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Redescription of *Prothaphorura eichhorni* (Gisin, 1954) (Collembola, Onychiurinae)

by

Wanda Maria WEINER [1]) and Norbert STOMP [2])

Abstract: *Protaphorura eichhorni* described by Gisin in 1954 from Luxembourg has been redescribed. The ventral male organ in this species has been discovered and some remarks on its development are given.

Resumé: Dans ce travail nous redécrivons *Protaphorura eicchorni* décrite par Gisin en 1954 en provenance du Luxembourg. La découverte de l'organe ventral du mâle de cette espèce donne lieu à quelques remarques sur son développement.

Key-words: Collembola, *Protaphorura*, Luxembourg, ventral male organ.

Introduction

From A. Eichhorn's collection Gisin described in 1954 a new species of *Onychiurus* (*O. eichhorni*) from Strassen (Kleepesch) and Bascharage (Neuwies), Luxembourg. During the investigation of Collembola in Luxembourg we have also found some specimens of this species. We compared this material with the paratypes preserved in the Musée national d'histoire naturelle in Luxembourg (MNHNL).

In this paper we give the redescription of *Prothaphorura eichhorni* (Gisin 1954) based on paratypes determined by Gisin, and on the fresh material.

Results

Protaphorura eichhorni (Gisin, 1954)

= *Onychiurus eichhorni* Gisin, 1954

Material examined: Luxembourg, Strassen (Kleepesch), forest with beeches, near the spring, September 4, 1953, 4 paratypes (4 young males and 1 juvenile), leg. A. Eichhorn; valley of the river Our, near Vianden in the direction of Bivels, forest with oaks, *Sambucus*, near stream, humid soil with litter and moss, April 11, 1991, leg. M. Ursone, W. M. Weiner, 1 specimen (female) (L-91-6); Berdorf, Zigzagschlöff, forest with beeches, oaks and pines, near sandstone rocks, April 17, 1991, leg. N. Stomp, M. Ursone, W. M. Weiner,

[1]) Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Sławkowska 17, Pl-31016 Kraków, Poland.

[2]) Musée national d'histoire naturelle, Marché-aux-Poissons, L-2345 Luxembourg.

2 specimens (males) (L-91-21); direction of valley of the river Our, east of Lieler, forest with oaks, hazels, moss and litter at the bases of trunks, April 29, 1991, leg. M. Ursone, W. M. Weiner, 7 specimens (males, some of them adults, and females) (L-91-32); valley of the river Our, south of "Trois Frontières", slopes of Buch, 10-15 m above the valley's floor, forest of firs, a thin litter layer of fir needles, April 29, 1991, leg. M. Ursone, W. M. Weiner, 11 specimens (juvenile, female, males, some of them adult) (L-91-39); valley of the river Our, south of "Trois Frontières", slopes of Buch, 10-15 m above the valley's floor, forest of beeches, with *Arum maculatum*, *Mercurialis perennis*, litter with some gravel, April 29, 1991, leg. M. Ursone, W. M. Weiner, 7 specimens (females, males, two of them adults) (L-91-40), (3 specimens in Institute of Systematics and Evolution of Animals, Kraków); north-west of Obereisenbach, forest of spruces, litter with moss, Mai 5, 1991, leg. M. Ursone, W. M. Weiner, one specimen (female) (L-91-51).

Redescription: Length of adult specimens: 1.49-1.73 mm. Colour in alcohol white. Tegumental granulation middle, a somewhat stronger granulation on certain fields on dorsal side of antennal segment, head, thorax II and III, posterior part of abdomen VI and particularly around pseudocelli. Bases of antennae distinctly marked.

Antennae almost of the same length as head (Fig. 1). Antennal segment I with 10-12 setae, antennal segment II with 15-19 setae. Sensory organ of antennal segment III (Fig. 2) consisting of: 5 setae at the base, 5 fairly large papillae guarding 2 smooth rods and 2 mulberry-like sensory clubs and one small ventro-lateral sensillum. Antennal segment IV with very small subapical organite and one latero-external microsensillum at the basal part of this segment.

Postantennal organ (Fig. 3) with about 34-43 simple vesicles.

