

Distribution of the genus *Paraleuctra* (Plecoptera: Leuctridae) in Canada

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ABSTRACT

The distribution of the genus *Paraleuctra* (Hanson, 1941) in Canada, based on the examination of specimens in the Canadian National Collection of Insects, Arachnids and Nematodes, the University of Guelph Barcode of Life Data System website collection, and the Royal British Columbia Museum is presented. Canadian specimen records from the Illinois Natural History Survey (INHS; Champaign, Illinois, United States of America) website and records presented in previously published research have also been added to the distribution. The female of the species *Paraleuctra alta* Baumann and Stark, 2009 is presumptively identified for the first time through association with males collected at the same time and location. New provincial and territorial records are provided for *Paraleuctra projecta* (Frison, 1937) from Alberta and the Yukon, Canada. A new state record is provided for *Paraleuctra forcipata* (Frison, 1937) from Wyoming, United States of America. New state records are provided from New Hampshire and Vermont, United States of America, for *Paraleuctra sara* (Claassen, 1937).

Keywords: *Paraleuctra*, Leuctridae, Plecoptera, Canada

INTRODUCTION

Stark and Kyzar's (2001) revision of the Nearctic *Paraleuctra* recognised seven species in three species groups and provided keys for the nine Nearctic leuctrid genera, the species of *Pomoleuctra* Stark and Kyzar, 2001, and the Nearctic species of *Paraleuctra*. The three species groups of *Paraleuctra* are the *P. occidentalis* group, which includes *P. jewetti* Nebeker and Gaufin, 1966, *P. occidentalis* (Banks, 1907), and *P. projecta* (Frison, 1942) in North America, the *P. sara* group, which includes *P. forcipata* (Frison, 1937), *P. sara* (Claassen, 1937), and *P. vershina* Gaufin and Ricker, 1974 in North America, and the *Paraleuctra divisa* group, which includes only *P. divisa* (Hitchcock, 1958). Male specimens of the *P. occidentalis* group have the caudal and lateral aspects of the sub-anal probe swollen, apically bifurcated cerci, and bilobed apex of sternum 9. Females of the *P. occidentalis* group have a sub-genital plate that is shallowly emarginate with the emargination not dentate and a distinct medial joining of the seventh and eighth sternal segments (Fig. 2A–D). Male specimens of the *P. sara* group have a slender sub-anal probe, deeply bifurcated cerci, and truncated apex of sternum 9. In females of the *P. sara* group, the sub-genital plate is distinctly bilobed, the emargination is dentate, and sternal segments 7 and 8 are not joined (Fig. 2E; Stark and Kyzar 2001). Male specimens of *P. divisa* have a short, thick

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sub-anal probe, simple unmodified cerci, and slightly emarginated apex of sternum 9. In females of *P. divisa*, the sub-genital plate is narrow and tongue shaped (Hitchcock 1958; Stark and Kyzar 2001). Baumann and Stark (2009) described a new species, *P. alta*, based on a male specimen from Alberta, Canada and assigned it to the *P. occidentalis* group based on sub-anal probe and sternum 9 morphology.

In Stark and Kyzar (2001), no specific distribution records are listed for *Paraleuctra* in western Canada (although they report *P. occidentalis*, *P. forcipata*, and *P. vershina* from Alaska to California, United States of America). Only one record (Labrador City, Newfoundland, Canada) is given for the eastern species *P. sara* (though they report *P. sara* from the Canadian Maritimes and Ontario). Most of the specimens in the Canadian National Collection of Insects, Arachnids and Nematodes (CNC; Ottawa, Ontario, Canada) were examined before the descriptions of *P. vershina* and *P. alta*. No Canadian specimens were included in the distribution data given for *P. vershina* when it was described (Stark and Kyzar 2001).

Ricker (1939, 1943), Ricker and Scudder (1975), Baumann *et al.* (1977), Stewart and Ricker (1997), Stewart and Oswood (2006), and Baumann and Stark (2009, 2010) have reported distribution records for *Paraleuctra* in western Canada. None of the specimens in the CNC, University of Guelph (UOG; Guelph, Ontario, Canada) Barcode of Life Data System (BOLD) collection, Royal British Columbia Museum collection (RBCM; Victoria, British Columbia, Canada), or the Illinois Natural History Survey (INHS; Champaign, Illinois, United States of America) were included in Stewart and Oswood (2006). Dossall and Lehmkuhl (1979) provided distribution records for *P. vershina* in Alberta. Ricker *et al.* (1968) provide distribution records for *P. sara* in Québec, Canada. Harper and Ricker (1994) provide county distribution records for *P. sara* in Ontario. Kondratieff and Baumann (1994) reported *P. sara* from New Brunswick and Nova Scotia, Canada, and Dobrin and Giberson (2003) reported *P. sara* from Prince Edward Island, Canada. Ogden *et al.* (2018) also report *P. sara* for Cape Breton, Nova Scotia's boreal highlands.

This study looks at the distribution of *Paraleuctra* in Canada based on the examination of specimens in the CNC collection, in the UOG BOLD collection, and in the RBCM collection. Other *Paraleuctra* records for Canada were obtained from the INHS website and from previously published records. Also included in this study is a first photograph of the sternites of the presumptive female of *P. alta*. New provincial, territorial, and state records are indicated in the species distributions in **bold** script.

MATERIALS AND METHODS

The systematic arrangement and terminology used follows Hanson (1941) and Stark and Kyzar (2001). Abbreviations of Canadian provinces and American states are from the Canadian Endangered Species Conservation Council (2016) and Stark *et al.* (1986).

Previously identified specimens from the CNC, UOG, and RBCM were examined to verify their species identification and to update any name changes due to taxonomic changes, using the taxonomic keys of Stark and Kyzar (2001). The taxonomic key and diagrams provided in Stewart and Oswood (2006) omit

many of the diagnostic features needed to separate female specimens into species groups, and researchers should use the more diagnostic key of Stark and Kyzar (2001). A large collection of unidentified Plecoptera from western and eastern Canada in the CNC and RBCM were examined for the presence of *Paraleuctra* specimens. All specimens were examined using a Leica MZ6 stereomicroscope (Leica, Wetzlar, Germany), and any *Paraleuctra* specimens present were identified to species or species group and deposited in the CNC or returned to the UOG and RBCM. Photos of selected specimens were taken using a Tucsen USB 2.0 H Series camera (Tucsen, Gaishan Town, Fuzhou, Fujian, Peoples' Republic of China) attached to a Leica MZ6 stereomicroscope using Windows Live Photo Gallery software (Microsoft, Redmond, Washington, United States of America).

Distribution maps were generated using decimal GPS coordinates and plotted using an Excel Mapcite software program (<https://www.mapcite.com>). *Paraleuctra occidentalis* group distribution maps are based on the examination of male specimens only or of female and nymphal specimens that were linked by DNA to male specimens. Detailed collection data is provided for all specimens examined. Specimen identification numbers are supplied for all examined specimens from the CNC, UOG, and RBCM. Detailed collection data and photographs for specimens examined are also available at the following websites: the CNC online database (<http://www.cnc-ottawa.ca/taxonomy/SpecSearchD15.php>) and the University of Guelph as part of the BOLD website (UOG) database, (http://v4.boldsystems.org/index.php/Public_BINSearch?searchtype=records; Ratnasingham and Hebert 2007). Other specimens are included from the INHS Insect Collection database (<http://inhsinsectcollection.speciesfile.org/InsectCollection.aspx>) and from data provided in published research. The distribution maps include only literature records where specific collection data or a map was provided. Only Canadian literature records are included in the species synonyms listed here. A Microsoft Excel file of all specimens examined in this study is available by contacting the author.

RESULTS AND DISCUSSION

The *P. occidentalis* group

Paraleuctra alta Bauman and Stark, Alberta needfly

<http://plecoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1155145>

Paraleuctra alta, Baumann and Stark (2009): 30. Holotype ♂, Alberta, 75 km N of Hinton, Berland River, Malaise trap (CNC659641).

Distribution. CAN: AB (DeWalt *et al.* 2023).

Additional records. Alberta: Spring Creek near Cascade River, Banff National Park, 51.19195, -115.48915, 30.v.1958, 2 ♂ (W.E. Ricker; CNC1036654); tributary entering Bow Lake near lodge, Banff National Park, 51.682603, -116.465867, 30.v.1958, 27 ♂ and ♀ (W.E. Ricker; CNC1036696); tributary of Bow River, 5 mi. below Bow Lake, 51.620517, -116.322136, 31.v.1958, 2 ♂, 3 ♀ (W.E. Ricker; CNC1036684).

