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Description of the male of *Lasioseius jorgeamadoi* Santos & Argolo, 2018 (Acari: Blattisociidae)

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Original research

ABSTRACT

The male of *Lasioseius jorgeamadoi* Santos & Argolo, 2018 is described based on specimens collected from buds of *Theobroma cacao* L. (Malvaceae) in Ilhéus, Bahia state, Brazil, representing the first characterization of males of this species.

Keywords Mesostigmata; Ascoidea; taxonomy; systematics
Zoobank http://zoobank.org/405A6ED7-62E5-43C9-ACCB-20644978B61E

Introduction

Lasioseius jorgeamadoi Santos & Argolo, 2018 was originally described based only on females collect from buds of cocoa (*Theobroma cacao* L., Malvaceae) in Ilhéus, Bahia state, Brazil (Argolo *et al.* 2018). As the morphological characterization of males can be relevant for future taxonomic and applied studies, the objective of this publication is to describe the male of *L. jorgeamadoi* based on specimens collected from the type host and locality of this species.

Material and methods

Mites were extracted from cocoa buds collected from an experimental plantation at the campus of 'Comissão Executiva do Plano da Lavoura Cacaueira' (CEPLAC), in Ilhéus. Specimens were removed from buds under a stereomicroscope, cleared in KOH solution and mounted in Hoyer's medium or on a stub for study, under phase contrast or scanning electron microscopy, respectively. Illustrations were done based on images and/or short movies taken with a digital camera connected to the phase contrast microscope. Measurements were taken with a graded ocular and presented in micrometers as the average, followed (in parentheses) by the minimum and the maximum for each character in case of variation. Nomenclature follows that used by Lindquist & Evans (1965) and Lindquist (1994) for idiosomal setae, Athias-Henriot (1969, 1971, 1975) as applied by Quintero-Gutiérrez *et al.* (2020) and Moraza & Balanzategui (2023) for gland pores and poroids in *Lasioseius*, and Beard (2001) for spermatodactyl. Voucher specimens were deposited in the mite collections of UESC and ESALQ.

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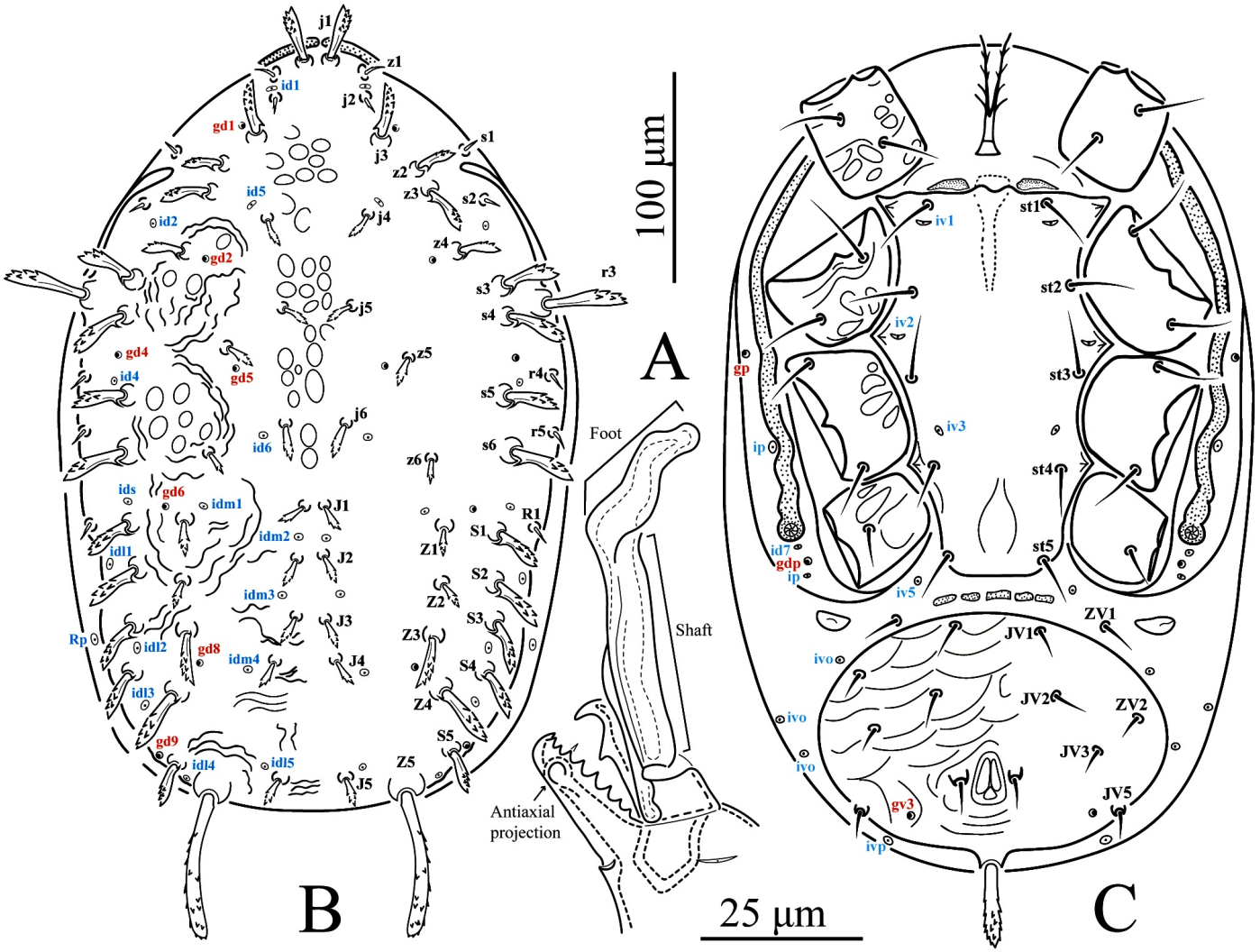

