

**LIBELLULA MARIAE SPEC. NOV., A NEW
DRAGONFLY FROM COSTA RICA
(ANISOPTERA: LIBELLULIDAE)**

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The new sp. (holotype ♂: Costa Rica, Cartago Prov., Tapanti, 20-V-1964; deposited in FSCA, Gainesville, FL) is described and illustrated from a single specimen, and compared with its nearest relative *L. foliata* Kirby.

INTRODUCTION

In January, 1990, Dr Jean Belle kindly sent me a species of *Libellula* from Costa Rica to describe which is allied to *L. foliata*. Dr Belle indicated the following (in litt. 1 June 1990): "the *Libellula*... was collected long ago by a student of the Universidad de Costa Rica and deposited in its Museo de Insectos where I found it. I... asked the director..., Lic. Luis-Fernando Jirón permission to describe and to put it in the Florida State Collection of Arthropods [FSCA], in Gainesville and he agreed."

LIBELLULA MARIAE SPEC. NOV.

Figures 1, 3, 5, 7-9, 11, 13

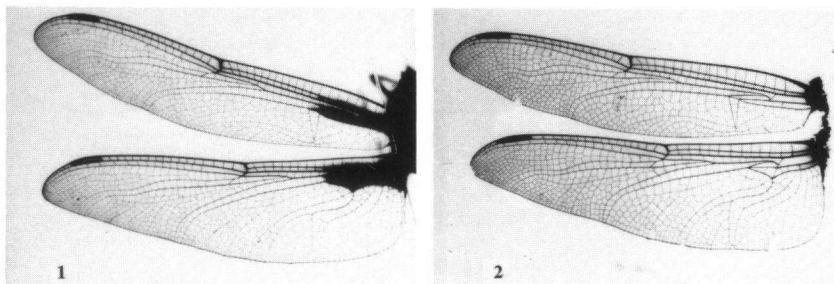
Material. - Holotype ♂, COSTA RICA: Cartago Province, Tapanti, 20-V-1964. L.Mena (spelling?) leg., in FSCA.

Etymology. - The new species is named, at Dr Belle's request (in litt., 1 April 1990), for his "late beloved wife Maria, whose encouragements and help in the field have often had unexpected great success in odonate collecting".

MALE (holotype). - Labium dark brown, paler along sides and on median lobe, labrum black, anteclypeus dark brown, remainder of face black, vesicle of vertex

erect, bidentate, occiput dark brown, rear of head tawny, becoming dark brown laterally.

Prothorax entirely dark brown, almost black dorsally, entire thorax black, becoming dark red brown laterally, a hint of dark blue pruinosity at upper 0.30 of mesepisternum below antealar crest; metastigma black. Wings (Fig. 1) with venation black, slight pruinosity on costal triangle (wing terminology from RIEK & KUKALOVA-PECK, 1984); wings hyaline with dark brown marking at base of wings as follows: In fore wing at base of costa and running distally about midway between costa and subcosta to distal angle of triangle, extending posteriorly to anterior margin of triangle, and basally along CuP and basal part of basal paranal cells; dark basal spot in hind wing similar but brown occupying entire triangle and extending posterobasally two cells along dark gray membrane; a clear wash of yellow extending distally from basal brown along subcosta and RP and disappearing at proximal end of pterostigma.

