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Notes on Italian Heptageniidae (Ephemeroptera). *Rhithrogena fiorii* Grandi, 1953 and *R. adrianae* sp. n.

by

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ABSTRACT

Rhithrogena adrianae, a new species related to *R. diaphana* Nav., is described from nymphs and male imagines collected in Central Italy. Taxonomic characters of nymphs and males of *R. fiorii* Grandi, whose nymphal stage was previously unknown, are also described and figured. Lectotype is designated for *R. fiorii*.

The taxonomic status of *Rhithrogena fiorii* Grandi, 1953, described from winged stages only, was till now very uncertain. The type locality, near Bologna, is now altered by buildings and factories: *R. fiorii* has probably disappeared from that site.

I have examined in Grandi's collection the specimens referred by her to *R. fiorii*, labelled: "Bologna, S. Luca, 16.III.1952 (1 ♂, 1 ♀ subim.), 20.III.1954 (1 ♀, 1 ♂ subim., 1 ♀ subim.), 20.II.1955 (1 ♂ subim.), 17.III.1955 (1 ♀), .IV. 1955 (1 ♂). I designate lectotype the male imago collected on 16.III. 1952. None of the specimens is in a good state of preservation. Titillators are not truncate (Grandi, 1960: fig. 21,6 and pag. 91), but with few pointed lobes at the apex.

During the first months of 1980 and 1981, in the river Mignone, near Rome, I collected and reared a hundred nymphs of *Rhithrogena*, from which I obtained some subimagines and two male imagines, easily referable to *R. fiorii*. I describe herein the taxonomic features of nymphs and males of this species. I also describe the male imago and nymph of a new species of *Rhithrogena* which lives in the same localities as *R. fiorii*, with a different phenology.

***Rhithrogena fiorii* Grandi, 1953 (Figs. 1-3)**

Male imago. In living specimens iridescent greyish green eyes with black and white stripes laterally, near the ventral margin of eyes. After some weeks of preservation

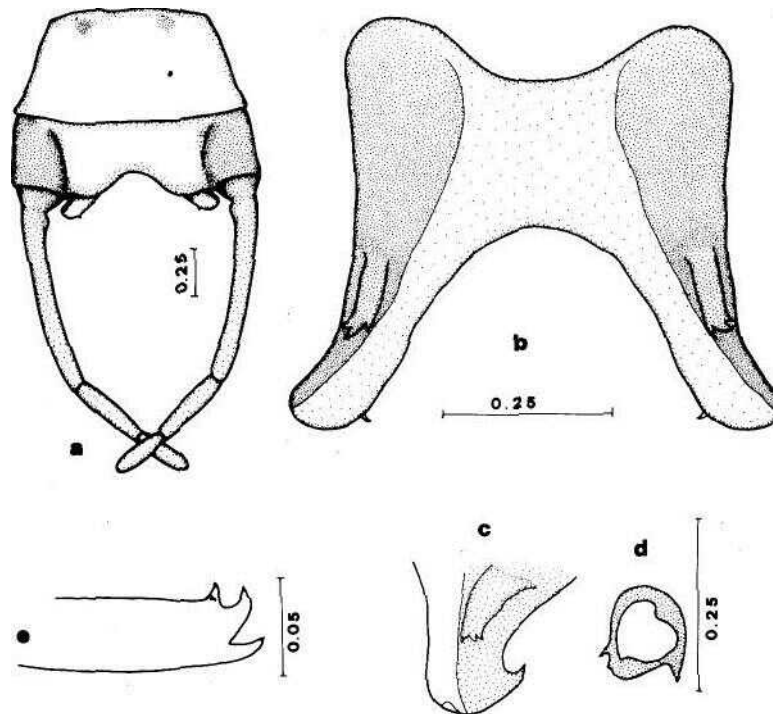


Fig. 1. *Rhithrogena fiorii*, male imago: a, gonopodes and penis; b, penis lobes, ventral view; c, penis lobe, lateral view; d, penis lobe, caudal view; e, titillator. (Scale in mm).

in alcohol eyes appear grey, with a pinkish hue. Thorax dorsally dark brown. Wings colourless; *C* and *Sc* proximally light brown, distally darker. Other fore longitudinal veins dark brown, *anal* veins lighter. Fore legs blackish brown, distally lighter. Middle and hind legs with yellowish green femur and tibia, greyish brown tarsi and joints. An elongate dark reddish spot on the surface of middle and hind femora. Abdomen reddish brown: II-VII tergites with two faint reddish longitudinal stripes from the fore margin, on the sides of median line. Sternites reddish brown, lighter than tergites. Last abdominal segments reddish with black spots on tergites; X sternite blackish on the sides, medially lighter. Gonopodes blackish, long and slender (fig. 1a). Penis lobes spread apart, subcylindrical, with rounded apex: in ventral view is visible only the little inner tooth (fig. 1b); outer tooth not very large (fig. 1c); in caudal view the apex of penis lobes has a subtriangular, rounded shape (fig. 1d).