Figure 1 *Lasioseius jorgeamadoi* male: A – Chelicera and spermatodactyl; B – Dorsal view; C – Ventral view.

Results and discussion

Lasioseius jorgeamadoi Santos & Argolo, 2018

Adult male description (Figs. 1–3) (n=7 measured)

Gnathosoma (Figures 1A and 3A) — Fixed cheliceral digit 26 (25–27) long, with 8 (7–8) not retrorse pointed teeth in addition to the apical hook and a round, antiaxial projection at *pilus dentilis* level; movable cheliceral digit 30 (30–31) long, with one retrorse pointed tooth in addition to apical hook; antiaxial and dorsal lyrifissures distinct. Spermatodactyl 61 (59–63) long, L-shaped; shaft 41 (39–43) long, almost straight, basally thicker; foot 20 long, at small angle with the shaft axis, rounded and curved downward apically. Deutosternum with the first five transverse denticulate lines each with 4–8 denticles and the last two each with 5–11 denticles. Corniculi 22 (17–23) long and 10 (9–10) wide basally, spaced 32 (30–35) apart proximally. Measurements of setae: *h1* 16, *h2* 21 (20–23), *h3* 41 (40–42), *pc* 30 (29–30).

Dorsal idiosoma (Figures 1B and 2A) — Dorsal shield densely covered with cerotegument, strongly ornamented with roundish structures centrally, combined with curved lines laterally anteriad of *z6* and scant broken and curved lines behind, 340 (330–350) long and 215 (210–220)

