

Taxonomical notes on the species of the genus *Isotomurus* (Collembola: Isotomidae) with the “*balteatus*”-like colouration

Таксономические заметки к видам рода *Isotomurus* (Collembola: Isotomidae) с окраской типа “*balteatus*”

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КЛЮЧЕВЫЕ СЛОВА: Collembola, Isotomidae, *Isotomurus*, степь.

ABSTRACT. *Isotomurus stepposus* sp.n. differing from other species by only one pair of trichobothria is described. *Isotomurus balteatus* with the similar colouration is shortly redescribed.

РЕЗЮМЕ. Описывается *Isotomurus stepposus* sp.n., отличающийся от других видов наличием всего одной пары трихоботрий. Приводится краткое переописание *Isotomurus balteatus*, имеющего аналогичную окраску.

Introduction

Presently, *Isotomurus* Börner, 1903 is probably the most complicated genus of Isotomidae for the taxonomy, this is explained by considerable polychaetosis on all parts of body, the maximum jumping complex development in all species (furca is useless as a character), and common setae and sensilla weakly diverged (the description of sensillar chaetotaxy is difficult). The modern taxonomical revisions [Deharveng & Lek, 1993; Carapelli et al., 1995a, 1995b, 2001] have established the following 1) many species do exist in this genus, which were proved by biochemical and ecological criteria 2) The only character to discriminate between the most species (especially in *palustris* complex) is a colouration — the pattern of distribution of pigment grains on body. The mentioned character is, however, unsuitable to work with because of its depending on fixation, age instar of a specimen, and possible strong intrapopulation variation. It was shown [Carapelli et al., 2001] that certain color pattern can appear parallelly, for instance in “*Isotomurus balteatus*”. Available material on the species of the genus with the “*balteatus*”-like colouration (broad transversal bands in anterior parts of tergites) made it possible to describe a new species and fixed the position of *I. balteatus* s.str., which was never described before.

Isotomurus stepposus sp.n. Figs 1–7.

MATERIAL. Holotype (♀, slide): Ukraine, Donetsk Area, “Kamennye Mogily” Reserve, slopes of ridges, south exposition, 23.10.1996. leg. E. Starostenko.

Paratypes. 4 ♀♀ from the same locality (slide). Collected in June 1993 and May 1994. Type specimens are kept in Moscow State Pedagogical University.

DESCRIPTION. Body length 1.3 mm (the description was compiled basing adult specimens). Colouration of “*balteatus*” type: with broad transversal bands on all segments of body (Fig. 1). In paler individuals the bands on Abd IV–VI lighter than on other segments. 8+8 ommatidia, G and H smaller. Postantennal organ narrow elliptical, more than 1.5 times longer than diameter of ommatidium. Labrum 5,5,4, apical ridges high and sharp. Labium with 5–6+5–6 basomedian and 5+5 proximal setae (Fig. 3). 4–5+4–5 postlabial setae. Antennae with few thin and short sensilla, thick and short sensilla present, 4, 1, 2 in number on Ant I, II, III. On Ant. I they arranged as in *I. rabili* Deharveng & Lek, 1993 (see fig. 9 in first description of *rabili*). Claw without inner but lateral teeth, empodium without teeth. Apical bundle of tibiotarsi with 8.8.9 setae. Legs with weakly developed macrosetae, equal to 1.3–1.4 of inner length of claw of leg III. Ventral tube with 5–6+5–6 laterodistal and 8–10+8–10 anterior setae. Retinaculum with 2–5 setae. Furca with few setae (Figs 5, 6). Posterior side of dens usually with 30 setae. Mucro quadridentate, without lamella and seta, with curve projecting subapical tooth (Fig. 2). Sexual dimorphism undeveloped.

Chaetotaxy. Macrosetae smooth. Sensilla as in *gallicus*: 6,6/5,5,6,7,6 (s), 1–2 the most laterally positioned of which thickened, 2 medial sensilla of Abd V much longer than others (Fig. 7). Microsensilla: 1,1/1,1,1 (ms), on Abd I–II they in anterior-lateral position, on Abd III — slightly in front of p-row. Trichobothria 0,0,1 on Abd. II, III, IV (Fig. 4).

