Boreus

Newsletter of the Entomological Society of British Columbia

Summer / 2026 / Vol. 46(1)

Cover Photographs – Fantastic Fieldwork, Terrific Traps!

1. Malaise traps passively collect flying insects, funneling them into ethanol for easy processing and IDing later. The malaise trap pictured on the cover is deployed in blueberry fields at AAFC Agassiz branch, sampling for parasitoid wasps in the area. *Photo by Paul Fisher.*
2. The light sheet pictured is set up at the UBC Research Farm to sample nocturnal flying insects, and the moths collected throughout the night were swabbed for pollen and IDed by UBC researcher Hannah Anderson. *Photo by Dr. Juli Carrillo.*

ESBC Crest and Header Sketch

Boreus elegans (Mecoptera: Boreidae) is one of the more conspicuous snow scorpionflies in B.C. and is only found in this province. Larvae and flightless adults live and feed on moss and clubmoss. Adults appear in the fall and are active on snow on warm winter days. The sketch of a female *Boreus elegans* which can be seen in silhouette in the ESBC crest, as well as the header featured in this newsletter, was illustrated by the editor at the time of the crest's creation, Dr. Robert A. Cannings.

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Got Something to Say?

Submit to the next edition of Boreus!

Boreus, the Newsletter of the Society is published in Winter and Late Summer each year. 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 Eva Burghardt at eva.burghardt@ubc.ca.

The deadline for submissions to be included in the Summer issue is **July 31**, and the Winter issue is **December 31**. Submission dates are always flexible, and all forms of insect intrigue are encouraged, so reach out readily!

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Become a Member!

Membership of the Entomological Society of B.C. is available to anyone interested in entomology. Annual fees are due March 30th of each year.

Join or renew your membership online via the Society's website:
http://entsocbc.ca/membership/

Submit to JESBC

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 if content is applicable or of interest to a regional audience. Authors are invited to submit ideas for review and forum articles as well.

Please reach out to the Editor-in-Chief, Dezene Huber, at huber@unbc.ca for more information.

ESBC 2026 Annual General Meeting and Symposium

It's official! The 2026 AGM and symposium for the Entomological Society of BC will be held October 16th and 17th on the University of British Columbia Vancouver campus. Join us at the biodiversity research centre to present your work, watch engaging talks from your peers, and enjoy the social mixer! Cash prizes are awarded for the best undergraduate, M.Sc., and Ph.D. presentations given during the conference so make sure to register to share your research and encourage members of your lab to join for this fantastic symposium!

Presentation submission deadline: Oct. 2nd

Beaty Biodiversity Museum at UBC, *Photo by Rachel Ashe*

ESBC Special Projects Grant

Every year, the ESBC invites applications for funding requests for projects that advance and promote entomological knowledge in the province of British Columbia. Projects address the following goals:

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

The amount and number of projects funded annually depends on available funds. Up to a total of $5000 CAD across all projects is available annually. Requests for funds that exceed this amount will be considered on a case-by-case basis. Applications are accepted and evaluated twice annually. Visit https://entsocbc.ca/awards-scholarships/esbc-special-projects-grant/ for more information.

Please visit https://entsocbc.ca/awards-scholarships/ for additional information about upcoming award opportunities!

In Memoriam

Richard A. Ring (1938–2025)

Text by Rob Cannings, Robb Bennett, and Neville Winchester

Richard Ring in his office at the University of Victoria, Victoria, BC, August 1995. Photograph by Hugh Danks.

Professor Richard A. Ring died in Victoria, British Columbia on 8 September 2025, after a long period of poor health. His contributions to entomology in Canada are wide-ranging, from his ground-breaking research in the physiology and ecology of arctic insects and his studies in biological diversity to his fervent commitment to students and their education and his leadership in Canadian entomological pursuits. We were fortunate to know him as a mentor, friend and colleague.

Richard was born on 24 September 1938 on a small farm near Glasgow, Scotland. He was educated in Glasgow schools and, in 1961, received a B.Sc. (honours) in Agricultural Zoology from Glasgow University. He completed his Ph.D. in Entomology at the same university in 1965.

