



BOREUS

NEWSLETTER OF THE ENTOMOLOGICAL SOCIETY
OF BRITISH COLUMBIA

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Publications of the ESBC

Journal of the Entomological Society of British Columbia

The Journal of the Entomological Society of BC is published annually. Papers for the Journal need not have been presented at meetings of the Society, nor is it mandatory, although preferable, that authors be members of the Society. The chief condition for publication is that the paper have some regional origin, interest or application. Line drawings or photographs as candidates for the cover are also accepted. Contributions should conform to the standards outlined in the Journal and should be sent to the Editor, Dr. Dave Raworth, Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, PO Box 1000, Agassiz, BC, V0M 1A0, Canada: tel 604-796-2221; fax 604-796-0359; e-mail raworth@em.agr.ca

The deadline for submissions to be included in the 2001 issue is **September 1, 2001**.

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 emphasising the Society's affairs, *Boreus* provides members with a forum for their views and news of British Columbia entomology. Please send correspondence concerning *Boreus* to the Editor, Philip A. Jones, P.O. Box 1943, Vernon, BC V1T 8Z7 Canada; tel 250-549-1596; e-mail philip_jones@telus.net.

The deadline for submissions to be included in the June 2001 issue is **May 15, 2001**.

Membership of the Entomological Society of BC is available to anyone interested in entomology. Annual dues are Can\$20 (regular member) or Can\$10 (student member). Members receive the Journal, *Boreus* and Occasional Papers (the latter published intermittently).

Inquiries concerning membership and back issues should be sent to the Secretary/Treasurer, Dr. Robb Bennett, BC Ministry of Forests, 7380 Puckle Road, Saanichton, BC, V8M 1W4, Canada; tel 250-652-6593; fax 250-652-4204; e-mail Robb.Bennett@gov.bc.ca

Cover: *Boreus elegans* (Mecoptera: Boreidae); one of the more conspicuous snow scorpionflies in BC. 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.

Boreus elegans, the ESBC Insect

This is a slightly modified version of an article in the inaugural issue of *Boreus* (April 1981), written by the editor at the time, Rob Cannings.

At the ESBC Director's meeting on 27 November 1980, those present chose the genus *Boreus* (Mecoptera: Boreidae) to represent the Society on a new logo. I was given the task of recommending a particular species of *Boreus* for this honour. My only instructions were: "Make sure you choose a good species...we don't want the Society's insect to end up as a forgotten synonym in a few years!" *Boreus elegans* Carpenter was the final choice.

The Boreidae (from the Greek "Boreas" -- the North Wind, the North) or snow scorpionflies are small mecopterans that resemble minute grasshoppers. The Holarctic genus *Boreus*, the only one of the family in British Columbia, was chosen to represent the province for several reasons. British Columbia is a province of mountains and snow, the characteristic habitat of these insects. They are striking and distinctive, with interesting and unusual behaviour. Five of the seven known Canadian species live in the province.

Boreus elegans is the most distinctive of the British Columbia species. It is considerably larger and redder in colour than the other four species; as its name suggests, it is the most handsome of the genus. In Canada it occurs only in British Columbia. Although it is not distributed as widely in the province as some of the other species (*B. californicus*, *B. pilosus*), it inhabits the Coast Range and lives among the mountains by the sea, the two features most often associated with our province [and now linked with the image of *Boreus* on the ESBC seal].

Boreus larvae are C-shaped grubs with a well-developed head capsule and three pairs of thoracic legs. They live at the base of the moss and clubmoss plants on which they apparently feed, although they probably also are saprophagous and carnivorous. Adults appear in the fall and winter, often hopping and walking on the surface of the snow.

The adults are long-legged. The male has vestigial, bristle-like wings with which he grasps the female during mating. In the female, the wings are further reduced to small scales. The female has a long and conspicuous ovipositor.

The Society's logo shows a female *Boreus elegans* in silhouette over the letters ESBC.

President's Corner

Rob Cannings, Royal B.C. Museum

James Grant and Harold Madsen – the names behind the ESBC Student Awards

When I was editor of *Boreus* back in the Palaeozoic Era (or was it the 1980s?), I proposed that the ESBC student awards, given for the best papers presented at the annual meeting by students in a Masters and Doctorate program, be named after two society members who had recently died. Both these men were well known for their interest and enthusiasm in helping students and (I admit to a personal bias), both were mentors of mine when I was a kid growing up, full of entomological fervor. The *Boreus* issue of October 1987 (Vol.7, No. 2) announced that at the Penticton annual meeting that year the membership agreed to name the prize in the Masters category after James Grant, award-winning naturalist and former Canadian Forest Service entomologist; the doctoral student prize was named for Harold Madsen, once professor at the University of California and Head of entomology at the Agriculture Canada Research Station in Summerland.

Subsequently, the James Grant Prize has been funded by the North Okanagan Naturalists Club, of which Jim was a founding member. PheroTech, a B.C. company specializing in entomological research, underwrites the Harold

Madsen Prize. Each prize has been worth \$100, but in 2000, the North Okanagan Naturalists raised their contribution to \$200 – an unsolicited and most appreciated gesture!

James Grant (1920-1986)

This biography is modified from an obituary I wrote in the April 1986 (Vol. 6, No. 1) issue of *Boreus*.

James Grant of Lavington died on 27 January 1986. He was a long-time member of the ESBC and published in our periodicals. Although an entomologist by profession, he was an expert botanist, ornithologist and ecologist – a self-taught genius of natural history whose major efforts were directed to passing his knowledge on to others.

Jim was born in Trinity Valley, a rural area near Lumby, B.C. on 25 May 1920. He displayed a keen interest in his natural surroundings at an early age. Most of his creations in "art class" at the one-room school were of birds and plants and they demonstrated an exceptional talent. Jim won a bird drawing competition in 1935 conducted by an English birding magazine, *The Bird Lover's League*. He is remembered for his famous doodles as well as his drawings, paintings, taxidermy mounts and collections of insects and plants. He bequeathed his collections of birds, mammals and insects to the B.C. Provincial Museum (now the Royal B.C. Museum).

For a short period following his schooling, Jim farmed and logged. From 1941 to 1946 he was on active service with the Signal Corps in the Canadian Army in Europe

In 1946 Jim joined the Federal Forest Entomology Laboratory in Vernon, B.C., as a Forest Entomology Ranger. He spent most of his summers in the field; this provided him with many opportunities to pursue his continuing interest in ornithology and botany. From 1948 to 1950 he performed similar responsibilities in Alberta and then returned to his original position at the Vernon station. There he became the Forest Biology ranger Supervisor in 1961. When the lab at Vernon moved to Victoria in 1968, Jim chose to resign rather than leave his beloved North Okanagan.

Jim was appointed field-studies coordinator for the Vernon School District (#22) in 1970. There he was responsible for organizing and conducting student field trips to grassland, forest and pond ecosystems. Hundreds of students from the district benefited from his broad knowledge and he was dubbed locally "the walking encyclopedia of natural history". To the disappointment of many youngsters he retired from his post in 1978 to devote more time to his "bird hospital", where he nursed assorted injured birds, mostly birds of prey, back to health and freedom in the wild.

During his busy life, Jim found time to teach night school classes in entomology, ornithology and botany. He was a founding member of the North Okanagan Naturalists Club and for years was treasurer of the Vernon Museum Board. He authored numerous scientific publications and natural history reports.

Active in the Federation of B.C. Naturalists, Jim was presented the Federation's *Elton Anderson Award for Outstanding Service to Natural Science* in 1982.

Jim conducted hundreds of field trips during his career, and most people who shared one of these events will remember some personal incident that reminds them of his special gifts. Jim was a great friend of my father and, from an early age, I considered him a friend and mentor of mine. His encouragement was one of the major reasons that I became fascinated by insects. He had the delightful habit of dropping by our house in Penticton with entomological treasures – I fondly remember the first monarch butterfly caterpillar I had ever seen, brought to my doorstep one summer day. With great anticipation, I reared it to adulthood. Jim also taught me the futility of collecting and keeping specimens without data; this linkage of scientific knowledge to a boyhood hobby is not always made, even by good teachers.

James Grant's fame was international; he is remembered by so many people for so many reasons. But it is James Grant, the teacher of natural history, that will be legendary.

Harold Madsen (1921-1987)

This biography is modified from an obituary I wrote in the October 1987 (Vol. 7, No. 2) issue of *Boreus*.

Dr. Harold F. Madsen died on 13 September 1987 in Penticton. He was born in San Jose, California on 31 March 1921 and was raised and educated there. Harold began his entomological career in boyhood, but it was formalized when he enrolled for a B.A. in biological sciences at San Jose State College. During World War II he served with the U.S. Navy in the Pacific. After the war he studied entomology at University of California at Berkeley, where he received his PhD in 1949. After graduation Harold won the position of Extension Entomologist, the first in California. The job, which he held until 1954, was a real challenge; it took him throughout the state studying the control of various insect pests. Subsequently, Harold accepted a teaching and research position at Berkeley and for the next decade investigated the biology and control of insects and mites attacking apples, pears, apricots and walnuts. In 1964 he was promoted to Associate Professor.

Harold left Berkeley for the Agriculture Canada Research Station in Summerland, B.C. , where he became Head of the Entomology Section. During the 21 years he worked at Summerland, Harold initiated and coordinated integrated pest management programs for orchard insects, especially codling moth. He also undertook pheromone studies, the evaluation of chemical sprays and the assessment of biological control agents. He retired in late 1985. During his career, Harold published 118 refereed papers and 116 miscellaneous articles.

In addition to his academic contributions to the science of entomology, Harold was a hard -working and active supporter of entomological societies. He served with distinction on the executive of the Entomological Society of Canada, including a term as President (1986-87). He was president of the Entomological Society of America, Pacific Branch, and also the Entomological Society of B.C. He was a fellow of the ESC and an honorary member of the ESA and ESBC (1986). He was a member of the FAO Expert Committee on Integrated Pest Management and was an adjunct professor in Biological sciences at Simon Fraser University. Harold was also an enthusiastic supporter of the South Okanagan Naturalists Club.

My father worked at the Summerland Research Station for almost 30 years and I grew up bothering the scientists there. When Harold was Head of the Entomology Section he would sometimes let me volunteer my enthusiastic services in entomological projects during the summer holidays. But it was his butterfly and moth collection that impressed me most. He had hundreds of exotic species in riker mounts hanging on the walls of his house and, during visits there, I would pore over these wonderful insects, quizzing Harold on their origins. I never forgot those experiences. Imagine my satisfaction when, after the sadness of Harold's death, his collection came to the Royal B.C. Museum. Part of it is now at the Spencer Entomological Museum at the University of B.C.

REPORTS

JESBC Editor's Report

Journal of the Entomological Society of BC - Plans to mark the centennial year of the Entomological Society of BC, 2001.

Seven papers in Volume 48 (1951) of the Journal reviewed the first 50 years of entomology in BC:

- Downes - Fifty Years of Entomology on Vancouver Island;
- Glendenning - Reminiscences of Fifty Years of Entomology in the Lower Fraser Valley of British Columbia;
- Venables - Fifty Years of Entomology in the Interior of British Columbia;
- Gregson - The History and Study of External Arthropods affecting Animals and Man in British Columbia;
- Marshall - Applied Entomology in the Orchards of British Columbia, 1900-1951;

- Handford - The Dominion Field Crop Insect Laboratory and its Work, Vernon, 1918 - 1938 and Kamloops, 1939 - 1950;
- Olds - Fifty Years of Plant Quarantine Legislation and Activities in British Columbia.

Volume 98 of the Journal will be composed of regular scientific papers and 14 invited papers that review, discuss, reminisce or reflect on entomology in BC during the last 50 years. Invited papers will be edited for Journal format, but otherwise published as submitted by the authors; maximum length is six Journal pages, and each article may include one black and white photograph. The cost of publication of the invited papers will be borne by the Entomological Society of BC. General topics, all relating to entomology in BC are:

1. Historical perspective of the Entomological Society and entomology;
2. The insect fauna and systematics;
3. Collections, surveys and conservation;
4. Bees;
5. Biting flies and ticks;
6. Aquatic insects;
7. The spider fauna;
8. Arthropod introductions;
9. Arthropod adaptations research;
10. Forest entomology;
11. Agricultural entomology;
12. Forensic entomology;
13. Behavioural and chemical ecology;
14. Population ecology.

This list has been reviewed and revised by the Executive of the ESBC - it is a subset of possible topics. People who are willing to take the lead on each topic have been identified. If you have any comments or suggestions please contact the Editor, Dave Raworth (raworthd@em.agr.ca).

Please submit regular scientific papers for the Journal before 1 September 2001.

Dragonfly Society of the Americas Annual Field Meeting

27 July-1 August 2000, Nanaimo and points East

Rob Cannings, Royal B.C. Museum

The 2000 annual field meeting of the Dragonfly Society of the Americas was held in Nanaimo. Every year, the Society organizes a field meeting somewhere in North America; this one was a first for Western Canada. Thirty-two participants came from as far away as Florida, Texas, Vermont, North Carolina and even England to observe, collect and talk about the dragonfly fauna of British Columbia and the world.

On 28 July, unfortunately, the sky was overcast and a light rain was falling – not a good omen for entomologists who pray for sun. Once the rain stopped and the temperature rose, dragonflying would be good, but in the meantime, one group who were keen to see something moving went to Nanoose Bay to look for birds. Between watching Merlins and Peregrine Falcons they managed to record *Aeshna multicolor* (Blue-eyed Darner), *Anax junius* (Green Darner) and *Sympetrum pallipes* (Striped Meadowhawk), species that the second group, which headed right to dragonfly habitat, failed to record.

