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New species of *Lepidocyrtus* Bourlet and *Entomobrya* Rondani (Collembola: Entomobryoidea: Entomobryidae) from Brazil

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Abstract

The taxonomic comprehension of Brazilian entomobryids had several contributions during the last decade, but the absence of detailed chaetotaxic schemes to most of endemic species difficult identifications and probably hides undescribed species in surveys across the country. Herein we describe two new species of the family and provide detailed dorsal chaetotaxy of them, in hope to guide future identifications and descriptions within the genera in Brazil and Neotropical Region. *Lepidocyrtus sotoi* **sp. nov.** is possibly more related to *L. biphasis* due to the lack of antennal and leg scales, but presents a unique dorsal head chaetotaxy among the Neotropical species of the genus. *Entomobrya bahiana* **sp. nov.** presents an uncommon color pattern and dorsal chaetotaxy in Th. II–III, Abd. II and IV when compared to other *Entomobrya* spp. from Neotropical Region.

Key words: Brazilian fauna, detailed chaetotaxy, Entomobryinae, Entomobryini, Lepidocyrtini, Neotropical Region

Introduction

The knowledge on Brazilian Entomobryidae grew rapidly during the recent years. While no species were described between 1996 and 2005, during the last decade (2006–2015 up to May) two endemic genera, *Rhynchocyrtus* Mendonça & Fernandes, 2007 and *Tyrannoseira* Bellini & Zeppelini, 2011, and 23 species were described to the country, and several additional new records to different regions were provided (Mendonça & Fernandes 2007, Bellini & Zeppelini 2009, 2011, Abrantes *et al.* 2010, 2012, Bellini & Godeiro 2012, Zeppelini & Lima 2012, Bellini *et al.* 2013, Godeiro & Bellini 2013, 2014, Cipola *et al.* 2014a, 2014b, Bellini 2014). At the same time data was improved, important lacks on the knowledge of Brazilian entomobryids became clearer, in special the absence of detailed chaetotaxy schemes to species outside *Seira* Lubbock. Without this information it is not clear if some of the Brazilian taxa are true established (and thus endemic) species and the identifications presented in checklists and ecological papers are not hiding undescribed species.

Herein we describe two new species of Brazilian Entomobryidae, *Lepidocyrtus sotoi* **sp. nov.** and *Entomobrya bahiana* **sp. nov.**, including detailed dorsal chaetotaxy. We expect these schemes help to guide identifications and descriptions to come of new taxa in the country and Neotropical Region.

Material and methods

Specimens of *Lepidocyrtus sotoi* **sp. nov.** were collected in northeastern region of Brazil, from an urban fragment of Atlantic Forest with pitfall traps, and *Entomobrya bahiana* **sp. nov.** specimens from a humid area of Caatinga

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Forest with entomological aspirators. More details of the areas are presented in "Habitat" topics, after the description of each species. Biological material was first preserved in 70% ethanol and latter mounted in glass slides to analysis under microscopy. The specimens were mounted in Hoyer's solution following the procedures presented in Bellinger *et al.* (1996–2015) and were drawn using a drawing tube attached to a microscope. Chaetotaxy schemes follow Szeptycki (1979), Christiansen & Bellinger (1980), Mari Mutt (1986), Jordana & Baquero (2005), Soto-Adames (2008, 2010), Zhang *et al*. (2009), Jordana (2012) and Zhang & Deharveng (2015). Symbols used in dorsal chaetotaxy schemes are: large empty circles refer to macrochaetae, large black circles to mesochaetae, black dots or normal chaetae-like drawings to microchaetae, black chaetae-like drawings to sensilla, large black circles with a cross line to pseudopores, long multiciliated chaetae to bothriotricha, triangle near bothriotrichum with fan-shaped scales/chaetae, and a small line over any symbol to elements that can be present or absent in different specimens of type series. Abbreviations presented in the text are: Abd.—abdominal segment, Ant.—antennal segment, Th.—thoracic segment, DBEZ/UFRN— Department of Botany and Zoology of Federal University of Rio Grande do Norte, Brazil (Departamento de Botânica e Zoologia da Universidade Federal do Rio Grande do Norte, Brasil).

Systematics

Family Entomobryidae Schött, 1891

Genus *Lepidocyrtus* Bourlet, 1839

Diagnosis of *Lepidocyrtus s. l.* Body covered with rounded or truncate finely striate scales, antennae with four segments, 8+8 eyes, oral cone normal, not elongate, few dorsal body macrochaetae beyond mesothoracic collar, mesonotum well-developed, sometimes projecting head downwards, Abd. IV enlarged, more than 2.5 times the length of Abd. III, furca scaled ventrally, without spines, mucro with two teeth and a basal spine (adapted from Mari Mutt 1976, 1986, Christiansen & Bellinger 1980, Yoshii & Suhardjno 1989, Mendonça & Fernandes 2007, Soto-Adames *et al.* 2008).

Lepidocyrtus sotoi Bellini & Godeiro sp. nov.

Figs 1–21, Table 1

Type material. Holotype female on slide, Brazil, Paraíba State, João Pessoa municipality, Penha beach (7°09'23"S; 34°47'45"W), Atlantic Forest, 28.iii.2008. Bellini, B.C. & A.P. Pais coll. Paratypes 4 males and 4 females on slides, plus one adult on 70% ethanol, same data as Holotype. Type material deposited at Collembola Collection of DBEZ/UFRN.

Description. Total length (head + trunk) of holotype 1.58 mm. Habitus typical entomobryoid (Fig. 1). Specimens in alcohol pale yellow with dark blue pigment covering eyepatches and antennae, light blue pigment covering legs, manubrium and distal lateral borders of Abd. IV–VI (Fig. 1). Brownish finely striate scales, apically rounded or slightly truncate, covering: both faces of head, dorsal thorax and abdomen, ventral face of manubrium and dentes. Antennae, legs and ventral tube without scales.

Head. Antennae shorter than body (Fig. 1). Ant. IV not annulated, without apical bulb, with ciliate normal chaetae, two types of smooth chaetae (small and normal) and some blunt s-chaetae (Fig. 2). Ant. III sense organ as in Fig. 3, with 2 rods and 3 surrounding guard sensilla; different types of apical chaetae as in Fig. 3. Eyes 8+8, lenses A to F well developed, lenses G and H smaller; eyepatch valley with 5 chaetae (**s**, **q**, **t**, **r** as ciliate mesochaetae; **p** as macrochaeta), interocular scales absent (Fig. 4). Dorsal chaetotaxy as in Fig. 14, with 11 pre-antennal macrochaetae (An series); 6 anterior chaetae (**A0**, **A2**, **A3** and **A5** as macrochaetae; **A1** and **A4** as microchaetae) plus additional surrounding microchaetae; 3 medio-ocellar chaetae (**M2** and **M3** as microchaetae; **M4** as macrochaeta) plus 4 microchaetae near **M4**; 4 sutural microchaetae (**S2**, **S3**, **S4** and **S6**; **S5** absent); 3 post-sutural microchaetae (**Ps2**, **Ps3** and **Ps5**); 6 post-occipital anterior chaetae (**Pa1**–**5** as microchaetae; **Pa6** as post-ocular bothriotrichum); 2 post-occipital medial microchaetae (**Pm1** and **Pm3**); and 3 post-occipital posterior

microchaetae (**Pp1**–**3**). Prelabral chaetae weakly ciliate (4), labral chaetae smooth (5-5-4) (Fig. 5). Labral papillae as in Fig. 6, without spine-like lateral structures. Maxillary palp with apical and basal appendages smooth, subequal in size; sublobal plate with 3 smooth appendages (Fig. 7). Labial palp papilla E with 4 appendages, lateral process apex rounded (Fig. 8). Five proximal chaetae of labial palp smooth. Labial triangle chaetae: **M1**, **M2**, **E**, **L1** and **L2** ciliate, **M1** smaller than **M2**; **r** reduced; **A1**–**5** smooth (Fig. 9). All post labial chaetae ciliate.

