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# New Species of the Primitive Oribatid Mite Families Brachychthoniidae and Phthiracaridae (Acariformes, Oribatida) from the Caucasus

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**Abstract**—Seven new species and a new subspecies of the families Brachychthoniidae Thor, 1934 and Phthiracaridae Perty, 1841 from the Caucasus are described: *Liochthonius murtazalievi* sp. n., *Sellnickochthonius ilyinae* sp. n., *Atropacarus achmedovi* sp. n., *A. kremenitsai* sp. n., *A. yarovenkoi* sp. n., *A. chernovae* sp. n., *A. obesus minimus* ssp. n., and *Steganacarus* (*Tropacarus*) *adelaidae* sp. n., and also the species *Synchthonius elegans* Forsslund, 1957, *Atopochthonius maimaensis* Grishina, 1971, and *Atopochthonius artiodactylus* Grandjean, 1949 from the Caucasus are figured.

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Several oribatid species and subspecies new to science were found in the fauna of the Caucasus in the recent years; some of them are described below.

All the measurements are given in micrometers.

## FAMILY **BRACHYCHTHONIIDAE** THOR, 1934

In the region investigated, representatives of 7 genera and 42 species and subspecies of the family were recorded, including *Brachychthonius* Thor, 1934 (7 species), *Eobrachychthonius* Jacot, 1936 (3 species), *Neobrachychthonius* Moritz, 1976 (1 species), *Poecilochthonius* Balogh, 1943, *Liochthonius* Hammen, 1959 (15 species), *Sellnickochthonius* Krivolutsky, 1964 (11 species and 2 subspecies), and *Synchthonius* Hammen, 1952 (1 species). The list of species and their ranges (according to Subías, 2004, 2011) and also distribution in the Caucasus are given in the *Catalog of Oribatid Mites of the Caucasus* (Shtanchaeva and Subías, 2010). It is supplemented by the new data on representatives of the family given below.

*Brachychochthonius jugatus* Jacot, 1958 (sensu Chinone et Aoki, 1972) was described as a new species, *Sellnickochthonius chinonei* Shtanchaeva et Subías, 2010 (Shtanchaeva and Subías, 2010), because *B. jugatus* Jacot, 1938 is a junior synonym of *B. berlesei* Willmann, 1928, and the description and figure in the paper by Chinone and Aoki (1972) refer to a different species which we have described as *S. chinonei*; we found this species in Daghestan (Tsumilukh) and Azerbaijan (Hyrkanskii Reserve, Talysh).

The genus *Synchthonius* is represented by a single species, *Synchthonius elegans* Forsslund, 1956 (Fig. 1); our specimens differ in a somewhat smaller size (body length 190) than that given in the original description (215–235).

Specimens of *Atopochthonius* sp. (Tsumilukh, Zakataly) mentioned in the *Catalog of Oribatid Mites of the Caucasus* (Shtanchaeva and Subías, 2010) belong to *A. artiodactylus* Grandjean, 1949 (Figs. 2, *2*, *3*). *Atopochthonius maimaensis* Grishina, 1971 (Fig. 2, *1*), described from the piedmont of Altai, was also found in the Caucasus (Talysh, Bzyb', Satapli).

Some species included in the catalog are new to science. Their descriptions are given in this paper.

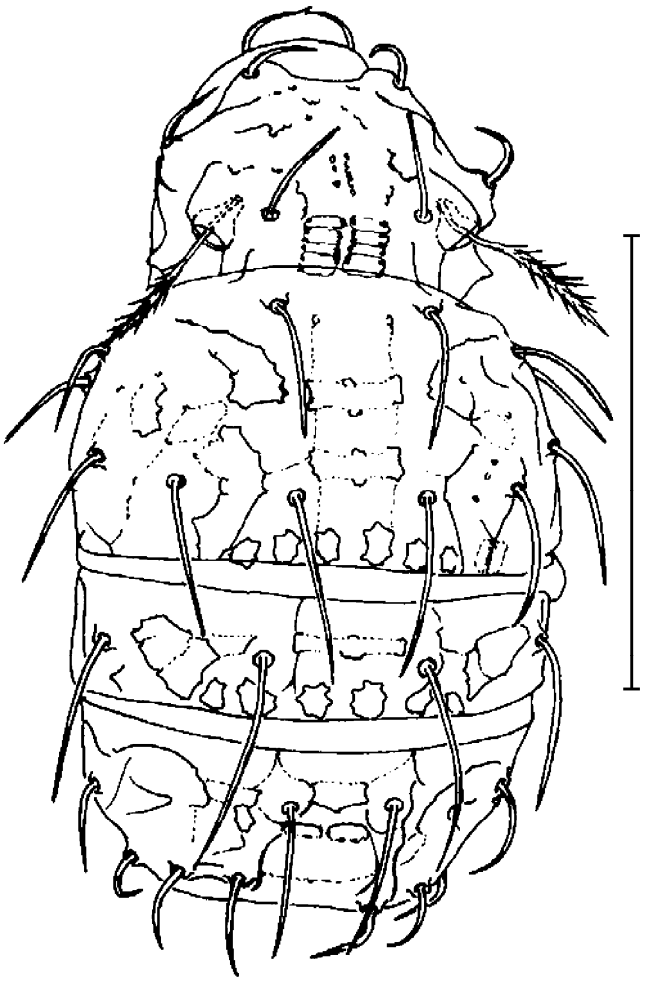

**Fig. 1.** *Synchthonius elegans*, dorsal side. Scale 100 μm.

### *Liochthonius murtazalievi*
Shtanchaeva et Subías, sp. n. (Fig. 3)

**Material.** Azerbaijan: Zakatalskii Reserve, environs of Matsekh and Kabizdere villages, beech and hornbeam forest, 800–1100 m above sea level (holotype and 28 paratypes), collected by U.Ya. Shtanchaeva and R.A. Murtazaliev, 05.VII.2004; Hyrkanskii Reserve, "Az[erbaijan] Branch of the Institute of Subtropical Cultures" Vill., floodland liana forest, Ruscus leaf litter (1 specimen), collected by U.Ya. Shtanchaeva and R.A. Murtazaliev, 02.VII.2004. In the *Catalog of Oribatid Mites of the Caucasus* (Shtanchaeva and Subías, 2010), this species is included as *Liochthonius* sp. 1.

The holotype (in lactic acid) and some paratypes are deposited in the Complutense University in Madrid, and paratypes, in the Caspian Institute of Biological Resources, Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala.

