



A new genus of Entomobryinae (Collembola, Entomobryidae) from Brazilian Amazon with body scales and dental spines

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Abstract

A new monotypic genus of Entomobryinae from Brazilian Amazon is described and illustrated. *Amazhomidia* **gen. nov.** is similar to other genera of the subfamily, especially to *Sinhomidia* Zhang, in presence of apically pointed scales on body dorsally and spines on dens. It differs from all other genera of Entomobryinae by the combination of: bifurcate prelabral chaetae, cephalic groove with scale-like chaetae and two transverse rows macrochaetae present on anterior central region of the abdominal IV segment. *Amazhomidia ducke* **sp. nov.**, the type species of the new genus is described. An identification key to the genera of Entomobryidae with scales and dental spines is also provided.

Key words: chaetotaxy, neotropics springtails, Willowsiini, keys

Introduction

Entomobryidae is the largest family of Collembola, with seven subfamilies (Zhang & Deharveng 2015), 58 genera and more than 1700 recognized species distributed worldwide (Bellinger *et al.* 1996–2016). So far, five subfamilies (*sensu* Zhang & Deharveng 2015), 10 genera and 67 species have been recorded from Brazil, and about half of these species belong to *Seira* Lubbock, 1870 (Abrantes *et al.* 2012, Bellini *et al.* 2013, 2015, Cipola *et al.* 2014a, b, Godeiro & Bellini 2014, 2015).

Sinhomidia Zhang, 2009 is a monotypic genus of entomobryids recorded from China, which resembles some genera such as *Acanthocyrtus* Handschin, 1925 (Seirini) and *Acanthurella* Börner, 1906 (Lepidocyrtini), in having scales on the dorsal body and dental spines, but differs from those by the absence of dental scales (Zhang *et al.* 2009). *Acanthocyrtus*, *Acanthurella*, and *Sinhomidia* belonged to the tribes Seirini, Lepidocyrtini, and Willowsiini, respectively (*sensu* Yoshii & Suhardjono 1989; Soto-Adames *et al.* 2008). Recent studies based on molecular and morphological data (Zhang *et al.* 2014b, Zhang & Deharveng 2015) indicate Willowsiini and Seirini *sensu* Soto-Adames *et al.* (2008) are not monophyletic, and some taxa with scales and bidentate mucro such as *Sinhomidia* and *Acanthocyrtus*, belong to Entomobryini (Entomobryinae *sensu* Zhang & Deharveng 2015).

Here a new genus and species of Entomobryinae from Brazilian Amazon is described and illustrated, and an identification key to Entomobryidae genera with dorsal body scales and dental spines is provided.

Material and methods

The specimens were collected in “Reserva Ducke”, a remnant of amazonian Rainforest, Amazonas State, Northern Brazil. Specimens were preserved in 92% ethanol, clarified with potassium dichromate (K₂Cr₂O₇) and hydrochloric acid (HCl), and mounted on glass slides in Hoyer’s medium following the procedures described by Bonet (1931). Specimens were photographed in ethanol gel using a stereomicroscope (M165C) attached with a DFC420 digital

camera. Photographs were digitally corrected using Application Suite V3.4.1. Type material is deposited in the Invertebrate Collection of the Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas, Brazil.

The terminology used is as follows: labial chaetotaxy after Gisin's system (1967) plus Mari Mutt (1986) labels to **A1–5** chaetae; labial papilla after Fjellberg (1999), labral chaetotaxy after Cipola *et al.* (2014a), colophore and subcoxae chaetotaxy after Chen & Li (1997), cephalic dorsal chaetotaxy after Soto-Adames (2008) (adapted from Pan *et al.* 2011), dorsal tergal chaetotaxy after Szeptycki (1979), and specialised chaetae (S-chaetae) after Zhang & Deharveng (2015). Overall morphology was compared to *Sinhomidia* and *Homidia* Börner, 1906. Symbols used to depict the chaetotaxy are presented in Figure 12. Chaetae of uncertain homology are followed by a question mark (?). All chaetotaxy is given for one side of the body only.

Abbreviations Abd.—abdominal segment, Ant.—antennal segment, Th.—thoracic segment, mac—macrochaeta(e), mes—mesochaeta(e), mic—microchaeta(e), ms—specialised microchaeta(e), sens—specialised ordinary chaeta(e), INPA—National Institute for Research in the Amazon.

Systematics

Family Entomobryidae Tömösvary, 1882

Subfamily Entomobryinae Schäffer *sensu* Zhang & Deharveng, 2015

Key to genera of Entomobryidae with dorsal body scales and dental spines

(modified from Zhang *et al.* 2009)

- | | | |
|---|---|-------------------------------------|
| 1 | Dental scales absent | 2 |
| - | Dental scales present | 3 |
| 2 | Prelabral chaetae smooth, simple (not bifurcate); cephalic groove without scale-like chaetae; anterior central region of the Abd. IV with one transverse row of mac | <i>Sinhomidia</i> |
| - | Prelabral chaetae bifurcate; cephalic groove with scale-like chaetae; anterior central region of the Abd. IV with two transverse rows of mac (Figs 14, 20, 27) | <i>Amazhomidia</i> gen. nov. |
| 3 | Body with faintly striate, apically rounded or truncate scales and few dorsal mac, except on mesothoracic collar | <i>Acanthurella</i> |
| - | Body with heavily striate apically pointed or rounded scales and numerous dorsal mac | <i>Acanthocyrtus</i> |