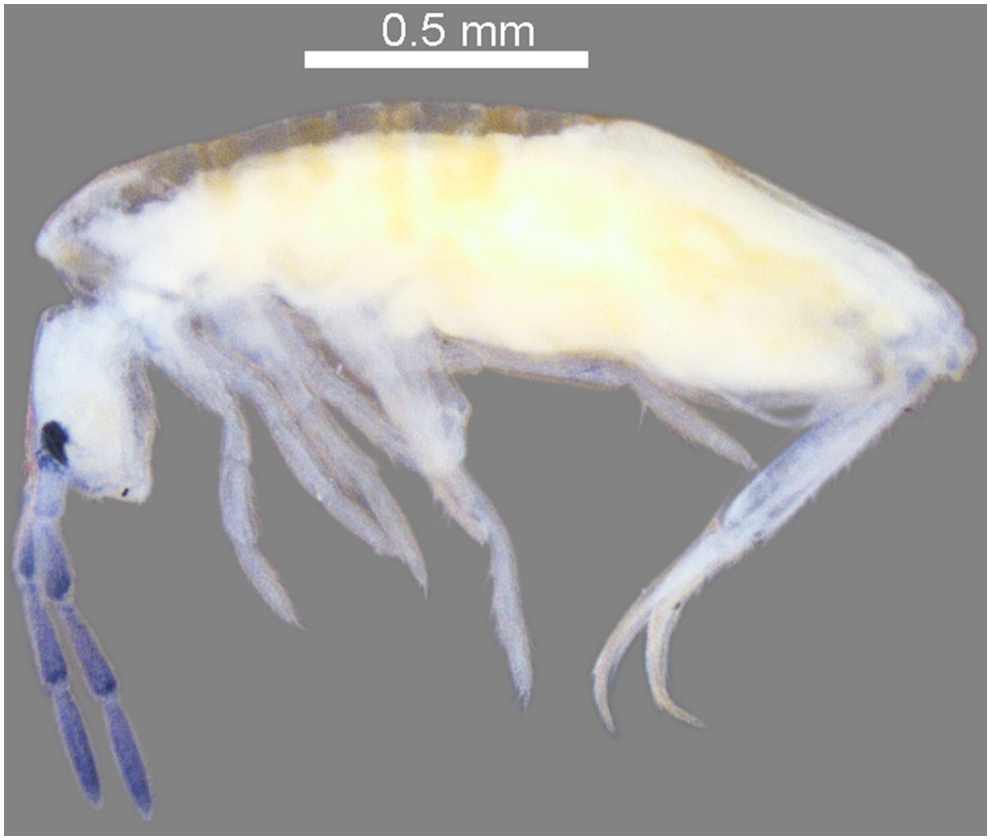
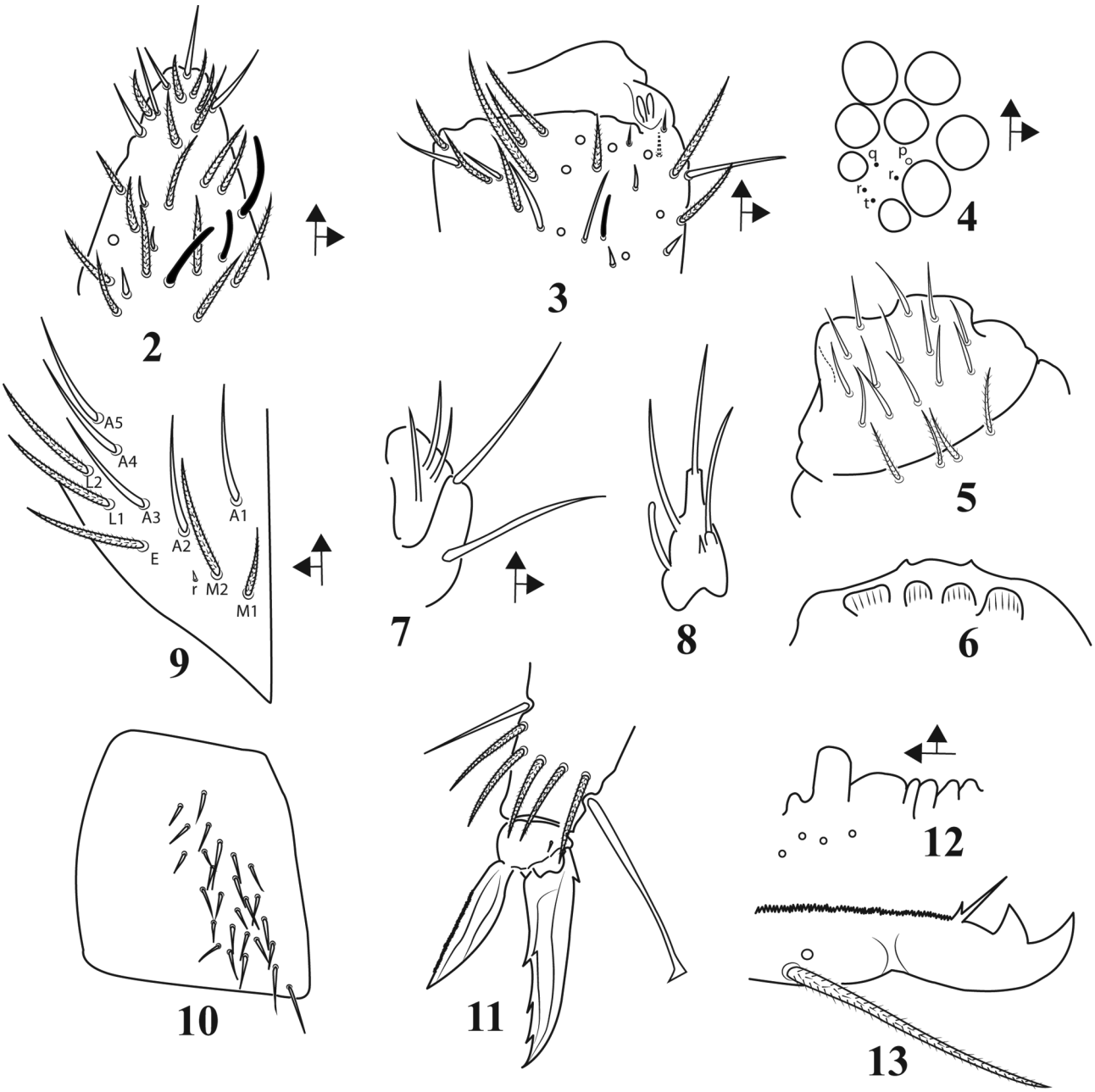


FIGURE 1. *Lepidocyrtus sotoi* **sp. nov.**: habitus of a fixed specimen.

Thorax. Mesothorax slightly projected forward, hood-shaped. Thorax without macrochaetae (excluding anterior chaetal collar). Chaetotaxy of Th. II as in Fig. 15, with 2 anterior microchaetae (**a2p?** and **a5**) plus 2 other microchaetae of uncertain homology (**?**); 3 medial microchaetae (**m4**, **m5** and **m5a**) plus 2 other microchaetae of uncertain homology (**?**) near the pseudopore; and 7 posterior microchaetae (**p1**–**6** + **p6e**). Sensillum **s** and accessory microsensillum **ms** present. Chaetotaxy of Th. III as in Fig. 16, with 6 anterior microchaetae (**a1**, **a2?**, **a3**, **a4**, **a6** and **a7**); 7 medial microchaetae (**m2**, **m4**–**m6**, **m6p**, **m6e** and **m7**); and 6 posterior microchaetae (**p1**–**6**) plus 2 other microchaetae of uncertain homology (**?**). Sensillum **s** present.