At the time he was finishing his doctorate, Richard was invited by a new acquaintance, Geoff Scudder, to apply to be Geoff's sabbatical replacement in the Zoology Department at the University of British Columbia in Vancouver. Richard got the job and his decision to come to Canada was one of the most influential events in his life.

After his year in Vancouver, Richard was awarded an NSERC Postdoctoral Fellowship (1965–1966) at the Entomology Research Institute, Agriculture Canada, in Ottawa (now the Ottawa Research and Development Centre), which houses the Canadian National Collection of Insects, Arachnids and Nematodes. It was a marvellous opportunity for him to meet many of the scientists involved in the Northern Insect Survey, which undertook entomological field work all over the Canadian Arctic from 1948 to 1966 and established baseline data for future arctic studies (Danks 1981). His brief time in Ottawa solidified his interest in arctic entomology; his research focus on overwintering diapause broadened into other ecophysiological adaptations to arctic habitats, such as cold hardiness.

In 1966, Richard joined the fledgling University of Victoria, in Victoria, BC, as an Assistant Professor in the Department of Biology and quickly established an important laboratory for arctic entomological research there. He became Associate Professor in 1972 and Professor in 1988 and worked at this university for the rest of his distinguished career. He retired in 2004 and was named Professor Emeritus. In his retirement he spent considerable time working on projects on syrphid flies and other insect families as a Research Associate at the Royal British Columbia Museum. His open personality, friendliness, generosity, and respect for others endeared him to those who knew and worked with him.

Richard's broad legacy was highlighted at the 2003 joint Annual General Meeting of the Entomological Societies of Canada and British Columbia, held in Kelowna, BC, where he was feted for his accomplishments. A symposium, "Adaptations and Constraints", organized by Neville Winchester and Robb Bennett, was held in his name and filled with papers contributed by friends and colleagues. These were published in a special issue of The Canadian Entomologist (Volume 138, Issue 1, February 2006) and included a summary of Richard's career (Danks 2006). In addition, Richard presented the annual Entomological Society of Canada Heritage Lecture highlighting his personal adventures in his work on insect adaptations (Ring 2004).

Richard published over 65 peer-reviewed papers, nine book chapters, and dozens of other articles in myriad publications. His early doctoral studies on diapause in calliphorid flies and his new connection to Canadian ecological studies in the late 1960s led him to the field in which he is best known—insect physiology and ecology in polar regions. Here his focus was on the adaptations of cold hardiness, diapause, and desiccation resistance that are so important in northern habitats.

In his Heritage Lecture (Ring 2004), Richard stressed what he considered the major contributions of his laboratory in the cold-hardiness field: "(1) identification of a multi-component cryoprotective system in successful overwintering insects, including a combination of glycerol, trehalose and sorbitol; (2) the discovery of the lowest supercooling point (-61ºC) ever recorded for an insect, *Pytho americanus*, in the Western Canadian Arctic (Ring 1982); (3) the close relationship between cold hardiness and desiccation resistance that exists in overwintering insects … (Ring and Danks 1994); and (4) identification of various anomalies that exist among arctic insects ..."

Although cold hardiness was a major focus of Richard's research, he spent time examining another realm of harsh environments for insects—saline waters. He especially was intrigued by the diversity and life-histories of intertidal chironomid midges, summarized in Ring (1989). Chironomid midges crop up in another of Richard's research topics—the control of pests; in this instance the target was Eurasian watermilfoil (*Myriophyllum spicatum* L.), an aquatic plant that chokes lakes and other waterways. He and his students discovered a new species of chironomid, *Cricotopus myriophylli* Oliver, that fed on the invasive plant; and studied the potential of the fly larva to control milfoil (MacRae et al. 1990). The caddisfly *Triaenodes tardus* Milne was also investigated as a control agent (Ring et al. 2002).

In the 1990s, funding for arctic research dwindled and interest in climate change and its effects on biodiversity increased dramatically. Richard took advantage of this change: although he continued to write about arctic biology, he spent much of his research time studying the diversity of insects and arachnids of ancient forests. He was particularly interested in the Douglas-fir woodlands and the Sitka Spruce rainforests of southern Vancouver Island. Canopy studies, stressing species diversity, abundance, and conservation priorities in these areas played a major role in this work and opened the eyes of many biologists (for example, Winchester and Ring, 1999).

