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A new species of *Mucrosomia* (Collembola: Isotomidae) from Brazil

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ABSTRACT. A new species of Collembola, *Mucrosomia alticola* **sp. nov.**, is described and illustrated based on material from "Parque Nacional da Serra dos Órgãos" (State of Rio de Janeiro) and from "Parque Nacional da Serra do Caparaó" (State of Minas Gerais). This is the first record of a species of *Mucrosomia* for Brazil. The genus has, up to date, only three species and can be diagnosed by the absence of eyes and pigmentation, PAO present, tenent hair pointed, Abd V and VI fused, manubrium with 1+1 chaetae on anterior side, long dens and a remarkable mucro with five teeth. The presence of chaetae on ventral thorax, between segments II-III, supports the new species.

KEY WORDS. Anurophorinae; diversity; neotropics; taxonomy.

Mucrosomia was proposed by Bagnall (1949) to include the type species *M. garretti* (Bagnall, 1939), which is widely distributed in Europe, and was originally described as *Folsomia* Willem, 1902 by the same author. More recently, Rusek (1996) erected *Bathyterra* and described the species *B. bipartita* – to date only known from the type locality: Bohemia Centralis, Czech – which was later included in the genus *Mucrosomia* by Potapov (2001). In this last work, the author also drew attention for the close resemblance of *M. garretti* and *Cryptopygus caecus* Wahlgren 1906, a species found in the Neotropics (from Peru to Patagonia) and the Antarctic Peninsula. Despite the many congruent characters between these species, Potapov (2001) has only transferred the latter species to the genus *Mucrosomia*, as *M. caeca* (Wahlgren, 1906), but has not discarded the possibility of a synonymy.

Mucrosomia is characterized by the absence of eyes and pigmentation, PAO present, tenent hair pointed, Abd V and VI fused, manubrium with 1+1 chaetae on anterior side, long dens and a remarkable mucro with 5 teeth (Fjellberg, 2007).

In an attempt to better understand the Collembolan biodiversity of Brazil, studies have been conducted at mountains of southeastern region of the country. There, specimens of *Mucrosomia* have been found in Brazil for the first time. The analysis of external morphological characters of the specimens revealed similarities to other species of the genus. Nevertheless, the presence of chaetae on thoracic sternites of all specimens support the establishment of a new species, *Mucrosomia alticola* **sp. nov.**, which is herein described and illustrated.

MATERIAL AND METHODS

The studied specimens were collected from litter and soil of the Atlantic Forest Biome, at altitudes varying from 1.400 m to 2.800 m a.s.l., in two National Parks of southeastern Brazil – "Parque Nacional da Serra dos Órgãos" (PARNASO), Rio de Janeiro State and "Parque Nacional do Caparaó" (PNC), Minas Gerais State. The extraction was made with Berlese-Tullgren funnels and the specimens mounted in glass slides according to the usual methodology. The type-material has been deposited in the Collembola Collection at Departamento de Entomologia, Museu Nacional/UFRJ, Rio de Janeiro-RJ, Brazil under the acronym CM/MNRJ. Abbreviation list used in the description: (Ant) antennal segments, (PAO) postantennal organ, (Th) thoracic segments, (Abd) abdominal segments, (bms) basal microsensilla.

TAXONOMY

Mucrosomia alticola **sp. nov.**

Figs 1-13

Description. Body length of holotype: 1mm; body length range of paratypes: 0.9-1.1mm. Habitus slender, similar to *Cryptopygus*. Integument smooth. Color: white.

Body chaetotaxy. All chaetae of body smooth. Axial chaetotaxy without defined pattern (Fig. 1). Macrosensillar and microsensillar pattern by half tergite respectively with 4,3/2,2,2,3,5 and 1,0/1,0,0,0,0 (Fig. 2). Th II with 1+1 lateral macrochaeta (56-60 µm), 3+3 lateral sensilla, respectively with 8 µm, 15 µm, 16 µm, and 2+2 dorsal sensilla (20 µm). Th III with 1+1 lateral macrochaeta (56 µm), 1+1 lateral sensillum (20 µm) and 2+2 dorsal sensilla (15 µm). Abd I with 1+1 lateral macrochaeta (37-39 µm), 2+2 lateral sensilla (respectively with 15 and 5 µm) and 1+1 dorsal sensillum (16 µm). Abd II with 1+1 lateral macrochaeta (50-54 µm), 1+1 dorsolateral mesochaeta (40 µm) and 1+1 central mesochaeta (31 µm)

