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Records and Descriptions of North American Plecoptera

Part I. New Species of *Leuctra* of the Eastern United States*

John F. Hanson

For the privilege of describing three of the four following new species I am indebted to Dr. C. P. Alexander who collected them during a recent trip to Mount Mitchell and the Great Smoky Mountains of the southeastern United States. These species are closely related to two other species which I have recently described that were collected by Dr. Inez W. Williams in this same very interesting region. One of the species, *Leuctra maria*, was collected while I was on a trip into New Hampshire and Maine with my wife who has accompanied me on many collecting trips.

A detailed general account of each species is omitted from the following descriptions, being quite superfluous because of the fact that the numerous species in the genus are virtually alike in color (uniform medium brown), size, and structure. Excellent specific characters are presented in the terminal abdominal structures.

Holotypes and allotypes of all except *L. maria* n. sp. are deposited in the Massachusetts State College Collection in Amherst. Most of the paratypes are deposited in my personal collection. Male paratypes of *L. nephophila* n. sp., however, are deposited also in the Massachusetts State College Collection, in the Museum of Comparative Zoology in Cambridge, and in the collection of the Illinois Natural History Survey.

Leuctra maria n. sp.

Figs. 1A, 1B, 1C, 1D

Length of body in both sexes, 5 to 7 mm.; of fore wings, 6 to 7 mm.

Male: Sclerotized process of the eighth tergite about one-third the width of the abdomen, extending nearly to posterior margin of the eighth segment, narrowing slightly toward the bilobed apex the lobes of which are small. Ventral lobe of ninth sternite clavate, nearly twice as long as wide, setiferous. Terminal lobe of ninth sternite tiny, amounting only to a small button hardly as broad as the ventral lobe. Subanal lobes, in lateral view, markedly short and broad, apex sharply pointed; in ventral view broad and with a deep trough extending from midlength to the sharply pointed apex. Titillators broad,

* Contribution from the Department of Entomology, Massachusetts State College, Amherst, Massachusetts.

extending slightly beyond apices of subanal lobes, gently curved upward and gradually narrowing to a blunt apex.

Female: Subgenital plate broad, with a deep meso-apical notch dividing the plate into two subtruncate lobes. Each of these lobes in the allotype specimen has apically a darker rim, while the paratype has a rim lighter in color than the rest of the sternite. Seventh abdominal sternite of allotype with a distinct triangular dark brown patch.

Holotype, male. — Barrington, New Hampshire, June 17, 1939 (J. F. Hanson). Allotopotype, female. Paratopotypes. 1 male, 1 female.

This species is affectionately dedicated to my wife, Marie Hanson, to whom I express my thanks for her invaluable assistance.

The trough in the subanal lobes of the male of this species serves definitely to distinguish it from all other described species of *Leuctra* of North America. It is also distinguishable by the character of the process on the eighth abdominal tergite. The apical lobes of this process are considerably smaller than those in other species of *Leuctra* that have a bilobed process on this segment, except *L. mitchellensis* which differs in other respects mentioned in the discussion under that species.

Leuctra alexanderi n. sp.

Figs. 2A, 2B, 2C

Length of body, of male 4 to 5 mm., of female 6 mm.; length of fore wing, of male 5.5 mm., of female 6.5 mm.

Male: Process of the eighth tergite about one-third the width of the segment, extending posteriorly only slightly beyond the middle of the segment; apex consisting of two broad diverging lobes or having only a very slight emargination. Ventral lobe of ninth sternite clavate, twice as wide as long, setiferous. Terminal lobe of ninth sternite about one-half the width of the segment, semicircular. Subanal lobes, in lateral view, curved slightly upward, broadest in the middle, a few spinulae on lower margin near apex, apex blunt; slender in ventral view. Titillators as long as subanal lobes, slender, tapering only slightly, curved ventrad near base and dorsad near apex.

Female: Subgenital plate with a shallow emargination on posterior edge; widening behind toward the apex.

Holotype, male. — Small stream along the Over-the-Mountain Highway near Anakeesta Ridge, Great Smoky Mountains, Tennessee, altitude 4,500 feet, June 6, 1939 (C. P. Alexander). Allotopotype, female. Paratypes. — Anakeesta Ridge, Gr. Smoky Mts., Tenn., alt. 4,000 feet, 1 male, June 5, 1939 (Alexander). Hogback stream, Shenandoah National Park, Virginia, alt. 3,300 feet, 1 male, May 31, 1940 (Alexander).

The process of the eighth abdominal tergite of the male most closely

resembles that of *L. monticola* Hanson but is much smaller and the emargination at the apex is not as deep as in *L. monticola*. The titillators in being recurved are distinctive also.

***Leuctra nephophila* n. sp.**

Figs. 3A, 3B, 3C

Length of body, of male 6 to 7 mm., of female 7 to 8 mm.; length of fore wing, of male 6 to 7 mm., of female 7 to 8 mm.

Male: Process of the eighth tergite well sclerotized, about one-fourth the width of the segment, extending posteriorly slightly beyond the middle of the segment, widening toward the apex from a pair of "shoulders" at midlength to a truncate or subtruncate apex. Ventral lobe of ninth sternite clavate, twice as wide as long, setiferous. Terminal lobe of ninth sternite about one-fourth the width of the segment, semicircular. Subanal lobes, in lateral view, very broad, angulate near middle of lower margin, apex sharply pointed; in ventral view, narrow. Titillators about as long as subanal lobes, moderately broad, tapering to a sharp apex, curved dorsad considerably.

Female: Subgenital plate variable, rectangular or narrowing very slightly posteriorly, darker brown apically and mesally in well sclerotized specimens; posterior margin with a shallow mesal notch or a membranization separating two truncate or subtruncate lobes.