Abdomen. Abd. IV more than three times the length (in the midline) of Abd. III (Fig. 1). Chaetotaxy of Abd. I as in Fig. 17, with 5 or 6 anterior microchaetae (**a1**, **a2**, **a3**, **a5** and **a6** always present; **a1a** present or absent); 5 medial microchaetae (**m2**–**6**); and 2 posterior microchaetae (**p5** and **p6**). Accessory microsensillum **ms** present near **a6**. Chaetotaxy of Abd. II as in Fig. 18, with 4 anterior chaetae (**a2**, **a3** and **a6** as microchaetae; **a5** as bothriotrichum); 7 medial chaetae (**m3e**, **m4**, **m6** and **m7** as microchaetae; **m3** and **m5** as macrochaetae; **m2** as bothriotrichum); and 4 posterior microchaetae (**p4**–7). Accessory sensillum **as** near **a2**; **el** present as mesochaeta. Chaetotaxy of Abd. III as in Fig. 19, with 6 anterior chaetae (**a2** as fan-shaped scale; **a3**, **a6**, **am6** and **a7** as microchaetae; **a5** as bothriotrichum); 6 medial chaetae (**m2** and **m5** as bothriotricha; **m3**, **m4**, **m7** and **m7a** as microchaetae) plus 1 microchaeta of uncertain homology (**?**); and 5 posterior chaetae (**p4** and **p5** as microchaetae; **pm6** and **p6** as macrochaetae; **p7** as mesochaeta). Microchaetae **em** and **emp** present, near **a5**; accessory sensillum **as** near **m3**; microsensillum **d2** near **p5**. Chaetotaxy of Abd. IV as in Fig. 20, with 4 microchaetae in A series (**A3**–**6**); 6 chaetae in B series (**B1**–**2** as microchaetae; **B3**–**6** as macrochaetae); **Be3** microchaeta present; 5 microchaetae in C series (**C1**, **C1p**, **C2**, **C3** and **C4**), 7 chaetae in T series (**T1**, **T3**, **T5** and **T7** as microchaetae; **T6** as mesochaeta; **T2** and **T4** as bothriotricha); 5 chaetae in D series (**D1** as a fan-shaped scale; **D1p** and **D3** as

microchaetae; **D2** as macrochaeta; **D3p** as mesochaeta); 6 chaetae in E series (**E1**, **E2**, **E3**, **E4p** and **E4p2** as macrochaetae; **E4** as microchaeta); 3 chaetae in F series (**F1** as mesochaeta; **F2** as microchaeta; **F3** as macrochaeta); and 4 chaetae in Fe series (**Fe1** and **Fe2** as microchaetae; **Fe3** and **Fe5** as mesochaetae). Sensillum near **T7**; **ps** sensillum near **D3p**; **r** sensillum near **Fe2**; 5 unnamed microchaetae plus 2 sensilla between A and C series; 7 posterior chaetae. Chaetotaxy of Abd. V as in Fig. 21, with 5 anterior chaetae (**a1**, **a3**, **a5i** and **a6** as macrochaetae; **a5** as microchaeta); 9 medial chaetae (**m2**, **m3**, **m4**, **m4a**, **m5** and **m6** as macrochaetae; **m3a**, **m5a?** and **m5e** as microchaetae); and 7 posterior chaetae (**p3a**, **p3**, **p4**, **p5i**, **p5** and **p6** as macrochaetae; **pp6** as mesochaeta). Five unnamed microchaetae plus 3 sensilla (**s**).



FIGURES 2–13. *Lepidocyrtus sotoi* **sp. nov.**: 2, apex of Ant. IV; 3, Sense organ of Ant. III and associated chaetae and sensilla; 4, eyepatch (right side) and interocular chaetae; 5, pre-labral and labral chaetae; 6, labral papillae; 7, maxillary palp and sublobal plate (right side); 8, labial papilla E (left side); 9, labial triangle chaetotaxy (right side); 10, trochanteral organ; 11, hind foot complex; 12, proximal dental appendix; 13, distal dens and mucro.

Legs, Ventral Tube and Furcula. Trochanteral organ well developed, with approximately 27 small spine-like chaetae (Fig. 10). Hind empodial complex as in Fig. 11, tenent-hair smooth and spatulate, similar in length to unguis; unguis with 4 inner teeth, basal pair similar in size to the unpaired teeth; external teeth inserted apically in

the outer edge of unguis; unguiculus lanceolate, with outer margin finely serrated. All unguiculi (legs 1–3) with similar morphology. Smooth posterior-distal chaeta on hind tibiotarsus present. Ventral tube without scales; chaetotaxy unclear. Manubrium with 3+3 ventral subapical chaetae; dens crenulate, without spines; dental appendix present and apically rounded (Fig. 12); mucro bidentate, with dental spine carrying a single spinelete (Fig. 13).

Etymology. The new species was named after our friend Felipe N. Soto-Adames due to his significant contributions to the knowledge of the Entomobryoidea.

Habitat. *Lepidocyrtus sotoi* **sp. nov.** specimens were collected from Restinga woods of Praia da Penha, João Pessoa municipality, within the Atlantic Forest of northeastern Brazil, during the start of raining season. The specimens were abundantly collected from leaf litter and sandy soil of a fragment of forest approximately 100 meters far from urban surroundings, near to garbage dumps. This fact suggests the species can be resistant to some anthropic soil contamination.

