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Scopaeus chalcodactylus Kolenati, 1846 (Coleoptera: Staphylinidae), a new species of rove beetles for the fauna of Russia

Scopaeus chalcodactylus Kolenati, 1846 (Coleoptera: Staphylinidae) – новый для фауны России вид стафилинид

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Ключевые слова: Coleoptera, Staphylinidae, Paederinae, *Scopaeus chalcodactylus*, распространение, фауна, Центральный Кавказ, Россия.

Abstract. The rove beetle *Scopaeus chalcodactylus* (Kolenati, 1846) is for the first time recorded for the territory of the North Caucasus (Kabardino-Balkarian Republic), this finding moreover constitutes the first record of the species for the Greater Caucasus and Russia. The related, allopatric *S. pusillus* Kiesenwetter, 1843, which in the Greater Caucasus was known from Azerbaijan (Ganja) only, is recorded for the western Greater Caucasus (Krasnodar Province). The total range of *S. chalcodactylus* and the Middle Eastern and Caucasian distribution of *S. pusillus* are mapped and discussed as well as the habitat requirements of *S. chalcodactylus* and the chorology of its Central Caucasian populations. Diagnostic characters of *S. chalcodactylus* and *S. pusillus* are presented including figures of the aedeagi.

Резюме. Впервые представлены данные о находке стафилинид *Scopaeus chalcodactylus* (Kolenati, 1846) на Северном Кавказе (Кабардино-Балкария), что является также первым указанием для Большого Кавказа и России. Близко связанный с ним аллопатрический вид *S. pusillus* Kiesenwetter, 1843, который на Большом Кавказе был известен только из Азербайджана (Ареш), указан для запада Большого Кавказа (Краснодарский край). Представлена карта и обсуждается ареал *S. chalcodactylus* и распространение *S. pusillus* на Среднем Востоке и Кавказе. Описаны местообитания и хорология центральнокавказской популяции *S. chalcodactylus*. Представлены диагностические характеристики *S. chalcodactylus* и *S. pusillus*, включая фотографии эдеагусов.

Scopaeus Erichson, 1839 (Staphylinidae: Paederinae) presently includes 452 valid species worldwide about a quarter of which is distributed in the West Palaearctic [Frisch, 2012]. The predominantly riparian rove beetle genus is traditionally diagnosed by four denticles at the anterior margin of the labrum – an unusable character which is also present in *Micranops* Cameron, 1913 [Frisch et al., 2002],

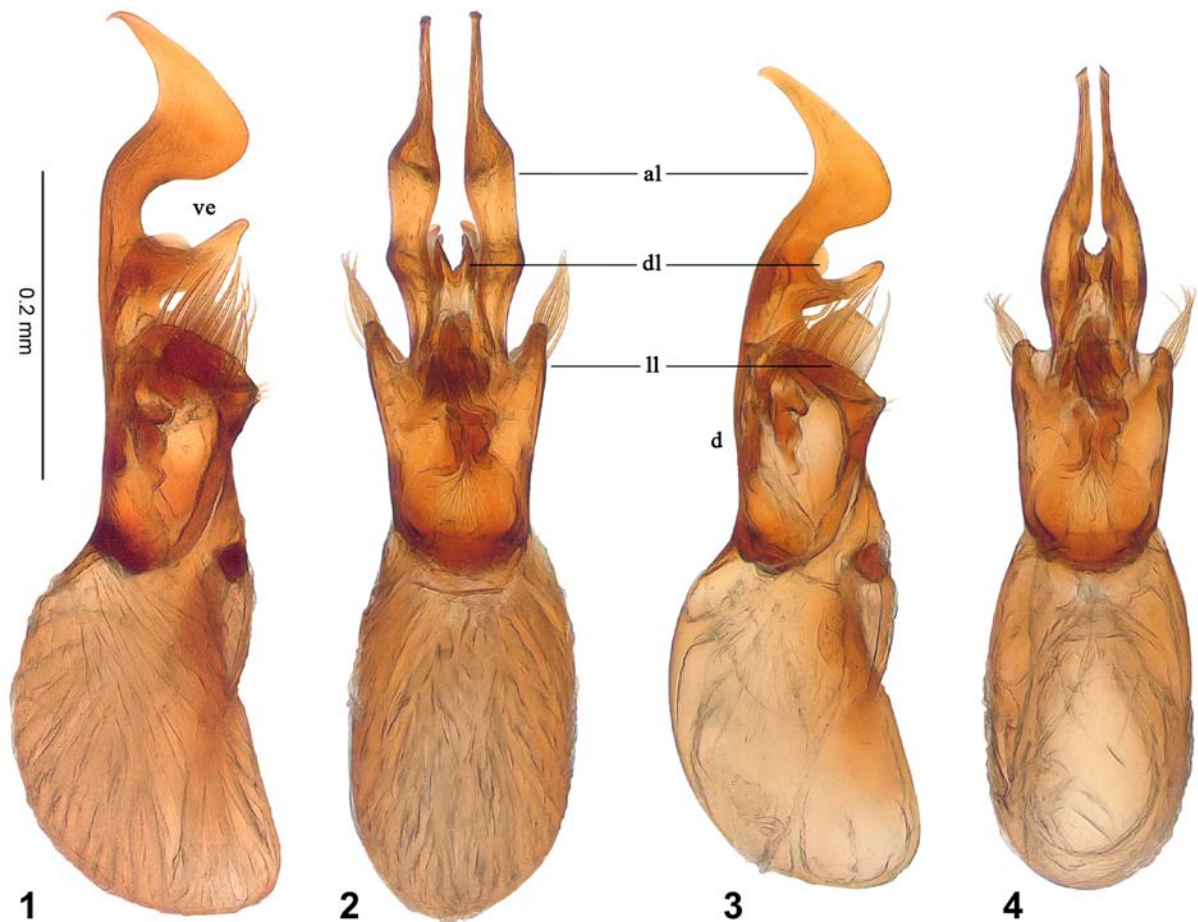
the second genus of the subtribe Scopaeina Mulsant et Rey, 1878 in the Palaearctic, which is represented in the Caucasus by *M. pilicornis* (Baudi, 1870) [Gusarov, 1992b]. *Micranops*, however, can easily be distinguished by smaller size and a distinct furrow posterior of the eyes, where a temporal trichobothrium, an important apomorphy of the subtribe, is located [Frisch et al., 2002].

