CAUCASONETHES BORUTZKYI VERHOEFF, 1932: NEW CHARACTERS TO THE ORIGINAL DESCRIPTION

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Abstract. This paper provides larger and more detailed drawings and an extended re-description of the species *C. borutzkyi*.

Key words: Isopoda, Oniscidea, Trichoniscidae, *Caucasonethes*.

1. INTRODUCTION

The genus *Caucasonethes* was established by K. W. Verhoeff in 1932 for a new species collected by E. V. Borutzky in 1929, in two caves from the Kutaisi region (Transcaucasia, Georgia): Rion-Höhle and Zchal-Ziteli Höhle (VERHOEFF, 1932).

Currently, the genus *Caucasonethes* includes only two species: *Caucasonethes borutzkyi* Verhoeff, 1932 and *Caucasonethes vandeli* Tabacaru, 1993 (TABACARU, 1993).

The second species was described from material collected by Prof. Traian Orghidan and Prof. Margareta Dumitrescu from two caves located in Central Dobrogea, namely Peştera Liliecilor de la Gura Dobrogei (on the right slope of the Visterna Creek, right tributary of the Casimcea Valley) and Peştera de la Casian (on the right slope of the Casimcea Valley) (peştera=cave) (TABACARU, 1993).

Subsequently, during extensive studies on Movile Cave, our colleague dr. Maria Georgescu and dr. S. M. Sârbu collected a blind and depigmented trichoniscid which proved to be a subspecies endemic for Movile Cave (Southern Dobrogea): *Caucasonethes vandeli pygmaeus* (GIURGINCA, 2020).

Since in his paper Verhoeff gave only relatively small drawings with few details, herein we continue and complete the description of Verhoeff by providing larger and more detailed drawings of *C. borutzkyi* which might help the species identification in case it might be found in other locations than the original one, but also for systematic and taxonomic analyses.

2. MATERIAL AND METHODS

In order to redraw the main characters of *C. borutzkyi* we have studied the holotype of the species described by Verhoeff and lent by Zoologische Staatssammlung München to dr. I. Tabacaru (4 slides in Canada balsam).

The drawings were made by I. Tabacaru, and were drawn in China ink by A. Giurginca.

3. RE-DESCRIPTION OF *CAUCASONETHES BORUTZKYI*

The description of the main taxonomically significant characters of *C. borutzkyi* follows VERHOEFF (1932) and our own observations.

Size: male: 4.75–5 mm, **female:** 5.3 mm.

Color: depigmented, completely white.

Eyes: absent.

Tegument: dorsally, the pereion with fine granules, the epimera with oblique ridges. Tergites with very fine scales on the edges of epimera. The telson is triangular, round-pointed with deeply curved sides; uropodal endopodites slightly shorter than the exopodites (Fig. 1).

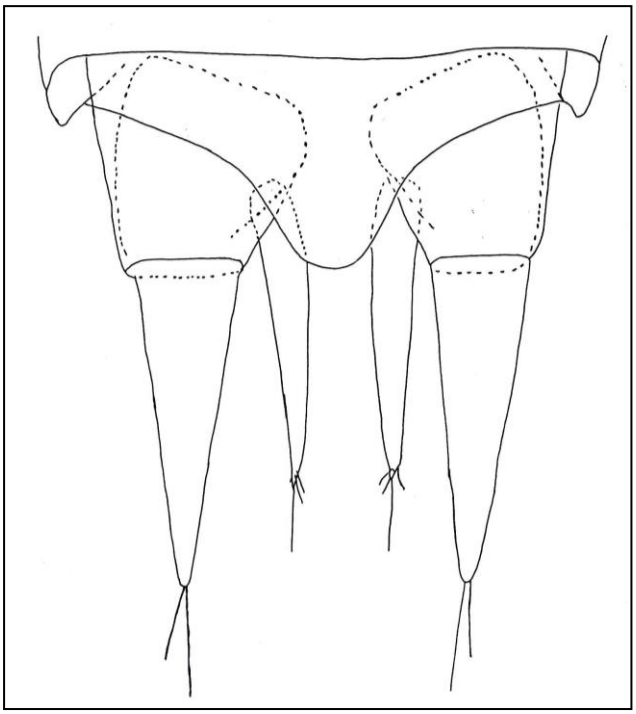

Fig. 1. *Caucasonethes borutzkyi*: telson and uropodes (redrawn after VERHOEFF, 1932).

Appendages:

Antennule: made up of three articles; article 1 is widened, article 2 is only half as wide as article1 and slightly longer than wide, article 3 curved, slender, ending in 3–4 aesthetascs.

Antenna: the fifth article of the peduncle with a long, bi-articulated bristle; flagellum made up of four very similar articles, the last article with four bristles.

Mouthparts:

Maxilliped: stronger endopodite, palpus not bent inwards but straight, the two terminal lobes with scattered bristles (Fig. 2).

Fig. 2. *Caucasonethes borutzkyi*: maxillipede.

