

Two New Species of the Genus *Curtonotus* Stephens (Coleoptera, Carabidae) from the South of the Russian Far East

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Abstract—Two new species of the genus *Curtonotus*, *C. larisae* sp. n. and *C. kataevi* sp. n., are described from the alpine zone of southern Sikhote-Alin Mountains.

Examination of the carabids collected by me from mountains of S Sikhote-Alin has revealed two new species of the genus *Curtonotus*. These species stand apart of the congeners and, apparently, should be separated in a subgenus. However, having no opportunity to study all representatives of the genus, I yet avoid establishing a new subgenus and only propose to consider these species a deviating group in the subgenus *Curtonotus* s. str.

In the descriptions of the beetles below, the following designations were used to indicate sizes of body parts and their ratios: HL, length of head from the anterior margin of clypeus to the posterior margin of temples; HW, width of head, including eyes; PA, anterior width of pronotum; PW, maximum width of pronotum; PB, basal width of pronotum; PL, maximum length of pronotum; PL(m), length of pronotum along midline; EW, maximum width of elytra; EL, length of elytra from humeral callus to apex; Ls = HL + PL + EL; L, total length of body (from the mandibular apex to the elytral apex); M, average size.

Holotypes and part of paratypes of the new species are deposited at the Zoological Institute, Russian Academy of Sciences (St. Petersburg); other paratypes, at the Biological Institute, Far Eastern Scientific Center, Russian Academy of Sciences (Vladivostok), and in my collection.

GENUS *CURTONOTUS* STEPHENS

Curtonotus (s. str.) *larisae* sp. n. Species-Group

The group comprises two species: *C. larisae* sp. n. and *C. kataevi* sp. n.

The most characteristic features of the group are the densely punctate upper surface of head and pronotum,

reduced hind wings, lack of elytral microsculpture in both sexes, and poorly developed tooth of male middle tibia.

The chaetotaxy widely varies: *C. kataevi* sp. n. possesses a complete set of pores typical of the genus; *C. larisae* sp. n. has no anterior supraorbital pore and no pores near the middle of lateral margin of pronotum and on hind femur; the number of setiferous pores in the apical group of the series *umbilicata* is reduced to 4–6.

Despite such a great difference in the chaetotaxy of the described species, it seems possible that these were formed as a result of disruptive selection and spatial isolation of populations of the common ancestral species. Probably, the isolation took place in the post-glacial epoch, when the psychrophilous alpine fauna was forced into the upper mountain belts. At present, this fauna is represented in Sikhote-Alin in some refuges above timber line. This assumption is supported by the fact that the new species share many morphological characters and live in a similar environment in the alpine zone of the southern Sikhote-Alin Mountains.

In appearance, the species are similar to *Curtonotus multipunctatus* Kabak, 1997 recently described from the alpine zone of the Tien Shan Mts. However, this similarity (body size and dense punctation of the head and pronotum) is apparently a convergence accounted for by the adaptation to similar environment. *C. multipunctatus* was described in the *Curtonotus miser* species-group (Kryzhanovskij, 1974) including 17 species from Middle Asian mountains. The group comprises rather dissimilar species with widely varying chaetotaxy, different shape of basal part of pronotum and tooth on male middle tibia, and widely varying punctation of the upper body surface [from fine

and sparse punctures located only in basal depressions of pronotum in *C. miser* (Tschitsch.) to dense punctation over the entire surface of pronotum and the upper side of head in *C. multipunctatus*]. Among the characters shared by the species are the reduction of hind wings; elongate cylindrical, or somewhat flattened body; rather small basal depressions of pronotum; usually short metepisterna; structure of aedeagus; and the range and environment. *C. larisae* sp. n. and *C. kataevi* sp. n. clearly differ from species of the *C. miser* group in the shape of pronotum with large basal depressions and acute posterior angles attenuate sideways, absence of microsculpture on elytra in both sexes, and rather long metepisterna. In addition, the wide gap between ranges of the two groups suggests that the similarity of the described species to *C. multipunctatus* in appearance is of convergent nature.

