

***Rhithrogena lisettae* sp. n. – A new representative of the *R. diaphana* species – group from Greece (Insecta: Ephemeroptera)**

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Abstract

The imaginal stages of a new species, *Rhithrogena lisettae* sp. n., from Peloponnisos, Greece, are described and illustrated. The new taxon belongs to the *R. diaphana* species-group and is well characterized by a unique pattern of colouration within the group as well as by structural characters for both sexes.

Keywords: Greece, Heptageniidae, new species, *Rhithrogena lisettae* sp. n., *R. diaphana* species-group.

Research Update on Ephemeroptera & Plecoptera
2003, E. Gaino (Ed.), University of Perugia, Perugia, Italy.

Introduction

Among mayfly material from light-trap catches, collected by Professor Dr. Hans Malicky in Greece 1979-1993 (see this volume p. 99-107), a hitherto undescribed species belonging to the *Rhithrogena diaphana* species-group was found.

***Rhithrogena lisettae* sp. n.**

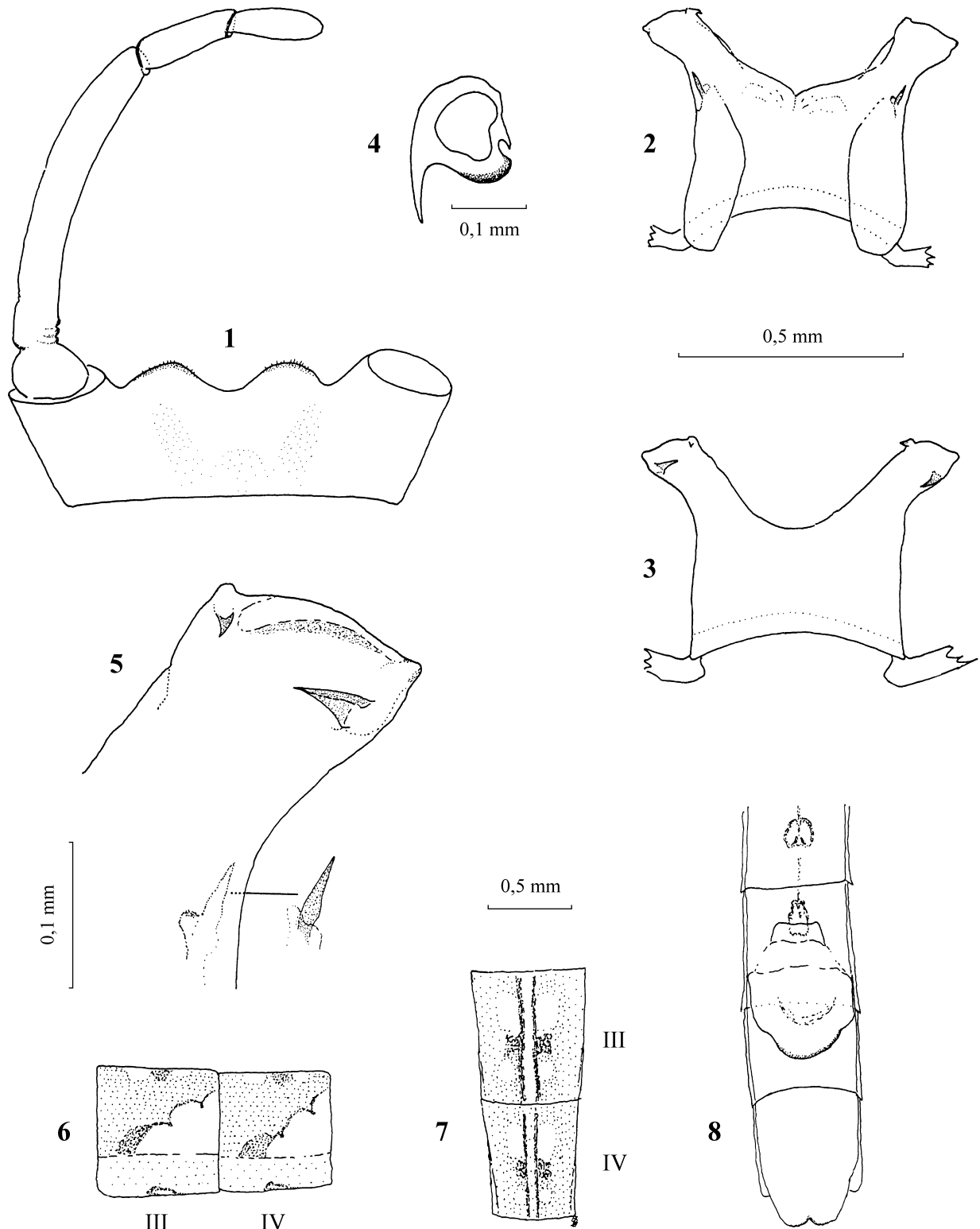
Material

Holotype male imago (in alcohol), Poliana, Taiyotos, Peloponnisos, S-Greece, [22°22' N 36° 58' E], 1000 m above sea-level, 22.5.1979, Georg Christensen leg., ex coll. Hans Malicky.

6 paratypes: female imago, same date and locality. 3 male imagines (one partly on slide), same locality, 11.8.1993, H. Malicky leg. field number (GR 705). 1 male, 1 female imago, same locality, 17.8.1993, H. Malicky leg. (field number GR 707). Holotype deposited in the Museum of Natural History, Vienna, paratypes in the author's collection.

Description

Male imago: Body length 10-11.5 mm, forewings 9-10 mm. General body colouration light yellow, abdomen with relatively conspicuous colour pattern in reddish amber, small markings deep violet. A small violet transverse stripe from the basis of antennal insertion to the margin of head. Compound eyes dark blue, contiguous in the middle, a black transverse band in basal third, basis black. Pronotum light yellow, lateral margins strongly stippled with violet. Mesonotum golden yellow to yellowish brown, laterally with a forked oblique violet stripe originating from the basis of the costa. Katepisternum (sensu Kluge 1994) anterior of fore coxa (rarely of middle coxa) with a fine violet stripe, coxae of all legs otherwise without markings. Femora yellowish, in the middle a bold (sometimes faint) small triangular spot on forelegs, narrower on middle legs and a mere short strike on hindlegs. Thoracic sternites pale