Maxillulae (maxilla 1): inner endite with three penicilli: the two upper penicilli (which are sub equal in length) are 3–4 times shorter than the long and pointed basal penicillum (Fig. 3).

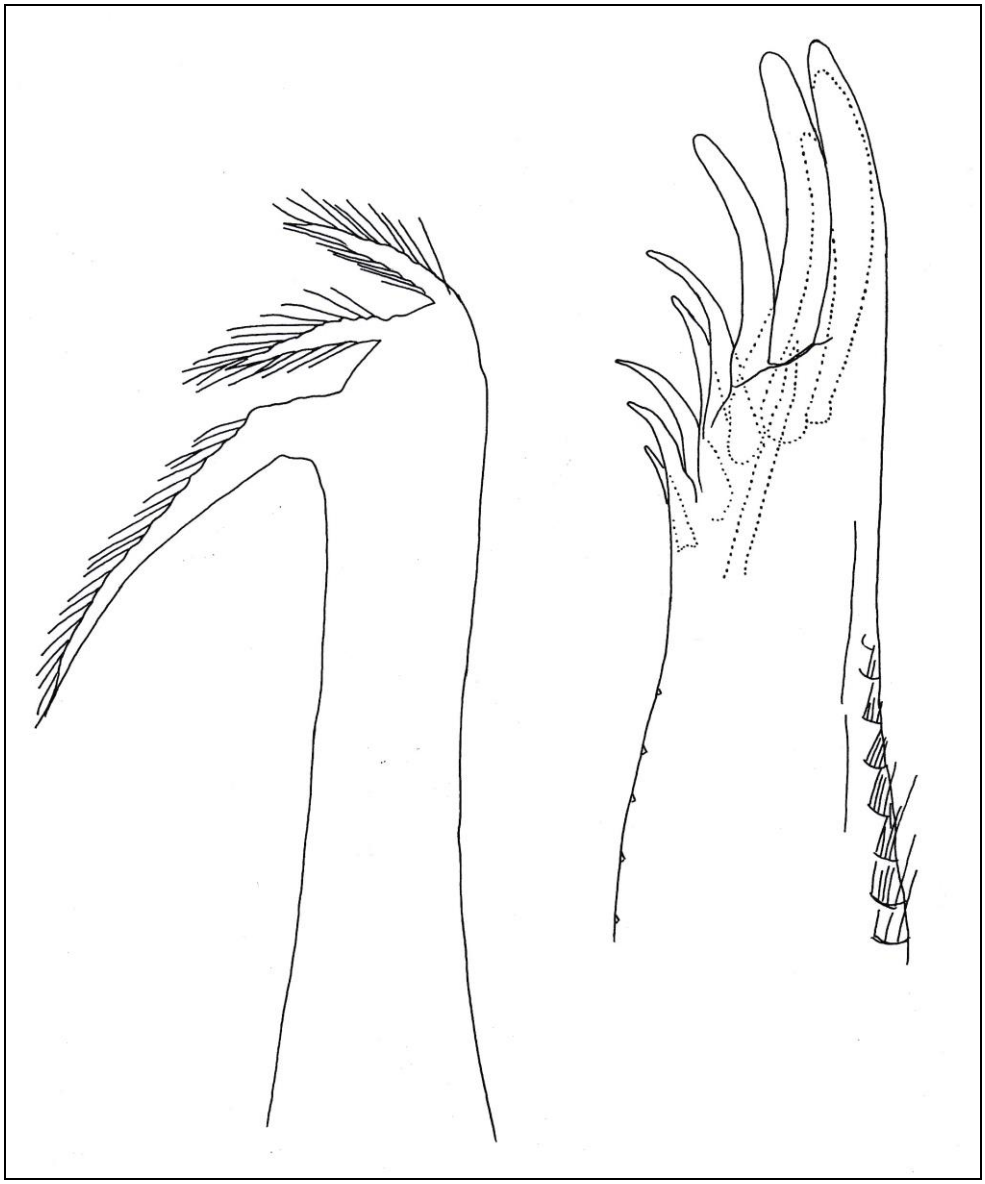

Fig. 3. *Caucasonethes borutzkyi*: maxilla 1.

Outer endite with 4 strong, terminal teeth and 6 additional, slenderer teeth.

Maxilla (maxilla 2): bilobed, the outer lobe is smaller than the inner lobe and juts out with a terminal apex; both lobes covered abundantly with bristles.

Left mandible: *pars incisiva* with four teeth and *lacinia mobilis* with three teeth; two penicilli inserted near the base of *lacinia mobilis* and another one between the *lacinia mobilis* and *pars molaris*; no penicillum on *pars molaris* which has a tooth-like protrusion (Fig. 4).