Amazhomidia **gen. nov.** Cipola & Bellini

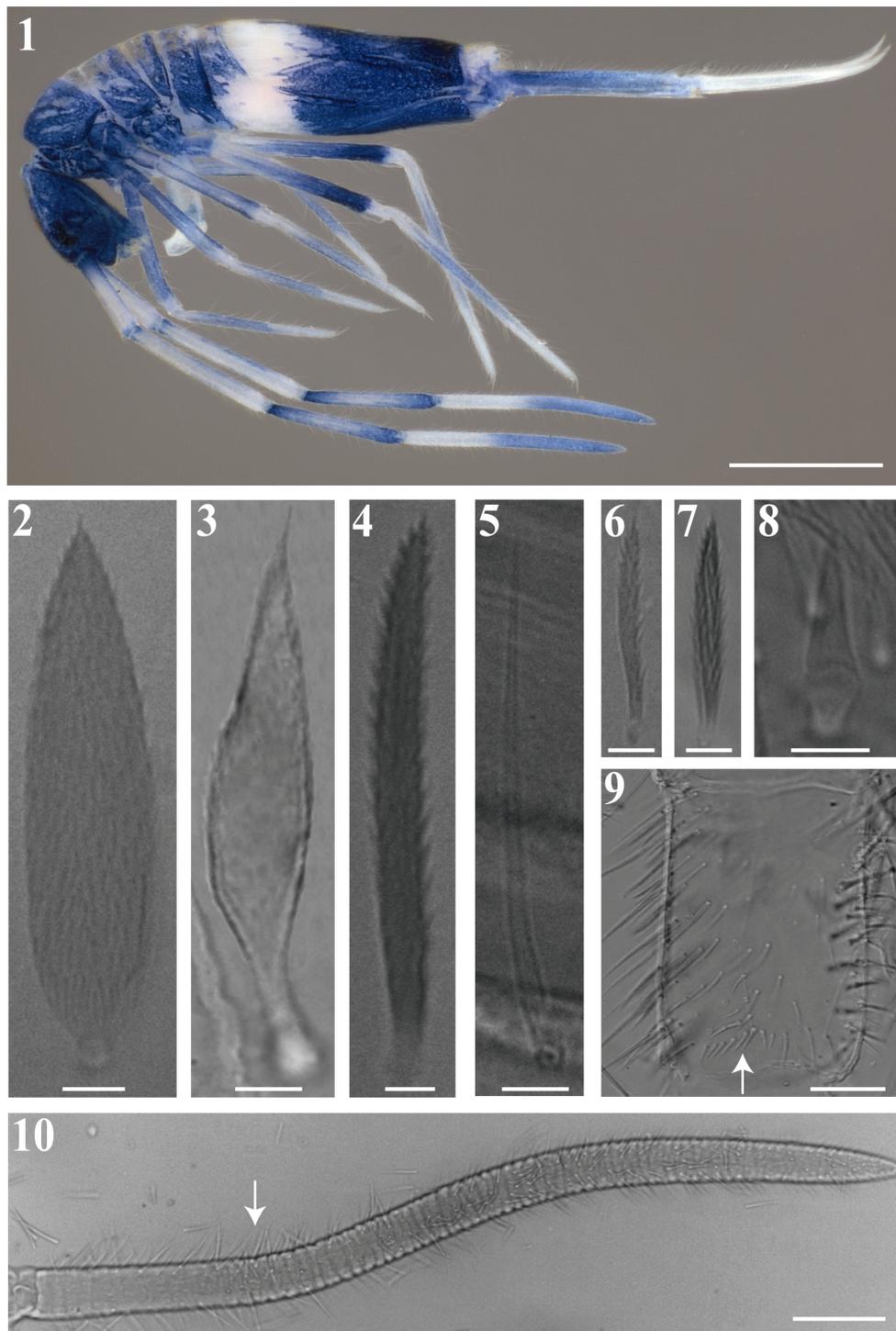
Type species. *Amazhomidia ducke* **sp. nov.**

Diagnosis of genus. Heavily striate apically pointed scales on dorsal head, thorax and abdomen (Fig. 2), absent on antennae, legs, colophore and furcula; antennae with 4 segments, Ant. IV annulate, without apical bulb (Figs 10, 15); eyes 8+8; prelabral chaetae bifurcate; labral papillae absent (Figs 13–14); cephalic groove with scale-like chaetae (Figs 3, 20); macrochaetotaxy relatively dense; Abd. II–IV bothriotrichal formula 2, 3, 2; accessory microchaetae of bothriotrichal complexes elongated; ms and sens formula of Th. II–Abd. V as 1, 0| 1, 0, 1, 0, 0 and 2, 2| 1, 1, 2, 14, 3, respectively (Figs 13, 22–28); Abd. IV well developed, several times the length of Abd. III in the midline (Figs 1, 26–27); unguis with 3 inner (two basal paired and one median unpaired) and 2 large laterodorsal teeth; unguiculi I–II truncate, unguiculus III acuminate, with small external basal small tooth; tenent hairs capitate, slightly longer than unguis (Figs 33–35); tenaculum with 4+4 teeth and one basal, multi-laterally ciliate chaetae (Fig. 37); male genital plate papillate, surrounded by ciliate chaetae (Fig. 38); manubrium lateral face with long distal mac (Fig. 40); dental spines present and striated; mucro bidentate with basal spine reaching subapical tooth (Figs 41–42; Tab. 1).

Etymology. The genus was named after the region in which it was collected and because it is most similar to *Sinhomidia* in morphology.

Remarks. *Amazhomidia* **gen. nov.** is given generic status within the group of other *Homidia*-like genera because of a combination of characters. These are prelabral chaetae bifurcate, labial chaetae ciliated (except **R**

sometimes smooth or absent), manubrium with long distal mac, and Abd. IV with two transverse rows of mac on anterior central region (Figs 3, 14, 19, 27, 40). These features combined with body scales, cephalic groove with very distinct scale-like chaetae and one row of ciliate spines on dens differ from all other genera of Entomobryinae.



