December 2017 Vol. 37 (2)

Boreus

Newsletter of the Entomological Society of British Columbia

Table of Contents

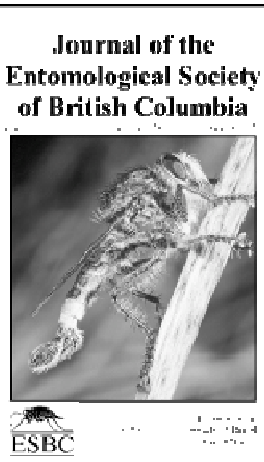
The Executive

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

President	Jenny Cory Simon Fraser University, Burnaby
First Vice President	Lisa Poirier University of Northern B.C., Prince George
Second Vice President	Tammy McMullan Simon Fraser University, Burnaby
Secretary	Tracy Hueppelsheuser British Columbia Ministry of Agriculture, Abbotsford
Treasurer	Ward Strong BC Ministry of Forests, Vernon
Editorial Committee (Journal)	Kathy Bleiker (Editor-in Chief) University of Northern B.C., Prince George Robert Cannings, Royal B.C. Museum, Victoria Lorraine Maclauchlan B.C. Ministry Forests & Range, Kamloops Bob Lalonde University of British Columbia – Okanagan, Kelowna Steve Perlman University of Victoria, Victoria Leland Humble Canadian Forest Service, Victoria Rob McGregor Douglas College, New Westminster Staffen Lindgren University of Northern B.C., Prince George, Prof. Emeritus Dezene Huber University of Northern B.C., Prince George
Editor (Boreus)	Gabriella Zilahi-Balogh Canadian Food Inspection Agency, Kelowna
Directors	Tamara Richardson (1st) Cornucopia Crop Consulting, Cawston Grant McMillan (2nd)
Graduate Student Representative	Dan Peach Simon Fraser University, Burnaby
Honorary Auditor	Brian Van Hezewijk Canadian Forest Service, Victoria
Regional Director of National Society	Bill Riel Canadian Forest Service, Victoria
Web Page Editor	Brian Muselle University of British Columbia – Okanagan, Kelowna

Publications of ESBC

Journal of the Entomological Society of British Columbia

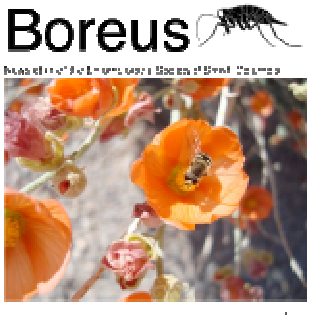


The Journal of the Entomological Society of BC is a peer reviewed, open-access journal. Manuscripts dealing with all facets of the study of arthropods will be considered for publication. Submissions may be from regions beyond British Columbia and the surrounding jurisdictions provided that content is applicable or of interest to a regional audience. Authors are invited to submit ideas for review and forum articles as well. Line drawings or photographs as candidates for the cover are also accepted.

For more information please contact Dr. Kathy Bleiker, Editor-in-Chief at journal@entsocbc.ca.

The deadline for submissions to be included in the 2017 issue is 1 September, 2017. Please submit articles at the JESBC website: http://journal.entsocbc.ca/.

Boreus



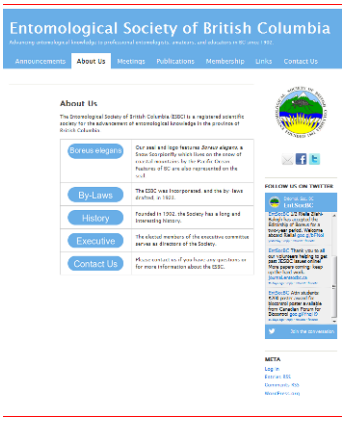
Boreus, the Newsletter of the Society is published in June and December. It contains entomological news, comments, reports, reviews and notices of meetings and other events. While emphasizing the Society's affairs, *Boreus* provides members with a forum for their views and news of British Columbia entomology, as well as informal articles, notes regarding research projects, and anything else that may be of interest to entomologists.

Please submit any entomological photograph, article, event or informational tidbit to the Editor!

Please send correspondence concerning Boreus to Dr. Gabriella (Riella) Zilahi-Balogh at boreus@entsocbc.ca.

The deadline for submissions to be included in the June issue is June 1, and the December issue is December 1. Submission dates are flexible. Submit before the end of the month.

ESBC Website



Main Webpage: http://entsocbc.ca

Update your bookmarks, and save our new URL to your browser favorites. Our website provides all the information you need, in one place: ESBC announcements, meeting info, publications, contact information, and other useful links.

Facebook

Find us on Facebook

Join us on Facebook:
https://www.facebook.com/groups/13552445022/

Keep in touch with students, colleagues, and friends! Stay up to date with the latest entomological happenings in BC, upcoming conferences, education and employment opportunities.

Twitter

@EntSocBC

Follow us on Twitter: https://twitter.com/EntSocBC

Join the conversation and connect with thousands of other entomologists and insect enthusiasts from all over the world. Stay up to date with insect news, announcements, conferences and job opportunities.

Membership

Membership of the Entomological Society of B.C. is available to anyone interested in entomology. Annual dues are: Canadian resident ($20.00), International member $25 or Student member $10. Join or renew your membership online via the Society's website http://entsocbc.ca/membership/.

Inquiries concerning membership and back issues should be sent to the Treasurer, Dr. Ward Strong, E-mail: treasurer@entsocbc.ca

Cover Sketch: *Boreus elegans* (Mecoptera: Boreidae), one of the more conspicuous snow scorpionflies in B.C. 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. Cover sketch credit Ward Strong and Robert A. Cannings.

