

Two Interesting *Rhithrogena* Eaton from Spain: *R. thomasi* sp.n., and *R. monserrati* sp.n. (Ephemeroptera: Heptageniidae).

by

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The male imagines of *R. thomasi* sp.n. and *R. monserrati* sp.n. are described and figured, based on fresh specimens from Spain. Differences between these and the related species are discussed.

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The jesuit Longinos Navás described many species of mayflies from pinned specimens. Fresh material of most of them has never again been collected. This also applies to *Rhithrogena gorrizi* Navás, 1913, described from several adult specimens caught at the margins of the River Ebro in Zaragoza, at different dates: 11.IV.1907, 7.V.1908, 19.V.1902, 3.VII.1908 and 29.X.1908. Thomas (1968), while studying some heptageniids from Navás' collection, designated an adult male specimen as the lectotype of this species. However, this specimen did not belong to the type series and the designation is therefore invalid. Thomas drew the genitalia and the pigmentation of some parts of the body of that particular specimen. At present, there are no additional specimens of this species in Navás' collection in Spain (Alba-Tercedor & Peters, 1985). Recently, Thomas & Sartori (1985) designated topotypes of *R. gorrizi* based on eight male adults caught by Prof. J. Aubert (Lausanne, Switzerland) and presented a supplementary description of the species. Although these specimens are slightly different from the so-called lectotype in the form of the first segment of the styli and in the shape of the penial lobes (compare Thomas, 1968: Figs. II,6 and III,4 and D to Thomas & Sartori, 1985: Figs. 5-8), they may nevertheless belong to the same species.

Recently *R. thomasi* sp.n. belonging to the *germanica*-group (Sowa, 1984) and close to *R. gorrizi* Nav. was collected in the South-East of Spain. Another new species, *R. monserrati* sp.n. which belongs to the *sowai*-group (Sowa, l.c.) was collected in the central part of Spain. Both new species are here described.

Rhithrogena thomasi sp. n.

Male imago. Lengths: body, 9 mm; fore wing, 9 mm; cerci, 15 mm. Upper part of compound eyes beige, the basal half dark grey. Lateral part of thorax light brown, ventral part brown. Pronotum brown. Central part of mesonotum light brown, lateral parts darker, brown. Hind part of mesonotum blackish; in front of the insertion of each fore wing there is a violaceous streak. Metanotum dark brown, preceded by a W - shaped pattern. Forelegs dark brown. Intermediate and hindlegs yellowish brown; distal part of femora and tarsi darker. Central part of dorsal surface of femora with a dark dot (in the forelegs, this spot is visible also on the ventral face). Latero-posterior part of coxae of intermediate and hindlegs with a transverse dark spot. Wings transparent. In the forewing, the pterostigma is whitish. Cross veins delicate, the main transverse vein light.

An oblique light dash terminating in a darker spot is situated laterally in the anterior angle of the 2-9. abdominal segments (Fig. 1). Dorsal surface of abdominal segments darkened, violaceo-ferrugineous; the dark, central, longitudinal zone of the segments with a lighter line. On each side of this line there are two light dots: the anterior one is oblique, the hind one is somewhat rounded. Ventral part of abdomen light. Nerve ganglia not pigmented. Cerci uniformly brown, darker in the basal half.

Genitalia. The hind margin of the styliger ("lamina infragenitalis" after Navás: we disagree with Thomas, 1968, that this would be identical to titillators) is deeply emerginated (Fig. 2). Penis long and slender (Fig. 2-7). Penial lobes divergent, with two small external teeth but without internal ones. A characteristic pigmentation present on the dorsal surface of the penis stem (Fig. 7 and 8). Titillators bidentate (Fig. 3-5).

Material: holotype, 1 male imago (preserved in alcohol), Rio Turia, Titaguas, prov. Valencia. S.E. of Spain, 650 m, U.T.M.: 30S X K51; 21.V.1982, leg. J Alba-Tercedor, in his collection.

Derivatio nominis: this species is named in honour of Dr. Alain Thomas from Paul Sabatier University in Toulouse, for his encouragement and fundamental contributions on Spanish *Rhithrogena*-species.

Affinities: *R. thomasi* sp.n. and *R. gorrizi* Navás, 1913, (= *R. comitissa* Navás, 1933, after Thomas & Sartori, 1985) belong to the *germanica*-group-b (Sowa, 1984). The two species are very close but can easily be separated by the following characters: shape of hind margin of styliger, general form of the penis, apical shape of penial lobes in ventral view and external teeth of penis lobes (compare Fig. 8 of the present paper to Figs. 7 and 8 of Thomas and Sartori, 1985).

Rhithrogena monserrati sp.n.