FIGURES 1–10. *Amazhomidia ducke* gen nov. sp. nov.: 1, habitus of a fixed specimen in ethanol (lateral view); 2–8, different shaped of scales and chaetae: 2, pointed scale, 3, scale-like chaetae of cephalic groove, 4, ciliated chaeta, 5, sens type II on Abd. IV, 6, ciliated microchaeta, 7, accessory chaeta of bothriotricha, 8, dental spine; 9, trochanter chaetotaxy, arrow indicates the extra spine-like chaetae of anterior face; 10, Ant. IV segment, arrow indicates the beginning of annulations. Scale bars: 1 (0.5mm), 2–8 (0.005mm), 9 (0.05mm), 10 (0.1mm).

Amazhomidia **gen. nov.** is most similar to *Sinhomidia* by the presence of apically pointed scales on dorsal body, Ant. IV annulated, labral papillae absent, tenent hairs capitate, dental spines present and, especially, by dental scales absent (Zhang *et al.* 2009). The new genus also resembles the unscaled genus *Homidia* (Entomobryinae) in cephalic groove with scale-like chaetae, dorsal macrochaetotaxy, dental spines, and structure of unguis, unguiculus and mucro (Chen & Li 1997, 1999, Wang & Chen 2001, Jia *et al.* 2005, Zhang *et al.* 2009, Shi *et al.* 2010, Pan & Shi 2015; Pan *et al.* 2015). *Amazhomidia* **gen. nov.** can be separated from these other genera by presence of body scales (absent in *Homidia*), Ant. IV without apical bulb (present in *Homidia* and *Sinhomidia*), prelabral chaetae bifurcate (simple in *Homidia* and *Sinhomidia*), labial chaetae **m** and **l2** smooth (ciliate in *Homidia* and *Sinhomidia*), cephalic groove with scale-like chaetae (absent in *Sinhomidia*), manubrium lateral face with long distal mac (absent in *Homidia* and *Sinhomidia*), anterior central region of the Abd. IV with two transverse rows of mac (one in *Homidia* and *Sinhomidia*), and striated dental spines (apparently smooth in *Sinhomidia*) (Figs 8, 14–15, 19–20, 27, 40–41; Tab. 1).

Amazhomidia **gen. nov.** is also similar to *Acanthurella* and *Acanthocyrtus* in having 8+8 eyes, scales on dorsal body, Abd. II–IV bothriotrichal formula 2, 3, 2, dental spines present and mucro bidentate with basal spine (Handschin 1925; Salmon 1964; Zhang *et al.* 2009). However, *Amazhomidia* **gen. nov.** can be distinguished from these two genera by the presence of heavily striate apically pointed scales (Fig. 2) (truncate or pointed in *Acanthocyrtus* and weakly striate and apically rounded or truncate in *Acanthurella*), dental scales absent (present in *Acanthurella* and *Acanthocyrtus*) and body with dense mac (reduced in *Acanthurella*). Detailed differences are listed in Table 1.

TABLE 1. Comparison of Entomobryidae genera with dorsal body scales and dental spines.

Genera	<i>Amazhomidia</i> gen. nov.	<i>Acanthocyrtus</i> 2, 4	<i>Acanthurella</i> 1–4	<i>Sinhomidia</i> 4
Ant. IV annulated	+	+	–	+
Ant. IV bulb	–	+	–	+
Prelabral chaetae	B	S or C	C	S
	M	S	C	C
Labial	E	S	C	S
chaetae	L1	S	C	S
	L2	S	C	C
Scale-like chaeta Head ventral	+	–	–	–
Macrochaetotaxy on body	+	+	–	+
Scales shape	pointed	rounded or pointed	rounded or pointed	pointed
Dental scales	–	+	+	–

Notes: (C) ciliated chaeta(e); (S) smooth chaeta(e); (B) bifurcate chaeta(e); (+) present; (–) absent. Reference: ⁽¹⁾ Börner 1906; ⁽²⁾ Handschin 1925; ⁽³⁾ Salmon 1964; ⁽⁴⁾ Zhang *et al.* 2009.

The new genus superficially resembles other genera such as *Himalanura* Baijal, 1958 (Entomobryinae) and *Lepidobrya* Womersley, 1937 (Willowsiinae), by having 8+8 eyes, mucro bidentate with basal spine, and body dorsally with ciliated and broadened chaetae (as *Himalanura*) (see Salmon 1949; Jordana 2012; Zhang *et al.* 2014a; Baquero *et al.* 2014, 2015). The new genus is easily discriminated from the latter by presence of body scales (absent in *Himalanura*), unguis with one unpaired tooth (absent in *Lepidobrya*) and dental spines (absent in *Himalanura* and *Lepidobrya*).

Amazhomidia **gen. nov.** with bifurcate prelabral chaetae, only recorded in *Pseudodicranocentrus* Mari Mutt, 1981 (Heteromurinae), some species of *Orchesella* Templeton, 1836 (Orchesellinae) (Mari Mutt 1981, 1984, 1985) and *Pseudosinella* Schäffer, 1897 (Lepidocyrtinae), with two rows of mac present on anterior central Abd. IV and bothriotricha with accessory chaetae on Abd. II–IV is a unique case in Entomobryidae, and we erect a new genus for it here.

Amazhomidia ducke sp. nov. Cipola & Bellini

Figs 1–42

Type material. Holotype female on slide N° COLLE 057/INPA: Brazil, Amazonas, Manaus, Reserva Ducke, 02°59'S; 59°55'W, 23.ix–04.xi.2014, pitfall-traps, T Vicente coll. Paratypes on slides N° COLLE 057A–E/INPA, 4 males and 1 female, same data as holotype.

