



BOREUS

NEWSLETTER OF THE
ENTOMOLOGICAL SOCIETY
OF BRITISH COLUMBIA

Volume 25 (2)

December 2005

ENTOMOLOGICAL SOCIETY OF BRITISH COLUMBIA

The Entomological Society of British Columbia is a scientific Society founded in 1902 for the advancement of entomological knowledge in the province.

Executive of the ESBC 2005-2006

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Karen Needham

Past President

Dave Raworth

Secretary / Treasurer

Robb Bennett

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Editors (Boreus)

Jennifer Heron

Suzie Lavallee

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AAFC-PARC, Agassiz

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Bill Riel

Canadian Forest Service, Victoria

Web page: <http://esbc.harbour.com/>



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OF BRITISH COLUMBIA**

Volume 25, Number 2

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Publications of the ESBC

Journal of the Entomological Society of British Columbia

The *Journal of the Entomological Society of BC* is published annually. Papers for the *Journal* need not have been presented at meetings of the Society, nor is it mandatory, although preferable, that authors be members of the Society. The chief condition for publication is that the paper has some regional origin, interest or application. Line drawings or photographs as candidates for the cover are also accepted. Contributions should conform to the standards outlined in the *Journal* and the Website (<http://esbc.harbour.com/>), and should be sent to the Editor, Dr. Ward Strong, BC Ministry of Forests, 3401 Reservoir Road, Vernon BC, Canada V1B 2C7; tel 250.549.5696; fax 250.542.2230; e-mail Ward.Strong@gov.bc.ca

The deadline for submissions to be included in the 2005 issue is **September 1, 2006**.

Boreus

Boreus, the Newsletter of the Society is published in June and December. It contains entomological news, comments, reports, reviews and notices of meetings and other events. While emphasizing the Society's affairs, *Boreus* provides members with a forum for their views and news of British Columbia entomology, as well as informal articles, notes regarding research projects, and anything else that may be of interest to entomologists. Please send correspondence concerning *Boreus* to the Editors, Jennifer Heron (Jennifer.Heron@gov.bc.ca) or Suzie Lavallee (slavalle@interchange.ubc.ca).

The deadline for submissions to be included in the June 2005 issue is **May 1, 2006**.

Membership of the Entomological Society of BC is available to anyone interested in entomology. Annual dues are Can\$20.00 (regular member) or Can\$10.00 (student member). Members receive the *Journal*, *Boreus* and *Occasional Papers* (the latter published intermittently).

Inquiries concerning membership and back issues should be sent to the Secretary/Treasurer, Dr. Robb Bennett, BC Ministry of Forests, 7380 Puckle Road, Saanichton, BC, V8M 1W4, Canada; tel 250.652.6593; fax 250.652.4204; e-mail Robb.Bennett@gov.bc.ca

Cover: *Boreus elegans* (Mecoptera: Boreidae); one of the more conspicuous snow scorpionflies in BC. Larvae and flightless adults live in, and feed on, moss and clubmoss. Adults appear in the fall and are active on snow on warm winter days.

Editor's Notes

Jennifer Heron

This summer was a *great* summer! Initially May started with a bit of a disappointment (I was laid off), but the summer months progressed into a series of adventures and looking back they were incredibly memorable. I want to start by thanking all my entomological colleagues for their letters, emails and words of support in a rally to get me my job back (it worked, as I am now employed again). As much as I was upset at being laid off, it gave me reason to join friends in *their* entomological pursuits, as well as further my own.

The first entomological trip was a splendid day on Saltpring Island with Rob and Robb. The fact it rained sideways for most of the day didn't deter us from prowling the Garry oak meadows on Mt. Maxwell and enjoying the fogged view. May ended with the finding of a population of the Endangered Taylor's checkerspot (*Euphydryas editha taylori*) on Denman Island, which Suzie and I immediately photo documented on a memorable overcast Sunday afternoon. June was a series of little adventures with children, as my free schedule allowed me to entertain the neighbourhood gang with local butterfly hunts. My Mom is a grade two teacher, and I took the opportunity to train her students in basic entomological skills – pooter making. The class and I proceeded to suck up most of the schools invertebrate diversity, intending to let them all free, although most ended up stuck to the spittle in the bottom of the pooter.

July started with a dragonfly survey with Rob Cannings to Terrace, Prince Rupert and the Nass Valley. This area of BC I have not had an opportunity to visit. The Nass Valley was mystical, with rolling alpine meadows, moss covered rocks and winding streams. The best record of the trip was a previously unrecorded dragonfly *Rhionaeschna multicolor* (the next closest record is from McBride) found twitching on the yellow dotted line of the highway next to Lakelse Lake.

Each year my family and I take a vacation together, and this year my sister and I met my parents in Tuscany for a walking tour. After two days together with a group of eight other people, I had everyone looking for the bugs under the Tuscan sun. The best event was an evening dining at a restaurant with a scenic view overlooking rolling hills of sunflowers and grape vines. In a span of ten minutes, the weather abruptly changed, the Tuscan sun disappeared, the clouds opened up, and the rain came down in torrents. We were quite dry under the restaurant awning, watching the hills become electrified silhouettes when the lightening flashed every few minutes. After two minutes of rain, about a dozen bright green June beetles decided to take refuge in the restaurant, much to the horror of the remaining restaurant guests. The people at my table were calm though, and we managed to rescue all the beetles, and I found myself showing a few of the other restaurant guests the beetles as they crawled on my fingers. Many people were equally curious, although there were a few who clearly found my actions strange and after a few explicative phrases in Italian, and a few more hand gestures, the waiter suggested I put my 'friends' outside.

Eventually the summer drew to a close, late August and September were filled with a few field trips to the south Okanagan, butterfly hunts and pitfall trap collections with Orville Dyer (Species At Risk Biologist in Penticton). Midway through October, when I realized that autumn was upon me and there were fewer arthropods, I started to

formulate the next summers' adventures, including asking Rob what dates he planned to survey more Odonates? My own plan to conduct a survey in Bute Inlet? Queen Charlotte Islands and the Haida Gwaii? Butterfly blitzes in the south Okanagan with Orville? Spider hunts with Robb? Taylor's checkerspot with Suzie? Recruiting more elementary students to look for bugs in the local parks?

Entomology gives you a reason to do what you like best, look and survey for insects, learn and make memories with friends, oh...and somewhere in between do some science.



Anita Sterjenberg and I looking for bugs at the Entomological Society of Canada conference in Canmore, November 2005.

Jennifer Heron

Suzie Lavallee

This year I took a six-month hiatus from the final throes of my thesis to teach full time in Forestry at UBC. The conservation course I was coordinating, teaching and administering was an incredible challenge for both instructors and students. Students go on three, one-week field trips to collect data and learn about three different ecosystems *in situ*.

As I put the final touches on the course and ready myself to travel down the home stretch of my Ph.D., I find myself reflecting on the many things I would have done differently, given the chance. Perhaps it is also the time of year that loans itself to reflection and revision of goals. Although I have never been one to make New Year's resolutions, crossroads such as these allow us to evaluate our current directions and make changes where necessary.

In light of my desire to set a new course for 2006, here are my three resolutions for next year:

1. *I will get out into the field at the right time of year.*

Too often, I would find out about sightings too long after the fact. If I really want to go and look for Taylor's checkerspot, I need to plan accordingly! If I expect to do some Behr's hairstreak work, I need to check out the Behr's Blitz this year! (See "Getting out there" for more information on the Behr's Blitz this coming summer.)

2. *I will seek out wilderness more often.*

Backpacking with my class in the alpine meadows of Garibaldi Park (see photo below) made me realize an essential element that has lately been missing from my life: solitude. Although we were in a very well-travelled part of the park, I got a taste of what draws so many to abandon their vehicles and go where few have gone before.

3. *I will learn more about plants.*

I know, it came as a shock to me, too. In order to truly know your insects, you have to know your plants. I have been in denial for years about getting to know our green friends, but (as Gandalf said to Frodo) **it is time**.



Two-pack Sue near Red Heather Campsite, Garibaldi Park

Other goals...Oh yeah, finishing my thesis needs to be fit in between checkerspot season and the Blitz, after I see the spring blossoms in the alpine and figure out my *Vaccinium* species.