Canadian distribution. See Fig. 1

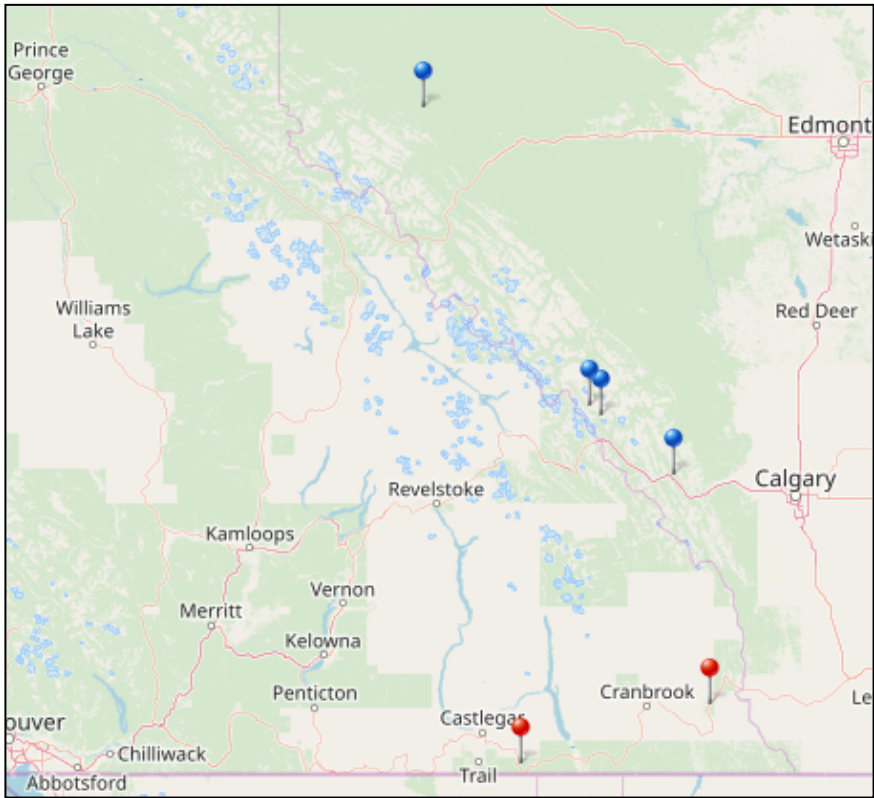


Figure 1. Canadian distribution of *P. alta*: blue pins – CNC and Baumann and Stark (2009); and *P. jewetti*: red pins – CNC and Baumann and Stark (2010).

Female. The females of the presumptive *P. alta* were collected in conjunction with male specimens in the Bow Lake area of Banff National Park. The females of these specimens are characteristic of the other females in the *P. occidentalis* species group in having sternum 8 partially fused to sternum 7 and a shallow emarginated, undentated sub-genital plate (Fig. 2A). Other *Paraleuctra* species that have been collected in the area include *P. occidentalis* and *P. vershina*, but these were collected only near the main body of the Bow River and not from the surrounding small tributaries. *Paraleuctra vershina* females can be distinguished from the presumptive *P. alta* in that they lack the attachment of sternum 8 to sternum 7 and have a distinctly bilobed, dentated sub-genital plate (Fig. 2E). Females of the presumptive *P. alta* specimens and females of *P. occidentalis* (Fig. 2A and C) specimens have a very similar sub-genital plate morphology. In Stark and Kyzar’s (2001) key, the female of presumptive *P. alta* is placed at couplet 2 but cannot be resolved by that key as *P. alta*, *P. jewetti*, *P. occidentalis*, nor *P. projecta*. Female specimens of *P. occidentalis* group currently cannot be reliably identified beyond species group based solely on morphological features.

Discussion. All the specimens in the CNC were originally identified as *Leuctra occidentalis bradleyi* by W.E. Ricker in 1958 but had been subsequently removed from the other *Paraleuctra occidentalis* specimens and placed under the label *Paraleuctra jewetti* Nebeker and Gaufin, 1966 by an unidentified researcher.

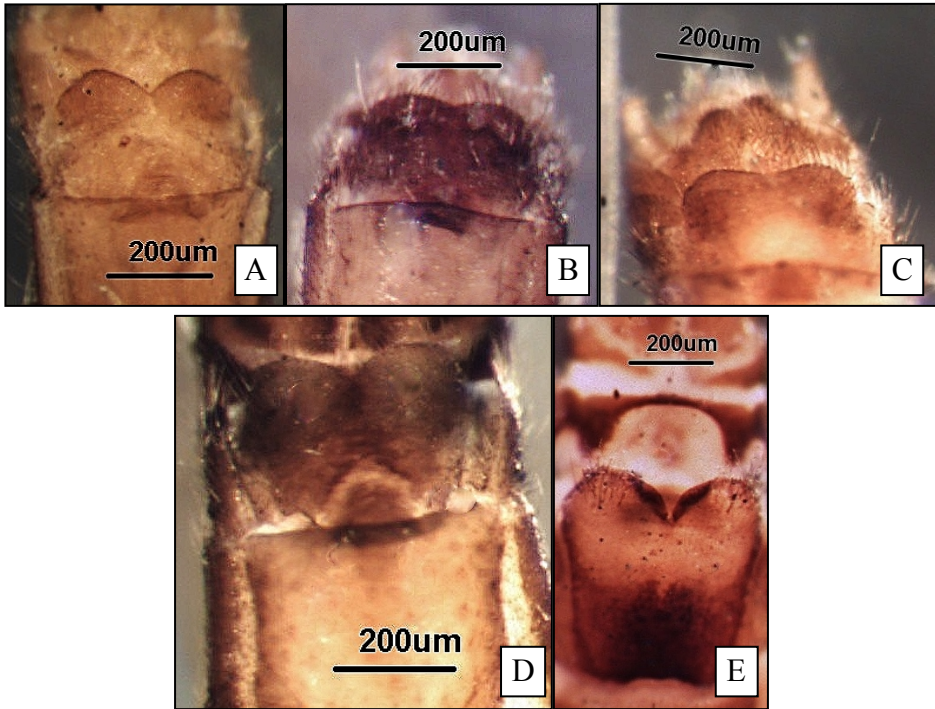


Figure 2. Ventral view of sub-genital plate females of *P. occidentalis* group showing connection between sternum 7 and 8: A, *P. alta*; B, *P. jewetti* (B.C.); C, *P. occidentalis* (Cameron Creek, Vancouver Island, B.C.); D, *P. projecta* (Waterton Lakes, Alberta); and E, ventral view of sub-genital plate female *P. vershina* (McIntyre Lake, B.C.) showing the lack of connection between sterna 7 and 8 and dentate sub-genital plate.

***Paraleuctra jewetti* Nebeker and Gaufin, Slender needlefly**

<http://plecoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1155138>

Paraleuctra jewetti, Nebeker and Gaufin (1966): 255. Holotype ♂, Big Cottonwood Creek, Salt Lake Co., Utah, United States of America (USNM; United States National Museum).

Paraleuctra jewetti, Baumann and Stark (2010), 6: 296. Purcell Range, BC

Distribution. CAN: BC; USA: CO, NM, MT, UT (DeWalt *et al.* 2023).

Additional record. British Columbia: Fernie, 49.504046, -115.070837, 17.v.1965, 1 ♂ (F. Schmid; CNC1603328).

Canadian distribution. See Fig. 1

Discussion. This species was previously reported in Canada from the Purcell Range, BC (Baumann and Stark 2010). The female specimens in Bin BOLD: ACA8184 may be this species, but male specimens needed to confirm this identification have not been assigned to this bin.

***Paraleuctra occidentalis* Banks, Western needelfly**

<http://plecoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1155134>

Leuctra occidentalis, Banks (1907): 329 Lectotype ♀, Laggan, (Lake Louise) Alberta (Museum Comparative Zoology; Harvard University, Cambridge Massachusetts, United States of America), designation by Ricker (1952): 172.

Leuctra bradleyi Claassen (1923): 257. Syn. Ricker (1954): 38.

Leuctra bradleyi, Ricker (1939): 22

Leuctra (Paraleuctra) bradleyi, Ricker (1943): 76

Paraleuctra dusha, Ricker (1965): 495. Syn. Stark and Kyzar (2001): 127 (CNC659642)

Paraleuctra occidentalis, Ricker and Scudder (1975), 8: 337

Paraleuctra occidentalis, Baumann *et al.* (1977), 31: 98

Paraleuctra occidentalis, Stewart and Ricker (1997), p. 209

Paraleuctra occidentalis, Stewart and Oswood (2006), p. 59

Paraleuctra occidentalis, Ratnasingham and Hebert (2007), Bin BOLD: ACG5665

Paraleuctra occidentalis, Baumann and Stark (2010), 6: 296

Distribution. CAN: AB, BC, YK; USA: AK, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY (DeWalt *et al.* 2023).