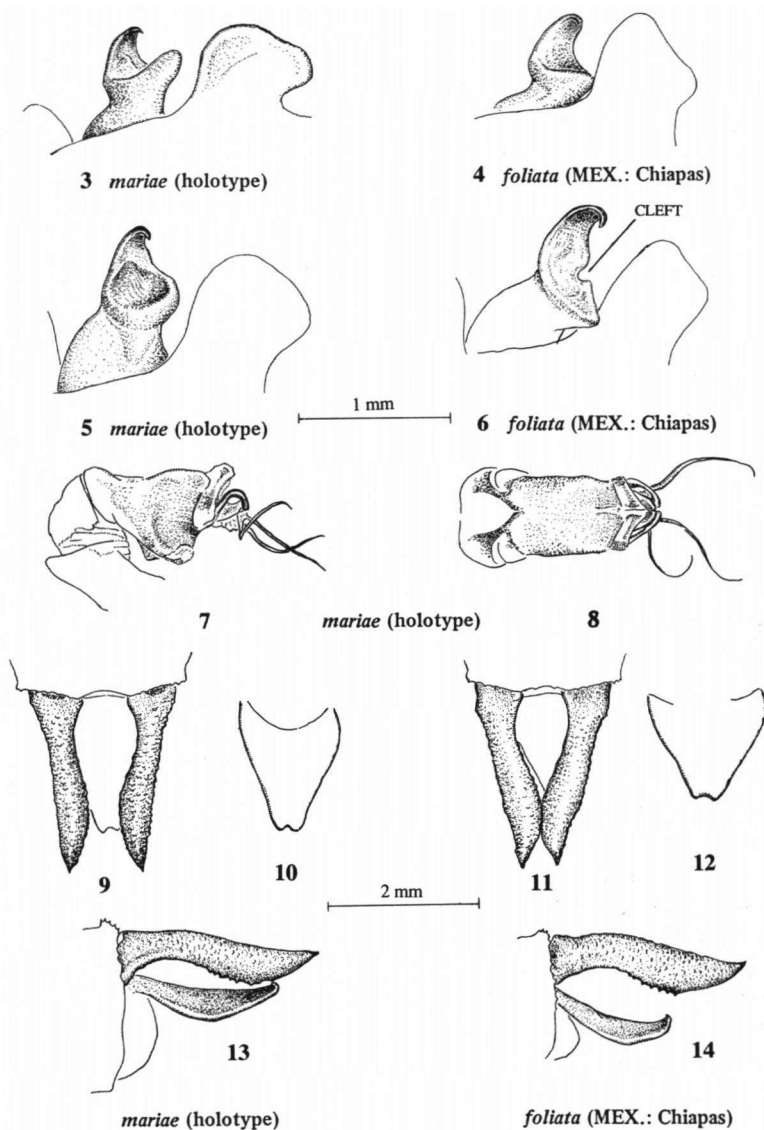


Figs 1-2. Wings of: (1) *Libellula mariae* sp.n. (holotype); - (2) *L. foliata* Kirby (Guatemala: Dept. Guatemala, Caldera lake nr San Francisco de Sales).

For venational characters and measurements, FW = fore wing, HW = hind wing, cs = crossveins, L = left, R = right. Length HW 42.5 mm, pterostigma FW 4 mm, HW 4 mm; antenodal cs FW 19/18, HW 14/15; postnodal cs FW 15/14; HW 16/16; cs in FW triangle 2/2, HW triangle 2/2; supratrangular cs FW 1/1, HW 0/1; subtriangle cells 7/7; cubital anal cs FW 1/1, HW 3/2; bridge cs FW 3/3, HW 3/4; trigonal interspace FW 4 (L) to 5 (R) cells, then irregularly by 4 cells.

Legs dark red brown at base becoming black toward distal end of femora; tibiae, tarsi and armature black.

Abdomen (31 mm long) strongly triquetal, dorsum of segment 1 and base of segment 2 dark brown, remainder of tergites all pruinose blue, gradually becoming darker posteriorly, especially on segments 9-10, underside of tergites and sternites brown, caudal appendages (Figs 9, 11, 13) black. Anterior hamule (Figs 3, 5) bifurcate, mesal branch terminating in a recurved black tooth, outer branch a



Figs 3-14. *Libellula mariae* sp.n. (holotype: Figs 3, 5, 7-9, 11, 13) and *L. foliata* Kirby (Mexico: Chiapas State, Oxchuc: Figs 4, 6, 10, 12, 14): right hamule, lateral view; - (3-4) right hamule, ventrolateral view; - (5-6) penis, lateral view; - (7-8) penis, ventral (ectal) view; - (9-10) cerci, dorsal view; - (11-12) epiproct, ventral view; - (13-14) caudal appendages, lateral view.

rounded lobe; genital lobe bluntly quadrate; penis (Figs 7, 8) with peduncle (first segment) stout, globular, fourth segment heavily sclerotized, with ental part forming a projecting ridge; heavily sclerotized lateral lobe narrow, semicircular, meeting median lobe distally, apex of median lobe with 3 long wire-like cornui.

