ЗООЛОГИЧЕСКИЙ ЖУРНАЛ, 2024, том 103, № 1, с. 8–32

УДК 595.713+57.063.7

NINE NEW SPECIES OF THE GENUS *OLIGAPHORURA* BAGNALL 1949 (COLLEMBOLA, ONYCHIURIDAE) FROM RUSSIA

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Received October 18, 2023
Revised November 07, 2023
Accepted November 08, 2023

Nine new species of the genus *Oligaphorura* are described based on material from various parts of the Russian Federation. Among them, three species, *O. ossetica* sp. n., *O. anocellata* sp. n., and *O. octosetosa* sp. n., are representatives of the Caucasian fauna. The former one belongs to the *marcuzzii*-group and differs from other members of the group by an increased number of dorsal and subcoxal pseudocelli. *Oligaphorura anocellata* sp. n., from the *differens*-group, shows the same pattern of dorsal pseudocelli as *O. hackeri* (Christian), but it lacks subcoxal pseudocelli. The latter Caucasian species described here, *O. octosetosa* sp. n. (the *daii*-group), is characterized by the presence of eight distal setae on the tibiotarsi, four papillae in the antennal organ, and only one pair of pseudocelli on the second thoracic tergum. *Oligaphorura ligni* sp. n., from the *absoloni*-group, is from the southern Primorye, Russian Far East, and it can be distinguished from the probably most similar, Chinese species *O. shifangensis* Liu et Sun by a longer unguiculus, a smaller postantennal organ, and fewer ventral parapseudocelli. The remaining five species described belong to the *groenlandica*-group and were found in different parts of the eastern Palaearctic. *Oligaphorura yakutica* sp. n. is most similar to *O. duocellata* Babenko et Fjellberg, from the Magadan Region, due to the presence of two pairs of dorsal pseudocelli on the first thoracic segment and a peculiar furcal remnant. Yet it is easily distinguishable from the latter by the complete absence of pseudocelli on the abdominal sterna. *Oligaphorura subnuda* sp. n., from the Taimyr Peninsula, northern Siberia, differs from the Nearctic *O. nuda* (Fjellberg) by the presence of pseudocelli on the fourth abdominal sternum. *Oligaphorura cavicola* sp. n., a species found in a cave in the northern Urals, is characterized by an increased number of dorsal pseudocelli on all abdominal segments (44454) and, unlike such sympatric congeners with the same number of abdominal pseudocelli as *O. interrupta* (Fjellberg) or *O. nuda* (Fjellberg), it shows a pseudocellus each side of the thorax I. *Oligaphorura neglecta* sp. n., widespread in the NE Palaearctic, is very similar to the circumpolar *O. groenlandica* (Tullberg). These two species can be distinguished by the presence/absence of a cuticular fold in the furcal remnant and different lengths of axial setae on the fifth abdominal terga. Finally, *O. primorica* sp. n., from the Russian Far East, can be compared to several Korean species described by Weiner (1994). All of them have a unique type of granulation that covers the anterior part of the body and the last abdominal segment, probably representing an isolated regional group of related species. The new species is characterized by the same number of pseudocelli as *O. koreana* (Weiner) and differs from the latter species (and the other related congeners of the region) in having strongly differentiated dorsal setae. An updated key to all presently known 77 *Oligaphorura* species is also given.

Keywords: taxonomy, Oligaphorurini, Caucasus, Urals, Northern and Northeastern Palaearctic, Russian Far East, identification key

DOI: 10.31857/S0044513424010029, **EDN**: JOKHIF

The most comprehensive identification key of the genus *Oligaphorura* Bagnall 1949, proposed by Paśnik and Weiner (2017), includes 55 valid species of the genus. During the current decade, the group has been supplemented by new congeners from Alaska (Paśnik, Kaprus', 2019), Eastern Asia (Liu et al., 2019; Sun et al., 2019) and the East European part of the Palearctic (Shveenkova, Babenko, 2021, 2022). As a result, 68 named species are currently listed at www.collembola.org (Bellinger et al., 1996–2023). Modern ecological studies of

soil springtails carried out in the Caucasus (Kuznetsova et al., 2019) and in the Russian Far East (Kuznetsova et al., 2021), as well as the available collections from the northern regions of Russia (Babenko, 2013), have revealed nine additional, still undescribed species of this group. This paper is devoted to their descriptions. Hence, the already long list of the known representatives of the genus *Oligaphorura* has increased to 77 species, which brings the genus to the third in the subfamily Onychiurinae in terms of species diversity. We also propose an updated identification key for all known *Oligaphorura* species of the world, based on species-groups identified earlier in the genus (Shveenkova, Babenko, 2021).

All types of the described species are kept in the collection of the Zoology and Ecology Department of the Moscow State Pedagogical University (MSPU).

Abbreviations. *Abd*. I–VI, abdominal segments; *A*-, *AC*-, *ABC*-, *ABD*-type, types of labium (Fjellberg, 1999), *A–E*, labial papillae; *A*-, *T*-, *B*-, *C*-, *M*-setae, tibiotarsal setae named according to Deharveng (1983); *a*-, *b*-, *c*-setae, setae on anal valves (Yoshii, 1996); *absoloni* (*A*)-, *differens* (*D*)-, *humicola* (*H*)-, *schoetti* (*S*)-type, types of furcal remnant (Shveenkova, Babenko, 2021, 2022); *a*-, *m*-, *p*-setae, setae of anterior, medial, and posterior rows on terga; *Ant*. I–IV, antennal segments; *AIIIO*, antennal organ on *Ant*. III; *a*'0-, *a*0-, *a*0'-, *d*0-setae, unpaired dorsal setae on head (Jordana et al., 1997; D'Haese, 2003); *a*- and *b*-*pso*, medial pseudocelli on terga (Pomorski, 1996); *ms*, microsensillum(a); *PAO*, postantennal organ; *pso*, pseudocellus(i); d. *pso*, full number of dorsal pseudocelli; *psx*, parapseudocellus(i); *S*, lanceolate sensorial seta(e); *Sc*, subcoxa(e); *Th*. I–III, thoracic segments; *Ti*, tibiotarsus(i); *VT*, ventral tube.

SPECIES DESCRIPTIONS

Oligaphorura ossetica
Shveenkova, Antipova et Babenko sp. n.
(Figs 1, *1–6*)

Diagnosis. Species of the *marcuzzii*-group. Dorsal sensilla on body well-marked. Anal spines absent. Pseudocellar formulae 42/244/5.7.7.10.6 (dorsal), 11/000/1112(1) (ventral), and 233 (subcoxal). Ventral *psx* hardly visible. *AIIIO* with 5 papillae. *PAO* slightly larger than nearest *pso*, with 3–4 lobes. Labium of *ABD*-type (papilla *E* entirely absent). *Th*. III without lateral *ms*. *Abd*. IV with unpaired seta *p*0. Distal whorls (*A*+*T*) of each tibiotarsus with 9 setae. Furcal remnant of *S*-type, with a small cuticular fold.

Type material. Holotype, female, Russia, Northern Caucasus, North Ossetian State Nature Reserve, upper part of Tsey Gorge, young birch forest with rich herbaceous cover [42.7788°N 43.8646°E], 2244 m alt., soil and litter, 27.07.2021, M. Antipova & A. Babenko leg. Paratypes, female and I instar juvenile, same data as holotype, but mixed forest with pine, birch and willow [42.7830°N, 43.8701°E], 2193 m alt.

Description. Size 0.7–0.8 mm, holotype 0.8 mm. Colour white in alcohol. Body shape typical of genus. Granulation regular, only slightly coarser around dorsal *pso* (12–13 granules) (Fig. 1, *1*).

Number of *pso*: 42/244/5.7.7.10.6 (dorsal) and 11/000/1112(1) (ventral) (Figs 1, *1–3*) with some variations detected. Ventral *psx* usually invisible. Upper *Sc* of legs I–III with 233 *pso*.

Antennae slightly shorter than head. *Ant*. IV with many curved sensilla, three of which thickened stronger, subapical organite present, microsensillum located under proximal row of setae almost hidden under papillae of *AIIIO* (Fig. 1, *4*). *AIIIO* consisting of 5 papillae, 5 guard setae, 2 sensory rods, 2 granulated clubs (external one larger) and lateral *ms*. *Ant*. I–II with 8 and 12–13 setae, respectively. Antennal area not marked. *PAO* located laterally in a cuticular furrow, with 4(3) lobes, its longer axis about as long as 1.2 diameter of nearest *pso*. Maxilla unmodified. Maxillary outer lobe simple with 1 basal seta and 2 sublobals. Labrum with 4/342 setae. Labium with 6 proximal, 4 basomedian and 5 basolateral setae, terminal sensilla of papillae *A*, *B* and *D* thickened, papilla *C* and its terminal sensillum short, but also slightly thickened, papilla *E* entirely absent (Fig. 1, *5*). Eleven guard setae present on labial palp, four of them spiniform as usual, seven others also rather short but curved. Their exact assignment uncertain: three guards located on site of reduced papilla *E*, and other four – next to papillae *B* and *D*.

Dorsal setae distinctly differentiated into macro- and microsetae only on last abdominal terga, mutual position of setae symmetrical in general (Fig. 1, *1*). *S*-setae well marked and usually distributed as follows: 11/012/222110 (dorsally), 11/000/000100 (ventrally) and 000 on lower *Sc* of legs I–III. Head with only one axial unpaired seta *a*0, *d*0 being absent as usual for the genus. Setae *p*1 on head located in front of setae *p*2. *Th*. I with 5–6+5–6 dorsal setae. Lateral *ms* present only on *Th*. II. Terga of *Th*. II–*Abd*. III with 3–4 pairs of axial setae. *Abd*. IV with unpaired seta *p*0 (*m*0?). On *Abd*. VI *a*0 and *a*2 subequal macrosetae, *a*1 as microsetae. Thoracic sterna with 0–1–1 setae each side of ventral line. Ventral chaetotaxy of head and abdomen as in Figs 1, *2–3*.

Upper subcoxae of legs I–III with 4, 4–5, 4–5 setae, respectively. Tibiotarsi I–III with 18–19–17 setae, respectively: distal whorl (*T*+*A*) with 9 setae (setae *T*2 and *T*3 absent), 7 *B*-setae (*B*7 absent on *Ti* III), unpaired seta *M* and one seta (or two setae on *Ti* II) of *C*-whorl. Unguis with neither inner nor lateral teeth, unguiculus without clear basal lamella, about half as long as inner edge of unguis (Fig. 1, *6*). *VT* with (6)7+(6)7 proximal and 2+2 setae at base. Furcal remnant of *S*-type, cuticular fold small (Fig. 1, *2*). Each lateral anal valve with *a*0 and 2*a*1 setae, unpaired valve with *a*0, 2*b*1, 2*b*2 (*a*1

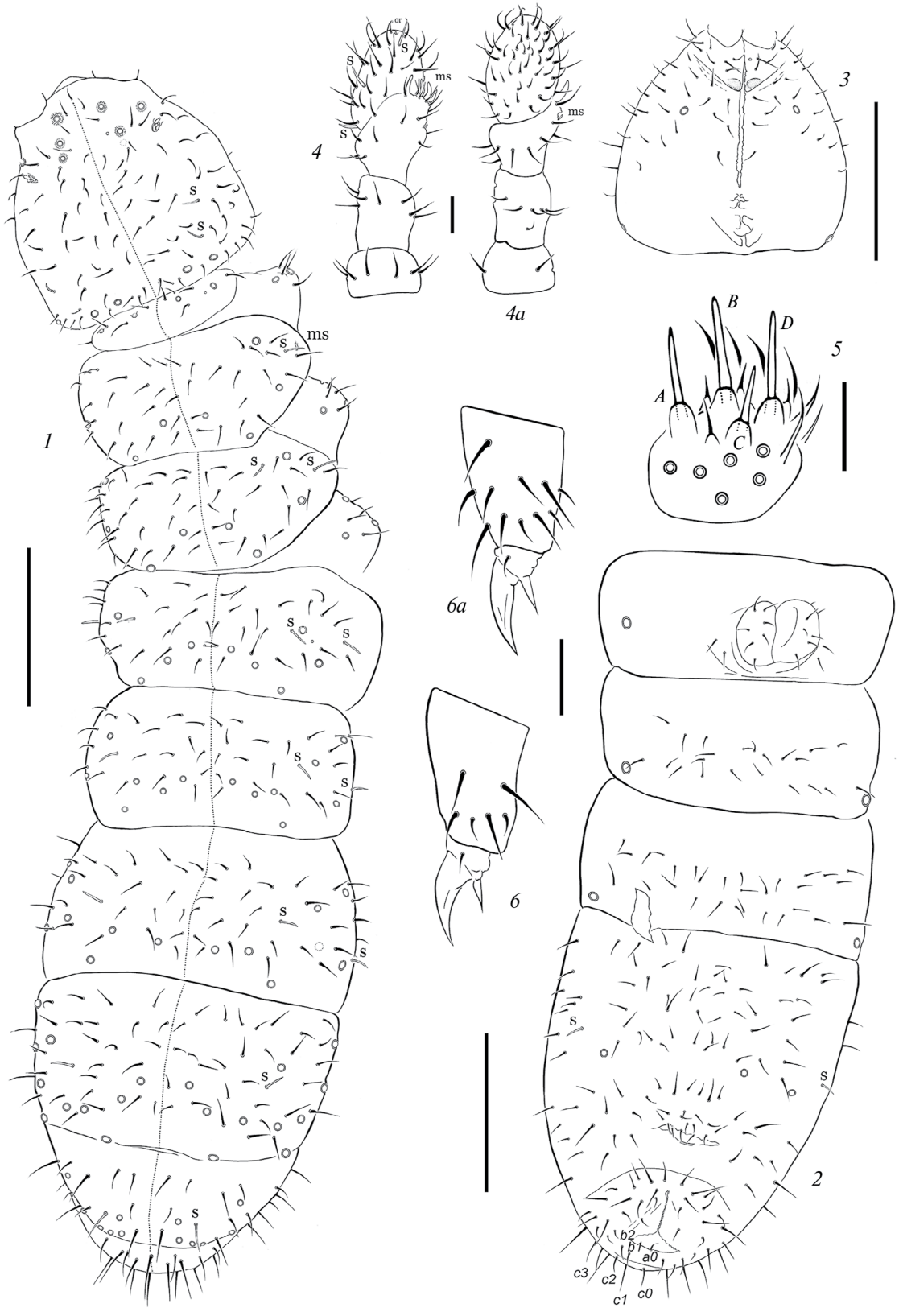

Fig. 1. *Oligaphorura ossetica* sp. n: *1* – dorsal chaetotaxy; *2* – ventral chaetotaxy of abdomen; *3* – ventral chaetotaxy of head; *4* – antenna, dorsal view; *4a* – ibid., ventral view; *5* – labial palp; *6* – tip of leg III, inner side; 6a – ibid., outer side. Scales, mm: *1–3* – 0.1; *4–6* – 0.01.

and *b*0 absent) and at least 7 setae in *c*-row. Anal spines absent.

