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393 Winston Avenue
Ottawa, Ontario, Canada K2A 1Y8
E-mail: entsoc.can@bellnet.ca
<http://esc-sec.org/>

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Entomological Society of Canada, 2003-2004 Société d'entomologie du Canada, 2003-2004

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President / Président

Charles Vincent
Horticultural Research & Development Centre
Agriculture and Agri-Food Canada
430 Gouin Blvd., Saint-Jean-sur-Richelieu
QC J3B 3E6
Tel: (450) 346-4494, ext. 202
Fax: (450) 346-7740
E-mail: vincentch@agr.gc.ca

First Vice-President / Premier vice-président

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

Second Vice-President / Second vice-président

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

Past President / Présidente sortante

Sandy Smith
Faculty of Forestry
33 Willcocks St., University of Toronto
Toronto, ON M5S 3B5
Tel: (416) 978-5482, Fax: (416) 978-3834
E-mail: smith@larva.forestry.utoronto.ca

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Tonya Mousseau
Department of Entomology
University of Manitoba
Winnipeg, MB R3T 2N2
E-mail: tonyabeetle@hotmail.com

Trustees / Fiduciaires

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Gary Gibson
Entomological Society of Canada
393 Winston Ave., Ottawa, ON K2A 1Y8
Tel: (613) 759-1823, Fax: (613) 759-1927
E-mail: gibsong@agr.gc.ca

Secretary / Secrétaire

Rick West
31 Drover's Heights
Portugal Cove-St. Philips, NF A1M 3G6
Tel: (709) 895-2734, Fax: (709) 895-2734
E-mail: reely.west@roadrunner.nf.net

Bulletin Editor / Rédacteur du Bulletin

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

Webmaster / Webmestre

Barry Lyons
1219 Queen St. E.
Sault Ste. Marie, ON P6A 2E5
Tel: (705) 541-5617, Fax: (705) 541-5700
E-mail: blyons@nrcan.gc.ca
<http://esc-sec.org>

The Canadian Entomologist

Editor-in-Chief / Rédacteur en chef (as of 2004)

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

Divisional Editors / Rédacteurs de division

Michel Cusson, E-mail: cusson@cfl.forestry.ca
Robert Lamb, E-mail: rlamb@agr.gc.ca
Don Lafontaine, E-mail: lafontained@agr.gc.ca

Head Office / Siège social

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



As my presidential year draws to an end, I am pleased to say that the society is in an excellent position, both professionally and financially. The publishing issues of last year have been successfully resolved and we now are a fully-functioning electronic society. We have seen the appointment of two new editors this year; one for *The Canadian Entomologist* and one for the *Bulletin*. The latter, Paul Fields, is already bringing exciting new ideas to our publications, and I fully expect Richard Ring will incorporate similar new initiatives as he takes on his job in January. On behalf of the Society, I would like to take this opportunity to thank both past editors, Jean Turgeon, as Editor-in-Chief of *The Canadian Entomologist*, and Dan Johnson, as Editor of the *Bulletin*, for their contributions; their time and commitment to these tasks has been much appreciated.

The finances of the Society are also very solid now; we are in the black! Changes in the US exchange rate may have some impact on our upcoming annual budgets surprisingly because of the number of American subscribers who receive *The Canadian Entomologist*. Hopefully efforts of our new Fund-Raising Committee will help offset this effect somewhat, and the recent PowerPoint presentation produced by our Marketing Committee will help raise the profile of our Society and attract new members.

Students have remained high on our agenda this year. The Graduate Student Symposium was continued at the Annual Meeting in Kelowna and showed again excellent turn-out. A new 'mixer' venue for students was started at the meeting this year as well, to allow students more opportunity

Comme mon année en tant que présidente s'achève, je suis heureuse de dire que la Société est en excellente position, tant professionnelle que financière. Les aspects relatifs aux publications ont été résolus et notre Société fonctionne entièrement de façon électronique. Cette année, nous avons nommé deux Rédacteurs en chef, un pour *The Canadian Entomologist*, l'autre pour le *Bulletin*. Ce dernier, Paul Fields, amène déjà des idées nouvelles et intéressantes au *Bulletin* et j'espère que Richard Ring fera de même lorsqu'il entrera en fonction en janvier 2004. Au nom de la Société, j'aimerais remercier les deux rédacteurs sortants, Jean Turgeon, rédacteur en chef du *Canadian Entomologist*, et Dan Johnson, rédacteur du *Bulletin*, pour leurs contributions; leur temps et leur engagement pour ces activités ont été grandement appréciés.

Les finances de la Société sont actuellement saines: nous avons des surplus ! Des changements dans les taux de change avec le dollar américain pourraient, de façon surprenante, avoir un certain impact sur nos prochains budgets car plusieurs américains sont abonnés au *Canadian Entomologist*. Nous espérons que les efforts du nouveau comité responsable de la levée de fonds contrebalanceront ce phénomène et que la présentation PowerPoint produite par notre comité de Marketing augmentera l'image de notre Société et attirera des nouveaux membres.

Les étudiants ont encore occupé une place importante parmi nos priorités cette année. Le Symposium des étudiants gradués a encore eu lieu lors de la réunion annuelle de Kelowna et a connu une excellente participation. Nous avons débuté une nouvelle activité-rencontre avec les étudiants pour favoriser les échanges et une section du *Bulletin* offre des occasions d'échanges d'informations entre étudiants.

Ce qui m'a le plus impressionné cette année a été le travail fait par les comités de notre Société. Nous avions 18 comités: deux comités permanents, huit comités en cours et huit comités *ad hoc*. Plus de 75 membres travaillent activement à ces comités au cours de l'année, la plupart

to link with each other, and a new *The Student Wing* section has been added to the *Bulletin* for students to exchange information.

What has truly impressed me about our Society over the year, is the work of the committees; we have 18 of them; two standing committees, eight continuing committees, and eight ad hoc committees. Over 75 individual members of our Society work actively on these committees throughout the year, in most cases behind the scenes. This count excludes the 20+ members of the Biological Survey of Canada, a 25-year old special 'committee' of the ESC, who also volunteer their time to insect biosystematic and faunal research in Canada. As I step down, I want to thank all the committees and their Chairs for their support over the year. The committees are almost completely filled for this coming year, which speaks volumes to the enthusiasm and energy of our members and their willingness to volunteer on behalf of the Society.

In closing, I would like to thank Terry Shore and his Local Arrangements Committee for organizing the Annual Meeting this year in BC. Also, I have greatly appreciated the support of the other members of the ESC executive this year; in particular, Secretary Rick West and Treasurer Gary Gibson, who were always able to tell me the right thing to do at the right time; and of course to make sure I didn't say the wrong thing at the wrong time, and Sandy Devine at Head Office who has been fantastic helping with communications and logistics. I have learned a lot from this opportunity to serve you.

du temps dans l'ombre. Ceci exclut les quelques 25 membres de la Commission biologique du Canada (Arthropodes terrestres), un comité issu de la SEC il y a 25 ans, qui donnent du temps pour faire des recherches faunistiques et biosystématiques au Canada. Au terme de mon mandat, je veux remercier tous les membres et responsables des comités pour leur travail au cours de cette année. Les positions des comités sont maintenant presque occupées, ce qui en dit long sur l'enthousiasme et l'énergie de nos membres et leur volontarisme pour notre Société.

En terminant, j'aimerais remercier Terry Shore et son comité local d'arrangements pour avoir organisé la réunion annuelle en Colombie-Britannique. J'ai également apprécié l'aide d'autres membres de l'exécutif cette année, et en particulier celle du secrétaire Rick West et du trésorier Gary Gibson, qui ont toujours su me dire la bonne chose à faire au bon moment et, bien sûr, à éviter de dire des choses incorrectes aux mauvais moments, et Sandy Devine au siège social, qui a su apporter une aide formidable au chapitre des communications et de la logistique. J'ai appris beaucoup en ayant eu l'occasion de vous servir.

Call for Nominations: Second Vice President, Director- at-Large.

Nominations for the Second Vice President and Director-at-Large must be signed by three members of the society in good standing, and received by the Secretary of the Entomological Society of Canada, Rick West, by **30 April 2004**.

Appel de Nominations: Deuxième vice-président et Conseiller

Les nominations pour deuxième vice-président et conseiller doivent être signées par trois membres de la Société, et envoyées au Secrétaire de la Société d'entomologie du Canada, Rick West, avant le **30 avril 2004**.

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

Rodd Charlottetown Hotel
Charlottetown, P.E.I., 15 - 18 October 2004

Meeting Theme: Insects in our Landscape

Tentative Symposia:

Insects in the Landscape; Organizer: Gilles Boiteau

Insect Vectors and Human Health; Organizer: Chris Lucarotti

Insect Population Dynamics; Organizer: Dan Quiring

Insects of the Canadian Arctic Central Barrens; Organizers: Doug Currie and Donna Giberson

Graduate Student Symposium; Organizer: Heather Proctor

This year's meeting begins on a Friday and finishes on a Monday to make it easier for people with commitments during the week to attend. For more information contact the Chair of the Organizing Committee; Donna Giberson, giberson@upei.ca or the Program Chair, Jon Sweeney, jsweeney@nrcan.gc.ca.

Meeting Announcements / Réunions futures

72^e Congrès de l' Association francophone pour le savoir - Acfas

Montréal, Québec, Canada, 10-14 mai 2004

www.acfas.ca/congres

15th International Plant Protection Congress,

Beijing, China, 11-16 May 2004

ippc2003@ipmchina.net, <http://www.ipmchina.net/ippc/ippcwelcome.html>

55th Annual Meeting of the Lepidopterists' Society

College Park, Maryland, USA, 14-18 July 2004

<http://alpha.furman.edu/~snyder/snyder/lep/meet.htm>

22nd International Congress of Entomology

Brisbane, Australia, 15-21 August 2004

<http://www.ccm.com.au/icoe/index.html>

51st Annual Meeting of the Entomological Society of America

Salt Lake City, Utah, USA, 14-17 November 2004

http://www.entsoc.org/annual_meeting/2004/ameeting.htm

Gold Medal Address / Allocution du médaillé d'or

By Hugh Danks

Knowledge and synthesis in entomology

Introduction and acknowledgements

Let me first express my great appreciation and thanks for the honour you have given me. I am very grateful to the Society and to those who took it upon themselves to put my name forward for consideration. By the same token, I want to begin with some acknowledgements.

I first became interested in entomology because of a book borrowed from the public library when I was about 14 years old, *Butterflies of the British Isles*, by Richard South. I had always been interested in nature, but it was reading that book that led me into butterfly collecting and through that to other insects and a determination to follow a career in entomology. A second key item was again a book, *The Pattern of Animal Communities* by Charles Elton, which was published during my undergraduate days. The complexity revealed and the approach taken there by Elton stimulated me to study ecology and led me especially towards ecological synthesis. Eventually I did study ecology for my PhD, on the nesting sites and biology of stem-nesting wasps, and I want to acknowledge my supervisor O.W. Richards, who trusted me to get the job done and helped when needed.

Then I came to Canada, and soon even went to the arctic. Very many people have helped me here, as shown by the length of the list of men-

Hugh Danks is the Head of the Biological Survey of Canada (Terrestrial Arthropods) at the Canadian Museum of Nature in Ottawa. He guides the Survey's work of coordinating and catalyzing research on the Canadian arthropod fauna, and he studies especially insect seasonal adaptations such as cold hardiness and diapause. Contact information: P.O. Box 3443, Station D, Ottawa, ON K1P 6P4, hdanks@mus-nature.ca.



tors, co-authors, colleagues and others who have contributed in various ways.

Obviously, there is no time to acknowledge everyone individually, but to give you the tenor of my thanks I am just going to mention the first few people on this strictly alphabetical list.

George Ball was the first chair of the Scientific Committee for the Biological Survey, and his fine sense of what was required and his no-nonsense approach were essential then and for many years afterwards. Bob Byers was an excellent companion during our joint entomological work in the arctic in 1969. I worked with Phil Corbet in Waterloo many years ago, profiting especially from his scientific rigour and careful notes about arctic mosquitoes, and although he left Canada we have stayed in touch over the years. My wife Thelma has of course been a constant source of support during my whole career. And most of these people, like Lloyd Dossdall (who is next on the list) and others, have also been the very best of friends as well as highly effective colleagues.

Many of the people are present today — so thanks to all of you on both scientific and personal levels.

Knowledge and synthesis

It is customary for the Gold Medal address to consider rather broad themes. I will do the same, but perhaps not in the usual way. I first want to emphasize the need for wide context in entomological studies, and especially the value of broad

knowledge and its synthesis — hence the title of this talk. Therefore, the bulk of my talk summarizes some knowledge-based syntheses derived from a few of my own studies of insects, in a distinctively Canadian setting. These studies have provided useful context for understanding the insect fauna, and at the same time have given me the excitement and satisfaction to keep the broadest possible scientific orientation.

Then at the end of my talk, using the viewpoint implicit in those examples, I want to make a few general comments about the current conduct of entomology in circumstances that often do not favour a wide approach.

Distributions and climates

It might be expected that in northern Canada the dominant effect of latitude on temperature would give the sort of clear range limits for insects that is exemplified by tree line. But in fact, many distributions are complex and do not show simple linear trends. For example, in the high arctic most insect species depend on sunshine to warm the ground surface or the plant parts on which they live, raising the temperatures quite substantially (e.g. 20 or 30° C above ambient in clumps of saxifrage and other plant cushions). Even high-arctic species highly dependent on sunshine to complete development or for reproductive activity, such as mosquitoes, butterflies and bumble bees, are absent from the northwestern arctic islands (Fig. 1), because these small islands in a large ocean have greater summer cloud cover and hence reduced sunshine. Therefore, the distributions of such species as the high-arctic bumble bee *Bombus polaris* follow a complex, not simple, latitudinal pattern.

Likewise, because solar radiation is so important for increasing the temperatures of microsites or of individual insects, the effects of any climatic changes on arctic insects will have complex and sometimes even counter-intuitive effects. Climate predictions are based chiefly on mean air temperatures and not on insect microhabitat temperatures.

Warming trends are predicted to permit additional species to survive farther north or to augment populations of existing species, of course.



Figure 1. Combined arctic range limit for butterflies, mosquitoes and bumble bees, showing the absence of these species on the small northwestern high arctic islands (after Danks 1993).

However, even if summers are longer, warming will not necessarily improve conditions for insects in the high arctic because the microhabitat temperatures and moisture relationships do not all coincide with changes in mean ambient temperature. Climatic warming in those northwestern high arctic islands just noted, where relatively small islands lie in the Arctic Ocean, is likely to melt permanent or seasonal sea ice to expose even more open ocean than at present. In turn, this open ocean will probably lead to increased cloudiness in summer (Fig. 2). The resulting reduction in sunshine would make insect microhabitats cooler and thus more than offset any increase in mean air temperature. On the other hand, effects on the larger northeastern islands would probably be different. Changes in cloudiness also affect the amount and seasonal supply of moisture, which is the other major factor influencing the suitability of habitats for insects in the high arctic polar desert.

In other words, broad knowledge of insect distributions and microhabitat relationships is needed to understand what might happen, in a way that will not be shown only by typical experiments, for example looking for potentially faster growth rates as a result of augmenting local temperatures. The wider context is impor-

tant for understanding.

Northern ecosystems

Canada is the ideal place to assess south-north differences in the fauna, because we have so much northern territory, with vast areas of both arctic terrain and boreal forest.

It is difficult for insects to survive in cold climates, with limited resources and fragmented habitats. Disturbance on various scales further hinders existence. Glaciation and postglacial changes continue to affect the landscape, fire is characteristic of the boreal forest — with mean time between fires, depending especially on the stand type, of much less than 100 years in many locations — and disturbance continues on a shorter time frame with seasonal frosts, snow and snow melt, for example.

As a result of this dominant effect of the physical environment, biotic interactions are reduced. Decomposers can't keep up with the accumulating litter; insect herbivores drop out toward the north much faster than the plants on which they could feed; pollinators are hindered by cooler temperatures and by a change in flora. And every species must cope with short, cool summers, long cold winters and cool nights.

Therefore, boreal ecosystems seem to differ qualitatively from the zones farther south. Most plants are not seriously attacked by insects because there are few insect herbivores, recently disturbed sites remain uncolonized, litter accumulates because decomposition is slow, and large parts of the year and of the day are too cold for full insect activity.

These features confirm that southern ecosystems (on which most of the theory has been based) and northern ecosystems (as in much of Canada) tend to function differently — in effect because biotic interactions are reduced and physical factors are dominant in the north — a finding that would not be evident from any individual study of interactions or climates.

Overwintering habitats

In Canada, many species survive the winter not just by physiological or biochemical adaptations ("cold hardiness"), but also by ecologi-

Figure 2. Hypothetical scheme of adverse effects from climatic warming on insect microclimates in the high arctic, caused by increased summer cloudiness and hence reduced sunshine.

cal adaptations such as the use of specific overwintering habitats. Understanding these adaptations requires a broad view. For example, moving away from the worst conditions (to different habitats or microhabitats) and at the right time, is at least as important to most species as is resistance to the cold itself.

Variation is a key element of winter habitats that has most often been overlooked. For example, winter mortality varies widely among species, populations and sites. Some species customarily suffer enormous winter losses, but in others few individuals are lost to cold or other factors. Moreover, potential mortality in a single species varies greatly in space and time according to a wide range of site features, such as irregularities in topography, minor surface depressions and vegetation (which traps insulating snow), and moisture content. This variation

makes it very difficult to understand the survival of populations, because even in the same general region local survival among places and years might vary from 0% to 100%, as has indeed been shown for a few species already. Environmental patchiness also means that a few individuals in especially favoured sites may survive even unusually severe winters.

So there are multiple components to surviving the winter, including stages, sites, mortality and various life-cycle requirements. However, comprehensive winter collecting to determine the overwintering stages, preferred sites, and variation in mortality has seldom been undertaken, even though a specific focus on crop fields or previously reported winter habitats may overlook important segments of the overwintering population. And of course, mortality depends on microhabitat conditions in nature, including fall and spring as well as winter conditions, and not just on the physiological cold-hardiness of particular species.

These sorts of complications suggest that a more comprehensive approach than has been usual is needed to study cold hardiness. In particular, to understand overwintering we have to do relatively broadly based work, because of the many ecological aspects.

Life-cycle pathways

Seasonality, then, is a dominant characteristic of Canada. Many species cope with seasonal vicissitudes through life cycles that contain alternative developmental pathways, whereby different individuals may develop at different rates. Even the most complex life cycles can be analyzed as a series of choices or decision points, somewhat like in a taxonomic key, which helps to interpret what is going on. For example, the effect of photoperiod or temperature in either accelerating or retarding growth can be plotted as a simple binary decision. Sometimes a response is reversed in different instars, and again this can be plotted; and so on.

Plotting out the alternatives allows one to visualize the responses and discover their seasonal pattern. For example, in the northern dragonfly *Aeshna viridis* [data from U. Norling], short days

induce a larval diapause in at least the last five instars (Fig. 3). The diapause is most intense in later instars and is ended by long days. Long days also induce a diapause in smaller larvae, which is less intense and so lasts for a shorter period. However, diapause is especially likely when younger larvae are exposed to a change from short to long days, whereas the same change accelerates growth when diapause is not induced. But although the life cycle is complex, it is made up of simple choices. The photoperiodic responses, coupled with responses to temperature (e.g. differences between instars in developmental thresholds in spring), help to maintain synchrony of development in the population.

Aeshna viridis has a two- to three-year life cycle (Fig. 4). Synchrony of emergence and its restriction to early summer is maintained especially by delaying the development of middle-instar larvae in summer and of advanced larvae in fall, and by accelerating the development of later stages to emergence in summer. So although there are continuous responses to photoperiod and temperature, they can be sorted out by plotting the various alternative pathways.

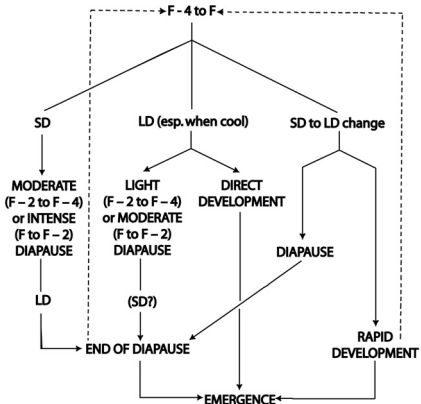


Figure 3. Life-cycle pathways in the dragonfly *Aeshna viridis* (Danks 1991b).

Here are a couple of other examples. Without going into any detail, so please focus on the number of pathways rather than on their specific control, it is clear that each one has many alternative life-cycle pathways.

In the stored-product mite *Lepidoglyphus destructor* [data from W. Knülle], the genetic propensity for diapause varies greatly. Moreover, food quality, temperature and humidity change diapause incidence and duration. After diapause, low humidity prompts quiescence. Life-cycle pathways in this species therefore range very widely from direct development to extremely long delays.

A grasshopper from habitats that are intermittently dry, the Australian plague locust *Chortocetes terminifera* [data from K.G. Wardaugh], has potential diapauses or quiescences at several different embryonic stages, governed chiefly by moisture and temperature. The 18 alternative pathways that result from these responses enhance survival where rainfall is unpredictable, and ensure the proper seasonal coincidence of active stages.

Such examples confirm that a broad approach allows complex information to be put to use to understand the seasonal relevance of the various life-cycle delays. Basic elements in life-cycle responses and their control are repeated in different species, they are assembled into coherent sets, and the sets cope effectively with natural seasonal changes. Such understanding is not possible just by assessing individual responses to photoperiod, for example. It is the life-cycle context that allows us to make sense of them.

