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Scientific Note

Rediscovery and complementary description of *Amblyseius riodocei* El-Banhawy, 1984 (Acari: Phytoseiidae)

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Abstract. *Amblyseius riodocei* El-Banahwy, 1984 (Acari: Phytoseiidae) is rediscovery from material collected in Aracruz, state of Espírito Santo, Brazil. A complementary description is provided with measurements and illustrations of the collected specimen.

Keywords: Atlantic Forest, Mesostigmata, Mites, Predators.

Phytoseiid mites are found worldwide, primarily on the aerial plant parts (Demite et al. 2014; McMurtry et al. 2013; 2015). This family has more than 2,800 described species of which about 250 have been recorded in Brazil (Demite et al. 2023).

In Brazil, *Amblyseius* Berlese, 1914 (Acari: Phytoseiidae) is the most diverse genus, with 45 species. In the Brazilian state of Espírito Santo, 24 phytoseiid species have been reported, five of which belonging to *Amblyseius*.

Amblyseius riodocei El-Banhawy, 1984 was described from material collected from an unidentified plant, in the municipality of Sooretama, Espírito Santo (El-Banhawy 1984). The morphology of this species is known only from the holotype female and a paratype male, the only specimens of this species known to date. The redescription of this species published by Denmark & Muma (1989) was based on the original description.

The objective of this publication is to report the finding of *A. riodocei* for the first time after the original description, and to provide a complementary description of this species.

The specimen here reported was collected from a leaf sample of an unidentified species of *Calyptranthes* (Myrtaceae), from the municipality of Aracaruz (19°58'15" S; 40°08'22" W), Espírito Santo. It was mounted in Hoyer's medium on a microscope slide and examined under a contrast-phase microscope, comparing it with the characteristics of species of the genus, available in the literature, including those of *A. riodocei*, provided by El-Banhawy (1984) and Denmark & Muma (1989).

Measurements of taxonomically relevant structures were taken using a grade eyepiece, and shown in micrometers (µm). The setal nomenclature adopted was that of Lindquist & Evans (1965) and Lindquist (1994), adapted by Rowell et al. (1978) for the dorsum and by Chant & Yoshida-Shaul (1991) for the venter of phytoseiids. The idiosomal setal pattern follows Chant & Yoshida-Shaul (1992). The notation of gland pores (solenostomes) or lyrifissures (poroids) is based on Athias-Henriot (1975). Terminology for the spermathecal apparatus follows that described by Beard (2001). The illustrations and photos were processed with software Adobe Illustrator CS6, based on imagens captured by phase-contrast microscope with attached camera (Leica DMR).

The voucher specimen was deposited in the Mite Collection at "Laboratório de Acarologia, UNESP-Universidade Estadual Paulista, São José do Rio Preto, São Paulo", Brazil.

Amblyseius riodocei El-Banhawy, 1984

Amblyseius riodocei El-Banhawy, 1984: 136; Moraes et al. 1986: 29; 2004: 48; Chant & McMurtry 2004: 201; 2007: 81.

Amblyseius (*Multiseius*) *riodocei* —. Denmark & Muma, 1989: 88.

Origin of the specimen examined: 1 female on *Calyptranthes* sp. (Myrtaceae), 24 IV 2018, Aracruz, Espírito Santo, Brazil.

Female (n= 1)

Dorsum (Fig. 1): Idiosoma setal pattern 10A:9B/JV-3:ZV. Dorsal shield 295 long and 225 wide, smooth, with 17 pairs of setae (*j1*, *j3*-*j6*, *J2*, *J5*, *z2*, *z4*, *z5*, *Z1*, *Z4*, *Z5*, *s4*, *S2*, *S4*, *S5*; setae *r3* and *R1* in the unsclerotized cuticle), six pairs gland pores (*gd2*, *gd4*, *gd5*, *gd6*, *gd8* and *gd9*) and eight pairs of lyrifissures (*id1*, *id2*, *id4*, *idm1*, *idm5*, *idm6*, *idl3* and *idl4*). Setal measurements: *j1* 24, *j3* 32, *j4* 6, *j5* 5, *j6* 8, *J2* 7, *J5* 8, *z2* 14, *z4* 10, *z5* 7, *Z1* 10, *Z4* 85, *Z5* 228, *s4* 62, *S2* 11, *S4* 11, *S5* 10, *r3* 15 and *R1* 10. All dorsal setae smooth, except *Z4* and *Z5*, slightly serrate.