Male imago. Lengths: body, 13.5 mm; forewing, 13 mm; cerci missing. Dorsal surface of compound eyes beige, latero-basal part dark. Thorax pale,

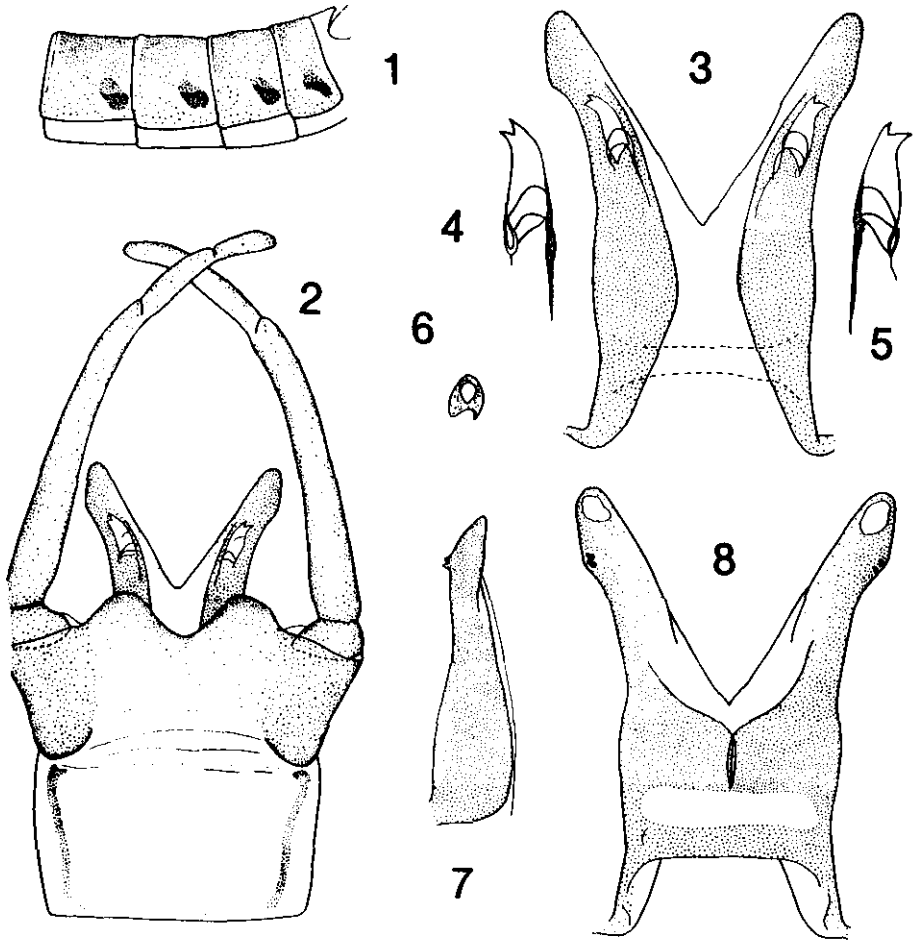


Fig. 1-8 *Rhithrogena thomasi*, adult male. 1 - lateral view of abdominal segments 1 to 4; 2 - ventral view of genitalia; 3 - ventral view of penis; 4 and 5 - titillators; 6 - apical view of a penial lobe; 7 - lateral view of penis; 8 - id., dorsal view.

light brown, prosternum and hind part of mesosternum darker, rufous brown. Forelegs brown, intermediate and hindlegs yellowish brown. Thorax and legs without special markings. Forewings slightly tinted with brown; longitudinal veins brown, C, Sc and R lighter; transverse veins distinctly bordered with dark brown pigment, especially in the anteroproximal part of the wing; the greater part of the big transverse vein dark; some transverse veins in the stigmatic region forked or anastomosed. Abdomen uniformly light brown. Joints between segments lighter. Nerve ganglia unpigmented.

Genitalia. Hind margin of styliger distinctly prolonged backwards and deeply emarginated in its central part, surpassing the first segment of the forceps (Fig.

