

New taxa of the genus *Trechus* Clairville (Coleoptera, Carabidae) from the Altai Mountains

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This publication continues the series of papers by Belousov & Kabak (1991, 1994, 1996) on the carabid genus *Trechus* Clairville from southern Siberia.

All the taxa described here were collected by the Siberian entomologists R. Dudko, A. Vorontzov, V. Zintshenko (Novosibirsk) and D. Lomakin (Tyumen').

The morphometric characters used follow those in Belousov & Kabak (1991, 1998). A total of 25 measures were made for each specimen. To provide an exact information concerning elytral chaetotaxy, the formula of umbilicate series is employed in addition to the discal formula. This formula is quite similar to the latter (Pawłowski, 1979) but means are given without ranges. The number of genital preparations is given in parentheses after the number of specimens studied. The holotypes of all described species were dissected and their aedeagi examined.

Abbreviations used in the text:

ISE = Institute of Systematics, Ecology of Animals and Plants, Novosibirsk, Russia

IZK = Institute of Zoology, Almaty, Kazakhstan

MPU = Moscow Pedagogical University, Russia

ZISP = Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia

cBK = authors' collection, St. Petersburg, Russia

Trechus pulvinipenis Belousov et Kabak, sp. nov. (Fig. 1-2)

The new species includes two subspecies.

Description. Medium-sized species, body length 3.26-3.88 mm, males larger, especially in nominotypical subspecies. Brownish, head and elytra darker, latter with lighter suture and margins; sometimes almost monochromous dark testaceous, in this case only posterior portion of head and apex of elytra obscured. Legs and antennae monochromously yellowish.

Head of different size in two known subspecies, 1.19-1.32 times as wide as pronotum. Eyes slightly convex, 1.06-1.36 times as long as 3rd antennomere. Temples weakly convex and pubescent. Antennae of medium length, 1.12-1.22 times shorter than elytra, surpassing base of pronotum by three apical segments.

Pronotum convex and transverse, 1.34-1.48 (1.40) times as wide as long; moderately constricted toward its base, 1.26-1.36 (1.31) times as wide as latter. Lateral sides gradually rounded in middle, subrectilinear or barely sinuate before hind angles; latter obtusangular and pointed at apices. Anterior angles not distinct. Base of pronotum of medium width, 0.97-1.09 (1.03) times as wide as anterior margin, rectilinear medially and oblique on sides. Anterior margin rectilinear. Marginal bead of pronotum average or relatively narrow, hardly broader near hind angles and strongly narrowed anteriorly. Basal transverse impression deep and vaguely delimited, more developed laterally where strongly bent in basal foveae, latter not large and moderately deep. Basal surface feebly rugulose medially. Median line distinct, deeper near base and not reaching the anterior margin.

Elytra small, elongate and regularly ovate, broadest near midlength, rounded combined at apex, 1.36-1.52 times as wide as pronotum and 1.68-1.88 times as wide as head, 1.38-1.52 times as long as wide. Shoulders oblique and widely rounded apically. Marginal bead of elytra narrow, its border strongly upturned. In females, suture weakly angulate. Elytral striae average and moderately punctured; striae 1-5 continuous, others superficial and partly evanescent. Inner intervals subconvex, outer ones flat. Apical striola large, strongly curved inward and joining stria 5 anteriorly. Discal formula 13-19,43-56,84-92. Apical triangle slightly elongate.

Microsculpture composed of isodiametric meshes in basal part of pronotum and on head, faint on front, irregular transverse meshes on pronotal disk, and transverse lines on elytra. Micropunctures on dorsum distinct, without hairs.

Aedeagus (fig. 1-2) step-like bent, very slender in basal part and strongly dilated in apical portion.

Apex with a well-developed hook. Sagittal lobe large, basal orifice deeply incised. Parameres long and narrow, left one with a ventral appendage. Endophallus armature looks as two large plates in dorsal view and as a small, obliquely placed structure combined with a large irregular plate in lateral view.