Peritreme: Extending forward to level of *j1*.

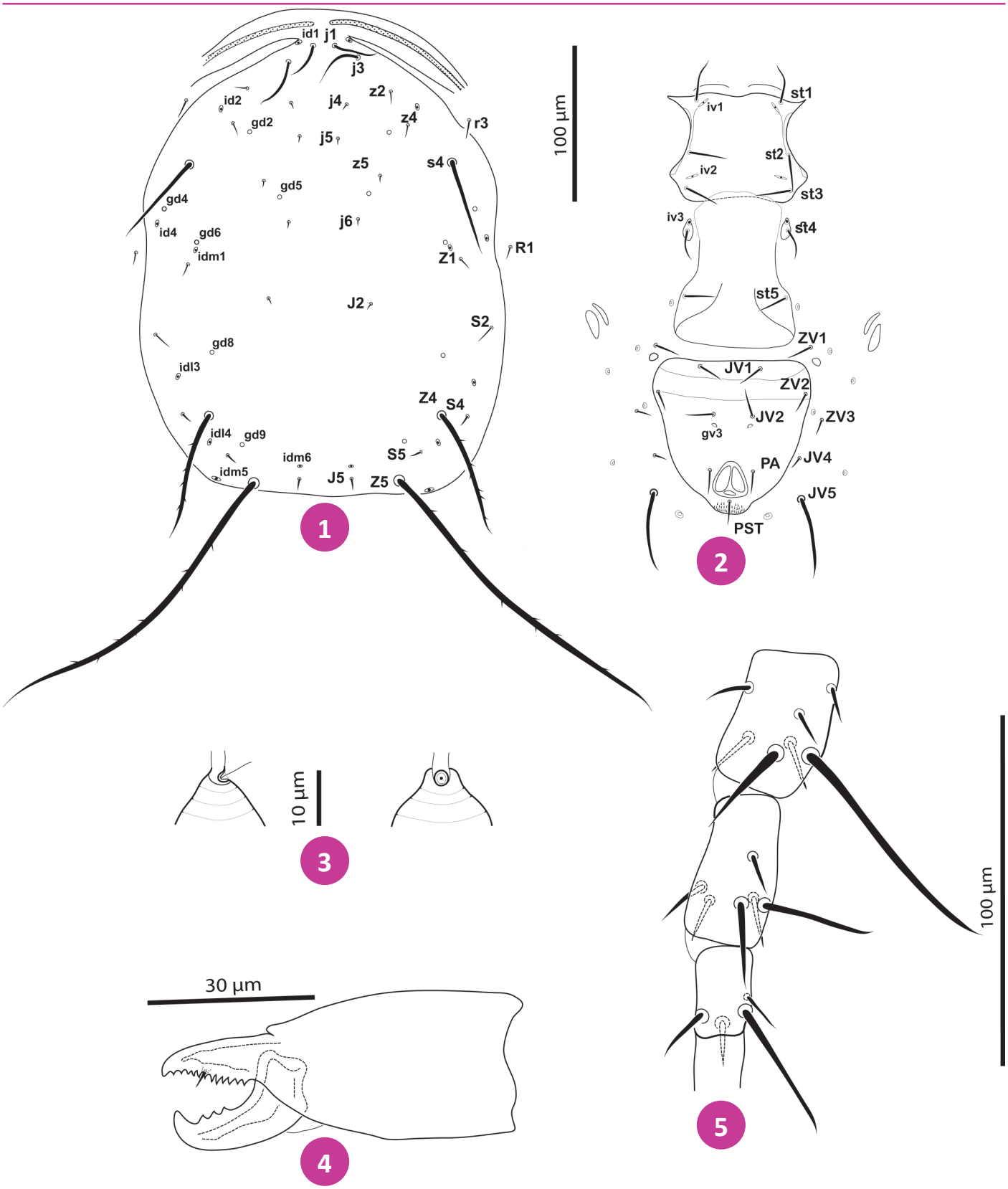
Venter (Fig. 2): Sternal shield smooth, except for scant lateral striae; with three pairs of setae (*st1, st2* and *st3*) and two pairs of lyrifissures (*iv1* and *iv2*); distances between *st1-st3* 58, *st2-st2* 55. Seta *st4* and lyrifissure *iv3* on metasternal plate. Genital shield smooth, *st5-st5* 67. With two pairs of metapodal plates. Ventrianal shield pentagonal, smooth, except for some striae anteriad *JV2*; 95 long, 100 wide at level of *ZV2* and 73 wide at anus level; with three pairs of preanal setae (*JV1, JV2* and *ZV2*) and a pair of elliptical pores (*gv3*) posteriad *JV2.* Four pairs of opisthogastric setae on unsclerotized cuticle (*JV4, JV5, ZV1* and *ZV3*); seta *JV5* 56 long. All ventral setae smooth.

