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## Redescription of *Tetracanthella caucasica* STACH, 1947, status nov. (Collembola: Isotomidae)

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KOVÁČ L. 1993. Redescription of *Tetracanthella caucasica* STACH, 1947, status nov. (Collembola: Isotomidae). Acta zool. cracov., 35(2): 373-379.

Abstract. *Tetracanthella afurcata caucasica* STACH, 1947 is redescribed as the species *Tetracanthella caucasica* STACH, 1947.

Key words: *Collembola*, *Tetracanthella*, taxonomy, Caucasus.

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### I. INTRODUCTION

Several individuals belonging to the genus *Tetracanthella* SCHÖTT, 1891 were found in material from Caucasus. This material corresponds to STACH's (1947) description of *Tetracanthella afurcata caucasica*. Unfortunately, its description is very brief and so in the genus revision DEHARVENG (1987) placed this taxon among the *species inquirenda*. I found the type material of *T. afurcata caucasica* deposited at the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences in Kraków. A study of the types and material found by me in the Caucasus showed that they are identical and led me to the conclusion that *T. caucasica* is a good species.

I wish to express my sincerest thanks to Prof. Dr. Andrzej SZEPTYCKI and Dr. Wanda M. WEINER (Kraków) for the loan of type material, Dr. J. RUSEK, Dr Sc. (České Budějovice) for critical comments and Prof. Dr. L. DEHARVENG (Toulouse) for his valuable remarks and the material of *T. clandestina*.

### *Tetracanthella caucasica* STACH, 1947, status nov.

*Tetracanthella afurcata caucasica*: STACH 1947

**D i a g n o s i s.** Body 1-1.2 mm long, dark grey. Large smooth plates on tergites of abdomen (plages lisses sensu DEHARVENG 1987) absent. Number of eyes 8+8. Sensilla s' on third antennal segment present in males. Outer lobe of maxilla with three sublobal hairs.

Two prelabral setae present. Axial chaetotaxy of tergites: 12,8/4,4,4,4. Macrochaetotaxy of tergites: 2/2,2/2,2,3. Metasternum with 1+1 setae. Coxa I with one outer mesochaeta. Retinaculum and mucrodens absent.

**Description.** Body 1-1.2 mm long. Colour dark grey. Ocular areas dark, antennae less pigmented, than body; coxae like body, remaining parts of legs more light coloured; ventral side of body weakly pigmented.

Antennae shorter than head, as 1:1.2. Antennal segments I:II:II:IV as 35:50:43:70 ( $\mu\text{m}$ ) in largest individual. Sensilla *s'* on third antennal segment present in males (Fig. 4A). Two sensillae *sm'* on antennal segments III, and III were found in one male (Fig. 4A). Mesochaeta *g* in sense organ on third antennal segment present.

Postantennal organ (Fig. 2C) narrowly – elliptical, 2 – 2.2 times longer than diagonal of nearest eye. Number of eyes 8+8; eyes *G* and *H* reduced to 0.6 of the length of eyes *A* – *F*.

Two prelabral setae; clypeolabral chaetotaxy 1,3,2/3,5,4 (Fig. 3B). Outer lobe of maxilla with three sublobal hairs (Fig. 3C). Three setae *pp* between the middle axis and seta *pc3* on the posterior margin of the dorsum of the head. Unpaired seta *ap* on dorsum of head absent (Fig. 2A).

Claw without teeth, 23-25  $\mu\text{m}$  long. Empodial appendage narrow, with fine apical bristle, 9-12  $\mu\text{m}$  long. Outer mesochaeta on coxae of first pair of legs present (Fig. 2D). Legs with 1,2,2 dorsal tibiotarsal tenent hairs, weakly clavate; ventral one not differentiated. Setae *x* on ventral side of tibiotarsus III not thickened in a rodlike manner in males (Fig. 3A). Mesosternum with 1+1 setae.

