



December 2021 Vol. 41 (2)

Boreus



Newsletter of the Entomological Society of British Columbia





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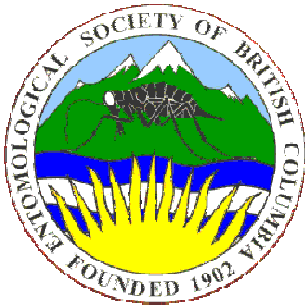
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The Executive



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

President	Chandra Moffat Agriculture Canada, Summerland
First Vice President	Lorraine MacLauchlan B.C. Ministry Forests, Lands and Natural Resources and Rural Development, Kamloops
Second Vice President	Juli Carrillo University of British Columbia
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Treasurer	Marcus Clodius, Agriculture Canada, Agassiz
Editorial Committee (Journal)	Kathy Bleiker (Editor-in Chief) NRCan Pacific Forestry Centre, Victoria Joel Gibson, Royal B.C. Museum, Victoria Lorraine MacLauchlan B.C. Ministry Forests, Lands and Natural Resources and Rural Development , Kamloops Bob Lalonde University of British Columbia – Okanagan, Kelowna Steve Perlman University of Victoria, Victoria Rob McGregor Douglas College, New Westminster Staffan Lindgren University of Northern B.C., Prince George, Prof. Emeritus Dezene Huber University of Northern B.C., Prince George Lisa Poirier University of Northern B.C., Prince George Marla Schwarzfeld Agriculture Canada, Ottawa
Editor (Boreus)	Gabriella Zilahi-Balogh Canadian Food Inspection Agency, Kelowna Elton Ko Simon Fraser University
Directors	Joyce Leung (1 st) Semios, Vancouver Dan Peach (2 nd) University of BC, Vancouver
Graduate Student Representative	Asim Renyard Simon Fraser University, Burnaby
Honorary Auditor	
Regional Director of National Society	Brian Van Hezewijk Canadian Forest Service, Victoria
Web Page Editor	Adam Blake Simon Fraser University, Burnaby



Publications of ESBC

Journal of the Entomological Society of British Columbia

Journal of the
Entomological Society
of British Columbia

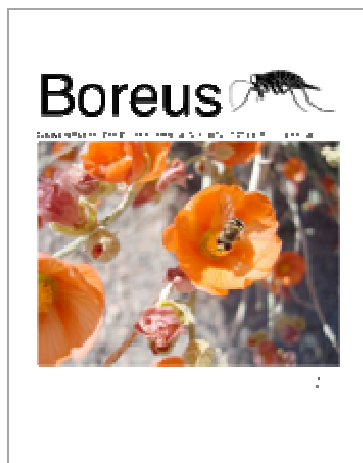


The Journal of the Entomological Society of BC is a peer reviewed, open-access journal. Manuscripts dealing with all facets of the study of arthropods will be considered for publication. Submissions may be from regions beyond British Columbia and the surrounding jurisdictions provided that content is 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 2020 issue is 1 September, 2020. 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.

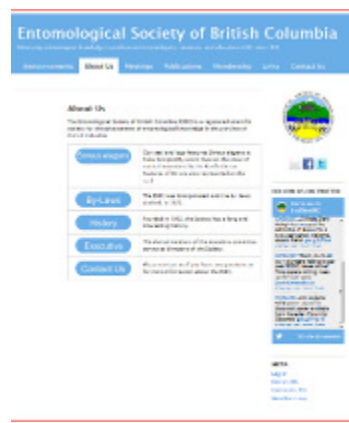
Please submit any entomological photograph, article, event or informational tidbit to the Editor!

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



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



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:

- Regular Member (Canadian Resident):
 - **BEFORE** MARCH 30 = \$20.00 (CDN)
 - **AFTER** MARCH 30 = \$30.00 (CDN)
- Regular Member (International):
 - **BEFORE** MARCH 30 = \$30.00 (CDN)
 - **AFTER** MARCH 30 = \$40.00 (CDN)
- Student Member:
 - **BEFORE** MARCH 30 = \$10.00 (CDN)
 - **AFTER** MARCH 30 = \$15.00 (CDN)
- Honorary Members renew at no charge.

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, Marcus Clodius, 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 (<i>Omus dejeani</i>), 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	

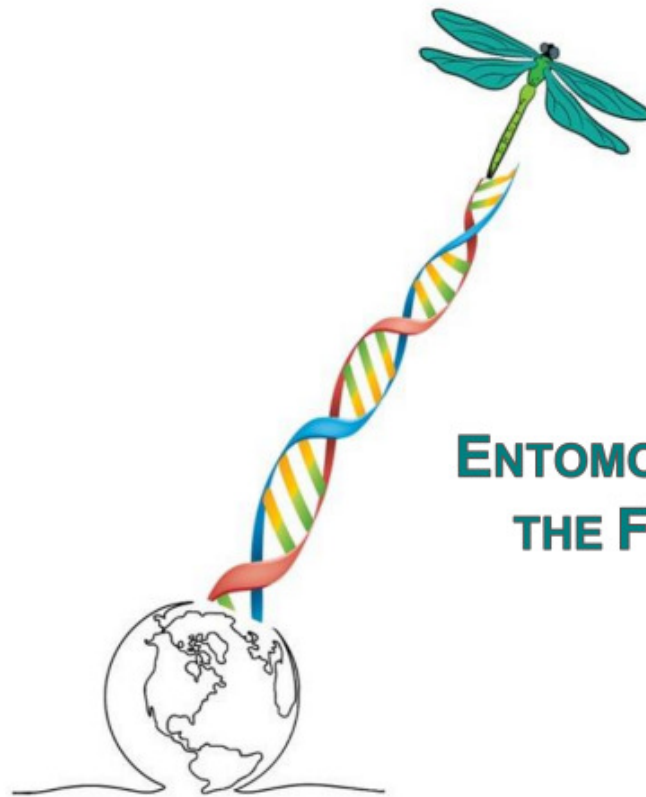


ESBC
2021 Virtual Conference &
Annual General Meeting
October 19 - 21, 2021



Entomological Society of British Columbia

Virtual Conference and AGM Program



**ENTOMOLOGY OF
THE FUTURE**

October 19 – 21, 2021

ESBC 2021 *Virtual* Conference and AGM link:

<https://sfu.zoom.us/j/65101649428?pwd=bjMzeVdpTkoycHFhVTZxMVFwK0N5Zz09>




ESBC
2021 Virtual Conference & Annual General Meeting
 October 19 - 21, 2021




ESBC Virtual Conference and AGM 2021
October 19 – 21, 2021
Entomology of the Future



Tuesday, October 19th

To join the ESBC 2021 *Virtual* Conference and AGM please use the following link:

