

# SIPHONURUS IRENEAE SP. N. FROM SPAIN (EPHEMEROPTERA: SIPHLONURIDAE)

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## ABSTRACT

The nymphs, subimagines and imagines of a new species of the *Siphonurus aestivalis*-group from the south of Spain are described and its relationship with similar species is discussed.

## INTRODUCTION

Nymphs of *Siphonurus* were collected from a small stream in the Sierra Morena mountains (southern Spain). They initially appeared similar to *S. aestivalis* Eaton, 1903 and *S. hispanicus* Demoulin, 1958 but the male genitalia of laboratory reared imagines revealed that they belonged to an as yet undescribed species.

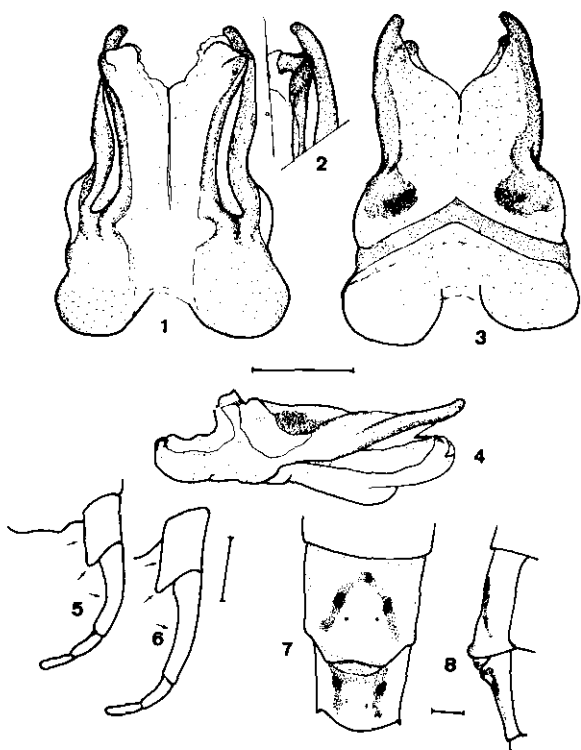
*Siphonurus ireneae* sp.n.

**Male imago.** Forewing and body length: 11–16 mm. Gradation of fore tarsal segments: 3  $\approx$  2, 4  $\approx$  1, 5. Gradation of hind tarsal segments: 1, 5 = or  $\approx$  2, 3, 4. Compound eyes with a whitish transverse line separating the upper brown-grey or violet-grey half of the eye from the lower darker half, in living animals the upper half is red-brown and the lower half brown-blackish, eyes normally touching dorsally, ocelli brown dorsally and laterally, white distally and ventrally. Thorax yellowish laterally; pronotum brown, darker; mesonotum brown-yellowish, longitudinal sutures darker, brown spot on each external hind angle of scutum; sternites brown to yellow-brown, darker near apodemes. Forelegs brown, mid and hindlegs yellowish. Wings, venation brown, darker in fore half, pterostigma and basal

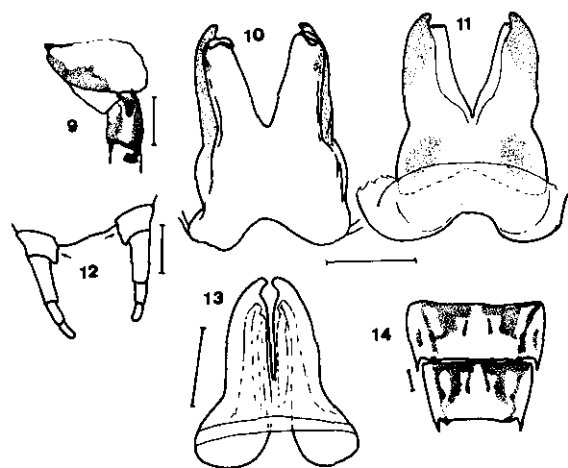
region of forewing light brown (in living specimens basal area between C and R red-wine coloured). Abdomen yellowish brown; tergites with paired light brown spots medially and brown spots laterally, the latter rectangular on segments 1–6, slender and pointed on segments 7–9; sternites with visible muscle insertions joined by faint arc sometimes not obvious in sternites 6 and 7, sternite 9 strongly pigmented laterally and posteriorly forming U-shape, edges of segment 9 produced posteriorly. Cerci light brown, proximal half darker. External genitalia (Figs 1–5), 1st segment of forceps slightly convex medially, penis lobes long, without teeth, external sclerites blunt distally, finger-like; inner longitudinal sclerites enlarged distally, width similar to basal width, dorsal transverse sclerite slightly pointed distally.