Ornamentation of integument on abdominal tergite IV as in Fig. 3F. Large smooth plates (plages lisses sensu DEHARVENG, 1987) absent on tergites. Tubus ventralis with 3+3 lateroanterior and 2+2 posterobasal setae. In two males another unpaired posterobasal seta between two extreme ones. Retinaculum absent; one unpaired seta in that area. Mucrodens absent. Anterior subcoxae of furca with 4-6 setae, posterior with 3-4 setae (one pair hypertrophied). Manubrium fused with abdominal sternite IV, covered with 8-9 + 8-9 setae, one posterobasal pair hypertrophied (Fig. 2B). Traces of dentes on manubrium absent. Anal spines on distinct papillae; anterior ones 17-22 m, posterior 21-25  $\mu\text{m}$  long, yellow.

Chaetotaxy. Axial chaetotaxy of tergites: 12,8/4,4,4,4; macrochaetotaxy of tergites: 2/2,2/2,2,3 (Fig. 2A). Macrochaetae well differentiated, acuminate. All values of chaetal length presented here were obtained from 4 individuals from Kazbegi (Georgia): 2 males and 2 females. Length of macrochaetae as in Table I:

Setae *a1* on abdominal tergite V+VI hypertrophied, 38-60  $\mu\text{m}$  long. Mesochaetae 20-27  $\mu\text{m}$  long; on posterior margin of head, thorax II and III, abdomen I, II and III and whole tergite of abdomen IV 30-40  $\mu\text{m}$  long. Distribution of microchaetae as in Fig. 2A, 5-8  $\mu\text{m}$  long; at anterior pair of anal spines 10-12  $\mu\text{m}$  long.

**Variability.** Certain degree of variability was observed in the ornamentation of integument. 18 adult and subadult individuals were examined: 6 from the localities Bezengi and Karaugom and 12 from Kazbegi. In 14 individuals – 11 from Kazbegi (6 males, 5 females) and 3 from Bezengi + Karaugom (all females) – the ornamentation of

Table I

Length of macrochaetae of *Tetracanthella caucasica* ( $\mu\text{m}$ )

	<i>Oc</i>	<i>Md</i>	<i>Mdl</i>	<i>Ml</i>
Head	38-55			45-60
Th II			35-55	63-90
Th III			38-58	60-85
Abd I			43-65	53-80
Abd II			50-75	60-85
Abd III		53-73	58-80	60-85
Abd IV		58-78	38-75	63-88/55-73
Abd V+VI	<i>M<sub>1</sub></i> : 78-105		<i>M<sub>2</sub></i> : 80-115	

\*Macrochaetae: *Oc* – ocular, *Md* – dorsal, *Mdl* – dorsolateral, *Ml* – lateral, *M<sub>1</sub>*, *M<sub>2</sub>* – macrochaetae on abdominal tergite V+VI

cuticle is as in Fig. 3F; in 2 from Bezengi + Karaugom (1 male, 1 female) the ornamentation is as in Fig. 3E and two individuals – 1 from Kazbegi (female) and 1 from Bezengi + Karaugom (male) – as in Fig. 2D. No other differences were found in the basic taxonomic characters in the material examined.

It can be seen from the foregoing that the size and form of the cuticular plates are independent of sex and the individuals with different cuticular ornamentations are not confined to certain localities or valleys in the Central Caucasus. Variable individuals were found in material from both Bezengi + Karaguom and Kazbegi (see Fig. 1). And so the differences in ornamentation of cuticle in separate individuals noted here are due to intraspecific variability.

**Affinity.** The description presented here makes it possible to place *T. caucasica* to the *wahlbergi* – group (see DEHARVENG 1987). This species is most similar to *T. clandestina* DEHARVENG, 1987. Both have identical axial chaetotaxy and macrochaetotaxy of tergites. *T. caucasica* differs from it in having 8+8 eyes and setae *x* on the tibiotarsus of the third pair of legs which are not thickened in a rod like manner. Besides, there are no traces of dentes on the manubrium.

The redescribed species is also similar to *T. afurcata* HANDSCHIN, 1919 in lacking a retinaculum and mucrodens, but differs mainly in its axial chaetotaxy: 12-14,8/6,6,6,8-10 and macrochaetotaxy of tergites: 2/1-2,2/2,2,2 and in having 6+6 eyes, 4 prelabral setae and 2 sublobal hairs of outer lobe of maxilla.