Canadian distribution. See Fig. 3

Material examined. CAN: AB, BC, YK. USA: CA, MT, OR, WA

Alberta: Akamina Road, Waterton Lakes, 49.045957, -114.025411, 17.vi.1980, 1 ♂, 1 ♀ (H.I. Teskey; CNC898008); Miette Hot Springs, Jasper National Park, 53.124, -117.775, 14.vi.2012, 2 ♀ (BIOBus 2012; UOG SSJAA021-13, SSJAA1394-13), 21.vii.2012, 1 ♀ (BIOBus 2012; UOG SSJAD4083-13).

British Columbia: Barkerville, 53.067589, -121.513161, 29.vi.1949, 1 ♂ (H.E. Buckell; CNC659642); Blazed Creek, Fairy Forest Rest Stop, 49.135128, -116.795153, 20.v.2022, 1 ♂ (D.K. Burton; CNC1893411); Cameron Creek, Vancouver Island, 49.203538, -124.610033, 8.iv.1955, 12 ♂ and ♀ (W.E. Ricker; CNC1036651), 15.iv.1956, 5 ♂ and ♀ (W.E. Ricker; CNC898003); Capilano River, Vancouver, 49.342826, -123.114753, 18.iv.1938, 10 ♂ and ♀ (W.E. Ricker; CNC1036648), 18.iv.1957, 20 ♂ and ♀ (W.E. Ricker; CNC1036635); Carnation Creek, Sarita, Vancouver Island, 48.896022, -124.999767, 1 ♂, 1 ♀ (W.E. Ricker; CNC1036798); Carpenter Creek, New Denver, 49.989035, -117.372177, 2 ♂, 1 ♀ (D.K. Burton; CNC1893417); Cultus Lake, 49.069682, -121.973701, 24.v.1965, 1 ♂ (F. Schmid; CNC1036616); Fernie, 49.504171, -115.075688, 17.v.1965, 3 ♂ (F. Schmid; CNC1036608, CNC1036621, CNC11784110); Dog Creek, Bulkley–Nechako, 54.1476, -124.474, 5 nymphs (UOG BMAPA412-15, BMAPA413-15, BMAPA158-14, BMAPA215-14, BMAPA270-14); Fraser River, Rosedale Bridge, Agassiz, 49.207998, -121.776065, 24.iv.1957, 2 ♂ (W.E. Ricker; CNC1036640), 1.v.1957, 1 ♂ (W.E. Ricker; CNC897888); Gun Creek, 50.894559, -122.774194, 25.vi.2022, 2 ♂, 1 ♀ (T. VanLoon; CNC1968206); Harrison Mills, 49.247177, -121.921184, 17.iv.1957, 1 ♂ (W.E. Ricker; CNC1036693); Haslam Creek, Vancouver Island, 49.035913, -123.916682, 16.iii–5.iv.1952, 10 ♂ and ♀ (W.E. Ricker; CNC1036652); Hatchery Creek, Cultus Lake, 49.081014, -121.994766, 31.iii.1937, 6 ♂ and ♀ (W.E. Ricker; CNC1036688); Nile Creek, Bowser,

Vancouver Island, 49.420157, -124.642977, 5.iv.1950, 1 ♂, 1 ♀ (F. Neave; CNC1036650); Onion Lake, 54.2815, -128.65, 1 nymph (UOG BMAPA106-14); Reservoir Creek, Cultus Lake, 49.074768, -121.9861, 18.v.1935, 6 ♂ and ♀ (W.E. Ricker; CNC1036698), 1.iv.1937, 6 ♂ and ♀ (W.E. Ricker; CNC1036699); Rogers Pass, 51.306, -117517, 12.vi.2014, 1 ♂ (S. Devita; UOG CNGCA250-15); Seymour Creek, 49.352703, -123.014354, 11.iv.1957, 2 ♂ (W.E. Ricker; CNC1603923); Smith Falls Creek, Cultus Lake, 49.063972, -121.964137, 17.iii.1937, 9 ♂ (W.E. Ricker; CNC1036697), 2.v.1937, 1 ♂ (W.E. Ricker; CNC1036694); Summit Lake, mile 392, Alaska Hwy., 58.651821, -124.651963, 29.vi.1959, 1 ♂ (R.E. Leech; CNC1036643); Sweltzer Creek, Cultus Lake, 49.085703, -121.966633, 8.iv.1937, 1 ♂, 1 ♀ (W.E. Ricker; CNC1036667); Terrace, 54.510558, -128.560885, 2.vi.1960, 19 ♂ and ♀ (G.E. Shewell; CNC1036644, CNC1036685); Upper Kitimat Road, 54.2504, -128.278, 1 nymph (UOG BMAPA502-15); Vedder Crossing, 49.097728, -121.964482, 25.iv.1937, 10 ♂ and ♀ (Ricker and Spencer; CNC1036653).

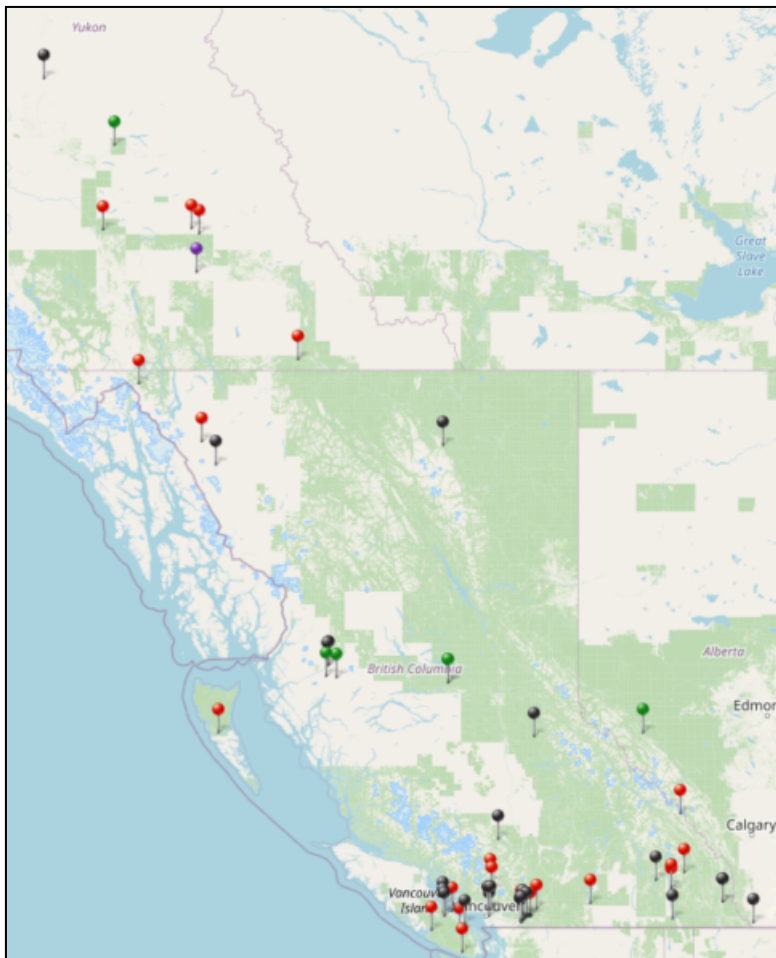


Figure 3. Canadian distribution of *P. occidentalis*: black pins – CNC; green pins – UOG; purple pins – RBCM; red pins – Ricker and Scudder (1975), Stewart and Ricker (1997), Stewart and Oswood (2006), and Baumann and Stark (2010).

Yukon: Mayo, 63.597, -135.895, 8.v.2015, 1 ♂ (M. McGinnis; UOG SMTPM6797-15); North Fork Passing, Ogilvie Mountains, 64.59.0903, -138.305724, 26.vi.1962, 10 ♂ and ♀ (R.E. Leech; CNC1036642); Rose Lake, Pony Creek, 61.59847, -133.0826, 2.vi.2014, 5 ♂ and ♀ (S.G. Cannings; RMBC ENT015-007036).

California: Fredonyer Butte, 40.378609, -120.922632, 27.ii.2022, 2 ♂ (T. Rickman; CNC5183874).

Montana: Hyalite Creek, 45.447750, -110.963072, 17.v.1951, 7 ♂ and ♀ (R. Hays; CNC1036637); Spanish Creek, 45.493943, -111.273595, 6.v.1951, 4 ♂ and ♀ (R. Hays and W. Alvord; CNC1036647); West Gallatin River, 45.893070, -111.450456, 11 ♂ and ♀ (R. Hays and J. Bailey; CNC1036646).

Oregon: Hemlock Butte Pass, 43.126207, -122.185166, 10.vi.1965, 1 ♂ (F. Schmid; CNC1178549); Scappoose Creek, 45.7922007, -122.850544, 23.ii.1948, 10 ♂ and ♀ (S.G. Jewett; CNC1036657).