**Female imago.** Forewing and body length: 14–18.6 mm. Gradation of foretarsal segments: 1, 2, 5, 3, 4. Gradation of hindtarsal segments: 1, 5, 2, 3, 4. Colour similar to male except spots absent from scutellum; vein C lighter, yellow brown in fore and yellow in hind wings; brown lateral spots on tergites somewhat rounded. Subgenital plate slightly emarginate, with two small rounded lobes (Figs 7–8).

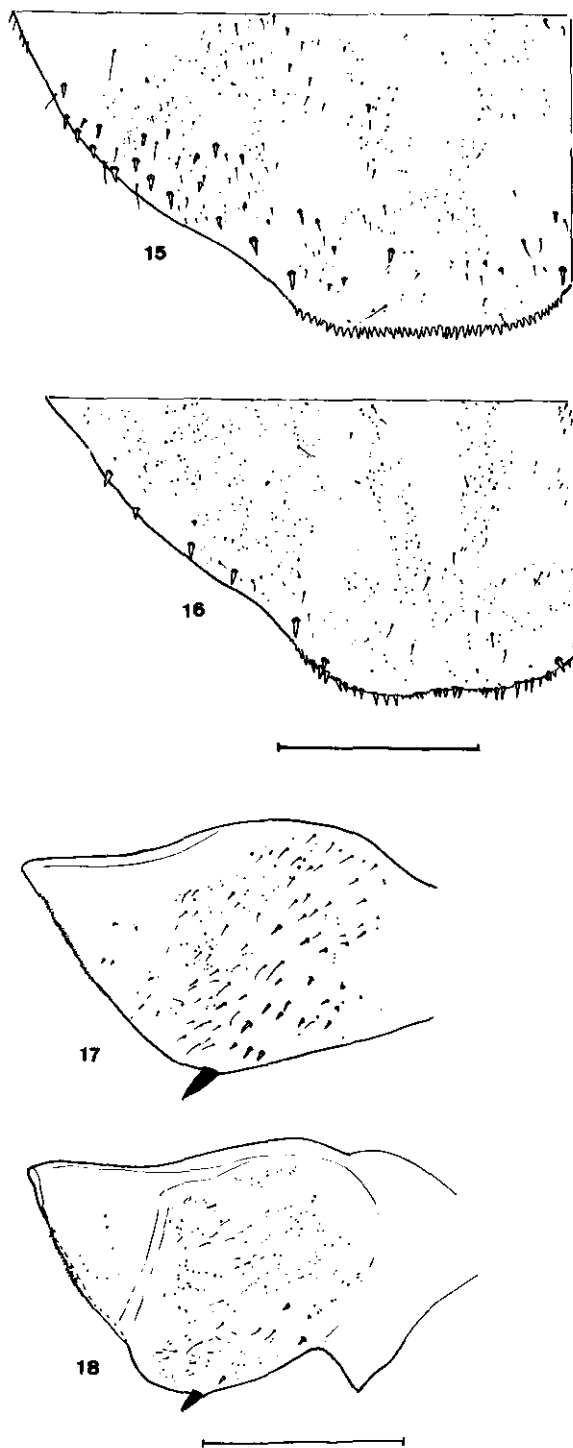
**Male subimago.** As for adult except: wings pal-



Figs 1-8. *Siphonurus ireneae* sp. n. (1-5, 7-8), *S. flavidus* Etn (6). Penis of imago: 1, ventral view; 2, after clearing with KOH; 3, dorsal view; 4, left lateral view. Styli and forceps 5, 6. Female imago sternites 7 and 8: 7, ventral view; 8, lateral view. Scale = 0.5 mm.



Figs 9-14. *Siphonurus ireneae* sp. n.: 9, lateral view of basal segments of 2nd leg of male subimagine; penis of subimagine, 10, ventral view, 11, dorsal view; 12, styli and forceps of subimagine; 13, penis of mature nymph; 14, 8th and 9th abdominal tergites of mature nymph. Scale = 0.5 mm.