Nymph. General coloration dark. Femora with a large subrectangular dark reddish spot (fig. 2e-g). I-VII and X tergites dark brown; VIII and IX tergites with large light markings. In pale nymphs two dark spots appear on the sides of median line, on most of tergites. I-IX sternites lighter than tergites; X sternite dark brown.

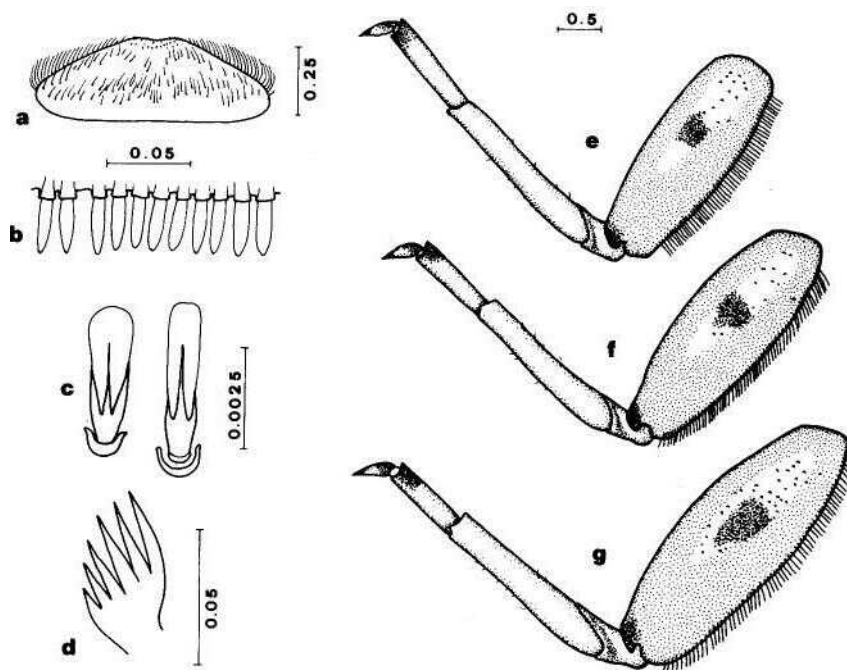


Fig. 2. *Rhithrogena fiorii*, nymph: a, labrum; b, hind margin of tergites; c, spines on upper surface of femora; d, bristle on distal margin of maxillae; e, fore leg; f, middle leg; g, hind leg. (Scale in mm).

Labrum wide, subtriangular (fig. 2a). Comb-shaped bristles on distal margin of maxillae with 5-7 pointed teeth (fig. 2d). Most of spines on upper surface of femora narrow and long, with parallel or slightly diverging sides (fig. 2c). Two denticles on tarsal claws (fig. 3h). Hind margin of tergites with narrow, bluntly pointed projections (fig. 2b). First gill crenulated, with large and rounded dorsal plica (fig. 3a); II-VII gills with distal margin crenulated (fig. 3b-g).

Material (in addition to syntypes listed above). Italy, Latium, Tolta (Roma), Mignone river, loc. Ripa Rossa, 1.III.1980: 3 nymphs, 1 n. skin; Canale Monterano (Roma), Mignone river, Monterano, 21-26.II.1981: 1 ♂ with its n. skin, 1 ♂ subim., 1 ♀, 38 nymphs, 8 n. skins; 5-6.III.1981: 1 ♂, 1 ♂ subim., 2 ♀♀ with their n. skins, 61 nymphs.

Affinities. *R. fiorii* is related to the group *hybrida* both for adult and nymphal characters: subcylindrical penis lobes, denticulate titillators, large plica on the first gill, crenulated gills. Some features are, however, very distinctive: wide red spot on femora of imagines and nymphs, abdominal pattern of nymphs, early emergence. *R. fiorii* is closely related to *R. hercynia* Landa, 1970, which presents the same set of taxonomic characters (see Landa, 1970).