**Description.** Body length 200 (195–208), width 120 (119–131). Integument yellow, mainly smooth; sculptural pattern present at base of prodorsum and on first sclerite.

Dorsal side (Fig. 3, *1*). Length of proterosoma 70. Prodorsum tuberose in lateral view (Fig. 3, *3*); in dorsal view, with carinae in anterior part of rostrum. Central part of prodorsum with two longitudinal folds resembling lamellae. Lamellar and interlamellar setae short, fine, slightly curved; rostral setae slightly longer than others; exobothridial setae thickened, poorly visible in dorsal view. Base of prodorsum with two longitudinal lines of small pale spots. Trichobothria (29) fusiform, bifurcate apically, with parallel rows of short setae.

Dorsal surface with 3 sclerites, first sclerite with several distinct large oval pale spots (including three unpaired medial spots); two other sclerites without pattern. Body surface without pore-like structures. Folds of integument in dorsal view undulate; their number significantly greater on last sclerite. Dorsal setae (10–14) needle-shaped, smooth, slightly bent; longest setae (17–19) situated in medial part of second sclerite. Suprapleural sclerites absent (Fig. 3, *3*).

Ventral side (Fig. 3, *2*). Structure of ventral side typical of *Liochthonius*. Epimeral formula 3-1-3-4. Genital (43 × 30) and anal (40 × 22) openings large, elongate, anal opening narrow. Genital, aggenital, anal, and adanal setae constituting 7, 1, 3, and 3 pairs, respectively. Adanal seta $ad_2$ significantly larger than others. Additionally, single pair of peranal (*pe*) setae present (designation after Moritz, 1976).

Leg with single claw.

**Differential diagnosis.** *Liochthonius strenzkei* Forsslund, 1963 is the most morphologically similar species. The new species differs from *L. strenzkei* in the fine lamellar and interlamellar setae; the presence of longitudinal folds in the central part of the prodorsum and three unpaired spots in the medial part of the first sclerite; and in the relatively larger size: its maximum value for *Liochthonius strenzkei* (195) is the minimum value for the new species.

**Etymology.** The species is named after Ramazan Alibegovich Murtazaliev (Mountain Botanic Garden of the Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala), to whom the authors are

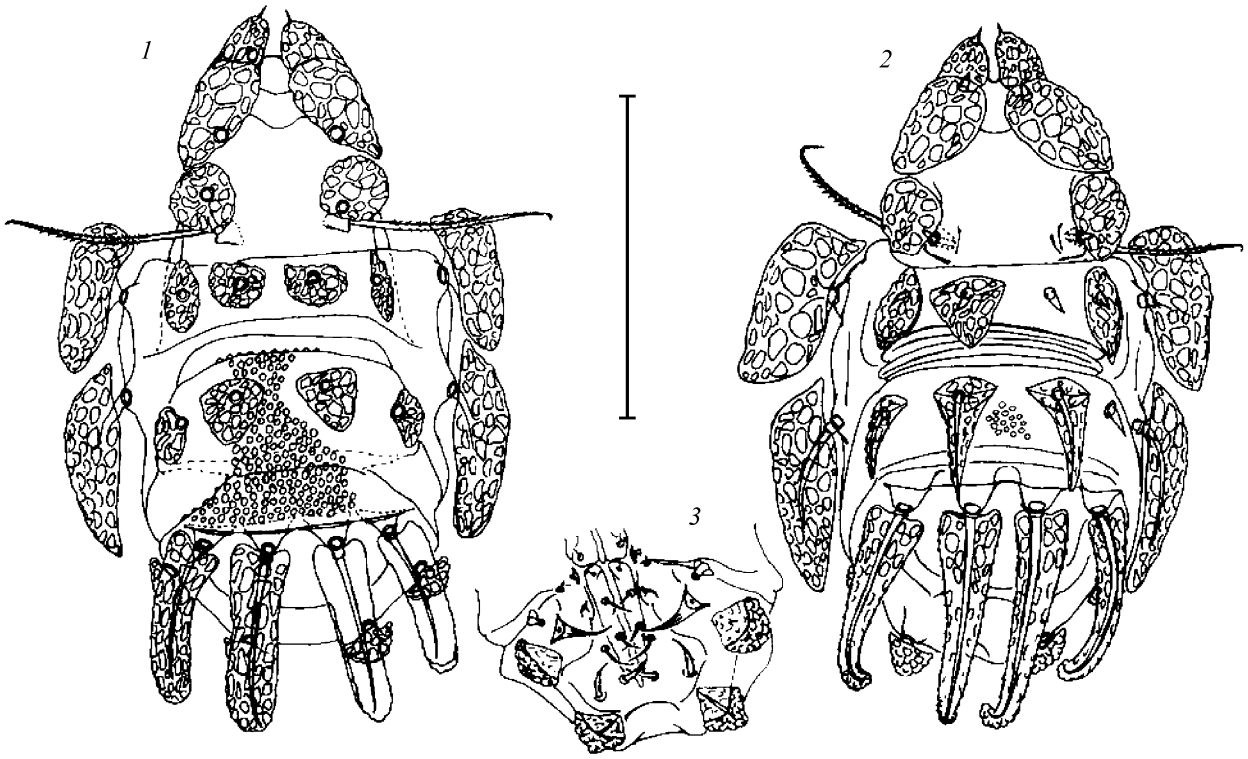


**Fig. 2.** *Atopochthonius maimaensis* (*1*) and *Atopochthonius artiodactylus* (*2*, *3*): (*1*, *2*) dorsal side; (*3*) anal area. Scale 100 μm.

