

## A NEW SPECIES OF *AMPHIPTERYX* SELYS, 1853 FROM OAXACA, MEXICO (ZYGOPTERA: AMPHIPTERYGIDAE)

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*A. longicaudatus* sp. n. (holotype ♂ and allotype ♀ deposited at UNAM, Mexico) is described from 8 ♂ and 2 ♀, collected in the vicinity of Valle Nacional-La Esperanza, Oaxaca, Mexico. Its affinities and differences from its only congeneric *A. agrioides* Sel., 1853 are discussed and notes on its habitat are given.

### INTRODUCTION

The family Amphipterygidae is represented in the New World by the single species *Amphipteryx agrioides* Sel., originally described from a female from Colombia (SELYS, 1853). This species has also been recorded from Honduras, Guatemala and Mexico (PAULSON, 1982). In this paper I describe *A. longicaudatus* sp. n. from material collected in the vicinity of Valle Nacional-La Esperanza in the Sierra de Juarez, Oaxaca, Mexico.

### *AMPHIPTERYX LONGICAUDATUS* SPEC. NOV.

Figures 1-6

**Material.** — **Holotype** ♂: Oaxaca State: Seepage at km 83.5 on route 175, 3.5 km SW La Esperanza, alt. 1700 m, 26-V-1990, E. Barrera & A. Cadena leg. — **Allotype** ♀: Oaxaca State: Waterfall at km 56.7 on route 175, alt. 580 m, 29-VII-1990, V. García & E. González leg. — **Paratypes** 7 ♂, 1 ♀: same data as holotype 3 ♂; same data as allotype 1 ♂, 1 ♀; arroyo ca 5 km S San Mateo Yetla, 25-V-1981, H. Velazco leg., 2 ♂; 8 km S Valle Nacional, 25-V-1981, C.M. & O.S. Flint Jr leg., 1 ♂.

The holotype, allotype and seven paratypes are deposited at UNAM (Mexico). One paratype male is deposited at USNM (Washington).

**Etymology.** — The name of this species is derived from the latin: "*longus*" = long and "*cauda*" = tail or appendage, referring to its long and slender male paraprocts.

**MALE (holotype)** — **Head.** — Labium cream colored with a deep oval-shaped cleft in distal part of median lobe; lateral lobes and apical 0.4 of median lobe black; base of mandibles, labrum (excepting black line on anterior and posterior borders), clypeus and genae blue green (bright blue in life), pale coloration of genae extending mesially to anterior surface of frons; posterior surface of frons and vertex black with polished surface, a pair of small blue spots on both sides of lateral ocelli, postocular region mat black contrasting with coloration of rest of head.

**Thorax.** — Prothorax black, anterior lobe with a small transverse white dorsal band; median lobe with two large lateral blue spots and a pair of dorso-apical pale spots; posterior lobe black with posterior angles forming two small lamellate processes (Fig. 1). Mesepisternum black with an incomplete blue antehumeral stripe reaching 0.5 of sclerite, its lower end connecting with pale stripe bordering anterior margin of mesinfraepisternum. Sides of synthorax black with following pale areas: a narrow stripe bordering anterior margin of mesepimeron, a large midlateral stripe running through most of length of interpleural suture, a large stripe on metepimeron connecting base of second lateral at metaspiracle. Metasternum ivory-white; legs with external surfaces black, coxae, trochanters and basal half of the inner surface of femora pale.

**Wings.** — Venation black, pterostigma black, its costal side much shorter than proximal side. Wings petioled before CuP crossing in all wings; arculus at third antenodal in all wings, antenodals in fore wings 8, in hind wings 7 (LHW) and 8 (RHW) respectively, postnodals in fore wings 30, in hind wings 24; origin of RP2 between halfway 3 and 4 in FW and just beyond 2 in HW.