Extreme variants

Some of these pathways are quite rare. But even a few unusual individuals have a great deal of importance in real environments, because they can be used to spread risk. Indeed, extreme variants are met with in various settings. For example, often a few individuals have much slower development than the majority, very late emergence, or prolonged diapause for two or more years. Occasional vagrants travel much farther than their siblings. A few individuals survive

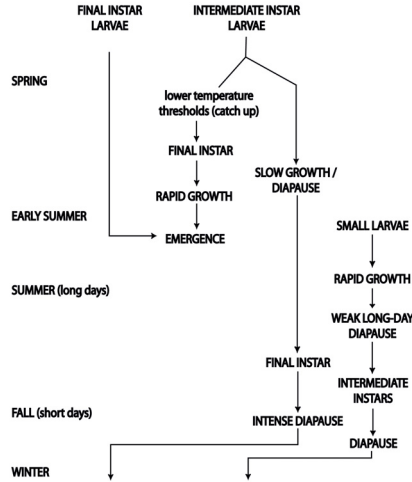


Figure 4. Seasonal development in nature of *Aeshna viridis* (Danks 1991b).

prolonged low temperatures or severe chemical treatments, for example. A few others may be very small in size, or even show unusual parthenogenesis.

And individuals like these, even though they may be very rare, seem to be characteristic of most insect populations, rather than unusual. They play a real role in buffering risk, because they represent “insurance” against infrequent — but not unexpected — catastrophes that may kill the majority of more typical individuals. For example, a few late emergers might survive even after a warm spring that suddenly turns cold, killing the earlier emergers. In other words, variations, including “extreme” individuals, appear to be selected and maintained as part of the requirements for persistence in time and space, because all environments are unpredictable to some degree.

Such a perspective means that valuable information comes from extreme individuals. Although a common tendency has been to disregard them as “experimental noise” or “unfortunate” individuals, a wider context is

needed to understand their significance as a means by which insects cope with environmental risks.

Biodiversity assessment

Finally, let me mention biodiversity assessment, a topic currently in vogue but — except for many entomologists who realize that especially in Canada much of our biodiversity has not even been described — in vogue without much context.

To study biodiversity properly it is necessary to plan the whole operation from start to finish (Table 1). Steps include a proper scientific and logistic plan (what is the question and how can it be addressed?), and a means to deliver on aspects of the work that come after the actual collection, such as identification, voucher specimens and peer-reviewed publication. Those aspects are often overlooked in the rush to start sampling. Sampling is easy, sorting is harder, identification is difficult, and so on down the chain.

Table 1. Steps in a proper study of biodiversity (condensed from Danks 1996)

-
- Define objectives
 - Gather previous information
 - Develop an overall plan
 - Define level of detail
 - Select sites, taxa, duration, methods
 - Control sampling quality
 - Sort and prepare samples
 - Identify material
 - Manage data
 - Curate and preserve specimens
 - Publish and disseminate results
-

So even if it is uncomfortably difficult and takes major planning to do biodiversity studies properly — unlike a focus on just one aspect like efficient trapping, for example — the complete approach gives usable answers: findings are reproducible; they are based on recognizable entities with worthwhile data and specimens; and variations among habitats or treatments can

be distinguished from variations among samples. Again, generally speaking, the wider the scientific context in which our work is planned and done, the more rewarding the results.

Context

So obviously I believe in the importance of scientific context. For example (see above):

- Few distributional trends are simple
 - Microclimates are very important to insects, especially in the arctic
 - Northern and southern ecosystems differ qualitatively
 - Overwintering conditions are complex
 - Life-cycle pathways can be summarized as a series of decision points
 - Many extreme variants give important information
 - Biodiversity studies need especially comprehensive planning
- And other broad examples could be mentioned, such as the conclusions that:
- Environmental cues are integrated in complex ways
 - Wide natural variation reflects features of both habitats and cues
 - Life cycles can be controlled through either active development or passive delay as the default condition
 - Cold hardiness is integrated with other life cycle components
 - and so on.
- But hopefully the point has been made.

A problem

Given those examples, I want to turn now to some more general considerations about entomology. As you know, many past medallists have presented broad recipes for how to fix a major problem with the conduct of entomology in Canada, such as the lack of support for taxonomy and collections, or the need for particular research programs in medical veterinary entomology, aquatic ecosystems health monitoring, or other areas. There are indeed numerous real problems of this sort. The usual solution proposed is that we need to develop and fund a particular

scientific program — but, of course, most of these programs have proved to be unattainable. So although I am going to identify an overall problem, I am not going to propose some sort of federal cure. Rather, I want to suggest a way in which each individual entomologist might begin to mitigate the problems, by analogy with the broad entomological examples just outlined.

The overall problem currently hindering entomology (as well as many other sciences) stems from the influence of factors that take studies away from the broad search for scientific understanding, into constraints created by politics, policy and process, employment and funding, so that we have fragmentation and reduced effectiveness that reduces science to a compromised fragment — the sort of process shown in Fig. 5.

For example, there is a modern preoccupation with high-profile items and limited agendas that will “impress” decision makers. At government workshops to establish what to do in biological science, for example, talk tends to be about how to capture the attention of the politicians, through “impact” items that the public is concerned about (whether or not they should be) or through items that are easy to complete in order to attract quick notice (and hence support), which — in the current jargon of the bureaucracy — are “low hanging fruit”. Such emphasis usually comes at the

expense of planning effective overall long-term programs, or taking a broad scientific approach to building knowledge, or providing the necessary infrastructures.

Limitations in funding for staffing and for research activities have a further diminishing effect. Funds are difficult to get for long-term knowledge- and infrastructure-based work, as opposed to the “hot buttons” of current short-term interest. And of course, people find it hard to do otherwise when decision makers and funders — most of whom are not entomologists or even scientists — can exert so much pressure on their employees. These days, apart from a tendency to “agree with the boss”, most decision makers seem to have a primarily economic outlook that does not take a long-term view, that accords little intrinsic value to natural environments or the species that comprise them, and that undervalues the need for understanding.

An antidote

Such a system will take a long time to change. So let me recommend that the most effective way to cope with these problems now is as individuals. The chief antidote, I think, is to rediscover our excitement about knowledge and about the complexity of nature, which brought many entomologists, including me, into the field. That

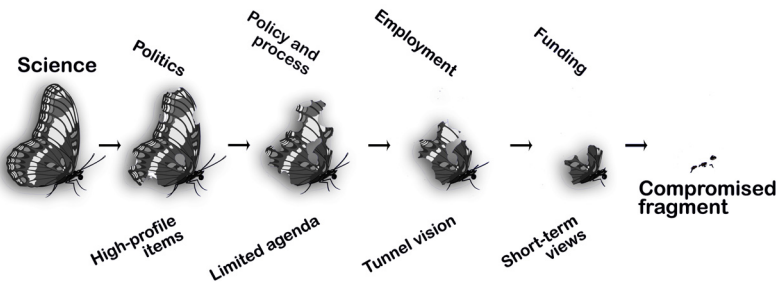


Figure 5. Scheme showing how science is compromised by current pressures.

approach keeps a focus on the positive, not on the problems, and thereby keeps the limitations and distractions in perspective.

In other words, we can't assess scientific knowledge or use it fully without broad context — so we should not only meet process-orientated goals in our studies, despite the frequent pressure to do nothing else, but also look far beyond them.

There is also an internal perspective that might be useful in coping with some of the frustrations: it is essential to realize that every job has a considerable proportion of chores, and it is necessary just to get through them — for example the usual sorts of unfulfilling, bureaucratic requirements — in order to deal with the exciting work that brings real satisfaction. So don't fret too much about the chores.

Moreover, some of the practical constraints can be overcome through cooperation among individuals, which allows broader questions to be addressed than if everyone works alone. Work that combines different interests and resources can assemble relatively piecemeal or limited initiatives into programs of considerable power, as long as the focus remains on the scientific objectives. I haven't discussed it today, but the Biological Survey of Canada, which was started by the Entomological Society of Canada and has been my long-term interest, is one such agent to catalyze cooperative work.

Again, though, let me close by repeating what I think is the main personal "fix" in the short term for present frustrations: we should strive to keep a broad orientation in order to maintain excitement for entomology — exactly the sort of excitement that I derived years ago from reading Richard South's book on butterflies and Charles Elton's ecological synthesis.

I have tried to carry that excitement with me since then: diverse kinds of insects have provided it; the information and insights of many authors and colleagues have helped; and most recently, of course, it has been reinforced by the honour that you have given to me today — so thank you again.

Key references

- Biological Survey of Canada [online] Available from <http://www.biology.ualberta.ca/bsc/bschome.htm> [cited 15 November 2003]
- Brust, R. 1995. Entomology – a medical veterinary perspective (Gold Medal address). *Bulletin of the Entomological Society of Canada* **27**: 197-204
- Danks, HV. 1981. *Arctic Arthropods. A review of systematics and ecology with particular reference to the North American fauna*. Ottawa, Entomological Society of Canada
- Danks, HV. 1983. Extreme individuals in natural populations. *Bulletin of the Entomological Society of America* **29**: 41-46
- Danks, HV. 1987a. *Insect dormancy: An ecological perspective*. Ottawa, Biological Survey of Canada (Terrestrial Arthropods)
- Danks, HV. 1987b. Insect-plant interactions in arctic regions. *Revue d'Entomologie du Québec* **31**: 52-75
- Danks, HV. 1991a. Winter habitats and ecological adaptations for winter survival. pp. 231-259 in RE Lee and DL Denlinger (Eds), *Insects at low temperature*. Chapman and Hall, New York and London.
- Danks, HV. 1991b. Life-cycle pathways and the analysis of complex life cycles in insects. *The Canadian Entomologist* **123**: 23-40
- Danks, HV. 1992. Arctic insects as indicators of environmental change. *Arctic* **45**: 159-166
- Danks HV. 1993. Patterns of diversity in the Canadian insect fauna. pp. 51-74 in GE Ball and HV Danks (Eds), *Systematics and entomology: Diversity, distribution, adaptation and application*. *Memoirs of the Entomological Society of Canada* 165. 272 pp.
- Danks HV. 1994. Diversity and integration of life-cycle controls in insects. pp. 5-40 in HV Danks (Ed), *Insect life-cycle polymorphism: theory, evolution and ecological consequences for seasonality and diapause control*. Kluwer Academic Publishers, Dordrecht.
- Danks HV. 1996. How to assess insect biodiversity without wasting your time. A brief from the Biological Survey of Canada (Terrestrial Arthropods). Biological Survey of Canada

- Document Series No. 5. 20 pp.
- Danks HV. 1999. The diversity and evolution of insect life cycles. *Entomological Science* **2**: 651-660
- Danks HV. 2002. The range of insect dormancy responses. *European Journal of Entomology* **99**: 127-142
- Danks HV. ms submitted. Seasonal adaptations in arctic insects.
- Danks, HV, Byers JR. 1972. Insects and arachnids of Bathurst Island, Canadian Arctic Archipelago. *The Canadian Entomologist* **104**: 81-88
- Danks HV, Footitt RG. 1989. Insects of the boreal zone of Canada. *The Canadian Entomologist* **121**: 626-677
- Elton CE. 1966. *The pattern of animal communities*. London, Methuen
- Masner L. 1999. The role of taxonomists and natural history collections in biodiversity studies (Gold Medal address). *Bulletin of the Entomological Society of Canada* **31**: 160-163
- Rosenberg DM. 1998. A national aquatic ecosystem health program for Canada: We should go against the flow (Gold Medal Address). *Bulletin of the Entomological Society of Canada* **30**: 144-152
- South R. 1941. *Butterflies of the British Isles*. 3rd edition. London, Warne
- Wiggins GB. 1992. Who speaks for systematic biology in Canada? (Gold Medal Address). *Bulletin of the Entomological Society of Canada* **24**: 197-202
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New Publication

Pest Management magazine is a national publication dedicated to providing pertinent and timely information to professionals combating Canada's pest problems. The magazine features articles on crop pests as well as house and building vermin. A full section is devoted to the latest industry news and quirky tidbits.

Pest Management is available free of charge. For more details, please contact the editor, Kathleen Hodgson, telephone: (204) 957-0265, E-mail: k.hodgson@august.ca

Books to be reviewed

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

- Hallman GJ, Schwalbe CP (Editors). *Invasive arthropods in agriculture: Problems and solutions*. Enfield NH: Science Publisher Inc.
- Basset Y, Novotny V, Miller CE, Kitching RL (Editors). *Arthropods of tropical forests: Spatio-temporal dynamics and resource use in the canopy*. New York NY: Cambridge University Press
- Shuster SM, Wade MJ. *Mating systems and strategies*. Princeton NJ: Princeton University Press
- Held LI Jr. *Imaginal discs: The genetic and cellular logic of pattern formation*. New York NY: Cambridge University Press
- Walter GH. *Insect pest management and ecological research*. New York NY: Cambridge University Press
- Peck SB. *Smaller orders of insects of the Galapagos Islands, Ecuador: Evolution, ecology and diversity*. Ottawa ON: NRC Research Press
- Vandermeer JH, Goldberg DE. *Population ecology: First principles*. Princeton NJ: Princeton University Press
- Please send correspondence concerning book reviews to the Chair of the Publications Committee:
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Victoria, BC, Canada V8Z 1M5
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The worst thing about new books is that they keep us from reading the old ones. Joseph Joubert (1754 - 1824)

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How we run our lab meetings

By Bernie Roitberg

Our weekly lab meetings are typical in many ways and atypical in another. Anywhere from four to eight people attend. These include undergraduates, graduate students, post-docs, sabbatical visitors and Dave Gillespie, an honorary member of our lab. We use our meetings to bring everyone up to date, conduct internal reviews of manuscripts, read published papers and practice talks prior to meetings. Where our meetings differ from others is in the use of an annual lab project (also, we may meet on a ski hill or in kayaks but that's another story). The primary goal of the lab project is for students to gain experience in building a project from scratch; all too often students are handed a piece of puzzle wherein the foundation has already been laid. The process goes like this.

At the beginning of each year, I ask lab members to suggest topics for group study. Such topics could arise from recently published articles, as offshoots from a current research project, an observation (insect A and insect B never seem to occur on the same plant) or interesting ideas that just pop into someone's head. Once we've agreed on one of the suggested topics the fun begins. From here we engage in a multi-step process:

Bernie Roitberg is a Professor of Biology at Simon Fraser University. His primary focus is on the interface between behaviour and population dynamics. His current interests consider feeding tradeoffs in mosquitoes and zoophytophagous insects and their impact on population and community level dynamics. He can be reached at roitberg@sfu.ca. Current members of his lab include: Colleen Alma, Allison Henderson, Lee Henry, DooHo Kim, Brian Ma, Christy MacDougall, Jen Perry, Jason Peterson, Maxence Salomon, Sue Senger and Honorary Member, Dave Gillespie. They can be reached at roitberg-lab@sfu.ca.

Step 1

Considerable time is spent "brainstorming" to identify the critical issue(s). This often involves reading the literature on related topics, and is not restricted to particular taxonomic groups. There is no time limit on this process. Our philosophy is that one should clearly identify the question before seeking an answer. This is the hard part of research that biologists often ignore.

Step 2

Identify the appropriate tools for answering the question. In our case that mostly means the appropriate class of model (e.g. dynamic optimization, game theory, coupled population dynamics differential equations, etc.). In some cases, however, we develop experimental designs that are appropriate to the question. Here we spend considerable time talking about appropriate internal and external controls.

Step 3

Describe in plain English what the model (or experiment) will look like, what sorts of assumptions, functions, connectors will be employed. During this phase, we try to identify holes in our argument or identify assumptions where information is currently not available. This leads to further discussions (and sometimes actions) on appropriate experimental designs for parameterizing the model. If experiments are designed and conducted the whole lab pitches in.

Step 4

Formal development of the model. Here, we work at the blackboard to convert our plain English theory into formal mathematical theory.

Step 5

If the model cannot be solved analytically, we use our computer to numerically solve the problem. This involves writing computer code. The first step in this process is to describe the computer model in plain English; once agreed upon

by all, two or three individuals initiate coding.

Step 6

Write a manuscript. Again, we work as a group to develop the outline and then assign different sections to different individuals.

The project may be terminated at any step along the way. For example, we may decide that identifying the critical question is in itself sufficient or we may choose to develop the analytical model. These decisions are based upon interest level or time requirements. In some cases, we quickly realize that the critical experiments are not feasible.

My description of the project development makes it sound more formal and serious than it actually is. We joke a lot, consume lots of pastry (it is essential to identify a cookie facilitator) and give everybody a chance to contribute.

Currently, we are working on a feeding decision model for *Dicyphus hesperus* a zoophytophagous bug. We have taken the project to Step 4 (i.e. formal development of the model). That includes a series of experiments and empirical measures that were initiated through discussions of model structure. Our goal is to test predictions of our model.

If you are interested in the kinds of projects that we have developed as a group some recent examples include:

Bouskila A, Robinson M, Roitberg B, Tenhumberg B. 1998. Life history evolution under predator threat: Importance of a game perspective. *Evolutionary Ecology* **12**: 701-15

Lalonde R, McGregor R, Gillespie D, Roitberg B. 1999. Plant-feeding by arthropod predators contributes to the stability of predator-prey population dynamics. *Oikos* **87**:603-608

Roitberg B, Robertson I, Tyreman J. 1999. Vive la variance: A new theory for the evolution of host selection. *Entomologia Experimentalis et Applicata* **91**: 187-194

The universe is full of magical things patiently waiting for our wits to grow sharper. Eden Phillpots

Editor's Note: I am looking for quotes for the Bulletin. If you have a quotable quote, from yourself or someone else, please pass it along.



Weekly lab meeting of Bernie Roitberg's lab at Simon Fraser University with Lee Henry, Bernie Roitberg, Wim van Herk, Dave Gillespie, Jason Peterson, Jen Perry, Colleen Alma and Brian Ma (from left to right).

The Roland Lab

The Roland lab is located in the Biological Sciences Center, at the University of Alberta in Edmonton, Alberta. The Roland crew is primarily interested in examining the impacts of landscape characteristics on population process of the forest tent caterpillar and its natural enemies. Other ongoing projects include metapopulation dynamics of butterfly populations in Kananaskis, Alberta and on the Gulf Islands in British Columbia.

Life in the Roland lab is not all work! Every year our lab hosts the “Annual Roland Curling Bonspiel”, one of finest gatherings of poor to average curlers in the area. Students and staff from all departments join in the fun – there is even a trophy to be won! When we’re not working or playing, we can usually be found eating. This habit was learned relatively recently, brought by former Finnish postdoc, Tomas Roslin, who was known to have multiple lunches. The Roland lab regularly bonds over lunch, tending to focus on ethnic foods of the all-you-can-eat variety. Based on the detailed data we have collected, starving oneself – no breakfast – has been proven essential to boosting the ability to eat big lunches. Morning coffee breaks are usually spent trekking through snow and sleet to the nearest Tim Hortons to get their Boston creams and coffee. Beer-bonding time has also been known to occur at the campus graduate student lounge Friday. Currently, we are working out details for the creation of a Roland Lab Band, complete with guitars, penny whistles, mandolin, banjo, flute, piano and fiddle. Unfortunately, at present we have more instruments than we do talent or people to play them, so we have a ways to go. We are seeking talented singers to join this band. Our goal is to be signed to a recording label within the next two years.

Jens Roland; jens.roland@ualberta.ca,
http://www.biology.ualberta.ca/faculty/jens_roland/

Jens Roland started his academic career at the University of Alberta, completing his BSc in

1976. This was followed by an MSc at the University of British Columbia in 1981 on adaptive melanism in alpine *Colias* butterflies. The West Coast apparently suited Jens, as he decided to stay put for his PhD, remaining at UBC to work on population dynamics and biological control of the winter moth on Vancouver Island. Jens returned to the University of Alberta in 1992 as a faculty member, where he has remained for the last 12 years. When not teaching, Jens continues to play an active part in several research projects. His primary project is a long-term study on forest tent caterpillar dynamics and landscape characteristics. As well, he has recently started small projects on habitat fragmentation effects on native and introduced leaf-cutter bees, and has supervised a project on spatially structured populations of gall midges and their parasitoids. Jens is also part of such committees as The Editorial Board of *Biological Control Theory and Application*, and is an Organizer of a Symposium on Metapopulations and Spatially structured Populations for the International Congress of Entomology in Brisbane.

Jens’s pastimes include hiking, X-country skiing and long walks on the beach. As well, he appears to take special delight in watching his beloved Oilers trounce other Canadian hockey teams.

Kimberly Rondeau; MSc student,
kimberly.rondeau@ualberta.ca

Kim graduated in 2002 with a BSc from Okanagan University College. As the newest member of the lab, she has alternated between working with Rob Bouchier, a research scientist at the Agriculture and Agri-Food Canada, Research Centre in Lethbridge, Alberta and with Jens and the Roland lab in Edmonton, Alberta.

Currently, Kim is investigating insect dispersal in the root-boring weevil *Cyphocleonus achates* used predominantly for biocontrol of Knapweed (*Centaurea maculosa*, *C. diffusa*). Being established as a highly destructive agent on Knapweed but a poor disperser, *Cyphocleonus achates* is under study in order to improve the chances of controlling this weed. Kim’s research focuses on using mark-recapture methods to



Some members of the Roland lab (left to right): Wayne Hallstrom, Dave Roth, Maggie Glasgow, Jens Roland, Kimberly Rondeau and Dana Sjostum.

determine; 1) if this insect employs flight as a dispersal mechanism, 2) if sex, weight or age have an impact on dispersal of *Cyphocleonus achates* and 3) if plant phenology determines dispersal.

