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Collembolan fauna of the Turukhansk Territory

К познанию фауны коллембол Туруханского края

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КЛЮЧЕВЫЕ СЛОВА: ногохвостки, Средняя Сибирь, северная тайга, фауна, новые виды.

ABSTRACT. The present paper is a result of Collembola fauna survey performed in one of the northern taiga regions of Middle Siberia (Yenisei basin, vicinity of Turukhansk). During a season 130 species were revealed for the area under study by different sampling methods that may be considered as an evidence of a high species diversity of the group even in the northern belt of boreal Siberian forests. Nine new Collembola species, viz. *Philotella obesa* Babenko **sp.n.**, *Micranurida rostrata* Babenko **sp.n.** (Neanuridae), *Oligaphorura sabulosa* Babenko **sp.n.**, *Tantulonychiurus asiaticus* Babenko **sp.n.**, *Thalassaphorura tenuis* Babenko **sp.n.**, *Uralaphorura tunguzica* Babenko **sp.n.**, *Deuteraphorura mangazeya* Babenko **sp.n.** (Onychiuridae), *Folsomia potapovi* Babenko **sp.n.** (Isotomidae), and *Sminthurinus dispar* Babenko **sp.n.** (Katiannidae) have been described.

РЕЗЮМЕ. Работа является результатом исследования фауны коллембол одного из северо-таёжных районов Средней Сибири (бассейн Енисея, окрестности п. Туруханск). Всего за сезон на данной небольшой территории разными методами учёта выявлено 130 видов ногохвосток. Это свидетельствует о сохранении высокого видового разнообразия группы даже в северной полосе сибирских таёжных лесов. Описано девять новых видов коллембол: *Philotella obesa* Babenko **sp.n.**, *Micranurida rostrata* Babenko **sp.n.** (Neanuridae), *Oligaphorura sabulosa* Babenko **sp.n.**, *Tantulonychiurus asiaticus* Babenko **sp.n.**, *Thalassaphorura tenuis* Babenko **sp.n.**, *Uralaphorura tunguzica* Babenko **sp.n.**, *Deuteraphorura mangazeya* Babenko **sp.n.** (Onychiuridae), *Folsomia potapovi* Babenko **sp.n.** (Isotomidae) и *Sminthurinus dispar* Babenko **sp.n.** (Katiannidae).

Introduction

It may sound strange but despite more than a century-old study of Siberian fauna of Collembola, the level of faunistic knowledge of the main forested part of the region is not significantly higher than that of the beginning of the XX century after publications of results of the famous Swedish expedition of 1875–1876 [Tullberg, 1876; Reuter, 1891; Schött, 1893; Schäffer, 1900]. All modern data about the fauna of regions under consideration is rather fragmentary and it was not accidental that only 58 widespread collembolan species were mentioned by Stebaeva [1976] for the plain Siberian taiga. Recent ecological [Berezina, 1997; Mordkovich et al., 2003; Sleptsova, 2005] and taxonomic publications [Rusek, 1984, 1991; Potapov, 1991, 2006; Potapov & Stebaeva, 1991; Potapov et al., 2005; Berezina & Potapov, 2006; Bretfeld, 2000, etc.] based on the material from Siberian forests changed the situation but not significantly as there is still no comprehensive species list for any Siberian boreal region. To the contrary, Siberian edges including southern mountains and steppes [Stebaeva, 1963, 1968, 1974, 1991, 2003, etc.], northern tundras [Ananjeva, 1973; Ananjeva & Chernov, 1979; Babenko, 2003; Babenko & Fjellberg, 2006, etc.], and North-Eastern Asia [Bondarenko, 1980; Stebaeva et al., 1984; Martynova et al., 1977; Tshelnokov, 1988, etc.] are obviously investigated faunistically more completely.

The present paper is a result of collection performed in July–August, 2003 in the northern taiga of the Yenisei basin: vicinity of Turukhansk [65º48'N 87º57'E], north of the Krasnoyarsk Territory (Fig. 1).The purpose of the study was pure faunistic — revealing as many species of the local fauna of Collembola as possible for a season. That is why the sampling was performed in a wide range of habitats covering all main landscape types of the region under study, and several different methods of sampling (funnels, pit-traps, entomological sweeping, and hand collection) were used in each site.

The uncovered collembolan fauna turns out to be rather diverse for such northern region. As a whole, 130 species were found (Table) and more than 10% of species list consists of species new for science. Some of them were already described by Potapov [2006] and Smolis [2007], the descriptions of new *Protaphorura* Absolon, 1901 species will be published by I. Kaprus' (Ukraine), respectively. Nine new species from differ-

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Fig. 1. An area under study.
Рис. 1. Район исследований.

ent families (Neanuridae, Onychiuridae, Isotomidae, and Katiannidae) are described below. Their types are deposited at the Chair of Zoology and Ecology of the Moscow State Pedagogical University (MSPU).

ABREVIATIONS:

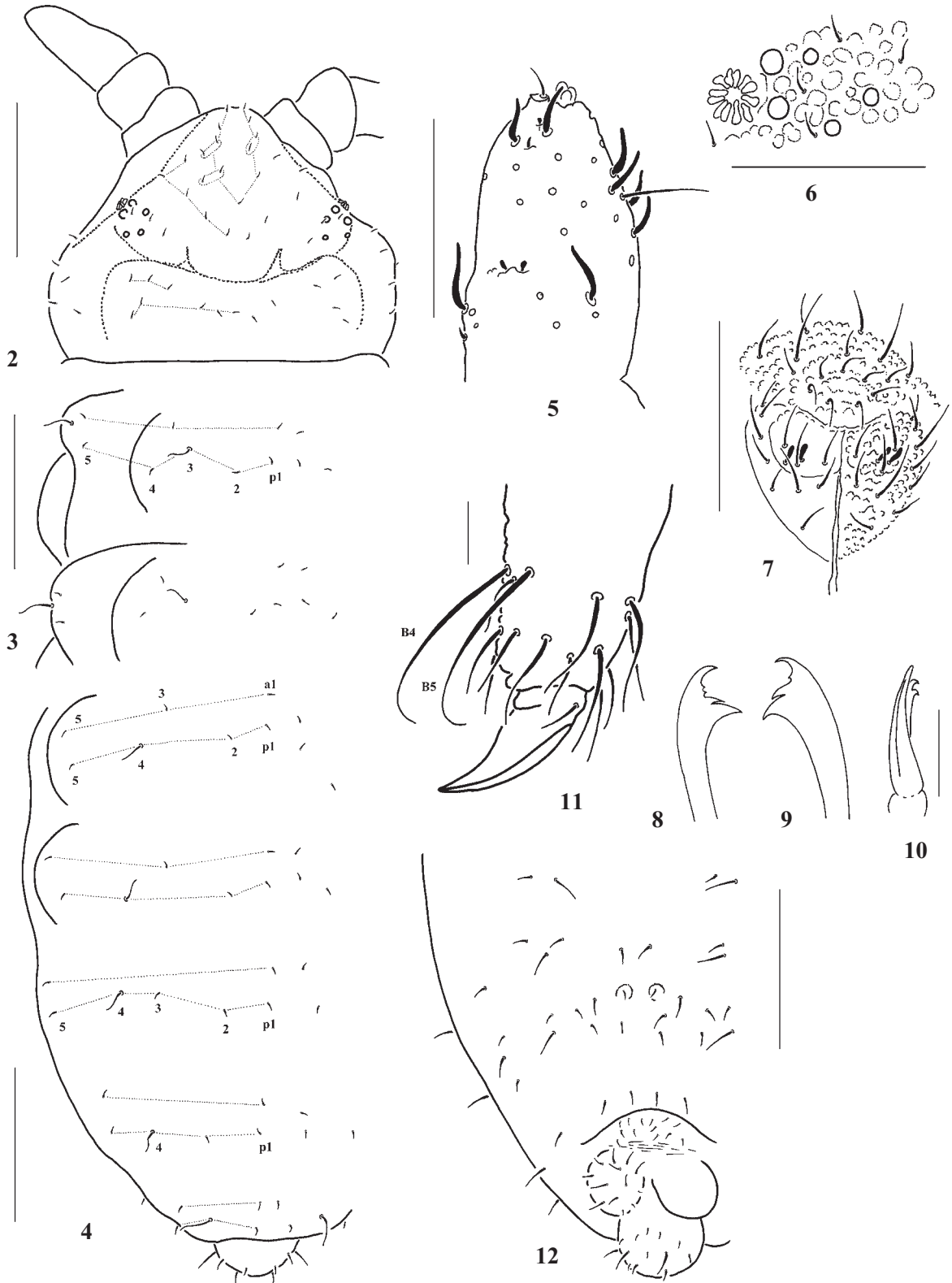
a, *m*, and *p*-rows — anterior, median, and posterior rows of setae on terga;
Abd.1–6 — abdominal segments;
A–C, *T*-setae, setae *M* and *Y* — abbreviation of tibiotarsal setae according to Deharveng [1983];
AD — anal spines;
a–e guards — appendices of appropriates labial papillae;
A–E papillae — labial papillae according to Fjellberg [1998/99];
A–F sensilla — enlarged sensilla on *Ant*.4 [Fjellberg, 1985];
Ant.1–4 — antennal subsegments;
AO — antennal organ on *Ant*.3;
bms — basal microsensillum on *Ant*.1–3 in Isotomidae;
Cx — coxa;
d_0 — unpaired axial seta on area *frontalis* of a head;
Lg.1–3 — legs;
ms — tergal microsensillum;
MVO — male ventral organ;
PAO — postantennal organ;
pso — pseudocellum;
psx — parapseudocellum;
s — tergal or antennal sensillum;
Th.1–3 — tergal segments;
Ti.1–3 — tibiotarsi;
Tr — trochanter;
v, vl — ventro-axial and ventro-lateral setae of thorax [Potapov, 2006];
VT — ventral tube.

Philotella obesa Babenko **sp.n.**

Figs 2–12.

MATERIAL. Holotype, ♂ — Russia, Krasnoyarsk Territory, mouth of Nizhnyaya Tunguska River, vicinity of Turukhansk, herbaceous meadow near forest edge, 02 viii 2003, A. Babenko leg. Paratypes, 3♀, ♂ — same data as holotype; ♂ — same data, meadow on steep slope of river valley; ♀, same data, damp sedge meadow in a dell; 9♀, ♂ — same region, clearing in mixed forest, 27 vii 2003; 3♀, ♂ — same region, birch forest with rich herbaceous cover, 08 viii 2003; ♂ — same region, aspen forest with fragmentary lichen-moss cover, 27 vii 2003, A. Babenko leg.

DESCRIPTION. Colour bluish-grey, rather dark, ventral side only slightly paler. A small, stout species looks like immature specimens of *Anurida* gr. *weberi*, size 0.70–0.82 mm, holotype 0.72 mm. Antennae conical, shorter than head. *Ant*.1–2 with 7 and 13 setae respectively. *Ant*.3–4 fused dorsally, ventral separation marked by a fine tegumentary granulation. Ant.4 with slightly 3-lobed apical bulb and 6



Figs 2–12. *Philotella obesa* Babenko **sp.n.**: 2 — dorsal chaetotaxy of head; 3 — dorsal chaetotaxy of *Th.*2–3; 4 — dorsal chaetotaxy of abdomen; 5 — sensilla on *Ant.*3–4; 6 — *PAO* and ocelli; 7 — buccal cone; 8–9 — top of mandibles; 10 — maxillary head; 11 — *Ti.*2; 12 — ventral chaetotaxy of *Abd.*2–6. Scales: 2–4, 12 — 0.1 mm, 5–7 — 0.05 mm, 8–11 — 0.01 mm.

Рис. 2–12. *Philotella obesa* Babenko **sp.n.**: 2 — дорсальная хетотаксия головы; 3 — дорсальная хетотаксия 2–3-го сегмента груди; 4 — дорсальная хетотаксия брюшка; 5 — сенсиллы на 3–4-м члениках усиков; 6 — ПАО и глазки; 7 — ротовой конус; 8–9 — вершина мандибул; 10 — головка максиллы; 11 — тибиотарзус 2-й пары ног; 12 — хетотаксия 2–6-го стернита брюшка. Масштаб: 2–4, 12 — 0,1 мм; 5–7 — 0,05 мм; 8–11 — 0,01 мм.

blunt sensilla (Fig. 5), external microsensillum and organite present. *Ant*.3 organ normal, consisting of two long, widely separated outer sensilla, two bent sensory pegs and a small ventral microsensillum. Ocelli 5+5, about as large as tegumentary granules and hard to detect (Fig. 6). *PAO* roundish with 10–15 vesicles, as large as 2–2.5 of the nearest ocellar diameter. Mandibles thin, usually with one small tooth between apical and two basal ones (Figs 8–9), rarely two small teeth were observed. Maxillary capitulum styliform, blunt-tipped with at least one bidentate dorsal lamella (Fig. 10). Labrum with 4/2–3–5–2 setae, those of proximal row are clearly longer (Fig. 7). Apical part of labium with 3 setae and two relatively large sensorial papillae, basal part of labium with 8 setae as usual.

Integument granulation coarse and uniform. Dorsal setae smooth, very short and fine, sensilla well differentiated. Head chaetotaxy, particularly on the medial part of area *occipitalis*, partly reduced (Fig. 2), d_0 usually present. Characteristics of dorsal chaetotaxy of thorax and abdomen (Figs 3–4): *Th*.1 with 3+3 setae. *Th*.2–3 with only three setae in *a*-row, *m*-row reduced to lateral sensilla, *p*-row complete (p_1–p_5), setae p_2 in posterior position, sensilla p_3 set anteriorly to p_4, lateral microsensillum present on *Th*.2. *Abd*.1–2 with a_3 present but p_3 absent. Contrary, on *Abd*.3 p_3 is present instead of a_3[1]. On *Abd*.4 both a_3 and p_3 absent. *Abd*.5 without p_2. Ventral chaetotaxy as on Fig. 12, all sterna without unpaired axial setae. Number of setae on subsegments of *Lg*.1–3 respectively is as follows, tibiotarsi 19–19–18, setae B_4 and B_5 long and curved distally (Fig. 11), femora: (12)13–12(13)–11 setae, trochanteres: 6–6–(5)6, coxae: (2)3–6–6(7), subcoxae II: 0–1–1, subcoxae I: 1–2–2. Ventral tube with 4+4(5) setae. Furca vestige as two unclear warts with a seta and few spinules. Unguis simple, without inner or lateral teeth.

AFFINITIES. The new species fully fits a diagnosis of the genus *Philotella* Najt & Weiner, 1985, although all three known species of this genus with 5+5 ocelli, described by Najt & Weiner [1985] from Northern Korea (*deharvengi, miracle*, and *tertia*), are characterized by posterior position of p_3 sensilla on thoracic terga and less number of setae on tibiotarsi (18–18–17). Besides, none of them possesses p_2 setae on abdominal terga.

