

**On the Type Specimens of *Electrogena zebrata* (Hagen, 1864) and
E. fallax (Hagen, 1864) (Ephemeroptera).¹**

by

Elda GAINO & Carlo BELFIORE

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Lectotypes for *Baetis zebrata* Hagen, 1864 and *B. fallax* Hagen, 1864 are designated. Both species are redescribed from fresh and type material. They are transferred to the recently described genus *Electrogena* Zurwerra & Tomka, 1985.

E. GAINO, Istituto di Zoologia dell'Università di Genova, Via Balbi 5, 16126 Genova, ITALY.

C. BELFIORE, Istituto e Museo di Zoologia dell'Università di Napoli, Via Mezzocannone 8, 80134 Napoli, ITALY.

INTRODUCTION

The name *Baetis fallax* was proposed by Hagen (1864a), albeit rather doubtfully, for a male imago. The species was considered related to *Baetis fluminum* Pictet. After examination of an additional male and of a female subimago, Hagen (1864b) confirmed *B. fallax* as a separate species. Later on, Eaton (1871) synonymized *B. fallax* with *Baetis zebrata*, another species described by Hagen (1864a), that he referred to the genus *Heptagenia*. After some years the two species were finally separated by Eaton (1883-1888) in the subgenus *Ecdyurus* [sic!]. Ulmer (1921) studied materials from the Selys' collection that were previously examined also by Hagen for his descriptions, and redescribed the male of *fallax* (subgen. *Ecdyonurus*), pointing out the affinity between this species and *Ecdyonurus lateralis* (Curtis). In the same work, Ulmer was unable to redescribe *Baetis zebrata* exhaustively, but he referred it tentatively to the same genus *Ecdyonurus* (sub nom. *E. zebratus*). In contrast, Grandi (1953) redescribed under *Heptagenia fallax* some specimens from Sardinia that showed some very peculiar penis lobes, clearly different from those of the *lateralis* group. She also quoted Eaton's early opinion about the synonymy with *H. zebrata*. Later on, Grandi (1960) ranked the two species separately, making reference to her previous redescription of *Heptagenia fallax*, and referring *Baetis zebrata* to the genus *Ecdyonurus*. Finally Puthz (1978) referred *Baetis fallax* to

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the genus *Ecdyonurus*, possibly because of the peculiar penis lobes figured by Grandi. More recently, Zurwerra and Tomka (1985) created the new genus *Electrogena* to include all species of the "*lateralis*-group", previously considered as a part of the genus *Ecdyonurus*.

The need to clarify the taxonomic status of these two species is evident. Therefore, we asked Dr. Vogt (Museum of Comparative Zoology, Harvard University, U.S.A.) for the types of *B. fallax* and *B. zebrata*. New collections in Sardinia of many imagines of both species allowed us to point out some additional taxonomic characters.

***Electrogena zebrata* (Hagen, 1864), (comb. n.)**

= *Baetis zebrata* Hagen, 1864

= *Heptagenia fallax*: Grandi, 1953; 1960

Lectotype - Male imago, pinned. Labels: Type Nr. 14550/128/ Corse, B.[ellier de la] Ch[avignerie] /Hagen/ *B. zebrata* Hagen, herewith designated.

Abdominal segments V-VIII detached, glued on the label bearing the species name. Segments IX-X in a separate tube, together with penis lobes, a gonopode and a leg. Eyes in bad condition. Wings transparent; forewings length 10.5 mm. Legs all missing except the middle right one. The latter yellowish brown, with an evident dark transverse band on the femur. Tergites II-VIII with a dark band on hind margin, extending laterally toward the fore corners. On the same tergites a dark median longitudinal stripe. Penis lobes as in fig. 1,a, with a large backwards projecting appendix. Titillators well developed.

New collections: Sardinia: Olbia (Sassari), Torrente Enas, 23.V.1985, 21 ♂♂; Montresta (Nuoro), Torrente Santale, 1.VI.1985, 10 ♂♂; C. Belfiore legit.