As an active and conscientious scientist, Richard gave dozens of conference presentations and poster displays at meetings and scientific workshops across Canada and around the world. He wrote book reviews and reports to funding agencies, published many short articles on natural history topics, and reviewed countless manuscripts for scientific journals. He was a gregarious and generous friend to his scientific

colleagues and students with whom he shared the laboratory bench, field experiences, and the publishing process. Richard was honoured by a friend and colleague, Jan Klimaszeski, who named a rove beetle from the Carmanah Valley after him—*Atheta ringi* Klimaszewski (Klimaszewski and Winchester 2002).

The high regard that his students and university colleagues had for Richard's teaching abilities is obvious—he received both the 2003 University of Victoria Faculty of Science Teaching Award and the 2004 University of Victoria Alumni Excellence in Teaching Award. He was open, accessible, interested, and respectful; he was known for his ability to integrate his research and teaching, a talent that brought his lectures alive.

Richard championed the University of Victoria's Biology Co-operative Education Program and served as its first Director from 1984 to 1990. He was indefatigable in curriculum development—he knew how to teach, and he knew what coursework should contain to maintain student enthusiasm. He was the first entomologist at the University of Victoria and, of necessity, developed the three undergraduate entomology courses and several graduate ones. Importantly, for most of his career he was co-ordinator of the large first-year biology course in the department, which was the entry level course for all further offerings in biology, and the science requirement for many non-science majors.

Richard's long and distinguished record of educational service in science extended to the community at large. Popular as a speaker around Victoria and farther afield, Richard talked about insects and science at schools, service clubs, naturalist societies, and other organizations. He led field trips for the Victoria Natural History Society. He gave innumerable interviews for radio, television, newspapers, and magazines in British Columbia and across Canada. He loved extension entomology and answered uncounted questions from the public, government agencies, and others on a range of insect topics from pest control to species identification.

Richard took his professional life seriously. He twice served as president of the Entomological Society of British Columbia (1971 and 1983) and was made an Honorary Life Member in 2003. He was president of the Entomological Society of Canada (1991–1992) and, in 2001, was elected a Fellow of the Society. In 2006 he was honoured with the prestigious Gold Medal of that society for outstanding contributions to entomology in Canada (Entomological Society of Canada, 2006). He was active back home in Victoria, too, working on the Garry Oak Meadow Preservation Society and the spongy moth task force, among others. Richard played an important role in the Biological Survey of Canada (Terrestrial Arthropods), serving on its Scientific Committee from 1990 to 2002. An energetic organizer, Richard chaired the organizing committee for the International Symposium on Insect and Plant Cold Hardiness held in Victoria in 1985 and 2000 and hosted the Society for Cryobiology meetings in 1980.

Just before he retired from his long career at the University of Victoria, Richard reflected on a career shaped by "people, places, projects, and passion" (Ring 2004). He genuinely liked people. His generosity, kindness and integrity drew people to him and his influence lives on through the students and colleagues he touched and inspired. He loved the places he experienced and several, especially in the Arctic and on Canada's west coast, defined his work. His passion fuelled his curiosity and insight and guided his work and friendships. Richard's energy and commitment resulted in a significant legacy—distinguished entomological contributions, an exceptional teaching record, and a broad professional influence.