Notes. In the aedeagal structure, the new species is similar to *T. teletskianus* Belousov & Kabak (1994), differing from the latter by the darker color of the upperside and by the considerably thicker aedeagus with more rectilinear ventral side and larger apical disk as well as by the quite different and more strongly developed armature of the endophallus. From *T. saglensis* Shilenkov, described from Tuva, the new species is easily distinguished by the more strongly swollen and less clearly attenuated apical portion of the aedeagus with a larger and more strongly curved apical hook.

Distribution. The new species seems to be widespread over the western part of the Altai Mts, western of the Katun' Valley. Two known localities of this species are situated far away from each other: the Bastshelakskiy Ridge in the north and the Ivanovskiy Ridge in the south.

Habitats. The species occurs at 1 800-2 500 m a.s.l., above with the upper forest limit.

***Trechus pulvinipenis pulvinipenis* Belousov et Kabak, ssp. nov. (Fig. 1)**

Description. Relatively large-sized subspecies with an elongate and moderately convex habitus and thick appendages. Body length 3.46-3.88 mm (males larger, average 3.65 mm vs. 3.44 mm in females). Brownish, head and elytra darker, latter with lighter suture and margins; rarely almost monochromously dark testaceous, in this case only posterior portion of head and apex of elytra obscured.

Head medium-sized, 1.21-1.32 (1.26) times narrower than pronotum. Eyes medium-sized, 1.13-1.36 (1.23) times as long as 3rd antennomere. Antennae 1.14-1.22 (1.18) times shorter than elytra; their 3rd segment 1.69-2.11 (1.94) times as long as wide. Vertex moderately thickened.

Lateral sides of pronotum straight or hardly sinuate before hind angles, basal surface barely rugulose. Basal margin, although variable, usually clearly oblique on sides.

Elytra small, elongate and regularly ovate, broadest near midlength, rounded combined at apex, 1.36-1.46 (1.42) times as wide as pronotum and 1.70-1.87 (1.79) times as wide as head, 1.40-1.52 (1.46) times as long as wide. Both anterior and posterior discal pores slightly shifted anteriad; subapical pore on second interspace far behind anterior end of apical striola. Discal formula 15-19(17),43-53(48),84-89(86); formula of umbilicate series 8,13,18,23,57,63,79,86. Sometimes anterior pore of median group of umbilicate series lacking.

Aedeagus (fig. 1) with a large and strongly bent apical hook.

Types. Holotype: { (ZISP), "СЗ Алтай, Башелакский хр., 27 км ЮЮВ Топольного, h=1800-2200 м, граница леса и выше, 28.07.-6.08.1998, D.E. Lomakin leg." - in English: NW Altai, Bastshelakskiy Mt. R., 27 км SSE Topolnoye, h=1800-2200 m, forest line and above, 28.07.-6.08.1998 D.E. Lomakin leg. Paratypes: 36 (8) {, 26 } (ZISP, ISE, cBK), collected together with holotype.

Distribution. The new subspecies is known from the Bastshelakskiy Ridge in the western Altai, Russia.

Habitats. Subspecies inhabits the upper forest belt and alpine zone at 1 800-2 000 m a.s.l.

***Trechus pulvinipenis ivanensis* Belousov et Kabak, subsp. nov. (Fig. 2)**

Description. Medium-sized subspecies, body length 3.26-3.61 mm (on the average, 3.44 mm in males vs. 3.37 in females). Color of upperside relatively monochromous, elytra normally light brownish, more rarely color as in nominotypical subspecies.

Head medium-sized, 1.19-1.25 (1.23) times narrower than pronotum. Eyes 1.06-1.27 (1.16) times as long as 3rd antennomere. Antennae of medium length, 1.12-1.17 (1.15) times shorter than elytra; 3rd segment 1.81-2.40 (2.02) times as long as wide.

Pronotum normally with a more or less developed emargination before hind angles; thus latter slightly projecting outward. Base of pronotum hardly oblique on sides. Basal surface distinctly rugulose.