Curtonotus (s. str.) *larisae* Sundukov, sp. n.
(Figs. 1–5)

Material. Holotype: ♂, Primorskii Territory, Sikhote-Alin Nature Reserve, Glukhomanka Mt., 45°10'34" N, 135°48'24" E, 1400–1450 m, rocky places, 13.VII.1998 (Yu. Sundukov). Paratypes (4 specimens): 1 ♂, 2 ♀, as holotype; 1 ♂, Primorskii Territory, Sikhote-Alin Nature Reserve, Dal'nii Range, Verblyud Mt., 45°03'25" N, 136°18'31" E, rocky places, 1200 m, 20.VII.1998 (Yu. Sundukov).

Description. Coloration. Body dark fuscous. Palpi, antennae, and tarsi pale fuscous.

Microsculpture. Head and elytra without microsculpture in both sexes, pronotum with delicate reticulation formed by weakly transverse meshes. Elytra glossy-shining.

Punctuation. Head finely and densely punctate over entire surface. Pronotum with dense punctation: fine, similar to that on head, at disc center and coarser in other parts. Elytra smooth.

Measurements (mm): HW 2.05–2.18 (M 2.12), HL 1.23–1.35 (M 1.28), PA 2.08–2.13 (M 2.11), PW 2.90–3.15 (M 3.06), PB 2.30–2.53 (M 2.45), PL 2.35–2.45 (M 2.4), PLm 2.18–2.38 (M 2.29), EW 3.9–4.3 (M 4.11), EL 6.1–6.6 (M 6.39), Ls 9.71–10.38 (M 10.07), L 10.2–10.9 (M 10.5).

Head convex, not narrowing behind temples. Eyes convex. Each side of head with 1 supraorbital seta somewhat before posterior margin of eye. Temples very short. Frontal grooves short (hardly reaching

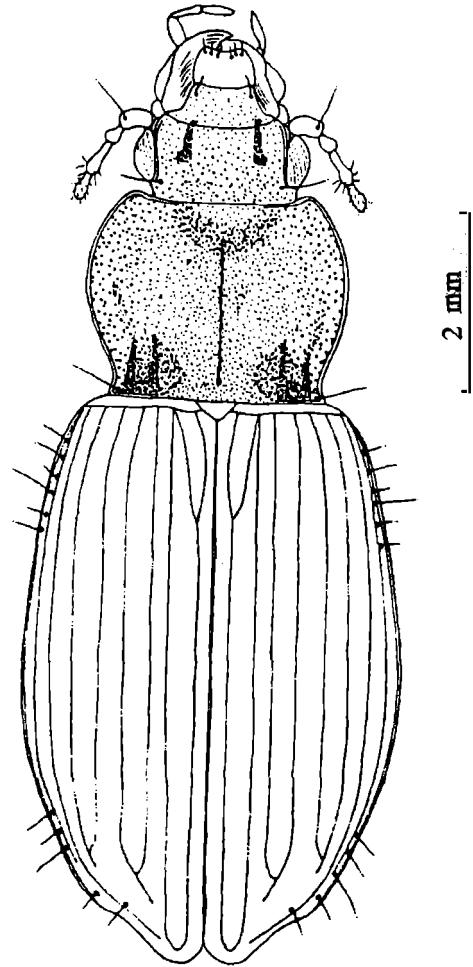
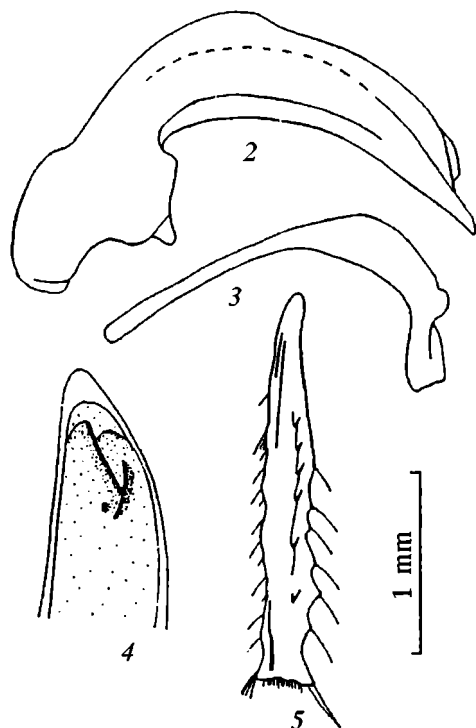


