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THE LARVA OF *ARGIA JOERGENSENI* RIS (ZYGOPTERA: COENAGRIONIDAE)

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The larva of *A. joergenseni* is described and illustrated for the first time, based on specimens from NW Argentina, and compared to the sympatric larva of *A. translata*.

INTRODUCTION

The genus *Argia* Rambur, 1842, with over a hundred and ten described species, is the most speciose genus of South American coenagrionid damselflies. About 38 of its species are also known from their larval stage (NOVELO-GUTIÉRREZ, 1992).

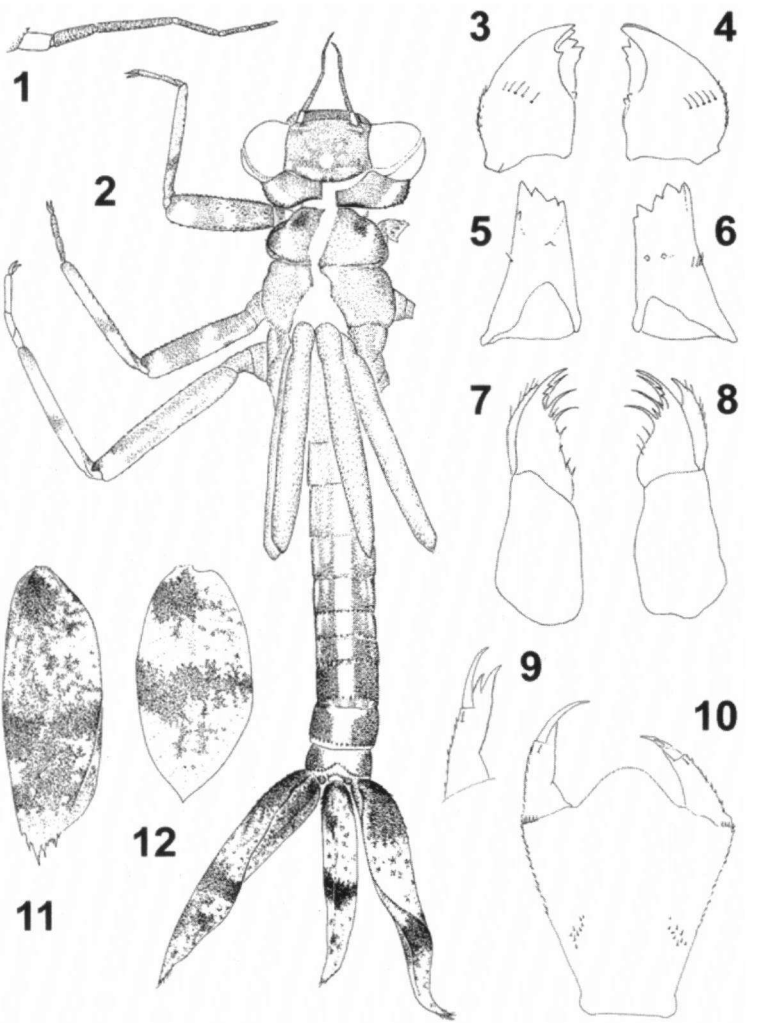
Here, I describe and illustrate the previously unknown larva of *Argia joergenseni* Ris, 1913. This species is a common inhabitant of stony mountain streams and rivers along the Yungas cloud forests of NW Argentina, where it is sympatric with *A. jujuya* Ris, 1913, *A. translata* (Hagen *in* Selys, 1865) and a hitherto undescribed *Argia* species. GEIJSKES' (1946) exhaustive description of the larva of *A. translata* is insufficient to diagnose it from the larva of *A. joergenseni*. Therefore, I describe and illustrate diagnostic structures of *A. translata* here as well.