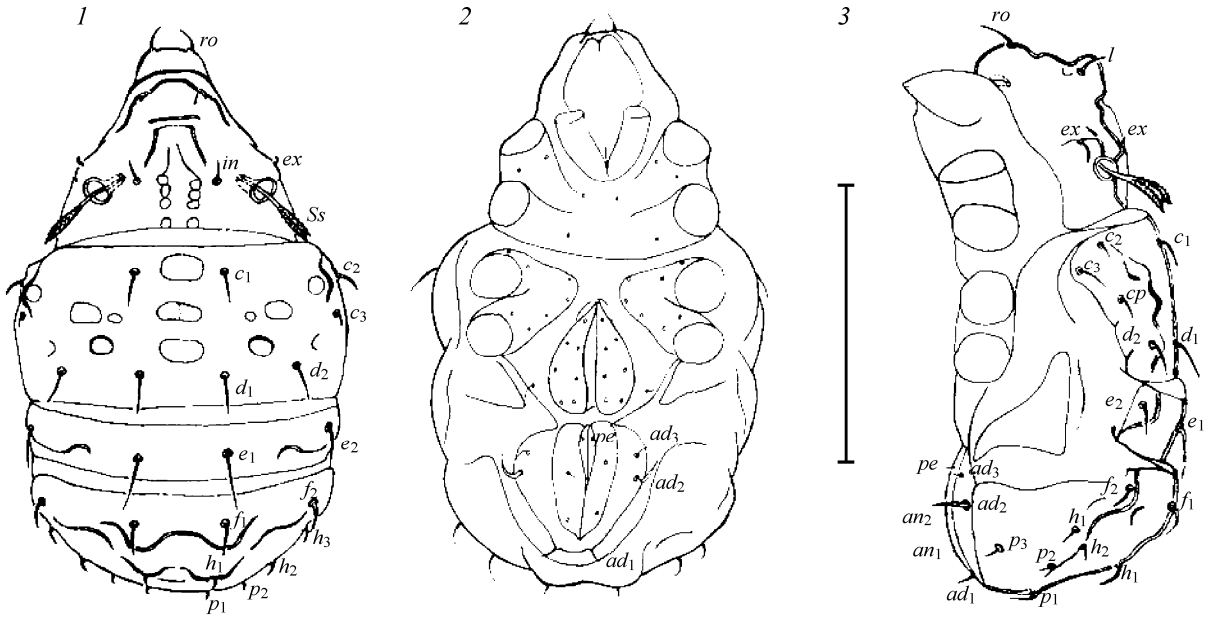


**Fig. 3.** *Liochthonius murtazalievi* sp. n.: (*1*) dorsal view; (*2*) ventral view; (*3*) lateral view. Scale 100 μm.

grateful for his inestimable help in collecting the material.

### *Sellnickochthonius ilyinae*
Shtanchaeva et Subías, sp. n. (Fig. 4)

**Material.** Azerbaijan, deciduous forest on the slopes of E Talysh, soil under chestnut-leaved oak and ironwood (holotype and 2 paratypes), collected by U.Ya. Shtanchaeva and R.A. Murtazaliev, 1.VII.2004; [Russia. Daghestan.—Ed.] Akhty, Chekhi-Chai River valley, 2450 m above sea level, dry steppefied subalpine meadow, collected by U.Ya. Shtanchaeva, 23.IX.1984 (1 specimen); Khivsky District, Mezhgyul, beech and oak forest, leaf litter, 500–800 m above sea

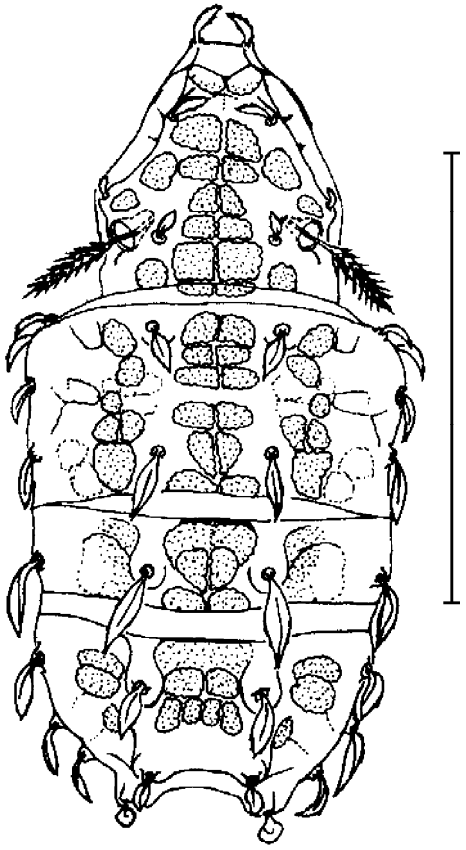

**Fig. 4.** *Atropacarus lyinaei* sp. n., dorsal view. Scale 100 μm.

level, collected by E.V. Ilyina, 18.V.2003 (1 specimen); Nyugdi, Samur River delta, dry subtropical forest (silver poplar, beech, smilax, silk vine), collected by E.V. Ilyina, 06.VI.2003 (2 specimens); Pyatigorsk, Mt Mashuk, forb meadow, 993 m above sea level, collected by U.Ya. Shtanchaeva and R.A. Murtazaliev, 30.VI.2003 (1 specimen); Azerbaijan, Zakatalskii Reserve, environs of Matsekh and Kabizdere villages, beech and hornbeam forest, 800–1100 m above sea level, collected by U.Ya. Shtanchaeva and R.A. Murtazaliev, 05.VII.2004 (3 specimens).

The holotype and paratypes are deposited in the Complutense University in Madrid, and the rest of the type series, in the Caspian Institute of Biological Resources, Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala.

**Description.** Body length 170 (168–184), width 85 (83–90). Integument pale-yellow, smooth.

Dorsal side (Fig. 4). Length of proterosoma 60. Anterior margin of rostrum straight. Prodorsum covered with paired symmetrical punctate sclerotized areas. All setae of prodorsum (7–10) leaf-shaped, with serrate margins. Bothridia cup-shaped; trichobothria (30–35) fusiform, with well-ciliate long head (20).

Dorsal surface covered with ornament of paired symmetrical punctate sclerotized areas. 14 pairs of leaf-shaped smooth, weakly serrate setae present along margins; medial setae pointed. Longest setae situated on second segment (22), posterior marginal setae short (8–11).

Ventral side. Structure of ventral side typical of the genus. Epimeral formula 3-1-3-4. Genital and anal openings large. Genital, aggenital, anal, and adanal setae constituting 7, 1, 3, and 3 pairs, respectively. All anogenital setae fine, smooth.

Leg with single claw.

**Differential diagnosis.** In the structure of the dorsal surface, most similar to *Sellnickochthonius fuentesi* Ruiz, Subías et Kahwach, 1991 and *S. meridionalis* (Bernini, 1973); in the shape of notogastral setae, to *L. honestus* (Moritz, 1976). The new species differs from *S. meridionalis* in the narrower and longer body, and also in the smooth surface of notogastral setae, serrate only along margins, whereas in *S. meridionalis*, these setae are covered with small teeth over the entire convex area of the surface. The new species differs from *L. honestus* in the ornament of the dorsal surface (in *L. honestus*, notogastral sclerotized areas have different shape, they are larger and unpaired in the medial part); in the straight shape of the rostrum without prominence, typical of *L. honestus*; and in the significantly shorter prodorsal setae. In contrast to *S. fuentesi*, the new species possesses a punctate sclerotized notogastral areas, some of them of different shape, and also pointed notochaetae, whereas in *S. fuentesi*, the integument is impunctate, the notochaetae have smooth margin and more rounded apices.