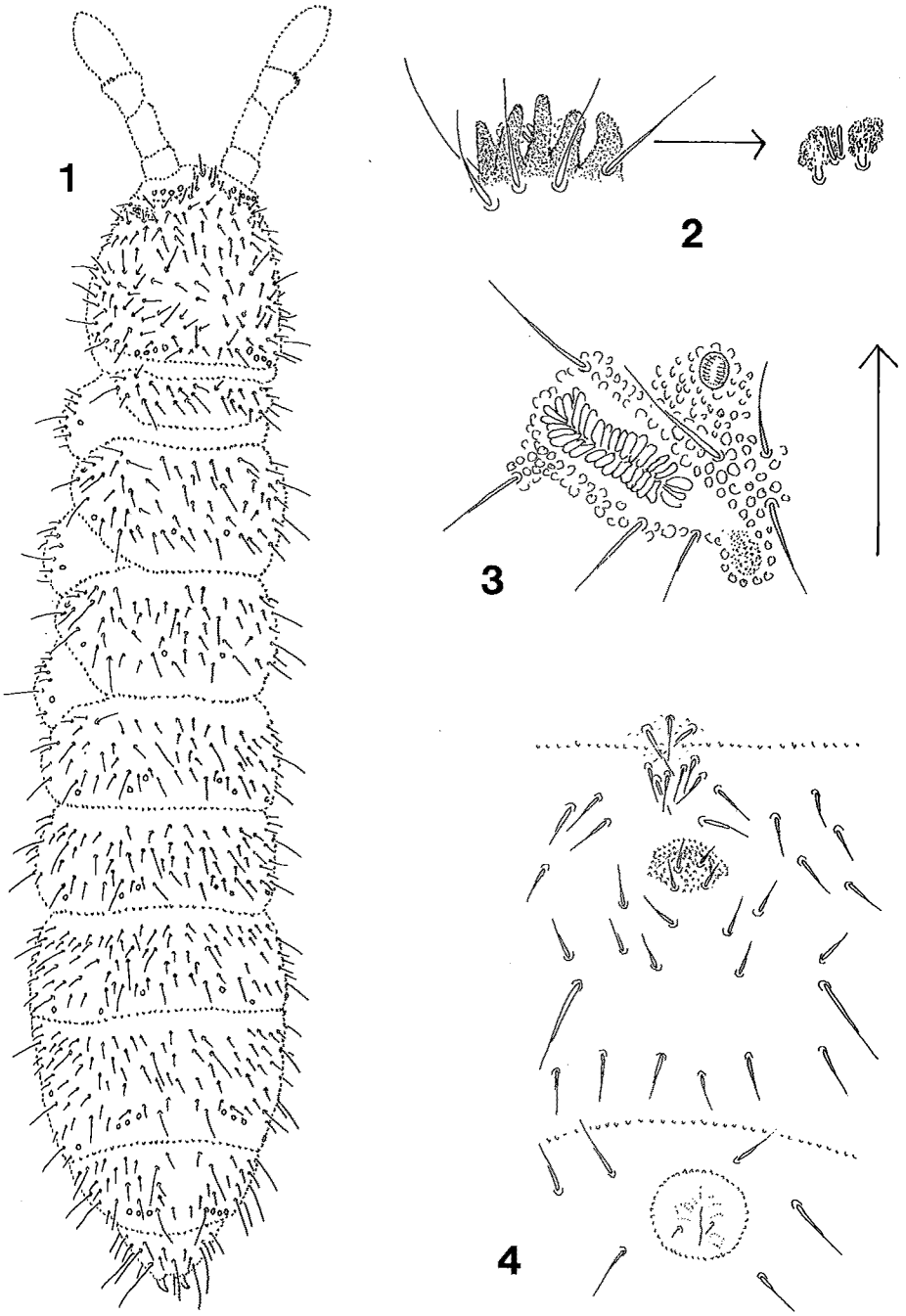
Labrum with 4/342 setae.

Pseudocellar formula per half tergite: 44(3)/022/3335(6)(4)3, per half sternite : 1(2)/000/00000. Well marked base of antenna with four pseudocelli. Subcoxae I, II and III with: 1, 1, 1 pseudocelli. Parapseudocellar formula per half sternite: 1/000/1001 and odd parapseudocellus on medial anal valve. Further parapseudocelli on subcoxa I (1), subcoxa II (1) and femur (1 on internal side).