Male imago. Body length 11 mm, fore wing 11 mm, caudal filaments 25 mm. Legs: femora brown, those of the fore legs darker with a wide median blackish-red band and a distal stain of yellow colour, level with the joint with tibia.

Leg formula expressed in mm (average value from 10 images):

- a) foreleg: femur 2,7; tibia 3,2; tarsus 10,6; tarsus II 1, 2; tarsus III 1,1; tarsus IV 0,7; tarsus V 0,5;
- b) mid leg: femur 2,7; tibia 2,3; tarsus 1,0;
- c) hind leg: femur 2,8; tibia 2,3; tarsus 0,9.

Thorax brown with black dots on the pleural plates. Fore wings hyaline with a small subtriangular black spot level with the first cross vein of the costal area. The cross veins of the fore half of the wing very sharply defined, with a brownish halo.

Abdominal tergites light brown dorsally with two narrow longitudinal stripes close to the sides of the median line, posterior margin with a dark band. An oblique blackish stripe on the sides of each tergite continuing forward and laterally. Sternites with two blackish longitudinal stripes on the sides; at least the first four segments with a subtriangular brown reddish macula including two subcircular spots on the sides of the mid line. Caudal filaments annulated reddish brown. Rear edge of the last sternite slightly convex with two lateral processes.

Genitalia (fig. 1,b) of a peculiar shape. Forceps markedly bent, segment 2 with a proximal expansion as wide as the first segment. Penis lobes very similar to those of *Afronurus kugleri* Demoulin, 1973 (Demoulin, 1973; fig. 4), tapering

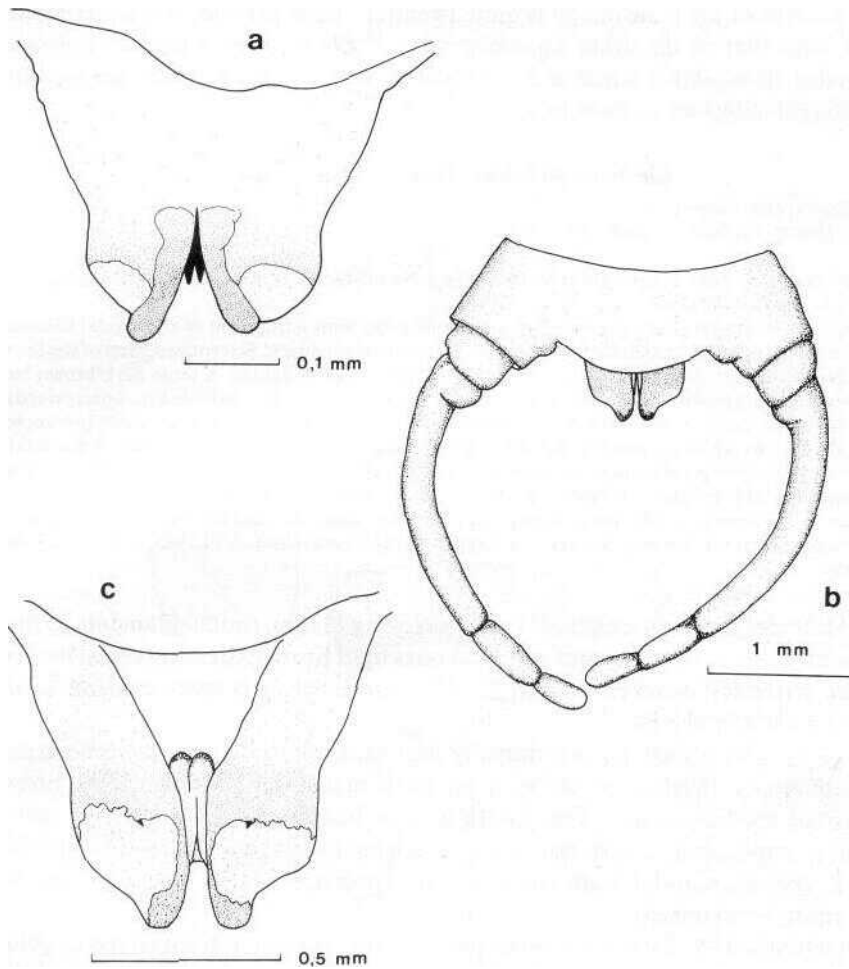


Fig. 1. *Electrogena zebrata*: penis lobes of the lectotype (a); genitalia (b) and penes in dorsal view (c) of a specimen from Sardinia.

to the apex dorsally, bearing a thickened, indented belt with 1 or 2 small spines turned backwards (fig. 1, c).