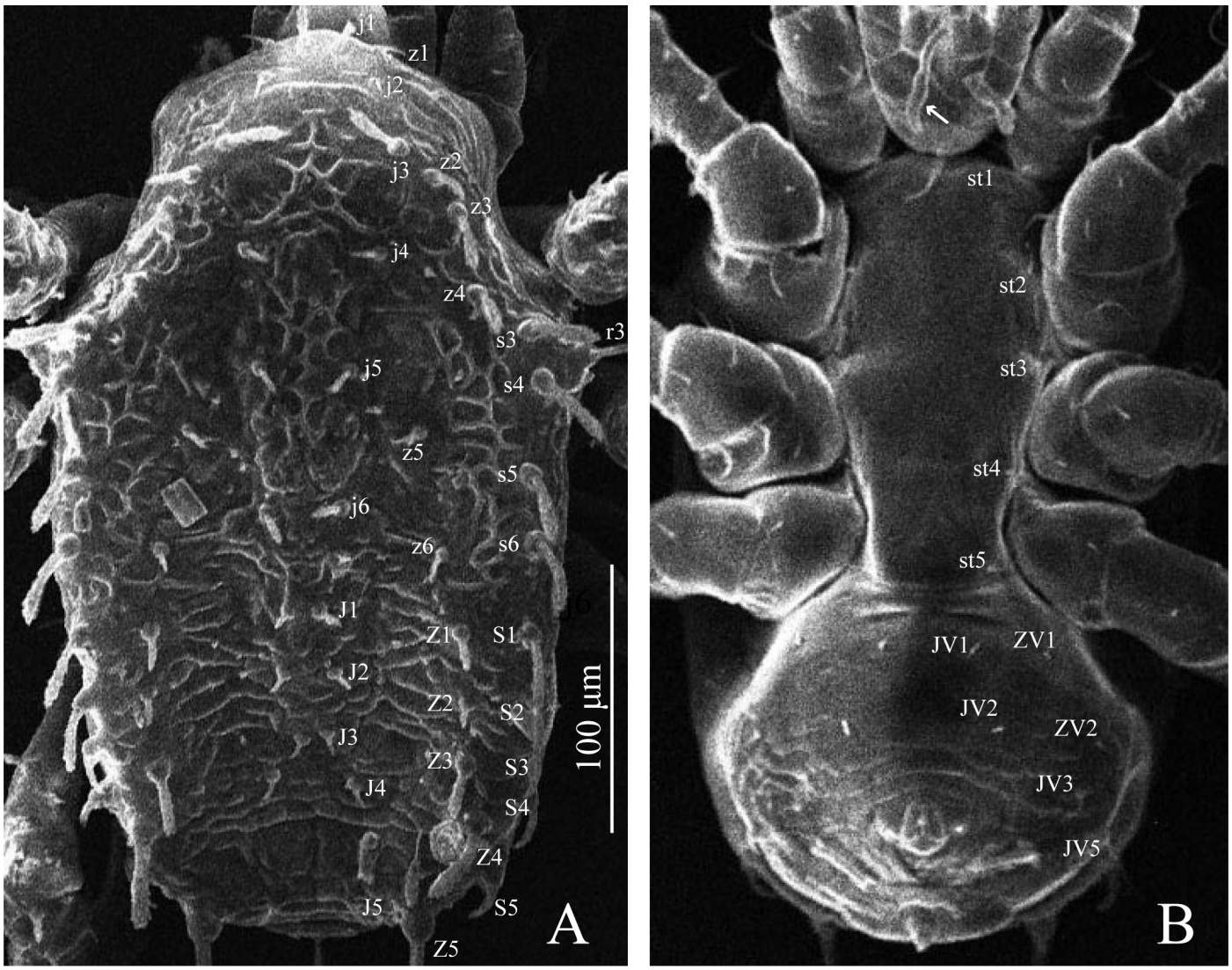

Figure 2 *Lasioseius jorgeamadoi* male: A – Dorsal view; B – Ventral view. The arrow points to a detached spermatodactyl.

wide at widest level. With seven pairs of dorsal gland openings (*gd1*, *gd2*, *gd4*, *gd5*, *gd6*, *gd8*, *gd9*) and16 pairs of lyrifissures (*Rp* on unsclerotized lateral cuticle). Seta *r3* inserted on dorsal shield and *R1* usually inserted on dorsal shield (one member of each pair on unsclerotized lateral cuticle in two males); other setae of the *R*-series (*R2–R5*) absent. Setal measurements: *j1* 26 (25–27), *j2* 10 (9–11), *j3* 24 (23–25), *j4* 11 (11–13), *j5* 11 (11–12), *j6* 13 (13–14), *J1* 11 (10–11), *J2* 10 (10–11), *J3* 10, *J4* 10, *J5* 11 (10–11), *z1* 12 (11–13), *z2* 15 (15–16), *z3* 24 (23–25), *z4* 20, *z5* 10 (8–10), *z6* 9 (9–10), *Z1* 16 (15–17), *Z2* 12, *Z3* 19 (18–20), *Z4* 39 (36–40), *Z5* 69 (68–70), *s1* 6 (5–6), *s2* 6 (5–6), *s3* 27 (26–29), *s4* 28 (27–28), *s5* 26 (25–27), *s6* 31 (30–32), *S1* 22 (22–23), *S2* 22 (21–22), *S3* 18 (17–19), *S4* 17 (17–18), *S5* 22 (22–23), *r3* 41 (40–42), *r4* 6, *r5* 5 (5–6), *R1* 5. Most dorsal setae stout and barbed in the apical half, except for short, simple *z1*, *j2*, *s1–s2*, *r4–r5* and *R1*. Setae *j3*, *z2–z4*, *s3–s6*, *S1–S5* and *Z4* with a minute hook at the base; *Z5* particularly longer and thicker than other dorsal setae, provided with fine barbs along almost its entire length.

