BioOne COMPLETE

A New Brazilian Species of Hylaeanura (Collembola: Neanuridae)

Authors: Zeppelini, Douglas, and Palacios-Vargas, Jose G.

Source: Florida Entomologist, 96(4) : 1401-1405

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/024.096.0419

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Florida-Entomologist on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

A NEW BRAZILIAN SPECIES OF *HYLAEANURA* (COLLEMBOLA: NEANURIDAE)

DOUGLAS ZEPPELINI[1,2,*] AND JOSE G. PALACIOS-VARGAS[3]

[1]Laboratório de Sistemática de Collembola e Conservação. Depto. Biologia, Centro de Ciências Biológicas e Sociais Aplicadas. Progama de Pós Graduação em Ecologia e Conservação, Universidade Estadual da Paraíba campus V, João Pessoa, PB, Brazil

[2]Associação Guajiru-Ciência-Educação-Meio Ambiente Scientific Board, João Pessoa, PB, Brazil

[3]Laboratorio de Ecología y Sistemática de Microartrópodos, Departamento de Ecología y Recursos Naturales, Facultad de Ciencias, Universidad Nacional Autónoma de México, 04510 México, D. F., México

*Corresponding author: E-mail: zeppelini@daad-alumni.de

ABSTRACT

A new species *Hylaeanura mendoncae* **sp. nov.** from areas of iron ore mining in Minas Gerais, Brazil, is described. It is characterized by the presence of 2 eyes on each side of the head, the sensorial seta of Abd. IV in the form of a curved and blunt sensillum, the absence of mucro, and 3 setae on each dens. A key to the 4 species known in the genus is provided.

Key Words: Taxonomy, Neotropical Poduromorpha, Pseudachorutinae

RESUMEN

Se describe una nueva especie *Hylaeanura mendoncae* **sp. nov.** de áreas de mineración en Minas Gerais, Brasil. Se caracteriza por la presencia de dos ojos a cada lado de la cabeza, la seda sensorial del Abd. IV en forma de sensila curva y chata, la ausencia de mucrón y dos sedas en cada dente. Se presenta una clave para las cuatro especies del género conocidas.

Palabras Clave: Taxonomía, Poduromorpha Neotropicales, Pseudachorutinae

RESUMO

Uma espécie nova, *Hylaeanura mendoncae* **sp. nov.,** de áreas de mineração em Minas Gerais, Brasil é descrita. A espécie se caracteriza pela presença de dois olhos de cada lado da cabeça, cerdas sensoriais do Abd. IV em forma de sensila curva com o ápice rombo, ausência de mucron e duas cerdas em cada dente. Apresenta-se uma chave para as quatro espécies conhecidas do gênero.

Palavras Chave: Taxonomia, Poduromorpha Neotropical, Pseudachorutinae

The genus *Hylaeanura* was created by Arlé in 1966 to place the species *Paranurella infima* described by Arlé in 1959. Two additional species were added to the genus by Vázquez et al. (1998), *H. nohbecana* Vázquez, Cutz-Pool & Palacios-Vargas 1998 and *H. nepalensis* (Yosii 1966), first described as *Paranura nepalensis*. The distribution of known species is Brazil, French Guiana (Najt et al. 1990), Mexico and Nepal, respectively. The second Brazilian species is described and compared, and a key for identification of the 4 species is provided.

MATERIALS AND METHODS

The material studied, comes from Minas Gerais, Brazil and is part of a survey of the fauna from soil and caves in areas of iron ore mining. The collecting was done by pit fall traps, adapted Wrinkler extractor and manually.

Terminology follows mainly Vázquez et al. (1998). Abbreviations used in the text are: Ant. = antennal segment; Abd. = abdominal segment; Th. = thoracic segment.

Downloaded From: https://bioone.org/journals/Florida-Entomologist on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

Diagnosis of the Genus *Hylaeanura* Arlé 1966

Habitus of *Paranurella* or *Kenyura*, without pigment. Very small, less than 1.0 mm. Without eyes or at most 2 eyes per side. Antenna shorter than half the cephalic diagonal, with 7 sensilla, 1 of them S8 hypertrophied. Mandible with very few teeth (1-3); maxilla styletiform. Legs very short. Ungues without teeth, no unguiculus or tenent hairs. Ventral tube with 3 + 3 setae. Furcula very reduced, dens with 3 setae, mucro minute or lacking. Body chaetotaxy very reduced, setae very small, sensorial setae on Abd. IV modified.