Additional materials:

- A male imago, labelled *Heptagenia fallax*, from Grandi's collection (Sardinia: Gennargentu, VII.1939);
- A male nymph from Corse (Torrente Puto, Comune di Ota, 18.VIII.1981, S. Gaiter legit). This specimen fits Grandi's description of the nymph of *H. fallax* (Grandi, 1960) and shows subimaginal penis lobes, shaped those of the imago off. *zebrata*.

Discussion. We attribute this species to the genus *Electrogena* because the nymphs of *E. zebrata* (described by Grandi, 1953 sub nom. *Heptagenia fallax*) are very similar to those of the other species of the genus. Indeed, the genital

apparatus of the male imago is quite peculiar and at present, it is not comparable with that of the other known species of *Electrogena*. Further studies are needed to establish whether *E. zebrata* (and *Afronurus kugleri*) belongs to a different subgenus or even to a new genus.

***Electrogena fallax* (Hagen, 1864) (comb. n.)**

= *Baetis fallax* Hagen, 1864
nee *Heptagenia fallax*: Grandi, 1953; 1960

Lectotype - Male imago, pinned. Labels: Type Nr 14549/16, Corse, B. [elliet de la] Ch. [avignerie], herewith designated.

Genitalia detached and preserved in a separate tube, with a fragment of the caudal filaments. Forewing length: 11 mm; body length: 9 mm. Eyes in bad condition. Sclerotized parts of the thorax brown. Fore legs yellowish brown, mid and hind legs slightly lighter. A large dark brown band extending from half to 3/4 femora, toward the tibia. Femur-tibia joint dark brown. A narrower dark band is near the apex of femora. Wings transparent, veins brown. Abdomen yellowish brown, with reddish brown spots on tergites like in *E. lateralis* (Curtis) s.s. (cfr. Belfiore, 1981). Some reddish brown spots at tergites' corners, the hind ones larger. Genitalia: in a separate tube are the gonopodes (detached) and the right only lobe of penis, with both titillators (fig. 2, a-b).

New collections: Sardinia, Santadi (Cagliari), loc. Pantaleo, Rio Mannu, 25.V.1985, 10 ♂♂; Villanova Strisaili (Nuoro), tributary of Lago Alto del Flumendosa, 3.VI.1985, 6 ♂♂; C. Belfiore legit.

Male imago. Body length 11,5 mm, fore wing 11 mm, caudal filaments 25 mm. Fore femora brown, the mid and hind ones light brown; the transversal median dark stripe less marked than in *E. zebrata* whereas it is more evident on the median and hind legs.

Thorax both dark brown dorsally and ventrally, pleura with some cream white spots. Hyaline wings with no dark maculae. Abdomen light brown spotted reddish brown. Terga with a dark line on the rear and two lateral anterior spots (fig. 2,c), sterna with a polygonal brown macula, less evident than in *E. zebrata*. Caudal filaments uniformly brown. Posterior margin of the last sternum very convex.

Genitalia (fig. 2,d): penis lobes and forceps with the typical shape of genus *Electrogena*. Penes subovoidal, with their quadrangular-shaped sclerites visible dorsally; the little anterior lobe with some little spines (fig. 2,e).

Discussion. The external morphological characters of this species are recalling of some other forms of *Electrogena* particularly *E. grandiae* (Belfiore) (Belfiore, 1981), as to the shape of the penis lobes and abdominal markings. The shape of the sclerite of the penis lobe is a good character discriminating this species from all other *Electrogena*.

