

# A new species of *Seira* (Collembola: Entomobryidae) from northeastern Brazil

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**ABSTRACT.** A new species of *Seira* Lubbock, *S. mendoncea* **sp. nov.**, from Cacimba de Dentro, state of Paraíba, Brazil is described and illustrated. The new species resembles *S. delamarei* Jacquemart in many morphological features, especially on the dorsal macrochaetae disposition. In Brazil there are now 21 described species of *Seira*, with 12 of them recorded in Paraíba.

**KEY WORDS.** Brazilian collembolan diversity; caatinga; chaetotaxy patterns; Seirinae.

**RESUMO.** Uma nova espécie do gênero *Seira* Lubbock, *S. mendoncea* **sp. nov.**, coletada no município de Cacimba de Dentro, Estado da Paraíba, Brasil, é descrita e ilustrada. A nova espécie possui muitas semelhanças morfológicas com *S. delamarei* Jacquemart, especialmente no que se refere à disposição das macroquetas dorsais. No Brasil há até o momento 21 espécies descritas de *Seira*, com 12 espécies registradas na Paraíba.

**PALAVRAS-CHAVE.** Caatinga; diversidade brasileira; padrões de quetotaxia; Seirinae.

Entomobryidae is the largest family of Collembola, with more than 1625 described species (BELLINGER *et al.* 1996-2008). *Seira* Lubbock, 1869 is one of the most diverse genera of the family, comprising 178 species (BELLINGER *et al.* 1996-2008, MARI MUTT & BELLINGER 1990, 1996, MARI MUTT *et al.* 1998-2008, BELLINI & ZEPPELINI 2008).

The habitus of *Seira* specimens are similar to other entomobryids (CHRISTIANSEN & BELLINGER 1998). The genus can be distinguished by the presence of a falcate mucro, eight or seven lenses on each eye spot and yellowish or brownish rounded scales covering the dorsum of the head, body and at least the first segments of antennae, legs and furca (CHRISTIANSEN & BELLINGER 2000, BARRA 2004).

The majority of *Seira* species has been recorded from the tropical areas, and the species are usually found in warm locations (MARI MUTT *et al.* 1998-2008, CHRISTIANSEN & BELLINGER 2000, ZEPPELINI & BELLINI 2006, BELLINI & ZEPPELINI 2008). There are 48 species of *Seira* described for the Americas, 20 of which being recorded in Brazil (MARI MUTT 1986, CULIK & ZEPPELINI 2003, BELLINI & ZEPPELINI 2005, 2008, ZEPPELINI & BELLINI 2006). In Brazil, *Seira* is the most diverse known genus of Collembola, along with *Sphaeridia* (CULIK & ZEPPELINI 2003, BELLINI & ZEPPELINI 2008).

Herein a new species of *Seira* is described, collected in Cacimba de Dentro, state of Paraíba, northeastern Brazil. The chaetotaxy system used follows CHRISTIANSEN & BELLINGER (2000), modified from JACQUEMART (1974).

## MATERIAL AND METHODS

The specimens were collected at the Fazenda Cachoeira da Capivara, in Cacimba de Dentro, state of Paraíba, Brazil, in January of 2008, during the dry season, directly from the soil and foliage using entomological aspirators.

The specimens were mounted on glass slides with Hoyer's solution following CHRISTIANSEN & BELLINGER (1998).

## RESULTS AND DISCUSSION

### *Seira mendoncea* **sp. nov.**

Figs 1-II

**Etymology.** The species was named after Maria Cleide de Mendonça, one of the most important Collembola researchers in Brazil.

Total length of the holotype 1,48 mm, other measures are listed in table I. Habitus typically entomobryid (Figs 1 and 2). Color of fixed specimens pale yellow with dark blue pigment covering the antennae, fore-head, lateral borders of meso and metathorax, abd I, III, IV and V (Fig. 1); mounted specimens – pale grey with dark blue pigment covering antennae, fore-head, lateral borders of meso and metathorax, abd I, III, IV and V (Fig. 2). Brownish rounded scales covering Ant. I, II and III, head, meso and metathorax, abdomen, coxae, trochanters, femurs and tibiotarsus, manubrium and dens. Ant. IV not



Figure 1. *Seira mendoncea* sp. nov. Habitus of a preserved specimen.

annulated, with an apical bulb and no pin setae (Fig. 4). Eye patches oval, with the largest lens being B and the smallest lens being H, with four interocular feathered setae (Fig. 5). Pre-labral and labral setae feathered. Labial triangle seta *r* reduced. M1, M2 and E feathered (Fig. 3). Trochanteral organ in inverted V-shape with 24 spine like setae (Fig. 5). Pro, meso and meta unguis with four inner teeth, one pair at base and two unpaired teeth at apex (Figs 7-9). Unguiculi acuminate, with slightly smooth edges (Figs 7-9). Tenent hair capitate with smooth edges. Venter of manubrium with five subapical setae. No spine-like setae on manubrium. Mucro typically falcated (Fig. 10). Dorsal macrochaetae distribution of head and body as in figure 11. Other characteristics are listed in table II.

