

## Lecto- and Paralectotype Designations and Redescription of *Arachnocoris alboannulatus* Costa Lima, 1927 (Hemiptera: Heteroptera: Nabidae)<sup>1</sup>

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**Abstract:** The lecto- and a paralectotype of *Arachnocoris alboannulatus* Costa Lima, 1927 are designated to enhance nomenclatural stability. A redescription based on the type material from Rio de Janeiro deposited in the Entomological Collection of the Oswaldo Cruz Institute, Brazil, is presented. Specimens are illustrated and measured in detail for the first time.

**Key Words:** Aracnophilia, Insecta, taxonomy, zoological nomenclature

### Introduction

*Arachnocoris* Scott, 1881 (Nabidae: Nabinae: Arachnocorini) is represented by small (2.9–6.0 mm long), subcylindrical true bugs with large eyes and raptorial pro- and mesofemora (Mercado and Santiago-Blay 2015, Mercado et al. 2016). This Neotropical genus contains 16 species (Table 1), including several confirmed kleptoparasites that live on spider webs and feed on invertebrates captured by their hosts (Harris 1928, Sewlal and Starr 2008, Mercado and Santiago-Blay 2015).

During the preparation of a review of the *Arachnocoris* from the West Indies and an updated catalog of its species, the previously unknown depository of the type material of *A. alboannulatus* Costa Lima, 1927 was found to be the Entomological Collection of the Oswaldo Cruz Institute, Brazil (Mercado et al. 2016). We take this opportunity to redescribe the species, present illustrations, detailed measurements, and to designate the lecto- and a paralectotype based on the two cotypes used by Costa Lima (1927) to describe the species. The location of the type material of *A. simoni* Bergroth, 1899 and *A. torquatus* Bergroth, 1914 still remains unknown and, in the case of *A. karukerae* Lopez-Moncet, 1990, *A.*

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*thesauri* Lopez-Moncet, 1997, and *A. varius* Lopez-Moncet, 1997 the type material is believed to be lost (Mercado et al. 2016).

Table 1. Check list of the described species in the genus *Arachnocoris* and their geographical distributions (adapted from Mercado et al. 2016) (asterisk, \*, denotes an uncertain record).

<b>Species of <i>Arachnocoris</i></b>	<b>Geographical Distribution</b>
<i>A. alboannulatus</i> Costa Lima, 1927	Brazil
<i>A. albomaculatus</i> Scott, 1881	Brazil
<i>A. berytoides</i> (Uhler, 1894)	Grenada
<i>A. darlingtoni</i> Santiago-Blay and Mercado, 2016	Dominican Republic
<i>A. dispar</i> Scott, 1881	Brazil
<i>A. eberhardi</i> Kerzhner, 1990	Costa Rica
<i>A. karukerae</i> Lopez-Moncet, 1990	Guadeloupe, *Martinique
<i>A. myersi</i> China, 1946	Brazil
<i>A. panamensis</i> (Distant, 1893)	Costa Rica, Panamá
<i>A. portoricensis</i> Mercado, 2016	Puerto Rico
<i>A. setosus</i> Kerzhner, 1990	Costa Rica
<i>A. simoni</i> Bergroth, 1899	French Guiana, Venezuela
<i>A. thesauri</i> Lopez-Moncet, 1997	French Guiana
<i>A. torquatus</i> Bergroth, 1914	Venezuela
<i>A. trinitatis</i> Bergroth, 1916	Trinidad, Venezuela

### Methods

The description follows the format of Mercado et al. (2016). Digital photographs were taken using a Leica M205A stereomicroscope. Photographs taken at different depths were stacked into one nicely focused image using the Leica Application Suite. All measurements were taken using the same equipment, making sure the structures were perpendicular to the viewer, and are given in millimeters (mm) to the nearest decimal. The material examined is in the Costa Lima Collection, that is part of the Entomological Collection of the Oswaldo Cruz Institute, Rio de Janeiro, Brazil (Coleção Entomológica do Instituto Oswaldo Cruz, CEIOC). Because the types are in poor condition, and no new specimens have become available, we chose not to dissect the male genitalia.