**Etymology.** The species is named after Elena Vyacheslavovna Ilyina (Biological Museum, Daghestan State University, Makhachkala), who collected the material in Daghestan.

## Family **PHTHIRACARIDAE** Perty, 1841

In the region investigated, representatives of 8 genera and subgenera of this family were recorded: *Atropacarus* Ewing, 1917 (16 species and 1 subspecies), *Hoplophorella* Berlese, 1923 (1 species), *Hoplophthiracarus* Jacot, 1933 (1 species), *Notophthiracarus*

Ramsay, 1966 (4 species), *Phthiracarus* (*Phthiracarus*) Perty, 1841 (12 species and 1 subspecies), *Phthiracarus* (*Archiphthiracarus*) Balogh et Mahunka, 1979 (18 species), *Steganacarus* (*Steganacarus*) Ewing, 1917 (5 species and 2 subspecies) and *Steganacarus* (*Tropacarus*) Ewing, 1917 (7 species and 1 subspecies).

Additionally, some taxa new to science were revealed; these descriptions are given below.

***Atropacarus achmedovi*** Shtanchaeva et Subías, sp. n. (Fig. 5)

**Material.** Azerbaijan, deciduous forest (chestnut-leaved oak, ironwood, elderberry, common fig, maple) on the slopes of E Talysh (holotype and 1 paratype), collected by U.Ya. Shtanchaeva and R.A. Murtazaliev, 1.VII,2004; [Russia. Daghestan.—Ed.] Gunib, birch forest with prevalence of *Betula verrucosa*, collected by A.M. Musaev and R.A. Murtazaliev, 19.V.2003 (1 specimen); Khivsky District, Mezhgyul, beech and oak forest, leaf litter, 500–800 m above sea level, collected by E.V. Ilyina,18.V.2003 (9 specimens); Georgia, Khashuri, oak forest, collected by D.A. Krivolutsky, 1973 (2 specimens). In the *Catalog of Oribatid Mites of the Caucasus* (Shtanchaeva and Subías, 2010), this species is included as *Atropacarus* sp. 1.

The holotype (Fig. 5, *1*) (in lactic acid) is deposited in the Complutense University in Madrid, and paratypes, in the Caspian Institute of Biological Resources, Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala.

**Description.** Length of proterosoma 213 (160–215), that of hysterosoma 432 (320–450). Integument yellowish brown, with foveolate structure.

Prodorsum with weak median carina. Rostral setae more (Fig. 5, *1*, *2*) or less (Fig. 5, *3*) widened distally. Lamellar and interlamellar setae needle-shaped, subequal in length, densely arranged. All chaetae of prodorsum, excluding fine exobothridial setae, weakly serrate. Trichobothria setiform, fine, bent, with distal end slightly widened along outer margin due to characteristic transparent sheath consisting of small short papillae.

Notogaster with 17 pairs of notochaetae (one specimen with 18 pairs), medial setae erect, lateral setae recumbent. Shape of notogastral setae varying from slightly widened toward distal end (Fig. 5, *1*) to club-shaped (Fig. 5, *3*); all notochaetae ciliate.

Anogenital area. Structure of ventral side typical of the genus. Genital and anal openings large, approximate. Genital setae usually constituting 7 pairs, but some specimens with 6 (Fig. 5, *2*) or 9 pairs (Fig. 5, *3*); 4 posterior setae well visible, whereas anterior setae very densely arranged and hardly distinguishable. Aggenital, anal, and adanal setae constituting 1, 2, and 3 pairs, respectively. Inner margin of anal-adanal plates with 4 pairs of setae ($ad_1$, $an_1$, $ad_2$, $an_2$), very densely arranged in one line; seta $ad_3$ slightly more distant from margin of plates.

Leg with single claw.

**Differential diagnosis.** The new species is most similar to *Atropacarus platakisi* Mahunka, 1979, differing from the latter in the number of notogastral chaetae (17 pairs, against 16 pairs in *A. platakisi*) and in the proportions of the prodorsal setae (in *A. platakisi*, lamellar and interlamellar setae are significantly finer than rostral setae; lamellar setae are half as long as interlamellar setae; in *A. achmedovi* sp. n., they are subequal in length).

**Etymology.** The species is named in memory of Eldar Gasanovich Akhmedov (Laboratory of Animal Ecology, Caspian Institute of Biological Resources, Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala).

***Atropacarus kremenitsai***
Shtanchaeva et Subías, sp. n. (Fig. 6)

**Material.** [Russia.—Ed.] Kabardino-Balkaria, Bashil', abies forest, 2100 m above sea level, collected by A.M. Kremenitsa, 29.V.2002 (holotype and 7 paratypes). In the *Catalog of Oribatid Mites of the Caucasus* (Shtanchaeva and Subías, 2010), this species is included as *Atropacarus* sp. 2.

The holotype (in lactic acid) is deposited in the Complutense University in Madrid, and paratypes, in the Caspian Institute of Biological Resources, Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala.

**Description.** Length of proterosoma 188 (180–240), of hysterosoma 392 (345–485). Integument yellowish brown, with alveolate structure.

Prodorsum with weakly pronounced median carina. Rostral setae fusiform (Fig. 6, *1*), leaf-shaped in dorsal

