



PARALEUCTRA ALTA (PLECOPTERA: LEUCTRIDAE), A NEW STONEFLY FROM ALBERTA, CANADA

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ABSTRACT

Paraleuctra alta, a newly discovered stonefly from the Berland River, Alberta, Canada, is described from male specimens and compared with related members of the *Paraleuctra occidentalis* species group. The description is based, in part, on scanning electron micrographs of male genitalia.

Keywords: Plecoptera, Leuctridae, *Paraleuctra*, new species, Alberta, Canada

INTRODUCTION

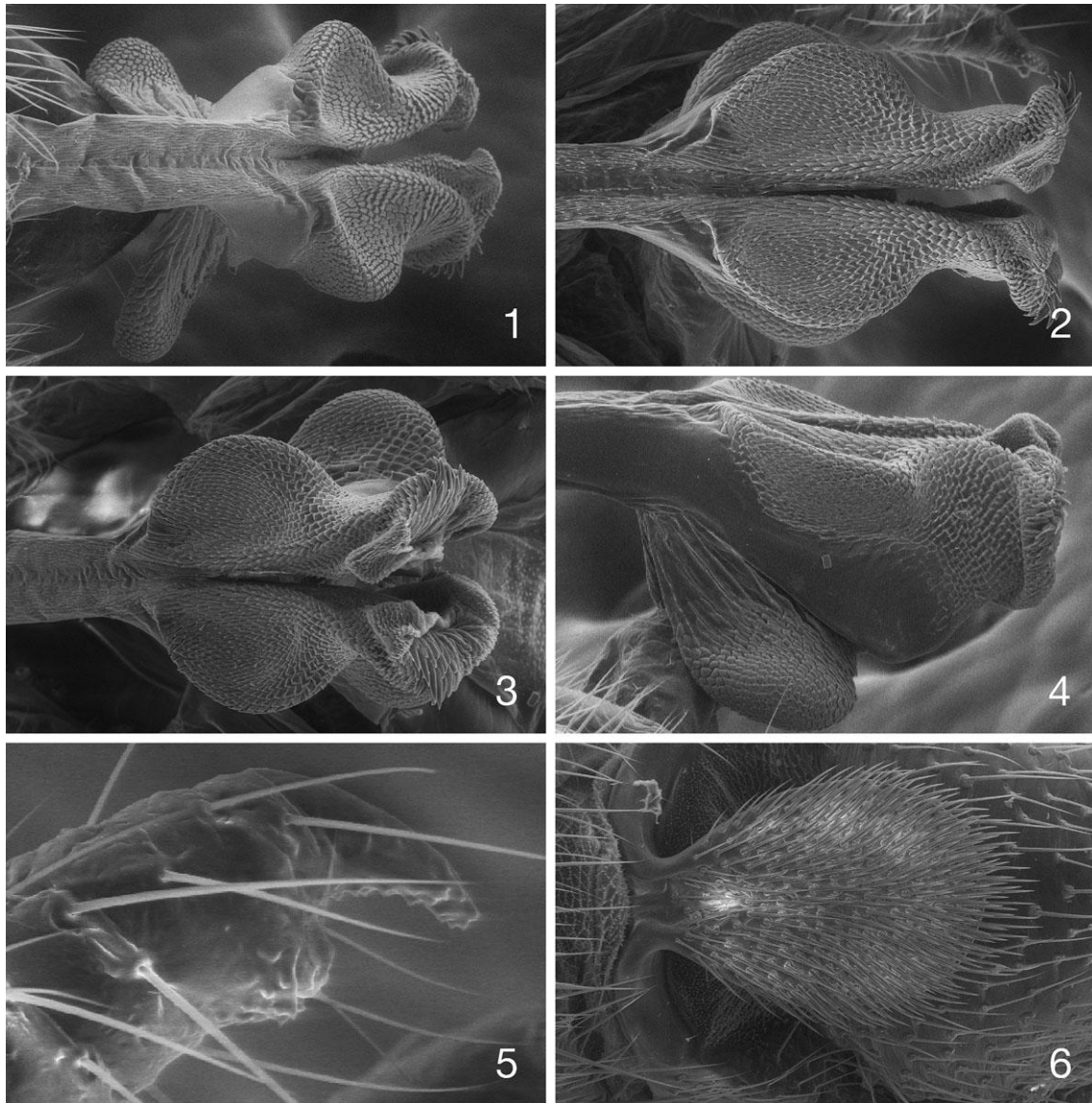
Genus *Paraleuctra* Hanson currently includes 19 species, following studies by Shimizu (2000) in Japan and Stark & Kyzar (2000) in North America. In the latter study, relatively large samples of specimens taken from scattered localities throughout the range of most species were examined with scanning electron microscopy without discovery of additional species. It was, therefore, somewhat surprising to discover males of an undescribed *Paraleuctra* in Malaise samples collected in Alberta. Because this location is near the type locality for *P. bradleyi* (Claassen) and *P. occidentalis* (Banks), the respective type specimens were borrowed from Cornell University and the Museum of Comparative Zoology, Harvard University. The former species is considered a synonym of *P. occidentalis* (Ricker 1954). Unfortunately the abdomen is missing from the *P. bradleyi* holotype, but the figures on plate 41 of Needham & Claassen (1925) show that species to be consistent with *P. occidentalis* and distinct from the