### Systematic Entomology

#### *Archnocoris alboannulatus* Costa Lima, 1927

Figures 1–4

*Archnocoris alboannulatus* Costa Lima, 1927:541; Costa Lima, 1940:236; China, 1946:121; Henry, 1984:56; Kerzhner, 1986:180; Volpi and Coscarón, 2010:52; Coscarón et al., 2015:295; Mercado et al., 2016:60.

**Type Material:** One male, herein designated LECTOTYPE – [Brasil, Rio de Janeiro State], Rio [de Janeiro], Jardim Botânico, V.1927, Moraes Mello col. (CEIOC-12944; support 6, bottle 58; box 6, divisions 5–7, slides 155–157). One female, herein designated PARALECTOTYPE – same data as for lectotype except CEIOC-22300.

**Redescription. Male lectotype** (Figures 1A, 1C, 1E). *Head:* Mostly dark brown, lighter on longitudinal midline of vertex and a transverse line behind eyes, antenniferous tubercles yellowish; compound eyes dark brown to black; ocelli yellowish; labium brown, darker toward apex, with lighter marks on apex of segment I and base of III. *Thorax:* Pronotal collar yellowish brown anteriorly, darker posteriorly; anterior lobe dark brown, glossy, impunctate, with a pair of depressions at both sides of midline near posterior margin; posterior lobe convex, densely punctate, with long setae on lateral margins, mostly brown, darker along anterior margin, with a yellowish carina behind each humerus, posterior margin widely concave medially with sides reflexed; scutellum dark brown with a yellowish, apical, erect spine; hemelytron brownish, lighter on membrane, yellowish on an irregularly transverse band crossing through the middle of corium and clavus, on triangular apex of corium, and along most of lateral margin of corium; veins inconspicuous (Figure 2B); prosternum orange brown; margins of proacetabula yellowish brown; pro- and mesopleura, meso- and metasterna mostly dark brown to black; metacetabula orange brown.

