

A NEW SPECIES OF HEPTAGENIIDAE FROM SICILY:

RHITHROGENA JOHANNIS SP. N.

(Ephemeroptera) (*)

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The *alpestris* group of the genus *Rhithrogena* includes the following European species (in brackets are listed known stages, distribution and references to recent literature): *Rhithrogena alpestris* Eaton, 1885 (male imago, nymph; Alps; Sowa, 1984; Sowa & Soldan, 1984; Sowa & Degrange, 1987); *R. delphinensis* Sowa & Degrange, 1987 (nymph; French Alps; Sowa & Degrange, 1987; Degrange & Sowa, 1988); *R. vaillanti* Sowa & Degrange, 1987 (nymph, egg, imagines, subimagines; Austrian Alps; Sowa & Degrange, 1987; Sowa e Weichselbaumer, 1988); *R. bogoescui* Sowa & Degrange, 1987 (male imago; Rumania; Sowa & Degrange, 1987); *R. allobrogica* Sowa & Degrange, 1987 (nymph, egg, male imago, female subimago; French Alps; Sowa & Degrange, 1987; Degrange & Sowa, 1988); *R. landai* Sowa & Soldan, 1984 (imagines, egg, nymph; French and Austrian Alps, Czechoslovakia; Sowa & Soldan, 1984; Sowa e Degrange, 1987); *R. neretvana* Tanasijevic, 1984 (imagines; Yugoslavia (Herzegovina); Tanasijevic, 1984); *R. eatoni* Esben-Petersen, 1912 (male imago, nymph, egg; Corsica; Sowa, 1971; Belfiore, 1987). In Italy this species-group was represented only by *R. alpestris*, widely distributed over the Alps. A further species, new for Science, has been recently collected in Southern Italy and is hereafter described.

Rhithrogena j o h a n n i s sp. n.

DIAGNOSIS. A *Rhithrogena* of the *alpestris*-group, whose nymphs share the following characters:

- 1) fore margin of head with a small median rounded projection;
- 2) labrum triangular;

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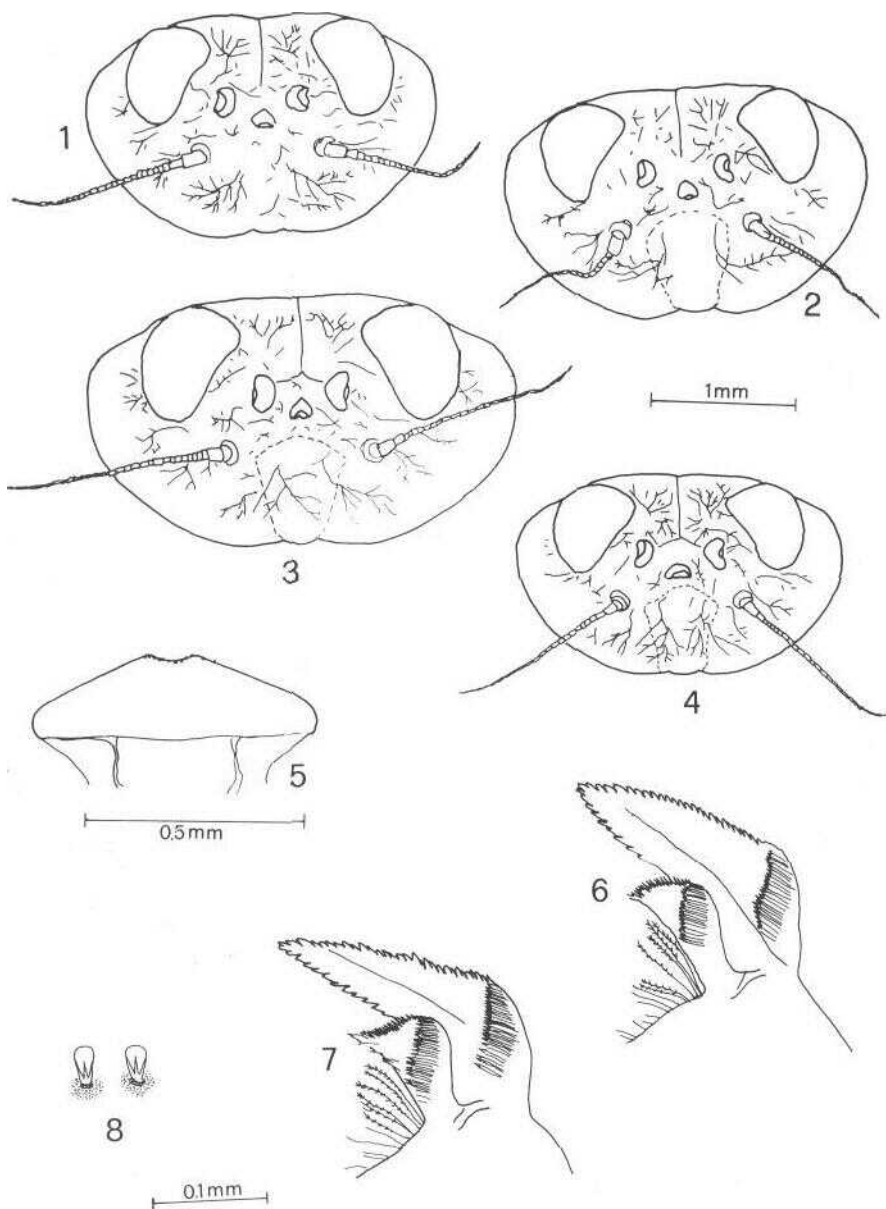
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- 3) long bristles present on proximal half of fore margin of fore femora;
- 4) gills with wide crenulation.