Fig. 1. *Curtonotus larisae* sp. n., holotype.

middle of eye), deep, parallel. Antennae of usual length, extending beyond elytral base by 1/4 of their length. Upper side of mandibles coarsely obliquely rugose. Mental process small, about half as long as lateral lobes of mentum, bifurcate at apex, with 2 setae at base. Submentum with 2 setae on each side, the outer one short.

Pronotum distinctly cordate, slightly wider than long [PW/PL 1.22–1.30 (M 1.27), PW/PLm 1.29–1.37 (M 1.33)], significantly wider than head [PW/HW 1.41–1.47 (M 1.44)], widest before middle. Base straight, slightly wider than anterior margin [PB/PA 1.11–1.19 (M 1.16)]. Anterior margin shallowly concave; anterior angles weakly protruding, widely rounded apically. Sides more or less uniformly rounded, shortly emarginate before posterior angles, narrowly margined along entire length. Posterior angles sharp, attenuate, pointed. Disc uniformly convex



Figs. 2–5. *Curtonotus larisae* sp. n., holotype: (2) penis, right side; (3) right paramere, left side; (4) apex of penis, dorsal view; (5) fore tibia. Scale bar 1 mm.

between narrow lateral grooves. Median line fine, distinct, not reaching anterior and posterior margins. Anterior transverse depression shallow, obsolete. Sides with 1 seta in each posterior corner. Base with 2 nearly merged foveae at each side, the inner one longer.

Elytra ovate [EL/EW 1.51–1.59 (M 1.55), EL/PL 2.56–2.72 (M 2.66), EW/PW 1.30–1.37 (M 1.34)], widest somewhat behind the middle, weakly narrowed basally. Apices sharply narrowed and attenuate in both sexes. Preapical emargination distinct. Humeri nearly rectangular, without prominences. Basal margination entire. Striae deep, entire, regular, coarsely punctate. Basal setiferous pore missing. Scutellar stria long, lying in 2nd interval, usually merging apically with 1st stria. Intervals moderately convex along entire length, without discal pores. Series umbilicata of 9th interval consisting of 10–12 setae forming 2 groups: 6 setae in anterior group and 4–6, in posterior one. Apex of 7th interval with 1 seta. Wings reduced in the form of small scales.

Legs long, rather slender. Middle tibia in male with weak prominence on inner side. The largest spur of

fore tibia situated at 1/4 from its apex (Fig. 5). Hind femur with 1 seta on posterior margin (1 specimen with 3 setae on right femur) near base at trochanter. Middle femur with 2 setae at posterior margin.

Underside. Prosternal process flat, rounded apically, without margination, finely and sparsely punctate. Punctuation coarse and dense over most of underside; finer on temples, in the middle of prosternum, and on abdominal sternites. Gula, submentum, epimera, and the middle of metasternum impunctate. Abdominal sternites coarsely rugose laterally; sternites III–V with 1 pair of setae each. Apical abdominal sternite with 4 setae in female and 2 setae in male (1 female and 1 male with 5 setae). Metepisterna rather long, their length along outer margin 1.5 times their width across anterior margin.

Aedeagus as in Figs. 2–4.