Ventral idiosoma (Figures 1C, 2B and 3B–C) — Base of tritosternum 15 (15–16) long and 10 (9–10) wide proximally; laciniae 35 (34–36) long. Pre-sternal area with a pair of small, elongate, lightly sclerotized punctuate plates. Sternogenital shield essentially smooth, 168

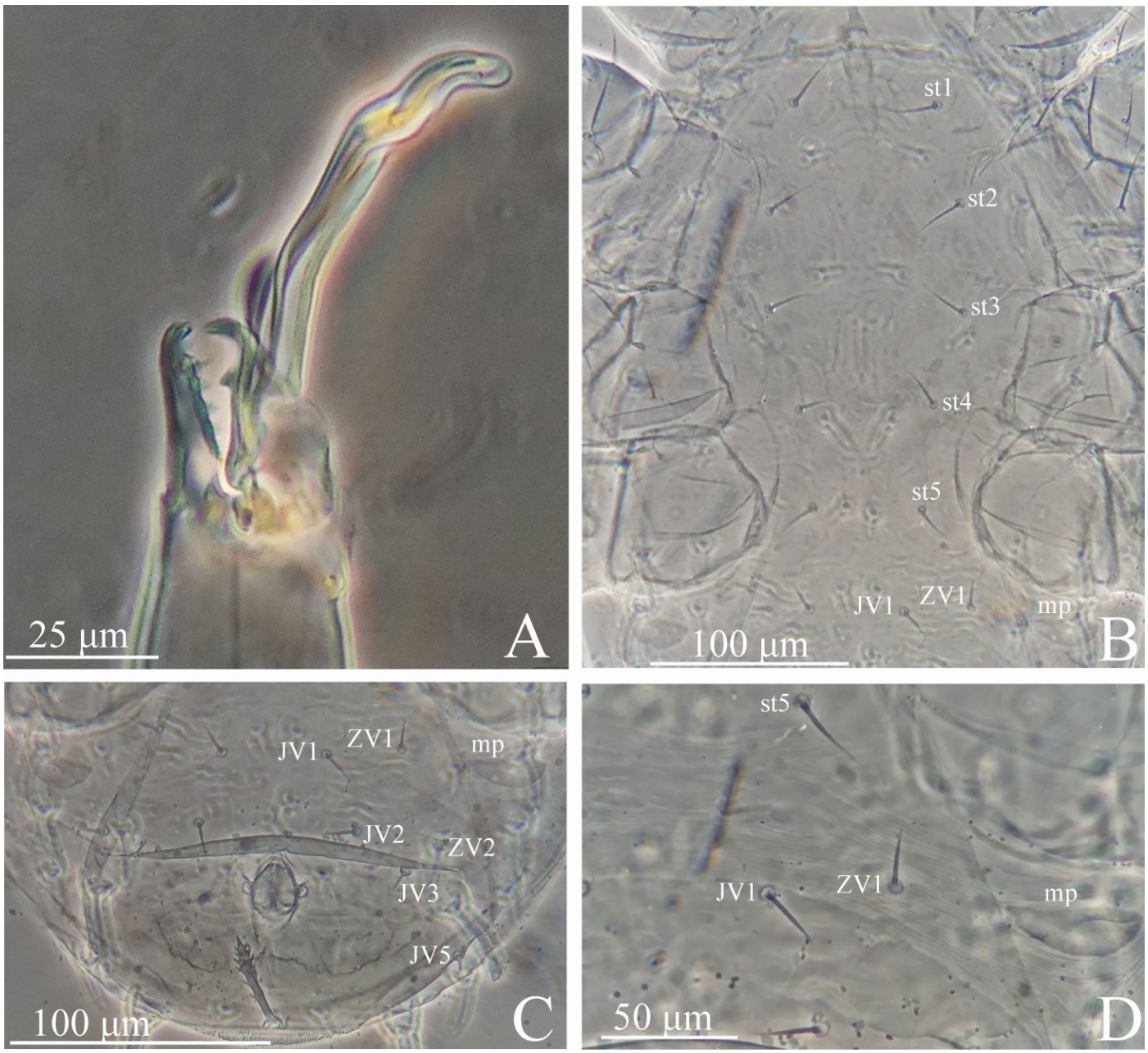

Figure 3 *Lasioseius jorgeamadoi* male: A – Chelicera and spermatodactyl; B – Sternogenital shield; C – Ventrianal shield; D – Same, anterior view showing right metapodal plate (mp).