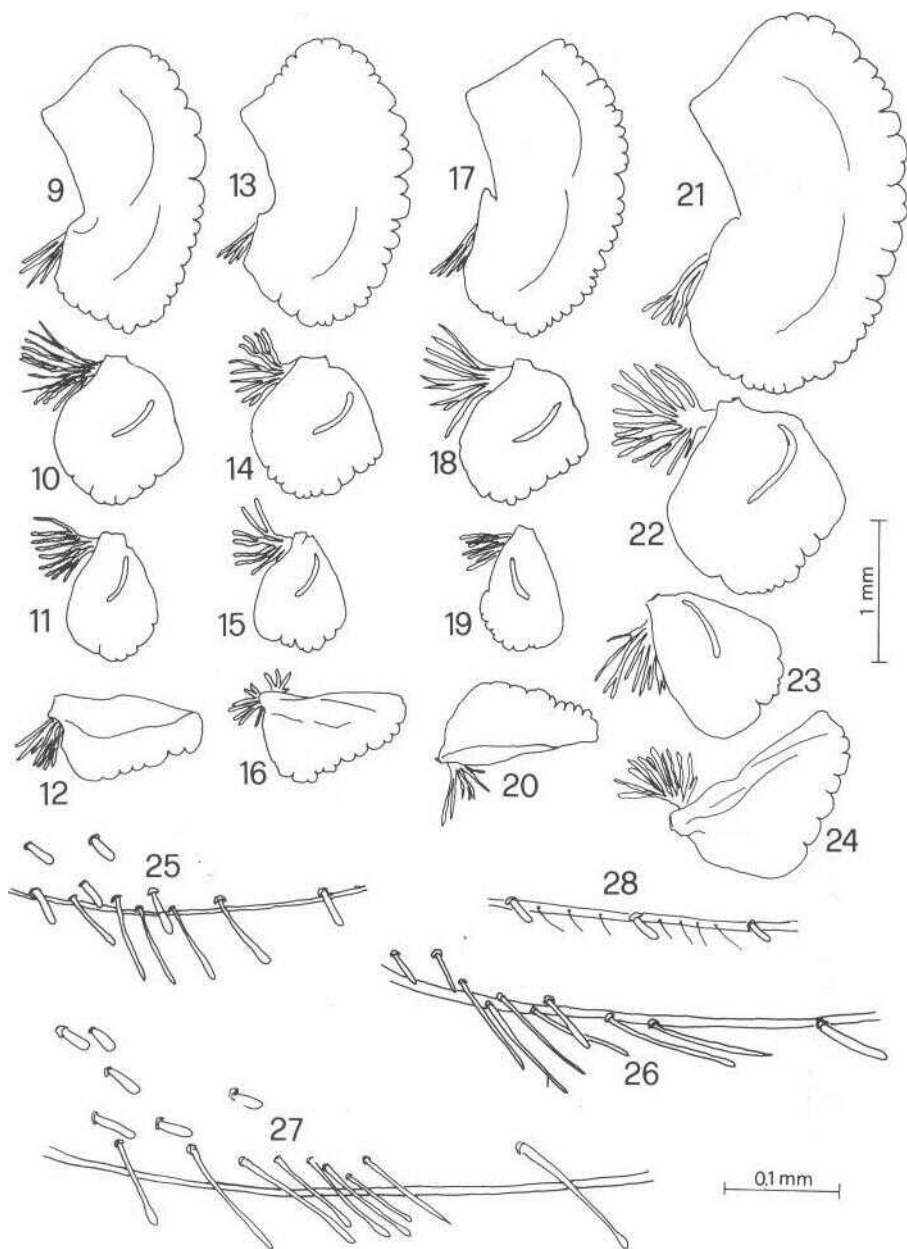
MATERIAL. Holotype: male nymph from Sicily, Alcara Li Fusi (Messina), Fiume di Scavioli, 550 m, VC7408, 6.VI.1988. Paratypes: 3 female nymphs, 2 male nymphs from the same locality, 6.VI.1988 (C. Belfiore & C. D'Antonio leg.). Other material. Sicily (C. Belfiore & C. D'Antonio leg.): same locality of type material, 6.VI.1988, 1 female subimago; Bridge on road SS 286 (Ponte Paratore), Torrente Vicaretto (Palermo), 320 m, VB2795, 2-4.VI.1988, 6 male imagines, 18 nymphs; Bronte, Fondaco (Catania), Fiume di Martello, 800 m, VB8294, 5.VI.1988, 29 male imagines, 16 nymphs; Moio Alcantara (Messina), Fiume Alcantara, 450 m, WB0695, 7.VI.1988, 3 nymphs; Fiumedinisi (Messina), Torrente Fiumedinisi, 400 m, WC3210, 7.VI.1988, 4 nymphs; (C. Belfiore leg.): Pollina (Palermo), Ponte Parriniello, right tributary Fiume Pollina, 76 m, VC2805, 17.IV.1979, 28 nymphs; Scillato (Palermo), Torrente Fichera, 250 m, VB0589, 17.IV.1979, 3 nymphs; (R. Gerecke leg.): Paternò (Catania), Fiume Simeto, 30.IV.1985, 1 nymph; Calabria (C. Belfiore & C. D'Antonio leg.): Aspromonte, Santuario di Polsi (Reggio Calabria), 862 m, 18.VI.1987, 3 nymphs. All material preserved in the Author's collection.