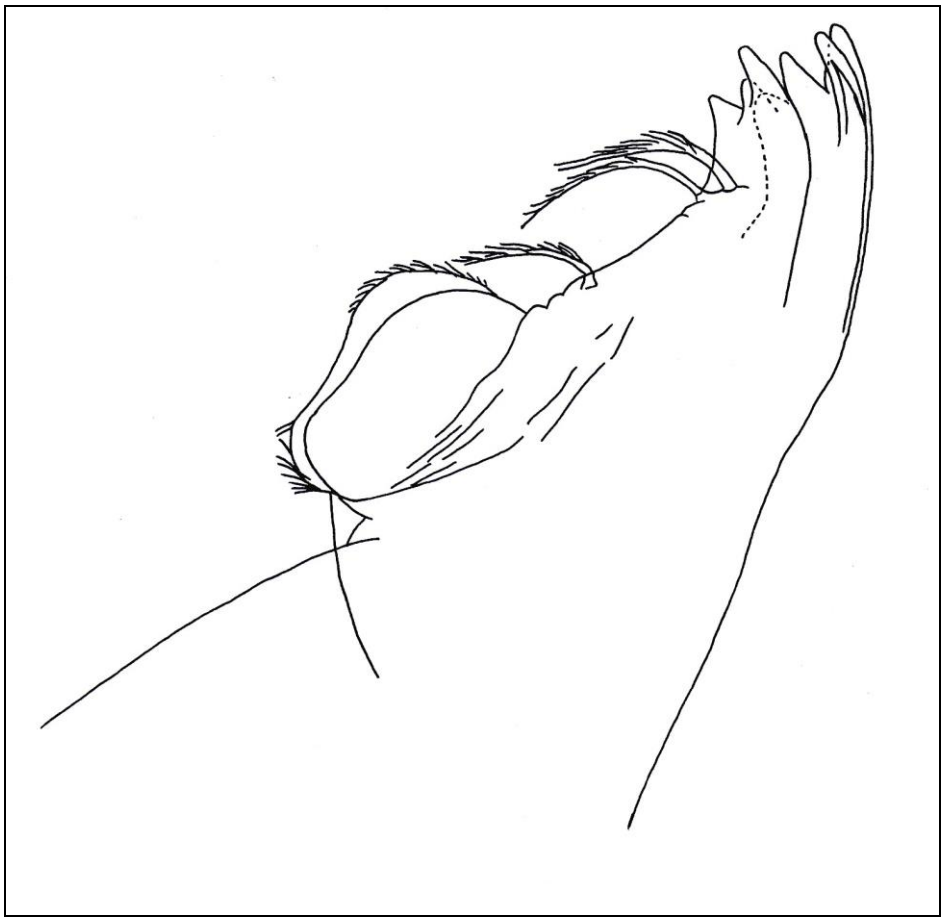

Fig. 4. *Caucasonethes borutzkyi*: left mandible.

Right mandible: *pars incisiva* with only three teeth; at the base of *lacinia mobilis* there is only one penicillum and another one between the *lacinia mobilis* and *pars molaris* but clearly closer to the latter one; there is an additional penicillum inserted on the caudal side of the *pars molaris* which ends with a tooth-like corner (Fig. 5).