Suzie Lavallee

Society Business

Entomological Society of British Columbia Fall 2005 Business Meeting

Pacific Forestry Centre, Victoria, BC
21 October 2005 – 3:40 – 4:40 pm

SUMMARY OF ACTION ITEMS

2005 JESBC printing costs monitoring	Strong, Bennett
TCE formatting and electronic review comments	All
Amateur entomologists issue	Carroll
Meeting with CFS RE: Library	Executive
2006 2-day AGM planning	Executive

Call to Order (Dave Raworth)

Raworth called the 2005 business meeting to order at 3:40 pm.

2) Approval of Agenda (Raworth)

Agenda approval moved by Chris Borkent, seconded by Terry Shore.

3) Approval of Minutes from Fall 2003 Business Meeting (Raworth)

Fall 2004 Business Meeting Minutes approval moved by Rob Cannings, seconded by Ward Strong.

4) Business Arising from Minutes

4.1) Future of *Boreus* (Raworth)

Jennifer Heron and Suzie Lavallee are new co-editors of *Boreus*. They have produced two issues since taking over from Cris Guppy.

4.2) Journal article formatting (Strong)

New 2-column formatting for JESBC articles was incorporated in Volume 101. Editor has received positive comments regarding the change, no negatives. See also 5.2 below.

4.3) New Editorial Board (Strong)

New Editorial Board has been installed and has completed the review process for JESBC Vol. 102. Strong remains as Chief Editor; Robb Bennett, Joan Cossentine, and Lorraine Maclauchlan are Associate Editors responsible for general themes of Systematics/Morphology, Agriculture, and Forestry respectively. See also 5.2 below.

4.4) New Regional Director (Raworth)

Allan Carroll has replaced Shore as Regional Director. See 5.5 below.

5) Reports

5.1) Secretary-Treasurer's Report (Bennett)

Society remains in good shape financially; membership and subscriber rolls remain stable. 2005 year-end ESBC financial statement read into Minutes (see attachment). \$5,500 payment to SFU for 2004 JESBC printing charges was not made in time to be

included in 2004 financial statement. Acceptance of Secretary-Treasurer's Report moved by Lee Humble, seconded by Maclauchlan, carried.

5.2) Journal Editor (Strong)

Report read into minutes (see attached). As a result of confusion during restructuring of SFU print shop, ESBC was apparently overcharged for 2004 printing costs; reimbursement will be made in 2005 billing. Acceptance of Journal Editor's report moved by Markus Clodius, seconded by John McLean, carried. **Strong & Bennett will monitor 2005 JESBC printing costs.**

5.3) Boreus Editor (Heron)

Heron & Lavallee are enjoying challenge of producing *Boreus*. New ideas are being incorporated; suggestions and other submissions are invited from ESBC members. Deadline for inclusion in next issue is November 15. Acceptance of *Boreus* Editors' report moved by Maclauchlan, seconded by Johnson, carried.

5.4) Website Editor (Bennett for Bill Riel)

The following report was read into minutes:

"Managing the website continues to go smoothly, though the growth of the web site has required some reorganization (as mentioned in my spring report). Much of the reorganization has taken place, though there is still some work to do. We are now publishing both *Boreus* and the Journal online in pdf format and this turns out to be a fairly straightforward process. To assist with this and other web management tasks, ESBC member Patricia Perkins is now assisting me – this is a tremendous help, especially when my workload collides with website management tasks."

5.5) Entomological Society of Canada Regional Director (Carroll)

Paraphrased report read into minutes (see attached). Discussion centred on issues of the evolving processes of *TCE* formatting and electronic manuscript review. Acceptance of Regional Director's report moved by Greg Smith, seconded by Cannings, carried. **Interested members will send comments RE: TCE issues or other relevant matters directly to Carroll. Carroll will ensure that issue of amateur entomologists is raised at Canmore AB ESC Board meeting..**

5.6) President (Raworth)

Report read into Minutes (see attached). Acceptance of President's report moved by John McLean, seconded by Strong, carried.

6) New Business

6.1) ESBC financial commitment for digitizing Library holdings (Nealis)

ESBC is seeking CFS assistance for Library maintenance and production of an electronic catalogue of holdings (compatible with CFS's *Metaphor* system). Maintenance (receiving, shelving, recording incoming volumes, etc.) is an ongoing issue that can be dealt with in large part by volunteer effort but considerable professional expertise and significant funding are required to produce the catalogue. ESBC library issue has caught the attention of CFS administrators and we are trying to keep the issue moving. Financial commitment from ESBC will facilitate the process. ESBC is now seeking membership approval to offer up to \$5k to CFS towards electronic cataloguing. ESBC executive is planning to meet with CFS administrators before the end of 2005. Membership expressed general approval for ESBC executive's ongoing handling of this issue. **Executive will approach CFS administration to schedule a meeting.**

6.2) Reformatting AGM to a 2-day meeting (Raworth).

2004 AGM at SFU was a crowded affair and led to suggestion of reformatting AGM as a 2-day event. ESBC executive is seeking members' input on holding a ½ day symposium, with proceedings published in JESBC, in conjunction with next AGM - this will increase profile of JESBC and take pressure off regular paper presentations session. In discussion, the following points were made:

2-day meetings have been held in the past

AGM organizational and JESBC editorial workloads will increase

JESBC will benefit

increased expenses and time involved will negatively impact students and people with teaching duties.

Meeting could be held on Friday/Saturday to minimize impacts to students and professors.

Karen Needham moved that 2006 ESBC Annual General Meeting be a 2-day affair with details to be worked out in the coming months by ESBC executive. Seconded by Markus Clodius. In favour: 20. Against: 3. Passed. Success will be assessed after the 2006 AGM. **Executive will plan a 2-day event for 2006 AGM.**

6.3) Installation of New Officers (Raworth)

New President-Elect is Richard Ring; new Directors are Markus Clodius and Rob McGregor. Grinning widely in a benevolent manner, Raworth passed the gavel to incoming President Karen Needham.

7) Other New Business (Dave Raworth)

Needham thanked the outgoing executive members for their service, especially Raworth for his cheerful, calm and upbeat style of leading ESBC. There was no response to a call for any other business items.

8) Adjournment (Raworth)

There being no further new business, Needham called for a motion of adjournment. In the ensuing general bedlam, mover and seconder were not noted - motion was carried at 3:40.

Minutes submitted by: Robb Bennett, Secretary, 15 November 2005.

Entomological Society of British Columbia 2005 Year-end Financial Statement

(1/x/2004 - 30/ix/2005)

FORWARDED

1. Bank balance forwarded on 30 September 2004		14,058.13
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RECEIPTS

1. Dues		3,618.07
Memberships	2426.94	
Subscriptions	1191.13	
2. Publication		5,695.27
2004 page charges	5,560.57	
Back issues	134.70	
3. Miscellaneous income		3,341.82
Dan Johnson Award 2004	100.00	
Copyright payment	42.08	
AGM 2004 income	1,060.00	
Term deposits interest transfer	1,138.16	
MacCarthy fund - public education contribution (ESC)	600.00	
North Okan. Naturalists (Grant Award 2005)	200.00	
PheroTech Inc. (Madsen Award 2005)	200.00	
Interest	1.58	
4. Total Receipts		12,655.16

EXPENDITURES

1. Publication		5,521.68
2003 Journal printing	4,996.68	
2004 Journal typesetting	450.00	
Journal delivery	75.00	
2004 Journal printing (5,000.00 - invoice not in)	0.00	
2. Miscellaneous expenditures		4,278.19
Dan Johnson Award (V. Cervantes)	100.00	
Travel Scholarships (K. Bleiker / S. Hawkins)	1,000.00	
James Grant Award (MSc. Nt.Ok.Nat. - M. Hart)	200.00	
Harold Madsen Award (Ph.D. Ph.Tech. - S. Senger)	200.00	
MacCarthy Education Grants	1,200.00	
Society registration (2005)	25.00	
VISA transactions fees	10.00	
Software - MS Publisher (2 copies)	521.60	
2004 AGM expenses	933.00	
New cheques	53.59	
Service charges	35.00	
3. Total Expenditures		9,799.87

BALANCE

14,058.13 + 12,655.16 - 9,799.87 = 10,256.89		16,913.42
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OTHER ASSETS – Island Savings Credit Union

1. Savings		41.14
Balance forward	0.05	
Transfer in Interest from Term 5	762.08	
Transfer in Interest from Term 3	376.03	
Transfer out to ESBC general account	-1,138.16	
Monthly service fee	-1.00	
Service fee refund	0.99	
Debit interest	-0.02	
Patronage deposit	41.16	
Credit interest	0.01	
2. Membership Equity Shares		5.00
3. Term Deposits		42,480.00
3 @ 3.75% (start 17/i/05, matures 17/i/10)	6,000.00	
5 @ 3.80% (start 17/i/03, matures 17/i/08)	20,000.00	
6 @ 3.00% (start 18/v/04, matures 18/v/07)	16,480.00	
4. Total Other Assets		42,526.14

BANK BALANCE on 30 September 2005**\$16,913.42****OTHER ASSETS on 30 September 2005****\$42,526.14****TOTAL ASSETS on 30 September 2005****\$59,439.56**

Statement prepared 10 October 2005
Robb Bennett, ESBC Secretary/Treasurer

Audited -

Bob Vernon, Past President

President's Report

One of the highlights of the year must of course be the appointment of Dr. Thelma Finlayson to the Order of Canada for Science and Voluntary Service. On behalf of the ESBC, I extend our sincerest congratulations to Thelma.

