

Vol 39(1) June 2019

Boreus



Newsletter of the Entomological Society of British Columbia





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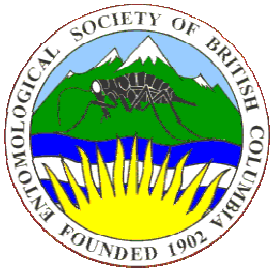
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The Entomological Society of British Columbia is a scientific Society founded in 1902 for the advancement of entomological knowledge in the province.

The Executive

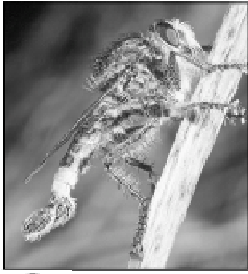
President	Lisa Poirier University of Northern British Columbia, Prince George
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Graduate Student Representative	Dan Peach Simon Fraser University, Burnaby
Regional Director of National Society	Brian van Hezewijk Canadian Forest Service, Victoria
Web Page Editor	Brian Muselle University of British Columbia – Okanagan, Kelowna



Publications of ESBC

Journal of the Entomological Society of British Columbia

Journal of the Entomological Society of British Columbia

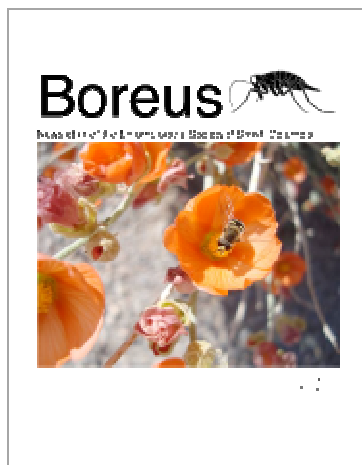


The Journal of the Entomological Society of BC is a peer reviewed, open-access journal. Manuscripts dealing with all facets of the study of arthropods will be considered for publication. Submissions may be from regions beyond British Columbia and the surrounding jurisdictions provided that content is 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 2019 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 early June and the December issue is early December. If you have something to submit and missed the deadline email me I may be able to accommodate you.



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 \$30.00, International member \$45 or Student member \$15. 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, Ward Strong, E-mail: membership@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	



Grammoptera subargenata (Cerambycidae).
Photo Credits: Lisa Poirier



ESBC Annual General Meeting and Symposium October 4 and 5, 2019

The Entomological Society of BC Invites you to attend the 2019 AGM and Symposium at Pacific Forestry Centre, Victoria

Meeting website: <https://www.entsoc.org/events/annual-meeting/registration-rates>

President's Corner

Submitted by: Lisa Poirier

Hello, fellow ESBC members!

Field season is in full swing in northern BC. We had a rather abrupt start to spring, with daytime highs reaching about 10°C one week, and 26°C the next week. Inevitably, that means there is plenty of time to plan and prepare ... and then there is, suddenly, no time at all!

We are beginning to develop a much better understanding of some aspects of entomological diversity on the Central Interior Plateau. I will be working with Aleza Lake Research Forest personnel this summer, and we now have pitfall traps at various locations around the forest. The goals are to document some of the ground-dwelling arthropod diversity in the forest, and to compare the diversity between sites with different histories. Ian Higgins (MSc NRES candidate, co-supervised with Dr. Brent Murray, UNBC) has done similar work, focused on Carabidae, in the new Chun T'Oh Wudujut park, located east of Prince George in the Interior Cedar Hemlock BEC zone. Dr. Dezene Huber (UNBC) and I have also surveyed the diversity of ground-dwelling arthropods within the city of Prince George itself. Dezene will be sharing some of those results at the CSEE/ESC/AES meeting in Fredericton, NB, Aug. 18-21, 2019.



In Society news, the next Annual General Meeting of the Entomological Society of British Columbia will be held at the Pacific Forestry Centre in Victoria, 4–5 October 2019. Planning is underway, and more information will be available soon. In November, we enjoyed a wonderful joint meeting with ESC and ESA in Vancouver. I would like to thank everyone involved with planning and delivering the event. It was not easy, I know, but congratulations on a great accomplishment. The ESBC Executive has agreed to pursue a second such meeting in Vancouver in 2022, so we look forward to another exciting program.