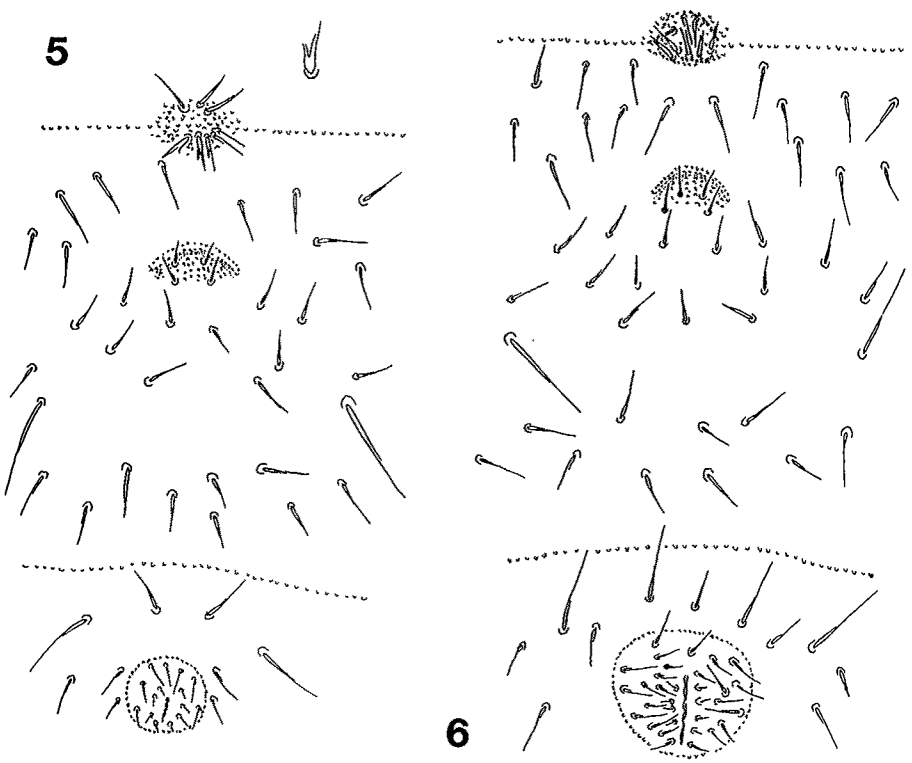
Dorsal chaetotaxy as in Fig. 1 with numerous asymmetries. Thorax I with i2-3m. Thorax II and III with lateral microsensilla. Head with setae p2 in front of setae p1 and p3. Seta p1 on thorax II and III ahead of seta p2. Four prespinous setae slightly convergent. Abdomen I-III with seta s', abdomen IV with setae: s,' s" and another seta between M and M', abdomen V without seta s'. Other setae s indistinguishable. Important characters of ventral chaetotaxy: thoracal sternites I, II and III with 1+1, 2+2 (2+1) (1+1), 2+2 (3+3) (2+3) (2+1) (1+1) setae. Ventral tube with 9+9 (8+8) (7+7) (10+10) setae on distal part and 2+2 (3+3) setae on basal part. Abdomen VI with two spines (2.3 times longer than wide, of the same length as the inner edge of claw) on short papillae.

On the abdominal sternite IV rudiment of furca (Figs. 4-8), in the form of a small cuticular fold with four setae. Male ventral organ present on abdominal sternites III and IV (Figs. 4-8).

Tibiotarsi I, II, III with 22, 23, 24 setae, with acuminate tenent hair. Claw without, or with inner tooth. Empodial appendage without basal lamella, its length equalling 2/3 of the inner edge of the claw.



Figs. 1-4: *Prothaphorura eichhorni* (Gisin, 1954). Fig. 1. Dorsal chaetotaxy. Fig. 2. Antenna III-organ. Fig. 3. Postantennal organ with one pseudocellus. Fig. 4. Ventral male organ, rudiment of furca and genital plate in stage III. (Stages after Pomorski 1986).