Elytra small-sized, 1.40-1.52 (1.47) times as wide as pronotum and 1.68-1.88 (1.80) times as wide as head; of medium width, 1.38-1.48 (1.44) times as long as wide. Elytral striae superficial, intervals flat. Anterior discal pore distinctly shifted anteriad, posterior discal pore usual in position, subapical pore distant from elytral apex. Discal formula 13-19(16),49-56(52),87-92(89); formula of umbilicate series 8,12,17,22,58,64,78,87.

Aedeagus (fig. 2) similar to that in nominotypical subspecies, but with less strongly developed and more oblique apical hook.

Types. Holotype: { (ZISP), “З. Алтай, Ивановский хр., 3 км З. г. Вышеивановский Белок, h=2500 м, тундра, вершина 7.06.1996, R. Dudko.” in English: W Altai, Ivanovskiy Mt. R., 3 km W of Vysheivanovskiy Belok Mt., h=2500 m, tundra, summit, 7.06.1996, R. Dudko. Paratypes: 9(6) {, 3 } (ZISP, ISE, сBK), collected together with holotype. - 1(1) {, 4 } (ISE, сBK), “З. Алтай, Ивановский хр., 5 км СЗ. г. Вышеивановский Белок, h=1900 м, тундра, С. склон, 7.06.1996, R. Dudko, A. Vorontzov” - in English: W Altai, Ivanovskiy Mt. R., 5 km NW of Vysheivanovskiy Belok Mt., h=1900 m, tundra, N slope, 7.06.1996 (R. Dudko, A. Vorontzov).

Notes. This subspecies is smaller, especially as far as males are concerned (on the average, 3.44 mm vs. 3.65 in nominotypical form), and it has a smaller pronotum (on the average, 1.23 times as wide as head vs. 1.28), less strongly developed eyes and longer antennae as well as more strongly rugulose, though variable, basal surface of the pronotum. The most important difference, however, concerns the shape of the aedeagal apex which is considerably smaller and is curved more weakly in *T. pulvinipenis ivanensis* ssp. n.

Distribution. The subspecies under consideration occupies the southern part of the species' range. It is only known from the Ivanovskiy Ridge, Kazakhstan.

Habitats. The species inhabits the tundra zone at 1 900-2 500 m a.s.l.

Trechus tesnensis Belousov et Kabak, sp.nov. (Fig. 3)

Description. Very large-sized species with ovate and depressed habitus, appendages slender. Body length 4.07-4.69 (4.42) mm. Monochromously testaceous, rather pale. Legs and antennae yellowish.

Head small, 1.21-1.35 (1.28) times narrower than pronotum. Frontal furrows regular and deep. Eyes convex and relatively small, 0.78-0.94 (0.85) times as long as 3rd antennomere. A small striola distinguished behind posterior margin of eye. Temples long, moderately or strongly convex, without any trace of pubescence. Antennae filiform, long, only 1.06-1.15 (1.10) times shorter than elytra; their 3rd segment 2.43-2.94 (2.69) times as long as wide.

Pronotum variable in shape, usually subcordiform, relatively flat, 1.26-1.36 (1.31) times as wide as long; moderately constricted toward base, 1.29-1.38 (1.33) times as wide as latter. Lateral sides gradually rounded, more or less strongly sinuate before hind angles; latter large, from obtusangular to acutangular, pointed at apices. Anterior angles small but recognizable. Base of pronotum 1.03-1.09 (1.06) times as wide as anterior margin, rectilinear or barely concave medially, hardly emarginate and oblique on sides. Anterior margin rectilinear. Marginal bead of pronotum narrow and regular, reaching the sinuation before hind angles to disappear there. Basal transverse impression relatively deep but vaguely outlined. Basal foveae large and deep. Basal surface rugulose. Median line distinct, more strongly engraved on base.