Members of the Executive are fielding an increasing number of queries from outside the Society, ranging from questions about insect identification and how to find more information about insects, to requests for media interviews, to funding and participation requests for a variety of outreach, educational, and community events. This is great news! – more and more, people are paying attention to insects, and are curious and engaged. We have helped to fund several activities at Van Dusen Gardens this year, and our First Vice President, Tammy McMullan, delivered her “Picky Pollinator” activity there during Pollinator Days, June 12-14. We would like to be more proactive and organized in how we deal with these requests and, perhaps, do more to advertise opportunities. Soon, you will see an e-mail from the Society soliciting volunteers for a new Public Outreach Committee. We hope you will consider being a part of this exciting initiative! Also, please remember to check in with our web page and/or our Twitter and Facebook accounts for updates on this and other activities.

I must sincerely thank the members of the ESBC Executive for keeping this Society functioning. They all do tremendous jobs, on a volunteer basis and in their “spare” time. Finally, I also thank all of you for your participation in the Entomological Society of British Columbia. Your contributions continue to raise awareness about insects and entomology, and make ESBC a vibrant part of professional activities in the province. My best wishes to everyone for a productive and rejuvenating field season!

Sincerely,
Lisa Poirier



Praying Mantid feeding on *Leptoglossus* (Photo Credit: Ward Strong).

Graduate Student's 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.

Title - Agent-based scenario models of invasion and movement of *Rhagoletis pomonella* (Diptera: Tephritidae) within the southern interior of British Columbia

Supervisors - Dr. Jason Pither of UBCO and Dr. Howard Thistlewood of AAFC

Abstract - The apple maggot, *Rhagoletis pomonella*, is an economically important native pest of pome fruits in the United States and southern Canada. British Columbia's



Okanagan Valley is currently the only significant commercial apple-producing region in North America that remains free of its impact. This is likely to change soon, as *R. pomonella* is well established within certain counties in adjacent Washington State. Ideally, the Okanagan Valley would by now have a management prescription, but such is not the case, and the heterogeneous landscape demands consideration of varied management strategies. Extensive sampling and control efforts have been undertaken since the pest's arrival in Washington in the late 1970's. Data from the American agencies provided a foundation for spatially explicit agent-based models (ABM), which I used to evaluate fly movement and establishment under different management schemes within comparable regions in the Okanagan Valley. Agent-based modeling is a relatively new concept and idea of conceptualizing how complex systems work but has recently increased in its use as an alternative method to understanding behaviour, especially in economics or pest management. ABMs are powerful modeling tools that enable simultaneous manipulation of agent behaviour (e.g. insect dispersal, human management action) and other variables (e.g. host density and distribution) within a spatially explicit landscape context. With ABMs, one can explore management scenarios that would otherwise be infeasible to explore in the field. The aim of the resulting ABM is to inform management and survey efforts as *R. pomonella* establishes in the southern interior of British Columbia. I split the model into two main components: a validation model, based on central Washington State apple maggot spread history, and a predictive model, which is the new, un-invaded environment in the Okanagan Valley where apple maggot spread predictions will be based. I calibrated my model parameters using the literature and observations of historical apple maggot spread in central Washington State. I validated the model by using metrics that compare the simulated results with real-world observations. The validation model yielded a 52.8 – 82.0 % agreement for the locations of apple maggot infestation and a 52.1 – 81.9 % agreement for the locations of apple maggot infestation severity. With this, I considered the model validated and the application to a new environment, the Okanagan Valley, was with confidence. My simulations of the predicted model yielded maps expressing risk of infestation under various management and spread scenarios. My results illustrate



that management of apple maggot has the potential to provide a 59.3 – 85.7 % reduction of mean infested locations, a 43.0 – 83.4 % reduction of mean undetectable infested locations, and a 66.8 – 86.0 % reduction of mean total costs associated with the management of apple maggot. Regardless of management, the simulation runs of my model produced a frequency of occurrence of apple maggot similar to those of Kumar et al (2016), in that frequency of occurrence was mainly less than 0.2, suggesting the Okanagan Valley is not an overly suitable environment. To my knowledge, my use of ABMs to explore potential spread patterns in as-yet uninvaded regions is novel. My findings highlight key data gaps, but also underscore the utility of using ABMs for pest management scenario modeling.