**Taxonomic Summary.** Holotype. BRAZIL, Paraíba: Cacimba de Dentro (Fazenda Cachoeira da Capivara), male, 27-I-2008, B. Bellini leg. Paratypes: 3 males, 9 females, with the same data as the holotype. The type material is deposited at the Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brasil (CM/MNRJ).

Table I. Lengths of segments of the body of *S. mendoncea* sp. nov. Measurements were taken from holotype. Conversion rate to  $\mu\text{m} = \times 10$ .

Segments	<i>S. mendoncea</i>
Antenna Segment IV	27
Ant. III	19
Ant. II	17
Ant. I	9
Head length	35
Head (cephalic diagonal)	38
Mesothorax	24
Metathorax	13
Abdominal Segment I	8
Abd. II	12
Abd. III	17
Abd. IV	51
Abd. V	9
Abd. VI	6
Manubrium	32
Dens	41
Mucro	1

**Remarks.** The head chaetotaxy of *S. mendoncea* sp. nov. resembles that of *S. delamarei* Jacquemart, 1980, a species only found in Ecuador (CHRISTIANSEN & BELLINGER 2000). Cephalic regions 2, 4A, 4C and 6 of both species have the same number of macrochaetae in the same disposition. Regions 1 and 5 have also some similarities. The number and disposition of macrochaetae at the cephalic region 4 of *S. mendoncea* sp. nov. is similar to *S. dubia* Christiansen & Bellinger, 1980 and *S. mantis* Zeppelini & Bellini, 2006, with two macrochaetae at region 4A, four at 4B and three at 4C. The chaetotaxy pattern of the thorax of *S. mendoncea* sp. nov. resembles that of *S. delamarei*,

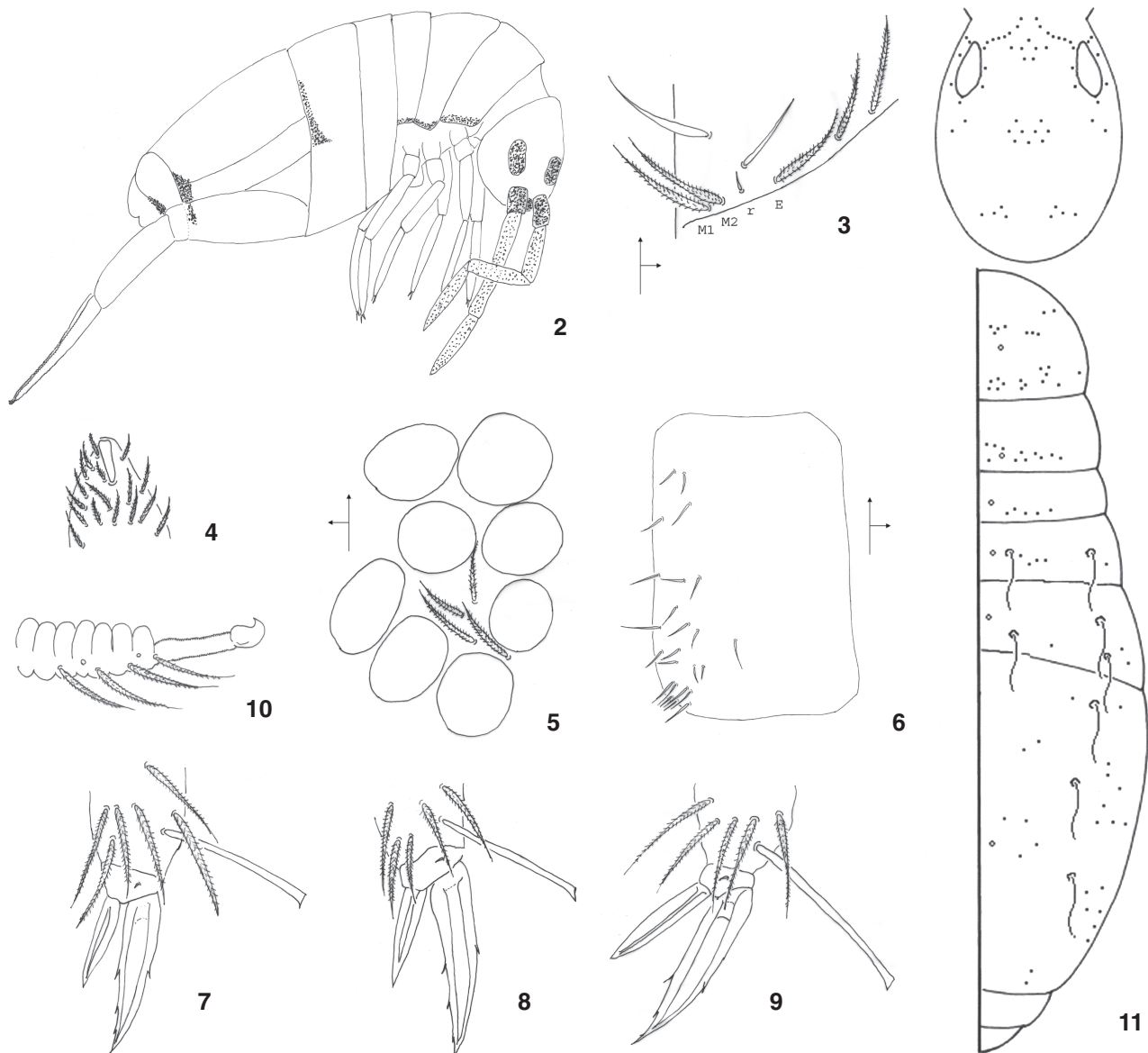
Table II. Comparison of characters among species of *Seira*.

