

Wanda Maria WEINER and Judith NAJT

North Korean *Collembola*. V. The Genus *Grananurida* YOSHII, 1954 \*

[9 text-figs.]

Północnokoreańskie *Collembola*. V. Rodzaj *Grananurida* YOSHII, 1954

Abstract. In this work we redescribe *Grananurida tuberculata* YOSHII, 1954 with a new diagnosis of the genus and we placed it among the *Pseudachorutini*.

The presence of a number of specimens of *Grananurida tuberculata* YOSHII, 1954 in our samples from North Korea allowed us to redescribe and figure this very exceptional species and to place it among the *Pseudachorutini*.

We are much obliged to Prof. R. YOSHII\*\* and Dr. Z. MASSOUD for their kind discussion about validity of this genus and we thank Dr. B. HAUSER for loaning us one specimen of *Grananurida tuberculata* from Japan.

*Grananurida* YOSHII, 1954

Diagnosis. *Pseudachorutini* with body flattened dorso-ventrally. Inter-segments very distinct but hidden under cuticular tubercles.

Segments of antenna I and II distinctly separated, antenna III and IV fused.

Eyes absent. Postantennal organ present, formed by vesicles arranged in a rosette.

External mouth cone short. Labium without seta L. Mandible with 2(3?) teeth. Maxilla slender, styliform with 2 small teeth on the tip, without lamellae.

No tenent hair and empodial appendage.

Furcula reduced to a median protuberance. Tenaculum absent.

No anal spines.

Tegument with secondary granules well developed in the shape of a rosette.

Type-species: *Grananurida tuberculata* YOSHII, 1954.

Type locality: Japan, Katsuôji, dist. Osaka (Honshu Island).

Geographical distribution: Japan (Honshu Island, Hokkaido Island,

\* Studies have been carried out under the CNRS — PAN program.

\*\* R. YOSHII = R. YOSHII

Shikoku Island), North Korea (Provinces: Janggang-do, Phjõngan-punkto, Kangvõn-do).

Remark. This species may be considered a rare one, because in 300 samples examined only 4 individuals have been found.

*Granaturida tuberculata* YOSII 1954

Description. Body length: ♀♀ — 1.3 mm, juv. — 0.65 and 0.78 mm. White in alcohol.

Antennae coniform almost equal to the head (fig. 2). Ant. III and IV fused. Ant. IV with apical vesicle three-lobed, five sensillae subcylindric, one small sensilla in dorso-external position and one very small subapical organ placed behind compound tubercles, the rest of setae normal acuminate, but 4 setae blunt. Ant. III organ with two small thick and oval sensory rods ("flame of a candle") in a groove, with a pair of "guard sensillae" and a little ventro-external sensilla. Ant. II with 11 setae, ant. I with 7 setae.

Eyes absent. Postantennal organ (PAO) of a morula type with 19—27 simple vesicles arranged in a rosette (fig. 3).

External mouth cone short. Labral chaetotaxy: 2/3, 2, 2, 2. Labium without seta L and labial organ (x) (fig. 5). Mandible with two teeth (one specimen with three), maxilla very delicate, fine with two minute apical teeth (fig. 4), without lamella.

Tibiotarsus of legs I—III: 18, 18, 17 setae, without tenent clavate hair, claw with one tooth at one-third of basal part of inner lamella, but without lateral tooth and empodial appendage (fig. 9).

Thoraxal sternal seta absent.

Ventral tube with 3+3 setae. Sternal abd. II—III without impair setae.

Furcal rest present, there is a median protuberance of the tegument with 4+4 or 3+4 setae (figs 6—7).

Genital plate ♀ with 18 setae (fig. 8).