<https://sfu.zoom.us/j/65101649428?pwd=bjMzeVdpTkoycHFhVTZxMVFwK0N5Zz09>

9:00am – 9:15am	Welcome and Opening Remarks – Wim van Herk, ESBC President
9:15am – 11:30am	Scientist and Undergraduate Student Presentations (<i>moderator Wim van Herk</i>)
9:15am - 9:30am	Brian Van Hezewijk, Research Scientist, Canadian Forest Service. Resistance of forest communities to insect invasions.
9:30am - 9:45am	Kathleen Furtado, Simon Fraser University. Testing attraction of click beetles (Coleoptera: Elateridae) to green and UV light.
9:45am -10:00am	Thompson Hyggen, Canadian Forest Service. Understanding the Predation Landscape of Yellowjackets on Lepidopteran Pupae.
10:00am -11:30am	Hume Douglas Workshop – Diagnostic Entomology Photography Workshop. FREE registration by emailing hume.douglas@agr.gc.ca
<i>Separate registration required.</i>	USDA Animal and Plant Health Inspection Service’s Identification Technology Program (ITP), in collaboration with Agriculture and Agri-Food Canada, present a virtual workshop on techniques for producing high quality, identification-worthy images of insects and other arthropods, for publication in digital identification tools.
11:30-am – 12:30pm	LUNCH BREAK





Tuesday, October 19th (continued)

12:30pm – 2:15pm	Undergraduate Student Presentations (<i>moderator Chandra Moffat</i>)
12:30pm – 12:45pm	Syed Asad, Simon Fraser University. Kairomonal attraction of female bumble bee wax moths, <i>Aphomia sociella</i> , to bumble bee nests.
12:45pm – 1:00pm	Jin Cai, Agriculture and Agri-Food Canada. Testing for non-consumptive effects of the parasitoid <i>Leptopilina japonica</i> on non-target drosophila species <i>D. immigrans</i> and <i>D. pseudoobscura</i> .
1:00pm – 1:15pm	Lana Harach, University of the Fraser Valley. Flying Low? <i>Ganaspis brasiliensis</i> and <i>Leptopilina japonica</i> canopy height preferences for spotted wing drosophila in raspberry crop.
1:15pm – 1:30pm	Kenza Zobaidi, Simon Fraser University. Strength in numbers: Do European fire ants communicate and forage better in groups than on their own?
1:30pm – 1:45pm	Clarissa Capko, University of the Fraser Valley. Is clutch size uniformity in stinkbugs influenced by patterns of resource availability?
1:45pm – 2:00pm	Heshmat Meraj, Simon Fraser University. Time- and tissue-specific antimicrobial activity of the common bed bug in response to blood feeding and immune activation by bacterial injection.
2:00pm – 2:15pm	Grace Wang, University of B.C. Intercropping trial and monitoring of <i>Drosophila suzukii</i> at UBC farm in 2021.





**ESBC Virtual Conference and AGM
Twitter Contest**

Enter to win a free ESBC T-Shirt!



Our theme this year is #wearyourentoswag

To enter:
 Tweet @EntSocBC with a photo related to the theme including the #wearyourentoswag
 The post with the most likes at the end of the conference will win a free #EntSocBC T-shirt!
 The contest ends at 11:59pm on Oct 21st





ESBC
 2021 Virtual Conference &
 Annual General Meeting
 October 19 - 21, 2021



Wednesday, October 20th

9:00am – 10:15am	M.Sc. Student presentations (<i>moderator Rob Higgins</i>)
9:00am – 9:15am	Danielle Ogilvie, Simon Fraser University. Interactions between Lepidopteran microbiomes, host plant sites, and pathogens.
9:15am – 9:30am	Jaime Chalissery, Simon Fraser University. Identification of the Trail Pheromone of the Pavement Ant <i>Tetramorium immigrans</i> (Hymenoptera: Formicidae).
9:30am – 9:45am	Orna Phelan, University of B.C. The breeding habitat ecology of <i>Aedes togoi</i> .
9:45am – 10:00am	Emmanuel Hung, Simon Fraser University. Conductive and convective heat, but not infrared radiation, mediates stable fly alighting and probing frequency on thermally different targets.
10:00am – 10:15am	Elton Ko, Simon Fraser University. Long- and short-range bimodal signals mediate mate location and recognition in yellow fever mosquitoes.
10:15am – 10:30am	BREAK
10:30am – 11:30am	M.Sc. & Ph.D. Student presentations (<i>moderator Lorraine Maclauchlan</i>)
10:30am – 10:45am	Jessica Fraser, Université Laval & Agriculture and Agri-Food Canada. Manipulating parasitoid biocontrol of aphids with artificial light.
10:45am – 11:00am	Isaac Peetoom Heida, University of B.C. Herbivory-induced silicon uptake may provide lasting resistance to fungal pathogens in wheat.
11:00am – 11:15am	Emily Lemke, Simon Fraser University. Investigating mechanisms of reproductive isolation between <i>Limenius congeners</i> (Coleoptera: Elateridae) and testing of 'catch-all' click beetle pheromone lures.
11:15am – 11:30am	Andreas Fischer, Simon Fraser University. Sexual conflict in false black widow spiders – aging females manipulate mate choice by males.
11:30am – 12:30pm	LUNCH BREAK





Wednesday, October 20th (continued)

12:30pm – 2:00pm	M.Sc. and Ph.D. Student presentations (<i>moderator Hester Williams</i>)
12:30pm – 12:45pm	Saif Nayani, Simon Fraser University. Microbe-mediated attraction of stable flies to host cattle.
12:45pm – 1:00pm	Nathan Earley, UBC-Okanagan and Agriculture & Agri-Food Canada. Adventive parasitoids in British Columbia: Comparing physiological host ranges to ecological host ranges in an adventive landscape.
1:00pm – 1:15pm	Pauline Deschodt, Simon Fraser University. Key role of insect host plants in within-host pathogen interactions.
1:15pm – 1:30pm	Asim Renyard, Simon Fraser University. Bimodal distress signals of Western carpenter ants upturn alarm responses of nestmates.
1:30pm – 1:45pm	Debra Wertman, University of B.C. The evolution of bark beetle–fungus mutualisms: Insights from a hardwood system.
1:45pm – 2:00pm	Takwa Wannassi, University of Sousse, High Agronomic Institute of Chott-Mariem, Tunisia, Sousse. Studies on the biology of <i>Eurytoma samsonowi</i> : dynamic of population, symptoms of attack and assessment of the damage in Tunisia.
7:00pm	Virtual Evening Social Event



