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THE TAXONOMIC POSITION OF *CARABUS (MORPHOCARABUS) KOZHANTSCHIKOVI* LUTSHNIK, 1924 AND *CARABUS (MORPHOCARABUS) ODORATUS* MOTCHULSKY, 1844 (COLEOPTERA: CARABIDAE)

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Abstract - Two Siberian species, *C. kozhantschikovi* Lutshnik, 1924 and *C. odoratus* Motschulsky, 1844, are examined. *C. odoratus martjanovianus* ssp. n. from western Sayans is described. Diagnostic data are given. The endophallus of *C. kozhantschikovi*, not previously figured, is illustrated.

KEY WORDS: Coleoptera, Carabidae, *Carabus*, taxonomy, distribution, new subspecies, western Sayans.

Izveček - TAKSONOMSKI POLOŽAJ VRST *CARABUS (MORPHOCARABUS) KOZHANTSCHIKOVI* LUTSHNIK, 1924, IN *CARABUS (MORPHOCARABUS) ODORATUS* MOTCHULSKY, 1844 (COLEOPTERA: CARABIDAE)

Obravnavani sta dve sibirski vrsti, *C. kozhantschikovi* Lutshnik, 1924, in *C. odoratus* Motschulsky, 1844. Opisana je *C. odoratus martjanovianus* ssp. n. iz zahodnih Sajanov. Navedeni so določevalni znaki. Prvič je prikazan endofalus vrste *C. kozhantschikovi*.

KLJUČNE BESEDE: Coleoptera, Carabidae, *Carabus*, taksonomija, razširjenost, nova podvrsta, zahodni Sajani.

C. odoratus Motsch. is distributed from the Yamal peninsula, and all around Siberia to the Magadan area and Kamchatka peninsula; in south Siberia from Altai up to the Khabarovsk territories. The species has a large number of subspecies and local forms. *C. odoratus* occurs in mountain forests, mountain and forest tundras; in the north part of the area it inhabits plain and forest tundras. *C. kozhantschikovi* Lutsh. is an endemic species of western Sayans, which, it seems, occurs only in high mountains.

The name *C. kozhantschikovi* has been wrongly attributed to other species by many authors. Often this name was used for *C. aeruginosiformis* Breuning, 1932. It was usually considered that *C. kozhantschikovi* and *C. odoratus* are morphologically very similar. The study of specimens from various localities of the *C. odoratus* area and restudy of the single known specimen of *C. kozhantschikovi* (syntype of *C. martjanovi*), has shown that it not only strongly differs from *C. odoratus* but is also morphologically isolated in the *Morphocarabus* subgenus. Its general appearance is not typical for the subgenus, externally resembling the Caucasian *Carabus*-species of the subgenus *Microtribax* Gottwald. V. Lutshnik (1924) separated *C. kozhantschikovi* and *C. martjanovi* in the subgenus *Sajanocarabus* (type species *C. kozhantschikovi* Lutshnik, 1924) on the basis of the following features: body more or less flattened; mandibles moderately long, evenly incurved; labrum wider than clypeus; mentum with tooth; submentum with two setae; palpi long, the last but one joint of the maxillary palpi longer than the last joint, the last but one joint of the labial palpi with two setae; metepisterna short; sternal sulci absent; fore male tarsi with four dilated segments. However, the features specified by him cannot be considered as subgeneric and it is more correct to consider these species as members of the subgenus *Morphocarabus*.

Carabus (Sajanocarabus) kozhantschikovi Lutshnik, 1924 was described after one pair from western Sayans: the Kazyr Suk River. The types are absent. *Carabus (Sajanocarabus) martjanovi* Lutshnik, 1924 was described from the same locality after one female, also after specimens of Kozhanchikov (the dates of collecting are about the same: *C. kozhantschikovi* June 25-July 21, 1918, and *C. martjanovi* June 19, 1918). The type of *C. martjanovi* (Fig. 1) is preserved in the Zoological Institute of the Russian Academy of Sciences (Sankt-Petersburg). According to Breuning (1932), who studied the types of both species, this form is conspecific with *C. kozhantschikovi*.

The description of V. Lutshnik (1924) does not look sufficient, I therefore propose a redescription.

Carabus (Morphocarabus) kozhantschikovi Lutshnik, 1924. (Figs 1,5,8,11).

- *kozhantschikovi* Lutshnik, 1924. Jahrb. Martjan. Staatsmus. in Minussinsk, II, 1: 37, 43, 63.

- *martjanovi* Lutshnik, 1924. Jahrb. Martjan. Staatsmus. in Minussinsk, II, 1: 37, 45, 65.