Cover Photographs:

Greater Night-stalking Tiger Beetle (*Omus dejeani*), taken on Denman Island, B.C. Photograph by Jennifer Heron.	Helliwell Provincial Park, May 2012. Photograph by Jennifer Heron
Photographs taken in the Peace Region, BC. Photographs by Jennifer Heron	

Illuminated wasp nest and wasps. Photo credit: Peter Belton

The Entomological Society of British Columbia

ANNUAL GENERAL MEETING - OCTOBER 13, 2017

Student Union Building, University of the Fraser Valley -Abbotsford

PROGRAM

8:30 – 9:00	**REGISTRATION**		
9:00 – 9:15	**WELCOME AND ANNOUNCEMENTS**		
Time	**Title**	**Presenter**	**Type of Talk**
9:15-9:30	Yeast enhances the attraction of yellowjackets to dried fruit and fruit powder.	Tamara Babcock	Student
9:30-9:45	Mixed pathogen interactions: how does host nutrition modulate disease?	Pauline S. Deschodt	Student
9:45-10:00	How to Train your Parasitoid (in Sawdust)	Jessica Y.W. Leung	Student
10:00-10:15	Creating a DNA biomarker to identify dengue refractory and susceptible *Aedes aegypti*	Heather Coatsworth	Student
10:15-10:30	Manipulating Vector Competence in the Yellow Fever Mosquito, *Aedes aegytpi*	Lea Sanchez Milde	Student
10:30-11:00	**Break**		
11:00-11:15	Effect of nutrition status on the lifespan and reproductive output of the click beetle *Agriotes obscurus*	Danielle White	Student
11:15-11:30	Trade-offs between reproduction and disease resistance in the click beetle *Agriotes obscurus*	Kari Zurowski	Student
11:30-11:45	Synthetic Aphid Honeydew Volatiles Attract Mosquitoes (Diptera: Culicidae)	Dan Peach	Student
11:45-12:00	Within-individual repeatability of behavioural activity levels of the parasitoid *Pachycrepoideus vindemmiae*	Wendy Fleming	Student
12:00–1:00	**LUNCH BREAK – Lunch Provided**		
1:00-1:15	Flash in the pan or long term threat? MPB in novel pine habitats	Stan Pokorny	Student
1:15-1:30	Population state-dependent invasion potential of the mountain pine beetle in Alberta	Jordan Burke	Regular
1:30-1:45	Toxin diversity and specificity in a Drosophila defensive symbiosis	Matt Ballinger	Regular
1:45-2:00	Cutworm Killer: an Okanagan *Beauveria bassiana* isolate shows promise for climbing cutworm control in vineyards	Naomi DeLury	Regular
2:00-2:15	Effect of duration and location of pheromone trap placement in field margins on population estimates of two click beetle species	Wim Van Herk	Regular
2:15-2:30	A trait-based approach to predicting spread rates of invasive forest insects.	Brian Van Hezewijk	Regular
2:30-3:30	**Break**		
3:30-4:15	**Business Meeting!**		

Entomological Society of British Columbia Annual General Meeting Minutes, October 13, 2017 University of the Fraser Valley, Abbotsford

Meeting called to order by **Brian Van Hezewijk**, Society President, at 3:14 pm.
21 participants present.

Executive reports: to follow:

- Joyce Leung, Graduate Student Representative
- Bill Riel, Regional Representative
- Gabriella Zilahi-Balogh, Boreus Editor: published 2 times per year, June and December, posted on website. Submissions, photos, articles always welcomed from the membership or entomological community in BC.
- Dezene Huber, Journal Editor
- Brian Muselle, Webmaster
- Ward Strong, Treasurer
- Brian Van Hezewijk, President

Awards:

- ICMS Scholarship in Insect Pest Management: Recipient: **Warren Wong**, MPM candidate, Simon Fraser University
- ESBC Graduate Scholarship: Recipient: **Debra Wertman**, MSc candidate, University of Victoria

Student Presentation Winners at AGM:

- BSc presentation: **Lea Sanchez Milde**, Simon Fraser University, "Manipulating Vector Competence in the Yellow Fever Mosquito, *Aedes aegypti*".
- Okanagan Naturalists' James Grant award for Masters presentation: **Tamara Babcock**, Master of Pest Management Candidate, Simon Fraser University, "Yeast Enhances the Attraction of Yellowjackets to Dried Fruit and Fruit Powder".
- PhD presentation: **Heather Coatsworth**, PhD candidate, Simon Fraser University, "Creating a DNA Biomarker to Identify Dengue Refractory and Susceptible *Aedes aegypti*".

Thank you to all applicants for your interest and for your worthy applications. Thank you as well to the judges who adjudicated; it is always difficult to pick winners from

an excellent field of candidates! And, thank you for the donor organizations: ICMS, the Okanagan Naturalists, and the ESBC for supporting the awards in 2017 and encouraging the study of entomology in BC.

Elections: New officers elected by acclamation.

- Second Vice President: Tammy McMullan
- First Director: Tamara Richardson
- Second Director: Grant McMillan
- Graduate Student Director: Dan Peach

New Business:

- Bill Riel: Motion to register as a "member-funded society" under the new BC Societies Act. Joyce seconded. Carried.
    - Discussion: Would there be any differences in how we function as a society? No.
    - Some minor bylaw adjustments will need to be done and will be presented to the membership prior to the next AGM (Nov 2018) for approval.
- **Bill Riel:** Joint Annual Meeting planned for November 11-14, 2018 in Vancouver, with Entomological Society of America, Entomological Society of Canada, and Entomological Society of British Columbia. http://www.entsoc.org/events/annual-meeting
- **Jenny Cory:** Invasive Species "Grand Challenge" being planned for November 10, a full day event, prior to the 2018 JAM in Vancouver. https://entomologychallenges.org/meetings-and-events/ . A co-chair from BC will participate in the planning of the event.

Passing of the gavel to new President:

- **Jenny Cory**

Adjournment: by Jenny Cory at 4 pm.

Student Representative Report-Fall 2017

Joyce Leung

Improving student membership

This year in an effort to increase student participation at our AGM's, I expanded our advertising campaign by emailing various institutions to encourage them to forward the information about our meeting to students that may be interested, as well as undergraduates currently enrolled in entomology courses. Some of the institutions that we have not advertised to students before include BCIT, Douglas College and the University of the Fraser Valley. It remains to be seen how effective the campaign was, but I feel this was an important step in building relationships with those institutions.

Change in student award

A proposal for changes to the terms and conditions for the student awards was circulated in May and was accepted by the executive with minor changes. I believe the flexibility in award usage will make the awards more appealing for students. Although many students were still unaware of the new deadline this year, I believe with time, having the same deadline from year to year will be effective in increasing the number of applications.

This year, the ICMS has decided to sponsor an additional student award. I hope that they will continue to do so to encourage the next generation of entomologists.

Membership discounts

Last executive meeting, I was tasked with gauging interest from different organizations for providing our members with discounts. After looking into the admission prices for some places of interest including the Victoria Bug Zoo and the Beatty Biodiversity Museum, I concluded that the admission for these places were fairly affordable and it may be therefore be difficult in negotiating a discount.