ARGIA JOERGENSENI RIS, 1913

Figures 1-18

M a t e r i a l. – Ultimate larval instar: ARGENTINA, Jujuy prov., El Pantanoso, 23°31'17"S, 64°35'13"W, 609 m.a.s.l., 3/4-XI-2005, von Ellenrieder leg., 1 ♀ (emerged in laboratory), 3♂, 1♀; Río Zora, 23°45'14"S, 64°40'50"W, 396 m.a.s.l., 5-XI-2005, von Ellenrieder leg., 2♀; stream on Provincial Road 6, 23°52'12"S, 64°22'44"W, 534 m.a.s.l., 5-XI-2005, von Ellenrieder leg., 1♀; Salta province: El Rey National Park, Arroyo La Sala, 24°43'41.2"S, 64°40'16.7"W, 971 m.a.s.l., 30-XI-2005, von El-

lenrieder leg., 2♂, 1♀ (emerged in laboratory), 10♂, 13♀. Larvae were found crawling under stones or walking on river bed. – Younger instars: Jujuy prov., El Pantanoso (same data as above), 10♂; Río Zora (same data as above), 1♀; stream on Provincial Road 6 (same data as above), 3♂; Salta prov.: El Rey National Park, Arroyo La Sala (same data as above), 6♂, 3♀; Baritú National Park,



Figs 1-12. Ultimate larval instar of *Argia joergenseni* Ris: (1) right antenna, dorsal view; – (2) general aspect, dorsal view; – (3) right mandible, lateral view; – (4) left mandible, lateral view; – (5) right mandible, inner view; – (6) left mandible, inner view; – (7) right maxilla, lateral view; – (8) left maxilla, lateral view; – (9) labial palp, dorsolateral view; – (10) prementum, dorsal view; – (11) lateral caudal lamella, lateral view; – (12) medial caudal lamella, lateral view.

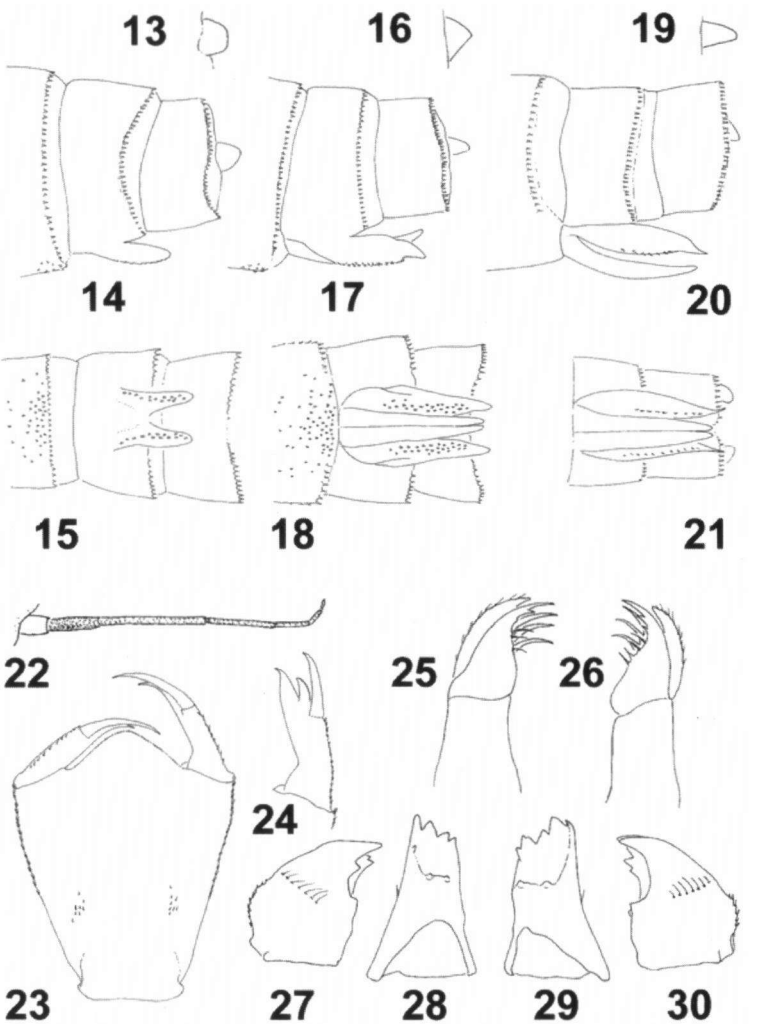
stony stream affluent to Baritú River, 22°29'57"S, 64°45' 29"W, 1215 m.a.s.l., 19/20-VIII-2005, von Ellenrieder leg., 1♀ (NvE Coll.).