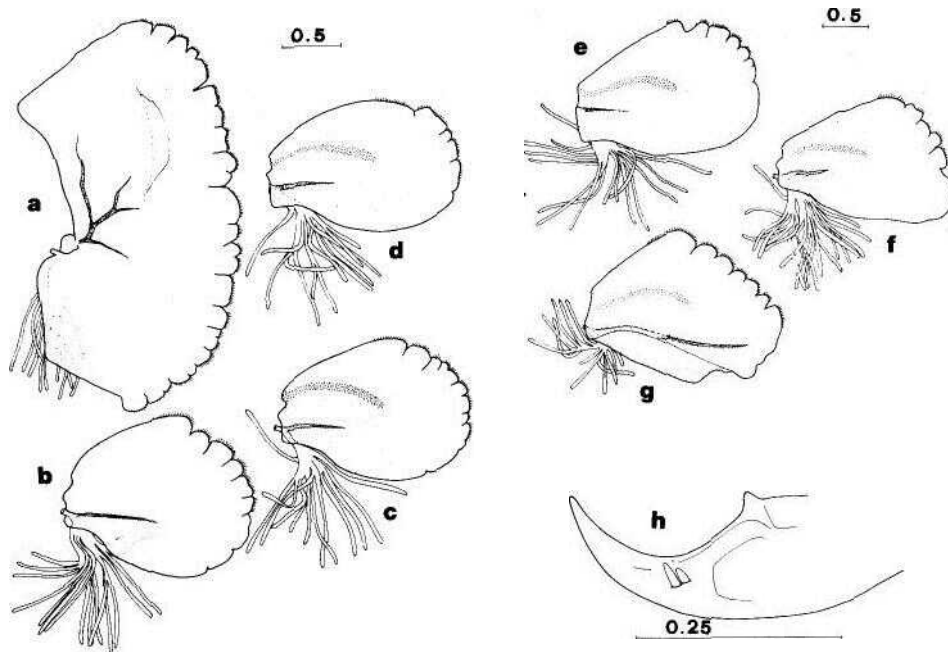


Fig. 3. *Rhithrogena fiorii*, nymph: a-g, I-VII gills; h, tarsal claw. (Scale in mm).

Biology. The nymphs of *R. fiorii* were collected in a little river, at low altitude, with moderately clean, current water. The phenology of the species is characteristic: adults fly very early, from February to April. Details on the development cycle are given in Table 1.

Table 1. Distribution in length classes of the individuals (nymphs) of *R. fiorii* collected in the river Mignone from May, 1980 to May, 1981. In brackets: nymphs close to emergence.

dates of collection	mm	2	2.5	3	3.5	4	4.5	5	5	6	7	8	9	10	11	11.5	12	13
2/9/80		2	24	20														
2/10/80				3	2													
5/11/80				2		1	1											
12/12/80						1		1		10	9		1					
8/1/81																1	1	
2/2/81																	2	
26/2/81										3	1(1)	3	9	12(5)			7(1)	1

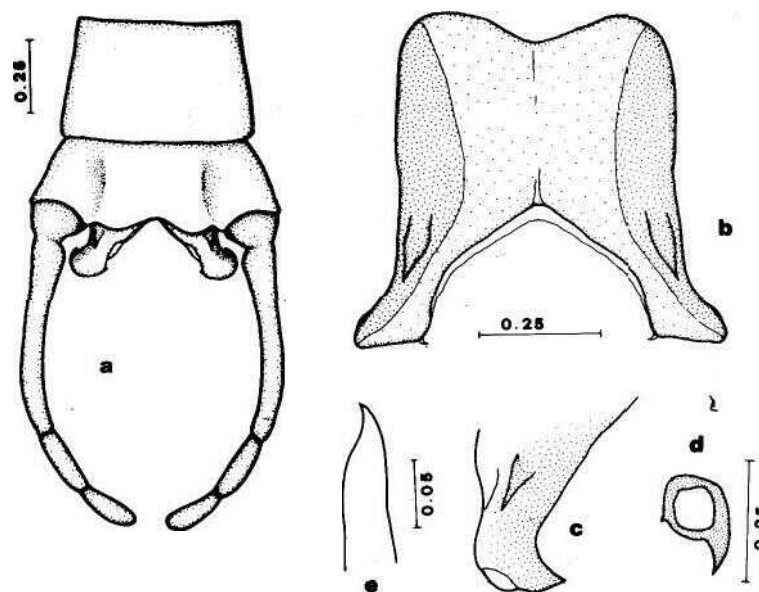
Rhithrogena adrianae sp. n. (Figs. 4, 5a-g, 6a-h)

Fig. 4. *Rhithrogena adrianae*, male imago: a, gonopodes and penis; b, penis lobes, ventral view; c, penis lobe, lateral view; d, penis lobe, caudal view; e, titillator. (Scale in mm).

