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MICRATHYRIA SYMPRIONA SPEC. NOV., A NEW DRAGONFLY FROM ECUADOR AND PERU (ANISOPTERA: LIBELLULIDAE)

K.J. TENNESSEN
1949 Hickory Avenue, Florence, AL 35630, United States

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The new sp. (holotype ♂, allotype ♀: Ecuador, Zamora Chinchipe prov., grassy marsh 5.5 km SE of Zamora, ca 3000 ft, 4°10'S, 78°56'W, 5-XI-1997; deposited at FSCA, Gainesville, FL, USA) is described and compared with *M. hypodidyma* Calvert. *M. sympriona* differs in the low, laterally rounded transverse ridge on the venter of abdominal segment 1 which bears 0 to 3 widely spaced black denticles on each side of the median depression, the tips of the outer arms of the hamules surpassing the anterior laminae, and segment 9 all black. Females have abdominal segment 9 sternite convex instead of flat as in *M. hypodidyma*.

INTRODUCTION

Micrathyria is a neotropical group of 42 currently recognized species (BRIDGES, 1994), although the genus is in need of revision. Recently described species include *ringueleti* (RODRIGUES CAPITULO, 1988), *venezuelae* (DE MARMELS, 1989), *caerulistyla* (DONNELLY, 1992), and *divergens, dunklei, occipita*, and *pseudeximia* (WESTFALL, 1992). DUNKLE (1995) described a new subspecies of *mengeri*. The new species described here is from southern Ecuador and Peru. When I first looked at the thoracic color pattern and hamules in the field, I assumed they were *M. laevigata* Calvert. When J.J. Daigle and I examined them more closely in the laboratory, we noticed the very different cerci and suspected they represented an undescribed species. Several species in addition to *M. laevigata* possess hamules in which the outer arms extend anteriorly past the anterior laminae and bear stout spines on the anterior margin (hereafter referred to as the *M. didyma* group). I compare it in detail to *M. hypodidyma* Calvert, which it closely resembles in morphology and color pattern, and distinguish it from other species in the group.

In the collecting data, the names of the collectors are abbreviated as follows: JJD (Jerrell J. Daigle),

RWG (Rosser W. Garrison), WFM (William F. Mauffray), KJT (Kenneth J. Tennessen). Thoracic notation follows WALKER (1953); wing venation follows the Comstock-Needham system (NEEDHAM & WESTFALL, 1955).

MICRATHYRIA SYMPRIONA SP. NOV.

Figures 1-9

M a t e r i a l. – **Holotype** ♂: ECUADOR: Zamora Chinchipe province, grassy marsh 5.5 km SE of Zamora, ca 3000 ft, 4°10'S, 78°56'W, 5-XI-1997, WFM leg. – **Allotype** ♀: in cop. with holotype. – **Paratypes** 30 ♂, 2 ♀): ECUADOR: same data as holotype; 6 ♂, KJT leg., 3 ♂, 1 ♀, JJD leg., 6 ♂, WFM leg. PERU: Madre de Dios, Pakitza Reserved Zone, palm swamp at stake 28, near Troncal Castañal, 6--VII-1993, RWG leg., 15 ♂, 1 ♀. The holotype and allotype are deposited in the Florida State Collection of Arthropods (FSCA) in Gainesville, Florida, USA. Paratypes are deposited in the personal collections of the four collectors, the United States National Museum (USNM) in Washington, DC, the International Odonatological Research Institute (IORI) in Gainesville, Florida, and the collections of S.W. Dunkle and T.W. Donnelly.

E t y m o l o g y. – The name *sympriona* is Greek for "with saw", referring to the distinctive sharp teeth on the straight ventral margin of the male cerci.