Etymology. The species is named after the region of its type locality, the Republic of North Ossetia–Alania.

Affinities. *Oligaphorura ossetica* sp. n. is a typical member of the *marcuzzii*-group due to the presence of 4+4 *pso* at the antennal base and the absence of anal spines. Its labial palps are of the peculiar *ABD*-type with a reduced papilla *E*, like those of most other members of the group. Due to the presence of nine distal setae on each tibiotarsus, the new species is similar to *O. igori* Shveenkova et Babenko 2022, but differs clearly in the number of dorsal and subcoxal *pso* (42/244/5.7.7.10.6 and 233 in *O. ossetica* sp. n., *vs* 43/133/44354 and 222 in *O. igori*).

Oligaphorura ossetica sp. n. was recently referred to in North Ossetia's species checklist of Collembola as *Oligaphorura* sp. 4 (Antipova, Babenko, 2022).

The *marcuzzii*-group appears to be rather diverse in the Caucasus including the region of the type locality of *O. ossetica* sp. n. For instance, *O. montivaga* Shveenkova et Babenko 2022 was recently described from a nearby area of the same republic. Moreover, when describing the latter species, an undescribed form, represented by juvenile specimens and found in the same gorge as *O. ossetica* sp. n. was mentioned as well (Shveenkova, Babenko, 2022, p. 583). It is characterized by the same type of the labium and 9 distal setae on the tibiotarsi, but has a different pseudocellar formula with a lower *pso* number. Previously this latter form was referred to as *Oligaphorura*. sp. n. 2 aff. *kremenitsai* Shvejonkova et Potapov (Kuznetsova et al., 2019) or *Oligaphorura* sp. 3 (Antipova, Babenko, 2022).

Oligaphorura anocellata
Shveenkova, Antipova et Babenko sp. n.
(Figs 2, *1–6*)

Diagnosis. Species of the *differens*-group. Dorsal sensilla not distinguishable. Anal spines present. Pseudocellar formulae: 32/022/33343 (dorsal), 10(?)/000/0000 (ventral), and 000 (subcoxal). Ventral *psx* not visible. *AIIIO* with 5 papillae, *PAO* slightly larger than nearest *pso*, with 3–4 lobes. Labium of *ABC*-type. *Th*. III without lateral *ms*. Distal whorls (*A*+*T*) of each tibiotarsus with 9 setae. Furcal remnant of *D*-type.

Type material. Holotype, male, Russia, Northern Caucasus, North Ossetian State Nature Reserve, vicinity of Verkhniy Tsey., 1676 m alt., green moss-rhododendron pine forest [42.7971°N, 43.9242°E], soil and litter, 20.06.2016, N. Kuznetsova & A. Geraskina leg. Paratype, male, same data as holotype.

Description. Holotype length about 0.8 mm. Colour white in alcohol. Body shape typical of the genus. Granulation regular, slightly coarser around dorsal *pso* (10–11 granules) (Fig. 2, *1*).

Number of *pso*: 32/022/33343[1] (dorsal) and 10(?)/000/0000 (ventral) (Figs 2, *1–3*). Ventral *psx* invisible. Upper *Sc* of legs I–III with neither *pso* nor *psx*.

Antennae about as long as head. *Ant*. IV without thickened *S*-setae, subapical organite present, microsensillum located in proximal row of setae (Fig. 2, *4*). *AIIIO* consisting of 5 papillae, 5 guard setae, 2 sensory rods, 2 granulated clubs (external one larger) and lateral *ms*. *Ant*. I–II with 8 and 12–13 setae, respectively. Antennal area slightly marked. *PAO* located laterally in a cuticular furrow, with 4(3) lobes and slightly larger than nearest *pso*. Maxilla unmodified. Maxillary outer lobe simple with 1 basal seta and 2 sublobals. Labrum with 4/342 setae. Labial palp with 6 proximal setae and 10 guards, four of which spiniform as usual, remaining six guards longer and curved. Basomedian and basolateral fields of labium with 4 and 5 setae, respectively. Terminal sensilla of papillae *A*, *B* and *C* thickened (Fig. 2, *5*).

Dorsal setae poorly differentiated into macro- and microsetae, symmetrical in general (Fig. 2, *1*). *S*-setae not distinct. Head probably with two axial unpaired seta *a*0 and *a*'0 (?), *d*0 absent as usual for the genus. Setae *p*1 on head located slightly above of setae *p*2. *Th*. I with 4(5)+4(5) dorsal setae. Lateral *ms* present only on *Th*. II and absent on *Th*. III. Terga of *Th*. II–*Abd*. III each with 3–4 pairs of axial setae. On *Abd*. VI, setae *a*0 and *a*2 approximately same in size, setae *a*1 half as long as *a*0. Thoracic sterna with 0–1–1 setae each side of ventral line. Ventral chaetotaxy as in Figs 2, *2–3*.

Upper subcoxae of legs I–III with 2, 3, 3 setae, respectively. Tibiotarsal chaetotaxy with 18(17)–18–17 setae: distal whorl (*T*+*A*) with 9 setae (setae *T*2 and *T*3 absent), 7 *B*-setae (*B*7 absent on *Ti* III), an unpaired seta *M* and one seta of *C*-whorl. Unguis with neither inner nor lateral teeth, unguiculus with a broad basal lamella, approximately as long as 0.8–0.9 of inner edge of unguis (Fig. 2, *6*). *VT* with 6+6 proximal setae and 1+1 setae at base. Furcal remnant of *D*-type (Fig. 2, *2*). Each lateral anal valve with *a*0 and 2*a*1 setae, unpaired valve with *a*0, 2*b*1 (*b*0, *b*2 and *a*1 absent) and 5 setae in *c*-row. Anal spines present.

Etymology. The name of the new species reflects the absence of subcoxal *pso*, which is still unique in the genus.

Affinities. *Oligaphorura anocellata* sp. n., characterized by a slightly reduced number of tibiotarsal setae and the absence of cuticular fold on the sternum of *Abd*. IV (furcal remnant of the *D*-type), can be considered as a member of the *differens*-group. The new species has the same number of dorsal *pso* as *O. hackeri* (Christian 1986), *i.*e. 32/022/33343, but lacks subcoxal *pso*. The latter character has never been mentioned among congeners.

[1] one of the two known specimens of *O. anocellata* sp. n. (paratype) has a *pso* on one side of *Th*. I.

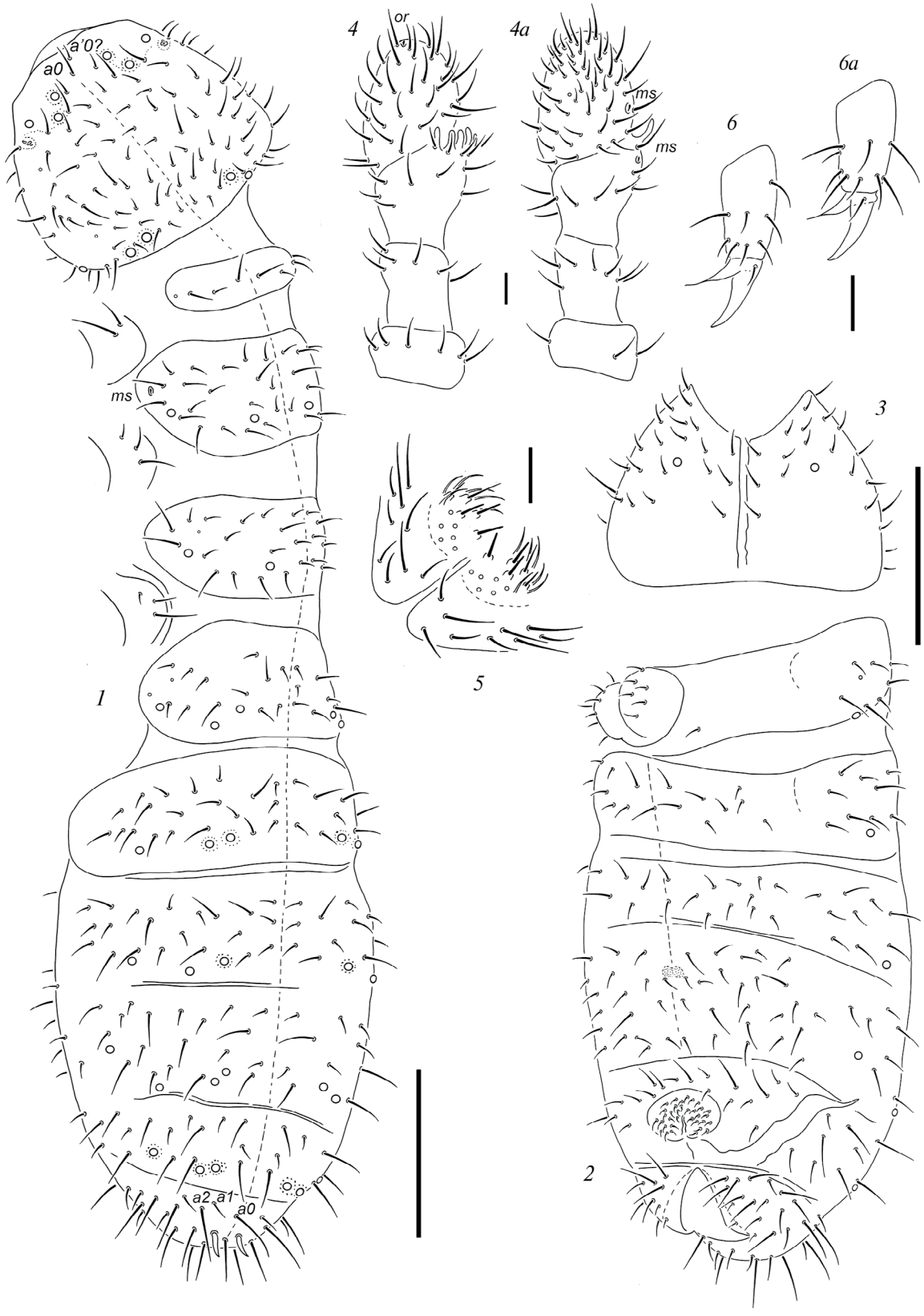

Fig. 2. *Oligaphorura anocellata* sp. n.: *1* – dorsal chaetotaxy; *2* – ventral chaetotaxy of abdomen; *3* – ventral chaetotaxy of head; *4* – antenna, dorsal view; *4a* – ibid., ventral view; *5* – labial palp with basomedian and basolateral parts of labium (spiniform guards not shown); *6* – tip of leg III, outer side; *6a* – ibid., inner side. Scales, mm: *1–3* – 0.1; *4–6* – 0.01.

In the Collembola fauna of Northern Ossetia it was previously known as *O.* cf. *caucasica* (Weiner et Kaprus') (Kuznetsova et al., 2019) or *Oligaphorura* sp. 1 (Antipova, Babenko, 2022).

Oligaphorura octosetosa
Shveenkova, Antipova et Babenko sp. n.
(Figs 3, *1–6*)

Diagnosis. Species of the *daii*-group. Dorsal sensilla on body poorly marked. Anal spines present. Pseudocellar formulae: 32/012/33343 (dorsal), 11/000/0000 (ventral), and 111 (subcoxal). Ventral *psx* not visible. *AIIIO* with 4 papillae, *PAO* 1.5 times larger than nearest *pso*, with 3–4 lobes. Labium of *ABC*-type. *Th*. III without lateral *ms*. Distal whorls (*A*+*T*) of each tibiotarsus with 8 setae. Furcal remnant of *D*-type.

Type material. Holotype, male, Russia, Western Caucasus, Krasnodar Krai, ~ 45 km E of Sochi, Krasnaya Polyana, Aibga Range, Laura River basin [43.4827°N, 40.5800°E], mixed (fir-beech) forest with maple, ~1490 m alt., litter, 21.06.2018, N. Kuznetsova & A. Saraeva leg. Paratypes, 6 females, 3 males, same data as holotype.

Description. Size 0.50–0.65 mm, holotype 0.62 mm. Colour white in alcohol. Body shape typical of the genus. Granulation regular, slightly coarser around dorsal *pso* (9–10 granules) (Fig. 3, *1*).

Number of *pso*: 32/012/33343 (dorsal) and 11/000/0000 (ventral) (Figs 3, *1–3*). Each upper *Sc* of legs I–III with one *pso*. Ventral *psx* invisible.

Antennae slightly shorter than head. *Ant*. IV with two slightly thickened *S*-setae, subapical organite present, microsensillum located in proximal row of setae (Fig. 3, *4*). *AIIIO* consisting of 4 papillae, 5 guard setae, 2 sensory rods, 2 granulated clubs (external one larger) and lateral *ms*. *Ant*. I–II with 8 and 12–13 setae, respectively. Antennal area not marked. *PAO* located laterally in a cuticular furrow, with 4(3) lobes, about 1.5 times larger than nearest *pso*. Maxilla unmodified. Maxillary outer lobe simple with 1 basal seta and 2 sublobals. Labrum with 4/342 setae. Labial palp with 6 proximal setae and 10 guards, four of guards spiniform as usual, remaining six long and curved. Basomedian and basolateral fields of labium with 4 and 5 setae, respectively. Terminal sensilla of papillae *A*, *B* and *C* thickened (Fig. 3, *5*).

Dorsal setae only slightly differentiated into macro- and microsetae, symmetrical in general (Fig. 3, *1*). *S*-setae poorly marked and distributed as follows: 11/011/00000 (dorsally), invisible on sterna and lower *Sc*. Head with two axial unpaired setae *a*0 and *a*'0; *d*0 absent as usual for the genus. Setae *p*1 on head located above of setae *p*2. *Th*. I with 4+4 dorsal setae. Lateral *ms* present only on *Th*. II. Terga of *Th*. II–*Abd*. III each with 3–4 pairs of axial setae. On *Abd*. VI setae *a*0 shorter than *a*2, setae *a*1 half as long as *a*2. Thoracic sterna with 0–1–1 setae each side of ventral line. Ventral chaetotaxy of abdomen as in Fig. 3, *2*.