Spermatheca (Figs. 3 and 6): Calyx cone-shaped 10 long. Atrium discreet, noticeable mostly by the presence of a small and the attachment of the minor duct.

Chelicera (Fig. 4): Movable cheliceral digit 24 long, with three teeth; fixed digit 25 long, with 12 teeth.

Legs (Fig. 5): Leg macrosetae smooth and pointed: *SgeI* 30, *SgeII* 30, *SgeIII* 33, *StiIII* 27, *SgeIV* 72, *StiIV* 35, *StIV* 43. Chaetotactic formula of genu II: 1-2/1-2/0-1 and genu III: 1-2/1-2/0-1.

The measurements are close to the original description (El-Banhawy 1984) and the redescription provided by Denmark & Muma (1989). The presence of seven setae in genus II is in agreement with the original description and different from that reported by Denmark & Muma (1989). In the redescription, these authors reported only one posterior dorsal seta (2-2/0-1/0-1) and not two, as in the original



Figures 1-5. *Amblyseius riodocei* El-Banhawy, 1984. Female (1-5): (1) Dorsum of idiosoma; (2) Venter of idiosoma; (3) Spermatheca; (4) Chelicera; (5) Genu, tíbia and basitarsus of leg IV.

description and the specimen studied here. The location of a seta in this leg segment is difficult to define, as it is inserted in an intermediate region between the lateral and the venter of the genu. Thus, it is difficult to inform, based on the specimen studied, whether the formula of genu II is 1-2/1-2/0-1 or 2-2/0-2/0-1. With regard to genu III, the chaetotactic formula is in accordance with that presented by Denmark & Muma (1989) (1-2/1-2/0-1). However, in the original description, El-Banhawy (1984) considered that the ventral seta was posterior ventral (1-2/0-2/1-1) and not anterior ventral. An additional difference refers to the number of teeth of the fixed digit, not informed in the original description and reported as nine by Denmark & Muma (1989); 12 teeth reported in this study.

The type locality of this species is very close (about 100 km) to the place where the specimen studied in this work was found. Thus, it is believed that this species is relatively rare and endemic to a small region in eastern Brazil. This conclusion is reached because this species is known from only three specimens collected from two places relatively close together, despite the several surveys carried out in different parts