MALE (**holotype**). – H e a d. – Labium cream white except mesal margins black; labrum, clypeus, and vertical surface of antefrons cream white with black setae; horizontal surface of antefrons and postfrons wrinkled (except for smooth median furrow), shiny bluish black medially, duller brown laterally and posterior to lateral ocelli; occiput dull black, posterior surface in dorsal view slightly convex with a shallow median groove (Fig. 1), dull creamy brown, markedly paler than rear of head which is mostly blackish brown except for small lateral yellow spot medially and lower elongate yellow spot. Eyes in life green dorsally.

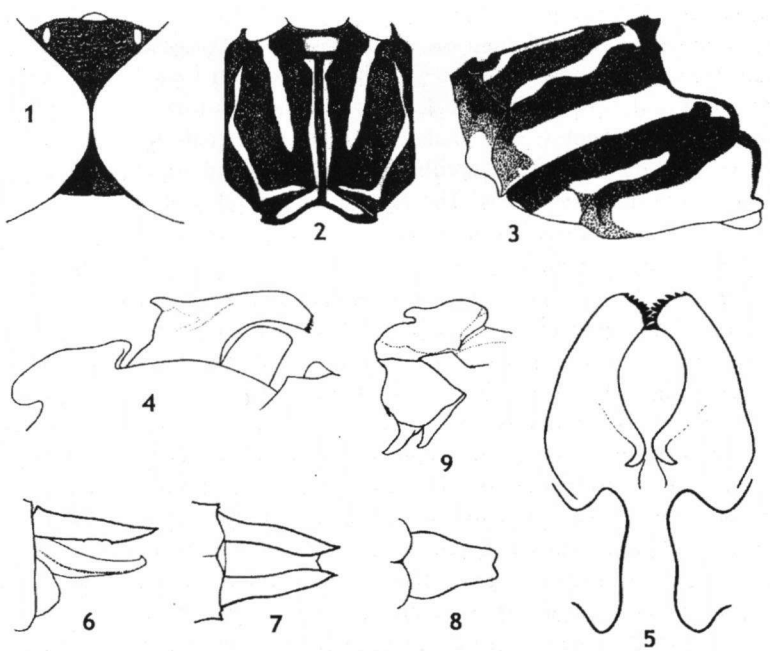
T h o r a x. – Prothorax. – Middle lobe raised, brown with a small rectangular green spot on each side of median line; hind lobe sloping upward, mostly black with an anterolateral spot half yellow, half green; posterior margin partly green and with very long, pale setae.

Pterothorax. – Blackish brown with green stripes as follows: (1) dorsal edge of dorsal carina, (2) very narrow stripes along base of dorsal carina, (3) dorsal mesepisternal stripes 0.32 mm wide, extending 3/4 distance to posterior margin (Fig. 2), (4) narrow sinuate stripes above mesopleural (humeral) suture, (5) wide mesepimeral stripes (0.80 mm), (6) narrow, shortened metepisternal stripe just above metapleural suture, and (7) wide metepimeral stripe occupying lower 2/3 of metepimeron (Fig. 3). Metapostepimeron grayish green.

Legs. – Coxae brownish green, trochanters dark brown, remainder of legs black, except inner surface of front femora pale green.

Wings. – Hyaline, with arculus at level of 2nd antenodal crossvein; subtriangle of fore wing 3-celled. Fore wings with 9 1/2 antenodals, 8 postnodals; left hind wing with 7 antenodals and 7 postnodals, right hind wing with 8 antenodals and 9 postnodals.