In the Caucasus, only 13 species of *Scopaeus* were hitherto found. While most of them have a wider distribution, two species seem to be endemic to the Caucasus: *Scopaeus argonauta* Gusarov, 1992, described from Adzharia and Krasnodar [Gusarov, 1992a] and recorded from Western Transcaucasia by Solodovnikov [1998a], and *S. gusarovi* Frisch, 2009 from the Greater Caucasus and Northern Transcaucasia [Frisch, 2009]. For the North Caucasus, however, only *S. laevigatus* (Gyllenhal, 1827) was recorded up to now [Frisch, 2003]. The discovery of *S. chalcodactylus* (Kolenati, 1846) in the North Caucasus published herein constitutes the first record of this species for all of the Greater Caucasus and Russia. This little known species was described from Armenia as *Lathrobium chalcodactylus* and for a long time considered as a synonym of *S. minutus* Erichson, 1840, which is absent from the Caucasus, until it was revalidated by Frisch [1997].

Material and methods

The material was collected by sifting plant litter by the first author. The specimens were identified by the first author according to Frisch [1997] and the identification confirmed by the second author. The vertical zonation variants of the Caucasus are given according to Sokolov and Tembotov [1989]. The terminology of the aedeagus follows Frisch et al. [2002].

The material is stored in Tembotov Institute of Ecology of Mountain Territories, Kabardino-Balkarian Scientific Centre, Russian Academy of Sciences, Nalchik.



Figs 1–4. Aedeagi of *Scopaeus chalcodactylus* (1, 2) and *S. pusillus* (3, 4).

1, 3 – lateral view; 2, 4 – dorsal view; al – apical lobes; dl – dorsal lobe; ll – lateral lobes; ve – ventral emargination of apical lobes; d – dorsal margin of aedeagus.

Рис. 1–4. Эдеагусы *Scopaeus chalcodactylus* (1, 2) и *S. pusillus* (3, 4).

1, 3 – вид сбоку; 2, 4 – вид сверху; al – апикальные лопасти; dl – дорсальные лопасти; ll – латеральные лопасти; ve – вентральная выемка апикальных лопастей; d – дорсальный край эдеагуса.

Scopaeus chalcodactylus (Kolenati, 1846)

Material. Russia: Kabardino-Balkarian Republic, Belaya Rechka village, 43°26'399"N / 43°32'644"E, 698 m a.s.l., meadow, in compost, 30.04.2011, 1♂, 15.05.2011, 2♀, 3.06.2012, 2♂, 1♀, 12.06.2012, 1♂, 4♀, 1.09.2012, 1♂, 1♀; vicinity of Belaya Rechka village, left bank of Belaya River, flood-plain deciduous forest, in moss on trunk of tree, 9.10.2011, 2♂, 1♀; vicinity of Elbrus village, floodplain of Baksan River, right bank, 43°15'870"N / 42°39'322"E, 1764 m a.s.l., at permanent pool, under stones, 6.07.2012, 2♂, 1♀; vicinity of Elbrus village, 43°14'952"N / 42°38'388"E, 1759 m a.s.l., bottomland of Baksan River, left bank, sandy soil covered by algae, under stones, 10.07.2012, 5♂; spurs of Skalistyi Ridge, Gundelen River valley, 2 km W of Gundelen village, 43°35'973"N / 43°06'834"E, 988 m a.s.l., meadow, under stones at bank of brook, 15.07.2013, 1♂, 2♀.