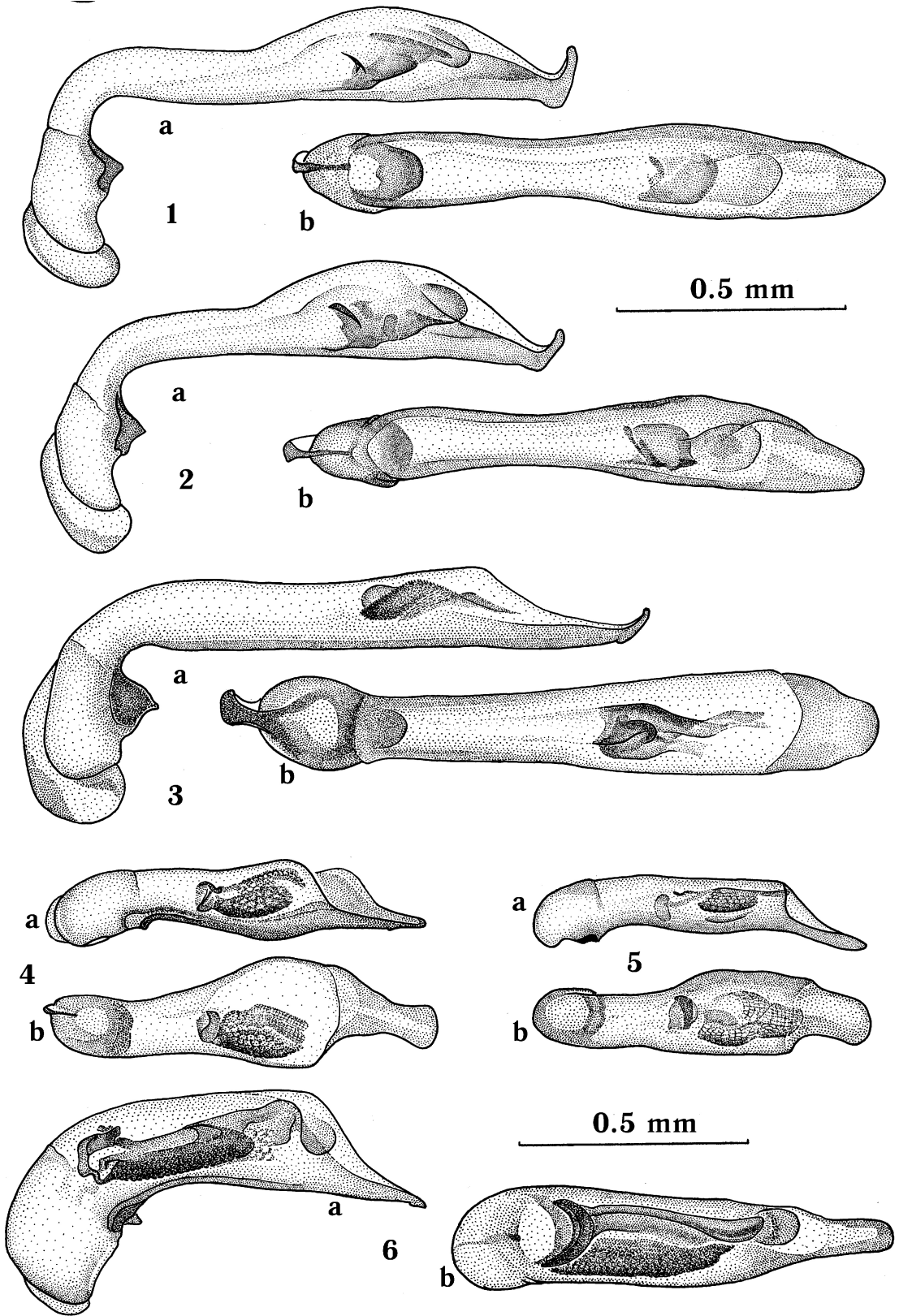
Elytra large-sized, 1.60-1.75 (1.67) times as wide as pronotum and 2.05-2.22 (2.14) times as wide as head; broad, 1.34-1.43 (1.38) times as long as wide. Shoulders moderately salient. Marginal bead of elytra narrow as compared with that of pronotum, without basal hook. Elytral striae deep and continuous, even outermost in apical portion distinct; all striae strongly punctured. Intervals subconvex. Apical striola directed to stria 6 or 7 but without clear connection. Both anterior and posterior discal pores slightly shifted anteriorly; discal formula 13-20(17),43-51(48),81-87(84); formula of umbilicate series 8,14,19,25,60,66,80,87. Apical triangle elongate.