We hit the deck running after the Autumn 2004 AGM, with many e-mails aimed at resolving a number of issues. This is a very effective way to work, and we accomplished a great deal. It means, however, that someone must maintain e-mail minutes and that task has fallen to the President.

Cris Guppy happily agreed to hand over the editing of *Boreus* to Jennifer Heron and Suzie Lavallee. Jennifer and Suzie were keen to co-edit *Boreus* and have very successfully produced two volumes. A note of thanks was sent to Cris for editing *Boreus* and meeting time-lines, despite his busy schedule.

Bill Riel has maintained and improved the ESBC Website. This is an important information source for members of the Society and Bills efforts are most appreciated.

Terry Shore decided to step aside as Regional Director. Letters of thanks were sent from both the ESC and the ESBC to acknowledge his 10 years of excellent service, which included organizing two Joint Annual Meetings. The search for a new Regional Director found its way to Allan Carroll, who has agreed to take on the duties. We welcome his input to the Society.

Ward Strong has had an exceptional year, reformatting the 2004 issue of the Journal, and completely restructuring the editorial process. The time commitment for Ward has undoubtedly been considerable, but I believe that the results are truly a giant step forward for the Journal.

Karen Needham has done a remarkable job handling the HRM Memorial Education Fund; six schools were awarded a total of \$1200 (\$600 from the ESBC and \$600 from the ESC).

Vince Nealis, Robb Bennett, I, and several people at the Pacific Forestry Centre, including Director, Gary Hogan, Librarian, Alice Solyma, and Greg Smith have taken important steps towards an initiative that will result in the digitizing of the ESBC library holdings. Once complete, that valuable resource will be available to all researchers via the internet.

The scientific portion of the 2005 AGM features 15 interesting contributions, including 9 from graduate students – and I believe, sufficient time to chat with colleagues and friends between sessions. I want to thank everyone involved in running the meeting, including Markus Clodius, Greg Smith, Rob McGregor, Vince Nealis and the PFC caterers; sincere thanks also to Raoul Wiart, Director of Programs, Planning and Operations at PFC, for making this fine facility available to us. Phero Tech Inc. and the North Okanagan Naturalists= Club have again supported the Harold Madsen and James Grant Awards, for best PhD and MSc presentations, respectively. On behalf of the ESBC, I thank both organizations. In addition, Dan Johnson has, for the second year, supported the "Conference Paper Award in Arthropod Ecology" - it is most generous Dan, and very much appreciated.

Robb Bennett as always has been the backbone of the Executive, keeping the ship in motion and suggesting port or starboard tacks as needed. I want to thank all the members of the Executive for your ideas, your time, and the lively e-mail debates. It has been a real pleasure working with you all, but most importantly, your efforts have strengthened the Society.

Finally, I want to thank the outgoing Executive, Vince Nealis and Bob Vernon for their contributions as Director and Past-President, respectively; and in turn, I welcome our incoming Executive, Rob McGregor and Markus Clodius as Directors, Richard Ring as President-Elect, and Karen Needham as President.

Dave Raworth
President, ESBC 19 October 2005

Journal Editor's Report

Volume 102, 2005, is moving smartly along with 14 submissions, including 4 Scientific Notes. This will be a more slender volume than in the recent past, especially since two submissions have been rejected, the first rejections since 2002. I would like to thank the editorial staff, anonymous reviewers, and typesetter Jen Perry for all their help and assistance so far in getting this volume together.

Volume 101, 2004, was printed and distributed by early March 2005. It contained 15 full papers and five Scientific Notes. Our new two-column format was well received with many compliments and no negative remarks. Dave Holden retired from his position as typesetter due to family and work responsibilities: we thank him for his years of dedicated service. Jen Perry is our new typesetter, and has taken up the reigns with gusto, rapidly learning our new typesetting program (MS Publisher). The excellent cover graphic of a common species of salticid spider, *Pelegrina montana*, was kindly provided by Wayne Maddison. Printing was again done by John Peters and crew at Simon Fraser University Reprographics. For the first time, instead of dealing with reprints, an Acrobat file of each paper was sent to the authors; files were also submitted to Bill Riel to post on the website. This "paperless reprint" system saved time and money, and was met with no negative remarks by the authors.

A surprise result of our new electronic publishing system was that we could send acrobat files directly to SFU Reprographics, who then printed them up on a high-quality laser printer, and bound them in their new binding plant. This eliminated the need for high-quality printing of a photo-ready product, creation/correction of a blueline, offset printing, paper cutting, and submitting to a contract bindery. The final product is of fine quality, and was produced much more speedily and less expensively than with offset printing.

Major changes continue in the production of the JESBC. Due to the discouragingly high workload for a single editor with a panel of four in-house reviewers, the editorial committee has been completely restructured. We now have a single Chief Editor, myself, and three Subject Editors. Subject editors are:

Agricultural entomology: Joan Cossentine, Agriculture and Agrifoods Canada, Summerland

Forestry entomology: Lorraine Maclauchlan, BC Ministry of Forests, Kamloops

Systematics and Morphology: Robb Bennett, BC Ministry of Forests, Saanichton.

Subject editors are responsible for shepherding each manuscript through two anonymous peer reviews, reviewing the paper themselves, guiding revisions, and accepting or rejecting the revised paper. The Chief Editor then copy-edits the manuscript for editorial consistency, and takes it the rest of the way through publication.

We have also moved our date of publication and distribution up to mid-December. This decision was made to comply with the requirements of Thomson ISI for inclusion in their abstracting

services. We are not presently listed in Web of Science or Current Contents, and thus have no Impact Factor, a discouragement to authors who may otherwise wish to publish with us. Moving the distribution date to agree with the printed date of publication on the cover is one important step in becoming accepted by Thomson ISI. This has meant bumping up submission deadlines and tightening the turnaround times for reviews, revisions, and other steps.

There have been birthing pains associated with our new editorial structure and advanced deadlines, but the process has gone surprisingly well so far. The first papers are back from the typesetter, and I'm optimistic that this volume will be delivered on time by mid December. We are still looking for a cover graphic for this volume; if you have any ideas or a submission please let me know.

Respectfully submitted

Ward Strong, Editor

Report of the ESBC Regional Director

The past year has been an eventful one for the Entomological Society of Canada. Highlights include (i) introduction of the reformatted journal *The Canadian Entomologist* and the *Bulletin of the Entomological Society of Canada*, (ii) renegotiation of the publishing contract with NRC Press, and (iii) initiation of a Strategic Review.

The new format of the journal and bulletin were received with universal approval in 2005. Designed around images that reflect the breadth of entomological activities in Canada, the Society will solicit new images each year from the membership. Images will be judged by the editors of TCE and the Bulletin, and the winners announced at the ESC-SEC AGM.

In 2005, the ESC-SEC renegotiated its contract with NRC Press for publication of TCE. A four-year contract was proposed, with a relatively minor increase in costs in line with inflation. The duration of the contract was chosen to provide the Society with longer-term stability for financial planning.

Also in 2005, outgoing President, Bob Lamb, spearheaded another Strategic Review for the Society (the last one was conducted in 1995-96). The goals of the review are to recommend changes in the structure and operation of the Society for attaining long-term financial viability, and effectiveness in maintaining basic scientific and educational functions. The main topics of the current review are as follows:

1. *Implications of information technology*
 - Identify ways to exploit information technology more effectively to further the objectives of ESC-SEC, reduce costs of communication, and forestall revenue losses that may occur as a result of changing technology.
2. *Membership*
 - Assess membership trends, identify ways of enhancing membership and membership services.
3. *Finances*
 - Determine whether the main activities of ESC-SEC are financially sound and can be sustained, what room if any we have for new initiatives, or opportunities for increasing revenues or reducing costs.
4. *Progress as a result of 1996 review*

- Assess what progress has been made as a result of the earlier review, and feed insights of that review to the current review process.