Maggie Glasgow; MSc student, mglasgow@ualberta.ca

I have just completed my first field season. My project examines the impacts of forest fragmentation on the regulation of forest tent caterpillars (FTC) by generalist predators along a gradient of FTC densities. Specifically, I am examining how depredation rates of FTC pupae differ at outbreak versus low densities, in forest fragments and continuous forest patches. The main guild of generalist predators includes carabid beetles and birds. Along the FTC population gradient in the different forest structures, I erected cages that excluded only birds, only beetles and both birds and beetles. Preliminary analysis indicates that depredation rates are significantly higher at low FTC densities but do not differ in forest fragments versus continuous forest patches. Birds appear to have a greater effect

on FTC pupal populations than do predacious arthropods. Another major finding that came out of this year's field season is that the Albertan foothills are an impressive area of Canada. The amount of wildlife that I encountered this summer is also very impressive – a few bears, elk, mule and white tailed deer, moose, attack grouse... I completed my undergraduate degree from the University of Manitoba, and subsequently worked for two years in the "Wheat Midge lab" at AAFC in Winnipeg before joining the caterpillar crew.

Dave Roth; MSc student, dzroth@ualberta.ca

Dave Roth has just finished his first year in the Roland lab. He is currently examining how forest fragmentation alters the relationship between forest tent caterpillar (FTC) and its parasitoid guild. Specifically, how does the increased isolation resulting from forest fragmentation alter the ability of both diptera and hymenoptera parasitoids to respond to increased FTC densities? Dave's project consists of experimentally elevating FTC densities in continuous and frag-

mented forest, and comparing parasitism rates in the two landscape types. Preliminary analysis of the first summer's data suggests that fragmentation does not affect all parasitoid species equally, although poor initial host survival resulted in low sample sizes, limiting the significance of this year's results. The only highly significant result revealed was that the frequency of unpredictable weather was positively correlated with increases in Dave's blood pressure. Dave completed his BSc at Queen's University, and his middle name is not Lee, though coincidentally he does play guitar...

Wayne Hallstrom; MSc student,
wayne.hallstrom@ualberta.ca

My current interests are in examining the relative importance of different factors affecting persistence / extinction of a population. To address this problem I have chosen to work for my MSc research on butterflies of Garry Oak meadows on the Southern Gulf Islands, in a metapopulation context. Well, it is a beautiful place, and I am always happy to be able to go each summer, so maybe I was a bit influenced by the chance to work there as well... Anyway, this project examines metapopulations of rare butterfly species to determine; 1) the effect of loss and fragmentation of habitat on butterfly populations, and 2) the effect of degradation of habitat quality of Garry oak meadows due to the invasive weed, Scotch Broom. Identification of which characteristics of meadows (nectar resource availability, larval host plant abundance, meadow size / spatial location, and abundance of Scotch Broom) have the strongest effect on viability of populations of several different species of butterfly is the goal of this project. These data were used to adjust for 'effective habitat area,' and to parameterize a predictive metapopulation model. The role of individual meadows, and their qualities, will be assessed to determine which meadows play the biggest role in overall metapopulation persistence, and what is the effect of varying qualities of the available habitat in each of these meadows. The intensity of the relationships between a butterfly species and these variables is different in each case, but sig-

nificant results have been found for flowers and host plants, showing area and spatial location are not the only important factors, as many metapopulation models assume. The results and method developed will help managers identify the best locations for restoration, reintroduction, and conservation purposes, to promote regional persistence of the species of interest. I grew up in Saskatchewan, but am now from Vancouver Island, and completed my BSc at University of Victoria before coming to University of Alberta. I plan to complete the MSc in April 2004.

Dana Sjostrom; Laboratory Technician and Morale Booster

Dana Sjostrom entered the Roland Lab as an undergraduate field assistant and was quick to fall in love with crashing through bush finding caterpillars or hiking to alpine meadows in search of butterflies. In 2002, she had the opportunity to develop an undergraduate thesis project examining the effects of density on mating success in populations of the forest tent caterpillar. She was delighted to find interesting nonlinear effects of density, and concluded that both low and high population densities can show reduced mating success! This decline at high density may have implications for pheromone trap interpretation, as changes in density may not be accurately reflected in trap catches. Following a replication of the experiment in the summer of 2003 she continues her work on this project.

After completing her degree in Evolutionary Biology in 2003, Dana continued work in the Roland Lab as the technician and enthusiastic field assistant. Keeping busy with the amazing fieldwork, parasitoid rearing, leaf cutter bee recovery and other odd jobs around the lab ensures entomology will remain an important part of Dana's agenda.

Editor's Note: If you would like to share what is happening in your laboratory, please contact me. This is good way for potential graduate students to learn about your lab.

The Student Wing / L'aile étudiante

By Tonya Mousseau



M. Alperyn

Hello entomology students! It was a great pleasure to meet everyone at this year's ESC meeting in Kelowna. I hope everyone had a wonderful time. With over 300 people attending the conference, there was ample opportunity to meet new friends and gain new contacts. I do believe this event was successful in both academic and social aspects.

Academically, the students made up a large proportion of the oral and poster presentations, with over 40 students competing for the President's Prize. Everyone should be proud of the great work that was displayed.

Socially, every night there was something for the students. The first night was the ESC Student Mixer, starting out at the Kelowna curling club and ending up at Rosies pub. I was very impressed with the number of students who attending that night. Feedback from the students suggests that having the Student Mixer on the first night was a great idea. The second night consisted of the Student and General Receptions, and carried on long into the night in the form of a pub-crawl (hey we were finished our talks!). The last night was the banquet with a wonderful band. It was great to see so many people dancing!

I also attended the ESC Governing Board Meeting on behalf of the students. One thing I cannot stress enough is how much the Governing Board cares about the welfare of the students! I would say almost half the time in the meeting (8:30 AM - 4:30 PM) is spent discussing issues pertaining to students. There was some exciting talk of creating new travel awards and a new Biological Survey Student Award. I was very disappointed, however, with the lack of students at the Annual General Meeting. You are a member of this society, you have a say in what happens. Please show your support by coming out to the meetings, we are the future of this society!

I will be looking for your new ideas and comments every issue of the *Bulletin*. If you know of someone that is a Canadian abroad or from a Canadian University that has successfully completed his or her thesis in the last six months, send the information to me to be published in the next *Bulletin*. Grad students are also encouraged to write in questions, which can then be answered by experts in the field.

Thesis roundup / Un foisonnement de thèses

Lenli Claude Otoiobiga; pognoa@yahoo.com, PhD June 2003. *Biology and control for whitefly (Bemisia tabaci Gennadius)(Homoptera: Aleyrodidae) populations in Burkina Faso (West Africa)*. Supervisors: Charles Vincent and Robin K. Stewart, McGill University.

Brian Aukema; aukema@entomology.wisc.edu, PhD Entomology, August 2003. *Impact of multiple natural enemies attacking a common, phloeophagous herbivore in a restricted habitat: Sequence, behaviour, and interactions*. Supervisor: Kenneth Raffa, University of Wisconsin-Madison.

Brian Aukema; MSc Biometry, August 2003. *Relative sources of variation in spruce beetle-fungal associations: Implications for population dynamics, sampling methodology, and hypothesis testing in bark beetle-symbiont relationships*. Supervisors: Murray Clayton (Statistics) and Kenneth Raffa (Entomology), University of Wisconsin-Madison.

Questions and answers / Questions et réponses

I was at the meeting in Kelowna, and was participating to the President Prize. I was wondering if it would be possible, for the next meetings, to obtain a copy (anonymous) of the evaluations with some commentaries. I think that it would help students improve their presentations for the following years. This is done in the Entomological Society of Québec, and it is very helpful.

Véronique Martel, Horticultural Research and Development Centre, Agriculture and Agri-food Canada, Québec.

All of the judges of the President's Prize agreed that getting the forms back to the students would be useful. Some judges made extensive notes that needed recopying before giving them to the students. We were unable to do this during the meeting, so I have been working on obtaining the e-mail addresses of the students. If you were a participant of the President's Prize Competition, and have not received comments on your presentation please feel free to contact me.

Dave Raworth (raworthd@agr.gc.ca), Organizer of the Student Competition, ESC-ESBC 2003

For the Student Competition at the Joint Annual Meeting of the Acadian and Canadian Entomological Societies in Charlottetown being held 15 - 18 October 2004, we intend to forward the comments of the judges to all the participants. We look forward to having a strong showing of students at the meetings. In addition to the student competition, we intend to have Graduate Student Symposium that will be organized by this year's Hewitt Award winner, Heather Proctor, hproctor@ualberta.ca

Kenna MacKenzie (MacKenzieK@agr.gc.ca), Organizer of the Student Competition, ESC-AES 2004

ESC Student Award Winners

Congratulations to the following 2003 Award winners:

Travel Award:

Tara Gariepy, University of Saskatchewan;
Patrik Nosil, Simon Fraser University.

Postgraduate Scholarship:

Sarah Jandricic (McCan), U of Guelph;
Christopher Cutler, University of Guelph

Kevan Award:

Jade Savage, McGill University.



Richard Ring (white shirt) with the many people who have worked in his laboratory over the years, at the ESC-EBC Joint Annual Meeting, 4 November 2003, Kelowna B.C.

Student Award Winners at the Joint Annual Meeting ESC-ESBC.

As always, the students were an important part of the ESC meeting in Kelowna. There was a competition for the two best student presentation in each oral and poster session. Thank-you to students who participated and congratulations to the award winners. The award winners are:

Biodiversity and Systematics Session

First: Amanda Roe, University of Alberta

Second: Tonya Mousseau, University of Manitoba

Pest Management Session (ESC Paper Award)

First: Marie-Pierre Mignault, Université Laval

Second: Tara Sackett, McGill University

Insect Behaviour Session (ESC Paper Award)

First: Zaid Jumean, Simon Fraser University

Second: Trent Hoover, University of British Columbia

Population Ecology Session (James Grant Award, North Okanagan Naturalists' Club via ESBC)

First: Jen Perry, Simon Fraser University

Second: Chris MacQuarrie, University of New Brunswick

Poster Session (Harold Madsen Award, Phero Tech Inc. via ESBC)

First: Tanya Latty, University of Calgary

Second: Andrew Morrison, University of New Brunswick



Bill Riel

Some of the award winners at the ESC-EBC Joint Annual Meeting, 4 November 2003, Kelowna B.C. from left to right: Tanya Latty, Jen Perry, Zaid Jumean, Colleen Alma (2003 ESBC Graduate Student Scholarship Winner), Chris Cutler (Postgraduate Scholarship Award Winner), Tara Gariépy (ESC Travel Award Winner), Amanda Roe, Trent Hoover, Chris MacQuarrie, Andrew Morrison, Tonya Mousseau, Marie-Pierre Mignault, Jeanne Robert, Rex Kenner, (2003 Criddle Award Winner), Heather Proctor (C. Gordon Hewitt Award 2003).

**Doctorat en biologie à l'UQÀM -
Épidémies d'insectes & Succession
Forestière**

Un-e candidat-e au doctorat est recherché-e dans le cadre d'un projet de recherche sur le rôle des épidémies récurrentes de la livrée des forêts comme facteur influençant les trajectoires successioneuses des peuplements de la forêt boréale méridionale (Abitibi). Les épidémies de la livrée constituent un régime de perturbation particulier : les impacts à court terme sont relativement mineurs mais ils se manifestent sur de grands territoires. Au-delà du court terme, rien n'est connu. Le-la candidat-e retenu-e pour ce projet contribuera donc à développer des connaissances fondamentales sur le rôle des régimes de perturbation d'intensité intermédiaire qui agissent sur de vastes territoires.

Le-la candidat-e sera co-dirigé-e par François Lorenzetti, professeur associé, Université du Québec en Outaouais, et chercheur, Institut Québécois d'aménagement de la forêt feuillue, et par Yves Bergeron, professeur, Université du Québec à Montréal, et directeur de la Chaire industrielle en aménagement forestier durable. Une expérience préalable en foresterie et/ou en entomologie constitue un avantage pour ce poste. Les cours prévus au programme seront donnés à Montréal et à Rouyn-Noranda. Le travail de terrain se déroulera en Abitibi. Le poste est disponible immédiatement. Il doit être comblé au plus tard pour **avril 2004**. Une bourse de CDN 18,000 \$ par année pour 3 ans sera assurée. Veuillez faire parvenir votre CV accompagné d'une lettre de présentation en précisant le nom de deux référent-e-s à l'attention de :

François Lorenzetti, Chercheur
Institut Québécois d'Aménagement
de la Forêt Feuillue
58, rue Principale
Ripon, Québec
J0V 1V0
Courriel : florenzetti@iqaff.qc.ca
Téléphone : (819) 983-6589
Télécopieur : (819) 983-6588

**PhD in Biology, UQÀM - Insect
outbreaks & Forest succession**

A doctoral candidate position is available to study the effects of recurring Forest Tent Caterpillar (FTC) outbreaks on successional trajectories in the southern portion of the boreal forest (Abitibi). Outbreaks of the FTC are a natural disturbance of a particular type: the short-term impact on trees is relatively minor but outbreaks can extend over a considerable area. The long-term impact of this type of disturbance is virtually unknown. The successful candidate will thus have the opportunity to contribute with his-her research to our understanding of disturbance regimes of intermediate intensity acting at very large scales.

The candidate will be co-supervised by François Lorenzetti, adjunct professor, Université du Québec en Outaouais, and researcher, Institut Québécois d'aménagement de la forêt feuillue, and by Yves Bergeron, professor, Université du Québec à Montréal, and director, Chaire industrielle en aménagement forestier durable. Prior knowledge/experience in forestry and/or entomology is clearly an advantage. A working knowledge of French, or an aptitude to learn, is mandatory for this position. Courses needed to complete this PhD program will be held in Montreal and in Rouyn-Noranda (Abitibi). Field work will take place in Abitibi. A stipend of CDN\$18,000 per year for 3 years will be provided. The position is available immediately and must be filled not later than **April 2004**. Please send your CV, a cover letter and the names of two references to:

François Lorenzetti
Chercheur, Institut Québécois
d'Aménagement de la Forêt Feuillue
58, rue Principale
Ripon, Québec
J0V 1V0
E-mail : florenzetti@iqaff.qc.ca
Telephone : (819) 983-6589
Fax : (819) 983-6588

Graduate Assistanship Available at University of Alberta

MSc graduate student research/teaching assistantship available in the Department of Biological Sciences, University of Alberta, Edmonton, Alberta Canada. I am seeking a motivated student to conduct graduate work on the chemical communication of lepidopterous defoliators on aspen. The overall goal of the research is to understand the role of chemical messages in the ecology of three native defoliators of aspen, the large aspen tortrix (Lepidoptera: Tortricidae), the forest tent caterpillar (Lepidoptera: Lasiocampidae) and the bruce spanworm (Lepidoptera: Geometridae). Students will have considerable input into the design of their own projects within the overall research theme. The position is available as soon as **January 2004**. Suitable applicants are eligible for teaching and research assistantships (minimum \$17 700/year) for three years of study. Applications will be accepted until the position is filled. Applicants should send their CV, a statement of research goals, university transcripts and the names and phone numbers of three references to:

Maya Evenden
 Department of Biological Sciences
 CW405 Biological Sciences Building
 University of Alberta
 Edmonton, Alberta, Canada T6H 3M8

For more information about this research please contact Maya Evenden at: mevenden@ualberta.ca. For general information about graduate studies and application processes at the Department of Biological Sciences, please refer to our website at: <http://www.biology.ualberta.ca>.

The Master of Pest Management Program, Simon Fraser University: Revised, "Open For Business" and Accepting New Graduate Students

The Master of Pest Management (MPM) program was founded in 1967 after the establishment of Simon Fraser University in 1965. The program became recognized nationally and internationally for its contributions to biology and the management of pests. Since 1967, the program has provided training to students from over 30 countries. This unique professional degree relied upon valuable contributions from numerous guest instructors and the training provided to the MPM students was broad and comprehensive covering numerous aspects of pest management.

The availability of new technologies, and skills with which pest problems can be solved, provide new research opportunities for both students and faculty alike. In addition, as the complexities of management of pests increase in the face of limited resources and increased awareness of environmental sustainability, we are being faced with ever-increasing challenges. Therefore, new and innovative approaches to management of pests must be developed. There is increased interest, for example, in areas of biological control, biotechnology and chemical ecology. In 2003, the MPM program underwent a major revision to provide students with contemporary training and research experiences.

The MPM program continues to provide unique opportunities for students through a combination of courses and research with the practical application of pest management strategies. The underlying philosophy is that students graduating from the program should attain a broad interdisciplinary perspective.

For more information about the program, visit the website at <http://www.sfu.ca/biology/mpm> or contact the Department of Biological Sciences, Simon Fraser University, 8888 University Drive, Burnaby, British Columbia, Canada V5A 1S6

ESC Travel Awards 2004 Invitation for Applications

Preamble

To foster graduate education in entomology, the Entomological Society of Canada will offer two research-travel scholarships, awarded annually on a competitive basis. The intent of these scholarships is to help students increase the scope of the graduate training. These scholarships, up to a maximum of \$2,000, will provide an opportunity for students to undertake research or course work pertinent to their thesis subject that could not be carried out at their own institution, and that represents a significant addition to the planned thesis research or course work. **Applications will be judged on scientific merit.**

Eligibility

To be eligible, a student must:

- 1) be enrolled as a full-time graduate student,
- 2) be studying at a Canadian University,
- 3) be pursuing scientific studies on insects or other related terrestrial arthropods.

Format of the Application

The application will be in the format of a grant proposal, where the applicant will provide the following information: 1) the subject of the thesis; 2) a pertinent review of the literature in the field; 3) a concise presentation of the status of the ongoing thesis research; 4) a description of the research or course work to be undertaken, clearly indicating, a) the relevance to the overall goal of the thesis, b) an explanation of why such work cannot be carried out at the student's own university, and c) the justification of the site where the research/course work will be carried out; 5) a budget for the proposed project, including a justification for how costs not covered by the scholarship will be covered; 6) anticipated dates of travel and date on which scholarship money is needed.

The application shall also be accompanied by:

- 1) an up-to-date C.V.;
- 2) a supporting letter from the senior advisor;

- 3) a supporting letter from the scientist or Department Head at the institution where the applicant wishes to go.

Evaluation Procedure

The scientific merit of each application will be evaluated by a committee that has the option of sending specific projects out for external review by experts in the field. Comments from the Awards Committee members will be provided to the applicant upon request.

Timetable and Application Procedure

Application forms may be obtained from the Chair of the Student Awards Committee or at <http://esc-sec.org/gform.htm>. These must be completed in full, and the original plus three copies of all documents returned to the Chair of the Student Awards Committee by **13 February 2004**. The committee will evaluate all applications by **30 April 2004** and determine if, and to whom, scholarships will be awarded. The successful applicants will be informed immediately, thereby providing sufficient time for students wishing to start in the fall to make necessary arrangements.

Recipients should provide a short final report within three months following the trip.

All communications regarding these awards, including requests for applications, should be addressed to:

Rosemarie De Clerck-Floate,
Chair ESC Student Awards Committee
Lethbridge Research Centre
Agriculture and Agri-Food Canada
P.O. Box 3000
Lethbridge, Alberta T1J 4B1
E-mail: Floate@agr.gc.ca

Bourses de voyage SEC 2004 Invitation à soumettre des demande

Préambule

Pour promouvoir les études supérieures en entomologie, la Société d'entomologie du Canada offre deux subventions de recherche-voyage, qui seront décernées chaque année lors d'un concours. Ces bourses ont pour objet d'aider les étudiants et étudiantes à élargir le champ de leur formation supérieure. Le montant accordé, qui peut aller jusqu'à 2 000 \$, doit permettre aux récipiendaires de suivre des cours ou d'effectuer des travaux portant sur leur sujet de thèse, cours et travaux qu'ils ne pourraient pas entreprendre autrement dans leur propre établissement et qui constituent un ajout important au programme de recherche prévu. **Les candidatures seront jugées selon leur mérite scientifique.**

Admissibilité

Pour être admissible, un étudiant ou une étudiante doit:

- 1) être inscrit comme étudiant à temps complet au niveau des études supérieures
- 2) étudier à une université canadienne
- 3) poursuivre des études scientifiques sur les insectes ou autres arthropodes terrestres

Présentation de la demande

La demande doit se présenter comme une proposition, dans laquelle le candidat ou la candidate fournit les informations suivantes : 1) sujet de la thèse; 2) revue des documents pertinents; 3) résumé de l'état d'avancement de la thèse; 4) description de la recherche ou des travaux à effectuer, avec les précisions suivantes, a) pertinence de l'objectif global de la thèse, b) raisons pour lesquelles les travaux ne peuvent être effectués à l'université d'attache et c) raisons expliquant pourquoi le candidat ou la candidate a choisi un lieu plutôt qu'un autre pour effectuer ses recherches; 5) budget du projet proposé et des explications concernant le mode de règlement des dépenses non couvertes par la bourse; 6) dates prévues pour le voyage et date

à laquelle le candidat ou la candidate aura besoin de la bourse.

Le candidat ou la candidate doit joindre à sa demande :

- 1) un CV à jour;
- 2) une lettre de référence de son directeur;
- 3) une lettre d'appui du scientifique ou chef de département de l'établissement où il ou elle souhaite mener à bien son projet.

Méthode d'évaluation

Le mérite scientifique de chaque demande sera évalué par un comité qui pourra soumettre certains projets à l'examen d'experts compétents de l'extérieur. Sur demande, un rapport des commentaires du comité des prix sera remis à chaque candidat et candidate.

Échéancier et marche à suivre

Les formulaires de demande, qui sont disponibles auprès du président du Comité des prix aux étudiants de la Société ou sur notre site internet à l'adresse suivante: <http://esc-sec.org/gform.htm>. Ceux-ci doivent être complétés (original, ainsi que trois copies de tous les documents), et retournés au président du Comité, au plus tard le **13 février 2004**. Le comité évaluera toutes les demandes pour le **30 avril 2004** et il déterminera si des subventions seront accordées et, le cas échéant, à qui. Les heureux ou heureuses récipiendaires seront informé(e)s sans délai, de façon à ce qu'ils ou elles disposent de tout le temps voulu pour entamer leur projet dès l'automne suivant, si tel est leur souhait.