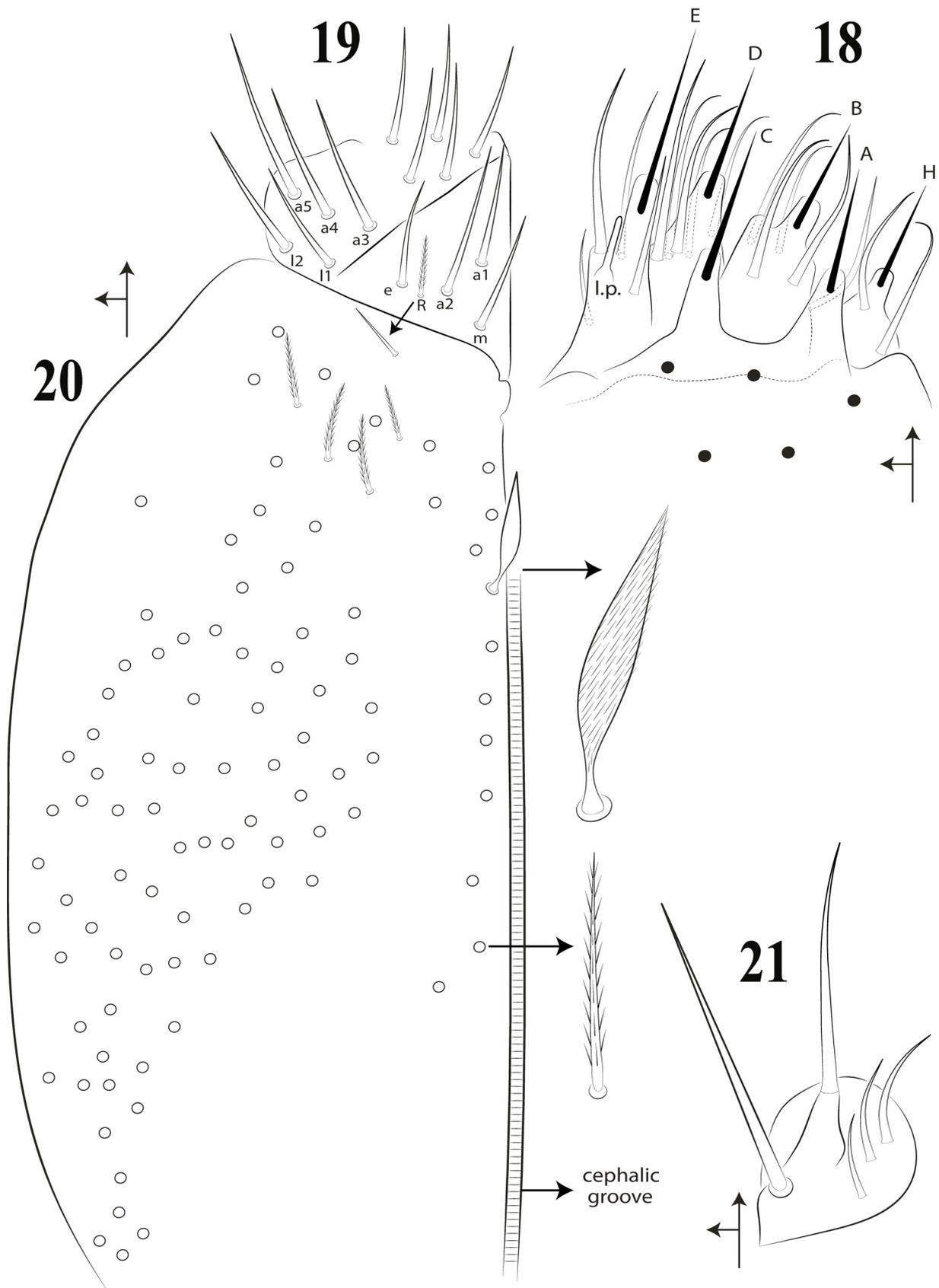
Paratypes on slides N° COLLE 057F–H/INPA, 2 males, 1 female and 12 specimens in alcohol, same data as holotype, except 15.ix–20.v.2006, JLP Souza coll. Paratype on slide N° COLLE 057I/INPA, 1 male, same data as holotype, except 25–27.iii.2013, dish trap, NG Cipola & MB Graça coll.

Additional examined material: on alcohol, 1 specimen, Experimental farm of the Universidade Federal do Amazonas, 02°39'11"S; 60°06'08"W, 06–18.viii.2010, pitfall traps, C Brito & JLP Souza coll.

