

Two New Species of *Leuctra*, with Notes on the *ferruginea* Group (Plecoptera: Leuctridae)¹

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ABSTRACT

Leuctra crossi and *L. rickeri* are described from Alabama and Kentucky, respectively, and the diagnostic characters figured. New figures of *L. ferruginea* (Walker)

are given and the relationship of *rickeri* to other species in the *ferruginea* group is briefly discussed.

Both *Leuctra crossi*, n. sp. and *L. rickeri*, n. sp. were collected during a 1970–72 survey of adult stoneflies in Alabama. The separation of each species from similar species resulted from comparisons of the Alabama specimens with those recently collected in Kentucky as well as specimens from the Illinois Natural History Survey (INHS and the collection of Bill P. Stark. Descriptions are based on the types, which were cleared and expanded with potassium hydroxide solution. Types are deposited in the INHS. Male paratypes of *crossi* are deposited in the United States National Museum of Natural History (USNM), the Auburn (Ala.) University Insect Museum (AUIM), and W. E. Ricker's collection. Male and female paratypes of *rickeri* are deposited in the USNM and AUIM. Distribution data were obtained from collections studied, Hanson's (1941) and Frison's (1942) records, and Ricker (pers. com.).

Leuctra crossi, n. sp.

(Fig. 1–3)

Holotype.—Male, collected from stream border, Calhoun Co., AL, Camp Cottaquilla Rd. off AL 9, N. jct US 78 and AL 9, April 14, 1972, A. M. James and A. M. Burnett. Length: 6.5 mm; color and wing venation typical of the genus; 7th tergite unmodified; 8th tergite with a raised bilobed process, lobes broadly divergent and wing-shaped, width of process ca. $\frac{1}{3}$ that of tergite; in dorsal view, inner members of subanal lobes broad throughout the lengths, apices crenulate, lateral aspect narrowing slightly beyond the upward curve; outer members sheath-like basally, extending obliquely over lateral aspect of inner members, narrowing to sharp apices that recurve mesad over inner members; vesicle of 9th sternite clavate.

Allotype.—Female, same collecting data as holotype. Length: 7 mm; subgenital plate (8th sternite) with a shallow notch wider than the apex of a lobe, apices truncate. The slight asymmetry of the subgenital plate of this specimen was corrected for in the figure.

Paratypes.—3 ♂, same data as holotype; 1 ♂, type-locality, April 14, 1973, A. M. James.

Comments.—The tergal process of this male is similar to that of *L. alexanderi* Hanson but the sub-

anal lobes are different. Male *alexanderi* collected in Natural Bridge State Park, Powell Co., KY, exhibit both inner and outer subanal lobes as figured by Hanson (1941): the ventral aspects of the inner subanal lobes are quite slender compared to those of *crossi*, and the outer members are slender, anteriorly recurved structures typical of several *Leuctra*. Lateral aspects of the outer subanal lobes of *crossi* are not contrasted so well against the inner members and the sheathlike structure is apparent only with close examination. The only female that resembled *alexanderi* in the collection from the type-locality was identified as *crossi*. It cannot be distinguished from *alexanderi* as figured by Hanson, and no females were taken in the Kentucky collection for comparison. Hanson recorded *alexanderi* from elevations above 3300 ft msl in the Appalachian Mtns of Virginia and Tennessee; the Kentucky specimens are from ca. 1200 ft msl in the Cumberland Plateau.

Leuctra rickeri, n. sp.

(Fig. 4–6)

Leuctra decepta: Frison 1942: 257–258. In part.
Leuctra ferruginea: Illies 1966: 89. In part.

Holotype.—Male, collected from stream border, Menifee Co., KY, 1.5 mi E Frenchburg on US 460, May 25, 1975, A. M. James and A. M. Burnett. Length: 7 mm; color and wing venation typical of the genus; 7th tergite with triangular lobe not raised; in dorsal view, inner members of subanal lobes broadest at base, twisting laterad somewhat and tapering slightly to blunt apices, a distinct spur at each apex, lateral aspect uniformly broad throughout most of the length, tapering and recurving forward at the apex; vesicle on 9th sternite parabolic, somewhat longer than wide.

