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Taxonomy and distribution of *Electrogena ujhelyii* (SOWA, 1981)

(Insecta: Ephemeroptera: Heptageniidae)¹

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Abstract

Taxonomy of *Electrogena ujhelyii* (SOWA, 1981) is reviewed on the basis of a new set of diagnostic characters, recently proposed for the genus *Electrogena*. The species is pointed out for the first time for Italy, and its synonymy with *E. rivuscellana* SARTORI & LANDOLT, 1991, is stated.

Key words: Heptageniidae, *Electrogena*, taxonomy, biometry, new record, new synonymy.

Zusammenfassung

Die Taxonomie von *Electrogena ujhelyii* (SOWA, 1981) wird unter Benützung neuer diagnostischer Merkmale revidiert, welche erst kürzlich für die Gattung *Electrogena* vorgeschlagen worden sind. Die Art wird erstmals für Italien erwähnt. Ihre Synonymie mit *E. rivuscellana* SARTORI & LANDOLT, 1991, wird festgestellt.

Introduction

Recent papers (BELFIORE 1994, in press) focused on the previously underestimated significance of some selected characters of larvae in the diagnosis of *Electrogena* ZURWERRA & TOMKA, 1985, species. The use of this set of characters, unambiguously defined and often workable with numerical methods, led to a great improvement in the recognition of species. Previously, the taxonomy of *Electrogena* was based mainly on adult characters, which are few and very variable; the larval characters described were often different from paper to paper and the diagnosis of species was ambiguous.

On the basis of the new acquisitions in the taxonomy of *Electrogena* species, we examined material from Austria belonging to *E. ujhelyii* (SOWA, 1981), kindly loaned from the colleagues Dr. E. Bauernfeind and Dr. P. Weichselbaumer, and we can give a better definition of the diagnostic characters of this species.

Electrogena ujhelyii was described on larvae and adults collected from the tributaries of Lake Balaton, Hungary (SOWA 1981). This species was then reported from East Germany (BRAASCH & JACOB 1984) and Austria (WEICHSELBAUMER & SOWA 1990). In this paper we point it out for Italy (Friuli). Furthermore we state the synonymy between *E. ujhelyii* and *E. rivuscellana* SARTORI & LANDOLT, 1991, the latter described on material from Switzerland, Slovenia and Germany (LANDOLT & al. 1991).

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Electrogena ujhelyii (SOWA, 1981)

Ecdyonurus ujhelyii SOWA, 1981 Acta Hydrobiol. 23(4): 375-380.

Electrogena rivuscellana SARTORI & LANDOLT, 1991 Bull. Soc. Vaud. Sc. Nat. 80(4): 459-470,

syn.n.

Material: A U S T R I A : Amstetten, Gschirnbach, 300 m, 15.VI.1991, 12 larvae, Dorfmayr leg., Weichselbaumer det.; Kronstein, brook Kl. Tulln, 250 m, 11.VI.1991, 2 larvae, Bauernfeind leg. et det.; brook near Döllersheim, 400 m, 1.V.1991, 2 larvae, Bauernfeind leg. et det.; Plank, River Kamp, 250 m, 3.V.1990, 2 larvae, Bauernfeind leg. et det.; Jennersdorf, River Raab, 242 m, 20.VIII.1991, 2 larvae, Bauernfeind leg. et det. (NMW); I T A L Y : Friuli-Venezia Giulia, Attimis (Udine), Racchiuso, Racchiusana stream, 18.V.1984, 1 larva, F. Desio leg., C. Belfiore det.; S W I T Z E R L A N D : Etang St. Victor (GE), 28.V.1985, 1 exuvia, M. Sartori leg. et det. (*E. rivuscellana*). All specimens in the author's collection, 2 larvae deposited at the Naturhistorisches Museum, Vienna (NMW).