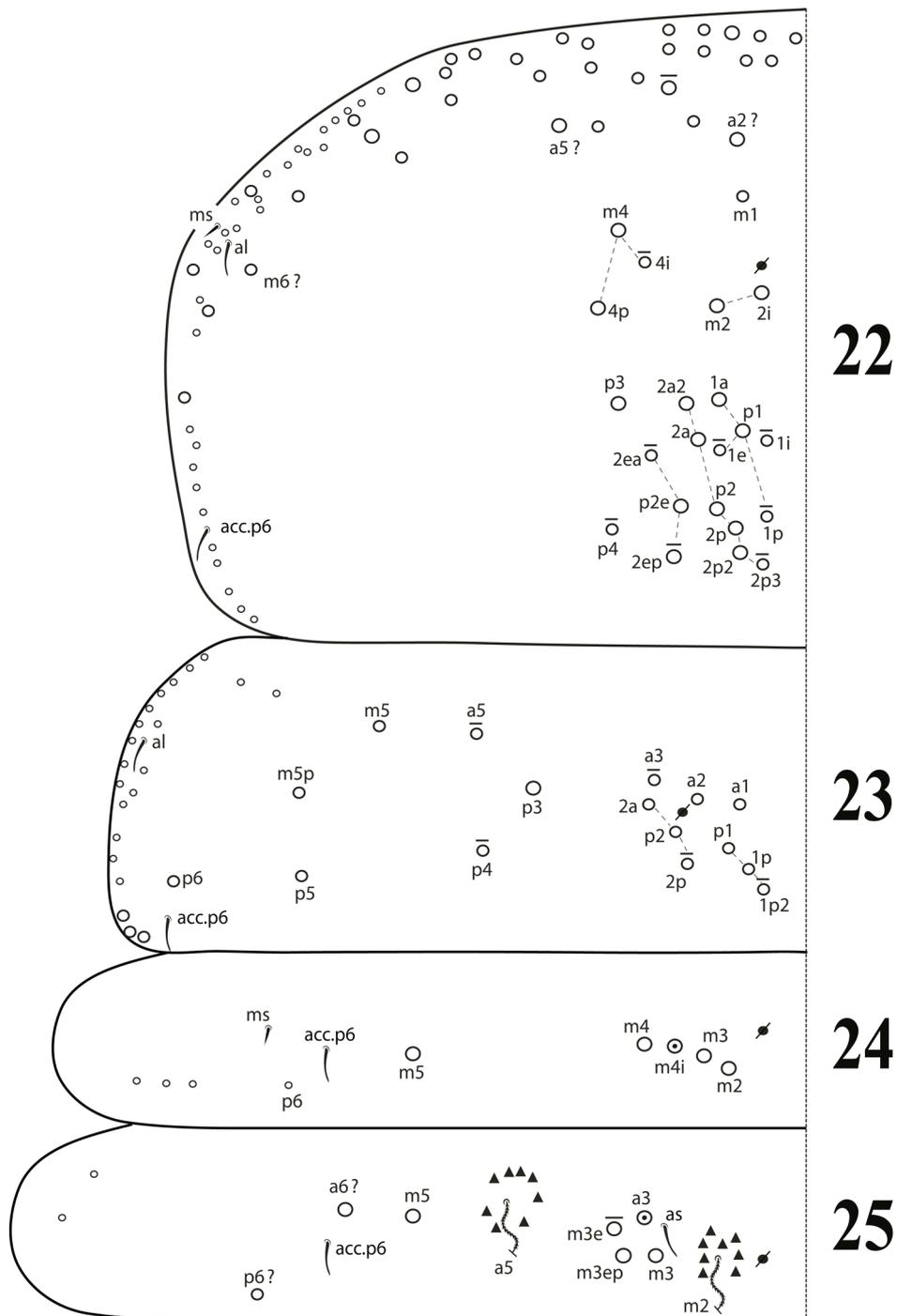
Description. Total length (head + trunk) of holotype 2.51 mm. Habitus typically entomobryid (Figs 1, 11). Specimen with dark blue pigment covering the distal half of Ant. IV and Ant. III, head, thorax and Abd. I–IV (except lateral Abd. III and anterior part of Abd. IV), slight lighter in middle of trunk, legs (except the articulations of femora with tibiotarsi and distal tibiotarsi) and manubrium, dorsal Th. II–Abd. III with irregular unpigmented areas (Figs 1, 11). Heavily striate apically pointed scales covering dorsum of the head, thorax and abdomen (Fig. 2). Antennae, legs, colophore and furcula without scales.

Head. Antennae subequal to the length of body, antennal ratio as I: II: III: IV = 1: 1.4–1.7: 1.07–1.29: 2–2.21, holotype 1: 1.15: 1.18: 2.07 (Fig. 1). Ant. IV annulated, without apical bulb, with at least three types of chaetae: s-blunt sensilla, ciliated and smooth chaetae (Figs 10, 15). Ant. III sense organ with 2 rods and 3 surrounding guard sensilla, with more 3 near s-blunt sensilla (Fig. 16). Ant. I dorsal face with 11 mac and three basal spiny smooth mic; ventral face with two mac (Fig. 17). Eyes 8+8, G and H smaller, other subequal, with 4 interocular chaetae, **p** as mac, **q**, **r** and **s** mic. Dorsal chaetotaxy as in Fig. 13: antennal series 'An' with 10–11 chaetae; anterior series 'A' with 5 chaetae, **A0**, **A3** and **A5** as mac; medio-ocellar series 'M' with 4 chaetae, **M2** and **M3** as mac; sutural series 'S' with 8 mac (**S0–7**); post-sutural series 'Ps' with 2 mac (**Ps2–3**); postoccipital internal series 'Pi' with 1 mac (**Pi1**); postoccipital anterior series 'Pa' with 5 chaetae, **Pa1–3** and **P5** as mac, **Pa6** as bothriotrichum; postoccipital media series 'Pm' with 3 mac (**Pm1**, **Pm2?**, **Pm3**); postoccipital posterior 'Pp' series with 4 mac (**Pp1–3**, **Pp5**); postoccipital external series 'Pe' with 2 mac (**Pe2–3**). Clypeus with 16 ciliated chaetae: 5 mac, 5 mes, and 6 mic. Four prelabral chaetae, internal pair with bifurcated chaetae, external pair smooth or bifurcated. Labral papilla absent. Labral formula 4, 5, 5, all smooth chaetae, four anterior (**a1–2**), five median (**m0–2**) and five posterior (**p0–2**) (Fig. 14). Labial palp with five papillae (A–E), and with 0, 5, 0, 5, 4 guard chaetae, respectively; papilla E with lateral process (**l.p.**) finger-shaped with tip not reaching; H (main hypostomal chaeta) with two accessory hypostomal chaetae (Fig. 18). Labium with five smooth proximal chaetae (Figs 18–19). Labial region with smooth chaeta (**a1–5**, **m**, **R(r)**, **e**, **l1–2**), chaetae **r** smaller, ciliated, smooth or absent (Fig. 19). Cephalic groove with 1+1 scale-like chaeta and 10 ciliated chaetae; chaetae on posterior labium ciliated and subequal in size, with exception of four anterior smaller chaetae (Fig. 20). Maxillary out lobe with one apical, one subapical chaetae and 3 sublobal hairs on sublobal plate, subapical chaeta larger than apical one (Fig. 21).