yellow, sclerotized parts golden yellow to light brown, ganglia stippled with violet. Wings transparent, distinctly iridescent. Costa whitish, marginally stippled with violet, subcosta and radius yellow. Pterostigmatic region milky white with 7 – 9 simple crossveins, humeral arc yellow, between costa and subcosta black. Rest of longitudinal veins dark brown, cross veins transparent, mostly imperceptible.



Figs. 1-8 *Rhithrogena lisettae* sp. n., imago: 1: forceps, 2: penis (ventral view), 3: penis (dorsal view), 4: penis apex (caudal view), 5: right penis lobe (dorsal view) and titillator, 6: abdominal segments III, IV (lateral), 7: abdominal segments III, IV (dorsal), 8: end of abdomen (female, ventral view). [4 and 5 drawn from holotype, 1-3 and 6-7 from male paratype, 8 from female paratype].

Abdominal segments pale yellow, with pattern as in figures 6 (lateral) and 7 (dorsal view). On segments 2 – 7 (8) dorsally a conspicuous dark red double line, widening in the middle of each

segment and separating four light spots. Lateral spots and sinous line stippled with violet, rather faded in specimens after longer preservation in alcohol.

Sternites transparent, abdominal ganglia 1 – 8 conspicuously stippled with violet. Cerci golden brown, whitish at tip. Forceps basis deeply sinous, forceps rather slender, distal margin of segments 2 and 3 strongly sclerotized (Fig. 1). Penis lobes divergent, truncated at apex, bluntly pointed apicolaterally (Figs. 1, 3). Inner apical tooth situated at the basis of a rounded protuberance. Ventrally between outer and inner tooth a conspicuously sclerotized rim. Ventral vesicular parts only weakly developed. Titillators pointed, short and slender, not much longer than outer apical tooth (Fig. 5). Dorsal transverso-basal sclerite weakly sclerotized, regularly curved.

Female imago: Body length 9-10.5 mm, forewings 9-10 mm. General body colouration light yellow, abdomen with colour pattern similar to male, usually lighter and pattern less pronounced. Violet stippling of ventral ganglionic chain distinctly visible, usually well marked. Subgenital plate as in figure 8.

Eggs: Relatively large, oval shaped, approximately 225 x 140 µm. Polar cap inconspicuous, on one pole only, consisting of globular adhesive elements, larger than on the opposite pole. Chorionic surface relatively densely granulated and with irregular rows of conical adhesive elements. Single rows strongly sinous, furcations frequently meeting, generating a roughly mesh-like appearance.