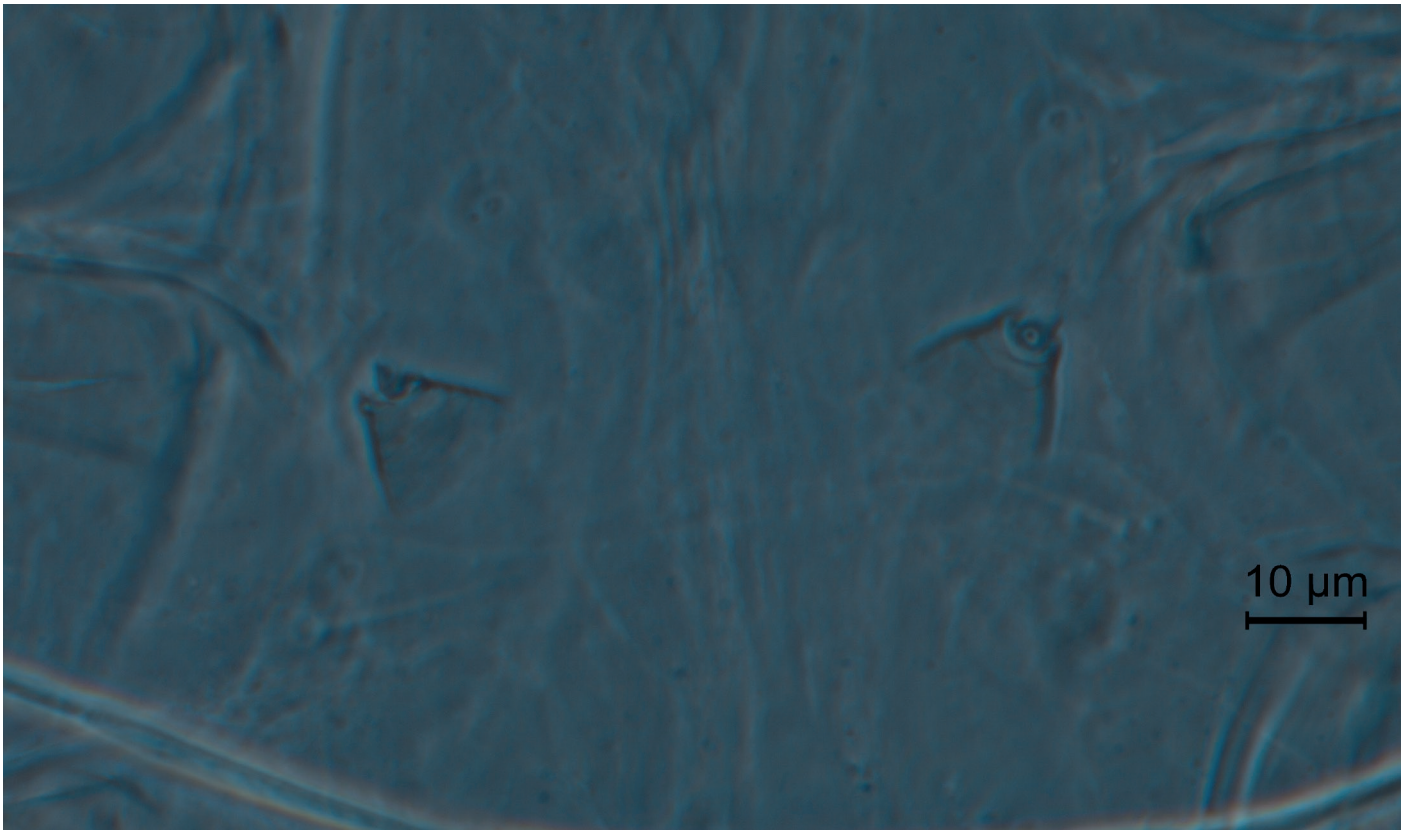


Figure 6. *Amblyseius riodocei* El-Banhawy, 1984. Spermathecas of the specimen collected in Aracruz, Espirito Santo, Brazil (Photo: Peterson R. Demite).

of Brazil, including areas of the extensive Atlantic Forest (*e.g.*, Gondim Jr. & Moraes 2001; Lawson-Balagbo et al. 2008; Moraes et al. 2013; Gonçalves et al. 2015; Rosa et al. 2015; Argolo et al. 2017; Cavalcante et al. 2021), the biome in which the few *A. riodocei* specimens were found.

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Authors' Contributions

AMH conducted the field work. PRD identified the phytoseiid mite. JSC and PRD prepared the illustration. PRD prepared the manuscript. PRD, JCS and AMH revised different versions of the manuscript.

Conflict of Interest Statement

The authors declare no potential conflict of interest.

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