



A New Species of *Thraulodes* (Ephemeroptera: Leptophlebiidae) from Mexico

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Abstract

A new species of *Thraulodes* from Mexico is described from male and female imagines. The male imagines of this species have very characteristic genitalia that allow its easy separation from the other known species of the genus.

Keywords: Ephemeroptera, Atalophlebiinae, *Thraulodes*, systematics, Mexico, taxonomy.

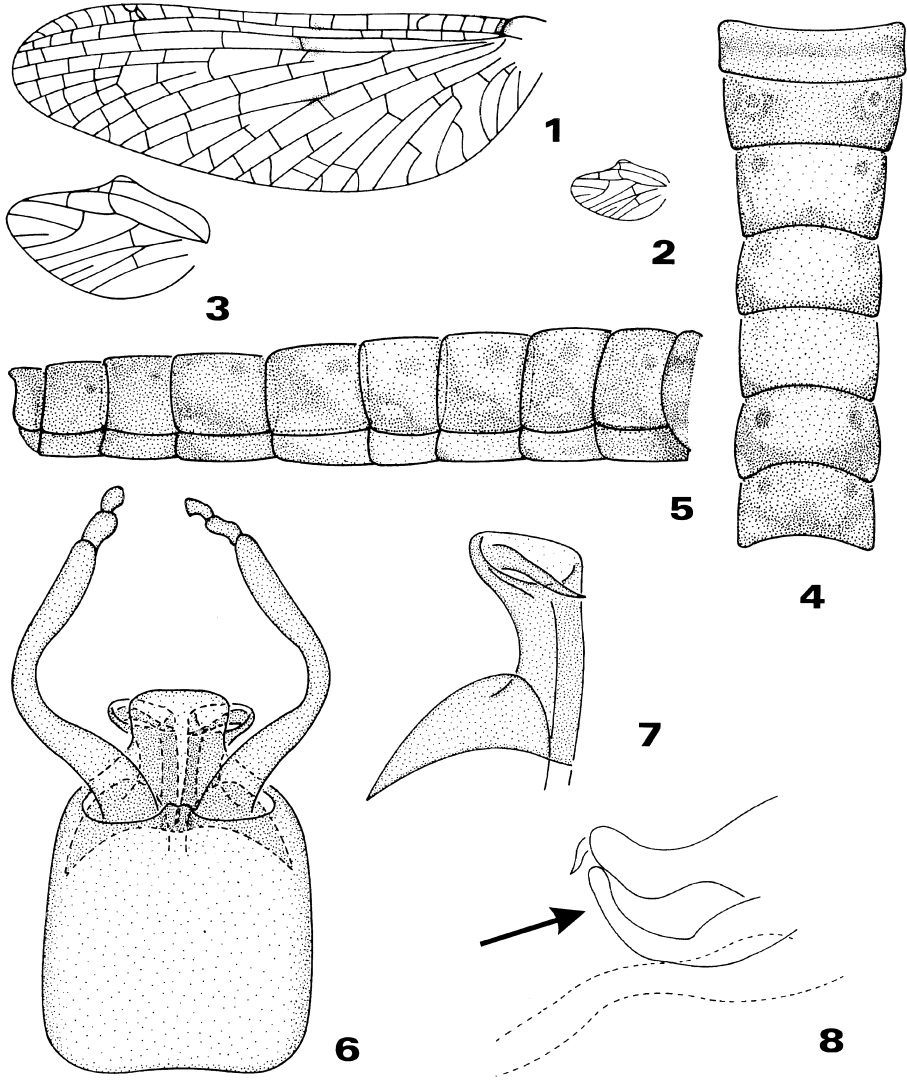
Introduction

Thraulodes is one of the most common genera present in South and Central American streams. It is an important component of the benthos due to its abundance and is also one of the most speciose genera in the family Leptophlebiidae, with close to 50 described species. Nevertheless, the recent description of three new species from a restricted area of Venezuela (Chacón et al., 1999), probably indicates that there are many new species still to be described. Unfortunately, the previous revisions of the genus by Traver and Edmunds (1967) and Allen and Brusca (1978) are outdated or are geographically restricted (Domínguez, 1987) and no modern keys are available for all the species. The terms used to describe the genitalia follow Traver and Edmunds (1967).

Description

Thraulodes cryptodrilus sp. nov. (Figs. 1–8)

Male imago (in alcohol). Length: body, 8.5–9.2 mm; fore wings, 8.5–9.0 mm; hind wings, 1.5–1.6 mm. General coloration orange-brown with abdominal segments



Figures 1–8. *Thraulodes cryptodrilus* sp. n. (1) Fore wing; (2) Hind wing; (3) Hind wing, detail; (4) Abdominal terga I–VII; (5) Abdominal segments I–X, l. v.; (6) ♂ genitalia, v. v.; (7) Penis, detail; (8) ♂ genitalia, l. v., showing position of posterior projection (arrow).

translucent. Head: yellowish-white, upper portion of eyes yellowish-brown, lower portion blackish. Ocelli white with basal black rings. Antennae: scape brownish, tinged with black, pedicel whitish with apical brownish rings, flagellum light yellow.

Thorax: Pronotum yellowish-brown tinged with black, lateral margins and medial line washed with black. Mesonotum bright yellowish-brown with carinae and margins

brownish. Metanotum yellowish-brown with posterior margins and sublateral margins blackish, pleura yellowish-brown with membranous areas tinged with black; sterna yellowish with orange on the anterior parts, with brown on the posterior parts.