Type locality: western Sayans, Kazyr Suk River.

Description:

Body length 19.5 mm (including mandibles), width 7.0 mm.

Head, pronotum and elytrae black with greenish lustre, margin of elytrae greenish;

mandibles, palpi, antennae, femurs and ventral surface brown; tibiae and tarsi reddish brown.

Head extended, not thickened, ratio width of pronotum/width of head 1.85; eyes strongly convex; mandibles moderately long, narrow, its apical part strongly incurved and sharply pointed; retinaculum of the right and left mandibles bidentate, terebral tooth of both mandibles slightly protruding upwards, triangular; surface of mandibles smooth. Frontal furrows very short and relatively deep, inside smooth. Frons, vertex and neck smooth. Labrum much wider than clypeus, strongly notched, with two long lateral setae. Antennae long, protruding beyond the base of pronotum by 5 apical joints; palpi slightly dilated; the last but one joint of the labial palpi with two setae. Mentum tooth triangular, much shorter than lateral lobes; submentum with two very long setae.

Prothorax flattened, narrow, nearly cordiform, broadest before middle; ratio width/length 1.35. Sides of pronotum evenly rounded anteriorly, then narrowed to hind angles. Pronotum smooth, anteriorly and laterally with few shallow wrinkles. Median longitudinal line well-marked; basal foveae oblong-oval, deep, inside with sparse wrinkles. Sides of pronotum narrowly margined, its margin broader and slightly bent upwards posteriorly; lobes of hind angles rounded, moderately long. Lateral margin with four setiferous pores: two pores before middle, one pore at about middle and one pore near hind angle.

Elytrae flattened, narrow, widest behind middle; shoulders prominent; sides of elytrae relatively broadly margined. Ratio length/width 1.66; ratio width of elytrae/width of pronotum 1.69. Primary elytral interspaces a little more developed, interrupted into relatively long links; secondary and tertiary about equally developed, posteriorly partially interrupted into short and long links. Primary foveoles distinct; striae finely punctured.

Metepisterna smooth, length nearly equal to width. Abdominal sternites smooth; third and fourth sternites with three setae; fifth sternite with two setae, sixth sternite with ten setae on back edge. Sternal sulci absent.

Legs long; femurs of fore legs strongly dilated, fore tarsi with four dilated and pubescent segments.

Aedeagus (Fig 5), strongly curved near base, apical lamella narrow, sharply pointed, bent downwards (viewed laterally) and slightly bent to the left side (viewed dorsally); endophallus (Fig. 8): aggonoporus consists of two small symmetric plates (Fig. 11) ventral apical lobe of endophallus one-lobate, less prominent than in *C. odoratus*, median lateral lobe reduced, right basal lateral lobe convex.

Differential diagnosis:

The species differs from *C. odoratus* by the following features: head more extended, eyes more prominent, pronotum narrower, more flattened and more cordiform, lobes of pronotal hind angles longer, frons and pronotum smooth, elytrae strongly flattened, elytral striae finely punctured, legs and antennae longer.

In the shape of aedeagus both species are similar to each other (Figs 5,6,7), endophallic structure of *C. kozhantshikovi* however is very peculiar and strongly dif-

fers from endophallic structure of *C. odoratus* (Figs. 8,9,10).

Examined material: male with labels: "Sayans Mountain, Kazyr-Suk Riv., 19.VI.1918, Kozhanchikov leg. "C. martjanovi Lutschn., Typ.? O. Kryzhanovskij det. ", "Ex coll. Lutschnik" (Zoological Institute of the Russian Academy of Sciences, Sankt-Petersburg).

C. kozhantschikovi is endemic in the western Sayans. Up to now only one population of *C. kozhantschikovi* from the western Sayans (Kazyr Suk River) is known. In the modern materials this species is absent. Only three populations of *C. odoratus* from the western Sayans are known: *C. odoratus shaman* Shilenkov, 1996 from Shaman Mountain, *C. odoratus sambylensis* Shilenkov, 1996 from the Sambyl Pass (both from the Abakan river bassin) and *C. odoratus martjanovianus* ssp. n. from the vicinity of Sayanogorsk (closest to the locality of *C. kozhantschikovi*). The specimens from near Sayanogorsk were wrongly determined by many authors as being *C. kozhantschikovi*. The study of these specimens has shown that they have significant differences not only from *C. kozhantschikovi*, but also represent an unknown subspecies of *C. odoratus*.