Diagnosis. The redescription of *Scopaeus chalcodactylus* by Frisch [1997] is based on a few old specimens only. Meanwhile, about 350 specimens from all over the range are available, which reflect the species' variability. Thus, *S. chalcodactylus* can be briefly diagnosed as follows:

Body length 2.6–3.3 mm (depending on degree of expansion or contraction of abdomen), forebody length 1.4–1.7 mm. Forebody usually medium brown to dark brown, frequently blackish brown, more rarely light brown or reddish brown; elytra unicolorous or somewhat lighter at shoulders, suture and towards posterior margin; abdomen blackish brown, in lighter specimens medium brown; appendages yellowish brown to light brown

except for darker penultimate segment of maxillary palpi. Head notably widened posterior of eyes with somewhat concave hind margin; eyes small, 0.42–0.5 times as long as tempora. Sutural length of elytra shorter than pronotal length, 0.78–0.92 times as long as pronotum. Penultimate antennomeres notably transverse. Protarsomeres 2–4 strongly transverse, in males about 3 times as wide as long, in females twice as wide as long. Mesotibia strongly dilated, 4.4–5 times as long as wide. Abdominal sternite VIII with short triangular emargination in about posterior fifth of sternite length. Aedeagus (Figs 1–2) with two remarkable, strongly laterally projecting, setiferous lateral lobes and two ventrally almost semicircularly emarginate apical lobes with broad apical portion with strongly dorsad curved, evenly tapered, acute ends; dorsal margin of aedeagus, in lateral view (Fig. 1), straight between phallobasis and ventral emargination, behind that notably curved ventrad towards broad apical portion of apical lobes; in dorsal view (Fig. 2), apical lobes with widened median third with slightly concave lateral margins which, by forming obtuse angles, is strongly tapered both in proximal and distal direction; dorsal lobe (between bases of apical lobes) as long as proximal third of apical lobes, in lateral view projecting from proximal margin of emargination of apical lobes, in dorsal view bilobate with deep, V-shaped apical emargination.

Differential diagnosis. *Scopaeus chalcodactylus* can be safely distinguished from the closely related *S. pusillus* Kiesenwetter, 1843 according to genital characters only.