The larger group went off to the Nanaimo Lakes watershed. They were rewarded with improving weather and managed to find 15 species including *Cordulegaster dorsalis* (Pacific Spiketail), *Ophiogomphus occidentis* (Sinuous Snaketail), *Somatochlora semicircularis* (Mountain Emerald) and *S. walshii* (Brush-tipped Emerald). For the locals, the highlight was confirming that *Lestes forcipatus* (Sweetflag Spreadwing) indeed occurred on

the BC coast – it had been overlooked all these years in the hordes of the widespread *L. disjunctus* (Common Spreadwing). The next day at this site others found two more species, one of them *Aeshna tuberculifera* (Black-tipped Darner).

Saturday 29 July dawned with much better weather. The group headed north to Hamilton Marsh near Coombs. Collectors and photographers spread out over this large, rich fen and managed to see 25 species -- *Aeshna canadensis* (Canada Darner), *A. interrupta* (Variable Darner), *A. palmata* (Paddle-tailed Darner), *A. multicolor* (Blue-eyed Darner), *Pachydiplax longipennis* (Blue Dasher), *Sympetrum obtrusum* (White-faced Meadowhawk) and *S. occidentale* (Western Meadowhawk) were abundant. The specialty of the site, *Aeshna tuberculifera* (Black-tipped Darner), was finally caught. Later, at Bowser Bog, a peatland species, *Aeshna sitchensis* (Zigzag Darner), excited the southerners.

Evening meetings took care of business. In addition, various members showed photographs of foreign faunas. Explaining the local fauna, Rob Cannings gave an overview of the dragonflies of British Columbia. He showed slides of species from representative families found in the province and his biogeographical maps indicated how diverse this part of North America truly is. The field trip to the Okanagan Valley the next day showed us some of this diversity.

On Sunday (30 July) morning the crowd dispersed, some heading home via Vancouver or Victoria, others continuing on the field trip to the Okanagan Valley. The weather was sunny and hot for the rest of the meeting. Half the group drove up to Cypress Provincial Park to see a *Tanypteryx hageni* (Black Petaltail) colony, the only one known in Canada. A few burrows, complete with larvae, were found in the mud and moss of a road cut; adults were yet to emerge. Part of the group, led by Syd Cannings, drove east via Rolley Creek in the Fraser River Valley to look for *Octogomphus specularis* (Grappletail). A second bunch under the watchful eye of Rob Cannings, headed up the Coquihalla Highway from Hope, eager to find high altitude species near the summit of Highway 97C on the plateau east of Okanagan Lake. The highlight here among the fens and ponds (some of the latter man-made dugouts for watering cattle) was *Somatochlora hudsonica* (Hudsonian Emerald); this is the most westerly record of the species in British Columbia. *S. albicincta* (Ringed Emerald) and *S. minor* (Ocellated Emerald) were also collected, along with *Coenagrion resolutum* (Taiga Bluet), *Aeshna sitchensis* (Zigzag Darner), and other species. *S. semicircularis*, (Mountain Emerald) a common Cordilleran species, literally swarmed in the Beaked Sedge fens. The night was spent to the south at Oliver.

On Monday (31 July), a small group keen to see *S. hudsonica* (Hudsonian Emerald) returned to the area at the summit of Highway 97C ; they were not disappointed – *Somatochlora* and *Aeshna* abounded. The main crew visited the bottomlands of the Okanagan River north of Osoyoos. Along the oxbows and main river channel cruised *Macromia magnifica* (Western River Cruiser) and *Ophiogomphus occidentis* (Sinuous Snaketail). *Erythemis collocata* (Western Pondhawk), a rarity here at the extreme northern limit of its range, swarmed over its favourite pond and a lone *Pachydiplax longipennis* (Blue Dasher), a common species to the south but a new species to the Interior of British Columbia, appeared here, too. *Libellula forensis* (Eight-spotted Skimmer) and *L. pulchella* (Twelve-spotted Skimmer) were abundant. In the afternoon, collectors split up and went off in various directions into the pine and fir-clad hills surrounding the valley. Many species, including *Aeshna eremita* (Lake Darner), *A. interrupta* (Variable Darner), *A. multicolor* (Blue-eyed Darner), and *Sympetrum costiferum* (Saffron-winged Meadowhawk), were recorded. At a dry sedge marsh a lucky group recorded *Sympetrum madidum* (Red-veined Meadowhawk), *Lestes dryas* (Emerald Spreadwing) and a population of *Aeshna constricta* (Lance-tipped Darner), the latter another common species to the south that is scarce here at its northern outposts.

The last day (1 August) again dawned clear and warm; at 05:00 it was already about 80 degrees F and by 06:30 *Aeshna multicolor* (Blue-eyed Darner), was flying around the motel parking lot (the afternoon temperature in the valley reached about 100 degrees). But we were heading high in the hills to the northeast to escape the heat and find more northern species. Dick Cannings and his 13 year-old son Russell, Okanagan residents, led the day's jaunt to several lakes and fens over dusty gravel logging roads. John Abbott of Texas provided a memorable quote as he anticipated the dragonflies to come -- "There'd better be plenty of 'em and they'd better be easy to catch!"

At Solco Lake, a sunny and quiet oasis in the Engelmann Spruce/ Lodgepole Pine woods at 5500 feet, the highlights were *Somatochlora cingulata* (Lake Emerald)(common, and for once, flying along the shore and easy to catch) and *Coenagrion interrogatum* (Subarctic Bluet). We stopped at two fens dominated by Beaked Sedge, *Aeshna juncea* (Sedge Darner) and *Somatochlora semicircularis* (Mountain Emerald). One of them had a sluggish stream and lots of *Somatochlora minor* (Ocellated Emerald). Both had adjacent mossy, rather dry areas thick with *Aeshna sitchensis* (Zigzag Darner). At each place a single *Somatochlora whitehousei* (Whitehouse's Emerald) showed up, the most southerly records in British Columbia – even more surprising because appropriate habitat couldn't be found anywhere.

For more information on the dragonfly species mentioned in this article, try the following websites:

http://livinglandscapes.bc.ca/www_dragonflies/toc.html

http://www.royalbcmuseum.bc.ca/nh_papers/aeshna.html

http://www.cciw.ca/eman-temp/reports/publications/99_montane/odonata/intro.html

<http://www.ups.edu/biology/museum/UPSdragonflies.html>

Dragons and Damsels in the Columbia/Kootenay Region

Rob Cannings, Royal B.C. Museum

Fire-breathing dragons and damsels in distress at Cranbrook? Knights in shining armour riding to the rescue from Fort Steele? Not likely. Just a handful of keen biologists and volunteers searching for dragonflies and damselflies (the insect Order Odonata) for the Royal British Columbia Museum's Living Landscapes project in the Columbia Basin.

As part of the project, the Museum, the B.C. Conservation Data Centre (CDC) (Ministry of Environment, Lands and Parks) and Parks Canada joined forces to study the dragonflies of southeastern British Columbia. Parks Canada enthusiastically provided logistic and financial support for the inventory in the four national parks in the region. The area we explored is the Columbia River Basin exclusive of the Okanagan River drainage. In British Columbia this area is commonly called "The Kootenays" after the Kootenay River -- the largest of the Canadian tributaries of the Columbia River.

Through 1998 and 1999 we criss-crossed the region to document occurrence and habitat requirements of the dragonflies of the Kootenays (in the rest of the article I use the term "dragonflies" to include the closely related damselflies). Although the Museum had dragonfly specimens and a species list for the region that represented our knowledge up to 1997, no comprehensive survey for dragonflies had ever been made; some of the recorded populations were known only from collections made almost a century ago.

Dragonflies are invertebrates that seldom receive the attention they deserve from biologists and resource managers. But they are of great ecological importance. They are major predators in aquatic habitats, often dominating the large invertebrates, especially in fish-free systems. Both the underwater larvae and the flying adults live mainly along the edges of water bodies, thriving in the rich and sensitive interface between land and water. Many species are habitat-specific and their presence can be used to characterize healthy wetlands of all sorts. Furthermore, unlike most invertebrates, dragonflies are identifiable in the field by experts, and surveys can proceed with speed and efficiency. Finally, because they are large, colourful, diurnal creatures with fascinating behaviour, dragonflies are excellent subjects for nature interpretation programs and public education about aquatic ecosystems in general.

The Living Landscapes Project is designed to take the museum's resources to the diverse regions of the province, stimulating local residents and organizations to conceive their own research projects and participate in the Museum's research, collections and public programming activities. In the Columbia Basin we wanted to improve our scientific knowledge about British Columbia dragonflies, and we were keen to gather information for use in wetland management and conservation planning -- issues of great concern in the region. But we also wanted to create simple educational materials that would promote the understanding of dragonflies and their relationship to diverse and healthy wetland habitats. In addition to the main report on the internet, complete with photographs and distribution maps of every species, we decided to produce slide shows and videos for distribution to parks, naturalist groups and schools. Finally, we had a long-term goal -- to involve a few residents of the regional community in the detailed study of dragonflies and the long-term monitoring of selected species and localities.

The region, with its maze of deep valleys and high mountains, is rich in dragonfly habitats. Mountain fens and bogs, trickling springs, warm lake beaches, grassland alkali ponds and rich cattail marshes all beckoned. We added nine dragonflies to the fifty-seven species that were listed from the Columbia Basin before the start of the project. The additions were: *Calopteryx aequabilis* (River Jewelwing), *Lestes forcipatus* (Sweetflag Spreadwing), *Coenagrion interrogatum* (Subarctic Bluet), *Stylurus olivaceus* (Olive Clubtail), *Somatochlora cingulata* (Lake Emerald), *S. forcipata* (Forcipate Emerald), *S. minor* (Ocellated Emerald), *S. walshii* (Brush-tipped Emerald) and *Leucorrhinia glacialis* (Crimson-ringed Whiteface).

The inventory also improved our understanding of the status of other species rarely recorded in the Columbia Basin. Thirteen are considered rare and of management concern, based on collections in museums. However, with increased study, species such as *Aeshna tuberculifera* (Black-tipped Darner) and *Somatochlora cingulata* (Lake Emerald) proved to be more widespread than initial records suggested. Dean Nicholson, a Cranbrook volunteer, found *Gomphus graslinellus* at Wasa Lake in the Rocky Mountain Trench, far to the east of the only other regional record at Christina Lake. *Argia vivida* (Vivid Dancer) is a Kootenay specialty, because its Canadian range is centred in the region and because it is restricted there to the outlets of hot springs that are such a feature of the area's mountain ridges. Although we found a few new populations of *Argia*, it's still considered vulnerable -- it has been eliminated from some springs and most of the others are threatened by development.

Calopteryx aequabilis (River Jewelwing), *Lestes forcipatus* (Sweetflag Spreadwing) and *Somatochlora forcipata* (Forcipate Emerald) are species new to British Columbia. *Calopteryx* represents a new family of Odonata for British Columbia: the Calopterygidae. This spectacular damselfly, with its metallic green body and brown-banded wings, had been recorded as close to British Columbia as Stevens County, Washington; for several decades we had suspected that it lived in the streams of the Boundary district. However, we had not managed to find it there until July 1999, when Leah Ramsay (wide-eyed with amazement!) discovered it dancing along Christina Creek, the outlet of Christina Lake.

In 1998, in a wetland near Donald in the Rocky Mountain Trench, Leah also found *Lestes forcipatus*, not confirmed elsewhere in Canada west of Manitoba. Here is a good example of an uncommon species that had been overlooked simply because it was not expected and because it closely resembles the widespread and abundant *Lestes disjunctus* (Common Spreadwing). Since the discovery, more localities were found, and some of our old specimens of *L. disjunctus* have been re-identified as *L. forcipatus*. Inventories do not simply gather new records; they force curators to re-evaluate old collections!

Finding *Somatochlora forcipata* (Forcipate Emerald) was a goal that had eluded us for years. In the 1920s Edmund Walker of the Royal Ontario Museum had collected this elusive dragonfly about three kilometres from the British Columbia/Alberta boundary in Banff National Park. This ancient collection had remained the only record west of Manitoba. Surely it also had to live in "small spring runs following devious courses" (as Walker had described the habitat) west of the Continental Divide. After much searching, we finally came across it in Kicking Horse Pass, Yoho National Park). Gord Hutchings, a long-time RBCM volunteer, netted a dragonfly hovering over a small trickling seep near Ross Lake. "This looks different!" he yelled, slogging back to the rest of us examining a boggy pond. Sure enough -- *S. forcipata*! Two years and much searching later, we now have mapped the species at three peatland sites in Yoho and Kootenay National parks. This emerald is clearly a sparsely distributed member of the Rocky Mountain dragonfly community, and an inhabitant of an apparently rare habitat as well.

The 66 species now known from the Columbia Basin represent 76% of the 87 species recorded from British Columbia, and 33% of the 201 recorded in Canada. At least six more species are thought to occur in the region, and several more than that will probably be added to the list. With more study of Columbia Basin dragonflies, especially by the enthusiastic residents who continue to monitor some special habitats, our understanding of these important and lovely insects will surely grow.

The full report of this project, complete with photographs and distribution maps of the species, is found at http://livinglandscapes.bc.ca/www_dragonflies/toc.html .

The Quebec Emerald out West

Syd Cannings, B.C. Conservation Data Centre

In the summer of 2000, staff from the B.C. Conservation Data Centre (Ministry of Environment, Lands and Parks) and the Royal B.C. Museum organized a dragonfly survey of east-central British Columbia. This was the first year of a larger northern B.C. inventory, part of the Royal B.C. Museum's *Living Landscapes* project, and partly funded by a grant from the Habitat Conservation Trust Fund. See the article by Rob Cannings in this issue that discusses a similar dragonfly inventory in the Columbia/Kootenay region in 1998-99.