Hylaeanura Mendoncae **sp. nov.**

Order Poduromorpha Börner, 1913 *sensu* D'Haese 2002

Superfamily Neanuroidea Massoud 1967 *sensu* D'Haese 2002

Family Neanuridae Börner 1901 *sensu* Deharveng 2004

Subfamily Pseudachorutinae Börner 1906

Genus *Hylaeanura* Arlé 1966

Type species *Paranurella infima* Arlé 1959

Hylaeanura mendoncae **sp. nov.**

Material Examined

HOLOTYPE: female, BRAZIL: Minas Gerais, Itabirito, from leaf litter of forest fragments adjacent to iron ore mines (S 20° 06' 57.9" W 43° 53' 55.6"), 24-I-2013, coll. Bioespeleo team, deposited at Coleção de Referência em Fauna de Solo da Paraíba (LSCC-CRFS/UEPB), number 2841. PARATYPES: 1 juvenile, BRAZIL: Minas Gerais, Mariana, same environment as holotype (S 20° 12' 34.3" W 43° 26' 21.3"), 09-XII-2012, coll. Bioespeleo team, deposited at LSCC-CRFS/UEPB, number 2288 and 1 preadult, BRAZIL: Minas Gerais, Itabirito (S 20° 06' 06.4" W 43° 53' 47.5"), 18/I/2013, coll. Bioespeleo team, deposited at Museu Nacional da Universidade Federal do Rio de Janeiro (MNUFRJ), number 2424.

Description

Hylaeanura mendoncae **sp. nov.** (Figs. 1-7)

Length of holotype 630 µm (paratype juvenile 384 µm, paratype preadult 567 µm). Color, white. Tegumentary granules relatively big, without the formation of large tubercles. Body setae small, fine and sharply pointed. Sensorial seta of thorax and abdominal segments longer than setae and acuminate, those of Abd. IV similar in shape to those sensilla of Ant. IV. Average length of ten setae 6.5 µm; length of sensorial setae on Abd. IV 10 µm, on Abd. V 14 µm (from holotype). Antenna of holotype 57 µm (paratypes juvenile 64, preadult 65 µm) shorter than head of holotype 93 µm (paratypes juvenile 88, preadult 118 µm).

Ant. I with 7 dorsal setae, Ant. II with 11 setae. Ant. III with 14 setae, sensorial organ formed by 2 internal microsensilla, 2 guard sensilla sinuous of equal length and similar appearance and a ventral microsensillum. Ant. IV (dorsally fused with Ant. III) with 7 sensilla, 3 on the external side and 4 on the internal side. One subapical sensillum hypertrophied (S8) other (S1-S4) normal. With microsensillum (m') and subapical organ (or). Apex of Ant. IV with a slightly defined trilobated bulb (Fig. 1). Ant. III and IV well isolated on ventral view; with 26 acuminate setae, not forming a file (Fig. 2).

