A New Species of Amblyseius (Acari: Phytoseiidae) in the State of Bahia, Brazil

Authors: Argolo, Poliane Sá, Moraes, Gilberto J. de, and Oliveira, Anibal R.

Source: Florida Entomologist, 98(2) : 749-751

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/024.098.0252

A new species of *Amblyseius* (Acari: Phytoseiidae) in the state of Bahia, Brazil

*Poliane Sá Argolo[1], Gilberto J. de Moraes[2], and Anibal R. Oliveira[1,]**

Abstract

A new phytoseiid species, *Amblyseius constrictus* Argolo, Oliveira & Moraes **sp. nov.** (Acari: Phytoseiidae), is described and illustrated. The specimens were collected from tropical ornamentals, cupuaçu (*Theobroma grandiflorum* (Willd. ex Spreng.) K.Schum.; Malvales: Sterculiaceae) fruits and from other trees in shaded cacao plantations in the southern coast of the state of Bahia, northeastern Brazil.

Key Words: predatory mites; ornamental plants; tropical fruits; Amblyseiinae; taxonomy

Resumen

Una nueva especie de fitoseido, *Amblyseius constrictus* Argolo, Oliveira & Moraes **sp. nov.** (Acari: Phytoseiidae), es descrita e ilustrada. Los especímenes fueran obtenidos de plantas ornamentales, frutos de cupuaçu (*Theobroma grandiflorum* (Willd. ex Spreng.) K.Schum.; Malvales: Sterculiaceae) y de otros árboles en plantaciones de cacao sombreado en la costa sur del estado de Bahia, noreste de Brasil.

Palabras Clave: Ácaros depredadores; plantas ornamentales; frutales tropicales; Amblyseiinae; taxonomía.

The commercial cultivation of tropical ornamentals, tropical fruit trees, and cacao has been the basis of the agricultural economy in the coastal region of southern Bahia State. This is one of the largest Brazilian states, located in the northeastern part of the country. Phytoseiid mites are known for their common occurrence on plants and their efficiency as biological control agents of phytophagous mites (Gerson et al. 2003; McMurtry et al. 2013). Fifty-one species of Phytoseiidae were already registered in the state of Bahia (Demite et al. 2014). However, few studies have reported these mites in the coastal region of southern Bahia (Lawson-Balagbo et al. 2008; Souza et al. 2010). The aim of this paper is to describe a new phytoseiid species collected from leaves of tropical ornamentals, cupuaçu (*Theobroma grandiflorum* (Willd. ex Spreng.) K.Schum.; Malvales: Sterculiaceae) and other trees in shaded cacao plantations in that region.

Materials and Methods

Leaves of *Heliconia psittacorum* x *Heliconia spathocircinata* cv. 'Alan Carle' (Heliconiaceae), *Alpinia purpurata* cv. 'Red Ginger' (Zingiberaceae), cupuaçu tree *Theobroma grandiflorum* (Sterculiaceae) and *Cordia trichotoma* Arrabida ex Steudel (Boraginaceae) were sampled from shaded cacao plantations in the municipalities of Ilhéus and Valença, state of Bahia. They were taken to a laboratory for examination under a stereomicroscope. The phytoseiid mites found were mounted on slides with Hoyer's medium and examined under a phase-contrast microscope. The specimens were measured with the use of a graded eye-piece. After determining that they belonged to an undescribed species, they were illustrated with the use of a drawing tube and finished with Adobe Illustrator CS6 Series®.

In the following description, all measurements are given in micrometers, each measurement corresponding to the average for the mites collected followed (in parentheses) by the respective ranges and the value in the holotype female. Idiosomal setal notation is that of Rowell et al. (1978) and Chant & Yoshida-Shaul (1989) for the dorsal surface and that of Chant & Yoshida-Shaul (1991) for the ventral surface of the idiosoma. Macrosetal notation is that of Muma et al. (1970).

Results

Amblyseius constrictus **sp. nov.** (Figs. 1–5).

DIAGNOSIS

The new species is characterized by having the dorsal shield smooth; all dorsal, ventral and leg setae smooth and sharp-tipped; sternal shield mostly smooth, with few lateral striae; ventrianal shield vase shaped, mostly smooth, with a profound constriction immediately behind JV1; calyx tubular, slightly constricted near basis; atrium undifferentiated.