DIAGNOSIS. After many features (chaetotaxy of ventral tube, retinaculum and furca, colouration, body chaetotaxy) new species mostly closed to *I. gallicus* Carapelli et al., 2001 (= *I. balteatus* sensu Poinso) (S France) and differs in absence of trichobothria on Abd. III. Latter species have 0,1,1

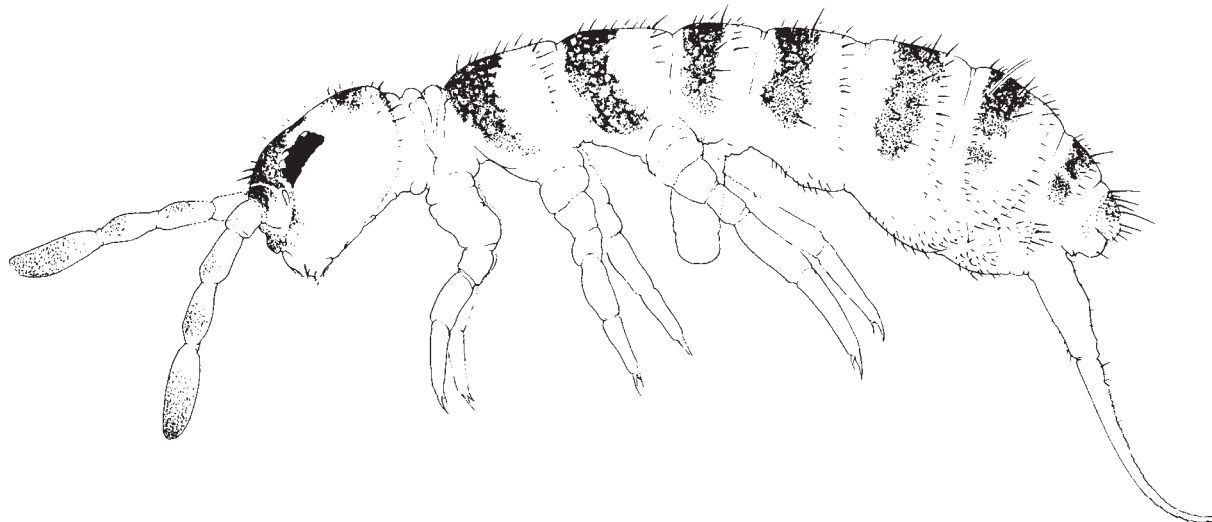


Fig. 1. Habitus *Isotomurus stepposus* sp.n.

Рис. 1. Габитус *Isotomurus stepposus* sp.n.

on Abd. II, III, IV. Poinso-Balagauer & Ferard [1983] indicated trichobothria sometimes lacking on Abd.III in *I. gallicus* (i.e. formula was 0,0,1). Following modern taxonomy such a variability is hardly possible. Those specimens could probably be refer to our or closed species. After the number of trichobothria *I. stepposus* is in intermediate position between species with few trichobothria (*gallicus*, *rabili*) and a species has entirely lost them (*antennalis* Bagnall, 1940).

DISTRIBUTION. Known only from the type locality.

Isotomurus balteatus (Reuter, 1876)

Fig. 9.

Bas.: *Isotoma balteata* Reuter, 1876

MATERIAL. 1) S Arkhangelsk Area, Velsk Distr., Ramen'e village, on moist stones in spring (together with *I. stuxbergi* (Tullberg, 1876)), august 1981; 2) Leningradskaya Area, Beloostrov station of Finnish railway, sphagnous pine wood, along the shores of ponds, august 2002.

SHORT DESCRIPTION. Postantennal organ small, much smaller than diameter of ommatidium. Labium with many basomedian and proximal setae, ca. 10+10 in each group. Claw without inner but lateral tooth, empodium with small tooth. Apical bundle of tibiotarsi with many setae (more than 10). All legs with long and ciliated macrosetae. Ventral tube with 15–20+15–20 laterodistal setae. Furca with numerous setae, as typical for the genus. Mucro quadridentate, with seta and lamella running to proximal tooth.

Chaetotaxy. Macrosetae and other setae of body distinctly ciliated. 2 medial sensilla of Abd V only slightly longer than others (Fig. 9). Trichobothria 3,3,1 on Abd. II, III, IV. On Abd.III lateral trichobothria much shorter than others.

DIAGNOSIS. For a long time all species with transversal banded pattern were referred to *I. balteatus*, which was recorded and redescribed almost all over the world. In Europe, it was shown that several species "hidden" within *I. balteatus*, subsequently, *I. ghibellinus* Carapelli et al., 1995 (*palustris* complex) and *I. gallicus* Carapelli et al., 2001 (*gallicus* group) were erected. Our specimens are in agreement with the first description, particularly in having mucronal seta, and were collected in areas closed to type locality (SE Finland). *Isotomurus balteatus*

belong neither to *palustris* complex nor *palustris* group because of having mucronal seta, rather short medial sensilla on Abd.V, and many laterodistal setae on ventral tube.

DISTRIBUTION: Uncertain. Known from SE Finland, Leningradskaya and Arkhangelsk Areas.