Diagnostic characters of larvae

The character codes used hereafter are explained in detail by BELFIORE (1994). Mean, minimum, maximum and variance values are given for specimens from Austria (n = 18). Values for specimens from Switzerland ("*E. rivuscellana*": RIV) and from Italy (ITA) are then added (the mean between left and right mouthpart in case of characters regarding maxillae). Data on *E. ujhelyii* have been compared with mean values of the Italian species of the genus *Electrogena* (BELFIORE, manuscript).

- R_LBR The ratio: width of labrum/ width of lateral projection is high in *E. ujhelyii* (mean = 4.89, min = 4.66, max = 5.33, variance = 0.0393; RIV: 4.92; ITA: 4.70). Lateral projections are not very long, only *E. grandiae* (BELFIORE, 1981) and *E. lateralis* (CURTIS, 1934) have shorter projections (means = 4.93; 5.50).
- N_PLP The number of long hairs on ventral and inner surface of first segment of maxillar palpus is very high in *E. ujhelyii* (mean = 20, min = 13.5, max = 27, variance 21.97; RIV: 18 hairs; ITA: 27 hairs). The closest species is *E. gridelli* (GRANDI, 1953) (mean = 16.77). All the other species examined have less hairs.
- N_OUT Also the number of hairs on the margin of galea-lacinia, from the basis of maxillar palpus to fore edge, is the highest among the species examined (mean = 33.8, min = 18, max = 46, variance = 80.5; RIV: 36; ITA: 30). The closest species is again *E. gridelli*, whose maximum value is 26. A peculiarity of *E. ujhelyii* is that the hairs extend widely from outer margin to the ventral surface of galea-lacinia (Fig. 6).
- N_CBS The number of comb-shaped bristles of galea-lacinia is intermediate between species considered (mean = 20.39, min = 17, max = 24, variance = 3.5163; RIV: 19; ITA: 21.5).
- N_TCB The number of teeth of the 5th comb-shaped bristle on the fore margin of maxilla is high (mean = 13.53, min = 11, max = 16, variance = 1.7786; RIV: 14; ITA: 10). The closest species are *E. malickyi* (BRAASCH, 1983), *E. fallax* (HAGEN, 1864), and *E. zebrata* (HAGEN, 1864) (whose means are respectively 13.98, 13.26, and 13.20).