ETYMOLOGY

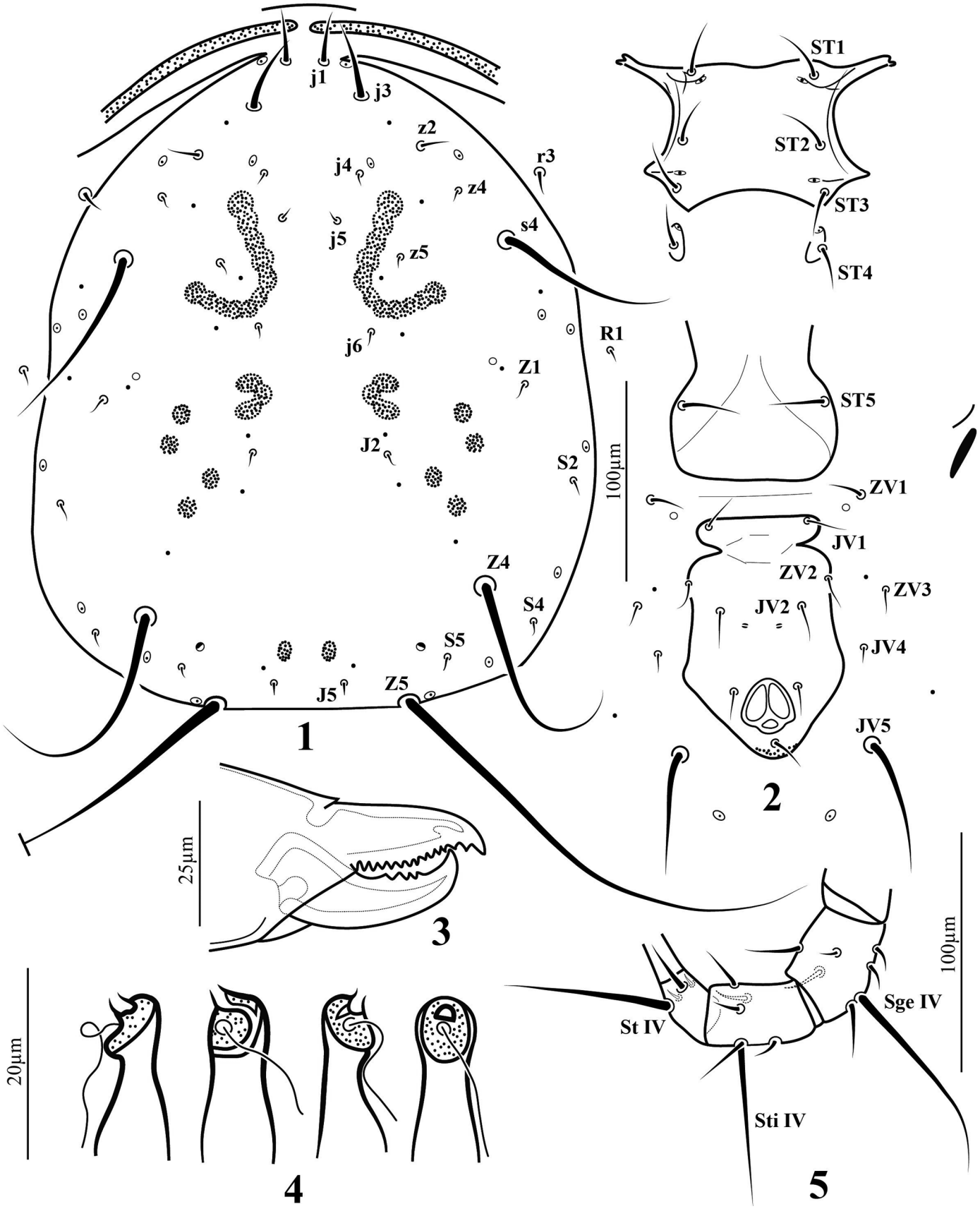
The epithet *constrictus* refers to the profound constriction of the ventrianal shield immediately behind JV1.