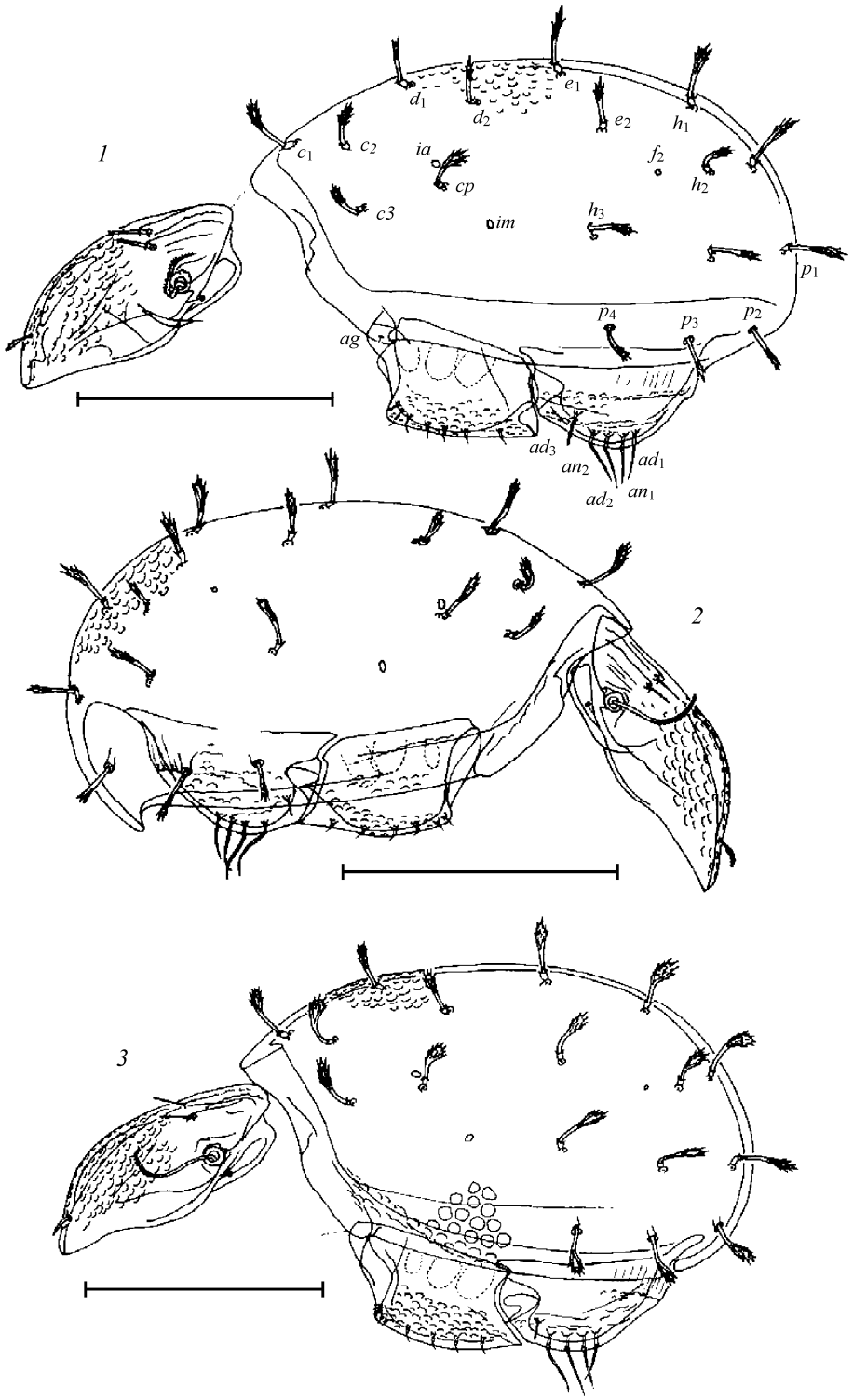


**Fig. 5.** *Atropacarus achmedovi* sp. n., lateral view: (*1–3*) variability in the shape of notogastral setae and chaetotaxy of anal plates. Scale 200 μm.

view (Fig. 6, *2*). Lamellar and interlamellar setae widened, similar in length, densely arranged. All chaetae of prodorsum, except fine exobothridial setae, serrate. Trichobothria setiform, their distal end slightly widened along outer margin due to characteristic transparent sheath consisting of small short papillae.

Notogaster. Sculpture of prodorsum differing in size of cells; meshes on lateral surface significantly larger

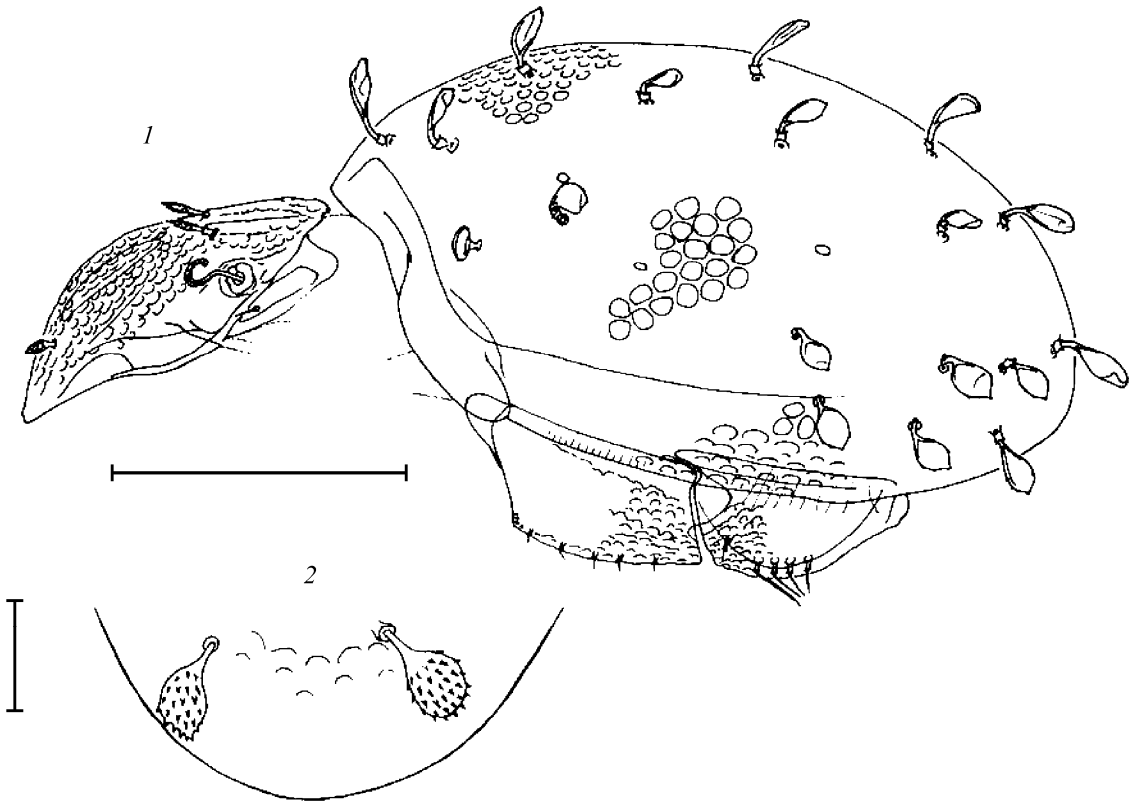


**Fig. 6.** *Atropacarus kremenitsai* sp. n.: (*1*) lateral view; (*2*) part of prodorsum with rostral setae. Scale (μm): *1*, 150; *2*, 25.

than setae on medial part of notogaster. Notogaster with 18 pairs of notochaetae, notogastral setae concave, leaf-shaped, with slightly serrate, nearly smooth margin and smooth surface.

