



June 2021 Vol. 41 (1)

Boreus

Newsletter of the Entomological Society of British Columbia



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The Executive

President	Wim van Herk Agriculture Canada, Agassiz
First Vice President	Chandra Moffat Agriculture Canada, Summerland
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Treasurer	Markus Clodius, Agriculture Canada, Agassiz
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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	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



ESBC

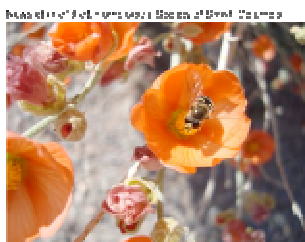
The Journal of the Entomological Society of BC is a peer reviewed, open-access journal. Manuscripts dealing with all facets of the study of arthropods will be considered for publication. Submissions may be from regions beyond British Columbia and the surrounding jurisdictions provided that content is 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 2021 issue is 1 September, 2021. Please submit articles at the JESBC website: <http://journal.entsocbc.ca/>.

Boreus

Boreus



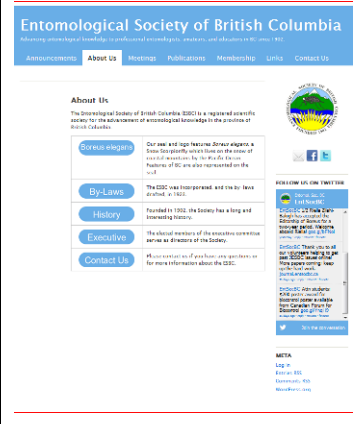
Boreus, the Newsletter of the Society is published in June and December. It contains entomological news, comments, reports, reviews and notices of meetings and other events. While emphasizing the Society's affairs, *Boreus* provides members with a forum for their views and news of British Columbia entomology, 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



The screenshot shows the homepage of the Entomological Society of British Columbia. The header includes the society's name and a navigation menu with links for Announcements, About Us, Meetings, Publications, Membership, Links, and Contact Us. The main content area features an 'About Us' section with a logo and several informational boxes: 'Society宗旨', 'By-Laws', 'History', 'Executive', and 'Contact Us'. A sidebar on the right contains a 'FOR NEW US ON TWITTER' section with a Twitter icon and a 'META' section with links for Log In, Home, About, and Members.

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



The image shows the Facebook logo (a white 'f' on a blue square) next to a grey button with the text '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.

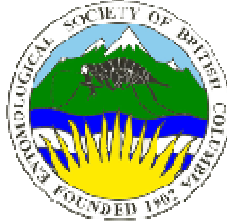
Twitter



The image shows the Twitter logo (a blue bird) next to the text '@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:

- 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, Markus 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	

Presidents Report

Position: President, Wim van Herk

Period under report: [October, 2020 – April, 2021]

Summary of activities during report period:

It is hard to believe that half a year has passed since our last Executive meeting. Time flies in these “interesting times” that we live in, and, hunkered down in our basement offices as some of us are, days tend to bleed into each other. For the ESBC it was a relatively quiet period, characterized, I think, by transition, follow-up, response, and preparation.

Transition. Annual change in the executive is normal, of course, but perhaps there was a bit more change than usual during this period, with Rob and Markus taking over from positions long held by Tracy and Ward. But it has been a very smooth transition, and the “backbone of our society” (to use Tammy’s words from the previous President’s report) remains as strong as ever. Thank you to all four for this!

Follow-up. In recognition of Dr. Ware’s, our plenary speaker at the AGM, role in EntoPoc, ESBC donated \$1,000 (USD) to this organization in November to help it provide memberships to BIPOC students. ESBC also gained some publicity (we made the paper!) by donating 500 copies of ‘The Bug Girl: A True Story’ by Sophia Spencer and Margaret McNamara to schools. A HUGE thank-you to Tracy, Chandra, Munro’s Books, and BC Agriculture in the Classroom for making this happen, and to Chandra and Brian for sharing this on social media. Thank you all for approving this donation. As Chandra put it, “500 copies of an amazing story of kids following their passions, overcoming bullying, trusting in themselves, AND loving insects are now in BC classrooms. These will spread Sophia’s story over many years to BC kids, and hopefully inspire a few new budding entomologists.” Another, relatively minor, follow-up item was to share news of ESC’s new “Entomology Enthusiast” membership category with BC’s naturalist clubs. Little did I know BC had 53 such clubs, but contacting them was an opportunity to put in a shameless plug for the ESBC, mentioning its cheap membership rates, respectable history, and publications. Hopefully it will bring some more attention to ESBC, and maybe some more memberships?