Carabus (Morphocarabus) odoratus odoratus Motschulsky, 1844 (Figs 2,6,9,12).
- *odoratus* Motschulsky, 1844, Insectes de la Sibérie: 100.

Type locality: The species was described from "Alpes du Hamar-Daban". The lectotype (Fig. 2) is preserved in the collection of the Zoological Museum of Moscow University.

Typical *C. odoratus* is characterised by relatively broad and convex pronotum with more evenly rounded sides and shorter hind angles; frons and pronotal punctuation much rougher and dense; elytrae more convex, elytral sculpture rougher, antennae shorter.

Examined material: male, lectotype (designated by O.L. Kryzhanovsky, 1968) with three labels: "Mt. Hamar-Daban", "Carabus odoratus. Alp. Ham. D. mihi" and "Lectotypus, Kryzhanovskij det. "; 6 males, paralectotypes, with labels "Mt. Hamar-Daban" and "Paratypus, Carabus odoratus Motsch., Kryzhanovskij det."

Carabus (Morphocarabus) odoratus martjanovianus ssp. n. (Figs 3,4,7,10).

Holotype: male with labels: "Russia, Sajon m., Sajonogorsk, 7.7.1993" and "*C. kozhantschikovi*" (Darwin-Museum, Moscow); paratypes: male, 2 females with same labels (Darwin-Museum, Moscow, coll. B. Brezina, Prague).

Description:

Body length 18.8-20.0 mm (including mandibles), width 7.4-8.0 mm.

Head, pronotum and elytrae black with bronze, green or blue lustre; margin of elytrae blue or green; primary elytral foveoles bronze or blue; ventral surface, femurs,

clypeus and antennae blackish brown; mandibles, palpi, tibiae, tarsi, claws and the first four joints of antennae (apically) reddish brown.

Head not thickened, ratio width of pronotum/width of head 1.79; eyes moderately convex; mandibles strongly incurved and sharply pointed; terebral tooth of left mandibles nearly reduced; surface of mandibles smooth. Frontal furrows shallow, inside smooth. Frons and vertex nearly smooth, neck with sparse and coarse punctures. Labrum wider than clypeus, moderately notched, with two lateral setae. Antennae protruding beyond the base of pronotum by 3 apical joints; palpi moderately dilated; the last but one joint of the labial palpi with two setae. Mentum tooth triangular, shorter than lateral lobes; submentum with two setae.

Prothorax transverse, broadest before middle; ratio width/length 1.46. Pronotum with sparse shallow wrinkles. Median longitudinal line distinct; basal foveae oval, deep, inside with sparse wrinkles. Sides of pronotum narrowly margined, its margin slightly bent upwards posteriorly; lobes of hind angles short, slightly bent downwards. Lateral margin with two setiferous pores: one pore at about middle and one pore near hind angle.

Elytrae flattened, relatively broad, widest at about middle; shoulders prominent; sides of elytrae broadly margined. Ratio length/width 1.69; ratio width of elytrae/width of pronotum 1.51. All elytral interspaces interrupted into short and long links; primary interspaces slightly broader than secondary and tertiary. Sometimes elytral interspaces interflow transversely; primary foveoles distinct; striae coarsely punctured.

Metepisterna and abdominal sternites smooth, metepisterna not longer than its width. Sternal sulci absent.

Legs of normal length; femurs of fore legs dilated, fore male tarsi with four dilated and pubescent segments.

Aedeagus (Fig. 7): apical lamella narrow, slightly bent downwards (viewed laterally) and bent to the left (viewed dorsally); endophallic structure is characteristic for the species (Fig. 10).

Differential diagnosis:

The new subspecies differs from *C. odoratus* s. str., *C. odoratus shaman* Shilenkov, 1996 and *C. odoratus sambylensis* Shilenkov, 1996 by smooth frons, nearly smooth pronotum with few fine wrinkles and strongly flattened elytrae. It also differs from *C. odoratus shaman* by narrowly margined pronotum.

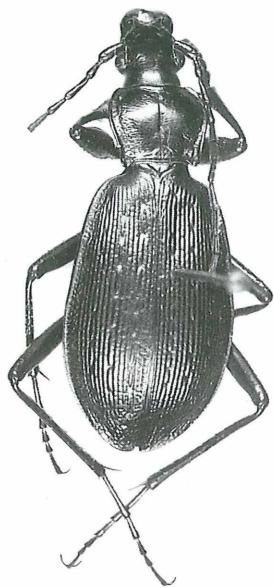
The new subspecies easily differs from *C. kozhantshikovi* by less extended head with less convex eyes; shorter antennae and legs; broader pronotum and elytrae; more coarse elytral sculpture and peculiar endophallic structure (Figs. 5,7).