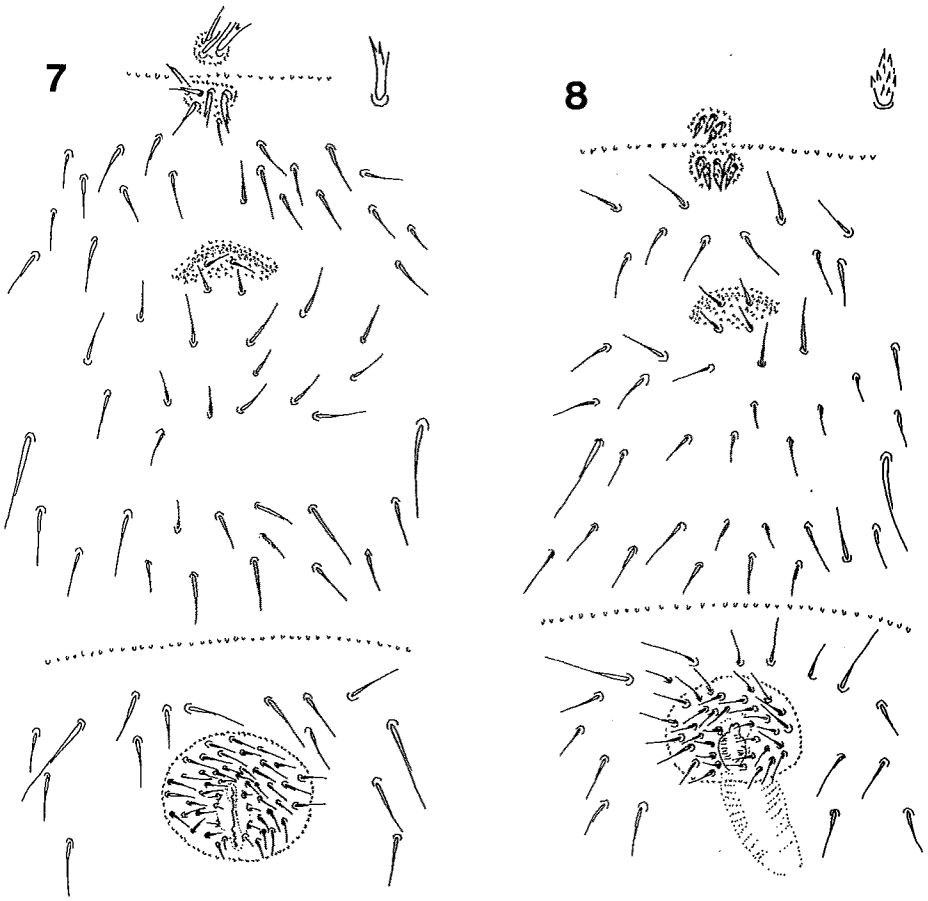
Figs. 5-6: *Protaphorura eichhorni* (Gisin, 1954): ventral male organ, rudiment of furca and genital plate. Fig. 5. Stage IV. Fig. 6. Stage V.

Discussion

Gisin (1954), in his description of this species, did not mention the existence of a male ventral organ. A part of his paratypes, stored at the Musée National d'Histoire Naturelle in Luxembourg, are male juveniles, with the male ventral organs at different stages of development. In the material collected by M. Ursone and W. M. Weiner, there are adult males along with the young and preadult ones. This made it possible to follow the development of the shape of setae constituting the male ventral organ (Figs. 4-8).

Specimens belonging to this species demonstrate quite a great variation in pseudocellar formula. Gisin has given the numbers 4 (Gisin 1960) and 3 (Gisin 1954) for the pseudocelli in the posterior part of the head.

Principally, the number of pseudocelli on the base of antenna is constant (except for doubled pseudocelli on one side of one specimen, and three asymmetric pseudocelli in another). Also the number of pseudocelli on thoracal segments, on abdomen I-III, is almost constant. In most cases, the abdomen IV is characterized



Figs. 7-8: *Protaphorura eichhorni* (Gisin, 1954): ventral male organ, rudiments of furca and genital plate. Fig. 7. Stage VI. Fig. 8. Adult male.

by 5 pseudocelli; if 6 or 4 pseudocelli occur, then asymmetrically. On abdomen V a variable number of pseudocelli, occurring asymmetrically. A characteristic arrangement of setae occurs between M and M', where the seta s is almost twice as long as seta s' and setae s".

This species seems to be connected with various types of fresh forests, more likely to occur in litter layer than in the soil.

Acknowledgements

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