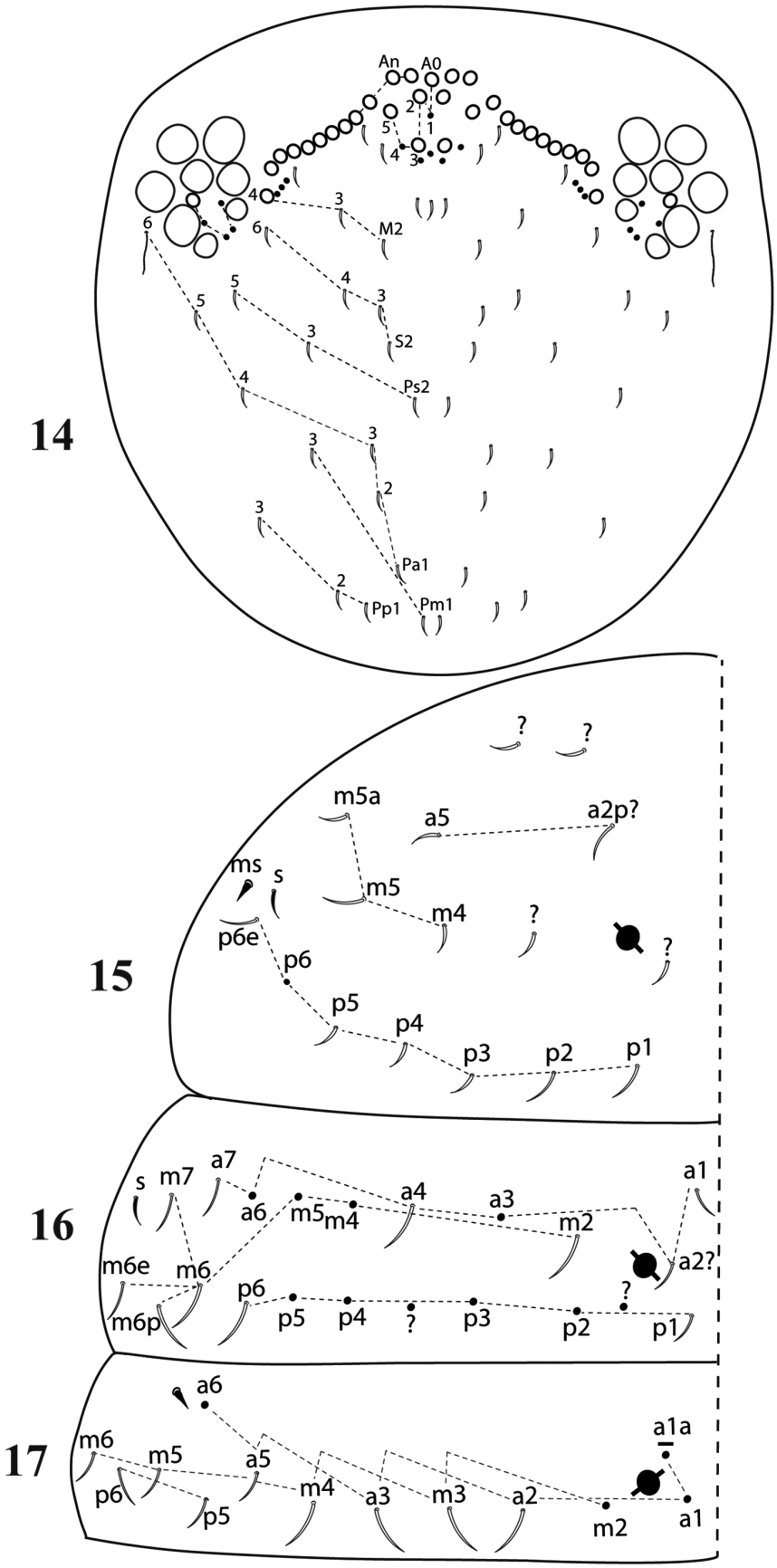
Remarks. *Lepidocyrtus sotoi* **sp. nov.** differs from other Neotropical species of *Lepidocyrtus* by the combination of: absence of head macrochaetae outside An and A series, only two macrochaetae (**pm6** and **p6**) near **m5** bothriotrichum on Abd. III, presence of four macrochaetae (**B3**–**6**) on inner Abd. IV, and six macrochaetae (**E1**–**3**, **E4p**, **E4p2** and **F3p**) on outer Abd. IV, 5 interocular chaetae and absence of interocular scales, absence of scales on antennae and legs, and trochanteral organ with less than 30 spine-like chaetae (Mari Mutt 1983, 1986, 1988). Among the Neotropical species, *L. nigrosetosus* Folsom, 1927, *L. finus* Christiansen & Bellinger, 1980 and *L. biphasis* Mari Mutt, 1986 show more morphological similarities with the new described species, especially in color pattern and dorsal macrochaetotaxy. With *L. nigrosetosus* the new species shares: similar labial and most trunk macrochaetotaxy (excluding **am6** on Abd. III and considering **C1** in Abd. IV is actually **B3** in *L. nigrosetosus*), and differs in: absence of macrochaetae in outer Abd. IV (in *L. nigrosetosus*), presence of interocular and appendicular scales (absent in the new species) and approximately 40 spines on trochanteral organ in *L. nigrosetosus*. *Lepidocyrtus sotoi* **sp. nov.** is similar to *L. finus* in the absence of scales on antennae and legs, presence of dental appendix and labial chaetotaxy, but differs in color pattern (*L. finus* presents a transversal band of pigment on middle Abd. IV), chaetotaxy of Abd. IV and presence of apical bulb on Ant. IV in *L. finus* (absent in the new species). Finally with *L. biphasis* the new species share: absence of antennae and legs scales, same interocular chaetotaxy, similar empodial morphology and macrochaetotaxy of Th. II to Abd. II, while they differ almost completely in the macrochaetotaxy of Abd. IV and trochanteral organ morphology (Mari Mutt 1986). In a phylogenetic perspective, *Lepidocyrtus sotoi* **sp. nov.** is possibly more related to *L. biphasis* and *L. finus* since the phylogeny of the Neotropical Lepidocyrtini grouped taxa without scales on antennae and legs (Mari Mutt 1986, Soto-Adames 2002a). A comparison among the cited species of Neotropical *Lepidocyrtus* is presented in Table 1.

Lepidocyrtus sotoi **sp. nov.** represents the tenth species of Lepidocyrtini recorded to Brazil, along with: *Lepidocyrtus maldonadoi* Mari Mutt, 1986, *L. nigrosetosus*, *L. pallidus* Reuter, 1895, *Pseudosinella alba* (Packard, 1873), *P. biunguiculata* Ellis, 1967, *P. brevicornis* Handschin, 1924, *P. dubia* Christiansen, 1960, *P. octopunctata* Börner, 1901 and *Rhynchocyrtus klausi* Mendonça & Fernandes, 2007 (Bellini & Zeppelini 2009, Abrantes *et al.* 2010, 2012, Bellini 2014).

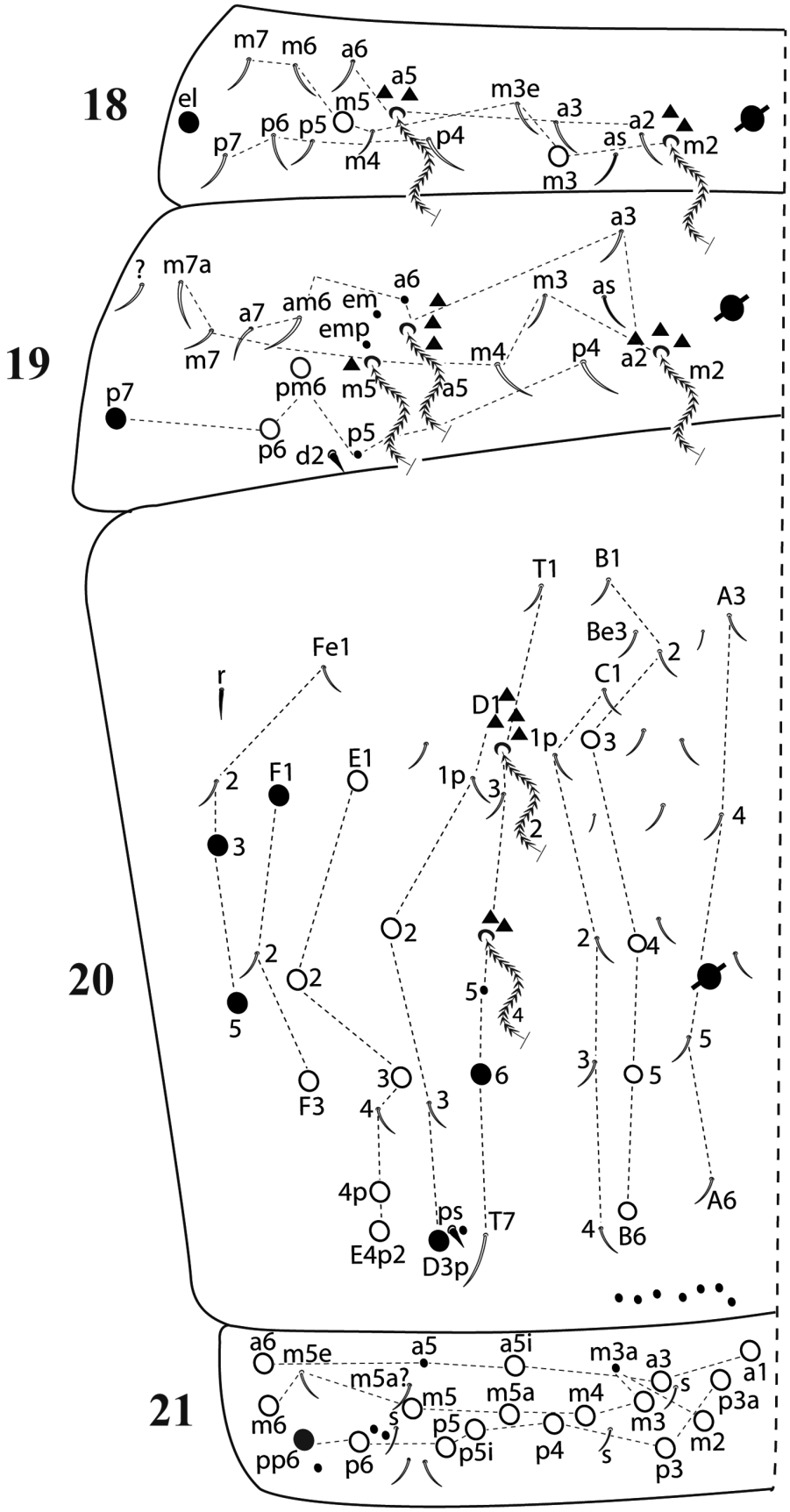
TABLE 1. Comparison of cited species of Neotropical *Lepidocyrtus*.

