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ATOPOPHLEBIA FORTUNENSIS, A NEW GENUS
AND SPECIES FROM PANAMÁ
(LEPTOPHLEBIIDAE: EPHEMEROPTERA)

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ABSTRACT

Atopophlebia fortunensis, a new genus and species of the Leptophlebiidae is described from the mountains of western Panamá.

A collection of mayflies from Panamá donated by Dr. Charles W. O'Brien to Florida A&M University contains 2 male imagos of a new genus and species of Leptophlebiidae. The specimens were collected in median elevation tropical wet forest near the summit of Cerro Fortuna in Chiriquí Province.

In the following description, the venational terminology is that given in Peters and Edmunds (1970). Each segment of the fore legs of the male imago is compared to the length of the fore tibia and expressed as a ratio, while the length in millimeters of the fore tibia is given in parentheses.

I thank Drs. Charles W. and Lois B. O'Brien and Mr. George B. Marshall for the specimens and Drs. William L. Peters and Manuel L. Pescador and Mrs. William L. Peters for their useful suggestions on the preparation of this paper. This research was supported by a research project (FLAX 79009) of SEA/CR, USDA, to Florida A&M University, William L. Peters, Research Leader.

Genus *Atopophlebia* Flowers, NEW GENUS

(Fig. 1-10)

MALE IMAGO: *Length*: body, 9.1-9.7mm; fore wings, 9.3-9.9mm. Eyes (Fig. 8-9) separated on meson of head by slightly less than width of median ocellus, upper portion of eyes oval, on short stalk; lower portion of eyes 7/10 length of upper portion, dorsally contiguous with upper portion; width of lateral ocelli 2/5 width of upper portion of eye. *Wings* (Fig. 1-3): maximum

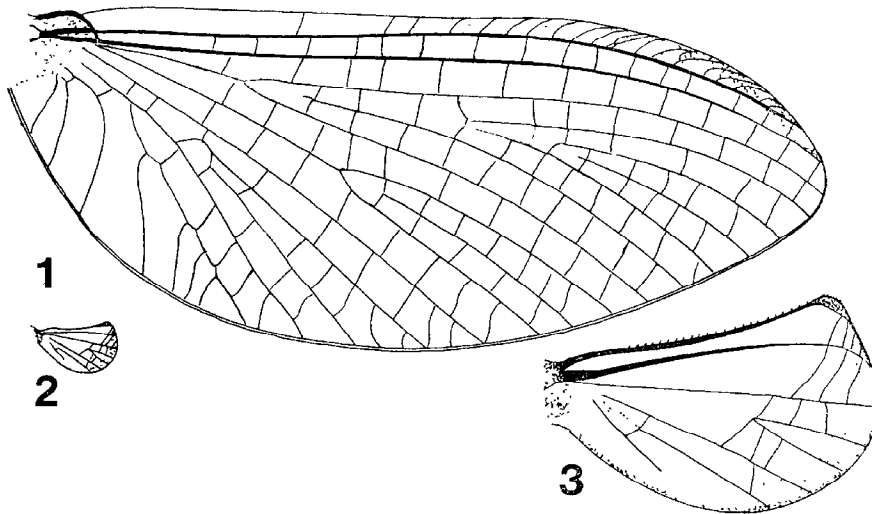


Fig. 1-3. *Atopophlebia fortunensis*, ♂ imago. 1) Fore wing; 2) hind wing; 3) hind wing enlarged.

width of fore wings $1/3$ maximum length of fore wing; vein R_s of fore wings forked $1/5$ of distance from base to margin; vein MA forked $1/2$ of distance from base to margin, fork symmetrical; MP_2 attached at base to vein IMP with a cross vein $1/3$ of distance from base to margin; vein IMP attached to MP_1 and CuA with a cross vein less than $1/3$ of distance from base to margin of CuA ; ICu_1 attached at base to CuA , remainder of $Cu-A$ area as in Fig. 1; cross veins numerous, those in stigmatic area strongly curved with some anastomosis. Costal projection of hind wings well developed, located $5/6$ of distance from base to margin, costal margin slightly concave with short setae before projection, apex of wings obtuse, rounded; cross veins few and clustered in apical $1/3$ of wing. *Legs*: ratios of segments in the ♂ fore legs, $0.53:1.00$ (3.8mm) : $0.03:0.34:0.29:0.12:0.05$. Claws of a pair dissimilar, 1 apically hooked (Fig. 10), the other obtuse, pad-like. *Genitalia* (Fig. 4-7): segment 3 slightly shorter than segment 2, segment 2 ca. $1/7$ length of segment 1; apex of segment 3 rounded; base of segment 1 broad, its inner margin forms an angular bend $7/10$ the distance from its base to its apex; length of styliger plate along median line a little less than $1/2$ maximum width; basal third of penis lobes fused (Fig. 5-7); lobes narrow and widely separated in apical $2/3$, each lobe twisted ventrally and laterally at apex; sperm ducts open laterally at apex of lobes. Terminal filament a little longer than cerci.