Figs 15-18. 15-16. Posterior right surface of tergite 10 of the nymph: 15, *S. aestivalis*; 16, *S. ireneae* sp. n. Scale = 0.5 mm. 17-18: paraproct plate of mature nymph of: 17, *S. aestivalis* and 18, *S. ireneae* sp. n. Scale = 0.5 mm.

er, hyaline with pale brown veins, legs whitish with conspicuous pigmented spots on coxa, trochanter (Fig. 9), basally and distally on femora and basally on tibiae; joints of tarsi ringed dark, claws with distal half obliquely pigmented brown, cerci yellowish. External genitalia Figs 10–12.

*Female subimagine.* Colour as for male subimagine. Abdominal pattern and subgenital plate as for imagine.

*Nymph.* Body length of mature nymph. 16–18 mm. Muscular insertions on abdominal tergites and sternites clearly visible. General pattern as for *S. aestivalis* but distal half of abdominal tergites less pigmented (Fig. 14). Mouthparts and gills as for *S. aestivalis* but gills somewhat smaller and more extended laterally such that almost the whole dorsal abdominal surface is visible. 10th abdominal tergite with a few stout spines, and a row laterally (Fig. 16). Paraproct plates (Fig. 18) with a few stout spines.

**MATERIAL EXAMINED:** Holotype ♂ imagine and the following paratypes: 27 ♂♂ imagines, 36 imagines, 36 ♂♂ subimagines, 7 subimagines, 18 nymphs, 7 v 1983; 140 nymphs 2 iv 1983, 1 ♂ imagine, 1 nymph 4 v 1982, all from Arroyo de la Campana, Sierra Morena, La Carolina prov. Jaen, Spain, 550 m., V.T.M.: 30S VH 488 413 m., leg. I. Ruiz.

All imagines are stored with their nymphal and subimaginal exuviae, and subimagines with their nymphal exuviae. The material is preserved in 75% alcohol or as microscopic preparations nos 220 and 241–247 (genitalia of the holotype on slide no. 242, and the nymphal exuvium on slides 243 and 244) in the author's collection in the Dept of Animal Biology (Zoology), University of Granada, Spain.

*Etymology.* the species is named after the author's daughter, Irene.

## AFFINITIES

*S. ireneae* sp. n. belongs to the *aestivalis*-group (Jacob 1986, Malzacher 1981). In general appearance, form of the genitalia and shape of abdominal segment 9 it is similar to *S. flavidus* (Puthz 1977, Alba-Tercedor 1984) but may be differentiated from that species by the following set of characters: in the male 1) internal edge of forceps segment 1 slightly convex and with a slightly shorter apico-internal corner (Figs 5–6), 2) forceps segment 2 more curved (Figs 5–6), 3) outer longitudinal sclerites of penis apically rounded, and dorso-transverse-median sclerite broader and only slightly pointed in the middle; in the female 1) gradation of the foretarsal segments 1, 2, 5, 3, 4. Both *S. ireneae* and *S. flavidus* may be separated from *S. aestivalis* and *S. hispanicus* in having the lateral lobes of the female subgenital plate less acutely shaped.

Nymphs of the new species are very close to those of *S. aestivalis*, from which they may be distinguished by 1) a row of a few stout spines laterally on tergite 10 (Fig. 16), whereas in *S. aestivalis* the spines are more abundant, arranged in irregular rows and some are inserted in the hind central surface (Fig. 16) and 2) paraproct plates more rounded, with scarcer stout spines and the internal great spine shorter and blunter than for *S. aestivalis*.

Nymphs of *S. ireneae* can be distinguished from *S. hispanicus* by 1) pigmented paired parenthesis-shaped marks on the abdominal tergites shorter and more slender (Fig. 14), 2) segment 3 of maxillary palps more slender, 3) segment 1 of labial palps widest in the middle rather than in the basal third (Demoulin 1958).

## ACKNOWLEDGEMENTS

I am most indebted to Mr. Isodoro Ruiz who collected the material and to Dr. Volker Puthz, Schlitz, and Dr. Peter Malzacher, Germany (DBR) for early help, and to Dr. Tomas Soldán, Ceske Budejovice (Czechoslovakia) for providing me with specimens of *S. aestivalis*. This work was

supported in part by a grant from the Comisión Asesora de Investigación Científica y Técnica (CAICYT 3243/83) to the Department of Zoology, University of Granada.

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