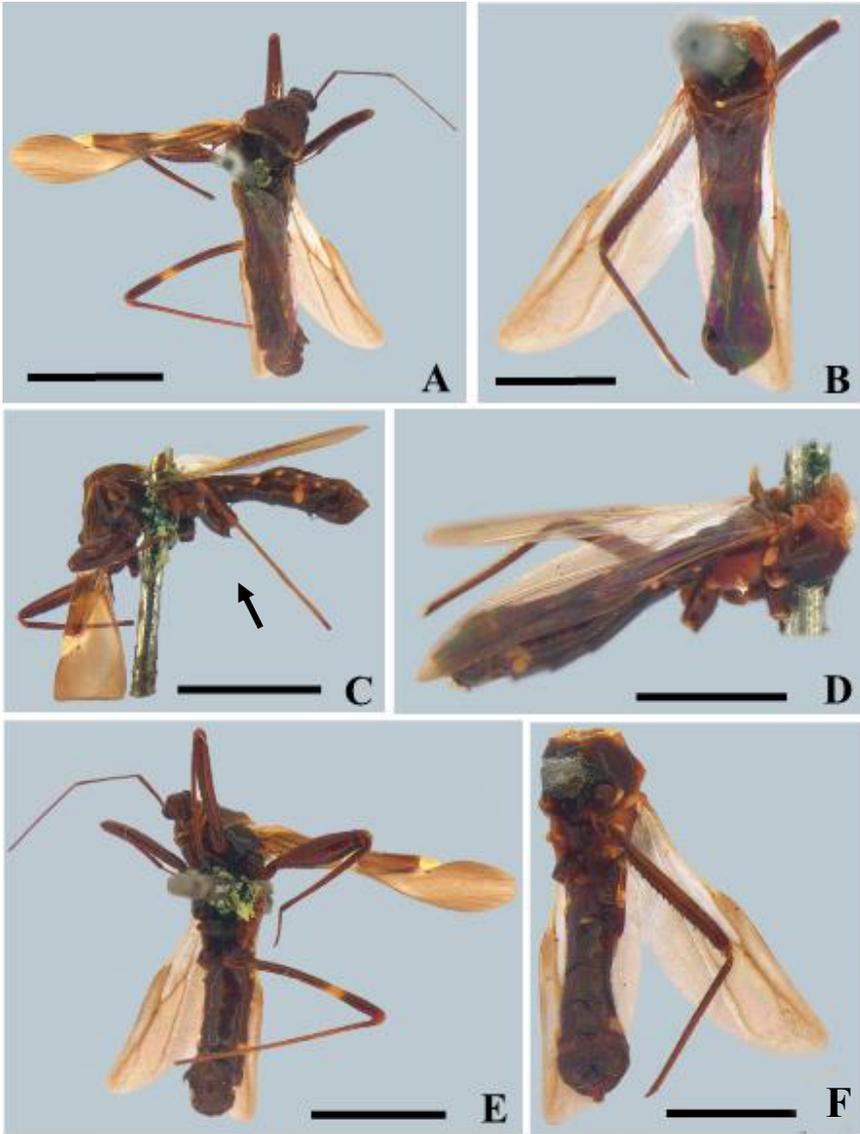


Figure 1. *Arachnocoris alboannulatus*. A, C, and E. Male lectotype. On C, arrow indicates hook on metatrochanter; on E, note incrassate mesofemur. B, D, and F. Female paralectotype (note mesofemur is not incrassate). A–B. Dorsal views. C–D. Lateral views. E–F. Ventral views. Scale bars: A, C, and E represent 2 mm, B, D, and F represent 1 mm.

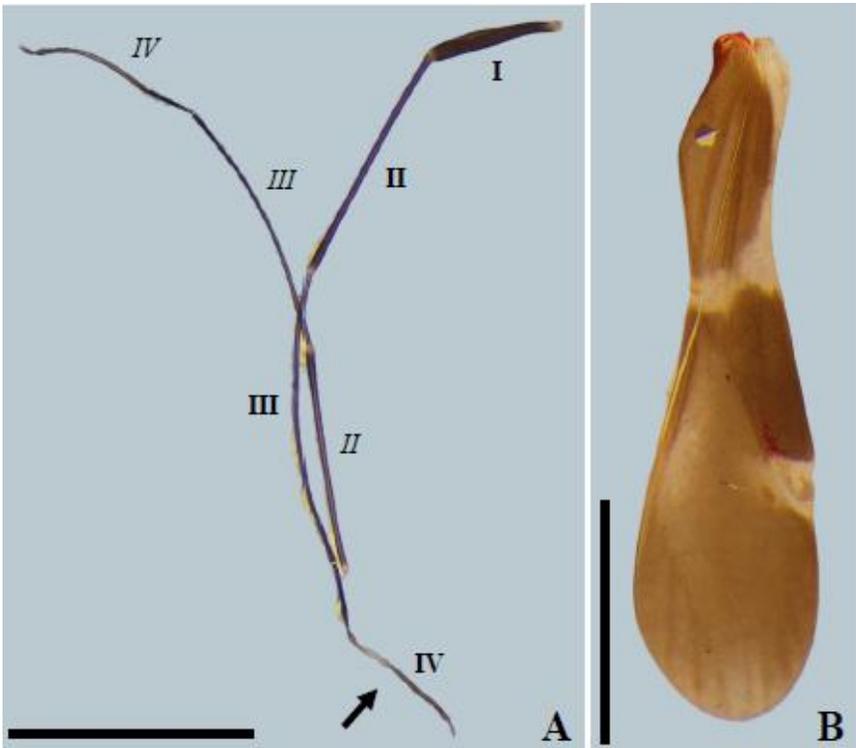


Figure 2. *Arachnocoris alboannulatus*. A. Female paralectotype, antennae mounted on slide. Antennae were mounted in opposite directions; antennomeres of each antennae are noted in different fonts. Light color in the middle of antennomere IV (arrow) is possibly an artifact. B. Male lectotype, right hemelytron mounted on slide. Scale bars represent 1 mm.