Thorax. Th. II chaetotaxy as in Fig. 22; anterior series with about 30 mac; medial series 'm' with 5–6 central mac (**m4i** present or absent) and 3 lateral mac (**m6?**) and two unnamed; posterior series 'p' with 9 to 16 mac, **p1i**, **p1p**, **p1e**, **p2p3**, **p2ea**, **p2ep** and **p4** present or absent. Tergite laterally with numerous chaetae, one **ms**, one anterolateral sens (**al**), and one accessory sens (**acc.p6**), both type I. Th. III chaetotaxy as in Fig. 23; series 'a' with 2 to 4 mac, **a3** and **a5** present or absent; series 'm' with 2 mac (**m5–5p**); series 'p' with 7 to 10 mac, **p1p2**, **p2p** and **p4** present or absent. Numerous mes on the side of tergite plus one anterolateral sens (**al**) and one accessory sens (**acc.p6**), both type I. Legs with subcoxa I with a row of two mac and two pseudopores; subcoxa II with one row of six mac and three mes, anteriorly with one mac plus four mes and 16 mic, posteriorly with four mac plus three mes and four pseudopores; subcoxa III with a row of 9 mac, anteriorly with 10 mes plus two mic, posteriorly with two pseudopores (Figs 29–31). Trochanteral organ with approximately 33 spine-like chaetae; anterior face with about 10 extra spine-like chaetae (Fig. 32). Unguis with three inner teeth, one paired basal and one unpaired medial; and a basal pair of large laterodorsal teeth. Unguiculi I–II weakly truncate, unguiculus III acuminate, all with one small proximal external tooth. Tenent hairs capitate with smooth edges (Figs 33–35). Tibiotarsus III with a smooth inner distal chaeta, near the empodium (Fig. 34).

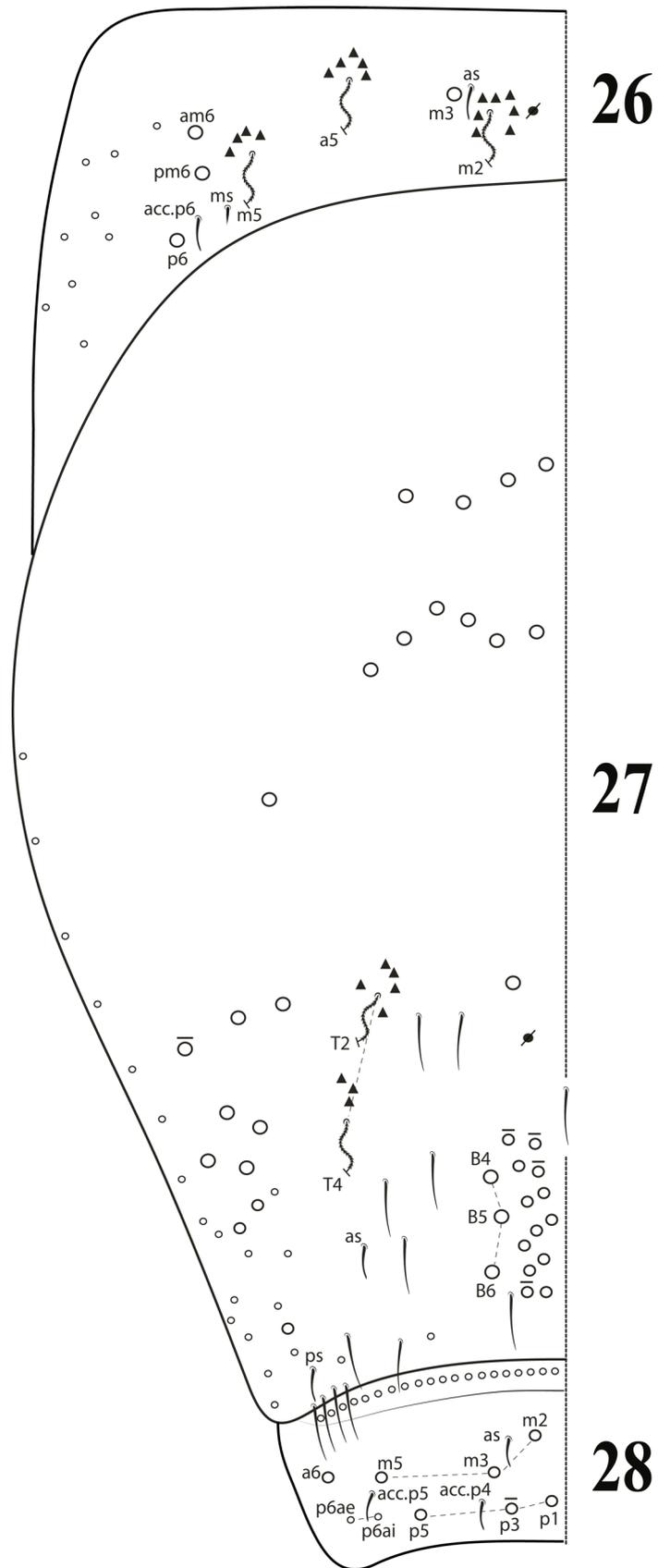


FIGURES 18–21. *Amazhomidia ducke* gen nov. sp. nov.: ventral head: 18, labial papillae and proximal chaetae; 19, labial region and proximal chaetae; 20, posterior labial chaetotaxy; 21, maxillary outer lobe and sublobal plate.

