

New taxa of oribatid mites of the family Liacaridae (Acariformes: Oribatida) from the Caucasus

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In this paper new taxa belonging to the family Liacaridae from the Caucasus (Georgia) are described: a new subgenus and species *Adoristes* (*Gordeeviella*) *krivolutskyi* subg. n., sp. n. and a new species *Liacarus* (*Liacarus*) *longipilis* sp. n. The new subgenus *Adoristes* (*Gordeeviella*) differs from *Adoristes* (*Adoristes*) Hull, 1916 by the shape of its sensilla, with the tip sharply pointed, and of its lamellae, without cuspis. The new species *Liacarus* (*L.*) *longipilis* differs from the rest of species of *Liacarus* by the presence of very long notogastral setae.

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1. Introduction

Studying some samples of Transcaucasian oribatid mites from Batumi (Georgia), two new species of oribatid mites were discovered, one of them belonging to a new subgenus: *Adoristes* (*Gordeeviella*) *krivolutskyi* subg. n., sp. n. and *Liacarus* (*Liacarus*) *longipilis* sp. n., both described below. With these new findings, 24 species of oribatid mites belonging to the family Liacaridae are known from the Caucasus, belonging to the following genera (and subgenera): *Liacarus* (*Liacarus*) Michael, 1898 (11 species), *Liacarus* (*Dorycranosus*) Woolley, 1969 (7 species), *Adoristes* (*Adoristes*) Hull, 1916 (2 species), *Adoristes* (*Gordeeviella* subg. nov.) (1 species) and *Birsteinius* Krivolutsky, 1965 (3 species) (Shtanchaeva, 2008). Systematic order of the family follows that of Subías (2004).

2. Taxonomy

2.1. *Adoristes* (*Gordeeviella*) subg. n.

Type species. *Adoristes* (*Gordeeviella*) *krivolutskyi* sp. n.

Diagnosis. Sensillus fusiform, distal portion long with the tip sharply pointed. Lamellae virtually without cuspis, without tooth. Lamellar setae inserted on lamellae very close to prodorsal surface. Without translamella. Anterior margin of notogaster slightly concave. Notogaster bearing eleven pairs of short notogastral setae. Epimeral formula 3:1:3:3. Five pairs of genital setae. Adanal lyrifissures *iad* situated in paranal position. Tridactylous legs.

Description. Rostrum rounded with a median swelling. Rostral setae smooth. Lamellae long and broad, converging and without translamella;

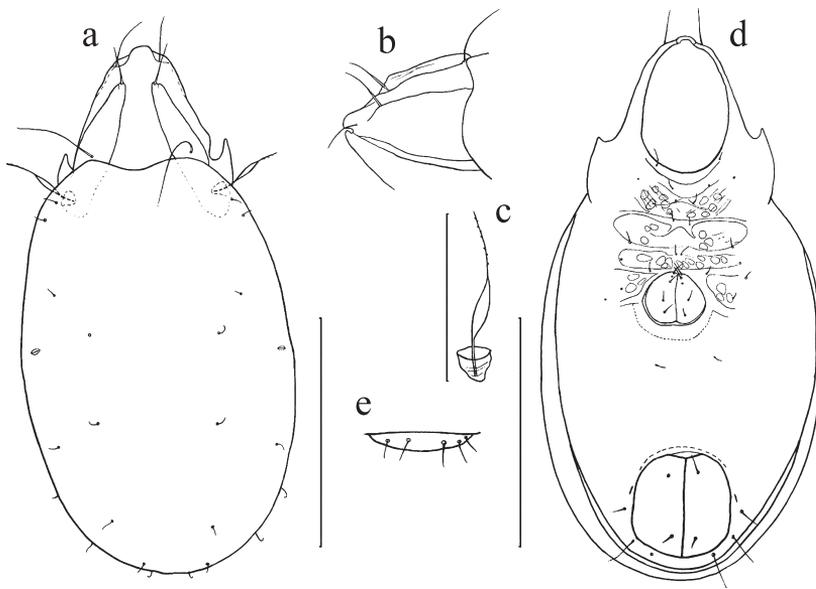


Fig. 1. *Adoristes (Gordeeviella) krivolutskyi* subg. n., sp. n. (holotype). – a. Dorsal view. – b. Lateral view of prodorsum. – c. Sensillus. – d. Ventral view. – e. Lateral view of genital plates. Scale bar 150 μ m (except in c and e 100 μ m).

Lamellar cusps barely insinuated and without tooth. Lamellar setae are slightly stronger than rostral setae reaching rostral margin and inserted in the distal edge of the lamellae, almost over the prodorsal surface. Interlamellar setae are smooth and almost as long as lamellae. Bothridium hidden by the anterior margin of the notogaster. Sensillus shaped as is usual within the genus with its head fusiform and smooth with a length similar to that of tail and with a long distal portion sharply pointed and slightly barbed. Notogaster elliptical and elongated, with its anterior margin concave, bearing eleven pairs of short, thin and smooth setae. Lyrifissures *im* very short. Epimeres II and III are parallel and sternal apodeme is not developed. Epimeral formula 3:1:3:3. Five pairs of genital setae, one pair of aggenital setae, two pairs of anal setae and three pairs of long adanal setae. Adanal lyrifissures *iad* are short, situated in paranal position close to the lateral margins of anal plates. Tridactylous legs.