(167–170) long at mid–line and 80 (77–82) wide at level of *st2*, with five pairs of setae (*st1–st5*) and three pairs of lyrifissures (*iv1–iv3*); posterior margin strait to slightly concave. Ventrianal shield weakly lineate-reticulate, 105 (100–110) long at mid-line and 150 (145–160) wide at widest level; with five pairs of setae (*JV1*, *JV2*, *JV3*, *JV5* and *ZV2*) in addition to circumanal setae; *ZV1* on unsclerotized opisthogastric cuticle; *JV4* and *ZV3* absent. One pair of discrete semicircular metapodal plates present. Setal measurements: *st1* 26 (25–26), *st2* 22 (21–23), *st3* 22 (21–22), *st4* 18 (17–18), *st5* 18 (17–20), *JV1* 15 (14–16), *JV2* 15 (14–15), *JV3* 10 (9–10), *JV5* 10 (9–10), *ZV1* 11 (10–12), *ZV2* 10 (10–11); para–anal 17 (16–18), post–anal 32 (31–34).

Leg lengths — I: 389 (382–396); II: 370 (363–380); III: 361 (352–362); IV: 491 (480–504).

Specimens examined

13 ♂♂ + 10 ♀♀ collected by E. da S. Araújo from buds of *Theobroma cacao* L. (Malvaceae) at CEPLAC, Ilhéus, Bahia state, Brazil (14º45′35“S, 39º13′49”W); 7 ♂♂ + 5 ♀♀ collected on 17 May 2023 on 2 slides (nr. 28 with 5 ♂♂ + 3 ♀♀ and nr. 118 with 2 ♂♂ + 2 ♀♀); 4 ♂♂ collected on 7 November 2023 on 4 slides (nrs. 261, 262, 263 and 264); 2 ♂♂ + 5 ♀♀ collected on 7 November 2023 on a stub. Holotype + 3 paratype ♀♀.

Remarks

This mite species has been commonly found in association with the cacao bud mite, *Aceria reyesi* (Nuzzaci, 1973) (Eriophyidae), seemingly feeding on the latter (our unpublished observation). In addition to the males used for the description here provided, 5 adult females collected and slide-mounted with them were compared with the holotype and 3 paratype females originally described in Argolo *et al.* (2018) to confirm the species identification. Besides the fact that measurements are generally shorter in male, most characters of the gnathosoma, idiosoma and legs are similar to those of females, except for the smaller presternal area, the fused sternal and genital shields, the absence of *R2–R5*, *JV4* and *ZV3*, the insertion of *R1* mostly on shield, and the reduced number of teeth in the chelicera of the male. All those and other characters described above fit well the diagnosis of males of the genus *Lasioseius* (Moraes *et al.* 2016), except for the presence of the discrete pair of metapodal plates in the males of *L. jorgeamadoi*. Although some discrepancies were found in Argolo *et al.* (2018), as the absence of a dorsal cheliceral seta, not retrorse teeth and antiaxial projection present on the fixed digit in both male and female, most of the not sexual characters originally described were confirmed in the types, additional females and males examined, and some of them are suggested to be included in the species diagnosis as presented bellow.

Revised diagnosis

Female and male. Cheliceral dorsal seta absent. Spermatodactyl 60 µm long, L-shaped. Dorsal shield with cerotegument, seven pairs of pairs of dorsal gland openings and 16 pairs of lyrifissures, ornamented with roundish/curved lines anteriad of *z6* and scant broken lines behind; podonotal region with 21 pairs of setae (*j1–j6*, *z1–z6*, *s1–s6*, *r3–r5*); opisthonotal region with 15 pairs of setae (*J1–J5*, *Z1–Z5*, *S1–S5*) plus *R1* in male. Unsclerotized cuticle along lateral margins of dorsal shield with five pairs of setae (*R1–R5*) in female or zero in male (except for *R1*, sometimes inserted out of the dorsal shield); most dorsal setae stout and barbed in the apical half, except for short, simple *z1*, *j2*, *s1–s2*, *r4–r5* and *R1*; *s*etae *j3*, *z2–z4*, *s3–s6*, *S1–S5* and *Z4* with a minute hook at the base; *Z5* longer and thicker than other dorsal setae, especially in female, with fine barbs along almost its entire length. Pre-sternal area with one pair of lightly sclerotized and punctuate plates; ventrianal shield with five pairs of setae (*JV1–JV4*, *ZV2*) in addition to circumanal setae *JV5*, *ZV1* and *ZV3* (*JV5* on shield, *JV4* and *ZV3* absent in male). Many dorsal and lateral setae of trochanter to tarsus of legs I–IV pilose. Tarsus I with a pilose macroseta.

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