Dans les trois mois suivant leur voyage, les récipiendaires devront remettre un court rapport final.

Toute correspondance relative aux bourses, incluant les demandes de formulaires doit être adressée à:

Rosemarie De Clerck-Floate,
Présidente,
Comité des prix aux étudiants de la SEC
Centre de recherche de Lethbridge
Agriculture et agroalimentaire Canada
Case postale 3000, Lethbridge, Alberta T1J 4B1
Courriel: Floate@agr.gc.ca

ESC Postgraduate Awards 2004

The Entomological Society of Canada will offer two postgraduate awards of \$2,000 each to assist students in study and research leading to a post-graduate degree in entomology. The post-graduate awards will be made on the basis of high scholastic achievement. The Society will normally award one scholarship to a MSc student and one to a PhD student.

Invitation for Applications

Eligibility:

The applicant must be a post-graduate student enrolled at a Canadian university and their studies and research must be carried out at a Canadian university. Each award is conditional upon certification by the Department Head that successful applicants are students in good standing in a program of study and research for an advanced degree with full graduate status. A student who was unable to gain admission or enters graduate school as a qualifying candidate is not eligible to receive an award.

Method of Application

Applicants must submit a properly completed form, with support documents. Application forms are available at <http://esc-sec.org/form.htm>, or from the Chair of the ESC Student Awards Committee. The original and three copies of the application and supporting documents, must be submitted to the Chair of the Student Awards Committee postmarked no later than **16 June 2004**. Original transcripts showing undergraduate and post graduate (if applicable) grades are required.

Process of Selection and Award Presentation

Applications will be reviewed by a committee of the Society. An announcement of the two winners will be made at the annual meeting of the Society and each winner will receive a certificate. Payment of the award will be made in October 2004.

Regulations

Earnings from Other Sources

Award holders are permitted, under normal circumstances, to demonstrate, instruct or assist in non-degree related research for a maximum of 200 hours per annum, provided that the Head of their Department considers this is desirable and that it does not hinder the progress of their studies. Apart from these assistantships, award holders will devote their full time to study and research and will not undertake any paid work during the school term. They may hold other awards and scholarships.

Transfers

Awards are made on the condition that the winners engage in a program of graduate studies and research for an advanced degree in entomology in Canada. Students who, after receiving the award, wish to change their graduate program or transfer to a foreign university may be asked to decline the award. Any change in the course of study, department or university in which an award winner is registered requires prior approval of the Scholarship Committee. A request for permission to transfer must be supported by statements from Heads of Departments.

Additional Allowances

The award stipends are all-inclusive. There is no provision for additional grants by the Society for any purpose. Additional grants, for example, to attend meetings, pay course fees, meet publications costs, etc., will not, under any circumstances, be authorized.

All communications regarding these awards, including requests for applications, should be addressed to: Rose De Clerck-Floate Chair of ESC Student Awards Committee (see page 188 for contact details)

SEC Bourse pour étudiants post-gradués 2004

La Société d'entomologie du Canada offrira deux bourses d'une valeur de 2 000 \$ chacune pour aider des étudiants dans la poursuite de leurs études post-graduées et leur recherche en vue de l'obtention d'un diplôme d'études supérieures en entomologie. Les bourses seront accordées aux étudiants ou étudiantes en raison des seuls critères de réussite académique. En temps normal, la Société attribuera une bourse à un étudiant à la maîtrise et une autre à un étudiant au doctorat.

Avis Éligibilité

Le candidat doit être un étudiant post-gradué inscrit à une université canadienne et dont les études et la recherche s'effectuent dans une université canadienne. Les bourses ne seront accordées que lorsque les directeurs de Département auront certifié que les candidats choisis sont de bons étudiants dans leur programme d'études et de recherche, et ce avec tous les privilèges attachés au statut d'étudiant gradué. Un étudiant qui n'a pu être admis à l'École des Gradués, ou qui s'inscrit en vue de compléter l'obtention de crédits, n'est pas éligible à la bourse.

Procédure

Les candidats devront soumettre leur candidature à l'aide du formulaire approprié et y joindre tous les documents requis. Les formulaires sont disponibles auprès du président du Comité des bourses aux étudiants de la Société ou sur notre site internet à l'adresse suivante: <http://esc-sec.org/form.htm>. L'original ainsi que trois copies de la demande et des autres documents qui l'accompagnent doivent être soumis au Président du Comité des Prix au plus tard le **16 Juin 2004**. De plus, les relevés officiels des notes obtenues au niveau sous-gradué et post-gradué sont requis.

Sélection et remise des bourses

L'analyse des candidatures se fait par un

comité de la Société, et l'annonce des récipiendaires se fera à la réunion annuelle de la Société où ils recevront un certificat. Le paiement de la bourse aura lieu en octobre 2004.

Règlement Autres sources de revenus

Un boursier pourra normalement donner des séances de cours ou de démonstration et être auxiliaire de recherche jusqu'à un maximum de 200 heures par année, en autant que le Directeur de son département considère cela profitable et que ces tâches additionnelles ne nuisent pas au progrès de l'étudiant. Mises à part ces exceptions, un boursier devra consacrer tout son temps à ses études et recherches et n'accepter aucune autre rémunération. Il peut cependant jouir d'une autre bourse ou d'un prix.

Transferts

Les bourses sont accordées à condition que les boursiers entreprennent des études graduées en vue de l'obtention d'un diplôme en entomologie au Canada. Les boursiers qui décideront de changer de champ d'études, ou de transférer dans une université hors du Canada peuvent se voir retirer leur bourse. Après acceptation de la bourse, tout changement de programme d'études, de département ou d'université devra recevoir au préalable l'approbation du Comité de la Bourse de la SEC. Une telle demande doit être accompagnée de documents provenant des Directeurs des départements concernés.

Frais supplémentaires

La somme offerte est invariable. En aucun cas la Société n'accordera de montant supplémentaire. Des frais additionnelles, par exemple, pour assister aux réunions scientifiques, payer des frais de cours, défrayer des coûts de publications, etc..., ne seront autorisés sous aucune considération. Toute correspondance relative aux bourses, incluant les demandes de formulaires doit être adressée à : Rosemarie De Clerck-Floate, Présidente, Comité des prix aux étudiants de la SEC, voir page 189.

The First Arctic and Boreal Entomology Course - 2003

By Robyn Underwood, Peter Kevan and Rob Roughley

After about a year of planning, the First Arctic and Boreal Entomology Course, was organized and ran through the University of the Arctic in Finland and the Churchill Northern Studies Centre (CNSC) in Churchill, MB from 9-23 August 2003. The instructors were Peter Kevan, Environmental Biology, University of Guelph, Rob Roughley and Robyn Underwood (teaching assistant), Department of Entomology, University of Manitoba. Taking the course were students from four countries (Fig. 1). The students had a wide range of knowledge and backgrounds. All were enthusiastic and eager to learn about the arctic boreal transition zone and its diverse and abundant insect life.

The facilities at the Churchill Northern Studies Centre are highly appropriate for this kind of

course. The Centre includes laboratory space, classrooms, and extensive dormitory and kitchen facilities (cook included!). A station employee, David Wright, who acted as bus driver, bear guard and tour guide, also escorted us on most outings. Between the facilities and the people, the CNSC made our stay highly enjoyable, safe and a splendid atmosphere for learning.

The day-time schedule for the course consisted of visiting the wide array of habitats, ranging from the shores of Hudson Bay and the Churchill River and its estuary to tundra and the boreal forest. All are close at hand. We visited and collected insects in the kelp strand, saline shoreline and saline ponds, an assortment of fens, bogs, ponds and streams, salt marshes along the edge of the Churchill River, the northern boreal forest, the forest margin, the treeline, the krumholz, the willow scrub, boreal forest-tundra transition zones and tundra zones (Fig. 2 and 3). Gall insects and pollinators were sampled in various habitats and soil insects were compared between a mature forest area and in a forest fire burn site (burned in 1997). Among the collecting tech-



Figure 1. Course participants: standing left to right; **Moe Vidotto**, Guelph, Ont.; **Ann Millett**, Bramalea, Ont., **Blandina Felipe Viana**, Universidade Federal de Bahia, Ondina, Bahia, Brazil; **Peter Kevan**, University of Guelph, **Michael Adjaloo**, Kumasi National University of Science and Technology, Kumasi, Ghana; **Vivian Darroch-Lozowski** and **Ronald Silvers**, University of Toronto, Ont. and **Eric Chapman**, Kent State University, Ohio; Kneeling (front row) left to right - **Fabiana Oliveira da Silva**, Universidade Federal de Bahia, Ondina, Bahia, Brazil; **David Wright**, Churchill Northern Studies Centre., Churchill, Man., **Robyn Underwood** and **Rob Roughley**, University of Manitoba, Man.



Rob Roughley

Figure 2. Robyn Underwood (left) and Peter Kevan examining a bee specimen.

niques demonstrated were Malaise traps, fan traps, pitfall traps, Berlese funnels, traps for aquatic insects, use of entomological nets, aspirators (pooters) and killing vials. Through demonstrations, pinning, preserving, and proper labeling were also stressed.

Evening lectures addressed various topics of entomology with emphasis on the northern boreal and arctic habitats. Those included the arctic as a habitat for insects, classification of insects and spiders, insect cold hardiness, thermoregulatory behavior, aquatic habitats, insect-floral relations and snail predator (Sciomyzidae: Diptera) biology and classification.

Course participants designed, implemented and reported on projects of their choice. Among the topics chosen were species richness and abundance of aquatic beetles (Dytiscidae) in rock-pool ponds, aquatic invertebrates of the Churchill area, fauna of burned and unburned forests, snail predators and phenomenology of insect collecting.

In association with the evening lectures and projects was time for discussions about what was presented and the extent of knowledge of northern entomology. Many interesting insects were collected, some that seem to represent large range extensions. The specimens are being prepared and are destined for the University of Manito-

ba's insect collection, and other entomological museums. We plan to place a reference collection at the CNSC to assist future efforts in expanding and promoting northern entomology. The CNSC received a Major Facilities grant from NSERC and is poised to make many improvements that will facilitate further our course being presented again.

In addition, we had time to visit various sites in Churchill, including local shops and the Eskimo Museum. We also went on a beluga whale-watching expedition that included a visit to the Fort Prince of Wales.

By the end of the two weeks, the students were well versed in various active and passive insect collecting techniques, able to identify most insects to the ordinal level, and had a good understanding of the habitats and landforms in and around Churchill. Friends were made and knowledge was shared – the perfect recipe for a successful field course.

Information on the course can be found on the web site of the University of the Arctic <http://www.uarctic.org/fieldschool/catalogue.asp> and www.uoguelph.ca/~pkevan (under courses).

Please contact either Peter Kevan (pkevan@uoguelph.ca) or Rob Roughley (Rob_Roughley@umanitoba.ca) if you are interested in taking the course, as we hope to offer it again in the summer of 2004.



Robyn Underwood

Figure 3. Rob Roughley aquatic sampling at rock pool on Cape Merry.

Graduate Student Symposium

Joint Annual Meeting of the Entomological Society of Canada and British Columbia 4 November 2003, Kelowna, BC

Jacques Brodeur, Organizer

Forest management affects plant-insect interactions at two spatial scales.

Colleen M Simpson and Mary L Reid
University of Calgary, Calgary, Alberta

The implications of forest management for plant-insect interactions remain largely unknown, despite the ecological and economic significance of these relationships. Here we focus on the effects of stand thinning on the pine engraver bark beetle, *Ips pini* (Scolytidae). Pine engravers are phloem feeding herbivores that breed in freshly dead pine boles. Thinning is expected to have two main effects that may influence plant-insect interactions. First, stand structure and composition are immediately changed and stand microclimate becomes warmer and windier. These changes may enhance beetles' ability to find habitat because flight is favoured in warmer and less cluttered environments and because windthrow will increase the abundance of breeding habitat. Second, the growth and vigour of trees remaining in the stand may be improved over subsequent growing seasons. For beetles breeding in freshly dead trees, greater quantity and quality of phloem should enhance reproduction. We examined how stand characteristics and tree quality affect beetle reproduction and development both alone and in combination up to seven years after thinning. We found that beetles occurred in densities an order of magnitude greater in thinned stands versus natural stands, even seven years after thinning. This increase in beetle numbers appears due to the continued input of freshly fallen lodgepole pine trees linked to increased wind and an increased proportion of lodgepole pine in thinned stands. Teneral beetles emerging from logs in thinned stands were smaller, consistent with higher temperatures in thinned

stands. Trees growing in thinned stands did not have higher growth rates or phloem nitrogen, yet we detected a small effect on beetle reproduction. Overall, the stand level effects of thinning were more important than tree level effects in determining abundance and reproductive success of a forest herbivore.

The consperse stink bug, *Euschistus conspersus*: A new pest management challenge for Washington orchardists.

Christian Krupke, JF Brunner and VP Jones

Stink bugs (Pentatomidae) are recognized as pests of a variety of economically important crops, including cotton, soybeans and tree fruits. Historically, stinkbugs have been regarded as sporadic secondary pests in Washington State fruit production areas. As a result of the US Food Quality Protection Act (FQPA), IPM programs have moved away from broad spectrum organophosphate (OP) pesticides and towards alternatives that target key pests more specifically, such as insect growth regulators and pheromone-based mating disruption. This shift has resulted in an increased pest status for stink bug species that may previously have been suppressed by the broad-spectrum OP applications. The most abundant stink bug species in central Washington and the one implicated in recent fruit damage in commercial orchards is the consperse stink bug, *Euschistus conspersus* Uhler. My research has developed a list of host plants that support these insects, and has shown that these insects move into orchards from border vegetation and are effectively treated by pyrethroid insecticide treatments to border rows only; a practice that I have also shown to be beneficial in conserving populations of mite predators. In an effort to develop monitoring tools for this pest, my research has focused upon quantifying the behavioral response of this insect to its aggregation pheromone, methyl (2E, 4Z)-decadienoate. My experiments have demonstrated attraction of *E. conspersus* adult males and females in both the spring (reproductive) and summer (reproductively diapausing) generations, and a rapid (<24 h) aggregation of stinkbugs when pheromone is

present and rapid dispersal following pheromone removal. Basic research into aggregation formation and mating activity revealed that this behaviour follows a diel cycle, with males and females present in equal proportions throughout the cycle. Mating occurs nightly, however, both males and females prefer to choose mates that they have not mated with previously. The mechanisms of this choice are not clear.

Behavioural plasticity in response to density-dependent environmental shifts: Model and tests in mountain pine beetles.

Ché Elkin and Mary Reid

University of Calgary, Calgary, Alberta

The environment that individuals experience is dependent on both extrinsic factors and intrinsic population processes. Environmental shifts due to intrinsic processes are expected to be particularly important in species that exhibit large fluctuations in population density, such as mountain pine beetle, *Dendroctonus ponderosae*. We examined whether density-dependent shifts in the availability and quality of breeding habitat results in an adaptive shift in habitat selection of mountain pine beetles. Mountain pine beetle must kill living trees to successfully reproduce. When beetle population density is low, only weakened trees can be successfully colonized, whereas in high density populations, vigorous trees may be attacked and may provide increased reproductive returns relative to weakened trees. Selection for adaptive shifts in beetle behaviour should depend on the rate of change and variability of host availability. We used individual based simulation models to explore how these two factors interact to affect selection for behavioural plasticity, and compared these results to field experiments. Our field experiments demonstrated that in high density populations there are more host trees available, but there is also a greater variance in host tree quality. Based on these findings, we tested the prediction that beetles would be more choosy in high density populations. We found that in high density populations beetles invest more energy in locating a host tree, and that there is a greater difference in

the condition of beetles settling on poor, versus good quality breeding habitat. In addition to our finding that beetles are more choosy, we found that beetles use different cues to assess breeding habitat in low and high density populations. In high density populations beetles select breeding habitat based on beetle attack density, while in low density populations beetles chose based on both attack density and the condition of the tree. Using simulation models we found that shifts in host acceptance cues are likely due to density dependent differences in the rate of deterioration of breeding habitat within a year. With this research we have demonstrated that intrinsic population process can cause large shifts in both resource availability, and the dynamics of how resources are used. In response to these intrinsically driven environmental shifts mountain pine beetle modify both the cues used to select breeding habitat and the amount of energy that they invest in host location. Behavioural plasticity is therefore one mechanism used by mountain pine beetles to deal with density dependent environmental shifts.

Searching for food and oviposition sites in shifting environments: A case study of the cranberry fruitworm, *Acrobasis vaccinii* (Lepidoptera: Pyralidae).

David Marchand and Jeremey McNeil

Université Laval, Quebec, Quebec

In insect species whose larvae need several hosts to complete their development, larval survival is usually dependent on both the choice of oviposition sites by females and the food searching behaviour of larvae. Here, I present evidence that in unpredictable environments, random oviposition may be an appropriate strategy to maximise larval survival in these species. I also suggest that in these species, larvae may reduce intraspecific competition by responding to environmental changes induced by conspecific larvae.

Under laboratory conditions, females of *Acrobasis vaccinii* (Lepidoptera: Pyralidae), a species whose larvae feed on cranberry fruit (*Vaccinium oxycoccos*), choose larger fruits

significantly more often than smaller fruits as oviposition sites. Such behaviour ensures that neonate larvae have access to a maximum amount of resources before the larvae move to the next fruit. However, I found no evidence of such preference in the field. This absence of preference under natural conditions may be explained by the fact that the oviposition period for *A. vaccinii* begins early in the cranberry season, before fructification is completed, leading to potential competition among females for the first fruits present in the environment. Laying eggs on the first fruit available may be advantageous since this behaviour increases the probability that females oviposit on fruits that are not infested with other eggs. This is particularly true in environments where severe climatic conditions induce limited flowering/fruit formation and where hosts are thus rare.

My research also demonstrated that feeding by *A. vaccinii* larvae induces a change in fruit colour – from green to red – of cranberry fruits, associated with a significant increase in the concentration of anthocyanin inside the fruit. Host fruit colour affects larval foraging behaviour and food acceptance, since significantly more cranberry fruitworm larvae are attracted to, and accept, green rather than red fruits. In the laboratory, this change in host colour also prevents the exploitation by conspecific larvae of other green fruits adjacent to the attacked fruit.

Host specificity of *Lygus* parasitoids: Understanding mirid-parasitoid associations in different habitats.

Tim Haye¹, U. Kuhlmann², P.G. Mason³ and H. Goulet³

¹Zoological Institute, Christian-Albrechts-University, Kiel, Germany; ²CABI-Bioscience, Switzerland; ³Agriculture and Agri-Food Canada, Ottawa,

Native plant bugs, *Lygus* spp., are serious pests of many crops in protected environments throughout Canada. Braconid parasitoids of the genus *Peristenus* introduced from Europe could help to reduce native *Lygus* populations in Can-

ada. However, there has been increasing concern over the last years with respect to potential non-target risks associated with importing exotic biological control agents. Of particular concern is the possibility that exotic parasitoids will leave cropping habitats and switch over to native species in natural habitats. Very little is known about the host-parasitoid associations of mirids from different habitats in Europe. In order to address this issue, we defined the ecological host range of two *Peristenus* species, *P. digoneutis* and *P. stygicus*, being considered as candidate biocontrol agents for *Lygus*. A thorough examination of the parasitoid complex of common mirids was investigated to determine which of these species appears in non-target mirids occurring natural habitats. In addition, eight mirid species were selected for physiological host range tests in the laboratory based on the following criteria: phylogenetic relatedness, habitat overlap, time of occurrence and abundance in the field. Ecological host range studies on non-target mirids indicate that in addition to attacking three *Lygus* species, *Peristenus stygicus* also attacks at least 14 non-target species, and *P. digoneutis* attacks six species. However, while *P. stygicus* and *P. digoneutis* were found in field-collected non-target mirids, their occurrence was generally less than seven %. In general, both parasitoids were common in *Matricaria* habitats, where *Lygus* spp. were also found in high numbers. In grasslands *P. digoneutis* was almost absent while *P. stygicus* occurred regularly. In stinging nettle habitats both parasitoids were found only sporadically. In the area of investigation (northern Germany) the abundance of *P. stygicus* was unexpected, as previous literature indicated that *P. stygicus* is a southern European species. The results also indicate that among each genus of non-target mirid, little overlap of parasitoid species occurs. This suggests that each non-target mirid has a dominant parasitoid species, with *P. digoneutis* and *P. stygicus* being mainly dominant in *Lygus*. In total we reared 18 *Peristenus* (ten undescribed) and two *Leiophron* species from 21 host genera (29 mirid species), which will be the basis for a review of the genus *Peristenus* in Europe. Furthermore, several new mirid-parasi-

toid associations have been identified. Physiological host range studies demonstrated that *P. stygicus* and *P. digoneutis* were capable of attacking all selected non-target species they were presented with in laboratory experiments. Closely related non-target mirids were generally well accepted by the parasitoids, while mirids living on grass were less frequently attacked and less suitable for parasitoid development. A broad ecological and physiological host range suggests that *P. stygicus* is a generalist. In contrast a broad physiological host range can lead to the overestimation of the potential for non-target effects of the oligophagous parasitoid *P. digoneutis*.

These studies provide baseline ecological data which are essential for the decision making process to introduce or not to introduce *Peristenus* species into Canada.

The effect of crop on the evolution of *Bt* resistance in *Trichoplusia ni* populations.

Alida Janimatt and Judy Meyers

University of British Columbia, Vancouver, British Columbia

The microbial insecticide, *Bacillus thuringiensis* (*Bt*), has become the mainstay of nonchemical control of Lepidopteran pests either as sprays or through the incorporation of *Bt* toxins into transgenic crops. Given the wide use of *Bt*, it is striking that currently only one pest species, *Plutella xylostella*, has been reported to have developed significant resistance to *Bt* outside of the laboratory. In contrast, we have observed the frequent and rapid development of resistance to *Bacillus thuringiensis kurstaki* (Dipel, Abbott) in populations of cabbage loopers, *Trichoplusia ni*, in commercial greenhouses.