A b d o m e n. – Black, with green markings as follows: segment 1 with large lateral spots; 2 with narrow basal dorsal spots and reddish brown lateral spots, dark area of sides pruinose; 3-5 with dorsolateral, elongate spots extending from base to beyond 1/2 length except less than 1/2 on 5; 6 with very small, rectangular basal spots; 7 with large rectangular spots extending 2/3 length of segment; 8-10 black. Segment 1 with a low, narrow, transverse ridge on venter bearing a few long yellow setae on each side of the median. Hamules of segment 2 dark brown to black, with outer branches extending anteriorly to level of middle of segment 1, slightly surpassing anterior laminae (Fig. 4), tips converging, with 8-10 long black teeth on anterior margin, inner branches short, slender, recurved, diverging from each other at tips (Fig.5); genital lobes short but very wide (0.32 x 0.60 mm). Cerci black, 1.32 mm long, in lateral view straight with 4 stout ventral teeth (more prominent in dorsolateral view), tips sharply pointed (Fig. 6); in dorsal view straight, tips very sharply pointed, outer margins slightly concave near base (Fig. 7), covered with whitish gold hairlike setae. Epiproct blackish brown, slightly shorter than cerci, tapered to blunt, emarginate tip, width at tip nearly half



Figs 1-9. *Micrathyria sympriona* sp. n., ♂: (1) Occiput, dorsal view; – (2) pterothorax, dorsal view; – (3) pterothorax, left lateral view; – (4) hamules and genital lobes of segment 2, lateral view; – (5) same as 4, ventral view; – (6) terminal appendages, left lateral view; – (7) cerci, dorsal view; – (8) epiproct, ventral view; – (9) terminal segment of penis, left lateral view.

maximum width (Fig. 8). Segment 8 with ventral tergal margins projecting ventrally at posterior margins and bearing 3 or 4 stout spines, segment 9 with base of ventral tergal margins swollen. Terminal segment of penis in ventral view much wider distally than basally; 2 stout, median, apical lobes projecting anteroventrally, best seen in lateral view (Fig. 9).

Measurements (mm). – Total length 36.5, abdomen length 25, hind wing length 26.

FEMALE (**allotype**). – Head. – Similar to holotype except face gray and horizontal surface of antefrons and postfrons light brown. Occiput rusty brown, posterior surface more swollen with deeper median groove (Fig. 10), covered with long, golden setae. Eyes brown.

Thorax. – Dark stripes brown, pale stripes green.

Legs. – Middle femora with inner surface yellowish green.

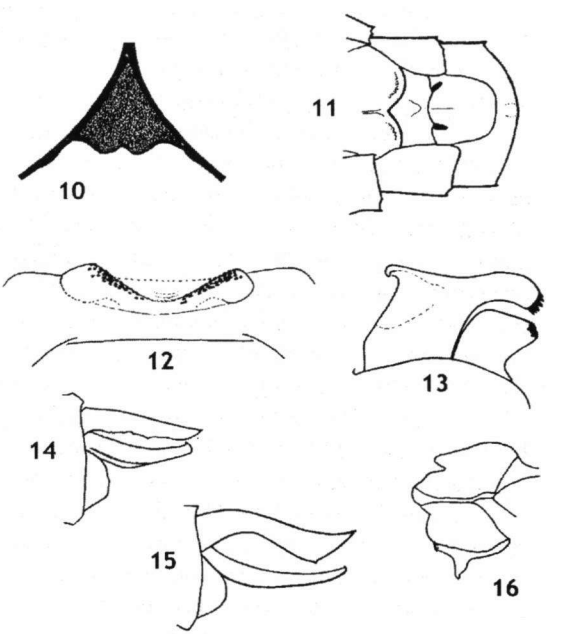
Wings. – Moderately smoky; fore wings with 9 1/2 antenodal crossveins, 8 postnodals; left hind wing with 7 antenodals, right with 8; both hind wings with 8 postnodals.

Abdomen. – Stockier than male; pale midlateral markings on segments 1-5 larger than in male, on 6 extending posteriorly similar to markings on 3-5. Cerci 0.70 mm long. Vulvar lamina as shown in Fig. 11. Sternite 9 convex, overlapping sternum of segment 10.

Measurements (mm). – Total length 33, abdomen length 23, hind wing length 25.5.