Micranurida porcella Fjellberg, 1985 from Alaska is even more similar being characterized by anterior position of p_3 sensilla on *Th*.2–3. Especially interesting are several specimens from Delta (central Alaska) which were mentioned by Fjellberg in a note to *M. porcella* description. Contrary to the main form, they have more complete set of dorsal setae (p_2 are present on all terga) and are almost identical to *Ph. obesa* **sp.n.** The only notable difference between these forms is the presence of two setae (a_3 and m_4) in front of p_3–p_4 on *Th*.2–3 in Alaskan specimens whereas the new species has only one seta (a_3) in this position. In fact they may be conspecific but clearly differ from *M. porcella.*

In general morphology *Ph. obesa* **sp.n.** substantially resembles representatives of the *weberi*-group of the genus *Anurida* Laboulbéne, 1865 as it was defined by Babenko [2002] and probably belongs to the same evolutionary line of Pseudachorutinae. Thus, *Ph. obesa* **sp.n.** and immature specimens of *Anurida confinis* Babenko, 1998 can be distinguished only by more reduced chaetotaxy of the former. This fact is a good evidence of uncertain generic position of the described species which will probably change in future after a revision of the *Anurida/Micranurida* complex.

[1] In fact, it may be the same seta, but in clearly different position.

ETYMOLOGY. Named due to general impression of the new species, from Latin "*obesus*" — fat, stout, etc.

DISTRIBUTION. Known from several biotopes near the type locality but may be widespread if Alaskan specimens from Delta are conspecific (see above). It is more typical for open, meadow sites (both dry and damp) of the region under study, found also in some forests without continuous moss cover.

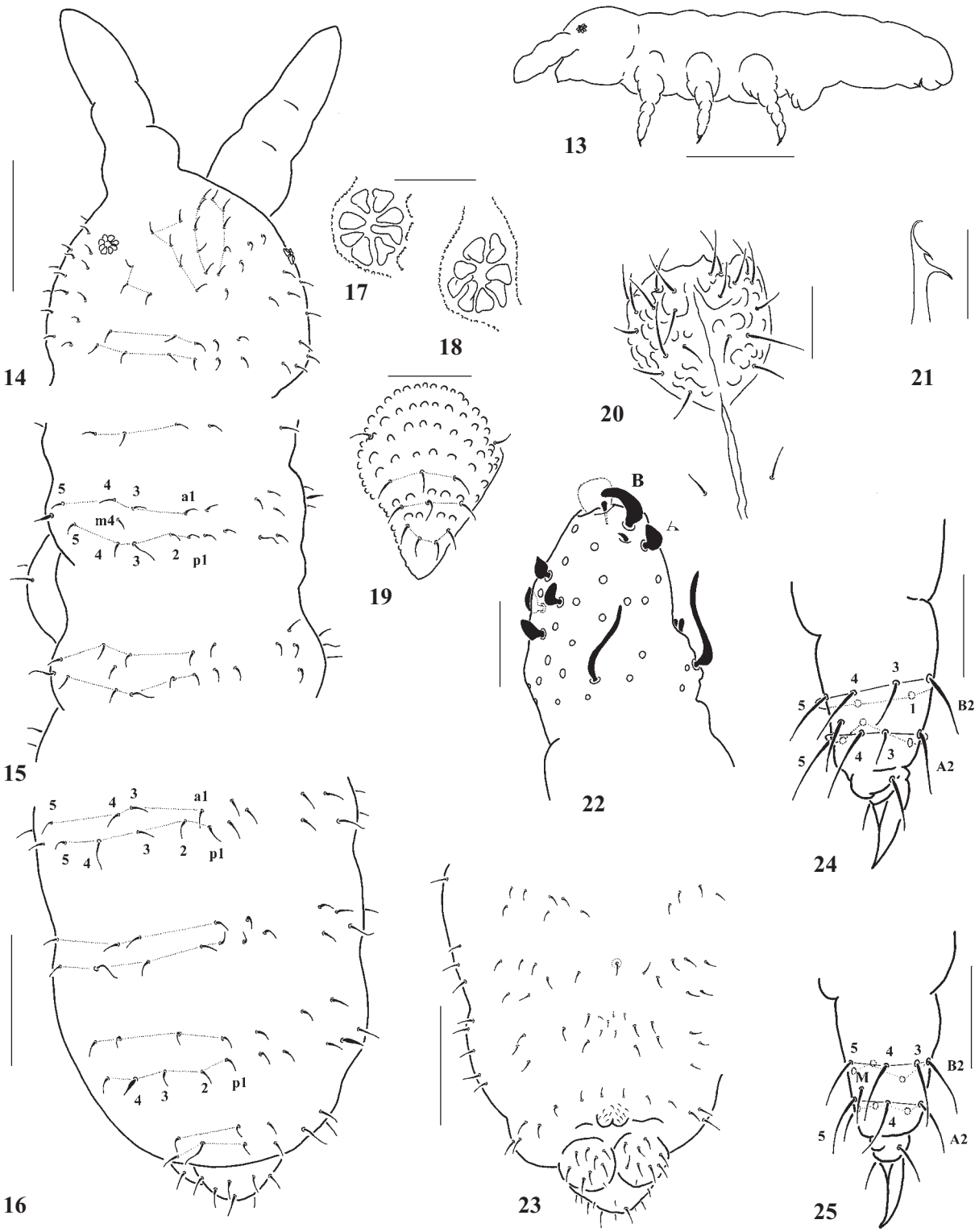
Micranurida rostrata Babenko **sp.n.**
Figs 13–25.

MATERIAL. Holotype, ♂ — Russia, Krasnoyarsk Territory, mouth of Nizhnyaya Tunguska River, vicinity of Turukhansk, clearing in a mixed forest, 27 vii 2003, A. Babenko leg. Paratypes, 1♀, 2♂ — same data as holotype; 32 specimens, same data, damp sedge meadow in a dell, 02 viii 2003, A. Babenko leg.

DESCRIPTION. Colour white. Size 0.35–0.45 mm, holotype 0.44 mm. Antennae conical, slightly shorter than head. *Ant*.1–2 with 7 and 11 setae respectively. *Ant*.3–4 fused dorsally, ventral separation marked by a fine tegumentary granulation. *Ant*.4 with a simple apical bulb, 6 well differentiated sensilla, *i*-seta absent, external microsensillum and organite present. Sensillum *B* strongly elongated and curved, other sensilla hammer-shape and shorter (Fig. 22). *Ant*.3 organ normal, consisting of two long, slightly curved outer sensilla, two bent sensory pegs and a small ventral microsensillum. Ocelli absent. *PAO* with 8–12 regular vesicles in oval arrangement (Figs 17–18). Buccal cone elongate, rostral (Fig. 13). Mandibles thin, with three teeth (Fig. 21), maxillary capitulum styliform, lamellae invisible. Labrum with 3–3–4 setae, two widely separated prelabral setae present (Fig. 19). Apical part of labium with 4 setae, sensorial papillae are not seen, basal part of labium with 6 setae only (Fig. 20).

Granulation rather coarse, uniform. Dorsal setae smooth and fine, sensilla differentiated. Head usually without unpaired d_0 seta, but, in general, chaetotaxy of area *frontalis* is not stable and symmetrical. Dorsal chaetotaxy of body almost complete (Figs 14–16). Setae p_2 present on *Th*.2–*Abd*.4. Lateral sensillum m_6 on *Th*.2 and p_4 sensillum on *Abd*.4 broad, flame-like, other dorsal sensilla slender. *Abd*.5 without p_2 setae. Ventral chaetotaxy as on Fig. 23, unpaired axial seta usually present on sterna of *Abd*.3. Furca remnant marked by 6 tiny setulae. Number of setae on subsegments of *Lg*.1–3 respectively is as follows, subcoxae I: 1–2–2, subcoxae II: 0–1–1, coxae: 3–6(7)–(6)7, trochanteres: 5–5–5(6), femora: 12–(10)11–10, tibiotarsi: 14–13–14, respectively, *viz*. *T*-setae absent, *A*-row with 6–6–7 setae (A_3 on *Ti*.1–2 absent), *B*-row with 7–6–6 setae (B_7 is absent on *Ti*.2–3), *M*-setae present in somewhat unusual position closer to *A*-row (Figs 24–25). Ventral tube with 4+4 setae. Unguis simple, without inner or lateral teeth, empodial setae long, almost spine-like.

AFFINITIES. No doubts that *M. rostrata* **sp.n.** is the most similar to two blind European species of the genus, *M. retezatica* Gruia et Harsia, 1990 and *M. balta* Fjellberg, 1998, which are also characterized by elongated sensillum *B* on *Ant*.4 and flame-like sensilla on *Th*.2 and *Abd*.4. The new species can be easily identified by more complete dorsal chaetotaxy: the presence of p_2 setae on all terga from *Th*.2 to *Abd*.4 is the most significant. These setae are absent on all terga in *M. retezatica* and present in *M. balta*, but only on thorax. Besides the new species is characterized by the unique reduction of tibiotarsal chaetotaxy, similar type of reduction with less number of tibiotarsal setae in distal row[2] on *Ti*.1–2 is known only for *M. bescidica* Smolis et Skarzynski, 2004, which seems to be also closely related to the new species but characterized by unusual fusion of *Ant*.4 sensilla.



Figs 13–25. *Micranurida rostrata* Babenko **sp.n.**: 13 — habitus; 14 — dorsal chaetotaxy of head; 15 — dorsal chaetotaxy of thorax; 16 — dorsal chaetotaxy of *Abd.*2–6; 17–18 — *PAO*; 19 — labrum; 20 — labium; 21 — mandible; 22 — sensilla on *Ant.*3–4; 23 — ventral chaetotaxy of abdomen; 24 — chaetotaxy of left *Ti.*3; 25 — ibid, *Ti.*1. Scales: 13 — 0.1 mm; 14–16 — 0.05 mm; 17–25 — 0.01 mm.

Рис. 13–25. *Micranurida rostrata* Babenko **sp.n.**: 13 — габитус; 14 — дорсальная хетотаксия головы; 15 — дорсальная хетотаксия груди; 16 — дорсальная хетотаксия 2–6-го сегментов брюшка; 17–18 — ПАО; 19 — хетотаксия верхней губы; 20 — нижняя губа; 21 — мандибула; 22 — сенсиллы 3–4-го члеников усиков; 23 — вентральная хетотаксия брюшка; 24 — левый тибиотарзус 3-й пары ног; 25 — то же, 1-й пары ног. Масштаб: 13 — 0,1 мм; 14–16 — 0,05 мм; 17–25 — 0,01 мм.

ETYMOLOGY. The name reflects the shape of buccal cone of the new species.

DISTRIBUTION. Known only from the type locality. Prefers damp meadow sites.

Oligaphorura sabulosa Babenko **sp.n.**
Figs 26–32.

TYPE MATERIAL. Holotype, ♂ — Russia, Krasnoyarsk Territory, mouth of Nizhnyaya Tunguska River, vicinity of Turukhansk, flood graminaceous belt with *Salix* bushes between beach and meadow on slope, sand, 02 viii 2003, A. Babenko leg. Paratypes, 16 ♀, ♂ — same data as holotype; 1♂ — same data, meadow on steep slope of river valley, A. Babenko leg.

OTHER MATERIAL. 8 specimens — Russia, Southern Taimyr, lake Pyasino [70°05'N 87°41'E], meadow on south-facing slope, sandy soil, 03 viii 1999; 17 specimens — Russia, Archangelsk District, Pinezhskii Reserve, Sotka river [64°37'N 42°50'E], coastal alder forest, 09 viii 2005, A. Babenko leg.

DESCRIPTION. Colour white. Size 0.65–0.80 mm. Body shape cylindrical. Antennae about as long as head, *Ant*. 3–4 broad, club-like. *Ant*.4 with subapical organite and microsensillum located in a distal row of setae (Fig. 27). *Ant*.3 organ consists of 5 papillae, two sensory rods, two granulated sensory clubs (internal straight, external bigger and bent (Fig. 28), 5 guard setae, and lateral microsensillum which set below the organ. *Ant*.1 with 8 setae. *PAO* with 3–4 lobes, clearly longer than nearest pseudocellus (Figs 29–30). Labrum with 9 setae and 4 prelabral ones. Apical part of labium with thick terminal setae on papillae *A*, *C* also blunt but thinner, 6 long guards[3], and 6 proximal setae, basal fields with 4+5(6) setae. Maxillary palp simple with two sublobal hairs.

Pseudocellar formula (*pso*) as follows, dorsal: 32/133/33353, ventral: 2/000/0000, ventral parapseudocelli (*psx*) as 1/000/121201[m]. Each subcoxa with one *pso* and two *psx* [anterior *psx* on *Scx*.1 often invisible]. One *psx* present also on inner side of each femur. Localization of *pso* and *psx* as on Figs 26, 31. Granulation fine and uniform, only slightly coarser on abdominal tip and around pseudocelli. Dorsal chaetotaxy almost symmetrical, setae smooth and fine, macrosetae hardly differentiated, sensilla indistinct (Fig. 26), only *Th*.2 with lateral microsensillum[4]. *Abd*.5 with m_1 shorter than a_1 and p_1. Unpaired medial seta absent on *Abd*.4, but present on *Abd*.6. Ventral chaetotaxy of abdomen as on Fig. 31, thoracic sterna 1–3 with 0+0–1+1–1+1 setae, respectively. Furca as a cuticular fold with 2+2 small posterior setae. Ventral tube with 7–9+7–9 distal and 2+2 proximal setae at corpus base. Subcoxae with (3)4–5–5 setae, tibiotarsi with 20–20–19 setae: each distal row (*A*+*T*) with 11 setae, row *B* with 7–7–6 setae, setae *M* and *Y* present on all tibiotarsi. Unguis simple, without inner tooth, unguiculus with distinct basal lamella, about 3/4 as long as unguis (Fig. 32). Anal spine bent, set on low papillae.

AFFINITIES. The only other known species of the tribe Oligaphorurini having the same dorsal pseudocellar formula as the new species is *Oligaphorura aborigensis* (Fjellberg, 1987). However, the latter is bigger (up to 1.5 mm) and characterized by strong dorsal macrosetae, by the presence of *ms* on both *Th*.2–3, and by such unique feature as the absence of sublobal hairs on maxillary palp.

ETYMOLOGY. The name reflects biotopic preference of the new species in the type locality, from Latin "*sabulosus*" — sandy.

DISTRIBUTION. Seems to be widespread boreal species with East Palaearctic distributional range.

Tantulonychiurus asiaticus Babenko **sp.n.**
Figs 33–41.