7:00pm Virtual Evening Social event – join by conference zoom link

<https://sfu.zoom.us/j/65101649428?pwd=bjMzeVdpTkoycHFhVTZxMVFWK0N5Zz09>





ESBC
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Thursday, October 21st

<p>9:00am – 10:00am <i>Introduction - Wim Van Herk</i></p>	<p>Plenary Speaker: Dr. Zoë Lindo, Western University, London, Ontario. “Forest blockades and tsunamis: Factors that contribute to oribatid mite diversity in coastal temperate rainforests.”</p>
	<p>Dr. Zoë Lindo is a Professor at Western University, Department of Biology. Growing up on Vancouver Island was formative for Zoë’s connection to coastal temperate rainforests. While completing a BSc, Zoë was introduced to soil ecology and soil biodiversity which led to a MSc at the University of Calgary examining forest harvesting effects on oribatid mites (Acari: Oribatida) in mixed-wood boreal forests. Eager to return to the forest of home, Zoë completed a PhD at the University of Victoria in 2008 examining oribatid mite communities in canopy habitats of coastal temperate rainforests on Vancouver Island. After a postdoctoral position at McGill University, Zoë started as Assistant Professor at Western in 2011. While the majority of their current research examines how peatland soil biodiversity is affected by climate warming, Zoë’s 2017 sabbatical was spent looking for rare oribatid mite species on southern Vancouver Island and sampling beach debris on Haida Gwaii. While Zoë and her partner live in London, Ontario, they spend as much time as possible in the forest at their property on Denman Island.</p>
<p>10:00am – 10:30am</p>	<p>BREAK</p>
<p>10:30am – 12:00pm</p>	<p>M.Sc. and scientist presentations (<i>moderator Chandra Moffat</i>)</p>
<p>10:30am-10:45am</p>	<p>Kendal Singleton, Simon Fraser University and Agriculture & Agri-Food Canada. Identification of sex-pheromones of two Nearctic <i>Agriotes</i> species (Coleoptera: Elateridae).</p>
<p>10:45am – 11:00am</p>	<p>Tyler Nelson, Agriculture and Agri-Food Canada. Biocontrol begins with a checklist: invasive apple clearwing moth and the clearwing moths of western Canada (Lepidoptera: Sesiidae).</p>
<p>11:00am – 11:15am</p>	<p>Scott Gilmore. Which one is it? The creation of a key to the Elateridae of British Columbia.</p>
<p>11:15am – 11:30am</p>	<p>Emily Grove, B.C. Ministry of Agriculture, Foods, and Fisheries. Brown Marmorated Stink Bug (<i>Halyomorpha halys</i>) in Fraser Valley Hazelnut Orchards: 2021 Update.</p>





Thursday, October 21st (continued)

11:30am – 11:45am	Martina Clausen, University of B.C. Long-term pest monitoring at the UBC farm.
11:45am – 12:00pm	Quentin Geissmann, University of B.C. Sticky Pi, an AI-powered smart insect trap for community circadian ecology.

12:00pm – 1:00pm	LUNCH BREAK
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1:00pm – 2:00pm <i>Introduction - Lorraine Maclauchlan</i>	Plenary Speaker: Dr. Staffan Lindgren, Professor Emeritus, University of Northern B.C., now in Nanaimo. “Entomology as a career: Yesterday, Today, and Tomorrow”
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Staffan Lindgren is Professor Emeritus of Forest Entomology, University of Northern British Columbia. Since his retirement in 2015, he lives with his wife in Nanaimo. He has published >90 refereed scientific articles plus a number of chapters, proceedings and reports. He has served a Subject Editor for three scientific journals and is frequently asked to serve as reviewer for numerous international journals. Staffan holds dual citizenship in Sweden and Canada and is married with two children. Recreationally, he enjoys kayaking, bird watching, fishing, and photography.

Staffan was born 1950 in Norrköping, Sweden, but moved to Piteå, a forest industry-dependent town in northern Sweden at the age of 11. Encouraged by his parents, he developed an interest in nature, particularly insects, very early in life, and (based on childhood photographs) spent much time on his hands and knees. He spent a year as a high school exchange student in Michigan, USA, 1968-69, after which he returned to complete high school and military service. He did most of his undergraduate training at Umeå University, but received a degree in biology from Uppsala University, Sweden, in 1975. After trying his hand at medical physiology research, he returned to his love for insects, and in 1977 arrived in Canada to complete a Master of Pest Management degree at Simon Fraser University, Burnaby, British Columbia. His supervisor, Dr. John H. Borden, convinced him to stay to do a Ph.D., which he completed in 1982. After his PhD, he held two post-doctoral fellowship positions and worked as Research Director in a small pest management company, before accepting a position at UNBC in 1994.

Staffan has very broad research interests in forest insect ecology and management. He has a background in applied insect pheromone research, but after moving to Prince George, his research interests focused on how insects and conifer trees interact, particularly factors that determine the suitability of a tree as host to an insect, as well as forest insect community ecology, e.g., how species interact after habitat disturbance such as harvesting.

2:00pm – 3:00pm	Entomological Society of British Columbia Annual General Meeting
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ESBC
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Plenary speaker **ABSTRACTS:**

Zoë Lindo, Professor, Western University, Department of Biology.

Coastal temperate rainforests are globally rare and geographically isolated ecosystems. They exist in only a few places on Earth and are mostly threatened by industrial and climate pressures. British Columbia contains the largest area of coastal temperate rainforests in the world and is a biodiversity hotspot for soil organisms like oribatid mites (Acari: Oribatida). Factors that contribute to this high biodiversity include large accumulations of organic matter that extend into the canopy, warm and wet soil conditions, and stochastic dispersal events. Historic and current social and geologic events such as the ‘war-in-the-woods’ over forest harvesting and earthquake-induced tsunamis across the Pacific Ocean might seem unrelated, but both have long-lasting impacts that shape the composition of oribatid mite communities in the coastal temperate rainforest.

Staffan Lindgren, Professor Emeritus of Forest Entomology, University of Northern B.C.

A brief retrospective of my career in entomology, including the people and factors that contributed to my success. I then offer advice to future entomologists and offer my thoughts on entomology in the future.



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New Design!!!



New Colours!!

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to purchase yours today!





Awards and ESBC Initiatives

James Grant Award

The James Grant Award is given to the best MSc presentation. This award is sponsored by the [North Okanagan Naturalist Club](#) and memorializes their founder and first president.

Dan Johnson Award in Insect Ecology

This is an **annual award** (kindly sponsored by Professor Dan Johnson) that recognizes the best manuscript submitted in any peer-reviewed journal by a student in the field of insect ecology. The award is open to all students (membership in the ESBC is not necessary).

In keeping with a tradition started last year, the ESBC would like to make a donation to a non-profit organization that both promotes entomological research and supports underrepresented persons, and/or persons facing barriers to a career in science. This donation is given to an organization that is chosen by the Plenary Speaker who gives the BC-themed, early-career presentation. This year's Plenary Speaker, Zoë Lindo, selected EntoPOC - an excellent choice!

What is EntoPOC?

EntoPOC is an organization devoted to diversifying entomology by supporting “People of Color (POC) members in Entomological (ento) Societies.” As stated in their Mission Statement, EntoPOC “strive[s] to increase access to STEM education for people of color (POC), young and old.... [F]or entomology we know that the numbers of POC graduate students is low, compared to the number of POC in the general population; for example, the NSF reports that of graduate students in entomology/parasitology, only 2.3% are Black, 4.8% are Hispanic/Latinx, and 0.17% are Pacific Islander (NSF Demographic Report, 2016; 16% of entomology graduate students are POC). For graduate students in general, the cost of membership to scientific organizations may be a barrier to participation. Our group, Entomologists of Color, strives to close this gap by providing POC paid memberships to various entomological societies, making participation, scientific communication and outreach more inclusive to POC.

Why focus on society memberships? By sponsoring a membership you are providing an entomology student of color with STEM resources, and community activities that will help them become lifelong entomology-ophiles. Membership to scientific societies allows participation in networking events, provides access to scientific publications and other member-restricted scientific content, and reduced meeting costs. All necessary tools for a successful career.”