Washington: Big Creek, Easton, 47.212518, -121.103297, 21.iv.1954, 11 ♂ and ♀ (W.E. Ricker; CNC1036639); Glacier, 38.893247, -121.94555, 24.iv.1957, 15 ♂ and ♀ (W.E. Ricker; CNC1036750), 25.v.1965, 2 ♂ (F. Schmid; CNC1178436, CNC1178617); Glacier View Camp, Lake Wentachee, 47.826296, -120.821682, 19.v.1961, 15 ♂ and ♀ (W.E. Ricker; CNC1036649); Mineral Park, 48.464409, -121.165082, 1.vi.1965, 1 ♂ (F. Schmid; CNC1178626); Rocky Run Creek, Snoqualmie Pass, 47.415380, -121.407090, 7 ♂ and ♀ (W.E. Ricker; CNC1036636).

Discussion. Most of the specimens in the CNC were previously identified as *L. bradleyi* Claassen, *L. occidentalis bradleyi* Claassen, or *P. dusha* Ricker, determined by W.E. Ricker and S.G. Jewett before 1970.

***Paraleuctra projecta* Frison, Rockies needlefly**

<http://plecoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1155136>

Leuctra projecta, Frison (1942): 260. Holotype ♂ and ♀, Wild Basin, Rocky Mountain National Park, Colorado (INHS)

Paraleuctra projecta, Ratnasingham and Hebert (2007), Bin BOLD: ACI7470

Paraleuctra projecta, Baumann and Stark (2010), 6: 296. Purcell Range, BC.

Distribution. CAN: AB, BC, YK; USA: AK, CO, ID, MT, NM, OR, UT, WA (DeWalt *et al.* 2023).

New provincial and territorial records. Alberta: Marmot Creek, 52.78193, -118.076, 29.vi.1977, 1 ♂ (D.R. Oliver; CNC898010); Rowe Tamarack Trail, Waterton Lakes National Park, 49.059, -114.014, 22.vi.2012, 1 ♀ (BIOBUS 2012; UOG SSWLC3726-13). **Yukon:** Airport Spring, 60.724, -135.081, 14.vii.2020, 18 ♂ and ♀ (S.G. Cannings; UOG GMOAN285,288,303-305,308,311-315,318-321,323,329-330,-19), 20.vii.2020, 2 ♀ (S.G. Cannings; UOG GMOZR1198,1218,-21); Crestview Springs, 60.7875, -135.187, 8.vi.2018, 21 ♂ and ♀ (S.G. Cannings; UOG AMCAB001-007,010-017,019-024,-19), 7.vii.2018, 6 ♂ and ♀ (S.G. Cannings; UOG AMCAF001-004,008-009,-19); Wolf Creek, 60.5954, -134.953, 7.vi.2014, 1 ♂ and 1 ♀ (M. Svoboda; UOG GMOQB145-19, GMOQB146-19).

Canadian distribution. See Fig. 4

Other material examined. CAN: BC; USA: CO, OR, WA.

British Columbia: Mt. Arrowsmith, Vancouver Island, 49.224761, -124.597406, 9.vi.1957, 3 ♂ and ♀ (W.E. Ricker; CNC1036692); Roger's Pass, Glacier National Park, 51.306, -117.517, 12.vi.2014, 2 ♂ (S. Devita; UOG CNGCA245,249,-15); Mount Revelstoke National Park, 51.022, -118.207, 25.v.2012, 1 ♀ (G. Walker; UOG CNGLA002-13); Waterton Lakes National Park, 49.026283, -114.080722, 14.v.1965, 1 ♂ (F. Schmid; CNC1036634).

Colorado: Nederland, 39.971593, -105.471488, 5.vi.1954, 1 ♂, 1 ♀ (H.H. Ross; CNC898009).

Oregon: Hemlock Butte Pass, 43.126207, -122.185166, 10.vi.1965, 1 ♂ (F. Schmid; CNC1178589); Tombstone Prairie, 44.396289, -122.139714, 20.vi.1965, 1 ♂ (F. Schmid; CNC1603329).

Washington: Calypso Creek, Glacier National Park, 48.91268, -121.973227, 24.v.1937, 4 ♂ and ♀ (W.E. Ricker; CNC1036656); Skabbage Creek, Glacier National Park, 47.823734, -120.810592, 27.iv.1963, 3 ♂ (W.E. Ricker; CNC1036724).

Discussion. All specimens in the CNC were found in the unidentified Plecoptera specimens of the collection. *Paraleuctra projecta* had previously been reported from the Purcell Range of BC by Baumann and Stark (2010).

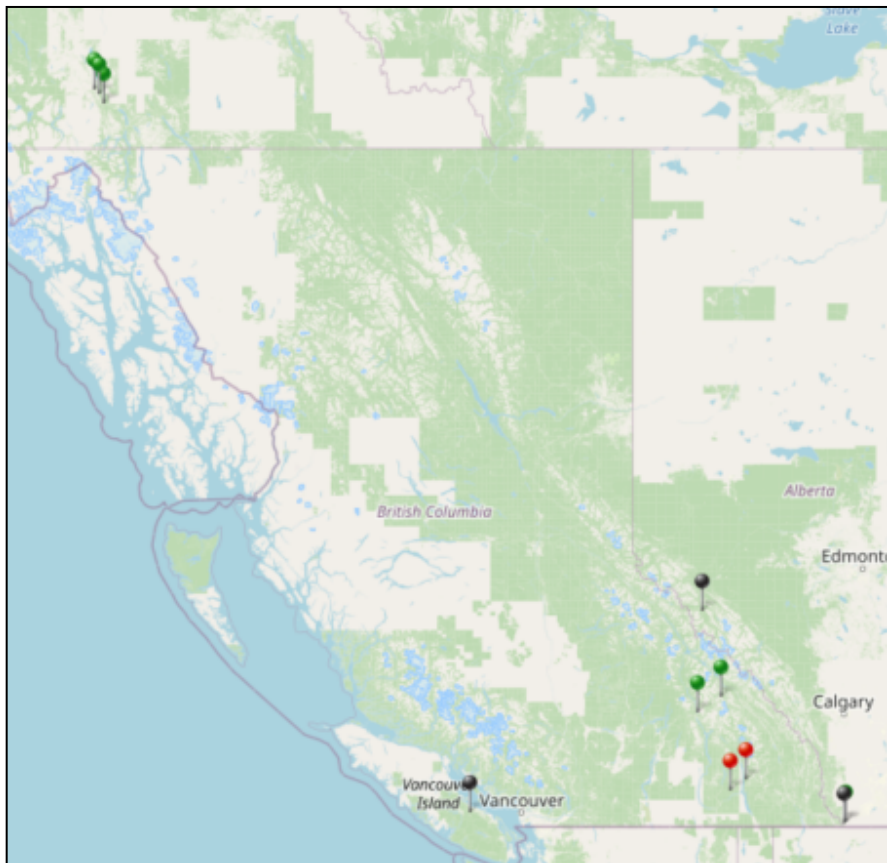


Figure 4. Canadian distribution of *P. projecta*: black pins – CNC, green Pins – UOG, red pins – Baumann and Stark (2010).

The *P. sara* group

***Paraleuctra forcipata* (Claassen), Bullshorn needlety**

<http://plecoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1155140>

Leuctra forcipata, Frison (1937): 85. Holotype ♂, Corvallis, Benton Co., Oregon, United States of America (INHS)

Paraleuctra forcipata, Ricker and Scudder (1975), 8: 337

Paraleuctra forcipata, Baumann *et al.* (1977), 31: 97

Paraleuctra forcipata, Stewart and Ricker (1997), p. 209

Paraleuctra forcipata, Stewart and Oswood (2006), p. 59

Paraleuctra forcipata, Ratnasingham and Hebert (2007), Bin BOLD: AAX2360.

Paraleuctra forcipata, Baumann and Stark (2010), 6: 295–296

Distribution. CAN: AB, BC, YK; USA: AK, CA, ID, MT, OR, WA, WY (DeWalt *et al.* 2023).

New state record. Wyoming: North Platte River, Guernsey, 42.26905, –104.75418, 20.vi.1947, 1 ♂, 1 ♀ (D.S. Denning; CNC1036701).

Other material examined. CAN: AB, BC, YK; USA: AK, ID, MT, WA.

Alberta: Cameron Lake, Waterton Lakes National Park, 49.019702, –114.04307, 18.vi.1956, 3 ♂ and ♀ (O. Peck; CNC1036704); Moraine Creek, Banff National Park, 51.334833, –116.173586, 23 ♂ and ♀ (W.E. Ricker; CNC1036715).

