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A new species of *Neoseiulus* Hughes (Acari: Phytoseiidae) from São Paulo State, Brazil

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ABSTRACT — A new species *Neoseiulus jeca* **n. sp.** is described in this paper based on specimens collected on *Cecropia* sp. in the Atlantic Forest area of São Paulo State, Brazil. *Neoseiulus jeca* **n. sp.** is the third species included in the *peruanus* species group. This species group has been registered only in South America and Africa.

KEYWORDS — Amblyseiinae; Atlantic Forest; diversity; hotspot

INTRODUCTION

Phytoseiidae (Acari: Mesostigmata) are plant dwelling mites broadly found on cultivated and wild plants. Some species in this family have been extensively used for the control of mite and insect pests (Gerson *et al.*, 2003; McMurtry *et al.*, 2013, 2015). Despite the great number of described species (more than 2700; Demite *et al.*, 2014, 2015), many species of this family are unknown, mainly in natural environments of tropical regions (e.g. Lofego *et al.*, 2011b; Moraes *et al.*, 2004; Tixier *et al.*, 2012).

The Atlantic Forest biome occupied most of the extensive Brazilian coast, reaching in some places deep inland to reach northeastern Argentina and eastern Paraguay, extending from Rio Grande do Norte to Rio Grande do Sul states, over an area of approximately 1,100,100 km² in Brazil. This biome is considered as a "biodiversity hotspot", *i.e.*, a world priority conservation area due a great con-

centration of endemic species subjected to strong anthropic pressure (Myers *et al.*, 2000), and have been highlighted in discovery of new species and genera of phytoseiids; only in the last fifteen years were 27 new species and four new genera described from this biome from São Paulo State (Gondim Jr. and Moraes, 2001; Zacarias and Moraes, 2001; Zacarias *et al.*, 2002; Moraes *et al.*, 2003; Lofego and Feres, 2006; Demite *et al.*, 2007, 2008a, b, 2011; Tixier and Kreiter, 2009; Lofego *et al.*, 2011a, b; Moraes *et al.*, 2013; Barbosa *et al.*, 2014). In this paper a new species of phytoseiid mite is described, discovered during collections conducted in Atlantic Forest areas of State of São Paulo, Brazil.

MATERIALS AND METHODS

Specimens of the new species described here were mounted in Hoyer's medium and examined under phase contrast microscopy. The classification system used is that of Chant and McMurtry (2007).

Dorsal and ventral setal nomenclature used in this paper is that of Rowell *et al.*, (1978) and Chant and Yoshida-Shaul (1991) respectively. Measurements were done with the use of a graduated eyepiece. All measurements are given in micrometers. Holotype measurements are shown in bold type followed by their mean and range in parentheses. Illustrations were made using a drawing tube attached to the microscope.

TAXONOMY

Neoseiulus jeca n. sp. (Figure 1)

Diagnosis — Females with dorsal shield reticulate, except for a area next to *Z4*, setae *Z4* and *Z5* serrate; length of almost all dorsal setae subequal; peritreme extending anteriorly to *j1*; ventral shields smooth; ventrianal shield much longer than wide with a slight waist; calyx of spermatheca cup-shaped and atrium inconspicuous.

Description. Female (n= 5). Dorsum — Idiosomal setal pattern (Chant and Yoshida-Shaul, 1991): 10A:9B/JV-3:ZV. Dorsal shield reticulate, except for a area next to *Z4*, **283** 291 (283 – 300) long, **170** 172 (170 – 175) wide at level of *s4*; with nine pairs of lyrifissures and six pairs of pores; setae: *j1* **19** 20 (19 – 21), *j3* **34** 34 (31 – 35), *j4* **24** 26 (24 – 28), *j5* **26** 26 (23 – 29), *j6* **41** 41 (38 – 42), *J2* **45** 48 (45 – 50), *J5* **8** 9 (8 – 10), *z2* **29** 32 (29 – 34), *z4* **36** 40 (36 – 42), *z5* **39** 37 (34 – 39), *Z1* **39** 42 (39 – 45), *Z4* **47** 46 (44 – 47), *Z5* **55** 56 (53 – 58), *s4* **50** 51 (50 – 55), *S2* **45** 44 (41 – 46), *S4* **38** 38 (37 – 40), *S5* **27** 28 (26 – 30), *r3* **30** 31 (30 – 32), *R1* **23** 24 (23 – 25). All setae smooth, except *Z4* and *Z5* slightly serrate.

