

Bulletin

Entomological Society of Canada
Société d'entomologie du Canada

Volume 47
Number / numéro 1



March / mars 2015

Published quarterly by the
Entomological Society of Canada

Publication trimestrielle par la
Société d'entomologie du Canada



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Two lab-raised *Eumaeus godartii* (Lepidoptera: Lycaenidae) butterflies are almost ready to emerge at the Smithsonian Tropical Research Institute in Panama City (Smithsonian Tropical Research Institute, Panama City, Republic of Panama)

Deux papillons *Eumaeus godartii* (Lepidoptera: Lycaenidae) élevés en labo sont presque prêts à émerger au Smithsonian Tropical Research Institute à Panama (Institut Smithsonian Tropical Research, Panama, République du Panama)



Something old, something new, something borrowed, something blue

The title comes from the first line of a rhyme that has to do with marriage, and what the bride should bring for good luck. While marriage in the traditional sense is hardly on the agenda for the ESC in 2015 (although I am certain that some of our members may be tying the knot), we may think of our new partnership with *Strauss Event & Association Management* since November last year as a marriage of sorts. So what can we bring to this relationship that will bring us good luck for the future? I will suggest some things here.

Something old

Apart from having a President who is a bit longer in the tooth than most predecessors, the ESC is one of the oldest associations in North America, including two time-tested publications of extremely high quality, *The Canadian Entomologist* and the *Bulletin of the ESC*. With age comes tradition, experience, wisdom, and perhaps a bit of inertia against

Quelque chose de vieux, quelque chose de nouveau, quelque chose d'emprunté, quelque chose de bleu...

Le titre vient de la première ligne d'une comptine sur le mariage, et sur ce que la mariée doit avoir sur elle pour la chance. Bien que le mariage au sens traditionnel soit loin d'être au calendrier pour la SEC en 2015 (bien que je sois certain que certains de nos membres célèbrent leur union), nous pourrions voir notre nouveau partenariat avec *Strauss Event & Association Management* depuis novembre dernier comme une sorte de mariage. Alors que pourrions-nous amener à cette relation qui nous amènerait de la chance pour le futur? J'apporte quelques suggestions ici.

Quelque chose de vieux

En dehors d'avoir un président qui a un peu plus d'expérience que la plupart de ses prédécesseurs, la SEC est une des plus vieilles associations en Amérique du Nord, incluant deux publications à l'épreuve du temps d'extrêmement haute qualité, *The Canadian Entomologist* et le *Bulletin de la SEC*. Avec l'âge vient la tradition, l'expérience, la sagesse et peut-être un peu d'inertie envers le changement. Nous avons survécu à des périodes turbulentes, particulièrement durant les dernières décennies. Nous devons continuer à changer afin de nous ajuster à des temps changeants. Par conséquent, nous devons laisser certaines vieilles choses derrière nous. Par exemple, les moyens de communication ont drastiquement changé et les vieilles méthodes comme les revues imprimées sont devenues choses du passé. Ces jours-ci, la plupart d'entre nous ont accès à un large corps de littérature, qui est littéralement au bout de nos doigts sur Internet. Nous essayons également d'acquérir des ressources

change. We have survived through turbulent times, particularly during the last few decades. We must continue to change in order to adjust to changing times. Consequently, we have to leave some old things behind. For example, means of communication have changed drastically, and old ways such as printed journals have largely become a thing of the past. These days most of us have access to a large body of literature, which is literally at our fingertips through the internet. We also bring with us human resources, that is, volunteers who often give a lot of their time to ensure that the ESC stays vibrant. From my perspective as President, a number of 'old' Governing Board members have been, and continue to be invaluable sources of information and advice. I could mention many, but our Secretary Alec McClay deserves special note.

Something new

Over the past year, we have seen numerous highly significant changes that are independent of the transition to Strauss. *The Canadian Entomologist* editorship was taken over by Kevin Floate last September, and he has continued to build on the work of former editors to improve the standing of the journal. We also have a new treasurer, Christopher Dufault. Christopher has put an enormous amount of time and effort in to the transitioning process. One of the trickiest parts has been setting up the new online membership renewal system. When you read this, you would have renewed using this system. If it worked flawlessly, you can thank Christopher.

Something borrowed

As one of North America's oldest organizations, it comes as no surprise that the ESC is well connected to other organizations. This is particularly true for our regional societies, of course, and also true of our neighbours to the south. This means that we can learn from them, and they can learn from us; that is, we can borrow each other's ideas. For example, we are not the first society to

humaines, c'est-à-dire des bénévoles qui donnent de leur temps afin d'assurer que la SEC demeure vibrante. De ma perspective en tant que Président, bon nombre de « vieux » membres du conseil d'administration ont été, et continuent d'être une source inestimable d'information et de conseils. Je pourrais en mentionner plusieurs, mais notre secrétaire Alec McClay mérite une note spéciale.

Quelque chose de neuf

Durant la dernière année, nous avons vu un nombre important de changements significatifs qui sont indépendants de la transition vers Strauss. Le poste d'éditeur-en-chef de *The Canadian Entomologist* a été repris par Kevin Floate en septembre dernier, et il a continué à bâtir sur le travail des éditeurs précédents afin d'améliorer le niveau de la revue. Nous avons également un nouveau trésorier, Christopher Dufault. Christopher a mis une quantité de temps et d'énergie énorme dans le processus de transition. Une des parties difficile a été de mettre sur pied le nouveau système de renouvellement de l'adhésion en ligne. Au moment de lire ces lignes, vous avez déjà renouvelé avec ce nouveau système. Si le tout a fonctionné sans problème, vous pouvez remercier Christopher.

Quelque chose d'emprunté

En tant qu'une des plus vieilles organisations d'Amérique du Nord, il n'est pas surprenant que la SEC soit liée à d'autres organisations. Cela est particulièrement vrai pour nos sociétés régionales, évidemment, et aussi pour nos voisins du sud. Cela veut dire que nous pouvons apprendre d'eux, et qu'ils peuvent apprendre de nous : nous pouvons donc emprunter nos idées les uns aux autres. Par exemple, nous ne sommes pas la première société à utiliser une compagnie de gestion d'association et nous étions donc en mesure d'apprendre quelque chose sur les avantages et les inconvénients des organisations qui utilisent déjà ces compagnies. Similairement, j'ai demandé au comité de l'adhésion si nous pouvions créer une sorte d'incitatif pour les

use an association management company, so we were able to learn something about the advantages and disadvantages from organizations that are already using such companies. Similarly, I have asked the Membership Committee to look into whether we can create some incentive for members who recruit new members to the ESC, something the ESA is already doing.

Something blue

You are probably wondering how I will pull this part off! Well, it turns out that some Canadian researchers published a paper on colour preferences in *Science Express* about 6 years ago, and found that blue inspires creativity (<http://www.uvm.edu/~pdodds/files/papers/others/2009/mehta2009a.pdf>). I believe we have a strong team of volunteers in the ESC, and while they may not be blue, they are definitely creative. An example is the ESC Blog, which can have enormous impact. One of my students wrote a blog about her research (<http://escsecblog.com/2014/11/05/tracking-the-warren-root-collar-weevil/>) and was contacted by a reporter as a result. More recently, Felix Sperling wrote a blog about the potential loss of an entomology curator at the Royal British Columbia Museum (<http://escsecblog.com/2015/01/06/royal-bc-museum-insect-curator-position-in-danger-but-you-can-make-a-difference/>). The blog, along with a Twitter campaign and a blog by Morgan Jackson, led to a large number of letters sent to the RBCM, and interviews of Morgan and collections manager Claudia Copley on a Victoria radio station. While I cannot state for certain what role this played in the ultimate decision, the curator's position will be re-filled. (See also page 25.)

... and a silver sixpence in her shoe.

This is the last line of the little poem, which is often left off. But funds are important, and even if you can't spend time to volunteer for

membres qui recrutent de nouveaux membres pour la SEC, quelque chose que l'ESA fait déjà.

Quelque chose de bleu

Vous vous demandez sans doute comment je vais m'en tirer avec celui-là! Eh bien, il s'avère que certains chercheurs canadiens ont publié un article sur les préférences de couleur dans *Science Express* il y a environ 6 ans, et que le bleu inspire la créativité (<http://www.uvm.edu/~pdodds/files/papers/others/2009/mehta2009a.pdf>). Je crois que nous avons une équipe forte de bénévoles à la SEC, et que même s'ils ne sont pas bleus, ils sont définitivement créatifs.

The Canadian Press

TORONTO — We all have our colour preferences, but two Canadian researchers argue all colours are not of the same value.

The colour blue inspires creativity while the colour red improves attention to detail, they report in a study published online by the *Journal Science*.

Un exemple est le blogue de la SEC, qui a un impact énorme. Une de mes étudiantes a écrit un billet sur sa recherche (<http://escsecblog.com/2014/11/05/tracking-the-warren-root-collar-weevil/>) et a été contacté par un journaliste suite à cela. Plus récemment, Felix Sperling a écrit un billet sur la perte potentielle d'un curateur en entomologie au Royal British Columbia Museum (<http://escsecblog.com/2015/01/06/royal-bc-museum-insect-curator-position-in-danger-but-you-can-make-a-difference/>). Le billet, ainsi qu'une campagne Twitter et un billet par Morgan Jackson, ont mené à un grand nombre de lettres envoyées au RBCM, et des entrevues de Morgan et de la gestionnaire des collections, Claudia Copley, sur une station de radio de Victoria. Bien que je ne puisse pas établir avec certitude le rôle que cela a joué dans la décision ultime, le poste de curateur sera comblé. (Voir aussi page 25.)