MATERIAL. Holotype, ♀ — Russia, Krasnoyarsk Territory, mouth of Nizhnyaya Tunguska River, vicinity of Turukhansk, herbaceous meadow near forest edge, 02 viii 2003, A. Babenko leg. Paratypes, ♀, ♂ — same data as holotype; 2♀, 1♂, 5 juvenile — same data, meadow on steep slope of river valley; 1♂ — same data, damp sedge meadow in a dell, A. Babenko leg.

DESCRIPTION. Colour white. Size 0.5–0.6 mm. Body shape cylindrical, rather narrow. Antennae about as long as head. *Ant*.4 with two distinct thickened sensilla (dorso-subapical and inner-subbasal), subapical organite and subbasal microsensillum present (Fig. 35). *Ant*.3 organ consists of 5 papillae, two sensory rods, two smooth sensory clubs with median rib (Figs 36–37), 5 guard setae, and lateral microsensillum. *Ant*.1–2 with 8 and 12–14 setae, correspondently. *PAO* with 9–11 composed vesicles (Fig. 34). Labrum with 7 setae and 4 prelabral ones. Apical part of labium with thick terminal setae on papillae *A* and *B*, *C* also blunt but thinner, 6 guards, and 5 proximal setae, basal fields with 4+5 setae. Maxillary palp simple with two sublobal hairs.

Pseudocellar formula (*pso*) as follows, dorsal: 32/233/33343, ventral: 2/000/0(?)112, parapseudocelli (*psx*) invisible. Each subcoxa with two *pso*. Localization of *pso* as on Figs 33, 40. Granulation fine and uniform. Dorsal chaetotaxy almost symmetrical, setae smooth and fine, macrosetae differentiated only on abdominal tip, sensilla more or less distinct: 1/011/222221 (Fig. 33), similar thickened sensillum present on coxae of *Lg*.3. *Th*.2–3 with lateral microsensilla. Unpaired dorsal setae: d_0 on head, m_0 on *Abd*.4, a_0 on *And*.5, *Abd*.6 with two axial macrosetae (Figs 33, 38). Each thoracic sternum with 1+1 setae along *linea ventralis*, ventral chaetotaxy of abdomen as on Fig. 40. Furca reduced to a small area of fine granulation with 2+2 setae posteriorly, arranged in two rows (Fig. 41). Ventral male organ absent even in fully mature specimens (with *ductus ejaculatorius*). Ventral tube with 1+1 frontal, 6+6 distal and 2+2 proximal setae at corpus base. Subcoxae with 3–4, rarely 5 setae, tibiotarsi with 16–16–16 setae: each distal row (*A*) with 7 setae (*T*-setae absent), row *B* also complete on all legs[5], setae *M* and *Y* present. Unguis simple, without inner tooth, unguiculus without distinct basal lamella, clearly shorter than unguis (Fig. 39). Anal spine slightly bent, without clear papillae.

AFFINITIES. Having compound vesicles in *PAO*, d_0 on head, only 7 setae in distal row on tibiotarsi, furcal remnant as finely granulated area with 2+2 setulae arranged in two rows and anal spine on abdominal tip, the new species is obviously a member of the genus *Tantulonychiurus* Pomorski, 1996

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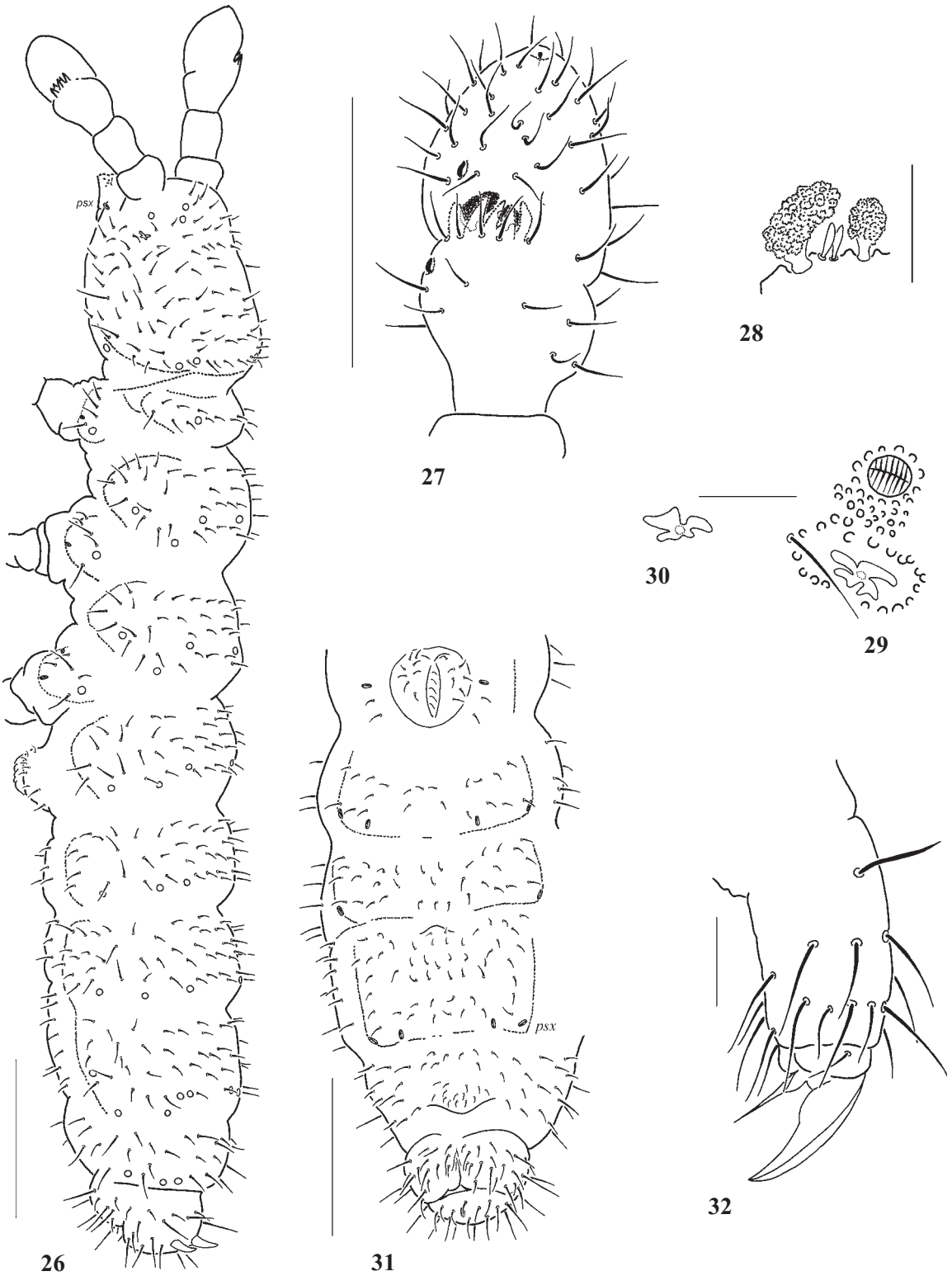
[2] *M. bescidica* also has 6–6–7 setae in distal row on tibiotarsi (14–14–14 setae as a whole) although the authors differently construed the absent setae.

[3] Following Fjellberg [1998], four small spiniform guards (a_1, b_1, b_2, d_2), present in all studied species of Onychiuridae [Fjellberg, 1998/99], were excluded from the count.

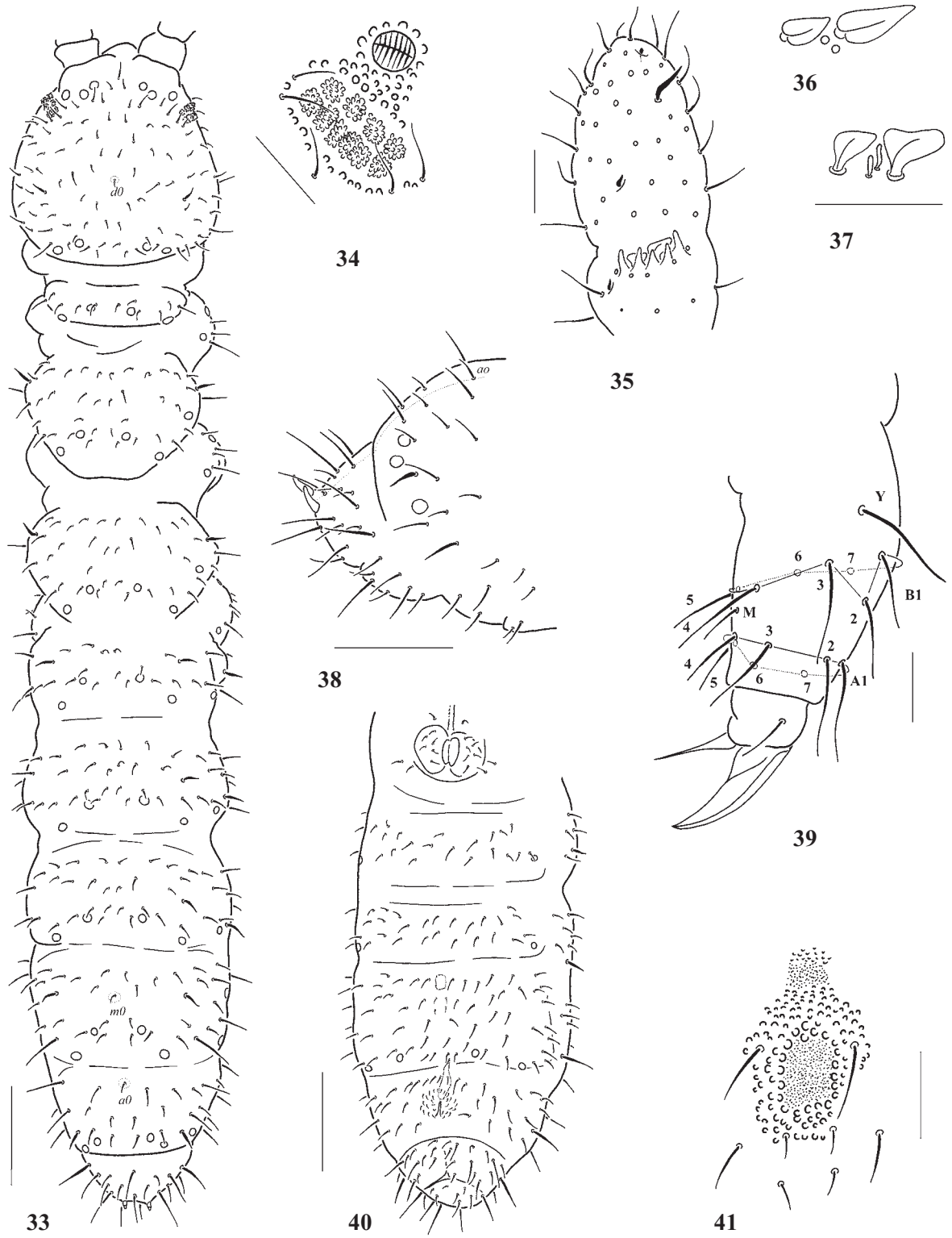
[4] One juvenile specimen has lateral microsensilla on both terga (Th.2–3).

[5] The presence of all seven setae in *B* row on *Ti*.3 is not common for Poduromorpha. Nevertheless it seems to be a frequent characteristic in Thalassaphorurini: mentioned earlier for *Tantulonychiurus volinensis* (Szeptycki, 1964), *Thalassaphorura debilis* (Moniez, 1890) and *T. halophila* (Bagnal, 1935) by Fjellberg [1998], known in *T. lifouensis* Thibaud & Weiner, 1997, and *T. qixiaensis* Yan et al., 2006; found also in *Thalassaphorura tenuis* **sp.n.**, but not in *Sensillonychiurus* sp. from Taimyr which has 15–15–14 setae on tibiotarsi (7 setae in *A* row, 7–7–6 in *B*-row, and *Y*; *M* and *T* setae absent).



Figs 26–32. *Oligaphorura sabulosa* **sp. n.**: 26 — habitus, dorsal chaetotaxy and *pso* distribution; 27 — *Ant.*3–4; 28 — sensorial elements of *Ant.*3 organ; 29–30 — PAO and neighboring *pso*; 31 — ventral chaetotaxy of abdomen; 32 — chaetotaxy of left *Ti.*2. Scales: 26, 31 — 0.1 mm; 27 — 0.05 mm; 28–30, 32 — 0.01 mm.

Рис. 26–32. *Oligaphorura sabulosa* **sp. n.**: 26 — габитус, дорсальная хетотаксия и расположение ложных глазков; 27 — 3–4-й членики усиков; 28 — сенсорные элементы антеннального органа; 29–30 — ПАО и близлежащий ложный глазок; 31 — вентральная хетотаксия брюшка; 32 — левый тибиотарзус 2 пары ног. Масштаб: 26, 31 — 0,1 мм; 27 — 0,05 мм; 28–30, 32 — 0,01 мм.



Figs 33–41. *Tantulonychiurus asiaticus* Babenko **sp.n.**: 33 — habitus, dorsal chaetotaxy and *pso* distribution; 34 — *PAO* and neighboring *pso*; 35 — *Ant.*3–4; 36–37 — sensorial elements of *Ant.*3 organ; 38 — chaetotaxy of *Abd.*5–6; 39 — chaetotaxy of left *Ti.*3; 40 — ventral chaetotaxy of abdomen; 41 — furcal remnant. Scales: 33, 38, 40 — 0.05 mm; 34–37, 39, 41 — 0.01 mm.

Рис. 33–41. *Tantulonychiurus asiaticus* Babenko **sp.n.**: 33 — габитус, дорсальная хетотаксия и расположение ложных глазков; 34 — ПАО и близлежащий ложный глазок; 35 — 3–4-й членики усиков; 36–37 — сенсорные элементы антеннального органа; 38 — хетотаксия 5–6-го сегментов брюшка; 39 — левый тибиотарзус 3-й пары ног; 40 — вентральная хетотаксия брюшка; 41 — фуркальное поле. Масштаб: 33, 38, 40 — 0,05 мм; 34–37, 39, 41 — 0,01 мм.

which so far was considered as being monotypic. The genus was erroneously mentioned for northern part of East Palaearctic [Babenko, 2003; Babenko & Fjellberg, 2006]. In fact these records belong to a new species of recently established genus *Sensillonychiurus* Pomorski & Sveenkova, 2006 differs from *Tantulonychiurus* by having reduced number of guard setae in *AO* (3) and by the absence of d_0 on head. The third closely related genus, *Agraphorura* Pomorski, 1998, is even closer to *Tantulonychiurus* distinguishing from the latter mainly due to the absence of anal spines.

The new species differs from the only known species of the genus — *T. volinensis* (Szeptycki, 1964) having different number of papillae in *AO* (5 in *T. asiaticus* **sp.n.** *v*. 4 in *T. volinensis*) and by the absence of male organ on *Abd*.4 sterna. Besides the position of *pso* on antennal base and on *Abd*.5 slightly differs (set closer in the new species).