Upper subcoxae of legs I–III with 2, 3, 3 setae, respectively. Tibiotarsal chaetotaxy with 16–16–15 setae: distal whorl (*T*+*A*) with 8 setae (setae *T*2, *T*3 and *A*5 absent), 7 *B*-setae (on *Ti* III seta *B*7 absent), and one seta of *C*-whorl (unpaired seta *M* absent). Unguis with neither inner nor lateral teeth, unguiculus short, with a narrow basal lamella, about as long as 0.3 of unguis inner edge (Fig. 3, *6*). *VT* with 6+6 proximal setae and 1+1 setae at base. Furcal remnant of *D*-type (Fig. 3, *2*). Each lateral anal valve with *a*0 and 2*a*1 setae, unpaired valve with *a*0, 2*b*1 (*a*1, *b*0 and *b*2 absent) and 5 setae in *c*-row. Anal spines present.

Etymology. The name of the new species refers to its most unusual feature, the number of distal setae on the tibiotarsi.

Affinities. Representatives of the *daii*-group, namely *O. daii* (Pomorski et al. 1998), *O. stojkoae* Shvejonkova et Potapov 2012, *O. chatyrdagi* (Kaprus' et al. 2002), and *O. steposa* (Kaprus' et al. 2002), are all characterized by a pronounced reduction of tibiotarsal chaetotaxy with 5, 6 or 7 distal setae. In this character, *O. octosetosa* sp. n., which has 8 distal setae on each tibiotarsus, distinctly differs from other species of the group. Moreover, such a number of tibiotarsal setae has not yet been found in any of the congeners. Apart from this, *O. octosetosa* sp. n., contrary to all other species of the group, has only 4 papillae in *AIIIO* and one pair of dorsal *pso* on *Th*. II (32/012/33343 *pso*, totally).

Oligaphorura ligni
Shveenkova, Antipova et Babenko sp. n.
(Figs 4, *1–6*)

Diagnosis. Species of the *absoloni*-group. Dorsal sensilla poorly marked. Anal spines present. Pseudocellar formulae: 32/133/33343 (dorsal), 11/000/0000 (ventral), 111 (subcoxal). Ventral *psx* (1+1) present on *Abd*. II and *Abd*. IV, as well as on *Sc* I–III (111). *AIIIO* with 5 papillae, *PAO* slightly smaller than (or the same size with) nearest *pso*, with 3–4 lobes. Labium of *AC*-type. *Th*. II–III with lateral *ms*. Distal whorls (*A*+*T*) of each tibiotarsus with 11 setae. Furcal remnant of *A*-type.

Type material. Holotype, female, Southern Primorye, Chuguev District, National Park "Zov Tigra", Mount Oblachnaya, Ussuri River valley, mixed forest, 43.6007°N, 134.1930°E, ~550 m alt., rotten wood, 19–20.09.2018, A. Kuprin leg. Paratypes, 5 females, 3 males and 4 juveniles, same data as holotype; 12 females, 3 males and 1 juvenile male, Southern Primorye, Shkotovo District, Mount Falaza, 43.1194°N, 132.7936°E, ~600 m alt., rotten wood with mosses near stream, 08.09.2018, M. Potapov & A. Kuprin leg.

Description. Size 0.75–1.10 mm, holotype 0.75 mm. Colour white in alcohol. Body shape typical of

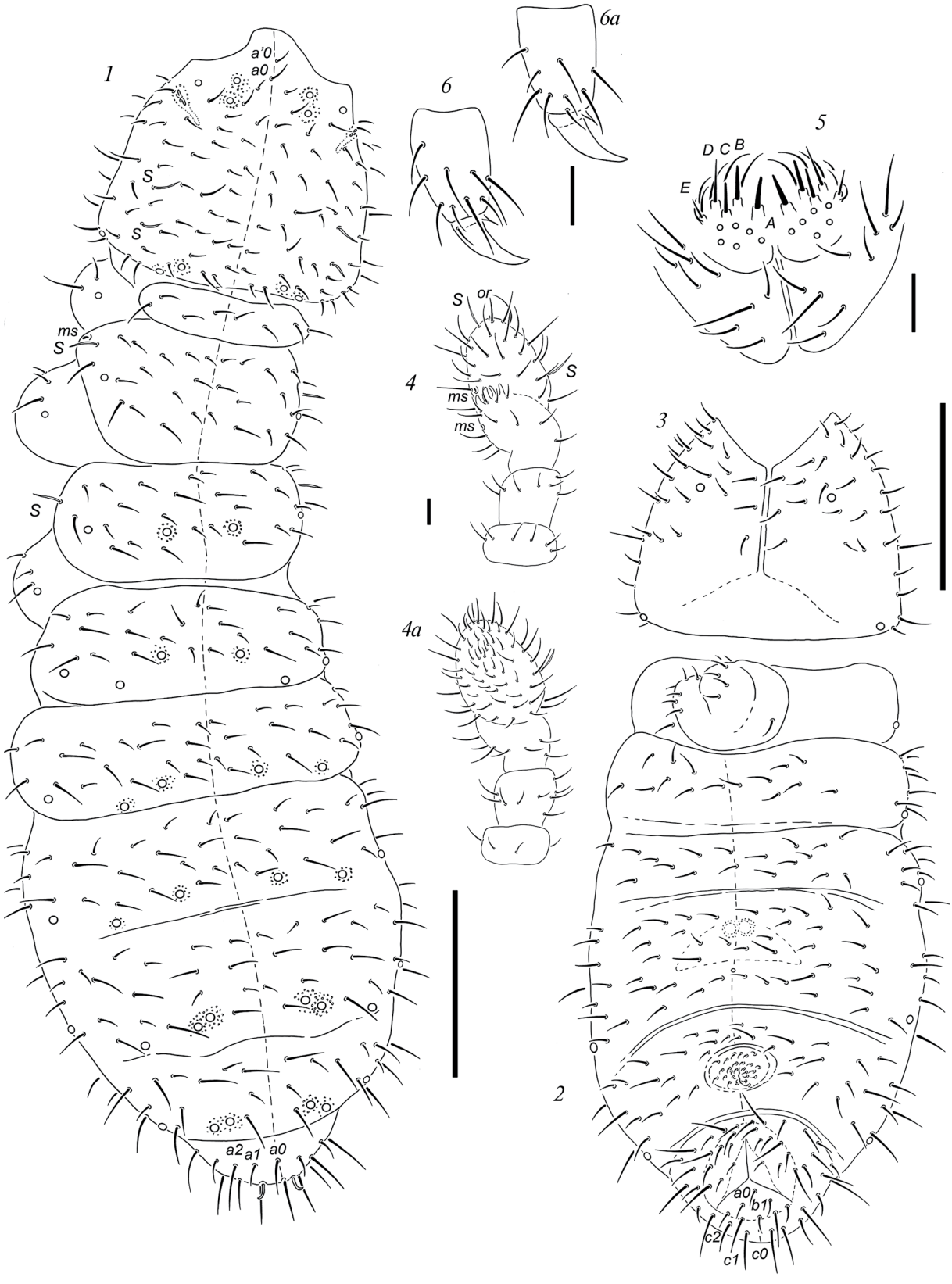

Fig. 3. *Oligaphorura octosetosa* sp. n.: *1* – dorsal chaetotaxy; *2* – ventral chaetotaxy of abdomen; *3* – ventral chaetotaxy of head; *4* – antenna, dorsal view; *4a* – ibid., ventral view; *5* – labial palp with basomedian and basolateral parts of labium (spiniform guards not shown); *6* – tip of leg I, outer side; *6a* – ibid., inner side. Scales, mm: *1–3* – 0.1; *4–6* – 0.01.

the genus. Granulation regular, slightly coarser around dorsal *pso* (10–11 granules) (Fig. 4, *1*).

Number of *pso*: 32/133/33343 (dorsal) and 11/000/0000 (ventral) (Figs 4, *1–3*). Ventral *psx* poorly expressed, 0/000/01010 in number (Fig. 4, *2*). Each upper *Sc* of legs I–III with 1 *pso* and 1 *psx*.

Antennae about as long as head. *Ant*. IV with subapical organite, microsensillum located in proximal row of setae (Fig. 4, *4*). *AIIIO* consisting of 5 papillae, 5 guard setae, 2 sensory rods, 2 granulated clubs (external one larger) and lateral *ms*. *Ant*. I–II with 9 and 13 setae, respectively. Antennal area not marked. *PAO* located laterally, in a cuticular furrow, with 4(3) lobes, slightly smaller than (or the same size with) nearest *pso*. Maxilla unmodified. Maxillary outer lobe simple with 1 basal seta and 2 sublobals. Labral chaetotaxy complete with four prelabral and nine labral setae. Labial palp with 6 proximal setae and 11 guards, four of which spiniform as usual, remaining seven guards long. Basomedian and basolateral fields of labium with 4 and 6 setae, respectively. Terminal sensilla of papillae *A* and *C* thickened (Fig. 4, *5*).

Dorsal setae poorly differentiated into macro- and microsetae, symmetrical in general (Fig. 4, *1*). *S*-setae expressed only on *Th*. II–III. Head with two axial unpaired setae: *a*0 and *a*0'; *d*0 absent as usual for the genus. Setae *p*1 on head located at level with *p*2. *Th*. I with 7(9)+7(9) dorsal setae. Lateral *ms* present on both *Th*. II–III. Terga of *Th*. II–*Abd*. III each with 3–4 pairs of axial setae. *Abd*. IV usually with unpaired seta *m*0, more rarely a pair of *m*1 present. On *Abd*. VI seta *a*0 slightly shorter than *p*0, setae *a*1 as long as *a*0 and much shorter than *a*2. Thoracic sterna with 0–1–1 setae each side of ventral line. Ventral chaetotaxy as in Figs 4, *2–3*.

Upper subcoxae of legs I–III with 3–4, 3–5, 3–5 setae, respectively. Tibiotarsal chaetotaxy with 20–20–19 setae, respectively: distal whorl (*T*+*A*) with 11 setae, 7 *B*-setae (*B*7 absent only on *Ti* III), an unpaired seta *M* and one seta of *C*-whorl. Unguis with neither inner nor lateral teeth, unguiculus with a narrow basal lamella, about as long as inner edge of unguis (1.0–1.1: 1) (Fig. 4, *6*). *VT* with 8–9+8–9 proximal setae and 2+2 setae at base. Furcal remnant of *A*-type (Fig. 4, *2*). Each lateral anal valve with *a*0 and 2*a*1 setae, unpaired valve with *a*0, 2*b*1, 2*b*2 (*a*1 and *b*0 absent) and 5 setae in *c*-row. Anal spines present.

Etymology. The name of the species reflects its habitat preference – decaying wood.

Affinities. *O. ligni* sp. n. belongs to the *absoloni*-group and is rather similar to *O. shifangensis* Liu et Sun 2019, described from southwestern China. Both species are characterized by complete distal whorls on tibiotarsi (11 setae), the furcal remnant of *A*-type, the same numbers of dorsal *pso* (32/133/33343), and the labium of *AC*-type. The new species can be distinguished by a longer unguiculus (about as long as the inner edge of the unguis, *vs* 0.7 of unguis length in *O. shifangensis*), a smaller *PAO* (slightly smaller than the nearest *pso*, *vs* 1.5–2.0 *pso* in *O. shifangensis*), fewer ventral *psx* (0/000/010100 in the new species, *vs* 0/000/221101+1^{m} in *O. shifangensis*). The new species is also characterized by the more pronounced differentiation of the macro- and microsetae on *Abd*. V: axial setae *m*1 only slightly shorter than setae *a*1 and *p*1. Both *a*1 and *a*3 are about twice as long as setae *a*2 and *a*4. Contrary, in *O. shifangensis* setae *m*1 (microsetae) are clearly shorter than *a*1 and *p*1 (mesosetae) and the corresponding mesosetae of *a*-row (*a*1 and *a*3) are about 1.5 times longer than microsetae (*a*2 and *a*4).

Oligaphorura yakutica
Shveenkova, Antipova et Babenko sp. n.
(Figs 5, *1–7*)

Diagnosis. Body shape typical of the genus. Dorsal sensilla indistinct. Anal spines present. Pseudocellar formulae: 32/233/33343 (dorsal), 11/000/0000 (ventral), 111 (subcoxal). Ventral *psx* invisible, *Sc* I–III with 111 *psx*. *AIIIO* with 5 papillae, *PAO* slightly larger than nearest *pso*, with 3–5 lobes. Labium of *AC*-type. *Th*. II–III with lateral *ms*. Distal whorls (*A*+*T*) of each tibiotarsus with 11 setae. Furcal remnant of *H*-type.

Type material. Holotype, male, Russia, Republic of Sakha (Yakutia), vicinity of Ust'-Nera [64.521°N, 143.179°E], lichen larch forest, ~700 m alt., soil and litter, 22.07.1992, N. Kuznetsova & M. Potapov leg. Paratypes, 1 female, 2 males, same data as holotype.

Description. Size 0.98–1.20 mm, holotype 0.98 mm. Colour white in alcohol. Body shape typical of the genus. Granulation regular, not coarser around dorsal *pso* (12 granules) (Fig. 5, *1*).

Number of *pso*: 32/233/33343 (dorsal) and 11/000/0000 (ventral) (Figs 5, *1–3*). Pseudocelli slightly elongated (Fig. 5, *4*). Ventral *psx* invisible. Each upper *Sc* of legs I–III with one *pso*.

Antennae somewhat shorter than head. *Ant*. IV with 10–12 slightly thickened sensilla, subapical organite present, microsensillum located in proximal row of setae (Fig. 5, *5*). *AIIIO* consisting of 5 papillae, 5 guard setae, 2 sensory rods, 2 granulated clubs (external one larger) and lateral *ms*. *Ant*. I–II with 8 and 13 setae, respectively. Antennal area not marked. *PAO* located laterally in a cuticular furrow, with 3–5 lobes, slightly larger than nearest *pso*. Maxilla unmodified. Maxillary outer lobe simple with 1 basal seta and 2 sublobals. Labrum with 4/342 setae. Labial palp with 6 proximal setae, four spiniform and seven long guards. Basomedian and basolateral fields of labium with 4 and 6 setae, respectively. Terminal sensilla of papillae *A* and *C* thickened (Fig. 5, *6*).