Dragonflies are one of our best-known insect groups, but this vast study area of snowy mountains, boggy and marshy valleys, and plateaus awash with warm lakes was literally a big blank spot on our dragonfly distribution maps for the province. We knew that we might find that some of the 'rare' dragonflies on our provincial list are more common than we previously thought (and we did, but that's another story), but we weren't prepared for the discovery of the year!

It all began with the capture of an odd-looking female emerald (a medium-sized, dark-metallic dragonfly with brilliant green eyes) in the huge fens near the headwaters of the Parsnip River north of Arctic Lake. That one was put back in the collection box with the plan of checking on it further when time allowed, but then forgotten for the moment. Two days later, I teamed up with Sid Dunkle, a dragonfly expert from Texas, and we drove to a fabulous set of terraced fens near timberline at McBride. The common dragonflies there were Whitehouse's Emerald, *Somatochlora whitehousei*, a rarely-collected beast of shallow fen pools. Sid was ecstatic with these northern specialties, and we even added the very rare Canada Whiteface, *Leucorrhinia patricia*, to our list as well!

But then Sid caught a female emerald that was unfamiliar to him and I realized that it was the same as the one I had caught a couple of days earlier. We scratched our heads for a while, then resumed searching for more. Soon I caught a male, which was certainly different than any other emerald I had ever seen! We eliminated candidate species one after another and were soon faced with the amazing conclusion that this was a Quebec Emerald! The Quebec Emerald, *Somatochlora brevicincta*, is one of the Holy Grails of northern dragonflies—known for many years from only two localities in a remote area of central Quebec, it has been recently located in a handful of peatlands in Newfoundland, Nova Scotia, New Brunswick, and Maine. Despite these recent discoveries, to find it in British Columbia was unexpected, to say the least—and we've now challenged our colleagues from Alberta to Ontario to fill in the huge gap in central Canada!

We continued searching, but after another day of trembling fen-treading we still had found only a handful of specimens. The day after that we returned to the Parsnip River, but arrived there shortly after a tremendous cloudburst had just cleared, and very few dragonflies were flying. We did, however, find a couple more Quebec Emeralds patrolling the rich fens there! And to top things off, during the following week my brother Rob Cannings and Andrew Harcombe found them at two more sites in the Rocky Mountains north and east of McBride.

Nowhere are these dragonflies common, and we certainly did not find them in most of the ‘appropriate’-looking fens we sampled. Their full distribution and habitat requirements remain a mystery, both within British Columbia and across the boreal and sub-boreal regions of North America. We’ll be out again this summer, searching and hoping!

PROFILES

Leonardo Frid

I was born in Mexico City on August 25th 1973. My childhood was spent alternating between this mega-city and outings to the surrounding countryside and coast. In 1983 my family moved to Vancouver, (what a contrast!) and this is when my appreciation for nature and wildlife began in earnest. My older brother, Alejandro, is also a biologist and was very influential in my choosing of entomology and ecology as a career. I did my first stint of fieldwork with Alejandro, studying huemul deer in southern Chile during the Austral winter of 1990.

During my early undergraduate years I worked as a field assistant for Linda Dupuis, a herpetologist studying the impacts of forestry on Amphibians. The following summer I continued to work in herpetology, tracking pacific giant salamanders with the aid of radio telemetry. I first became interested in insects as a botany field assistant in the boreal forest of the Yukon. The area in which I worked was under attack by bark beetles. I am still amazed at how creatures so small can have such a large impact on the landscape. My M.Sc. research is on another outbreaking insect, tent caterpillars. The cyclical population dynamics of these caterpillars are strongly influenced by a viral disease (NPV). I study how temperature affects the interaction between the virus and the caterpillars.

My research focuses on the following questions:

1. Do higher temperatures favour the virus or the caterpillars?
2. Do the caterpillars alter their thermoregulatory behaviour when they become infected?
3. What are the environmental factors that influence caterpillar body temperature?
4. Does climate have an influence on disease dynamics?

So far I have found that higher temperatures favour the virus, but paradoxically, infected caterpillars prefer higher temperatures. Sunlight is one of the main factors influencing caterpillar body temperature and the disease is more prevalent during years with more sunlight in the spring.

Aside from my interest in insect, disease ecology, I have recently become very interested in pollinator ecology and conservation. Prompted by an announcement by the Union of Concerned Scientists and the Ecological Society of America I wrote a popular article about pollinator declines which was published in August in the Vancouver Courier. While writing this article I interviewed three inspirational women, Alice Miro and Desiree Tommasi, who as undergraduate students are investigating the effects of habitat fragmentation on native bees in Vancouver and Margriet Dogterom, A bee researcher that works on alternative pollinators to honey bees (mason bees and bumblebees).

In the future I hope to pursue a PhD. in either pollinator ecology and conservation or a continuation of my M.Sc. work in disease ecology.

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Dean Morewood

I have always been interested in the natural world and have found insects particularly fascinating. I can remember attempting to dissect a grasshopper with a kitchen knife when I was about five years old, and at the same age a live praying mantis would keep me entertained all day. Strangely, I never considered entomology as a career (one of my high school biology teachers was an entomologist by training and I actually thought that was rather odd!) until after I had embarked on my post-secondary education, which I began in the field of forestry.

Working towards a Diploma in Forest Resources Technology at Selkirk College in Castlegar, I found that the most interesting course in the whole two-year program was the one entitled "Forest Pestology". Completing that program in the spring of 1985 with no forestry work experience, no immediate job prospects, and a renewed interest in insects, I checked out the biology department at the University of Victoria and was most impressed to discover that they had both a cooperative education program and a dedicated entomologist!

I enrolled at the University of Victoria in the fall of 1985 and worked my way through the coop program focussing mainly on insects and completing five work terms, one with MacMillan Bloedel Ltd. (my first and only real forestry job!), two with Safer Ltd. (back when their research and development branch was still in Greater Victoria), and two with Applied Bio-Nomics Ltd. (the second in collaboration with Agriculture Canada's Summerland Research Station) before graduating with an Honours BSc in 1989.

My first work term with Applied Bio-Nomics lead into an Honours thesis project on diapause induction in the predatory mite *Amblyseius cucumeris* (Phytoseiidae) and then further into an MSc thesis project on cold hardiness in *Amblyseius cucumeris* and *Phytoseiulus persimilis*, both under the supervision of Richard Ring at the University of Victoria and Linda Gilkeson at Applied Bio-Nomics (at that time).

I completed my MSc in the spring of 1992 and immediately began work towards a PhD, still at the University of Victoria under the supervision of Richard Ring, but on a completely different topic; namely, host-parasitoid interactions in *Gynaephora* species (Lymantriidae) and their insect parasitoids in the High Arctic. It was a long haul with some rather large ups and downs, but with the support of my wife Petra (whom I met along the way and at least partly converted from botany to entomology) and parents, I successfully defended my dissertation in the spring of 1999.

After spending a few months working for the Canadian Food Inspection Agency on their Asian Longhorned Beetle Project, I was offered a Research Associate position with John Borden at Simon Fraser University to replace Rory McIntosh who was moving to Saskatchewan to become that province's Forest Insect and Disease Specialist. I'm currently working on the chemical ecology and management of large woodborers (Cerambycidae, Buprestidae, Siricidae) and happy to be able to continue conducting research involving insects.

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David Threatful

David was born in Revelstoke, B.C., January 15, 1945. His elementary and secondary education was in Revelstoke. His father, Leonard Threatful, owned and operated a cedar shingle mill from 1955 – 1977 in the Akolkolex River valley, 20km southeast of Revelstoke, where David worked for a number of years.

David became interested in insects when he was five years old and a year later started a collection of butterflies. His Grade three teacher, Mr. Burns, encouraged him in this activity. Much later his mentor was Jim Grant whom he met in 1970 through Robert Nelson of Vernon. Jim introduced David to a number of butterfly areas near Vernon, including the Kalamalka Lake area. David was a Volunteer Naturalist at Mt. Revelstoke and Glacier National Parks in 1981. John Woods, with the National Parks Service in Revelstoke, provided David with the appropriate permits to undertake a collection and survey of butterflies in these National Parks. In 1986, through Crispin Guppy, he was introduced to Thomas R. Manley, from Pennsylvania, who was conducting research on the Parnassians. David has since then collected annually for Thomas Manley and the Peabody Museum at Yale University in New Haven, Connecticut. He has also collected for Clifford D. Ferris for specimens for deposit in the University of Wyoming, Laramie. Although he still collects for various researchers, both in B.C. and out of the Province, he does not believe in collecting large numbers of specimens for commercial purposes.

David's butterfly collection, which was made over twenty five seasons, has specimens from the southern interior of B.C., southern Alberta, Washington State, Oregon, California, Wyoming, and northern Montana. His significant collection, which documented 117 species from the North Okanagan/Shuswap and Columbia Districts was donated to the North Okanagan Naturalists Club in Vernon and it is now housed in the Vernon Museum.

With David's particular interest in alpine butterflies, he was responsible for a new record for B.C. when he collected the Magdalena Alpine (*Erebia magdalena*) on August 16, 1984, on Dore Peak in the Cariboo Mountains, near McBride. He also made the first collection of the European Skipper (*Thymelicus lineola*) in the southern interior at Sicamous in 1981.

David is the butterfly resource person for the North Okanagan Naturalists. In the last few years he was instrumental in finding new sites with a good spectrum of butterfly species to introduce persons to this part of the insect world.

David does not have a telephone but he can be reached at: Telafrend Motel, Unit 14, 1501 – 32nd St., Vernon, BC, V1T 5K4.

The Book Corner

News Flash: A publication date of March 1, 2001, has been set for the long awaited "Butterflies of British Columbia". The authors are Crispin Guppy and Jon Shepard. The publisher is the University of British Columbia Press. It will be available only in a hard cover edition, 400+ pp. There are no Plates but it will have over 1000 full color illustrations. At least 50% of the species will have photographs of immature stages, i.e., egg, larvae or pupae. Some of the photos are from museum specimens the remainder from life. Estimated cost of the publication will be \$95.00.

REFLECTIONS ON OUR PAST

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MENTAL INSECT ATTACKS

George J. Spencer

Department of Zoology, University of British Columbia, Vancouver, B.C.

In the last eighteen years I have been consulted in connection with three cases of serious mental insect plagues. Each instance involved a middle-aged man, bachelor, in moderate or humble circumstances, living alone in a cabin or little house, afflicted with the idea that he was persecuted by small, fast-flying, tick-like insects that in one instance at least, "burrowing under the skin, causing intense irritation; the insects affected the back of the head and neck by day but at night got into bed and bit all parts of the body; they could be detected only as a streak when flying and moved too fast to be caught." With minor variations, the symptoms of attack and the resultant hysteria, were alike in the three cases.

Two men were from Vancouver and one from the lower Fraser Valley; all three suffered from irritation and burns produced by the severity of various "dopes" with which they had rubbed themselves; none showed any spot or puncture that could be attributed to insect attack. No control measures and soothing salves that were suggested, were acceptable; the men apparently revelled in their afflictions although the hysteria and suffering were genuine enough and rather pitiable. In one case I recommended the "sweat" treatment, "that sweat induced by hard work was a sure cure against all such attacks," hoping to take the man's mind off his affliction but he did not report to me of the success or failure of this prescription.

Messrs. W. Downes and J. D. Gregson, of the Dominion Entomological laboratories at Victoria and Kamloops respectively, have kindly supplied me with additional records of this type. Mr. Downes' case concerned a lady in Victoria who, says Mr. Downes, "imagined that she was being bitten by small flies; that she could see them in the air but much to her astonishment always failed to catch one. The hallucinations were particularly marked at night when she imagined that she was being bitten about the arms and neck on which red spots appeared, said to be caused by the bites. She had not had much unbroken sleep for weeks on account of this and her health was rapidly deteriorating. On investigation of the premises I found a spotlessly clean house, reeking of sundry insecticides and disinfectants but not a sign of any insect. I suggested to her the use of an ordinary mosquito repellent which I assured her would keep all insects away. She used this and immediately obtained relief, getting unbroken rest for the first time for along period. The trouble returned, however, after a fortnight and she was then placed in charge of a doctor. After a course of treatments for neurasthenia her troubles disappeared."

Mr. Gregson's record concerned a man 62 years of age, who wrote in to the laboratory from a town in Alberta, recounting in great detail his persecution by ticks which were "burrowing into his body and reproducing their kind under the skin," drilling up the neck into the skull. He declared that he had cut out the first attackers from under the skin, bit by bit with penknife and forceps but later ones bored too deeply for cutting out although they could be distinctly felt; he was keeping some from entering his skull by scrap- them down under the skin of his neck, with the blade of a penknife. He had consulted a number of medical men and forwarded the name of one who was treating him at the moment. This doctor reported to the Kamloops laboratory, that the man's body presented no skin disturbances or constitutional troubles, that the affliction was purely mental and was yielding slowly to a mixture to be taken by mouth and to abundant reassurances that the treatment would be completely effective.

All these cases follow somewhat the same pattern and course of development. The trouble can hardly be called "Insectophobia" because the sufferer did not hate insects as such; it is a sense of being persecuted by one specific, though imaginary type of insect and constitutes a mental fixation or hallucination. All cases probably started from genuine attacks at one time or another, of lice or mosquitoes or no-see-ums (*Culicoides*) and perhaps true ticks, which so worried them that the sense of suffering remained to form a mental plague when the insects themselves had passed. This was definitely so in the case supplied by Mr. Gregson, for the man had visited a mining property near Nelson, B.C., with some companions and all members of the party had been attacked by wood ticks which they had completely removed from their bodies and clothing. It was not until several days later that the mental trouble began in the man in question.