This article is abridged from a more comprehensive tribute to Richard published in the Bulletin of the Entomological Society of Canada 58(2), June 2026

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Upcoming Meetings and Symposia

Entomological Society of Canada & ES of Manitoba – Joint Meeting

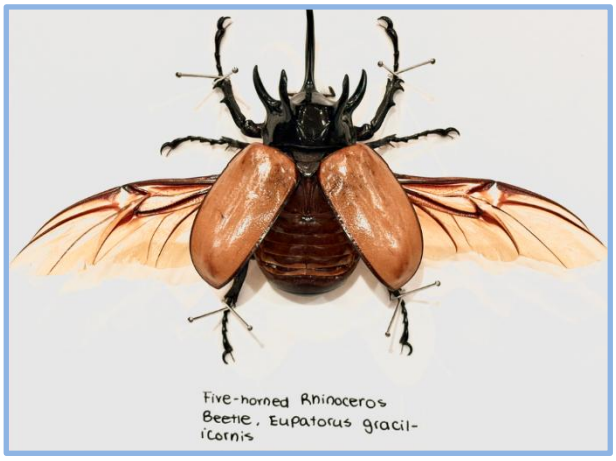
The Entomological Society of Canada and the Entomological Society of Manitoba will be having a joint meeting in Winnipeg from October 4th and 7th. Join in for student talks, industry professionals, and plenary speakers Dr. May Berenbaum of the University of Illinois School of Integrative Biology, and Dr. David L. Wagner, University of Connecticut!

Registration is open until September 30th, visit https://entsocmb.ca/2026_JAM/registration.html for information and to register.

Photo by Eva Burghardt

Professional Pest Management Association of British Columbia Meeting

Be a part of the first ever PPMABC online symposium, held October 27th! Reach out to PPMABCINFO@gmail.com for more information. Register with a talk prepared, come and listen in on the exciting happenings of the association, or become a member in preparation for the annual spring symposium, held on February 26th, 2027, at KPU Langley. More location details to follow.



Bellapod Menagerie

Hello, bug buddies! My name is Bella, and I'm a high school student aspiring to master the art of insect taxidermy! To me, pinning is a way to celebrate the often-overlooked magnificence of the tiny creatures that share our world.

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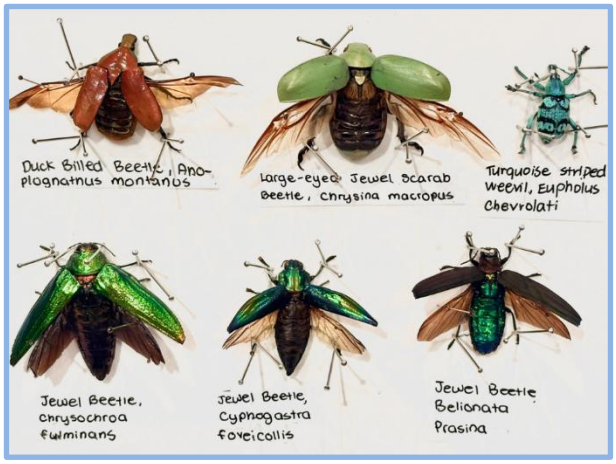

As a tribute to my favourite 6-legged creature, the beetle, for its endless variety of iridescence and forms, here's a glimpse into my ever-growing beetle collection:

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Beetles have long been seen as symbols of luck and prosperity. I hope my collection brings you plenty of both this summer! If you'd like to explore more of my local specimens, butterflies, and moths, feel free to visit my website: [The Bellapod-Menagerie]

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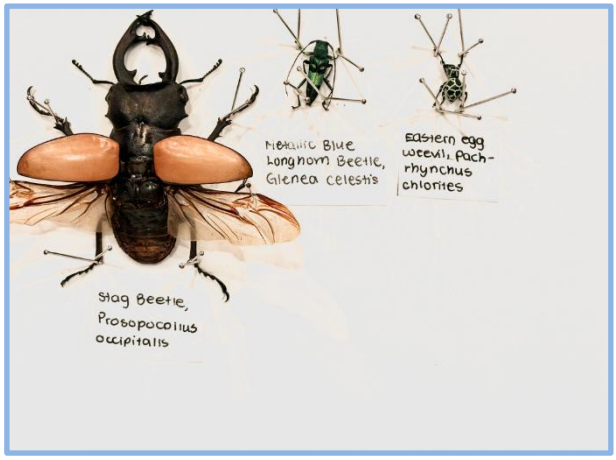


Do you currently have an insect specimen you'd like preserved? I'd love to share my passion by offering FREE INSECT PINNING SERVICES. Visit the Pinning Services page on my website for more information and leave me a message!