DESCRIPTION

Female (7 Specimens Measured)

Dorsum (Fig. 1)—Dorsal shield smooth; with 14 pairs of lyrifissures and eight pairs of pores; setal pattern 10A:9B; 352 (326–366,

[1]Universidade Estadual de Santa Cruz - UESC, Rodovia Jorge Amado, km 16, 45662-900, Ilhéus, BA, Brazil
[2]Departamento de Entomologia e Acarologia, Universidade de São Paulo, 13418-900, Piracicaba, SP, Brazil
*Corresponding author; E-mail: arolivier@gmail.com



Figs. 1-5. Female of *Amblyseius constrictus* **sp. nov.** 1. Dorsal surface of idiosoma; 2. ventral surface of idiosoma; 3. chelicera; 4. variations of calyx of spermatheca; 5. genu, tibia, and basitarsus of leg IV.

336) long and 282 (271–305, 274) wide; setal lengths: j1 31 (30–34, 31), j3 39 (37–41, 41), j4 7 (7–8, 7), j5 7 (6–8, 8), j6 8 (6–8, 8), J2 9 (8–10, 10), J5 7 (6–8, 7), z2 17 (15–18, 15), z4 12 (11–13, 11), z5 7 (7–8, 7), Z1 9 (7–11, 11), Z4 112 (107–116, 113), Z5 223 (214–229, 229), s4 89 (85–92, 92), S2 11 (10–12, 12), S4 10 (9–11, 11), S5 9 (8–11, 8), r3 13 (12–15, 15), R1 10 (8–11, 10). All setae smooth and pointed. Peritreme—Extending beyond level of j1. Venter (Fig. 2)—Sternal shield mostly smooth, with few lateral striae, 3 pairs of setae and 2 pairs of lyrifissures; distances between setae St1–St3 63 (61–64, 64), St2–St2 75 (72–76, 73). Genital shield smooth; distance between St5–St5 73 (69–76, 69). Ventrianal shield vase shaped, mostly smooth, with a profound constriction immediately behind JV1, 113 (98–119, 98) long, 68 (64–76, 76) wide at level of ZV2, and 79 (76–81, 76) wide at anus level, with 3 pairs of pre-anal setae (JV1, JV2 and ZV2) and a pair of round pores posteromesad of JV2; setae JV4, JV5, ZV1, and ZV3 on unsclerotised cuticle. Ventral setae smooth and pointed. Two pairs of metapodal plates. Chelicera (Fig. 3)—Fixed digit 31 (30–32, 31) long, with 14 (13–15, 15) teeth; movable digit 38 (36–40, 40) long, with 3–4, 3 teeth. Spermatheca (Fig. 4)—Calyx tubular, 16 (14–18, 18) long, slightly constricted near region of fusion with major duct; atrium undifferentiated. Leg macrosetae (Fig. 5)—Sge I 39 (37–43, 40) Sge II 37 (37– 40, 40), Sge III 48 (43–55, 43), Sti III 34 (34–37, 34), Sge IV 97 (92–101, 98), Sti IV 61 (58–64, 64), St IV 75 (70–79, 70), all pointed. Chaetotaxy: genu II 1–2/1, 2/0–1; genu III 1–2/1, 2/0–1.

Male

Unknown.

TYPE MATERIAL

Seven slides: HOLOTYPE 1 female BRAZIL: Bahia, Ilhéus, Fazenda Terra Nova (14°43'52"S, 39°09'16"W), 25-V-2007, from *H. psittacorum* x *H. spathocircinata* cv. 'Alan Carle', A.R. Oliveira (deposited at Universidade Estadual de Santa Cruz, UESC, Ilhéus, Bahia). PARATYPES 3 females BRAZIL: Bahia, Ilhéus, Campus of UESC (14°47'49"S, 39°10'23"W), 1-VIII-2014, from *C. trichotoma* Arrabida ex Steudel, A.N. Carvalho (UESC). 1 female BRAZIL: Bahia, Ilhéus, Campus of UESC (14°47'49"S, 39°10'23"W), 14-I-2008, from *A. purpurata* cv. 'Red Ginger', A.R. Oliveira (deposited at Escola Superior de Agricultura "Luiz de Queiroz", ESALQ, Universidade de São Paulo, Piracicaba, São Paulo, Brazil). 2 females BRAZIL: Bahia, Valença, Fazenda Barra (13°21'05"S, 39°19'57"W), 15-VIII-2007, from *T. grandiflorum*, A.R. Oliveira (ESALQ).