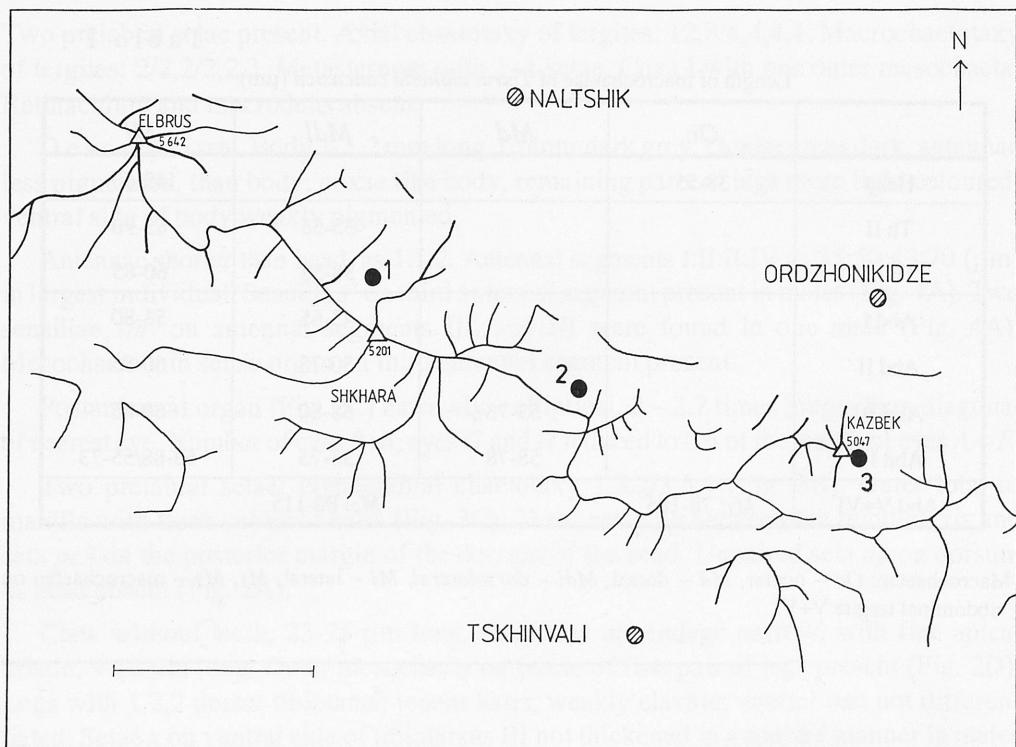


Fig. 1. Central Caucasus, localities with records of *Tetracanthella caucasica*. 1 – Bezengi, 2 – Karaugom, 3 – Kazbegi (scale: 50 km).

**Type material:** lectotype (female) and 5 paralectotypes on slides and 1 paralectotype in alcohol in the collection of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences in Kraków.

**Type locality:** Caucasus, Russia, at the foot of the Karaugom and Bezengi glaciers, 2500 m a. s. l., 17 VII and 7 VIII 1935, leg. Dr. R. WOJTUSIAK.

**Other material:** Caucasus, Georgia, Kazbegi, Gergeti Valley, ca 2200 m a. s. l., mosses and lichens on rocks and soil under *Rhododendron* sp., 15 X 1989, 20 individuals on slides in the author's collection, leg. L. KOVÁČ.