Anogenital area. Structure of ventral side typical of genus. Genital and anal openings large, approximate. Genital setae constituting 9 pairs; 5 of these pairs well visible, of which anterior setae very densely arranged; 4 pairs smallest and hardly distinguishable. Aggenital, anal, and adanal setae constituting 1, 2, and 3 pairs, respectively. Inner margin of anal-adanal plates with 4 pairs of setae ($an_1$, $an_2$, $ad_1$, $ad_2$), very densely arranged in line; setae $ad_3$ small, attached far from margin of plates.

Leg with single claw.

**Differential diagnosis.** The new species is most similar to *Atropacarus cucullatus* Ewing, 1909, differing from the latter in the number of notogastral setae (17 pairs, against 15 pairs in *A. cucullatus*). Lamellar and interlamellar setae are widened in *A. kremenitsai* sp. n. and fine in *A. cucullatus*. Some differences are present in the chaetotaxy of the anal-adanal area: in *A. cucullatus*, adanal setae $ad_2$ are leaf-shaped and situated at a longer distance from the margin of folds, whereas in the new species they are setiform and attached near the inner margin, similarly to the anal setae.

**Etymology.** The species is named in honor of a collembologist, Aleksandr Mikhailovich Kremenitsa (Sanitary Epidemiological Station, Kislovodsk), who had provided the material for examination.

### ***Atropacarus yarovenkoi*** Shtanchaeva et Subías, sp. n. (Fig. 7)

**Material.** [Russia. Daghestan.—Ed.] Tsumilukh, pine forest, 1700 m above sea level; collected by U.Ya. Shtanchaeva, 20.VIII.1984 (holotype and 3 paratypes); Samur, Samur River delta, dry subtropical liana forest (elm, oak, hawthorn, hornbeam, greenbrier, ivy, silk vine), collected by U.Ya. Shtanchaeva, 10.VIII.1996 (1 specimen). In the *Catalog of Oribatid Mites of the Caucasus* (Shtanchaeva and Subías, 2010), this species is included as *Atropacarus* sp. 3.

The holotype (in lactic acid) is deposited in the Complutense University in Madrid, and paratypes, in the Caspian Institute of Biological Resources, Da-

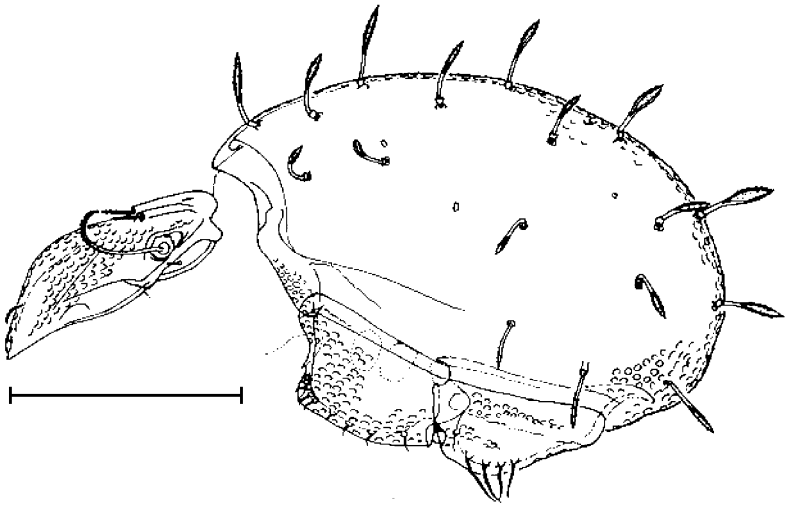

**Fig. 7.** *Atropacarus yarovenkoi* sp. n., lateral side. Scale 170 μm.

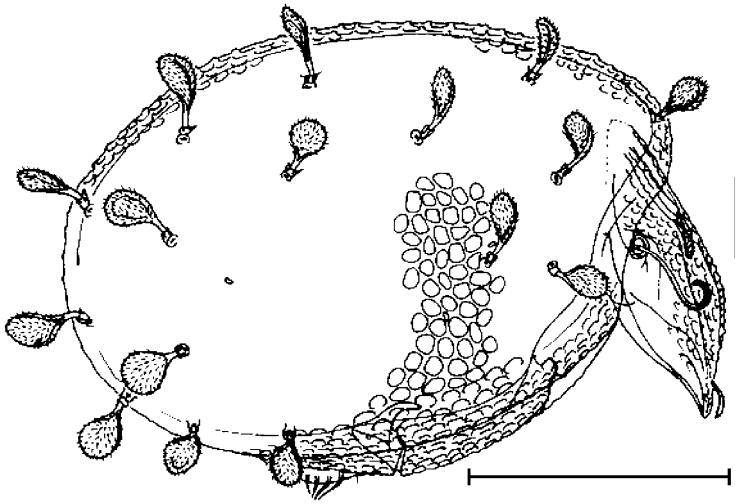

**Fig. 8.** *Atropacarus chernovae* sp. n., lateral view. Scale 180 μm.

ghestan Scientific Center, Russian Academy of Sciences, Makhachkala.

**Description.** Length of proterosoma 193 (140–210), that of hysterosoma 399 (385–530). Integument brown, with reticulate structure.

Prodorsum without distinct median carina. Rostral setae shorter than lamellar and interlamellar setae; the latter similar in length and densely arranged. All chaetae of prodorsum, except for fine exobothridial setae, serrate. Trichobothria setiform, their distal end slightly widened along outer margin due to characteristic transparent sheath consisting of small short papillae.

Notogaster. Sculpture of prodorsum foveolate. Notochaetae constituting 17 pairs, notogastral setae lanceolate (only two pairs of posterior marginal setae not dilated), covered with small teeth.

Anogenital area. Structure of ventral side typical of the genus. Genital and anal openings large, approximate. Genital setae constituting 9 pairs; 5 anterior pairs strongly converging. Aggenital, anal, and adanal setae constituting 1, 2, and 3 pairs, respectively. Inner margin of anal-adanal plates with 4 pairs of large setae ($ad_1$, $an_1$, $ad_2$, $an_2$), very densely arranged in one line; setae $ad_3$ small, their thecae remote from others.

Leg with single claw.