Response. “Interesting times” are not necessarily good times. And I am grateful to the Equity, Diversity and Inclusion Committee for preparing a Statement on Anti-Asian Sentiment in response to the recent rise in anti-Asian racism. Drafting such a statement is not easy. On the one hand we want it to be comprehensive and recognize all marginalized groups, and have sufficient time to discuss and reflect before releasing the statement, but on the other hand we want to be timely and respond to recent events. I think the committee worded our position well with their statement that, “We are committed to our stance against racism and systemic oppression. We are ready and devoted to building a safe and welcoming environment for our members and extended communities”, and am glad we could move on this as quickly as we did.

Preparation. Initial work is underway to prepare for the big 2022 JAM of the ESBC, ESC, and ESA in Vancouver. Markus and Chandra have been working on a MOU to determine how costs and spoils are to be shared, and Dan and Asim (as ESBC representatives) have been working with Bill Riel to start planning the scientific program. But, we have a 2021 ESBC meeting to plan first. Will it be virtual, in-person, a hybrid of the two? Who should we ask for plenary speaker, and what should be our theme? Our next six months will require us to focus on this upcoming meeting, and likely be a little less quiet than the previous.

In closing, I want to give a big thank you to all members of the Executive and Committees for your contributions to the ESBC these last six months, and look forward to a fun summer!

Recommendations or action items for the attention of the ESBC Executive: Review awards, explore opportunities to fund local research projects that raise the profile of ESBC, encourage EDI and Outreach committees to identify and pursue initiatives.

Respectfully submitted, Wim van Herk, President, 24 April 2021

Having a field day...

The last 15 months have been quite a miserably difficult time to do research. Many of us were forced to work from home, a lot of lab and field projects were cancelled, insect colonies had to be maintained in bathrooms and garages and on patios (where some had their samples eaten by bears), fridges and freezers at home were stocked with an array of little critters, smelly insect samples were processed on kitchen counters, etc. Stressful for those trying to meet project deadlines and satisfy commitments made to industry, or trying to adhere to ever-changing regulations and restrictions from management without cancelling all research, or trying to write or suffer through endless virtual meetings in (non-soundproofed) houses shared with hyper pre-teens supposedly engaged in online learning—not to mention trying to do Zoom meetings while toilet training toddlers and during the kids' (obligatory) *fortississimo* piano practice. Stressful, too, for grad students, anxious to complete a last year of work, graduate, and move on in life. Dickens' description of living in "the worst of times" (which, by the way, he also cheerily describes as an "age of foolishness", "season of darkness", and "winter of despair") has come to mind as an apt description of the year of the Covid, but maybe we'll look back on this period some day and see some sunny bits. These there were. If anything, these last months have made me appreciate the privilege of working with a team of great colleagues, in research, industry, and on the farm; the value of working with brilliant and dedicated (co-op and grad) students; the sheer joy of data; and how great it is to have a chance to get out to the field. Being able to get out of my basement and meet up with growers and set up some studies in the field has been one of the most liberating and therapeutic experiences of the last year. I was lucky this spring to work in the Okanagan and Pemberton valleys again. These are areas where some of the native click beetle pest species still occur in high numbers, and have not yet been displaced by the invasive species that predominate on Vancouver Island or in the Fraser Valley. As many as five co-occurring species in one unique site in Pemberton, located well out of cell phone coverage and well beyond signs warning us not to feed the local grizzly population. Work doesn't get much better than that. Field work, of