Results of the Strategic Review will be tabled at the ESC-SEC AGM in Canmore later this year. Those results will be summarized and presented as part of the Regional Director's spring report.

During 2005, the ESBC Executive debated the issue of facilitated access to the ESC-SEC AGM for amateur entomologists. Some members of the ESBC expressed frustration over the fact that for students and professionals, the cost of registration at the AGM is normally defrayed by the institution with which they're associated. However, amateurs are expected to personally bear the cost of full registration. Although this issue has been discussed in the past by the ESC board, to date there has been no resolution. Given that the most significant decline in membership over the years has occurred amongst the amateur entomologists in both the regional and national societies, I will raise the issue once more at this year's AGM. Historically, amateur entomologists comprised part of the backbone of entomological societies. Efforts should be made to encourage involvement by this segment of the entomological community.

Allan Carrol

Boreus Editors' Report

Jenny and Suzie enjoyed the challenge of beginning Boreus. Our goal is to create a social community for those who are interested in meeting and getting to know fellow entomologists. As always, we thank those who have submitted works for the newsletter, and further encourage others to submit small articles, photographs, announcements, upcoming events and make suggestions. Sincere thanks go to Robb Bennett for copy edit assistance and all members of the executive for submission of materials, encouragement and review.

Suzie Lavallee and Jennifer Heron

ESBC Annual General Meeting, 21 October 2005

Abstracts

Pigment cells in *Chaoborus* larvae migrate during pupation to form another function in the adult

Borkent, C.C.

Royal BC Museum contractor, 2396 Estevan Ave., Victoria, BC, Canada V8R 2S5

cborkent@primus.ca

Chaoborus larvae are well known planktonic insects occurring in aquatic areas worldwide. They travel vertically within the water column using tracheal air sacs, which are covered with pigment cells. I present results on the reaction of these cells to differing light levels and the movement of the cells after pupation.

Trophic switching in an omnivorous predator, *Dicyphus hesperus* Knight (Hemiptera: Miridae)

Gillespie, D.¹, S. VanLaerhoven², and B.D. Roitberg³

¹Agriculture and Agri-Food Canada, P.O. Box 1000, Agassiz, BC, Canada V0M 1A0

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By definition, omnivores can use resources at two different trophic levels. The so-called true omnivores feed on plants and on various consumer trophic levels. For omnivorous true bugs that feed on prey that inhabit the plants on which they live, the switch between feeding on prey and on the continuously available plants, seems somewhat trivial. However, plant-feeding omnivores generally seek out high-value plant parts such as fruits, growing points or seeds as alternatives to prey feeding. The switch is therefore not trivial, as it may necessitate a change in position, and changes in foraging strategies. Switching in true omnivores is assumed to be driven primarily by the availability of prey. *Dicyphus hesperus* is an omnivorous mirid that feeds on a variety of insect prey on several different host plants. Host plant species has a large effect on both development and reproduction of this species in the absence of prey. We show that prey availability, plant community composition, and external resources can all contribute to switching between food resources in *D. hesperus*. Models of trophic switching in omnivores should therefore consider resources available at the community level.

Orientation to and recognition of prey by *Dicyphus hesperus* Knight (Heteroptera: Miridae)

Hazard, T.¹, D. Gillespie², and B.D. Roitberg¹

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²Agriculture and Agri-Food Canada, P.O. Box 1000, Agassiz, BC, Canada V0M 1A0

Here we investigate the cues used to locate and recognize prey at close range and elicit foraging behaviour in the greenhouse whitefly biocontrol agent, *Dicyphus hesperus* Knight. Prey extract, in the absence of a visual or mechanical stimulus, appears to suffice in provoking foraging behaviour and perhaps feeding behaviour.

Covariance of phenotypically plastic traits in the generalist parasitoid *Aphidius ervi*

Henry, L.¹, B.D. Roitberg¹, and D. Gillespie²

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Parasitoids function within a heterogeneous environment where they may encounter a diverse number of host species that offer discrete levels of resources for offspring development. Here we document plasticity in both morphological and behavioural traits, when parasitoids are reared in two separate larval environments, resulting in an adaptive shift in host selection behaviour.

Canopy oribatid mite communities in ancient Western redcedar

Lindo, Z. and N.N. Winchester

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Eighty-eight oribatid mite species were recorded from canopy and forest floor habitats associated with Western redcedar. Eighteen of 53 oribatid mite species observed from the

canopy were unique and not found on the forest floor. Overall similarity of oribatid mite communities between the canopy and forest floor was low (35%).

Integrating measures of fitness into standards for natural enemies

Luczynski, A.¹, J. Nyrop², and I. Shi³

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²Department of Entomology, Comstock Hall, Cornell, Ithaca, NY, USA 14853

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Pupae of *Encarsia formosa* and *Phytoseiulus persimilis* females were stored to determine the influence of cold on their key fitness parameters. The proportion of mortality of the two species and the capability of *E. formosa* to fly and parasitize declined with an increased duration of storage. Predatory mites that survived storage lived longer and produced more eggs than the control. We discuss the implication of results for the standardization of natural enemies.

How do mosquitoes deal with tradeoffs between sugar and blood feeding activities?

Ma, B.O. and B. D. Roitberg

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A female mosquito faces many tradeoffs between the acquisition between blood and sugar meals. Blood and sugar meals have differential mortality and are spatially separated. Furthermore, blood can be used to fuel somatic maintenance but only at the cost of reduced egg production. We develop a model to examine these trade-offs.

Forest encroachment reduces habitat quality for a rare butterfly on Vancouver Island

Miskelly, J.

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Taylor's checkerspot (*Euphydryas editha taylori*) is a rare butterfly that once occurred in grasslands from Oregon to Vancouver Island. Sites from which Taylor's checkerspot has been extirpated in BC still have sufficient densities of nectar and larval host plants to support a population. However, the host plants now senesce too early in the summer to permit larval development. This is because a disruption of the historic fire regime has allowed forest to encroach on the deeper soiled and more mesic meadows, leaving only marginal habitat. Reestablishment of Taylor's checkerspot at these sites will require restoration of meadows that have been replaced by forest.

Tools for managing extinction of the gypsy moth

Nealis, V.

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Periodic introductions of gypsy moth have occurred in British Columbia since 1978. Decisions to use pesticides for eradication must balance non-target impacts with the likelihood of achieving eradication. Many decisions regarding risk and targeting are aided by simulating the seasonal development (phenology) of gypsy moth using temperature-dependent physiological processes and site-specific temperatures. Modeling at the landscape level is used to map areas most climatically favorable to the gypsy moth and at the local level to increase the efficiency of the detection trap network and to facilitate the logistics and timing of the application of pesticides. The model can be used retrospectively to evaluate past eradication programs. This historical analysis suggests that improved targeting could reduce the number of pesticide applications without reducing the likelihood of success.

Exploring the role of energetic developmental thresholds in shaping patterns of emergence

Phelan, C. and B.D. Roitberg

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Mosquitoes and other organisms that undergo metamorphic and habitat transitions at maturity typically exhibit a negative relationship between adult size and development time. We have developed a dynamic state variable model of mosquito development to assess the role that energetic costs of moulting and pupating (i.e. developmental thresholds) play in this relationship.

Dynamic irritability in parasitoids

Roitberg, B.D.

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Parasitoids may encounter other organisms while foraging on host-containing patches. Some of those organisms pose direct threats to the foraging wasp. On the other hand, the patch provides resources that can directly contribute to the parasitoid's reproductive success. Thus, the parasitoids must "decide" how to tradeoff threats versus benefits. Further complicating matters are several parameters that can affect costs and benefits, including: (1) the threatening organism may or may not attack, (2) the patch will diminish in value over time and (3) forager state, in particular, egg load, body mass and energy state. For example, heavier wasps may be less agile or slower in escape than light individuals. Here I consider 2 mutually exclusive decisions, continue foraging vs. abandon the patch as a function of the three aforementioned parameters. In my talk I will develop state-dependent theory and test some predictions from the theory as to conditions under which parasitoids will abandon patches following encounters with threats. I will show both theoretically and experimentally that sensitivity to threats are dynamic i.e. they depend upon parasitoid internal state and perception of danger.