What was possibly an incipient case of this kind was encountered in Vancouver in an elderly couple, comfortably off financially, who had rented their house for a season. They returned to find it infested by a few bed bugs which

bit both man and wife, and horror and disgust seized them; they rented another house and had their own home treated, cleaned and redecorated from basement to roof. The fear and loathing of the bed bugs followed them into the rented house, and every speck on the walls, on the furniture or in their beds, turned into an imaginary bug and any sudden irritation or feeling on the skin developed into the intolerable itching of a bite.

At this stage I was called in by a friend who actually thought they had bed bugs. I found both people suffering from burns and irritation caused entirely by the number, variety and severity of the "dopes" they had used; the furniture, sheets and mattresses were stained by varied insect sprays including creosote washes, the blankets had great holes burnt in them by lye. There was not a sign of a bug anywhere in the house.

It took two days of demonstration and persuasion to convince the old people that they had no bed bugs and were not being bitten and probably saved them from developing the same permanent mental delusions and suffering which affected the other people.

Mental Insect Attacks Revisited

Karen Needham

Curator, Spencer Entomological Museum

Department of Zoology, UBC

Ten years ago, when I first began taking care of the Spencer Entomological Museum in the Department of Zoology at UBC, I would occasionally (once or twice a year) receive a call from a member of the general public complaining about a serious insect invasion in their home. The insects were described to me as living in clothing, bedding, furniture, and on or under the skin. They were characterized as being tiny and fast moving, with their bite accompanied by a sudden, sharp pain; the feeling of them burrowing under the skin was unbearable. So small were they that their victims could barely see them with the naked eye, so fast moving that capturing a specimen for identification was impossible. The few times that people complaining of such an infestation did manage to send something in for identification, the sample invariably consisted of lint, kitchen crumbs, and sometimes human skin.

I was intrigued by these calls, but knew of no insects that fit the description and behavior of these amazingly similar reports. Then, one day while I was cleaning up some old papers around the office, I came across an article written by our museum's namesake, George J. Spencer, entitled "Mental Insect Attacks". In it, he talked about reports of insect invasions that he had received during his time as curator that were identical to the ones I had been getting! Never had I felt closer to the man I had never met, but had grown to admire so much. Dr. Spencer attributed these attacks to the mind playing tricks on its owner, rather than to the presence of any actual arthropods.

Today, this disorder goes by the name of delusional parasitosis, an accepted and treatable psychological condition. Unfortunately, it goes unrecognized by many of those to whom sufferers go for assistance. Sadly, in recent years, the number of these calls that I receive has increased dramatically, and so, too, have the severity of the "attacks." One elderly woman had become so distraught that she had rid her home of all of its furnishings and was sleeping each night on her freshly scrubbed, bare kitchen floor. Another elderly gentleman could only get relief from the sensation of "little, black insects" burrowing into his skin by dousing himself daily with undiluted kerosene.

The details of these calls is so characteristic, that I can usually identify them within a few minutes. Typically, the callers are elderly, intelligent, knowledgeable about the biological world and fastidious in their habits; often they have worked in the health care industry. To date, the only assistance I have been able to provide is the offer to look at any specimens captured and the suggestion that I speak with their family doctor directly, so that I can discreetly alert them to my possible diagnosis. I have also recently contacted a psychiatrist here on campus to find out if there is anything further that I can do at my end to help them find comfort, because no matter how

fictional the attackers, the pain and distress such people feel is very real. If you would like more information on delusional parasitosis, please go to <http://cbshome.ucdavis.edu/delusion/>.

Random Experiences of an Amateur Insect Collector

Bruce A. Hardy (1999)

As a young lad living on Southern Vancouver Island during the early 1940's, I had the distinct pleasure of living in a rural setting. Today, the area has changed considerably with a massive development in housing. The farms are all gone. This drastic change to the rural areas of British Columbia is becoming more and more common.

My parents bought a relatively large, rocky lot in Saanich, with a northwestern view of Mount Douglas, many vegetable and berry farms and Gordon Head Military Camp which is now the University of Victoria.

This area also had a lovely temperate climate.

My parents selected a floor plan and house construction proceeded. The main problem was a rock formation which hindered the provision of a proper basement without having to blast with dynamite which would have been a very costly production. With a little exploring by my father and the builder, it was found that by moving the whole plan about a foot and a half west the foundation would fit snugly between two large rock formations. Apparently there was no difficulty with the local building regulations so construction began.

When the house was finished, attention was given to a garden. Initial plans went awry when the area designated to be a flower garden turned out to be the garbage dump of many of the local residents. My father, in his spare time, dug out all the garbage which filled a large dump truck. Further towards the back of the house, another pit full of treasures was found and again another truckload of cans and bottles was removed.

These two excavations were 3-4 feet deep in parts and surrounded by natural granite. A lovely natural setting. Cracks and crevices were filled in with a sand/cement mix and ultimately two lovely ponds appear. Local ponds and lakes provided the necessary plants. A few gold fish were purchased. Now the pools seemed to be in balance with a varied insect population of Dragon Flies, Damsel Flies, Whirl-a-gig Beetles, Water Boatmen and a multitude of other insects which thrive in this environment. We also introduced a few Leopard Frogs which also thrived in this area.

One of the most common sights in this area was Garter Snakes. On occasion, my friends and I would come across a Garter snake with a large bulge in the middle. Adolescent curiosity would make us wonder what was for lunch and by walking up the tail of the snake would make it disgorge whatever it ate. On several occasions, small mice would appear, but often frogs would appear, the most impressive was the Leopard Frog because of its larger size.

On one occasion, I was watching the activities in one of the garden pools when a smaller Garter snake swam around probably looking for smaller Gold fish. All of a sudden there was a large splash and an adult Leopard Frog leaped into the pond and got a hold of the snake and swam to the edge of the pool. I called my mother to come, and we both watched this adult frog stuff the snake down its throat. It was a sight to see, the frog with half a live snake writhing around in its stomach with the other half flailing around outside its mouth. I have only seen this occurrence once and will never forget it. Years later my mother made reference to it on a few occasions also.

It was at this stage of my life, living in the country with a relatively wild environment, that my interest in Nature generally and Insects specifically developed.

Later, my parents relocated from the rural environment of Saanich to the city of Victoria which opened up whole new areas. Victoria has many lovely beaches to explore, especially following a change in tide. A breakwater to the entrance of Victoria Harbour afforded fishermen an excellent place to try for Ling Cod, Red Snapper and various rock fish. It was there that a friend and I walked along the edge of the breakwater at low tide and spotted a large red thing at the edge. When we got close it became startled and darted out to deep water. This was the

first time that either of us had seen a Giant Octopus in the wild and were amazed how quickly it could change color and the speed it could reach through the water using "Jet Propulsion".

Later I found the Provincial Museum with its extensive collection of stuffed animals and other exhibits. Also the Museum had an extensive collection of insects common to North America representing some of the populations of the huge world of insects. Not on display, but behind the scenes was an extensive collection of tropical insects which space limitations did not allow public showing.

Having seen these orderly displays of insects and all the varieties stimulated my curiosity and I began to collect specimens and finding out a specific insects role in nature.

After a few years in Victoria, my father was transferred to Vancouver, so I moved to the 'big' city. I maintained my interest in insects and continued to collect in my new neighborhood. My curiosity increased as I got older, and I realized that there was a massive world out there with only a small scratch being made on the world on insects.

While at High School, under the subject of "Guidance", counselors were advising on future careers and opportunities. I inquired into the field of Entomology, and was told that this did not exist, and that I was wasting my time. Needless to say, I did not rush back to another "counselling" session on something that did not exist.

My mother could see my frustration in running into a dead end with the so-called 'Counselling'. She phoned the University of BC and got some information on Entomology and was told that in fact it does exist. I made an appointment with Dean Walter Gage for an interview. This meeting completely changed my outlook. He was positive, enthusiastic and explained all the areas and opportunities available.

When I graduated from High School, I enrolled at the University of British Columbia in the Faculty of Agriculture primarily in the field of Agricultural Entomology. After many courses on such subjects as Genetics, Chemistry, Horticulture, Animal Husbandry, Agronomy, etc. I finally got into the world of Entomology from a total environment, not just an Agricultural point of view. My later years at UBC were exceptional in that there were only three students, thus we had the Professor's undivided attention. Also there was no opportunity for "cat-naps". The enthusiasm displayed by Professor Spencer and others was infectious and all students responded accordingly.

After 5 years at UBC I graduated with a Bachelor of Science in Agriculture (BScA) degree and was now ready to charge out into the workplace. I did attend a Federal Government Science Service interview. It was short. The interviewer said if I had a PhD they would consider my application. I finished this short interview by saying "If I had a Doctorate I would consider them". That ended the interview.

While at UBC, I enrolled in the UBC Contingent of the Canadian Officer's Training Corps (COTC). I was offered three choices as a career. I selected: 1)Infantry, 2)Armoured and 3)Artillery. Considering the time and effort I took in making this choice I was surprised to find I was an Officer Cadet in the Royal Canadian Army Service Corps (RCASC), which was basically Supply and Transport.

My first summer was at Camp Borden, Ontario, north of Toronto. This was quite an experience having left a relatively protected environment at home, to join a few hundred other trainees who were also competing to qualify for their Commission.

Our life as Officer Cadets was controlled with little time available for other activities and the evenings full of studying projects and some night Exercises, but I was still able to find a little time to do some collecting.

I had a little collecting kit of the necessities: Killing Jar, Net made from a coat hanger and cheese cloth, and pinning boards. All this was stashed in my Barrack Box, which was not usually subject to inspection.

My room mate and other Cadets were somewhat interested in the varieties of the insects I was catching. Many of the insects were not common here on the West Coast.

One evening, conditions were right, and I ventured outside the Camp and walked along some tank tracks with my net at the 'ready'. It was now nearly dark and I was returning to the camp on a different set of tank tracks when a large moth flew past. I immediately took off after what ever it was and was not aware that I was rapidly approaching another platoons defensive location. All hell broke loose with flares, Rifles firing blanks and Thunder Flashes (Noisemakers). This sudden outburst caused me to return to my quarters in record time. The following morning at breakfast I overheard some comments about a "Nut with a Net". I did not join in with that conversation.

On another occasion there was an abundance of attractive opalescent colored June Beetles flying around. I had not seen this type here in BC. These were attracted to the flood lights around the vehicle compound and I located myself at the fence and found a weak spot which would give me access to insects that had dropped 2 to 3 feet inside. Collecting had been going well and I had an interesting assortment of night insects until I looked up and found a very nervous soldier with his rifle pointed at me. I had not made plans for this type of event. I was ordered to crawl the rest of the way through the fence along with my butterfly net and killing jar. I was unceremoniously marched at gun point to the compound office and presented to the Duty Sergeant who was an old Vet and seemed to lack a sense of humour. When I think back to this scenario it must have been a real challenge to the Sergeant. Here we have a Teen-ager wearing blue-jeans, a Tee Shirt with a comical portrait of a cow's face and UBC Agriculture on the front, a Regulation Military haircut, Butterfly net, Killing jar, box with about 2 dozen dead beetles and a nervous guard with a rifle. The Sergeant asked "What unit are you with?" I replied "Canadian Officer's Training Corps, Sergeant". He fidgeted with his mustache a bit, assessed the situation and ordered "Pick up you bugs and stuff and get the hell out of here, I do not want to see you again". The guard seemed relieved, I was relieved and returned to my quarters remembering that this was another place I did not wish to return to again.

At one time in the summer Praying Mantids appeared and I caught one during a coffee break and explained to my buddies what it was and that it was a beneficial insect. Some are green and up to about three inches long. One day I caught a lovely specimen and took it into the classroom and put it under an ash tray. During the lecture there was the sound of "Swat!" Later in the lecture the man sitting next to me produced a dead fly. I moved the ashtray to his side of the table. He put the fly on a pin, lifted the ash tray, the Mantid stood up, he twirled the pin, the Mantid devoured the fly quickly and was quietly placed under the ash tray. At the end of the class everyone was dismissed except me.

I was not aware that our activities during the break had not gone unnoticed, and the Chief Instructor stood behind me during all the feeding activities. I attended a one-sided chat. The results were the immediate cessation of any feeding and related activities.

Twenty odd years later, I had the opportunity to attend a Conference at Base Borden (formerly Camp Borden) and attended a short service at the RCASC Cenotaph. Following the ceremony, our Regimental Sergeant Major (RSM) from the 1950's appeared and greeted all of us. Most of us had served under his reign and was known by most. When he came up to me, he stood there for a short time and then said "I am having trouble placing you, but there was something different about you". I said "How about insects?" The RSM stood back and said "Oh, yes", smiled and went on to meet others from his flock.

In 1953, I ceased to be an Officer Cadet and was promoted to a Second Lieutenant (also known as a 'One Pip Wonder'). My Phase III training consisted of on-job training during the summer. I was asked where I would like to attend my third phase as a functioning 2nd Lt. There were several options open. I suggested Germany or Vancouver. I was offered Korea which was at War. I was not keen on that idea based on some of the comments regarding the terrain and climate generally.

Higher powers prevailed and I found that I was to spend all summer at Camp Valcartier in eastern Quebec, as the Transport Officer with the Royal Canadian Army Service Corps. Another chap from Vancouver was going there as the Supply Officer so the two of us decided to go to Quebec by Bus and see a bit of North America.

I found I lived on the Military Base which was about 20 miles North of Quebec City.

This turned out to be good command. Very active Base, good staff and many challenges that go with the territory. The Base operated 24 hours a day. My Commanding Officer was stationed in Quebec City and was readily available by phone.

