

**DESCRIPTION OF THE LAST LARVAL INSTAR
OF *AESHNA* (*MARMARAESCHNA*) *PALLIPES* FRASER, 1947
(ANISOPTERA: AESHNIDAE)**

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The last larval instar is described and illustrated, based on reared specimens from Argentina (Salta and La Rioja provinces). It differs from the only other *Marmaraeschna* larva known, *A. (M.) brevicercia*, by the antennae surpassing anterior margin of labrum, lateral spine of abdominal segment IX as long as segment X, and ♂ basal lamina of epiproct with rounded tip and half as long as epiproct. Both *pallipes* and *brevicercia* larvae differ from other *Aeshna* larvae by the U-shaped apical excision of epiproct and the marginal tubercles on sides of ligula medial cleft.

INTRODUCTION

Subgenus *Marmaraeschna* Calvert (Aeshnidae, *Aeshna*), includes seven species distributed along the Andean mountain range from Venezuela south to Argentina (MUZÓN & VON ELLENRIEDER, 2001). The only larva of the subgenus known up to now is that of *Aeshna (M.) brevicercia*, described by DE MARMELS (2001) as *Aeshna (M.) vigintipunctata*, based on Venezuelan specimens.

Aeshna (M.) pallipes was described by FRASER (1947) based on a female from Tucumán, Argentina. MUZÓN & VON ELLENRIEDER (2001) provided the first description of the male, distribution area, and diagnosis of the species. Its last larval instar is here described for the first time and compared with that of *A. (M.) brevicercia*, and possible characters of subgeneric value are outlined.

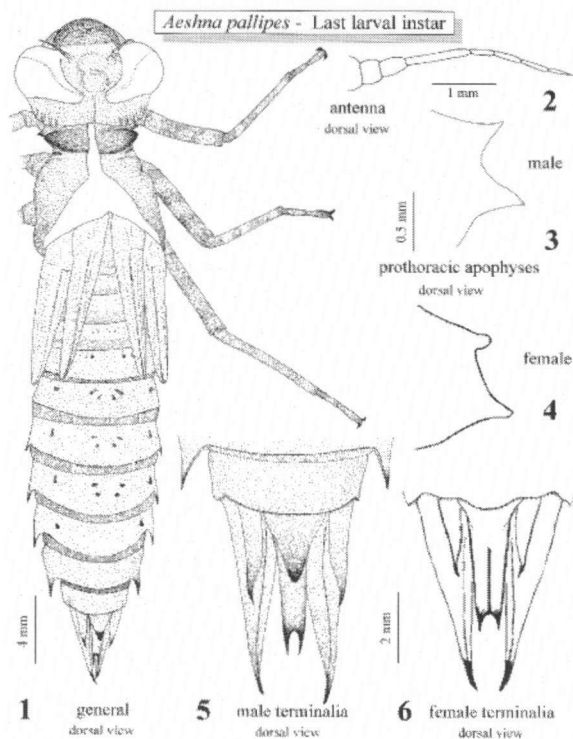
MATERIAL AND METHODS

Material examined: Argentina: Salta province: 1 ♂ exuviae (reared), Cafayate, Quebrada del Río Colorado, 26°05'30S 66°0'24W, 1750 m, 3-IV-1999 (emerged 24-IX-1999), N. von Ellenrieder leg.; La Rioja province: 1 ♀ exuviae (reared), Chilecito, Vertiente La Florentina, 29°10'0S 67°30'0W, 1080 m, 5-XII-1986, A. Rodrigues Capítulo leg.; 3 ♂ exuviae, 4 ♀ exuviae, Chilecito, Sañogasta, 29°18'S 67°35' W, 1205 m, 5-XII-1986, A. Rodrigues Capítulo leg. Specimens are preserved in ethanol and deposited at the collection of the Museo de Ciencias Naturales de La Plata.

Measurements were made using an eyepiece reticule in a stereomicroscope and are given in mm. Drawings were made with a camera lucida.