There are also a number of similar small species which are treated now as members of *Allonychiurus* Yosii, 1995 (according to a tentative key of Onychiurinae on *www.collembola.org* it should differ from *Tantulonychiurus* in the number of distal setae on tibiotarsi). For instance, *A. mariangeae* (Thibaud & Kim, 1994) from South Korea is characterized by identical number of pseudocelli on both dorsal and ventral side of body, but differs having four papillae in *AO* and male ventral organ in a form of 3+3 flame-like setae on genital area. Two other Korean species (*A. jindoensis* Lee & Kim, 1994 and *A. donjiensis* Lee & Kim, 1994), as well as *A. foliatus* (Rusek, 1967) from China, are also very similar in general appearance, but have different number of pseudocelli. All of them can be also easily distinguished from *T. asiaticus* **sp.n.** by the number of papillae in *AO* (5 in *T. asiaticus* **sp.n.** *v*. 4 in the other species).

DISTRIBUTION. Known only from the type-locality

Thalassaphorura tenuis Babenko **sp.n.**
Figs 42–47.

MATERIAL. Holotype ♀ — Russia, Krasnoyarsk Territory, mouth of Nizhnyaya Tunguska River, vicinity of Turukhansk, meadow on steep slope of river valley, 02 viii 2003, A. Babenko leg. Paratypes, 1♀, 3♂ — and 6 juvenile, same data as holotype.

DESCRIPTION. Colour white. Size 0.66–0.70 mm. Body shape cylindrical, rather slender (Fig. 42). Antennae thin, about as long as head. *Ant*.4 with two slightly thickened sensilla, subapical organite and microsensillum present (Fig. 45). *AO* consists of 5 papillae, two sensory rods, two smooth sensory clubs, 5 guard setae, and lateral microsensillum (Figs 43–45). *Ant*.1–2 with 9 and 13 setae, correspondently. *PAO* with 11–13 vesicles (Fig. 47). Labrum with 7 setae and 4 prelabral setae present. Apical part of labium with blunt terminal setae on papillae *A*, *B* and *C* (*C* — clearly thinner), 6 guards, and 5–6 proximal setae, basal fields with 4+5 setae. Maxillary palp simple with two sublobal hairs.

Pseudocellar formula (*pso*) as follows, dorsal: 32/233/33343, ventral: 2/000/0112, parapseudocelli (*psx*) invisible. Subcoxae with 1(2)–2–2 *pso*, correspondingly. Localization of dorsal *pso* as on Fig. 42. Granulation fine and uniform. Dorsal chaetotaxy almost symmetrical, the longest setae slightly thickened, sensilla poorly marked: 2/011/11101 (Fig. 42), similar thickened sensillum present on coxae of *Lg*.3. *Th*.1 with 6+6, rarely 7 setae. *Th*.2–3 with lateral microsensilla. Unpaired dorsal setae: d_0 on head, m_0 on *Abd*.4, a_0 on *And*.5 and *Abd*.6 (Fig. 42). Each thoracic sternum with 1+1 seta along *linea ventralis*. Furca reduced to a small area of fine granulation with 2+2 small setae posteriorly, arranged in two rows. Male ventral organ not observed. Ventral tube with 1+1 frontal, 5+5 distal and 2+2 proximal setae at corpus base. Subcoxae with (3)4–4–4 setae, tibiotarsi with 18–18–18 setae: two *T*-setae (T_1 and T_4), *A* and *B* rows with 7 setae each, setae *M* and *Y* present on all tibiotarsi (Fig. 46). Unguis simple, without inner tooth, unguiculus without distinct basal lamella, almost as long as inner edge of unguis. Anal spines present, set on low papillae and slightly bent.

AFFINITIES. The same formula of dorsal pseudocelli as in *T. tenuis* **sp.n.** is characteristic of a number of Holarctic species of the genus *Thalassaphorura*: *zschokkei* (Handschin, 1919), *encarpata* (Denis, 1931), *franzi* (Stach, 1946), *duplopunctata* (Strenzke, 1954), *kwona* (Thibaud & Lee, 1994), *tovtrensis* (Kaprus & Weiner, 1994), and *qixiaensis* Yan et al., 2006. There is also one non Holarctic species, *T. lifouensis* (Thibaud et Weiner, 1997) (New Caledonia), which is also very similar to *T. tenuis* **sp.n.**

Two of the species mentioned above, *T. duplopunctata* and *T. kwona*, differs from *T. tenuis* **sp.n.** in the number of ventral pseudocelli, 2/000/0111 and 2/000/1112, respectively *v*. 2/000/0112 in *T. tenuis* **sp.n.** *T. tovtrensis* can be easily identified due to 4 papillae in *AO* and spiniform *AD*. *T. franzi* also has spiniform setae instead of true *AD* on abdominal tip. *T. encarpata*, contrary to *T. tenuis* **sp.n.**, is strictly parthenogenetic and has only one sublobal hair on maxillary palp and labium of *A* type with 5 proximal setae [Fjellberg, 1998]. Chinese *T. qixiaensis* is characterized by the presence of *MVO* in males (thickened setae on the sterna of *Abd*. 2–3), labium of *AC* type with 7 proximal setae (*T. tenuis* **sp.n.** has 5–6 proximal setae on labium), and more lobes in *PAO* (21–30 in *T. qixiaensis v*. 10–13 in *T. tenuis* **sp.n.**). The latter feature may be also used to separate *T. tenuis* **sp.n.** from *T. zschokkei* and *T. lifouensis* (24–38 and 17–23 *PAO* lobes, respectively). Difference in size and the number of setae on *Th*.1 (6+6(7) in *T. tenuis* **sp.n.** *v*. 5+5 in *T. zschokkei*) may also be useful for its separation from the former species and some chaetotaxy characteristic from the latter, for instance, the number of setae between medial *pso* on proximal part of a head (3+3 in *T. tenuis* **sp.n.** *v*. 4+4 in *T. lifouensis*) or medial microsetae of *m*-row between lateral macrosetae on *Abd*.5 (2+2 in *T.* "*tenuis*" **sp.n.** *v*. 3+3 in *T. lifouensis*)

ETYMOLOGY. Named because of small size of the new species, from Latin *tenuis*.

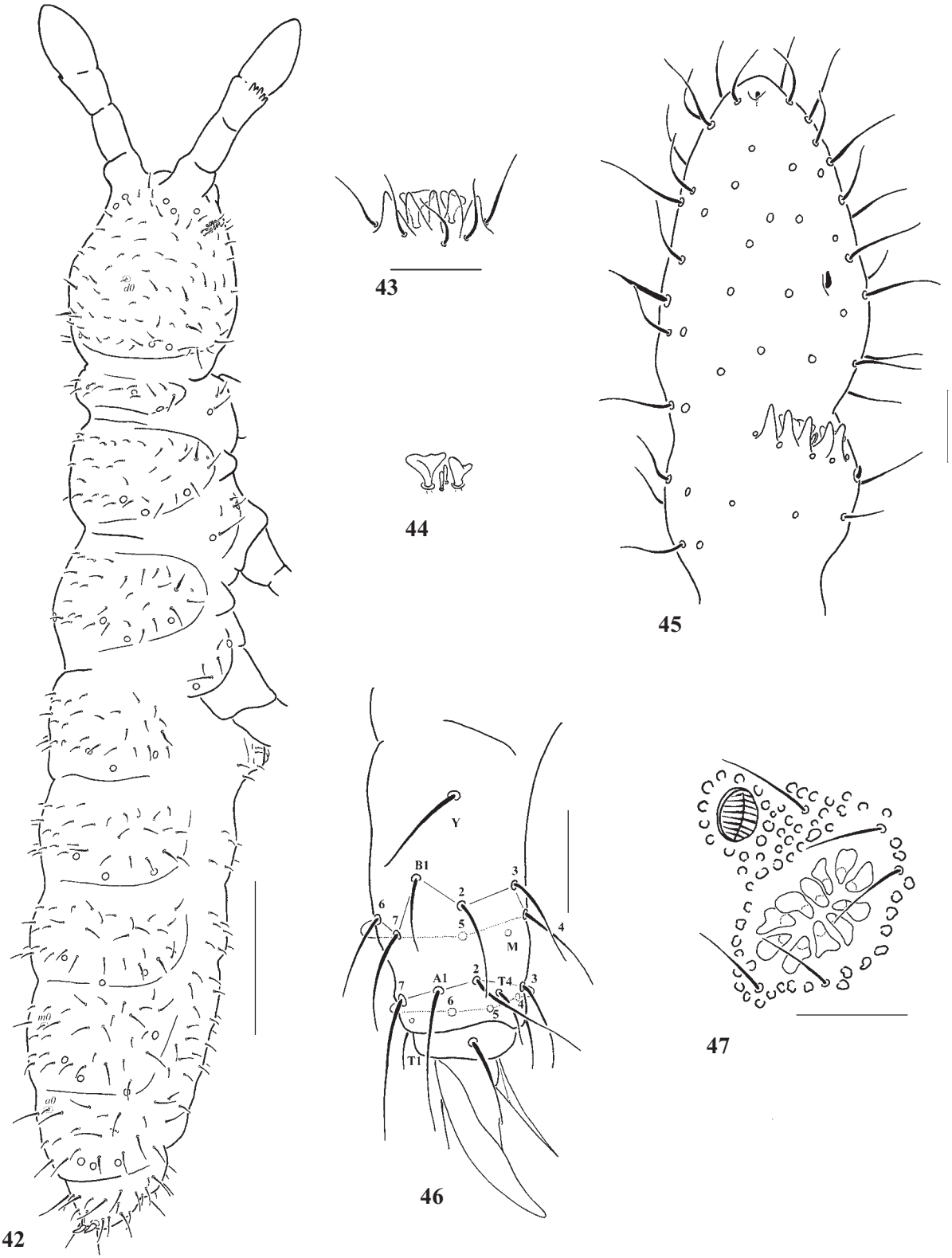
DISTRIBUTION. Known only from type-locality.

Uralaphorura tunguzica Babenko **sp.n.**
Figs 48–55.

MATERIAL. Holotype, ♀ — Russia, Krasnoyarsk Territory, mouth of Nizhnyaya Tunguska River, Turukhansk, mosses on log house footing, 27 vii 2003, A. Babenko leg. Paratypes: 7♀, 2♂ (slides), and ca. 150 specimens (alcohol) — same data as holotype.

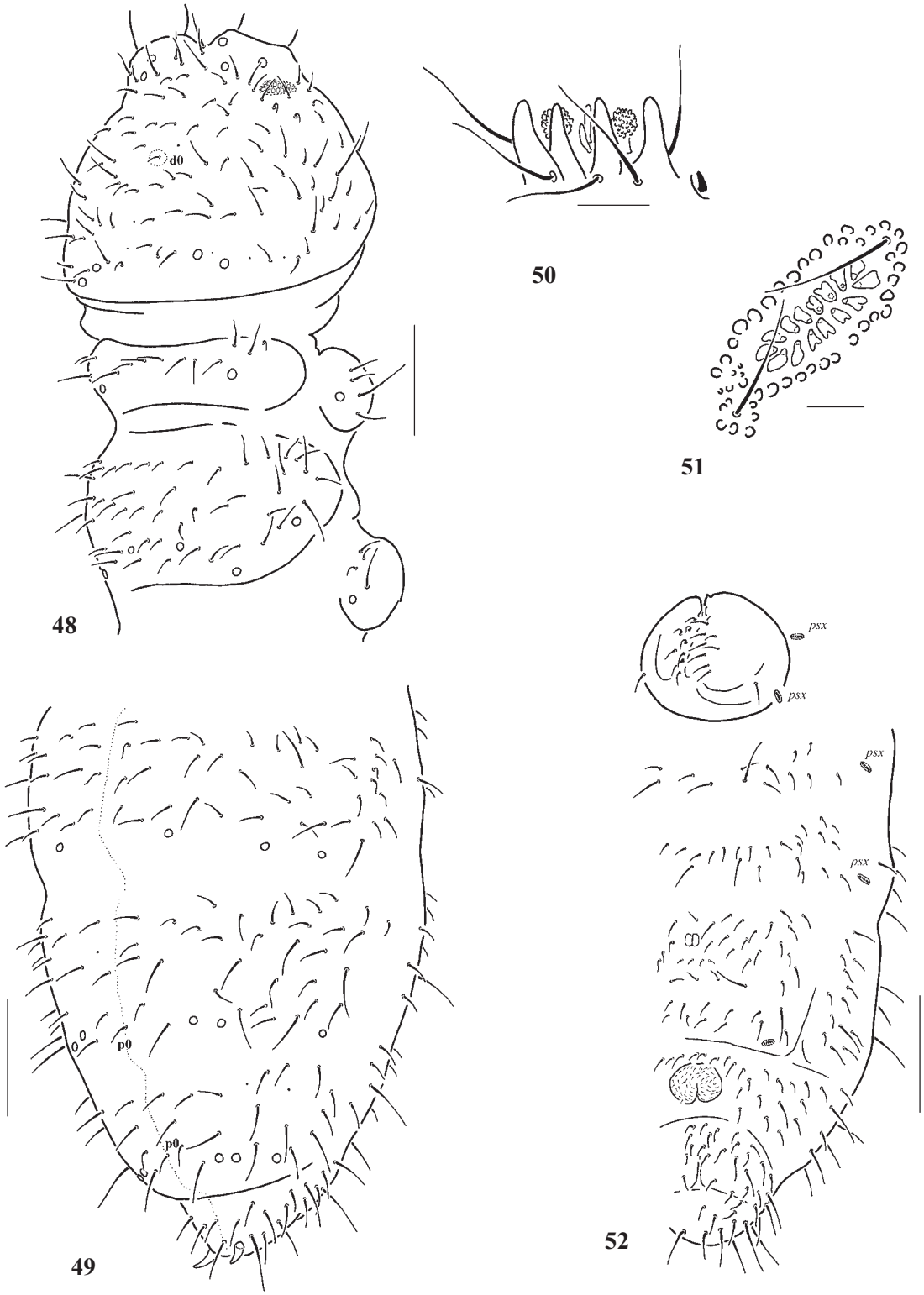
DESCRIPTION. Colour white. Size up to 1.5 mm. Body rather short and broad. Granulation fine and uniform, without differentiated fields. Microsensillum on *Ant*.4 set clearly above proximal row of setae, subapical organite present. *Ant*.3 organ consists of 4 papillae, two sensory rods, two granulated straight subequal clubs, 5 guard setae, and lateral microsensillum (Fig. 50). *Ant*.1–2 with 9 and 13 setae, correspondently. *PAO* with 12–17 simple vesicles, some of them may be bilobed (Fig. 51). Labrum with 4 prelabral and 9 labral setae. Labium with thick terminal seta only on papilla *A*, 7 guards and 6 proximal setae present, basal fields of labium with 4+6 setae. Maxillary palp simple with two sublobal hairs.