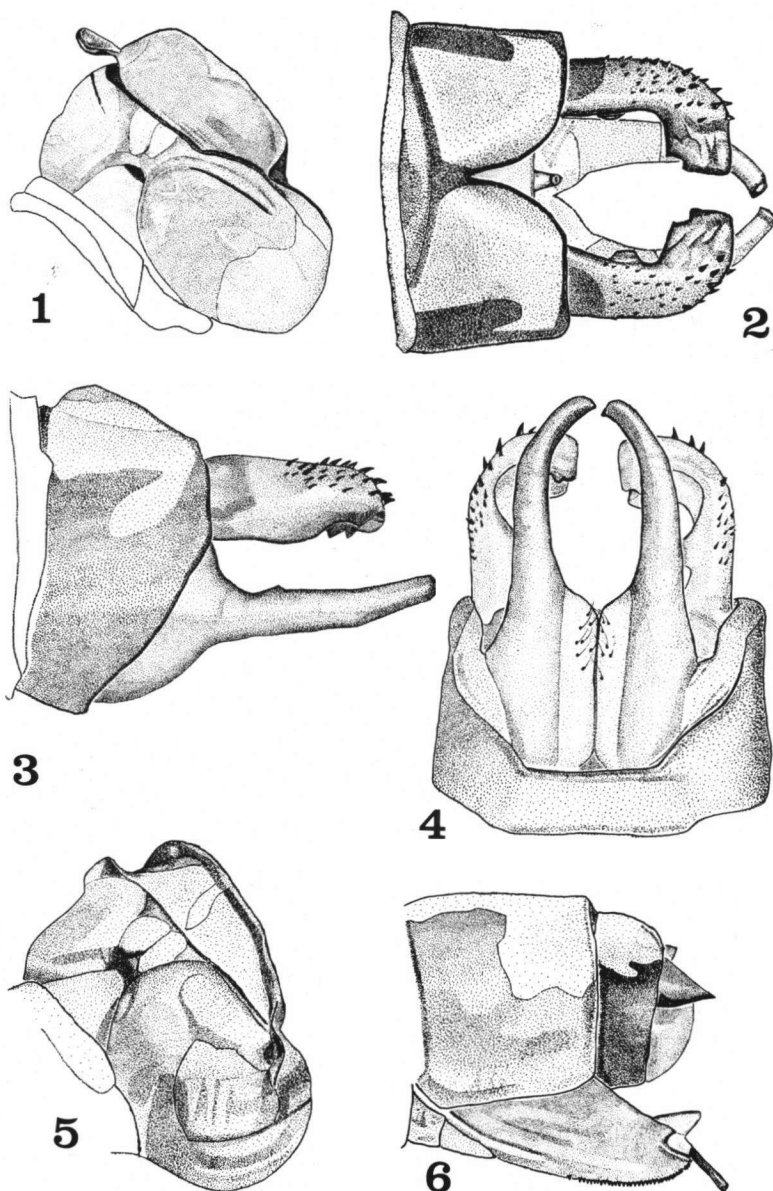
**Abdomen.** — Segment 1 with two dorsolateral spots each connecting anteriorly by a blue band; segment 2 black with two longitudinal dorsolateral stripes covering the length of segment; segments 3-7 with two small basal blue spots (in 6-7 these spots rudimentary), segments 8-10 blue on dorsum; segment 10 with a longitudinal crest.

**Appendages.** — Cerci stout, longer than segment 10 with apices truncate, in dorsal view its apical 0.4 bending mesially at almost 90° angle, apical inner angle with an angular notch (Fig. 2). In lateral view cerci with 0.4 ventrally concave with three recurved teeth (innermost not visible in this angle) (Fig. 3). Paraprocts slender, longer than cerci and convergent in ventral view (Fig. 4).