...et un penny d'argent dans sa chaussure.

Il s'agit de la dernière ligne de la comptine, qui est souvent laissée de côté. Mais les fonds sont importants, et même si vous ne pouvez pas donner du temps en bénévolat à

the ESC, your financial support as a member is important. The ESC has struggled for a few years, but I have some good news to end this with. Thanks to the efforts of the Headquarters Committee led by Peter Mason and Christopher Dufault in particular, I am happy to report that the headquarters building was sold for a very good price. Peter et al. spent considerable time cleaning the place, and we owe them a great deal for their efforts on behalf of the Society. Consequently, the immediate future of the ESC looks bright, and on behalf of the Executive, I assure you that we will keep doing our very best to make sure it stays that way.

la SEC, votre soutien financier en tant que membre est important. La SEC s'est démenée pendant quelques années, mais j'ai de bonnes nouvelles pour terminer. Grâce aux efforts du comité du siège social mené par Peter Mason et Christopher Dufault en particulier, je suis content d'annoncer que l'immeuble du siège social a été vendu à un très bon prix. Peter et collab. ont passé un temps considérable à nettoyer l'endroit, et nous leur devons beaucoup pour leurs efforts au nom de la Société. Ainsi, le futur immédiat de la SEC semble prometteur et au nom du conseil exécutif, je vous assure que nous continuerons de faire de notre mieux pour nous assurer que ça reste ainsi.



Skunk cabbage attracting insects, Burns Bog, Delta, BC, April 2014

The student wing / L'aile étudiante

Paul Abram and Joanna Konopka



Research Roundup

For a graduate student, publishing a paper is a big deal. After spending countless hours doing the research, slogging through the writing process, soliciting comments from co-authors, formatting the paper to meet journal guidelines, and dealing with reviewer comments, it's nice to finally get that acceptance letter and know that your work is getting out there.

We want to help publicize graduate student publications to the wider entomological community. The ESC Student Affairs Committee will post a roundup of papers authored by Canadian graduate students on monthly bases on the ESC Blog ([check out the first one here](#)), as well as more regular Facebook ([on the Entomological Society of Canada student page](#)) and Twitter ([follow us @ESC_Students](#)) updates. If you want your recently published article featured (or we missed yours last month!), [send us an email](#).

Meet your Student Affairs Committee (SAC)

The ESC Student Affairs Committee is composed of graduate students and post-doctoral fellows from around the country – and we're always looking for new members! Here's this year's team:

Joanna Konopka (ESC Student Representative, SAC Co-Chair, London)

Joanna's main research interest is applied entomology, especially integrated pest management and medical entomology. With

Aperçu de la recherche

Pour un étudiant gradué, publier un article est important. Après avoir passé d'innombrables heures à faire la recherche, à trimer dans le processus d'écriture, à solliciter des commentaires des co-auteurs, à formater l'article pour rencontrer les critères de la revue et à gérer les commentaires des réviseurs, il est agréable de finalement recevoir une lettre d'acceptation et de savoir que votre travail est rendu là.

Nous voulons aider à publiciser les publications des étudiants gradués à la communauté entomologique plus large. Le comité des affaires étudiantes de la SEC affichera une collection d'articles écrits par les étudiants gradués canadiens sur une base mensuelle sur le blogue de la SEC ([consultez le premier ici](#)), ainsi que des mises à jour plus régulières sur Facebook ([sur la page étudiante de la Société d'entomologie du Canada](#)) et Twitter ([suivez-nous @ESC_Students](#)). Si vous voulez que vos articles récemment publiés y apparaissent (ou si nous les avons manqué le mois dernier!), envoyez-nous un [courriel](#).

Rencontrez votre comité des affaires étudiantes (CAE)

Le comité des affaires étudiantes de la SEC est composé d'étudiants gradués et de chercheurs postdoctoraux de tout le pays – et nous sommes toujours à la recherche de nouveaux membres! Voici l'équipe de cette année :

Joanna Konopka (Représentante étudiante de la SEC, co-présidente du CAE, London)

Le principal intérêt de recherche de Joanna est l'entomologie appliquée, et en particulier la gestion intégrée des ravageurs et l'entomologie médicale. Avec sa formation en écologie et évolution, elle poursuit actuellement un doctorat sur les parasitoïdes d'une punaise en incorporant des techniques comportementales, moléculaires et d'imagerie (Université Western; Agriculture et agroalimentaire Canada; en collaboration avec CABI Europe-Suisse).

her background in ecology and evolution, she is currently working on her doctoral research on parasitoids of brown marmorated stink bug incorporating behavioural, molecular, and imaging techniques (Western University; Agriculture and Agri-Food Canada; in collaboration with CABI Europe-Switzerland).

Paul Abram (SAC Co-Chair, Montréal)

Paul has been a member of the SAC since 2010, and co-chair since 2013. His research interests include the behavioural ecology of parasitoids and their hosts as well as arthropod biological control. He is currently working on his PhD at the Université de Montréal under the supervision of Jacques Brodeur and Guy Boivin, studying the evolutionary ecology of parental care in two model systems: a parasitoid of stink bug eggs that guards host patches, and a predatory stink bug that can change the colouration of its eggs.

Guillaume Dury (Montréal)

Since Guillaume started his insect collection, before he was 5 years old, his passion has only grown; during his undergraduate degree at the University of Québec at Montréal, he studied the feeding behaviour of forest tent caterpillars. For his Master's degree at McGill's Macdonald Campus and the Smithsonian Tropical Research Institute in Panama, Guillaume studied circular group defense in the larvae of neotropical leaf beetles (Chrysomelidae: Chrysomelinae), and used a molecular phylogeny to uncover evolutionary history of this behaviour. He plans on starting a PhD in September.

Justin Gaudon (Toronto)

Justin completed his Bachelor's degree (BES, Hons.) at the University of Waterloo in 2013. Now, Justin is working on his PhD at the Faculty of Forestry, University of Toronto under the supervision of Sandy Smith. He is specializing in forest entomology and exploring the feasibility of slowing the spread of *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae), more commonly known as emerald ash borer or EAB, using North American natural enemies. He is exploring questions concerning

Paul Abram (co-président du CAE, Montréal)

Paul est membre du CAÉ depuis 2010, et co-président depuis 2013. Ses intérêts de recherche incluent l'écologie comportementale des parasitoïdes et de leurs hôtes, ainsi que la lutte biologique contre les arthropodes. Il réalise actuellement ses recherches de doctorat à l'Université de Montréal sous la direction de Jacques Brodeur et Guy Boivin, étudiant l'écologie évolutive des soins parentaux dans deux systèmes modèles : un parasitoïde des œufs de punaises qui protège les agrégats d'hôtes et une punaise prédatrice qui peut changer la coloration de ses œufs.

Guillaume Dury (Montréal)

Depuis que Guillaume a commencé sa collection d'insectes, avant l'âge de 5 ans, sa passion n'a fait que croître : au cours de sa formation de premier cycle à l'Université du Québec à Montréal, il a étudié le comportement alimentaire de la livrée des forêts. Pour sa maîtrise au Campus Macdonald de l'Université McGill et à l'Institut de recherche tropicale Smithsonian, à Panama, Guillaume a étudié la défense circulaire de groupe chez les larves de chrysomèles néotropicales (Chrysomelidae: Chrysomelinae) et a utilisé une phylogénie moléculaire afin de découvrir l'histoire évolutive de ce comportement. Il prévoit débiter un doctorat en septembre.

Justin Gaudon (Toronto)

Justin a complété son baccalauréat (BES) à l'Université de Waterloo en 2013. Justin effectue maintenant un doctorat à la faculté de foresterie de l'Université de Toronto sous la supervision de Sandy Smith. Il se spécialise en entomologie forestière et explore la faisabilité de ralentir la propagation de *Agrilus planipennis* (Coleoptera : Buprestidae), plus connu sous le nom de l'agrile du frêne, en utilisant des ennemis naturels nord-américains. Il explore des questions concernant l'influence du stress de l'arbre-hôte, l'augmentation des populations, les préférences d'hôte et les comportements de localisation d'hôte, ainsi

the influence of host-tree stress, augmentation of populations, host preferences and host-location behaviours, and flight capacities of these native natural enemies.

Sarah Loboda (Montréal)

Sarah discovered a passion for spiders during her undergraduate studies that led her to do a Masters on spatial patterns of spider diversity in Northern Canada as part of the Northern Biodiversity Program. Supervised by Jade Savage (Bishop's) and Chris Buddle (McGill), she just started her PhD on ecological and evolutionary responses of arctic insects to recent climate change in Greenland.

Chandra Moffat (Fredericton)

Chandra is a PhD student at the University New Brunswick, where she studies the evolution of host-race formation and speciation in herbivorous insects. She has been involved with the ESC Student Affairs Committee since 2010, and served as the Student Representative from 2010-2012. She is currently Co-Chair of the International Congress of Entomology Student Affairs Committee, representing the ESC SAC. She completed a BSc at the University of Victoria, where through the co-op program, she gained experience in agricultural entomology, invasive plant ecology and biological control. After her BSc, she worked for both the CFIA and CABI Europe-Switzerland, and then completed an MSc at the University of British Columbia – Okanagan investigating the host-associations of a candidate weed biological control agent in its native range.