British Columbia: Beckman Creek, 58.341751, –123.693706, 15.vi.1995, 3 ♂ and ♀ (S. Cannings; RBCM); Brown's Cabin Creek, Moresby Island, 53.132012, –132.346062, 28.iv.1953, 5 ♂ and ♀ (F. Neave; CNC1036719); Flathead Pass, Corbin, 49.47844, –114.651943, 9.vii.1980, 9 ♂ and ♀ (R.G. Cannings; RBCM ENT991-63826); Fernie, 49.503947, –115.070366, 17.v.1965, 1 ♂ (F. Schmid; CNC1036927); Illecillewaet River, Glacier National Park, 51.265645, –117.51415, 4.vi.1957, 10 ♂ and ♀ (W.E. Ricker; CNC1036714, CNC1036719); Kinnaird, 49.278061, –117.646467, 21.v.1965, 5 ♂ (F. Schmid; CNC944881, CNC944883, CNC1036718, CNC1037167, CNC1178423); Kitchener, 49.155858, –116.349911, 18.v.1965, 1 ♂ (F. Schmid; CNC887819); Lakelse, 54.375713, –128.52634, 14.vii.1960, 1 ♀ (W.W. Moss; CNC1036705); Mount Arrowsmith, Vancouver Island, 49.224843, –124.597663, 9.vi.1957, 5 ♂ and ♀ (W.E. Ricker; CNC1036712); Salmon Arm, 50.69598, –119.28853, 2.v.1933, 1 ♀ (H. Leech; CNC1036726); Skagit River, Manning Provincial Park, 49.207841, –121.078603, 21.vi.1988, 3 ♀ (L. LeSage; CNC887748, CNC887754); Trinity Valley, 50.400355, –118.922804, 8.v.1980, 1 ♀ (R.G. Cannings; RBCM ENT991-63414).

Yukon: North Fork Crossing, Ogilvie Mountains, 64.590903, –138.305724, 13.vi.1962, 1 ♀ (P.J. Skitsko; CNC887587), 17.vi.1962, 1 ♂, 1 ♀ (P.J. Skitsko; CNC1036706), 26.vi.1962, 3 ♀ (R.E. Leech; CNC1036708), 6.vii.1962, 1 ♀ (R.E. Leech; CNC1036703); Otter Lake, 62.5, –130.416667, 22.vii.1960, 1 ♀ (J.E.H. Martin; CNC1036709); Swim Lakes, 62.216667, –133.0, 17.vi.1960, 1 ♀ (J.E.H. Martin; CNC1036710).

Alaska: Unalakeet, 63.888684, –160.794045, 20.vi.1961, 9 ♂ and ♀ (B.S. Heming and R. Madge; CNC1036707).

Idaho: Trestle Creek, Hope, 48.280841, –116.348012, 4.v.1952, 1 ♂, 1 ♀ (S.G. Jewett; CNC1036700).

Montana: Hyalite Creek, 45.447509, -110.963984, 6.vii.1951, 12 ♂ and ♀ (R. Hays and J. Bailey; CNC1036702), 3.vii.1952, 18 ♂ and ♀ (R. Hays; CNC1036716); Twin Falls Creek, 48.48381, -113.36954, 17.vii.1952, 7 ♂ and ♀ (R. Hays; CNC1036713).

Oregon: Clear Lake, 44.382462, -122.004625, 23.vi.1965, 4 ♂ (F. Schmid; CNC1178421, CNC1603318, CNC1603325, CNC1603331); Hemlock Butte Pass, 43.107979, -122.185408, 10.vi.1965, 1 ♂, 1 ♀ (F. Schmid; CNC1178433, CNC1178462); Humbug, 45.867804, -123.605091, 18.vi.1965, 1 ♀ (F. Schmid; CNC1178477); Marion Forks, 44.614520, -121.949086, 19.vi.1965, 1 ♂ (F. Schmid; CNC1178408).

Washington: Baker Lake, 48.747802, -121.581572, 27.v.1965, 1 ♂ (F. Schmid; CNC1603090); Cle Elum River, Yakima, 47.198635, -120.948575, 21.iv.1954, 2 ♀ (W.E. Ricker; CNC1036720); Glacier View Camp, 47.839319, -120.823402, 19.v.1961, 10 ♂ and ♀ (W.E. Ricker; CNC1036711); Grandy Lake, 48.567104, -121.804024, 27.v.1965, 1 ♂ (F. Schmid; CNC1037209); Packwood, 46.612426, -121.679185, 25.vi.1965, 1 ♂ (F. Schmid; CNC1178435); Skabbage Creek, Glacier View Camp, 47.846579, -120.836799, 27.iv.1963, 1 ♂ (W.E. Ricker; CNC1036723); White Pass, 46.63840, -121.38897, 25.vi.1965, 1 ♀ (F. Schmid; CNC1603112).

Canadian distribution. See Fig. 5

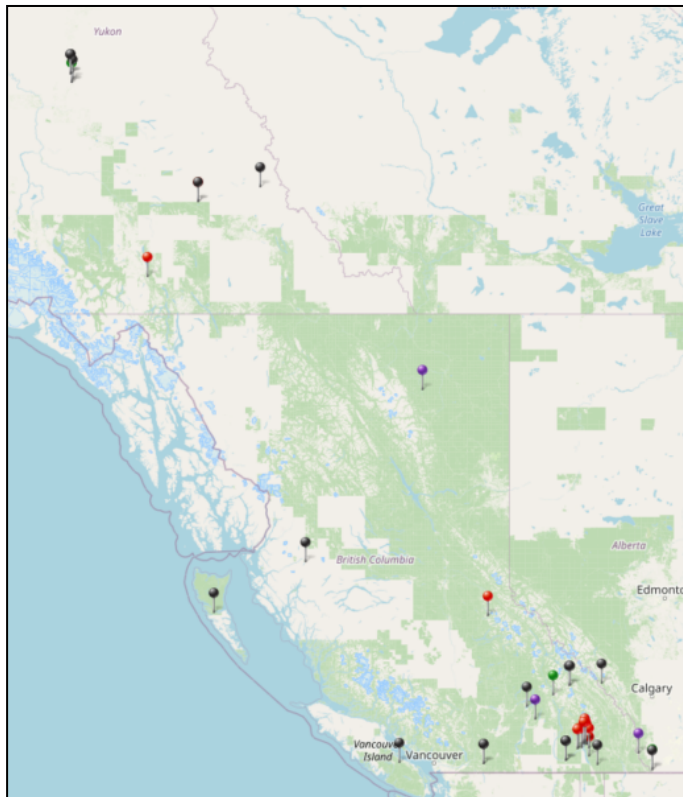


Figure 5. Canadian distribution of *P. forcipate*: black pins – CNC; purple pins – RBCM; green pins – UOG; red pins – Ricker and Scudder (1975), Stewart and Ricker (1997), Stewart and Oswood (2006), and Baumann and Stark (2010).

***Paraleuctra sara* Claassen, Appalachian needlefly**

<http://plecoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1155141>

Leuctra sara, Claassen (1937): 44. Holotype ♂, Ringwood Lloyd Preserve, Tompkins County, New York, United States of America (Cornell University).

Paraleuctra sara, Ricker *et al.* (1968), 95: 1106

Paraleuctra sara, Harper and Ricker (1994), 125: 58

Paraleuctra sara, Kondratieff and Baumann (1994), 12: 18

Paraleuctra sara, Stark and Kyzar (2001), 144: 131. Tawta Lake, Labrador City, Labrador

Paraleuctra sara, Dobrin and Giberson (2003), 81: 1087

Paraleuctra sara, Ratnasingham and Hebert (2007), Bins BOLD: ABY6478 and BOLD: ADX:5219.

Paraleuctra sara, Ogden *et al.* (2018), 14: 167

Distribution. CAN: LB, NB, NS, ON, PE, PQ; USA: AL, CT, DE, GA, IN, KY, MA, MD, ME, NC, NH, NY, OH, PA, SC, TN, VA, VT, WV (DeWalt *et al.* 2023).

New state records. New Hampshire: Ammonoosac River, Mt. Washington, 44.270599, -71.349769, 13.vi.1967, 1 ♂ 1 ♀ (D.R. Oliver; CNC898036). **Vermont:** Mt. Mansfeld, 44.54224, -72.814548, 26.v-15.vi.1982, 1 ♂ (Dondale and Rednar; CNC887549).

Canadian distribution. See Fig. 6.

Other material examined. CAN: LB, NS, ON, PQ; USA: GA, IN, MD, NC, SC, TN, VA, WV.

Labrador: Goose Bay, 53.289368, -60.359624, 16.vii.1960, 1 ♂ (J.J. Tibbles; CNC1037061).