The current lack of *Bt* resistance in the field may be due to an inherent instability of resistance in the absence of *Bt* exposure. Newly arisen resistance traits are often assumed to be associated with a fitness cost. Resistance to *Bt* does appear to be costly in *T. ni* as there is a rapid decline of resistance in *T. ni* populations collected from greenhouses and maintained in the laboratory without selection. However, the repeated and

rapid evolution of resistance observed in greenhouse *T. ni* populations suggests that resistance alleles are maintained in *T. ni* populations in the absence of *Bt* sprays. Therefore, it is possible that fitness costs are not as deleterious in the wild as in the laboratory.

The host plant is one important environmental factor that impacts insect herbivores and may play an important role in the evolution of *Bt* resistance. *T. ni* is a pest of three different crops grown in commercial greenhouses and larval growth rate varies considerably between these crops. The effect of crop on the resistance trait and associated fitness costs was examined to determine how resistance evolution and stability varies between each cropping system. Knowledge of such genotype-environment interactions will allow us to develop crop specific *Bt* resistance management strategies and to further our understanding of how herbivorous insects adapt to new circumstances.

New student awards for 2004!

Watch the ESC website and March *Bulletin* for more information on the upcoming **Student Conference Travel** and **NSERC Biocontrol Network Awards**, or contact the Chair of the Student Awards Committee, Rosemarie De Clerck-Floate (floate@agr.gc.ca)

Du nouveau pour 2004! Aide financière aux étudiants

Surveillez le site Web et le *Bulletin* de mars pour plus de détails sur la nouvelle **bourse de voyage pour conférences** et les **prix du Réseau Biocontrôle de CRSNG**, ou bien communiquez avec la présidente du Comité Prix aux étudiantes et étudiants, Rosemarie De Clerck-Floate (floate@agr.gc.ca).

Members in the News Membres faisant la manchette

New Editor-in-Chief for *The Canadian Entomologist*

Richard Ring will assume the duties of Editor-in-Chief for *The Canadian Entomologist* on 1 January 2004. All manuscripts submitted after that date should be sent at his address below. All requests for information about the status of manuscripts submitted prior to that date should also be addressed to him. Each Division Editor will continue to process submissions already under his editorial consideration.

Richard Ring
Editor-in-Chief, *The Canadian Entomologist*
Department of Biology
University of Victoria
Victoria, British Columbia
Canada V8W 2Y2
Tel: (250) 721 7102, Fax (205) 721 7120
E-mail: rring@uvic.ca



Nouveau Directeur général de la revue *The Canadian Entomologist*

Richard Ring prendra la relève comme Directeur général de la revue *The Canadian Entomologist* le 1 janvier 2004. Tous les manuscrits soumis après cette date doivent être envoyés à l'adresse indiquée ci-dessous. Toute requête d'information concernant le progrès de l'évaluation de manuscrits soumis avant cette date doit également lui être adressée. Le directeur de chaque division continuera de traiter les évaluations en cours.



Bill Riel

Jean Turgeon (left and large) is stepping down as Editor-in-Chief of *The Canadian Entomologist* after 5 years. Here he receives a service award from Sandy Devine at the Annual General Meeting, 4 November 2003, in Kelowna



Bill Riel

Dan Johnson (left) receives a service award from Sandy Devine at the Annual General Meeting, 4 November 2003, in Kelowna B.C. for his work as *Bulletin* Editor from 2001 until 2002.

Appointment at PMRA

Christopher P. Dufault has been appointed Head of the Re-evaluation and Use Analysis Section, Efficacy and Sustainability Assessment Division, Pest Management Regulatory Agency (PMRA) in Ottawa, Canada. The PMRA is responsible for the evaluation and registration of pesticides in Canada, Christopher.P.Dufault@hc-sc.gc.ca

Canadians Heading to ICE Australia

Les noms des entomologistes canadiens qui suivent apparaissent dans la brochure du 21e Congrès international d'entomologie (Brisbane, Australie: 15-21 août 2004).

The following names of Canadian entomologists appear in the brochure of the XXII International Congress of Entomology (Brisbane, Australia: 15-21 August 2004).

Wigglesworth Memorial Lecture: Ken Davey

Organisateurs de Symposia

Organizers of Symposia:

Guy Boivin

Jeremy McNeil

Heather Proctor

Les Shipp

John Spence

Jens Roland

Charles Vincent

David Evans Walter

Pour plus d'informations, visitez le:

For more information, visit:

www.ice2004.org



Bob Lamb

Acyrtosiphon pisum (Harris), pea aphid viviparous female on field pea.

Nominations sought for Fellows

Members of the Society are also invited to nominate individuals as Honorary Members and as Fellows of the Society.

Honorary Members of The Entomological Society of Canada.

Honorary Members are deemed to have made an outstanding contribution to entomology, and may not comprise more than ten entomologists or 1% of Active Membership of the Society. Nominations for Honorary Membership should be supported by at least five Active or Special Members of the Society, and submitted to the Achievement Awards Committee at the office of the Society by **28 February 2004**. The Society currently has ten Honorary Members and so any nominations received will be held until such time as a position becomes available.

Fellows of The Entomological Society of Canada.

Fellows are deemed to have made a major contribution to entomology, and may not comprise more than 10% of the Active Membership of the Society. Nominations for fellows should be supported by at least four Active or Special Members of the Society, and submitted to the Achievement Awards Committee at the office of the Society by **28 February 2004**.

Weed - a plant whose virtues have not yet been discovered. Ralph Waldo Emerson (1803 - 1882)

ESC 2003 Award Winners

Gagnants des prix SEC 2003

Gold Medal Award

Hugh Danks

The 2003 recipient of the Entomological Society of Canada's Gold Medal for Outstanding Achievement in Canadian Entomology is Hugh Danks, Canadian Museum of Nature, Ottawa. This award is presented in recognition of his contributions to Canadian entomology for many years across an exceptionally broad front, embracing research, synthesis, education, coordination and scientific leadership.

Hugh Danks came to Canada upon finishing his PhD in England in 1968, and except for two years in USA has worked here ever since. His early career was spent in a variety of posts in Ottawa, Waterloo, North Carolina and St. Catharines, but for the past 25 years he has been head of the Biological Survey of Canada in Ottawa. This organization, run jointly by the ESC and the Canadian Museum of Nature, focusses on how to characterize the Canadian fauna, and its achievements are widely recognized. The success of the Survey depended to a great degree on Hugh's energy and effectiveness. At the beginning of the project he led consideration of how the initial ideas could be put into practice, and he continues to execute much of the necessary work of organization, catalysis and coordination, including an emphasis on scientific publications. By his strong guidance of the Survey, Hugh has ensured that this valuable initiative has also gained international recognition, with the result that it now stands greatly to the credit of Canada and Canadian entomology.

Allied to the Survey efforts is his research and scientific editing on the fauna and its adaptations. Synthesis of information on the fauna began with the 1979 book that he conceived, edited and contributed to, *Canada and its Insect Fauna*. Other major contributions on the fauna followed, including the book *Arctic Arthropods* (1981) and papers analysing patterns in the faunas of Canada, arctic and boreal zones, and elsewhere. He helped to edit and contributed synthetic chapters to volumes organized by the Survey on wet-



Sandy Smith (left) presenting Gold Medal to Hugh Danks, 2 November 2003, Kelowna.

lands, on springs and on systematics and entomology. Most recently he brought to completion a major Survey volume on *Insects of the Yukon* (1997), regarded as an exceptional contribution by reviewers.

Hugh Danks also has major achievements in research on insect seasonal adaptations. He wrote the acclaimed book *Insect Dormancy* (1987), edited the volume *Insect Life-cycle Polymorphism* (1994), and continues to produce widely cited synthetic papers. These numerous publications are of a consistently high standard, and reflect his considerable ability to synthesize complex subjects, revealing new insights into the complexities of diapause, cold-hardiness, life-cycle pathways and other themes. They have gained international, as well as national, acclaim and have become standard references in several active disciplines of high topical interest, bringing credit and recognition to the Biological Survey of Canada and to Hugh as its head. Invitations to present keynote papers at international conferences – most recently in Japan, Russia and the Czech Republic as well as Canada – and to publish on these themes attest to the scientific impact of Hugh's ideas. All his publications are distinguished by authority and clarity, and by their exhaustive coverage of the current literature.

Hugh is active in professional activities. He is a widely sought after reviewer for international

journals and grant applications as well as a member of editorial boards. He has given valuable service to the Entomological Society of Canada in many different roles, including chair of the Membership, Publications, Finance and other committees, member of the Governing Board, and President. His work as membership chair helped to prompt the strategic review that led to reorganization of the Society in 1997-1998. As President at that time he was charged with implementing the major changes in personnel, publication avenues and Society organization that helped to put the ESC back on a sound financial footing after a period of instability.

He also contributes to entomological education at various levels. He taught courses in entomology and other subjects while at Brock University in St. Catharines, but is best known among graduate students for his interest in their work during his visits to entomological centres on behalf of the Biological Survey. On those occasions he also stimulates interest in entomology through seminars and lectures across a wide range of topics. He is a member of the International Advisory Board for a Japanese high-school biology textbook currently in preparation, as well as a contributing author. In support of still younger students of entomology, he is the author of the *Bug Book and Bottle* (1987), aimed at encouraging interest in insects among children five to ten years old. This book has sold more than two million copies in Canadian, US and other editions. By virtue of his friendly, helpful and positive demeanour, Hugh serves as a valuable motivator and catalyst for the cause of entomology, encouraging its pursuit by potential naturalists of all ages.

These outstanding contributions to entomological research and its national coordination, as well as to entomological education and to the ESC, make Hugh Danks eminently qualified to receive the Society's Gold Medal.

La Médaille d'Or Hugh Danks

La Médaille d'Or de la Société d'entomologie du Canada pour une contribution exceptionnelle est remise en 2003 au Hugh Danks du Musée canadien de la nature, Ottawa. Cette décoration est présentée en reconnaissance de ses contributions depuis plusieurs années à l'entomologie canadienne et ce, à plusieurs niveaux: en recherche, synthèse d'idées, éducation, coordination et leadership scientifique.

En 1968 Hugh Danks est venu de l'Angleterre au Canada suite à l'obtention de son doctorat. Depuis, il a travaillé au Canada sauf pour deux ans qu'il a passés aux États-Unis. Depuis le début de sa carrière, Hugh a occupé plusieurs postes à Ottawa, Waterloo, Caroline du Nord et St. Catharines, mais depuis 25 ans, il occupe le poste de directeur de la Commission biologique du Canada à Ottawa. Cet organisme, parrainé conjointement par la SEC et le Musée canadien de la nature, a comme objectif de caractériser la faune canadienne. Ses réalisations sont présentement reconnues mondialement et ce succès est en grande partie attribuable aux efforts et à l'efficacité du travail de Hugh. Au début du projet, il a piloté la mise en oeuvre de la mission de la Commission et continue à exécuter la majeure partie des activités d'organisation, d'initiation et de coordination des activités, mettant une emphase particulière sur les publications scientifiques. Grâce au suivi rigoureux de Hugh, la Commission biologique a gagné une renommée internationale ce qui est tout à l'honneur du Canada et de l'entomologie canadienne.

En plus de se distinguer par son travail à la Commission, Hugh poursuit un programme de recherche et de rédaction scientifique important sur la faune entomologique et ses adaptations. Sa synthèse des informations sur la faune entomologique canadienne a débuté avec la publication en 1979 du livre, *Canada and its Insect Fauna*, un livre que Hugh a conçu, édité et auquel il a contribué. Plusieurs documents sur la faune entomologique canadienne ont paru par la suite, incluant le livre, *Arctic Arthropods*

(1981) et des articles analysant les modèles fauniques canadiens, des zones arctiques et boréales et d'ailleurs. Hugh a contribué à l'édition et à la rédaction des volumes préparés par la Commission sur la faune des lieux humides, des sources et en systématique. Récemment, il a terminé le volume, *Insects of the Yukon* (1997), reconnu en tant que contribution exceptionnelle par ses réviseurs.

Hugh Danks a réalisé plusieurs exploits majeurs en recherche sur les adaptations saisonnières des insectes. Il a rédigé le livre *Insect Dormancy* (1987), hautement respecté et acclamé dans le domaine, édité le volume *Insect Life-cycle Polymorphism* (1994), et continue à produire des articles de synthèse souvent cités. Ces nombreuses publications sont reconnues en tant qu'œuvres de très haute qualité et ceci reflète son habileté remarquable à résumer des sujets complexes tout en intégrant des aspects nouveaux. Ces publications traitent des sujets suivants : les processus de diapause, de tolérance au froid et de cycle de vie. Ces résumés sont de renommée internationale, aussi bien que nationale, et servent présentement de documents de référence pour plusieurs disciplines d'intérêt de pointe. Ceci a contribué à la crédibilité et la renommée de la Commission biologique du Canada et, plus personnellement, à Hugh qui en est le directeur. Il est souvent invité à présenter des articles clés à des symposia internationaux et, à titre d'exemple, il s'est rendu récemment au Japon, en Russie et dans la République tchèque en plus de diverses localités au Canada. Ces invitations et la publication de ces présentations démontre la pertinence et l'impact des écrits de Hugh. Ses publications se démarquent par leur autorité et lucidité et par une connaissance remarquable de la littérature récente.

Hugh est aussi très présent dans des activités professionnelles. Il est sollicité régulièrement pour réviser des articles scientifiques et des demandes de subventions et pour siéger aux comités de rédaction de revues scientifiques. Il a beaucoup contribué à la SEC en servant à différents postes, incluant directeur des comités des membres, des publications, des finances, membre du conseil d'administration et président. Son

travail au sein du Comité des membres a contribué à la création de la révision stratégique de la Société ce qui a mené à sa restructuration en 1997-1998. En tant que président à cette époque, il a dû piloter l'implantation de changements majeurs au niveau du personnel, des axes de publication et dans l'organisation de la Société. Ce travail monumental a permis à la SEC de se remettre sur un solide pied financier suite à une longue période d'instabilité.

Hugh contribue également à la formation en entomologie à plusieurs niveaux. Au début de sa carrière, il a enseigné l'entomologie et d'autres matières durant son séjour à l'université Brock de St. Catherines. Il est plus connu pour son travail auprès des étudiants gradués et pour l'intérêt qu'il porte à leurs travaux dans le cadre de ses visites réalisées au nom de la Commission biologique. Au cours de ces visites, il a su stimuler l'intérêt pour l'entomologie par ses présentations et ses conférences sur des sujets variés. Il est un membre du *International Advisory Board* et co-auteur d'un volume d'école secondaire japonaise présentement en préparation. Son soutien aux jeunes écoliers se démarque par la publication du livre *Bug Book and Bottle* (1987), écrit pour encourager l'intérêt pour les insectes parmi la jeune clientèle de cinq à dix ans. Ce livre s'est vendu à plus de deux millions d'exemplaires au Canada, aux États-Unis et ailleurs. Grâce à son attitude plaisante, aidante et positive, Hugh sert de catalyseur important pour la cause de l'entomologie auprès des naturalistes en herbe de tout âge.

La Société d'entomologie du Canada considère que les contributions importantes de Hugh Danks à la recherche entomologique, à la coordination nationale d'activités entomologiques, à la formation et aux réalisations de la SEC, le qualifient sans aucun doute pour recevoir la Médaille d'Or de la Société en 2003.

C. Gordon Hewitt Award

Heather Proctor

Heather Proctor was born in Edmonton in 1964. Her early interest in nature was fostered by frequent trips to the family cabin and the grandparental acreage, where she spent many hours capturing small creatures from lakes and sloughs. She achieved an undergraduate honours degree in Zoology from the University of Alberta under the guidance of Hugh Clifford. Hugh supervised her honours thesis on the distribution and ecology of water mites in Alberta, and funded a trip to Ottawa where she had her collection verified by Ian Smith. She has remained fascinated with aquatic mites ever since.

In 1986 Heather graduated with a BSc Honours degree and was awarded the Lieutenant Governor's Gold Medal for the highest average in a science honours program at the U of Alberta, plus an NSERC (1967) Scholarship to support her during her MSc and PhD degrees. She did the former at the University of Calgary with Gordon Pritchard as her supervisor, and the latter at the University of Toronto under the joint care of Robert Baker and Darryl Gwynne. Both theses revolved around water mites, the first concentrating on their predatory behaviour and the second on sexual selection. In 1992, Heather took up an NSERC Postdoctoral Fellowship with Lawrence Harder at the University of Calgary. On the advice of her PhD supervisors, she switched her research focus from sperm transfer in mites to pollen transfer in orchids. She completed her post-doc at the University of Alberta, this time in the Department of Entomology with Doug Craig. Her supervisors' advice about orchids appears to have paid off, because in 1994 she received an NSERC Women's Faculty Award at Queen's University in the Department of Biology. Heather worked there for three years on both mites and orchids, taking advantage of the excellent Queen's University Biological Station with its great diversity of shield lakes and bogs.

Foolishly, though, she met and fell in love with David Walter, a mite researcher from Australia, within a few months of arriving at Queen's. Heather and David were married in November



Terry Reis

Heather Proctor sampling leaf litter in Atherton Tablelands in Queen'sland, Australia for mites.

1994 and had an e-mail-based marriage for 2.5 years until Heather finally gave up and moved to Australia to live with her husband. Luckily, she moved straight into a lectureship at Griffith University in Brisbane, just across the river from Dave's place of work at the University of Queen'sland. Heather worked at Griffith for five years teaching a myriad of ecological courses, with the focus of her research being stream- and soil-dwelling invertebrates of subtropical and tropical rainforests. Although the biology of Australia proved to be endlessly fascinating, the government attitude towards scholarship was less inviting. In 2002, Heather applied for, and was very happy to win, a position in the Department of Biological Sciences at her *alma mater*. She moved back to the University of Alberta in July 2002 and is now teaching about freshwater invertebrates, using the text that her honours supervisor Hugh Clifford wrote.

Heather has authored or co-authored 40 papers in refereed journals, two books, and numerous book chapters and consulting reports. Together with Dave Walter she has created interactive keys to mites of Australia that are distributed through CSIRO. She was the president of the Entomological Society of Queen'sland and was recently elected Vice-President of the

Entomological Society of Alberta. Over the years, Heather has supervised and co-supervised 27 honours, MSc and PhD students in Canada and Australia. She is now in the process of populating her lab at the University of Alberta where she intends to augment her research into the biology of soil and water mites with her new-found passion for mites associated with birds.

Prix C. Gordon Hewitt Heather Proctor

Heather Proctor est née à Edmonton en 1964. Ses premiers intérêts pour la nature ont été développés par de fréquents voyages au chalet familial et au domaine de ses grands-parents où elle passait de nombreuses heures à capturer de petites créatures dans les lacs et les marécages. Elle a terminé ses études de premier cycle en Zoologie à l'Université d'Alberta avec comme conseiller le Hugh Clifford. Hugh a dirigé son mémoire de thèse qui portait sur la distribution et l'écologie des acariens aquatiques en Alberta, et il a aussi financé un voyage à Ottawa afin de lui permettre de faire vérifier sa collection par le Ian Smith. Depuis, Heather demeure fascinée par les acariens aquatiques.

En 1986, Heather a obtenu son diplôme de Baccalauréat en science avec mention et s'est méritée la médaille d'or du Lieutenant Gouverneur pour la plus haute moyenne générale en science à l'Université d'Alberta ainsi qu'une bourse du CRSNG (1967) afin de la soutenir pendant ses études de maîtrise et de doctorat. Elle a complété sa maîtrise à l'Université de Calgary sous la direction du Gordon Pritchard et son doctorat à l'Université de Toronto sous la co-direction des Robert Baker et Darryl Gwynne. Ses deux thèses ont porté sur les acariens aquatiques, la première se concentrant sur le comportement de prédation et la deuxième sur la sélection sexuelle. En 1992, Heather a effectué un stage post-doctoral avec le Lawrence Harder à l'Université de Calgary grâce à une bourse du CRSNG. Sous les conseils de ses deux

co-directeurs de thèse au doctorat, elle délaissa sa recherche sur le transfert de sperme chez les acariens pour le transfert de pollen chez les orchidées. Elle a complété ses études post-doctorales à l'Université d'Alberta, mais cette fois au département d'Entomologie sous la supervision du Doug Craig. Les conseils de ses deux directeurs de thèse semblent avoir été judicieux puisqu'en 1994, elle a reçu une bourse du programme d'appui aux professeurs universitaires du CRSNG au Département des sciences biologiques à l'Université Queen's. Heather y a travaillé pendant trois ans à la fois sur les acariens et sur les orchidées, tout en profitant de l'excellente Station biologique de l'Université Queen's où l'on retrouve une grande diversité de lacs et de tourbières protégés.

Quelques mois après son arrivée à Queen's, elle rencontra et tomba en amour avec le David Walter, un chercheur australien spécialiste des acariens. Heather et David se sont mariés en novembre 1994 et ont entretenu une relation maritale par courriel jusqu'à ce que Heather quitte finalement Queen's pour aller vivre en Australie avec son mari. Heureusement, elle obtint un poste d'assistant à l'Université Griffith à Brisbane, juste de l'autre côté de la rivière où travaillait son mari à l'Université Queen's-land. Heather travailla à Griffith pendant five ans, et y enseigna une multitude de cours en écologie focalisant son intérêt sur la recherche des invertébrés des eaux courantes et des sols dans les forêts tropicales et subtropicales. Même si la biologie des espèces australiennes s'avérait fascinante et sans fin, il en allait tout autrement de l'attitude du gouvernement envers l'octroi de bourses. En 2002, Heather appliqua et fut très heureuse d'obtenir un poste au Département des sciences biologiques à son *alma mater*. Elle fut donc de retour à l'Université d'Alberta en juillet 2002 où elle enseigne maintenant les invertébrés aquatiques, utilisant le texte rédigé par son conseiller de mémoire de thèse, Hugh Clifford.