Boyd Mori (Alnarp, Sweden)

Boyd has been a member of the SAC since 2011 and has previously served as Student Representative and Co-Chair. He started his post-secondary education at the University of the Fraser Valley in Abbotsford, British Columbia, before transferring to the University of Alberta to finish his BSc. During his time at the U of A, he was inspired by some fantastic faculty members to continue on in entomology.

que les capacités de vol de ces ennemis naturels natifs.

Sarah Loboda (Montréal)

Sarah s'est découverte une passion pour les araignées au cours de ses études de premier cycle qui l'a conduit à faire une maîtrise sur les patrons spatiaux de la diversité des araignées dans le Nord Canadien dans le cadre du Programme de la Biodiversité Nordique (PBN). Supervisée par Jade Savage (Université Bishop) et Chris Buddle (Université McGill), elle vient de commencer son doctorat sur les réponses écologiques et évolutives des insectes arctiques au changement climatique récent au Groenland.

Chandra Moffat (Fredericton)

Chandra est étudiante au doctorat à l'Université du Nouveau-Brunswick où elle étudie l'évolution de la formation de races selon l'hôte et la spéciation chez les insectes herbivores. Elle a été impliquée dans le comité des affaires étudiantes depuis 2010, et a servi comme représentante étudiante de 2010 à 2012. Elle est actuellement co-présidente du comité des affaires étudiantes du Congrès international d'entomologie (ICE), représentant le CAÉ de la SEC. Elle a fait un baccalauréat à l'Université de Victoria, où, par le programme coop, elle a acquis de l'expérience en entomologie agricole, en écologie des plantes envahissantes et en lutte biologique. Après son baccalauréat, elle a travaillé pour L'ACIA et CABI Europe-Suisse et a ensuite complété une maîtrise à l'Université de Colombie-Britannique - Okanagan, investiguant les associations d'hôtes d'un agent candidat de lutte biologique contre une mauvaise herbe dans son aire de distribution native.

Boyd Mori (Alnarp, Suède)

Boyd est membre du CAÉ depuis 2011 et a précédemment servi comme représentant étudiant et co-président. Il a commencé ses études postsecondaires à l'Université de la vallée du Fraser à Abbotsford, en Colombie-Britannique, avant de transférer à l'Université de l'Alberta à la fin de son baccalauréat. Pendant son séjour à l'Université de l'Alberta, il

Boyd completed his PhD in July 2014 entitled, “Following the plume: Development of a pheromone-based monitoring and management program for *Coleophora deauratella* (Lepidoptera: Coleophoridae)”. He is currently a Postdoctoral Fellow at the Swedish University of Agricultural Sciences in Alnarp, Sweden. His current research focuses on insect-yeast interactions, specifically, the role of yeasts in attraction of the spotted wing *Drosophila*, *Drosophila suzukii*.

Miles Zhang (Winnipeg)

Miles’ passion for insects and other arthropods has started at a very young age, and further developed during his BSc at the University of Guelph. He then completed his MSc on the integrative taxonomy of Eurytomidae associated with rose galls at Laurentian University with Joe Shorthouse before switching taxa to work on the evolution of *Peristenus* (Braconidae) with Barb Sharanowski at the University of Manitoba.

Getting involved with the ESC

If you are interested in joining the SAC, or just have suggestions for new initiatives in the coming year, email us at students@esc-sec.ca

We look forward to hearing from you,
Joanna and Paul

a été inspiré par plusieurs professeurs fantastiques pour continuer en entomologie. Boyd a terminé son doctorat en juillet 2014, sa thèse s’intitulant « Following the plume: Development of a pheromone-based monitoring and management program for *Coleophora deauratella* (Lepidoptera: Coleophoridae) ». Il est présentement postdoctorant à l’Université suédoise des sciences agricoles à Alnarp en Suède. Ses recherches se portent sur les interactions insectes-levure, plus particulièrement le rôle des levures dans l’attraction de la drosophile à ailes tachetées, *Drosophila suzukii*.

Miles Zhang (Winnipeg)

La passion de Miles pour les insectes et autres arthropodes a débuté à un très jeune âge et s’est développée durant son baccalauréat à l’Université de Guelph. Il a ensuite complété sa maîtrise sur la taxonomie intégrative des Eurytomidae associés aux galles des roses à l’Université Laurentienne avec Joe Shorthouse avant de changer de taxon pour travailler sur l’évolution de *Peristenus* (Braconidae) avec Barb Sharanowski à l’Université du Manitoba.

S’impliquer au sein de la SEC

Si vous êtes intéressés à joindre la CAE, ou si vous avez des suggestions pour de nouvelles initiatives dans la prochaine année, écrivez-nous à students@esc-sec.ca.

Au plaisir d’avoir de vos nouvelles,
Joanna et Paul

Thesis Roundup / Foisonnement de thèses

If you or a student you know has recently defended an entomology-related thesis at a Canadian University, and would like notice of this accomplishment published here and on the ESC website, please email students@esc-sec.ca with the relevant information (name, date, degree, thesis title, supervisor[s], and university).

Si vous, ou un étudiant que vous connaissez, a récemment soutenu sa thèse dans un domaine lié à l’entomologie dans une université canadienne, et que vous voulez publier l’avis de cette réalisation ici et sur le site web de la SEC, merci d’envoyer les informations pertinentes (nom, date, diplôme, titre de la thèse, directeur[s] et université) à students@esc-sec.ca.

People in the news / Gens qui font les manchettes

Jeremy McNeil named to Order of Canada

Jeremy McNeil was among the 95 individuals named in December 2014 to the Order of Canada by Governor General David Johnston “for his contributions to the study of reproductive biology in insects and for his dedication to increasing public appreciation of science.”

Jeremy, who was a professor at Laval University for 30 years and now holds a Distinguished University Professorship at Western University, is internationally renowned for his work in insect behavioural and chemical ecology, with an emphasis on reproductive biology and migration of pest species. In a career that spans over 40 years, he has published more than 200 peer-reviewed articles and trained dozens of graduate students and postdoctoral fellows, many of whom now hold positions in universities and government agencies around the world.

Jeremy’s latest honour is but one of many he has acquired over the years. Others include the Entomological Society of Canada’s C. Gordon Hewitt Award (1979) and Gold Medal (1987), Fellow of the ESC (1981), Fellow of the Royal Society of Canada (1999), Humboldt Research Awardee (Germany) (2003), and the Fry Medal, given by the Canadian Society of Zoologists (2008).

The Order of Canada was established in 1967 to recognize outstanding achievement and dedication to the community and service to the nation. More than 6,000 individuals have received the honour. Appointments are made on the recommendation of the Advisory Council for the Order of Canada.



Andre Berlinck



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

The Marriott Château Champlain, Montréal, Québec
Sunday 8 November – Wednesday 11 November 2015



The Entomological Society of Québec invites you to the 2015 Joint Annual Meeting of the Entomological Society of Canada and the Entomological Society of Québec to be held at the Marriott Château Champlain Montréal, Québec, from 8 November to 11 November 2015. Room rates are \$169 per night plus taxes. Parking is \$23 per day. The deadline to reserve rooms is 7 October 2015, rooms might still be available afterwards but we can't guarantee it.

Reservations:

1050 Rue de la Gauchetière Ouest, Montréal, Québec H3B 4C9

Phone : (514) 878-9000 <http://www.montrealchateauchamplain.com/index.htm>

Erratum: Unfortunately, the \$15 discount announced in the ESC December bulletin for room reservations at the Marriott Château Champlain could not be offered to registrants. The organizing committee apologizes for this change.

PROGRAM HIGHLIGHTS

Our meeting theme is “**Entomology in the Anthropocene**”. Given that the footprint of human activity can be seen in all corners of the planet, there is a growing consensus among scientists that we have now entered a new epoch that is defined by the significant global impact of human activities on all of Earth's ecosystems and their biodiversity. We want to use the identification of this new epoch as an opportunity to discuss how all fields of research in entomology are adapting to the Anthropocene.

Plenary symposium theme: Entomology in the Anthropocene.

Confirmed Plenary Speakers:

May Berenbaum, Professor and Department Head, School of Integrative Biology, University of Illinois at Urbana-Champaign

Jessica J. Hellmann, Associate Professor, Department of Biological Sciences, University of Notre Dame

Marcel Dicke, Professor, Department of Entomology, Wageningen University, The Netherlands

Symposia:

Graduate Student Showcase

Biological Survey of Canada

Heritage lecture:

Guy Boivin, Research Scientist, Entomology, Horticulture Research and Development Centre Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu

Student paper and poster competitions

Regular poster and presented papers sessions

For More Information:

Check the SEQ webpage (http://seq.qc.ca/activites/reunions/SEQ-ESC_2015/index2.asp) for updated information on symposia and the call for papers.

Deadlines:

31 August 2015: Title/abstract submissions

1 September 2015: Early registration fees

7 October 2015: Hotel room reservation. It is advisable to book your room early; after 7 October our block of rooms will be made available to anyone!

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

Au Marriott Château Champlain, Montréal, Québec
Dimanche 8 novembre – mercredi 11 novembre 2015



Nous vous invitons à la réunion conjointe annuelle de la Société d'entomologie du Canada et de la Société d'entomologie du Québec qui se tiendra à l'hôtel Marriott Château Champlain de Montréal, Québec, du 8 novembre au 11 novembre 2015. Le tarif des chambres est de 169\$ par nuit plus taxes et le parking coûte 23\$ par jour. La date limite pour réserver une chambre est le 7 octobre 2015, des chambres pourront encore être disponibles après cette date mais sans garantie de prix ou de disponibilité.