FEMALE IMAGO: Unknown.

MATURE NYMPH: Unknown.

ETYMOLOGY: *Atopos*, Gr. meaning unusual; *phleps* Gr., Feminine, meaning vein.

TYPE SPECIES: *Atopophlebia fortunensis* Flowers, NEW SPECIES

Atopophlebia fortunensis Flowers, NEW SPECIES

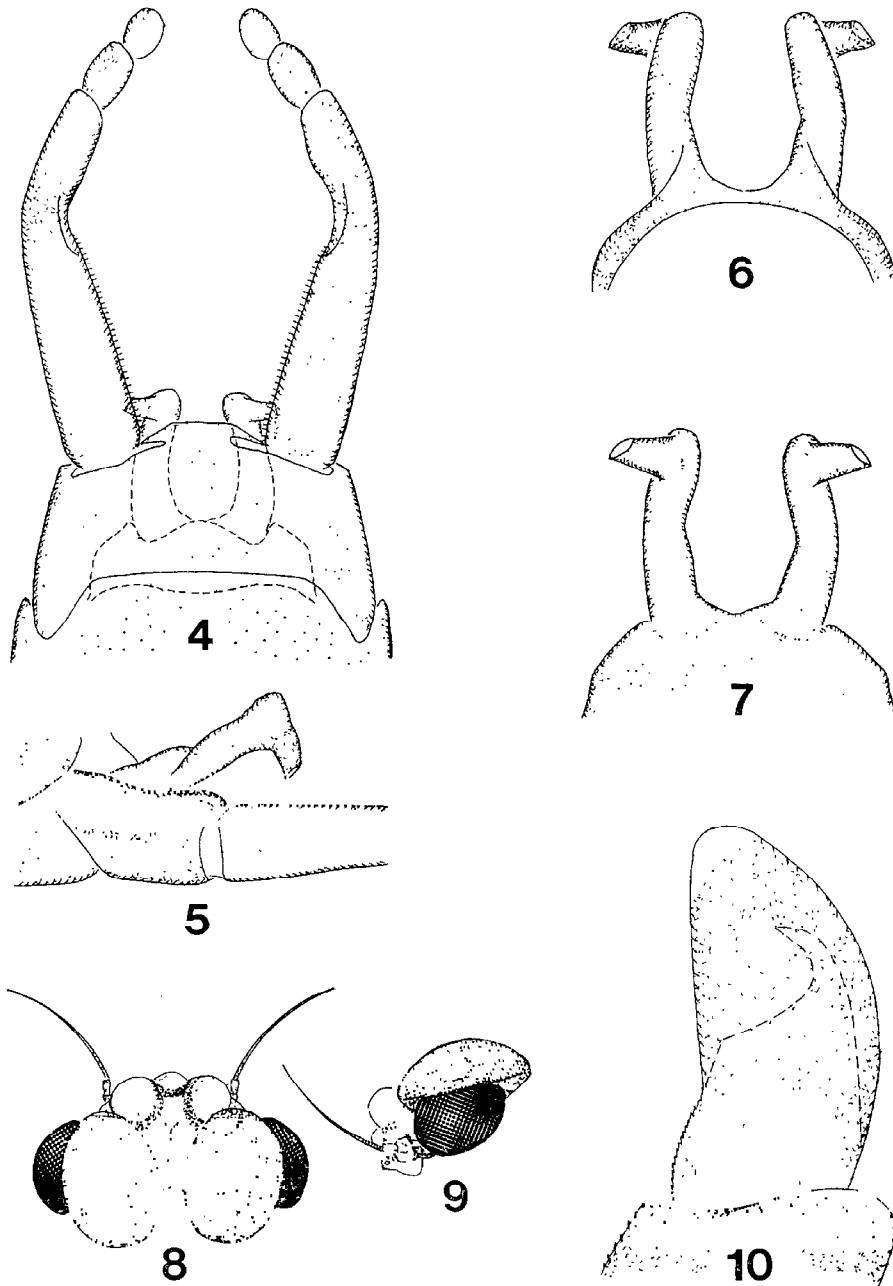


Fig. 4-10. *Atopophlebia fortunensis*. ♂ imago. 4) genitalia, ventral view; penes, 5) lateral, 6) dorsal, and 7) ventral views; 8) eyes; dorsal and 9) lateral views; 10) fore claw.

MALE IMAGO (in alcohol): *Length*: body 9.1-9.7mm; fore wings, 9.3-9.9mm. Upper portion of eyes creamy yellow, lower portion grayish-black. Head yellow, black markings across front of head above carinae and on vertex between eyes (Fig. 8-9); ventral surface of head with a pair of black maculae laterally and a black macula at midline. Thorax pale yellow, lateral

margins of pronotum washed with dark brown. Legs yellow; prothoracic femora with a dark brown spot on dorsal surface at apex and a brown streak on ventral surface at midlength, prothoracic tibiae dark brown at apex, prothoracic tarsi with segment 5 brown; meso- and metathoracic legs with apex of tibiae and tarsal segment 5 brown. *Wings* (Fig. 1-3): longitudinal veins of fore and hind wings yellow, cross veins light brown. Membrane of fore wings hyaline, except shaded with amber at extreme apex and milky in stigmatic area; membrane of hind wings hyaline, except apical 1/3 shaded with amber. *Abdomen*: terga and sterna pale yellow; segments 1, 7-9 opaque, segments 2-6 semi-translucent; posterior margins of terga 1-8 brown; a pair of anterolateral black maculae on terga 8-9. *Genitalia* (Fig. 4-7): styliger plate light yellowish-brown of basal half, darker brown at angular bend and washed with brown on outer margin of apical 1/4; segments 2 and 3 yellowish-brown on outer margins, yellowish-white on inner margins. Caudal filaments pale yellow, apical 3/4 washed with smoky brown.

FEMALE IMAGO: Unknown.

NYMPH: Unknown.