This was a very busy operation, but I did find time to do a little insect collecting. Since we operated 24 hours a day the compound was flood lit all night and thus attracted a myriad of night insects. I explained to my night staff that I was interested in collecting insects and would appreciate if they came across any large and/or colorful insects if they would catch them and put them in my desk top drawer. This seemed to be an innocent enough request.

At one stage in your career in the Military you will be subject to an Inspection. I was advised that the Command Supply and Transport Officer, a Lieutenant-Colonel, had the nasty habit of arriving for an inspection unannounced. I went into my office early one Monday morning. The dispatcher said "You have a visitor, Sir". I looked at the entrance area and here was an older gentleman standing with a very noticeable scowl on his face. I saluted and introduced myself. His response was an abrupt "What in hell are you running here?" I looked around and found my desk was askew, drawers open and chair off in a corner. It took some time for him to regain his composure. It appears his inspections are usually unannounced, and his desk inspection gives the feeling that a neat desk shows an organized mind. This day the night staff caught a couple of large (3-4" wingspan) Hawk Moths and put them in the top drawer. Opening the drawer released the captives which flew out and into the face of the Inspector. This explains why the furniture had been relocated. Needless to say it was a short inspection. My boss came out from Quebec City to receive his report. The only thing that I recall from the results of the inspection was my Commander's question, "How many Insects do you have?" The rest of my tour of duty in 'La Belle Province' was enjoyable.

On another occasion, I was invited to visit my Aunt and Uncle's Summer Home at a lake west of Edmonton, Alberta. It was a lovely cottage overlooking a large lake. I did a little collecting there. One warm evening a 'hatch' of fish flies occurred. That is when millions of larvae hatch into adults. It is interesting to note that these flies are the pattern used for man-made fishing-flies.

When night came, I put a bright light in front of the main picture window and then went outside to collect any uncommon specimens. My standing in front of this window was quite successful and it was interesting to note that my silhouette was outlined on the window by thousands of Fish Flies.

When I entered the cabin I found that the fish flies that were missing in the silhouette were all on my back and by walking into the room hundreds of these fish flies left my back and gathered around the inside lights. I was not popular and spent the rest of the evening netting and releasing flies to the outside.

One day I checked behind the window shutters and found a bat hanging there. Since part of my studies at UBC consisted of catching and preserving (stuffing) small animals. The next day I found two more which were dispatched, skinned and stuffed. I mounted them on a piece of cardboard. When it came time to return by bus to Vancouver I had a box with the bottom layer being pinned insects and the top layer consisting of three stuffed bats. I got on the bus and put this box on the rack above and proceeded to Vancouver. An elderly oriental gentleman sat next to me in the aisle seat. We had a pleasant conversation. At one point the bus hit a large 'Pot-hole' and everything in the overhead racks went flying. He handed me my box, which I opened and found both layers were all intact. I closed the box and looked beside me and found that he had gone. I found him on the back seat of the bus reading. He never spoke to me again. I guess the thought of sitting with a chap who had a box full of bugs and bats was too much. The staff at UBC thanked me for my donation.

Later, I joined the Reserve Army with 156 Coy RCASC(M) in Vancouver. Later on I told the other members that I collected insects. This was accepted by all and once in a while when on exercises in the field soldiers would bring in the odd "different" insect to see if it was harmful. On one summer Militia Concentration in the hills behind Vernon, BC we were doing our supply and transport role. We had an Officer's Mess located away from the main supply area where the Officers could relax after duty hours. The Mess consisted of a Bell Tent, a couple of Tarpaulins over a couple of folding tables with Coleman Lamps suspended to provide light. There were also two garbage cans outside the Tent. One contained garbage and the other contained Ice and cold beer. This was roughing it(?).

One night the Militia Commander and his staff arrived for a visit. All the officers gathered and we all sat around under the tarps and had a pleasant visit with some refreshments. While we were sitting there chatting, I looked up at the overhead tarpaulin and spotted a spectacular Long-horned beetle on the tarp. I had never seen one quite like that so I climbed up onto the chair, one foot on the table, grabbed the insect and put it into a small box I carried for that purpose. I did not notice that the conversation had ceased during this performance. I sat back down and everyone continued chatting. It was a pleasant and relaxing visit.

A few months later when I was in my office at Base Jericho a Staff Officer dropped in for a visit. I finally said "Why are you here?" He discretely described the event on the exercise where I caught some sort of creature and put it in my pocket. He said the General was concerned, and thought I may have been in the sun too long, or was I on some medication. I sat there and laughed. I finally calmed down and explained to him that I was an entomologist and did this sort of thing as a hobby. My guest started to laugh at the turn of events and finally said "How am I supposed to explain all this with a straight face". I said "That, Sir, is now your problem". He left chuckling to himself and I never heard another word from any one in HQ on the subject.

My Aunt and Uncle who lived in southern California invited me to visit with them during a summer break from UBC. This invitation was eagerly accepted. I packed up my suitcase, butterfly net and killing jar and took a bus to Los Angeles. My Aunt and Uncle, who was a Professor of Economics at UCLA, were very interested in the large and varied types of insects I found in their garden, particularly the back yard. They warned me about the "Black Widow Spiders" which were prevalent in the area.

One day I went for a hike to a large field with a dense hedge row around three sides. I was crawling along beside the hedge watching a particular type of insect when all of a sudden a loud volley of shots was fired right next to me. This gave me hell of a start. I carefully rose and peeked through the hedge and found that on the other side of this hedge was a Military Cemetery and the Military had just fired a salute at a burial service. I told my uncle of this encounter and he laughed and said "Oh, I forgot to tell you". On other outings I would ask if there were any more surprises. He just laughed and said "I would find out".

On returning back to BC I had to of course go through Canadian Customs which was a challenge. I had a large cardboard box full of a variety of pinned up insects, and in the bottom layer were some plastic boxes containing some large, live Black Widow spiders which I was asked to get, if possible for one of the Professors at UBC. I declared the insects to a Customs Officer who took a quick look into the box and suggested that I take all this into the office and discuss with the Officers in the Office. This I did, and ended up with a large number of Customs Officers looking at the insects and asking a myriad of questions. This "Show and Tell" session was interrupted by an irate Bus Driver who announced he had a schedule to meet and if they wanted me, they could keep me. The Customs Officers thanked me for my time and let me return with the Bus.

When I was preparing to get married, my fiancée, Joan, stipulated loudly and clearly to all and sundry, and anybody that may have cared, that NO Butterfly Net would be on the Honeymoon (to Southern California). This was agreed to by me.

The wedding went well with a large attendance at St. Philip's Church at 27th and Dunbar, in Vancouver.

We started out on the Honeymoon and had to visit the Seattle Zoo, but it was too early in the morning and the animals were not even up yet. We then continued to drive south.

One evening in Northern California we stopped at a Drive-in for supper. We parked next to the building and I noticed a large, long-horned Beetle on the door of the Women's Washroom. I stated it may look strange to have a man lurking around the entrance to the women's washroom even if it is to catch a long-horn beetle. She reluctantly agreed and went out and grabbed the insect and put it in her change-purse.

We finally arrived at our destination, Los Angeles, and went around for a visit with my Aunt and Uncle who had been up for our Wedding. Joan and I were sitting with my Aunt in the Kitchen having Coffee, when all of a sudden in the doorway appears my Uncle with my Butterfly net. Apparently, my parents and they thought this would be an appropriate gesture. Joan did not seem to happy, but what could she do.

On another occasion, when I was at UBC, it was a warm summer evening and I suggested to my father that it was a perfect evening to collect flying June Beetles. The best place for this was under the Neon Lights of the Dunbar Theater. He must have felt he should show more interest in his son's studies and he asked if he could come along. We drove up to Dunbar St. and each had a collecting jar and stood under the Neon lights. All of a sudden a large number of Beetles arrived and were falling to the sidewalk and we started to grab these elusive creatures. When the Theater doors opened, I realized that the show must be over, so stood up beside the door. My father was still on his hands and knees chasing these beetles. He grabbed a large one, said "Here's a good one", when he looked up and found he was completely surrounded by a circle of theater goers who must have thought the heat had got to him. He recognized many of the gathered group, but what could he say. He found me against the wall laughing. He was not pleased. Oddly enough that was the last time he offered to go bug collecting.

Obituary

Bruce Arthur Hardy 1932 – 2000

Bruce was born 16 Nov. 1932 in Victoria, B.C. He went to grade school there and then his father was transferred with the BC Tel to Vancouver. Bruce went to Lord Byng High School graduating in 1950. He went to UBC 1950-55 graduating with a Bachelor of Science in Agriculture (BSA in Agricultural Entomology).

In 1950 jobs were hard to come by and he could not get one in his specialty, so he went to work in Management of Traffic Studies etc. with BC Tel for 37 years. He retired in 1992. He married Joan Woodley in 1956 and had many happy camping trips with his family of three children, all of whom, enjoyed his continued interest in insects catching many and learning all about them.

Bruce had many interests including the Militia while at UBC, he joined the Canadian Officers Training Corps. In 1954 he was commissioned as a 2/Lt in the Royal Canadian Army Service Corps where from 1959-65 he was Commanding Officer. He continued his interest and volunteered with several units and was still an officer with the Army Cadet League at the time of his death.

He also was an active volunteer with the Vancouver Aquarium as a docent and "taught" the school children about the marine mammals at least once a week. He even wrote a book about his other hobby, stamps, entitled "Marine Mammals Postage Stamps."

He was also active with the Burnaby Crime Watch Program.

He died too early at the age of 67 of cancer.

His family, wife Joan, Paul, Ann and Susan

Many thanks to the family of Bruce A. Hardy, who donated his expertly curated private insect collection, housed in 12 drawers, nine books plus his Honors Thesis, insect pins, and butterfly net to the Spencer Entomological

Museum in September 2000. The Hardy Collection adds many valuable records to the data in our Museum.

Karen Needham
Curator
Spencer Entomological Museum
Dept. of Zoology, UBC

Butterflies of the Subalpine and Alpine Zones of Red Mountain,

Camelsfoot Range, Interior Plateau of BC

David L. Threatful

Red Mountain is located 94 km northwest of Lillooet, BC, in the Camelsfoot Range of the Interior Plateau, latitude 51°12' N, longitude 122° 33' W. Red Mountain is an impressive mountain, with the rocky surface a brilliant red shade especially during bright sunny weather. At an elevation of 2446m it is the highest mountain in that part of the Camelsfoot Range. Elevations were determined in feet from the topographic map, and then converted to metric. The following annotated list of butterfly species was compiled from observations and collections made July 31 and August 16, 2000 at Red Mountain. by David L. Threatful

Supplementary information includes species habitat and elevations at which the species were taken or observed, plus a list of five additional butterfly species observed on nearby Poison Mountain, but that apparently are not present not on Red Mtn. Poison Mtn. is in the Coast Range 13 km southeast of Red Mtn.

List I – Species from Red Mountain

Skippers, Family Hesperidae

1. Grizzled Skipper, *Pyrgus centaureae*: Dry open alpine tundra. 2256m; 31-VII-2000.

Swallowtails and Apollos, Family Papilionidae

2. Rocky Mountain Apollo, *Parnassius smintheus*: Dry open alpine and subalpine rocky areas with *Sedum*, the larval food plant. 1891m - 2042m, 2073m to 2286m; 31-VII-2000, 16-VIII-2000.

Whites, Marbles, and Sulphurs, Family Pieridae

3. Western White, *Pontia occidentalis*: Occurs on the rocky summit in association with *Astarte Fritillary* and *Melissa Arctic*. 2246m; 31-VII-2000.
4. **Clouded Sulphur**, *Colias philodice*: Subalpine meadows. One specimen collected at the base of a scree slope in dry alpine tundra. 1981m to 2256m; 31-VII-2000.
5. **Labrador Sulphur**, *Colias nastes*: Dry open tundra often adjacent to scree slopes, and occasionally at timberline. 2073m to 2347m; 31-VII-2000, 16-VIII-2000.
6. **Pink-edged Sulphur**, *Colias interior*: In open subalpine meadows and alpine tundra. 2134m to 2164m; 16-VIII-2000.

7. **Gossamer Wings**, Family Lycaenidae

8. American Copper, *Lycaena phlaeas*: **Open dry alpine just above timberline and rocky disturbed alpine tundra. 2073m to 2134m; 31-VIII-2000. (Note: there are only three other known localities for this species in southwest BC, one being Poison Mtn).**
9. Lustrous Copper, *Lycaena cuprea*: Open rocky scree above the alpine tundra. 2286m to 2316m; 31-VIII-2000.