REMARKS. - This species is easily distinguished from its nearest ally, *L. foliata* Kirby (Fig. 2), by the presence of dark basal wing marking (Fig. 1); the wings of *L. foliata* often have a slight flavescent tinge along the second series of antenodal and postnodal crossveins (not present in specimen figured). Morphological differences in the hamules and caudal appendages also distinguish this species. The hamule in *L. mariae*, when viewed ventrolaterally (Fig. 5), forms a broad, cuplike structure with a broad, medially raised portion (also seen in lateral view in Fig. 5). The posterior margin of the "cup" is roughly convex, with a small obtuse notch near the base of the inner hamular branch. In *L. foliata*, this structure is distinctly crescent shaped, its shorter outer branch more acutely pointed, and its posterior margin with a well defined U-shaped cleft (Fig. 6).

The epiproct of *L. mariae* extends 0.75 the length of the cerci (Fig. 13), and in ventral view (Fig. 11) is approximately 1.50 times as long as wide at its base. In *L. foliata*, the epiproct extends about 0.60 the length of the cerci (Fig. 14) and is about as wide at the base as long (Fig. 12).

CALVERT (1905), who first described the male of *L. foliata*, mentions "Two tufts of hairs on the ventral surface of segment 2 in front of the anterior lamina...", which are also present on four *L. foliata* I have from Mexico (Chiapas, Oxchue, 22 March 1973, 1 ♂; 6 June 1973, both R.G. Wind, collector) and Guatemala (Baja Vera Paz, Vista Hermosa, rte. 5, nr. jct. with Purulha road, 24 June 1966, O.S. Flint, Jr., M.A. Ortiz B., 1 ♂; Dept. Guatemala, Caldera, lake nr San Francisco de Sales, 1800 m, 22 Aug. 1964, T.W. Donnelly, 1 ♂). These tufts are absent on the holotype of *L. mariae* and although the abdomen was broken from the thorax during transit from The Netherlands, I cannot see any evidence of such hairs ever having been present.

CALVERT (1905) records *L. foliata* from Irazú (Cartago Prov., 9°58'N, 83°49'W, SELANDER & VAURIE 1962), which is north of Tapanti. The type locality is a biological preserve traversed by a dirt road which winds up a steep grade near the town of Orosi (13 km SE Cartago, 9°48'N, 83°52'W) at about 920-1230 m to about 2770 m. There is no indication on the locality label of where within the preserve the holotype was taken.

ACKNOWLEDGEMENTS

I thank Dr JEAN BELLE of Velp, The Netherlands, for discovering this species, the authorities of the Universidad de Costa Rica for the privilege of describing it, CARL COOK, Center, Kentucky, and Dr T.W. DONNELLY, Binghamton, N.Y., for loan of specimens, and FRANK HAVORE, of Newhall, California, whose knowledge of Costa Rica provided information about Tapanti.

REFERENCES

- CALVERT, P.P., 1905. Neuroptera. *Biologia cent.-am.*, pp. 145-212.
- RIEK, E.F., & J. KUKALOVA-PECK, 1984. A new interpretation of dragonfly wing venation based upon Early Upper Carboniferous fossils from Argentina (Insecta: Odonatoidea) and basic character states in pterygote wings. *Can. J. Zool.*, 62(6): 1150-1166.
- SELANDER, R.B. & P. VAURIE, 1962. A gazetteer to accompany the "Insecta" volumes of the "Biologia Centrali-Americana." *Am. Mus. Novit.* 2099:1-70.