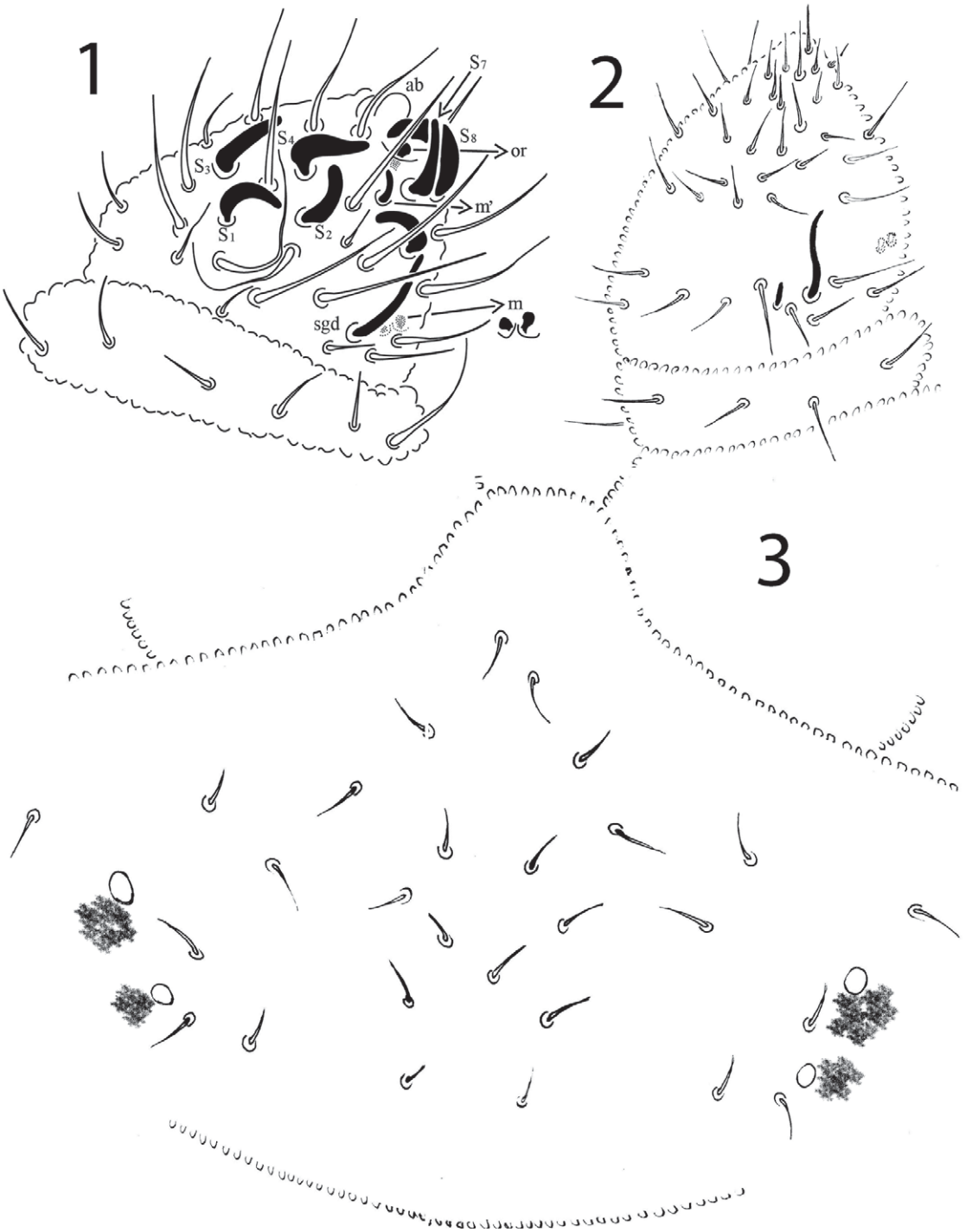
Eyes, 2 + 2. Mandible with 2 teeth, 1 apical and 1 subapical; styliform curved maxillae. Labral chaetotaxy with 2, 2, 2, 2 setae, sclerotization of labium in the shape of ogive, labium with a total of 11 setae per side, as normal for the family and 2 pairs of poslabial setae. Anterior cephalic chaetotaxy as in Fig. 3, identical to that illustrated by Thibaud & Massoud (1983) for specimens from Guadalupe (Antilles). Posterior dorsointernal region of the head with 1 seta, dorsoexternal region with 3, lateral with 5. Chaetotaxy of thorax as illustrated by Vázquez et al (1998) in the genus. Prothorax with 3 + 3 dorsal setae and 1 lateral seta on each side. Th. II with 2 sensory setae (p3 and m7) and 1 lateral microsensillum (Fig. 4). Chaetotaxy of abdomen as illustrated by Thibaud & Massoud (1983). Sensory setae from Abd. I to III in position p3, in Abd. IV also in position p3 but in the shape of a sensillum, and in Abd. V in position p2 (Fig. 5).

Legs very short, setation from coxa to tibiotarsus, from leg I to III respetively: 3,5,12,18; 6,5,12,18; 6,5,12,17; no setae M on tibiotarsus; no tenent hairs, ungues without teeth. Ventral tube with 3 + 3 setae. Tenaculum with 2 + 2 teeth; manubrium totally reduced, but 6 + 6 setae present ventrally on Abd. III, dens with 3 setae each, no mucro. Genital plate of female with 3 + 3 pregenital setae, 6 circumgenital setae and 2 eugenital setae (Fig. 6). Each anal lateral lobe with 12 setae and 2 setolae (Fig. 7). Abd. VI dorsally with 6 pairs of setae and no anal spines, p1 1onger than other setae; ventrally with 3 pairs of setae and 2 setolae (Fig. 7).