new form which we describe below. The description is based, in part, on SEM micrographs taken with a Philips XL30 ESEM FEG microscope housed at Brigham Young University. Terminology follows Stark & Kyzar (2000).

Paraleuctra alta sp. nov.
(Figs. 1-8)

Material examined. Holotype ♂ and 1 ♂ paratype from Canada, Alberta, 75 km N Hinton, Berland River, 33° 92' N, 118° 20' W, 30 April-11 June 1994, Malaise trap, E. Fuller. Holotype deposited in the Canadian National Collection, Ottawa, Ontario and the paratype deposited in the Monte L. Bean Life Science Museum, Brigham Young University, Provo, Utah.

Male. Forewing length 5.5 mm. General color dark brown to black, typical of genus. Cerci weakly bifurcate in apical 4th of cercal length (Figs. 5, 7), lower prong shorter and wider than upper prong.



Figs. 1-6. Scanning electron micrographs of *Paraleuctra alta* genitalic structures. 1. Subanal probe, dorsal (posterior) aspect, 2. Apex of subanal probe, dorsal aspect, 3. Dorsoapical aspect of subanal probe, 4. Lateral aspect of subanal probe apex, 5. Cercus, lateral aspect, 6. Vesicle.

Vesicle well developed (Figs. 6, 7), posterior margin of sternum 9 bilobed around base of subanal probe (Fig. 8). Subanal probe swollen apically with a pair of large, anteriorly projecting, membranous lobes which extend over epiproct and between cercal bases (Figs. 1, 4, 7-8); membranous lobes covered with minute microtrichia. Posterior and lateral aspects of probe swollen subapically and armed over subapical swellings with minute microtrichia which extend to the apex (Figs. 1-4, 7-8); apex with small rows of tooth-like structures on each fold (Figs. 1-3).

Female. Unknown.