Pour réserver :

Hôtel Marriott Château Champlain

1050 Rue de la Gauchetière Ouest, Montréal, Québec H3B 4C9

Téléphone : (514) 878-9000

<http://www.montrealchateauchamplain.com/index.htm>

Correction : Le rabais de 15\$ offert aux personnes réservant leur chambre à l'hôtel Marriot Château Champlain ne pourra être accordé. Le comité organisateur s'excuse de ce changement.

POINTS SAILLANTS DU PROGRAMME

Le thème de la réunion est « **l'entomologie dans l'anthropocène** ». Sachant que l'empreinte de l'activité humaine peut être visible à chaque coin de la planète, il y a un consensus croissant parmi les scientifiques que nous sommes maintenant entrés dans une nouvelle époque définie par des effets globaux significatifs des activités humaines sur les écosystèmes de la planète et leur biodiversité. Nous voulons profiter de l'entrée dans cette époque comme opportunité de discuter comment tous les champs de recherche en entomologie s'adaptent à l'anthropocène.

Conférenciers confirmés pour la session plénière: Entomologie dans l'anthropocène

May Berenbaum, Professeur et directrice du département, École de biologie intégrative, Université d'Illinois à Urbana-Champaign

Jessica J. Hellmann, Professeur associé, Département des sciences biologiques, Université de Notre Dame

Marcel Dicke, Professeur, Département d'entomologie, Université de Wageningen, les Pays-Bas

Symposium:

Vitrine aux étudiants diplômés

Commission biologique du Canada

Allocution du patrimoine:

Guy Boivin, Chercheur scientifique, Entomologie, Centre de recherche et de développement en horticulture-Agriculture et Agroalimentaire Canada, Saint-Jean-sur-Richelieu

Compétition étudiantes : présentations et affiches

Présentations et affiches régulières

Pour plus d'information:

Allez voir la page internet de la SEQ (http://seq.qc.ca/activites/reunions/SEQ-ESC_2015/index2.asp) pour des mises à jour de l'information sur les symposiums et les appels à conférences.

Dates limites:

31 août 2015: soumission des titres/résumés

1 septembre 2015: première inscription à tarif préférentiel

7 octobre 2015: réservation des chambres d'hôtel. Il est préférable de réserver vos chambres rapidement, après le 7 octobre, nos blocs de chambres réservées seront disponibles pour tout le monde!

A tale of two stinks! How blow flies locate feces and carrion

Bekka Brodie

Poop flies, filth flies, blow flies, green bottle flies, carrion flies, blue bottle flies... are all different common names for the many species of flies in the Family Calliphoridae. We mostly know these flies by their less than socially approved eating (feces and carrion) and oviposition (carrion only) habits, and we associate them with filth, insalubrity, and death. Blow fly maggots feed on and develop within carrion, providing us with a very important eco-system service. These are nature's recyclers! From death to new life... In other words, the world would be a much smellier and dirtier place without them. Consequently, because of their economic and forensic importance, most of what we know is focused on their larval (maggot) development. Yet these early stages of development, eggs to pupae, account for less than 50% of their lifespan, and almost nothing is known about their adult ecology and behavior. For example: How do they locate resources?; how do they find mates?; and what cues are they using to locate these resources and mates? My research seeks to answer these questions by studying adult blow fly ecology and communication pathways. Out of all these questions, I'm going to focus here on how and why blow flies find food and oviposition resources: the "two stinks".

Blow flies lay their eggs on recently deceased animals (Figure 1). The eggs quickly hatch into maggots, which consume and break down the carrion. After approximately 1 week, they will leave the corpse and pupate in the soil nearby. But blow flies aren't the only organism scavenging the carrion; they face a lot of competition from other insects, bacteria, fungi, and vertebrates (DeVault et al. 2003). In order to reduce competition with these organisms, blow flies need to get there first, and they do! Often, they arrive within the first few hours after death (Hall and Doisy 1993). This means that they can smell a corpse long before our noses can!

To find out which cues blow flies use to rapidly locate carrion, we chose to work with one of the first species to arrive at a death scene, the green bottle fly, *Lucilia sericata*. Using behavioral assays which excluded all visual cues, we found that blow flies can detect 'death' volatiles, and respond faster to a recently-dead and wounded rat carcass than they do to an intact rat carcass. But what are the odours that attract them? Our next step was to identify the odour using a variety of lab equipment including a gas chromatograph electro-antennal detector (GC-EAD) that is a fancy name for a process with an easy explanation... the antenna acts as a filter for all the smells and we only identify the odours that excite the antenna. Using this process we identified nine antennally active volatile compounds emanating from the corpse (Figure 2). We then determined the essential attractive component(s) by testing several synthetic "blends" of these volatile compounds in



Figure 1. Female blow flies (*Lucilia sericata* and *Phormia regina*) and eggs on vertebrate carcass. (Photo: Sean McCann)

Bekka Brodie (bbrodie@sfu.ca) is a PhD candidate at Simon Fraser University where she is an entomologist and chemical ecologist. Her research interests include insect communication, behaviour and conservation. The material presented here was part of her symposium talk at the Saskatoon Joint Annual Meeting (September 2014).

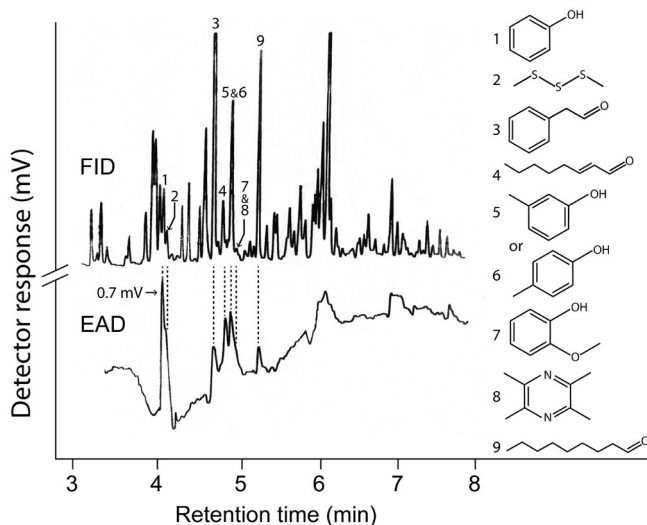


Figure 2. Representative recording of the responses of a gas chromatographic flame ionization detector (FID) and an electroantennographic detector (EAD: female *Lucilia sericata* antenna) to aliquots of headspace volatile extract of incised rat carrion. Nine components elicited antennal responses, as follows: (1) phenol, (2) dimethyl trisulfide, (3) phenylacetaldehyde, (4) (E)-2-octanal, (5,6) meta-cresol and/or para-cresol, (7) guaiacol, (8) tetramethyl pyrazine, and (9) nonanal.

which we selectively removed groups of organic chemicals (e.g., esters) or individual compounds. It turns out that dimethyl trisulfide (DMTS) was the key compound that attracted lab reared blow flies to a recently dead animal. To see whether DMTS works just as well in a natural setting, we tested the attraction of wild flies to DMTS at a local dairy farm (Figure 3a). In this new setting, DMTS had to compete with farm odours and farm resources (e.g., liquid manure, decomposing proteins and plant material). And it worked! A DMTS lure in Oak Stump traps (Figure 3b) captured lots and lots of blow flies. But there is a catch: we did not trap just any blow flies, we caught only female flies laden with eggs (Brodie et al. 2014).



Figure 3. (a) Field tests at a local dairy farm (Delta, British Columbia) with (b) Oak stump trap deployed in field experiments (the depicted trap is covered in brown construction paper as one of four colors tested).

Now that we had figured out the smells that attract blow flies to their oviposition resources, the next natural question was: are there other cues that blow flies use to locate corpses? The second mechanism we looked at was vision. Like most insects, blow flies use their antennae to smell odours, but unlike many insects blow flies have huge eyes that take up 70% of their head. In another set of experiments we found that dark animal pelt-mimicking colours, like black and dark red, in combination with DTMS increased the response of gravid female blow flies at both long and short range (Brodie et al. 2014).

Uncovering smells and colors that attract gravid females furthered our knowledge about blow fly ecology and behavior, and provided critical information for designing an effective lure for these flies. But there are many other aspects of blow fly ecology that remain unknown, including the means by which they can find food resources. As I mentioned in the opening paragraph, blow fly foods include feces, and feces are what we often associate these insects with (we tend to see more poop than dead animals in our day-to-day life).

To our nose feces have a characteristic odour. But this striking odour is composed of a chemical bouquet that includes many of the same compounds found in carrion, including DMTS (Cosse and Baker, 1996). Blow fly maggots cannot develop on feces, so how do gravid females tell the two resources apart, or can they?

Immediately after pupation, but also throughout their lives, an adult blow fly requires a great deal of protein; in particular, females require a lot of protein to complete the vitellogenic cycle, develop ovaries and mature eggs (Stoffolano et al. 1995). If a female cannot fulfill her requirements for protein, she will quickly re-absorb her oocytes. While carrion is a high-quality protein resource, it is ephemeral and an uncommon occurrence. Therefore, blow flies forage on a variety of resources and can commonly be seen dining on feces (Figure 4).