With regards to companies supplying entomological supplies. I have drafted a letter that could be sent to entomological supply companies. I will pass this on to Dan who can work on this further. On further thought, even if we are unable to secure discount deals, I think an alternative worth exploring is to make a bulk order for supplies as a society, on behalf of members, and to negotiate a discount on these bulk orders.

New student director

As mentioned in the last executive meeting, I will be resigning my position as Student Director after the AGM. Dan Peach from SFU has kindly decided to accept the position and he has already been very busy with the society's activities. I am sure he will bring a lot to the position and I look forward to assisting in any way I can during this transition period.

Lastly, I would like to thank everyone on the executive for being very encouraging and supportive in the last three years. It's been a great experience, and it has been a pleasure to work with everyone.

Regional Director's Report: by Bill Riel

In 2017, the JAM will take place on October 22-25th at the Fairmont Hotel in Winnipeg, Manitoba. The theme will be "Small is Beautiful", a fitting theme given the fact that the Winnipeg meeting takes place in between ICE 2017 and the ESBC-ESC-ESA 2018 meeting in Vancouver. Manitoba meetings tend to be small but excellent: the local organizing committees do a good job of creating a solid scientific program. For more information see:
http://home.cc.umanitoba.ca/~fieldspg/ESC_ESM_meeting_webpage/index.html

At the Winnipeg JAM the ESC Governing Board will be participating in a facilitated Strategic Planning exercise in order to identify challenges and explore solutions to some significant issues the Society is facing.

The organization for the 2018 annual meeting in Vancouver, BC is progressing well. The joint organizing committee meets regularly via conference call, and wishes and needs of each participating society are being respected. There is a large organizing team, with representatives from all three societies.

The key players representing the ESBC are listed below:

ESBC Annual Meeting Co-chair:	Bill Riel
ESBC President:	Jenny Cory
ESBC Graduate Student Rep:	Dan Peach
ESBC Student Competition Co-Chair:	Dezene Huber
ESBC Scientific Program Rep:	Lorraine Maclauchlan
ESBC Treasurer:	Ward Strong

Editors

i) **Boreus**, Gabriella Zilahi-Balogh: loose deadline of June 1 for next Boreus contributions, seeking articles, photos, etc.

ii) **Journal**, Dezene Huber

Journal Editor's report: by Dezene Huber

Dr. Kathy Bleiker will assume full Editor-in-Chief (EiC) duties as of the end of October 2017. Over the past few months I have been including her as editor on incoming submissions and have been cc-ing her on correspondence, etc.

After I step down from EiC duties to take up the EiC position at The Canadian Entomologist (TCE), I will remain on as a subject editor at JESBC and will be available to help with system navigation.

The small run of 2016 hard copies has been printed. I plan to mail them to Tracy for distribution to our archiving partners.

We still need to complete the archiving of all of our back issues on the JESBC site. I believe that Alex Chubaty and/or Rylee Isitt have the remaining files. Alex is probably the best-versed in where this needs to go. I would strongly suggest finishing that.

Our current archives at the JESBC site include: 1906-1908, 1911, 1913-1916, 1918-1924, 1927-1945, 1947-1948, 1955, 1988-2016, plus all three Occasional Papers.

As soon as it is all online, I would also strongly suggest partnering with LOCKSS to ensure long-term backups of our archives. Alex is also familiar with this.

I would be happy to partner with someone in the know about this – preferably Alex, if he's interested, as he has the best handle on this – to complete and protect our archive.

On that topic, the Biodiversity Heritage Library (Smithsonian) currently archives:

- Proceedings of the ESBC: 1906 to 1965 (precursor to the JESBC)
- JESBC: 1971 to 2015
- Occasional papers 1 to 3 (i.e. all of them)
- Bulletin 1906 (partial) to 1908

From the above, our online gap is from 1966 to 1970; but we are heavily reliant on the BHL for this level of coverage.

The 2017 issue currently has the following in production:

- 3 Natural History and Observations Notes
- 2 Scientific Notes
- 3 Articles
- One (pollinator) set of symposium abstracts
- ESBC meeting symposium abstracts (anticipated)
- ESBC meeting oral scientific program abstracts (anticipated)

There are currently five other articles in various stages of review or revision. One of them is likely dead-in-the-water as it's been sitting there for a while. The statuses of the other four (reject, 2017 or 2018) depend on the outcomes and rapidity of their processes.

I am glad to say that the Natural History Notes and Observations (NHN&O) section is getting some traction. I have noticed that people often submit things as Scientific Notes that are better places in the NHN&O section. When that happens I suggest that they switch their category, and they have done so on all occasions so far.

Dr. Jesse Rogerson was the layout editor for the 2016 issue. He did a great job and we have retained his services for 2017. We have moved to a per-page payment scheme instead of the previous per-hour system.

I have really enjoyed being EiC for JESBC, and I look forward to continuing to work with the journal in my Subject Editor role. I hope to use my EiC position at TCE to help to champion Canada's regional journals as I see an important place for them in the entomological scientific landscape.

I look forward to seeing the journal continue to flourish under the capable leadership of Dr. Bleiker, the continued commitment of our excellent SEs, and the professional volunteer service of our copyeditor (Monique Keiran).

Webmaster's Report: by Brian Muselle

Web Editor Position

I have taken over as web editor from Rylee Isitt, the previous web editor, since mid-November 2016, and fully took over, with some minor requested help with new tasks, in late-December 2016.

Main Website

I haven't had any major issue with the website.

Aside from posting numerous announcements, updates to the website include: removal of email addresses and replaced with contact forms (to reduce SPAM emails), removal of MailChimp as the subscription program and replaced with subscription/un-subscription forms, and updated various plug-ins which include an archive plug-in to archive various posts as to not clutter the announcement page.

Among updates are the replacement of email addresses to contact forms, where questions, subscriptions, and AGM registration form submissions are sent to the webmaster email address and redirected to the appropriate members. So far, I do not think there has been any issues.

The website has done well preventing unwanted issues, including blocking nearly 40,000 malicious login attempts and nearly 700 spam comments. Figure 1 illustrates the mean views per day for each month since last October. October 2016 and March 2017

had the highest views, concurring with the AGM and Pollinator symposium, respectively. This October looks to be similar to last year (keep in mind these are means, and we still have half a month to go).