Venter — Sternal shield with three pairs of setae and two pairs of lyrifissures; distances between *st1-st3* **60** 60 (60 – 61), *st2-st2* **67** 67 (65 – 67); *st4* on metasternal plate; Genital shield smooth; distance between *st5-st5* **65** 62 (61 – 65). Ventrianal shield constricted at level of *JV2*; smooth; **102** 106 (102 – 113) long, **68** 70 (68 – 71) wide at level of *ZV2* and **55** 57 (55 – 58) wide at level of anus; with three pairs of pre-anal setae (*JV1*, *JV2* and *ZV2*) and a pair of minute pores postero-mesad of *JV2*. Four pairs of

opisthogastric setae on unsclerotized cuticle (*JV4*, *JV5*, *ZV1* and *ZV3*). Seta *JV5* **37** 38 (36 – 40). All ventral setae smooth. Two metapodal plates visible.

Peritreme — Extending anteriorly to *j1*.

Spermatheca — Calyx cup-shaped **10** 10 (9 – 10) long, atrium inconspicuous.

Chelicera — Movable digit **27** 28 (27 – 29) long, with two teeth in addition to apical tooth; fixed digit **29** 29 (28 – 30), with **11** 10 – 11 teeth in addition to apical tooth. *Pilus dentilis* not visible.

Legs — Macrosetae present only on leg IV: SgeIV **32** 33 (32 – 35), StiIV **26** 26 (24 – 28), StIV **58** 63 (58 – 67). SgeIV and StIV with knobbed tip. Chaetotatic formula of genu II: 2-2/0-2/0-1 and of genu III: 1-2/1-2/0-1.

Type deposition — Holotype female and three paratypes female: Natividade da Serra (21°21'28"S; 45°17'33"W), São Paulo State, Brazil, on *Cecropia* sp. (Cecropiaceae), July 26, 2008, P.R. Demite and A.C. Lofego collectors, deposited at Departamento de Zoologia e Botânica, UNESP – Universidade Estadual Paulista, São José do Rio Preto, SP, Brazil; One paratype female, same locality, host, data and collectors as holotype, deposited at Departamento de Entomologia e Acarologia, Universidade de São Paulo, Escola Superior de Agricultura "Luiz de Queiroz" (ESALQ/USP), Piracicaba, SP, Brazil.

Etymology — The specific name refers to character "Jeca Tatu" created by the Brazilian writer Monteiro Lobato (1882-1948). This character, one of the most important of this writer, lived in rural areas of the region where this species was found.

Remarks — This new species belongs to *peruanus* species group (Chant and McMurtry, 2003) which is characterized mainly by having almost all dorsal setae approximately subequal; the fixed digit of chelicerae with more than seven small teeth and movable digit bidentate; ventrianal shield much longer than wide with a slight waist, with three pairs of preanal setae arranged in a triangular pattern, and with a pair of minute pores posterior and mesad of setae *JV2*. This group was previously represented by two species, *Neoseiulus peruanus* (El-Banhawy, 1979) and *Neoseiulus irungus* (El-Banhawy and Knapp, 2011), with register