**Measurements (mm).** — Abdomen (excl. appendages) 39.9; — hind wing 34; — cerci 1.1; — paraprocts 2.1.

**FEMALE (allotype)** — **Head.** — Color pattern as in male.

**Thorax.** — Prothorax as in male; prothoracic processes not so developed as in male (Fig. 5); synthorax with pale antehumeral stripe wider and longer than in male, extending from mesostigmal plate to antealar sinus, its lower end widely connecting with pale area at sides of synthorax; sides of synthorax with more extensive blue coloration than in male, following areas black: a spot at the lower



Figs. 1-6. *Amphipteryx longicaudatus* sp. n.: (1) Dorsolateral view of male prothorax; — (2-4) Abdominal male appendages in dorsal, lateral and ventral views (paratype 2); — (5) Dorsolateral view of female prothorax; — (6) Last abdominal segments, female (allotype), lateral view.

part of mesepimeron, an incomplete stripe extending from metastigma to the alar ridge, metepimeron as in male.

**Wings.** — Venation as in male, with following differences: antenodals in fore wings 6 (LFW) and 7 (RFW), in hind wings 8 (LHW) and 7 (RHW); postnodals in fore wings 24 (LFW) and 25 (RFW), in hind wings 21 (LHW) and 19 (RHW). Origin of RP2 beyond postnodal 4 in FW, just before 3 in LHW and just beyond 3 in RHW.

**Abdomen.** — Segment 1 black with lateral blue spots connecting anteriorly, segments 2-7 with lateral longitudinal blue stripes extending 0.8 the length of each segment, in 3-7 they are basally interrupted and are seen as laterobasal spots followed by linear stripes; a very narrow pale middorsal line on 2-8 covering the length of each segment and interrupted only by intersegmental annuli; segment 8 black with two small lateral blue spots; segment 9 black, in dorsal view with a large wide stem "T" shaped blue spot; segment 10 black with blue on dorsum. Tip of ovipositor extending slightly beyond tip of cerci (Fig. 6).

Measurements (mm). — Abdomen (excl. appendages) 32.1; — hind wing 30.4; — cerci 0.6.

**PARATYPES** — Venational variation (7 ♂, 1 ♀). — Petiolation in both sexes ceases before CuP crossing by a distance more than the length of CuP crossing; arculus at third antenodal; number of antenodals (♂): fore wings 7-9, ave. 8, hind wings 6-9, ave. 7.6; postnodals fore wings 25-34, ave. 30.6, hind wings 21-27, ave. 24.2. Antenodals (♀): fore wings 8, hind wings 6; postnodals fore wings 25 (LFW) and 26 (RFW), hind wings 18 (LHW) and 21 (RHW). Origin of RP2 (♂): fore wings, halfway between 3-4 (7%), at 4 (14%), just beyond 4 (43%), halfway between 4-5 (14%), at 5 (7%), just beyond 5 (7%), just beyond 6 (7%). Hind wings, halfway between 1-2 (7%), at 2 (21%), halfway between 2-3 (21%), just before 3 (21%), at 3 (7%), just beyond 3 (7%), between 3-4 (14%). ♀: fore wings, just beyond 4, hind wings, between halfway 2-3 (LHW) and just beyond 2 (RHW).

Measurements (mm), 7 ♂, 1 ♀. — ♂: abdomen 38.1-33.8 (mean 36.1), hind wings 34.2-29.5 (31.6), cerci 1.17-0.93 (1.01), paraprocts 2.08-1.86 (1.97). — ♀: abdomen 32.8, hind wing 30.7, cerci 0.60.

**MORPHOLOGICAL ABNORMALITIES.** — Seven out of 10 specimens showed morphological abnormalities. Malformation of entire labium was present in a single male (paratype 1). Another male (paratype 8) had the left metathoracic leg consisting only of the coxa, trochanter, traces of tibia, a remnant of tarsus (probably only segment 3) and two small non-articulated claws. However, the commonest deformity consisted of malformation of tarsi. Six out of 7 malformed specimens had this kind of abnormality. From a total of 58 tarsi examined, 9 were abnormal consisting in a reduction of tarsal segments from three to two. In all cases segments 1 and 3 were the only developed, the latter segment ended in two short non-articulated claws. HILTON (1985) discussed tarsal abnormalities in a population of *Amphiagrion saucium* in Canada. He noted that 87% of the tarsal abnormalities were identical suggesting that some type of genetic transmission may be involved. However, FORBES & BAKER (1989) working experimentally