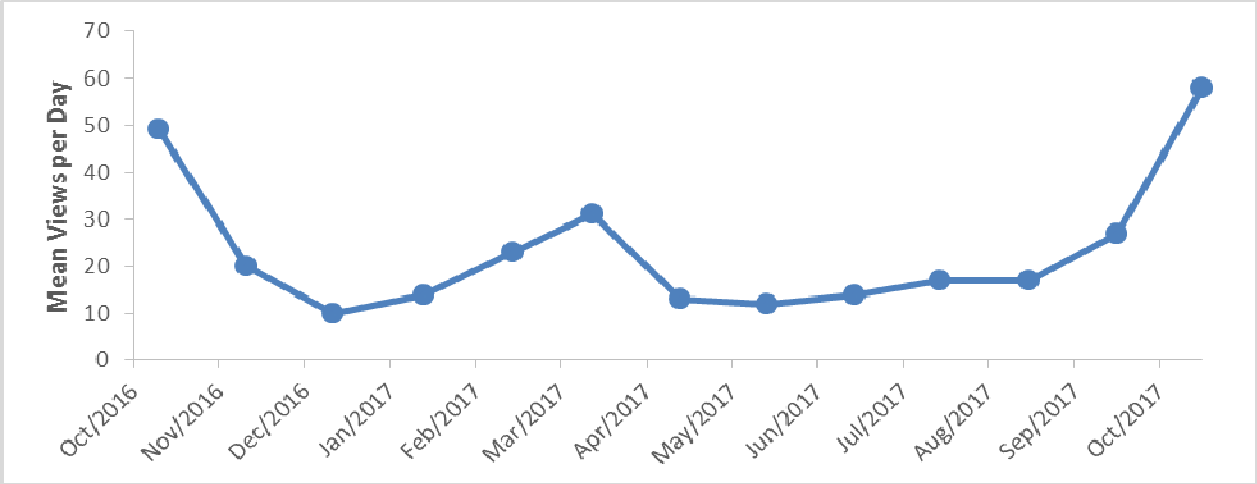


Fig.1 Traffic on main website (mean views per day). The spikes in views correlates with the AGM (October) and the Pollinator symposium (March).

Projects

1) Merchandise page – so far only for t-shirts; may be simply adding a paypal form.
2) Better streamlining of the AGM page – so far applicants must fill in a form (name, contact info, are they a student?) which also asks them whether they are paying for someone else and listing the names. Once completed, they are redirected to the paypal AGM payment page. This way we have a full list of applicants and which have paid and whose paid for who. This was supposed to help fix the problem last year of people paying for other people and not mentioning the names – making it harder for registration at the door. There is probably a better way that we can discuss after the AGM.

Social Media

The announcements I post on the website are automatically sent to Twitter. I also, on occasion or as requested, post these announcements on Facebook.
Also, when possible, I email UBC-Okanagan students and facility about events or announcements.

Overall, nothing really new to report. I am enjoying being the webmaster and hope I am doing a decent job. Thanks.

Brian Muselle, Web Editor
webmaster@entsocbc.ca

Tammy McMullan, Dave Gillespie and Naomi DeLury during coffee break at the ESBC 2017 meeting

Photo Credit: Joyce Leung/Brian van Hezewijk

Cercecis fumipennis (Hymonoptera: Crabronidae), female used as a biosurveillance tool for Emerald Ash Borer, *Agrilus planipennis*. Nest found in Lytton, BC. Photo Credit: Troy Kimoto

http://www.inspection.gc.ca/plants/plant-pests-invasive-species/insects/emerald-ash-borer/eng/1337273882117/1337273975030

Contact Troy Kimoto, Troy.Kimoto@inspection.gc.ca for sites of *Cercecis fumipennis* found in BC

TREASURER'S REPORT: October 10, 2017

The ESBC is on strong financial footing, with $17,749 in our bank and Paypal accounts, and $52,945 net assets. This is comparable to net assets at the end of 2016 of $52,248, so we are financially stable.

Income: We had a large miscellaneous income of almost $25k, which was mostly due to a GIC maturing and being deposited in our bank account. We also were reimbursed $2786 from UBC for the Spencer Museum slide collection photography project that was cancelled; the photographer Don Griffiths was issued an honorarium for the same amount. So far AGM registrations have brought in over $750; this will climb until the day of the event. Membership fees topped over $1000, which is about half of 2016 levels. 2016 was a catch-up year in which many members paid up dues in arrears and also paid in advance for 2017, largely due to a successful membership reminder drive. Dues for 2018 will start coming in at and shortly after the AGM, so this income will be higher by year end. Journal income is solid at over $3,000; all of 2016 and many papers for 2017 have been paid up.

Expenses: The large miscellaneous expense of over $20k was mostly due to the purchase of two new GIC's at $10k each, paid for with the matured GIC deposit. AGM expenses will climb to over $1500; none have been paid yet. Journal publishing fees are for the archive hard copies of the 2016 volume.

Liabilities: Accounts payable consist of 5 undeposited cheques: an honorarium cheque to Don Griffiths; a student awards cheque, facilities and catering for the AGM, and publishing of the 2016 Journal.

GIC's: We have 4 GIC's of $10,000 each, coming due in 2018, 19, 20, and 21:

GIC	Name	Matures	Invested	Return (max)
1	BMO Rate Riser Max	08-May-18	$10,000.00	$10,389.57
2	BMO Rate Riser Plus	16-Jan-19	$10,000.00	$10,241.43
3	BMO Growth GIC	14-Dec-20	$10,000.00	$18,106.39
4	BMO Growth GIC	08-Feb-21	$10,000.00	$18,106.39

Membership: We stand at 96 paid-up members (including 10 student members) for 2017, which is the highest we have had in many years. This is due to a series of email membership campaigns reminding old members to rejoin, and targeting new members. Our Benefits of Membership document spearheaded by Joyce Leung has been very helpful in persuading people to rejoin. Non-member subscribers to our communications stand at 189. We must continue communicating with members and non-member subscribers to maintain a strong sense of community and desire for membership.