Dorsal setae poorly differentiated into macro- and microsetae, symmetrical in general (Fig. 5, *1*). *S*-setae indistinct. Head with a single axial unpaired seta *a*0; *d*0

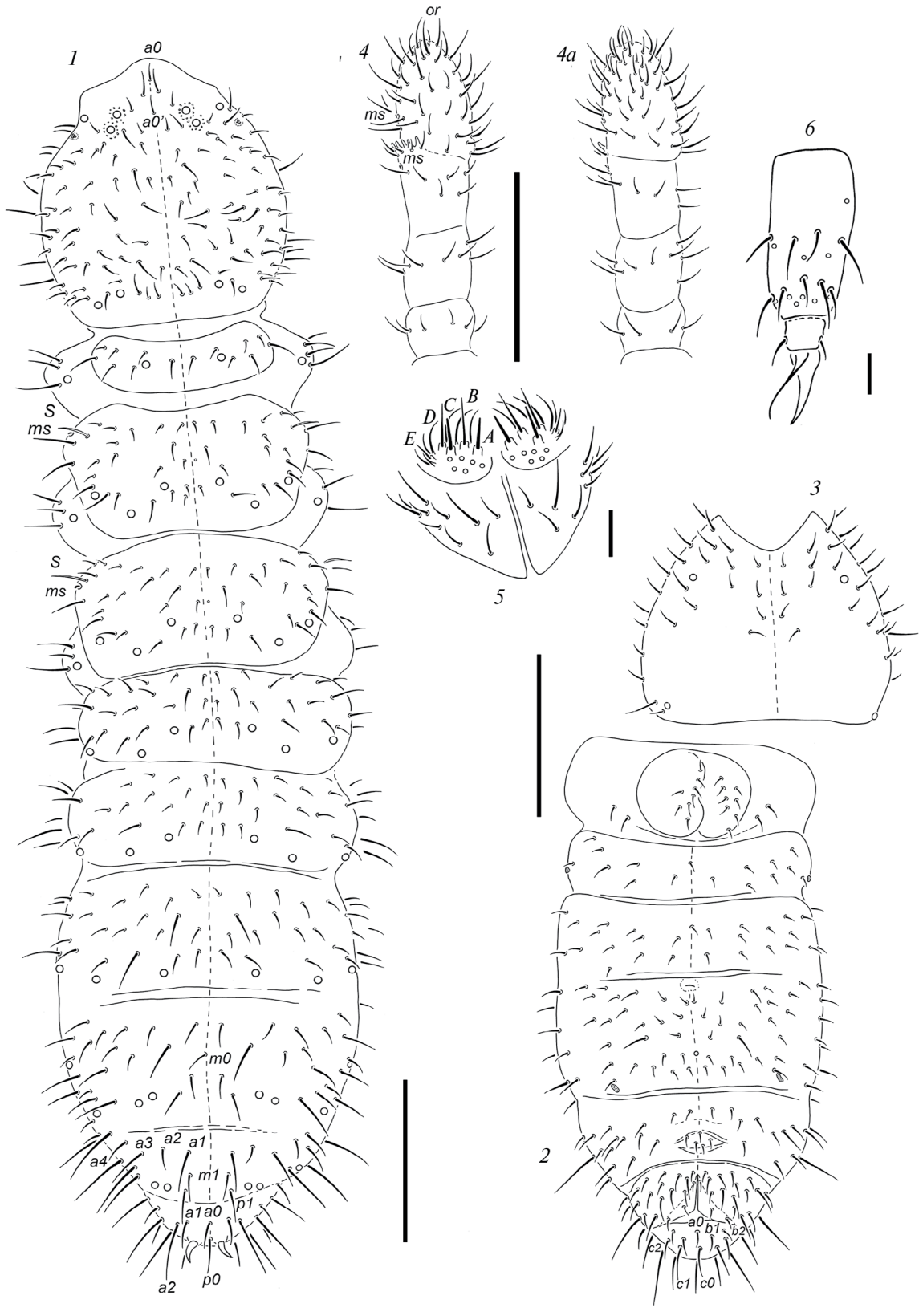

Fig. 4. *Oligaphorura ligni* sp. n.: *1* – dorsal chaetotaxy; *2* – ventral chaetotaxy of abdomen; *3* – ventral chaetotaxy of head; *4* – antenna, dorsal view; *4a* – ibid., ventral view; *5* – labial palp with basomedian and basolateral parts of labium (spiniform guards not shown); *6* – tip of leg III, anterior side. Scales, mm: *1–4* – 0.1; *5–6* – 0.01.

absent as usual for the genus. Setae *p*1 on head in front of setae *p*2. *Th*. I with 4(5)+4(5) dorsal setae. Lateral *ms* present on both *Th*. II and *Th*. III. Terga of *Th*. II–*Abd*. III each with 3–4 pairs of axial setae. On *Abd*. VI seta *a*0 similar in length to setae *a*2, setae *a*1 three times shorter than *a*0. Thoracic sterna without setae. Ventral chaetotaxy of abdomen as in Fig. 5, *2*.

Upper subcoxae of legs I–III with 3, 4, 5 setae, respectively. Tibiotarsi with 20–20–19 setae: distal whorl (*T*+*A*) with 11 setae, 7 *B*-setae (*B*7 absent only on *Ti* III), an unpaired seta *M* and one seta of *C*-whorl. Unguis with neither inner nor lateral teeth; unguiculus with broad basal lamella, slightly shorter than unguis (about 0.9 of its inner edge length) (Fig. 5, *7*). *VT* with 6+6 proximal setae and 1+1 setae at base. Furcal remnant of *H*-type (Fig. 5, *2*). Each lateral anal valve with *a*0 and 2*a*1 setae, unpaired valve with *a*0, 2*b*1, 2*b*2 (*a*1 and *b*0 absent) and 5 setae in *c*-row. Small anal spines present.

Etymology. The new species was named after the region of its type locality.

Affinities. *Oligaphorura yakutica* sp. n. is rather similar to *O. duocellata* Babenko et Fjellberg 2015, described from the upper reaches of Kolyma River, Magadan Region. Both of these species are characterized by such unusual features as the absence of setae on thoracic sterna, the presence of two pairs of dorsal *pso* and a few setae on *Th*. I, as well as a distant position of *a*- and *b*-*pso* on *Abd*. IV. We tentatively include these two species into the *groenlandica*-group even though they have a furcal remnant of *H*-type (in the form of 4 small setae behind a finely granulated area) which is not typical of the group. *Oligaphorura yakutica* sp. n. can easily be distinguished from *O. duocellata* by the absence of ventral *pso* on the abdomen (*vs* 1111(2) in *O. duocellata*).

The presence of two pairs of dorsal *pso* on *Th*. I is uncommon among *Oligaphorura* species; previously this character was considered characteristic of only *O. quadrituberculata* (Börner 1901). This latter species has slightly more numerous dorsal *pso*, *i.e.* 32/2(3)3(4)3(4)/33(4)333, and only 3 *pso* on *Abd*. IV (*vs* 4 in the new species), a shorter unguiculus (half of the inner edge of the unguis, *vs* 3/4 in *O. yakutica* sp. n.), and the furcal remnant with a cuticular furrow (absent in *O. yakutica* sp. n.).

One more species, *i.*e. *O. ossetica* sp. n., also having 2+2 *pso* on *Th*. I, is described in this paper. It belongs to a different species-group and is hardly comparable to *O. yakutica* sp. n.

Oligaphorura subnuda
Shveenkova, Antipova et Babenko sp. n.
(Figs 6, *1–8*)

Diagnosis. Species of the *groenlandica*-group. Body shape as usual for the genus. Anal spines present. Dorsal sensilla not distinguishable. Pseudocellar formulae 32/033/44454 (dorsal), 11/000/0001 (ventral), and 111 (subcoxal). Ventral and subcoxal *psx* invisible. *AIIIO* with 5 papillae, granulated clubs distinctly differing in sizes. *PAO* usually with 3 lobes, slightly smaller than nearest *pso*. Labial palp of the *AC*-type. Lateral *ms* present on both *Th*. II–III. Thoracic sterna with 0–0–1 setae on each side of the ventral line. Tibiotarsal chaetotaxy complete: distal whorls (*A*+*T*) of each *Ti* with 11 setae. Furcal remnant of *S*-type, cuticular fold distinct.

Type material. Holotype, female, Russia, Taimyr Peninsula, middle reaches of Pyasina River, former Ust'-Tareya [73.2529°N, 90.5962°E], *Dryas punctata* association on upper part of river slope, 22.07.2010, O. Makarova & A. Babenko leg. Paratypes, 3 females, 3 males and 2 juveniles, same data as holotype; 2 females and 3 males, same area and date but herbaceous meadow on river slope; 3 females and 2 males, same area, lemming's colony, 02.08.2010, all O. Makarova & A. Babenko leg.

Description. Size 0.58–0.71 mm, holotype 0.63 mm. Colour white in alcohol. Body cylindrical. Granulation fine and uniform, with 10–12 granules around dorsal *pso* (Figs 6, *1*, *5*).

Number of *pso* stable within available material and expressed as 32/033/44454 (dorsal) and 11/000/0001 (ventral) (Figs 6, *1–2*). Ventral and subcoxal *psx* invisible. Upper *Sc* of legs I–III with 1 *pso* each (Fig. 6, *3*).

Antennae slightly shorter than head, *Ant*. III–IV broad, club-like. Subapical organite present on *Ant*. IV, microsensillum located in proximal row of setae (Fig. 6, *6*). *AIIIO* consisting of 5 papillae, 5 guard setae, 2 sensory rods, 2 granulated clubs (external one clearly larger) and lateral *ms*. Antennal area not marked. *Ant*. I–II with 8 and (12)13 setae, respectively. *PAO* smaller than nearest *pso* with 3 subequal lobes as a rule (Fig. 6, *5*). Maxillary lamellae unmodified, maxillary outer lobe simple with 1 basal seta and 2 sublobals. Labrum with 4/322 setae. Labial palp with thickened terminal sensilla on papillae *A* and *C*, 10 guards (6 long and 4 spiniform) and 6 proximal setae (Fig. 6, *7*). Basomedian and basolateral parts of labium with 4 and 5 setae, respectively.

Dorsal chaetotaxy almost symmetrical, especially in medial parts of terga, macrosetae clearly distinguishable only laterally and on abdominal tip (Fig. 6, *1*), meso- and microsetae similar in size but differentiated in form: mesosetae usually straight and truncate at tips, microsetae pointed and curved. *S*-setae not distinguishable as a rule. Head with two axial unpaired setae (*a*0 and *a*'0) on frontal part (Fig. 6, *4*), *d*0 being absent as usual for the genus. Setae *p*1 on head and *Th*. II–III usually located in front of *p*2. *Th*. I with 6–7 dorsal setae on each side. Lateral *ms* present on both *Th*. II and *Th*. III (Figs 6, *3*). Terga of *Th*. II–*Abd*. III with 3 pairs of axial microsetae and a pair of mesosetae located slightly laterally. *Abd*. IV–V often with unpaired setae: *m*0 on

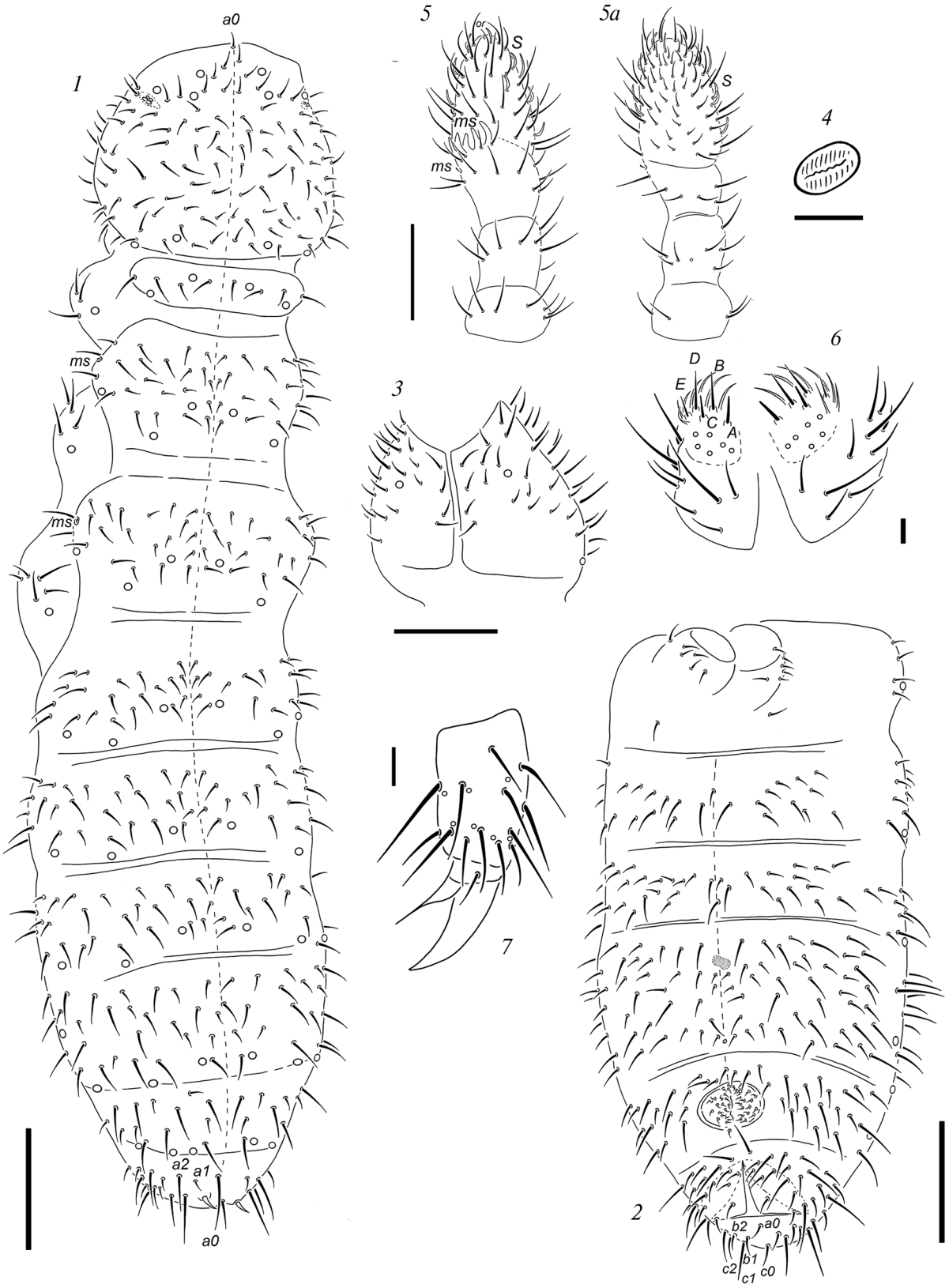

Fig. 5. *Oligaphorura yakutica* sp. n.: *1* – dorsal chaetotaxy; *2* – ventral chaetotaxy of abdomen; *3* – ventral chaetotaxy of head; *4* – *pso*; *5* – antenna, dorsal view; *5a* – ibid., ventral view; *6* – labial palp with basomedian and basolateral parts of labium (spiniform guards not shown); *7* – tip of leg I, outer side. Scales, mm: *1–3*, *5–0.*1; *6–7* – 0.01; *4–0.*005.