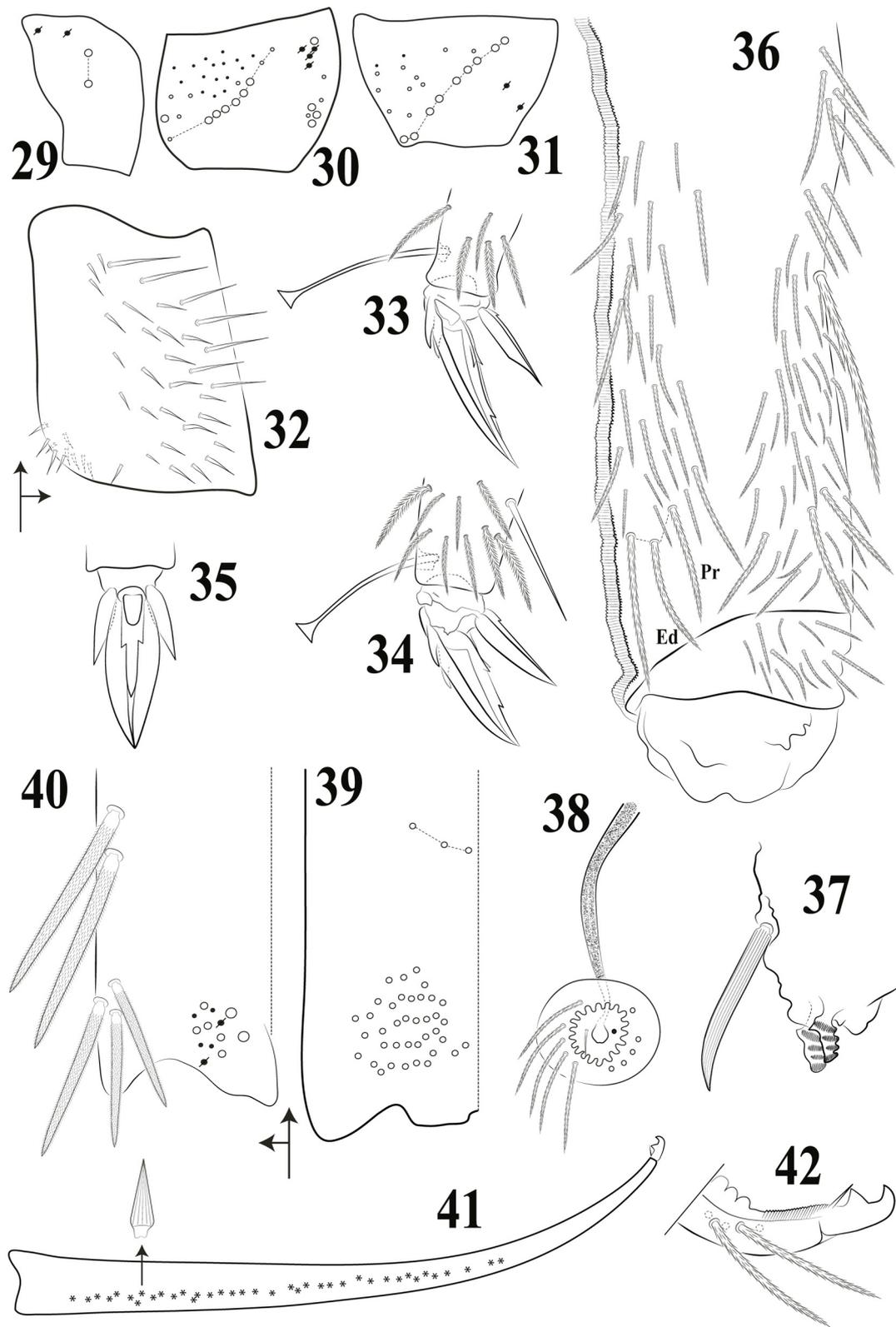


FIGURES 22–25. *Amazhomidia ducke* gen nov. sp. nov.: dorsal chaetotaxy: 22, Th. II; 23, Th. III; 24, Abd. I; 25, Abd. II.

Abdomen. Abd. I chaetotaxy as in Fig. 24; series ‘m’ with 4–5 mac, **m4i** present or absent; series ‘p’ with 4 mes (**p6** and three unnamed); one **ms** and one accessory sens (**acc.p6**) (**ms** external to sens). Abd. II chaetotaxy as in Fig. 25; series ‘a’ with 3 chaetae, **a6?** as mac, **a3** as mac or mic, **a5** as bothriotrichum with 8 accessory chaetae; series ‘m’ with 4–5 chaetae, **m3**, **m3ep**, **m3e** (present or absent) and **m5** as mac, **m2** as bothriotrichum with 8 accessory chaetae; series ‘p’ with 1 mac (**p6?**). Two sensilla present, one anterosubmedial (**as**) and one accessory (**acc.p6**), both type I. Abd. III chaetotaxy as in Fig. 26; series ‘a’ with 2 chaetae, **am6** as mac, **a5** as bothriotrichum with 5 accessory chaetae; series ‘m’ with 4 chaetae, **m3** and **pm6** as mac, **m2** and **m5** as bothriotricha, respectively with 7 and 4 accessory chaetae; series ‘p’ with one mac (**p6**). Two sensilla present, one anterosubmedial (**as**) and one accessory (**acc.p6**), both type I, plus one **ms**. Nine unnamed lateral mes present. Abd. IV chaetotaxy as in Fig.



FIGURES 26–28. *Amazhomidia ducke* gen nov. sp. nov.: dorsal chaetotaxy: **26**, Abd. III; **27**, Abd. IV; **28**, Abd. V.