DESCRIPTION. – H e a d. – Trapezoidal, wider than long, with posterior margin slightly concave, and cephalic lobes bearing stout setae (Fig. 2). Ventral margin of eyes at level of mandible bases with 8-14 claviform setae. Antenna 7-segmented, longer than head, with antennomere 3 the longest, about as long as or shorter than 1+2; antennomere 1 pale, remaining brown with pale tips (Fig. 1). Prementum (Fig. 10) 0.73-0.80 times as wide as long, ventral surface bare, dorsal (inner) surface with a group of 8-10 latero-basal and 14-18 marginal spiniform setae; ligula strongly prominent, with small claviform setae along margin. Premental palp with two teeth shorter than movable hook, the medial one the longest; medial margin of palp and outer margin of outer tooth finely crenulated; outer margin of ligula with 8-11 small spiniform setae; 1 short palpal seta basal to movable hook (Figs 9-10). Articulation of pre- and postmentum at level of posterior margin of coxae I. Mandibles (Figs 3-6) with molar teeth but lacking molar crest, with following formula (sensu WATSON, 1956): L 1'1234 0 a b, R 1'1234 y 0 b. Maxillae as in Figs 7-8.

T h o r a x. – Pronotum quadrangular, with anterodorsal corners dark and covered with spiniform setae. Wing pads extending to abdominal segments 4 to 5. Legs pale with dark bands; usually one on basal third of tibiae (sometimes absent on tibia 1), and three on femora.

A b d o m e n. – Dark brown with medio-longitudinal pale stripe and two latero-longitudinal pale spots on each side on abdominal segments 3-7 (Fig. 2). Male cerci short and rounded (Figs 13-14), female cerci triangular in dorsal view (Fig. 16) and cylindrical in lateral view (Fig.17). Posterior half of abdominal sternum 8 covered with claviform setae (Figs 15, 18). Gonapophyses blunt and with two--three rows of claviform setae along ventral margin; in males extending to mid-length of abdominal segment 10 with divergent apices (Figs 14-15); in females surpassing distal end of abdominal segment 10 with apices approximately parallel sided (Figs 17-18). Caudal lamellae triquetral basally with apical third foliaceous, ending in filamentous tip; dark (dark grey to black), usually with a transverse pale band and pale apex, in a few specimens only the apices pale; medial lamella shorter than lateral lamellae (Figs 11-12).

M e a s u r e m e n t s (in mm; average and standard deviation, range in square brackets; females N=19, males N=15, unless indicated otherwise). – Total length without appendages, females: 13.03 ± 1.63 [11-17] (N=18), males: 13.25 ± 1.88 [11-16] (N=14). Prementum length, females: 3.02 ± 0.06 [2.9-3.1], males: 2.97 ± 0.06 [2.8-3] (N=14); prementum max. width, females: 2.29 ± 0.08 [2.2-2.4], males: 2.26 ± 0.06 [2.2-2.4]; Femur I, females: 2.19 ± 0.06 [2.1-2.3], males: 2.18 ± 0.12 [2-2.4]; II, females: 2.8 ± 0.12 [2.5-3.1], males: 2.83 ± 0.15 [2.6-3.1]; III, females: 3.85 ± 0.19 [3.5-4], males: 3.72 ± 0.13 [3.6-4]. Inner wing pads, females: 5.12 ± 0.26 [4.6-5.6], males: 5.02 ± 0.16 [4.8-5.3]; external wing pads, females: 4.79 ± 0.24 [4.3-5.2], males: 4.72 ± 0.14 [4.6-4.95]. Medial caudal lamella, females: 3.94 ± 0.49 [3.3-4.7] (N=14), males: 4.03 ± 0.34 [3.6-4.6] (N=10); lateral caudal lamellae, females: 5.16 ± 0.65 [3.9-6.2] (N=14), males: 5.23 ± 0.40 [4.5-5.8] (N=10).