Holotype, male. — Andrews Bald, Gr. Smoky Mts., North Carolina, alt. 5,860 feet, June 11, 1939 (Alexander). Allotopotype, female. Paratopotypes. — 8 males, 5 females. Paratypes. — Forney Ridge, Gr. Smoky Mts., N. C., alt. 6,000 feet, 1 male, 2 females, June 18, 1940 (Alexander). Ramsey Cascade, Tenn., alt. 4,000 feet, 1 male, June 21, 1940 (Alexander). Gr. Smoky Mts., Tenn., alt. 4,000 feet, 1 male, June 5, 1939 (Alexander).

The specific name, *nephophila*, is an allusion to the Great Smoky Mountains.

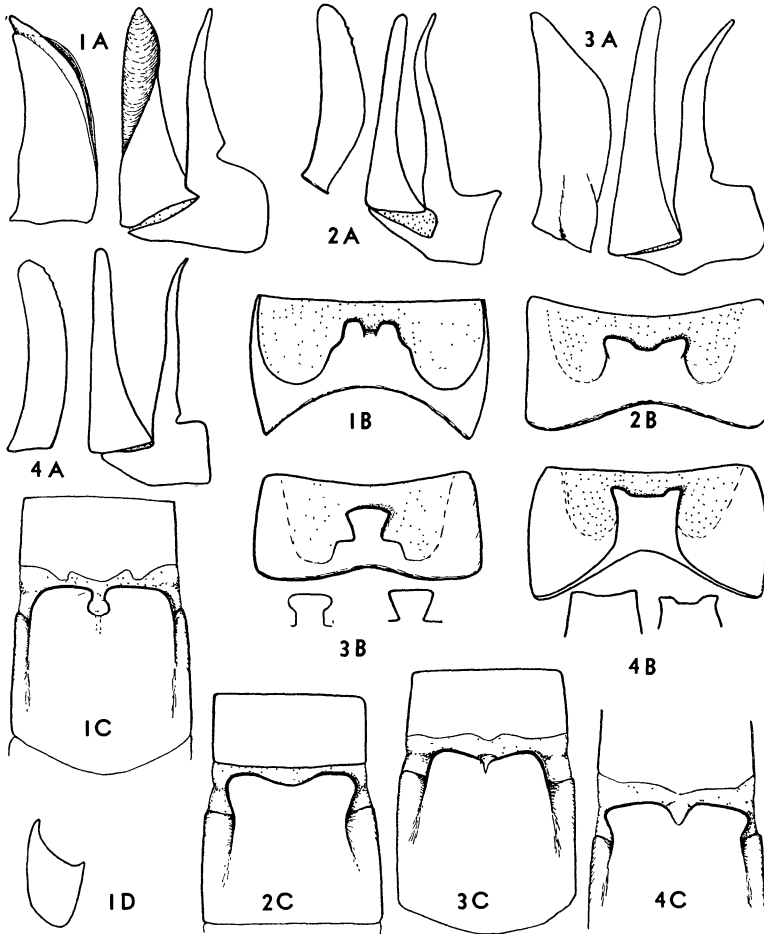
This species differs from *L. truncata* Clns. in that the process of the eighth abdominal tergite widens rather than narrows, posteriorly. It differs from *L. alexanderi* n. sp. and *L. mitchellensis* n. sp., which sometimes have this process nearly truncate, in that the process is not broad. It differs also in genitalic features as shown in the figures.

***Leuctra mitchellensis* n. sp.**

Figs. 4A, 4B, 4C

Length of body, of male 6 to 7 mm., of female 6 to 8 mm.; length of fore wing, of male 6 to 7 mm., of female 7 mm.

Male: Sclerotized projection of the eighth abdominal tergite about one-third the width of the segment, extending nearly to the posterior margin of



The figures are drawn from slides made of the holotype and allotype specimens. Additional outlines are included where of value in showing variations of diagnostic structures among paratypes.

Numbers refer to the species, and capital letters refer to the various structures shown, as indicated.

1. *Leuctra maria* n. sp.; 2. *L. alexanderi* n. sp.; 3. *L. nephophila* n. sp.; 4. *L. mitchellensis* n. sp. A. Lateral view of titillator and ventral and mesal view of subanal lobe of male; B. Eighth tergite of male; C. Eighth and ninth sternite of female; D. Cross-section of subanal lobe of male at midlength.

the segment, usually parallel-sided or nearly so, and bearing two small latero-apical lobes which are two or three times narrower than the intervening emargination; in one case the latero-apical lobes nearly disappear so as to make the apex of the process almost truncate. Ventral lobe of ninth sternite clavate, nearly twice as long as wide, setiferous. Terminal lobe of ninth sternite one-half the width of the segment, not quite semicircular in shape. Subanal lobes, in lateral view, curved slightly upward, of uniform width throughout its length, a few spinules on lower margin near apex sometimes evident, apex blunt; narrow in ventral view. Titillators as long as subanal lobes, slender, tapering to a sharp point, straight or curved slightly upward, with an abrupt shoulder at the base.

Female: Subgenital plate deeply notched by a V-shaped emargination to form two transversely truncate or subtruncate (obliquely or transversely) diverging lobes.

Holotype, male. — Bald Knob Ranger Station, Toe River Gap, Mt. Mitchell, N. C., alt. 5,200 feet. Allotopotype, female. Paratopotypes, — 4 males, 2 females.

This species differs from its most closely related allies in the large broad process with the small latero-apical lobes on its eighth abdominal tergite. Only *L. maria* n. sp. has such small lobes and in that species the process is much smaller apically and has the lobes closer together than in *L. mitchellensis*. The genitalia of the male closely resembles that of *L. alexanderi* but differs particularly in the width of the basal process of the titillator extending under the subanal lobe.