VARIATION AMONG PARATYPES. – In the series from Ecuador, several males have 2 or 3 widely spaced black denticles on the low transverse ventral ridge of abdominal segment 1. In 3 males there are small pale transverse spots on abdominal segment 10. The arculus is slightly distal to the 2nd antenodal crossvein in several specimens. The number of ventral teeth on the cerci range from 3-5, and 1 or 2 small ventral teeth may be present in the basal half. The dorsum of the epiproct varies from completely dark to partly pale dorsomedially. Size range of males: total length 35-36 mm, abdomen length 24-25 mm, hind wing length 26-27 mm. These measurements in the paratype female are 34, 23.5, and 26.5 mm. The males from Peru are generally smaller and darker, the crest of the dorsal carina is partly to totally dark, and the green stripe along the base of the dorsal carina is nearly totally obscured. The green antehumeral stripe is usually interrupted in 1 or 2 places and is often separated from its posterodorsal extension. The green spot on abdominal segment 5 often has no posterior extension. Most specimens have only 1 or 2 teeth on the posterior ventral projection of tergum 8. Size range of Peru males: total length 31.5-35.5 mm, abdomen length 20.5-23.5 mm, hind wing length 25-27 mm. The ratio of hind wing length to abdomen length is greater in the single female from Peru (1.29) than in the two females from Ecuador (1.11-1.13). Measurements of the Peru female are: total length 32 mm, abdomen length 21 mm, hind wing length 27 mm. Several male paratypes from both countries exhibit pruinosity on the sides and venter of the thorax and the sides of abdominal segments 1 and 2. Their wings are slightly smoky.

DIAGNOSIS WITHIN THE *DIDYMA* GROUP. – *M sympriona* is most closely related to *M. hypodidyma*, which is known from Argentina, Bolivia, Brazil, Paraguay, and Uruguay (TSUDA, 1991). The penis of the two species is identical in lateral view, possessing 2 slender apical lobes. DIAS DOS SANTOS (1954, fig. 23) figured the penis of *M. hypodidyma*. Abdominal segment 1 in *M. hypodidyma* males bears a well-developed, narrow transverse ridge which projects ventrally and laterally at an angle and bears numerous (>30) small black denticles on each side of the median concavity. These denticles are arranged in 3 or 4 tightly packed rows (Fig. 12). A similar ridge is present in *M. sympriona*, but it is less prominent, rounded laterally, and bears at most 2 or 3 widely spaced black denticles on each side of the median. Other differences in males of *M. hypodidyma* (with *M. sympriona* characteristics in parentheses) are: tips of outer arms of hamules exactly overlying anterior laminae (surpassing anterior laminae); tips of anterior laminae black and inclined anteriorly at distal end – Fig. 13 (pale and straight, Fig. 4); abdominal segment 9 with a pair of round, greenish yellow, lateral spots just above lateral carina (segment 9 all black); cerci with 3 or 4 very small ventral teeth in basal half, none evident in distal half – Fig. 14 (stout, ventral teeth in distal half); distal width of epiproct < 1/3 maximum width basally (distal width 1/2 maximum width basally). Females of the 2 species differ as follows. In *M. hypodidyma*, the occiput is longer than wide, whereas in *M. sympriona* it is wider than long. The pale middorsal stripe at the base of the middorsal carina is as wide as the adjacent dark stripe in *M. hypodidyma* compared to being narrower in *M. sympriona*. The part of the venter of segment 9 which overlaps



Figs 10-11. *Micrathyria sympriona* sp. n., ♀: (1) Occiput, dorsal view; – (2) vulvar lamina, ventral view. – Figs 12-14. *Micrathyria hypodidyma*, ♂: (12) Ventral ridge on abdominal segment 1, oblique anterior view; – (13) hamule and anterior lamina, lateral view; – (14) cercus, left lateral view. – Fig. 15. *Micrathyria didyma*, ♂, cercus, left lateral view. – Fig. 16. *Micrathyria laevigata*, ♂, terminal segment of penis, left lateral view.

the base of the venter of segment 10 is flat in *M. hypodidyma* versus convex in *M. sympriona*, and the papillae at the base of the venter of abdominal segment 9 are farther apart in *M. hypodidyma* (0.46-0.54 mm vs. 0.31-0.37 mm).