Respectfully submitted,

Ward Strong
Oct 10, 2017

Entomological Society of British Columbia

Income and Expense Statement

Period: January 1, 2017 to October 10, 2017

REVENUES		
Membership fees		$1,154.54
Misc Revenues		$24,688.15
AGM:		$751.05
Registration	$751.05	
Donations	$0.00	
Misc AGM Revenue	$0.00	
Journal:		$3,047.55
Page charges	$3,047.55	
Subscriptions	$0.00	
Misc Journal Revenue	$0.00	
TOTAL INCOME:		**$29,641.29**
EXPENSES		
Bank fees		$0.00
Website		$0.00
Office, printing, postage		$564.22
Misc Expenses		$20,251.68
AGM:		$15.00
Facilities	$0.00	
Catering	$0.00	
Awards	$0.00	
Misc AGM Expenses	$15.00	
Journal:		$1,130.00
Publishing	$1,130.00	
Distribution	$0.00	
Misc Journal Expenses	$0.00	
TOTAL EXPENSES:		**$21,960.90**
NET INCOME		**$7,680.39**

Entomological Society of British Columbia

Statement of Financial Position

As of: 2017-Oct-10

ASSETS			
BMO Chequing Account		15,469.30	
Paypal account		2,279.47	
Accounts Receivable		0.00	
GIC 1: May 8, 2018	10,000	10,389.57	
GIC 2: Jan 16, 2019	10,000	10,241.43	
GIC 3: Dec 14, 2020	10,000	18,106.39	
GIC 4: Jan 16, 2021	10,000	18,106.39	
Total Assets			**$57,748.77**

LIABILITIES			
Accounts Payable		4,803.42	
Total Liabilities			**$4,803.42**

NET ASSETS	$52,945.35
LIQUID ASSETS	$12,945.35

President's Report: by Brian Van Hezewijk

Hello fellow ESBC members!

Spring is still weeks away, or perhaps even months for those members from our more northerly climes like Prince George.

In Society news, it has been an eventful year since I took over from Bob Lalonde as president of the ESBC. Dr. Lisa Poirier of UNBC in Prince George is now 1st vice president, Tammy McMullan is 2nd vice president. Thank you Lisa and Tammy for joining the executive. Brian Muselle has been doing a great job as web-editor. Dezene has been asked to be the Editor of the Canadian Entomologist and we wish him well as he takes over that position in the coming months. Dr. Kathy Bleiker has agreed to become the new editor of the JESBC and is currently learning how to manage the electronic submission system under Dezene's expert tutelage. Tamara Richardson, Cornucopia Crop Consulting, is 1st Director and Grant McMillan is 2nd Director. Dan Peach is now the Grad Student Representative. Thank you Grant and Dan for joining the executive.

Every year new positions open up within the society; I urge you to consider taking an active role and joining as an executive member or director. I have personally found it to be a rewarding and enjoyable experience.

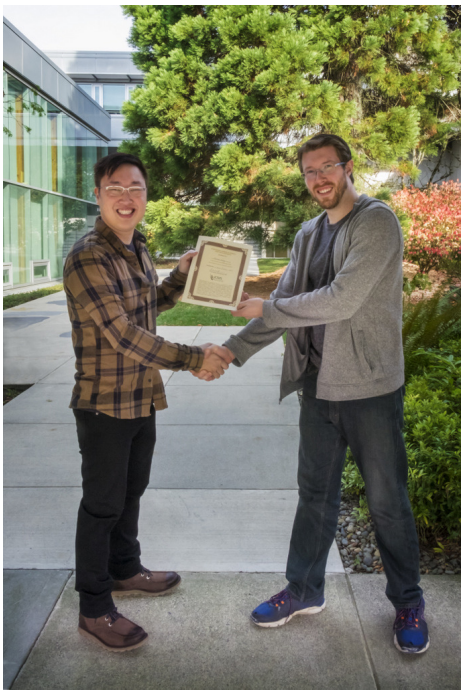
As many of you may already know, in 2018 our society will host a Joint Meeting of the ESBC/ESC/ESA in Vancouver. Planning for this large meeting is well under way and Jenny Cory, the incoming president in 2018, along with Ward Strong, and Bill Riel have been working hard on developing a program that I'm sure will prove to be very interesting. Both of these larger societies have been very supportive in tailoring the meeting to be inclusive of our local society and I am looking forward to seeing the results of all this hard work.

In closing I'd like to thank you all for your participation in the Entomological Society of British Columbia. Whether your contribution is large or small, we all benefit as the Society continues to add to our knowledge of those little animals that run our world.

Sincerely,
Brian Van Hezewijk, President.

Student Winners

Debra Wertman (UVic), receiving ESBC Graduate Student Award with Brian van Hezewijk.
Photo Credits: Joyce Leung



Warren Wong (SFU) (left), receiving ICMS Award from lab-mate Dan Peach
Photo credits: Tamara Babcock

Lea Sanchez-Milde (SFU) - Best Student Paper (Undergraduate) with Brian van Hezewijk. Photo Credits: Joyce Leung

Tamara Babcock (SFU) - James Grant North Okanagan Naturalist Club Masters Student Award for best Masters' paper with Brian van Hezewijk. Photo credit: Joyce Leung

Heather Coatsworth (SFU) – Best Student Paper (PhD) with Brian van Hezewijk.
Photo credits: Joyce Leung

Entomology in the News

Insect-sniffing dog helps Leamington, ON greenhouse stay pest free

Chili is a weevil-smelling Belgian shepherd with a full-time job

Melissa Nakhavoly,
CBC, Windsor, ON

http://www.cbc.ca/news/canada/windsor/insect-sniffing-dog-keeps-greenhouse-pestfree-1.4368366

Last year, a tiny pest known as a pepper weevil, [*Anthonomus eugenii*] destroyed bell pepper crops all over Leamington, Ont., baffling pest control managers and farmers alike.

This year, the staff at NatureFresh Farms decided to do something uncommon to fight the problem — they got a dog.

"Chili is the newest member of our scouting team ... she's a registered working dog trained to find pepper weevil," said Cam Lyons, an integrated pest management scout at NatureFresh. "As far as we know, she's the only one in the world looking for this pest in a greenhouse."

Chili is a rambunctious two-year-old Belgian shepherd who was bred in Mexico. On the job at the greenhouse since July, the dog's only mission is to find the small pests that can ruin an entire crop.

Chili, has a nose that can find the tiny pepper weevil, which can ruin entire crops.

"It's a very challenging pest… we didn't have a lot of options," said Lyons, who explained the pest is difficult to eradicate using traditional methods. He said the female insect lays eggs on top of a pepper. After they hatch, they feed on the fruit, eventually killing it. That's where Chili comes in.

"We start on the outside of the greenhouse actually, I'll take her and we'll search the perimeter of the greenhouses," said Tina Heide, a biological scout at NatureFresh and Chili's handler. "I'll have her sniff out walls, sniff our floors, we do skids like packing crates, boxes anything we come across."

Heide said Chili takes a lot of breaks during her time searching for pests, so that she doesn't get tired or overheated.

So far this year, NatureFresh hasn't had any pepper weevils in their crops, so Heide hides vials of the pests around to keep Chili's nose in the game.