<https://www.entopoc.org/>

https://www.instagram.com/entomologists_of_color/

<https://www.facebook.com/entopoc/>





Annual General Meeting of the Entomological Society of British Columbia
Minutes
21 October 2021
2 pm (called to Order on-line via Zoom)

38 Participants were logged in at the beginning of the AGM

Chair: Wim van Herk, President

1. Welcome from the President Wim van Herk

2. Agenda

- no additions to the agenda from the membership

Moved to accept the agenda: Asim Renyard

Second: Dan Peach

Accepted

3. Minutes from 2020 AGM (available in Boreus 2020 40(2))

-no discussion or corrections

Moved to accept the Minutes: Lorraine Maclauchlan

Second Markus Clodius

Accepted

4. Executive Reports

a. Graduate Student Representative: Asim Renyard. Report attached (see Appendix 1)

Highlights

-Outreach and the EDI committees have been busy. In addition to contributing to this meeting (i.e., ESBC AGM) active contributions to the ESC JAM have been made.

-recommendation: consider streamlining communications to membership with a new position. This should be considered at the spring meeting

-recommended: consider a dedicated student affairs committee

b. EDI Committee: Asim Renyard. Report attached (see Appendix 1)

Highlights



- the EDI committee has developed a Terms of Reference. These have been approved by the Executive. The Secretary (Rob Higgins) can send these out to any members who would like to see them

- recommendation: the harassment protocol that has been developed should be in place before JAM

c. Outreach Committee: Judy Myers chair but Asim Renyard reported. Report attached (see Appendix 1)

Highlights

- looking to redesign the website. An audit has been conducted by a website professional with recommendations for improvement. Six priorities were identified.

- recommendation: that we pay up to \$2500 to get the website improved and get our new Webmaster (Adam Blake) up to speed. This was approved by the Executive at our last meeting. However, the recommendation to change the logo was not included in the planned changes

d. Regional Director of the ESC: Brian van Hezewijk (see Appendix 1)

Highlights

- Brian has attended all board meetings of the ESC along with regional societies.

- 3 key issues at the ESC

- a) new Equity Diversity Inclusivity (EDI) initiative

- b) examining the feasibility of running all future joint meetings as hybrid online/in-person starting a few years from now. The ESC JAM will be held 15 Nov online this year. Theme is Strength in Diversity. Plenaries are lined up. There will be 2 Lunch and Learn sessions for students. The ESC will be reaching out about how much we value the joint meetings. The plan may be to change the format of joint meetings. They may be smaller or use a hybrid model with virtual component (to reduce carbon emissions).

- c) to review financial stability of The Canadian Entomologists. The ESC is looking for a new Treasurer.



e. Editors

i. Boreus

- Elton Ko: we got some engagement from some high school students.
- all going well but always looking for content

ii. Website

- Adam Blake: focused on the website redesign. See Outreach Report regarding website redesign

iii. Journal

Kathy Bleiker: we have a software update but things are pretty much the same as before

- all past copies have been digitized
- currently 8 submissions accepted and a few in review.
- thanks to reviewers. It was tough this year but still went very well with the quality of the reviews
- Staffan Lindgren is stepping down as a subject editor this year (big thanks to Staffan) but we still have quite a few
- still doing a print run of the Journal. Asked the Executive if they wanted to discontinue but it was decided to maintain hard copy prints
- Kathy recommends that we should consider onboarding a new editor following 2022 edition

f. Treasurer: Markus Clodius. Report attached (see Appendix 1)

Highlights

- everything is in order
- miscellaneous expenses is a bit high as it relates to sending out the Bug Girl books to school libraries
- noted that the bylaws require an audit. Request that Wim van Herk act as an auditor. Wim accepted.

Motion: as per article 10 of our bylaws the outgoing president be assigned as auditor of the 2021 financial statement

Moved Markus Clodius

Second Dan Peach

Accepted



g. First VP: Chandra Moffat.

Highlights

-Chandra gave a Powerpoint presentation covering items from the past year

-new membership category ... early career membership category (to be voted upon today)

-The Bug Girl project was a great success with great public coverage. Tracy Hueppelsheuser suggested that we do something to contribute and it was thought we should put a copy of the book into BC schools (500 copies). Tracy/Wim/Chandra/ Markus spearheaded the project. Worked with Monroe's Books.

-Next meeting of the ESBC will be joint with ESC and ESA (Lorraine/markus, Chandra/ Asim on committee)

h. President: Wim van Herk. Report attached (see Appendix 1)

Highlights

-sends a 'Thanks' to everyone who has been helping the ESBC behind the scenes

-welcome to Adam Blake as our new Webmaster

-there is a new scholarship ... to be voted upon today

-great to see the success of the Bug Girl project and donations to ENTOPOC

Motion to accept the reports: Asim Renyard

Second: Brian Van Hezewijk

Accepted

5. New business

a. Update on 2022 ESBC/ESC/ESA JAM planning

-see report of the 1st VP

-Lorraine: beautiful artwork has been done by Michal Blackstock. He will be speaking on history

-monetary sharing has changed from previous joint meetings but the new agreement protects us from monetary loss. We won't make as much. MOU has been signed by all three partners

b. New membership category

-Chandra spoke to the motion



Motion. That the bylaws are amended to include the addition of Item 4.7.

4.7. Recent Graduate membership. Recipients of a post-graduate degree in the field of entomology from a recognized educational institution may become Members of the Society upon providing proof of graduation within 5 years of graduation and providing payment of an annual fee set at one half that of the full membership. Fee to be paid to the Secretary-Treasurer. They shall have the privileges of full members.

Discussion

Tracy Hueppelsheuser: question: what are the benefits?

Answer: New members have all benefits and will get early career registration at the next JAM

Motion moved: Chandra Moffat

Second Wim van Herk

Accepted

c. ESBC Website revision

- Jaime Chalissery and Asim Renyard: covered earlier

d. Proposed new process for funding small grants

Motion: To approve the creation of a Special Projects Grant that will award up to \$5000 a year to projects that advance and promote entomological knowledge in the province of British Columbia, pending available Society funds. Project eligibility, application and review process to be determined by the executive committee.

Draft eligibility, application, and review process

The ESBC occasionally receives requests for funds to support entomological related projects in BC. Examples of special projects previously funded by the ESBC:

- Bee a Citizen Scientist Project (<http://entsocbc.ca/wp-content/uploads/2020/07/2019-Citizen-Science-digital-final-4.pdf>) (2019, \$5000)
- Photographic archive of lice and flea collection at the Spencer Entomological Collection (<https://www.zoology.ubc.ca/entomology/>) (2017, \$5000)

Requests for funds have in the past been made through direct inquiry with an executive member. The motivation for proposing a Special Projects Grant is to not only formalize the process in which the society receives requests and awards grants, but to also have a means to broadcast that the ESBC supports entomology projects in BC.



