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Hypogastrura (Mucrella) yoshiana
(Collembola, Hypogastruridae), a New Species
from the Tuva Steppe (Southern Siberia).

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ABSTRACT A new species of Collembola Hypogastruridae, *Hypogastrura (Mucrella) yoshiana* sp. nov. is described and illustrated from the Tuva region of Russia.

KEY WORDS *Mucrella* / *Hypogastrura* / Russia / Tuva

***Hypogastrura (Mucrella) yoshiana* sp. nov.** (Fig. 1 a-h)

Length, exclusive of antennae, up to 1,5 mm. Color dark, spotted grey with paler venter. Integument granulation fine and uniform.

Antennae with a simple apical bulb and 7 poorly differentiated sensilla on Ant.4: three lateral and 4 dorsal ones (Fig. 1b), lateral microsensillum and subapical organelle present. Juveniles lack the proximal sensillum of the lateral group and the most lateral sensillum of the dorsal group. Ventral file on Ant.4 with about 10 straight setae, slightly broadened at apex (Fig. 1c). No eversible sac between Ant. 3 & 4. Ant.3 organ is typical for genus, with the inner sensilla closer to one 'guard' sensillum than the other. Labral formula as usual (4/554). Apical edge of labrum with a prominent rim, not divided to clear papillae, and a ventral row of marginal cilia. Labial palp with all usual papillae (A-E), accessory papillae and 9 'guard setae' (Fig. 1e). Mandibles normal, strong. Maxillae as Fig. 1, d: Lam. 1 with denticles in basal part and expanded apex bearing rather long marginal cilia, Lam.2 & 6 with marginal ciliations and denticles all along the inner side. Lam.3 with marginal ciliations only. Lam.4 rather broad but not high with a row of cilia along outer edge, partly hidden by Lam.5. Maxillary palp simple, outer lobe with two sublobal projections. Head with 8+8 subequal ocelli. PAO with 4 lobes, slightly larger than the nearest ocellus.

Dorsal setae rather strong, sometimes with some ciliations. Their differentiation into macrosetae and microsetae is clear in lateral parts of a head and on Abd. 4-6. Juvenile specimens are characterised by stronger seta differentiation. Chaetotaxy almost complete (Fig. 1a), but Th. 1 with only 2+2 setae and setae m_2 on Th. 2 often (found only once on one side) and p_3 on Abd. 4 always absent. Abd. 4 sometimes with additional m-setae. Tibiotarsi of all legs with a complete set of setae even in juveniles: 4 T-setae, 7 setae in A-row (A_1 long, weakly clavate), 7 B-setae (B_2 and B_7 long, but acuminate), and M-seta (Fig. 1f). Unguis with a clear tooth beyond the middle of inner edge and a pair of smaller lateral ones. Unguiculus broadly lamellate reaching 3/4 of



Fig. 1. *Hypogastrura (Mucrella) yoshiana* sp. n.: a, chaetotaxy of head, Th. 1-2, and Abd. 3-6; b, tip of antenna, dorsal view; c, ditto, ventral view; d, maxilla; e, labial palp; f, left tibiotarsus of leg. 3; g, furca; h, mucro. a-c, holotype; d-h, paratypes. Scales: a, 0.1 mm; b-h, 0.01 mm.

inner unguis. Ventral tube with 4+4 lateral setae.

Tenaculum with 4+4 barbs. Furca complete. Dens with 6-7 setae (usually 5 in juveniles), the basal macrosetae about as long as dens (Fig. 1g). Dorsal granulation of dens fine, ventral smooth hyaline area small (smaller than mucro). Mucro (Fig. 1h) curved in a dorsal view, with straight ventral edge, narrow tip with tooth-like apex, and rounded lateral lamella.

Anal spines of moderate sizes, about 0.6-0.7 as long as inner unguis (with papillae almost as long as unguis) and slightly hooked.

Holotype: female: "Russia, Tuva, northern macroslope of Tannu-Ola Mt. Range, 1450 m alt., vicinity of Shuurmak settlement, under lichen *Parmeria saxatilis* (L.) Ach. on rocks in petrophyte steppe, 12. viii. 1997", leg. S. Stebaeva. **Paratypes:** 2 females, 2 males and 6 juv. from the same sample. Types are deposited in the collection of Moscow State Pedagogical University.

Remarks The new species can be easily recognized by its characteristic maxillae and the presence of seta B₇ on tibiotarsus 3 even in juvenile specimens. The latter feature is unique for Poduromorpha as *H. yoshiana* is the only known species of the group having 19-19-19 setae on tibiotarsi.

The precise position of *H. yoshiana*, it is not clear. I believe it could be placed in the subgenus *Mucrella*, the most notable feature of which is a reduction of maxillary Lam. 4 (Fjellberg, 1985). A tendency towards such reduction is clear in *H. yoshiana* but it is not so strong as in four other known species of the subgenus. *H. yoshiana* also shares with the species of *Mucrella* the absence of clear papillae on labrum together with lamellate unguiculus-the condition only typical of species of *Mucrella*, representatives of the "trybomi" group of *Hypogastrura* s. str. and of the subgenus *Ceratophysella*. *Mucrella* species usually have 2+2 setae on Th. 1, a peculiar structure of the mucro, unguis with lateral and inner tooth in the upper part, some development of the ventral file on Ant. 4. Nevertheless the description of *H. yoshiana* within *Mucrella* calls for some changes in its diagnosis, since it lacks a sac between Ant. 3-4 and has weakly clavate tenent hairs.

There are also good reasons for placing *H. yoshiana* in the "trybomi" group of *Hypogastrura* s. str., some species of which (*H. oregonensis* Yosii 1960, *H. maxillosa* Babenko 1994) also have modified maxillae, a ventral file on Ant. 4, lateral teeth on unguis, and similar mucro structure (Babenko et al., 1994); however, all so far known Palaearctic species of the "trybomi" group are characterised by features such as the presence of setae m₆ on Th. 2-3 which are lacking in *H. yoshiana*.

H. yoshiana can be also compared with *H. paradoxa* Yosii 1965 from southern Japan. Although the structure of maxillae of the latter is unknown, it probably belongs to the subgenus *Mucrella* having eversible sac between Ant. 3-4 and all other features common with *Hypogastrura* s. str. Both species can be easily separated by their chaetotaxy as *H. paradoxa* is characterised by a strong plurichaetosis especially on the abdomen's tip.

Etymology The new species is named after Ryozo Yoshi (= Yosii), whose classical

works on Hypogastruridae always were the base of my study of the group in Russia.

Distribution So far known only from the type locality in Tuva where it is common and rather numerous under two foliose lichens (*P. saxatilis*, *Leptogium saturninum* (Dicks.) Nyl.) on rocks in mountain petrophyte steppe.

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