subequal to proximal chaetae; 1+1 lateral sensillum (16 µm) and 1+1 dorsal sensillum (16 µm). Abd III with 2+2 dorsolateral macrochaetae respectively with 50 µm and 45 µm, 1+1 central mesochaeta (37 µm) subequal to proximal chaetae; 2+2 dorsolateral sensilla (17-20 µm). Abd IV with 3+3 dorsolateral macrochaetae with 50-55 µm and 1+1 distal lateral macrochaeta (56 µm), 2+2 dorsal sensilla (18 µm) and 1+1 lateral sensillum (15 µm). Abd V-VI with several macrochaetae of variable size (50-76 µm), 5+5 sensilla, 1+1 proximal (23 µm), 3+3 distal (26 µm) and 1+1 ventral sensillum (15 µm) (Fig. 2). Ventral thorax with 1+1 – 3+3 chaetae along the ventral line, between the meso and metacoxae (Figs 3 and 4).

Head. Without eyes. PAO (35-40 mm) with a slight constriction, elongate, chitinous borders, longer than half width of Ant I or almost the same size (Fig. 5). Antennae slightly longer than head. Ratio head/antennae = 1,0/1,04. Length of Ant I-IV: 30 µm, 47 µm, 51 µm, 85 µm. Ant IV with rod-like subapical organite (3-4 µm) protect by a curved chaeta, six broad and pointed sensilla clearly differentiated from others, several supplementary very thin sensilla (about 10), poorly differentiated from ordinary chaetae. Ant III with 25-28 chaetae, two small sensory rods (4-5 µm), two guard sensilla (10-13 µm), one short lateral sensillum (4-5 µm) and one dorsobasal microchaeta. Ant II with 26-28 chaetae, one long tapering lateral sensillum (13-15 µm), two basal, one dorsal and one ventral microchaetae. Ant I with 14 chaetae, two ventral and unequal tapering sensilla (20 µm, 11 µm), two basal, one dorsal and one ventral microchaetae (Fig. 6). Labrum with four prelabal and 5, 5,4 labral undifferentiated chaetae. External lobe of maxilla with bifurcated palp and four sublobal chaetae (Fig. 7). Maxillary capitulum with three teeth and six ciliated lamellae. Labial palps complete, with three proximal and five basomedial chaetae; guard chaeta **e7** and papilla **C** lowered, apparently displaced. Hypostomal group with **h1-h2** curved and longer than **H** (Fig. 8). Ventral head with 3+3 – 4+4 chaetae along *linea ventralis*.