Male imago. Length of fore wing 10 mm. Eyes dark grey (in alcohol); medial margins of eyes very close. Thorax light brown with paler spots. Legs pale; coxa without definite dark marking. All femora with a dark reddish spot, elongate, often of a somewhat triangular shape. Wings colourless, very distinctive: longitudinal veins light brown, transverse veins very light, hardly visible. I-VI abdominal segments light brown, translucent, dorsally darker; near hind margin of tergites there is a vanishing brown band, which sometimes extends to fore corners with two faint oblique brown stripes; two pale spots sometimes appear on the sides of median line. VII-X segments brown, opaque, with paler markings. Penis lobes show different features depending on angles of view (fig. 4a and b). In ventral view is visible a short hooked tooth from inner distal corner of lobes; sometimes the outer tooth appears too, dorsally bent inwards. From caudal and lateral views outer tooth appears long and wide (fig. 4 c-d). Titillators pointed (fig. 4e).

Nymph. Length of body 9-10 mm. General coloration pale brown, ventrally lighter. I-VIII tergites uniformly brown. IX and X tergites pale. Labrum slender (fig. 5a). Comb-shaped bristles on distal margin of maxillae with 10-13 pointed teeth (fig. 5g). Coxa with pale brown pattern, not well marked; fore and middle femora with a narrow dark reddish spot on upper surface (fig. 5d-e); hind femur

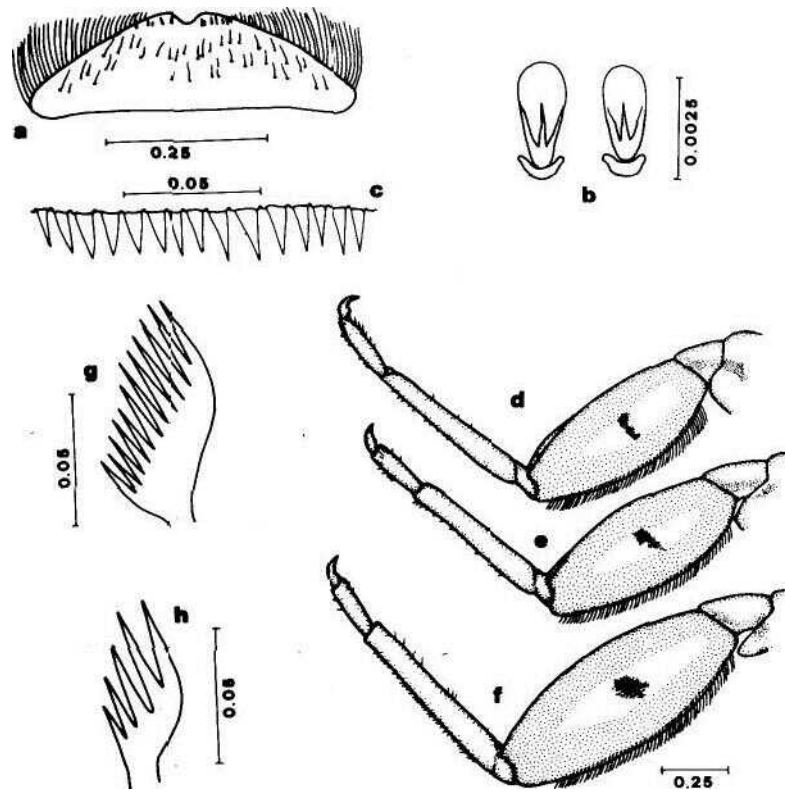


Fig. 5. *Rhithrogena adrianae* (a-g) and *R. diaphana* (h), nymph: a, labrum; b, spines on upper surface of femora; c, hind margin of tergites; d, fore leg; e, middle leg; f, hind leg; g, bristle on distal margin of maxillae (*R. adrianae*); h, bristle on distal margin of maxillae (*R. diaphana*). (Scale in mm).

with a wider, rounded spot (fig. 5f). Spines on upper surface of all femora rounded and short, with diverging sides (fig. 5b). Tarsal claws with 2-3 well developed denticles (fig. 6h). First gill without dorsal plica and with smooth margin (fig. 6a); other gills smooth (fig. 6b-g).