Allotype.—Female, same collecting data as holotype. Length: 7.5 mm; subgenital plate (8th sternite) with a deep notch narrower than the apex of a lobe, apices of lobes slightly arched and sloped mesad.

Paratypes.—11 ♂, 11 ♀, same data as holotype; 2 ♂, 2 ♀, Calhoun Co., AL, Camp Cottaquilla Rd., April 27, 1972, A. M. James and A. M. Burnett; 4 ♂, 1 ♀, same data, May 12, 1972. In the INHS from Illinois: 3 ♂, 3 ♀, Herod, May 24, 1940, C. O. Mohr and B. D. Burks; 2 ♂, Herod, May 29, 1939, B. D. Burks and G. T. Riegel; 2 ♂, 2 ♀, Eddyville, May 24, 1940, C. O. Mohr and B. D.

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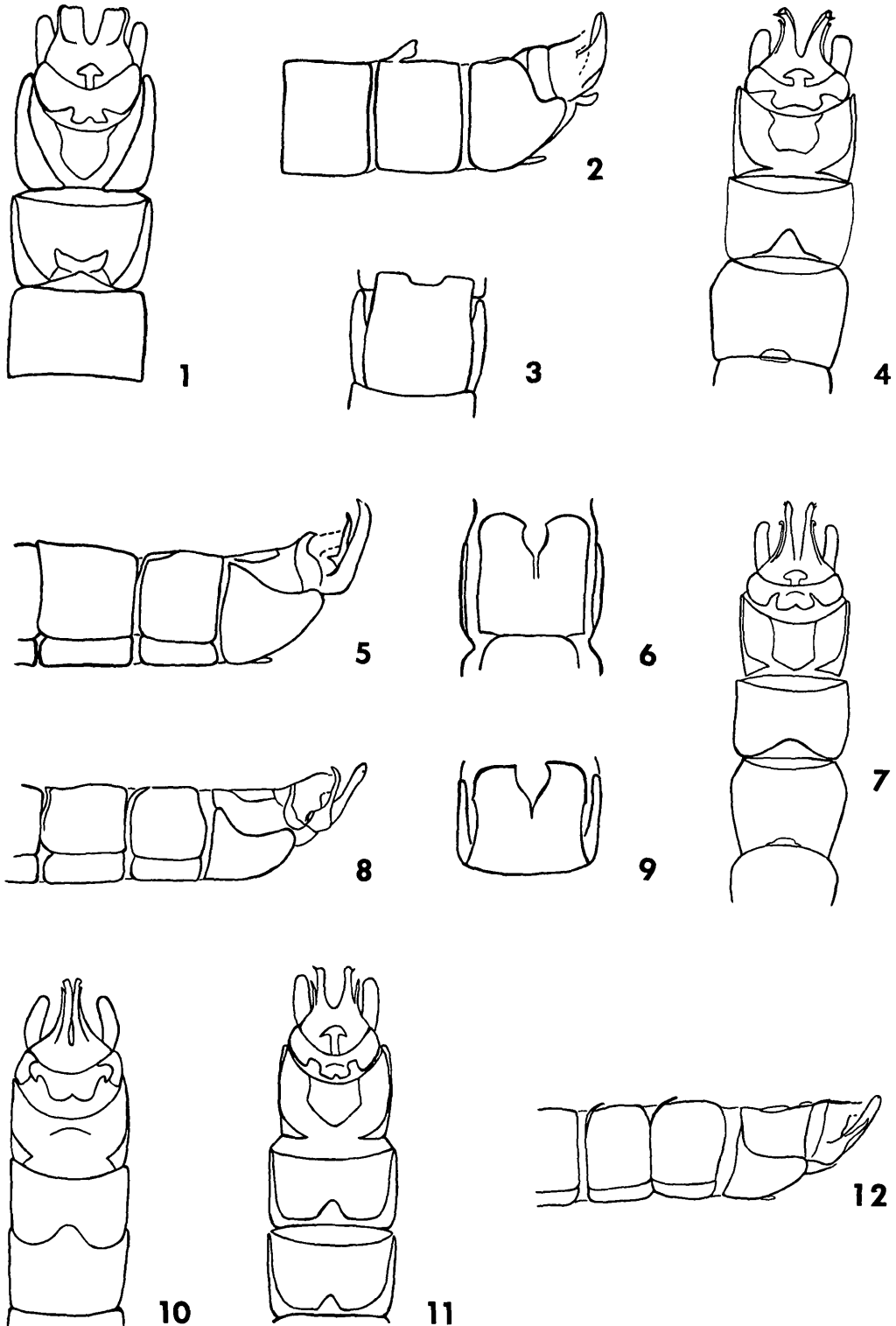