Species	Lobes on antennal apical bulb	Clear annulations on 4th antennal segment	Ratio antenna/cephalic diagonal	Unguiculus shape
<i>S. mendoncea</i> *	1	–	1.89	Acuminate
<i>S. delamarei</i>	2	–	2.3-2.7	Acuminate
<i>S. dubia</i>	2	+	3.0-4.5	Acuminate
<i>S. mantis</i>	2	+	3.33	Acuminate

Species	Number of inner unguis teeth	Distinctly larger inner unguis tooth	Spine-like setae at base of dens	Number of ventral manubrial subapical setae
<i>S. mendoncea</i> *	4	M+, A-	–	5
<i>S. delamarei</i>	4	–	–	4
<i>S. dubia</i>	4	M+, A-	–	4
<i>S. mantis</i>	4	M+, A-	–	6

(A-) Minor apical, (M+) larger medial, (+) present, (–) absent, (\*) measurements were taken from holotype.



Figures 2-11. *Seira mendoncea* sp. nov.: (2) habitus; (3) labial quaetotaxy; (4) apical bulb of 4<sup>th</sup> antennal segment; (5) right eye patch; (6) metatrochanteral organ; (7) first foot complex; (8) second foot complex; (9) third foot complex; (10) distal dens and mucro; (11) dorsal macrochaetae distribution.

especially at regions 2 and 3A at the mesothorax and region A and B of the metathorax. There are five macrochaetae on the first abdominal segment of *S. mendoncea* sp. nov. in contrast to three or four found in *S. delamarei*. Abdominal segments II and III have also similarities between the two species. The Abd. IV on the species differs considerably, and this segment in *S. mendoncea* sp. nov. appears more similar to that of *S. mantis*. The shape of the feet complexes and antennae is similar in *S. mendoncea* sp. nov. and *S. delamarei* (Tab. II). Other characteristics are compared in table II.

*Seira mendoncea* sp. nov. was collected at Cacimba de Dentro, state of Paraíba, Brazil. The climate of the type locality is 'As' following Koeppen's system (KOTTEK *et al.* 2006) and it is located at the biogeographic zone 27 (GOOD 1974). This region is situated between Caatinga and Brejo de Altitude biomes. In the same locality occur other three species of *Seira*: *S. raptora* Zeppelini & Bellini, 2006, *S. nigrans* (Arlé, 1959), and *S. mirianae* Arlé & Guimarães, 1981.

A total of 12 species of *Seira* have been recorded in Paraíba so far, including *S. mendoncea* sp. nov. (BELLINI & ZEPELINI 2005,

2008, ZEPPELINI & BELLINI 2006). In Brazil there are now 21 described species.

### ACKNOWLEDGEMENTS

Support for this study was provided by a grant to the senior author by CNPq/MCT/Brazil.

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Submitted: 20.VI.2008; Accepted: 01.XII.2008.

Editorial responsibility: Claudio J.B. de Carvalho