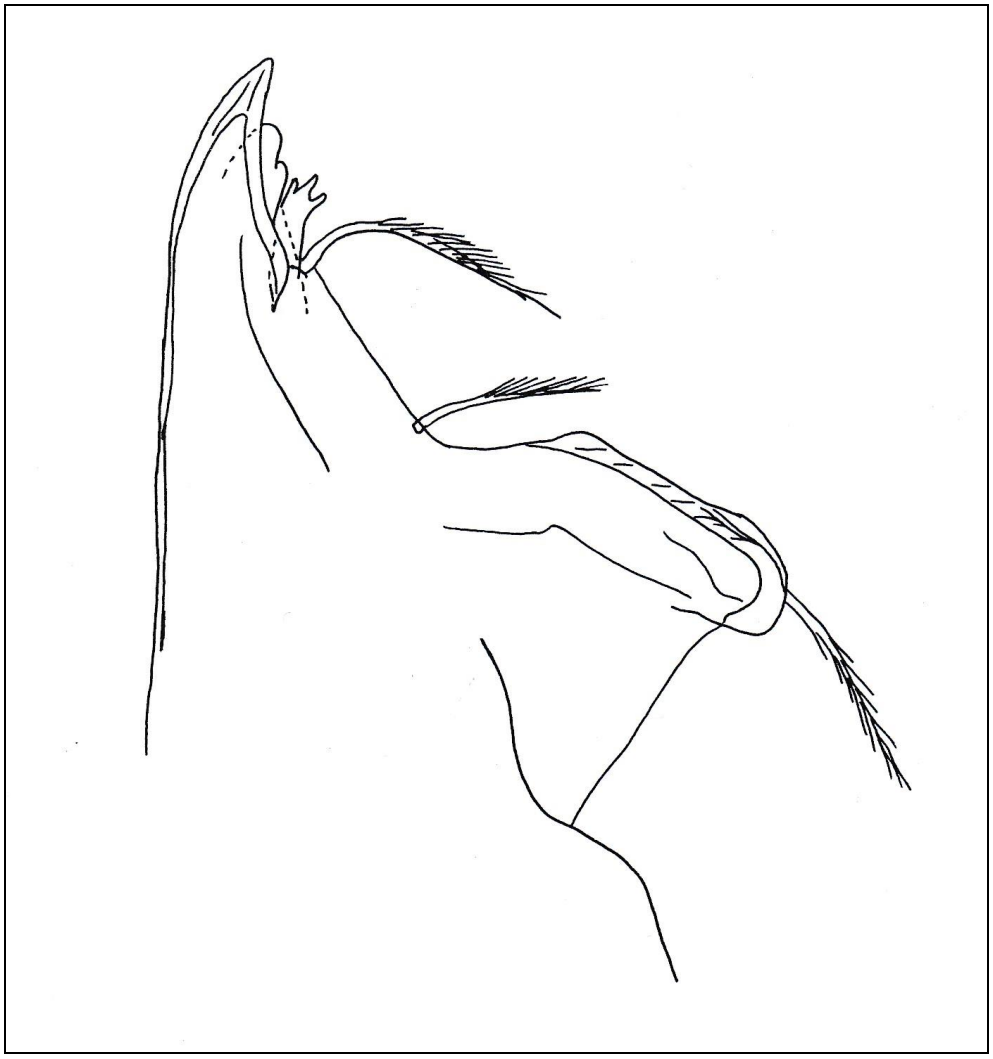

Fig. 5. *Caucasonethes borutzkyi*: right mandible.

The pereiopodes do not exhibit sexual differentiation.

Pereopod VII male: distal part of meropodite expanded, clavate, slightly longer than wider at the end, slightly indented ventrally between the spiny bristles. Propodus, in both sexes, with a brush on the tergal edge (Fig. 6).

Male sexual characters:

Genital apophysis: long and narrow, without any particular distinction (Fig. 7).

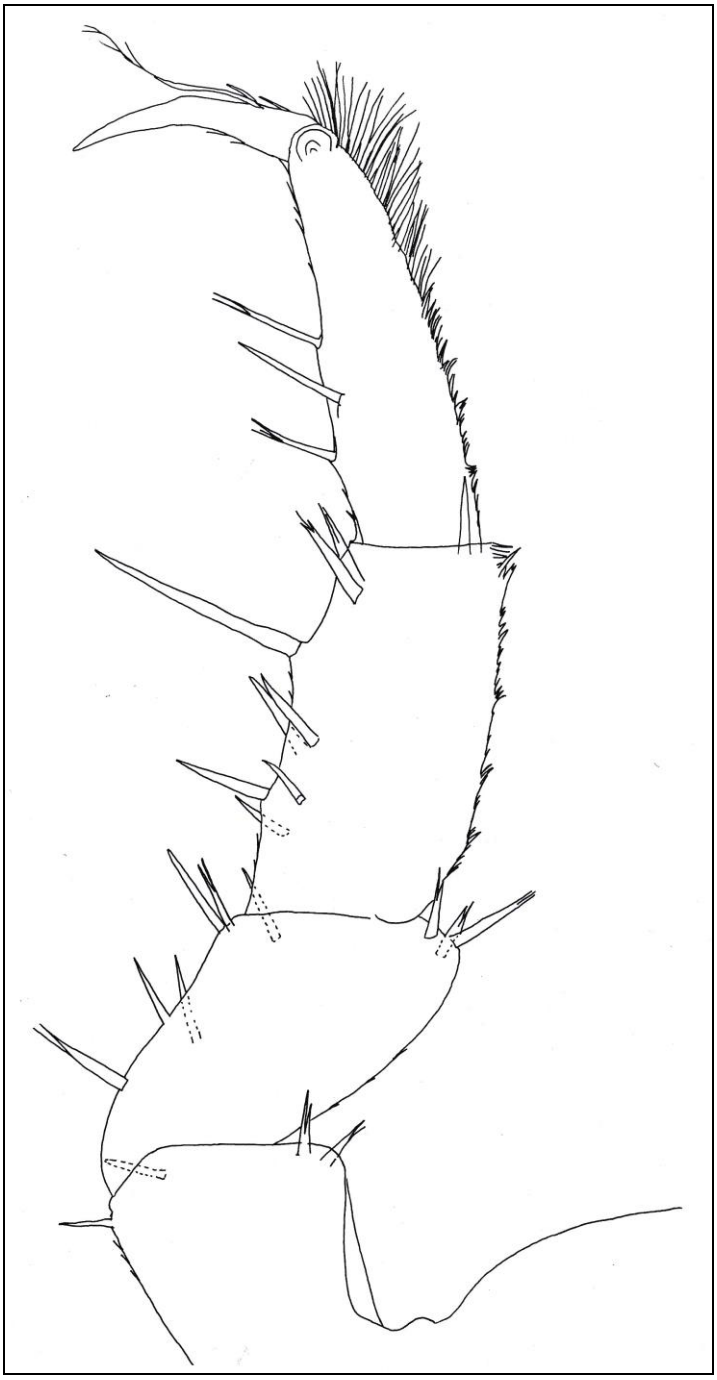

Fig. 6. *Caucasonethes borutzkyi*: pereopod VII male.