Discussion. The new subgenus *Adoristes (Gordeeviella)* differs from *Adoristes (Adoristes)* Hull, 1916 by the shape of its sensilla, quite different with the tip sharply pointed, and of its lamellae, without cusps. Because the shape of the sensilla *Adoristes (Gordeeviella)* has some similarities with the subgenus *Liacarus (Liacarus)* Michael, 1898, but differs from it by the shape of the lamellae, never fused or with trans-

lamella, by the presence of five pairs of genital setae and by the paranal position of lyrifissures *iad*. The new subgenus has also some similarities with the genus *Planoristes*, described by Iturondobeitia and Subías (1978) from northern Spain. The only species included in *Planoristes* lacks lamellar cusps and translamella, like *Adoristes (Gordeeviella)*, with the lamellar seta inserted on the prodorsal surface. But the sensillus of *Planoristes* is quite different, without the distally sharp tip, and *Planoristes* has four pairs of genital setae and monodactylous legs.

Etymology. Named after our colleague, acarologist Elena W. Gordeeva (Karadag Natural Reserve of the National Academy of Sciences of Ukraine).

2.2. *Adoristes (Gordeeviella) krivolutskyi* sp. n. (Fig. 1)

Material. All the material sampled at the Botanical Gardens in Batumi (Georgia) (D. A. Krivolutsky leg., 1973): soil under *Eucalyptus* (holotype and 12 paratypes), soil under conifers (2 paratypes), relict forest of conifers (9 paratypes). Holotype (female) and paratypes deposited in the collection of the Complutense University (Madrid, Spain).

Diagnosis. As for the subgenus.

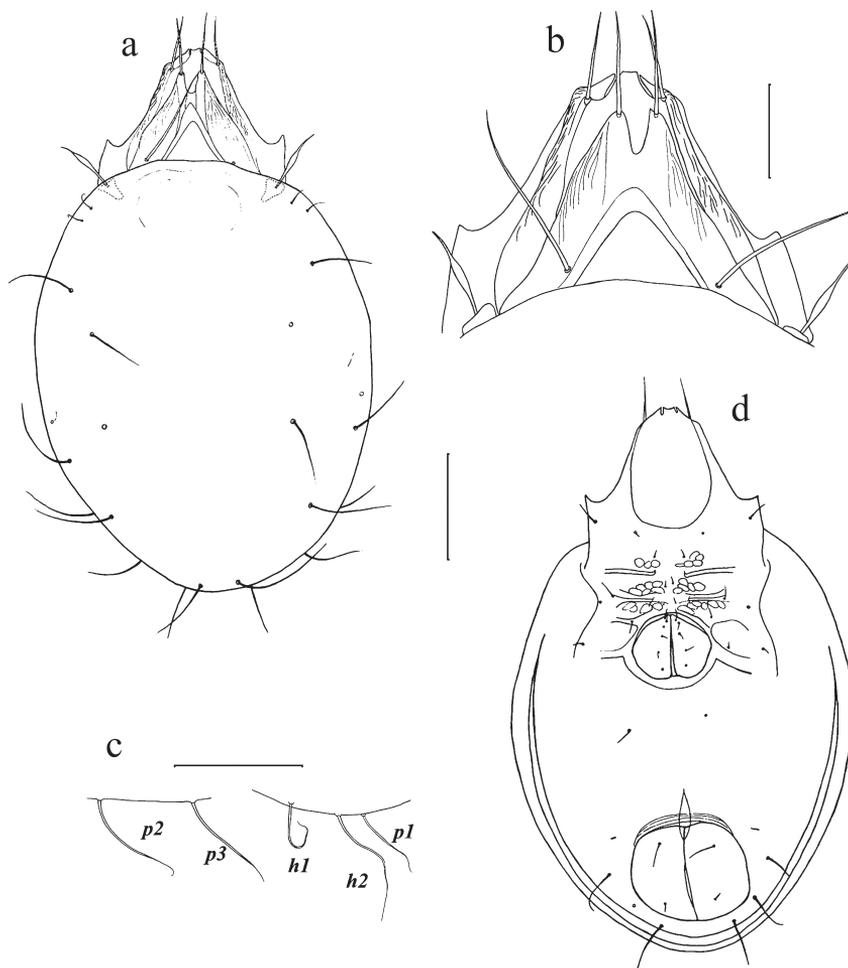


Fig. 2. *Liacarus* (*Liacarus*) *longipilis* sp. n. – a. Dorsal view (holotype). – b. Prodorsum (paratype). – c. Posterior notogastral setae of the holotype and the paratype. – d. Ventral view (holotype). Scale bar 200 μm (a and d), 80 μm (b) and 150 μm (c).

Description. Measurements: 500–640 μm long and 250–330 μm wide. Integument brown, rather dark.