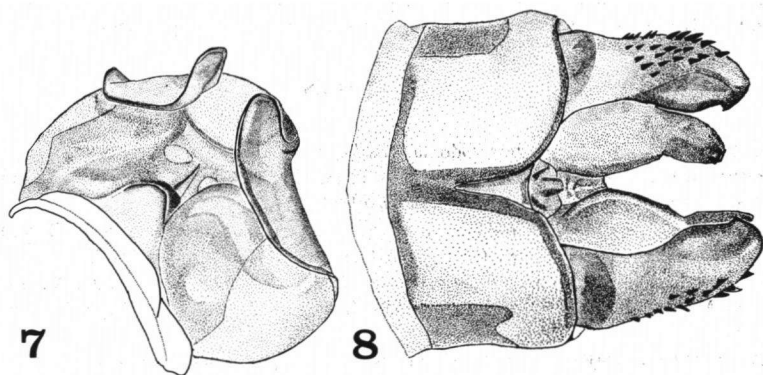
with *Ischnura verticalis* and *Enallagma ebrium* found that abnormal tarsi in these two species were the result of incomplete regeneration of lost legs rather than genetically transmitted deformities.

**HABITAT.** — *A. longicaudatus* is apparently restricted to the Sierra de Juarez, Oaxaca area. Specimens were collected at seepages and small "arroyos", at altitudes from 520 to ca 1700 m. At lower altitudes we collected this species in remnants of tropical rain forest and at higher altitudes it occurred in cloud forest. Other Odonata breeding at the former habitat were *Palaemnema* sp. n. and *Paraphlebia quinta*, at the latter *A. longicaudatus* coexisted with the same *Palaemnema* and with *Paraphlebia* sp. n.

## DISCUSSION

I compared my specimens of *A. longicaudatus* with a male of *A. agrioides* collected in Guatemala (El Progreso; Finca La Cajeta nr. Estación La Virgen, 22 Aug. 1970, T.W. Donnelly leg.). Males of *A. longicaudatus* differ from *A. agrioides* by the shape of the posterior lobe of the prothorax and also of the abdominal appendages. Males of *A. agrioides* have two conspicuous upright mesally adjacent lamellar processes on the posterior lobe of the prothorax. These processes are smaller, more anteriorly directed and more laterally situated in *A. longicaudatus* (cf. Figs 1, 7). The cerci of *A. agrioides* are primarily linear in dorsal view with only the tips of their apices slightly convergent, not strongly curved mesally at apical 0.4 as in *A. longicaudatus* (cf. Figs 2, 9). The paraprocts in *A. agrioides* are robust and slightly shorter than the cerci, in *A. longicaudatus* they are more slender and longer than the cerci (Figs 3-4).

I did not have any female of *A. agrioides* for comparison, but CALVERT's



Figs 7-8. *Amphipteryx agrioides*: (7) Dorsolateral view of male prothorax; — (8) Abdominal male appendages, dorsal view.

(1901) excellent redescription of this species shows the following differences: The hind prothoracic lobe of *A. agrioides* also possesses two dorsal lamellar processes but they are separated by a greater interval than in the male and they are curved anteromesally. The same structures in *A. longicaudatus* are much smaller and are seen only as two small lateral auricles (Fig. 5).

Finally, PAULSON (1982) listed the genus *Amphipteryx* as an example of a Chiapas-Guatemala-Honduras highlands endemic, but the discovery of *A. longicaudatus* in Oaxaca extends the range of this genus in Central America slightly to the north (Fig. 9). The occurrence of *A. agrioides* in Colombia is dubious (even though that is the type locality) because it has never been found in Costa Rica and Panama, fairly well-sampled countries (D.R. Paulson, pers. comm.).



Fig. 9. Distribution of genus *Amphipteryx* in Mexico and Central America.

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