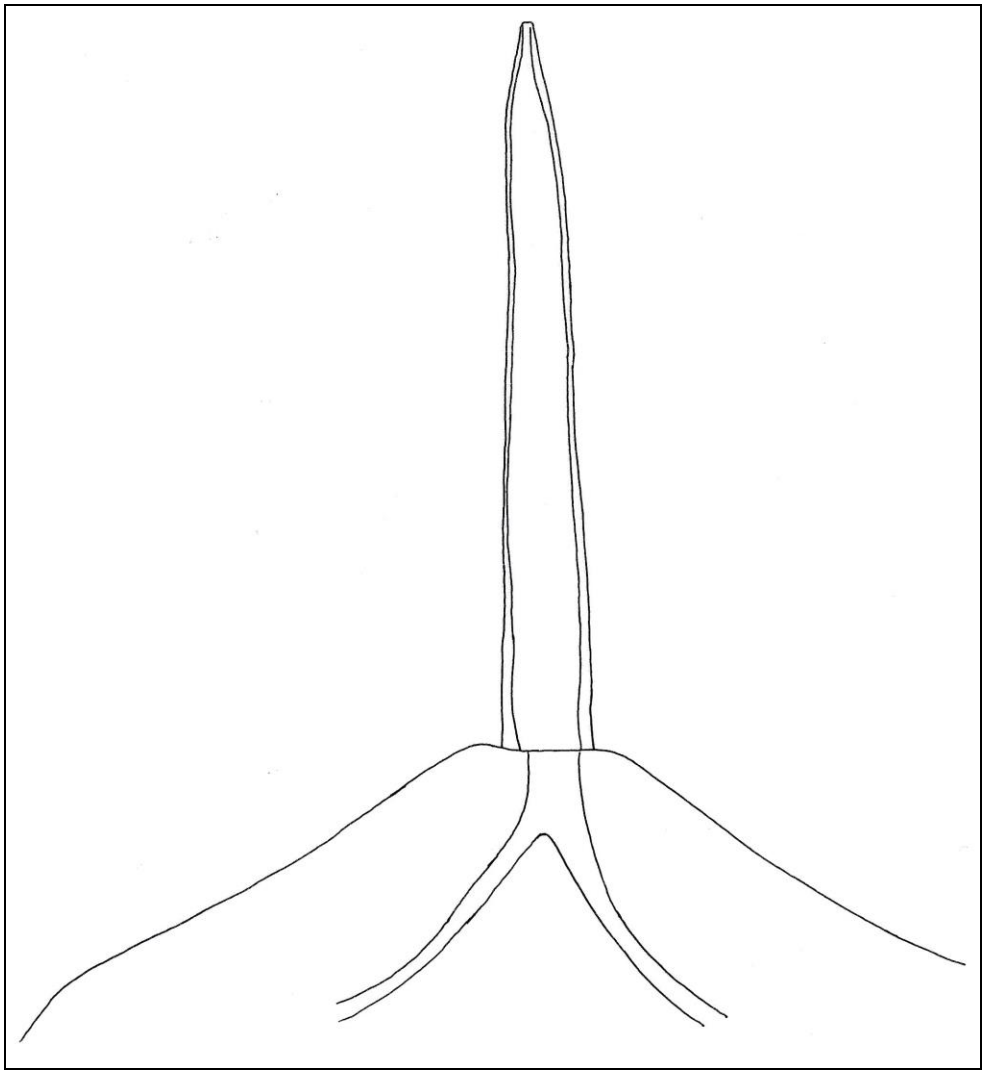

Fig. 7. *Caucasonethes borutzkyi*: genital apophysis.

Pleopod 1: triangular exopodite, almost three times longer than wide, completely obscuring the endopodite. Apically divided into two lobes, partly superposed. The outer lobe is rounded; the inner lobe presents a pointed outer corner and a rounded inner corner. The endopodite is elongated and unsegmented, gradually narrowing towards the tip (Figs. 8 & 9).