*Legs*: Coxae dark brown, reddish on apex; trochanters dark reddish brown, each metatrochanter with a large hook facing posteriorly; pro- and mesofemora reddish brown to dark brown, yellowish on dorsal apical margin, metafemora reddish brown to dark brown, yellowish on a narrow area on base and on a band on distal third; pro- and mesofemora each with two ventral rows of spines, mesofemora incrassate, metafemora without spines; tibiae and tarsi orange brown to reddish brown. *Abdomen*: Constricted near middle at level of fused segments II–IV; ventral surfaces dark reddish brown mottled with dark brown to black; rounded yellow maculae on laterotergites, apex of sternite III, and a larger yellow macula on side of sternite VI (described as in V by Costa Lima 1927). Segment VIII longest, with reproductive structures, ventrally with sinuous lateral margins, each side with a pair of large black spines on anterior half, posterior margin widely rounded, with a small notch on center (Figures 3A - 3D). Parameres yellowish brown, lateral margin sinuous, apex rounded (Figure 3C). **Female paralectotype**

(Figures 1B, 1D, 1F). Antennal formula III > II > IV > I. Antennomeres I–III mostly dark brown, yellowish on basal tenth of I and narrowly on apex of I, base and apex of II, and base of III, antennomere IV dark brown on basal fourth, yellowish to light brown toward apex, long setae present on dorsum of antennomere I, throughout II–III and on darker area of IV, these setae longer than the width of III–IV (Figure 2A). Mesofemora not incrassate. Abdominal segment VII containing the sexual structures, longest; gonocoxae red, ending close to yellowish anal opening (Figures 4A, 4B).