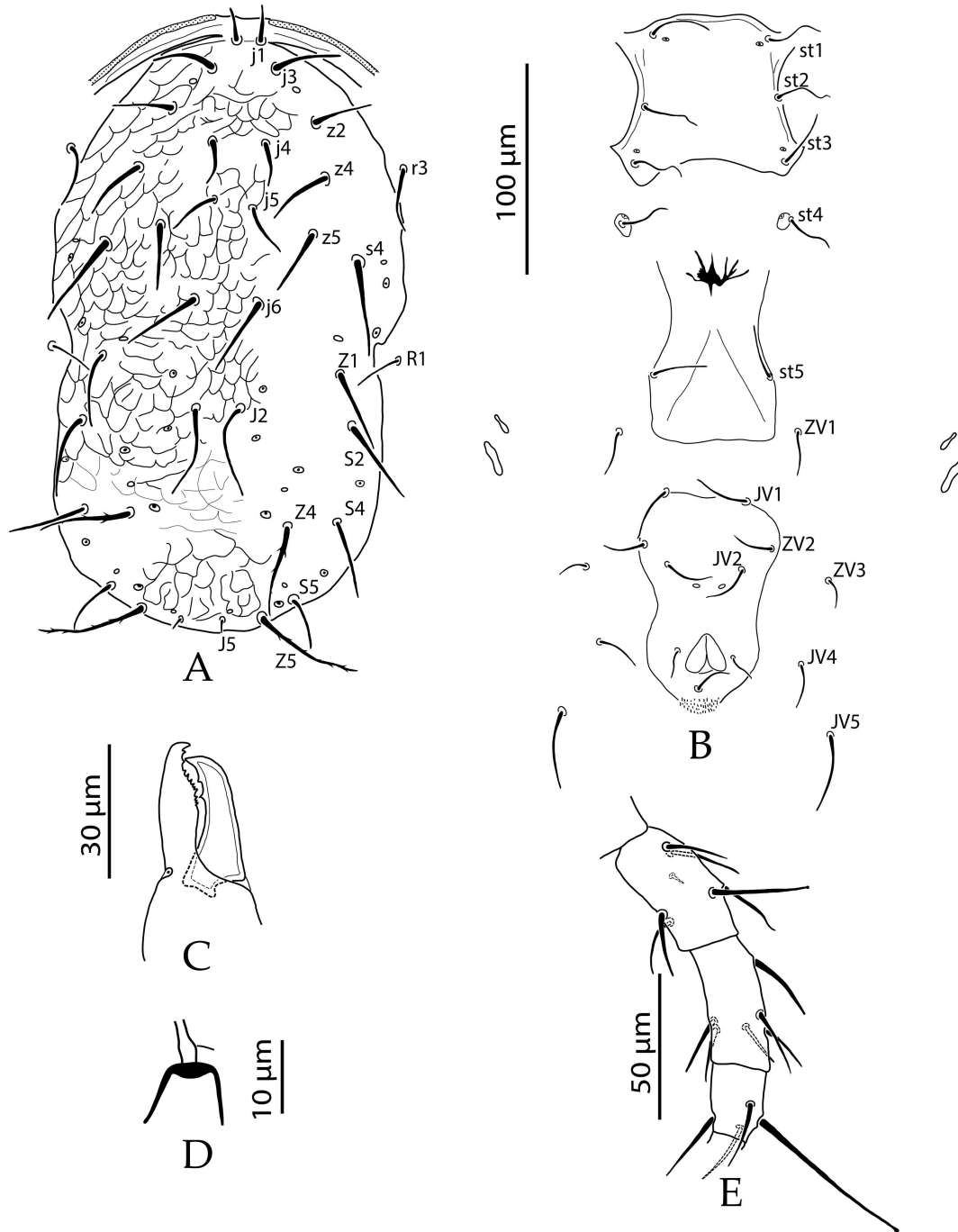


FIGURE 1: *Neoseiulus jeca* n. sp. Female: A – Dorsal shield; B – Ventral idiosoma; C – Chelicera; D – Spermatheca; E – Genu, tibia and basitarsus of leg IV

in South America and Africa, respectively. The new species differs from both by having ventrianal shield smooth and calyx of spermatheca cup-shaped. *N. peruanus* and *N. irungus* has a striated ventrianal shield and a trumpet-shaped and bell-shaped calyx, respectively.