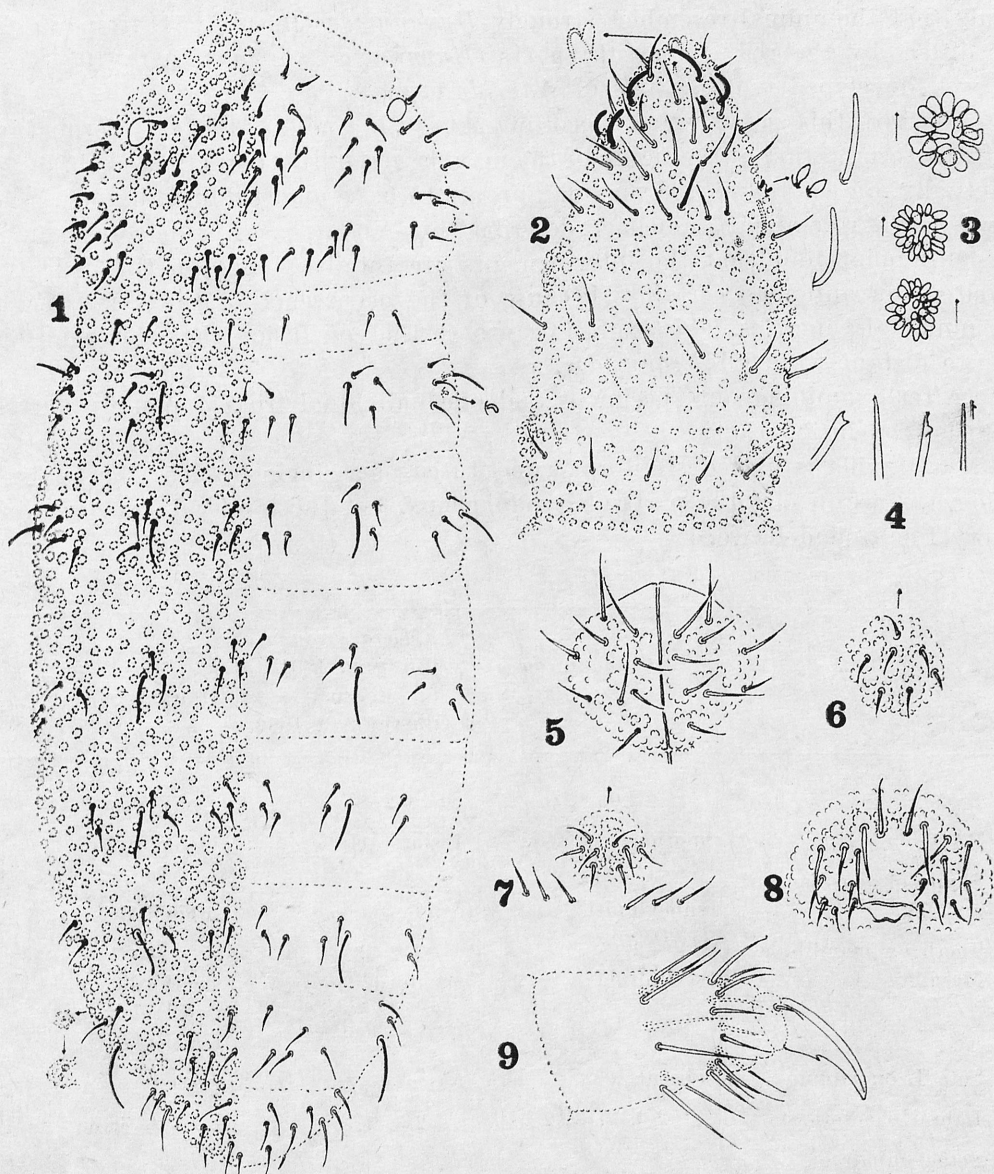
Dorsal chaetotaxy (fig. 1) with simple, acuminate setae and blunt sensory setae, twice longer than a normal seta. The number of sensory setae is: 022/11111.

Cuticular structure: cuticular ornamentation very strong constituted by rosette-shaped tubercles formed of secondary granules. The granules are allocated on the antennal segments, head, tergites of thorax and abdomen, and abdominal sternites. Only the sternites of thorax and legs with very small and slender tubercles.

Material examined: Japan, Hokkaido Island, Futatsu-Tokachi; from the R. Yosii collection, 16. 10. 1962, 1 ex.

Korea, prov. Janggang-do, Džedang-jõng (a hill south-west from Hjesan), fresh larch forest in the lower part of the northern slope, under stone. Collected by A. SZEPTYCKI, 31. 8. 1971, 1 ex. Dist. Samdžijon, the canyon Phote-čhõn, a rich deciduous forest, under stone. Collected by A. SZEPTYCKI, 6. 9. 1971, 1 ex.

Prov. Kangvõn-do, the Kymgang-san mountains, Okru-dong valley, small wood with



Figs 1—9: *Grananurida tuberculata* Yosii, 1954. 1 — dorsal chaetotaxy, 2 — antenna, 3 — post-antennal organ, 4 — mandible and maxilla, 5 — labium, 6—7 — furcal rest, 8 — genital plate ♀, 9 — leg II

oaks and pines on the edge of gravel heap, in litter-sample. Collected by A. SZEPTYCKI and W. WEINER, 1. 7. 1981, 1 ex.