Wings (Figs. 1–3): membrane of fore wings hyaline, except costal and subcostal areas tinged with whitish, with blackish spots around the costal brace; 7 crossveins basal, and 14 distal to bullae; longitudinal veins yellowish-brown, lighter toward posterior margins, crossveins brownish; membrane of hind wings hyaline with subcostal and R veins yellowish-brown, black spots at base of wings.

Legs: Leg I: coxae, trochanters and basal 2/3 of femora yellowish white; apical 1/3 of femora dark yellow, with 3 brown spots, tibiae yellowish white with apex tinged with brown. Tarsi and claws yellowish white. Leg II: yellowish with margins of trochanter, apical 1/4 of femur, apical 1/5 of tibia and tarsi 3 to 5 blackish; two red-orange bands occupying medial area and apical 1/3 of femur. Leg III: similar to leg I except medial band on femur more diffuse, tarsal claws yellowish-brown.

Abdomen (Figs. 4–5): terga I–II brownish with spots and posterior margins blackish, anterior margins of tergum II translucent-white; terga III–VI translucent with posterolateral corners and medial triangular mark on tergum III brownish, paired lateromedial round spots and posterior margins blackish; terga VII–X orange-brown with posterolateral corners yellowish-white, black margins as in preceding segments; sterna yellowish-translucent, segments I–II, VII–VIII washed with brown in medial area; sterna III–V with small anteromedial orange round spots.

Genitalia (Figs. 6–8): styliger plate with an unusual wide and flat projection directed posteriorly, that covers the penes ventrally (Figs. 6, 8). Styliger plate yellowish with central area brown, posterior projection of styliger plate washed with grey. Forceps yellowish-white, segment I yellowish-white, apex of segment I and segment II washed with gray, segment III whitish. Penes (Fig. 7) yellowish-brown, penes and spines short and stout; apicolateral area not forming an ‘ear’; external margins forming a small lateral pouch; recurved folds parallel to internal margins (not forming ‘lapel’). Caudal filaments yellowish-white with blackish rings in each segment articulation, some narrow, some wide.

Female imago (in alcohol). Length: body, 7.7–8.0 mm; fore wings, 9.5–9.8 mm; hind wings, 1.8–1.9 mm. Coloration similar to male imago, except as follows: Head: yellowish-brown, with reddish stripes between lateral ocelli and posterior margin of head. Eyes blackish. Thorax: mesonotum and metanotum orange-brown. Pleura: yellowish-white. Abdomen: terga orange-brown, sterna translucent yellowish-white. Association between male and female imagines from the same locality is based on similar leg and abdominal color pattern.

Nymph: Unknown.

Material: *Holotype*, ♂ imago, Mexico, Chiapas, Río Lacanje, 22 km N. Orosingo 19/V/1981. C.M. and O.S. Flint, Jr. coll. *Allotype* ♀ imago, same data as holotype. *Paratypes*: 34 ♂♂ imagines, 21 ♀♀ imagines, 6 ♂♂ subimagines, 3 ♀♀ subimagines; same data as holotype. Also studied: 3 ♂♂ imagines, same data as holotype, except Río Tulija, 48 km S Palenque, 19/V/1981, and 10 ♂♂, 13 ♀♀ imagines and 1 ♂ subimago, Río Contento, 7 km N. Ocosingo, 20/V/1981, C. M. and O. S. Flint, Jr., coll. All material deposited at the National Museum of Natural History, Washington, D.C., U.S.A., except 5 ♂♂ and 5 ♀♀ paratype imagines in Instituto Fundación Miguel Lillo, Tucumán, Argentina.

Etymology: From the Greek words *krypto*, hide, conceal and *drilos*, penis, because the styliger plate covers the penis in the male imagines.

Variations: In some of the male paratypes the pro-, meso- and metanotum rather more brownish. Abdomen: terga VII–X rather more brownish.

Discussion

Traditionally, the species of *Thraulodes* were named only when male imagines were known. Following that tradition, and aware that most of the time the nymphs were difficult to associate with adults by external appearance, Allen and Brusca (1978) described several species based on nymphs, but designated them only as sp. A, B, etc. In 1996, Lugo-Ortiz and McCafferty decided to name species B and D of Allen and Brusca based only on nymphs from Mexico. Due to the problems of association, until the adults of these species become known, some uncertainty will exist concerning new species described from adults only, which could eventually be found to be synonyms of the species named by Lugo-Ortiz and McCafferty from larvae alone. This can also not be excluded in the case of *T. cryptodrylus*. However, the task of describing and naming the many new species in the neotropics may not be paralyzed by this kind of problems.

T. cryptodrilus can be distinguished from the male imagines of the other species by the following combination of characters: 1) in fore wings, 7 crossveins basal and 14 distal to bulla present; 2) main longitudinal veins yellowish-brown; 3) abdominal color pattern as in Figs. 4–5, with part of terga III–VI translucent; 4) femora I with 3 brown spots on apical 1/3; 5) Styliger plate produced in a wide and flat projection directed posteriorly and covers the penes ventrally (Figs. 6, 8); 6) penes and spines (Fig. 7) short and stout; apicolateral area not forming ‘ear’; external margins forming small lateral pouch and recurved folds parallel to internal margins, not forming ‘lapel’.

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