Dorsal pseudocellar formula: 32/133/33333, two median pseudocelli near antennal base set almost at the same distance from a middle line. Ventral pseudocelli absent. Ventral parap-



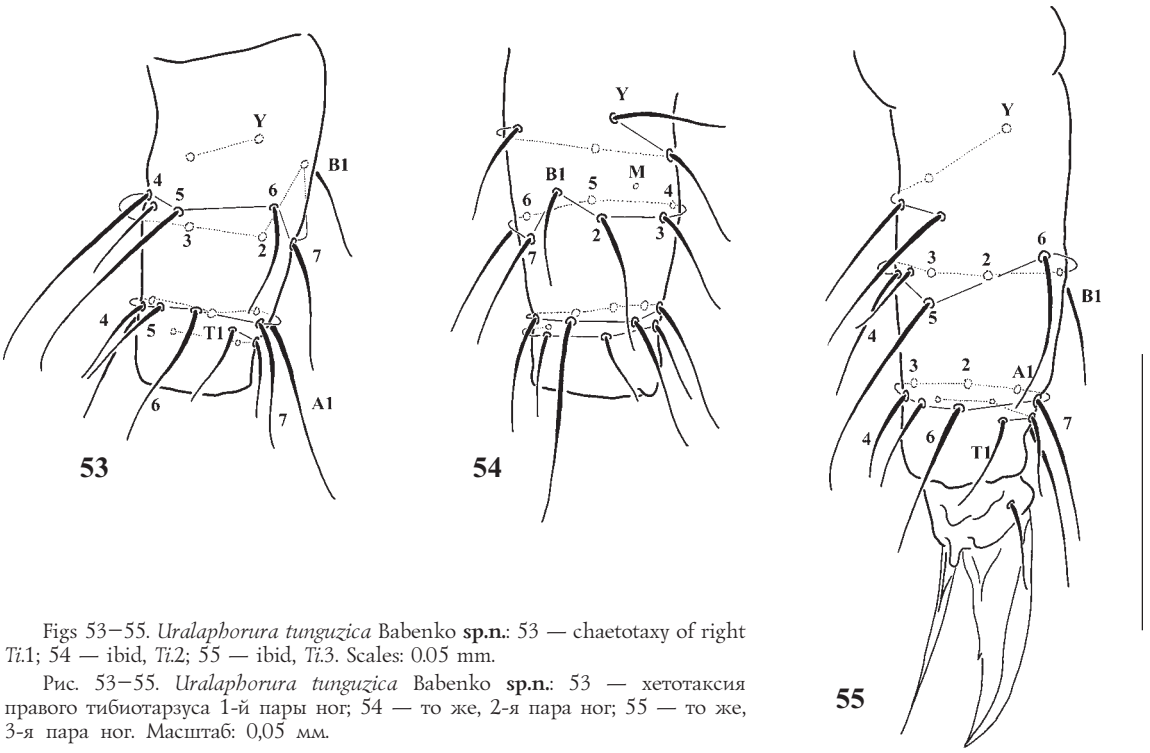
Figs 42–47. *Thalassaphorura tenuis* Babenko **sp.n.**: 42 — habitus, dorsal chaetotaxy and *pso* distribution; 43–44 — sensorial elements of *Ant.*3 organ; 45 — *Ant.*3–4; 46 — chaetotaxy of right *Ti.*3; 47 — *PAO* and neighboring *pso*. Scales: 42 — 0.1 mm; 43–47 — 0.01 mm.

Рис. 42–47. *Thalassaphorura tenuis* Babenko **sp.n.**: 42 — габитус, дорсальная хетотаксия и расположение ложных глазков; 43–44 — сенсорные элементы антеннального органа; 45 — 3–4-й членики усиков; 46 — правый тибиотарзус 3-й пары ног; 47 — ПАО и близлежащий ложный глазок. Масштаб: 42 — 0,1 мм; 43–47 — 0,01 мм.



Figs 48–52. *Uralaphorura tunguzica* Babenko **sp.n.**: 48 — dorsal chaetotaxy of head and *Th.*1–2; 49 — dorsal chaetotaxy of *Abd.*3–6; 50 — *Ant.*3 organ; 51 — PAO; 52 — ventral chaetotaxy of abdomen. Scales: 48–49, 52 — 0.1 mm, 50–51 — 0.01 mm.

Рис. 48–52. *Uralaphorura tunguzica* Babenko **sp.n.**: 48 — дорсальная хетотаксия головы и 1–2-го сегментов груди; 49 — дорсальная хетотаксия 3–6-го сегментов груди; 50 — антеннальный орган; 51 — постантеннальный орган; 52 — вентральная хетотаксия брюшка. Масштаб: 48–49, 52 — 0,1 мм; 50–51 — 0,01 мм.



Figs 53–55. *Uralaphorura tunguzica* Babenko **sp.n.**: 53 — chaetotaxy of right *Ti*.1; 54 — ibid, *Ti*.2; 55 — ibid, *Ti*.3. Scales: 0.05 mm.

Рис. 53–55. *Uralaphorura tunguzica* Babenko **sp.n.**: 53 — хетотаксия правого тибиотарзуса 1-й пары ног; 54 — то же, 2-я пара ног; 55 — то же, 3-я пара ног. Масштаб: 0,05 мм.

seudocelli (*psx*) as follows: 1/000/2111, the head one set in usual position of *v*-pseudocellus. Each subcoxa with one *pso* and one *psx*. One *psx* present also on inner side of each femur. Localization of *pso* and *psx* as on Figs 48–49, 52. Dorsal chaetotaxy partly plurichaetotic and asymmetric. Macrosetae distinct, especially on abdominal tip. *Th*.2–3 with lateral microsensilla. Head with d_0 Unpaired median setae p_0 present on terga of *Abd*.4–5, *Abd*.6 with two dorsal axial setae. Thoracic sterna without setae along *linea ventralis*, ventral chaetotaxy of abdomen as on Fig. 52. Furca reduced to a small area of fine granulation with a line of 4 setulae posteriorly (Fig. 52). Male organ absent. Ventral tube with (8)9+9 distal and 1+1 proximal setae. Subcoxae with 4–4–4 setae. Tibiotarsi with more than 20 setae, slightly variable (all four *T*-setae present, 7 setae in *A*-row, 7(6) in *B*-row, a part of *C*-row, setae *M* and *Y*) (Figs 53–55). Setae A_1 on all tibiotarsi, B_{4-5} on *Ti*.1–2 and B_5 on *Ti*.3 are longer than others but not clavate. Unguis with clear inner tooth, lateral teeth absent or vestigial, unguiculus without basal lamella, as long as inner edge of unguis (Fig. 55). Anal spines present, set almost without papillae.

AFFINITIES. Although the new species lacks clavate tibiotarsal setae (the main diagnostic feature of the genus *Uralaphorura* (=*Uralia)* according to Martynova [1976]), it is obviously closely related to *U. schilovi* (Martynova, 1976), having many common morphological features (labrum, labium, *AO*, *PAO*, mutual position of antennal *pso*, complete absence of ventral *pso* and setae on thoracic sterna, only one seta on *VT* base, furca remnant, etc.) Apart pointed tibiotarsal setae, the only notable difference between *U. tunguzica* **sp.n.** and *U. schilovi* is the presence of dorsal pseudocellus on *Th*.1, as well as three instead of two *pso* on *Abd*.5 in the former.

The records of *U. schilovi* from eastern Siberia [Babenko, 2003; Babenko & Fjellberg, 2006] seems to belong to the third undescribed species of the genus which has the same pseudocellar formula as *U. schilovi* but pointed tibiotarsal setae as *U. tunguzica* **sp.n.** and is characterized by small, almost rod-shape sensory clubs in *AO*.

ETYMOLOGY. From Tunguzy (now called Evenki) — one of the main native race of Siberian taiga.

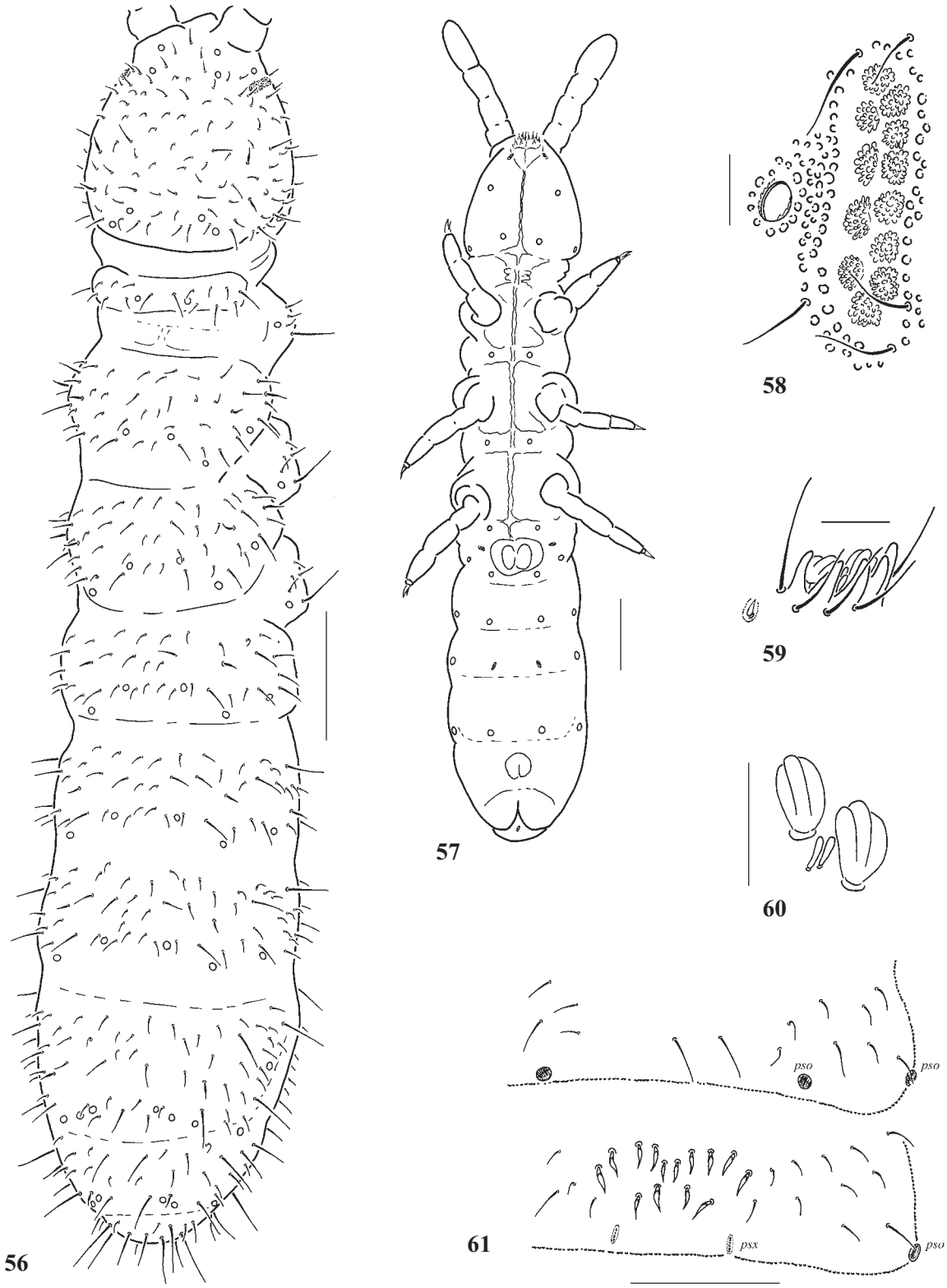
DISTRIBUTION. Known only from type-locality.

Deuteraphorura mangazeya Babenko **sp.n.** Figs 56–65.

MATERIAL. Holotype, ♀ — Russia, Krasnoyarsk Territory, mouth of Nizhnyaya Tunguska River, vicinity of Turukhansk, meadow on steep slope of river valley, 02 viii 2003, A. Babenko leg.; Paratypes: 6♀, 10♂, and 11 juv. — same data as holotype.

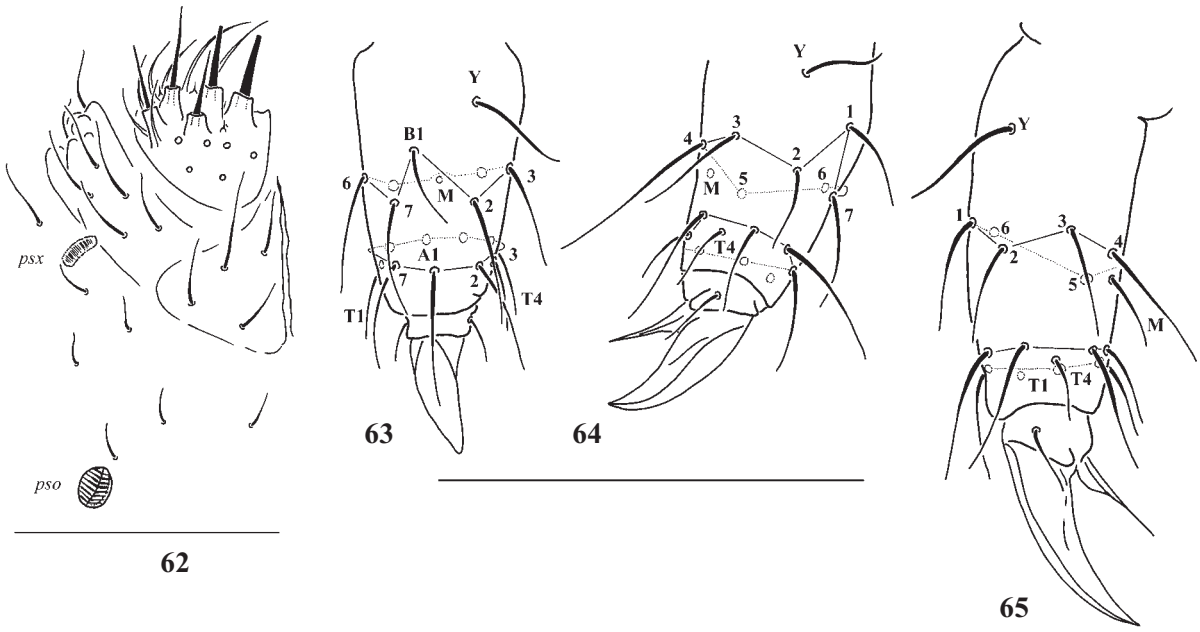
DESCRIPTION. Colour white. Size 0.8 (males), females usually about 1.0 mm, max. up to 1.2 mm, holotype 0.98 mm. Body cylindrical, slightly broadened in a region of *Abd*.4. Granulation fine and almost uniform, without differentiated fields with coarser granules. Area *antennalis* distinct. Antennae about as long as head. Subapical organite on Ant.4 small, rod-like, microsensillum set within proximal row of setae. *Ant*.3 organ (*AO*) consists of 5 papillae, two sensory rods, two smooth, subequal sensory clubs with clear ribs, 5 guard setae, and lateral microsensillum (Figs 59–60). *Ant*.1–2 with 8 and 14 setae, correspondently. *PAO* long and narrow, consists of 11–12 composed vesicles (Fig. 58). Labrum with 4 prelabral and 3–2–2 labral setae, two distal pairs prolonged. Labium with thick terminal setae on papillae *A* and *B*, 7 guards and 6 proximal setae present, basal fields of labium with 4+6(7) setae (Fig. 62). Maxillary palp simple with two sublobal hairs.