DESCRIPTION

H e a d. — As long as 0.53-0.63 its width, broader than thorax. Occipital margin concave, with 5 pilose patches on each side. Antennae (Fig. 2) surpassing anterior margin of labrum, 7-segmented, the third antennomere the longest. Occipital lobes rounded, posterior margin of occiput concave. Labium reaching caudad to second coxae; prementum (Fig. 7) as wide as 0.77-0.88 its length, anterior margin of ligula medial lobe with fringe of setae and a minute tubercle shorter than the setae on each side of



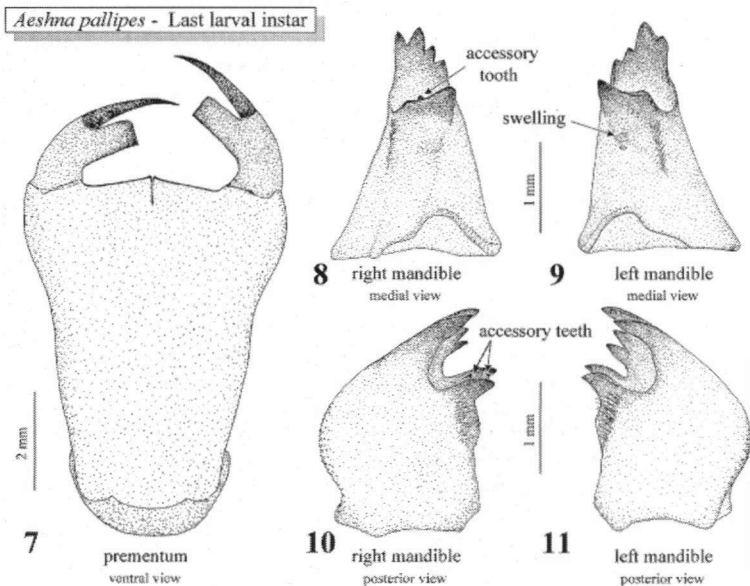
cleft, marginal; cleft closed. Labial palp sub-rectangular with or without small infraapical tooth, inner margin serrated; movable hook 1.15-1.50 times as long as inner margin. Mandibular formula (Figs 8-11): L 1234 0 a b/R 1234 0 a (m^{1,2}) b. Mandibles have no accessory teeth y between incisives and molar crest, and no k teeth below the molar crest, only a swollen area on the equivalent position. The molar crest of right mandible has two differentiated teeth (Figs 8-10).

T h o r a x. — Posterior prothoracic supracoxal process longer and wider at base than anterior one (Figs

3-4); external wing pad reaching caudad anterior margin of abdominal segment V; femora and tibiae each with four dark annular bands (Fig. 1).

A b d o m e n . — Widest on segments V-VI. Dorsal color pattern as in Fig. 1; segments III-IV with two dark lateral spots on each side, V-VII with four central dark spots and one lateral spot on each side, VIII with one lateral spot on each side, and IX-X without dark spots. Lateral spines present on segments VI-IX, the VIII and IX the longest. Male cerci (Fig. 5) as long as 0.66-0.78 of epiproct and 0.45-0.51 of paraprocts, female cerci as long as 0.56-0.70 and 0.38-0.50 respectively. Epiproct with or without middorsal ridge and bearing two apical long spines, apical excision U-shaped, male basal lamina of epiproct with rounded tip, as long as half of epiproct length. Female gonapophyses reach the posterior margin of segment IX.