Derivatio nominis. The species is dedicated to Dr. Adriana Giangrande.

Affinities. *R. adrianae* is related to the group *diaphana*. The adult male of *R. adrianae* resembles *R. eatoni* Esben Petersen (see Sowa, 1971), from which it differs in shape of penis lobes, and in pointed titillators; the nymph of *R. eatoni* is unknown. The nymph of *R. adrianae* can be easily distinguished from *R. diaphana* Navas by the following characters: brown pattern, coxa without well defined markings, uniform coloration of tergites, 10-13 pointed lobes on comb-shaped bristles of maxillae, 2-3 denticles on tarsal claws. *R. diaphana* has a light,

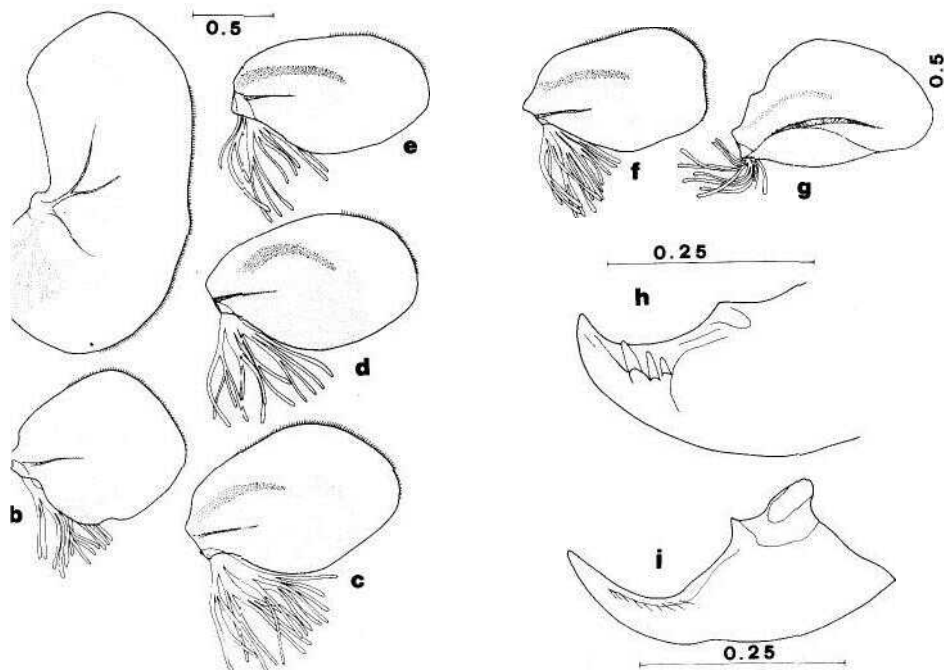


Fig. 6. *Rhithrogena adrianae* (a-h) and *R. diaphana* (i), nymph: a-g, I-VII gills; h, tarsal claw (*R. adrianae*); i, tarsal claw (*R. diaphana*). (Scale in mm).

whitish coloration, with characteristic lateral dark spots on fore corner of tergites, coxa with well defined dark marking, 4-5 pointed lobes on comb-shaped bristles of maxillae (fig. 5h), tarsal claws without denticles (fig. 6i). Markings on coxa and on abdomen are characteristic also of adult stages (see Thomas, 1968).

Material. ♂ holotypus and 7 ♀♀ paratypes: Italy, Oriolo Romano (VT), R. Mignone, loc. La Mola, 31.V.1980. 2 ♂♂ paratypes: Tolfa (Roma), R. Mignone, 7.VI.1980. 5 nymphs paratypes: Canale Monterano (Roma), R. Mignone, loc. Monterano, 29.V.1980. Other material. *R. adrianae*: Oriolo Romano, 31.V.1980, 60 ♂♂; Tolfa, 7.VI.1980; 43 ♂♂; Tolfa, Ripa Rossa, R. Mignone, 3.V.1980, 4 nymphs; Tolfa, Rota, 29.V.1980, 7 nymphs; Canale Monterano, R. Mignone, 29.V.1980, 3 nymphs. *R. diaphana*: Abruzzo, Giulianova (TE), F. Salinello, 1.VIII.1980, 13 nymphs; Teramo, F. Tordinò, 13.VI.1980, 10 nymphs.

Biology. The nymphs of *R. adrianae* were collected in the same biotopes as *R. fiorii*. *R. adrianae* most likely has only a spring generation per year; during summer and autumn of 1980 and 1981 no nymph was found.

ACKNOWLEDGEMENTS

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