Isotomurus ghibellinus Carapelli et al., 1995

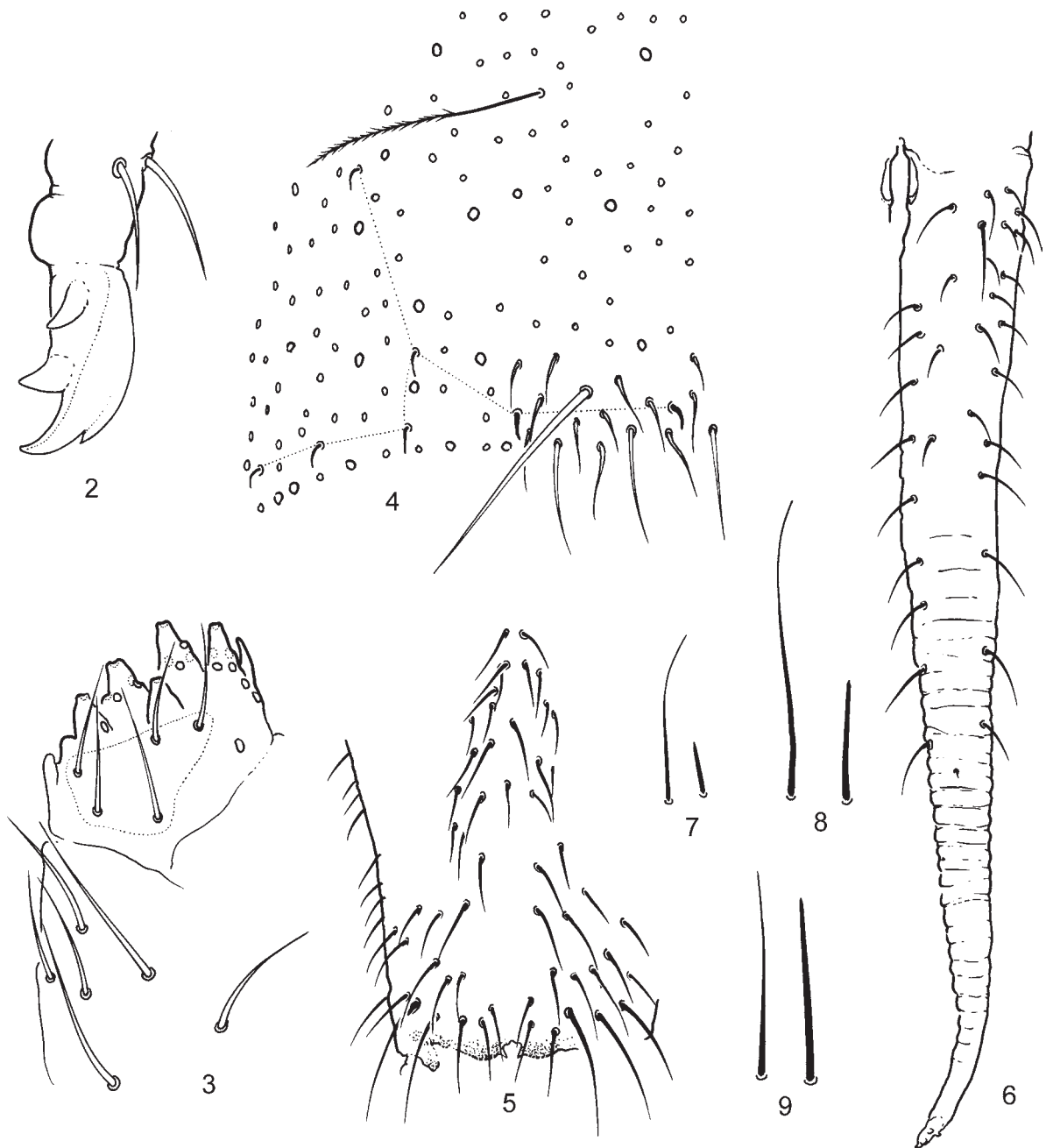
Fig. 9.

MATERIAL. S Azerbaijan. Lenkoran. Ghirkansky Reserve. Along spring bank in oak forest. January 1983. leg. M. Potapov.

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Figs 2–9. 2–6 — *Isotomurus stepposus* sp.n.: micro laterally (2), labium (proximal setae marked) (3), chaetotaxy of Abd IV (only sockets shown in common setae, sensilla connected by dotted line) (4), manubrium anteriorely (5), dens posteriorely (6); 7–9 — medial sensilla s1 and s2 of p-row on Abd.V in *I. stepposus* sp.n. (7), *I. ghibellinus* (8) and *I. balteatus* (9).

Рис. 2–9. 2–6 — *Isotomurus stepposus* sp.n.: микро сбоку (2), лабиум (проксимальные хеты обведены) (3), хетотаксия Abd IV (у обычных хет показаны лишь основания, сенсиллы соединены точечной линией) (4), манубрий спереди (5), денс сзади (6); 7–9 — медиальные сенсиллы s1 и s2 p-ряда на Abd V у *I. stepposus* sp.n. (7), *I. ghibellinus* (8) и *I. balteatus* (9).