Official completion date - April 5, 2019 (Defended March 6, 2019)

Currently - working at the CFIA

Future - working with insects!

VanDusen Botanical Garden Pollinator Days (June 12-14, 2019)

In January, the ESBC was contacted by the Youth Programs Manager of VanDusen Botanical Garden about whether the ESBC would be interested in being a Community Partner for Pollinator Days, which is held annually at the garden. VanDusen advertises Pollinator Days as an opportunity “*to explore the special relationships between plants, pollinators and people... through fun, hands-on activities*”.



As I am currently on Study Leave, I volunteered to host a “Picky Pollinators” activity. For this activity, the children had to search for the correct flowers for their pollinator (bumblebee or hummingbird). I made “flowers” that were placed around the Great Lawn of VanDusen Garden. When the child successfully identified their flowers, they received stickers for their worksheet. Over the three days, 800 elementary aged children participated in Pollinator Days at VanDusen Botanical Garden. Approximately half of the children, 398 to be precise, participated in the “Picky Pollinator” activity.

I am extremely grateful to Asim Renyard (SFU MPM student) and Dr. Dan Peach (SFU PhD) who did the lion share of the work of checking that the children had the correctly identified their pollinator’s flowers and giving out the 2400 stickers we used over the



three days. The photographs to the right (Asim hard at work in the top photo and Dan working equally as hard in the bottom) were taken during “slow times” at our booth. We also had the assistance of several staff members from VanDusen. We received very positive feedback in the teacher’s exit survey.

In total there were 14 different activities that the children could do during their visit to Pollinator Days, which included: “seeing like a bee”; tasting different types of honey; viewing display bee hives; learning how to use a sweep net and a bumble bee nesting box (hosted by SFU graduate students from the Gries lab); making bee friendly seed bombs; and learning about the role of pollinators in sustainable food production.



By all accounts, the children had a “Buzzing good time”.

I would like to thank the ESBC for financial support (funds for purchase of printable stickers and printing of the worksheets). I hope that we inspired a new generation of entomologists.

Tammy McMullan



Goosseberry sawfly, *Nematus ribesii*. Photo Credit: Lisa Poirier



Graduate Student Scholarship Competition

Award information:

The Entomological Society of British Columbia awards annually a scholarship of \$400 to up to two postgraduate students to encourage students engaged in entomological research in BC. Funds are to be used at the student's discretion.

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). Applicants may also choose to include other contributions to the field of entomology outside of their research.
- A curriculum vitae
- A post-secondary transcript

In addition, applicant must arrange for **two letters of reference** to be submitted on behalf of the applicant.

Deadline:

Applications and letters of reference should be submitted to the ESBC Secretary at secretary@entsocbc.ca by **September 1st** of each year. Competition results will be announced at the annual general meeting which is typically held in October each year.

Judging Criteria:

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



Many-plume moth, *Alucita adriendenisi* (Photo Credits: JF Landry)



Grad Student, Post Doc and Employment Opportunities – Entomological Society of Canada

<http://esc-sec.ca/opportunities/>

See details on the ESC website

Permanent Opportunities

Field Scientist, Integrated Field Sciences R&D

Corteva Agriscience

Application deadline: None listed

Details: [https://careers.corteva.com/ShowJob/JobId/271547/Field-Scientist%2C-Integrated-Field-Sciences-R-D-\(Masters-PhD\)](https://careers.corteva.com/ShowJob/JobId/271547/Field-Scientist%2C-Integrated-Field-Sciences-R-D-(Masters-PhD))

Agriculture Canada Research Scientist (40 Positions)

Agriculture and Agri-Food Canada

Application deadline: N/A

<https://emploisfp-psjobs.cfp-psc.gc.ca/psrs-srpf/applicant/page1800?poster=1206690>

Graduate Research Opportunities

MSc Student – Host plant resistance mechanisms against wheat midge

University of Manitoba – Winnipeg

Application deadline: July 5, 2019; Start Date: As soon as possible

<https://emploisfp-psjobs.cfp-psc.gc.ca/psrs-srpf/applicant/page1800?poster=1206690>

MSc Student – Investigating the roles of ecology, phenology, and insect genotype in predicting host-range of candidate biocontrol agents for an invasive fruit-feeding fly

University of British Columbia – Okanagan (Kelowna)

Application deadline: Applications will be accepted until a suitable candidate is found but



those received by June 15th 2019 will be given priority.