Text and Photos by Bella Zhang

HAVE YOU SEEN THESE INSECTS?

BC Insect researchers are interested in the locations and spread of these two non-native insects to the area with high potential for establishment in the Lower Mainland.

Pink spotted lady-beetle, ***Coleomegilla maculata,*** is a native beetle to the eastern region of the US and Canada, but is also often used in greenhouse biocontrol in the Pacific Northwest. This beetle has been found outdoors in Vancouver, raising concern that they may be able to establish outside of their greenhouse releases.

Recently found at the UBC Farm in Vancouver, this ***Timema*** species is far from it's expected home in California and southern Oregon! Keep an eye out on Douglas Fir and Redwood for this wingless stick insect.

If you think you've seen either of these insects, take a picture for iNaturalist and send a copy to lfs.pieelab@ubc.ca!

Coleomegilla maculata, or pink-spotted lady beetles, are likely found outside of greenhouses

Picture credit: Alex Bairstow

Be on the lookout for this *Timema* species, recently found in Vancouver, BC at the UBC Farm

Contact lfs.pieelab@ubc.ca if found and please snap a picture to share on iNaturalist!

Picture Credit: Juli Carrillo

Entomology in the News

Bad Blood: Drug-Spiked Bloodmeal Effective for Eliminating Female Mosquitoes

by Ed Ricciuti, Wildlife Conservation Society NY

To use the sterile insect technique against mosquitoes, females must be removed from the lab-raised populations before release. For species in the genus *Anopheles*, such as *Anopheles stephensi* (shown here), separation is difficult because male and female larvae and pupae "show negligible differences in body size and pupation timing." However, a new study shows that adult female mosquitoes' taste for blood can be used against them by lacing a bloodmeal with insecticide, significantly accelerating the sex-separation process before sterile males can be released. (Photo by Jim Gathany via CDC Public Health Image Library)

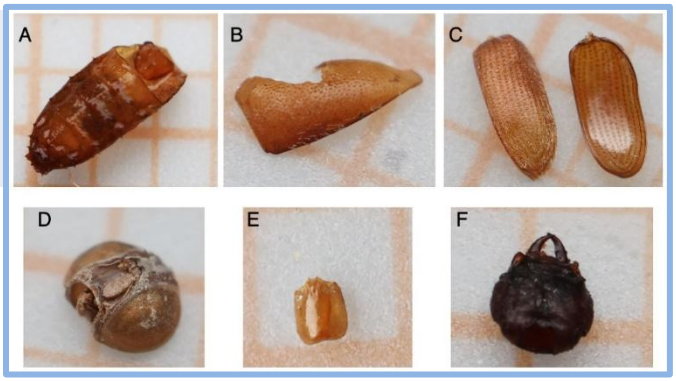
Researchers Zero In On Potential Natural Enemy of Spotted Lanternfly

by Carolyn Bernhardt

The tiny parasitoid wasp *Dryinus sinicus* (adult female shown here) has emerged as a leading candidate for long-term biological control of the invasive spotted lanternfly. A natural enemy of the spotted lanternfly in Asia, *Dryinus sinicus* is currently being evaluated by researchers in the U.S. and offers hope for reducing spotted lanternfly populations naturally and potentially easing reliance on insecticides. (Photo originally published in Wang et al. 2026, *Annals of the Entomological Society of America*)

The Insects Buried With Us: Toward Best Practices in Funerary Archaeoentomology

by Melissa Mayer, Washington State University



Researchers specializing in the study of arthropods associated with archaeological sites—a field known as funerary archaeoentomology—have developed best-practice recommendations for the emerging discipline that examines insects preserved in burials for clues about past lives, environments, and historical communities. Shown here are insect remains from the Philip Calvert coffin (1683) excavated at Historic St. Mary's City, Maryland, United States: A vacated fly puparium (A); a partial beetle elytron (B); a pair of betle elytra (C); the head capsule of a fly (D); head capsule of an ant (E); and head capsule of a beetle (F). Grid lines on surface are 1 millimeter part. (Figure originally published in Monzón et al. 2026, *Annals of the Entomological Society of America*)