Distribution and Habitat

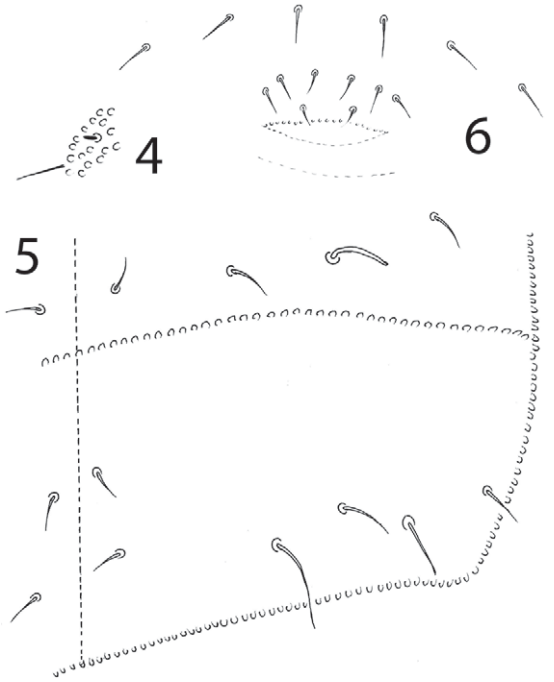
Good's biogeographic zone 27, northeastern and central Brazil (Good 1974; Culik & Zeppelini 2003). The species is found in areas of iron ore mining. Animals were collected in leaf litter of semi-deciduous forest fragments. The climate presents dry winter and wet summer, and average temperatures of 18 °C during winter and 22 °C in summer.

Downloaded From: https://bioone.org/journals/Florida-Entomologist on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use



Figs. 1-3. *Hylaeanura mendoncae* **sp. nov.** 1. Chaetotaxy of Ant. II-IV dorsal view; 2. Chaetotaxy of Ant. II-IV ventral view; 3. Dorsal chaetotaxy of anterior part of the head.

Downloaded From: https://bioone.org/journals/Florida-Entomologist on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use



Figs. 4-6. *Hylaeanura mendoncae* **sp. nov.** 4, Microsensillum on Th. II on ventral view; 5. Dorsal chaetotaxy of Abd. IV and V; 6. Genital opening adult female (Holotype).

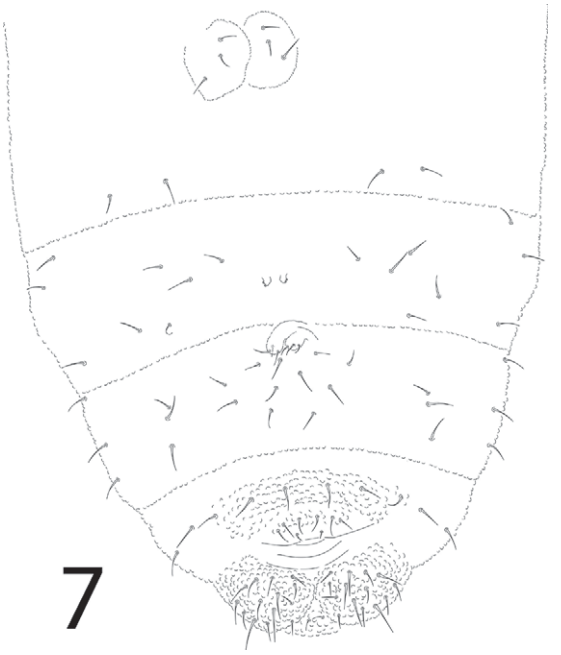


Fig. 7. *Hylaeanura mendoncae* **sp. nov.** 7. Ventral chaetotaxy of abdomen (Holotype).

Etymology

The new species is named after Dr. Maria Cleide Mendonça for her contributions to the study of Brazilian Collembola.