A review of the life history of *Pseudips mexicanus* and its interactions with endemic mountain pine beetles (*Dendroctonus ponderosae*) (Coleoptera: Scolytidae)

Smith, G.^{1,2}, A. Carroll¹, and S. Lindgren²

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² Forestry, University of Northern British Columbia, 3333 University Way, Prince George, BC, Canada V2N 4Z9

The bark beetle *Pseudips mexicanus* is commonly found in weakened lodgepole pine trees (*Pinus contorta* var. *latifolia*) in southern British Columbia, often cohabitating with other secondary bark beetles and endemic mountain pine beetles (*Dendroctonus ponderosae*). A native to the province, *P. mexicanus* is not an economic pest; hence little is known about it. An experiment was conducted to determine some of the developmental parameters of this beetle using a series of growth chambers maintained at five different temperatures. The parameters measured included the number of instars, mean sex ratio of offspring and percent virgin females emerging. *Pseudips mexicanus* was also observed in the wild and the morphology of gallery systems, over-wintering behaviour and presence of bark beetle associates were evaluated. Results of this work will be discussed in the context of the life history of *P. mexicanus* and its interactions with endemic mountain pine beetles.

An evaluation of lambda cyhalothrin formulations for protecting Douglas-fir logs against bark and ambrosia beetles (Coleoptera: Curculionidae)

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An emulsifiable formulation and a microencapsulated formulation of lambda cyhalothrin were evaluated for their comparative ability to protect racks of short Douglas-fir logs against the spring flight of ambrosia beetles. Despite 360 mm precipitation between the time of spray application and the main attack flight of ambrosia beetles, both formulation gave better than 95% reduction in attacks compared to those recorded on untreated and control logs.

Relative efficacies of various insecticides following dermal exposure to the dusky wireworm, *Agriotes obscurus* L.

Van Herk, W. and R.S. Vernon

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Neonicotinoid, pyrethroid, phenyl pyrazole, and spinosyn insecticides may soon replace OP's and OC's for vegetable pest management. Here we present the relative efficacies of candidate insecticides from each chemical class on a common BC wireworm pest. Intermediate morbidity stages and the ability to recover after prolonged illness are discussed.

Sexual communication in hobo spiders

Vibert, S., M. Salomon, and G.J. Gries

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This study investigates potential use of pheromonal communication and mating signals in hobo spiders, *Tegenaria agrestis*. We present experimental data providing evidence for a female-produced airborne pheromone. We also show images of courtship behavior, suggesting the presence of a male-produced pheromone.

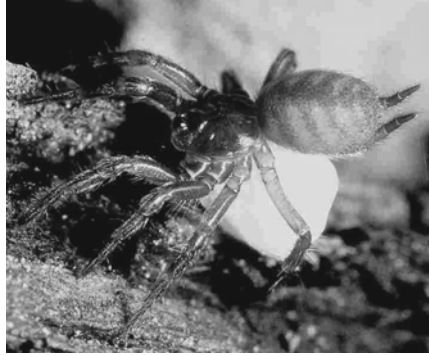
Symposium on Invertebrate Species At Risk in BC, 22 October 2005

This year the ESBC Executive decided to try a two-day event, and coordinate the AGM with A Symposium on Invertebrate Species At Risk in BC.

The event attracted over sixty individuals from industry, all forms of government and the private sector. A wide range of speakers gave talks that ranged from spiders to butterflies to gastropods. Arthur Robinson and Patricia Perkins at the Pacific Forestry Centre were gracious hosts to the event and in all it was impressive that so many people would give up a splendidly sunny fall day to attend.



Large marble *Euchloe ausonides insulanus*, found in Garry Oak Ecosystems
Photo: J. Heron



Rare spider *Microhexura idahoana*, found in sheltered moss/rock complexes in Stagleap Provincial Park.
Photo: Fred Coyle



Oregon forestsnail, *Alogona townsendiana*, found in low elevation moist and mixed wood forests of southwestern BC
Photo: Kristiina Ovaska



Behr's hairstreak, *Satyrium behrii columbia*, found in the South Okanagan grasslands
Photo: J.Heron



Taylor's checkerspot butterfly, *Euphydryas editha taylori*, found on Denman Island.
Photo: S.Lavallee

Abstracts

Authors and Presentations (in alphabetical order)

- **Mary Jo Andersen**, Oregon Zoo, OR
Email: AndersonM@metro.dst.or.us
 - **Invertebrate Conservation at the Oregon Zoo** Starting in 1999, the Oregon Zoo has been involved with population supplementation projects for four different species of native butterflies. This talk covered aspects of captive rearing for the Oregon silverspot butterfly and the initial rearing observations of the Taylor's checkerspot butterfly.
- **Robert G. Bennett**, BC Ministry of Forests
Email: Robb.Bennett@gov.bc.ca
 - **Developing a directed approach for including spiders in Canada's endangered species conservation efforts** Spiders have no visible presence in Canada's growing federal endangered species conservation program. Successful inclusion of any taxon requires status reports including good distribution and abundance data. Except for a small minority of spider species these data are lacking and difficult to obtain. Realistic candidates for conservation consideration are Canada's

- mygalomorphs and endemic pholcids. Spiders with strong associations with threatened or endangered habitats could be targeted for future directed surveys.
- **Robert A. Cannings**, Royal British Columbia Museum, and **Leah R. Ramsay** British Columbia Conservation Data Centre, British Columbia Ministry of Environment
 - **The Conservation Status of British Columbia Dragonflies (Insecta: Odonata): species at risk, inventory and status ranks** The changes in the conservation status ranks of BC's dragonfly (Insecta: Odonata) species over a nine-year period demonstrate how inventory provides information for assigning these ranks. Preliminary conservation status ranks were assigned to BC's dragonflies in 1993. Subsequently, inventory efforts focused on species considered at risk in order to more accurately determine their status. From 1996 to 2003, concentrated surveys were conducted throughout much of the province. During these surveys, known ranges of many species were extended, knowledge of habitat requirements increased, and five new species were confirmed for the province. Many of the targeted species were more abundant than previously thought, and their conservation ranks were changed accordingly. Others were found only rarely or not at all. Ranking poorly known species is challenging, particularly if samples are small or habitats are difficult to access. By increasing our knowledge of these species and their requirements, we can assign them more accurate ranks, thus ensuring that conservation efforts will target the species and habitats that truly require them. As of 2005, an expanded COSEWIC Invertebrate Subcommittee is now empowered to list species of Odonata at risk in Canada; inventory in BC has helped determine species requiring COSEWIC attention.
 - **Sylvie Desjardins**, University of British Columbia Okanagan, Kelowna, BC
Email: Sylvie.Desjardins@ubc.ca
 - **Monitoring Threatened Butterfly Species Using Mark Recapture** The Behr's hairstreak (*Satyrium behrii columbia*) is a small butterfly that requires antelope-brush (*Purshia tridentata*) as its larval foodplant. In Canada, it resides only in the South-Okanagan, the only region where this host plant occurs. The butterfly is at risk because the antelope-brush ecosystem, one of the four most endangered ecosystems in Canada, is itself at risk. Hundreds of hectares of this habitat have been converted to vineyards in recent years. Recent wildfires near Osoyoos and Vaseux Lake, and the construction of the Aquila power substation in the Vaseux Creek Floodplain, represent further threats to this species' fragile habitat. To inform the decision-making process and ensure the success of the recovery program, we have initiated a comprehensive study of the Behr's hairstreak population in the Vaseux Creek Floodplain that combines extensive monitoring, dispersal and genetic diversity studies, and population modeling. This talk presented the results of mark-recapture surveys carried out in the spring of 2004 and 2005 and how this information is being used to generate mathematical models.
 - **Jennifer Heron**, British Columbia Ministry of Environment, Vancouver, BC
Email: Jennifer.Heron@gov.bc.ca
 - **Introduction to the Symposium and Update on the Recovery of invertebrates at risk in British Columbia** Invertebrate conservation is a significant challenge facing land managers, governments and those working in conservation biology. British Columbia is no exception to this challenge. This talk will provide an update on the provincial recovery of terrestrial invertebrates at risk highlighting those COSEWIC-listed species in the Garry Oak Ecosystems, South Okanagan-Similkameen ecosystem and lower mainland region of BC.