Abd. IV and *p*0 on *Abd*. V. Setae *a*0 on *Abd*. VI slightly shorter than *a*2, setae *a*1 almost half as long as *a*2.

Thoracic sterna with 0–0–1(2) setae each side of ventral line. *VT* with (6)7+7 proximal and 2+2(1) setae at base. Ventral chaetotaxy as in Fig. 6, *2*. Furcal remnant of *S*-type, usually with 6+6 setae arranged in four irregular rows. Each lateral anal valve with *a*0 and 2*a*1 setae, unpaired valve with *a*0, 2*b*1, 2*b*2 (*a*1 and *b*0 absent) and 7 setae in *c*-row.

Upper subcoxae of legs I–III usually with 4, 5, 4 setae, respectively; lower subcoxae with 0, 3, 3 setae; coxae – 3, 8, 8 setae; trochanters – 8, 8, 8 setae and femora – 12, 12, 12 setae. Tibiotarsi with 20–20–19 setae: distal whorls (*T*+*A*) complete, totally with 11 setae, 7 *B*-setae (*B*7 absent on *Ti* III), an unpaired seta *M* within *B*-whorl and one *C*-seta on each leg. Unguis with neither inner nor lateral teeth, unguiculus about as long as 3/4 of inner edge of unguis with a narrow but clear basal lamella (Fig. 6, *8*). Anal spines rather strong, usually constricted at base, set without papillae.

Etymology. The name of the new species reflects its high similarity with the Nearctic *O. nuda* (Fjellberg 1987).

Affinities. The species was earlier referred to in the East-Palaearctic fauna as *O.* sp. aff. *nuda* (see Babenko, 2013). It is very similar to this Nearctic form indeed, also characterized by the presence of additional *pso* on each side of abdominal terga and the absence of *pso* on *Th*. I. The only characters by which these species can be reliably distinguished are the presence (*O. subnuda* sp. n.) or absence (*O. nuda*) of ventral *pso* on *Abd*. IV, and the type of the labium (*AC*- type in the new species, *vs A*- type in *O. nuda* (after Fjellberg, 1999)).

Another similar form, *O. interrupta* (Fjellberg 1987), inhabits more eastern parts of the Palaearctic, ranging from Yakutia to the Magadan Region (Babenko, Fjellberg, 2015). The most common dorsal pseudocellar formula in this species is 32/033/33353, but variations are frequent and specimens with additional *pso* on some abdominal terga are also observed. The whole formula may be expressed as follows, 32/033/3(4).3(4).3(4).5(4).3(4), which covers that in *O. subnuda* sp. n. Nevertheless, among the vast available material of *O. interrupta*, there are no specimens with ventral *pso* on *Abd*. IV.

The new species clearly prefers the warmest sites in the area of its type locality, being mainly found on south-facing slopes. Thus, it may well be presumed that the main part of its distributional range encompasses more southern territories than the region where it is still found.

Oligaphorura cavicola
Shveenkova, Antipova et Babenko sp. n.
(Figs 7, *1–7*)

Diagnosis. Species of the *groenlandica*-group. Body shape as usual for the genus. Anal spines present. Dorsal sensilla not distinguishable. Pseudocellar formulae 32/133/44454 (dorsal), 11/000/0001 (ventral), and 111 (subcoxal). Ventral and subcoxal *psx* present. *AIIIO* with 5 high papillae, granulated clubs distinctly differing in shape and size. *PAO* with 4 lobes, its longer axis about as long as 1.5–1.7 of nearest *pso*. Labial palp of the *AC*-type. Lateral *ms* present on both *Th*. II–III. Thoracic sterna with 0–0-(0)1 setae on each side of the ventral line. Tibiotarsal chaetotaxy complete: distal whorls (*A*+*T*) of each *Ti* with 11 setae. Furcal remnant of *S*-type, cuticular fold distinct.

Type material. Holotype, male, Russia, north of Perm Region, 10 km north of Nyrob, Kolva River basin, Cave Div'ya [60.8097° N, 56.7417° E], grotto Kaban [about 400 m from the entry], 07.01.2007, I. Lavrov leg. Paratypes, 3 females and 4 males, same data as holotype.

Description. Size 1.2–1.6 mm, holotype 1.2 mm. Colour white in alcohol. Body cylindrical (Fig. 7, *1*). Granulation fine and uniform, with 12–14 granules around dorsal *pso*.

Number of *pso* stable within available material and expressed as 32/133/44454 (dorsal) and 11/000/0001 (ventral) (Figs 7, *1–2*). Ventral *psx* usually as 0/000/?11000. Upper *Sc* of legs I–III with one *pso* and one *psx* each, one *psx* also visible on inner side of each femora.

Antennae about as long as head, *Ant*. III–IV broad, club-like. Subapical organite present on *Ant*. IV, microsensillum located in proximal row of setae (Fig. 7, *3*). *AIIIO* consisting of 5 long papillae, 5 guard setae, 2 sensory rods, 2 granulated clubs (external one clearly larger and stronger curved) (Fig. 7, *4*) and lateral *ms*. Antennal area not marked. *Ant*. I–II with 8 and 12–14 setae, respectively. *PAO* about as long as 1.5–1.7 of nearest *pso* with 4 lobes, anterior pair clearly longer (Fig. 7, *6*). Maxillary lamellae unmodified, maxillary outer lobe simple with 1 basal seta and 2 sublobals. Labrum with 4/9 setae. Labial palp with thickened terminal sensilla on papillae *A* and *C*, 10 guards (6 long and 4 spiniform) and 6 proximal setae (Fig. 7, *5*). Basomedian and basolateral parts of labium with 4 and 5 setae, respectively.

Dorsal chaetotaxy more or less symmetrical (Fig. 7, *1*), although intraspecific variations frequent; macrosetae well differentiated especially on lateral parts of terga, meso- and macrosetae usually straight and truncate at tips, microsetae pointed and curved. *S*-setae not distinguishable. Head with one axial unpaired setae (*a*0) on frontal part, *d*0 being absent as usual for the genus. Setae *p*1 on head usually in front of *p*2. *Th*. I with 5–6 dorsal setae on each side. Lateral *ms* present on both *Th*. II and *Th*. III. Terga of *Th*. II–*Abd*. III usually with 3 pairs of axial microsetae and a pair of mesosetae of similar size located slightly laterally. Chaetotaxy of medial part of *Abd*. IV unstable; axial mesosetae (*a*1 and *p*1) on *Abd*. V rather long and subequal to microsetae

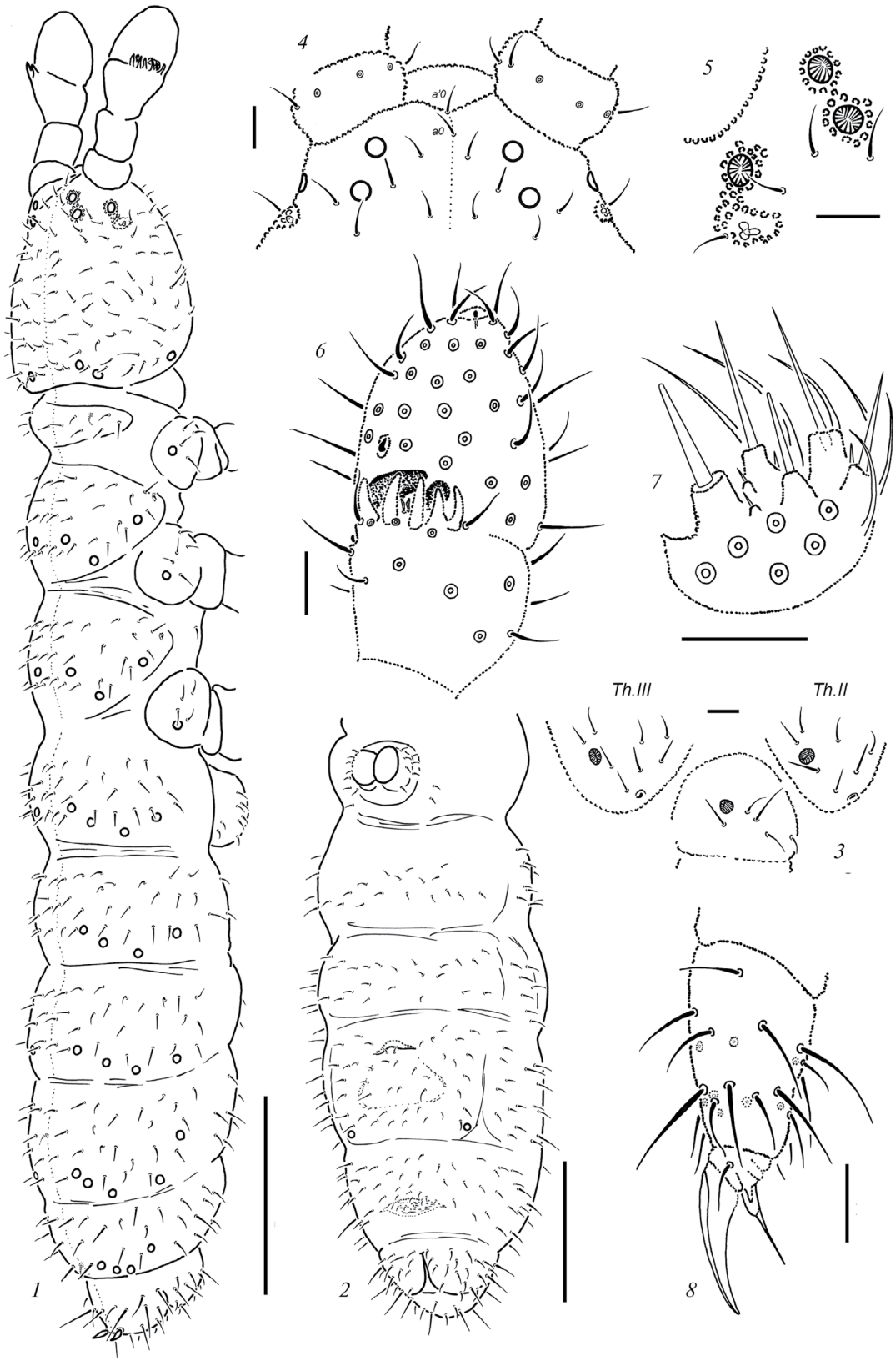

Fig. 6. *Oligaphorura subnuda* sp. n.: *1* – dorsal chaetotaxy; *2* – ventral chaetotaxy of abdomen; *3* – *Th*. II–III and *Sc* II, lateral view; *4* – chaetotaxy of anterior part of head; *5* – antennal *pso* and *PAO*; *6* – antennal segments III–IV; *7* – labial palp; *8* – tip of leg I. Scales, mm: *1–2* – 0.1; *3–8* – 0.01.

*m*1, unpaired seta *p*0 present or absent. Seta *a*0 on *Abd*. VI slightly longer than *a*1, the latter about half as long as *a*2.

Thoracic sterna with 0-0-(0)1 setae each side of ventral line, sometimes seta present only on one side of *Th*. III. *VT* with 6+6 proximal and 2+2(1) setae at base as a rule. Ventral chaetotaxy as in Fig. 7, *2*. Furcal remnant of *S*-type, setae on manubrial field usually arranged in four irregular rows. Each lateral anal valve with *a*0 and 2*a*1 setae, unpaired valve with *a*0, 2*a*1, 2*b*1, 2*b*2 (*b*0 absent) and usually 7 setae in *c*-row.

Upper subcoxae of legs I–III with 4(5), 4(5), 4 setae, respectively; lower subcoxae with 0, 3, 3 setae; coxae – 3, 7–9, 9–12 setae; trochanters – 8–9, 8–9, 9–11 setae and femora – 14, 14–15, 11–14 setae. Tibiotarsi with 20–20–19 setae: distal whorls (*T*+*A*) complete, totally with 11 setae, 7–7–6 *B*-setae (*B*7 absent on *Ti* III), an unpaired seta *M* within *B*-whorl and one *C*-seta on each leg. Unguis long and narrow with neither inner nor lateral teeth, unguiculus about as long as 0.8 of inner edge of unguis with clear basal lamella (Fig. 7, *7*). Anal spines rather strong, slightly constricted at base, set almost without papillae.

Etymology. The name of the new species reflects its cavernicolous style of life.

Affinities. The most characteristic feature of the new species is the increased number of dorsal *pso* on all abdominal segments, which, however, is not unique for the genus and occurs among a fairly large number of congeners. On the other hand, in most of such cases, additional *pso* are developed not only on the abdomen, but also on the head and thorax. The basic set of dorsal *pso* in the anterior part of the body (on the head and thorax) and an increase in their number on abdominal segments is known only for eight described species. Of these, five species, namely *O. reversa* (Fjellberg 1987), *O. nuda* (Fjellberg 1987), *O. interrupta* (Fjellberg 1987), *O. arnei* Paśnik et Kaprus' 2019, and *O. subnuda* sp. n. lack *pso* on the first thoracic segment, making them quite easy to distinguish from *O. cavicola* sp. n. It is also fairly easy to distinguish the new species from the Spanish *O. alavensis* (Simón-Benito et Luciáñez 1994), which has a similar dorsal *pso* formula, *i*.e. 32/133/44463, but lacking anal spines.

Only two remaining species, *O. uralica* (Khanislamova 1986) and *O. changbaiensis* (Sun et Wu 2012), show a dorsal *pso* formula completely identical to that of *O. cavicola* sp. n. Of these, the almost sympatric *O. uralica* differs significantly in the number of subcoxal (*Sc* I–III with 233 *pso*, *vs* 111 in *O. cavicola* sp. n.) and ventral *pso* (2/000/1112, *vs* 2/000/0001 in *O. cavicola* sp. n.). The Chinese species, *O. changbaiensis*, formally seems to be most similar to the new species, although it is characterized by a different type of furcal chaetotaxy (*A*-type, *vs S*-type in *O. cavicola* sp. n.) and therefore was originally described in the genus *Micraphorura* Bagnall 1949. These two species also differ in a number of other characteristics, for instance, the labial type (*ABC*, *vs AC* in *O. cavicola* sp. n.), the number of ventral *pso* (2/000/0000, *vs* 2/000/0001 in *O. cavicola* sp. n.) and *psx* on the upper subcoxae (222, *vs* 111 in *O. cavicola* sp. n.) and ventrally on the abdomen (2222, *vs* ?110 in *O. cavicola* sp. n.).