Purpose of Proposed Grant

The purpose of the grant is to fund projects that advance and promote entomological knowledge in the province of British Columbia. Projects should address one of the following goals:

- Contribute to the understanding of insects and relatives in British Columbia
- Raise appreciation of insects and relatives in British Columbia
- Contribute to insect and relatives conservation in British Columbia

We will invite applications from a wide cross section of the community, including both private and public organizations/individuals. Projects must take place wholly or partially within BC **OR** for projects that take place outside of BC, the applicant must be based in BC. Additional eligibility criteria include the public availability of data. It should also be noted that the ESBC considers equity, diversity and inclusivity important and encourages applications that connect with this objective.

Grant Amount

The amount and number of projects funded annually will depend on available funds. Up to a total of \$5000 CAD across all projects will be awarded annually. Requests for funds that exceed this amount will be considered on a case by case basis.

Timeline and Review Process

Applications will be reviewed twice a year (March and September) by the ESBC president, Treasurer, and one other member of the ESBC executive.

Applications recommended to receive the grant will be presented to the ESBC Executive committee for final approval.

Motion moved: Rob Higgins

Second: Lorraine Maclauchlan

Accepted

e. New scholarship

6. Student Awards

AGM student oral presentations - \$500

Clarissa Capko

Lana Harach (*\$250 – split award*)

Kenza Zobaidi (*\$250 – split award*)

Jaime Chalissery

Elton Ko

Asim Renyard

Andreas Fischer (*\$250 – 2nd place*)

Dan Johnson Award - \$500



Jaime Chalissery
Emily Lemke

ESBC (Grad Student) Scholarship - \$500
Asim Renyard
Sam Meraj

James Grant Award (North Okanagan Naturalists) – \$500, plus certificate
Jaime Chalissery

EntoPOC foundation, on behalf of Zoë Lindo – (CDN) \$1000 (+transaction fees)

7. Elections

Nominees for the 4 positions indicated on agenda
-called 3 times

Acclaimed: 2nd VP: Dr. Juli Carrillo

Acclaimed: Treasurer: Markus Clodius

Acclaimed: Director: Dan Peach

Acclaimed: Student Director: Asim Renyard

Motion to accept new Executive Members: Rob Higgins

Second Chandra Moffat

Accepted

ESBC needs to nominate a regional Director to the ESC. Brian van Hezewijk was nominated

8. Recognition of service

Wim van Herk spoke to the role of all members

9. Transfer of Presidency from Wim van Herk to Chandra Moffat

Chandra: thanks to all of the attendees of the AGM and members of the ESBC

Recommendation: AGM recommends to the Executive that the EDI

recommendations be made a priority by the Executive

10. Adjourn

Motion to Adjourn: Lorraine Maclauchlan

Second Asim Renyard

Accepted



Appendix 1: AGM 2021 Executive and Committee Reports
**ENTOMOLOGICAL SOCIETY OF BRITISH COLUMBIA
OFFICER'S REPORT**

Position: Graduate Student Representative
Period under report: Apr 27, 2021 – Oct 19, 2021
<p>Summary of activities during report period:</p> <p>Since our last meeting I am pleased to report a number of updates on various items I am working on for the ESBC. The status of items I am working on for the ESBC are outlined below:</p> <ol style="list-style-type: none"> 1. Equity, diversity and inclusion committee: As co-chair of this committee most of our work is summarized in the EDI committee report. However, I will outline briefly here that we have now drafted a committee TOR that we are sending for approval during the AGM and we are very excited to propose a new EDI scholarship aimed at supporting the inclusion of people who are represented in the ESBC. 2. Outreach committee: As a member of our outreach committee, I have helped facilitate and organize committee meetings, and helped organize our website redesign efforts. We have obtained a website audit from a web developer and conducted a survey to determine how our redesigned website will best serve the ESBC. We are sending a proposed plan for the website redesign for approval at this upcoming ESBC AGM 3. 2022 JAM planning: I have attended several meetings on the program and theme for the 2022 JAM. I am pleased to report there will be a great theme, with many exciting items in the program for people to enjoy together. 4. 2021 ESBC conference and AGM planning: My roles for the ESBC conference thus far have including creating our meeting poster and theme, generating ads for our student awards, running the ESBC twitter and serving as the student voice on planning meetings. In addition, I will be part of the team from the Gries lab that will be hosting the zoom meeting.
<p>Recommendations or action items for the attention of the ESC Board of Directors:</p> <p>I think the ESBC would benefit greatly for having a dedicated person in charge of our online communications. Should we create a dedicated position for communications?</p>
<p>Respectfully submitted</p> <p>Asim Renyard</p> <p>Student Director</p> <p>Submitted Oct 19th, 2021</p>



COMMITTEE REPORT

Position: EDI Committee
Period under report: Apr 27, 2021 – Oct 19, 2021
<p>Summary of activities during report period:</p> <p>As co-chair, I am pleased to report on the various activities of the ESBC EDI committee since our spring meeting:</p> <ol style="list-style-type: none"> 1. Terms of reference: The committee has drafted a terms of reference to determine how the committee will govern itself as well as the roles and responsibilities of the committee. We are presenting this terms of reference document to the executive for approval at our executive meeting. 2. ESBC EDI award: We are pleased to present a draft for the ESBC EDI award to the executive for approval. We believe this \$500 award will help greatly support people who are underrepresented in our society. 3. ESBC harassment policy and diversity and inclusion policy: Work is currently underway to generate an ESBC harassment policy and diversity and inclusion policy. We aim to have this completed prior to the 2022 ESA, ESC, ESBC JAM. 4. Diversity and inclusion survey: We are currently working on a survey to determine how to make the ESBC more inclusive and to identify weak points in our society's EDI policies and strategies.
Recommendations or action items for the attention of the ESC Board of Directors: NA
<p>Respectfully submitted</p> <p>Asim Renyard</p> <p>ESBC EDI co-chair</p> <p>Submitted Oct 19th, 2021</p>



Outreach Committee

Judy Myers Chair with Jaime Chalissery reporting here on the website initiative

Hello ESBC,

As you know the outreach committee has been working towards redesigning the website with Mariah Kolinsky (our contact at Tanamar Consulting). Mariah has conducted an audit and given us a quote (both attached here), and the outreach committee has conducted a survey of the executives to determine our list of priorities for the website redesign (see this google doc link https://docs.google.com/document/d/13Q24rvDo701iTooleMotWBySG-25E37KdNN_7soQvps/edit?usp=sharing).

Summary:

Based on Mariah's recommendations and the results of the survey, we have created a list of priorities:

1. Make sure the website is secure
2. Improve quality of service for members
3. Improve look and ease of access
4. Improve how searchable the website is
5. Create more dedicated sections for outreach information
6. Create a dedicated merchandise section

Mariah has quoted an initial cost of \$1571.44 for her work. We, the outreach committee, propose that we allocate up to \$2500 to pay Mariah Kolinsky/Tanamar Consulting for the initial website redesign. This amount is to cover Mariah's quote as well as having leeway for any extra hours/work we ask Mariah to do. This website redesign would allow for our current website to continue running while Mariah makes a new one from scratch with our priorities in mind.

This is just a draft proposal and **if you have any thoughts or questions, please let us know** and we can incorporate things for when we submit a revised proposal at the upcoming ESBC meeting. To be clear we are looking for feed back on this proposal, not voting to approve this draft proposal.