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CONTRIBUTION TO ELECTROGENA (EPHEMEROPTERA)

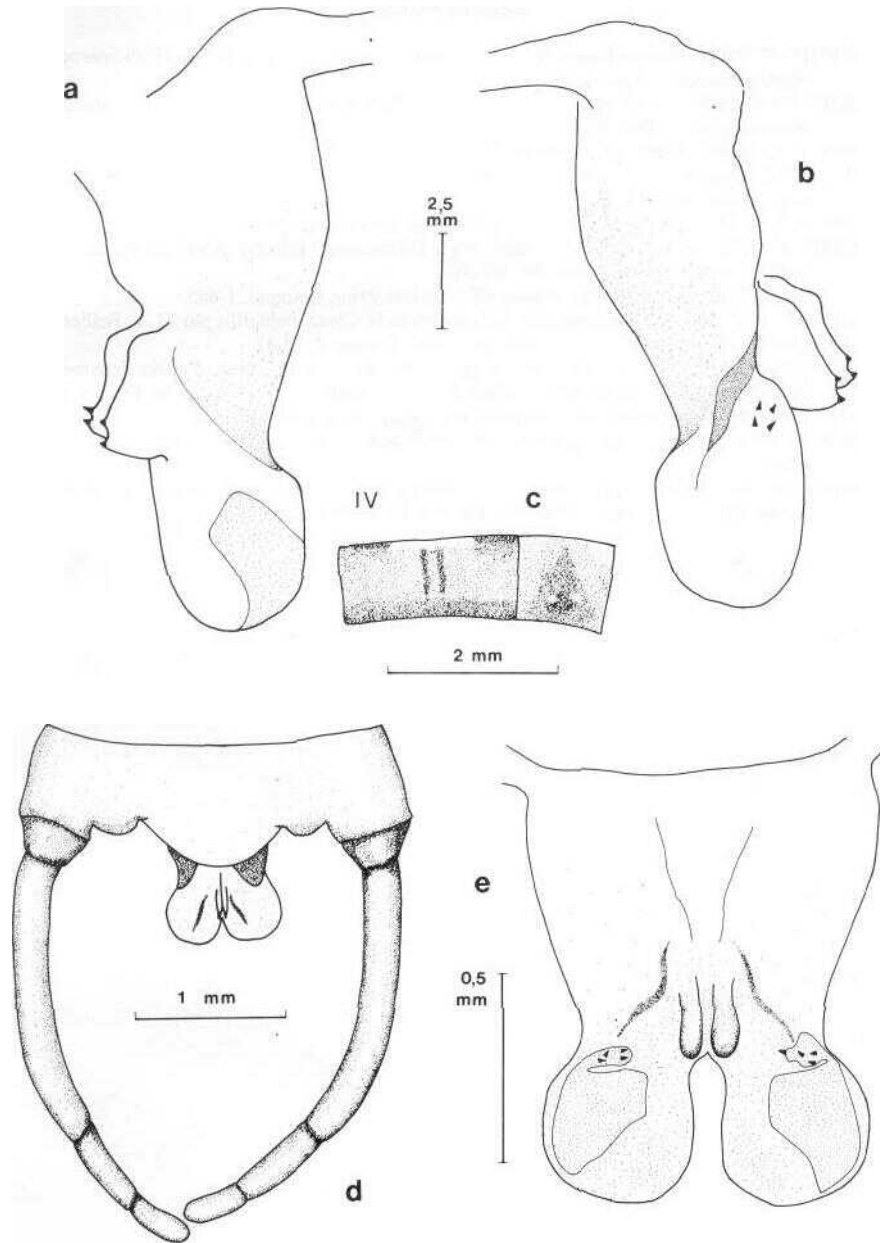


Fig.2. *Electrogena fallax*: dorsal (a) and ventral (b) view of the right penis lobe of the lectotype; IV abdominal tergum and sternum (c), genitalia (d) and penes in dorsal view (e) of a specimen from Sardinia.

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