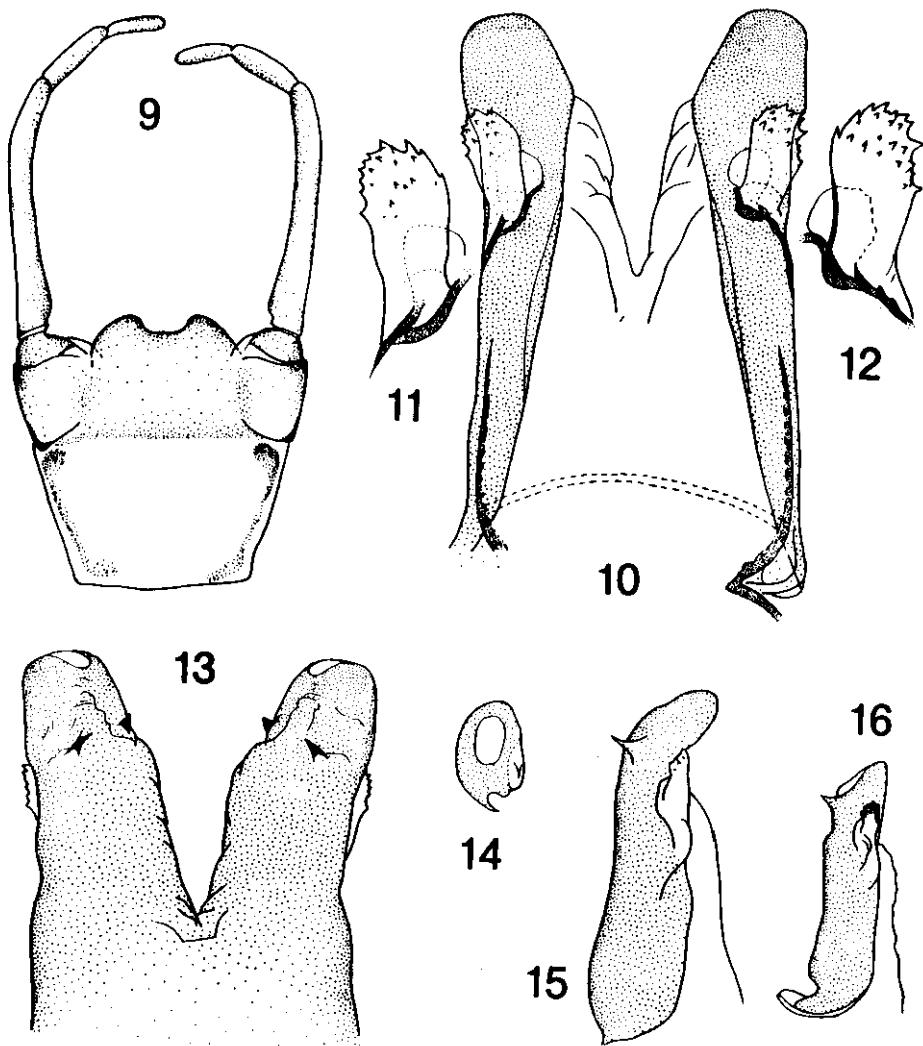


Fig. 9-16 *Rhithrogena monserratii*, adult male. 9 - 9th sternite, styliger and gonopods (forceps); 10 - ventral view of penis; 11 and 12 - titillators; 13 - dorsal view of penial lobes; 14 - apical view of a penial lobe; 15 - lateral view of penis; 16 - id., of *R. daterrai* Sowa.

9). Penis (Figs: 10-15): general shape rectangular; distal part of lobes slightly divergent; in ventral view, the membranous part of the penial lobes extends over more than half of their total length (Fig. 10); in dorsal view, the internal teeth of the penial lobes are orientated in almost the same way as the external ones; between the two teeth, a fold extends towards the gonoporus (Fig. 13); in lateral view, the apical part of the penial lobes is bent ventrally (Fig. 15);

titillators somewhat racket-shaped and multidentate apically (Fig. 10-12).

Material: holotype imago male (genitalia mounted on a slide), Sierra de Guadarrama, Majada del Cojo, prov. Madrid, Spain, 1320 m a.s.l., U.T.M. 30TVL22, 24.05.1976, leg. V. Monserrat. The holotype is preserved in alcohol, in the collection of the senior author.

Derivatio nominis: this mayfly is named in honour of Prof. Dr. Victor Monserrat of the Alcala de Henares University in Madrid.

Affinities: *R. monserati* sp.n. belongs to the *sowai*-group (Sowa, 1984). It is very close to *R. sowai* Puthz, 1972 and to *R. castellana* Navás, 1927 (Thomas & Sartori, 1985) but it can easily be separated from both by the following characteristics: 1. from *sowai*: hind margin of styliger more distinctly prolonged backwards, apical part of penial lobes bent ventrally (Figs 15 and 16), general shape of penis more slender, penial lobes more prolonged to the apex and titillators racket-shaped; 2. from *castellana*: internal margins of the penis in ventral view not parallel (Fig. 10), wider apical part of the penial lobes, titillators more mace-shaped and not externally curved (Figs 10 to 13), teeth of the penial lobes directed obliquely backwards (Fig. 13) and forewings slightly tinted with brown (compare Thomas & Sartori, 1985, figs 11 to 16).

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