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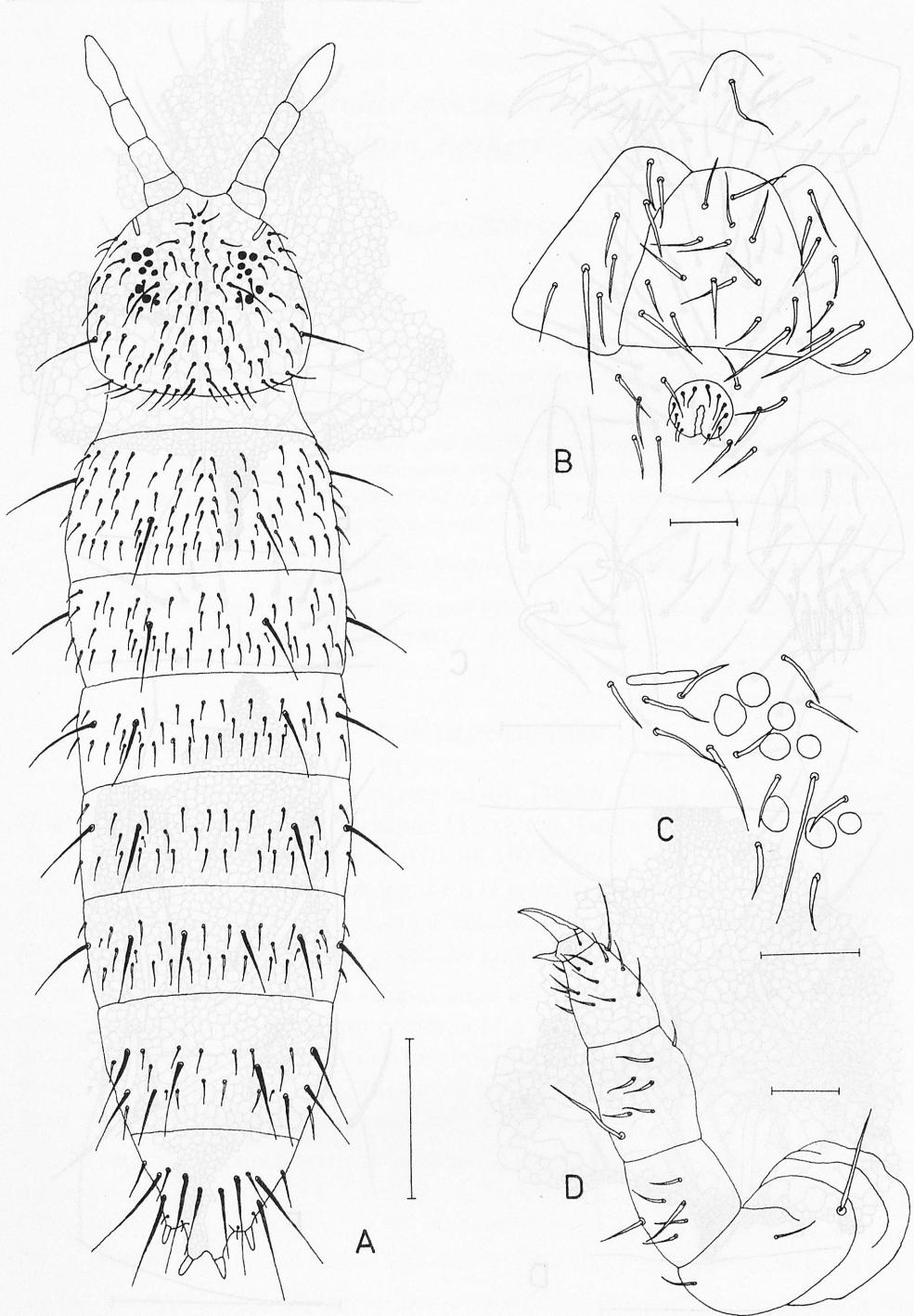


Fig. 2. *Tetracanthella caucasica*. A – dorsal chaetotaxy (scale: 200  $\mu\text{m}$ ), B – manubrium, anterior and posterior subcoxae of furca and genital area (scale: 20  $\mu\text{m}$ ), C – postantennal organ and eyes of left side (scale: 25  $\mu\text{m}$ ), D – first leg (scale: 30  $\mu\text{m}$ ).

