

***Argia rosseri* sp. nov. from central Bolivia (Odonata: Coenagrionidae)**

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Abstract

Argia rosseri sp. nov. is described from central Bolivia. Holotype ♂: Santa Cruz Department, Florida Province, seep along Rio Achira, 8.6 km E of Samaipata (18°09'42"S, 63°48'53"W), 1,400 m a.s.l., 25 xi 1999; allotype ♀: same locality, 05 xi 1998; both leg. K.J. Tennessen. The new species appears to be related to the *A. gerhardi/nigrrior* complex, but differs in being mostly pale and having the decumbent ventral tooth of the male cerci apically situated.

Introduction

The new species was discovered at two localities in the semiarid region of Samaipata in central Bolivia. It is a pale species, violet and light brown being the predominant colors, that occupies seepage habitats at intermediate elevations (1,400-1,600 m). The morphology of the male anal appendages and female mesostigmal laminae, along with certain color characteristics, indicate that *Argia rosseri* is closely related to *A. gerhardi/nigrrior* of Calvert (1909), even though they are predominantly black species.

***Argia rosseri* sp. nov.**

(Figs 1-6)

Material

Holotype ♂ – Bolivia, Santa Cruz Department, Florida Province, seep along Rio Achira, 8.6 km E of Samaipata (18°09'42"S, 63°48'53"W), 1,400 m a.s.l., 25 xi 1999, leg. K.J. Tennessen (KJT). Allotype ♀ – same locality as holotype, 5 xi 1998, leg. KJT. Paratypes (8 ♂, 1 pair in tandem linkage, 1 ♀) – 5 ♂ and 1 pair in tandem linkage, same data as holotype; 3 ♂, same locality, leg. W.F. Mauffray; 1 ♀, Bolivia, Santa Cruz Department, Florida Province, seep along Rio El Fuerte, E of Samaipata (18°10'54"S, 63°49'48"W), 1,630 m a.s.l., 24 xi 1991, leg. KJT. All specimens acetoned. The holotype and allotype are deposited in El Museo de Historia Natural "Noel Kempff Mercado"

at the Universidad Autonoma “Gabriel Rene Moreno”, Santa Cruz, Bolivia. Paratypes are deposited in the Florida State Collection of Arthropods, the collection of KJT, the collection of R.W. Garrison, and the United States National Museum.

Etymology

Named for my colleague and friend, Rosser W. Garrison, who has made major contributions to the systematics of Neotropical Odonata, especially in the large, difficult genus *Argia*.

Diagnosis

An average sized *Argia* with a very narrow black stripe on middorsal carina, wide pale brown dorsal mesepisternal stripes, violaceous antehumeral stripes, abdominal segments (S) 8-10 blue, cerci with apical decumbent tooth, and paraprocts most similar to those of *A. nigrior* except apical lower branch shorter.

Description

Holotype ♂

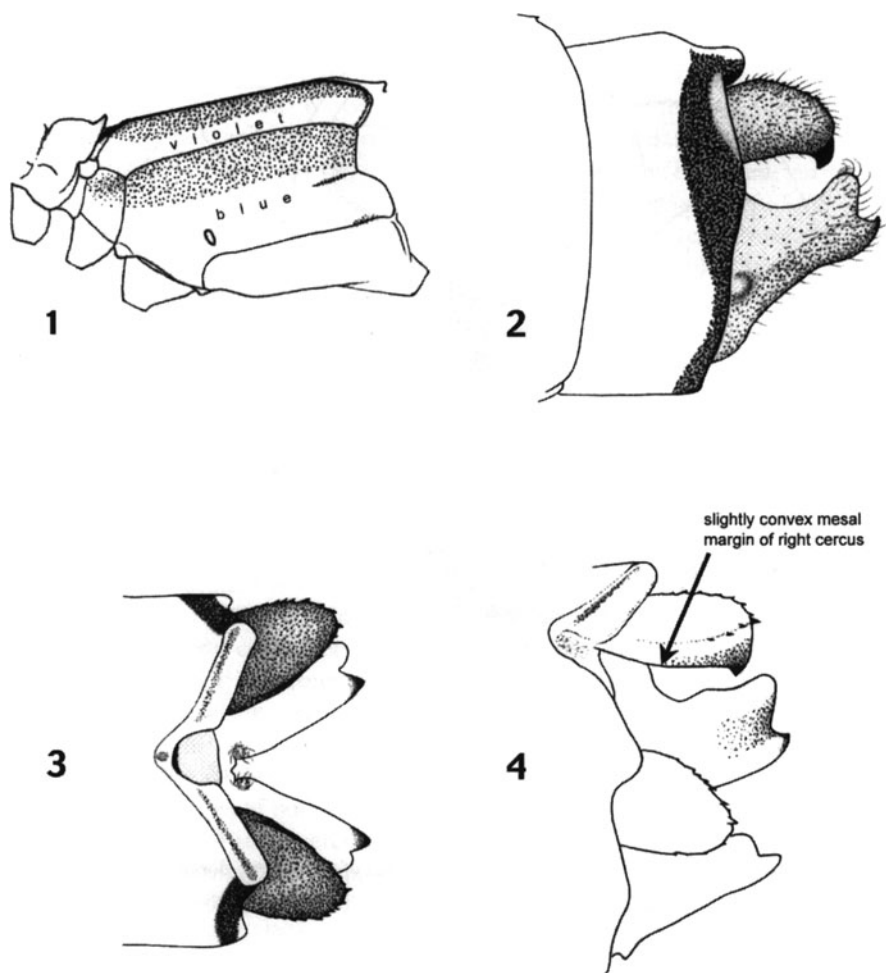
Head: Labium pale tan laterally, pale blue medially; labrum pale blue distally, pale violet basally; base of mandible and genae turquoise and light brown; anteclypeus dark brown, postclypeus dark blue and violet; first antennal segment brown, second segment light brown, flagellum black; vertical surface of frons light brown, horizontal surface grayish black except pale brown anterior to median ocellus; postfrons brown except for narrow black mark around anterior and medial edges of lateral ocelli; occiput brown anterior to dark brown postfrontal suture; large violet postocular spots; rear of head light brown.