Nova Scotia: Clyburn Valley, 46.6533, -60.4285, 21.v.2013, 3 ♂ and ♀ (CBH Staff; UOG CNBRJ216, 218, 219-14); Lone Shieling, Grand Anse, 46.809976, -60.733933, 31.v.1983, 19 ♂ and ♀ (L. Masner and H. Goulet; CNC898070), 3-5.v.1983, 1 ♂, 1 ♀ (H. Goulet; CNC898068), 6-7.vi.1983, 10 ♂ and ♀ (H. Goulet; CNC898061, CNC898062), 9-13.vi.1983, 47 ♂ and ♀ (H. Goulet; CNC898060, CNC898065), 16.vi.1983, 3 ♀ (Y. Bousquet; CNC898063), 19.vi.1983, 28 ♂ and ♀ (Y. Bousquet; CNC819614, CNC819677, CNC898069), 25.vi.1983, 1 ♀ (J.R. Vockeroth; CNC898063), 25.vi.1983, 4 ♀ (Y. Bousquet; CNC819629), 24.vi.2009, 1 ♀ (D. Baird; UOG CBSTO66-10), 9.vii.2009, 1 ♀ (D. Baird; UOG CBSTO43-10); North Aspy Bridge, 46.831, -60.612, 10.vi.2009, ♂, 1 ♀ (K. Hearn; UOG CBSTO146, 147-10).

Ontario: Clear Lake, Renfrew County, 45.691325, -77.347171, 20.iv.1968, 6 ♂ (W.E. Ricker; CNC898057); Singhampton, 44.35111, -80.2475, 23.v.1930, 1 ♂ (W.E. Ricker; CNC898059).

Québec: Lindsay's Creek, Wakefield, 45.637214, -75.945024, 31.v.1930, 3 ♂ and ♀ (G.S. Walley; CNC898013); McDonald Creek, trib. Meech Lake, Gatineau, 45.546525, -75.916279, 28.iv.1964, 10 ♂ and ♀ (W.E. Ricker; CNC898024), 31.v.1964, 2 ♀ (W.E. Ricker; CNC898066), 3.v.1977, 2 ♀ (D.R. Oliver; CNC1603564), 23.iv.1979, 2 ♂ (D.R. Oliver and M.E. Roussei; CNC1603573); Mines Madeleine, Gaspésie, 49.001136, -66.012717, 30.vi.1989, 1 ♂ (L. LeSage; CNC1603564); Mt. Lyall, Gaspésie, 48.784825, -66.08706, 1.vii.1933, 1 ♂ (W.J. Brown; CNC898015); Old Chelsea, Gatineau, 45.496282, -75.813954, v.1937, 1 ♂ (G.S. Walley; CNC898014); Rivière Saint-Anne East,

49.121314, -66.50123, 16–23.vi.1994, 1 ♀ (F. Landry; CNC1603555), 30.vi–7.vii.1994, 1 ♀ (F. Landry; CNC1603527), 14–21.vii.1994, 1 ♂, 3 ♀ (F. Landry; CNC1603525, CNC1603557); Wadsworth Creek, Harrington Lake, Gatineau, 45.562603, -75.980413, 3.v.1964, 9 ♂ and ♀ (W.E. Ricker; CNC819760).

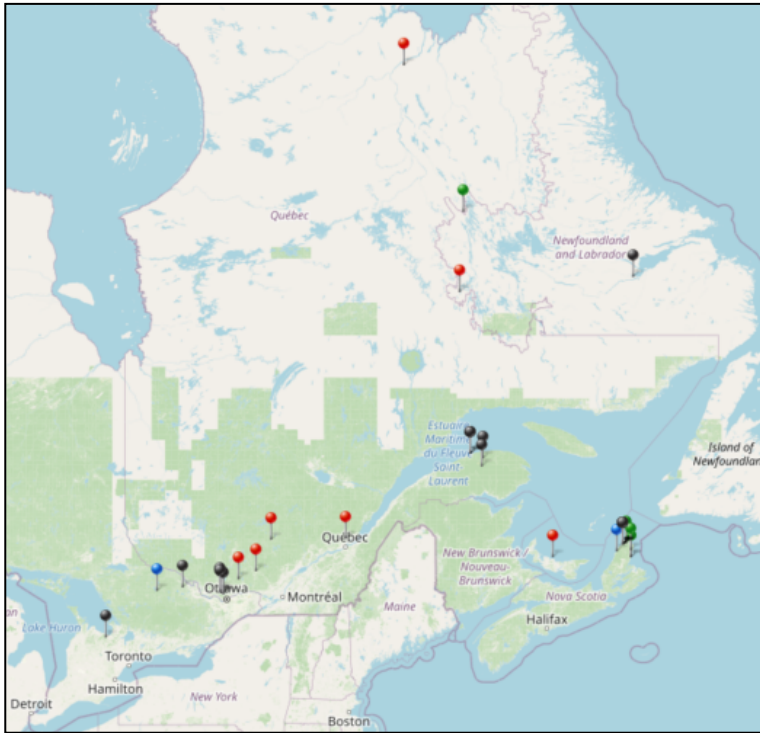


Figure 6. Canadian distribution of *P. sara*: black pins – CNC; green pins – UOG; blue pins – INHS; red pins – Ricker *et al.* (1968), Stark and Kyzar (2001), and Dobrin and Giberson (2003).

Georgia: Amicalola River Falls, 34.567059, -84.244684, 3.iv.1939, 1 ♀ (D.C. Scott; CNC898021); Brasstown Bald, 34.833478, -83.732759, 2.iv.1949, 1 ♂, 1 ♀ (W.E. Ricker; CNC898020); Panther Creek, Tallallah Falls, 34.713303, -83.401523, 2.iv.1949, 1 ♀ (W.E. Ricker; CNC898018); Timpson Creek, Clayton, 34.867448, -83.478416, 7.iv.1949, 1 ♀ (D.C. Scott; CNC898019).

Indiana: Turkey Run State Park, 39.886947, -87.203377, 20.iv.1946, 1 ♂ (M.W. Sanderson; CNC898058).

Maryland: Fishing Creek, 39.535745, -77.476315, 9.iv.1955, 1 ♀ (E.L. Mockford; CNC870416).

North Carolina: Alum Cave Creek, 35.633243, -83.435166, 2.iv.1949, 2 ♂ (W.E. Ricker; CNC898050); Buck Creek, Marion, 35.692051, -82.057751, 26.iii.1964, 4 ♂ and ♀ (Ross and Stannard; CNC898034); Couches Creek, Cherokee, 36.305637, -81.51402, 2 ♂ (Ross and Stannard; CNC898033); Davenport Gap, 35.77006, -83.110679, 4.iv.1949, 4 ♂ and ♀ (W.E. Ricker; CNC898047); Maggie, 35.51475, -83.082964, 25.iii.1964, 13 ♂ (Ross and Stannard; CNC898032).

South Carolina: Hwy. 123, ½ mi. E of 38-27, 34.727746, -82.72945, 11.iv.1970, 2 ♀ (V. and L.H. McCaskill; CNC819883).

Tennessee: Chimney's Camp, 35.636742, -83.489554, 21.iv.1949, 13 ♀ (W.E. Ricker; CNC898051); Government Headquarters Bridge, 35.685034, -83.538194, 9.iii.1964, 1 ♂ (H.B. Mills; CNC898053), 25.iii.1964, 5 ♂ and ♀ (Ross and Stannard; CNC898038); LeConte Creek, Gatlinburg, 35.707053, -83.51918, 25.iii.1964, 16 ♂ and ♀ (Ross and Stannard; CNC898037, CNC898039); Little Pigeon River, New Found Gap, 35.6124324, -83.425272, 14.v.1939, 3 ♀ (Frison and Ross; CNC898011), 21.vi.1939, 3 ♀ (W.E. Ricker; CNC897301); West Prong, Alum Cave Creek, 35.630906, -83.454907, 3 ♂ and ♀ (W.E. Ricker; CNC898048); Walker Prong, 1 mi. N of New Found Gap, 35.624313, -83.417056, 4.iv.1949, 19 ♂ and ♀ (W.E. Ricker and D.C. Scott; CNC898046, CNC898049); West Prong, 35.746096, -83.416188, 3.iv.1941, 4 ♂ and ♀ (W.E. Ricker; CNC898052).

Virginia: Bob Downy Creek, Longdale, 37.790942, -79.703594, 19.iii.1966, 10 ♂ and ♀ (J.K. Neel; CNC898012); Callaghan, 37.808095, -80.062299, 19.iii.1950, 42 ♂ and ♀ (W.E. Ricker; CNC898017, CNC898022, CNC898045); Cove Creek, Shelleys, 36.646206, -82.33279, 30.iii.1960, 1 ♂, 1 ♀ (Ross and Stannard; CNC898042); Waynesboro, 38.05056, -78.911651, 18.iii.1960, 42 ♂ and ♀ (W.E. Ricker; CNC898016); Great Falls, 38.976725, -77.252242, iii.2022, 1 ♂ (T. Richman; CNC1893233).