10. **Mariposa Copper**, *Lycaena mariposa*: Open subalpine meadows along streams and forest edges. 1981m; 16-VIII-2000.
 11. **Northern Blue**, *Lycaeides idas*: Open subalpine meadows with lupines, the larval food plant. 1981m to 2073m; 16-VIII-2000.
 12. **Greenish Blue**, *Plebejus saepiolus*: Open damp alpine just above timberline and open subalpine meadows from 1981m to 2042m. Specimens also taken in wet alpine tundra at the base of scree slopes at 2256m. 32-VII-2000, 16-VIII-2000.
 13. **Boisduval's Blue**, *Icaricia icarioides*: Open subalpine meadows with lupines, the larval food plant. 1981m to 2073m; 31-VII-2000.
 14. **Arctic Blue**, *Agriades glandon*: Dry open rocky habitat with Saxifrage, the larval food plant. 2134m to 2408m; 16-VIII-2000.
15. **Brushfoots, Family Nymphalidae**
16. Mormon Fritillary, *Speyeria mormonia*: Open subalpine meadows and alpine tundra, often near the base of scree slopes. 1981m to 2256m; 16-VIII-2000.
 17. **Bog Fritillary**, *Boloria eunomia*: Open wet alpine tundra, with willow scrub. 2103m to 2134m; 31-VII-2000. Adults also observed at 1981m to 2012m in open subalpine forest and meadows with willow scrub.
 18. **Astarte Fritillary**, *Boloria astarte*: Occurs on the rocky barren summit where the only plants are grasses and other plants including Moss Champion that are adapted to very harsh conditions. 2246m; 31-VII-2000.
 19. **Arctic Fritillary**, *Boloria chariclea*: Open subalpine meadows with willow scrub and forest edges. 1981m to 2042m; 31-VII-2000.
 20. **Damoetas Checkerspot**, *Chlosyne damoetas*: Found on scree slopes and rockslides often adjacent to alpine tundra at time with low willow scrub. 2164m to 2271m; 31-VII-2000.
 21. **Northern Crescent**, *Phyciodes cocyta*: Four specimens taken at the base of scree slopes in alpine tundra. 2134m; 16-VIII-2000. Also one specimen observed at 2073m near timberline.
 22. **Field Crescent**, *Phyciodes pratensis*: Open subalpine meadows & forest edges. 1981m- 2042m; 31-VII-2000.
 23. **Anicia Checkerspot**, *Euphydryas anicia*: Open subalpine meadows to alpine tundra adjacent to scree slopes and rock slides. 1981m to 2286m; 31-VIII-2000, 16-VII-2000.
 24. **Edith's Checkerspot**, *Euphydryas editha*: Open subalpine meadows and forest edges, and open dry alpine tundra with rocky areas. 1981m to 2103m; 31-VII-2000.
 25. **California Tortoiseshell**, *Nymphalis californica*: Observed on rocky knolls and scree slopes nectaring on Moss Champion. 2256m; 31-VIII-2000. Also at 2316m on open scree slopes basking in the sun and trying to avoid the strong winds that were blowing. Too wary to collect!
 26. **Milbert's Tortoiseshell**, *Nymphalis milberti*: Same habitat as *N. californica* but much more common. Also seen nectaring on Ragwort in moist tundra areas at the bases of scree slopes. 2256m to 2316m; 32-VII-2000, 16-VIII-2000.
 27. **Common Ringlet**, *Coenonympha tullia*: One specimen was taken in dry alpine tundra above timberline. 2146m; 16-VIII-2000.
 28. **Small Woodnymph**, *Cercyonis oetus*: 2073m. One specimen observed in dry open alpine tundra at timberline. 16-VIII-2000.
 29. **Vidler's Alpine**, *Erebia vidleri*: Most common in open subalpine meadows and adjacent forest edges. 1981m to 2042m; 31-VII-2000.
 30. **Common Alpine**, *Erebia episodea*: Common in open subalpine meadows and moist alpine tundra above timberline. 1981m to 2286m; 31-VII-2000, 16-VIII-2000.
 31. **Chryxus Arctic**, *Oeneis chryxus*: Common in open subalpine forest in dry rocky places and forest edges, and rocky draws and dry stream beds just above timberline. Also at the base of scree slopes in dry alpine tundra. 1981m to 2316m; 31-VII-2000.
 32. **Melissa Arctic**, *Oeneis melissa*: A common species that favors the black lichen covered rocks and knolls in the alpine tundra, and on the rocky barren summit of the mountain in association with Astarte Fritillary in extremely harsh weather conditions. Flew with Labrador Sulphurs at lower elevations. 2256m to 2446m; 31-VII-2000.

List II – Additional Species observed only on Poison Mountain

31. Arctic Skipper, *Carterocephalus palaemon*: Uncommon in the wetter areas and bogs of the open subalpine forest. 1950m; 19-VII-2000.
32. **Anise Swallowtail**, *Papilio zelicaon*: Specimens flying on the summit with Western Whites, Edith's Checkerspots, and Melissa Arctics. 2256m; 19-VII-2000.
33. **Acmon Blue**, *Icaricia lupini*: One specimen taken in dry open disturbed area with buckwheat (*Eriogonum*), the larval food plant, in open forest of Whitebark Pine. 2042m; 30-VII-2000.
34. **Freija Fritillary**, *Boloria freija*: Specimens observed and two collected in willow scrub just above timberline. 2073m; 19-VII-2000.
35. **White Admiral**, *Limenitis arthemis*: One flight worn female at the 4 km marker on Poison Mtn. Forest Service Rd., open subalpine forest. 1920m; 19-VII-2000.

Butterflies of the Cherry Creek Area

Cherryville, BC

David L. Threatful

This report lists the butterfly species observed near Cherryville, BC, by some members of the North Okanagan Naturalists Club, Vernon, BC, during outings from June 14, 1997 – September 16, 2000. The 56 butterfly species listed were from a small area 1.3km east of the Cherry Creek Bridge, on the Sugar Lake Road off Highway 6. The collecting site, elevation 550m, was 1km by 75m, along a narrow dirt road with roadside openings, located in a dry open transition forest of Douglas-fir and Lodgepole Pine. The vegetation in the under story and ground cover was made up of shrubs, grasses, and flowering plants, both native and introduced, and included those species which were either adult nectar sources or larval food plants for the butterfly species observed. All specimens collected were identified to species, confirmed by David Threatful, and then released. Supplementary information is provided in three lists of species that, under certain conditions, could occur in the Cherry Creek area.

List I – Species from the Cherry Creek area

Skippers, Family Hesperidae

1. **Northern Cloudywing**, *Thorybes pylades*
2. **Dreamy Duskywing**, *Erynnis icelus*
3. **Persius Duskywing**, *Erynnis persius*
4. **Two-banded Checkered Skipper**, *Pyrgus ruralis*
5. **Arctic Skipper**, *Carterocephalus palaemon*
6. **European Skipper**, *Thymelicus lineola*
7. **Tawny-edged Skipper**, *Polites themistocles*
8. **Long Dash Skipper**, *Polites mystic*
9. **Woodland Skipper**, *Ochlodes sylvanoides*
10. **Common Roadside Skipper**, *Amblyscirtes vialis*

Swallowtails and Apollos, Family Papilionidae

11. **Rocky Mountain Apollo**, *Parnassius smintheus*
12. **Anise Swallowtail**, *Papilio zelicaon*
13. **Canadian Tiger Swallowtail**, *Papilio canadensis*
14. **Pale Swallowtail**, *Papilio eurymedon*

Whites, Marbles, and Sulphurs, Family Pieridae

15. **Pine White**, *Neophasia menapia*
16. **Western White**, *Pontia occidentalis*
17. **Margined White**, *Pieris marginalis*
18. **Cabbage White**, *Pieris rapae*
19. **Stella Orangetip**, *Anthocharis stella*
20. **Clouded Sulphur**, *Colias philodice*
21. **Orange Sulphur**, *Colias eurytheme*
22. **Pink-edged Sulphur**, *Colias interior*

Gossamer Wings, Family Lycaenidae

23. **Purplish Copper**, *Lycaena helloides*
24. **Mariposa Copper**, *Lycaena mariposa*
25. **Barry's Hairstreak**, *Callophrys barryi*
26. **Hoary Elfin**, *Callophrys polia*
27. **Western Pine Elfin**, *Callophrys eryphon*
28. **Grey Hairstreak**, *Strymon melinus*
29. **Western Tailed Blue**, *Everes amyntula*
30. **Purple Azure**, *Celastrina echo*
31. **Silvery Blue**, *Glaucopsyche lygdamus*
32. **Melissa Blue**, *Lycaeides melissa*
33. **Boisduval's Blue**, *Icaricia icarioides*

Brushfoots, Family Nymphalidae

34. **Leto Fritillary**, *Speyeria cybele*
35. **Zerene Fritillary**, *Speyeria zerene*
36. **Northwestern Fritillary**, *Speyeria hesperis*

37. **Hydaspe Fritillary**, *Speyeria hydaspe*
38. **Meadow Fritillary**, *Boloria bellona*
39. **Pacific Fritillary**, *Boloria epithore*
40. **Northern Checkerspot**, *Chlosyne palla*
41. **Northern Crescent**, *Phyciodes cocyta*
42. **Field Crescent**, *Phyciodes pratensis*
43. **Mylitta Crescent**, *Phyciodes mylitta*
44. **Anicia Checkerspot**, *Euphydryas anicia*
45. **Satyr Comma**, *Polygonia satyrus*
46. **Hoary Comma**, *Polygonia zephyrus*
47. **Green Comma**, *Polygonia faunus*
48. **Compton Tortoiseshell**, *Roddia vaualbum*
49. **Mourning Cloak**, *Nymphalis antiopa*
50. **Milbert's Tortoiseshell**, *Nymphalis milberti*
51. **Painted Lady**, *Vanessa cardui*
52. **Red Admiral**, *Vanessa atalanta*
53. **Lorquin's Admiral**, *Limenitis lorquini*
54. **Common Ringlet**, *Coenonympha tullia*
55. **Common Wood-Nymph**, *Cercyonis pegala*
56. **Common Alpine**, *Erebia epipsodea*

List II - Species that could possibly occur at this site and in the surrounding area

1. **Slyvan Hairstreak**, *Satyrium sylvinum*
2. **Brown Elfin**, *Callophrys augustinus*
3. **Moss's Elfin**, *Callophrys mossii*
4. **Greenish Blue**, *Plebejus saepiolus*
5. **Hoary Comma or Zephyr Anglewing**, *Polygonia zephyrus*
6. **West Coast Lady**, *Vanessa annabella*
7. **Macooun's Arctic**, *Oeneis macounii*
8. **Chryxus Arctic**, *Oeneis chryxus*

9. **Monarch**, *Danaus plexippus*

List III - Species that will occur if there is buckwheat (*Eriogonum* spp.) growing on the dry hillsides in the surrounding area

1. **Sheridan's Hairstreak**, *Callophrys sheridanii*

2. **Blue Copper**, *Lycaena heteronea*

3. **Square-spotted Blue**, *Euphilotes battoides*

4. **Lupine Blue**, *Icaricia lupini*

List IV - Other species that could occur if their larval foodplants are found in the surrounding area.

1. **Pacuvius Duskywing**, *Erynnis pacuvius*

2. **Peck's Skipper**, *Polites peckius*

3. **Western Tiger Swallowtail**, *Papilio rutulus*

4. **Large Marble**, *Euchloe ausonides*

5. **Hedgerow Hairstreak**, *Satyrium saepium*

6. **Thicket Hairstreak**, *Callophrys spinetorum*

7. **Rosner's Hairstreak**, *Callophrys rosneri*

8. **Northern Blue**, *Lycaeides idas*

9. **Arctic Blue**, *Agriades glandon*

10. **Aphrodite Fritillary**, *Speyeria aphrodite*

11. **Callippe Fritillary**, *Speyeria callippe*

12. **Freija Fritillary**, *Boloria freija*

Dung Dwelling Skippers

Norbert Kondla

So setting aside humorous comments about coprophagous behaviour etc., the observation of the Plains Skipper, *Hesperia assiniboia*, larvae using Bos plop is kind of interesting. In case anyone was wondering, no I have not been turning over range patties to look for caterpillars. The credit for this unusual observation goes to: McCabe, T.L. and R.L. Post (1977) in "Skippers of North Dakota", North Dakota Insects Publication No.11, North Dakota State University, 70pp. Here is a brief quote on what these folks found: "..larvae even go so far as to utilize cattle droppings as fortresses against the weather. The larvae construct a burrow two to five inches long under a dried cattle dropping and line the burrow with silk. Larvae can be found in this area under cattle droppings about the first of July." The place is Mineral Springs, Slope County, North Dakota, in case you want to add this to your next butterfly watching trip to see the world famous dung-dwelling skipper s.

Ed. Note: In "Butterflies of Canada", Layberry et al., it is stated that the habitat for *H. assiniboia* is in native short-grass prairie. The range map shown for this species includes the eastern Peace River Block of B.C.

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ENTOMOLOGICAL SOCIETY OF BC AGM

SCIENTIFIC PROGRAM

FRIDAY, OCTOBER 20, 2000

9:00-9:15 Welcome and Opening Remarks, Jim Wood, Director, Forest Resources, Canadian Forest Service.

Morning Session I Chair: Neville Winchester

9:15 -9:30 Title: Feeding effects of *Leptoglossus occidentalis* (Hemiptera: Coreiidae) on 1st-year pine conelets.

Ward B. Strong, Sarah Bates, Seed Pest Management, BC Ministry Forests, 3401 Reservoir Road, Vernon, BC V1B 2C7

9:30-9:45 Title: Attack dynamics of *Dryocoetes confusus* in interior forests vs. edge forests.

Lorraine Maclauchlan, Ministry of Forests, Kamloops Forest Region, Ministry of Forests, 515 Columbia Street, Kamloops, BC V2C 2T7

9:45-10:00 Title: Effect of ant-aphid populations in protecting young Interior Spruce (*Picea glauca* X *engelmannii*) from attack by the White Pine Weevil (*Pissodes strobi*).

Robert J. Higgins, Biology Department, University College of the Cariboo Suite 303-383 Oliver Street, Williams Lake, BC V2G 1M 4

10:00-10:15 Title: Patterns of soldier allocation in the aphid *Pemphigus spyrothecae*.

Jabus G.A. Tyerman, Behavioural Ecology Research Group

Dept. Biological Sciences, Simon Fraser University

Burnaby, BC V5A 1S6

10:15-11:00 COFFEE

Morning Session II Chair: Robb Bennett

11:00-11:15 Title: Body temperature and temperature preferences of two species of tent caterpillar: Implications for caterpillar, nuclear polyhedrosis virus interactions.