We started the investigation of what make feces and carrion different to a blow fly by testing how reproductive stage affects preference for these resources. We gave female flies a choice between fresh canine feces (feeding resources) and freshly deceased rat carrion (oviposition resource), all visual cues excluded. Young (3-day-old) females preferred feces, whereas older, gravid females overwhelmingly chose carrion (as we expected!). We then identified the specific odours that attract flies to feces using the same methods we used to



Figure 4. Blow flies (*Lucilia sericata*) feeding on canine feces. (Photo: Sean McCann)

identify attractant carrion odors. A total of 17 feces volatiles consistently elicited responses from blow fly antennae. Through a series of 32 experiments in which we selectively removed groups of compounds, we found that indole and two or more lower-molecular-weight alcohols were the key semiochemicals that attracted blow flies to feces. With DMTS and alcohols emanating from both feces and carrion, and indole originating only from feces, we are now investigating whether indole is indeed the indicator semiochemical of feces that mediates resource partitioning between young flies foraging for protein meals and gravid flies seeking oviposition sites.

The lesson learned from all this work is that for blow flies, stink does matter! Smells play such an important part of blow fly life (and to insects in general). Although focused on a model study species, our investigation contributes to the understanding of resource foraging by insect detritivores in general, and emphasizes the importance of studying foraging decisions in accordance with insect developmental stage. In addition to these insights into blow fly ecology and behavior, our data will help develop effective lures for trapping blow flies in industrial and household settings. We have so much to learn from studying the ecology of adult blow flies! It literally blows my mind (pun intended) that we understand the ecology of blow fly maggots to such extents that their growth and pupation patterns are used to put murderers behind bars (for more beneficial examples, see my recent blog post on “why blow flies are stink’n awesome”; www.bekkabrodie.com), yet we know so little about their adult ecology and behavior. Understanding their full life cycle will only increase our appreciation of these ecologically and socially important insects.

Acknowledgements

I would like to thank my undergraduate research assistants for all their hard work and dedication; Gerhard Gries, my supervisor; Sean McCann for providing photographs; and as always, my family, my husband, Viorel, and my son, Octavian “Tavi”, because without their continued support and patience throughout the pursuit of my PhD, this work would not have been possible. The Natural Sciences and Engineering Research Council of Canada (NSERC) - Industrial Research Chair, with ConTech Enterprises and Global Forest Sciences as industrial sponsors, supported this research.

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Dean Lyle Struble, a chemist/entomologist with Agriculture and Agri-Food Canada from 1968 until his retirement in 1996, died 22 April 2014 in White Rock, British Columbia, at the age of 77. Dean worked at the Lethbridge Research Centre as a research scientist from 1968 until 1990, when he was appointed Director of the AAFC Vancouver Research Centre.

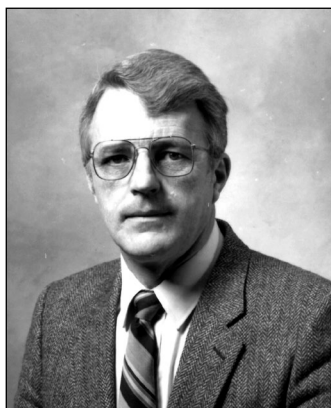
Dean was born 29 August 1936 at Wawota, Saskatchewan. After finishing high school, he farmed for several years before enrolling at the University of Saskatchewan to study chemistry. He graduated from the U of S with a BA (1961) and MA (1962). He worked several years as a chemist with Dupont Canada before returning to the U of S to obtain a PhD in 1966. He was then awarded National Research Council Overseas Fellowships for 1 year's study at Imperial College, London, England, and another year at the University of Adelaide, Australia. He joined the Agriculture Canada Research Station at Lethbridge in January 1968.

Initially, his research involved the analysis of residues in soil and crops of the persistent organochloride and organophosphate insecticides in wide use at that time. However, within a few years he switched his focus to the identification and synthesis of the sex pheromones of pest species of Lepidoptera.

Sex pheromones are produced by female moths in nanogram quantities and in the late 1960s and early 1970s their identification required the extraction of large numbers of moths. Dean speculated that most sex pheromones of Noctuidae would be structurally related to the four that had been reported by 1996. And, therefore, that attractants were most likely to be positional and stereo-isomers of long chain C10 to C18 alcohols, acetates and aldehydes. These chemicals were not available commercially, so he proceeded to synthesize them. Using his synthetic chemistry skills he prepared an extensive library of nearly 200 potential pheromone components of high purity and systematically screened them for pheromone activity in field tests. By this method he developed sex attractants for several pest species and received four Canadian and USA patents.

Subsequently, during a work transfer to Switzerland in 1977, he developed a method using a gas chromatograph linked directly to an electroantennogram which used the living antenna of male moths as a detector (Struble and Arn, 1984). This enabled him to directly determine, from extracts of the ovipositors of only a few female moths, the actual pheromone components and the ratio in which they were present. With this methodology he was able to develop sex attractants for all the main pest species of cutworms prevalent in western Canada and also to resolve a number of taxonomic issues within the Noctuidae. He was recognized nationally and internationally for this research and also for his involvement in several cooperative studies for the utilization of these attractants for population monitoring and prediction of the potential for crop damage. During his career he published many scientific papers in both organic chemistry and entomology, including several book chapters.

During his career, Dean Struble represented Agriculture Canada on many local, national and international committees. He became a Fellow of the Entomological Society of Canada in 1986.



**Dean Lyle Struble
(1936 – 2014)**

In retirement Dean was active in the Canadian Executive Service Organization, serving as a volunteer advisor on several overseas assignments. For a number of years he was also deeply involved in mentoring a Fraser Valley First Nations Band with their business and agriculture development efforts.

He is survived by his wife, Norma, three daughters and 6 grandchildren.

Reference

Struble, D.L. and H. Arn. 1984. Combined gas chromatography and electroantennogram recording of insect olfactory responses. Pp. 161-178 In: H.E. Hummel and T.A. Miller (Eds). Techniques in pheromone research. Springer –Verlag, New York.

J. Robert Byers
Lethbridge

Ron Harris passed away peacefully at the Guelph General Hospital on Tuesday, 9 December 2014, at the age of 82. He was the beloved husband of the late Carol (Smith) Harris (2000). He will be greatly missed by his family including daughters Brenda (Andrew) of Calgary, Shelley of Toronto, grandchildren Isabel, Nadia, Olivia and Aidan, and many colleagues, students and friends from around the world.

Ron was born in the mining town of Chapman Camp, Kimberly, British Columbia. After an adventurous youth, he went on to receive his BSc (1954) and MSc (1956) from the University of British Columbia and PhD (1961) from the University of Wisconsin. He had a distinguished career with Agriculture Canada (Chatham [1956-1968] and London [1968-1990]) conducting and leading research in environmental toxicology and integrated pest management. Ron then went on to his second career with the University of Guelph as Chair of the Department of Environmental Biology (1990-1997), retiring in 1997. He enjoyed immensely his work at the University of Guelph, and with numerous organizations and scientific societies, including the Entomological Society of Canada (President 1974-1975). During his professional career Ron received many honors including: the Entomological Society of America's J. Everett Bussart Award for research excellence (1968), Fellow of the Entomological Society Canada (1977), Citation of Merit from the Ontario Ministry of the Environment (1990), Member Emeritus of the Entomological Society of America (1997), Fellow of the Entomological Society of Ontario (2003), and Professor Emeritus of the University of Guelph (2000). But above all, Ron cherished the time he spent mentoring students – our future scientists.

He touched the lives of many and will be sadly missed. A touching and upbeat Celebration of Ron's Life was held on 24 January 2015 at the University of Guelph Arboretum which was attended by approximately 100 of Ron's family, friends and colleagues.

Cynthia Scott-Dupree
University of Guelph



**Charles Ronald Harris
(1932 – 2014)**

Book review / Critique de livre

The Bee A Natural History. Wilson-Rich, Noah, with Kelly Allin, Norman Carreck and Andrea Quigley. 2014. Princeton University Press, Princeton, USA and Oxford, UK. 224 pp. ISBN: 978-0-691-16135-8. US\$27.95, hardback.

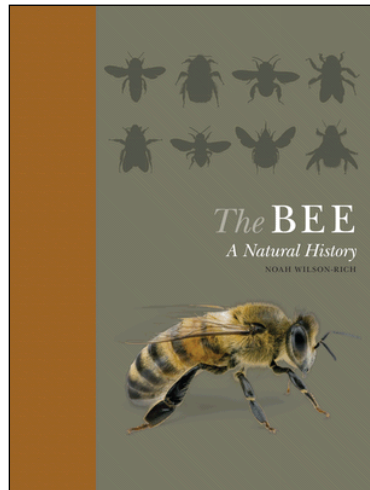
This book begins with an introduction followed by seven chapters covering different aspects of the natural history of bees. At the end of the book can be found a bibliography, index, biographies of the authors and acknowledgements. The book is beautifully designed and copiously illustrated with numerous splendid high resolution colour photographs, and clear drawings and tables.

Chapter 1 covers the evolution and development of bees. It begins with a discussion of how bees are descended from carnivorous wasps and how the spread of flowering plants “coincided with the appearance of the first bees.” This is followed by a section on early records of honey hunting and beekeeping. Subsequent sections cover such areas as the distinguishing features of the different bee groups (i.e., short, medium and long-tongued bees), honey bee evolution and development, and wild bees in the old and new worlds.