Derivatio nominis:

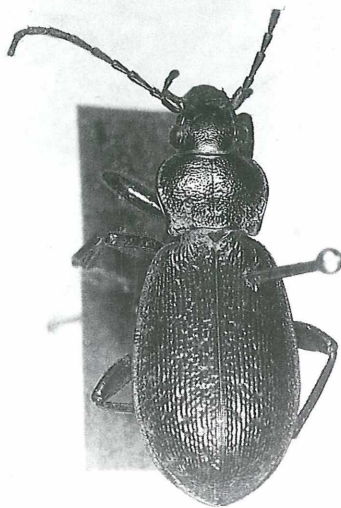
The new subspecies is named in honour of N. M. Martianov, founder of the oldest and best known Siberian museum in Minussinsk.

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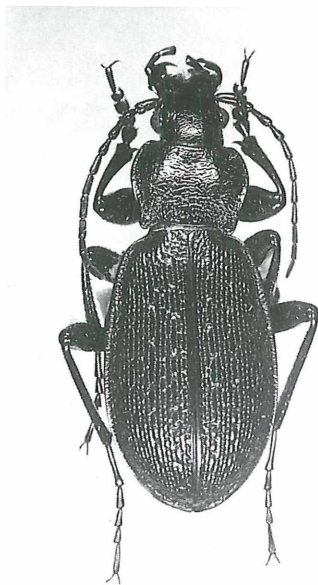
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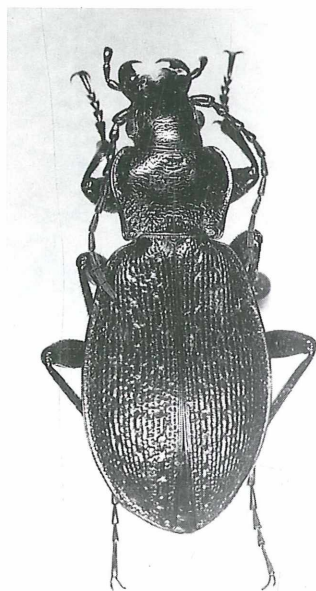
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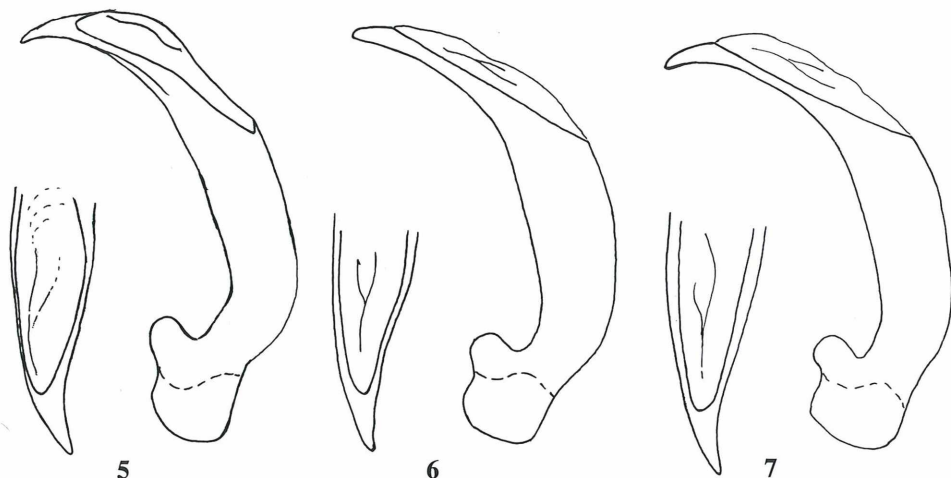


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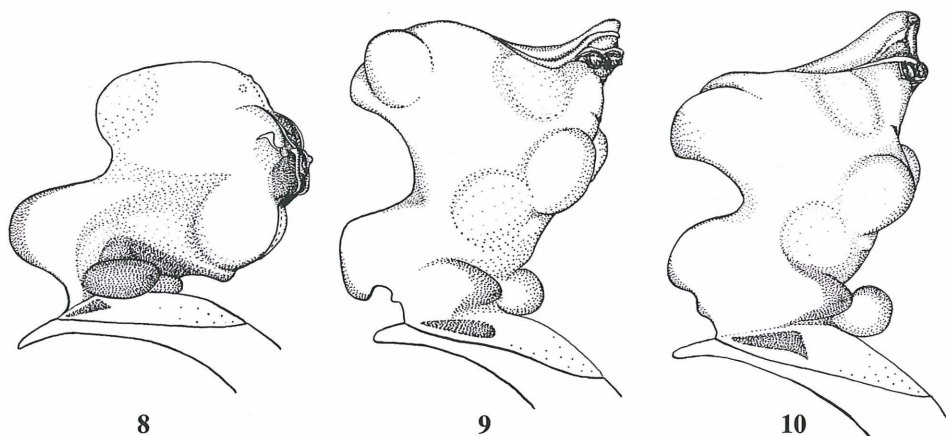