Formally, *O. cavicola* sp. n. is also quite similar to *O. subnuda* sp. n., which is described above. Both species have almost identical dorsal, ventral and subcoxal *pso* formulas and are found in the central regions of the Palaearctic. Besides the presence of *pso* on *Th*. I only in *O. cavicola* sp. n., these two species differ significantly in size (1.2–1.6 mm in *O. cavicola* sp. n., *vs* 0.6–0.7 mm in *O. subnuda* sp. n.), the differentiation of dorsal setae, the relative size of the *PAO*, the number of labral setae, and the presence/absence of subcoxal and ventral *psx*.

Oligaphorura neglecta
Shveenkova, Antipova et Babenko sp. n.
(Figs 8, *1–3*)

Diagnosis. Species of the *groenlandica*-group. Body shape as usual for the genus. Anal spines present. Dorsal sensilla present but poorly distinguishable. Pseudocellar formulae 32/133/33343 (dorsal), 11/000/0000 (ventral), 111 (subcoxal). Ventral and subcoxal *psx* present. *AIIIO* with 5 papillae, granulated clubs distinctly differing in sizes. *PAO* usually with 3 lobes, its longer axis clearly longer than nearest *pso* diameter. Labial palp of the *AC*-type. Lateral *ms* present on both *Th*. II–III. Axial part of *Abd*. V with setae *m*1 clearly shorter than *a*1 and *p*1. Thoracic sterna with 0–1–1(2) setae on each side of the ventral line. Tibiotarsal chaetotaxy complete: distal whorls (*A*+*T*) of each *Ti* with 11 setae. Furcal remnant of *S*-type, cuticular fold distinct.

Type material. Holotype, female, Russia, Taimyr Peninsula, middle reaches of Pyasina River, former Ust'-Tareya [73.2529°N, 90.5962°E], *Dryas punctata* association on pingo, 22.07.2010, O. Makarova & A. Babenko leg. Paratypes, 2 males and 2 juveniles, same data as holotype; 11 females, 6 males and 5 juveniles, same area, nival slope with *Cassiope tetragona*, 27.07.2010; 5 females, 2 males and 1 juvenile, same area, polygonal mire, 01.08.2010; 4 females, same area, tussock tundra, 28.07.2010; 2 males, same area, zonal tundra association, 27.7.2010; 2 males and 11 juveniles, same area, lemming's colony, 02.08.2010; 2 females, male and juvenile, same area, *Betula nana* association, 27.7.2010; all O. Makarova & A. Babenko leg.

Additional material. 2 females, 2 males and juvenile, Novosibirsk Islands, Kotelnyi Island [75.05°N, 140.17°E], slope of valley, 31.07.1994, M. Berezin leg.; 2 females and male, same area and date, nival slope, mosses, A. Babenko leg.; female, Yakutia (Sakha Republic), Suntar-Khayata Mt. Range, upper reaches of Kyubyume River [63.22°N, 139.53°E], 1250 m alt.,

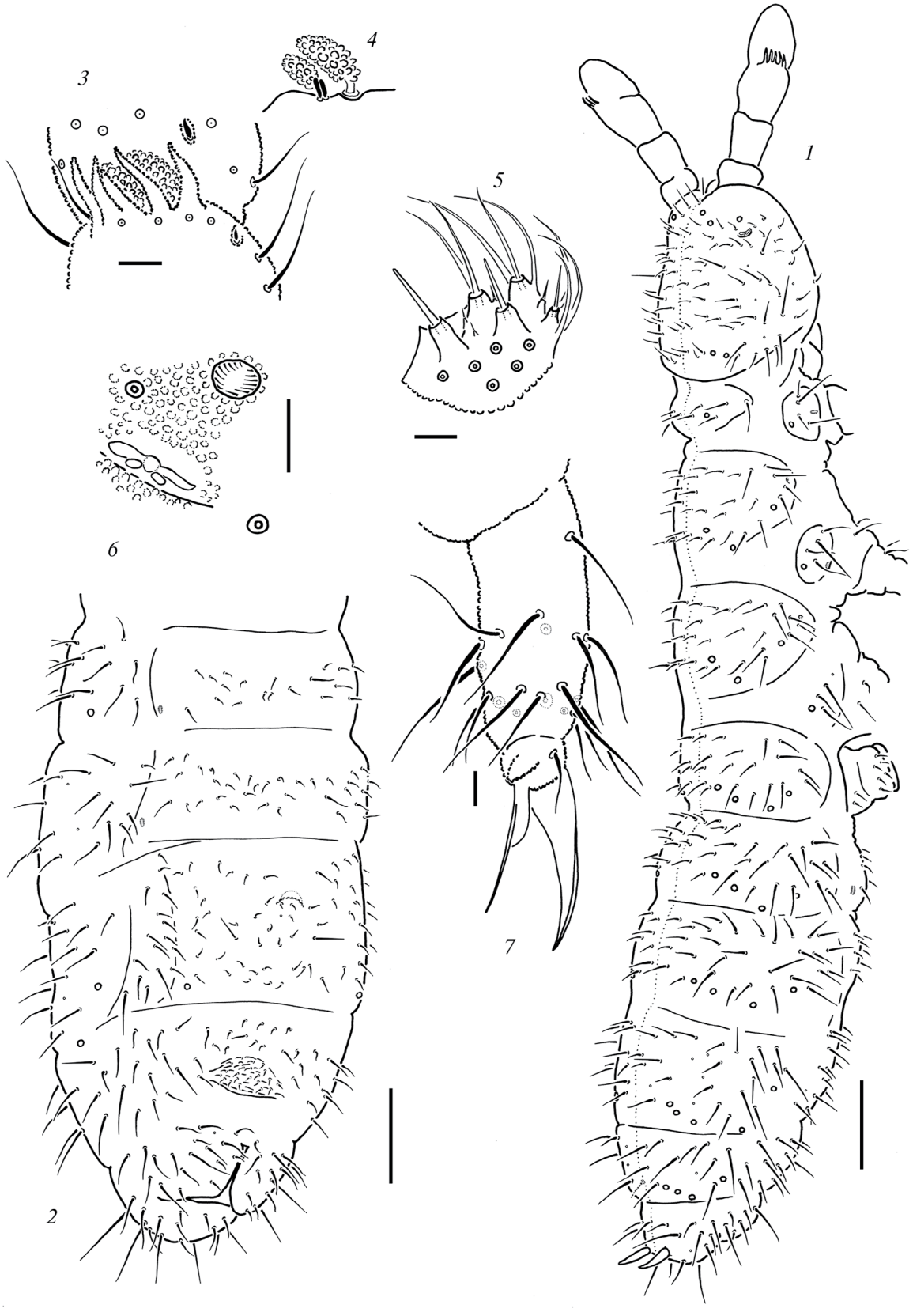

Fig. 7. *Oligaphorura cavicola* sp. n.: *1* – dorsal chaetotaxy; *2* – ventral chaetotaxy of abdomen; *3* – *AIIIO*; *4* – sensory rods and granulated clubs of *AIIIO*; *5* – labial palp; *6* – *PAO* and antennal *pso*; *7* – tip of leg III. Scales, mm: *1–2* – 0.1; *3–7* – 0.01.

Salix spp. in floodplain, 30.07.2002, O. Makarova leg.; 3 females and 1 male, same republic, Leno-Vilyui interfluve, environs of Asyma [62.4003°N, 126.7931°E], burnt larch forest, 28.06.2022 and 1 male, same biotope, but 18.08.2022, A. Burnasheva leg.

Description. Size 0.7–1.0 mm (males), 0.9–1.3 (females), holotype 0.89 mm. Colour white in alcohol. Body shape as usual for genus. Granulation fine and uniform, with 10–12 granules around dorsal *pso*.

Number of *pso* stable within available material and expressed as 32/133/33343 (dorsal) and 11/000/0000 (ventral). Ventral *psx* present, their number rather variable: head as a rule with one *psx* near basolateral part of labium, *Abd*. I–IV usually with 2222 ventral *psx* and one *psx* on each anal lobe (1/000/222201+1^{m} as a whole) (Fig. 8, *1*). Upper *Sc* of legs I–III with one *pso* each and usually with (1)2–2–2 *psx*.

Antennae slightly shorter than head, *Ant*. III–IV broad, club-like. Subapical organite present on *Ant*. IV, microsensillum located in proximal row of setae. *AIIIO* consisting of 5 high and narrow papillae, 5 guard setae, 2 sensory rods, 2 granulated clubs (external one clearly larger (Fig. 8, *2*)) and lateral *ms*. Antennal area not marked. *Ant*. I–II with (8)9 and 14–15 setae, respectively. *PAO* with 3 lobes as a rule, its longer axis almost 2 times as long as *pso* diameter. Maxillary lamellae unmodified, maxillary outer lobe simple with 1 basal seta and 2 sublobals. Labrum with 4/522 setae. Labial palp with thickened terminal sensilla on papillae *A* and *C*, 10 guards (6 long and 4 spiniform) and 6 proximal setae. Basomedian and basolateral parts of labium with 4 and 5 setae, respectively.

Dorsal chaetotaxy in medial parts of terga almost symmetrical, macrosetae clearly distinguishable only on abdominal tip, setae on other parts of body similar in size but differentiated in form: mesosetae usually more straight and truncate at tips, microsetae pointed and curved. Dorsal *S*-setae poorly distinguishable from mesosetae, their highest seen number as 2/011/22211. Head with one axial unpaired seta (*a*0) on frontal part, *d*0 being absent as usual for the genus. Setae *p*1 on head in front of *p*2. *Th*. I with (7)8–9 dorsal setae on each side. Lateral *ms* present on both *Th*. II and *Th*. III. Terga of *Th*. II–*Abd*. III with 3 pairs of axial microsetae and a pair of mesosetae located slightly laterally. Chaetotaxy of medial part of *Abd*. IV usually more irregular. Axial microsetae *m*1 on *Abd*. V clearly shorter than mesosetae *a*1 and *p*1 (Fig. 8, *3*). Mesoseta *a*0 on *Abd*. VI subequal to microsetae *a*1 and about 1.5 times shorter than macrosetae *a*2.

Thoracic sterna with 0–1–1(2) setae each side of ventral line. *VT* with up to 9 proximal setae on each side and usually 2+2 setae at base. Furcal remnant of *S*-type with clear cuticular fold and 14–16 setae on manubrial field (Fig. 8, *1*). Each lateral anal valve with *a*0 and 2*a*1 setae, unpaired valve with *a*0, 2*b*1, 2*b*2 and 5 setae in *c*-row (*b*0 and *a*1 absent).

Upper subcoxae of legs I–III with 4, (5)6, (5)6 setae, respectively; lower subcoxae with 0, 3, 4 setae; coxae – 3, 8–11, 12–14 setae; trochanters – 9–10, 9–10, (8)9 setae and femora – 15–18, 16–18, (14)15 setae. Tibiotarsi with 20–20–19 setae: distal whorls (*T*+*A*) complete, totally with 11 setae, 7 *B*-setae (*B*7 absent on *Ti* III), an unpaired seta *M* within *B*-whorl and one *C*-seta on each leg. Unguis without inner tooth, lateral ones present only occasionally, unguiculus about as long as 3/4 of inner edge of unguis with a narrow but clear basal lamella. Anal spines rather strong and curved, usually set on low papillae.

Etymology. The name of the new species reflects the fact that, despite being known from the late 80s of the last century, it was described only now.

Affinities. *Oligaphorura neglecta* sp. n. was first found on the Taimyr Peninsula by A. Fjellberg in the summer of 1989, and till now it was usually considered as a bisexual form of the variable *O. groenlandica* (Tullberg 1877) (see Fjellberg, 1998; Babenko, Fjellberg, 2015). This point of view seems quite justified, since for some species of the subfamily Onychiurinae the existence of large parthenogenetic and smaller bisexual forms has already been experimentally confirmed (Hale, 1964). The morphological characters commonly used to separate species in the genus *Oligaphorura*, such as *AIIIO* and *PAO*, labrum and labium, number of dorsal, ventral and subcoxal *pso*, the presence of *ms* on *Th*. III, position of "dental" setae on manubrial field, tibiotarsal chaetotaxy, are all identical in both species. The presence of males also does not allow us to reliably distinguish these species. In most of the northern regions of the Holarctic, the true *O. groenlandica* is only represented by females, but males are still found in some populations. For example, we noted them in the area of Pevek Town, western Chukotka. As a result, apart from a smaller size (0.7–1.3 mm in *O. neglecta* sp. n., *vs* 1.3–1.7 mm in *O. groenlandica*), the only notable characters which truly separate *O. neglecta* sp. n. from *O. groenlandica*, are the structure of the furcal remnant (presence *vs* absence of a cuticular fold, cf. Fig. 8, *1* and Fig. 8, *4*), the more pronounced differences in size of *AIIIO* sensilla (cf. Fig. 8, *2* and Fig. 8, *5*) and the differentiation of axial setae on *Abd*. V: curved microsetae *m*1 are shorter than straight mesosetae *a*1 and *p*1 in the former species (Fig. 8, *3*), whereas in *O. groenlandica* setae *m*1 are clearly longer than other axial setae (Fig. 8, *6*). Apparently, the *psx* formulas also differ in the species compared, but their rather high variability (see Babenko, Fjellberg, 2015) in both species does not allow them to be reliably separated by this trait. The presence of lateral teeth on the unguis of *O. groenlandica*, mentioned for this species by Fjellberg (1998), is sometimes also seen in *O. neglecta* sp. n.

In our opinion, *O. neglecta* sp. n. is probably not the only cryptic species in the *groenlandica* complex, which clearly requires additional attention, primarily in relation to the "southern" populations.