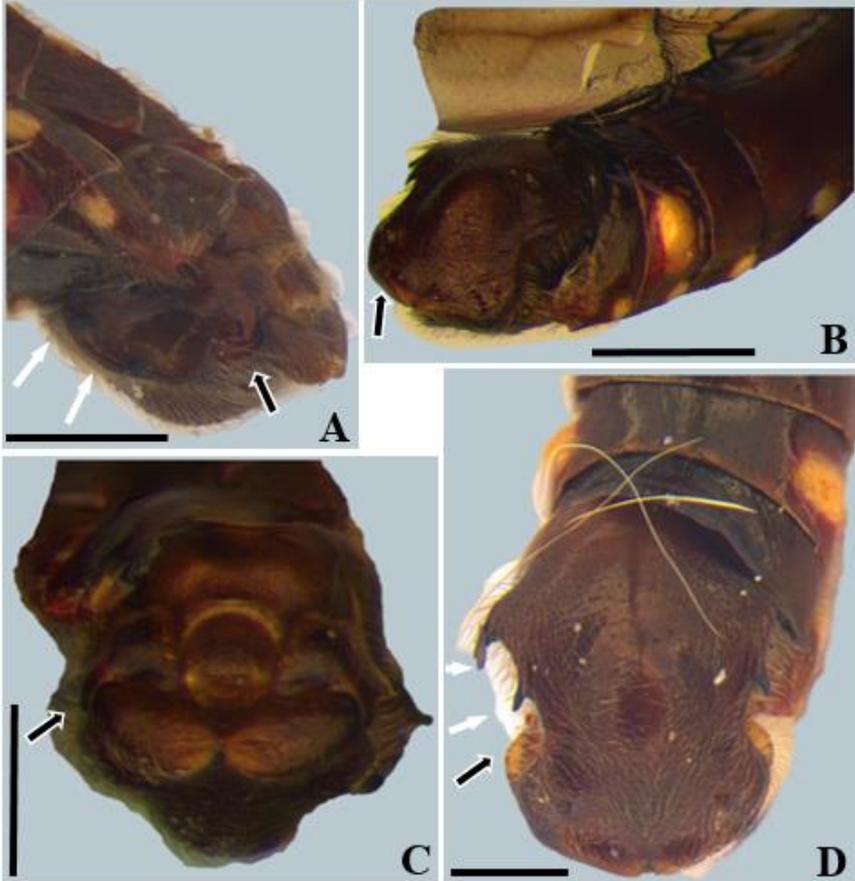


Figure 3. *Arachnocoris alboannulatus*, male lectotype, apex of abdomen. A. Lateral view. B. Ventrolateral view. C. Caudal view. D. Ventral view (white arrows indicate spines on abdominal segment VIII, black arrows indicate paramere). Long golden structures on panel D perhaps are brush hairs used in the original preparation. Scale bars C and D represent 250  $\mu\text{m}$ .



Figure 4. *Arachnocoris alboannulatus*, female paralectotype, apex of abdomen. A. Lateral view. B. Ventral view. Scale bars represent 200  $\mu\text{m}$ .

**Morphometrics:** *Male lectotype* - Total length (estimated) 6.27. Head length 0.39, width at eye level 0.46, at vertex 0.25, at base 0.40. Length of labial segment I - 0.28, II - 0.53, III - 0.27, IV - 0.19. Distance between ocelli 0.07, between ocelli and eye 0.05. Pronotum length 0.72 (including collar 0.11, anterior 0.21 and posterior lobe 0.59); width at collar 0.40, at anterior lobe margin 0.44, at humeri 0.83. Scutellum length 0.39, width 0.30. Profemora length 1.34, protibiae 1.60, protarsi lost; mesofemora 1.51, mesotibiae 1.49, mesotarsi 0.45; metafemora 1.96,

metatibiae 2.28, metatarsi lost. *Female paralectotype* - Length of antennomere I – 0.55, II – 0.98, III – 1.12; IV – 0.82. Mesofemora length 1.31, mesotibiae 1.09 (other structures lost or damaged).

**Remarks on the Etymology:** Costa Lima (1927) did not specify the etymology of this species, but the specific epithet *alboannulatus* might have been used in reference to the light band (annulus) present on the distal third of the metafemur.



Figure 5. An adult *Arachnocoris*, possibly *A. alboannulatus* (arrow, note the light metafemoral band and large posterior abdominal maculae) stands upright on the surface of host spider silk threads over substrate. The arthropods' orientation is an artifact as the insect possibly fell with the spider after disturbance by the photographer (Huber, personal communication to coauthor JEM, August 2016). Costa Lima (1927) stated his specimens were taken under a spider's web. This image is copyrighted by Dr. Bernhard A. Huber.

**Distribution and biology:** *Arachnocoris alboannulatus* and *A. albomaculatus* are the southernmost species in the genus. *Arachnocoris alboannulatus* was originally described from the state of Rio de Janeiro, Brazil, and not reported from other localities. We present here a probable new record that potentially extends its distribution over 500 km to the northeast based on a specimen from Sooretama in the state of Espírito Santo (Figure 5, Huber 2016, and personal communication). With the help from arachnologist Dr. Bernhard Huber, we know that the specimen in Figure 5 is a spider visitor and might also be a kleptoparasite of cellar spiders (Pholcidae). The host spider in the photograph is the pholcid *Mesabolivar togatus* (Keyserling, 1891), a species found in the Brazilian states of Sergipe, Bahia,

Espírito Santo, Rio de Janeiro, São Paulo, and Paraná (Machado 2007), with a disjunct record from the state of Pará (Mello-Leitão 1940).

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