Heather est auteur ou co-auteur de 40 articles scientifiques dans des journaux arbitrés, de deux livres ainsi que de nombreux chapitres de livre et rapports de consultant. Elle a réalisé conjointe-

ment avec Dave Walter des clés interactives des acariens de l'Australie qui sont distribuées par le CSIRO. Elle a été présidente de la 'Entomological Society of Queen'sland' et a été récemment élue vice-présidente de la Société d'entomologie de l'Alberta. Au fil des années, Heather a dirigé et co-dirigé 27 étudiants à la maîtrise et au doctorat au Canada et en Australie. Elle accroit présentement le nombre de collaborateurs dans son laboratoire de l'Université d'Alberta où elle compte développer le secteur de la recherche sur la biologie des acariens retrouvés dans le sol et en milieux aquatiques, avec une nouvelle passion pour l'association acariens-oiseaux.

Criddle Award Rex Kenner

Although Rex has an academic background (PhD in chemistry from Michigan State University), he is a self-taught, amateur entomologist and vertebrate biologist who spends much of his time studying insects and teaching others about them. Since 1995 he has volunteered (up to five days a week) in the Spencer Entomological Museum, Department of Zoology, at the University of B.C. There, his accomplishments included labeling and sorting the 15,000 Diptera specimens of the Foxlee Collection, reorganizing and databasing the Odonata collection, and identifying and curating several families of aquatic beetles. In addition, as part of various research projects, he identified, curated and databased material from several other collections, including the Royal BC Museum, Strickland Museum (University of Alberta) and James Museum (Washington State University). Rex has published a number of papers on the taxonomy and distribution of dragonflies, aquatic beetles and other groups (see attached publication list). The UBC Zoology Department appointed Rex Assistant Curator of the Spencer Entomology Museum (a purely honorary position) in recognition of his volunteer work.

Rex has been active in conservation projects.

When an extensive environmental survey of Burns Bog was undertaken as part of the effort to preserve this extraordinary habitat, Rex was a major player in the aquatic insect component of the study. This not only involved surveys, but specimen identification, report writing and public presentations. He also helped organize aquatic insect surveys of the Terra Nova Natural Area in Richmond and Lulu Island Bog. The latter includes the Richmond Nature Park and adjacent National Defense lands, and the survey was part of a study directed at preserving the DND lands from development. In 1996 and 1997 Rex surveyed Odonata for the B.C. Conservation Data Centre in the Lower Mainland and Peace River region, respectively.

Education plays a large role in Rex's life—he's a born teacher. Public awareness and appreciation of insects have been significant activities. After developing a slide talk on dragonflies, Rex presented it to dozens of audiences, from natural history societies to seniors' groups, from wetland institutes to cultural societies. Newsletters and workshops are full of his programs on dragonflies and the importance of wetlands and aquatic life. He has been an instructor at Science World's summer Science Camp for teachers and has led many marsh and dragonfly programs for the Vancouver Natural History Society and its Young Naturalist Club, for Richmond



Rex Kenner (right) receiving the 2003 Criddle Award from Sandy Smith, 2 November 2003, Kelowna.

Nature Park, Friends of Boundary Bay and many others. He has mentored young students. His reviews of insect books appear frequently in the Vancouver Natural History Society's journal, *Discovery*.

Rex is an active member of the ESBC. He has presented papers at annual meetings, written articles in *Boreus* and the *Journal*, and has run for executive office.

This short summary of Rex Kenner's entomological activity in collections, research, public education and publishing necessarily omits many of his contributions to entomology in British Columbia. Nevertheless, it serves as a solid basis for his receipt of the Criddle Award in 2003.

Prix Norman Criddle Rex Kenner

Titulaire d'un doctorat en chimie de Michigan State, Rex Kenner est amateur de la biologie des vertébrés et entomologiste autodidacte, et s'investit beaucoup dans l'étude et l'enseignement des insectes. Depuis 1995, il est bénévole jusqu'à cinq jours par semaine au Spencer Entomology Museum du département de zoologie à l'Université de la C.-B., en reconnaissance de quoi ce dernier lui a conféré le titre honorifique de conservateur adjoint. Là, il a étiqueté et trié 15 000 spécimens de diptères de la collection Foxlee, réorganisé et enrichi la base de données sur les odonates, identifié et conservé plusieurs familles de coléoptères aquatiques. De plus, il participe à divers projets de recherches, identifie, organise, prépare et met sous forme de base de données l'information d'autres collections, y compris le Royal British Columbia Museum, le Strickland Museum (Université de l'Alberta) et le James Museum (Washington State). Rex a écrit des articles sur la taxonomie et la répartition des libellules, des coléoptères aquatiques et d'autres groupes. (Consultez la liste de publications en annexe.)

Au cours d'une étude approfondie de l'environnement de Burns Bog, entreprise dans

le cadre d'efforts pour préserver cet habitat extraordinaire, Rex a joué un rôle important au niveau de la composante des insectes aquatiques. Il identifie des spécimens, rédige des rapports et fait des présentations auprès du public. Il participe également à l'organisation d'études sur les insectes aquatiques de la réserve naturelle Terra Nova, à Richmond, et du marais de l'île Lulu, lesquels englobent le Richmond Nature Park et les terres du ministère de la Défense nationale, que l'on cherche à protéger contre l'aménagement. Rex réalise des recherches sur les odonates dans le bas Fraser en 1996, et dans la région de la rivière de la Paix en 1997, pour le Conservation Data Centre.

Né enseignant, Rex sensibilise le public aux insectes et les lui fait apprécier. Il présente à des douzaines d'auditoires (sociétés culturelles et d'histoire naturelle, aînés, instituts des zones humides) un diaporama qu'il a créé sur les libellules. Ses programmes sur la libellule, l'importance des zones humides et de la vie aquatique figurent dans des bulletins d'information et des ateliers. En plus de diriger le cours du camp estival de sciences pour enseignants à Science World, il a mené de nombreux programmes sur les marais et les libellules pour la Vancouver Natural History Society et le Young Naturalist Club, ainsi que pour le Richmond Nature Park, les Friends of Boundary Bay et beaucoup d'autres groupes. Il a conseillé de jeunes élèves. La Vancouver Natural History Society souvent publie son appréciation de livres d'insectes dans la revue *Discovery*.

Membre actif de l'ESBC, Rex a présenté des articles à des réunions annuelles, en a écrit pour *Boreus* et le *Journal* et s'est porté candidat au conseil d'administration.

Ce court résumé présente une partie des nombreuses contributions de Rex Kenner à l'entomologie, que ce soit dans les collections, en éducation, dans la publication ou la recherche. Il est clair que Rex mérite bien le prix Norman Criddle 2003.

ESC Fellow John Arnason

John Thor Arnason est professeur au département de Biologie de l'Université d'Ottawa depuis 1978. Chercheur et scientifique aux larges perspectives, il s'est bâti une solide réputation dans le domaine de l'écologie chimique et de la phytochimie, contribuant ainsi à une meilleure compréhension des relations plantes-insectes.

John Arnason has a natural gift for making people from different disciplines work together, which largely explains his multi-national collaborations, and the great success he has enjoyed in his research endeavours.

He has investigated the phytochemical factors which impart resistance to corn insects, and has also looked at the insecticidal effects of numerous plant compounds, particularly from tropical plants. His work has led to a better understanding of the mode of action of phototoxic compounds and their efficacy against mosquito lar-



John Thor Arnason in Belize where he has collected botanical insecticides from tropical plants and land races of maize with insect resistance.

vae and plant feeding insects. His current work focuses on other phytochemicals with both insecticidal and synergistic activity. Professor Arnason also has a major interest in medicinal plants.

Gold Medal for Outstanding Achievement in Canadian Entomology and The C. Gordon Hewitt Award

Members of the Society are invited to nominate individuals whom they regard as eligible for these awards (for the year 2004). The information should include a statement of relevant achievements (three pages maximum) and a *curriculum vitae*. Nominations should be sent in an envelope marked "Confidential" to the following address:

Achievement Awards Committee
Entomological Society of Canada
393 Winston Avenue, Ottawa, Ontario
K2A 1Y8

and should comprise: (1) the name and address

of the nominee(s); (2) a statement of relevant achievements; and (3) the name of the nominator and at least one seconder. To be considered by the Achievement Awards Committee, nominations must bear a postmark no later than **28 February 2004**.

The following conditions govern these awards:

1. Outstanding contributions should be judged on the basis of

(a) superior research accomplishment either as a single contribution or as a series of associated endeavours and which may be either in entomology or a related field where the results obtained are of great consequence; or (b) dedicated and fruitful service in the fields of Society affairs, research, administration or education.

2. No more than one of each award shall be granted per year but, where circumstances warrant, more than one individual may be mentioned in a single award.

3. Recipients need not be members of the So-

ciety providing their contribution is judged to have a major impact on entomology in Canada.

4. The award may be granted on different occasions to the same recipient but for different contributions to entomology in Canada.

5. Nominees for the C. Gordon Hewitt Award must be less than 40 years of age throughout the calendar year in which the award is both announced and awarded.

Médaille d'Or pour Contributions Exceptionnelles à l'Entomologie Canadienne et Prix C. Gordon Hewitt

La Société invite les membres à lui faire parvenir les noms des personnes qu'ils considèrent éligibles à ces deux prix. L'information devrait comprendre un énoncé pertinent des accomplissements (three pages maximum) et un *curriculum vitae*. Veuillez envoyer vos nominations (pour l'année 2004) au:

Comité des décorations

La Société d'entomologie du Canada
393 Winston Avenue, Ottawa, Ontario
K2A 1Y8

dans une enveloppe portant la mention "Confidentiel". La nomination doit contenir: (1) le nom ainsi que l'adresse du (ou des) candidat(s) désigné(s); (2) un compte rendu des réalisations pertinentes; et (3) le nom du parrain et celui d'au moins une deuxième personne appuyant la mise en nomination. Pour être acceptées par le Comité, les nominations devront porter un sceau postal d'au plus tard le **28 février 2004**.

Les conditions suivantes régissent le choix des récipiendaires de ces prix:

1. Les contributions exceptionnelles devraient être jugées dans le contexte; (a) d'un accomplissement hors pair en recherche, soit comme résultat d'une seule contribution ou d'une série d'efforts reliés et ayant abouti à des résultats de

grande valeur. Cette recherche aura été réalisée en entomologie ou tout autre domaine connexe; ou (b) de service dévoué et fructueux au profit de la Société, de l'administration de recherche, ou de l'éducation.

2. Chaque prix ne sera décerné qu'une seule fois par année. Cependant, lorsque les circonstances le justifient, plusieurs personnes peuvent collectivement devenir récipiendaires d'un prix.

3. Les récipiendaires ne doivent pas nécessairement être membres de la Société pour autant que l'on juge que leur contribution à eu un impact majeur sur l'entomologie au Canada.

4. Chaque prix peut être décerné plus d'une fois au même récipiendaire mais pour différentes contributions à l'entomologie au Canada.

5. Le candidat désigné pour le prix C. Gordon Hewitt doit être âgé de moins de 40 ans pour toute la durée de l'année au cours de laquelle le prix est annoncé et décerné.

Les membres de la Société sont invités à désigner certains individus comme Associés ou comme Membre honoraire.

Membres honoraires de la Société d'entomologie du Canada.

Les Membres honoraires auront contribué de façon exceptionnelle à l'entomologie. Leur nombre ne doit pas dépasser dix, ou 1 % des membres actifs de la Société. Les candidatures doivent être appuyées par au moins cinq membres actifs ou spéciaux, et soumis au Comité des prix de distinction, aux bureaux de la Société, avant le **28 février 2004**. La Société comprend en ce moment dix membres honoraires, donc toute nomination sera retenue jusqu'à ce qu'une place soit libre.

Associés de la Société d'entomologie du Canada.

Les Associés auront contribué de façon exceptionnelle à l'entomologie, et leur nombre ne doit pas dépasser 10 % des membres actifs de la Société. Les candidatures doivent être appuyées par au moins quatre membres, actifs ou spéciaux, et soumis au Comité des prix de distinction, aux bureaux de la Société, avant le **28 février 2004**.

A. Murray Fallis 1916-2003

Professor Emeritus A. Murray Fallis passed away in his 97th year on 8 July 2003. Murray Fallis was born on 6 January 1907 in Harriston, Ontario, where he received his elementary school education. Subsequently, he attended teachers' college and taught for two years before enrolling at the University of Toronto where he received an Honours BA. He was awarded his doctorate in 1933 based on a study of parasites of lambs.

Following graduation, Murray accepted a fellowship at the Ontario Research Foundation where he continued his research on various helminth parasites. In 1947, he moved to the School of Hygiene, and one year later was appointed Head of the newly formed Department of Parasitology. Fallis and other members of his faculty, including Ray Freeman, Susan McIvor, Ken Wright and Sherwin Desser were cross appointed to the Department of Zoology in which their graduate students were registered. Murray established an undergraduate and graduate scholarship for zoology students engaged in research on parasitic organisms.

Under his inspired leadership, parasitology flourished at the University. Together with faculty and students, Murray conducted pioneering research on the biology of parasites of wildlife. He and Ray Freeman taught medical parasitology at the School of Hygiene. Many prominent parasitologists visited the department for varying periods of time to conduct research and participate in teaching.

For almost 30 years, Murray and his graduate students studied the blood parasites of birds at the Wildlife Research Station, in Algonquin Park, Ontario. They discovered the role of ornithophilic simuliids and ceratopogonids in the transmission of *Leucocytozoon* and *Haemoproteus* species to birds and elucidated the development and pathogenesis of these parasites in their avian hosts and arthropod vectors. Other studies were directed towards the behaviour of these



biting flies and their role in the transmission of avian trypanosomes and the filarial worms of amphibians. Murray's research afforded him the opportunity to travel widely. Among the exotic locales he visited were Puerto Rico, Guatemala, Israel, Iran, New Zealand, Norway and Africa.

Murray Fallis was thoughtful, caring and generous, an inspiring mentor who instilled in his students not only the fascination of research, but the value of leading moral and ethical lives. He derived much satisfaction watching his students supervise their own, and lived long enough to meet his academic grandchildren, who are continuing his legacy.

Following his retirement in 1972, Murray Fallis continued to pursue his interest in the history of parasitology in Canada. He wrote several articles and his book, *Parasites, People and Progress: Historical Recollections*, was published in 1993.

Murray received many honours and was elected Fellow of the Royal Society of Canada in 1958, in recognition of his achievements in research and education. He served as President of the Royal Canadian Institute, President of the Ontario Society of Biologists, Vice-President (1970) and President (1979) of the American

Society of Parasitologists, and President of the Fifth International Congress of Parasitology (1982). Murray also served the University of Toronto with distinction, as Associate-Dean of the Graduate School and a member of the Governing Council.

Murray was a man of many interests and he retained his active lifestyle in retirement. In addition to his historical research and writing, he crafted fine wooden toys for his grandchildren and refinished old furniture that he enjoyed purchasing at country auctions. As well, he produced excellent maple syrup on his farm, Hilly Haven, in Caledon East, well into his eighties.

Murray was predeceased by his beloved wife, Ruth, and is survived by his three sons and their extended families. He will be sorely missed by his family and many friends and colleagues around the world. His passing marks the end of a golden era of parasitology in Canada.

Sherwin Desser
Toronto, Ontario

Erratum

The year that Jim Hudson was born is 1940 not 1925 as stated in the last issue (*Bulletin of the ESC* 35(3): 144). Thanks to Martha Farkas for noting this error.



Henri Goulet

Badister neopulchellus Lindroth, a carabid beetle. Photo taken from the ESC web site photo archive http://esc-sec.org/photo_archive/photo_archive.htm

Recently deceased Compiled by Ed Becker

Lois Smith died in Ottawa on 20 March 2003, aged 73 years. Lois worked for 11 years (1959 to 1970) at the old Experimental Research Institute.

Hartley Fredeen, nearly 83, died on 10 September 2003. He was the husband of Margaret, 410 Leslie Ave., Saskatoon SK, S7H 2Z1, 306-374-2794. He spent his career at the Research Station, Saskatoon.

Bob Hill, former technician with apiculture (Agriculture Canada) died on 20 September 2003. Survived by his wife for more than 50 years and best friend, Eileen, 27 Indian Rd., Nepean ON, K2G 1N5, 613-224-5066. Bob had survived three major heart attacks in years past, but succumbed to cancer. He was in the hospital only 10 days or so.

Dorothy Morgan, age 87, died as a result of a car accident in early October 2003. She was the wife of Cecil Morgan, R. R. #4, Site 100, Summerland BC, V0H 1Z0, 250-494-1531. The information was received from Muriel Proverbs.

Ann Vockeroth, wife of Dick Vockeroth, 32 Birch Ave., Ottawa ON, K1K 3G6, 613-746-3132, died on 28 October 2003, a few days short of her 79th birthday. She had not been well in recent years.

Catherine Smith, wife of Maurice Smith, 22 Sprucehaven Ct., Guelph ON N1G 4X7, 519-822-7529, died on 1 November 2003. She had been in a nursing home for the past two years.

Virginia Pickett, widow of Allison Pickett, 789 St. George St., Annapolis NS B0S 1A0, died on 27 November 2003 at age 87. Condolences can also be forwarded to 1012@alderwoods.com

Smaller Orders of Insects of the Galapagos Islands, Ecuador: Evolution, Ecology, and Diversity. Peck, SB. 2001. 278 pp. National Research Council Research Press, Ottawa, Ontario, Canada. ISBN 0-660-18284-X, CAN\$ 39.95, other countries US\$ 39.95, paper.

The Galapagos Islands, 1000 km off the coast of Ecuador, are perhaps the most pristine remaining tropical oceanic archipelago. The islands have been colonised over their 3-4 million year existence with the oldest islands, San Cristobal and Espanola available for between 3-4 million year to the present and younger islands such as Santa Cruz and Floreana being available from 0.7-1.5 million year ago. The youngest such as Isabela, and Fernandina may be less than 0.7 million year old. If Charles Darwin's visit in 1835 started the collection and investigation of the invertebrates then it is clear that Stewart Peck's collecting visits, starting in 1985 (the 150th anniversary of Darwin's visit) may provide the answer to the complete inventory of the insects. Peck had long wanted to visit the islands and had thought the fauna comparatively well-known, until his visit in 1985. He then initiated a larger research project extending over several field seasons from 1985 to 1996. All major islands and most minor islands were visited and a range of sampling methods employed. Over 2000 sampling stations were established and several sampling techniques used at each station. Peck now considers that the fauna is 90-95% collected (but not yet fully worked on). This book is the first step in a complete inventory of this relatively impoverished fauna - around 2200 species are known. It covers the smaller orders, and further volumes will cover the larger groups such as Coleoptera, Diptera, Hymenoptera and Lepidoptera. However, this volume is far more than an annotated list of insects. Each chapter is provided with a good bibliography. The first 100 pages provide a very useful background to the islands, the insect fauna, and the means by which it has arisen. The Introduction briefly covers the islands, their geological history, climate, biological zones, the insects and how many species there may be

present. Comparisons are made with other islands. Chapter 2 documents information sources about Galapagos insects and also provides details of the remarkable sampling regime that Peck, his students and collaborators carried out. Chapter 3 discusses the processes by which the insects arrived in Galapagos and where they may have originated. Chapter 4 discusses the evolution of the insect fauna once it has arrived - in Galapagos there are relatively few endemic genera and relatively little speciation within each colonising genus. There then follows a chapter dealing with patterns of distribution covering such topics as island area, elevation, island age, vegetation zonation in relation to insect diversity.

The taxonomic chapters occupying the remaining 178 pages provide species lists annotated with a list of references and summary of the distribution (both within and outside of Galapagos) and bionomics. Keys are provided to many groups and species (but not all). The only weakness in these sections, and some might consider it a major weakness, is the almost total lack of illustrations (only one plate in the Odonata chapter) to support the keys. The user is still left needing to refer to other literature for illustrations. It would have been an even more remarkable achievement to have provided illustrative keys to all groups! Peck does not claim to provide an identification handbook but does provide a framework for others to use and in this he succeeds very well. In practice there must be relatively few requiring identification of Galapagos insects, but many who wish to have some reference to the fauna. The first part of the book alone would make it an important reference source for all those interested in island biogeography.

M.R. Wilson
Cardiff, UK

Minutes of the 53rd Annual General Meeting

4 November 2003

Grand Okanagan Resort and Conference Centre

Kelowna, B.C.

President S. Smith called the meeting to order at 4:53 PM. Sixty-four members were present.

- 1. Notice of Meeting.** Notices of the meeting were published in the March and June 2003 issues of the *Bulletin* (Vol. 35).
- 2. Proxies.** C. Vincent acted as proxy for N. Larocque (SEQ).
- 3. Additions to the Agenda and Approval of the Agenda.** P. MacKay moved and G. Boivin seconded that the agenda be accepted. Carried.
- 4. Deceased Members of the Entomological Community.** R. West thanked Ed Becker who kindly writes letters of condolence to the families of the deceased on behalf of the Society. A moment of silence was observed in memory of the following members of the Entomological Community who passed away during the past year: Bill Nelson, Beulah Webb, Albert Winmill, Hazel Gushul, Beulah Salt, Al Downe, Arthur Ghent, Joyce Gardiner, André Beaulieu, Daphne Fairey, Cal Sullivan, Maurie Taylor, Stuart Brown, Antony Downes, Fred Urquhart, Lucien St. Laurent, Lois Smith, Hartley Fredeen, Murray Fallis, Bob Hill, Ethel Fox, Paul Bouchard, and Doug Ferguson.
 - 4.1. Senior Entomologists Newsletter.** Ed Becker reminded members to keep him informed of any recent deaths in the entomological community. This information is published regularly in the *Senior Entomologists' Newsletter*.
- 5. Minutes of the 52nd Annual General Meeting.** Minutes of the 52nd Annual General Meeting were printed in the December 2002 issue of the *Bulletin* (Vol. 34). H. Danks moved and P. Dixon seconded that the minutes be accepted. Carried.