Microsculpture composed of isodiametric meshes on head, irregular transverse meshes on pronotum and transverse lines on elytra, faint medially on disk of pronotum and head.

Aedeagus (fig. 3) long and slender, step-like bent, widely rounded apically in dorsal view. Armature of endophallus feebly sclerotized, provided with scaly patches on left side.

Types. Holotype: { (ZISP), “Алтай, хр. Листвяга, окр. г. Теснинский Белок, h=2000-2300 м, 28.07.1997, R. Dudko, V. Zintshenko leg.” in English: Altai, Listvyaga Mt. R., near Tesninskyi Belok Mt., h=2000-2300 м, 28.07.1997, R. Dudko, V. Zintshenko leg. Paratypes: 38(16) {, 12(4) } (ZISP, ISE, сBK), collected together with holotype.

Notes. Undoubtedly, this species is most closely related to *T. angulifer* Belousov & Kabak (1991), differing from it by the considerably larger size (4.07-4.69, average 4.45 mm vs. 3.66-4.29, average 3.99 in *T. angulifer*, data for males); by the shape of the pronotum with the lateral margins usually less strongly sinuate before the hind angles and with wider base (latter 1.03-1.09 times as wide as anterior margin vs. 0.92-1.01 in *T. angulifer*); by the smaller head which, on the average, is 1.28 times narrower than the pronotum vs. 1.22 in the counterpart, and 2.11-2.22 (2.17) times narrower than the elytra vs. 1.95-2.13 (2.07) in *T. angulifer* (the latter ratio is also given only for males, taking into account the



Figs 1-6: *Trechus* spp., aedeagi (median lobe; a - lateral view, b - dorsal view; scale 0.5 mm):
1 - *T. pulvinipennis pulvinipennis*, ssp. n.; 2 - *T. pulvinipennis ivanensis*, ssp. n.; 3 - *T. tesnensis*, sp. n.; 4 - *T. incisipennis*, sp. n.; 5 - *T. markakolensis*, sp. n.; 6- *T. zintshenkoi*, sp. n.

sexual dimorphism); by the larger eyes; by the longer and more slender antennae; by the deeper elytral striae with rougher punctures; by lacking a basal hook of the lateral bead of elytra and, especially, by the conformation of the male genitalia. The aedeagus is slenderer, more strongly parallel-sided in lateral view and more strongly constricted toward the basal portion in dorsal view; the endophallic armature is shifted distally, much narrower when viewed laterally.

Distribution. It is known only from the Listvyaga Ridge, Kazakhstan.

Habitats. The species inhabits the alpine zone at 2 200-2 300 m a.s.l.

***Trechus incisipenis* Belousov et Kabak, sp.nov. (Fig. 4)**

Description. Habitus subparallel and depressed. Medium-sized species, body length 3.02-3.41 (3.19) mm. Dark reddish-brown; clypeus, pronotum, suture and margins of elytra lighter; in contrast, head and background of elytra blackish. Rarely, dorsum light brownish but even in this case both head and anterior part of labrum darker. Legs monochromously yellowish, antennae obscured beginning with apical portion of segment 3 or 4.

Head medium-sized, 1.19-1.26 (1.22) times narrower than pronotum. Eyes conically protruding, convex, medium-sized, 1.02-1.14 (1.08) times as long as 3rd antennomere. Temples flat and clearly pubescent. Frontal furrows not deep, somewhat angulate in middle. Antennae long and thick, only 1.09-1.15 (1.12) times shorter than elytra; their 3rd segment 1.82-2.40 (2.19) times as long as wide, their middle antennomeres a little longer than wide.