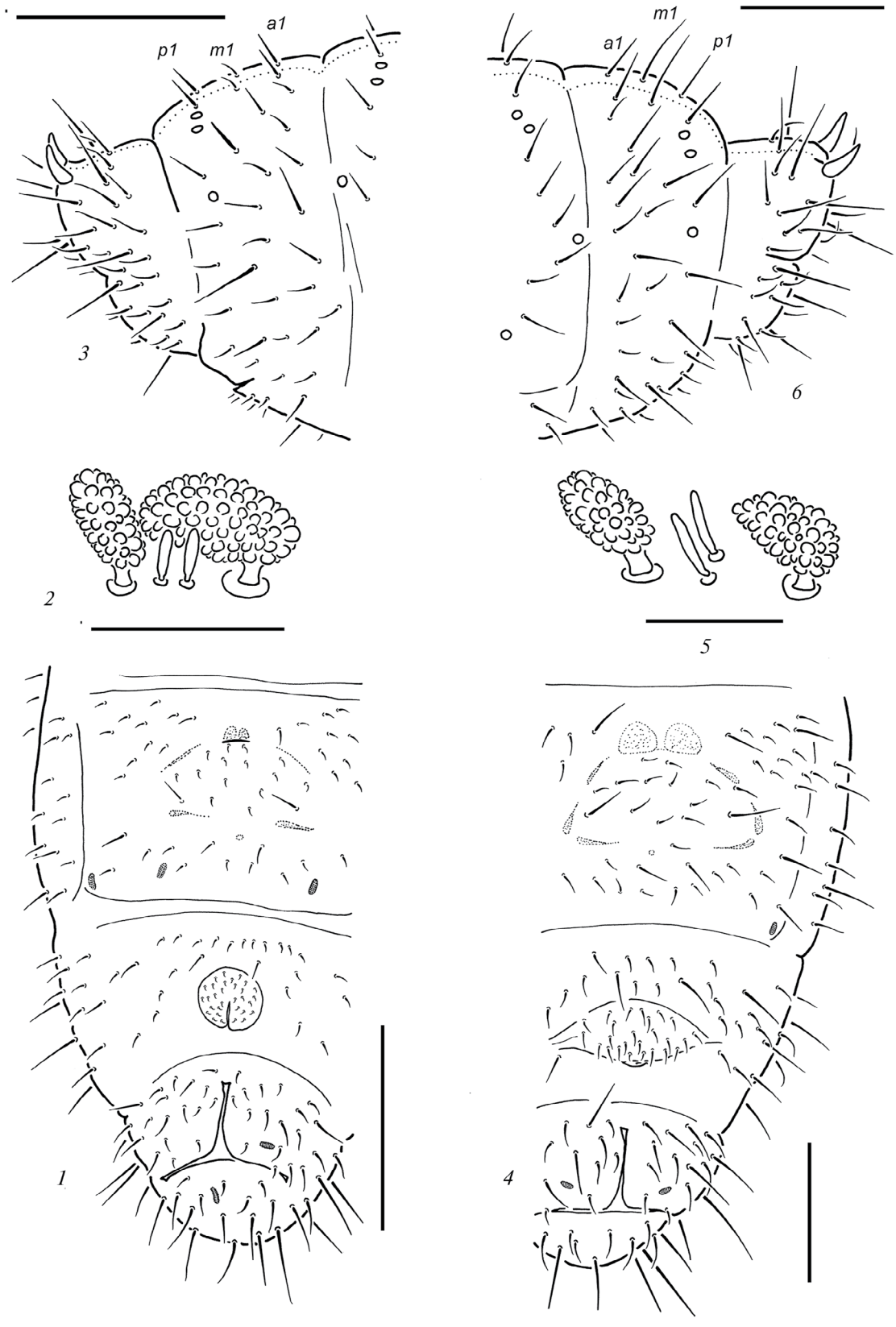

Fig. 8. *Oligaphorura neglecta* sp. n. (*1–3*) and *Oligaphorura groenlandica* (*4–6*): *1*, *4* – ventral chaetotaxy of abdomen (*1* – male, *4* – female); *2*, *5* – sensory rods and granulated clubs of *AIIIO*; *3*, *6* – dorsal chaetotaxy of *Abd*. V–VI. Scales, mm: *1*, *3*, *4*, *6–0*.1; *2*, *5–0*.01.

Oligaphorura primorica
Shveenkova, Antipova et Babenko sp. n.
(Figs 9, *1–7*)

D i a g n o s i s . Species of the *groenlandica*-group. Body shape as usual for the genus; head, thorax and *Abd*. VI with fields of coarser cuticular granulation; dorsal setae clearly differentiated into long and straight macrochaetae and short and curved microsetae. Anal spines present. Dorsal sensilla invisible. Pseudocellar formulae as 32/033/33343 (dorsal), 11/000/0000 (ventral), and 111 (subcoxal). Ventral and subcoxal *psx* present. *AIIIO* with 5 papillae, granulated clubs distinctly differing in sizes. *PAO* with (3)4 lobes, 1.5–2.0 times longer than nearest *pso* diameter. Labial palp of the *AC*-type. Lateral *ms* present on both *Th*. II–III. Thoracic sterna with 0–1–1 setae on each side of the ventral line. Tibiotarsal chaetotaxy complete: distal whorls (*A*+*T*) of each *Ti* with 11 setae. Unguis with inner and a pair of lateral teeth. Furcal remnant of *S*-type, cuticular fold small but distinct.

T y p e m a t e r i a l . Holotype, male, Russia, Southern Primorye, Vladivostok Botanical Garden, coniferous-broad-leaved forest [43.2222°N 131.9936°E], winter traps, 20 November 2016–11 March 2017, A. Komisarenko leg.

D e s c r i p t i o n . Size of a single available specimen (holotype) 1.53 mm. Colour white in alcohol. Body shape as usual for genus. Granulation of dorsal side of body very characteristic with fields of coarser granulation on head, all three thoracic terga and *Abd*. VI; similar fields developed also on upper subcoxae and *Ant*. I–II (Fig. 9, *1*).

Number of *pso* expressed as 32/033/33343 (dorsal) and 11/000/0000 (ventral) (Figs 9, *1–2*), on head two anterior medial *pso* and one posterior *pso* set within coarsely granulated part (Figs 9, *1*). Ventral *psx* formula as 0/000/111101^{m}. Upper *Sc* of legs I–III with one *pso* and one ventro-lateral *psx* each.

Antennae about as long as head; *Ant*. III–IV broad, club-like (Figs 9, *4*). Subapical organite present on *Ant*. IV, microsensillum located in proximal row of setae; dorsal side of segment with two usual types of setae, curved and more straight ones, and also with two slightly thickened sensilla on inner side. *AIIIO* (Fig. 9, *4–5*) consisting of 5 high and thick papillae, 5 guard setae, 2 long and thin sensory rods, 2 granulated clubs (external one curved and clearly larger) and lateral *ms*. Antennal area clearly marked by tegumental granulation. *Ant*. I–II with 9 and 16–18 setae, respectively. *PAO* with (3)4 lobes, its longer axis almost 2 times as long as *pso* diameter (Fig. 9, *6*). Maxillary lamellae unmodified, maxillary outer lobe simple with 1 basal seta and 2 sublobals. Labrum with 4/522 setae, four distal setae clearly longer. Labial palp with thickened terminal sensilla on papillae *A* and *C*, 10 guards (6 long and 4 spiniform) and 6 proximal setae. Basomedian and basolateral parts of labium with 4 and 5 setae, respectively.

Dorsal chaetotaxy (Figs 9, *1*, *3*) in a single available specimen slightly irregular even in medial part of terga, with many additional setae, especially laterally; macrosetae clearly distinguishable, strong and rather long, microsetae short, pointed and curved. Dorsal *S*-setae undifferentiated. Head with one axial unpaired seta (*a*0) on frontal part. Setae *p*1 on head long and clearly set in front of *p*2. *Th*. I with 7 dorsal setae on each side. *Th*. II–*Abd*. III with *a*1 as macrosetae. Lateral *ms* present on both *Th*. II and *Th*. III. Mesoseta *a*0 on *Abd*. VI subequal to microsetae *a*1 and about half as long as macrosetae *a*2.

Thoracic sterna with 0–1–1 setae on each side of ventral line. *VT* with 9+10 proximal setae, 2+2 setae on anterior side and 2+3 setae at base. Ventral chaetotaxy of abdomen rather abundant (Fig. 9, *2*), setae differentiated only on abdominal tip. Furcal remnant of *S*-type with small, but clear cuticular fold, manubrial field with 19 setae in several irregular rows.

Upper subcoxae of legs I–III with 4, 6, 5 setae, respectively; lower subcoxae with 0, 3, 3–4 setae; coxae – 3, 11, 14 setae; trochanters – 10, 10, 9–10 setae and femora – 19, 18, 16 setae. Tibiotarsi with 20–20–19 setae: distal whorls (*T*+*A*) complete, totally with 11 setae, 7 *B*-setae (*B*7 absent on *Ti* III), an unpaired seta *M* within *B*-whorl and one *C*-seta on each leg. Unguis with clear inner tooth and a pair of lateral ones in basal half, unguiculus about as long as 3/4 of inner edge of unguis with narrow basal lamella (Fig. 9, *7*). Anal spines conical, set without papillae on coarsely granulated belt of *Abd*. VI (Fig. 9, *3*).

E t y m o l o g y . The name of the new species is associated with the region of its supposed distribution – *i*.e. Southern Primorye.

A f f i n i t i e s . Despite the limited material (only one specimen of this species was found in three-month trap collections), we venture to describe it, since it is hard to confuse with any of the known species, even taking into account the very possible variability of some characters. First of all, the peculiar coarse granulation of some parts of the body, such as the head, thoracic segments and the tip of the abdomen, should be noted. Enlarged granulations on some segments are certainly not a unique feature of the genus, but a similar type of granulation that covers only the anterior part of the body and the last segment of the abdomen, is only known in four species of the genus, namely *O. tottabetsuensis* (Yosii 1972), *O. koreana* (Weiner 1994), *O. linderae* (Weiner 1994), and *O. judithae* (Weiner 1994). All of them were described from adjacent East Asian regions: the former species from Hokkaido, and the other three from the Korean Peninsula. Most likely they represent an isolated regional group of related species, and *O. primorica* sp. n. occupies a somewhat isolated position in it, differing from all species of this group in a noticeable differentiation of the dorsal setae. Among representatives of this group, *O. primorica* sp. n. shares

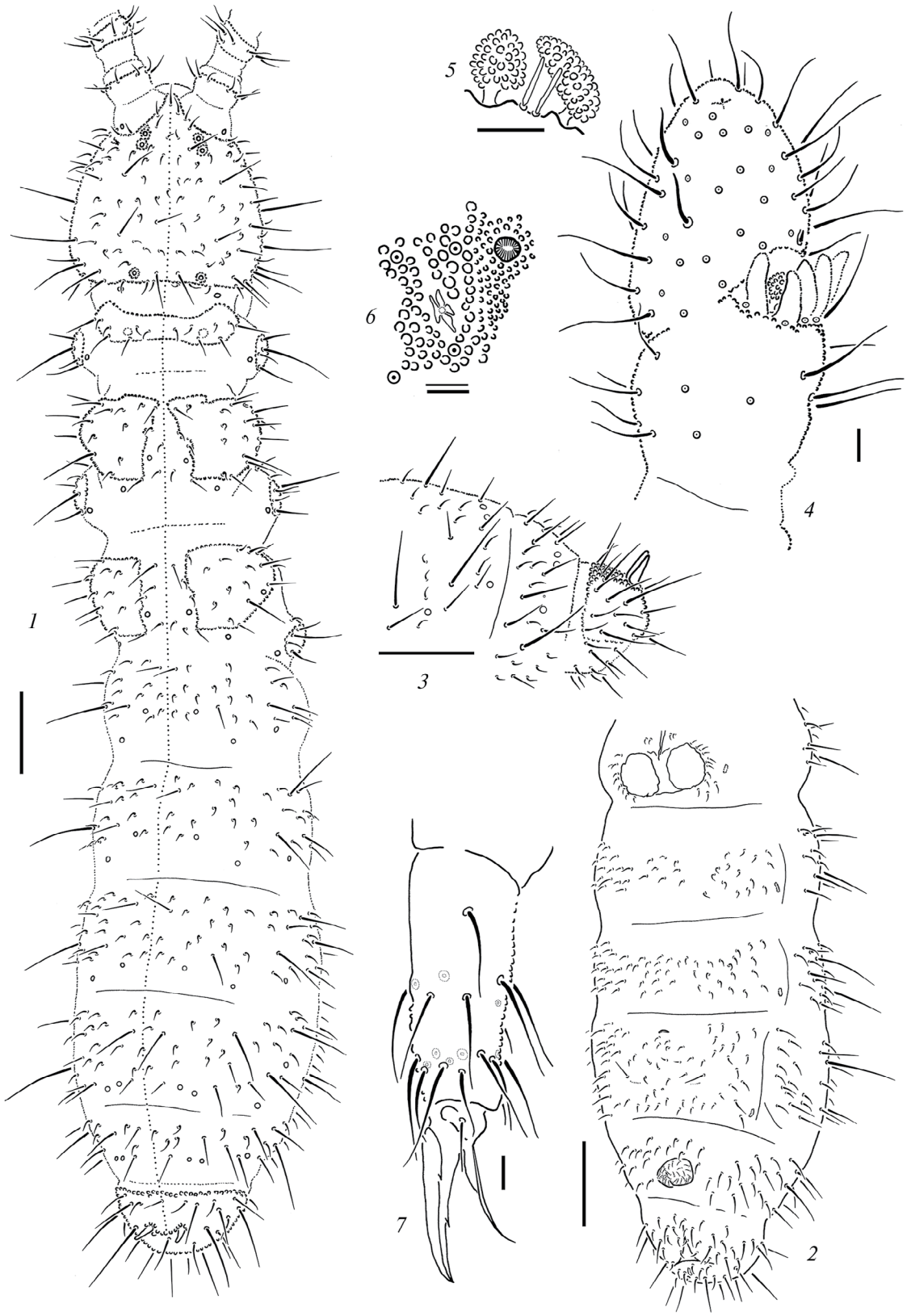

Fig. 9. *Oligaphorura primorica* sp. n.: *1* – dorsal chaetotaxy; *2* – ventral chaetotaxy of abdomen; *3* – dorsal chaetotaxy of *Abd*. IV–VI, lateral view; *4* – antennal segments III–IV; *5* – sensory rods and granulated clubs of *AIIIO*; *6* – *PAO* and antennal *pso*; *7* – tip of leg III. Scales, mm: *1–3* – 0.1; *4–7* – 0.01.

the same number of dorsal and ventral *pso* only with *O. koreana*. It is also possible that an identical dorsal *pso* formula is also characteristic of *O. tottabetsuensis*. This latter species also lacks *pso* on *Th*. I, whereas the presence of only three *pso* on *Abd*. IV is postulated, which, in our opinion, needs confirmation. Apart from weakly differentiated dorsal setae and the absence of teeth from the unguis, these two species, *O. koreana* and *O. tottabetsuensis*, differ quite clearly from *O. primorica* sp. n. in the location of the *pso* on the head. In *O. primorica* sp. n. only one *pso* of the anterior group is located inside the antennal base (within the area of finer granulation), *vs* two such *pso* in *O. tottabetsuensis*, and all three *pso* in *O. koreana*. In addition, in the latter species, both posterior *pso* on the head are located beyond the coarsely granulated field, *vs* only one *pso* in *O. primorica* sp. n. or both *pso* located "*at the margin of the granulate area*" (Yosii, 1972, p. 84) in *O. tottabetsuensis*. The other two species of the group are characterized not only by the presence of *pso* on the first thoracic segment, but also by a greater number of *pso* at the end of the abdomen (32/133/33354, totally).