"We don't know when these things are going to come, where they'll hit," she said. "That's why I work [Chili] with the vials so that in her mind she keeps finding them and it keeps [the scent] fresh in her mind. "Heide said that for Chili, it's a daily game of hide-and-seek".

"I think a scent-detection dog would be valuable on every farm," said Lyons. "We're very excited to have her around."

Armyworm invades Alberni Valley farms

SUSIE QUINN,
Alberni Valley News
Jul. 13, 2017 10:45 a.m.
https://www.albernivalleynews.com/news/armyworm-invades-alberni-valley-farms/

The Alberni-Clayoquot Regional District has called a public meeting for today (Thursday, July 13, 2017) at 3 p.m. at their office to discuss the armyworm infestation that has hit the Alberni Valley. Phil Croteau and Graham Fowler from the Ministry of Agriculture are in the Alberni Valley today investigating the infestation first hand.

Beaver Creek farmer John Oosterom spotted what looked like caterpillars in a hay field on his 200-acre farm on Friday. He could see the devastation happening: millions of what have now been identified as armyworms were eating his livelihood, and he couldn't do anything about it.

In two days, a 10-acre hay field was leveled.

Oosterom said he's never seen anything like it. "Talking to other farmers in the neighborhood who are my seniors, they've never seen anything like it either," he added.

"My parents came here in the mid-50s and we've been farming here," he said while driving between hay fields. Much of the property was timber when they first arrived, and the family—Oosterom also has a couple of brothers who helped at the farm—cleared the land. They used to have dairy cows, but now Oosterom has a modest, 50-60-head beef cattle business.

And he grows hay. He sells it to other farmers as well as uses it to feed his cattle.

He's not sure what the damage will be at the end of the season, but admits it will be significant. The pests have already taken two hay fields, and he was forced to plow one early. The 10-acre field would have yielded about 800 bales of hay.

"There's nothing to mow here," he said. "It's at least half my annual crop.

"This is absolutely devastating."

Someone came to his farm on Tuesday and took samples of the caterpillars to try and identify them.
"Ministry of Agriculture staff suspect they are armyworms and are working with their federal colleagues to confirm the species of samples taken from the Port Alberni area," a ministry spokesperson said earlier this week.
The Comox Valley is also experiencing armyworms.

Oosterom said he hasn't been given any information on how to effectively treat armyworms yet. He doesn't spray pesticide on his crops and hopes he can find a better answer than that.

"The provincial entomologist has been in touch with her counterparts in Manitoba for support," BC Ministry of Agriculture entomologist **Susanna Acheampong** noted in a statement. Farmers are encouraged to check their crops and if they find what they suspect is armyworms, to call Acheampong at 250-861-7681 for proper identification and confirmation.

Armyworms are common in Manitoba, where according to Manitoba Agriculture, they feed on oats, wheat, fall rye, barley, forage grasses and field and sweet corn. Adults are moths that do not overwinter in the province, but move in from the south, and in some years can get to levels that can cause economic damage to crops.

Oosterom said he doesn't know where the armyworms came from. "I know I'm not alone with this problem." Farmers aren't the only ones noticing the armyworms. Carole Nielsen from South Port said she found them in her backyard garden. "They are in my planters eating my petunias and are eating the leaves off my azalea bush," she said. "I've killed about a dozen so far."

Another person responding to a post on the Alberni Valley News' Facebook page said they have been spotted in Tofino as well.

editor@albernivalleynews.com

An armyworm, [*Mythimna unipuncta*] infestation in the Alberni Valley. SUSAN QUINN PHOTO

An armyworm infestation in the Alberni Valley turned one farmer's gravel access road black; the caterpillars leveled a 10-acre field in two days. SUSAN QUINN PHOTO

On Friday, this 10-acre field was thigh-high with hay. By Sunday, armyworms had ravaged it to ground level. SUSAN QUINN PHOTO

Germany Sees Drastic Decrease in Insects

A 27-year-long study finds insect biomass has declined by about 75 percent.

The Scientist

https://www.the-scientist.com/?articles.view/articleNo/50673/title/Germany-Sees-Drastic-Decrease-in-Insects/

By Anna Azvolinsky | October 18, 2017

Insects within alcohol Malaise trap

Photo Credit: ENTOMOLOGICAL SOCIETY KREFELD

Sampling from 63 protected nature areas throughout Germany, researchers have found a drop in flying insect mass by about 76 percent over 27 years. The results, published today (October 18) in *PLOS ONE*, are drastic, but are consistent with prior studies of butterflies, wild bees, and other surveys of specific insect species.

"The amount of decline, about 75 percent, is way too much to be attributed to just one or a few species such as bees or butterflies," says plant ecologist and study author Hans de Kroon of Radboud University in the Netherlands. "These results are not from agricultural areas but natural preserves that are well-maintained and meant to protect biodiversity. We are seeing insects slipping out of our hands."

De Kroon, along with Caspar Hallmann and others from Radboud University, paired up with colleagues from Entomological Society Krefeld in Germany who had begun collecting nature preserve insect biomass data more than two decades ago. "[Our colleagues] are excellent field biologists who were visionary and realized it was important to collect this broader insect population data," says Hallmann.

The researchers in Krefeld placed Malaise traps—mesh tents that direct flying insects toward a chamber with collection bottles filled with alcohol—within 63 nature sites between 1989 and 2016. They sampled through spring, summer, and fall, randomly and judiciously placing traps so as not to contribute to the decrease in insects. Thirty-seven of the locations were only sampled once, and 26 locations at least twice, with many years in between.

After about two decades, they started to see a drastic decrease in insects of about 80 percent, so the researchers began to re-sample from certain locations to make sure that the results weren't just due to bad luck, says Hallmann.

But the trend continued. And after 27 years, in mid-summer, the decline was 82 percent.

Entomological Society Krefeld entomologists setting up a Malaise trap

Photo Credit: ENTOMOLOGICAL SOCIETY KREFELD

"This is one of the most exciting papers I have read in a while," writes Joe Nocera, an assistant professor who studies population ecology at the University of New Brunswick in Canada, in an email to *The Scientist*. "There is a huge paucity of data on historical patterns of insect populations and work on ecological phenomena that depend upon insects has long suffered due to this gap in our knowledge. And here, with this paper, is one major first step in correcting this."

All of the natural preserves are lowlands regions, islands amid agricultural lands and human-populated areas. The results, according to Hallmann and de Kroon, are likely to be valid for major parts of Western Europe and other populated regions in the world where small nature reserves are locked in an agricultural landscape.