Pronotum discoid and flat, 1.30-1.42 (1.35) times as wide as long; slightly constricted backward, 1.19-1.35 (1.27) times as wide as its base. Lateral sides evenly rounded till hind angles, sinuation before hind angles weak or disappearing; latter obtusangular, rounded at apices. Anterior angles not salient. Base of pronotum of medium width, 0.97-1.14 (1.05) times as wide as anterior margin, latter rectilinear. Basal margin convex. Marginal bead of pronotum relatively broad, barely dilated posteriorly and slightly narrowed just near anterior angles, its border weakly upturned. Basal transverse impression vague, basal foveae large but superficial. Basal surface with a few slight wrinkles in middle. Median line continuous, much deeper at base.

Elytra small-sized, strongly depressed, 1.45-1.55 (1.50) times as wide as pronotum and 1.77-1.89 (1.84) times as wide as head, 1.37-1.43 (1.39) times as long as wide combined. Shoulders oblique, slightly projecting, lateral margins of elytra subrectilinear in middle, their broadest part after midlength, each elytron rounded separately at apex. Marginal bead average, wider in apical portion and distinctly narrowed before humeral group of umbilicate series, its margin slightly upturned. All elytral striae superficial, irregular, but distinct, including outmost ones, with vague punctures. Intervals flat. Apical striola relatively short, subrectilinear, directed to stria 5 anteriorly. Both anterior and posterior discal pores usual in position; discal formula 18-23(20),49-59(54),87-92(89); formula of umbilicate series 10,14,20,26,60,68,81,89. Apical triangle subequilateral or slightly transverse.

Microsculpture well-developed, composed of isodiametric meshes on head and pronotum base, irregular transverse meshes on pronotal disk and transverse lines on elytra, faint medially on disk of pronotum and head.

Aedeagus (fig. 4), of remarkable shape: small, hardly bent basally, strongly swollen both in lateral and dorsal views, with extraordinarily deep emargination in distal portion. Its ventral side strongly convex and pigmented. Lamella well-defined, clearly constricted before apex, curved to left side. Endophallus armature consisting of two scaly patches and small feebly sclerotized proximal structure.

Types. Holotype: {(ZISP), "ЮВ Алтай, В хр. Азутау, 10 км ВЮБ Урунхайки, h=2200-2400 м, альп. луга, 19-20.06.1997, R. Dudko, V. Zintshenko leg." in English: SE Altai, E Azutau MT. R., 10 km ESE Urunkhaika Vill., h=2200-2400 m, alp. meadow, 19-20.06.1997, R. Dudko, V. Zintshenko leg. Paratypes: 53(14) {, 26(1) } (ZISP, ISE, cBK), collected together with holotype.

Notes. The new species is strongly isolated among Siberian members of the genus. Nevertheless, the endophallic armature argues for its relationship to *T. holzun* Shilenkov & Sokolov (1987) and allied species from southwestern part of the Altai Mts. Its differences from the related *T. markakolensis* sp. n. are discussed below.

Distribution. The new species is only known from the type locality (10 km ESE of the Urunkhaika Village) in the South Altai, Kazakhstan.

Habitats. The species inhabits the alpine zone at 2 200-2 400 m a.s.l.

***Trechus markakolensis* Belousov et Kabak, sp.nov.** (Fig. 5)

Description. Body shape and color as in the preceding species. Body length 3.08-3.36 (3.20) mm.

Head medium-sized, 1.17-1.27 (1.22) times narrower than pronotum. Eyes medium-sized, slightly protruding, 1.14-1.29 (1.20) times as long as 3rd antennomere. Antennae long and thick, only 1.12-1.18 (1.14) times shorter than elytra; their 3rd segment 1.98-2.21 (2.10) times as long as wide.

Pronotum flat, with lateral margins straightened in posterior portion, 1.33-1.41 (1.37) times as wide as long; moderately constricted toward base, 1.25-1.37 (1.31) times as wide as pronotum base. Hind angles obtusangular, pointed at apices. Anterior angles not salient. Base of pronotum of medium width, 0.99-1.08 (1.04) times as wide as anterior margin, latter rectilinear. Basal margin convex, clearly oblique on sides. Marginal bead of pronotum average or narrow, barely dilated posteriorly and slightly narrowed just near anterior angles, its border weakly bent upward. Basal transverse impression vague, basal foveae large but superficial. Basal surface with a few slight wrinkles in middle. Median line continuous, deeper at base.