course, never quite goes as planned. I assured my student Emily she would likely only need to travel (from Abbotsford) to the southern Okanagan to collect beetles for her thesis work in April this year. Four weeks of trap checks, that should be all, I said. Eminently doable. It lasted fourteen, and some *creativity* was required to conduct the weekly checks. And sometimes she and Kendal drove three hours to a site only to find a bear in their research plot and in no hurry to leave (and some chewed up traps). And a fair number of things don't work out at all, or work very differently than expected, but *c'est la vie*. I'm hoping we can beat this disease, that restrictions ease soon, and that all of us can get back to teaching and committing science and research as usual, and that we all had some good sunny bits these last months. I for one will never take the chance to have a field day for granted again...

Wim van Herk, ESBC President





A. Northernmost site in Pemberton valley—ideal location for at least five pest elaterid pest species, grizzlies, moose, and mountain goats. **B.** Emily Lemke and Kendal Singleton (MPM students, SFU) in the field—working with enthusiastic, dedicated students is invaluable for keeping up morale. **C.** Kendal setting up light traps for click beetles in Pemberton. **D.** Light traps at night—almost too much fun. **E.** Trapping in Oliver, in a site I had last visited in 2003—pretty much nothing beats working with great farmers who also love research. **F.** Except... for processing beetle samples with little helpers at home...

Entomological Society of British Columbia

ANNUAL GENERAL MEETING and SYMPOSIUM 2021

19-21 October 2021 Virtual

Theme: TBA

Entomology in the News

Live plant imports: the major pathway for forest insect and pathogen invasions of the US

Andrew M Liebhold, Eckehard G Brockerhoff, Lynn J Garrett, Jennifer L Parke, and Kerry O Britton

Front Ecol. Environ. 2012; 10(3): 135–143

Trade in live plants has been recognized worldwide as an important invasion pathway for non-native plant pests. Such pests can have severe economic and ecological consequences. Nearly 70% of damaging forest insects and pathogens established in the US between 1860 and 2006 most likely entered on imported live plants. The current regulation of plant imports is outdated and needs to balance the impacts of pest damage, the expense of mitigation efforts, and the benefits of live plant importation. To inform these discussions, we document large

increases in the volume and value of plant imports over the past five decades and explain recent and proposed changes to plant import regulations. Two data sources were used to estimate the infestation rate of regulated pests in live plant shipments entering the US, thus allowing evaluation of the efficacy of the current port inspection process.

Projecting the continental accumulation of alien species through to 2050

Global Change Biology. 2021: 970–982

Hanno Seebens, Sven Bacher, Tim M. Blackburn, César Capinha, Wayne Dawson, Stefan Dullinger, Piero Genovesi, Philip E. Hulme, Mark van Kleunen, Ingolf Kühn, Jonathan M. Jeschke, Bernd Lenzner, Andrew M. Liebhold, Zarah Pattison, Jan Pergl, Petr Pyšek, Marten Winter and Franz Essl,

Biological invasions have steadily increased over recent centuries. However, we still lack a clear expectation about future trends in alien species numbers. In particular, we do not know whether alien species will continue to accumulate in regional floras and faunas, or whether the pace of accumulation will decrease due to the depletion of native source pools. Here, we apply a new model to simulate future numbers of alien species based on estimated sizes of source pools and dynamics of historical invasions, assuming a continuation of processes in the future as observed in the past (a business-as-usual scenario). We first validated performance of different model versions by conducting a back-casting approach, therefore fitting the model to alien species numbers until 1950 and validating predictions on trends from 1950 to 2005. In a second step, we selected the best performing model that provided the most robust predictions to project trajectories of alien species numbers until 2050. Altogether, this resulted in 3,790 stochastic simulation runs for 38 taxon–continent combinations. We provide the first quantitative projections of future trajectories of alien species numbers for seven major taxonomic groups in eight continents, accounting for variation in sampling intensity and uncertainty in projections. Overall, established alien species numbers per continent were predicted to increase from 2005 to 2050 by 36%. Particularly, strong increases were projected for Europe in absolute ($+2,543 \pm 237$ alien species) and relative terms, followed by Temperate Asia ($+1,597 \pm 197$), Northern America ($1,484 \pm 74$) and Southern America ($1,391 \pm 258$). Among individual taxonomic groups, especially strong increases were projected for invertebrates globally. Declining (but still positive) rates were projected only for Australasia. Our projections provide a first baseline for the assessment of future developments of biological invasions, which will help to inform policies to contain the spread of alien species.