Question for the Executives:

1. Our current website is being hosted using A Small Orange (ASO). Mariah (and Adam Blake, our new webmaster) has more experience with Bluehost. Mariah also has great reps that she has worked with previously from Bluehost that can help with the change.

The outreach committee highly recommends transitioning to using Bluehost would be more cost efficient, easier, and timely.



2. In Mariah's quote, there is an option for a "Monthly SEO contract" - which would keep our Search Engine Optimization (SEO = keeping our website easy to find online) up to date as time goes on. This also covers monitoring of the Google Search Console/Google Analytics and WordPress & Plug-in monthly updates being tested and monitored for errors.

With this in mind, having Mariah around for a month doing this and teaching out webmaster would be sufficient for the purposes of our website.

The outreach committee highly recommends using part of our proposed budget to keep Mariah around for at least a month to teach the new webmaster (Adam Blake).

3. In Mariah's quote, she has broken down particular sections of work she would be doing and raised a great question about the branding of the ESBC - as we are going forward with a website redesign, would we also want to redesign our logo?

Options for this:

1. **Keep old logo**
2. **Make new modern logo**
3. **Keep old logo and have new modern logo**

Jaime M. Chalissery

Position:

Regional Director – Brian Van Hezewijk

Period under report:

[26 Apr 2021 – 18 Oct 2021]

Summary of activities during report period:

ESC Board of Directors Meeting Oct 13, 2021

- Long discussion on future financial stability of TCE
 - Main question is how to continue funding The Canadian Entomologist with rising costs and diminishing income
 - Options are 1) page charges 2) Open access fees 3) subsidize from Society investments and membership fees
- ESC Board of Directors will be reaching out to provincial societies with a questionnaire regarding the value of Joint Annual Meetings and possible future changes
- ESC is looking for a new Treasurer – Please contact Bill Riel if you have any ideas.



Thanks to all those who helped fill out the information sharing survey regarding online meetings. Our contributions were very much appreciated and helped in the organizing of online meeting of the Entomological Society of Canada.

The Joint Annual Meeting of the Entomological Society of Canada and Entomological Society of Ontario will be held online from Monday 15 November–Thursday 18 November 2021 (<https://www.entsocont.ca/esceso-2021-jam-english.html>). The meeting’s theme is ‘Strength in Diversity’ and features workshops such as “How to be an advocate for EDI” and “Entomologists on the Margins”.

Recommendations: None

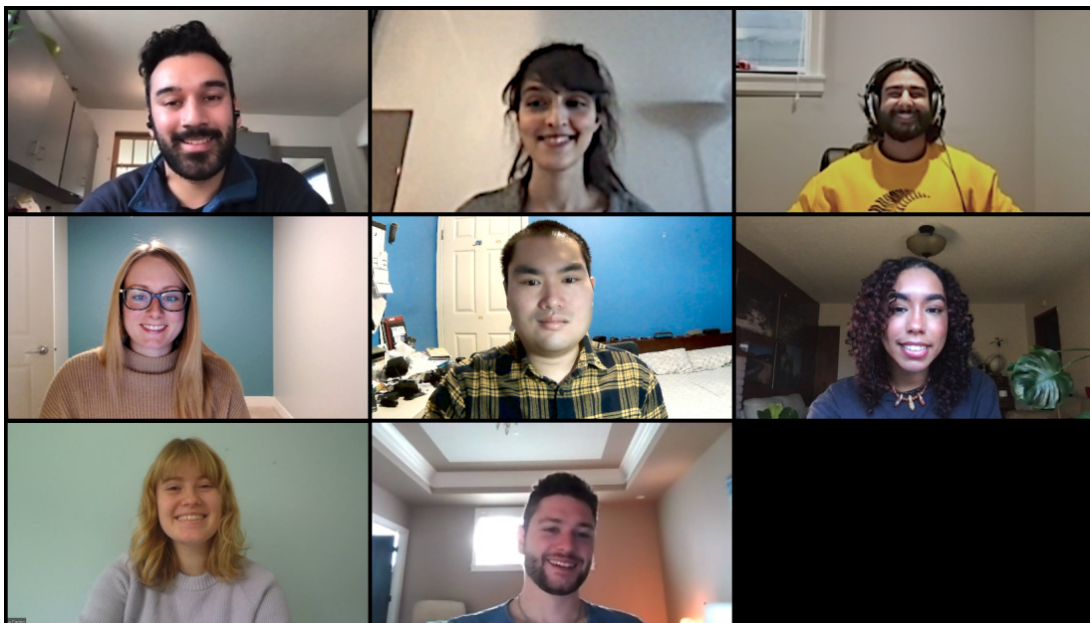
Respectfully submitted

Brian Van Hezewijk
Regional Director
18 Oct 2021

Boreus

Oral presentation at the AGM

Student Winners



From top to bottom row, left to right: Asim Reynard, Sam Meraj, Jaime Chalissery, Elton Ko, Kenza Zobaidi, Clarissa Capko, Andreas Fischer. Not pictured: Lana Harach



ESBC Grad Student Scholarship:

- Asim Renyard
- Sam Meraj

Dan Johnson Award:

- Jaime Chalissery
- Emily Lemke

Presentation Awards:

Undergraduate (runner up, tie)

- Clarissa Capko (\$500)
- Lana Harach, Kenza Zobaidi (Tie, runner up)

Best Presentation, MSc

- Jaime Chalissery
- Elton Ko (runner up)

Best Presentation, PhD

- Asim Renyard
- Andreas Fischer (runner up)

Graduate Students Graduating

Defended or planning to defend? Why not present your work in the Boreus? This is an excellent opportunity for graduate students to share their research. Send submissions to boreus@esbc.ca.

Nicolas Salcedo, PhD

- | | | |
|-------------|---|---|
| Title | - | How do insects fight pathogens? Molecular and functional characterization of the immune deficiency pathway in <i>Rhodnius prolixus</i> , a vector of parasites that cause Chagas disease |
| Supervisors | - | Dr. Carl Lowenberger, Simon Fraser University
Dr. Norbert Haunerland, Simon Fraser University
Dr. Christopher Beh, Simon Fraser University
Dr. Ryan Morin, Simon Fraser University
Dr. Julian Christians, Simon Fraser University |