Elytra small-sized, strongly depressed, 1.47-1.56 (1.52) times as wide as pronotum and 1.78-1.91 (1.85) times as wide as head, 1.37-1.42 (1.39) times as long as wide combined. Shoulders oblique, slightly projecting, lateral margins of elytra subrectilinear at middle, their broadest part after midlength, each elytron rounded separately at apex. Marginal bead average, wider in apical portion and distinctly narrowed before humeral group of umbilicate series, its border slightly upturned. All elytral striae irregular and superficial, but distinct, including outmost ones, vaguely punctured. Intervals flat. Apical striola relatively short, subrectilinear, directed to stria 5 anteriorly. Both anterior and posterior discal pores usual in position; discal formula 16-25(19),52-57(54),89-93(91); formula of umbilicate series 10,15,20,26,60,67,80,88. Apical triangle subequilateral.

Microsculpture well-developed, composed of isodiametric meshes on head and pronotum base, irregular transverse meshes on pronotal disk and transverse lines on elytra, faint medially on disk of pronotum and head.

Aedeagus (fig. 5) hardly bent basally, almost parallel-sided in lateral view, moderately dilated in dorsal view; lamella broad and short, curved to left side. Endophallus armature consisting of two connected scaly patches and clearly defined, small, weakly sclerotized basal structure.

Types. Holotype: { (ZISP), "ЮВ Алтай, В. хр. Азутау, 10 км ЮЗ Урунхайки h=2200-2300 м, альп. луга, 18.06.1997, R. Dudko, V. Zintshenko leg." in English: SE Altai, E Azutau MT. R., 10 km SW Urunkhaika Vill., h=2200-2300 m, alp. meadow, 18.06.1997, R. Dudko, V. Zintshenko leg. Paratypes: 7(7) {, 4 } (ZISP, ISE, cBK), collected together with holotype.

Notes. Doubtless, the new species is most closely related to *T. incisipenis* sp. n., differing mainly by the more strongly developed hind angles of the pronotum, by the basal margin of the latter more strongly oblique on the sides, by the narrower base which is 1.29-1.33 (1.31) times narrower than the pronotal width as compared with 1.23-1.30 (1.27) in *T. incisipenis*, by the larger eyes which are 1.14-1.29 (1.20) times as long as antennomere 3 vs. 1.02-1.14 (1.08) in *T. incisipenis* as well as by the aedeagal structure. The median lobe of the latter is smaller (despite the equal body size of both species), considerably less dilated in lateral and, especially, dorsal views; the lamella is broader, emarginated only on the left side, without small denticle on the ventral side; the distal orifice is open straight ahead (more asymmetrically in the counterpart). Two scaly patches of the endophallic armature are fused together in *T. markakolensis* (distinctly separated in *T. incisipenis* sp. n.). In spite of the above differences, both taxa are very similar and may only represent subspecies of a single species. Yet, for the moment, the available material is not sufficient to resolve this problem.

Distribution. *T. markakolensis* sp. n. is only known from the southeastern environs of Markakol Lake (E Kazakhstan) to west of the type locality of *T. incisipenis* sp. n.

Habitats. The species inhabits the alpine zone at 2,200-2,300 m a.s.l.

***Trechus zintshenkoi* Belousov et Kabak, sp.nov.** (Fig. 6)

Description. Medium-sized species with a robust and convex habitus and thick legs. Body length 3.34-3.36 mm. Blackish brown, with lighter reddish mandibles, pronotum, base, suture and margins of elytra. Legs monochromously yellowish. Antennae vaguely obscured beginning with apical portion of antennomere 3. Elytral surface iridescent.

Head small as compared with the rest of body, 1.32-1.35 times narrower than pronotum. Eyes large but weakly convex, 1.13-1.18 times as long as 3rd antennomere. Antennae long, only 1.10-1.11 times shorter than elytra; 3rd segment 2.12-2.25 times as long as wide, their middle segments clearly longer than wide.