Box tree moth, native to east Asia and now found across Europe. Credit: Professor Tim Blackburn, UCL

Images Contributed



Syrphid fly. Photo by: Jerry Yin



Assassin bug. Photo by: Jerry Yin



Ants tending larvae and pupae. Photo by: Jerry Yin



Jerry Yin
@undergrowth_snaps

Ants on the move. Photo by: Jerry Yin

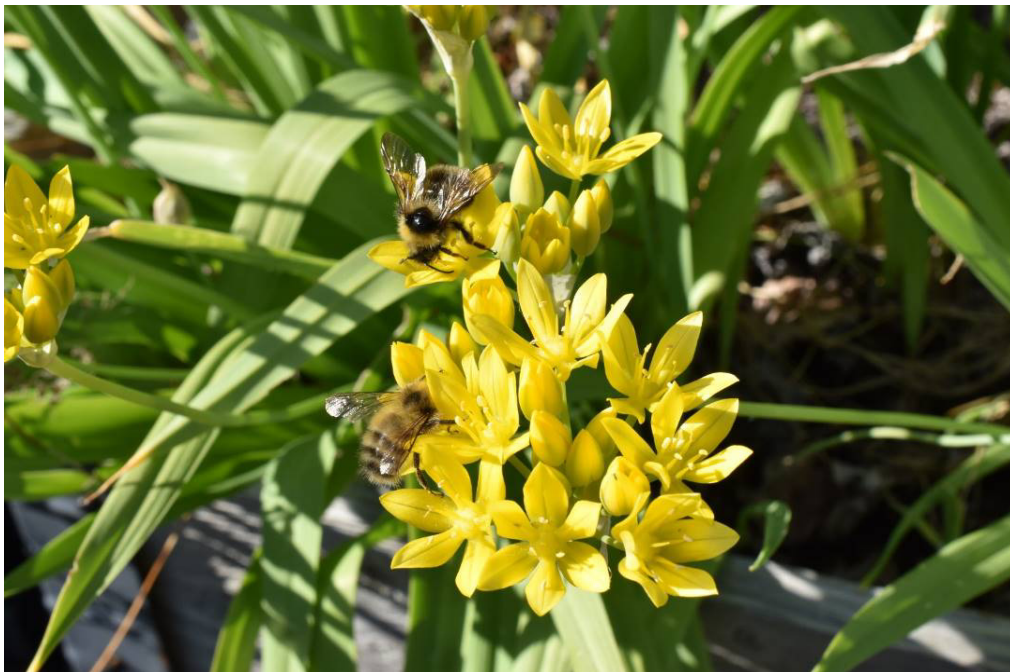


Jerry Yin
@undergrowth_snaps

Two ants foraging. Photo by: Jerry Yin



Bee foraging on a flower. Photo by: Elton Ko



Two bees foraging. Photo by: Elton Ko



A cluster of ants. Photo by: Jerry Yin



ENTOMOLOGICAL SOCIETY
OF
BRITISH COLUMBIA



Student Oral Presentation Awards

Each year the Entomological Society of British Columbia presents up to three awards for the best student oral presentations. Prizes are awarded at the AGM. **Note:** Details regarding the AGM will be announced soon!

Dan Johnson Award in Insect Ecology

This is a **\$200 annual award** for the best manuscript submitted in any peer-reviewed journal by a student in the field of insect ecology. Please submit a covering letter and the manuscript to secretary@entsocbc.ca by Sept 21st, 2021.



For details visit:
<http://entsocbc.ca/>

Awards given at the
undergraduate and
graduate level!!