Subimaginal and larval stages unknown (but should expectedly prove easily separable by the pigmented ganglionic chain and egg chorionic structure, both unique within all hitherto described species of the *R. diaphana* species-group).

Comparative analysis of characters

The *Rhithrogena diaphana* species-group sensu Sowa (1984) or subgroup (sensu Tomka and Rasch, 1993) is in the imaginal stage characterized by a comparatively similar pattern of colouration (mostly lateral stripes on abdominal segments and dots on coxae), transparent wings, penis structure, pointed titillator and egg chorionic structure. Intraspecific variation of characters may be considerable (within the limits of a distinct species-specific basic pattern) but typical specimens are usually easily recognizable. Least variation has been observed in penial structure (especially penis apex in caudal view) and egg chorionic structure. Altogether 11 taxa have been described so far, all of them known in the imaginal stage (reviewed and keyed by Alba-Tercedor, 1998). Centers of distribution are probably the Mediterranean and the Balkans, only

a few species are widely distributed throughout Middle Europe (e.g. *R. beskidensis* ALBA-TERCEDOR & SOWA, 1987).

Differential diagnosis

The abdominal colouration pattern of *R. lisettae* sp.n. is unique within all hitherto described species of the group (Figs. 6, 7). Most conspicuous is the red double line on abdominal terga 2 – 8 as well as the dark pigmentation of the ventral ganglionic chain. Structural discriminating characters of male genitalia include the strongly sclerotized rim between outer and inner tooth (Figs. 4, 5), the position of the inner apical tooth (in dorsal and caudal view) and small size of titillators. Egg chorionic structure is also distinctive.

Affinities: *R. lisettae* sp. n. shows certain similarities with *R. goeldlini* SARTORI & SOWA, 1987 and *R. marcosi* ALBA-TERCEDOR & SOWA, 1987 (direction of penis lobes, truncated penial apex) but is well differentiated by most of the structural details (see above) and different colour pattern. Egg chorionic structure resembles *R. marcosi*, but differs distinctly in the superficially mesh-like appearance of anastomised rows of adhesive structures as well as the densely granulated chorionic surface.

Derivatio nominis

I gratefully name this species in honour of my dear wife, who was born in Greece and has shared my life and scientific work now for more than thirty years. The species name is a noun in the (latinized) genitive, derived from the Greek diminutive form of the Christian name Elisabeth (Lisetta).

Acknowledgements

I am greatly indebted to Professor Dr. Hans Malicky (Lunz), who most kindly donated his material to me. Some linguistic corrections and editorial remarks by an anonymous referee are gratefully acknowledged.

References

- Alba-Tercedor J., 1998. Description of the imagines of *Rhithrogena goeldlini* Sartori and Sowa, 1988, and keys for the Identification of imagines of the European species of the *R. diaphana*-Subgroup (Ephemeroptera: Heptageniidae). *Aquat. Insects* 20(2):125-130.
- Alba-Tercedor J., Sowa R., 1987. New representatives of the *Rhithrogena diaphana*-Group from Continental Europe, with a redescription of *R. diaphana* Navás, 1917 (Ephemeroptera, Heptageniidae). *Aquat. Insects* 9(2):65-83.

- Kluge N. J., 1994. Pterothorax structure of mayflies (Ephemeroptera) and its use in systematics. Bull. Soc. Entomol. Fr. 99(1):41-61.
- Sartori M., Sowa R., 1988. Compléments à la connaissance des espèces du groupe de *Rhithrogena diaphana* Navás, de la péninsule ibérique (Ephemeroptera, Heptageniidae). Mitt. Schweiz. Entomol. Ges. 61:349-360.
- Sowa R., 1984. Contribution à la connaissance des espèces européennes de *Rhithrogena* Eaton (Ephemeroptera, Heptageniidae) avec le rapport particulier au espèces des Alpes et des Carpates. In: Landa V., Soldán T., Tonner R., (eds). Proc. IVth Intern. Confer. Ephemeroptera (CSSR), České Budejovice. pp. 37-52.
- Tomka I., Rasch P., 1993. Beitrag zur Kenntnis der europäischen *Rhithrogena* – Arten (Ephemeroptera, Heptageniidae): *R. intermedia* Metzler, Tomka & Zurwerra, 1987 eine Art der *alpestris*-Gruppe sowie ergänzende Beschreibungen zu fünf weiteren *Rhithrogena*-Arten. Mitt. Schweiz. Entomol. Ges. 66:255-281.