Chapter 2 relates to anatomy and biology, and it's here that the book really hits its stride. Excellent sections cover the anatomy of the honey bee, both external and internal, and bee senses. Of particular interest are the comparisons with humans regarding the differences in our abilities to see, taste and smell. Subsequent sections cover bee genetics and genomics, the endocrine system, immunology, reproduction and bee life cycles. A section on pests and diseases provides an excellent summary of the fungi, bacteria, viruses, protozoa and arthropods that prey on bees and their food stores. The chapter ends with a discussion of how pollination works including typical pollination by honey bees compared with buzz pollination by bumble bees and several other types of bees.

The third chapter discusses bee society and behaviour. This chapter begins with sections comparing solitary, sub-social and eusocial bees, with a focus on the latter, especially with respect to how species differ regarding reproduction, the division of labour and behaviours including swarming. Karl von Frisch's discovery that honey bees use dances such as the “round dance” and the “waggle dance” to communicate the presence of food sources and how to navigate to them, as well as other more recent research, are given an excellent treatment. Another section describes olfaction in bees; I discovered that my fondness for having a banana with my cereal each morning precludes me from getting close to bee hives as bee alarm pheromone has a banana-like scent! A series of additional sections describe behaviours such as foraging, crafting of various products (e.g., royal jelly), nesting, thermoregulation, and defence and aggression. Circadian and circannual rhythms as well as temporal polyethism are given excellent treatments. The final sections in the chapter cover the wide variation of behaviours concerning courtship, sexual reproduction, mating systems and parenting.

Chapter 4 brings us to the bee-human relationship. It begins with a brief discussion of early observations of bees by humans in ancient Egypt, Greece and Rome followed by the Renaissance and more recent times including a short overview of current scientific research. A section covers the economic importance of bees but, in my view, is too brief and focuses rather too much on



changes in recent honey prices in the USA to the detriment of understanding the “big picture.” Several sections cover the long association of bees and beekeeping with spirituality, religious traditions and political symbolism. The chapter ends with a section entitled “What if Bees Were to Disappear?” which, like the section on the economic importance of bees, left me wanting more.

The fifth chapter is about the keeping of both honey bees and other types of bees. Several sections describe various hive designs still in use in different parts of the world, including today’s favoured Langstroth hive, as well as those used by early beekeepers. The importance of record keeping and how it aids planning of interventions is discussed. Other sections discuss urban beekeeping, methods of small and large scale harvesting of honey, organic or “natural” beekeeping, and how to capture swarms. The final sections provide excellent information on integrated hive management and pest and disease management, expanding on the information from Chapter 2. For example, a number of management practices that can help increase overwintering success are described. Superb photos and descriptions of such arthropod pests as the small hive beetle and the aptly-named mite, *Varroa destructor*, are provided. Detailed information on the diagnosis of bacterial, fungal and viral infections, and their preventative and restorative treatment by chemical and chemical-free means is also given.

Chapter 6 refers to itself as a “directory” of the different types of the 20,000 known species of bees. For each of the groupings of solitary bees (by far the largest group), bumble bees, stingless bees, and honey bees, one or two pages of introductory text provides information such as range in size, economic importance, extent of sociality, approaches to pollen collection and storage, and levels and nature of aggression. A total of 40 well-chosen examples of bees from these categories are each granted a whole page consisting of a large, high resolution photo accompanied by a visual description, information on size, distribution, food preferences, habitat, behaviour and life cycle.

Chapter 7 covers many of the challenges faced by bees. It begins with a section that describes historic and recent bee losses followed by sections on the impact of changes in weather and climate, habitat loss, pests and diseases, and changes in farming methods. The latter includes a discussion of the impact of increased use of insecticides and changes in the types of insecticides used in recent decades, and of herbicides that kill weeds, in and around crops, that in the past would have provided good bee forage. It also includes a section outlining other threats to bees such as factors affecting queen failure and environmental damage caused by imported species of bees. A couple of sections advocate conserving bees through establishing dedicated bee reserves, and research initiatives such as breeding “hygienic bees” that more readily remove unhealthy and dead brood from the nest, thus eliminating pathogens. The chapter, and book, is completed with a section on how we can help bees through such activities as planting flowers and making homes for bees near our own homes, and lobbying our various levels of government for “better regulation and funding for conservation and research projects.”

To me, the book’s greatest strengths are the parts that describe bee anatomy, biology, behaviour, beekeeping and the many challenges faced by bees. It is written in a very understandable and accessible style where scientific terms and concepts are clearly explained. Additionally, the many photos are remarkably well “posed” and of very high quality.

Nevertheless, some of the sections pertaining to agriculture, economics, and the possible impact on the world if bees were to disappear, could be more substantive and some of the facts checked or expressed more carefully. For example on p. 192 it is reported that North Dakota produced 32.7 million tonnes of honey in 1992. By comparison Brunner and Saylor (2015) reported this to be “over 34 million pounds of honey” which doubtless is the more accurate statistic. When noting the impact of bees on the yield of forage crops such as red clover, the book needs to clarify that this relates to forages grown for seed (that require bee pollination) and not for feed (that do not

require bee pollination).

The index could be expanded somewhat; for example, *scopa* is listed in it twice, whereas neither pollen basket nor the more technical term, *corbicula*, could be found listed therein despite these words being used several times in the book. Also, it should be noted that although the book provides a bibliography of source books and some websites related to bees, none of the information in it is attributed to source.

Nonetheless, I do not wish to leave a negative impression of the book; truly, the positives far outweigh the few negatives. It is an engaging, wide-ranging introduction to the natural history of the bee that I found to be a real “page turner.” One can learn a great deal about bees from the book and, as such, it can serve as an excellent introductory text book on the subject for both formal and informal students of entomology. And at just US\$27.95 this beautiful book is a real bargain.

Bottom line: highly recommended.

Literature cited

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<http://www.nd.gov/ndda/program/apiary-program-honey-bees> (accessed January 30, 2015)

C.P. Dufault
Christopher P. Dufault & Associates Inc.
Ottawa, Ontario

Books available for review / Livres disponibles pour critique

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

If you wish to review one of these books, please send an email to the Chair of the Publications Committee (Tom Lowery, Tom.Lowery@agr.gc.ca).

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

Preference will be given to ESC members.

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Si vous souhaitez critiquer un de ces livres, veuillez envoyer un message au président du comité des publications (Tom Lowery, Tom.Lowery@agr.gc.ca).

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

La préférence est donnée aux membres de la SEC.

Guidelines

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

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

Lignes directrices

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

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

Currently available for review / Disponibles pour critique

- Bouchard, P. (Ed.). 2014. *The Book of Beetles*. 656 pp., 2,400 colour plates. University of Chicago Press. ISBN 978-0-226-08275-2 [hardcover]
- Gibb, T.J. 2014. *Contemporary Insect Diagnostics: The Art and Science of Practical Entomology*. 352 pp., numerous colour plates. Academic Press. ISBN print: 9780124046238; eBook: 9780124046924 [paperback, e-book]
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- Anonymous. 2014. *Bug Bingo Board game*. 64 illus. Features highly detailed illustrations and a brochure of factoids provided by The Natural History Museum of London. ISBN: 9781856699402 [board game]
- Williams, P., Thorp, R., Richardson, L., & S. Colla. 2014. *Bumble Bees of North America*. 208 pp., 150 colour illus. Princeton University Press. ISBN: 9780691152226 [paperback, e-book]
- Lemelin, R.H. (Ed.) 2013. *Management of Insects in Recreation and Tourism*. 365 pp. Cambridge University Press. ISBN: 9781107012882 [hardcover]
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- Morales-Ramos, J., Rojas, G. & D.I. Shapiro-Ilan. 2013. *Mass Production of Beneficial Organisms, 1st Edition, Invertebrates and Entomopathogens*. 764 pp. Academic Press. ISBN: 9780123914538 [hardcover, e-book]
- Chyb, S. & N. Gompel. 2013. *Atlas of Drosophila Morphology, 1st Edition, Wild-type and Classical Mutants*. 248 pp., Academic Press. ISBN: 9780123846884 [hardcover, e-book]
- Paiero, S.M., Jackson, M., Jewiss-Gaines, A., Kimoto, T., Gill, B.D., & S.A. Marshall. 2012. *Field Guide to Jewel Beetles (Coleoptera: Buprestidae) of Northeastern North America*. Canadian Food Inspection Agency. 164 maps. 411pp [paper]

65th Annual Meeting of Members and Board of Directors Meetings

The Annual Meeting of Members of the Entomological Society of Canada will be held at the Marriott Château Champlain Hotel, Montreal, Quebec, on Tuesday, 10 November 2015. The Board of Directors Meeting will be held at the same location on Saturday, 7 November 2015, from 8:30 to 17:00. The incoming Board of Directors will also meet immediately following the Annual Meeting of Members. Matters for consideration at any of the above meetings should be sent to Alec McClay, Secretary of the ESC (see inside back cover for contact details).

65e assemblée annuelle et réunions du conseil d'administration

L'assemblée annuelle de la société d'entomologie du Canada se tiendra à l'hôtel Marriott Château Champlain, Montréal, Québec, le mardi 10 novembre 2014. La réunion du conseil d'administration se tiendra au même endroit, le samedi 7 novembre 2015 de 8:30 à 17:00. Le nouveau conseil d'administration se réunira également immédiatement après l'assemblée annuelle. Les sujets à aborder pour n'importe laquelle de ces réunions doivent être envoyés à Alec McClay, secrétaire de la SEC (voir le troisième de couverture pour les coordonnées détaillées).

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

Under our new election procedures the Society will hold an online ballot to select candidates for a Societal Director and Director at Large. The selected candidates will then be presented as a slate for formal election by members at the Annual Meeting in Montreal in November. Nominations for these positions must be signed by three active members of the Society and be received by the Secretary of the Entomological Society of Canada, Alec McClay, by 30 April 2015 (see inside back cover for contact details).