**Differential diagnosis.** The new species is most similar to *Atropacarus substrictus* Niedbala, 1983, differing from the latter in the number of notogastral

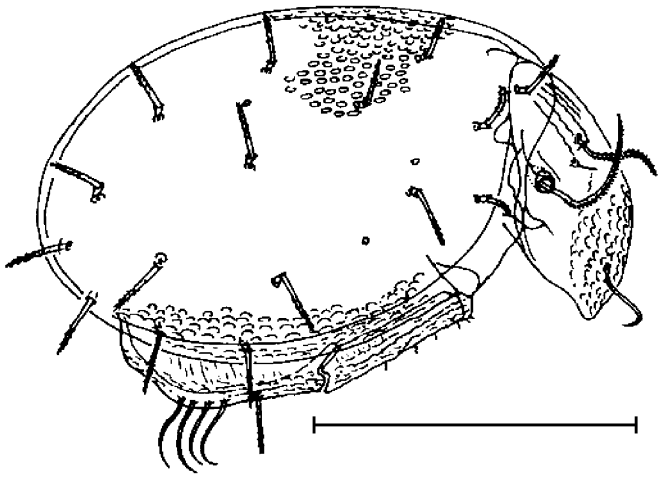

**Fig. 9.** *Atropacarus obesus minimus* ssp. n., lateral view. Scale 150 μm.

setae (17 pairs in *A. yarovenkoi* sp. n., against 18 pairs in *A. substrictus*) and also in the proportions of the setae on the prodorsum (in *A. substrictus*, the lamellar setae are half as long as interlamellar setae, whereas in the new species, these setae are of the same size).

**Etymology.** The species is named in honor of Yury Aleksandrovich Yarovenko (Laboratory of Animal Ecology, Caspian Institute of Biological Resources, Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala).

***Atropacarus chernovae*** Shtanchaeva et Subías, sp. n. (Fig. 8)

**Material.** Abkhazia, Bzyb Gorge, box tree forest, 600 m above sea level, soil layer 0–5 cm, collected by U.Ya. Shtanchaeva and M.Sh. Magomedov, 25.IX.2005 (holotype); Armenia, Dilizhan District, Salakh, 1000 m above sea level, yew and beech forest, collected by M.B. Potapov and N.A. Kuznetsova, 27.X.1987 (14 specimens). In the *Catalog of Oribatid Mites of the Caucasus* (Shtanchaeva and Subías, 2010), this species is included as *Atropacarus* sp. 4.

The holotype is deposited in the Complutense University in Madrid, and paratypes, in the Caspian Institute of Biological Resources, Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala.

**Description.** Length of proterosoma 218 (215–232), that of hysterosoma 443 (430–465). Integument brown, with alveolate structure.

Prodorsum with weakly pronounced median carina. Rostral, lamellar, and interlamellar setae similar in length, lamellar and interlamellar setae densely arranged. Chaetae of prodorsum dilated, with serrate club. Trichobothria setiform, their distal end slightly widened along outer margin due to characteristic transparent sheath consisting of small short papillae.

Notogaster with large meshes of integument, with 16 pairs of large, ciliate, strongly widened, widely rounded, spoon-shaped notogastral setae.

Anogenital area. Structure of ventral side typical of the genus. Genital and anal openings large, approximate. Genital setae constituting 9 pairs (in some specimens, 8 pairs). Aggenital, anal, and adanal setae constituting 1, 2, and 3 pairs, respectively. Inner margin of anal-adanal plates with 4 pairs of large setae very densely arranged in on line; setae $ad_3$ small, their thecae remote from margin of plates.

Leg with single claw.

**Differential diagnosis.** The new species is most similar to *Atropacarus maculosus* (Niedbala, 1983) and *A. echinodiscus* (Mahunka, 1982). It differs from the former species in the number of notogastral setae (16 pairs in *A. chernovae* sp. n. and 19 pairs in *A. maculosus*) and in their shape (apically pointed in *A. maculosus* and broadly rounded in *A. chernovae* sp. n.). In the shape of the notogastral setae, *A. chernovae* sp. n. is similar to *A. echinodiscus*, differing from the latter in the larger notochaetae, widened rostral setae, and another ratio between the size of lamellar and interlamellar setae.

**Etymology.** The species is named in memory of a Russian soil zoologist, Nina Mikhailovna Chernova (Moscow State Pedagogical University, Moscow).

### *Atropacarus obesus minimus*
Shtanchaeva et Subías, ssp. n.
(Fig. 9)

**Material.** Abkhazia, Bzyb Gorge, box tree forest, 600 m above sea level, litter (holotype and paratype) and soil layer 0–5 cm (28 specimens), collected by U.Ya. Shtanchaeva and M.Sh. Magomedov, 25.IX.2005. In the *Catalog of Oribatid Mites of the Caucasus* (Shtanchaeva and Subías, 2010), this species is included as *Atropacarus obesus* ssp.

The holotype (in lactic acid) is deposited in the Complutense University in Madrid, and paratypes, in the Caspian Institute of Biological Resources, Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala.

**Description.** Length of proterosoma 130 (125–220), of hysterosoma 256 (190–390). Integument brown, with foveolate sculpture.

Prodorsum without median carina (Fig. 9). Rostral setae large (39), slightly rough. Lamellar and interlamellar setae ciliate, densely arranged, strongly differing in length and shape; lamellar setae needle-shaped, fine, smooth, short; interlamellar setae setiform, thick, ciliate, thrice as long as lamellar setae. Trichobothria setiform, with long marginal teeth.

Notogaster. Sculpture of notogaster foveolate. Notogastral chaetae constituting 16 pairs, notogastral setae baculiform, finely denticulate.

Anogenital area. Structure of ventral side typical of the genus. Genital and anal openings large, approximate; anal and adanal areas fused, similarly to genital and aggenital areas. Genital setae constituting 9 pairs (6 well visible and 3 very small and closely approximate). Aggenital, anal, and adanal setae constituting 1, 2, and 3 pairs, respectively. Inner margin of anal-adanal plates with 4 pairs of large, smooth, bent setae $an_1$, $an_2$, $ad_1$, and $ad_2$, very densely arranged in one line along inner margin of plates; seta $ad_3$ somewhat shorter, needle-shaped, serrate, significantly remote from the rest.

Leg with single claw.

**Differential diagnosis.** The new subspecies differs from the nominotypical one (in which the length of the prodorsum and notogaster is 202 and 404, respectively) in the slightly smaller size (130 and 256, respectively), finer trichobothria, and the structure of adanal setae $ad_3$.