Prodorsum (Fig. 1a). Rostrum rounded with median swelling. Rostral setae (45–63 μm) smooth. Lamellae (Fig. 1b) long and broad, without translamella and lamellar cuspids barely insinuated. Smooth lamellar setae (50–53 μm) are slightly stronger than rostral setae reaching rostral margin and inserted on distal edge of lamellae, almost over prodorsal surface. Interlamellar setae smooth and long (180–195 μm). Bothridium hidden by anterior margin of notogaster. Sensillus (88–100 μm) shaped as usual within the subgenus *Liacarus* (*Liacarus*) (Fig. 1c), with head fusiform and smooth with length similar to that of tail (25–35 μm) and with long distal portion sharply pointed and slightly barbed

(35–45 μm). Tutorium being long and narrow, best viewed in lateral orientation (Fig. 1b).

Notogaster (Fig. 1a) elongated, elliptical and somewhat flattened. Anterior margin quite concave. Eleven pairs of very short (10 μm) smooth and thin notogastral setae. Lyrifissures *im* very short (5 μm) and difficult to see.

Ventral region (Fig. 1d). Epimeral region reticulated due to muscle insertions. Epimeres II and III parallel and sternal apodeme not developed. Epimeral setae short (10–13 μm) smooth and thin. Epimeral formula 3:1:3:3. Genital opening approximately 50×65 μm while anal opening almost twice as big. Five pairs of genital setae, three anterior pairs (13 μm) very close to each other and longer than posterior two pairs (9 μm) (Fig. 1e). One pair of agenital setae (10 μm), two pairs of anal setae (12–14 μm) and three pairs of

adanal setae (18–38 μm). Adanal lyrifissures *iad* short situated in paranal position close to lateral margins of anal plates. Legs tridactylous.

Etymology. Named after renowned Russian acarologist the late D. A. Krivolutsky.

Remarks. The new species is the only included in the new subgenus and differs from all others of the genus *Adoristes* Hull, 1916, because of the already mentioned subgeneric characters.

2.3. *Liacarus (Liacarus) longipilis* sp. n. (Fig. 2)

Material. All the material sampled at the Botanical Gardens in Batumi (Georgia) (D. A. Krivolutsky leg., 1973): soil under *Eucalyptus* (holotype) and soil under conifers (paratype). Holotype (female) and paratype deposited in the collection of the Complutense University (Madrid, Spain).

Diagnosis. The new species differs from other species of *Liacarus* by the presence of very long notogastral setae.

Description. Measurements: 920–1,050 μm long and 600–630 μm wide. Integument dark brown.

Prodorsum (Fig. 2a). Length about 230 μm . Rostrum rounded with median swelling. Rostral setae (75–90 μm) smooth and inserted at end of long and rugose tutorium (visible dorsally). Broad and long lamellae with striate external margin, fused at 55 μm from notogastral margin. Well developed cuspis (35 μm) without tooth (holotype) or with a vestigial one on inner margin (paratype) (Fig. 2b). Lamellar setae (110–120 μm) smooth, stronger than rostral setae, inserted on the distal edge of lamellar cuspis and surpassing rostral margin more than half of its length. Interlamellar setae smooth (except tip slightly barbed) thin and longer than rest of prodorsal setae (200–210 μm), inserted on basal part of lamellae. Bothridium hidden by anterior margin of notogaster. Sensillus (125–135 μm) shaped as usual within the genus *Liacarus* with head fusiform and smooth with length (45 μm) similar to that of tail (40–55 μm), distal portion sharply pointed, shorter (35–40 μm) and slightly barbed.

Broad and elliptical notogaster (475 μm) with anterior margin slightly convex. Eleven pairs of notogastral setae present, pairs c_2 and c_3 very thin

and short (35–40 μm) as is usual among species of *Liacarus*, other notogastral setae longer, smooth and sometimes with their tip curved: la – 135 μm , lm – 90 μm , lp – 100 μm , h_1 – 135–140 μm , h_2 – 135–150 μm , h_3 – 150–160 μm , p_1 – 90–100 μm , p_2 – 140 μm , p_3 – 125–130 μm ; some setae from series *h* and *p* of paratype with flagelliform tip (Fig. 2c). Lyrifissures *im* very short and barely visible, as associated glands.

Ventral side (Fig. 2d). Epimeral region reticulated due to muscular insertions. Epimeres II and III parallel without developed sternal apodeme. Epimeral setae with diverse length (15–35 μm). Epimeral formula 3:1:3:3. Genital (125×150 μm) and anal (195×220 μm) openings wider than longer. Six pairs of very short and thin genital setae (20–26 μm), anterior pairs very close to each other. One pair of aggenital setae – 35 μm , 2 pairs of anal setae – 55–60 μm and 3 pairs of adanal setae – 65–90 μm . Lyrifissures *iad* very short (10–15 μm) situated at level of anterior margin of anal plates but far from them. Legs tridactylous.

Etymology. *longipilis* refers to the long notogastral setae.

Remarks. Because of the length of the notogastral setae, this species has some similarities with those of *Birsteinius*, but this genus differs by the shape of sensillus, without the tip sharply pointed, and by the 5 pairs of genital setae.

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