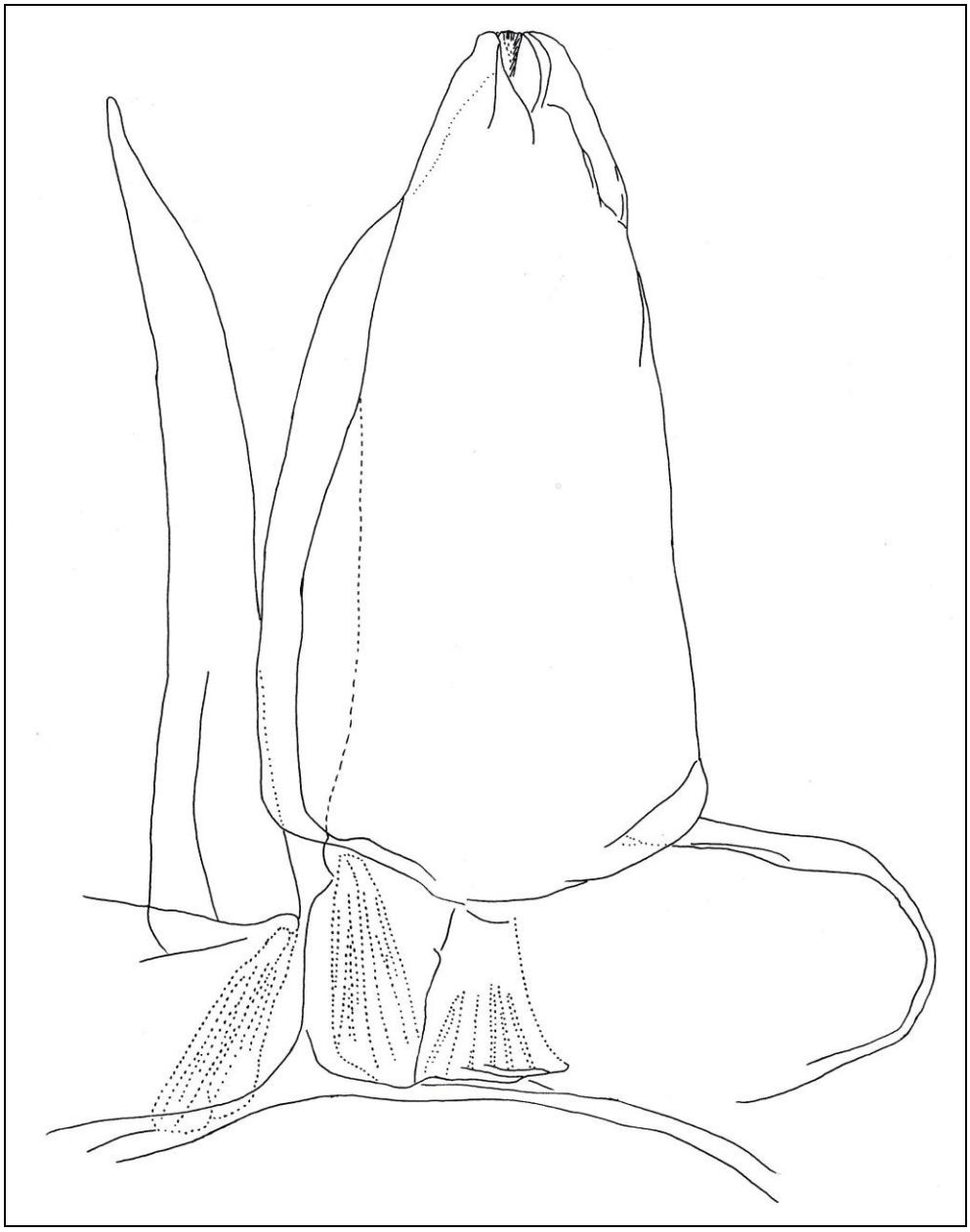

Fig. 8. *Caucasonethes borutzkyi*: pleopod 1 male.