	Species			
Morphological features	*L. biphasis*	*L. finus*	*L. nigrosetosus*	*L. sotoi* **sp. nov.**
Antennal and legs scales	-	-	+	-
Apical bulb of Ant. IV	+	+	-	-
Interocular scales	-	?	+	-
Posterior labial chaetotaxy	$MrEL_1L_2$	$M_1M_2rEL_1L_2$	$M_1M_2rEL_1L_2$	$M_1M_2rEL_1L_2$
Abd. III dorsal macrochaetae	0i+3e	0i+4e	0i+3e	0i+2e
Abd. IV dorsal internal macrochaetae	2	2	4	4
Number of spines in trochanteral organ	12	?	41	27
Unguiculus shape	truncate	lanceolate	truncate/ lanceolate	lanceolate

Abbreviations used to represent characteristics: (-) absent; (+) present; (i) internal; (e) external; (?) unclear/undescribed.



FIGURES 14–17. *Lepidocyrtus sotoi* **sp. nov.**: 14, dorsal head chaetotaxy; 15, dorsal Th. II chaetotaxy; 16, dorsal Th. III chaetotaxy; 17, dorsal Abd. I chaetotaxy.



FIGURES 18–21. *Lepidocyrtus sotoi* **sp. nov.**: 18, dorsal Abd. II chaetotaxy; 19, dorsal Abd. III chaetotaxy; 20, dorsal Abd. IV chaetotaxy; 21, dorsal Abd. V chaetotaxy.

Genus *Entomobrya* Rondani, 1861

Diagnosis of *Entomobrya*. Body and appendages without scales, dorsal head and body macrochaetae present and abundant, head and trunk also densely covered with small ciliate chaetae, antennae with four segments, 8+8 eyes, mesonotum usually normal, rarely enlarged or projected forward, trochanteral organ present and well developed, Abd. IV enlarged, more than 2 times the length of Abd. III, dentes without spines, mucro with two teeth, basal spine present (adapted from Christiansen 1958, Stach 1963, Mari Mutt 1976, Christiansen & Bellinger 1980, Soto-Adames *et al.* 2008, Jordana 2012).

***Entomobrya bahiana* Bellini & Cipola sp. nov.**
Figs 22–39, Table 2

Type material. Holotype male on slide, Brazil, Bahia State, Chapada Diamantina National Park, Abaira municipality, Catolés de Cima village, Pico do Barbado (13°17'40"S; 41°54'30"W), Caatinga Domain, 28.iii.2008. Bellini, B.C. & A.S. Ferreira coll. Paratypes 1 male and 1 female on slides, plus one adult on 70% ethanol, same data as Holotype. Type material deposited at Collembola Collection of DBEZ/UFRN.

Description. Total length (head + trunk) of holotype 1.32 mm. Habitus typical entomobryoid (Fig. 22). Specimens in alcohol with dark blue pigment covering almost all body, with exception of head, most of Th. II, anterior Abd. IV, all tibiotarsi and distal furcula (Fig. 22). Body and appendages without scales.

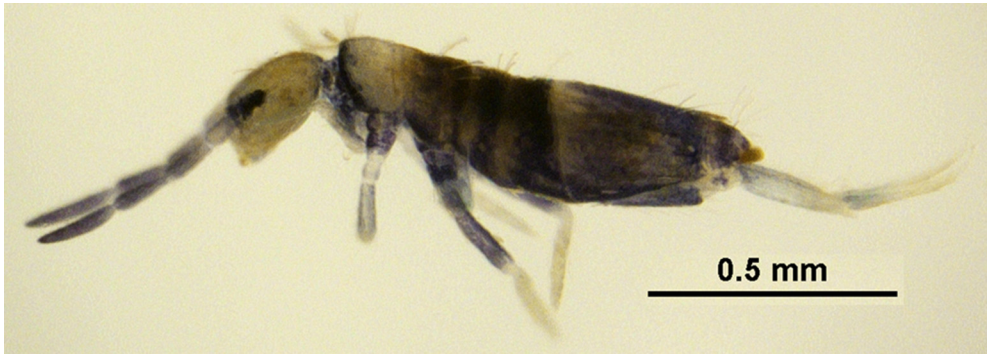
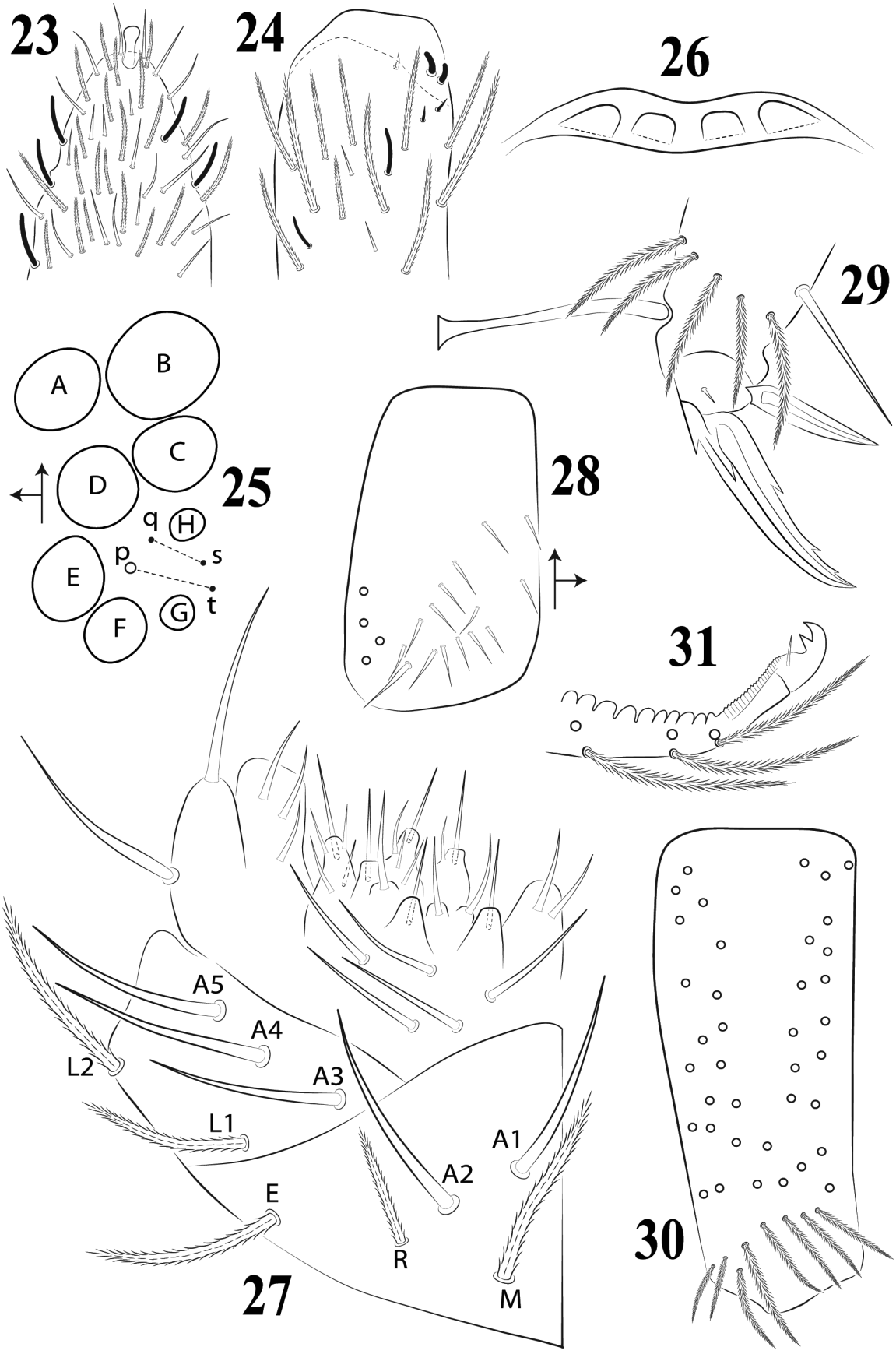


FIGURE 22. *Entomobrya bahiana* **sp. nov.**: habitus of a fixed specimen.