In the Far Eastern regions, only one other species of the genus, *O. aborigensis* (Fjellberg 1987), is known, which, like *O. primorica* sp. n., shows a differentiated dorsal chaetom with large macrosetae. Its body granulation, however, is "*fine and uniform, not significantly enlarged on Abd.6*" (Fjellberg, 1987, p. 285), and it is characterized by such a feature as the absence of sublobal hairs on the maxillary outer lobe which is unique in the genus.

A key to the *Oligaphorura* species of the world fauna

1. Head with more than 4 postantennal *pso* ..... *O. multiperforata* (Gruia 1973) [d. *pso*: 10.9/6.15.15/15.19.18.22.9]

– Head with fewer postantennal *pso* 2

2. Head with 4 postantennal *pso* 3

– Head with 3 postantennal *pso* 4

3. *Th*. III with lateral *ms*; anal spines present; setae on thoracic sterna absent ..... *montana*-group 13

– *Th*. III without *ms* (unknown for *O. marcuzzii*); anal spines absent; setae on thoracic sterna usually present ..... *marcuzzii*-group 17

4. *AIIIO* with 4 papillae; *Abd*. IV with 3+3 dorsal *pso* ..... *O. palissai* (Yosii 1971) [d *pso*: 32/133/33333]

– *AIIIO* usually with 5 papillae; if only 4 papillae present, than *Abd*. IV with 4+4 dorsal *pso* 5

5. *AIIIO* with 4 papillae; *Abd*. I–III with 444 dorsal *pso* ..... *O. gela* (Christiansen et Bellinger 1980) [d *pso*: 31/133/44444]

– *AIIIO* usually with 5 papillae; if only 4 papillae present, than *Abd*. I–III with 333 dorsal *pso* 6

6. *Th*. I with 2(3)+2(3) *pso*; furcal remnant with a cuticular fold ..... *O. quadrituberculata* (Börner 1901) [d *pso*: 32/2(3)3(4)3(4)/33(4)333]

– *Th*. I usually with 0–1+0–1 *pso*; if 2+2 dorsal *pso* present on *Th*. I, than furcal remnant without a cuticular fold 7

7. Tibiotarsi with 11 setae in distal whorls (*T* and *A*) 9

– Tibiotarsi with 9 or fewer distal setae 8

8. Tibiotarsi with 9 distal setae ..... *differens*-group 24

– Tibiotarsi with 5–8 distal setae ..... *daii*-group 35

9. Anal spines absent 10

– Anal spines present 11

10. *Th*. I–III with 133 *pso*; *Sc* with 122 *pso* ..... *O. alavensis* (Simón-Benito et Luciáñez 1994) [d. *pso*: 32/133/44463]

– *Th*. I–III with 122 *pso*; *Sc* with 111 *pso* ..... *O. serratotuberculata* (Stach 1933) [d. *pso*: 32/122/33343]

11. Furcal area without cuticular fold, *D*-type ..... *alnus*-group 39

– Furcal area with or without cuticular fold – *A*-, *S*- or *H*-type 12

12. Furcal remnant of *A*-type ..... *absoloni*-group 45

– Furcal remnant of *S*- or *H*-type ..... *groenlandica*-group 54

13. Head with 2+2 *pso* on posterior edge 14

– Head with 3+3 *pso* on posterior edge 15

14. *Abd*. I–III with 5(6)55 dorsal *pso* ..... *O. ussurica* Shveenkova et Babenko 2019 [d *pso*: 42/144/5(6)5554]

– *Abd*. I–III with 444 dorsal *pso* ..... *O. kedroviensis* Shveenkova et Sun 2019 [d *pso*: 42/144/44454]

15. *Abd*. I–III with 555 dorsal *pso* ..... *O. chankaensis* Sun et Wu 2012 [d. *pso*: 43/144/5556(7)4(5–6)]

– *Abd*. I–III with 544 dorsal *pso* 16

16. *Abd*. IV–V with 53 dorsal *pso* ..... *O. montana* Weiner 1994 [d. *pso*: 43/144/54453]

– *Abd*. IV–V with 64 dorsal *pso*...*O. pseudomontana* Sun et Wu 2012 [d. *pso*: 43/144/54464]

17. Head with 2+2 *pso* on posterior edge 18

– Head with 3+3 *pso* on posterior edge 22

18. *Abd*. I–III with 444 dorsal *pso* ..... *O. marcuzzii* (Cassagnau 1968) [d. *pso*: 42/144/44454]

– *Abd*. I–III with different number of dorsal *pso* 19

19. Tibiotarsi with 11 distal setae .... *O. ambigua* Babenko et Fjellberg 2015 [d. *pso*: 42/133/33354]

– Tibiotarsi with 9 or fewer setae in distal whorls 20

20. Tibiotarsi with 9 distal setae .... *O. ossetica* sp. n. [d. *pso*: 42/244/5.7.7.10.6]

– Tibiotarsi with 6 distal setae..... 21

21. *Th*. I–III with 133 *pso*..... *O. humicola* Shvejonkova et Potapov 2012 [d. *pso*: 42/133/33354]

– *Th*. I–III with 144 *pso*..... *O. kremenitsai* Shvejonkova et Potapov 2012 [d. *pso*: 42/144/33354]

22. Tibiotarsi with 9 distal setae .... *O. igori* Shveenkova et Babenko 2022 [d. *pso*: 43/133/44354]

– Tibiotarsi with 11 distal setae 23

23. *Th*. I–III with 133 *pso* .... *O. tatianae* Shveenkova et Babenko 2022 [d. *pso*: 43/133/44(5)364]

– *Th*. I–III with 144 *pso* .... *O. montivaga* Shveenkova et Babenko 2022 [d. *pso*: 43/144/44354]

24. Anal spines in a form of spiniform setae..... ..... *O. pseudoraxensis* (Nosek et Christian 1983) [d. *pso*: 32/133/33343]

– Anal spines of normal shape 25

25. *Abd*. VI with a band of coarser granulation..... ..... *O. differens* (Bagnall 1949) [d. *pso*: 32/133/33343]

– Tergum of *Abd*. VI with homogenous granulation 26

26. *Abd*. I–III with 222 dorsal *pso* .... *O. melittae* (Christian 1993) [d. *pso*: 32/022/22243]

– *Abd*. I–III with other set of dorsal *pso*..... 27

27. *Th*. III with lateral *ms* present 28

– *Th*. III without lateral *ms*..... 32

28. Ventral abdominal *pso* present at least on *Abd*. IV..... 29

– *Abd*. I–IV without ventral *pso* 30

29. *Abd*. I–IV with 1111 ventral *pso*; *Sc* I–III with 122 *pso*..... *O. olenae* (Weiner et Kaprus' 2014) [d. *pso*: 32/133/33343]

– *Abd*. I–IV with 0001 ventral *pso*; *Sc* I–III with 111 *pso*..... *O. irinae* (Thibaud et Taraschuk 1997) [d. *pso*: 32/133/33343]

30. *AIIIO* with 4 papillae..... ..... *O. sophyae* (Weiner et Kaprus' 2014) [d. *pso*: 32/133/33343]

– *AIIIO* with 5 papillae.....31

31. *Th*. I without *pso*..... ..... *O. raxensis* (Gisin 1961) [d. *pso*: 32/033/33343]

– *Th*. I with 1+1 *pso* .... *O. imosolica* Shveenkova et Babenko 2021 [d. *pso*: 32/133/33343]

32. *Th*. I–III with 133 *pso* ....*O. caucasica* (Weiner et Kaprus' 2014) [d. *pso*: 32/133/33343]

– *Th*. I–III with 022 *pso* 33

33. *Abd*. IV with 1+1 ventral *pso* present..... .....*O. eremia* (Kaprus' et al. 2002) [d. *pso*: 32/022/22343]

– Ventral *pso* on abdomen absent..... 34

34. *Sc* I–III with 111 *pso* .... *O. hackeri* (Christian 1986) [d. *pso*: 32/022/33343]

– *Sc* I–III without *pso*; the same number of dorsal *pso*..... .....*O. anocellata* sp. n. [d. *pso*: 32/022/33343]

35. Anal spines absent; tibiotarsi with 7 distal setae. ..... *O. stojkoae* (Shvejonkova et Potapov 2012) [d. *pso*: 32/133/33343]

– Anal spines present..... 36

36. Lateral *ms* on *Th*. III present; tibiotarsi with 5 distal setae..... 37

– Lateral *ms* on *Th*. III absent; tibiotarsi with more distal setae..... 38

37. *Th*. II–III with 33 dorsal *pso* ....*O. chatyrdagi* (Kaprus' et al. 2002) [d. *pso*: 32/033/33343]

– *Th*. II–III with 22 dorsal *pso* ..... *O. steposa* (Kaprus' et al. 2002) [d. *pso*: 32/022/33343]

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ACKNOWLEDGMENTS

We express our sincere thanks to Olga Makarova (Institute of Ecology & Evolution RAS), Natalia Kuznetsova, Mikhail Potapov (MSPU), Anna Geraskina (Center for Forest Ecology and Productivity RAS), Anna Saraeva (Forest Research Institute, Karelian Research Center, Petrozavodsk), Alexander Kuprin (Federal Scientific Center of the East Asia Terrestrial Biodiversity, FEB RAS), Alexander Komisarenko (Vladivostok), Albina Burnasheva (IBPC SB RAS, Yakutsk), Mikhail Berezin (Moscow Zoo), and Igor' Lavrov (a speleologist from Perm) for their extensive collections, as well as to Anna Bokova (MSPU) for the initial sorting of samples and other cooperation. We are also much indebted to Sergei Golovatch (Institute of Ecology & Evolution RAS) for his editing an early English draft.

AUTHOR CONTRIBUTIONS

The study is the result of the joint work of all of its co-authors. At the same time, the figures for *O. anocellata* sp. n., *O. octosetosa* sp. n., *O. ligni* sp. n. and *O. yakutica* sp. n. were prepared by Yu. Shveenkova, for *O. subnuda* sp. n., *O. cavicola* sp. n., *O. neglecta* sp. n. and *primorica* sp. n. by A. Babenko, and for *O. ossetica* sp. n. by M. Antipova.

FUNDING

Two last authors were partially financed through the Russian Science Foundation (RSF) grant 22-24-00162.

COMPLIANCE WITH ETHICAL STANDARDS

The article does not contain any studies involving animals in experiments performed by the authors.

CONFLICT OF INTEREST

The authors of this work declare that they have no conflicts of interest.

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ДЕВЯТЬ НОВЫХ ВИДОВ РОДА *OLIGAPHORURA* BAGNALL 1949 (COLLEMBOLA, ONYCHIURIDAE) ИЗ РОССИИ

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На материале из разных регионов Российской Федерации описаны девять новых видов рода *Oligaphorura*. Три вида, *O. ossetica* sp. n., *O. anocellata* sp. n. и *O. octosetosa* sp. n., вероятно, являются кавказскими эндемиками. Из них первый относится к группе *marcuzzii* и отличается от других видов группы увеличенным числом дорсальных и субкоксальных псевдоцелей (*pso*). *Oligaphorura anocellata* sp. n., из группы *differens*, имеет тот же набор дорсальных *pso*, что и *O. hackeri* (Christian), но лишена субкоксальных *pso*. Последний описанный здесь кавказский вид – *O. octosetosa* sp. n. (группа *daii*) – характеризуется наличием восьми дистальных щетинок на тибиотарзусах, четырех папилл в *AIIIO* и только одной пары дорсальных псевдоцелей на втором сегменте груди. *Oligaphorura ligni* sp. n., из группы *absoloni*, описан по материалам из южного Приморья. Его можно отличить от близкородственного китайского вида *O. shifangensis* Liu et Sun за счет более длинного эмподиального придатка, маленького *PAO* и небольшого числа вентральных *psx*. Остальные пять описанных видов относятся к группе *groenlandica* и встречаются в разных частях Восточной Палеарктики. *Oligaphorura yakutica* sp. n. наиболее сходен с *O. duocellata* Babenko et Fjellberg из Магаданской области благодаря наличию двух пар дорсальных псевдоцелей на первом сегменте груди и своеобразному строению фуркальной области. Его легко отличить от *O. duocellata* благодаря полному отсутствию вентральных псевдоцелей на сегментах брюшка. *Oligaphorura subnuda* sp. n. с п-ова Таймыр, Северная Сибирь, отличается от неарктического *O. nuda* (Fjellberg) наличием вентральных псевдоцелей на четвертом брюшном сегменте. *Oligaphorura cavicola* sp. n., вид, обнаруженный в пещере на Северном Урале, характеризуется повышенным числом дорсальных псевдоцелей на всех брюшных сегментах (44454). В отличие от близких видов с таким же количеством брюшных псевдоцелей, таких как *O. nuda* (Fjellberg) или *O. interrupta* (Fjellberg), он имеет пару псевдоцелей на первом грудном сегменте. *Oligaphorura neglecta* sp. n., широко распространенный в северо-восточной Палеарктике, очень похож на циркумполярный вид *O. groenlandica* (Tullberg). Эти два вида отличаются наличием/отсутствием кутикулярной складки в фуркальной области и относительной длиной осевых хет на пятом брюшном сегменте. Наконец, *O. primorica* sp. n., с Дальнего Востока, можно сравнить с несколькими корейскими видами, описанными Weiner (1994). Все они имеют своеобразный тип укрупненной грануляции, покрывающей переднюю часть тела и последний брюшной сегмент, и, вероятно, представляют собой изолированную региональную группу близкородственных видов. Новый вид характеризуется тем же количеством псевдоцелей, что и *O. koreana* (Weiner), но отличается от последнего вида (и других близких видов региона) сильной дифференцированностью дорсального хетома. Представлен также обновленный определительный ключ всех известных на сегодняшний день 77 видов рода *Oligaphorura*.

Ключевые слова: таксономия, Oligaphorurini, Кавказ, Урал, северная и северо-восточная Палеарктика, Дальний Восток, определительный ключ