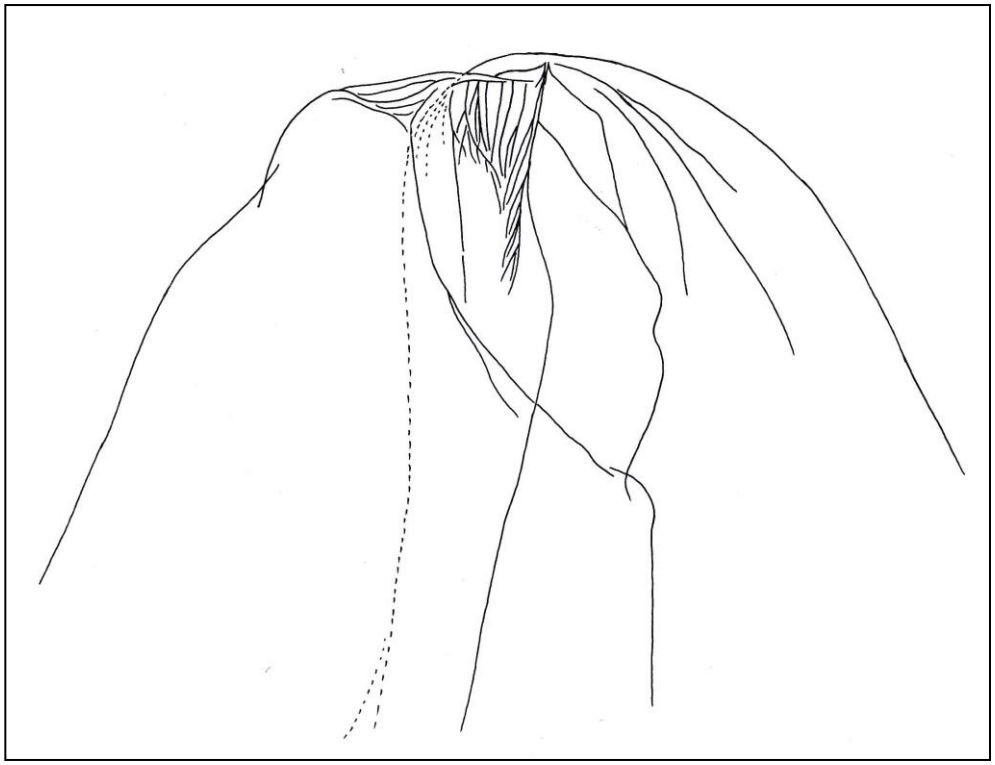

Fig. 9. *Caucasonethes borutzkyi*: pleopod 1 male, tip of the exopodite.

Pleopod 2: exopodite rectangular with rounded corners but with the postero-internal corner protruding backwards forming an indentation on the posterior edge. Endopodite bi-articulated, the two sub equal articles, the second article tapering in its distal half (Fig. 10).

Pleopods 3, 4 and 5: exopodites of 3 and 4 pleopods rounded-triangular in shape, while the exopodite of pleopod 5 (Fig. 12) is oval and covered with fine bristles at the posterior edges (the exopodite of pleopod 3 without any bristles, and the exopodite of pleopode 4 has only scarce bristles).

Distribution: Originally, Verhoeff described the species *C. borutzkyi* based on material collected by Dr. Borutzky from Rion-Höhle and Zchal-Ziteli Höhle (höhle=cave) (VERHOEFF, 1932). In the first cave, the species was collected on water puddles, while in the second cave, it was collected on bat guano (VERHOEFF, 1932).

Subsequently, Rion-Höhle was mentioned as Riongesovskaya or Sapichkaya Cave (Sapichkhia=Rionhesi) and was destroyed by the building of the Rioni Hydroelectric Power Station in the 1930s while Zchal-Ziteli Höhle seems to be currently known as Tskalsitela (Iazoni) Cave, in Tskhaltubo District, although one

source considers the two caves as one (Tskal-Tsiteli=Rion=Iazoni Cave) (VERHOEFF, 1932; GOLOVATCH, 1984–1985; KUZNETSOVA & GONGALSKY, 2012; BARJADZE & AL., 2015; BARJADZE & AL., 2018; MARIN, 2020; GREGO & AL., 2020).