Head. Antennae shorter than body (Fig. 22). Ant. IV not annulated or subdivided, with a single apically rounded apical bulb, with ciliate normal chaetae, two types of smooth chaetae (small and normal) and some blunt s-chaetae (Fig. 23). Ant. III sense organ as in Fig. 24, with 2 rods and 3 surrounding guard sensilla; different types of apical chaetae in Ant. III as in Fig. 24. Eyes 8+8, lenses A to F well developed, lenses G and H smaller; eyepatch valley with 4 chaetae (**s, q, t** as ciliate mesochaetae; **p** as macrochaeta) (Fig. 25). Dorsal chaetotaxy as in Fig. 32, with 5 pre-antennal macrochaetae (An series); 4 anterior macrochaetae (**A0**, **A2**, **A3** and **A5**); 3 or 4 medio-ocellar macrochaetae (**M2-4** always present, **M1** present or absent); 6 sutural macrochaetae (**S0**, **S1**, **S4**, **S4i**, **S5** and **S5i**); 3 post-sutural macrochaetae (**Ps2**, **Ps3** and **Ps5**); 2 post-occipital internal macrochaetae (**Pi1** and **Pi2**); 5 post-occipital anterior chaetae (**Pa1**, **Pa3'**, **Pa3** and **Pa5** as macrochaetae; **Pa6** as post-ocular bothriotrichum); 4 post-occipital medial macrochaetae (**Pm1**, **Pm3**, **Pm5** and **Pm6**); 3 post-occipital posterior macrochaetae (**Pp1**–**3**); **Pp1e** and **Pe3** macrochaetae present, posterior to Pp series. Prelabral and labral chaetae smooth and simple (not bifurcate). Labral papillae as in Fig. 26, without spine-like lateral structures. Labial region as in Fig. 27. Maxillary palp with apical and basal appendages smooth, subequal in size; sublobal plate with 3 smooth appendages. Labial palp papilla E with 4 appendages, lateral process apex acuminate. Five proximal chaetae of labial palp smooth; Labial triangle chaetae: **M**, **R**, **E**, **L1** and **L2** ciliate; **R** not reduced, but smaller than **M** and **E**; **A1**–**5** smooth. All post labial chaetae ciliate.

Thorax. Mesothorax normal, not strongly projecting forward or in a hood shape. Chaetotaxy of Th. II as in Fig. 33, with 1 anterior macrochaeta (**a5**), excluding anterior chaetal collar; 5 medial macrochaetae (**m1**, **m2**, **m2i2**, **m4i**, **m4**); and 13 posterior macrochaetae (**p1**, **p1p**, **p1a**, **p2**, **p2a**, **p2e**, **p3**, **p4**, **p4i**, **p5**, **p5pi**, **p6**, **p6e**); one



FIGURES 23–31. *Entomobrya bahiana* **sp. nov.**: 23, apex of Ant. IV; 24, Sense organ of Ant. III and associated chaetae and sensilla; 25, eyepatch (left side) and interocular chaetae; 26, labral papillae; 27, labial region; 28, trochanteral organ; 29, hind foot complex; 30, manubrium ventral chaetotaxy; 31, distal dens and mucro.

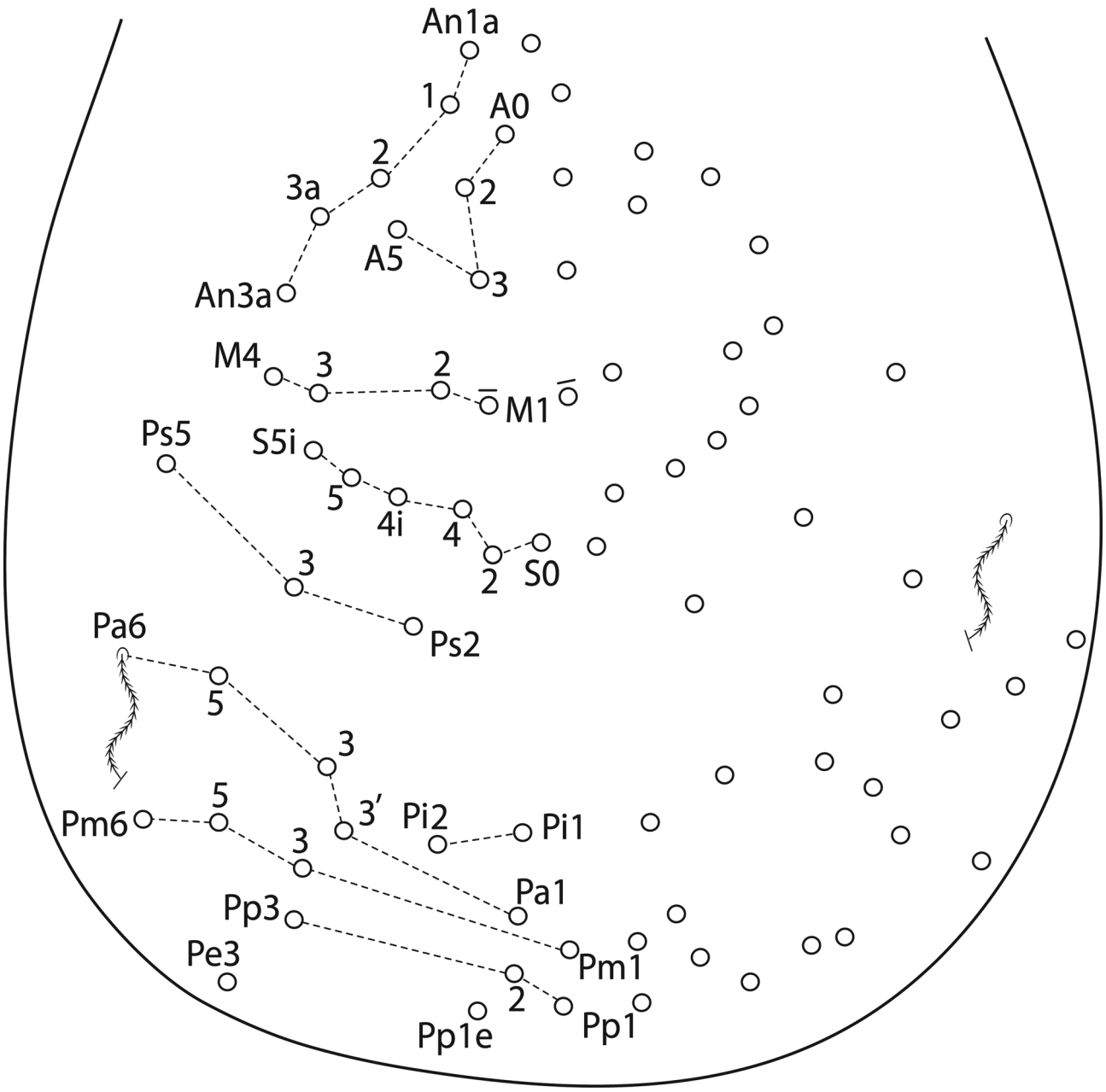


FIGURE 32. *Entomobrya bahiana* **sp. nov.**: dorsal head chaetotaxy.

accessory sensillum near **p6e**. Chaetotaxy of Th. III as in Fig. 34, with 9 anterior macrochaetae (**a1**–**6** and **a6i**); 5 medial macrochaetae (**m5**, **m5i**, **m6**, **m6e** and **m7**); and 14 posterior macrochaetae (**p1**–**6**, **p1i2**, **p1i**, **p1a**, **p2i**, **p2a**, **p4i**, **p4p** and **p5pi**); one accessory sensillum near **m6** and other near **m7**.