FIG. 1-12.—Diagnostic characters and variability. (1-3) *L. crossi*. (1) ♂ terminalia, dorsal; (2) ♂ terminalia, lateral; (3) ♀ 8th sternite. (4-6) *L. rickeri* (types). (4) ♂ terminalia, dorsal; (5) ♂ terminalia, lateral; (6) ♀ 8th sternite. (7-9) *L. ferruginea* (New York). (7) ♂ terminalia, dorsal; (8) ♂ terminalia, lateral; (9) ♀ 8th sternite. (10) *ferruginea* (West Virginia), ♂ terminalia, dorsal (segments telescoped). (11-12) *rickeri* (Powell Co., AL). (11) ♂ terminalia, dorsal; (12) ♂ terminalia, lateral.

Burks; 1 ♂, 2 ♀, Eddyville, June 1, 1940, B. D. Burks. In Stark's collection: 1 ♂, Laurel Run, OH, May 23, 1953, collector unknown.

Comments.—This species can be distinguished from *L. ferruginea* (Walker) by the spurs on broader inner subanal lobes and the triangular tergal lobe. The subgenital notch appears narrower in *rickeri*, although variation exists. Specimens of *ferruginea* from New York in the INHS (Fig. 7-9) exhibit the rounded tergal lobe, slender subanal lobes, and broad notch described by Claassen (1923); setae rather than spurs are near the apices of the inner lobes.

THE *ferruginea* GROUP

Besides *ferruginea* and *rickeri*, the group includes *L. alabama* James 1974, which has spurs on the inner lobes, but lacks a tergal lobe. *L. alabama* has been recorded only from Jackson Co., AL, in May. *L. ferruginea* and *rickeri*, which generally emerge from May-August, are more widely recorded in eastern North America, with *ferruginea* primarily northern and *rickeri* southern. Most southern records of *ferruginea* include high elevations from Virginia to Georgia, where northern populations frequently are found in their southern limits. Otherwise, *ferruginea* ranges from Nova Scotia and Ontario into Minnesota, Pennsylvania, and West Virginia. A few *ferruginea* from West Virginia (Fig. 10) exhibit slender, blunt inner lobes with a short excrescence near the apices. Tergal lobes intermediate between rounded and triangular are also found among the West Virginia specimens, sometimes in combination with the intermediate subanal lobes.

The range of *rickeri* extends from Illinois to Ohio south to Mississippi and Georgia. The most conspicuous variants among the specimens examined were 2 ♂ collected from Powell Co., AL (Fig. 11-12). These specimens have a definite though somewhat smaller triangular lobe on the 7th tergite, as well, and the lobes are raised slightly. These are the only specimens with a true lobe on the 7th tergite rather than a suggestion, as described by Claas-

sen for *ferruginea*, or faint pattern. The inner subanal lobes of these specimens are slenderer than commonly observed in *rickeri*.

Two records of *ferruginea* are from the southern Coastal Plain: 1 ♂, Marion Co., AL, December 28, 1971, A. M. James (a northern Alabama county within the fall line), and 2 ♂, Leon Co., FL, Nov. 30, 1939, L. Berner (INHS). The emergence time of these specimens and a nearly triangular tergal lobe on the Alabama specimen are the most noticeable variations from typical *ferruginea*. Further collecting is needed to determine the status of these specimens. They may represent relict patches of *ferruginea*, occupying refuge areas that Ricker (1964) suggested extended to near the Gulf of Mexico during recent glaciations. Collecting trips to the Alabama location, during May 1973 to find summer *Leuctra* and during December 1975 to find more of the winter forms, were unsuccessful.

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