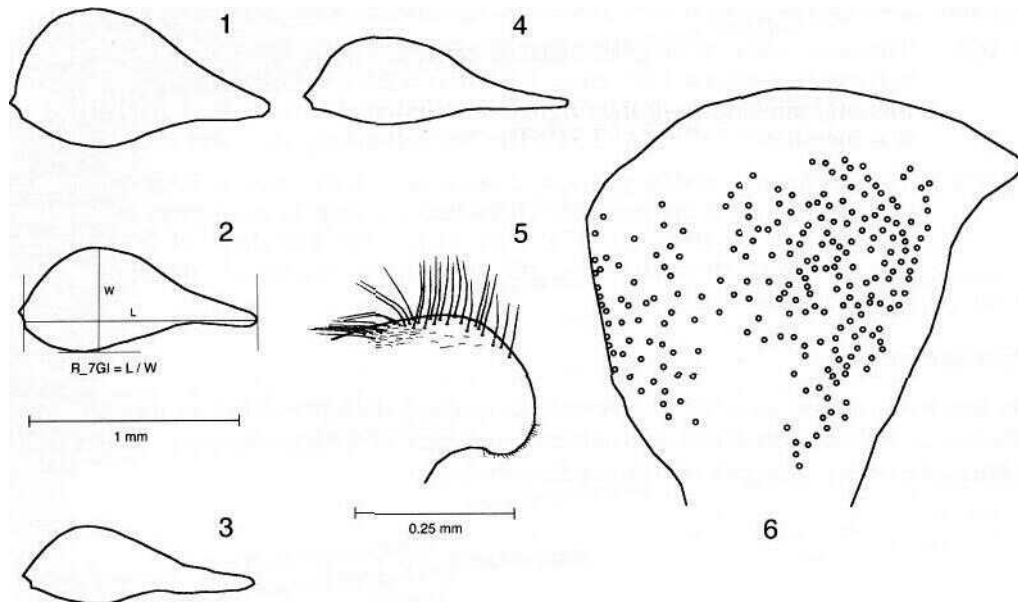


Fig. 1-6. Larva of *Electrogena ujhelyii*. Outline of 7th gill: gill with minimum (1), median (2) and maximum (3) value of L/W and gill of the Italian specimen (4); lateral lobe of hypopharynx (5); scheme of the arrangement of hairs on the ventral surface of galea-lacinia (6).

- S_HLB The long hairs on lateral lobes of hypopharynx do not extend over the apex of each lobe (Fig. 5); this character state is shared only with *E. lateralis*.
- R_GLA The ratio: distance between outer margins of glossae/ distance between inner margins of glossae is intermediate between examined species (mean = 2.9534; min = 2.7022; max = 3.4559; variance = 0.0510; RIV: not measured, because of the bad condition of labrum; ITA: 3.2727).
- R_GLB The ratio: distance between outer margins of glossae/ width of glossa is high (glossae are narrow: mean = 2.8539; min = 2.5824; max = 3.0111; variance = 0.0144; RIV: see previous character; ITA: 2.5714). Only *E. grandiae* has narrower glossae.
- S_PGL Paraglossae are little expanded laterally and regularly rounded at apex.
- S_PNT Sides of pronotum rounded, the joint with the side of mesonotum is smooth, without any step.
- S_BFE The distal bristles on upper surface of fore femora are long and somewhat squared at apex.
- N_BVF Several bristles are present on ventral surface of femora, near the hind edge (mean = 29, min = 19, max = 45, variance 47.41; "*E. rivuscellana*": 42; ITA: 16). Only three species, within Italy, have more than 3 bristles on ventral side of femora: *E. ujhelyii*, *E. fallax* and *E. zebrata*, the last two endemic to Corsica and Sardinia.
- S_TAR No dark marking on proximal part of tarsus.

- N_CLW 2 - 4 teeth on tarsal claw (mean = 2.6; variance = 0.37; RIV: 2; ITA: 2).
- R_1GI The mean value of 1st gill length/ 1st gill width is the lowest among the examined species (mean = 1.87; min = 1.53; max = 2.67; variance = 0.0846; RIV: gills missing, drawing from the original description (LANDOLT & al. 1991: fig. 14) was measured: 2.17; ITA: 2.31). The first gill is very short and broad.
- R_7GI 7th gill length/ width: mean = 2.28; min = 1.80; max = 2.85; variance = 0.0896; RIV: see the previous character, drawing from original description (LANDOLT & al. 1991: fig. 17): 2.14; ITA: 2.89. The shape of 7th gill in *E. ujhelyii* is very distinctive: the gill, proximally very broad, suddenly get narrower at apex (Fig. 1 - 4).

Distribution

On the basis of the new taxonomic and faunistical data presented in this paper, *E. ujhelyii* is widely distributed in southern countries of Central Europe: Switzerland, Austria, Germany, Hungary and North-Eastern Italy.

Discussion

The new approach to the taxonomy of the genus *Electrogena*, based on the set of 16 characters above listed, allows the identification of species with a high degree of certainty, also if only few specimens are available. The larvae of *E. ujhelyii* can be easily recognized by the following characters: hairs on outer edge of galea-lacinia very numerous, spreading to the ventral surface of maxilla (Fig. 6); apex of lobes of hypopharynx without long hairs (Fig. 5); femora with a row of bristles on the ventral side, near the hind edge (beyond the row of long bristles); 7th gill with a sharp transition from the proximal 2/3 (broad) to the distal 1/3 (narrow) (Fig. 1 - 4).

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