Abstract - *Rhodnius prolixus* is a triatomine insect that has been used for >80 years as a model organism to study many aspects of insect physiology. It is also a vector of *Trypanosoma cruzi*, the causal agent of human Chagas disease. Triatomines interact through their immune systems with myriad microorganisms including trypanosomes and



other pathogens that must be tolerated or eliminated, and beneficial symbionts that must be nourished. Pioneering studies on insect immunity were described in holometabolous insects, and it was assumed that the innate immune system was conserved in all insects. The publication of the *R. prolixus* genome, however, revealed that one of the main immune pathways, the Immune-deficiency pathway (IMD), was fragmented, with many missing genes, and probably was non-functional. To investigate whether the IMD pathway exists and is functional in *R. prolixus* we used a combination of bioinformatics and molecular analyses. We used sequence homology searches, 3D protein modeling, phylogenetic analyses, and RNA sequencing to identify most of the missing genes of the IMD pathway in *R. prolixus*. We used RNA Interference (RNAi) mediated silencing, to functionally characterize the transcription factor Relish, the negative regulator Caspar, and the Peptidoglycan Recognition Receptors, and confirmed that these genes regulate the production of antimicrobial peptides in the fat body. We used RNA-sequencing to generate a transcriptome of all genes up- or down-regulated in the fat body tissues after infections with bacteria. We demonstrate that the IMD pathway in *R. prolixus* responds principally to Gram-negative bacteria and to a lesser degree to Gram-positive bacteria, which deviates from the classical holometabolous insect model. We also found an IMD candidate gene which, in other insects, is essential for the IMD pathway to function. Our RNAi approaches, however, failed to confirm its role in immunity. Our results confirm that the IMD pathway is present and functional in *R. prolixus*, albeit with important variations compared with other insects. Altogether, these findings have added to the foundation of knowledge on the immune systems of triatomines and other hemimetabolous insects, allowing us to better understand the evolution of insect immunity. This knowledge will allow us to explore in more detail the interactions among triatomines, trypanosomes, and beneficial symbionts with the hope of developing new control strategies for Chagas disease.

Official completion date – Defended October 18, 2021



Muscoid feeding on honeydew. Photo Credits: Bob Lalonde



Entomological Society of Canada Student Awards

Details of Awards at <https://esc-sec.ca/student/student-awards/> . Deadline for all awards is **March 1** 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

Entomology Educational Opportunities in Canada

The Entomological Society of Canada publishes a Directory of **Entomological Education in Canada**. Available at: <https://esc-sec.ca/student/student-awards/>

Employment and Research Postings
 details on ESC website <https://esc-sec.ca/opportunities/>

Permanent Opportunities

Position: Lead Bumble Bee Breeding Technician, Wildlife Preservation Canada
 Native Pollinator Initiative

Wildlife Preservation Canada's (WPC) Native Pollinator Initiative is seeking a Lead Bumble Bee Breeding Technician to assist with activities related to their Native Pollinator Initiative in southern Ontario. The technician's primary role will be to lead and carry out husbandry and research activities at WPC's Bumble Bee Conservation Lab, including related data collection and management.

Application deadline: January 28, 2022, 11:59pm EST



For information, contact: Sarah MacKell, Lead Biologist
sarah.mackell@wildlifepreservation.ca

Species-at-risk Butterfly Technician, Wildlife Preservation Canada

Taylor's Checkerspot Recovery

Wildlife Preservation Canada is seeking a Species-at-Risk Butterfly Technician to implement recovery activities for Taylor's checkerspot butterfly. The primary focus of the position will be the captive management, rearing, and release of individuals to supplement and reintroduce wild populations Taylor's Checkerspot towards achieving recovery objectives.

Application deadline: January 28, 2022, 11:59pm EST

For information, contact:

Andrea Gielens, Lead Program Biologist

Andrea@wildlifepreservation.ca

Laboratory Manager – Nematology

Natural Insect Control

Natural Insect Control is a family owned and operated business since 1989. NIC specializes in bio-control for commercial growers, wholesalers, distributors and the consumer market. As the only Canadian producer of Beneficial Nematodes, NIC is in a unique position to lead the Canadian industry towards more sustainable and environmentally sound practices and offer products and services that are an alternative to chemicals for home, garden and commercial growers.

For information, contact:

Susan Cavey, Managing Director / Owner

susan@naturalinsectcontrol.com

www.naturalinsectcontrol.com

Entomology Lead

Spotta Smart Pest Control

Spotta is a VC backed, fast-growing startup in Cambridge, UK. We are commercialising



our proprietary smart insect Pods to allow targeted, precision interventions and help solve the £320Bn problem of insect pests.

We particularly encourage applications from women and under-represented minorities in science and engineering industries. To apply, send your CV and a brief covering letter to careers@spotta.co

Graduate Research Opportunities

MSc Student – agricultural ecosystem insect ecology – MITACS Funded

University of Northern BC

Application deadline: 15 December 2021; MSc program beginning May 2022

There may also be an opportunity for an earlier nondegree research contract (January to April 2022) prior to beginning studies. The student will be co-supervised by Dr. Dezene Huber (University of Northern British Columbia) and Dr. Jasmine Janes (Vancouver Island University) and will be enrolled in the graduate program in the Natural Resources and Environmental Studies Institute at the University of Northern British Columbia in Prince George, British Columbia. Outstanding applicants with a strong and demonstrable interest in insect ecology should send their CVs and a cover letter to huber@unbc.ca by 8 October 2021. Please feel free to contact Dr. Huber prior to submitting your CV and cover letter to discuss your interests as they relate to the project

MSc or PhD Students – Mountain pine beetle eastern spread risk: Beetle physiology and behaviour as drivers of spread

University of Alberta

Application deadline: none listed; start date: Jan or May 2022.

Principal Investigator: Dr. Maya Evenden <https://grad.biology.ualberta.ca/evenden/>

Highly qualified students are invited to apply to the Department of Biological Sciences at the University of Alberta (<https://www.ualberta.ca/biological-sciences>) in the lab of Dr. Maya Evenden.



MSc or PhD Students – Insect freeze tolerance

Western University

No application deadline; start date: Fall 2021 or Winter 2022

Contact: Dr Brad Sinclair bsincla7@uwo.ca

PhD (multiple positions) in Insect Navigation and Dispersal

Warren Lab at Oregon State University (Corvallis, OR)

Application channels: OSU Integrative Biology PhD

program <https://gradschool.oregonstate.edu/programs/6300/integrative-biology-phd-ms-minor> OR through a bioengineering program jointly administered between OSU and University of Oregon <https://gradschool.oregonstate.edu/programs/3080/bioengineering-meng-ms-phd>.

Application deadline: December 15, 2021

PhD in Habitat Management for Endangered Butterfly Recovery – NCC Weston Family Conservation Science Fellowship

The Nature Conservancy of Canada, University of Manitoba, and University of Winnipeg

No application deadline, but review of applications will begin in October. Start date: May/Sept 2022. If you are interested in the Fellowship, please upload your CV, contact information for three references, unofficial transcripts, and a detailed cover letter to ADP. Only shortlisted candidates will be contacted. Questions can be directed to Samantha Knight at samantha.knight@natureconservancy.ca.