Details: <https://twitter.com/DrChandraLa/status/1135721349517914117>

MSc Student – Tritrophic effects of supplemental LED lighting in greenhouse vegetables

Laval University (Quebec City, QC) and Agriculture and Agri-Food Canada (Agassiz, BC)

Application deadline: Until a suitable applicant is found; Start date: 1 January 2020

<https://emploisfp-psjobs.cfp-psc.gc.ca/psrs-srpf/applicant/page1800?poster=1206690>

PhD Student – Spotted wing drosophila management

Vineland Campus of London Research and Development Centre, Agriculture and Agri-Food Canada & School of Environmental Sciences, University of Guelph

Application deadline: Open until a suitable candidate is identified; Start date: September 2019

<https://emploisfp-psjobs.cfp-psc.gc.ca/psrs-srpf/applicant/page1710?careerChoiceId=1206690&psrsMode=1>

MSc Student – Vector Biology

University of Winnipeg

Application deadline: Open until a suitable candidate is identified; Start date: Early summer 2019

<https://emploisfp-psjobs.cfp-psc.gc.ca/psrs-srpf/applicant/page1710?careerChoiceId=1206690&psrsMode=1>

Check out Entomological Society of America <http://www.entsoc.org/listjobs> website and Entomological Society of Canada website <http://www.esc-sec.ca/jobs.php> for other positions and details of the positions listed above.

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://escsecblog.com/>

March 2019 Bulletin Vol 49 (2) (current issue) available online at <https://www.esc-sec.ca/bulletin.php>

Some International 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/>



The 2015 version of the Checklist of Lepidoptera of British Columbia is now available. The list is published by the BC Entomological Society.
<http://bcleps.weebly.com/bc-checklist.html>

The British Columbia Lepidopterists' Guild website <http://bcleps.weebly.com/>
Anybody wishing to join or get involved please contact: Dave Holden BCLEps@shaw.ca

Entomological Meetings and Conferences

The Canadian Society for Ecology & Evolution, the Entomological Society of Canada, and the Acadian Entomological Society invite you to a joint meeting. Fredericton, New Brunswick, August 18th – 21st, 2019

Obituary



It is with great sadness that we announce the passing of Dr. Peter Belton on Monday April 1, 2019.

Peter joined the Department of Biological Sciences, Simon Fraser University in 1967 as one of the founding faculty of the Master of Pest Management Program. Peter started his academic career in the UK. He received an ARCS from Imperial College, BSc (Honours)



London, PhD University of Glasgow. After the completion of his PhD he was employed as an Experimental Officer, British Ministry of Food and he followed that with two years in the RAF. In 1957 he returned to the University of Glasgow as an Assistant Professor. In 1960, Peter moved with his wife Dr. Elspeth Belton to Columbia University where he was as a Research Fellow in Neurology. In 1964 he moved to the Agriculture Canada Research Station in Belleville, Ontario where he was a Research Scientist and Group Leader until his move to SFU.

Peter’s research focused on the sensory physiology of biting flies, particularly mosquitoes, and the bioacoustics of insects. Peter was the foremost expert on mosquitoes in BC and published the book “Mosquitoes of British Columbia” in 1983. Although Peter retired in 1994, he was still actively publishing his work in 2018 and was discussing a new collaboration with Dan Peach last month.

Peter taught a number of courses at SFU: BISC003 Ecology and the Population Explosion, BISC101 General Biology, BISC 201 Cell Biology, BISC300 Evolution, BISC305 Animal Physiology, BISC601 Urban and Industrial Pest Management, and BISC845 Physical Controls. Peter also spent several months teaching in Indonesia with the SFU-CIDA project in 1992.

He will be deeply missed by his colleagues at SFU and the entomological community of BC and Canada. Peter and his wife Elspeth were both very active in the BC Entomological Society and were volunteering as the Editor Emeritus until Peter’s passing. Peter is survived by his wife Elspeth and their three children (Owen, Jim and Jill) and their families.

Executive Contact Information

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