### *Steganacarus* (*Tropacarus*) *adelaidae*
Shtanchaeva et Subías, sp. n.
(Fig. 10)

**Material.** Georgia, Batumi, Botanic Garden, natural forest area (holotype), collected by D.A. Krivolutsky, 1974; Satapli Reserve, Tskhaltubo District, forest of Kolkhidian type, soil under oak (9 specimens); Khashuri, soil under spruce (8 specimens), collected by D.A. Krivolutsky, 1973; Abkhazia, Bzyb Gorge, box tree forest, 600 m a.s.l., litter (1 specimen), collected by U.Ya. Shtanchaeva and M.Sh. Magomedov, 25.IX.2005; Azerbaijan, Talysh, deciduous forest (chestnut oak, ironwood, elder, common fig, maple) on ridge (9 specimens) and slopes (4 specimens) of peripheral mountain ranges, collected by U.Ya. Shtanchaeva and R.A. Murtazaliev, 01.VII.2004. In the *Catalog of Oribatid Mites of the Caucasus* (Shtanchaeva and Subías, 2010), this species is included as *Steganacarus* (*Tropacarus*) sp.

The holotype (in lactic acid) is deposited in the Complutense University in Madrid, and paratypes, in the Caspian Institute of Biological Resources, Daghestan Scientific Center, Russian Academy of Sciences, Makhachkala.

**Description.** Length of proterosoma 269 (210–345), that of hysterosoma 588 (523–755). Integument brown, with alveolate structure.

Prodorsum with developed median carina. Proterosomal setae smooth, fine, of uniform length, except for short exobothridial setae. Lamellar and interlamellar setae densely arranged. Trichobothria setiform, smooth, slightly widening distally due to characteristic transparent sheath.

Prodorsum with developed median carina. Proterosomal setae fine, smooth, of same length, excluding short exobothridial setae. Lamellar and interlamellar setae densely arranged. Trichobothria setiform, smooth, slightly widened distally due to characteristic transparent sheath consisting of small short papillae.

Notogaster with developed dorsal carina (Fig. 10, *2*), anterior margin of notogaster forming large prominence overhanging proterosoma. Sculpture

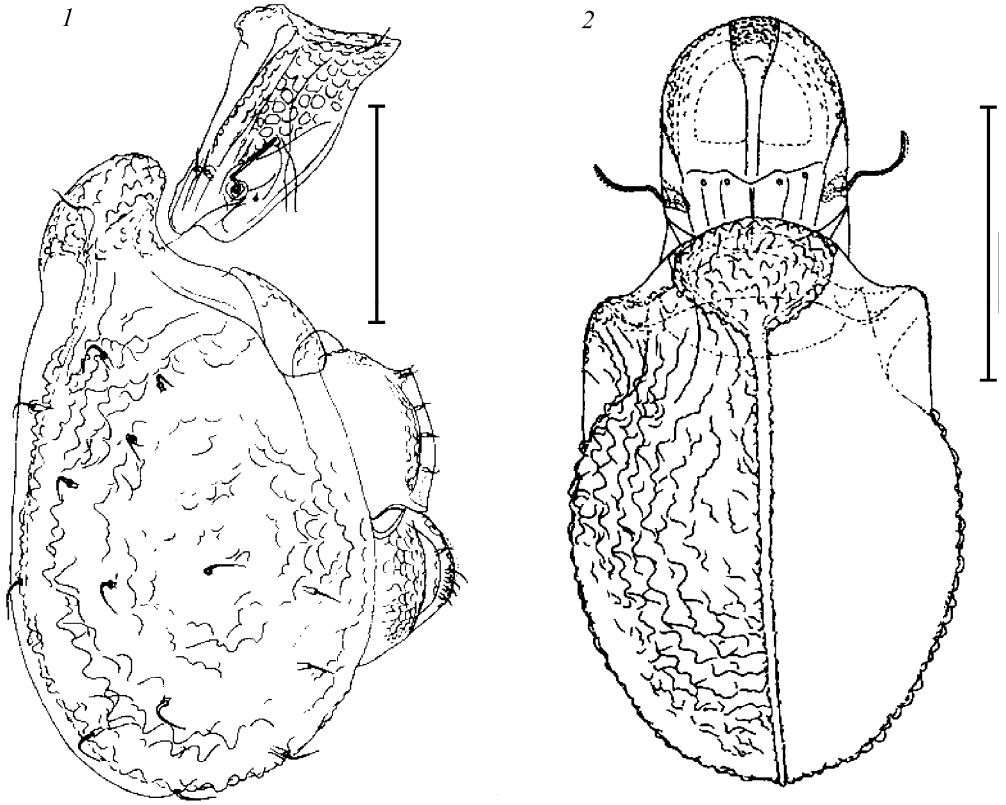


**Fig. 10.** *Steganacarus* (*Tropacarus*) *adelaidae* sp. n.: (*1*) lateral view; (*2*) dorsal view. Scale 250 μm.

of integument rough, tuberculate-foveate. Notogaster with 15 pairs of smooth setiform, mainly bent notochaetae.

Anogenital area. Structure of ventral side typical of genus. Genital and anal openings large, approximate; anal and adanal areas fused, similarly to genital and aggenital areas. Genital setae constituting 9 pairs (in some specimens, 7 or 8 pairs); 4 large anterior pairs, situated along margin of genital folds, well visible; other setae small, densely arranged, hardly visible, situated on anterior margin of genital folds. Aggenital, anal, and adanal setae constituting 1, 2, and 3 pairs, respectively. Inner margin of anal-adanal plates with 4 pairs of smooth, bent setae $an_1$, $an_2$, $ad_1$, and $ad_2$, very densely arranged in one line along inner margin of plates; first of these setae longest, seta $ad_3$ somewhat shorter, attached at slightly longer distance from margin of plates.

Leg with single claw, tarsal setae curled.

**Differential diagnosis.** The new species is most similar to *Steganacarus* (*Tropacarus*) *grandjeani* Mahunka, 1977 and *S.* (*T.*) *pulcherrimus* Berlese, 1887 due to the presence of the anterior notogastral prominence. It differs from *S.* (*T.*) *grandjeani* in the smaller size (the length of the prodorsum in *S.* (*T.*) *grandjeani* is 486–567, that of the notogaster, 906–1130); a less bent notogastral prominence (in the new species, this prominence projects significantly farther); in a rougher sculpture of the notogaster; in the shape of trichobothria, slightly more widened as compared to those of *S.* (*T.*) *grandjeani*. The new species differs from *S.* (*T.*) *pulcherrimus* in the presence of rough tuberculate-foveate sculpture of the notogaster and in the arrangement of setae $ad_3$.

**Etymology.** The species is named in memory of the Russian acarologist Adelaida Dmitrievna Petrova-Nikitina (Moscow State University, Moscow).

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