PhD in Mitigation and management of Cry1F resistance in European corn borer in Canada

School of Environmental Sciences, University of Guelph

Application deadline: none listed; anticipated start date: January 2021

To apply: Applicants should send a cover letter outlining your research interests, a current CV, unofficial transcripts and contact information for 3 academic references, as soon as possible, by email to: Dr. Rebecca Hallett or Dr. Jocelyn Smith rhallett@uoguelph.ca jocelyn.smith@uoguelph.ca



PhD in Mountain Pine Beetle Ecophysiology

Dr. Heath MacMillan (Carleton University)

Application deadline: none listed; anticipated start date: none listed

To apply: Please send a cover letter, CV, and unofficial copy of your transcripts to: Dr. Heath MacMillan heath.macmillan@carleton.ca

PhD in Forest Pest Genomics

Dr. Heath MacMillan and Dr. Cathy Cullingham (Carleton University)

Application deadline: none listed; anticipated start date: none listed

To apply: Please send a cover letter, CV, and unofficial copy of your transcripts to: Dr. Heath MacMillan heath.macmillan@carleton.ca

PhD opportunities in the UK

Go to the ESC website

MSc opportunities in the UK

Details go to the ESC website

Global opportunities

Go to the ESC website

Post-doctoral Research Opportunities

Postdoc – New threats from pest insects in the boreal forest of northwestern Quebec

Concordia University

Application deadline: none listed; start date: by 1 March 2022

The successful candidate will combine strong entomological and quantitative skills with experience in fieldwork, managing a research team and liaising with partners. Ability to communicate professionally in English and French is also required.

Applications are submitted directly to the School of Graduate Studies at Concordia University. For more information contact: Emma.Despland@concordia.ca or Tim.Work@uqam.ca



ESBC Special Projects Grant

Purpose

The purpose of the grant is to fund projects that advance and promote entomological knowledge in the province of British Columbia. Projects should address one of the following goals:

- Contribute to the understanding of insects and relatives in British Columbia
- Raise appreciation of insects and relatives in British Columbia
- Contribute to insects and relatives conservation in British Columbia

Available funds

The amount and number of projects funded annually will depend on available funds. Up to a total of \$5000 CAD across all projects will be awarded annually. Requests for funds that exceed this amount will be considered on a case by case basis.

Eligibility

- We welcome applications from, but not limited to, non-for-profit organizations, government agencies, research institutions, educational institutions, businesses and independent citizens
- Applicants must demonstrate how their project fulfills at least one of the listed grant goals
- Projects must either take place wholly or partially within BC **OR** for projects that take place outside of BC, the applying organization or individual must be based in BC
- Applicants must demonstrate how equity, diversity, and inclusion are considered in their project design and practices
- If data is collected as part of the project, data must be freely available to the public unless it pertains to personal information of individuals

Eligible Expenses

Eligible expenses include but are not limited to:

- Contractor salaries
- Equipment
- Travel costs
- Venue rental

Ineligible expenses include but are not limited to:

- Program maintenance
- Retroactive funding



How to apply

To apply, fill in form (see below)

Timelines

Applications are reviewed twice a year. Successful applicants will be notified by email.

Deadline	Successful applicants notified by
March 1st	June 1st
September 1st	December 1st

Application Review

Applications will be reviewed by the ESBC president, Treasurer, and one other member of the ESBC executive. The following criteria will be used:

- Does the project meet the purpose of the grant?
 - Does the project contribute to understanding of insects and relatives in British Columbia?
 - AND/OR Does the project raise appreciation of insects in British Columbia?
 - To the general public?
 - To other entomologists?
 - To professionals (growers, pest management professionals etc)
 - AND/OR Does the project contribute to insect conservation in British Columbia?
- What proportion of the total budget will the ESBC be funding? Preference will be for projects that will be mostly funded by the society.
- How much of the total budget is already funded? If the ESBC is funding a portion of the project, preference will be given to projects where other funding sources are confirmed.
- Is the budget and timeline realistic for completion?
- Does the project take equity, diversity and inclusion-related considerations into the project design and practices?
- Does the project have equitable and inclusive participation in the project?
- Is the ESBC supporting equitable access to funding opportunities for all members of the community?



Follow-up after receiving grant

Successful applicants will be required to submit a report to the society newsletter Boreus and may be asked to present project outcomes at the annual symposium in the fall.

APPLICATION QUESTIONS (to be converted to google form after feedback from ESBC exec)

- Name of the applying organization/individual
- Address of applying individual/organization
- Primary contact person for the application
- How is the primary contact person affiliated with the applying organization?
- Phone number of primary contact person
- Email address of primary contact person
- Description of the applying individual/organization (50 words max)
- Description of project (200 words max)
- Amount requested
- Please give a brief budget for how these funds will be used (bullet points are preferred)
- Please give a brief project timeline (bullet points are preferred)
- The ESBC is looking fund projects that will fulfill one or more of the following goals:
 - Contribute to understanding of insects and relatives in British Columbia
 - Raise appreciation of insects in British Columbia
 - Contribute to insect conservation in British Columbia

How does the project fulfill one or more of these goals? (300 words max)

- Do you have other sources of funding that will be helping fund this project? (YES/NO)
- If applicable, list other sources of funding that will be used to fund the project, and state whether the funding is pending or confirmed (150 words max)
- What percentage of the project will the ESBC be funding?
- How does your organization/group contribute/promote diversity/equality/underrepresented groups? (100 words max)
- How have you taken into account equity, diversity, and inclusion considerations in your project design and practices? (150 words max)
- If successful, will you be willing to submit a project report to the society newsletter Boreus? (YES/NO)
- If successful, will you be willing to present the outcomes of your project at the ESBC Annual Symposium? (YES/NO)



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 2021 Vol: 53 No. 4 Bulletin available online at:

<http://esc-sec.ca/publications/bulletin/>



Oblique Banded Leaf Roller *Choristoneura rosaceana* (Harris). Photo Credit: Dave Holden



Entomology in the News

The first mainland European Mesozoic click-beetle (Coleoptera: Elateridae) revealed by X-ray micro-computed tomography scanning of an Upper Cretaceous amber from Hungary

Márton Szabó, Robin Kundrata, Johana Hoffmannová, Tamás Németh,

Emese Bodor, Imre Szenti, Alexander S. Prosvirov, Akos Kukovecz & Attila Ósi

[Scientific Reports](#) volume 12, Article number: 24 (2022)

Abstract

Fossil bioinclusions in amber are invaluable source of information on the past evolution and diversity of various organisms, as well as on the paleoecosystems in general. The click-beetles, Elateridae, which originated and greatly diversified during the Mesozoic, are mostly known from the adpression-like fossils, and their diversity in the Cretaceous ambers is only poorly documented. In this study, we describe a new click-beetle based on an incomplete inclusion in ajkaite, an Upper Cretaceous (Santonian) amber from the Ajka Coal Formation from Hungary. We used X-ray micro-computed tomography scanning to reconstruct its morphology because it is deposited in an opaque piece of amber. Our results suggest that the newly described *Ajkaelater merkli* gen. et sp. nov. belongs to subfamily Elaterinae. It represents the first Mesozoic beetle reported from Hungary, and the first Mesozoic Elateridae formally described from mainland Europe. Our discovery supports an Eurasian distribution and diversification of Elaterinae already in the Cretaceous. The paleoenvironment of the Ajka Coal Formation agrees well with the presumed habitat preference of the new fossil taxon. The discovery of a presumably saproxylic click-beetle shed further light on the yet poorly known paleoecosystem of the Santonian present-day western Hungary.



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.



DATED: _____

PRESIDENT



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/>



Hymenoptera feeding on nectar. Photo by Bob Lalonde



Asian Gypsy Moth (*Lymantria dispar*). 2009. In Korea. Photo Credits Dave Holden



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

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