Figs 13-30. Ultimate larval instar of *Argia joergenseni* Ris (Figs 13-18) and *A. translata* Hagen *in* Selys (Figs 19-30): (13) male left cercus, dorsal view; – (14) male abdominal segments 8-10, lateral view; – (15) male abdominal segments 8-10, ventral view; – (16) female left cercus, dorsal view; – (17) female abdominal segments 8-10, lateral view; – (18) female abdominal segments 8-10, ventral view; – (19) female left cercus, dorsal view; – (20) female abdominal segments 8-10, lateral view; – (21) female abdominal segments 9-10, ventral view; – (22) right antenna, dorsal view; – (23) prementum, dorsal view; – (24) labial palp, dorsolateral view; – (25) right maxilla, lateral view; – (26) left maxilla, lateral view; – (27) right mandible, lateral view; – (28) right mandible, inner view; – (29) left mandible, inner view; – (30) left mandible, lateral view.

YOUNGER INSTARS. – Share morphological characters and color pattern with ultimate instar, except for having two dark bands on tibiae.

ARGIA TRANSLATA (HAGEN *in* SELYS, 1865)

Figures 19-30

M a t e r i a l. – ARGENTINA, Jujuy prov., El Pantanoso, 23°31'17"S, 64°35'13"W, 609 m.a.s.l., 3/4-XI-2005, von Ellenrieder leg., 1 ♀ (emerged in laboratory).

Very similar to *A. joergenseni* in size, colour pattern and morphology. It differs from it as follows: H e a d – Antennomere 3 longer than 1+2 (Fig. 22). Prementum (Fig. 23) 0.83 times as wide as long; palp lacking setae basal to movable hook (Fig. 24). Mandibles (Figs 27-30) with a molar crest between molar teeth, with following formula (sensu WATSON, 1956): L 1'1234 0 a (m^0) b, R 1234 y a (m^0) b

T h o r a x. – Tibiae with three darks bands.

A b d o m e n. – Female cercus triangular in lateral view (Fig. 20) and cylindrical in dorsal view (Fig. 19). Sternum of abdominal segment 8 smooth (Fig. 20). Female gonapophyses with a single row of spiniform setae along ventral margin and with diverging acutely pointed tips (Figs 20-21).

M e a s u r e m e n t s (in mm; female N=1). – Total length without appendages: 14.5. Prementum length: 3; prementum max. width: 2.5; Femur I: 2.4; II: 3.1; III: 4.1. Inner wing pads: 5.4; external wing pads: 5.1.

DISCUSSION

Argia joergenseni could be included in the group of *Argia* larvae with very prominent ligula and 1 palpal seta as classified by NOVELO-GUTIÉRREZ (1992), which encompasses *A. concinna* (Rambur, 1842), *A. difficilis* Selys, 1865, *A. emma* Kennedy, 1915, *A. harknessi* Calvert, 1899, *A. insipida* Hagen *in* Selys, 1865, *A. moesta* (Hagen, 1861), *A. oculata* Hagen *in* Selys, 1865, *A. oenea* Hagen *in* Selys, 1865, *A. tezpi* Calvert, 1902, *A. translata* Hagen *in* Selys, 1865 and *A. ulmeca* Calvert, 1902. GEIJSKES (1946) provided a description for the larva of *A. translata* based on one male ultimate instar exuviae and one second ultimate instar larva from Tobago, identified as this species by supposition. The description agrees well with the reared specimen of *A. translata* from Jujuy, Argentina examined in the present study, in what respects to characters of head (prementum, mandibles, maxillae), thorax and abdomen (colour pattern, shape of gonapophyses); the only difference found is in the absence of any palpal seta (GEIJSKES, 1946 mentioned 1 seta at the base of movable hook and 1 small seta on the middle of the lobe).

Larvae of the sympatric undescribed *Argia* species and *A. jujuya* are still unknown. *A. translata* can be easily separated from *A. joergenseni* by its acutely

pointed gonapophyses with a single ventral row of spiniform setae (blunt with 2-3 rows of claviform setae in *A. joergenseni*) and smooth sternum of abdominal segment 8 (with claviform setae on posterior half in *A. joergenseni*). It also differs in its mandibular formula (2 molars in right mandible and molar crest present in *A. translata* versus 1 molar in right mandible and molar crest absent in *A. joergenseni*), and details of colour pattern (3 dark bands on tibiae in *A. translata* against 1 in *A. joergenseni*) and some ratios (prementum width/ length 0.83 in *A. translata* and 0.76-0.8 in *A. joergenseni*; antennomere 3 longer than 1+2 in *A. translata* and as long as or shorter than 1+2 in *A. joergenseni*).

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