Nothing is known about biology or ecology of this new species.

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REFERENCES

- Barbosa M.F. de C, Rocha M. dos S., Ferla N.J. 2014 — A new genus and species of phytoseiid mite (Acari: Phytoseiidae) from the Brazilian Atlantic Forest — *Zootaxa*, 3795(1): 91-95. doi:10.11646/zootaxa.3795.1.10 doi:10.11646/zootaxa.3795.1.10
- Chant D.A., McMurtry, J.A. 2007 — Illustrated keys and diagnoses for the genera and subgenera of the Phytoseiidae of the world (Acari: Mesostigmata) — West Bloomfield: Indira Publishing House. pp. 220.
- Chant D.A., McMurtry J.A. 2003 — A review of the subfamily Amblyseinae Muma (Acari: Phytoseiidae): Part I. Neoseiulini new tribe — *Int. J. Acarol.*, 29(1): 3-46. doi:10.1080/01647950308684319
- Chant D.A., Yoshida-Shaul E. 1991 — Adult ventral setal patterns in the family Phytoseiidae (Acari: Gamasina) — *Int. J. Acarol.*, 17(3): 187-199. doi:10.1080/01647959108683906
- Demite P.R., Lofego A.C., Feres R.J.F. 2007 — A new species of *Amblyseius* Berlese (Acari: Phytoseiidae) from Brazil — *Zootaxa*, 1445: 63-68.
- Demite P.R., Lofego A.C., Feres R.J.F. 2008a — A new species of *Galendromus* (Acari: Phytoseiidae): a case of intraspecific variation and redefinition of *carinulatus* species group — *Ann. Entomol. Soc. Am.*, 101(5): 804-807. doi:10.1603/0013-8746(2008)101[804:ANSOGA]2.0.CO;2
- Demite P.R., Lofego A.C., Feres R.J.F. 2008b — Three new species of *Phytoseius* Ribaga (Acari: Phytoseiidae), and a new record from Brazil — *Zootaxa*, 1909: 16-26.
- Demite P.R., Lofego A.C., Feres R.J.F. 2011 — Phytoseiidae (Acari) in forest fragments in the State of São Paulo, Brazil — *Zootaxa*, 3086: 31-56.
- Demite P.R., McMurtry J.A., Moraes G.J. de 2014 — Phytoseiidae Database: a website for taxonomic and distributional information on phytoseiid mites (Acari) — *Zootaxa*, 3795(5): 571-577. doi:10.11646/zootaxa.3795.5.6 doi:10.11646/zootaxa.3795.5.6
- Demite P.R., Moraes G.J. de, McMurtry J.A., Denmark H.A., Castilho R. de C. 2015 — Phytoseiidae Database [Internet] — [20 Oct 2015]. Brazil: ESALQ/USP; [20 Oct 2015]. Available from: <http://www.lea.esalq.usp.br/phytoseiidae>
- El-Banhawy E.M., Knapp M. 2011 — Mites of the family Phytoseiidae Berlese from Kenya (Acari: Mesostigmata) — *Zootaxa*, 2945: 1-176.
- El-Banhawy E.M. 1979 — Records on phytoseiid (Acari) mites of Peru — *Int. J. Acarol.*, 5(2): 111-116. doi:10.1080/01647957908683133
- Gerson U., Smiley R.L., Ochoa R. 2003 — Mites for pest control — Oxford: Blackwell Science. pp. 539. doi:10.1002/9780470750995
- Gondim Jr. M.G.C., Moraes G.J. de 2001 — Phytoseiid mites (Acari: Phytoseiidae) associated with palm trees (Arecaceae) in Brazil — *Syst. Appl. Acarol.*, 6: 65-94. doi:10.11158/saa.6.1.11
- Lofego A.C., Feres R.J.F. 2006 — A new species of *Typhlodromus* Scheuten (Acari: Phytoseiidae) — *Zootaxa*, 1221: 25-28.
- Lofego A.C., Demite P.R., Feres R.J.F. 2011a — Two new species of phytoseiid mites (Acari: Phytoseiidae) from the State of São Paulo, Brazil — *J. Nat. Hist.*, 45(37-38): 2347-2354. doi:10.1080/00222933.2011.596950 doi:10.1080/00222933.2011.596950
- Lofego A.C., Demite P.R., Feres R.J.F. 2011b — Two new species of *Typhlodromips* (Acari: Phytoseiidae) from Brazil — *Int. J. Acarol.*, 37(2): 110-115. doi:10.1080/01647954.2010.502905
- McMurtry J.A., Moraes G.J. de, Famah Sourassou N. 2013 — Revision of the lifestyles of phytoseiid mites (Acari: Phytoseiidae) and implications for biological control strategies — *Syst. Appl. Acarol.*, 18(4): 297-320. doi:10.11158/saa.18.4.1 doi:10.11158/saa.18.4.1
- McMurtry J.A., Famah Sourassou N., Demite P.R. 2015 — The Phytoseiidae (Acari: Mesostigmata) as biological control agents — In: Carrillo D., Moraes G.J. de, Peña J.E. (Eds) *Prospects for biological control of plant feeding mites and other harmful organisms*. Springer. p. 133-149. doi:10.1007/978-3-319-15042-0_5