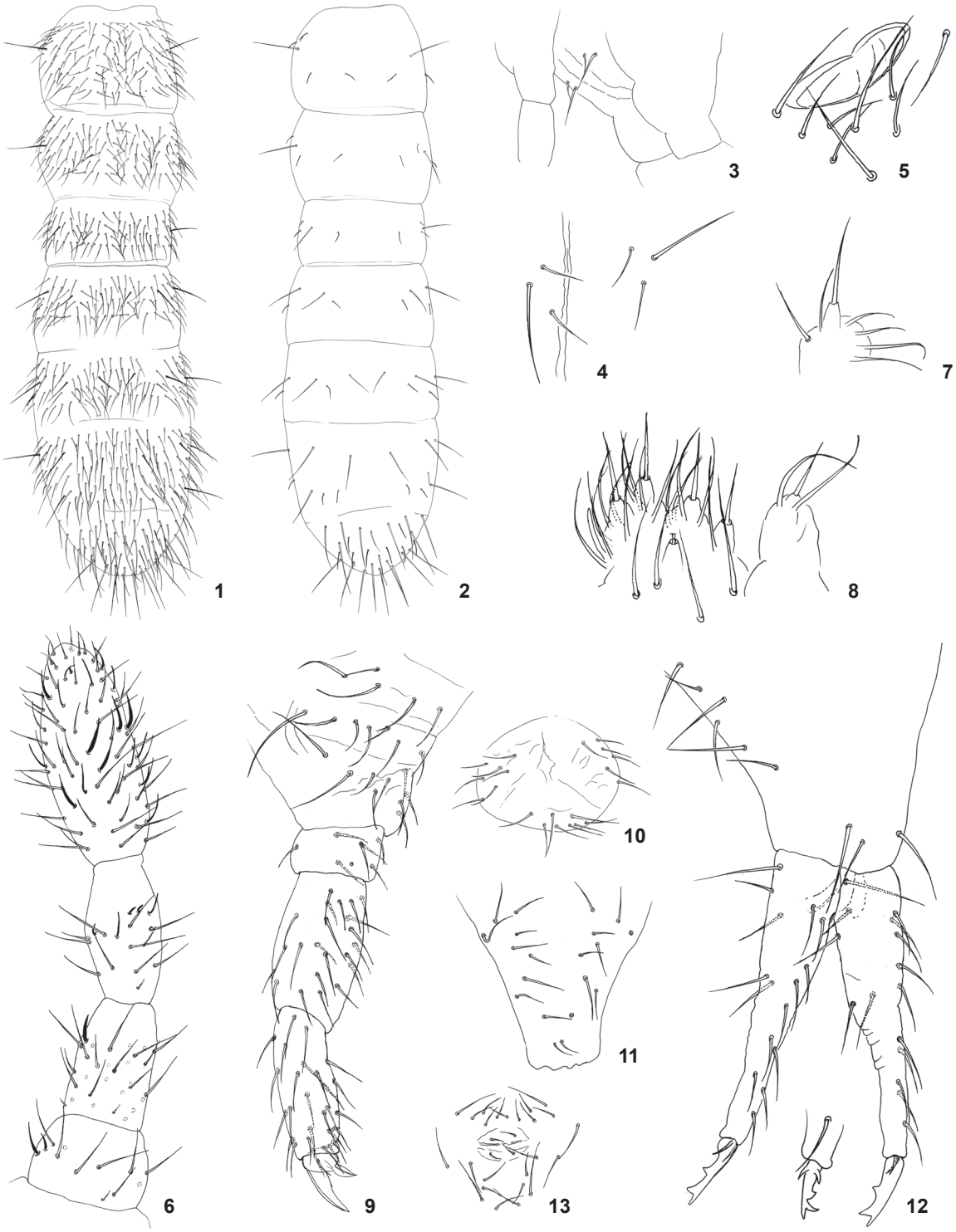
Appendages. Tibiotarsi I-III with 23 - 37, 25 - 28, 29 - 33 chaetae, respectively; distal whorl of tibiotarsi with seven chaetae; tenent hair pointed. Unguis plump (32 µm), with a small tooth in inner edge and unguiculus lanceolated (15 µm) (Fig. 9). Ventral tube with 4+4 – 7+7 distal and 5-9 posterior chaetae, no anterior chaetae (Fig. 10). Retinaculum with 4+4 teeth and one chaeta. Anterior furcal subcoxa with 6-15 chaetae and posterior furcal subcoxa with four chaetae, of which one is twice the size of other three. Manubrium (80-86 µm) with 1+1 – 1+2 anterior and about 20 posterior chaetae, of which the two basal chaetae are small and very close to each other (Fig. 11). Dens long (95 µm), weakly crenulated, with 9-11 anterior and 5 posterior chaetae. Mucro long (26 µm) with five teeth, three large at apex and two shorter and thinner at the base (Fig. 12). Ratio manubrium/dens/mucro = 3,2/3,6/1,0. Female genital plate as in Fig. 13.