Graduate Student Scholarship Competition

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. Applications should be submitted to the ESBC Secretary at secretary@entsocbc.ca by September 21st, 2021. Competition results will be announced at the AGM

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.

Kevin Colmenares-Di Maria

Title - The impact of plant identity and induced effects on within- and trans-generational disease resistance in the cabbage looper, *Trichoplusia ni*

Supervisors - Dr. Jenny Cory, Simon Fraser University
Dr. Gerhard Gries, Simon Fraser University
Dr. Juli Carrillo, University of British Columbia
Dr. Michelle Franklin, Kwantlen Polytechnic University

Abstract - Secondary plant metabolites can have a significant impact on the susceptibility of Lepidoptera to baculovirus infection, both directly and indirectly, and thus can play a major role in determining insect fitness. Here I first examine the effects of diet complexity on the resistance of the cabbage looper (*Trichoplusia ni*) to a nucleopolyhedrovirus (TnSNPV). I then tested whether induction of plant secondary chemicals as a result of insect feeding impacts transgenerational disease resistance. I found that larvae fed on a mixed plant diet had similar resistance to virus as larvae fed on single species diets. However, larvae fed on tomato prior to virus challenge had higher resistance to virus, compared to those fed on cabbage and broccoli. Plant induction did not affect transgenerational virus resistance, although offspring mortality was lower for insects whose parents fed on broccoli compared to cabbage. This suggests that plant defensive chemistry has longer-term, indirect effects on disease resistance which could impact host dynamics.

Official completion date – July 14, 2021

Employment Opportunities

Pest Control Operator, Integrated Pest Management
Star Produce Ltd.

Application Deadline: July 17, 2021

Details: <https://www.workbc.ca/Jobs-Careers/Find-Jobs/Job-Posting.aspx?jobid=679803&from=Search>

Pest Management Technician

Victoria Pest Control

Application Deadline: None listed

Details: <https://www.bcjobs.ca/jobs/pest-management-technician-victoria-1077270>

Gardener I (Integrated Pest Management)

City of Kelowna

Application Deadline: June 27 2021

Details: <https://bcjobhub.ca/bc-jobs/gardener-i-integrated-pest-management/>

Research Scientists – Growing Agricultural Innovation

Agriculture and Agri-Food Canada - Science and Technology Branch

Approximately 90 positions across Canada

Application deadline: August 8, 2021

Details: <https://emploisfp-psjobs.cfp-psc.gc.ca/psrs-srfp/applicant/page1800?toggleLanguage=en&poster=1206690>

Educational Opportunities in Canada

details on ESC website <https://esc-sec.ca/opportunities/>

Graduate Research Opportunities

M.Sc. Student position

Metabarcoding soil and litter invertebrates

Schwarzfeld (Agriculture and Agri-Food Canada) and Kerr (uOttawa) labs

Start date: September 2021

Details: <https://esc-sec.ca/wp-content/uploads/2021/04/MSc-student-posting-2021-Soil-metabarcoding.docx>

MSc or PhD Students

Mountain pine beetle eastern spread risk: Beetle physiology and behaviour as drivers of spread
Evenden Lab, University of Alberta, Department of Biological Sciences

Start date: January or May 2022

Details: <https://esc-sec.ca/wp-content/uploads/2021/04/Grad-Student-Ad-2021.docx>

MSc or PhD Students

Insect freeze tolerance

Sinclair Lab, Western University, Department of Biology

Start date: Fall 2021 or Winter 2022

Details: <https://publish.uwo.ca/~bsincla7/positions.html>

PhD opportunities in the UK

<https://www.findaphd.com/phds/biological-and-medical-sciences/?10gc00&PG=3&Keywords=insect>

MSc opportunities in the UK

<https://www.findamasters.com/masters-degrees/biological-sciences/?1001&Keywords=insecthttps://www.educations.com/search/masters-degrees?q=insectPost-doctoral>

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/>

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

<i>President</i>	Wim van Herk president@entsocbc.ca
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