Thorax: Pronotum mostly light brown, middle lobe with large violet dorsolateral spots, hind lobe entire with dark brown submedial spots, laterally light violet. Middorsal carina black, stripe 0.10 mm wide in dorsal view; mesepisternum with wide brown middorsal stripe, 0.50 mm wide on each side of middorsal carina; antehumeral stripe violet, 0.45 mm wide (Fig. 1); mesepimeron with pale brown stripe, 0.60 mm wide, right below mesopleural suture; metepisternum blue, metepimeron tan. Wings slightly smoky; pterostigma light brown; Px: 13 in left Fw, 15 in right, 12 in left Hw, 13 in right. Legs grayish blue and tan, femora with black lateral and medial stripes, spines black.

Abdomen: S1 brown basally, light blue distally; S2 blue dorsally with pair of black, crescent-shaped subapical spots; S3-5 with middorsal violet blue stripe and pair of dorsolateral black stripes; sides of S2-9 brown; S6-7 with narrow basal blue ring, middorsal brown stripe, and pair of dorsolateral black stripes; S8-10 light bluish violet, S10 predominantly bluish and with posterior margin black from lateral edge of tori to venter, basal 3/4 of sides and venter brown; tori light blue, elongate rectangular, 3.5 times as long as wide, mesal ends separated by distance equal to width of one torus; sterna of S3-9 black. Cerci brown, curved downward in lateral view, about 4/5 as

wide as long, with large ventroapical tooth (Fig. 2), in dorsal view cylindrical with apex bluntly rounded (Fig. 3), and with a medial ridge from base diagonally to apical ventral tooth; paraprocts slightly longer than cerci, narrowed at midlength, blue in upper half, brown in lower half, bifid at apex, upper branch bluish and wider than dark brown lower branch (Fig. 2). Cerci in dorsolateral view with mesal margin very slightly convex (Fig. 4).

Measurements (mm): total length 34.7, abdomen length (including appendages) 27.7, Hw length 22.8.

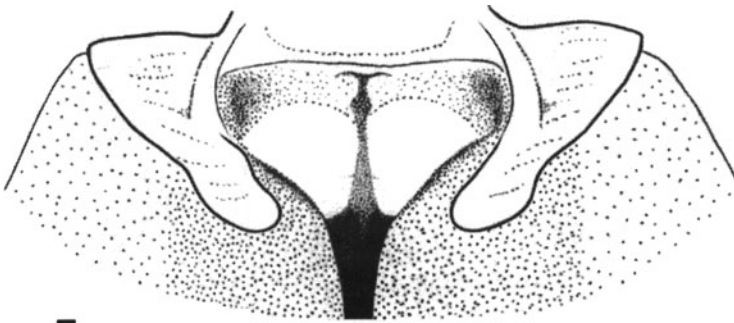


Figures 1-4. *Argia rosseri* sp. nov., holotype ♂ – (1) thoracic pattern, lateral view; (2) anal appendages, lateral view; (3) anal appendages, dorsal view; (4) anal appendages, dorsolateral view.