Appel à candidatures: Directeur sociétal (second vice-président), conseiller

Conformément à nos nouvelles procédures, la Société tiendra un vote en ligne afin de sélectionner des candidats pour les postes de directeur sociétal et conseiller. Les candidats sélectionnés seront ensuite présentés comme liste de candidats pour une élection formelle par les membres à la réunion annuelle à Montréal en novembre. Les nominations pour ces postes doivent être signées par trois membres actifs de la Société et être reçu par le secrétaire de la Société d'entomologie du Canada, Alec McClay, au plus tard le 30 avril 2015 (voir le troisième de couverture pour les informations de contact).

Eleventh Annual Photo Contest

The Eleventh Annual Photo Contest to select images for the 2016 covers of *The Canadian Entomologist* and the *Bulletin of the Entomological Society of Canada* is underway. The cover images are intended to represent the breadth of entomology covered by the Society's publications. Insects and non-insects in forestry, urban or agriculture; landscapes, field, laboratory or close-ups; or activities associated with physiology, behaviour, taxonomy or IPM are all desirable. A couple of 'Featured Insects' (for the spine and under the title) are also needed. If selected, your photo will grace the cover of both publications for the entire year. In addition, winning photos and a selection of all submitted photos will be shown on the ESC website.

Contest rules:

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

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

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

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

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

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

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

Submission deadline is 15 August 2015. Entries should be submitted as an attachment to an email message; the subject line should start with "ESC Photo Contest Submission". Send the email message to: photocontest@esc-sec.ca.

Onzième concours annuel de photographie

Le onzième 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* pour 2016 est en cours. Les images sur la couverture doivent représenter l'étendue entomologique couverte par les publications de la Société. Des photos représentant des insectes ou autres arthropodes forestiers, urbains ou agricoles, des paysages, du travail de terrain ou de laboratoire, des gros plans, ainsi que montrant des activités associées à la physiologie, au comportement, à la taxonomie ou à la lutte intégrée seraient souhaitées. Deux « insectes vedettes » (pour le dos et sous le titre) sont également recherchés. Si elle est sélectionnée, votre photo ornera la couverture des deux publications pour l'année entière. De plus, vos photos gagnantes et une sélection de photos soumises seront montrées sur le site Internet de la SEC.

Règlements du concours :

Les photos d'insectes et autres arthropodes à n'importe quel stade, effectuant n'importe quelle activité et dans n'importe quel habitat sont acceptées. Afin de représenter les sujets de la recherche entomologique, nous encourageons également les photos de parcelles de terrain, expériences de

laboratoire, impacts des insectes, activités de recherche, équipement d'échantillonnage, etc. Les photos doivent, cependant, avoir un intérêt entomologique clair.

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

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

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

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

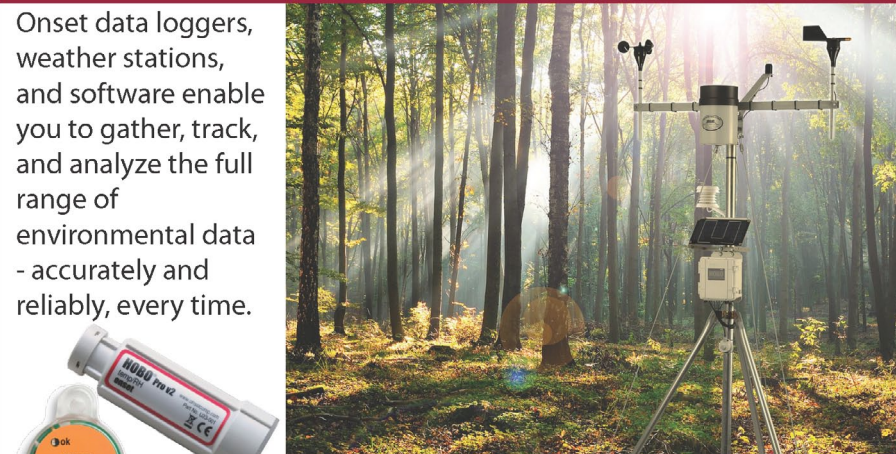
Le comité d'évaluation sera choisi par le président du comité des publications de la SEC et inclura un membre du comité du contenu du site Internet.

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

La date limite de soumission est le 15 août 2015. Les soumissions doivent être faites en pièces jointes d'un courrier électronique. L'objet du message doit débiter par « Soumission pour le concours de photographie de la SEC ». Envoyez vos courriels à : photocontest@esc-sec.ca.

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Good news from British Columbia on two fronts!

Royal British Columbia Museum

The Royal British Columbia Museum will be hiring a new entomology curator after all, filling the position occupied by Rob Cannings for 33 years (January 1980 – January 2013) (see *Bulletin* 45: 30 [March 2013], <http://www.esc-sec.ca/bulletin.php>). Many supporting letters were received from the general public, government agencies, universities and museums worldwide. The decision to fill the position was made after a final discussion lasting several hours in which the Museum's executive members discussed the issue with museum staff and representatives from universities, museums, the British Columbia government, the Entomological Societies of Canada and British Columbia, and the naturalist community.

The Entomology Collection is among the most active and growing collections in the Royal British Columbia Museum holdings, containing approximately 600,000 specimens and specimen lots. The earliest collections date back to the 1880s.

Vancouver to host International Congress

The University of British Columbia campus will be the site of the International Congress on Invertebrate Pathology and Microbial Control and 48th Annual Meeting of the Society for Invertebrate Pathology, 9-13 August 2015. (<http://www.sipmeeting-2015.org/>)

The meetings will offer an exciting scientific program exploring the latest findings in invertebrate pathology, including microbial control, diseases of beneficial invertebrates, and advances in fundamental research on host-pathogen interactions. In addition, a satellite symposium 'Microsporidia in the Animal to Human Food Chain: An International Symposium to Address Chronic Epizootic Disease' sponsored by the OECD-CRP on Biological Research Management for Sustainable Agricultural Systems and SIP will be held on Sunday, 9 August. The SIP meetings will begin on Sunday afternoon with a special half-day workshop organized by the Bacterial Division entitled 'Regulatory Considerations for the Commercialization of New Insecticidal Proteins. Registration is now open with an abstract submission deadline of 17 April and reduced cost early registration ending 30 April. Visit <http://www.sipmeeting-2015.org/> or e-mail SIP2015enquiries@gmail.com for more information.

Eagle Hill's Summer Field Courses 2015

Taught in Steuben, Maine by experts from the United States, Canada, and Europe, our week-long courses focus on the natural history of one of North America's most spectacular and pristine natural areas, the coast of eastern Maine from Acadia National Park to Petit Manan National Wildlife Refuge and beyond. Course participants include beginning to advanced amateurs, graduate and undergraduate students, teachers, professional field biologists, university professors, and personnel from federal and state agencies and numerous environmental organizations.

General program information: <http://www.eaglehill.us/programs/nhs/natural-history-seminars.shtml>

Course calendar and descriptions: www.eaglehill.us/programs/nhs/nhs-calendar.shtml

For more information, contact Marilyn Mayer: marilyn@eaglehill.us or 207-546-2821

- June 14 – June 20 Ants (Hymenoptera: Formicidae) of the Northeast: Amy Arnett
July 5 – July 11 Dragonflies and Damselflies: Field Techniques and Identification Bryan Pfeiffer
July 12 – July 18 Moths and Butterflies: Identification, Specimen Preparation and Taxonomy
Hugh McGuinness and Bryan Pfeiffer
July 12 – July 18 Beetles: Diversity, Identification, and Natural History Warren Steiner and Gary Hevel

Meeting announcements / Réunions futures

XII International Symposium of Neuropterology - Mexico City, Mexico, 12-15 May 2015

<http://neuropterology.unam.mx/>

4th International Forum for Surveillance and Control of Mosquitoes and Mosquito-borne Diseases - Guangzhou, Guangdong, China, 25-29 May 2015

<http://www.mosquitoforum.net/EN/volumn/home.shtml>

Dragonfly Society of the Americas: First Central American Regional Meeting

Costa Rica, 31 May – 9 June 2015 <https://sites.google.com/site/2015dsacostarica/>

Joint Congress of the Entomological Society of Southern Africa and the Zoological Society of Southern Africa - Grahamstown, South Africa, 12-17 July 2015

<http://www.entsoc.org/PDF/International/1stCircularJointESSAandZSSACongressGrahamstown.pdf>

International Congress on Invertebrate Pathology and Microbial Control and

48th Annual Meeting of the Society for Invertebrate Pathology

Vancouver, British Columbia, 9-13 August 2015 <http://www.sipmeeting-2015.org/> (see page 25 for more information)

XVII International Plant Protection Congress (Mission possible: Food for All through Appropriate Plant Protection)

Berlin, Germany, 24-27 August 2015 <http://www.ippc2015.de/>

Ento'15: International Symposium of the Royal Entomological Society (Insect Ecosystem Services) - Dublin, Ireland, 2-4 September 2015

<http://www.royensoc.co.uk/content/res-annual-national-science-meeting-international-symposium-ento-15-2-4-september-2015>

Joint Annual Meeting of the Entomological Society of Canada and the Entomological Society of Quebec (Entomology in the Anthropocene) - Montreal, Quebec, 8-11 November 2015

http://seq.qc.ca/activites/reunions/SEQ-ESC_2015/index2.asp

Entomology 2015: Entomological Society of America 63rd Annual Meeting (Synergy in Science: Partnering for Solutions)

Minneapolis, Minnesota, 14-18 November 2015

<http://www.entsoc.org/entomology2015>

The meeting will be co-located with the ASA-CSSA-SSSA Annual Meeting (American Society of Agronomy, Crop Science Society of America, and the Soil Science Society of America).