Abdomen. Abd. IV more than twice the length (in the midline) of Abd. III (Fig. 22). Chaetotaxy of Abd. I as in Fig. 35, with 1 anterior macrochaeta (**a2**); and 7 medial macrochaetae (**m2**–**6**, **m4ip** and **m6e**) plus two unnamed chaetae (**?**); one microsensillum and one sensillum near **m5**. Chaetotaxy of Abd. II as in Fig. 36, with 4 anterior chaetae (**a2**, **a6** and **a6e?** as macrochaetae; **a5** as bothriotrichum); 5 medial chaetae (**m2** as bothriotrichum; **m3**, **m3ea**, **m5** and **m6** as macrochaetae) plus 1 unnamed macrochaeta; and 2 posterior macrochaetae (**p5** and **p6**); **el** macrochaeta present. Chaetotaxy of Abd. III as in Fig. 37, with 4 anterior chaetae (**a1**, **a6** and **a7?** as macrochaetae; **a5** as bothriotrichum), plus **am6** macrochaeta; 3 medial chaetae (**m2** and **m5** as bothriotricha; **m3** as macrochaeta), plus **pm6** macrochaeta; and 2 posterior macrochaetae (**p6** and **p7**); **el** macrochaeta present; one accessory sensillum near **m2**. Chaetotaxy of Abd. IV as in Fig. 38, with 2 macrochaetae in Ai series (**Ai1** and **Ai2**); 5 macrochaetae in A series (**A3**–**6** and **A3p**); 3 macrochaetae in Ae series (**Ae5**, **Ae5p** and **Ae7**); 6 macrochaetae in B series (**B1**–**6**), plus

Be3 macrochaeta; 3 macrochaetae in C series (**C1**, **C2a** and **C3**); 6 chaetae in T series (**T1**, **T5**–**7** as macrochaetae; **T2** and **T4** as bothriotricha); 4 macrochaetae in D series (**D1**–**3** and **D2a?**); 3 macrochaetae in E series (**E1**–**3**); 4 macrochaetae in F series (**F1**–**3** and **F1a?**); and 4 macrochaetae of uncertain homology (**?**); five long sensilla present near A series. Chaetotaxy of Abd. V as in Fig. 39, with 2 anterior macrochaetae (**a1** and **a5**); 3 medial macrochaetae (**m2**, **m3** and **m5**); and 5 posterior macrochaetae (**p1**, **p3**, **p4**, **p5** and **pap6**).

Legs, Ventral Tube and Furcula. Trochanteral organ well developed, with approximately 15 small spine-like chaetae (Fig. 28). Hind empodial complex as in Fig. 29, tenent-hair smooth and spatulate, similar in length to unguis; unguis with 4 inner teeth, basal pair larger than the unpaired teeth; external teeth inserted apically in the outer edge of unguis; unguiculus acuminate, with smooth margins. Smooth posterior-distal chaeta on hind tibiotarsus present. Ventral tube with 9+9 anterior ciliate chaetae; lateral flaps with 8+8 smooth chaetae. Manubrium ventral chaetotaxy with slightly ciliate chaetae, 4+4 centrally displaced subapical chaetae (Fig. 30); dens crenulate, without spines; mucro bidentate, with dental spine (Fig. 31).

Etymology. The new species was named after its type locality. *Bahiana* in Portuguese refers to who is born in Bahia State.

Habitat. The new species was collected from Chapada Diamantina National Park, in southern region of Caatinga Phytogeographic Domain, at the peak of "Pico do Barbado" (at approximately 2033 meters of altitude), directly from exposed granitic rocks, during the raining season. Several collections were made in the surrounding areas and *Entomobrya bahiana* **sp. nov.** was not found in any other locality.

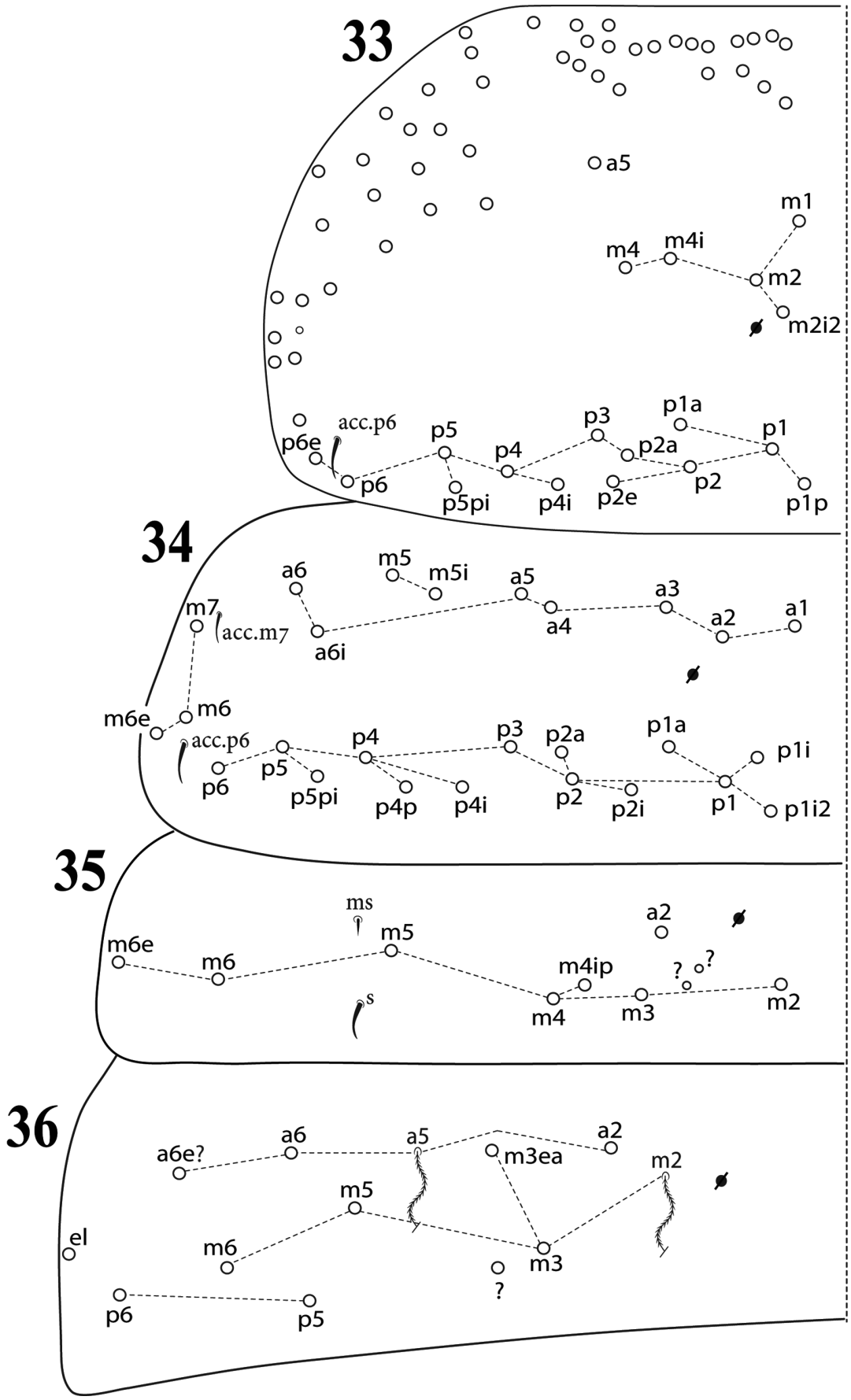
Remarks. In the abdominal chaetotaxy, we considered as macrochaetae some large ciliate chaetae without broadened curved tips (sensu Soto-Adames *et al.* 2008), but with similar sized alveoli when compared to typical macrochaetae.