The authors also sampled weather and temperature patterns, plant inventories, and the type of preserve— heathland or grassland—but no factor alone could explain the disappearance of flying insects.

"As one of the few studies assessing overall biomass this study is a useful complement to the larger set of studies on specific groups of insects," writes John Losey, an entomologist at Cornell University in New York, in an email to *The Scientist*. "The scope of this data is very impressive across time, space, and range of habitats."

Christian Krupke, an entomologist at Purdue University, agrees. "This is a unique, robust dataset that is the most comprehensive measure of insect biomass that I've seen."

The researchers have shown that climate change cannot explain the results. It is likely that the trend is the result of many factors, including pesticide use, environmental damage, and human uses of land. "Many of these preserves are islands surrounded by farmland, which may act as a sink for insects, resulting in a steady flow out from these lands," says study author and ecologist Dave Goulson of the University of Sussex in the U.K.

"This analysis is a good first cut of the data and I suspect, with further analyses, [the authors] can understand which of the species are decreasing because most certainly, it is not a 76-percent decrease of all of the species," says Krupke.

The team is working on just such an analysis. "Now, we want to dig deeper into particular groups of species, if not all of them, that are affected and what the consequences are for pollination, nutrient cycling, and species such as birds that rely on insects for food," says de Kroon.

For Nocera, one follow up study would be to assess the trend in forests and wetland areas, which are among the most productive areas for insect populations.

"The remarkable and alarming aspect of this long-term study is the magnitude of the decline," notes Losey. "Most previous studies have reported biomass declines of less than 50 percent which is disconcerting. But the 75 percent decline reported here sends a clear call for immediate action."

Article: Caspar A. Hallmann, Martin Sorg, Eelke Jongejans, Henk Siepel, Nick Hofland, Heinz Schwan, Werner Stenmans, Andreas Muèller, Hubert Sumser, Thomas Hoèrren, Dave Goulson, Hans de Kroon. "More than 75 percent decline over 27 years in total flying insect biomass in protected areas," ***PLOS ONE***, doi.:org/10.1371/journal.pone.0185809, 2017.

Judy Myers giving a presentation on Biological Control.
Photo Credit: Joyce Leung/Brian van Hezewijk

The North Okanagan Naturalists' Club

Presents

THE JAMES GRANT AWARD OF $400

TO:_____

FOR: THE BEST GRADUATE MASTERS DEGREE PAPER

AT: The Annual General Meeting of the Entomological Society of British Columbia

James Grant was born in Trinity Valley, near Lumby, on May 25th, 1920. He went to school in the North Okanagan and became a farmer and logger before enlisting in the Canadian Army in 1941. He served in the Signal Corps in Europe until 1946.

On his return to Canada he was employed by the Federal Forest Entomology Laboratory in Vernon. His work took him throughout the Province and enabled him to increase his expertise in ornithology, Entomology and botany.

In 1970, he was appointed Field Studies Coordinator for the Vernon School District (22) and remained there until his retirement in 1978. His dedication and extensive knowledge of natural history made him a mentor and inspiration to many naturalists and students in the Okanagan area, until his death in 1986. Grant was a founding member of the North Okanagan Naturalists' Club. He published at least thirty articles on birds and their biology and operated a hospital for injured hawks and owls from his home in Lavington.

Following his death, the "James Grant Memorial Fund" was established to contribute to the preservation of natural habitat through acquisition of property and for educational purposes, to continue the work he fostered throughout his life. This Entomological Award is presented in his memory by the North Okanagan Naturalists Club.

NORTH OKANAGAN NATURALISTS' CLUB

DATED:_____ _____

PRESIDENT

ICMS Scholarship in Insect Pest Management

About ICMS: ICMS (Integrated Crop Management Services) is recognized as a premiere provider of contract research services in the development, implementation and conduct of research in the areas of crop breeding, agronomy, evaluation of product efficacy for conventional and bio-pesticides, inoculants, plant growth regulators, fertilizers, seed coatings, and many other agricultural products. We are dedicated to providing accurate and meaningful data to local, national and international clientele. ICMS has five research stations across Western Canada. In BC, it services the Fraser and Okanagan Valleys through its Abbotsford and Okanagan Falls Research Stations. With the primary focus of conducting research on greenhouse crops such as tomato, pepper, cucumber and ornamentals, canola, corn, soybean, strawberry, blueberry, raspberry, tomato, cucumber, pepper, wheat, and barley to name a few.

Award information:

ICMS is awarding a scholarship of $500.^{00}$ to encourage students studying applied aspects of entomology.

Eligibility:

- Applicant must be a full-time postgraduate student at a registered institution in British Columbia at the time of application.
- Applicant must be partaking in entomological research as part of their degree program.

How to apply:

For consideration, applicants must submit a single PDF file containing:

- An outline of current research (no more than 300 words) describing how it contributes to applied aspects of insect pest management
- A curriculum vitae
- A post-secondary transcript

Deadline:

Applications must be submitted to the ESBC Secretary at secretary@entsocbc.ca by **Monday October 2nd, 2017**. Competition results will be announced at the Annual General Meeting in Abbotsford on Oct 13th, 2017.

Judging Criteria:

Applications will be judged on the basis of contributions to the field of applied entomology, importance of their research, and the qualifications of the applicant.

Check us out at:

www.icms-inc.com

www.facebook.com/ICMSResearch

@ICMS_Research

Biological control – a safe approach to pest management

Annual symposium organized by the Entomological Society of British Columbia

Kwantlen Polytechnic University
(Room Langley 1030)
Saturday October 14th

	Title	Presenter
8.30 – 9.00	*Convene: coffee, tea and snacks*	
9.00 – 9.05	Welcome	*Jenny Cory* *Simon Fraser University*
9.05 - 9.35	What is biological control and why do we need it?	*Judy Myers* *University of British Columbia*
9.35 - 10.05	Understanding insect behaviour and its influence on weed biocontrol success	*Alida Janmaat* *University of the Fraser Valley*
10.05 - 10.35	New developments in augmentative biological control	*Brian Spencer* *Applied Bio-nomics Ltd.*
10.35 – 11.00	*Tea, coffee and snacks*	
11.00 – 11.30	Insect pathogens as microbial control agents	*Jenny Cory* *Simon Fraser University*
11.30 – 12.00	Invasive insects – is biological control an option?	*Tracy Hueppleshesuser* *Plant Health Unit, BC Ministry of Agriculture*
12.00 – 12.30	Biological control in cannabis	*Amanda Brown* *Biobest*
12.30 – 13.00	Conservation biological control	*Renee Prasad* *University of the Fraser Valley*
13.00 – 14.00	*LUNCH (provided)*	

Entomology Educational Opportunities in Canada

The Entomological Society of Canada published a Directory of **Entomological Education in Canada.** Available at: **http://www.esc-sec.ca/students/Directory_of_Entomology.pdf**

Entomological Society of Canada Student Awards

Details of Awards at http://esc-sec.ca/student/student-awards/#toggle-id-9. Deadline for all awards is **February 16** of each year. Look on website for eligibility for each award.