Leonardo Frid and Judith H. Myers, Department of Biological Sciences, 8888 University Drive, Simon Fraser University, Burnaby, BC V5A 1S6

11:15-11:30 Title: Why does cornicle length vary across aphid taxa?

Edward B. Mondor, Centre for Environmental Biology, Simon Fraser University, Burnaby, BC V5A 1S6

11:30-11:45 Title: Productivity of *Pissodes strobi* Peck. (Coleoptera: Curcuionidae) at three genetic resistance levels of *Picea sitchensis* (Bong). Carr.

Paula Cabrera, Department of Biological Sciences, 8888 University Drive

Simon Fraser University, Burnaby, BC V5A 1S6

11:45-12:00 Title: Non-indigenous Bark-and Wood-borers in British Columbia: Detection, Distribution and Diversity.

Leland M. Humble, Natural Resources Canada, Canadian Forest Service

506 West Burnside Road, Victoria, BC V8Z 1M5

12:00-1:00 LUNCH

Afternoon Session I Chair: Hugh Barclay

1:00-1:15 Title: Riparian ecosystems and the ecology of carabid beetles: a closer look at the population dynamics and movements of *Scaphinotus angusticollis* (O. Coleoptera, F. Carabidae).

Suzie Lavallee, Ph.D. Student, Dept. of Forest Science, Faculty of Forestry, University of British Columbia.

1:15-1:30 Title: The effect of (water) Plant feeding on the foraging behavior and predation rate of *Dicyphus hesperus* (Hemiptera: Miridae)

Alice Sinia, Simon Fraser University, Department of Biological Science,

8888 University Drive, Burnaby, BC V5A 1S6

1:30-1:45 Title: Working towards classical biological control of the cherry bark tortrix"

Wade Jenner, Centre for Environmental Biology, Simon Fraser University, Burnaby, BC V5A 1S6

1:45-2:00 Title: Development of a Fine-Scale Hazard Rating System for Western Hemlock Looper (*Lambdina fiscellaria lugubrosa*).

Neil Borecky, Biology Department, University of Victoria, P.O. Box 3020, Victoria, BC

V8W 3N5

2:00-2:30 COFFEE BREAK

Afternoon Session II Chair: Rob Cannings

2:30-2:45 Title: A study of behavioral habituation to feeding deterrents in the larvae of a generalist, *Trichopulsia ni* (Lepidoptera: Noctuidae).

Yasmin Akhtar, Faculty of Agricultural Sciences, University of British Columbia, Vancouver, BC V6T 1Z4.

2:45-3:00 Title: Bioactivity of Crude Extracts of *Annona* spp. (Annonaceae) Against Lepidopteran Larvae.

J.A. Leatemia and M.B. Isman, Faculty of Agricultural Sciences, University of British Columbia, Vancouver, BC V6T 1Z4

3:00-3:15 Title: Identification and development of the sex pheromone of the Douglas-fir cone gall midge, *Contarinia oregonensis* (Diptera: Cecidomyiidae).

Robert Bennett (British Columbia Ministry of Forests) and G. Gries, R. Gries, G. Khaskin, S. King, P. Morewood, D. Morewood, K. N. Slessor, and D. Holden (Simon Fraser University).

3:15-4:00

- Third Annual Graduate Student Scholarship Awards
- Student Paper Awards
- Business Meeting.

CLOSING REMARKS

ABSTRACTS OF PAPERS PRESENTED AT AGM 2000

NOTE: The following abstracts are presented as they were submitted. No attempt has been made to edit abstracts in order to prevent possible peer embarrassment.

A study of behavioral habituation to feeding deterrents in the larvae of a generalist, *Trichopulsia ni* (Lepidoptera: Noctuidae)

Yasmin Akhtar and M. B. Isman Faculty of Agricultural Sciences, University of British Columbia, Vancouver, BC V6T 1Z4.

Habituation to feeding deterrents was examined in the second and fifth instars of *T.ni* using paired choice leaf disc assays. Neonates less than 24 hours old were reared on cabbage plants sprayed with different concentrations of crude extract of *Melia volkensii* and *Origanium vulgare* until the required instars before testing them for habituation. The possibility of cross habituation was examined by rearing them from neonates on cabbage plants sprayed with different concentrations of digitoxin until early second instars. They were then tested on cabbage plants sprayed with 8-methoxy psoralen. Control plants were sprayed with methanol. Amount of leaf area consumed by each larvae was measured and feeding deterrence index was calculated. The results clearly indicated that continued exposure to feeding deterrents can extensively affect larval sensitivity to them. The experienced larvae showed increased acceptance of feeding deterrents compared to naive larvae, thereby showing habituation. The larvae were also habituated to unrelated compounds-- a phenomenon known as cross habituation.

Identification and development of the sex pheromone of the Douglas-fir cone gall midge, *Contarinia oregonensis* (Diptera: Cecidomyiidae).

Robert Bennett (British Columbia Ministry of Forests) and G. Gries, R. Gries, G. Khaskin, S. King, P. Morewood, D. Morewood, K. N. Slessor, and D. Holden (Simon Fraser University)

Maggots of the Douglas-fir cone gall midge (DFCGM) were extracted from Douglas-fir cones and reared to adults. Pheromone glands of calling female DFCGM were extracted in hexane; extracts were subjected to coupled gas chromatographic-electroantennographic detection (GC-EAD) analyses. Field tests of candidate pheromone components in Douglas-fir seed orchards revealed that a single component attracted male DFCGM. Attractiveness of this compound exceeded that of virgin female DFCGM. Pre-operational experiments in seed orchards of coastal British Columbia, Washington, and Oregon demonstrated: 1) positive correlations between numbers of male DFCGM captured in pheromone-baited traps and numbers of DFCGM egg-infested scales within conelets; and 2) significantly fewer captures of male DFCGM in pheromone-baited traps placed in orchard sections treated with "Last Call"® (pheromone-impregnated and pyrethroid-laced droplet paste) than in traps placed in untreated sections. These results suggest that synthetic DFCGM pheromone could be used to 1) monitor DFCGM populations, 2) predict damage, and 3) provide an alternative to pesticide-based DFCGM control.

Development of a Fine-Scale Hazard Rating System for Western Hemlock Looper (*Lambdina fiscellaria lugubrosa*).

Neil Borecky, Biology Department, University of Victoria, P.O. Box 3020, Victoria, BC V8W 3N5

In British Columbia over the past 87 years, there have been 14 outbreaks of western hemlock looper, *Lambdina fiscellaria lugubrosa* (Hulst). During the last outbreak alone (1990-1995), over 63 000 ha were killed and another 272 000 ha of trees defoliated to

some extent by the looper. A fine-scaled hazard rating system is being developed to assess areas susceptible to defoliation based upon forest stand characteristics and other biophysical attributes. As an essential component in the integrated pest management of this pest, it is expected that this system will aid forestry managers in planning and controlling for defoliation events.

Productivity of *Pissodes strobi* Peck. (Coleoptera: Curculionidae) at three genetic resistance levels of *Picea sitchensis* (Bong). Carr.

Paula Cabrera, Department of Biological Sciences, 8888 University Drive Simon Fraser University, Burnaby, B.C. V5A 1S6

A trial with three genetic resistance levels of Sitka spruce (*Picea sitchensis*) against *P. strobi* was assessed for egg plugs and adult emergence weevils, their sex, and weight, in the summer of 2000. Advances of this study will be discussed.

Body temperature and temperature preferences of two species of tent caterpillar: Implications for caterpillar, nuclear polyhedrosis virus interactions

Leonardo Frid and Judith H. Myers, Zoology Department, University of British Columbia, 6270 University Blvd. V6T 1Z4

We examined the influence of irradiance, ambient temperature, group size and developmental stage on the body temperature of Western Tent Caterpillars (*Malacosoma californicum pluviale*), and Forest Tent Caterpillars (*Malacosoma disstria*). Temperature preferences of healthy and infected caterpillars were measured in a laboratory thermal gradient. Results are discussed in the context of caterpillar virus interactions.

Effect of ant-aphid populations in protecting young Interior Spruce (*Picea glauca*X*engelmannii*) from attack by the White Pine Weevil (*Pissodes strobi*)

Robert J. Higgins, Biology, University College of the Cariboo, Suite 303-383 Oliver Street, Williams Lake, BC V2G 1M4

Young spruce trees were examined to determine if the presence of ant-aphid populations provide protection against attack by the White Pine Weevil. Trees lacking ant-aphid populations were attacked 8.9% of the time. Trees hosting *Formica aserva* ant tenders were attacked at a statistically similar frequency. However, trees hosting *Camponotus herculeanus* ant tenders were attacked at rates below 4%.

Non-indigenous Bark-and Wood-borers in British Columbia: Detection, Distribution and Diversity

Leland M. Humble, Natural Resources Canada, Canadian Forest Service, 506 West Burnside Road , Victoria, BC V8Z 1M5

Since 1995, five non-indigenous species of Scolytidae and one species of Cerambycidae have been discovered to be established in forest habitats of southern Vancouver Island and the lower mainland region of British Columbia. Two species originate from north temperate Asia, three originate from Europe and one is of eastern North American origin. Their distribution across southwestern British Columbia as well as their diversity and abundance across a transect from the mouth of the Fraser River to Ruby Creek near Hope are presented.

Working towards classical biological control of the cherry bark tortrix

Wade Jenner, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6

Since its recent introduction into North America, *Enarmonia formosana* (Scopoli) has established itself as a major pest among Rosaceous trees. While the nursery industry is at risk, Canada, the United States, and CAB International Bioscience are collaborating to investigate the role of parasitoids regulating European populations of this tortricid moth.

Riparian ecosystems and the ecology of carabid beetles: a closer look at the population dynamics and movements of *Scaphinotus angusticollis* (O. Coleoptera, F. Carabidae)

Suzie Lavallee, Dept. of Forest Sciences, Faculty of Forestry, University of British Columbia

Despite its widespread occurrence and abundance in BC's forests, very little is known about the ecology of *Scaphinotus angusticollis*. Traditionally known as a forest-dwelling beetle, *S. angusticollis* populations in BC face some radical changes to their preferred habitat with current logging practices. One type of forest habitat that receives protection under the current Forest Practices Code lies in the riparian zones surrounding creeks and streams. This study will examine how *S. angusticollis* populations fare in these remnants, using capture/recapture methodology to evaluate individual movements and estimate population dynamics.

Bioactivity of Crude Extracts of *Annona* spp. (Annonaceae) Against Lepidopteran Larvae

J.A. Leatemia and M.B. Isman, Faculty of Agricultural Sciences, University of British Columbia, Vancouver, BC V6T 1Z4.

Crude ethanolic seed extracts of *Annona muricata* and *A. squamosa* (Annonaceae), collected from different locations and years in Mollucas, Indonesia, were screened for larval growth inhibiting effect on the polyphagous lepidopteran *Spodoptera litura* (Noctuidae). Extracts of *A. squamosa* are significantly (~20 X) more active than *A. muricata*. *A. squamosa* collected from Namlea yielded the most inhibitory extracts, but there is variation (5-fold) within 3 different years of collection. Extracts of *A. squamosa*, collected from Namlea, inhibited larval growth in a dose-dependent manner, with a dietary EC₅₀ (effective concentration to inhibit growth by 50% relative to control) of 192 ppm. Effects of crude aqueous extracts of *A. squamosa*, collected from Namlea were then tested on diamondback moth, *Plutella xylostella*(L) (Yponomeutidae) and cabbage looper, *Trichoplusia ni* (Hübner) (Noct uidae). A drench assay using neonate *P. xylostella* and *T. ni* resulted in LC₅₀ of 1 % and 9 %(w/v) respectively. LC₅₀ values for 3rd and 4th instars larvae diamondback moth were 4.29% and 8.90% (w/v) respectively based on a leaf dip bioassay. The extracts also deterred feeding by larvae of *P.xylosttella*. *A. squamosa* is a good candidate for the development of botanical insecticide for local use in Indonesia.

Attack dynamics of *Dryocoetes confusus* in interior forests vs. edge forests.

Lorraine Maclauchlan, Ministry of Forest, 515 Columbia Street, Kamloops, B.C. V2C 2T7

Attack dynamics of the western balsam bark beetle, *Dryocoetes confusus*, in natural stands and stand edges (newly created and old) was compared. Interior stands contained significantly more sub-alpine fir per hectare than stand edges. Stands near older cutblocks had a significantly lower ratio of dead to total trees than stands near more recent cutblocks. Both harvesting and incidence of *D. confusus* influences stand density.

Why does cornicle length vary across aphid taxa?

Edward B. Mondor, Centre for Environmental Biology, Simon Fraser University, Burnaby, BC V5A 1S6

Cornicle length varies across aphid taxa. Employing phylogenetic analyses, we correlated morphological and ecological traits with cornicle length in aphids. In all analyses, degree of individual protection and degree of colony aggregation were significant. Thus, cornicles may have evolved for both individual defense and through inclusive fitness.

The effect of (water) Plant feeding on the foraging behavior and predation rate of *Dicyphus hesperus* (Hemiptera: Miridae)

Alice Sinia, Simon Fraser University, Department of Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6

The degree of forage behavior and predation as a function of plant feeding was determined using omnivores *Dicyphus hesperus*. I test the hypothesis that the amount of plant feeding is inversely or directly proportional to the amount of prey feeding using results from the experiment.