M e a s u r e m e n t s (discriminated for reared ♂ and ♀, for 3 ♂ and 4 ♀ not reared range in square brackets). — Total length (with caudal appendages): ♂ 42 [39.0-40.9], ♀: 36.1 [37.2-42.6]; head maximum width: ♂ 9.1 [8.2-8.8], ♀ 8.9 [8.4-9.2]; head maximum length: ♂ 4.9 [4.8-5.5], ♀: 4.7 [4.7-5.0]; prementum maximum length: ♂ 6.1 [6.0-6.2], ♀ 6.45 [5.8-6.4]; prementum maximum width: ♂ 5.4 [4.8-5.2], ♀ 5.35 [5.1-5.25]; palp movable hook: ♂ 2.0 [1.7-1.8], ♀ 1.9 [1.6-1.8], palp inner margin: ♂ 1.35 [1.2-1.4], ♀ 1.3 [1.2-1.4], ligula width: ♂ 2.6 [2.3-2.6], ♀ 2.4 [1.2-1.4]; antennomere I: ♂ 0.26 [0.2], ♀ 0.3 [0.2-0.3]; II: ♂ 0.46 [0.35-0.4], ♀ 0.35 [0.35-0.4]; III: ♂ 1.05 [1.0-1.1], ♀ 0.9 [0.9-1.0]; IV: ♂ 0.4 [0.3], ♀ 0.35 [0.3]; V: ♂ 0.23 [0.3], ♀ 0.4 [0.3-0.4]; VI: ♂ 0.26 [0.3], ♀ 0.4 [0.3-0.4]; VII: ♂ 0.25 [0.25-0.4], ♀ 0.4 [0.3-0.45]; femur I length: ♂ 4.85 [4.5-4.7], ♀ 4.65 [4.2-5.1], femur II: ♂ 6.0 [5.4-5.7], ♀ 5.8 [5.4-6.0], femur III: ♂ 7.1 [6.4-7.1], ♀ 7.1 [6.5-7.25]; tibia I length: ♂ 6.2 [5.0-5.6], ♀ 5.8 [5.0-5.7]; tibia II: ♂ 6.4 [5.5-6.4], ♀ 6.4 [5.7-6.1], tibia III: ♂ 7.8 [7.1-7.2], ♀ 7.7 [7-7.6]; internal wing pads length: ♂ 8.7 [8.0-8.6], ♀ 8.9 [7.2-7.7], external: ♂ 8 [7.2-7.7], ♀ 8.2 [7.4-7.8]; maximum length of abdominal segment, VI: ♂ 2.5 [2.55-2.8], ♀ 2.8 [2.6-2.7]; VII: ♂ 2.4 [2.4-2.5], ♀ 2.8 [2.4-2.5]; VIII: ♂ 2.4 [2.2-2.3], ♀ 2.6 [2.15-2.3]; IX: ♂ 1.9 [1.7-1.8], ♀ 2.0 [1.7-1.9]; X: ♂ 1.4 [1.1-1.4], ♀ 1.3 [1.1-1.4]; lateral spines (inner margin) on



segment VI: ♂ 0.6 [0.6-0.9], ♀ 0.8 [0.7-0.9]; VII: ♂ 1.3 [1.0-1.1], ♀ 1.1 [1.0-1.1]; VIII: ♂ 1.5 [1.1-1.3], ♀ 1.1 [1.2-1.3]; IX: ♂ 1.5 [1], ♀ 1.4 [0.9-1.1]; cerci length (external margin): ♂ 2.85 [2.2-2.3], ♀ 2.25 [1.9-2.2]; paraprocts: ♂ 5.45 [4.5-5.1], ♀ 4.7 [4.4-4.9]; epiproct: ♂ 4.05 [2.8-3.3], ♀ 3.6 [3.0-3.35]; male dorso-basal lamina of epiproct: 1.95 [1.3-1.5]; inner gonapophyses (inner margin): 2.3 [1.8-2.3].

HABITAT. — Larvae were found under stones and clinging to submerged roots of marginal vegetation in creeks of Preandean mountain range localities in northwestern Argentina.

DISCUSSION

DE MARMELS (2001) suggested several diagnostic characters for *Marmaraeschna* larvae, including antennae not reaching to anterior border of labrum, occipital lobes bulging, lateral angles of pronotum slightly flattened and extended laterally into a blunt point, and narrow apical excision of epiproct. Of these, only the “U”-shaped apical excision of epiproct is shared with *pallipes*. The short antennae (not reaching free margin of labrum, surpassing it in *pallipes*) and the absence of an apical hook in the labial palp (present in *pallipes*) are unique for *brevicercia*. The shape of occipital lobes and pronotum shield are shared by larvae of other groups of *Aeshna* (i.e. *confusa*, *variegata*). Besides of the “U”-shaped distal excision of epiproct (truncated or biconcave in other *Aeshna*), last larval instars of *brevicercia* and *pallipes* share sides of median cleft of ligula with a marginal minute tubercle on each side of the cleft (sub-marginal in other *Aeshna*). The larva of *pallipes* can be further distinguished from that of *brevicercia* by relative length of lateral spine IX (reaching half of segment X length in *brevicercia*, clearly surpassing half of segment X in *pallipes*), relative length of male cerci (much longer than half of paraprocts in *brevicercia*, about as long as half of them in *pallipes*), and length and shape of male epiproct basal lamina (shorter than half of epiproct length with truncated apex in *brevicercia*, as long as half of epiproct length with pointed apex in *pallipes*). Mandibular formula of *pallipes* is unique among *Aeshna* larvae by the lack of accessory teeth y (at least in left mandible of all other *Aeshna* larvae) and k. Since the mandibles of *brevicercia* have not been described, it is not possible to know if these characters are also diagnostic for *Marmaraeschna* or only for *pallipes*.

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