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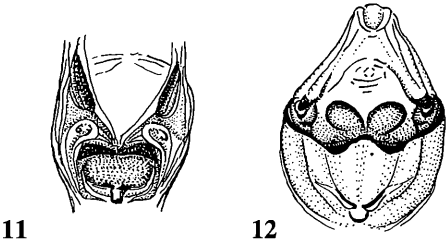
Figs 1-4: *Carabus* (general view), 1. *C. kozhantshikovi* (syntype of *C. martjanovi*), 2. *C. odoratus odoratus* (lectotype), 3. *C. odoratus martjanovianus* ssp. n. (holotype), 4. *C. odoratus martjanovianus* ssp. n. (paratype).



Figs 5-7: Aedeagus (right lateral view and dorsal view), 5. *C. kozhantschikovi* (syntype of *C. martjanovi*), 6. *C. odoratus odoratus* (from Hamar-Daban), 7. *C. odoratus martjanovianus* ssp. n.



Figs 8-10: Endophallus in complete extension (right lateral view), 8. *C. kozhantschikovi* (syntype of *C. martjanovi*), 9. *C. odoratus odoratus* (from Hamar-Daban), 10. *C. odoratus martjanovianus* ssp. n.



Figs 11-12: Aggonoporiis (dorsal view), 11. *C. kozhantschikovi*, 12. *C. odoratus*

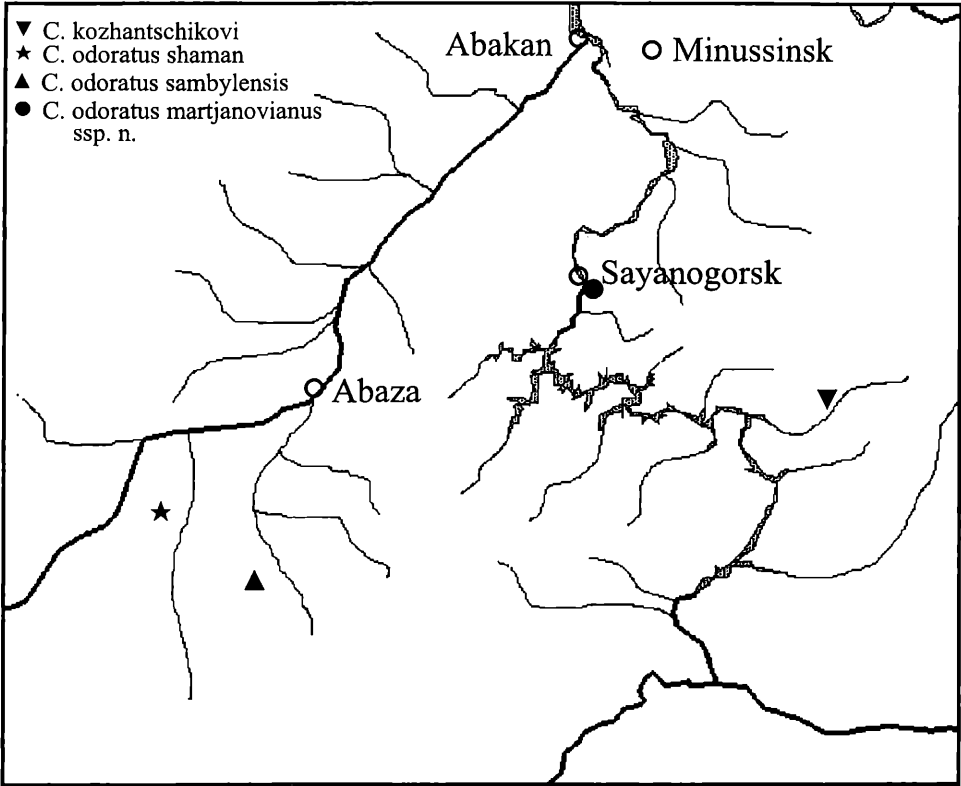


Fig. 13: The map of western Sayans: distribution of *C. kozhantschikovi* and subspecies of *C. odoratus*.