Allotype ♀

Coloration similar to male, head mostly light brown and without distinct violet or black markings; femora with black stripes reduced to distal half; mesostigmal plates with posterior flanges long, lobe-like, directed posterodorsally (Fig. 5), straight in lateral view and projecting above thoracic dorsum (Fig. 6). Wings more smoky than in male; Px: 15 in left Fw, 16 in right Fw, 13 in Hw. Abdomen with violet markings replaced by brown or grayish brown; S9 with pair of small, black middorsal spots; cerci 0.33 mm long, styli 0.32 mm long.

Measurements (mm): total length 33.8, abdomen length (including appendages) 26.9, Hw length 23.5.



5



6

Figures 5-6. *Argia rosseri* sp. nov., allotype ♀ – (5) anterior part of pterothorax, dorsal view; (6) mesostigmal plate, lateral view.

Variation

The paratypes show very few differences from the primary types. In two males, the black markings on the postfrons and occiput are more extensive; the number of Px in Fw

of males ranged from 13-16, in Hw 11-14; in females the number of Px ranged from 13-15 in Fw and 12-13 in Hw. Cerci length in males ranged from 0.36-0.38 mm, in females 0.32-0.36 mm.

Measurements (mm): ♂ total length 34.6-37.5, abdomen 27.9-30.0, Hw 21.5-22.8; ♀ total length 32.0-34.5, abdomen 25.7-27.0, Hw 22.0-24.3.

Discussion

Calvert (1909) described *Argia gerhardi* from two localities E of LaPaz, Bolivia: Chulumani and road to Coroico. He also described *A. nigrrior*, from the nearby area around Coroico, as a subspecies of *A. gerhardi*. The status of these and related taxa is being studied by Rosser W. Garrison, who has evidence that the two Calvert taxa are distinct species and that there are several undescribed species in the complex (R.W. Garrison pers. comm.). My sole intent here is to review the characteristics of the *A. gerhardi/nigrrior* complex in Bolivia in order to further diagnose *A. rosseri*.

Calvert (1909) presented a key to the South American species of *Argia* that he had studied. The first couplet included an often-used character to split the genus into two major groups, the extent of dark color vs pale color on the dorsum of the thorax and S3-6. Specimens of *A. gerhardi/nigrrior* I collected in Bolivia have wide black middorsal thoracic stripes and have a greater extent of dark color on the dorsum of the abdomen. The thoracic dorsum of *A. rosseri* has a very narrow black stripe, 0.10 mm wide, on the middorsal carina, and the dorsum of the mesepisternum and abdomen is mostly light brown; therefore this species appears to have a greater extent of pale coloring dorsally. Only if the light brown stripes of *A. rosseri* are considered dark can this species be taken the same way in Calvert's key as *A. gerhardi/nigrrior*.

Several color differences separate *A. rosseri* from *A. gerhardi/nigrrior* complex. In *A. rosseri* the occiput is mostly pale, the rear of the head is pale tan, the middorsal carina is black and 0.10 mm wide, but the dorsal mesepisternal stripes are light brown, and S8-10 are nearly completely pale blue ventrolaterally, bearing only a very small, posterior black mark; the cerci of both sexes are brown. In *A. gerhardi/nigrrior*, the occiput is mostly black, the rear of the head is usually mostly black, the dorsal mesepisternal stripes on each side of the middorsal carina are black, 0.40-0.48 mm wide and confluent with the black middorsal carina, and S8-10 have full-length, ventrolateral black stripes; the cerci of both sexes are black.

In morphology of male cerci and female mesostigmal plates, *A. rosseri* resembles the *Argia gerhardi/nigrrior* complex more than any other species known to occur in the central and southern areas of South America. In *A. rosseri*, the decumbent ventral tooth of the male cercus is apical [subapical in *gerhardi/nigrrior*], the lower branch of the male paraproct is short, projecting only 0.08 mm beyond the upper branch [longer, projecting 0.16 mm beyond the upper branch in *gerhardi/nigrrior*]. In *A. rosseri* females, the flange-like lobes of the mesostigmal plates are widely separated, the gap between them equal to the width of one lobe [separated by a distance much less than the width of one lobe in *gerhardi/nigrrior*].

Biological notes

Argia rosseri was found in the afternoon at a hillside seep flowing from a wooded area through a narrow, cut-over open area into the Rio Achira, E of Samaipata. This hilly area is relatively dry and cool; it has been largely deforested for agriculture and other human activities. Males were difficult to detect when they were perched or when they flew low in the short vegetation of the open seep. No other species of Odonata was observed in the seep.

Acknowledgements

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References

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