Bill Riel

Rick West enjoys breaking in another President at the 53rd Annual General Meeting of the ESC, 4 November 2003, Kelowna B.C., from left to right; Rick West (Secretary), Charles Vincent (President), Sandy Smith (Past President), Bob Lamb (First Vice-President), Dan Quiring (Second Vice-President).

6. Business Arising from the Minutes. There was no business arising from the previous minutes.

7. Report from the Governing Board. President S. Smith presented a report on behalf of the Governing Board. The report from the Governing Board and regular updates are published in the *Bulletin*. This particular report will be published in the December, 2003 *Bulletin* (Vol. 35).

7.1. Changes to Standing Rules . K. MacKenzie moved and J. Sweeney seconded that the following changes to the Standing Rules be approved:

I. Membership

I.1(b) Student Members, shall upon request, receive *The Canadian Entomologist* either as print copy or online access for twenty dollars (\$20.00) plus GST or HST, or as both print copy and online access for an additional \$10.00.

Rules I.5(a) I.5(b) replaced Rule I.5 as follows:

I.5(a) Regular members shall receive *The Canadian Entomologist* either as print copy or online access as part of the annual dues, or as both print copy and online access for an additional \$10.00.

I.5(b) Regular Members shall receive the *Bulletin of the Entomological Society of Canada* as part of the Annual Dues.

XII.3 Publications

The annual subscription rate for *The Canadian Entomologist* shall be one hundred and seventy-five dollars (\$175.00 Cdn), plus G.S.T., for all other subscribers one hundred and eighty dollars (\$180.00 U.S), (or \$240.00 Cdn.) effective 1 January 1989. (original wording).

The annual subscription rate for *The Canadian Entomologist* shall be two hundred dollars (\$200.00 Cdn), plus G.S.T. or H.S.T, in Canada and two hundred dollars (\$200.00 USD) elsewhere for either print copy or online access and three hundred dollars (\$300.00 Cdn) plus G.S.T or H.S.T. in Canada and three hundred dollars (\$300.00 USD) elsewhere for both print copy and online access. An online subscription represents a contiguous campus located within the same city and reporting to the same administrative body. An annual subscription rate for extended institutional licenses may be negotiated by the Treasurer in consultation with the Finance Committee. (new wording). Carried. **Action: R. West, R. Footitt**

8. Auditor's Report. G. Gibson presented the Auditor's Report for 2002 as published in the June 2003 issue of the *Bulletin*. T. Shore moved and P. Dixon seconded that the Auditor's report be accepted. Carried. No action required.

9. Elections Committee Report. R. West read the Elections Committee report. Those elected were: Dan Quiring as Second Vice-President; and Rosemarie De Clerck-Floate as Director-at-Large.

10. Installation of Officers. President Smith called on B. Roitberg to escort D. Quiring, Second Vice-President, to the dais then congratulated C. Vincent as incoming President of the Entomological Society of Canada. The new President assumed office and thanked the Members for the honour of being elected President.

11. Presentation of Service Awards. President Vincent thanked S. Smith, outgoing President for her service to the Society and presented her with a service award. President Vincent then thanked Jean Turgeon, outgoing Editor of *The Canadian Entomologist* and Dan Johnson, outgoing Editor of the *Bulletin*, for their service to the Society and presented them with service awards.

12. Appointment of Auditor. G. Gibson moved and E. Becker seconded that McCay, Duff, and Company be retained as Auditors for 2004. Carried. **Action: G. Gibson.**

13. Resolution. At the request of President Vincent, H. Danks presented the following resolution on behalf of the Entomological Society of Canada: encouraged all members to communicate with him, the board and Societal committees on any aspects of the workings of the Society stressing that open dialogue was very important. He also indicated that a special effort to continue to improve the bilingual status of the Society will be made. D. Giberson asked the membership for their input in planning the 2004 Joint Annual Meeting with the Acadian Entomological Society. President Vincent adjourned the 53rd Annual General Meeting at 5:40 PM following a motion by J. Sweeney seconded by H. Phillip.

13.1 Thanks to Organizing Committee:

Whereas the Entomological Society of Canada has met jointly with the Entomological Society of British Columbia at the Grand Okanagan Resort and Conference Centre, Kelowna, British Columbia, November 1-5, 2003; and

Whereas there has been a full and interesting meeting of lectures, symposia, and papers; and

Whereas the meeting has been planned with care and concern for those attending; and

Whereas there has been ample opportunity for social interaction and visits to Kelowna and surrounding areas;

Be it resolved that the Entomological Society of Canada express its sincere thanks to the Organizing Committee for their hard work and skill in arranging a worthwhile and entertaining program; and

Be it further resolved that the Society thank the Organizing Committee and meeting contributors for their generous assistance; and

Be it further resolved that the Society express its thanks to the Management and Staff of the Grand Okanagan Resort and Conference Centre for their courteous assistance during the Meeting."

The resolution was accepted with a round of applause. **Action: R. West**

14. New Business

15. Notice of 54th Annual General Meeting. The 54th Annual General Meeting will be held 15-18 October 2004 with the Acadian Entomological Society at the Rodd Charlottetown Hotel in Charlottown, P.E.I. Further notices for the meeting will be published in the March and June 2004 issues of the *Bulletin* (Vol. 36).

16. Adjournment. Prior to adjournment President Vincent

Action Items From Annual Meetings of the Governing Board and Membership

By Rick West, Secretary

Governing Board Meeting, Kelowna, B.C., 1 November 2003

Treasurer

G. Gibson gave notice of his intention to resign as Treasurer effective at the end of the outgoing board meeting in 2004. An ad hoc committee will be appointed to select a replacement by 31 January 2003 and the vacancy will be announced in the *Bulletin* and website. Carried. **Action: C. Vincent.**

ESC Headquarters

The new e-mail address of the Society is entsoc.can@bellnet.ca and this will be posted on the website, and printed in the *Bulletin* and journal. **Action: B. Lyons, P. Fields, J. Turgeon.**

Status of the Scholarships and Research Travel Award as a Charities

The eligibility status of all current ESC scholarships and travel research grant for 2004 needs to be changed to reflect the original wording in which the ESC Scholarship Fund was officially registered in 1974. **Action: D. Gillespie.**



Bill Riel

The Governing Board of the Entomological Society of Canada 2002-2003 enjoying the sun in Kelowna, B.C., 1 November 2003, top row; Dave Gillespie (Director-at-Large, 2005), Patrick Bouchard (Finance Chair), Jon Sweeny (Director-at-Large, 2004), Jean Turgeon (Editor-in-Chief, *The Canadian Entomologist*), Owen Olfert (Director-at-Large, 2003), mid-row; Charles Vincent (First Vice-President), Bob Lamb (Second Vice-President), Patricia MacKay (ESM), Barry Lyons (Webmaster), Greg Pohl (ESA), bottom row; Terry Shore (ESBC), Sandy Smith (President), Bernie Roitberg (Past President), Rick West (Secretary), Tonya Mousseau (Student Representative) and Gary Gibson (Treasurer).

The Canada Customs and Revenue Agency will be contacted to determine whether or not the ESC Scholarship fund can: Establish award(s) to assist students in furthering their education in entomology through attending entomological scientific conferences in order to present the results of their research to the scientific community and to learn of current discoveries in entomology; Whether such (an) award(s) can be restricted to attendance of the Annual Meeting of the Entomological Society of Canada; Whether eligibility requirements for ESC Scholarship Fund scholarships and awards can be limited to student members of the ESC. **Action: P. Bouchard**

Scientific Editor

Electronic access to the journal will shortly originate from the ESC web site. **Action: J. Turgeon, B. Lyons.**

Bulletin

An ad hoc committee to select an Assistant *Bulletin* Editor whose duties are to include; to aid in finding new material for publication, taking charge of some columns and proof-reading galleys will be appointed. **Carried: Action: C. Vincent.**

Only actions arising from the minutes of the Board and Annual meetings will be published, in order to reduce the number of pages in the December *Bulletin*. Minutes and reports from these meetings will be posted in the member's area of the website. **Action: R. West, B. Lyons.**

Mailing as a serial publication will reduce costs by 800.00. Further ways of reducing costs including text formatting and size will be explored before using advertising. A new printer for the *Bulletin* is being sought. **Action: P. Fields.**

Web Site

C. Vincent will ask a colleague (Martin Trudeau) to assist in upgrading the French content on the web site. **Action: C. Vincent.**

Links need to be added to order *Memoirs*, subscriptions and the *Diseases and Pests of Vegetable Crops in Canada*. B. Lyons needs to be provided with Memoir and DPVCC order forms in pdf format (**Action: Marketing Committee**), and a subscription form (**Action: G. Gibson**).

G. Gibson will contact a colleague (Eric Maugh) to advise members when new issues of *The Canadian Entomologist* is online. **Action: G. Gibson.**

Bylaws, Standing Rules, Committee Guidelines will be sent to B. Lyons for posting in the members area of the web site. **Action: R. West.**

Publications Committee

The Publications Committee in consultation with the Scientific and *Bulletin* Editors and Finance Committee will re-examine the format for *The Canadian Entomologist* and the *Bulletin* and recommend changes Carried. **Action: A.. Carroll.**

J. Turgeon will contact NRC Press to discuss any potential problems with diacritic marks. **Action: J. Turgeon.**

A letter will be prepared for sending from the ESC office to persons wishing to copy or reprint articles which have appeared in the journal advising them that the Society does not own copyright and that they must contact authors directly. Action: S. Smith. S. Devine will distribute the letter from the ESC office as required. **Action: S. Devine.**

A document, outlining conditions of use for downloading documents and photos from the web site, will be prepared by April 2004. **Action: A. Carroll.**

A journal subscription renewal form was produced by G. Gibson, however, this needs to be reviewed by the Publications and Marketing Committees before the meeting of the Executive Council

in April 2004, to emphasize the value-added benefits of receiving the journal online. **Action: A. Carroll, O. Olfert.**

Consultations have been initiated and recommendations regarding the maintenance of Entomological Information and Databases by Members on the Web site will be delivered in 2004. **Action: A. Carroll, R. Lamb.**

Currently up to 4% of page charges may be waived for authors without institutional funding and covered by the C.P. Alexander Fund. The Publications and Finance Committees are charged with reviewing this policy. **Action: A. Carroll and P. Bouchard.**

Bilingualism Committee

C. Vincent will contact the Bilingualism Committee and offer his assistance to ensure that the societal documents are translated without further delay. **Action: C. Vincent.**

Heritage Committee

Photos sent from the Society hosting the annual meeting should be accompanied with the names of the people photographed. This instruction will be added to the Annual Meetings document. **Action: T. Shore.**

Membership Committee

A summary of the membership survey will be sent to B. Lyons for posting on the website. **Action: J. Sweeney.** The survey of nonmembers should identify ways to encourage amateur entomologists (and others) to join the Society. Contacting natural history societies may improve the data base of survey targets. **Action: J. Sweeney.**

S. Smith will contact the Professional Institute of the Public Service of Canada which is in negotiation with Treasury Board for a new contract with government scientists. **Action: S. Smith.**

The Bylaws, Rules and Regulations Committee is charged, in consultation with the Membership Committee, to review the recommendations and determine whether or benefits as suggested by the Membership Committee can be given to Honorary Members without changing the bylaws. **Action: B. Footitt, J. Sweeney.**

Student Awards Committee

The terms of the Conference Travel Award have been drafted, but further work is needed before the award is activated. **Action: R. De Clerck-Floate.**

Science Policy Committee

A primer for new directors will be drafted by the Secretary for posting on the web site. **Action: R. West.**

Drafts of documents prepared by AAFC giving permission to use AAFC photos on the web site were circulated to the board. An appropriate disclaimer incorporating AAFC conditions of use will be posted on the web site. **Action: C. Vincent, B. Lyons.**

The Science Policy Committee was charged with contacting the administrators of the National Science Fair to identify areas where the Society could contribute (e.g., by offering a prize, providing judges) and increase its visibility with the general public. **Action: R. Lamb.**

C. Vincent will write a letter informing CARC that the ESC does not intend to join their organization. **Action: C. Vincent.**

Student Affairs

Posting student CVs, abstracts and other information on the web site and a mechanism for select-

ing a chair (and representative to the board) will be discussed during the student meeting on 4 November 2003. Retaining ESC membership after graduation may also be discussed. **Action: T. Mousseau.**

Marketing Committee

A decision needs to be made on reprinting the French softcover edition of the DPVCC book and the Canadian Phytopathological Society (CPS) wants to know what the long term vision for the book is with respect to reprinting, updating and partnership. **Action: O. Olfert.**

The French version, if reprinted, should not be different from the English version being sold CPS. **Action: O. Olfert.**

In addition to the marketing committee determining the exact cost of reprinting the French version they should determine, based on recent annual sales, how many years of sales of the English version remain in stock. **Action: O. Olfert.**

The costs of print hard covered and soft covered French editions and rebinding existing soft-covered English versions to hard covered versions needs to be determined. **Action: O. Olfert.**

The ESC and CPS marketing committees will draft a letter to St. Joseph's Printing which bought out M.O.M. Printing regarding the safety of the book text and photographic plates and interest in future reprinting. **Action: O. Olfert.**

A PowerPoint presentation of ESC activities will be posted on the web for use by members. **Action: O. Olfert, B. Lyons.**

Recommendations will be developed to safeguard from duplication electronic data temporarily copied on computers used in conference presentations. **Action: T. Shore.**

Fundraising Committee

Companies selling entomological products and services will be asked to sponsor ESC activities. The Fundraising Committee will work in cooperation with the fundraising committee of the AES in soliciting funds from potential sponsors. **Action: N. Bostanian, D. Giberson.**

The annual meeting document should indicate in its guidelines that the hosting society contact the Fundraising Committee Chair to identify sponsors and coordinate solicitations, if desired. **Action: T. Shore.**

Biological Survey of Canada (Terrestrial Arthropods)

Proper identification and profile of BSC symposia at ESC annual meetings should be sought and added to the ESC meeting document. **Action: T. Shore.**

Annual General Meeting, Kelowna, B.C., 4 November 2003

Appointment of Auditor McCay, Duff, and Company will be retained as Auditors for 2004. Carried. **Action: G. Gibson.**

Governing Board Meeting, Kelowna, B.C., 4 November 2003

Student Conference Travel Award

Criteria for the Student Conference Travel Award will be determined by the Students Awards Committee in consultation with the Student Affairs, Finance and Bylaws, Rules and Regulations Committee. **Action: R. De Clerck-Floate, T. Mousseau, R. Footitt.**

Scholarships

In order to qualify for charitable status, the eligibility for the Postgraduate Scholarship and Student Travel Grant (now Student Travel Scholarship) has been widened to include students who are not members of the Society. However, students must still attend a post-secondary educational institution in Canada and work in an aspect of research on arthropods to be eligible for ESC scholarships. The revised statement of eligibility for the Student Scholarships will be reviewed with Revenue Canada prior to announcements in the *Bulletin* and on the web site. **Action: G. Gibson.**

Budget

The budget for 2004 will be revised by the Treasurer to incorporate allowances for the new Student Conference Travel Award and sent by the Secretary to the Board for approval by e-mail ballot. Carried. **Action: G. Gibson, R. West.**

Summary of Committee Reports

By Paul Fields, *Bulletin* Editor

The full report version of the committee reports are available on the Entomological Society of Canada's web site <http://esc-sec.org/>. Committee Chairs and members for 2002-2003 were published in the March *Bulletin* 35(1) 14-15, see page 226-227 for current Committee Chairs and members.

Treasurer (Gary Gibson)

The Auditor's Report was published in the June *Bulletin* 35(2) 108-119. Although the audit is a difficult document to decipher relative to actual net worth of the Society from year to year, the bottom line is that the Society has regained a sound financial basis. The General Fund has been operating a net profit since 1998, reversing net losses since 1989 (total losses during the period: \$164,865). A word of caution however, the 2004 budget to be submitted calls for \$11,150 net operating deficit and only \$100 net profit for the Society in 2004. The 2002 audit of Societal finances showed a net increase of Societal assets of \$34,302, which compares to a net increase of \$69,782 in 2001 and \$65,867 in 2000. Comparison of the audit and budget reveals budgetary estimates were generally accurate. Revenue declined somewhat compared with 2001, for both regular membership (\$960) and subscriptions (\$3,080), which continues a trend of several years. The statement of expenditures shows Societal expenses being kept under control, with the only worrisome increase in recent years being cost of the *Bulletin* to members. These costs were \$20,487 in 2002, compared with \$11,313 in 2000 (81% increase, representing 64% of all membership fees). The Building Fund showed a net loss of \$7,709, but only \$2,739 excluding amortization for a monthly average of \$228.25 to operate Headquarters. The Scholarship Fund recorded net revenue of \$3,955, though interest revenue (\$6,930) remains a concern because it is less than the annual average amount awarded (\$8,500).

Gary Gibson has been Treasurer since 1996, he requests to resign in October 2004, and the Board select a replacement as soon as possible to ensure a smooth transition.

Finance Committee (Patrick Bouchard, Chair)

The only notable difference in expenditures between the 2003 and 2004 budgets is the cost of publication of the *Bulletin*. These costs have increased significantly in recent years and the Finance Committee believes that the Publications Committee should reassess the format / contents of the *Bulletin* to ensure the delivery of all necessary information at a reasonable production cost. On the

bright side the online availability of the *Bulletin* should reduce the mailing and handling costs in the future.

One of the challenges for the next year will be to assess the effects of having *The Canadian Entomologist* available online on the revenues from subscriptions, etc. The contract with the NRC for electronic format and access of *The Canadian Entomologist* expires at the end of 2004, and will have to be renegotiated next year. The exchange rate from US to Canadian dollars also has the potential to affect the Society revenues since a majority of subscriptions are paid in US dollars. The predicted revenues in the 2004 budget are based on current currency conversion rates.

Publications Committee (Allan Carroll, Chair)

The most difficult issue confronting the Committee during that time was copyright (see December 2002 *Bulletin*). Although a policy has recently been established to obtain an author's permission to reprint future publications, the issue has not been resolved for past publications. As a consequence, all requests for permission to reprint materials published prior to 2002 for which we do not have an explicit licensing agreement with the authors have been, and will continue to be, deferred to the President. The Committee Chair strongly urges the Executive to acquire legal advice with respect to copyright of past publications.

There was some discussion within the committee over the format of the *Bulletin* and *The Canadian Entomologist*. In recent years many scientific publications have adopted a double-column page format (e.g. NRC journals). Since it has become the standard, printing in double-column format has become less expensive than the single-column format of the common look of the ESC. While acknowledging the value of tradition, given the high cost of printing and the potential savings associated with a change in format, perhaps a reassessment of the ESC common look would be worthwhile. The Committee Chair asks the Executive to re-examine the common look of the ESC publications with the potential of adopting a new format.

A draft form for the copyright and license to publish form for the *Bulletin* similar to the one in use by *The Canadian Entomologist* has been written. A-Conditions-of-Use form for material posted on the web site and a new subscription renewal form for institutions have not been completed. Fourteen books were received for review, eight book reviews were published in the first three issues of the 2003 *Bulletin*.

Scientific Editor (Jean Turgeon)

The number of submissions was much lower in 2002 (122) than 2001 (150) and 2000 (184). Note that in 2000, there were 31 submissions for a special issue Borden Tribute. As of 21 October 2003, there were 95 papers submitted in 2003. As in previous years, the submissions in 2003 are predominantly from Canada (52%) and the United States (21%), although since 1998, the number submitted from Canada has declined, and those from the USA increased. The new structure of the Editorial Board has not affected the time, about three months, between reception of a manuscript by the Editor-in-Chief to evaluations sent to authors. The proportion of suitable submissions has remained approximately 55% over a number of years, with the rest of the papers being split equally between, unsuitable re-review and unsuitable.

The cost of handling the manuscripts in 2002 was \$3900, which covered the cost of office supplies, postage and services of an office assistant. Some costs were covered by Natural Resource Canada. Two new Associate Editors were appointed in 2002: Johanne Delisle, Canadian Forestry Service, Quebec, and Reddy Padi, University of Kentucky.

In February 2003, the first electronic edition of *The Canadian Entomologist* appeared. In 2004, authors will be requested to provide the Authorisation to Publish/ Copyright Assignment form at the

time of submission to allow electronic publication.

Richard Ring will assume the post of Editor-in-Chief as of 1 January 2003.

Bulletin Editor (Paul Fields)

The printing costs of this year's *Bulletin* were; March \$4,952, June \$3,482, September \$3,097, December \$4,000 (estimate). The cost of printing and mailing the *Bulletin* in 2003 is approximately \$75/page. Sandy Devine was successful in getting Canada Post to agree to mail it as serial publication, this will reduce the cost of mailing by about \$800 annually. The cost of printing and mailing four issues of the *Bulletin* has risen steadily over the last 3 years (2001, \$17,710; 2002, \$20,458; 2003, \$19,531 estimate). The *Bulletin* Editor will make every effort to reduce the cost of producing the *Bulletin*, while maintaining the quality and timeliness of printing. The lowering of production costs will be pursued, before investigating the use of advertising to reduce the *Bulletin* costs.

Currently 497 institutions, 209 regular members and 42 student members receive the *Bulletin* by mail and 235 members rely on the web site. The position of Assistant *Bulletin* Editor is to be filled in the by February 2004. A new cover for the *Bulletin* was proposed to the Publications Committee and the Governing Board. The Editor requested that the minutes of the meetings and the committee reports appear as summary in the *Bulletin* to reduce costs, and that the full versions be posted on the Society's web site.