- Entomological Society of Canada Danks Scholarships
- Entomological Society of Canada Graduate Research Travel Scholarships
- Entomological Society of Canada Postgraduate Awards
- Entomological Society of Canada John H. Borden Scholarship
- Entomological Society of Canada Dr Lloyd M Dosdall Memorial Scholarship
- Biological Survey of Canada Scholarship
- Keith Kevan Scholarship
- Entomological Society of Canada Ed Becker Conference Travel Awards

Employment and Research Opportunities – **check out details on ESC website http://esc-sec.ca/opportunities/**

Graduate Research Opportunities

MSc Student – Trophic relationships in forest insect outbreaks

Department of Biology, Concordia University

Ideal start date: May 2018; Application deadline: January 2019

PhD Student – Trophic relationships in forest insect outbreaks

Department of Biology, Concordia University

Ideal start date: May 2018; Application deadline: January 2019

MSc and/or PhD Students – Insect ecophysiology and molecular biology

Department of Biology, Carleton University. Application deadline: None listed

Graduate Students – Ant Community Ecology or Dragonfly Biogeography

Department of Biology, Concordia University. Application deadline: None listed

Student Awards – administered by Entomological Society of America

- There are numerous awards. Check them out for eligibility. http://www.entsoc.org/about/awards-honors

DNA Barcoding Website:

There is a new blog exclusively on the topic of DNA barcoding with the aim to have newsworthy information posted a few times per week. The blog is lead by Dirk Steinke, Lead Scientist Barcoding of Marine Life Biodiversity Institute of Ontario University of Guelph, Ontario, EMail: dsteinke@uoguelph.ca and blog website http://dna-barcoding.blogspot.ca/

Entomological Society of Canada

Blog Available at http://esc-sec.ca/blog/

December 2017 Bulletin available online at:
http://esc-sec.ca/publications/bulletin/

Some International Entomological Societies

Royal Entomological Society www.royensoc.co.uk/

Entomological Society of Southern Africa www.entsocsa.co.za/

Egyptian Entomological Society www.ees.eg.net/

Australian Entomological Society http://www.austentsoc.org.au/

Xerces Society for Invertebrate Conservation www.xerces.org

Japan Coleopterists Society http://www.mus-nh.city.osaka.jp/shiyake/j-coleopt-soc.html

Chilean Society of Entomology http://www2.udec.cl/~insectos/

Butterfly Conservation http://butterfly-conservation.org/

Croatian Entomological Society http://www.agr.unizg.hr/hed/index.htm

European Association of Coleopterology http://www.ub.edu/aec/

Dutch Butterfly Conservation http://www.vlinderstichting.nl/

Butterfly Conservation of the Republic of China http://butterfly.kingnet.com.tw/

Laricobius nigrinus, (Coleoptera: Derodontidae). Predator of hemlock woolly adelgid, *Adelges tsugae*. Native to the Pacific Northwest. Photo credit: http://ohiodnr.gov/portals/0/images/hwa/Lnigrinus.jpg

BC Butterfly Atlas

Supporting Butterfly Conservation through Collaboration: The BC Butterfly Atlas

---

The BC Butterfly Atlas is a community-based citizen science project aimed at increasing our knowledge of the status and distribution of butterflies in British Columbia.

Project Description

Beginning in 2012, the BC Butterfly Atlas will harness the efforts of both professional biologists and citizen naturalists to document the distribution and abundance of butterflies in British Columbia. Gathering butterfly records from across BC will help identify which species are truly rare and which are more common, provide a snapshot of butterfly populations to which past and future surveys can be compared, and inform efforts to conserve butterflies and their habitats. Results will be collated into a single database and be made available on maps on the project website. The project also aims to educate and engage the public about the importance of biodiversity and increase involvement in butterfly conservation in BC.

Project Objectives

The BC Butterfly Atlas has the following objectives:

- Increase public interest in butterflies and involvement in butterfly watching;
- Share information on the distribution, abundance, and habitat relationships of butterflies in British Columbia;
- Educate British Columbians on the importance of conservation of butterflies and their habitat; and
- Develop resources and partnerships to improve conservation of butterflies and their habitats.

Background

Mapping biodiversity is a growing stewardship activity around the world, and the information collected is invaluable for the conservation of species and their habitat. Following on the recent success of the BC Breeding Bird Atlas[1] and butterfly atlassing projects in other jurisdictions (e.g., Butterflies of the New Millenium (UK)[2], Maritimes Butterfly Atlas[3], and atlases in several US states), we are initiating a citizen-based survey and atlassing program for butterflies in British Columbia. Despite their important ecological role and value as habitat indicators, butterflies in BC lack adequate information on their distribution, abundance, and habitat relationships needed for effective conservation. An atlassing project would seek to fill this information gap while increasing public awareness and support for butterfly conservation.

---

[1] http://www.birdatlas.bc.ca

[2] http://www.butterfly-conservation.org

[3] http://www.accdc.com/butterflyatlas.html

Kelowna Museum request

Linda Digby of the Kelowna Museum Society is requesting help acquiring insect specimens for the natural history museum. Their interest is the south Okanagan region. They are seeking donations of identified, labelled specimens and photographs from members or students. Contact Linda directly at the museum, www.kelownamuseums.ca.

Executive contact information

President	Jenny Cory president@entsocbc.ca
Secretary	Tracy Hueppelsheuser secretary@entsocbc.ca
Treasurer and Memberships	Ward Strong treasurer@entsocbc.ca
Editor Entomological Society of BC Journal	Kathy Bleiker journal@entsocbc.ca
Boreus Newsletter Editor	Gabriella Zilahi-Balogh boreus@entsocbc.ca
Web Page Editor	Brian Muselle webmaster@entsocbc.ca

Students networking at the ESBC 2017 meeting.
Photo Credits: Joyce Leung/ Brian van Hezewijk