Remarks

Hylaeanura mendoncae **sp. nov.** shares with *H. infima* the total absence of mucro, but differs in having two eyes at each side the head and the shape of the sensorial seta of Abd. IV. The small size (300 µm) and the absence of genital opening (Fig. 54, pp. 187 of Arlé 1959) of the holotype specimen illustrated by Arlé (1959) indicates it is a juvenile, as he noted later (Arlé 1996). The new species is similar also to *H. nepalensis* in having 2 eyes per side of the head, but the dorsal and ventral guard sensilla (Apical organ Ant. III) are sinuous in the new species. Yosii (1966) did not describe the body chaetotaxy; furthermore the specimens illustrated by him are juveniles, because they have only 6 sensilla on Ant. IV and no genital opening (Figs. B, C and H in page 417 of Yosii 1966). What has been cited from the Antilles is probably a new species as Thibaud & Massoud (1983: 120-121) only described the dorsal chaetotaxy: "Notons que cette chétotaxie est normale, avec cependant des soies du corps très courtes, y compris les sois sensorielles (2 paires sur Th. II et III et 1 paire sur abd. 1 à 5)", but they did not describe the ventral chaetotaxy, and they illustrated the sensorial setae on Abd. IV as being similar to those of the other abdominal segments, thin and acuminate. For general morphological comparison see Table 1.

TABLE 1. COMPARATIVE MORPHOLOGY OF THE FOUR SPECIES OF *HYLAEANURA*.

Species	Total length (µ)	Ventral guard sensillum	Dorsal guard sensillum	Eyes per side of head	Tenacular teeth	Shape Abd. IV sensillum	Mucro
H. infima	500	?	?	0	?	ss	–
H. nohbecana	1000	st	st	0	3 + 3	cf	+
H. nepalensis	700	st	st	2	2 + 2 3 + 3	?	–
H. mendoncae **sp. nov.**	600	si	si	2	2 + 2	ss	–

st- straight, si- sinuous, cf- candle-flame shaped, and ss- sensillum shaped.

Downloaded From: https://bioone.org/journals/Florida-Entomologist on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

KEY FOR THE SPECIES OF THE GENUS *HYLAEANURA*

1. Without eyes 2

1'. With 2 eyes per side 3

2. Sensorial seta on Abd. IV candle flame shaped. Dens with a minute mucro present . . . . . *H. nohbecana*

2'. Sensorial seta on Abd. IV sensillum shaped. Dens without mucro . . . . . *H. infima*

3. Dorsal and ventral guard sensilla (Sensorial organ Ant. III) sinuose, manubrium vestige with one median setae . . . . . *H. mendoncae* **sp. nov.**

3'. Dorsal and ventral guard sensilla straight, manubrium vestige with two median setae . . . . . *H. nepalensis*

ACKNOWLEDGMENTS

Dr. Palacios-Vargas had partial support for this project from the program PASPA (DGAPA, UNAM). The senior author was granted by CNPq #301803/2012-9. Collections were made by the team of the Bioespeleo consultants. Vale S/A gave partial support to the LSCC/UEPB. Marcus P.A. de Oliveira provided information about the collection sites.

REFERENCES CITED

ARLÉ, R. 1959. Collembola Arthropleona do Brasil oriental e Central. Arq. Mus. Nac. 49: 156-191.

ARLÉ, R. 1966. Collemboles d'Amazonie. I. Poduromorphes nouveux ou peu connus et notes biologique sur *Neotropiella carli* (Denis). Bol. Mus. Paraense Emilio Goeldi (S.N.) 60: 1-9 + 13.

CULIK, M. P., AND ZEPPELINI, D. 2003. Diversity and distribution of Collembola (Arthropoda: Hexapoda) of Brazil. Biodivers. Conserv. 12: 1119-1143.

GOOD, R. 1974. The geography of flowering plants. 4th ed. Longman Group, London. 574 pp.

NAJT, J., THIBAUD, J. M. AND WEINER, W. M. 1990. Collemboles (Insecta) poduromorphes de Guyane Francaise. B. Mus. Natl. His. Nat. Section A Zoologie Biologie et Ecologie Animal 12(1): 95-121.

THIBAUD, J. M., AND MASSOUD, Z. 1983. Les Collemboles des Petites Antilles III. Neanuridae (Pseudachorutinae). Rev. Ecol. Biol. Sol 20: 111-129.

VÁZQUEZ, M. M., CUTZ-POOL, L .Q., AND PALACIOS-VARGAS, J. G. 1998. A new species of *Hylaeanura* (Collembola: Neanuridae: Pseudachorutinae). Southwest. Entomol. 23(4): 367-371.

YOSII, R. 1966. Collembola of Himalaya. J. Coll. Art. Sci. Chiba Univ. 4(4): 461-531.

Downloaded From: https://bioone.org/journals/Florida-Entomologist on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use