Web Site (Barry Lyons, Webmaster)

The French language sections of the web page are often neglected when updates occur on the English pages because of time constraints and the Webmaster's deficiency in French. The various sections of the web site were detailed. The major changes in the web site have been in the Publications section. There is a password-protected section of the web site, Member Area, accessible using the same password used to access *The Canadian Entomologist*. The use of the password for both username and password caused some initial confusion, but is now working well. This area contains the; 1) Membership Directory, 2) Insect Common Names List, 3) Current Issue of *Bulletin* and 4) Biography of Entomologists in Canadian Publications. The pdf version of the Common Names List only occurs in the Member Area.

Nominations Committee (Bernie Roitberg, Chair)

Neil Holliday and Dan Quiring were nominated as Second Vice-President. Rosemary De Clerck-Floate and Staffan Lindgren were nominated as Director-at-Large.

Elections Committee (Rebecca Hallet, Chair)

Dan Quiring was elected as Second Vice-President and Rosemary De Clerck-Floate was elected as Director-at-Large.

Achievement Awards Committee (Charles Vincent, Chair)

The 2003 ESC award winners are; 1) ESC Gold medal: H. V. Danks 2) Hewitt Award: H. C. Proctor 3) Fellow of the ESC: J. T. Arnason 4) Criddle Award: R. Kenner

Student Awards Committee (Dave Gillespie, Chair)

The following awards were made in 2003:

Travel Award: Tara Garipey, University of Saskatchewan; Patrik Nosil, Simon Fraser University

Postgraduate Scholarship: Sarah Jandricic (McCann), University of Guelph; Christopher Cutler, University of Guelph

Kevan Award: Jade Savage, McGill University

Bilingualism Committee (Lucie Royer, Chair)

In 2003, the Bilingualism Committee translated the following items: President's reports, biographies of candidates for the election, biographies of recipients of the Gold Medal, the C. Gordon Hewitt Award and the Criddle, documents related to the announcement of the Annual Meeting and program, documents related to the donation to scholarship fund of the Society, membership renewal forms, documents related to the new editorial structure and task descriptions, new format of the *Bulletin* and a questionnaire to promote membership. The committee members within the requested delays, which are too often, very short, fulfilled all translation demands. French versions of the Committee Guidelines and the Standing Rules are not up to date with English versions. The committee is considering contracting out the translation of the Standing Rules document, and suggests additional \$500 for other texts that may be too long to be done by committee members.

Bylaws, Standing Rules and Committee Guidelines Committee (Mark Goettel Chair)

The Corporations Directorate of Industry Canada accepted the bylaw amendments approved by the membership in December 2002.

Heritage Committee (Doug Eidt, Chair)

The Index to Biography of Entomologists in Canadian Publications was published in the *Bulletin* (35: 17-48), Just What Was FIDS?, by Lazlo Magasi, was published in the *Bulletin* (35:90-92), and one other is in the hands of the Editor.

A copy of the anniversary issue of the *Journal of the Entomological Society* was deposited in this Society's collection at the National Archives. Also received for archiving was a large collection of items from the 2002 Winnipeg meeting. Deposition of the photographs in this collection will have to await identification of the people in them, because they have limited archival value otherwise.

Although it is a project of the CanaColl Foundation, not this Society, Ed Becker is commended for his continued quarterly Newsletter for Senior Entomologists and Associates, which records retiree's activities, keeps them in touch, and turns a net profit for CanaColl. A request was made to find a new Chair, as well as members from Western Canada and Quebec.

Comité des noms communs (Hélène Chiasson, Présidente)

Nous voulons signaler que les documents suivants ont été préparés dans les deux langues et ont été remis aux gestionnaires des sites de la SEC et de la Société d'entomologie du Québec (SEQ): liste des membres du comité des noms communs, formulaire à remplir pour une demande de nouveau nom commun et critères ou recommandations à considérer lors de la sélection d'un nouveau nom commun. Ces formulaires ont été remis au début de l'année 2003 et ils figurent présentement sur le site web de la SEQ mais pas encore sur le site de la SEC.

Nous avons envoyé deux listes de noms communs français à faire valider auprès de taxonomistes. Une liste de noms d'insectes et d'acariens retrouvés pour la plus grande part dans les cultures de serres.. Nous attendons toujours des commentaires ou suggestions du Jean-François Landry. Une liste de noms d'odonates a été envoyée à M. Raymond Hutchinson.

Un travail de révision de la liste est à faire. On nous a signalé plusieurs fois au cours de l'année que certains noms latins avaient été changés suite à la révision d'un groupe taxonomique. Nous nous sommes rendus compte qu'une révision de la liste qui figure sur le site web doit être faite d'une façon périodique afin de maintenir cette liste à jour. On nous a également signalé que plusieurs noms

d'insectes qui sont toujours présents au Canada et qui étaient sur la liste de Paul Benoit ne se retrouvent pas dans la liste de la liste de la SEC.

Dans un premier temps, nous avons consulté la liste Entomological Society of America (ESA) pour se rendre compte que la liste de la ESA n'est pas nécessairement à jour. De plus, elle diffère beaucoup de par les espèces mentionnées de la liste de la SEC donc une consultation de la liste américaine s'est avérée inutile.

Nous avons donc convenu que le travail doit se faire au sein de la SEC et avec des taxonomistes canadiens. Il est évident que nous, en tant que membres du comité des noms communs n'avons pas l'expertise pour entreprendre cette révision et nous avons donc lancé un appel à la Commission biologique du Canada. Le sujet sera à l'ordre du jour lors de leur prochaine rencontre en novembre.

Nous voulons souligner l'importance (pour sa taille et sa pertinence) de cette tâche de révision. Le comité ne peut pas faire ce travail sans l'apport de spécialistes. Cette tâche sera d'autant plus difficile à poursuivre pour les raisons suivantes. 1) Le manque de taxonomistes dans les ordres différents. 2) Le manque de disponibilité des taxonomistes sollicités. Les taxonomistes consultés sont déjà débordés, et ont peu de temps à donner sur cette question. 3) Les correspondances envoyées par le comité sont souvent laissées sans réponse. Nous convenons que si le comité doit continuer à sélectionner de nouveaux noms et de mettre la liste à jour dans un délai raisonnable, il est nécessaire d'obtenir un engagement d'un groupe de taxonomistes pour travailler avec nous.

Membership Committee (Jon Sweeny)

Overall membership changed little from 2002 (Regular, 357; Student, 87; Emeritus, 74). The number of Emeritus members increased, whereas Regular and Student members declined slightly. The Committee reviewed the benefits of ESC Honorary Members (currently there are ten Honorary Members) and recommended that they be awarded the full benefits of Active Membership. The Committee also felt that Emeritus Members must be regular members for at least ten years before being eligible to request Emeritus status, and that the rules/by-laws regarding Fellows should remain unchanged. A survey of members was distributed by e-mail with 84 members or 20% responding, and the results presented to the Governing Board. The survey will be sent to non-members in the fall of 2003.

Science Policy and Education Committee (Bob Lamb, Chair)

One grant was given to the Youth Encouragement Committee of the Entomological Society of Manitoba. It was suggested that the availability of these grants be advertised to the regional societies. There was correspondence with the Canadian Agri-Food Research Council.

Student Affairs Committee (Tonya Mousseau, Chair)

A new column written by the Tonya Mousseau focused on students began in the March *Bulletin*. A student-only evening was planned at the Annual Meeting in Kelowna. The student member's directory on the web with student research interests was kept up to date on the Society's web site.

Marketing Committee (Lorraine Braun, Chair)

A PowerPoint presentation on Benefits of Membership in the ESC has been prepared for the ESC Board's approval. A French version will be made after Governing Board approval. It will be made available to Regional Societies and members. There are 125 copies of the French edition of *Diseases and Pests of Vegetable Crops in Canada*, which are expected to be all sold by 2005. There remain 737 copies of the English version. The Executive Board of the Canadian Phytopathological Society would like to know the ESC Board's views on reprinting the French softcover edition sometime in

the next year, and ESC's long term vision for the book. Renewed efforts are made to market the book to libraries at a discounted price.

Fund Raising Committee (Noubar Bostanian, Chair)

A letter was sent to companies in the agro-chemical industry requesting donations to the scholarship fund. To date Dow Canada has given \$1500. A second letter will be sent to laboratory equipment, computer, and software companies.

Biological Survey of Canada (Hugh Danks, BSC Secretariat)

Of particular relevance to the ESC are the following conclusions from the Survey review:

1. Reports for the ESC mid-term Executive and annual Governing Board meetings should be prepared. Short reports of Survey highlights, which were submitted early in the life of the Survey, have been reinstated with this report.

2. The feasibility of holding fall meetings in conjunction with ESC meetings should be investigated. As a test of this concept, the fall 2003 meeting of the Biological Survey Committee is being held in Kelowna immediately following the ESC/ESBC meeting.

3. Proper identification and profile of BSC symposia at ESC annual meetings should be sought

The Survey wants to ensure that (unlike in some past years) Survey symposia are recognized as such in meeting programs. The Survey requests that the need for such recognition be added to the ESC Meetings document.

4. Steps should be taken to institute a BSC award associated with the ESC annual meeting

A separate proposal will be prepared for consideration by the Board.

An account of Survey activities is published each March and September in the *Bulletin*, and a more detailed report appears in the Survey's Newsletter, available on-line at <http://www.biology.ualberta.ca/bsc/english/newsletters.htm#arthropods>

A proposal for a new student award for the Entomological Society of Canada, Biological Survey of Canada Conference Travel Award, was detailed. The purpose would be to provide \$500 to a student working on faunistic studies to attend the ESC Annual Meeting to make a presentation. The student would be chosen by a subcommittee of the BSC, and the BSC is ready to commit \$10,000 towards the scholarship. Additional funds to support the scholarship would be solicited.

Affiliated Societies (Regional Directors)

The Regional Directors detailed the meetings of the regional societies. The 2002 Proceedings of the Entomological Society of Manitoba was published and contains the abstracts from the Joint Annual Meeting of the ESC and the ESM. The ESM has agreed to host the 2007 Meeting of the North Central Branch of the Entomological Society of America. The Youth Encouragement and Public Education Committee of the ESM has made over 26 presentations to schools reaching over 500 students, as well as presenting at an agriculture fair for children, which 1500 students attended. The Entomological Society of Ontario has changed the name of the *Proceedings of the Entomological Society of Ontario* to the *Journal of the Entomological Society of Ontario* to reflect its status as a referred journal. The membership of the Acadian Entomological Society has dwindled in recent years. The web site of the AES will provide better contact between members, and a membership drive is planned.

Bulletin of the Entomological Society of Canada

Editor: Paul Fields

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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<http://esc-sec.org>
entsoc.can@bellnet.ca

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

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

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Bulletin de la Société d'entomologie du Canada

Rédacteur : Paul Fields

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.

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393 Winston Ave.
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entsoc.can@bellnet.ca

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

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**Date de tombée pour le
prochain numéro :
31 janvier 2004**

Committees and Representatives

Comités et représentants

Standing committees Comités permanents

Nominations / Nominations

S. Smith, Chair, Toronto
R. Bennett, Victoria
J. Delisle, Ste.-Foy
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Elections / Elections

R. Hallett, Chair, Guelph
C. Cutler, Guelph
S. Goodfellow, Guelph
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Continuing committees Comités en cours

Achievement Awards

Prix d'excellence

R. Lamb Chair, Winnipeg
S. Fitzpatrick, Agassiz
Y. Pelletier, Fredericton
R. Roughley, Winnipeg
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Annual Meeting / Réunion Annuelle

T. Shore, Chair, Victoria
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Bilingualism / Bilinguisme

M. Roy, Chair, Québec
H. Chiasson, St.-Jean-sur-Richelieu
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Bylaws, Rules & Regulations Règlements

R. Footitt, Chair, Ottawa
G. Gerber, Winnipeg
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu
R. West, *ex officio*, Portugal Cove-St Philips

Finance / Finance

P. Bouchard, Chair, Ottawa
P. Mason, Ottawa
D. Parker, Ottawa
M. Sarazin, Ottawa
G. Gibson, Treasurer, Ottawa
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Fund Raising / Levée de fonds

N. Bostanian, Chair, St.-Jean-sur-Richelieu
G. Pohl, Edmonton
D. Giberson, Charlottetown
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Headquarters / Siège social

V. Behan-Pelletier, Chair, Ottawa
J. Cumming, Ottawa
G. Gibson, *ex officio*, Ottawa
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Heritage / Patrimoine

C. Gillott Chair, Saskatoon
E. Becker, Ottawa
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Insect Common Names

Noms communs d'insectes

C. Buddle, Saint-Anne de Bellevue
Henri Goulet, Ottawa
M. Roy, Ste.-Foy
C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Marketing / Comité du marketing

O. Olfert, Chair, Saskatoon
H. White, Winnipeg
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D. Hunt, ESO, Harrow
N. Larocque, SEQ, Laval
P. MacKay, ESM, Winnipeg
G. Pohl, ESA, Edmonton
T. Shore, ESBC, Victoria
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 R. Bennett, Victoria
 G. Boivin, St.-Jean-sur-Richelieu
 P. de Groot, Sault Ste. Marie
 L. Gilkeson, Victoria
 P. Kevan, Guelph
 P. Fields, *ex officio*, Winnipeg
 B. Lyons, *ex officio*, Sault Ste. Marie
 J. Turgeon, *ex officio*, Sault Ste. Marie
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Politique scientifique et éducation**

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 D. Hunt, ESO, Harrow
 N. Larocque, SEQ, Laval
 D. Giberson, AES, Charlottetown
 C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Student Affairs / Affaires étudiantes

T. Mousseau, Chair, Winnipeg
 B. Sarauer, Saskatoon
 C. Schmidt, Edmonton
 R. De Clerck-Floate, *ex officio*, Lethbridge
 C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

**Student Awards
Prix aux étudiantes et étudiants**

R. De Clerck-Floate, Chair, Lethbridge
 J. Delisle, Ste Foy
 J. Myers, Vancouver
 N. Holliday, Winnipeg
 T. Wheeler, Ste-Anne-de-Bellevue
 D. Currie, Toronto
 D. Larson, St. John's
 C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

**Ad hoc Committees
Comités ad hoc****Joint Meeting Document
Document du congrès conjoint**

T. Shore, Chair, Victoria
 J. Sweeney, Fredericton
 C. Vincent, *ex officio*, St.-Jean-sur-Richelieu

Seeking Assistant *Bulletin* Editor

The Entomological Society of Canada is looking to fill the position of Assistant *Bulletin* Editor. The duties would cover, but not be limited to, finding new material for the *Bulletin*, taking charge of some of the columns and proof-reading galleys. The ability to work in both French and English would be an asset. The Assistant *Bulletin* Editor would be a Trustee of the Society and a member of the Governing Board. Please express your interest in the position to *Bulletin* Editor, Paul Fields (for contact details see the inside of the front cover), by **23 January 2003**. The final selection will be made by an ad hoc committee convened by the President of the ESC, Charles Vincent.

À la recherche d'un assistant ou assistante à la rédaction

La société d'entomologie du Canada cherche à combler le poste d'assistant à la rédaction du *Bulletin*. Les tâches comprennent, entre autres, la recherche de matériel neuf pour le *Bulletin*, la responsabilité de certaines sections et la révision la révision des épreuves. La capacité de travailler en français et en anglais serait un atout. L'assistant à la rédaction serait un fiduciaire de la Société et membre du conseil d'administration. Si ce poste vous intéresse, veuillez communiquer avant le **23 janvier 2004** avec le rédacteur du *Bulletin*, Paul Fields, dont les coordonnées figurent à l'intérieur de la page couverture de ce numéro. La sélection finale sera faite par un comité ad hoc convoqué par le président de la SEC, Charles Vincent.

The Buzz / Bourdonnements

Paul Fields, *Bulletin* Editor / Rédacteur du *Bulletin*



I would like to thank the many people that have helped with the *Bulletin* over the last year. Lucie Royer has been great in getting translations to me in record time. My wife, Lorraine Forbes, also has translated several pieces at the last minute and has looked over my muddled musings that appear in this column. I thank the many people that have come forward to contribute material to new columns in the *Bulletin*, *Tricks of the Trade* and *Lab Profile*. Tonya Mousseau has done a great job with *The Student Wing*. I am looking to fill the position of Assistant *Bulletin* Editor. The duties would cover, but not be limited to, finding new material for the *Bulletin*, taking charge of some of the columns and proof-reading the galleys. See page 227 for details if you are interested in this position.

This year has seen a few changes in the format and content of the *Bulletin*. In this issue you may notice that a summary of the Committee Reports has replaced the full publication of the Reports. These will now be available on the web, along with the minutes of the Governing Board. One reason to move these items from the *Bulletin* to our web page is that it will save over \$1000 in additional mailing and printing costs. The *Bulletin* currently cost approximately \$20,000 a year to print and mail. Over the next year, I aim to reduce the costs of printing the *Bulletin* while maintaining the quality and timeliness of printing. One option is to include advertising in the *Bulletin*. I would be interested in hearing from members their thoughts on advertising, new items that should be covered by the *Bulletin* or other changes for the *Bulletin*.

J'aimerais remercier tous ceux qui ont aidé à produire le *Bulletin* de puis un an. Lucie Royer m'a fait parvenir des traductions en un temps record. Aussi, ma femme Lorraine Forbes, a traduit plusieurs textes à la dernière minute et jeté un coup d'oeil aux pensées confuses que je rassemble pour cette rubrique. Je tiens à remercier les nombreuses personnes qui ont contribué du matériel aux nouvelles rubriques du *Bulletin*; *Trucs et astuces* et Profil de labo, et en particulier Tonya Mousseau qui a fait des merveilles avec *L'Aile étudiante*. Je suis maintenant à la recherche d'un assistant à la rédaction. Ses tâches comprendront, entre autres, la recherche de matériel neuf pour le *Bulletin*, la responsabilité de certaines sections et la révision des épreuves. Si ce poste vous intéresse, voir page 227 pour de plus amples renseignements.

Le *Bulletin* a vu quelques changements de format et de contenu cette année. Dans ce numéro, vous verrez qu'un résumé des rapports de comités remplace le texte intégral. Les rapports complets paraîtront dans notre site Web, ainsi que les procès-verbaux du conseil d'administration. Entre autres, le transfert de ces renseignements à notre site Web apportera une économie d'au-delà de 1000 \$ en frais d'imprimerie et d'expédition. En ce moment, le *Bulletin* coûte environ 20 000 \$ par année à imprimer et distribuer. L'année prochaine, j'ai pour but de réduire le coût d'impression du *Bulletin*, tout en conservant la qualité et la pertinence du support papier. Une possibilité serait d'y inclure des annonces publicitaires. J'aimerais bien connaître l'avis des membres sur ce point, sur des nouveaux sujets que le *Bulletin* devrait couvrir ou sur tout autre changement que les membres souhaitent apporter à leur *Bulletin*.

Officers of Affiliated Societies, 2003-2004
Dirigeants des sociétés associées, 2003-2004

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President-Elect Dave Raworth
Past President Gail Anderson
Editor (Journal) Ward Strong
Editor (Boreus) Cris Guppy
Sec.-Treasurer Robb Bennett
B.C. Ministry of Forests, 7380 Puckle Rd.
Saanichton, BC V8M 1W4
Tel: (250) 652-6593, Fax: (250) 652-4204
E-mail: robb.bennett@gems6.gov.bc.ca
<http://www.harbour.com/commorgs/ESBC/>

Entomological Society of Alberta

President Derek Kanashiro
Vice President Heather Proctor
Past President Hector Carcamo
Editor (Proceedings) Andrea Kalischuk
Editor (Website) Troy Danyk
Secretary Mike Undershultz
Treasurer Trevor Hindmarch
#62, 52152 RR 225, Sherwood Park, AB T8C 1C6
E-mail: tdhindmar@yahoo.ca, Tel: (780) 732-7238
<http://www.biology.ualberta.ca/courses/hp/esa/esa.htm>

Entomological Society of Saskatchewan

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

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

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Patrica MacKay
Editor (Proceedings) Terry Galloway
Member-at-Large Manhood Iranpour
Secretary Noel White
Agriculture and Agri-Food Canada
195 Dafoe Rd., Winnipeg, MB R3T 2M9
Tel: (204) 983-1452
E-mail: nwhite@agr.gc.ca
<http://home.cc.umanitoba.ca/esm/>

Entomological Society of Ontario

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

Société d'entomologie du Québec

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Agriculture et Agroalimentaire Canada
430 Boul. Gouin
St-Jean-sur-Richelieu, QC J3B 3E6
E-mail: secretariat@seq.qc.ca
<http://www.seq.qc.ca/>

Acadian Entomological Society

President John Sweeney
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Treasurer Don Ostaff
Secretary Don Ostaff
Department of Biological Sciences
5722 Deering Hall, University of Maine
Orono, ME 04469 USA
E-mail: charlene.donahue@maine.gov
<http://www.upei.ca/~aes/>

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.

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.

Illustrated on the front cover is *Tephritis angustipennis* (Loew) (Diptera: Tephritidae). This fruit fly is markedly boreal in distribution in North America, and also in northern and eastern Europe. Habitus drawing by B. Flahey, from McAlpine *et al.* (Editors) 1981-1989, "Manual of Nearctic Diptera, Vol 2", reproduced with permission from Agriculture and Agri-Food Canada.

On trouvera sur la couverture une illustration de *Tephritis angustipennis* (Loew) (Diptera:Tephritidae). Cette mouche a une répartition principalement boréale et se rencontre d'un bout à l'autre de l'Amérique du Nord. On la trouve également en Europe orientale et septentrionale. Habitus dessiné par B. Flahey, d'après McAlpine *et al.* (éditeurs) *Manual of Nearctic Diptera Vol. 2*, reproduit avec la permission d'Agriculture et Agroalimentaire 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.

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.