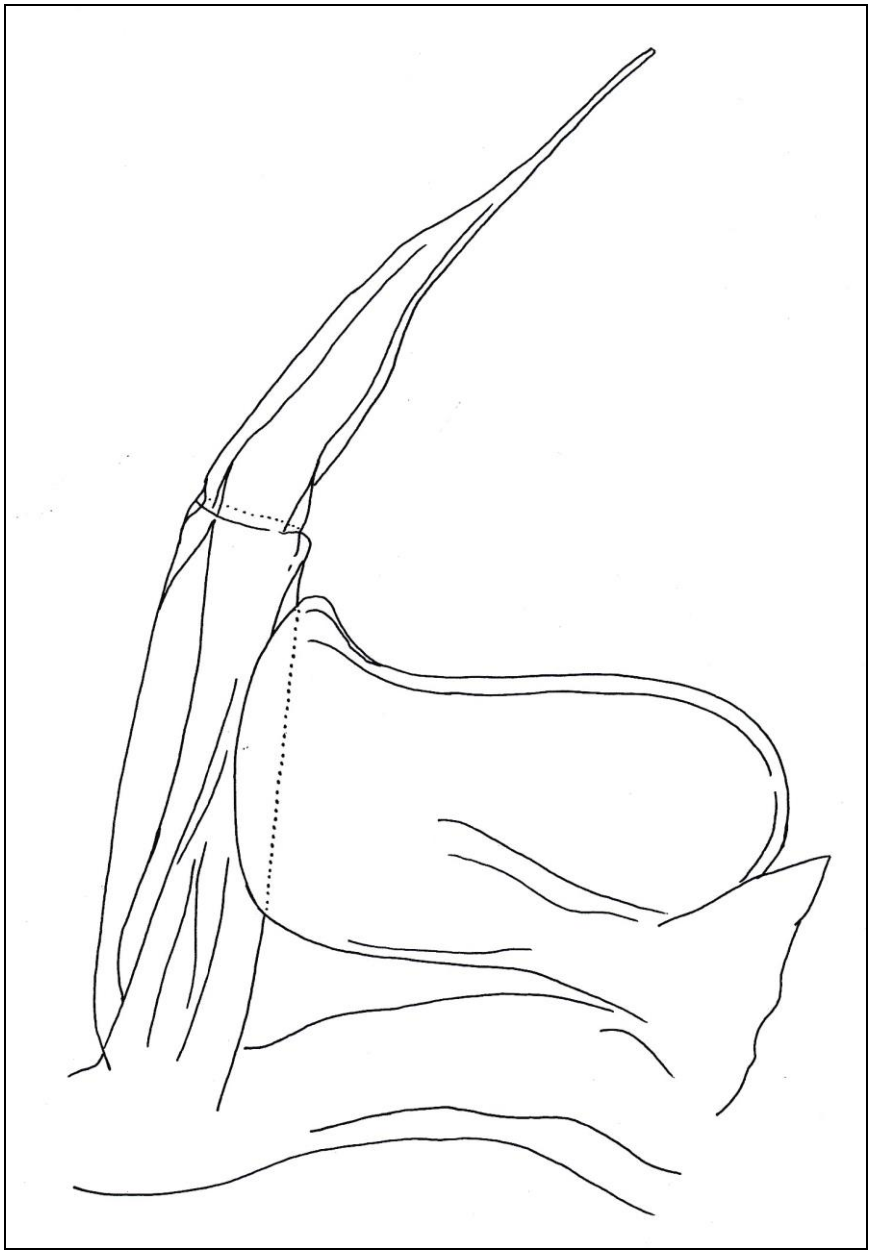

Fig. 10. *Caucasonethes borutzkyi*: pleopod 2 male.

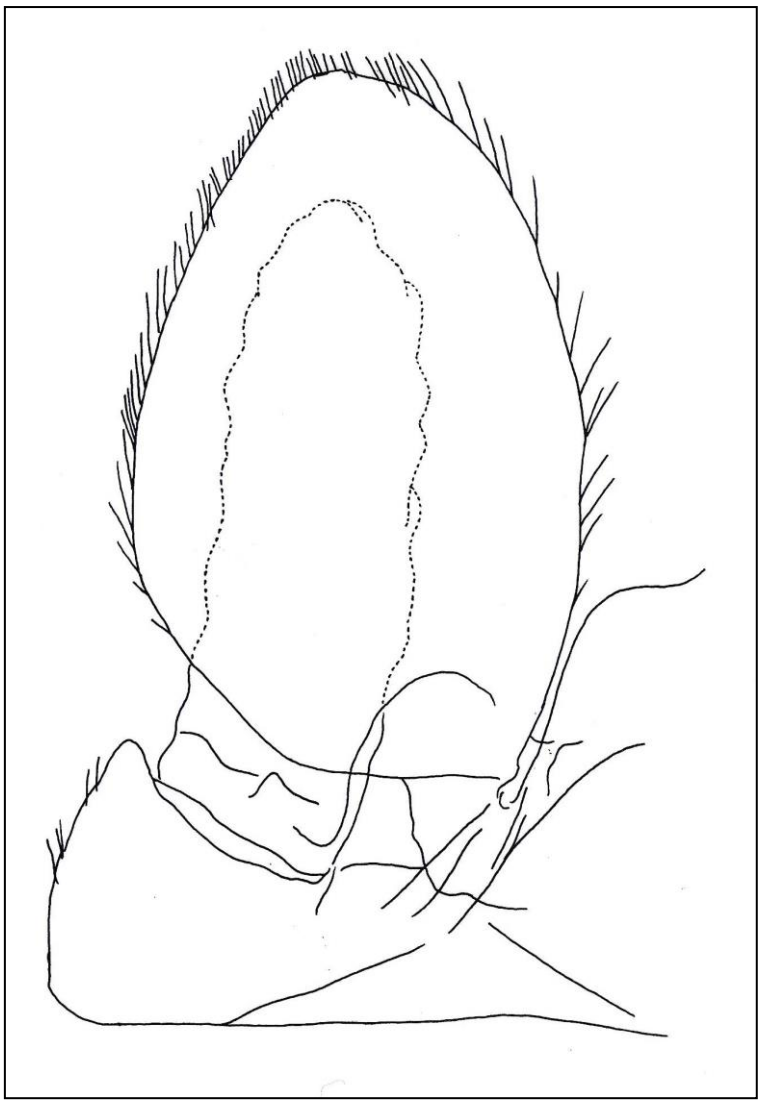

Fig. 11. *Caucasonethes borutzkyi*: pleopod 5 male.

4. DISCUSSION

C. borutzkyi differs from *C. vandeli* by its larger size (4.5–5 mm in *C. borutzkyi* versus 3 mm in *C. vandeli*) and by the prominent, protruding postero-internal corner of the pleopod 2 male exopodite (in *C. borutzkyi*) compared to the rounded, non-protruding internal corner of the pleopod 2 male exopodite found in *C. vandeli* (TABACARU, 1993).

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Author's contribution: The drawings were made by I. Tabacaru; the text and the drawings in China ink by A. Giurginca.

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