West Virginia: Howard's Creek, White Sulphur Springs, 37.798109, -80.300001, 19.iii.1950, 1 ♀ (W.E. Ricker; CNC898043); Road 60, 3 mi. W of Virginia Line, 37.785294, -80.400684, 19.iii.1950, 2 ♂ (W.E. Ricker; CNC898044).

Discussion. The presence of specimens from Labrador and northern Québec suggests that this species may have a much wider distribution in northern Québec and northern Ontario.

***Paraleuctra vershina* Gaufin and Ricker, Summit needletfly**

<http://plecoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1155142>

Paraleuctra vershina, Gaufin and Ricker (1974): 285. Holotype ♂, City Creek, Salt Lake Co., Utah, United States of America (USNM)

Leuctra occidentalis, Needham and Claassen (1925): 231. Syn. Gaufin and Ricker (1974)

Leuctra occidentalis, Ricker (1939): 22

Leuctra (Paraleuctra) occidentalis, Ricker (1943): 77–78

Paraleuctra vershina, Ricker and Scudder (1975), 8: 337

Paraleuctra vershina, Baumann *et al.* (1977), 31: 100

Paraleuctra vershina, Dosedall and Lehmkuhl (1979), 15: 42

Paraleuctra vershina, Stewart and Ricker (1997), p. 209

Paraleuctra vershina, Stewart and Oswood (2006), p. 59

Paraleuctra vershina, Ratnasingham and Hebert (2007), Bin BOLD: ADM0482.

Paraleuctra vershina, Baumann and Stark (2010), 6: 296

Distribution. CAN: AB, BC, SK, YK; USA: AK, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY (DeWalt *et al.* 2023).

Material examined. CAN: AB, BC, YK; USA: CA, CO, MT, NM, NV, OR, WA, WY.

Alberta: Lusk Creek, Seebe, 51.031321, -115.012292, 18.vi.1968, 5 ♂ and ♀ (H.J. Teskey; CNC944757).

British Columbia: Angusmac Creek, 54.57422, -122.714917, 5.vi.1975, 24 ♂ and ♀ (W.E. Ricker; CNC1037196); Annurill Creek, Cultus Lake, 49.057324, -121.966841, 10.vii.1937, 3 ♂ (W.E. Ricker; CNC1036672); Capilano River, Vancouver, 49.343078, -123.115396, 8.iv.1957, 1 ♂ (W.E. Ricker; CNC1036727); Carnation Creek, Sarita, 27.v.1971, 48.895464, -125.000044, 1 ♂ (W.E. Ricker; CNC887741); Crooked River, 54.458, -122.722, 20.v.2015, 3 ♂ and ♀ (D. Erasmus, D. Huber, and C. Shrimpson; UOG CRPLE012, 037, 038-19); Cultus Lake, 49.077483, -121.979149, 24.v.1965, 2 ♀ (F. Schmid; CNC1036959, CNC1036968); Elkan Creek, Elk Lakes Provincial Park, 50.550261, -115.067531, 12.vi.1988, 1 ♀ (C.S. Guppy; RBCM ENT991-61164); Fraser River, Rosedale Bridge, Agassiz, 49.204798, -121.77771, 24.iv.1938, 1 ♀ (W.E. Ricker; CNC1036737); Frost Creek, Cultus Lake, 49.032454, -122.029128, 2.v.1937, 20 ♂ and ♀ (W.E. Ricker; CNC1036660); Haslam Creek, Vancouver Island, 49.030644, 123.914506, 24.iv.1952, 12 ♂ and ♀ (W.E. Ricker; CNC898081), 6.v.1956, 2 ♀ (Angus and Ricker; CNC1036743), 21.iv.1963, 1 ♂ (W.E. Ricker; CNC1604015); Hooknose Creek, King Island, 52.126014, -127.835517, 10.v.1957, 2 ♂ (R. Wilson; CNC1036796); Hope, 49.386349, -121.455086, 23.v.1965, 3 ♀ (F. Schmid; CNC1036930, CNC1036945, CNC1036965); Kennedy Lake, Ucluelet, 49.037536, -125.530281, 25.vi.1955, 6 ♂ and ♀ (W.E. Ricker; CNC1037159); Kinnaird, 49.266315, -117.647985, 21.v.1965, 7 ♀ (F. Schmid; CNC898077, CNC1036920, CNC1036939, CNC1178426, CNC11784434, CNC1603084); Kitchener, 49.158889, -116.338324, 18.v.1965, 2 ♂, 1 ♀ (F. Schmid; CNC887825, CNC1036603, CNC1036961); Kumealon Inlet, 53.87, -129.964, 1 ♀ (C. Copley; UOG INRMA581-12); Ladysmith, Ivy Green Park, 48.922297, -123.725778, v.1957, 3 ♂ and ♀ (W.E. Ricker; CNC1036800); Loon Lake Fish Hatchery, Clinton, 51.067729, -121.338799, 21.vi.1979, 1 ♂ (I.M. Smith; CNC898076); Luckakuk Creek, Sardis, 49.1270782, -121.960475, 12.v.1937, 14 ♂ and ♀ (W.E. Ricker; CNC1603129); McClinton Creek, Queen Charlotte Islands, 53.636492, -132.617144, 5.v.1953, 13 ♂ and ♀ (F. Neave; CNC898080); McIntyre Lake, 50.077476, -118.528426, 30.vi.1980, 11 ♂ and ♀ (R.A. Cannings; RBCM ENT991-64780, 62967); Nanaimo, Vancouver Island, 49.205268, -123.991904, 17.iv.1957, 1 ♂ (W.E. Ricker; CNC944867); Mount Benson, Vancouver Island, 49.156666, -123.995199, 30.vi.1977, 29 ♂ and ♀ (W.E. Ricker; CNC898074); Skutz Falls, Cowichan River, 48.78349, -123.955929, 1.iii.1956, 1 ♂ (W.E. Ricker; CNC887480); Smith Falls Creek, Cultus Lake, 49.063972, -121.964137, 9.v.1932, 1 ♂ (W.E. Ricker; CNC1036661), 14.iv.1935, 6 ♂ and ♀ (W.E. Ricker; CNC944882), 2.v.1937, 49 ♂ and ♀ (W.E. Ricker; CNC1036664), 15.iv.1938, 49 ♂ and ♀ (W.E. Ricker; CNC1036662), 12.v.1957, 9 ♂ and ♀ (W.E. Ricker; CNC1036669); Spahat Falls, Wells Gray Provincial Park, 51.736095, -120.013489, 28.vi.1988, 2 ♀ (L. LeSage; CNC898073); Sweltzer Creek, Cultus Lake, 49.088464, -121.961921, 01.05.1937, 16 ♂ and ♀ (W.E. Ricker; CNC1036666), 1.xi.1937, 1 ♀ (W.E. Ricker; CNC1036683), 12.iii.1941, 3 ♂ and ♀ (W.E. Ricker; CNC1036683); Tats Creek, 59.3737, -137.4253, 22-23.vii.1992, 1 ♀ (C.S. Guppy; RBCM ENT992-022420); Vedder Crossing,

49.09744, -121.963935, 25.iv.1937, 7 ♂ and ♀ (W.E. Ricker; CNC1036670), 1.v.1937, 2 ♂ (W.E. Ricker; CNC1036663), 5.v.1937, 8 ♂ and ♀ (W.E. Ricker and S. Spencer; CNC1036671), 9.v.1937, 9 ♂ and ♀ (W.E. Ricker; CNC1036668), 11.v.1937, 1 ♂ (W.E. Ricker; CNC1036673), 3.iv.1938, 1 ♂ (S. Spencer; CNC944871), 10.iv.1938, 3 ♂ and ♀ (S. Spencer; CNC1603119), 16.iv.1939, 1 ♂ (S. Spencer; CNC1037236), 23.iv.1939, 3 ♂ (S. Spencer; CNC1603124).

Yukon: Crestview Springs, Whitehorse, 60.7875, -135.187, 5.viii.2018, 1 ♂ (S.G. Cannings; UOG AMCAJ070-19).

California: Dardenelle, 38.343278, -119.834048, 4.vii.1948, 1 ♂ (CNC898005); Gasquet, 41.847129, -123.967154, 4.vi.1965, 1 ♂ (F. Schmid; CNC898075); Merced River, Yosemite National Park, 37.648454, -119.919592, 2 ♀ (W.E. Ricker; CNC1036677); Portola, 6 mi. W, 39.77305, -120.61128, 3 ♀ (W.E. Ricker; CNC898079); Smith Creek, Blairsden, 39.778126, -120.634084, 11.vi.1952, 20 ♂ and ♀ (W.E. Ricker; CNC898082); Smoky Jack Camp, Yosemite National Park, 37.8177017, -119.712672, 22.vi.1950, 12 ♂ and ♀ (W.E. Ricker; CNC898006); Snow Flat, Yosemite National Park, 37.824855, -119.500741, 27.vii.1948, 5 ♂ (CNC1036658); Tenya Creek, Yosemite National Park, 37.841649, -119.448338, 22.vi.1950, 1 ♂ (W.E. Ricker; CNC898005).