Feeding effects of *Leptoglossus occidentalis* (Hemiptera: Coreiidae) on 1st-year pine conelets

Ward B. Strong, Sarah Bates, Seed Pest Management, BC Ministry Forests, 3401 Reservoir Road, Vernon, BC V1B 2C7

Lodgepole pine (*Pinus contorta latifolia*) and white pine (*Pinus monticola*) seed orchards in British Columbia are subject to depredation by the giant conifer seedbug, *Leptoglossus occidentalis* (Hemiptera: Coreiidae). Bugs feed on seeds within maturing, 2nd year cones, but effects on immature, 1st-year conelets were unknown. We found that nymphs were unable to survive on 1st-year lodgepole pine conelets, and that adults enclosed over 1st-year lodgepole conelets did not affect conelet abortion rate or seedset of mature cones. On white pine, adults did not feed on conelets and had no effect on conelet survival or subsequent seedset. Nymphs caused up to 71% conelet abortion, and surviving cones had ca. 50% reduction in seedset compared to unfed-on controls.

Patterns of soldier allocation in the aphid *Pemphigus spyrothecae*

Jabus G.A. Tyerman, Behavioural Ecology Research Group, Dept. Biological Sciences, Simon Fraser University, Burnaby, BC V5A 1S6

Pemphigus spyrothecae is a social aphid that inhabits galls on Lombardy poplar trees. The species has a distinct soldier caste which is employed to deter predators. Here, I report on the seasonal patterns of clonal growth and soldier investment in these aphids. Additionally, I discuss how gall position may affect these patterns.

ENTOMOLOGICAL SOCIETY OF BRITISH COLUMBIA

Fall 2000 Business Meeting
Pacific Forestry Centre
Victoria, BC
20 October 2000 3:25 pm – 4:05 pm

SUMMARY OF ACTION ITEMS

Continued Web Site Improvements	Ward Strong <i>et al.</i>
Education Grants competition	Strong

1) Call to Order (Neville Winchester)

Meeting called to order at 3:25 pm.

2) Approval of Agenda (Winchester)

Approval of agenda moved by Richard Ring, seconded by Karen Needham, **carried**.

3) Approval of Minutes from Fall 1999 Business Meeting (Winchester)

Approval of Fall 1999 Business Meeting Minutes (circulated to Membership earlier in *Boreus* and posted on ESBC web site) moved by Dave Blades, seconded by Rob Cannings, **carried**.

4) Graduate Student Scholarship Awards (Winchester)

Successful Scholarship applicants this year were Kathy Bleiker (MSc, UNBC) and Ed Mondor (PhD, SFU). To thunderous applause, Winchester presented Bleiker and Mondor with their well-earned awards.

5) Business Arising from Minutes (Winchester)

Robb Bennett reported that ESBC funds had been transferred to a term deposit, membership list had been published in *Boreus* with approval of individual members, web site development is proceeding apace, and elections had been run satisfactorily.

Approval moved by Bernie Roitberg, seconded by Hugh Barclay, **carried**.

6) President's Report (Winchester)

Winchester read the following report:

"My term as President for the Society this past year has been engaging – to say the least! I fondly remember Murray Isman telling me, and I quote, "The president generally has one of the easiest roles to play on the Executive – organizing the spring and fall executive meetings, and some infrequent correspondence with external organizations." Murray was correct to some extent, although organizing the AGM presented several challenges – 120 emails to deal with, putting together an agenda of stimulating talks, and calming the fears of paper presenters – all in a week's work.

"Based on a single response to my 'get involved' letter in *Boreus* asking for suggestions to direct the Executive, I have to conclude that the membership is delighted with the efforts of your elected members. Indeed the Society runs smoothly, and in particular, all members owe a debt of gratitude to our Secretary-Treasurer, Robb Bennett. Thank you Robb for correcting my numerous typos, supplying email addresses, and gently prompting various members to complete their action items. In addition to keeping the Society in good fiscal health, Robb also manages to supply some much needed satire at the appropriate time. Although I won't single out other members of our Executive, I extend my sincere thanks for your efforts in maintaining the quality and good standing of our Society.

"I was pleased with the voting response over those 'hotly' contested positions for a place on the 2001 executive and would like to thank Rory McIntosh for getting such a quality field of candidates together. For all of those that stood for election, a special thanks, the Society certainly benefits from your participation.

"I would like to welcome the new Directors, Rene Alfaro, Keith Deglow and Tracy Hueppelsheuser to the Society's Executive and our President Elect, Lorraine Maclauchlan. Finally, I wish our incoming President, Rob Cannings, the very best for yet another term at the 'helm'. The Society will be in good hands for the foreseeable future.

"The annual meeting does take a considerable effort to organize and again the executive participated in all logistical aspects needed to hold a successful event. I think you will agree that the range of talks is exciting and that graduate student involvement will make this day of talks, a memorable one. I extend thanks to Hugh Barclay for looking after the details needed to host this meeting at the Pacific Forestry Centre and to Ward Strong for keeping the website updated on the ever changing agenda.

"To conclude, it has been a pleasure serving the Society this year and I look forward to continued involvement with this group over the next several years."

In addition, Winchester put in a plug for a new course "Canopy arthropods and conservation" to be taught this winter at Uvic.

Approval of President's report moved by Dave Raworth, seconded by Barclay, **carried**.

7) Secretary-Treasurer's Report (Robb Bennett)

Currently, ESBC is stable with 167 Members (including 7 Life Members) plus 8 new members signed up at AGM registration desk, 57 Subscribers, and 85 Exchange Partners on the mailing lists.

Bennett outlined the ESBC year-end financial statement (see attached). ESBC had not yet been "officially" billed for 1999 Journal printing at year-end. \$6,609.00 will be paid shortly and will appear as a separate expenditure item in the 2001 financial statement. One invoice (\$742.00) for 1999 page charges remains outstanding. Finances are in reasonably good shape with income from memberships, subscriptions, and page charges continuing to balance Journal expenses.

Acceptance of Secretary-Treasurer's Report moved by Ring, seconded by Lorraine Maclauchlan, **carried**.

8) Journal Editor's Report (Dave Raworth)

Raworth read the following report:

"The December 1999 issue of the Journal of the Entomological Society of British Columbia (Volume 96) has been printed and distributed. It contains 14 peer-reviewed, scientific articles. The issue was designed and typeset by David Raworth and David Holden; the illustration on the cover was drawn by Robb Bennett; Maurice Perret and staff, Simon Fraser University Reprographics did the printing; Peter Belton provided the link with Reprographics; Robb Bennett and Neville Winchester handled the distribution; and Robb Bennett managed the finances.

"The next issue of the journal is well underway. Eleven articles were received before the 1 September time-line, and five more were received in September. This year, I will be scanning manuscript figures so that Dave Holden can incorporate them directly into the text. The ESBC has purchased a HP1100 Printer (600dpi, \$670) which will produce camera-ready copy for the figures as well as the text. Photographs will still be handled by the print-shop. These changes will help in maintaining a balanced budget for the Journal, and reduce the potential for error in figure placement.

"Plans have been drafted for Volume 98, to be published in the Centennial year of the Society. The Executive has agreed in principle that \$3000 may be allocated to support the publication of papers that review, discuss, reminisce, and reflect on entomology in BC during the last 50 years. Seven papers in Volume 48 (1951) of the Journal reviewed the first 50 years. The plan thus far calls for 14 papers, each six pages in length, from invited authors. The list of potential authors and general subjects is in preparation. Suggestions for this initiative are welcome, but they must come very soon so that authors have sufficient time to prepare a contribution.

"Many thanks to the authors who contributed to Volume 96. Thanks also to the anonymous reviewers, whose thoughtful comments contributed to maintaining the high quality of the Journal. The Society owes a great deal to the members of the Editorial Committee, who carefully review all the manuscripts; to Dave Holden for his care and attention in typesetting; to Robb Bennett and Neville Winchester who handled the distribution of the Journal; and to Robb Bennett for managing the financial aspects of publishing.

"Please submit articles for publication in the December 2001 issue, before September 2001 - the earlier the better."

Approval of Journal Editor's report moved by Roitberg, seconded by Ward Strong, **carried**.

Discussion – In response to expressed concern over The Canadian Entomologist's apparent disinterest in publishing faunistics papers, Raworth affirmed that JESBC is an appropriate place for such items provided they have some BC relevance.

9) Boreus Editor's Report (Phil Jones)

Jones indicated that *Boreus* is proceeding well and there are no issues needing discussion.

Approval of *Boreus* Editor's report moved by Raworth, seconded by Ring, **carried**.

10) Web Editor's Report (Ward Strong)

Strong discussed the following report, circulated earlier by e-mail.

"The ESBC Website has been revamped according to an action item in the Spring ESBC Executive Meeting minutes and discussion arising from the item. The item in the minutes was: "Bennett was directed to work with Strong to ensure that information on contacting and joining ESBC be prominently displayed on the website. Additionally, information on ESBC Executive structure and meetings need to be developed and/or given more prominence."

"The following changes have been made:

On the main page, a new link called "Joining the ESBC" has been added. It points to the section of the "About the ESBC" page regarding joining procedures.

On the main page, a new link called "Executive and Constitution" has been added. It points to a new page listing the executive, and the constitution will be added later. The executive listings have been removed from the "About the ESBC" page.

On the main page, a new link called "Meetings Past and Future" has been added. It has information about upcoming meetings of the ESBC, and minutes of past meetings.

"Links to Sites of Entomological Interest" page is continually being updated. Please send to me sites which you think should be added to the list.

"The following changes have yet to be made:

"About the ESBC" page: Mission Statement, history of the ESBC, quick blurb on library holdings.

"Executive and Constitution" page: the constitution, bylaws, serving periods and election procedures.

"Meetings past and future" page: Listings of other meetings of relevance in Canada (ESC and other provincial societies).

"These changes can be made as soon as we have the following: a Mission Statement, a blurb on the history of the ESBC, short listing of library holdings, the Constitution, and election procedures. I would be happy to have these issues resolved at the current Executive Meeting (we need knowledgeable volunteers!)."

Discussion – In future, web site may have its own domain name e.g. "esbc.org" but there is general satisfaction currently with functioning of web site at current domain.

Approval of Web Editor's report moved by Maclauchlan, seconded by Barclay, **carried**.

11) Other Business

• Executive Elections Report (Winchester)

An excellent field of candidates was assembled by Rory MacIntosh. New Directors are Rene Alfaro, Keith Deglow, and Tracy Huepplesheuser. Lorraine Maclauchlan is President–Elect. Rob Cannings is incoming President (in place of Rory MacIntosh). Executive has accepted election results and ballots will be destroyed.

• Graduate Student Scholarships (Winchester)

Only five scholarship applications were received this year. It would be nice to see more student interest in this program.

• Education Grants (Strong)

Entomology Education Grants for elementary schools have been offered by ESBC every 3 years over the last while. Strong will organize a new competition for 2001 fiscal year. Competition will be advertised on the web site.

• Student Paper Presentation Awards (Winchester/Maclauchlan)

Accompanied by yet more thunderous applause and other joyful noise, the Harold Madsen Award (sponsored by Phero Tech) for best PhD paper presentation and the James Grant Award (sponsored by the North Okanagan Naturalists) were given to Ed Mondor (SFU) and Leonardo Frid (UBC) respectively.

- **Installation of New President (Winchester)**

Thus ended the short reign of Neville Winchester. At this point he passed the yoke of leadership on to his successor, Rob Cannings.

12) Adjournment

There being no new business, Cannings called for a motion for adjournment. So moved by Winchester, seconded by Raworth, **carried** at 4:05 pm.

Minutes submitted by:

Robb Bennett, Secretary

26 October 2000

Entomological Society of British Columbia

2000 Year-End Financial Statement (1/x/1999-30/ix/2000)

Forwarded

1. Bank balance forwarded on 30 September 1999	12,259.23
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Receipts

1. Dues		3,996.03
Memberships (incl. 98.20 US exchange)	2,703.20	
Subscriptions (incl. 104.24 US exchange)	1,292.83	
2. Publication		3960.68
Page/reprint charges (incl. 222.54 US exchange)	3,822.08	
Royalties	39.37	
Back issues (incl. 32.23 US exchange)	99.23	
3. Other income		984.71
Interest	4.71	
N Okan. Field Naturalists (J. Grant Student Award -- 1998)	100.00	
1999 AGM registration	880.00	

4. Total Receipts	8,941.42
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Expenditures

1. Publication		1,465.86
Journal printing	?..?	
Editor's expenses	500.00	
1999 Journal typesetting	773.26	
Reprint stapling	192.60	
2. Other expenditures		9,093.99
Student awards (Pureswaran (Grant), Allison (Madsen))	200.00	
Scholarships (Pureswaran, Danyk)	1,000.00	
Society registration (2000)	25.00	
Society address change	15.00	
Term Deposit (Island Savings CU @ 6.25% for 5 years)	5,000.00	
1999 AGM expenses	1,122.53	
Library contract (Marlene Mitchell)	1,000.00	
Printer	671.46	
Service charges	60.00	
3. Total Expenditures		10,559.85

Balance

12,259.23 + 8,941.42 - 10,559.85	10,640.80
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Other Assets – Island Savings Credit Union

1. Cash		18.02
Interest	0.71	
"Patronage Bonus"	17.31	

2. Membership Equity Shares		5.00
3. Term Deposits		27,038.10
	20,000.00	
1203595-1 @ 5% (start 16/i/98, matures 16/i/03)	1,038.10	
1203595-2 @ 3.8% (start 30/iv/99, matures 30/iv/02)		
(1,000.00 balance forward + 38.10 interest)	6,000.00	
1203595-3 @ 6.25% (start 17/i/00, matures 17/i/05)		
(1,000.00 interest from #1 + 5,000.00 from general account)		
4. Total Other Assets		27,061.12

Bank Balance on 30 September 2000 \$10,640.80

Other Assets on 30 September 2000 \$27,061.12

Statement prepared 13 October 2000

Robb Bennett, ESBC Secretary/Treasurer