Differential diagnosis. *Curtonotus larisae* sp. n. is a very distinctive species. Owing to a set of such characters as the absence of anterior supraorbital pore, presence of a single seta on hind femur, lack of microsculpture on elytra in both sexes, and densely punctate head and pronotum, the new species is dissimilar to any of species from Siberia, Central Asia, and the Far East. I have examined 26 species from the indicated area and analyzed morphological characters of the species described by Habu (1953), Kryzhanovskij (1965, 1974a, 1974b), Lafer (1989), Hieke (1990), and Kabak (1997), and being beyond the reach of my study at present. As a result, I have concluded that *C. larisae* sp. n. is one of the most distinctive North Asian species in the genus *Curtonotus* and should be undoubtedly separated in a subgenus. The species clearly differs from the congeners in the absence of anterior supraorbital pore.

Type locality. Russia, Primorskii Territory, S Sikhote-Alin, Dal'nii Range (Khuntami).

Etymology. The new species is named for my wife, Larisa Sundukova, to whom I am thankful for help in collecting carabids in Siberia and the Far East.

Curtonotus (s. str.) *kataevi* Sundukov, sp. n. (Fig. 6)

Material. Holotype: ♀, Primorskii Territory, S Sikhote-Alin, Gorelaya Sopka Mt., 43°30'30" N, 134°06'08" E, 1400–1420 m, mountain tundra, 18–20.VI.1999 (Yu. Sundukov). Paratypes (8 specimens): 7 ♀, as holotype; 1 ♀, same locality, 11.VIII.1996 (Yu. Sundukov).

Description. Coloration. Head, pronotum, and legs dark fuscous. Elytra black. Legs, antennae, and mouth-parts reddish fuscous.

Microsculpture. Head and elytra lacking microsculpture (1 specimen with faint isodiametrical reticulation on elytra), pronotum with distinct isodiametrical reticulation. Elytra glossy-shining.

Punctuation. Upper surface of head regularly finely and sparsely punctate. Pronotum densely punctate along anterior margin, finely and sparsely punctate laterally at base and disc center. Punctuation the coarsest and densest on the bottom of basal foveae. Elytra smooth.

Measurements (mm): HW 1.95–2.18 (M 2.10), HL 1.15–1.25 (M 1.21), PA 2.13–2.30 (M 2.24), PW 3.13–3.27 (M 3.20), PB 2.60–2.75 (M 2.68), PL 2.30–2.50 (M 2.41), PLm 2.08–2.35 (M 2.22), EW 4.10–4.30 (M 4.18), EL 6.10–6.65 (M 6.44), Ls 9.58–10.30 (M 10.06), L 10.0–11.0 (M 10.7).

Head convex, not narrowing behind temples. Eyes convex. Each side of head with 2 supraorbital setae: anterior one at the middle of eye and posterior one at the level of posterior margin of eye. Temples very short. Frontal grooves short (hardly reaching the middle of eye and anterior supraorbital seta), deep, parallel. Antennae extending beyond elytral base by 1/4 of their length. Upper side of mandibles coarsely obliquely rugose. Mental process small, about half as long as lateral lobes of mentum, bifurcate at apex, with 2 setae at base. Submentum with 2 setae at each side, the outer one short.

Pronotum distinctly cordate, much wider than long [PW/PL 1.28–1.36 (M 1.33), PW/PLm 1.39–1.50 (M 1.44)], significantly wider than head [PW/HW 1.47–1.61 (M 1.52)], widest before middle. Base shallowly emarginate, wider than anterior margin [PB/PA 1.16–1.24 (M 1.20)]. Anterior margin with moderately deep, almost trapeziform emargination. Anterior angles weakly protruding, shortly rounded apically. Sides uniformly arcuate, deeply emarginate before posterior angles, narrowly margined along entire length. Posterior angles acute, pointed, attenuate sideways (also somewhat posteriad in some specimens). Disc moderately convex. Median line deep, not reaching anterior and posterior margins. Anterior transverse depression deep. Lateral margins with 2 setae at each side: anterior seta before the middle and posterior one, in posterior corners. Base with 2 nearly merged foveae, the inner one longer.