Dorsal pseudocellar formula as 32/133/33353, ventral pseudocelli as 3/011/3212. Ventral parapseudocelli (*psx*) as follows: 1/000/101001^m. One *psx* also present on inner part of each femora. Subcoxae with two *pso*. Localization of *pso* and *psx* as on Figs 56–57. Dorsal chaetotaxy almost symmetric. Macrosetae clearly differentiated, straight and usually blunt at tip, longer laterally and on abdominal tip. Tergal sensilla more or less distinct (2/022/11111), shorter and slightly



Figs 56–61. *Deuteraphorura mangazeya* Babenko **sp.n.**: 56 — habitus, dorsal chaetotaxy and *pso* distribution; 57 — distribution of ventral *pso* and *psx*; 58 — *PAO* and neighboring *pso*; 59 — *Ant.*3 organ; 60 — sensorial elements of *Ant.*3 organ; 61 — male organ on sternum of *Abd.*3. Scales: 56–57, 61 — 0.1 mm; 58–60 — 0.01 mm.

Рис. 56–61. *Deuteraphorura mangazeya* Babenko **sp.n.**: 56 — габитус, дорсальная хетотаксия и расположение ложных глазков; 57 — расположение ложных глазков и парапсевдоцеллей на вентральной стороне тела; 58 — ПАО и близлежащий ложный глазок; 59 — антеннальный орган; 60 — сенсорные элементы антеннального органа; 61 — вентральный орган самца. Масштаб: 56–57, 61 — 0,1 мм; 58–60 — 0,01 мм.



Figs 62–65. *Deuteraphorura mangazeya* Babenko **sp.n.**: 62 — labium; 63 — chaetotaxy of left *Ti*.1; 64 — chaetotaxy of right *Ti*.2; 65 — ibid, *Ti*.3. Scales: 0.05 mm.

Рис. 62–65. *Deuteraphorura mangazeya* Babenko **sp.n.**: 62 — нижняя губа; 63 — хетотаксия левого тибиотарзуса 1-й пары ног; 64 — хетотаксия правого тибиотарзуса 2-й пары ног; 65 — тоже, 3-я пара ног. Масштаб: 0,05 мм.

broader than macrosetae. Lateral microsensilla present on both *Th*.2 and *Th*.3. Unpaired median setae: d_0 on head and macroseta p_0 on *Abd*.4, *Abd*.6 without dorsal unpaired axial seta (Fig. 56). Thoracic sterna without setae along *linea ventralis*. Furca reduced to a small, finely granulated area with a line of 4 setulae posteriorly, its mutual position somewhat variable in mature specimens. Male organ developed only in specimens with *ductus ejaculotories* and consists of 14–15 strongly broaden and curved setae on ventral side of *Abd*.3 (Fig. 61). These setae in younger specimens even with fully developed genital opening are needle-like: straight and slightly broaden basally. Ventral tube with (6)7+7 distal setae, no frontal or basal ones. Subcoxae with 4–5–5 setae. Tibiotarsi with 18–18–17 setae: two *T*-setae present (T_1 and T_4), 7 setae in *A*-row, 7 (or 6 on *Ti*.3) in *B*-row, and setae *M* and *Y* (Figs 64–65). Unguis without inner or lateral teeth, unguiculus with more or less clear basal lamella, about as long as 2/3 of inner unguis (Fig. 65). Anal spines absent.

AFFINITIES. Despite the questionable validity of the genus *Deuteraphorura* Absolon, 1901 (see discussion on www.collembola.org), it combines rather homogeneous group of species (previously called "*fimetarius*" group of "*Onychiurus*"). The group includes now more than 70 species, but many of them require modern re-descriptions.

The new species is most similar to two European species: *D. sylvaria* (Gisin, 1952) sensu Pomorski, 1998 and *D. gemae* (Simón & Luciáñez, 1994) having the same dorsal and ventral *pso* and *psx* formulas[6]. All three species are also characterised by the presence of ventral organs in males which slightly differ in the number of broadened setae on *Abd*.3: *ca*. 30 in *D. sylvaria*, 17–18 in *D. gemae*, and 14–15 in *D. mangazeya* **sp.n.** The new species may be distinguished due to shorter unguiculus with clear basal lamella, distinct tergal sensilla, and by the presence of two axial macrosetae instead of unpaired p_0 on *Abd*.6. Tibiotarsal chaetotaxy is also slightly different with only *Y*-seta in *C*-row on all tibiotarsi in *D. mangazeya* **sp.n.**, whereas the other species may have one or two additional setae in this row, *i.e.* more than 18–18–17 setae as a whole [see Fig. 197c in Jordana et all., 1997 and Figs 472–473 in Pomorski, 1998].

Three other known species of the group have the same number of dorsal *pso* as the new species, namely *D. eduardi* (Denis, 1937), *D. insubraria* (Gisin, 1952), and *D. pseudoinsubraria* (Dallai, 1970). These species may be distinguished due to different formulas of ventral *pso* (2/000/1212, 3/011/2212, and 3/011/1212 respectively *v*. 3/011/3212 in *D. mangazeya* **sp.n.**). Besides two former species have no modified ventral setae (*MVO*) in males[7].

ETYMOLOGY. The new species is called after the first Russian town in Siberia — Mangazeya on Taz river. Turukhansk (known till the end of XVIII century as New Mangazeya) is by right considered as an assignee of this semi-legendary settlement.

DISTRIBUTION. Known only from the type-locality, but may be the same species as *Onychiurus fimetarius* (Linnaeus, 1767) sensu Linnaniemi [1919] from the Polar Ural and/or *D. variabilis* (Stach, 1954) sensu Taskaeva [2006] from Komi Republic. The first record has been considered as dubious [Babenko & Fjellberg, 2006]. The latter species, being synanthropic in Europe, can hardly inhabit natural communities within boreal forest zone and its presence there should be confirmed.

[6] According to the original description, *D. sylvaria* has not one, but two sternal *pso* on *Abd*.3 (3/011/3222 as a whole). Pomorski [1998] believes that this is just misinterpretation of medial *psx* on *Abd*.3 (Fig. 61) as *pso*. The same problem probably exists in interpretation of ventral *pso*/*psx* on *Abd*.1: one of the two *pso* on *VT* base figured by Gisin [1960, Fig. 273] seems to be *psx* while anterior *pso* was probably overlooked.

[7] The character is uncertain for *D. pseudoinsubraria* as only one male was mentioned in the original description.

Folsomia potapovi Babenko **sp.n.**
Figs 66–72.

MATERIAL. Holotype, immature ♀ — Russia, Krasnoyarsk Territory, mouth of Nizhnyaya Tunguska River, vicinity of Turukhansk, flood gramineous belt with *Salix* bushes between beach and meadow on valley slope, sand, 02 viii 2003, A. Babenko leg.; Paratypes, immature ♀ and 1 juv. from the same locality.

DESCRIPTION. Size 0.70–0.75 mm. Ocelli and pigment absent. Cuticle looks smooth, with only preliminary granulation all over the body. *PAO* rather broad and clearly longer than *Ant*.1 width, with 4–5 setae along posterior edge (Fig. 71). Maxillary outer lobe with 4 sublobal hairs, maxillary palp bifurcate. Labral formula as 4/5–5–4, distal edge of labrum with 4 roundish papillae. Labium with 5 usual papillae (*A–E*), full set of guards (16), and 3 proximal setae; basal part of labium with 4+5 setae. At least 4+4 postlabial setae present. *Ant*.1 with 2 ventro-lateral sensilla (*s*) and 2 basal microsensilla (*bms*, ventral and dorsal). *Ant*.2 with 3 *bms* and one lateral *s*. *Ant*.3 with one *bm*s (absent in juvenile specimen) and 5–6 distal *s* (including one or two lateral). Sensilla on *Ant*.4 differentiated, 5 dorsal and one lateral of which moderately thickened, organite and pin-seta present (Fig. 70).

Axial setae on *Th*.2–*Abd*.3 as 7–8,6–7/3–4,4,4–5. *Th*.3 with about 18 setae in *p*-row. Sensilla shorter than common setae, more or less clearly marked and slightly different in size. Sensillar formula as 4,3/2,2,2,3,5 (*s*), 1,0/0,0,0 (*ms*). Medial sensilla on *Th*.2–3 short and set well in front of *p*-row of setae (Fig. 66, 67), on *Abd*.1–3 medial sensilla set precisely in *p*-row of setae (Figs 66, 69). Macrosetae smooth and well differentiated, 1,2/3,3,3 in number, medial macroseta on *Th*.3 small but visible (may be probably marked better in mature specimens). Medial macrosetae on *Abd*.5 are 3.2–3.5 as long as mucro and slightly shorter than dens (ratio dens : macrosetae about 1.2–1.3 : 1). "Foil" setae well differentiated, 7 in number (4 anterior and 3 posterior) (Fig. 69). *Th*.3 with both ventro-axial (2+2(3) and ventro-lateral (2+2) setae present (Figs 67–68). Unguis without teeth. Unguiculus about half as long as inner margin of unguis. Tibiotarsi with full set of setae, *i.e*. 21–21–23 setae and few additional proximal setae usually present, especially on *Ti*.3. Upper subcoxae of *Lg*.1–3 with 1, 1–2, 4–5 setae, respectively. Tibiotarsal tenent setae pointed. Ventral tube with 4+4 latero-distal and 5 posterior setae (four setae in distal row). Tenaculum with 4+4 teeth and a seta. Anterior furcal subcoxae with 8–10, posterior ones with 4–5 setae. Manubrium with at least two pairs of anterior setae, distal setae longer and set closer to midline (Fig. 72). Posterior side of manubrium with 3+3 or more laterobasal setae, its main part with 1+1 lateral, 5+5 central, 2+2 distal and 1+1 apical setae [or according to Fjellberg's [2005] abbreviation: 1+1 *m*-setae, 2+2 *M*-setae, 2+2 *L*-setae, 1+1 *a*-setae, 2+2 *pr*-setae (probably more in adults), and 1+1 *l*-setae]. Dens about as long as manubrium, with *ca*. 10 anterior setae. Posterior side of dens slightly crenulated, with 4 setae in basal group, 2 setae in the middle and small subapical seta near mucro also present (Fig. 72). Mucro bidentate, subapical tooth stronger, ratio of dens : mucro as 4.1–4.3 : 1.

AFFINITIES. Despite immature status of the type material and probable increase of seta number on furca, legs, *VT*, etc. in adults, the new species can be easily distinguished from the majority of known Palaearctic species of the genus due to the presence of ventro-lateral setae on *Th*.3, or so called *vl*-setae by Potapov [2006]. *Folsomia arena* Potapov & Babenko, 2006 and *F. paoinflata* Potapov & Stebaeva, 2006, which were placed in a special *paoinflata* species-group of the genus *Folsomia* [Potapov, 2006], are the only exception. Besides *F. potapovi* **sp.n.** shares the presence of thickened sensilla on *Ant*.4 with both species and well differentiated "foil" setae on abdominal tip with *F. paoinflata*. *F. potapovi* **sp.n.** differs from the mentioned species by larger size, longer furca with more setae on anterior side of manubrium and posterior side of dens, bifurcate maxillary palp, position of medial sensilla on abdominal terga in *p*-row of setae, longer and more narrow *PAO*, etc. The number of ventro-axial (*v*) and ventro-lateral (*vl*) setae on *Th*.3 also differs between these three species: 1+1*v*, 1+1*vl* in *F. arena*, 0*v*, 1+1*vl* in *F. paoinflata*, and 2+2(3)*v*, 2+2*vl* in *F. potapovi* **sp.n.**

ETYMOLOGY. The new species is dedicated to my friend and colleague, Mikhail Potapov, whose permanent activity makes species identification of *Folsomia* so easy and pleasant.

DISTRIBUTION. Known only from the type-locality

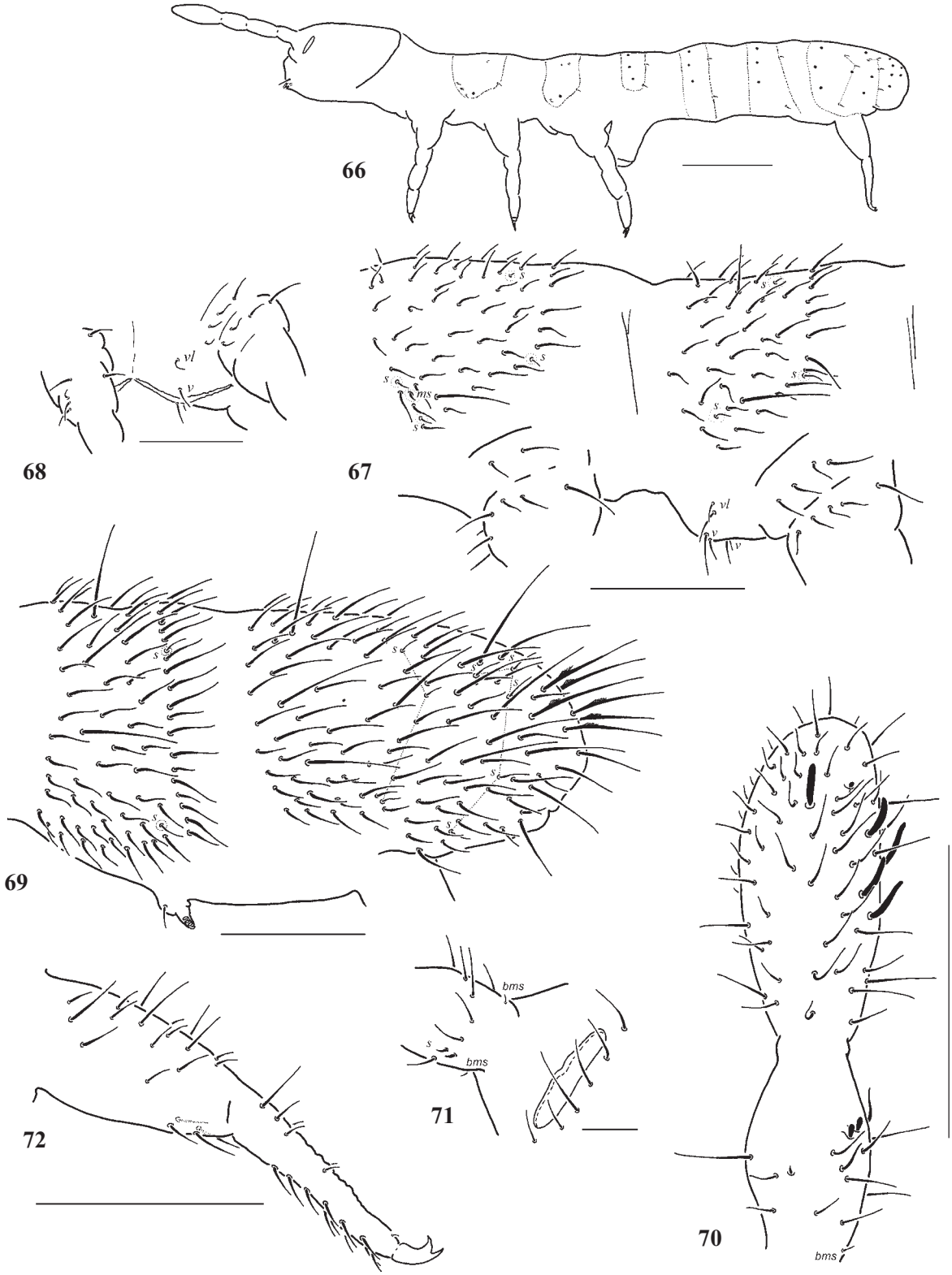
Sminthurinus dispar Babenko **sp.n.**
Figs 73–92.