- Moraes G.J. de, Barbosa M.F. de C., Castro T.M.M.G. de 2013 — Phytoseiidae (Acari: Mesostigmata) from natural ecosystems in the State of São Paulo, Brazil — *Zootaxa*, 3700(3): 301-347. doi:10.11646/zootaxa.3700.3.1 doi:10.11646/zootaxa.3700.3.1
- Moraes G.J. de, McMurtry J.A., Denmark H.A., Campos C.B. 2004 — A revised catalog of the mite family Phytoseiidae — *Zootaxa*, 434: 1-494.
- Moraes G.J. de, McMurtry J.A., Mineiro J.L. de C. 2003 — A new genus and species of Phytoseiid mite (Acari: Phytoseiidae) from Brazil — *Int. J. Acarol.*, 29(1): 47-54. doi:10.1080/01647950308684320
- Myers N., Mittermeier R.A., Mittermeier C.G., Fonseca G.A.B. da, Kent J. 2000 — Biodiversity hotspots for conservation priorities — *Nature*, 403: 853-858. doi:10.1038/35002501
- Rowell H.J., Chant D.A., Hansell R.I.C. 1978 — The determination of setal homologies and setal patterns on the dorsal shield in the family Phytoseiidae (Acarina: Mesostigmata) — *Can. Entomol.*, 110(8): 859-876. doi:10.4039/ent110859-8 doi:10.4039/Ent110859-8
- Tixier M.S., Kreiter S., 2009 — Rates Assessment of arthropods diversity in biodiversity hotspots: the case of the Phytoseiid mite (Acari) family. *Biodivers. Conserv.*, 18(3): 507-527. doi: 10.1007/s10531-012-0235-0 doi:10.1007/s10531-012-0235-0
- Tixier M.S., Kreiter S., Douin M., Moraes G.J. de 2012 — Rates of description of Phytoseiidae mite species (Acari: Mesostigmata): space, time and body size variations — *Biodivers. Conserv.*, 21(4): 993-1013. doi:10.1007/s10531-012-0235-0 doi:10.1007/s10531-012-0235-0
- Zacarias M.S., Moraes G.J. de 2001 — Two new species of phytoseiid mites (Acari: Phytoseiidae) from the State of São Paulo, Brazil — *Syst. Appl. Acarol.*, 6: 95-100. doi:10.11158/saa.6.1.12
- Zacarias M.S., Moraes G.J. de, McMurtry J.A. 2002 — A new species of *Galendromimus* (Acari: Phytoseiidae) from Brazil — *Zootaxa*, 102: 1-6.

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