- **Dan Johnson**, University of Lethbridge, Lethbridge, AB
Email: danjohnson@uleth.ca
 - **Concepts for grassland insect conservation and diversity** Insects and arachnids are keystone members of ecosystems, and in many cases they are worth conserving simply because of their important roles in food webs, pollination and decomposition. In other cases, they serve as umbrella and flagship species that can help us to protect habitat, while protecting species at risk. Rare arthropods also serve as harbingers of local and global change, so monitoring is not only central to ecosystem management, but also important for assessment of wider, longer-term changes. Dan illustrated some of these questions with examples in the Prairie, Foothills and Montane regions, regarding rare Orthoptera, the Northern scorpion and Yucca moth.
- **Kristiina Ovaska** and **Lennart Sopuck**, Biolinx Environmental Research Ltd., Sidney, BC
E-mail: kovaska@shaw.ca
 - **Terrestrial Gastropods at risk in British Columbia** Four species of terrestrial gastropods are listed by COSEWIC to be at risk, all from southwest British Columbia; an additional species is currently under assessment. The ranges of these species overlap populated areas on the Lower Mainland and/or southern Vancouver Island. All are forest associates, and human activities and developments continue to diminish their habitats. Much of our knowledge of gastropods in the province is at the alpha level, and recent studies have focused on mapping distributions and elucidating habitat associations. Ongoing research projects conducted by students at Trinity Western University address seasonal movements and reproductive ecology of the endangered Oregon forestsnail (*Allogona townsendiana*). The recovery of gastropods at risk is challenging because of paucity of basic information on distribution and life history for most species. However, because viable populations can exist in small patches of suitable habitat, the resources and land base required for an effective recovery are considerably less than for more wide-ranging species.
- **Nick Page**, Raincoast Applied Ecology, Vancouver, B.C.
Email: napage@interchange
 - **Ecology and Recovery of Sand-verbena Moth in Coastal Dunes** Sand-verbena moth has only been found at eight sites in the world, all of them in the Puget Sound - Georgia Basin region. It requires large patches of a single host-plant (yellow sand-verbena) for population persistence. This habitat is restricted to large sand beaches, spits, and dunes that are uncommon in the Puget Sound. This habitat has been degraded by coastal development and invasive species colonization, which have affected the rate and pattern of succession. Recovery research has focused on understanding the relationship between Sand-verbena moth and its host-plant, as well as developing methods for restoring open sand dunes. A variety of vegetation management treatments have been examined in dunes stabilized by Scotch broom and invasive grasses. Initial results indicate that restoring open dunes may be successful, but understanding the disturbance ecology of coastal dunes will be critical for long-term recovery for the Sand-verbena moth.
- **Kirsten Prior** and **Jessica Hellmann**, University of Notre Dame, IN
Email: Hellmann.3@nd.edu
 - **Building conservation practices for butterflies using a threatened indicator species (*Erynnis propertius*)** Garry oak ecosystems are hotspots for flower and butterfly diversity, but they are continuously impacted by human activities. In this talk we show how research on Garry oak butterflies, particularly the oak specialist *Erynnis propertius*, can uncover mechanisms of population change caused by

human pressures. Such research provides a foundation on which best conservation practices can be built.

- **Geoff G.E. Scudder**, University of British Columbia Vancouver, BC
Email: scudder@zoology.ubc.ca
 - **Approaches to Invertebrate Conservation in British Columbia** This talk will emphasize that not all invertebrates potentially at risk in British Columbia need to be legally listed for effective conservation. Instead, conservation efforts for invertebrates should concentrate on habitat protection, and it may only be habitat specialists from restricted habitats. Most invertebrates that live in less restricted habitats can probably be conserved through vertebrate conservation plans, or plans based on vegetation types. This point will be illustrated by considering conservation planning and activities in the South Okanagan. The need for public information and education will be stressed.
- **Mace Vaughan**, Xerces Society for Invertebrate Conservation Portland, OR
Email: Mace@xerces.org
 - **Invertebrate Conservation on the Ground: A U.S. Perspective** Mace Vaughan will provide a context for the importance of invertebrates, their conservation and role in ecosystem function. He will then briefly touch upon the strategies the Xerces Society uses in its invertebrate conservation efforts. The Xerces Society works on the ground with land managers, agency personnel, and scientists to conserve and protect habitat for invertebrates. Topics covered will include endangered species (with case studies of the Taylor's checkerspot and island marble butterflies), our work to develop a red list of pollinator insects, conservation of habitat for pollinators in agricultural landscapes, our general educational efforts to engage the public, and challenges specific to our conservation efforts on-the-ground.

Posters and Authors

- **Lea French, Leah Ramsay and Jacquie Lee**, British Columbia Conservation Data Centre, British Columbia Ministry of Environment
Email: Leah.Ramsay@gov.bc.ca
 - In August 2005, Lea French, Leah Ramsay and Jacquie Lee surveyed historical locations of the Red-listed western ridged mussel, *Gonidea angulata*. The results are presented.
- **Karen M.M. Steensma, Patrick L. Lilley and H.S. Zandberg**, Trinity Western University Langley, BC
Email: steensma@twu.ca
 - **Preliminary assessment of critical nesting habitat for the Oregon forest snail *Allogona townsendiana*** The remaining populations of the endangered Oregon forest snail *Allogona townsendiana* in Canada are restricted to moist, low-elevation, mixed forests in southwestern BC. A critical habitat survey is underway within the Trinity Western University Ecosystem Study Area (Langley) for mating, nesting and juvenile snails, to identify preferred microhabitats for each life history stage. Active nesting sites were located and compared with randomly chosen nearby locations by measuring substrate (soil) characteristics, surrounding vegetation, canopy cover, moisture, and other parameters. Preliminary analysis indicates that known nest sites had significantly greater percentages of bare soil and non-grass vascular plant cover than the random sites. Proximity to stinging nettle *Urtica dioica* and availability of coarse woody debris also appear to be critical factors.

Awards

BC grows good entomologists! Congratulations to those student prize winners at both the *Entomological Society of BC* and *Canadian Entomological Society Annual General Meetings*.

The winners for the 2005 Student awards at the Entomological Society of British Columbia Annual General Meeting were:

- Harold Madsen Award for best PhD presentation, contributed by Phero Tech Inc.
 - Samantha Vibert, Simon Fraser University, gave an outstanding presentation on her project titled “Sexual communication in hobo spiders”.
- James Grant Award for best Masters of Science presentation, contributed by the North Okanagan Naturalists' Club
 - Wim Van Herk, Agriculture and Agri-foods Canada, gave an outstanding presentation on his project titled “Relative efficacies of various insecticides following dermal exposure to the dusky wireworm, *Agriotes obscurus* L.”.
- Conference Paper Award in Arthropod Ecology, contributed by Dan Johnson (Canada Research Chair in Ecology)
 - Zoë Lindo, University of Victoria gave an outstanding presentation on her project titled “Canopy oribatid mite communities in ancient Western redcedar”.

BC winners at the 2005 Canadian Entomological Society Annual General Meeting in Canmore, AB:

- Zoë Lindo, University of Victoria, won the Entomological Society of Canada Postgraduate Student Award.
- Maxence Solomon (Simon Fraser University), apart from winning the Marlon Brando award for "highest number of chicken strips eaten at an entomology-ridden dinner banquet", won an ESC student conference travel award. He will likely use this award money to finance his next entomological conference adventure, and as long as they are serving chicken strips he will be there.

Getting out there

Lectures

Biodiversity Lecture Series, UBC

- Dr. David Suzuki gave the first Biodiversity lecture in October.
- Robert Bateman will be speaking sometime in March 2006 as part of the Biodiversity Centre Lecture series. Not entirely bug related, but nonetheless extremely interesting. Go forth and convert the masses to bugdom. Check the website <http://www.zoology.ubc.ca/biodiversity/seminars.htm> regularly and you can be notified of free tickets to upcoming talks.

G.G.E. Scudder Lecture Series, UBC

This year's G.G.E. Scudder Lecture will be by Naomi Pierce (Harvard). The lecture will take place in February, exact date, time and location are TBA.

Dr. Pierce is renowned for her work on the evolution of species interactions and behavioural ecology that governs species interactions. In particular, her lab is focusing on the many aspects of lycaenid butterflies and ants, as well as the host plants these two insects depend on. Her work spans the molecular aspects of these interactions, including both the systematics of the insects involved and the analysis of the chemical pathways that govern their relationships.

Her recent publications include (pdf's are available from her website):

Wahlberg, N, Braby, M.F., Brower, A.V.Z., de Jong, R., Lee, M., Nylin, S., Pierce, N.E., Sperling, F.A.H., Vila, R., Warren, A.D. and E. Zakharov. In press. Phylogeny of butterflies and skippers: hidden support in molecular data sets revealed by combined analysis with morphological data. **Proc. R. Soc. Series B**.