Colorado: Blue Mesa Summit, 38.402479, -107.348485, 8.vi.1954, 8 ♂ and ♀ (Ross and Ross; CNC898029); Boulder Canyon, 39.971674, -105.470801, 5.vi.1954, 22 ♂ and ♀ (H.H. Ross; CNC898054); Gunnison River, Gunnison, 38.532709, -106.952435, 4 ♂ and ♀ (Ross and Ross; CNC898030); Lake Creek, 39.635138, -106.612114, 14.vi.1954, 1 ♂ (Ross and Ross; CNC898078); Mancos River, Mancos, 37.347703, -108.276011, 10.vi.1954, 1 ♀ (Ross and Ross; CNC898031); Nederland Science Lodge, 39.983761, -105.515946, 2 ♀ (C.H. Mann; CNC1036729); Scotch Creek, Rico, 37.645746, -107.994966, 18.vii.1968, 1 ♂ (E.C. Becker; CNC898072).

Montana: Champagne Falls Station, 45.407799, -110.960422, 9.viii.1955, 1 ♀ (R. Hays; CNC1036736); Hyalite Creek, 45.447576, -110.963534, 26.vi.1953, 8 ♂ and ♀ (R. Hays; CNC1178397).

New Mexico: Pacheco Canyon, Santa Fe National Forest, 35.78355, -105.883908, 12.vi.1950, 12 ♂ and ♀ (W.E. Ricker; CNC1036676, CNC1036680).

Nevada: Angel Lake, SW of Wells, 41.026457, -115.08224, 11.vii.1961, 3 ♀ (J.G. Chillcott; CNC1178639).

Oregon: Belknap Spring, 44.189974, -122.047846, 21.vi.1965, 1 ♀ (F. Schmid; CNC1178688); Clear Lake, 45.193978, -121.692601, 1 ♀ (F. Schmid; CNC1178722); Cow Creek at Hwy. 99, 42.936027, -123.383604, 15.iv.1961, 1 ♀ (W.E. Ricker; CNC1178686); Elk Lake, 43.984778, -121.802478, 18.vi.1965, 2 ♀ (F. Schmid; CNC1036949, CNC1178534); Foster Creek, 42.990498, -122.407118, 08.vi.1965, 2 ♂, 1 ♀ (F. Schmid; CNC898071, CNC1178413, CNC11788693); Hebo, Nestucca River, 45.241281, -123.861997, 17.iv.1972, 3 ♂ and ♀ (W.E. Ricker; CNC1178631); Hemlock Butte Pass, 43.125381, -122.197784, 10.vi.1965, 1 ♀ (F. Schmid; CNC1178701); Indian Ford, 44.315175, -121.538622, 13.vi.1965, 1 ♀ (F. Schmid; CNC1178681); Marion Falls, 44.566757, -121.876111, 13.vi.1965, 1 ♂ (F. Schmid; CNC1178463); Marion Forks, 44.615009, -121.947884, 19.vi.1965, 2 ♂, 1 ♀ (F. Schmid; CNC1178542, CNC1178550, CNC11788585); Metolius River, 44.659015, -

121.53005, 18.i.1947, 1 ♀ (CNC1036679); Oak creek, Corvallis, 44.612013, –123.331269, 1 ♀ (Bourne; CNC1178656); Pauline Falls, 43.712435, –121.283936, 12.vi.1965, 2 ♀ (F. Schmid; CNC1178581, CNC1178609); Peavine Ridge, McMinnville, 45.186209, –123.229491, 4.iii.1945, 5 ♂ and ♀ (K.M. Fender; CNC1036681); Scappoose Creek, 45.791827, –122.850587, 8.v.1948, 12 ♂ and ♀ (S.G. Jewett; CNC1036678); Shuksan, 48.77528, –121.571315, 25.v.1965, 1 ♀ (F. Schmid; CNC1178689); Union Creek, 42.906793, –122.444331, 27.vi.1950, 9 ♂ and ♀ (W.E. Ricker; CNC1036675), 7.vi.1965, 1 ♀ (F. Schmid; CNC1178674); Woods Creek, Philomath, 44.548268, –123.400311, 13.v.1937, 1 ♀ (N. Smith; CNC1178478).

Washington: Baker Lake, 48.662193, –121.687463, 27.v.1965, 1 ♀ (F. Schmid; CNC1178678); Bumping River, 46.880259, –121.282137, 1 ♂, 1 ♀ (G.R. Ferguson; CNC898004); Glacier National Park, 48.889214, –121.940894, 25.v.1965, 1 ♂, 1 ♀ (F. Schmid; CNC1178645, CNC1603319); Grandy Lake, 48.567104, –121.803916, 27.v.1965, 1 ♂, 1 ♀ (F. Schmid; CNC1178620, CNC1178644); La Wis Wis, 46.675148, –121.583505, 1 ♂ (W.E. Ricker; CNC887565); Mount Rainier, Emmons Glacier Valley, 46.806694, –121.728526, 29.vi.1975, 1 ♀ (CNC1036739); Nooksack River, North Branch, 48.901937, –121.911991, 23.v.1937, 1 ♀ (W.E. Ricker; CNC1036682); Shuksan, 48.845647, –122.405618, 2 ♀ (F. Schmid; CNC1178618, CNC1603095); Taeniopteryx Creek, Mt. Rainier, 46.897335, –121.761572, 20–21.vii.1937, 2 ♀ (W.E. Ricker; CNC1036665).

Wyoming: Battle Creek, Sierre Madre Range, 41.093753, –107.149419, 18.vii.1961, 2 ♀ (J.G. Chillcott; CNC1036731).

Canadian distribution. See Fig. 7.

Discussion. Most of the *P. vershina* specimens in the CNC were previously identified as *L. occidentalis* Needham and Claassen, 1925, determined by W.E. Ricker and S.G. Jewett before 1970. Of the western *Paraleuctra* species, *P. vershina* has the farthest eastern distribution in Canada, reaching as far east as the Cypress Hills on the Alberta–Saskatchewan border.

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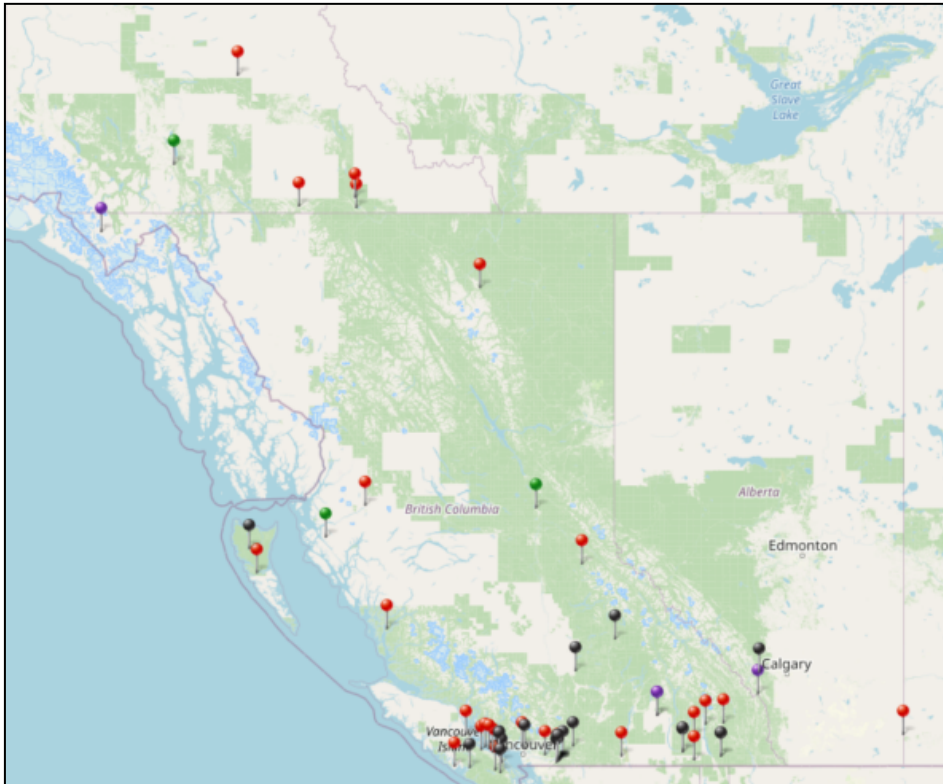


Figure 7. Canadian distribution of *P. vershina*: black pins – CNC; green pins – UOG; purple pins – RBCM; red pins – Ricker and Scudder (1975), Dosdall and Lehmkuhl (1979), Stewart and Ricker (1997), Stewart and Oswood (2006), and Baumann and Stark (2010).

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