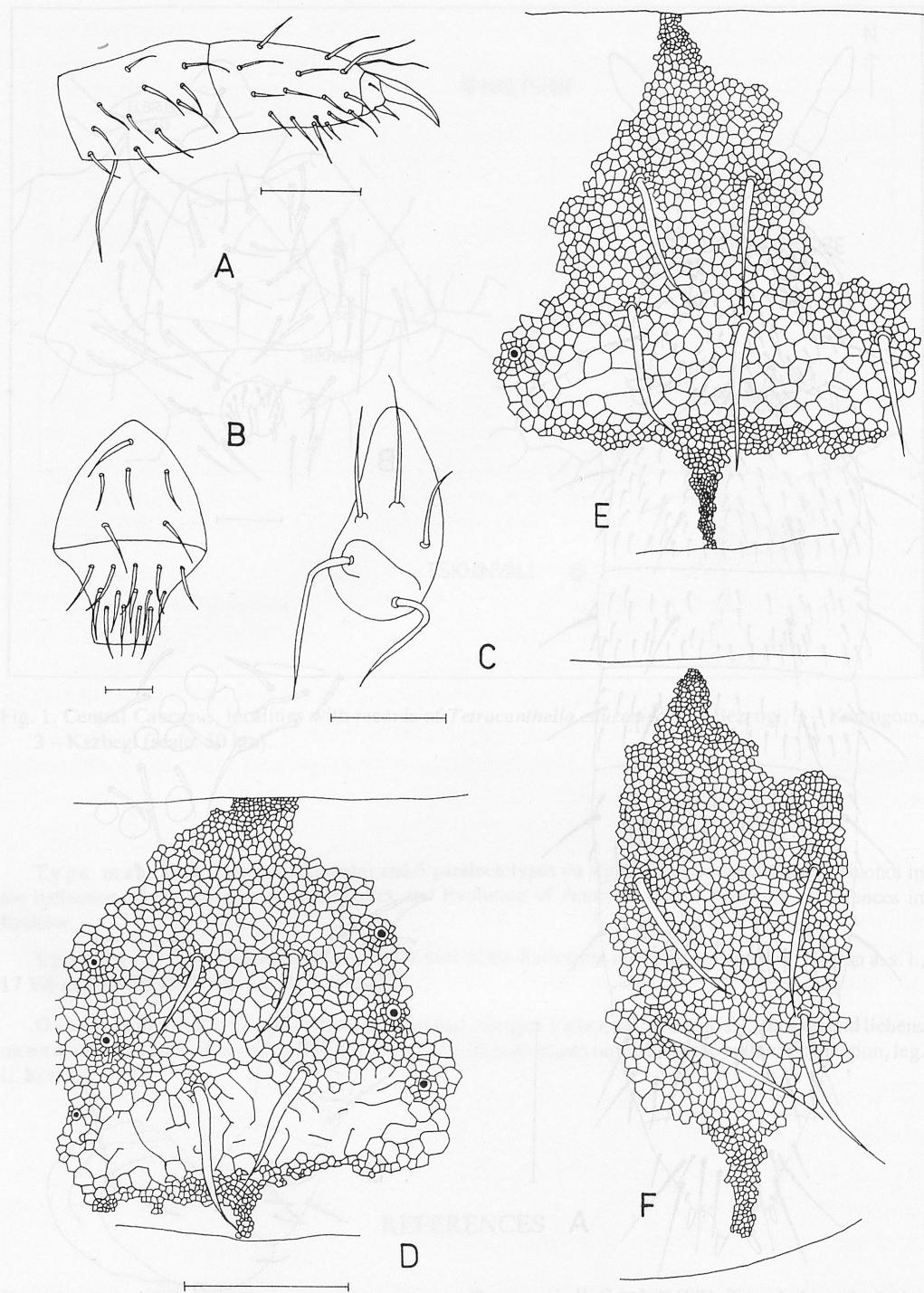


Fig. 3. *Tetracanthella caucasica*. A – femur, tibiotarsus and claw of third leg (scale: 40 µm), B – clypeus and labrum (scale: 20 µm), C – Outer lobe of maxilla (scale: 15 µm), D–F – axial cuticular ornamentation of fourth abdominal tergite: D – male from Bezengi + Karaugom, E – male from Bezengi + Karaugom, F – male from Kazbegi (scale: 35 µm).