MATERIAL. Holotype, ♀ — Russia, Krasnoyarsk Territory, mouth of Nizhnyaya Tunguska River, Turukhansk, meadow on steep slope of river valley, 02 viii 2003, A. Babenko leg.; Paratypes: 8 mature and 6 immature ♀, 12 ♂ — from the same locality; 1♀ — same region and date, damp sedge meadow in a dell; 2♀ — same region, cleaning in mixed forest, 19 viii 2003; 3♀ — same region, aspen forest with fragmentary lichen-moss cover, pit-traps, 29 vii–19 viii 2003.

DESCRIPTION. Size 0.8–1.1 mm (females), 0.5–0.6 mm (males). Female colour dark, more or less uniform with some irregular paler spots, head and appendices usually lighter, antennae pigmented. Immature females lighter, with dark pigment concentrated on eye patches, between antenna bases and on lateral parts of great abdomen, which dorsal side is paler. Colour in males is characteristic with three separate dark spots on great abdomen (Figs 73–74). Eye patch with 8 ocelli (*D* clearly smaller) and 2 setae (Fig. 79). Maxillary outer lobe with one sublobal hair, maxillary palp simple. Chaetotaxy of labrum as on Fig. 77, its distal edge with 4 small roundish papillae. Labium with 5 usual papillae (*A–E*) and 5 proximal setae; guards a_1, b_1, b_2 thickened and set on papillae, papilla *E* with 4 guards, basal part of labium with 4+4 setae (Fig. 76). Head dorsally furnished with short normal setae, setae on clypeus and area *genalis* clearly longer (Fig. 78), ventrally with 2+2 postlabial setae along *linea ventralis*. Ratio of length of antenna/head about 1.5. Ratio of antennal segments 1–4 in females as 1 : 2 : 3 : 5.7. Papillae on *Ant*.3 simple, protruding (Fig. 78), *Ant*.3 organ as usual. *Ant*.4 undivided (Fig. 75), with two longitudinal rows of differentiated thin sensilla, 7–9 in number, apical papilla present.

Abdomen with short, fine setae only. All usual bothriotrichia (*A*, *B*, *C*, *D*) and neosminthuroid seta present in usual position. *Abd*.5 separate [*niger*-group sensu Betsch, 1980]. Seta a_0 on *Abd*.6 in females bifurcate, other circumanal setae not winged, only slightly broaden at bases (Fig. 80). Anal appendices branched.

Upper and lower subcoxae of *Lg*.1–3 with 0, 1, 1 and 1, 1, 1 setae, respectively; coxae (*Cx*) with 1, 3, 2 setae; each trochanter (*Tr*) with 4 setae (Figs 82, 85); femora with 13, 13, 12 setae (Figs 83, 86). *Cx*.3, *Tr*.2 and *Tr*.3 with oval organs (Fig. 85). Tibiotarsal chaetotaxy as on Figs 81, 84, each tibiotarsi with 5 spatulate setae, *ae*, *e*, *pe*, *ka*, and *kp* according to Nayrolles's [1987] nomenclature (Fig. 88). Unguis with 2(3) small inner teeth, more or less clear subapical teeth and basal serration laterally, some outer teeth usually also visible (Figs 87–88). All unguiculus with inner tooth and

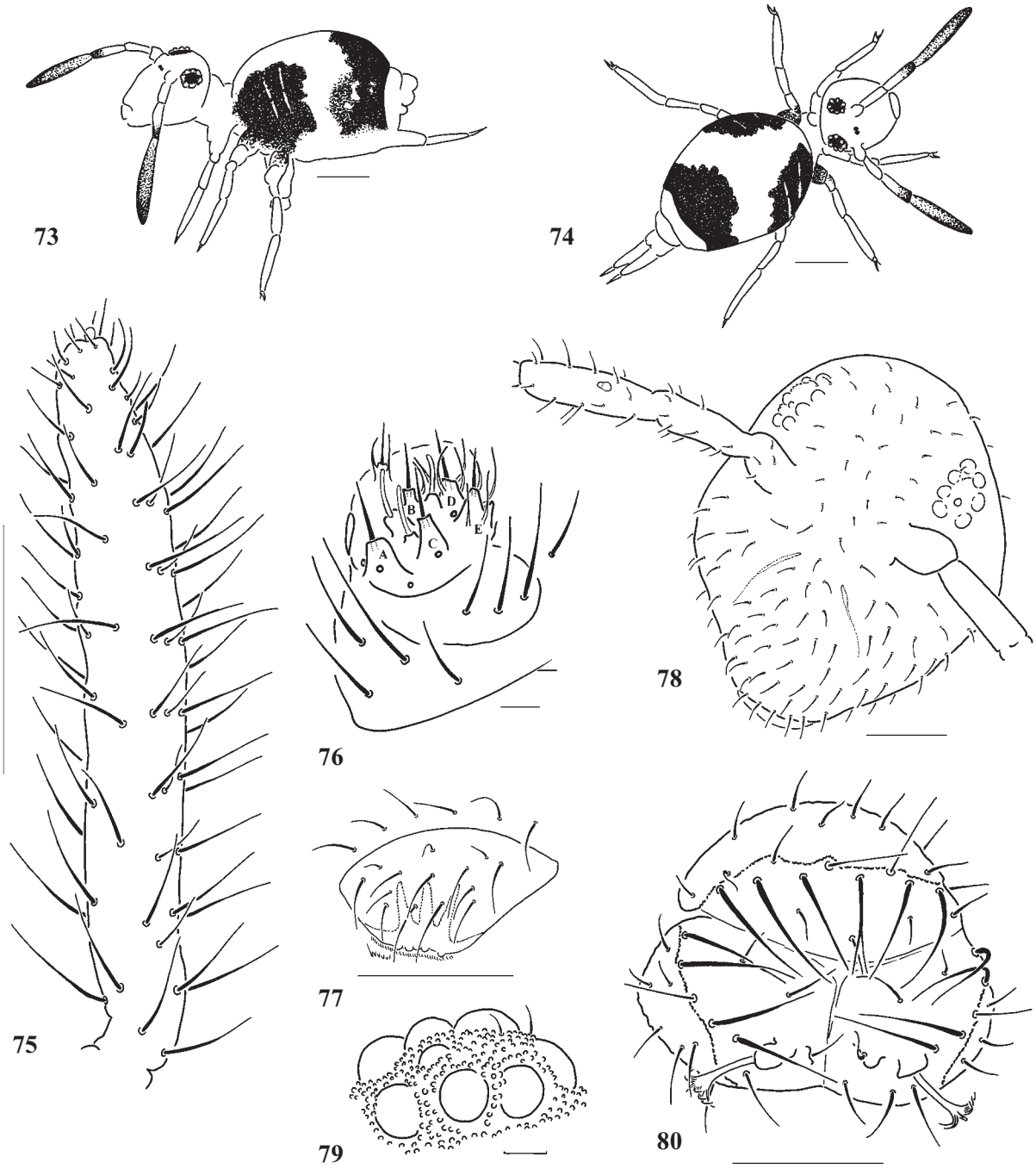


Figs 66–72. *Folsomia potapovi* Babenko **sp.n.**: 66 — habitus, distribution of macrosetae, sensilla and microsensillum on terga; 67 — tergal chaetotaxy (sensilla encircled); 68 — ventral and ventro-lateral setae in juvenile specimen; 69 — chaetotaxy of *Abd.*3–6 (sensilla connected); 70 — *Ant.*3–4; 71 — *PAO* and *Ant.*1; 72 — furca (lateral view). Scales: 66 — 0.1 mm; 67–70, 72 — 0.05 mm; 71 — 0.01 mm.

Рис. 66–72. *Folsomia potapovi* Babenko **sp.n.**: 66 — габитус и расположение макрохет, сенсилл и микросенсилл на тергитах; 67 — хетотаксия груди; 68 — вентральные и вентро-латеральные хеты у ювенильной особи; 69 — хетотаксия 3–6-го сегментов брюшка; 70 — 3–4-й членики усиков; 71 — ПАО и 1-й членик усиков; 72 — прыгательная вилка латерально. Масштаб: 66 — 0.1 мм; 67–70, 72 — 0,05 мм; 71 — 0,01 мм.

subapical filament, which expanded beyond the unguis tip only on *Lg*.1. Ventral tube with 2+2 setae on corpus, retracted sacs smooth. Retinaculum with 4+4 teeth and one seta. Manubrium with 6+6 posterior setae. Apical row of setae on dens with 7 setae as usual, anterior side with two subapical and one basal setae (Fig. 89), posterior side of dens with 2 outer, 3 inner, and 4 basal setae (one outer, middle macroseta, and two inner) (Fig. 90). Mucro about as long as a half of dens, inner lamella clearly serrate (Fig. 91), outer almost smooth or with sparse serration proximally (Fig. 92).

AFFINITIES. The same dental chaetotaxy as in the new species is known for four Palaearctic species of *Sminthurinus*, viz. *S. gisini* Gama, 1965, *S. orientalis* Stach, 1964, *S. pekinensis* Stach, 1964, and *S. hydrophilus* Bretfeld, 2000. Two eastern species, *S. orientalis* and *S. pekinensis* from China, clearly differ from *S. dispar* **sp.n.** having only three



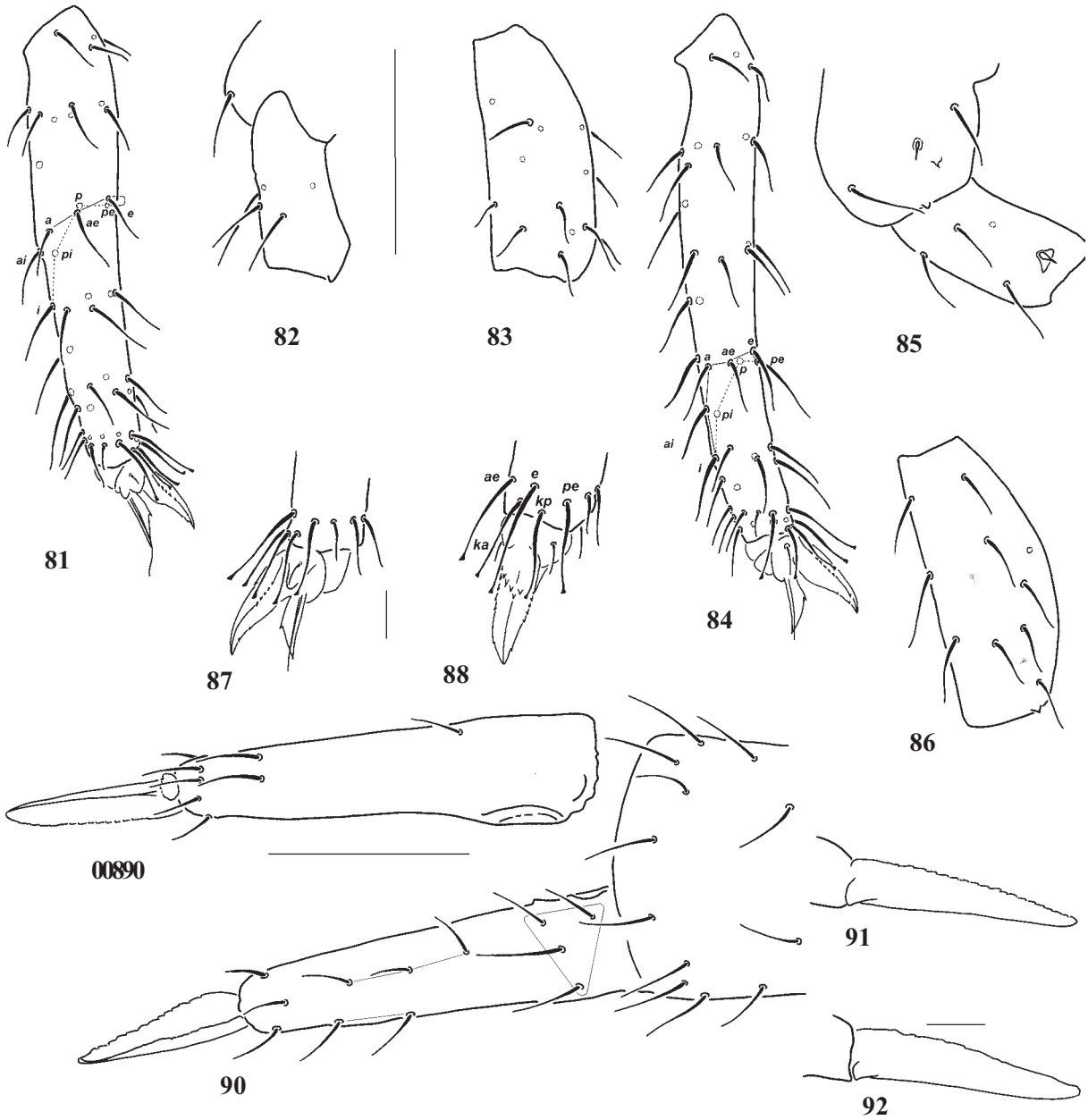
Figs 73–80. *Sminthurinus dispar* Babenko **sp.n.**: 73–74 — male coloration; 75 — *Ant.*4; 76 — labium; 77 — labrum; 78 — head chaetotaxy; 79 — eye spot; 80 — *Abd.*6. Scales: 73–74 — 0.1 mm; 75, 77–78, 80 — 0.05 mm; 76, 79 — 0.01 mm.