REMARKS

This new species is similar to *Amblyseius coffeae* De Leon (1961), *Amblyseius fernandezi* Chant & Baker (1965), and *Amblyseius operculatus* De Leon (1967), in relation to the general measurements and general shape of spermatheca, but it differs from them by having a profound constriction of the ventrianal shield immediately behind JV1, and by having the spermathecal calyx slightly constricted near region of fusion with the major duct. In addition, it differs from *A. coffeae* by having preanal pores rounded (ellipsoidal in *A. coffeae*), from *A. fernandezi* by having z2 longer (in the latter 9–12 according to Denmark & Muma [1989]), and from *A. operculatus* by having spermathecal calyx longer (in the latter 10 according to De Leon [1967], 8 according to Denmark & Muma [1989], and 8–12 according to Gondim Jr. & Moraes [2001]). The following key can be used to separate those species:

1. — Spermatheca with atrium globular . . . . . *A. fernandezi*

1'. — Spermatheca with atrium undifferentiated 2

2. — Preanal pores ellipsoidal . . . . . *A. coffeae*

2'. — Preanal pores rounded 3

3. — Ventrianal shield with a profound constriction immediately behind JV1; calix of spermatheca with a slight constriction near region of fusion with major duct . . . . . *A. constrictus* **sp. nov.**

3'. — Ventrianal shield without constriction behind JV1; calix of spermatheca with constriction near region of fusion with major duct . . . . . *A. operculatus*

Acknowledgments

We are grateful to Adeilma N. de Carvalho for specimens provided and to CAPES (Coordination for the Improvement of Higher Education Personnel) for the Post-Doc grant to P.S.A. This work was partially supported by the State of Bahia Research Foundation (FAPESB 7736/2006). G.J.M. is a CNPq researcher.

References Cited

Chant DA, Baker EW. 1965. The Phytoseiidae (Acarina) of Central America. Memoirs of the Entomological Society of Canada 41: 1-56.

Chant DA, Yoshida-Shaul E. 1989. Adult dorsal setal patterns in the family Phytoseiidae (Acari: Gamasina). International Journal of Acarology 15(4): 219-233.

Chant DA, Yoshida-Shaul E. 1991. Adult ventral setal patterns in the family Phytoseiidae (Acari: Gamasina). International Journal of Acarology 17(3): 187-199.

De Leon D. 1967. Some mites of the Caribbean Area. Part I. Acarina on plants in Trinidad, West Indies. Allen Press Inc., Lawrence, Kansas, USA.

Demite PR, McMurtry JA, Moraes GJ. 2014. Phytoseiidae Database: a website for taxonomic and distributional information on phytoseiid mites (Acari). Zootaxa 3795: 571-577.

Denmark HA, Muma MH. 1989. A revision of the genus *Amblyseius* Berlese, 1914 (Acari: Phytoseiidae). Occasional Papers of the Florida State Collection of Arthropods 4: 1-149.

Gerson U, Smiley RL, Ochoa R. 2003. Mites (Acari) for Pest Control. Blackwell Science, Oxford, United Kingdom.

Gondim Jr MGC, Moraes GJ. 2001. Phytoseiid mites (Acari: Phytoseiidae) associated with palm trees (Arecaceae) in Brazil. Systematic and Applied Acarology 6: 65-94.

Lawson-Balagbo LM, Gondim Jr MGC, Moraes GJ, Hanna R, Schausberger P. 2008. Exploration of the acarine fauna on coconut palm in Brazil with emphasis on *Aceria guerreronis* (Acari: Eriophyidae) and its natural enemies. Bulletin of Entomological Research 98: 83-96.

McMurtry JA, Moraes GJ, Famah Sourassou N. 2013. Revision of the lifestyles of phytoseiid mites (Acari: Phytoseiidae) and implications for biological control strategies. Systematic and Applied Acarology 18: 297-320.

Muma MH, Demark HA, De Leon D. 1970. Phytoseiidae of Florida, pp. 150. Arthropods of Florida and Neighboring Land Areas, 6. Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, Florida, USA.

Rowell HJ, Chant DA, Hansell RIC. 1978. The determination of setal homologies and setal patterns on the dorsal shield in the family Phytoseiidae (Acarina: Mesostigmata). The Canadian Entomologist 110: 859-876.

Souza IV, Oliveira AR, Gondim Jr MGC. 2010. A new species of the genus *Typhlodromips* De Leon (Acari: Phytoseiidae) from the state of Bahia, Brazil. International Journal of Acarology 36: 49-52.