SPECIMENS: *Holotype* ♂ *imago*: Panamá, Chiriquí Province, Fortuna, Soledad side of pass. 20-V-1978, L. B. O'Brien. *Paratopotype*: 7 ♂ *imago*: same date as holotype, G. B. Marshall. Holotype and paratopotype are deposited in the collections of Florida A&M University.

BIOLOGY: The imagos were collected by sweeping vegetation in a forested area at ca. 1300m. A small stream and marshy areas were present; however, only 1 tiny nymph, not assignable, was collected.

DISCUSSION: *Atopophlebia* can be distinguished from all other genera of the Leptophlebiidae by the following combination of characters. In the imago, (1) vein MA in the fore wings forked symmetrically (Fig. 1), (2) costal cross veins in stigmatic area of fore wings strongly curved with some anastomosis (Fig. 1), (3) vein MP_2 of fore wings attached by a cross vein to vein IMP (Fig. 1), (4) hind wing with costal projection 5/6 the distance from base to margin and cross veins clustered in apical 1/3 (Fig. 3), (5) penes narrow in apical 2/3, twisted ventrally and laterally at apex (Fig. 5-7), (6) eyes are separated on meson of head, upper portion on short stalk, lower portion dorsally contiguous with upper portion (Fig. 8-9).

Until the nymphs of *Atopophlebia* are discovered, the phylogenetic relationships of this genus within the Leptophlebiidae cannot be determined. Adults of *Atopophlebia* are so highly specialized that, based on this characterization, no demonstration of close affinities with the adults of any other known genus of Leptophlebiidae is possible. In the adults, the connection of vein MP_2 of the fore wings to IMP instead of MP_1 is unusual. This character is occasionally found as an individual variation in other leptophlebiid genera. In the 2 known specimens of *Atopophlebia* it is consistent but more specimens are needed to determine if this is a good generic character. The shape of the hind wings and the clustering of cross veins in its apical 1/3 are unique among known Leptophlebiidae.

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