Рис. 73–80. *Sminthurinus dispar* Babenko **sp.n.**: 73–74 — окраска самца; 75 — 4-й членик усиков; 76 — лабиальная пальпа; 77 — верхняя губа; 78 — хетотаксия головы; 79 — глазное поле; 80 — 6 сегмент брюшка. Масштаб: 73–74 — 0,1 мм; 75, 77–78, 80 — 0,05 мм; 76, 79 — 0,01 мм.

clavate setae on each tibiotarsi and divided papilla on *Ant*.3. European *S. gisini* can be easily identified due to two setae on tenaculum and winged circumanal setae [Bretfeld, 2000].

It is more difficult to distinguish *S. dispar* **sp.n.** from *S. hydrophilus* described from alpine belt of Alaiskii Mt. Range (Kirgizia). The only notable difference of *S. hydrophilus* is the length of unguiculus, which is clearly shorter than unguis even on *Lg*.1. As the male colour was not mentioned in the original description of *S. hydrophilus*, paratypes of the species deposited in MSPU collection were checked. Among them there are several males, which are dark and don't differ in colour from females. Besides *S. hydrophilus* is characterized by different structure of labium with 6 guards on papilla *E* (e_5 and especially e_6 partly reduced) whereas *S. dispar* **sp.n.** has only four *e*-guards.

A few non Palaearctic species are also characterized by the same dental chaetotaxy. Thus *S. suborientalis* Stach, 1965 from Vietnam shares some important morphological features with the new species but differs in the shape of papilla on *Ant*.3



Figs 81–92. *Sminthurinus dispar* Babenko **sp.n.**: 81 — chaetotaxy of *Ti*.1; 82 — coxa and trochanter of *Lg*.1; 83 — femur of *Lg*.1; 84 — chaetotaxy of *Ti*.3; 85 — coxa and trochanter of *Lg*.3; 86 — femur of *Lg*.3; 87–88 — unguis of *Lg*.2 (different views); 89 — anterior (ventral) side of dens; 90 — posterior (dorsal) side of furca; 91 — mucro (medial view); 92 — ibid (lateral). Scales: 81–86, 89–90 — 0.05 mm; 87–88, 91–92 — 0.01 mm.

Рис. 81–92. *Sminthurinus dispar* Babenko **sp.n.**: 81 — хетотаксия тибиотарзуса 1-й пары ног; 82 — кокса и трохантер 1-й пары ног; 83 — бедро 1-й пары ног; 84 — хетотаксия тибиотарзуса 3-й пары ног; 85 — кокса и трохантер 3-й пары ног; 86 — бедро 3-й пары ног; 87–88 — коготок 2-й пары ног; 89 — передняя (вентральная) поверхность денс; 90 — хетотаксия задней (дорсальной) поверхности прыгательной вилки; 91 — мукро (медиально); 92 — то же (латерально). Масштаб: 81–86, 89–90 — 0,05 мм; 87–88, 91–92 — 0,01 мм.

Table. List of Collembola species registered in the vicinity of Turukhansk
Таблица. Список видов Collembola, обнаруженных в окрестностях Туруханска

Species	Forests	Meadows	Mires	Banks of rivers
1	2	3	4	5
Tullbergiidae				
Mesaphorura critica Ellis, 1976				F
M. ghilarovi Khanislamova, 1987 [8]		F		
M. jirii Rusek, 1982	F	F		
M. krausbaueri Börner, 1901		F		F
Onychiuridae				
Hymenaphorura sibirica (Tullberg, 1876)	HF	F		H
Micraphorura absoloni (Börner, 1901)	F			
Oligaphorura sabulosa Babenko **sp.n.**		F		F
Tantulonychiurus asiaticus Babenko **sp.n.**		F		
Thalassaphorura tenuis Babenko **sp.n.**				F
Protaphorura bicampata (Gisin, 1956)		F		
P. borealis (Martynova, 1973)	F			
P. jacutica (Martynova, 1976)	THF			
P. octopunctata (Tullberg, 1876)	F	F		
P. sp. aff. *octopunctata* (Tullberg, 1876)	F			
P. pjasinae (Martynova, 1976)	F			
P. sp. aff. *pulvinata* (Gisin, 1954) [9]	TF	F	F	
P. sp. aff. *kopetdagi* Pomorski, 1994	F	F		
P. tundricola (Martynova, 1976)	F	F		F
Protaphorura sp.	F	F	F	
Supraphorura furcifera (Börner, 1901)	F	F		
Uralaphorura tunguzica Babenko **sp.n.**	F	F		
Deuteraphorura mangazeya Babenko **sp.n.**		F		
Hypogastruridae				
Ceratophysella cf. *armata* (Nicolet, 1842)	HF	T		
C. borealis Martynova, 1977	THF	F		
C. brevisensillata Yosii, 1961	THF	TSF		TF
C. succinea (Gisin, 1949)				T
Willemia anophthalma Börner, 1901	F	F		
W. intermedia Mills, 1934		F		F
W. trisphaerae Potapov, 1994	F			
Neanuridae				
Brachystomella parvula (Schäffer, 1896)		T		T
Friesea claviseta Axelson, 1900	HF	T		
F. truncata Cassagnau, 1958	F	F	F	F
Gisinea sp., juv.		F		
Anurida asiatica Babenko, 2002		TF		
A. confinis Babenko, 1998	HF			
A. dynkengda Babenko, 1998	F			
A. papillosa (Axelson, 1902)				H
A. subarctica Fjellberg, 1985		F		
A. zanokhae Babenko, 1998	H	TF		HF
Grananurida baicalica Rusek, 1991	F			
Micranurida pygmaea Börner, 1901	F	F	F	
M. rostrata Babenko **sp.n.**	F	F		F
Philotella obesa Babenko **sp.n.**	F	F		
Pseudachorutes sibiricus Rusek, 1991	THF	TF	F	H
Endonura reticulata (Axelson, 1905)	F	F	F	

[8] The generic position of the species is unclear. Being still among *Mesaphorura* Börner, 1901 species in Check-list of the Collembola of the World [www.collembola.org], it fits more to the diagnoses of *Paratullbergia* Womersley, 1930 or *Chaetophorura* Rusek, 1976

[9] The following two species will be described by I. Kaprus in a revision of *pulvinata*-group of *Protaphorura*.

Continue of Table..
Прождолжение таблицы.

1	2	3	4	5
Kalanura babenkoi Smolis, 2007	HF	F		
Kalanura compacta Smolis, 2007	HF			
Odontellidae				
Superodontella cf. *cornifer* (Mills, 1934)	F			
Isotomidae				
Agrenia sp., juv.				H
Anurophorus palearcticus Potapov, 1997	HF			
Hemisotoma tribasiosetis (Potapov & Stebaeva, 1999)		F		
Desoria alaskensis (Fjellberg, 1978)	F			HF
D. blufusata (Fjellberg, 1978)			F	
D. kaszabi (Dunger, 1982)		F		
D. inupikella (Fjellberg, 1978)	H			H
D. ruseki (Fjellberg, 1979)				H
D. cf. *multisetis* (Carpenter & Phillips, 1922)	F		F	
Folsomia arena Potapov & Babenko, 2006				F
F. borealis Potapov & Babenko, 2000	F			
F. diplophthalma (Axelson, 1902)	F	F		
F. fimetaria (Linnaeus, 1758)		F		
F. inoculata Stach, 1946	HF	F	F	
F. manolachei Bagnall, 1939	HF	F	F	F
F. palaearctica Potapov & Babenko, 2000	F	F		
F. potapovi Babenko **sp.n.**				F
F. quadrioculata (Tullberg, 1871)	HF	F	F	H
F. rossica Potapov & Dunger, 2000	F	F		
F. torpeda Potapov & Taskaeva, 2006	F	F		
Isotoma cf. *anglicana* Lubbock, 1862	H	TSF		HT
I. riparia (Nicolet, 1842)		T		THF
I. viridis Bourlet, 1839	THF	TF		
Isotomiella minor (Schäffer, 1896)	F	F		F
Isotomodella psammophila Potapov & Stebaeva, 2002		F		F
Isotomurus fucicolus (Reuter, 1891)	F	TF	F	H
Marisotoma tenuicornis (Axelson, 1903)	F		F	
Pachyotoma sp.	TF		F	
Parisotoma atroculata (Potapov, 1991)	F			
P. ekmani (Fjellberg, 1977)	F			
P. longa (Potapov, 1991)	F	F		
P. notabilis (Schäffer, 1896)	HF	F	F	
P. cf. *terricola* (Rusek, 1984)		F		
Pseudanurophorus binoculatus (Kseneman, 1934)	F			
Pseudisotoma cf. *monochaeta* (Kos, 1942)	F			
Scutisotoma schisti Potapov et al., 2006				T
Secotomodes sibiricus Potapov, 1988	F			
Vertagopus pseudocinereus Fjellberg, 1975	HF			
V. westerlundi (Reuter, 1898)	H			
Entomobryidae				
Drepanura kirgisica Martynova, 1971		TS		
D. quadrilineata Stebaeva, 1973	TF	TF		
Entomobrya nivalis (Linnaeus, 1758)	HSF	SF		
E. obensis Linnaniemi, 1919	HSF	TSF		
E. cf. *neriensis* Tshelnokov, 1977		SF		HF
Lepidocyrtus cf. *ruber* Schött, 1902 [10]		TF	SF	H
L. cf. *lignorum* (Fabricius, 1775)	TSF	S		
L. cf. *szeptycki* Rusek, 1985	H	TF		HF

[11] All four listed species of *Lepidocyrtus* Bourlet, 1839 clearly differ morphologically and by their ecological preferences but due to utterly confusing situation within the genus, they can not be definitely identified at present.

Continue of Table..
Окончание таблицы.

1	2	3	4	5
L. cf. *violaceus* (Fourcroy, 1785)	THSF	F		
Willowsia buski (Lubbock, 1871)	F	F		
Tomoceridae				
Pogonognathellus lividus (Tullberg, 1876)	THF	T		
Tomocerus asiaticus Martynova, 1969				H
T. minutus (Tullberg, 1876)	THSF	TF	F	H
T. sibiricus Reuter, 1891	THSF	TF	F	H
Neelidae				
Megalothorax minimus Willem, 1900	F	F		
Neelides minutus (Folsom, 1901)			F	
Sminthurididae				
Sminthurides aquaticus (Bourlet, 1842)				H
S. malmgreni (Tullberg, 1876)		F	F	T
S. schoetti Axelson, 1903	F		F	
S. signatus (Krausbauer, 1898)		F		
Sphaeridia furcata Dunger & Bretfeld,1989		F		
S. pumilis (Krausbauer, 1898)	S	TF		F
Stenacidia violacea (Reuter, 1878)				T
Katiannidae				
Sminthurinus dispar Babenko **sp.n.**	THF	TF		
S. cf. *pallescens*Yosii, 1970	F	T		
Arrhopallitidae				
Arrhopalites caecus (Tullberg, 1871)	H	F		F
A. cochlearifer Gisin, 1947	F		F	
A. principalis Stach,1945	HF		F	
A. secundarius Gisin, 1958	HF		F	
Bourletiellidae				
Deuterosminthurus bicinctus (Koch, 1840) f. *flava*	S	S		
D. pallipes (Bourlet, 1842) f. *principalis* & f. *repanda*		SF		
Heterosminthurus chaetocephalus Hüther, 1971	S	S		
H. linnaniemi (Stach, 1920)	THS	S		
H. novemlineatus (Tullberg, 1871)			SF	
H. stebaevae Bretfeld, 1996		S	S	
Sminthuridae				
Sminthurus ghilarovi Stebaeva, 1966		T		
S. multipunctatus Schäffer, 1896		TS		
S. cf. *nigromaculatus* Tullberg, 1871 [11]		TS		
Spatulosminthurus guthriei sibiricus Bretfeld, 1996	TS	TSF		F
Dicyrtomidae				
Dicyrtoma fusca (Lubbock,1873)	F		F	
D. ghilarovi Bretfeld, 1996		TF		
D. grinbergsi Stebaeva, 1966				H
Ptenothrix atra (Linnaeus, 1758)	T	T		
Total number of species	**85**	**85**	**27**	**42**

Sampling method: S — net sweeping, T — pit-traps, H — hand collection, F — funnels.
Способ сбора: S — net sweeping, T — ловушки, H — ручной сбор, F — эклекторы.

[11] It is a form described by Reuter [1891] as *Sminthurus viridis* var. *trimaculata* from the same area. Its main morphological characters match *S. nigromaculatus* but colour is quite different (light, with three dark spots dorsally on *Abd*.6).

which is clearly subdivided into four parts. Widespread Nearctic *S. quadrimaculatus* (Ryder, 1879) may also have the same dental chaetotaxy although the number of basal setae on posterior side of dens is unknown. Having winged circumanal setae, two setae on tenaculum, and both mucronal lamellae serrated, it can be easily separated from the new species.

The most notable feature of the new species is its sexual dimorphism in coloration. Although such phenomenon was not so far mentioned for Holarctic representatives of the genus, it is obviously not unique. The same is characteristic of *S.* cf. *pallescens* Yosii, 1970 listed below. Unfortunately material is too limited (only one female and 2 immature

males) to describe it now. It may be the same species as *S.* cf. *pallescens* sensu Bretfeld [2000] from Khakasia. Different colour pattern in males and females was also found in unidentified species of *Sminthurinus* from Pinega reserve (Archangelsk Region) which morphologically is most similar to European *S. trinonatus* Axelson, 1905 while male colouration resembles that of the main form of *Deuterosminthurus bicinctus* (Koch, 1840), females are almost completely dark.

ETYMOLOGY. From Latin "*dispar*" — dissimilar, to emphasize colour difference between sexes.

DISTRIBUTION: Known from several biotopes near the type-locality, clearly prefers the warmest, herbaceous habitats.

In conclusion, a few general remarks on the fauna under study are the following. Despite rather extensive list of registered species (especially for such northern region — only 80 km below Polar Circle), its incompleteness is evident even on the generic level. Thus, some *Hypogastrura* Bourlet, 1839 and *Xenylla* Tullberg, 1869 species should obviously be present in the region as they are common, for instance, on Putorana plateau [Babenko, 2002] which is not far from the area under study. Some "losses" of the fauna are also clear on specific level and they can not be always explained by the lack of appropriate microhabitats for a certain species. That is why it will not be probably serious overstatement if one estimates general diversity of the study fauna as 135–145 species. At a glance the fauna looks highly specific and differs significantly from those of European boreal regions although a few widespread ubiquitous species, for instance *Folsomia quadrioculata*, *F. manolachei*, *Parisotoma notabilis*, etc. often predominate on population level. Nevertheless, any serious comparison needs yet a solution of a number of taxonomic problems (identification of ca. 15% of the species list still calls for verification) and adequate investigations of several boreal regions of Siberia as well.

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