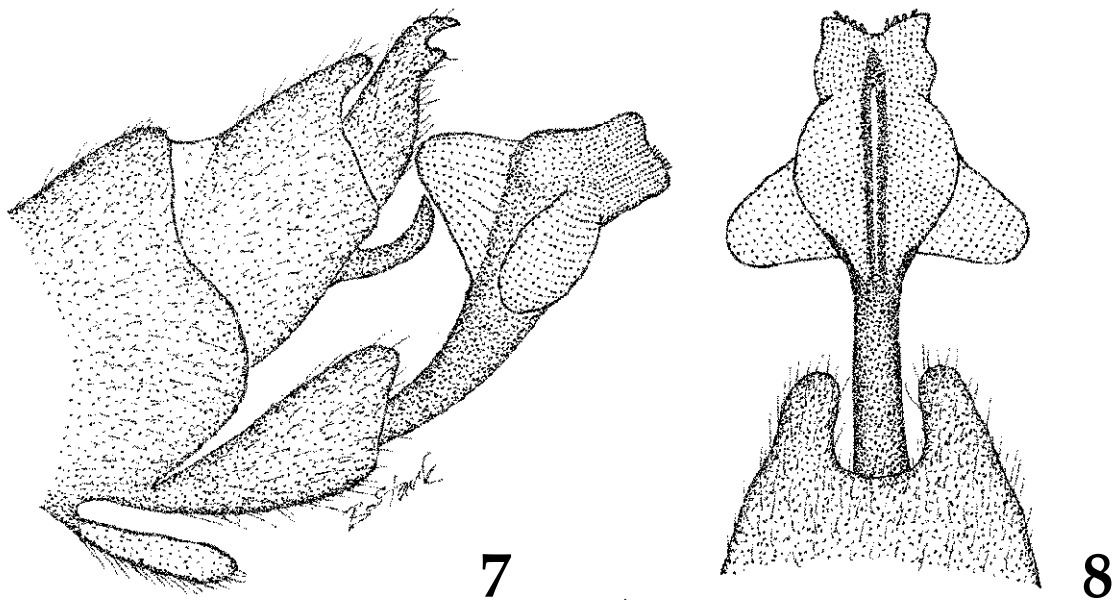
Larva. Unknown.

Etymology. The species name is derived from dual sources. It occurs at a high elevation in the Canadian Rocky Mountains north of Jasper National Park, so the Latin word *altus* applies, but must agree with the generic name. In addition, it is the old abbreviation for the Province Alberta, Alta.

Diagnosis. *Paraleuctra alta* is most similar in subanal probe shape to *P. jewetti* Nebeker & Gauvin (Nebeker & Gauvin 1966; Stark & Kyzar 2000). In both species, the

subapical area of the probe is inflated and then constricted nearer the probe apex (Figs. 2, 8). The new species differs in having an anteriorly directed pair of large membranous lobes on the probe (Figs. 4, 7-8), and also in having two bands of tooth-like structures on the probe apex (Figs. 1-3). We examined the *P. bradleyi* holotype from the Cornell University collection in order to determine if it might be the same as *P. alta*. Unfortunately, the genital segments for the

Cornell specimen are not in the vial and we are left with the original figures from Needham & Claassen (1925). The subanal probe shown on Plate 41 indicate the *P. bradleyi* holotype lacks the large anteriorly projecting membranous lobes and the subapical swellings found in the new species. In the Stark & Kyzar (2000) key, the new species is placed at couplet 3, but cannot be resolved by that key as either *P. jewetti* or *P. occidentalis*.



Figs. 7-8. Male genitalia of *Paraleuctra alta*. 7. Abdominal segments 9-10, lateral, 8. Subanal probe, dorsal (posterior) aspect.

Paraleuctra occidentalis (Banks)

Leuctra occidentalis Banks, 1907:329. Lectotype ♀ (Museum of Comparative Zoology, Harvard University), Laggan, Alberta, designated by Ricker, 1952

Leuctra bradleyi Needham & Claassen, 1925:225. Holotype ♂, damaged (Cornell University), Emerald Lake, Canadian Rockies

Material examined. Canada: Emerald Lake, Canadian Rockies, *P. bradleyi* holotype, abdomen lost (Cornell University). Alberta, Laggan, 22 July 1901, R. Osburn, lectotype ♀ (Museum of Comparative Zoology). Same location, 23 August 1902, R. Osburn, paralectotype ♀, abdomen lost (Museum of

Comparative Zoology).

Remarks. The female specimen in the MCZ which Ricker (1952) selected as lectotype was not labeled as such, but he indicates it is the “complete ♀ specimen” and by elimination, the specimen listed above must be the lectotype. The second MCZ specimen (paralectotype), collected at Laggan, “BC” on 23 August 1902 has no abdomen. We clipped the lectotype abdomen, cleared it and found it to be consistent with the figure of *P. occidentalis* (Fig. 32) provided by Stark & Kyzar (2000). We also accept the Ricker (1954) synonymy of *P. bradleyi* with *P. occidentalis* based on the figures provided by Needham & Claassen (1925) on Plate 41 of that publication.

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