Synergy in Science:
Partnering for Solutions
ASA · CSSA · SSSA · ESA
2015 MEETING
Nov. 15-18 | Minneapolis, MN

Entomological Society of Canada Annual Meeting

Orlando, Florida, 25-30 September 2016

The meeting will be held in conjunction with the 2016 International Congress of Entomology.

XXV International Congress of Entomology (Entomology without Borders)

Orlando, Florida, 25-30 September 2016 <http://ice2016orlando.org/>

Bulletin of the Entomological Society of Canada

Editor: Cedric Gillott
Assistant Editor: Donna Giberson

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

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

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ISSN: 0071-0741

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Submission deadline for the next issue: 30 April 2015



Bulletin de la Société d'entomologie du Canada

Rédacteur: Cedric Gillott
Rédactrice adjointe: Donna Giberson

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

Publié par la
Société d'entomologie du Canada
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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.

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ISSN: 0071-0741

Droits d'auteur 2015 Société d'entomologie du Canada

Date de tombée pour le prochain numéro: 30 avril 2015

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



Bulletins past and future

I am delighted to report two matters that relate to issues of the *Bulletin*, published and future.

As readers will be aware, issues of the *Bulletin* going back to the early 2000s are already available on the Society's web site. But it has been our intention for some time to scan and make available all volumes from the magazine's inception in 1969. Our dilemma was twofold: first, where could we obtain a complete set of *Bulletins*, and second, how (as in 'who would do it' and 'where') could we get them scanned.

Out of the blue in the Fall of 2013 came a most generous offer – Catherine Scott, then a MSc student at Simon Fraser University, offered to take on the momentous task of scanning, organizing, and preserving as pdfs, the over 5000 pages of material during her 'spare' time (and as we all recognize, graduate students have lots of this!). In a remarkable coincidence, almost simultaneously, our Publications Committee Chair Tom Lowery (AAFC Summerland) learned of the availability of a full set of *Bulletins* from the research centre's library which was about to reduce its hard-copy holdings. After a little negotiation, the library generously shipped the *Bulletins* to Catherine

Anciens et futurs Bulletins

Je suis ravi de faire deux annonces en lien avec les numéros du *Bulletin*, publiés et à venir. Comme les lecteurs en sont conscients, les numéros du *Bulletin* à partir du début des années 2000 sont déjà disponibles sur le site Internet de la Société. Mais il est de notre intention depuis quelque temps de numériser et rendre disponible tous les volumes depuis les débuts du magazine en 1969. Notre dilemme était double : d'abord, où obtenir un ensemble complet des *Bulletins*, et ensuite, comment (comme dans « qui le ferait » et « où ») les numériser?

À l'automne 2013 est venue de façon inattendue une offre généreuse – Catherine Scott, alors étudiante à la maîtrise à l'Université Simon Fraser, a offert de prendre en charge la tâche de numériser, organiser et préserver en tant que pdf les plus de 5000 pages de matériel durant son temps « libre » (et comme nous le savons tous, les étudiants gradués en ont plein!). Par une coïncidence remarquable, presque simultanément, notre président du comité des publications, Tom Lowery (AAC Summerland) a eu connaissance de la disponibilité d'un ensemble complet des *Bulletins* à la bibliothèque du centre de recherche qui s'appretait à réduire ses possessions en copie papier. Après quelques

– and the rest as they say ‘is history’. The Society owes a massive ‘THANK YOU’ to Catherine for undertaking this huge job, which serves as another fine example of the spirit of volunteerism on which our Society relies so heavily.

As a first step, the *Bulletins* will simply be accessible on the website for browsing and/or seeking a specific article whose volume and page are known. However, it is our intention to introduce a search option as soon as possible to enable readers to rapidly access references to particular topics, people, etc.

The second piece of news concerns future issues of the *Bulletin* and is part of a new initiative to encourage closer ties with Canadian ‘sister’ societies, notably the Canadian Phytopathological Society (CPS) and the Canadian Weed Science Society (CWSS). Now, there are plenty of ways in which the societies might work more closely with each other, perhaps most obviously by having joint meetings, though the latter is unfeasible at least for the ESC in the near future given its other commitments. So, we will begin our efforts for closer association with a smaller step, namely, the publication in the other societies’ newsletters of the contents of our own magazine. This, at least, will give readers a taste of the ‘flavour’ of what our ‘sister’ societies are up to and, I’m sure, will confirm that we do have many common interests. Look for the first samples of what’s going on in the CPS and CWSS in the June 2015 *Bulletin*.

négociations, la bibliothèque a généreusement envoyé les *Bulletins* à Catherine – le reste fait maintenant partie de l’histoire. La Société dit donc un énorme MERCI à Catherine pour avoir entrepris cette énorme tâche, qui donne un autre exemple de l’esprit de bénévolat sur lequel notre Société repose tant.

Dans un premier temps, les *Bulletins* seront simplement accessibles sur le site Internet pour les parcourir et/ou chercher des articles spécifiques pour lesquels le volume et le numéro sont connus. Cependant, nous avons l’intention d’introduire une option de recherche le plus tôt possible afin de permettre aux lecteurs d’accéder rapidement aux références à des sujets ou des gens en particulier.

La deuxième annonce concerne les numéros futurs du *Bulletin*, et fait partie de la nouvelle initiative afin d’encourager des liens plus serrés avec les sociétés canadiennes « sœurs », notamment la Société canadienne de phytopathologie (SCP) et la Société canadienne de malherbologie (SCM). Il y a plein de façons par lesquelles les sociétés peuvent travailler plus étroitement ensemble, la plus évidente étant peut-être d’avoir des réunions conjointes, bien que ce ne soit pas possible au moins dans un futur proche pour la SEC considérant les autres engagements. Nous débuterons donc nos efforts pour une association plus étroite par un premier pas plus petit, c’est-à-dire la publication dans les bulletins des autres sociétés de contenu de notre propre magazine. Cela donnera au moins aux lecteurs un goût de ce que nos sociétés « sœurs » font, et, je suis sûr, confirmera que nous avons beaucoup d’intérêts communs. Surveillez les premiers échantillons de ce qui se passe à la SCP et la SCM dans le *Bulletin* de juin 2015.

Entomological Society of Canada, 2014-2015

Société d'entomologie du Canada, 2014-2015

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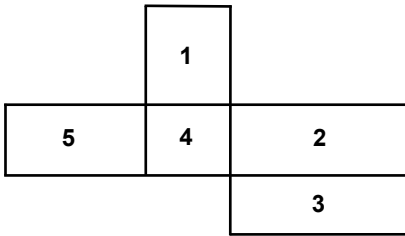
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Date of issue: March 2015 / mars 2015

ISSN: 0071-0741

Front cover/Plate supérieur:

- 1 *Nicrophorus* species (Coleoptera: Silphidae) and Calliphoridae feeding on a dead mouse (Waterton, Alberta, Canada)
 Une espèce de *Nicrophorus* (Coleoptera: Silphidae) et des Calliphoridae se nourrissant sur une souris morte (Waterton, Alberta, Canada)
 [Photo: Rosemarie DeClerck-Floate]
2. *Diadromus pulchellus* (Hymenoptera: Ichneumonidae), a biological control agent introduced into Canada against the invasive leek moth, *Acrolepiopsis assectella* (Lepidoptera: Acrolepiidae) (Delémont, Switzerland)
Diadromus pulchellus (Hymenoptera: Ichneumonidae), un agent de lutte biologique introduit au Canada contre la teigne du poireau, *Acrolepiopsis assectella* (Lepidoptera: Acrolepiidae) (Delémont, Suisse)
 [Photo: Tim Haye]
3. *Orussus minutus* (Hymenoptera: Orussidae) female
 Femelle *Orussus minutus* (Hymenoptera: Orussidae)
 [Photo: Miles Zhang]
4. *Monochamus scutellatus* (Coleoptera: Cerambycidae) found in Prince George, British Columbia. June 2014 (Prince George, British Columbia, Canada)
Monochamus scutellatus (Coleoptera: Cerambycidae) trouvé à Prince George, Colombie-Britannique. Juin 2014 (Prince George, Colombie-Britannique, Canada)
 [Photo: Dezene Huber]
5. Colourful larva of the cecropia moth, *Hyalophora cecropia* (Lepidoptera: Saturniidae), from eggs laid by a gravid female caught at Black Donald Lake near Calabogie, Ontario (Canada)
 Une chenille colorée de la Saturnie cécropia, *Hyalophora cecropia* (Lepidoptera: Saturniidae), sortie d'oeufs déposés par une femelle féconde au lac Black Donald près de Calabogie, Ontario (Canada)
 [Photo: Andrea Brauner]

Back cover/Plate inférieur:

- A two-striped grasshopper, *Melanoplus bivittatus* (Orthoptera: Acrididae), ovipositing beside a road in Torrance, Ontario (Canada)
 Un criquet birayé, *Melanoplus bivittatus* (Orthoptera: Acrididae), déposant ses oeufs près d'une route à Torrance, Ontario (Canada)
 [Photo: Justin M. Gaudon]