Entomobrya bahiana **sp. nov.** is unique among the Neotropical species of the genus in the sum of the following characters: coloration (bluish without pigment over head, most of Th. II, anterior Abd. IV, tibiotarsi and distal furca), complexity of dorsal chaetotaxy, simple prelabral chaetae (not bifurcate), and lanceolate unguiculi (Christiansen 1958, 1963, Arlé 1939, 1959, Arlé & Guimarães 1978, Soto-Adames 2002b). Regarding color pattern, the new species is somehow similar to other uniformly pigmented Neotropical species, like: *E. ciliata* Börner, 1907, *E. infuscata* Handschin, 1927, *E. litigiosa* Denis, 1931, *E. longiseta* Soto-Adames, 2002b, *E. violacea* Thibaud & Najt, 1987 and *E. wheeleri* Folsom, 1921, but differs from all of them in the absence of pigments over most of Th. II and part of Abd. IV (Christiansen 1963, Soto-Adames 2002b). Concerning the dorsal chaetotaxy, *Entomobrya bahiana* **sp. nov.** presents few resemblances with *E. longiseta* and *E. linda* Soto-Adames, 2002b in the anterior half of head chaetotaxy (excepting the presence of **S0** only in the new species) and partially in Abd. III, while differs in presenting a clearly more complex chaetotaxy in Th. II–III, Abd. II and IV (Soto-Adames 2002b). A detailed comparison among the three species is presented in Table 2.

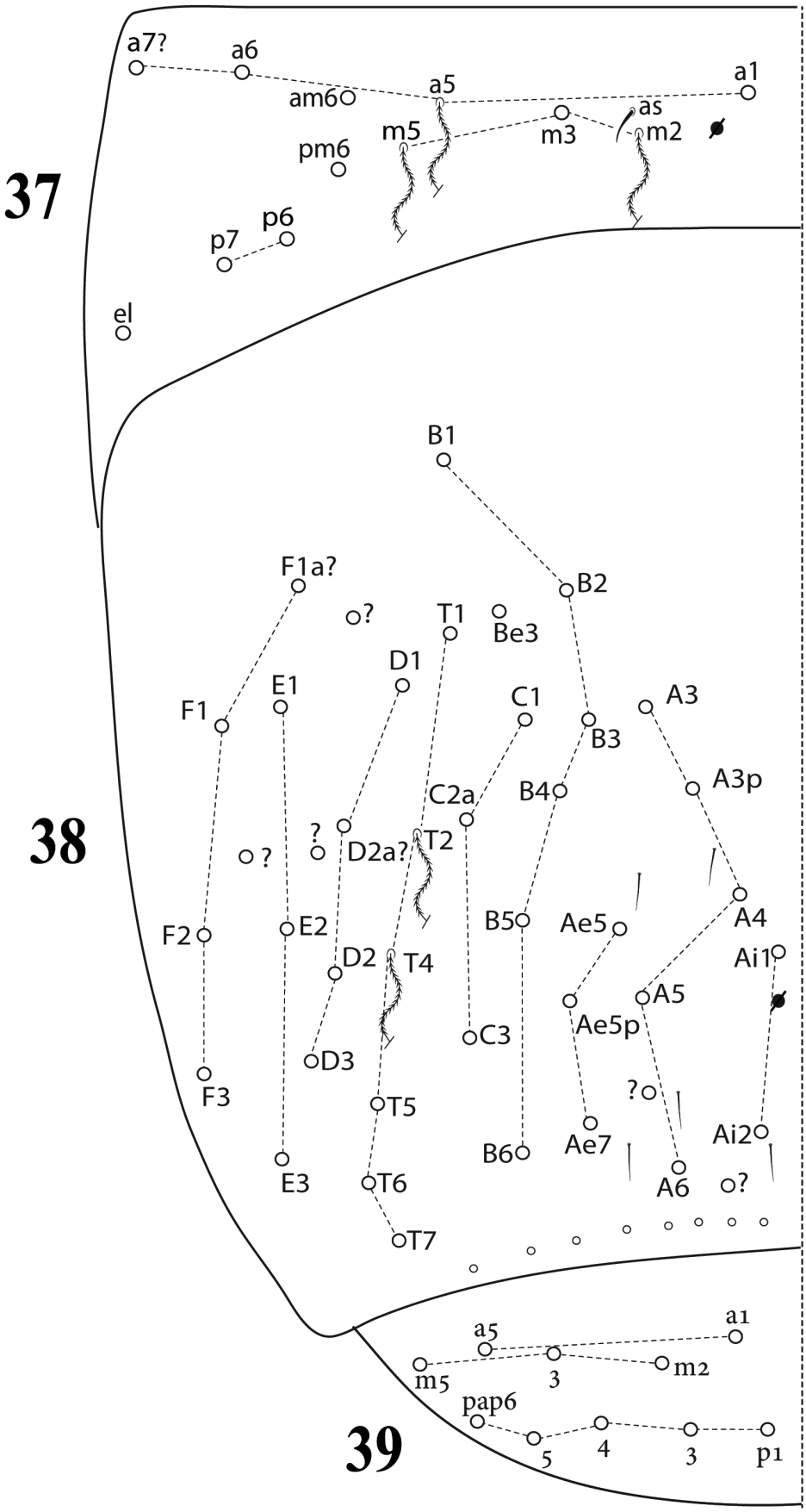
TABLE 2. Comparison of species of Neotropical *Entomobrya.*

	Species		
Morphological features	*E. linda*	*E. longiseta*	*E. bahiana* **sp. nov.**
S0 macrochaeta on head	-	-	+
Posterior labial chaetotaxy	MEL_{1-4}	MEL_{1-4}	$MREL_1L_2$
Th. II dorsal macrochaetae	0a+2m+4p	1a+1m+4p	1a+5m+13p
Th. III dorsal macrochaetae	2a+1m+4p	3a+1m+3p	9a+5m+14p
Abd. II dorsal macrochaetae	1i+2e	1i+1e	4i+7e
Abd. III dorsal macrochaetae	1i+2e	1i+2e	2i+8e
Abd. IV dorsal internal macrochaetae	10–11	2	22
Number of spines in trochanteral organ	9–11	7–9	15

Abbreviations used to represent characteristics: (-) absent; (+) present; (a) anterior; (m) medial; (p) posterior; (i) internal; (e) external.



FIGURES 33–36. *Entomobrya bahiana* **sp. nov.**: 33, dorsal Th. II chaetotaxy; 34, dorsal Th. III chaetotaxy; 35, dorsal Abd. I chaetotaxy; 36, dorsal Abd. II chaetotaxy.



FIGURES 37–39. *Entomobrya bahiana* **sp. nov.**: 37, dorsal Abd. III chaetotaxy; 38, dorsal Abd. IV chaetotaxy; 39, dorsal Abd. V chaetotaxy.

Traditional *Entomobrya* taxonomy is based mostly in color pattern (Christiansen 1958, 1963, Christiansen & Bellinger 1980). However, the analysis of detailed dorsal chaetotaxies shows several species with similar color pattern and very distinct number and disposition of body chaetae, as presented by Jordana & Baquero (2005). At the current time, no other Brazilian *Entomobrya* species was analyzed regarding its dorsal chaetotaxy, making it difficult to doubtless identify other species across the country. The review of the Brazilian (and part of the Neotropical) *Entomobrya* species is in need to elucidate past identifications and to guide new descriptions to come.

Entomobrya bahiana **sp. nov.** is the thirteenth species of the genus recorded to Brazil, along with *E. aipatse* Arlé, 1959, *E. ataquensis* Arlé, 1959, *E. decora* (Nicolet, 1847), *E. egleri* Arlé & Guimarães, 1978, *E. griseoolivata* (Packard, 1873), *E. inaequalis* Denis, 1924, *E. nivalis* (Linnaeus, 1758), *E. paroara* Arlé & Guimarães, 1978, *E. spectabilis* Reuter, 1895, *E. tupiana* Arlé, 1939, *E. uambae* Arlé, 1959 and *E. wasmanni* Handschin, 1924 (Abrantes *et al.* 2010, 2012).

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