Material examined. Holotype: female; Southeast Brazil, state of Rio de Janeiro, Teresópolis municipality (PARNASO, 22°27'15.11"S, 43°0'10.62"W, about 1,400 m a.s.l.), 17.V.2011, Mendonça, M.C. *leg*. 2056 CM/MNRJ. Paratypes: 3 females, same data of holotype; 7 females (PARNASO, 22°27'15.11"S, 43° 0'10.62"W, about 1,400 m a.s.l.), 13.X.2008, Correia, M.C.R. *leg*. 1912 CM/MNRJ; 2 females (PARNASO, 22°27'15.11"S, 43° 0'10.62"W, about 1,400 m a.s.l.), XI.2008, Queiroz, G.C. *leg*. 1921 CM/MNRJ; 1 female (PNC, 20°26'3.36"S, 41°47'49.03"W, 2,851 m a.s.l.), 12.IV.2011, Queiroz, G.C. *leg*. 2030 CM/MNRJ; 1 female (PNC, 20°25'55.64"S, 41°47'56.32"W, 2,750 m a.s.l.), 12.IV.2011, Queiroz, G.C. *leg*. 2032 CM/MNRJ; 3 females (PARNASO, 22°27'15.11"S, 43° 0'10.62"W, about 1.400 m a.s.l.), 17.V.2011, Mendonça, M.C. *leg*. 2053 CM/MNRJ; 2 females (PARNASO, 22°27'15.11"S, 43°0'10.62"W, about 1,400 m a.s.l.), 17.V.2011, Mendonça, M.C. *leg*. 2060 CM/MNRJ.

Etymology. The name *alticola* is a reference to the high altitude where the species was found.

Remarks. The analysis of descriptions and illustrations of *M. caeca*, *M. garretti* and *M. bipartita* (according to Bagnall 1939, Massoud & Rappoport 1968, Rusek 1996, Potapov 2001, Fjellberg 2007) in comparison to *M. alticola* **sp. nov.** has shown many resemblances, especially in relation to the sensillar pattern. Nevertheless, some differences, related mainly to PAO, macrochaetotaxy pattern and ventral thoracic chaetae can easily distinguish the new species from its congeners. It is worth noting that, according to Potapov (2001), *M. garretti* and *M. caeca* are almost indistinguishable from each other, with only slight differences seen between *M. garretti* and specimens of *M. caeca* from the Antarctic Peninsula such as: number of basomedian chaetae in the labium of 5+5 (*M. garretti*) instead of 4+4 (*M. caeca*); ventral tube distal chaetae of 6-7+6-7 (*M. garretti*) instead of 5+5(4) (*M. caeca*) and posterior furcal subcoxa with four chaetae (*M. garretti*) instead of six (*M. caeca*). In addition, according to Massoud & Rapoport (1968), the PAO of specimens of *M. caeca* from the Antarctic Peninsula have a slight constriction, being somewhat longer than the base of Ant I, whereas in *M garretti* and *M. bipartita*, there is no constriction in this structure, which is smaller than half the size of Ant I. For this character, *M. alticola* **sp. nov.** is more similar to *M. caeca*, which also has a long PAO that is as long as or even longer than half the Ant I, and in some specimens a slight constriction can also be found.

There is also a difference in the maximum size of the adults of *M. alticola* **sp. nov.** (1.1 mm), which is smaller compared to the maximum size of *M. garretti* (1.9mm) and *M. bipartita* (1.4 mm) (no data for *M. caeca*). Regarding the antennae, in all studied specimens the bms of Ant III is always present in *M. alticola* **sp. nov.**, while it is absent in *M. garretti*, *M. bipartita*, and probably absent in *M. caeca* (see pg. 324, fig. 6 A in Massoud & Rapoport 1968). The macrochaetotaxy pattern of *M. garretti* and *M. bipartita* is 1,1/3,3,3,4 by half tergite, in which the macrochaetae are well differentiated, according to Rusek (1996), Potapov (2001) and Fjellberg (2007). For *M. alticola* **sp. nov.**, however, it is difficult to visualize the same pattern, since from Abd I to Abd II only



Figures 1-13. *Mucrosomia alticola* **sp. nov.**: (1) dorsal chaetotaxy; (2) dorsal sensillar and macrochaetotaxy pattern only; (3) ventrolateral view of ventral chaetae between Th II and III; (4) ventral chaetae between Th II and III; (5) PAO and surrounding chaetae; (6) right antenna; (7) external lobe of maxilla; (8) labial palp; (9) leg III; (10) ventral tube; (11) posterior side of manubrium; (12) anterior side of complete furca with detail of mucro; (13) female genital plate.

the lateral macrochaetae can be easily differentiated, while the remaining of the chaetae are subequal (see Fig. 1). Lastly, the main character which definitely separates *M. alticola* **sp. nov.** from other species of the genus is the presence of 1+1 – 3+3 chaetae along the ventral line between the Th II and III. Other species do not bear chaetae in this region.

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