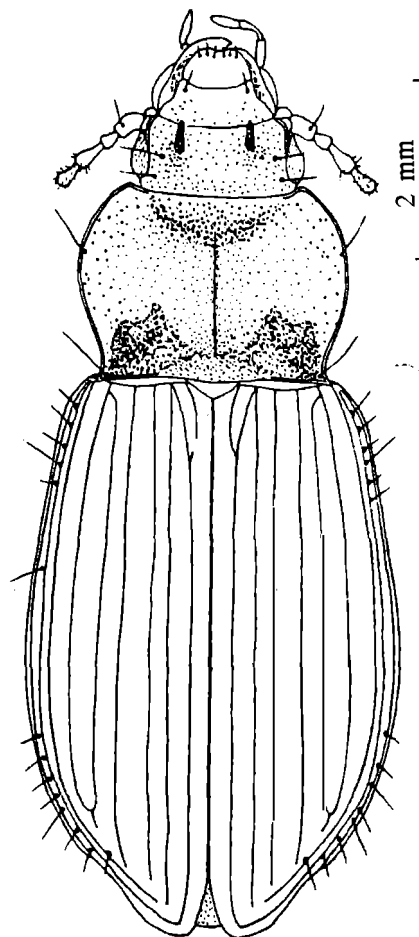


Fig. 6. *Curtonotus kataevi* sp. n., holotype.

Elytra ovate [EL/EW 1.49–1.59 (M 1.54), EL/PL 2.58–2.77 (M 2.67), EW/PW 1.28–1.33 (M 1.31)], widest somewhat behind middle. Apices narrowed and slightly elongate. Preapical emargination distinct. Humeri distinct, rectangular, without prominences. Basal margination entire. Striae regular, entire, deep, coarsely punctate. Basal setiferous pore missing. Scutellar stria moderately long (shorter than that in *C. larisae*), lying in 1st interval, usually merging apically with 1st stria. Intervals weakly or moderately convex along entire length, without discal pores. Series umbilicata of 9th interval usually consisting of 13 or 14 setae forming 2 groups: 6 setae in anterior group and 7 or 8, in posterior one. Seventh interval with 1 seta at apex. Wings reduced, in the form of small scales.

Legs long, rather slender. Hind and middle femora with 2 setae at posterior margin.

Underside. Prosternal process flat, weakly tapering apically, not marginate and impunctate. Punctuation fine and dense over entire underside. Head, metepi-

mera, middle of pro-, meso, and metasterna, apical abdominal sternite, and middle of other abdominal sternites, all impunctate. Abdominal sternites weakly rugose laterally; sternites III–V with 1 pair of setae each. Apical abdominal sternite in female with 4 setae. Metepisterna long, their length along outer margin 1.5 times their width across anterior margin.

Differential diagnosis. *Curtonotus kataevi* sp. n. is similar to *C. larisae* in appearance; clearly differing from it in the presence of 2 setiferous pores above each eye and at the lateral margin of pronotum. The new species is easily distinguished from the all Far Eastern species by the densely punctate surface of head and pronotum and lack of microsculpture on elytra.

Type locality. Russia, Primorskii Territory, S Sikhote-Alin, Gorelaya Sopka Mt. (massif of Sestra Mt.).

Etymology. The new species is named for B.M. Kataev, a specialist in carabids of the tribe Harpalini.

ECOLOGY

Both the new species inhabit the alpine zone at altitudes of 1200–1500 m. All beetles were collected from rocky placers in the zone of mountain hypsochthonous tundra. It is of interest that all specimens of *C. kataevi* have been found near roots of *Silene foliosa* Maxim., at depth of 5–10 cm. This small plant is scattered among rocks on the northern and western

mountain slopes. An attempt to collect the beetles from areas with another kind of vegetation has failed.

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