FIGURES 29–42. *Amazhomidia ducke* gen nov. sp. nov.: 29, subcoxa I; 30, subcoxa II; 31, subcoxa III; 32, trochanteral organ; 33–34, distal tibiotarsus and empodial complex (lateral view): 33, fore leg; 34, hind leg; 35, ventral view of hind empodial complex III; 36, colophore chaetotaxy (lateral view); 37, tenaculum (lateral view); 38, male genital plate and sperm duct; 39, distal manubrium (ventral view); 40, distal manubrium (dorso-lateral view); 41, dens and mucro (lateral view, showing dental spines distribution); 42, distal dens and mucro (lateral view).

27; anterior central region with two transverse rows of 6 and 4 mac respectively; 1 median central mac; posterior central with 12–16 mac, **B4–6** and 13 unnamed (four unnamed present or absent); series ‘T’ with 2 bothriotricha (**T2** and **T4**) and 8 surrounding accessory chaetae; lateral region with 10–11 mac and 20 mes. Two sensilla type I (**as** and **ps**), 12 sensilla type II, and 20 mes on posterior margin present. Abd. V chaetotaxy as in Fig. 28; series ‘a’ with 1 mac (**a6**); series ‘m’ with 3 mac (**m2–3**, **m5**); posteroanterior series ‘pa’ with 2 mes (**p6ai** and **p6ae**); series ‘p’ with 2–3 mac (**p1**, **p3**, **p5**), **p3** present or absent. Three sens as type I, one anterosubmedial (**as**) and two accessory sensilla (**acc.p4** and **acc.p5**).

Collophore. All chaetae ciliated; one side of anterior face with 28 chaetae; 3 as mac, line connecting proximal (Pr) and external-distal (Ed) mac oblique to medial furrow; lateral face with approximately 12 chaetae; posterior face with about 38 chaetae, one of them longer (Fig. 36). Tenaculum. With 4+4 teeth and 1 large, striated basal chaeta (Fig. 37). Genital plate. Male papillate with 5+5 surrounding ciliated chaetae and 1+1 inner smooth chaetae (Fig. 38). Furcula. Manubrium with ciliate chaetae; ventral side with 3 subapical chaetae, distal region with approximately 38 chaetae; lateral side with 5 long distal mac; manubrial plate (dorsal side) with 2 mac, 5 mes, 4 mic and 2 pseudopores (Figs 39–40). Dens dorsally with about 38 striated spines in an irregular row (Fig. 41). Mucro bidentate with a basal spine slightly longer than apex of the proximal tooth (Fig. 42).

Etymology. The new species is named after the type locality, "Ducke Reserve", Amazonas, Brazil.

Distribution and habitat. The new species was found in the Amazon Rainforest phytogeographic domain, Amazon state, Brazil, Good’s biogeographic zone 26, Neotropical Region, Highlands of Eastern Brazil: North Brazilian (Good 1974). The climate of the area following the Köppen-Geiger system is "Am" tropical wet (or monsoon) climate, characterized by wet and dry seasons (Kottek *et al.* 2006).

The specimens were found in different land units between 60 and 140 m asl in the “Reserva Ducke”, most commonly in low-lying areas on wet litter, in the warmer times of the year (April to September) (Baccaro *et al.* 2008). *Amazhomidia ducke* **sp. nov.** was not found in other regions sampled from Brazilian Amazon, so it is possibly a locally species to this region.

Remarks. The dorsal chaetotaxy of *A. ducke* **sp. nov.** possesses several unique characters compared to its closest taxon, *Sinhomidia bicolor* (Yosii, 1965). The new species has **Ps3** mac and several extra mac in posterior region of head (absent in *S. bicolor*), absence of **p5** mac on Th. II (present in *S. bicolor*), presence of **m5** mac on Abd. I (absent in *S. bicolor*), and two extra lateral mac **a6?** and **p6?** on Abd. II (absent in *S. bicolor*), absence of **m7** mac on Abd. III (present in *S. bicolor*) and a different number and arrangement of mac on Abd. IV, with a second row of median-anterior mac (absent in *S. bicolor*), high number of median-posterior mac (up to 16 *vs.* 8 in *S. bicolor*) and low number of latero-anterior mac above **T2** bothriotrichum (1 *vs.* 9 in *S. bicolor*). Additional differences between the species are listed on the first two paragraphs of *Amazhomidia* **gen nov.** ‘remarks’ and Table I.

Discussion

The characteristics of *Amazhomidia* **gen. nov.** such as dorsal macrochaetotaxy pattern, apically pointed scales on dorsal body, Abd. II–IV bothriotricha formula 2, 3, 2; S-chaetae formula 1, 0| 1, 0, 1, 0, 0 (ms) and 2, 2| 1, 2, 2, –, 3 (sens) of Th. II–Abd. V, and dental spines are also present in *Acanthocyrtus* and *Sinhomidia* (Zhang *et al.* 2009), both genera recently inserted into Entomobryinae based on molecular and morphological analysis (Zhang & Deharveng 2015, Zhang *et al.* 2014b, 2015). However, following the same recent revisions, the S-chaetae pattern of Th. II–Abd. V (Figs 22–28) represents the only synapomorphy of Entomobryinae at this moment. Because of this, we decided to describe the new genus within the Entomobryinae, not Willowsiini (Zhang & Deharveng 2015; Zhang *et al.* 2015). Furthermore, Szeptycki (1979, pg. 6) observations also support the Entomobryinae could include both scaled and unscaled species.

In addition, phylogenetic studies indicate that body scales in Willowsiini may have evolved independently within Entomobryinae (Zhang *et al.* 2014b), therefore, characteristics such as absence of dental scales may not currently support Willowsiinae distinctly, and this subfamily may be invalid (Zhang & Deharveng 2015, Zhang *et al.* 2015). In this way, the relationship between *Amazhomidia* **gen. nov.** and other similar unscaled (e.g. *Homidia*) and scaled genera (e.g. *Acanthocyrtus*, *Sinhomidia*) is unclear at present.

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