Pronotum large, convex and highly transverse, 1.46-1.47 times as wide as long; slightly constricted toward base, 1.24-1.28 times as wide as latter. Lateral sides widely rounded, hardly sinuate before hind angles; latter small, obtusangular, rounded at apices. Anterior angles barely prominent. Base of pronotum broad, 1.12-1.14 times as wide as its anterior margin. Basal margin slightly convex on sides. Anterior margin weakly concave. Marginal bead of pronotum average and regular throughout. Basal transverse impression deep and almost rectilinear, without distinct curvature in basal foveae; latter not large and superficial, separated from marginal bead by convex portion of pronotal disk. Basal surface medially rugulose. Median line distinct, deeper on base.

Elytra subparallel, 1.40-1.44 times as wide as pronotum, 1.88-1.90 times as wide as head and 1.41-1.45 times as long as wide. Shoulders projecting. Marginal bead of elytra regular and average. Elytral striation very superficial, striae 1-6 almost continuous and finely punctured, stria 7 evanescent. Intervals flat, of subequal width on apical slope. Apical striola almost straight, clearly joining stria 5 anteriorly. Anterior discal pore strongly shifted anteriorly, both posterior discal pore and subapical one usual in position; discal formula 15-16,50-51,92-93; formula of umbilicate series 7,12,17,23,59,65,82,89. Apical triangle equilateral. Apical cross well-developed.

Microsculpture composed of isodiametric meshes on head, irregular transverse meshes on pronotum and consisting of fine transverse lines on elytra, faint medially on disk of pronotum and head.

External surface of foretibia flattened, but not grooved.

Aedeagus (fig. 6), step-like bent, thick, lamella attenuated and parallel-sided. Endophallus armature extraordinarily strongly developed, consisting of well-sclerotized and screwed plates and vast scaly field near left wall of aedeagus.

Types. Holotype: { (ZISP), "Алтай, хр. Листвяга, 10 км ЮЮВ г. Теснинский Белок, р. Середчиха, h=1200-1500 м, лес, 27.07.1997, R. Dudko, V. Zintshenko" in English: Altai, Listvyaga Mt. R., 10 km SSE Tesninskyi Belok Mt., Seredtsikhka Riv., h=1200-1500 m, forest, 27.07.1997, R. Dudko, V. Zintshenko. Paratype: 1(1) {, (ISE), collected together with holotype.

Notes. Doubtless, the new species is closely related to *T. bakurovi* Shilenkov (1984), differing mainly in aedeagal structure: lamella narrower, not truncate at apex, endophallic armature without characteristic distal undulate piece. It is noteworthy that *T. bakurovi*, though widely distributed in southern Siberia, does not reveal any variability in the conformation of the male genitalia. As for the external characters, the new species is distinguished by the larger eyes which are 2.65-3.25 (2.95) times as long as temples vs. 1.93-2.74 (2.30) in *T. bakurovi*, the longer antennae (on the average, only 1.10 times shorter than the elytra vs. 1.15 in *T. bakurovi*); besides, the subapical pore of the elytra more strongly shifted toward their apex (on the average, 92.5% vs. 90% of the elytra).

Distribution. It is known only from the Listvyaga Ridge in the southwestern Altai, Kazakhstan, where it seems to replace *T. bakurovi* Shilenkov which is widespread over Southern Siberia.

Habitats. The species occurs at 1 200-1 500 m a.s.l.

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Резюме

Белусов И.А., Кабак И.И. Новые таксоны рода *Trechus* Clairv. (Coleoptera, Carabidae) из Алтая.

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Из Алтая описываются 5 новых видов и 1 подвид рода *Trechus*: *Trechus zintchenkoi* и *T. tesnensis* с хребта Листвяга, *T. incisipenis* и *T. markakolensis* из окрестностей оз. Маркаколь (Казахстан), *T. pulvinipenis* с Башчелакского хребта (Россия) с подвидом *T. pulvinipenis ivanensis* с Ивановского хребта (Казахстан).