DESCRIPTION OF TYPE MATERIAL. Nymph. Body length: 8 mm (holotype), 7-8.5 mm (male nymph), 7-9 mm (female nymph). Head (fig. 1): subtrapezoidal with convex sides and rounded hind corners; maximum width is generally at distal V_s of compound eyes level. Fore margin sinuous, with a little rounded prominence just over the labrum. Labrum (fig. 5) triangular with rounded hind corners. Inner canine of mandibles narrow (fig. 6). Comb-shaped bristles on fore margin of maxillae with 10-12 teeth. Glossae wide, subtriangular. Pale area on the upper surface of femora with (holotype) or without an irregular reddish spot in the centre. Some long bristles are on the proximal half of fore (inner) margin of fore femora (fig. 25). Fore margin of middle and hind femora with much shorter and spatulate bristles (fig. 28). Few bristles are on upper surface of femora, generally short and with diverging sides (fig. 8). Claws without well developed denticles. First abdominal sternite like other species of the *alpestris-group*. Gills (figs 9-12): first gill without dorsal plica; margin of all gills with wide crenulation. Penis lobes, visible under the cuticle of the last instar male nymph, are somewhat pointed, with denticulated titillator (fig. 29).

VARIABILITY OF NYMPHS. Individuals from the same population show little variations (e.g.: occurrence of spots on femora). Some characters are somewhat variable between different populations: head may be more or less wide (figs 2-4), inner mandibular canines are sometimes wider (fig. 7) and crenulation of gills may be more dense (figs 13-24) than in type specimens.



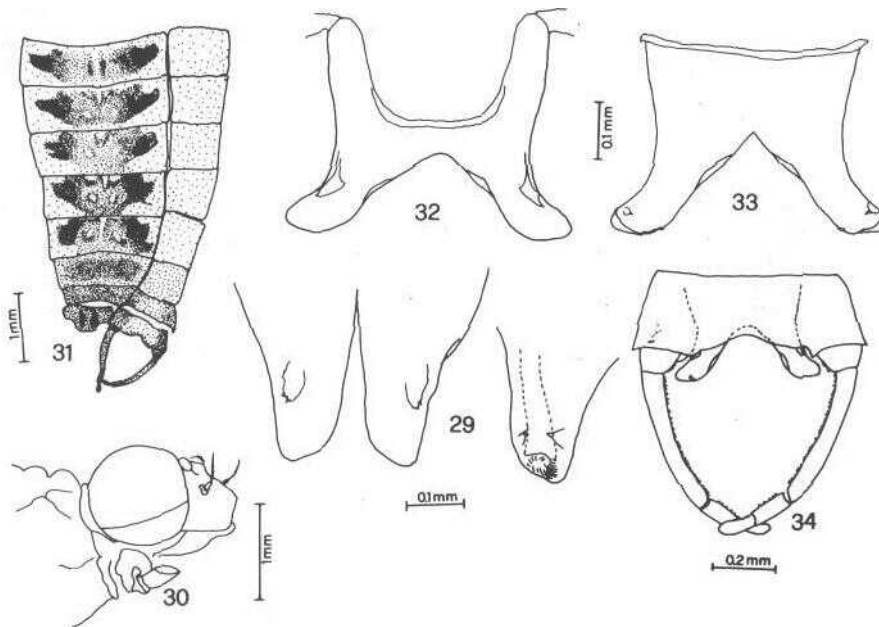
Figs. 1-8—*Rhithrogenajohannisn.sp.*, nymph: head of nymphs from type locality (1), Vicaretto stream (2), Fiumedinisi (3) and Aspromonte (4); labrum (5); mandibular canines of nymphs from type locality (6) and Aspromonte (7); bristles on upper surface of femora (8).



Figs. 9-28 — *Rhithrogena johannis* n. sp., nymph: I, II, VI and VII gill of nymphs from type locality (9-12), Aspromonte (13-16), Fondaco (17-20) and Fiumedinisi (21-24); bristles on fore margin of fore femur, nymphs from type locality (25), Fondaco (26) and Aspromonte (27); bristles on fore margin of mid femur (28).

DESCRIPTION OF MALE IMAGO. Body 7-8 mm, forewing 7-8.5 mm, cerci 14-16 mm. Eyes large (fig. 30). Thorax brown with whitish markings on the pleurae. Fore legs brown, mid and hind legs yellowish. Femora with a narrow irregular reddish spot in the centre of outer surface. The intensity of this marking is very variable: several individuals have spotless femora. Wings transparent, colourless; longitudinal veins violet brown, cross veins light brown. Abdomen dorsally brown; laterally the colour is darker and are visible irregular markings at the sides of tergites (fig. 31). Sternites I-VI light brown, translucent, VII-IX opaque, without any markings. Genitalia (fig. 34): hind margin of styliger with a wide rounded incision; gonopodes long and slender; penis lobes (figs 32-33) with straight hind margin, titillators with 1-3 apical teeth.