Lukhtanov, V.A., Kandul, N.P., Plotkin, J.B., Dantchenko, A.V., Haig, D. and N.E. Pierce. In press. Reinforcement of pre-zygotic isolation and karyotype evolution in *Agrodiaetus* butterflies. **Nature**.

Cui, J. Bahrami, A.K., Pringle, E.G., Hernandez-Guzman, G., Bender, C.L., Pierce, N.E. and F. M. Ausubel. 2005. *Pseudomonas syringae* manipulates systemic plant defence against pathogens and herbivores. **PNAS** 102: 1791-1796.

Quek, S-P., Davies, S.J., Itino, T. and N.E. Pierce. 2004. Codiversification in an ant-plant mutualism: stem texture and the evolution of host use in *Crematogaster* (Formicidae: Myrmicinae) inhabitants of *Macaranga* (Euphorbiaceae). **Evolution** 58: 554-570.

Summer 2006 In the Field

Behr's Blitz 2006



The Behr's hairstreak is a nationally threatened butterfly that lives in the Antelope-brush ecosystems of the south Okanagan. The butterfly typically starts its flight period in mid June. The Behr's Blitz Butterfly Event was started a few years ago to help survey for this butterfly and raise public awareness for this and other species that depend on Antelope-brush. This year the Behr's Blitz is scheduled from **Monday, June 12 to Friday, June 16, 2006**. Both experts and novices are encouraged to participate.

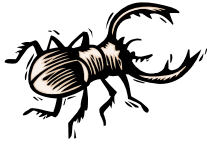
The event starts with a training session at the **Osoyoos Desert Centre** on **Monday, June 12, 2006** around 9:30am. Participants are then grouped and head off to survey polygons throughout the south Okanagan. We provide nets, identification cards, maps and encouragement; we just want your help.

A few years ago, a CBC television crew attended and this entomological event made the news. If you can't make the dates above, but still want to be involved, we can still provide you with the information.

Those interested in volunteering for the event should contact **Jennifer Heron** at 604-222-6759 or **Jennifer.Heron@gov.bc.ca**

There is a similar event for the **mormon metalmark** from **Monday, August 14 to Friday, August 18, 2006**. The details of the training and meeting points aren't finalized, contact Jennifer Heron for more information. The Metalmark Blitz will be in Keremeos, and coincide with the Bugs and Beers event in Penticton.

Bugs and Beers 2006



Those of you interested in being social, we are re-starting a “Bugs and Beers” monthly social event on the third Monday of every month at 7:30 pm. This is meant to be an informal setting for amateurs, enthusiasts, and professionals to meet and talk bugs. Come out and meet other entomologists!

Monday, January 16 th	Foggy Dew Irish Pub, Coquitlam (405 North Road)
Monday, February 19 th	The Orange Room, New Westminster (620 6 th Street) Telephone: 604.520.6464 http://www.theorangeroom.ca/ The Orange Room is a funky lounge; the owner’s favourite colour is orange and so what better name to call your restaurant.
Monday, March 20 th	Bimini’s Pub, Vancouver 2018 West 4th
Monday, April 16 th	Spinnakers Brewpub, Victoria (308 Catherine St)
Monday, May 21 st	The Fort Pub and Grill 9273 Glover Road, Fort Langley Phone 604.888.6166
Monday, June 12 th <i>Note: special date to combine with Behr’s Blitz</i>	The Ridge Pub, Osoyoos (at the junction of Hwy 3 and Hwy 97)
Monday, July 16 th	Alexander’s Beach Pub, Vernon (12408 Kal Lake Road) We have it on good authority (thank you, Ward) that this is a fine location for a Bugs and Beers “meeting”.
Monday, August 14 th <i>Note: special date to combine with Metalmark Survey</i>	The Barley Mill Pub 2460 Skaha Lake Rd., Penticton Phone: 250-493-8000

Notes from the Field

Fieldwork – grin and bear it!

Greg Smith

This past summer I was working southeast of Merritt in the Angstad Creek area, doing field work for my Master's, which is investigating the interaction between endemic mountain pine beetles and secondary bark beetles. In order to catch beetles to assess the attraction of mountain pine beetles to a pheromone blend, I had 56 Lindgren funnel traps laid out in a series of blocks. At the time of this little event, I was visiting them every 2 weeks to empty traps and ensure they were still hung between the trees where I had put them.



Throughout the early part of the summer I had seen no bear sign - scat, tree damage, ant nests ravaged, absolutely nothing. However on my 2nd trip I became very aware of the presence of one, as the further I walked from the road along my trap line, the more damage to my traps I found. Initially, the collection cup or a couple of funnels had a bite mark or two in them. Then the collection cups were on the ground and finally the traps were ripped down, funnels shredded, collection cups in little piles of tooth-marked plastic and no beetles anywhere! This isn't particularly surprising, as a trap with 2 weeks of rotting insects in it must make for an attractive little snack to a resident bear. After a number of hours and multiple trips to the truck to get new trap parts (I always carried extra cups and Vapona, but didn't expect to have to replace a few traps), I reset my line and left for home.

Two weeks later, my wife (who was 5 months pregnant at the time) met me in Merritt and came up to Angstad to help me check the lines. We began with the traps nearest the road and worked our way in. As we went from trap to trap, something looked familiar; my traps were damaged again! Not content with one feeding, our bear had come back for a second round. Again, as we went further from the road, the traps were in worse and worse condition (I supposed he liked to walk the lines the way we did, have an appetizer near the road and then a five course meal as he/she got further into the bush). Since this was a weekend, we had gotten started a little late and it was now far into the afternoon of a very overcast day. Under the canopy it was getting rather dark. As we were getting close the last trap set, I caught a brown

flash out of the corner of my eye the same time Jess did. She screamed (she would contend it was only a subtle exclamation of warning) and both of us ran towards the nearest tree. Then we stopped and listened. It sounded like our bear was part of bear stampede! Knowing that bears don't usually travel in packs large enough to start a stampede, I was quite relieved. Peeking out from behind our tree, seconds after the initial sighting, we both started laughing as we saw the receding rear ends of 20 brown cows that we had rudely interrupted while they were have a snack on the grasses in the study plot. Luckily that was the closest encounter with a bear I or any of my assistants had this past summer.

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Odonate Adventures

Jennifer Heron

An entomologist's summer is not complete without a few weeks of blissful bug hunting. This past summer I spent two weeks assisting Rob Cannings and the Royal BC Museum with dragonfly fieldwork in the central coast, from Prince Rupert to Terrace and various points in-between. It was the sixth year of fieldwork in a study to survey the provincial Odonata. Claudia Copely and her husband Darren joined in for some of the adventure too. We were quite successful in our surveys, but true to the reputation of the area it didn't stop raining for many of the days.

The trip started in Prince Rupert, and after watching the rain for a few hours we decided to explore a close by bog on the advice of a local. To our disappointment, there was no aquatic habitat, but as we were leaving we met an entomological friend, Lynn Westcott and her husband, who happened to be exploring the area too. Lynn had her net in the car, and was thinking similar thoughts to Rob and me, only to be thwarted by the rain.

Lars, a local government biologist in Terrace, knew the area well and volunteered to take us out to survey some of the backwater bogs. We were discussing the best places to find Odonates, wandering through Lakelse Lake Provincial Park and looking at some of the aquatic habitat. It wasn't until we had left the park and were crossing the highway that Lars looked down at the yellow dotted line and picked up a twitching dragonfly. This twitching specimen turned out to be female *Rhionaeschna multicolor*. This species is fairly common in the lowlands of southern BC south of 51 degrees, with one outlier at McBride. The Lakelse Lake record was a pretty big range extension. The insect was still barely alive, so couldn't have been carried far on a car grille! It must have been hit there by a car (the habitat on the roadside is perfect --cat-tail marsh). Rob and I continued to survey the roadside marshes near the road, but were unsuccessful in finding another specimen.

After time to reflect on some of the highlights of the trip, the best part was the summit of the road to Kitsault, a community that was abandoned in the early 1980's after the local mine shut down. The roadside alpine bogs were full of odonates, the waterways a series of meandering streams and creeks, and the landscape very 'hobbitish'. As the afternoon drew to a close, and Rob and I were showing each other our latest catches, and we hadn't seen or heard any sign of human existence. Then a man drove by clad head to toe in leather suit and riding a top of the line touring motorcycle. He was wearing a full helmet with tinted glass and it was as if

he had dropped out of a Matrix movie. You never know who or what you will encounter in the middle of nowhere.