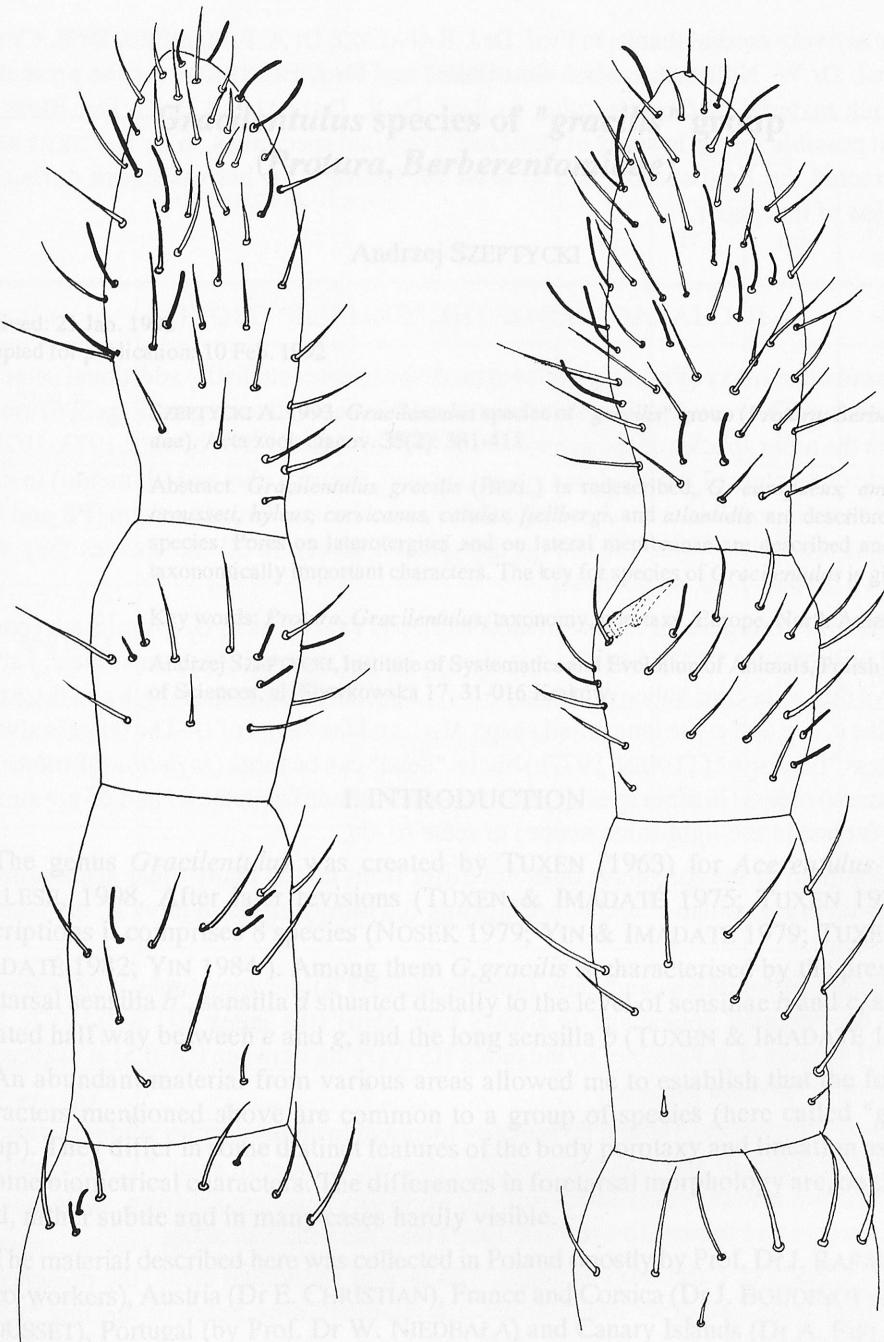


Fig. 4. *Tetracanthella caucasica*. A – ventral side of left antenna, B – dorsal side of right antenna (scale: 40 µm).