The cerci of male *M. dictynna* Ris are straight with 5 or 6 teeth along the ventral margin, but the outer arms of the hamules extend far past the anterior laminae, reaching the posterior portion of the thoracic venter. This is the most extreme anterior development of the outer arms known in the genus. The outer arms are unique also in possessing 6 or 7 sharp, stout setae on the ventral surface. Abdominal segment 8 has a pair of round, greenish yellow middorsal spots, which are absent in *M. sympriona.*

In 5 other species of the *didyma* group, the ventral margin of the male cerci are concave in the basal half (viewed laterally), and usually there is a prominent inferior angle in the distal third (Fig. 15). In *M. didyma* (Selys *in* Sagra), the top of the head is pale brown, the dark metepisternal stripe is narrower than the green metepisternal stripe, the distal width of the epiproct is only 1/4 the maximum basal width, and the tip of the epiproct is rounded. In males of *M. laevigata* Calvert I examined, penal segment 4 possesses a single apical sclerotized lobe directed ventrally (Fig. 16). In the figure of the penis given by DIAS DOS SANTOS (1954, fig. 25), it appears 2 apical lobes are present, although this may be an artifact of the drawing. The fore wing subtriangle is 2- or 3-celled in *M. laevigata*, the outer arms of the hamules are shorter than in *M. sympriona* (not surpassing the anterior laminae), and the posterior ventral tergal margins of abdominal segment 8 terminate in a single large spine. *M. laevigata* is fairly variable in several of the characters, as it ranges from Guatemala and Trinidad south to Brazil and Bolivia.

Micrathyria venezuelae De Marmels differs from *M. sympriona* in 2 characters in addition to the shape of the cerci: the outer arms of the hamules are light tan, and the distal width of the epiproct is 1/3 or less the maximum basal width. In 3 males that appear to fit *M. venezuelae* from Napo province, Ecuador (2 in coll. KJT, 1 in FSCA), the inferior angle of the cerci is nearly rounded, not distinctly denticulate as shown by DE MARMELS (1989, fig. 193). The penis of *M. venezuelae* (DE MARMELS, 1989, fig. 195) is similar to that of *M. sympriona* and *M. hypodidyma*. In *M. dido* Ris, the anal loop is extremely reduced, the outer arm of the anterior hamule surpasses the anterior laminae, the epiproct is as long as the cerci, and the cerci lack stout ventral teeth and an inferior angle in the distal third. In *M. cambridgei* Kirby, the wings are wider, the bases are golden yellow and the tips are black beyond the pterostigma, and the cerci are sinuate in both lateral and dorsal views. It is probable that *M. borgmeieri* Dias dos Santos also belongs in the *didyma* group, as do *spinifera* Calvert and *dythemoides* Calvert. Although I have not seen a specimen of *M. borgmeieri*, I surmise that *M. sympriona* is distinct from this species based on figures by DIAS DOS SANTOS (1947), which indicate that the anterior end of

the outer arm of the hamules is directed ventrally and lacks apical teeth, and that the cerci are more similar to those of *M. didyma*.

REMARKS. – In Ecuador, *M. sympriona* was collected in an open, tall grass marsh (*Paspalum* sp.) bordered by trees on one side. Males were perching on the tips of the grass stems, and were easier to approach than most *Micrathyria* species. The only other species observed in this marsh were *Remartinia rufipennis* (Kennedy), *Acanthagrion obsoletum* (Förster) and *A. peruvianum* Leonard. In Peru, R.W. Garrison collected *M. sympriona* in a palm swamp with partly submerged dead tree trunks (GARRISON, 1997); he also identified the species in the field as *M. laevigata*. Seven other species of Odonata were present at this site, the most common *Micrathyria* being *M. sympriona* (Dr R.W. Garrison, pers. comm.).

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