I learned much about the dragonflies of BC, and look forward to another summer survey with Rob, Claudia and Darren.

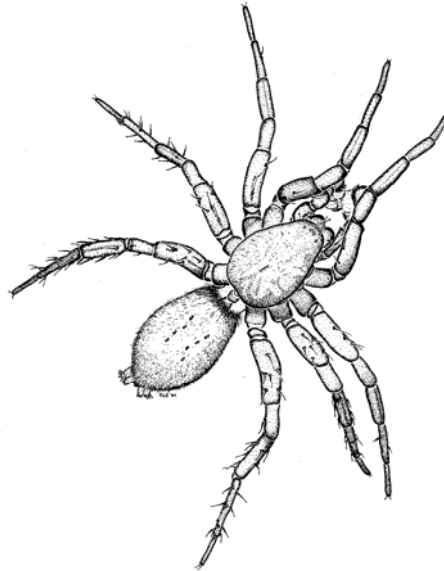


An alpine bog along the road to Kitsault (left) and Lars' hidden bog (right). (Photos by J. Heron)

New and Upcoming Publications

Spiders of North America

Various authors. This book is a bargain at \$40USD. More information can be found at the American Arachnological Society website: <http://www.americanarachnology.org/>. Our own Robb Bennett wrote six chapters!



Gnaphosa snohomish, a rare bog specialist spider.
Drawing courtesy Robert G. Bennett.

Notes and News

Entomological Society of Canada, 2-5 November 2005

The 2005 Entomological Society of Canada Annual General Meeting was held in Canmore, AB and was a rip-roaring event. The meeting was loads of fun, and as always it was a pleasure to see old friends and learn about the latest research in the Canadian entomological scene. There were many of us that chose to carpool the long drive to Canmore from the coast and with Bennett at the helm things rapidly turned into a gong show. On route, we spent the night at the Borkent's home in Salmon Arm, and had a truly entertaining time with laughs and incredible hospitality. The conference itself was intellectual stimulation, good conversation and a time to see old friends. One of the highlights to the meeting was the first Arachnology Symposium that brought together many of Canada's researchers in spiders, mites, and other eight legged wonders. The symposium was a great success, with Bennett printing official t-shirts and word that another symposium will follow next year. The meeting has barely ended, but we all look forward to next year's meeting in Montreal.



BC Student Representatives

The new student representatives on the Entomological Society of Canada are Chris Borkent and Greg Smith. The main role of the co-chairs is to organize a student committee comprised of student representatives from universities across the country. This committee discusses the needs and questions of entomology students and provides updates of who has defended their theses. The co-chairs also organize the Grad student symposium at the ESC AGM as well as the silent auction. We make sure the student part of the website is running smoothly and maintain the directory of entomological education in Canada. We also have voting privileges at board meetings and write a bimonthly column (the Student Wing) that comes out in the ESC Bulletin to keep students up to date with what is going on in Entomology in Canada.

Funding Opportunities

10th Annual Graduate Student Scholarships

The Entomological Society of British Columbia announces the tenth annual Graduate Student Scholarship competition. Two \$500.00 Scholarships (one M.Sc., one Ph.D.) are awarded each year at the Annual General Meeting. Scholarships are to be used to defray research paper or poster presentation related costs (including travel) incurred by graduate students for participation in conferences other than the ESBC AGM.

For consideration, applicants must be:

- Graduate students and ESBC members in good standing, and
- **must submit a Word file containing:**
 - name and locality of conference to be attended
 - title and abstract of research to be presented
 - current CV

Abstract should be double spaced, 12 font, and a **maximum** of 200-250 words (based on processor electronic word count). Applications will be judged on the basis of scientific importance, quality of the application, and qualifications of the applicant. Applications from M.Sc. and Ph.D. students will be judged in separate categories; a singleton application in either category will be judged with applications in the other.

Deadline for receipt of applications for 2006 Scholarships is 30 September 2006. The scholarships will be awarded during the ESBC Annual General Meeting during Fall 2006 (date to be announced in *Boreus* 26(1)). Send applications to:

Robb Bennett
Secretary/Treasure, ESBC
BC Ministry of Forests
7380 Puckle Road
Saanichton, BC V8M 1W4

or by e-mail to: [robb.bennett@ gov.bc.ca](mailto:robb.bennett@gov.bc.ca)

In Memory

Pavel Andreyevich Lehr: 1923-2005

Rob Cannings, Curator of Entomology, Royal British Columbia Museum, Victoria, BC, V8W 9W2, Canada. Email: cannings@royalbcmuseum.bc.ca and **Arkady Lelej**, Head of the Entomology Laboratory, Institute of Biology and Soil Science, Vladivostok, Russia. Email: lelej@ibss.dvo.ru

Pavel Andreyevich Lehr, the prominent student of Palaearctic Asilidae, died on 15 September 2005 at the age of 82 years. Born on 27 September 1923 in Saratov, Russia, in 1941 he and his family were deported to a small village in South Kazakhstan after the liquidation of the German autonomous region in Povolzhye. From April 1942 to September 1943 he was held in a so-called labour army (really as a prisoner) in the South Urals but was “demobilized” because of starvation. But he survived. In 1953 Pavel Andreyevich graduated, *cum laude*, from Kazakh State University in Alma-Ata and subsequently taught high school with his wife Nina in North Kazakhstan. From 1956 to 1965 he headed the Laboratory of Biological Control in the Institute of Plant Protection in Alma-Ata and from 1965 to 1973 he was a teacher and later professor of Kazakh State University. In 1973 Pavel Andreyevich was made head of the Laboratory of Systematics and Zoogeography of Terrestrial Arthropods in the Institute of Biology and Soil Science, Vladivostok. From 1977 to 1979 he was Deputy Director of this Institute and from 1981 to 1991 he was Director. From 1991 until his death he was a consultant to the Russian Academy of Sciences.

Lehr’s Ph.D. dissertation, “Asilid flies of South-East Kazakhstan”, was defended in 1959; an additional doctoral dissertation, “Asilid flies of Kazakhstan and Middle Asia” was completed and defended in 1970. In 1987 he was elected a corresponding member of the Academy of Sciences.

In 1973 Lehr founded the Laboratory of Systematics and Zoogeography of Terrestrial Arthropods (later called the Laboratory of Entomology) in the Institute of Biology and Soil Science, Vladivostok. It was his idea to create the fundamental publication, “Key to the Insects of the Russian Far East”, which deals with all the insects of the Russian Far East and adjacent territories. This long-term project (19 parts in 6 volumes) began in 1986; 16 parts treating more than 23,000 insect species, have already been published.

Pavel Andreyevich was a world authority on robber flies (Diptera: Asilidae). He investigated vast territories of the Russian Far East, Siberia, Kazakhstan and Middle Asia. He described one subfamily, four tribes, 34 genera and 292 species and subspecies, mainly from the Palaearctic region. His asilid collection, housed in the Institute of Biology and Soil Science, Vladivostok, numbers 40,000 specimens of 700 species, including the holotypes of 117 species and paratypes of 57 species. His sections on the Asilidae in the Catalogue of Palaearctic Diptera (1988) and the monograph “Robber flies of the subfamily Asilinae (Diptera, Asilidae) of the Palaearctic Region” (1996) are among the most important of his 89 scientific contributions. Pavel Andreyevich supported many young researchers - nine Ph.D. dissertations have been defended under his guidance and some of his students now hold prominent positions in Russian entomology. His colleagues have named two genera and 21 species after him; this number will surely increase in the years to come.

In 1993, I (RAC) was one of Pavel Andreyevich's first foreign visitors after the dissolution of the Soviet Union. Vladivostok had been a closed city and impossible to visit earlier. I was in the early years of my study of *Lasiopogon*, and virtually all the material of this genus from eastern Asia was in Lehr's collection. After weeks in the lab and field, I flew home with almost 1000 borrowed specimens and others that I had captured during my trip. These collections were critical to my work, as were the piles of Russian asilid papers that Pavel Andreyevich gave me during my stay (Not only was he an accomplished systematist, but he wrote insightful papers on robber fly ecology). He was a gracious host and I will always cherish his generosity and friendship.

Perseverance, tenacity and dedication helped Pavel Andreyevich overcome the tribulations of his life. Integrity and honesty guided his actions and his work. His humanity and unquenchable interest in the insect world endeared him to his friends and colleagues. They will not forget him.

Pavel Andreyevich Lehr is buried in Sergiev Posad, near Moscow.