Prov. Phjongan-pukto, the Mjohjang-san mountains, Hjangsan-čhön-river valley, on the edge of a forest with chestnut trees, pines, in litter-sample with leaves, between granite stones. Collected by A. SZEPTYCKI and W. WEINER, 23. 6. 1981, 1 ex.

**Discussion.** This monospecific genus has been defined by YOSII (1954) in the description of the type-species. In the genus diagnosis he mentioned



only that the animal resembles strongly *Hypanurida* DENIS, 1931, from which it differs by the reduced mouth parts (*Hypanurida speobia* YOSHII, 1954 has a well developed mouth parts of *Anurida*-type).

In 1967 this genus was placed by MASSOUD among *Anuridini*, probably after interpretation of the figure of the maxilla given by YOSHII (1954, Abb. 9 C). Actually, on the figure, the maxilla appears to have one styliform branch, and two parts resembling lamellae, described by YOSHII as hyaline structures. YOSHII points out that the intersegments are totally absent on the body as well as on antennae certainly because of the occurrence of the very strong tegumental tubercles. This lead MASSOUD to the conclusion that this genus is quite distant from all *Neanuridae*.

After examining our specimens and one individual from Japan we arrive at the conclusion that:

— Maxilla is indeed styliform, constituted of a single branch; the hyaline elements are in fact the parts of hypopharynx, but these buccal structure are very fine and delicate.

Table 1

Characters	<i>Granaturida</i> YOSHII, 1954	<i>Micranurida</i> BÖRNER, 1901 sensu DEHARVENG, 1982	<i>Rusekella</i> DEHARVENG, 1982
Eyes	0	0 to 2+5	5+5 to 8+8
PAO	morula	1 single circle	1 single circle
Shape of sensillae on ant. IV	subcylindric	candle-flame	subcylindric
Teeth on mandibula	2 (3?)	2—3	4—7
Maxilla	styliform	styliform	styliform or with two lamella slightly denticulated
Seta L on labium	absent	absent	present
Labral chaetotaxy	2/3, 2, 2, 2	2/3, 1, 5*	4/2, 3, 5, 2
Setae impair on sternites of abd. II and III	—	+**	—
Tegumental tubercles	very strong rosette-like	strong	strong
Geographic distribution	Japan, North Korea	Europe, North America, Austral America	Spain, France

\* — after *Micranurida pygma* BÖRNER, 1901 from Pieniny Mts.

\*\* — except in *Micranurida spirillifera* HAMMER, 1953 (FJELLBERG, in litt.)

— There are distinct intersegments on the body and between antennal segments I and II. These zones are constituted of the small primary granules, but entirely covered with the thick tegumental tubercles. These intersegments are clearly visible under dissecting microscope and under microscope at the highest magnification.

In the light of the characters examined here, it appears to us quite clearly that this genus should be placed more naturally among *Pseudachorutini*.

The genus *Granaturida* defined as above would comprise another species: *Micranurida alba* YOSHII, 1966 as it has been mentioned by the author in his paper on *Collembola* of Himalaya. The description of a single specimen is incomplete and the data on antenna IV (sensillae, apical vesicle) are lacking. However, due to the type of postantennal organ and tegumental tubercles of the distal abdominal segments it would be possible to consider this species as related to *Granaturida tuberculata*.

Even though *Granaturida* stays apart from all other genera of *Pseudachorutini* due to the spectacular type of cuticular ornamentation, we present above a tabulation of differential characters of the related genera: *Micranurida* BÖRNER, 1901 sensu DEHARVENG, 1982 and *Rusekella* DEHARVENG, 1982.

We also think that the genus *Granaturida* may descend anyway from the blind *Anurida* probably by the reduction of mouth parts and the hypertrophy of cuticular tubercles.

W. M. WEINER

Polish Academy of Sciences

Institute of Systematic and Experimental Zoology

Ślawkowska 17, 31-016 Kraków, Poland

J. NAJT

LA 42 du CNRS, Entomologie

Muséum National d'Histoire Naturelle

45, rue de Buffon, 75005 Paris, France

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W pracy niniejszej dokonano redeskrypcji *Granamurida tuberculata* YOSII, 1954 oraz podano diagnozę rodzaju włączając go równocześnie do *Pseudachorutini* (*Pseudachorutinae*, *Collembola*).

Redaktor pracy: doc. dr hab. A. Szeptycki