DESCRIPTION OF FEMALE SUBIMAGO. Body length 7 mm, cerci 7.5 mm. Thorax greenish brown, abdomen dorsally yellowish brown with brown spots like the male imago, ventrally paler and unmarked. Femora with and indistinct reddish spot on the centre. Wings uniformly grey. Cerci brown.



Figs. 29-34 — *Rhitrogena johannis* n. sp.: penis lobes from last instar nymph (29); head of male imago (30); II-IX tergites and sternites of male imago (31); penis lobes, ventral view (32), dorsal view (33); genitalia of male imago (34).

EGG (from female subimago). Size: 180x 110 mm. Large adhesive coils present only at one pole, distributed on less than % egg length. Small adhesive coils are all over the surface of egg. Only irregularly scattered microgranules are visible (400x). Microgranules are also around the margin of micropylar plate.

DISTRIBUTION AND ECOLOGY. The new species is distributed in rivers of northern and western Sicily (northern side of Madonie, northern and western sides of Nebrodi and Peloritani Mountains) and of southern Calabria (Aspromonte); the nymphs were collected in little fast-flowing rivers, also at low altitude (range 70-900 m). Adult fly at dusk, nuptial flights taking place at 1-5 m over the water, or over the bridges.

DISCUSSION. Notwithstanding recent descriptions and redescrptions of most species of the *alpestris* group (Belfiore, 1987; Sowa & Degrange, 1987; Degrange & Sowa, 1988; Sowa & Weichselbaumer, 1988) variability and fine morphology of adult stages were not sufficiently investigated for an easy discrimination of species. Nymphs share more available characters and the taxonomy of this group must prevalently deal with preimaginal stages. Also dealing with nymphs, however, some characters should be critically considered (e.g.: head-, labrum- and mandibular canines-shape). The nymphs of *R. johannis* appear to be close to *R. eatoni*: both species have spotted femora (even if some individuals of *R. johannis* have unmarked femora) and bristles on the upper surface of femora short, with diverging sides. Spots on femora are also recorded for *R. vaillanti* (Sowa & Degrange, 1987). Peculiar feature of *R. johannis* are the small rounded projection of the head fore margin and the arrangement of the relatively long bristles on the fore margin of the fore femora: these bristles are shorter than those on the hind margin and grow prevalently on the proximal half of femora. Another character for distinguishing *R. johannis* from *R. eatoni* is the , crenulation of gills, wider in the former.

ETYMOLOGY. The species is named for my father, Giovanni Belfiore, who was born in Sicily.

SUMMARY

Nymphs, male imago, female subimago and eggs of *Rhithrogena johannis* sp. n. from Sicily and Calabria regions are described. The new species belongs to the *alpestris*-group. Diagnostic characters of the nymphs are a small rounded projection in the central part of head fore margin and the presence of long bristles on the proximal half of the fore margin of fore femora. Distribution, ecology and affinities of the new species are shortly discussed.

RIASSUNTO

Vengono descritti la ninfa, l'immagine maschile, la subimmagine femminile e l'uovo di una nuova specie di Heptageniidae: *Rhithrogena johannis* sp. n., appartenente al gruppo *alpestris* e raccolta in Sicilia e in Calabria meridionale. La specie è facilmente diagnosticabile allo stadio di ninfa: al centro del margine anteriore del capo è presente una piccola sporgenza arrotondata, il labrum è subtriangolare con gli angoli posteriori arrotondati, sulla metà prossimale del margine anteriore dei femori anteriori vi sono alcune lunghe setole, le lamelle branchiali sono lassamente festonate. Vengono discusse brevemente la distribuzione, l'ecologia e le affinità della nuova specie.

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