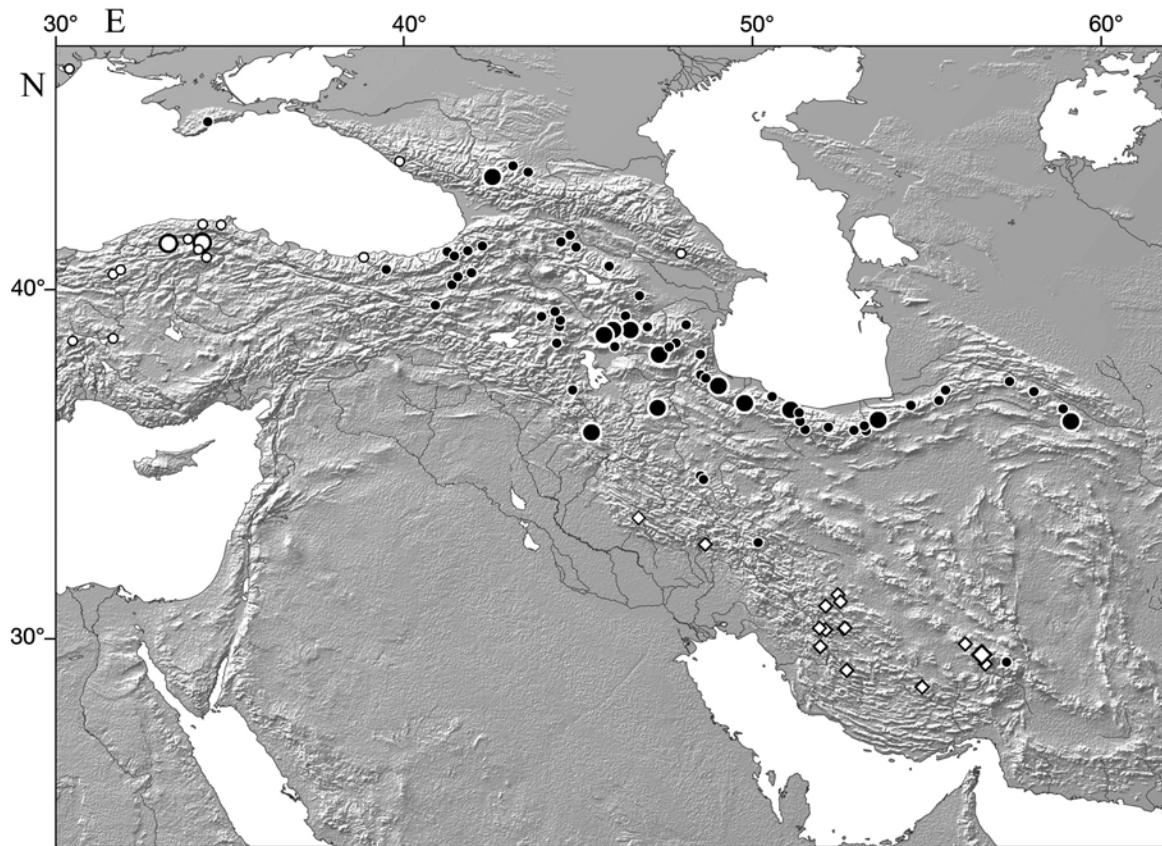


Fig. 5. Distribution of species of the genus *Scopaeus* in the Middle East and Caucasia. The large circles symbolize multiple localities at a small geographical area.

Рис. 5. Распространение видов рода *Scopaeus* на Среднем Востоке и Кавказе. Большими кругами отмечены многочисленные местонахождения на сравнительно малой территории.

● – *S. chalcodactylus*; ○ – *S. pusillus*; ◇ – *S. farsensis*.

The aedeagus of the latter species (Figs 3–4) differs from *S. chalcodactylus* by the following characters: lateral lobes less projecting; apical lobes with notably narrower ventral emargination and less broad apical portion (Fig. 3), in dorsal view (Fig. 4) not parallel, but with evenly curved lateral margins; dorsal margin of aedeagus, in lateral view (Fig. 3), not straight but evenly curved between phallobasis and dorsad bent apex of apical lobes; dorsal lobe somewhat longer, in lateral view (Fig. 3) projecting from deepest point of ventral emargination of apical lobes, in dorsal view (Fig. 4) with less deep, semicircular emargination.

Biogeography. Including the new records from the central Greater Caucasus, the distribution of *Scopaeus chalcodactylus* (Fig. 5) expands from the very northeast of Turkey [Frisch, 2002] throughout the Caucasus and the Irano-Anatolian highlands across the Zagros Mountains southeast to Esfahan and the highlands of Kerman, and in a narrow band throughout the South Caspian Mountains (Talış, Elburz) including the Aladag and Barjovein Mountains as far east as the Binalud Range in Northeast Iran. A population of *S. chalcodactylus* in the coastal mountains of Crimea [Frisch, 1997; Gontarenko, 2009] appears to be isolated from the main area of distribution, but it well may be that this big distribution gap is an artifact due to a lack of records. The species is widespread in the

Lesser Caucasus, where it is recorded for Armenia [Kolenati, 1846; Frisch, 2007], Azerbaijan, and Georgia [Frisch, 2007], but it seems to be absent from the lowlands of Georgia and Azerbaijan. *Scopaeus chalcodactylus* was also unknown from the Greater Caucasus, until it was recently discovered by the first author in Kabardino-Balkarian Republic, Russia. Considering the new findings in the North Caucasus, the distribution of *S. chalcodactylus* can be described as Crimean-Caucasian-West Asian.

Looking at the distribution pattern of *S. chalcodactylus* from the viewpoint of historical biogeography, the species is a true Caspian faunal element, because its range matches the Pleistocene glacial refuge of the Caspian distribution type according to de Lattin [1951, 1957] in Crimea, Transcaucasia, and mountains surrounding the southern part of the Caspian Sea [Frisch, 2006, 2007]. The discovery of *S. chalcodactylus* in the Greater Caucasus proves that the species is a true Caspian faunal element, because species of the Caspian distribution type as a rule occur in the Greater Caucasus, at least in the warmer southern slopes.

Like *Scopaeus pusilloides* Frisch, 1997 from the Iberian Peninsula and *S. farsensis* Frisch, 2007 from southwestern Iran, *S. chalcodactylus* is a southern vicariant of the widespread West Palearctic *S. pusillus* Kiesenwetter, 1843, which was already published for the very Northwest

of the Greater Caucasus [Solodovnikov, 1998b] and the eastern Greater Caucasus in Azerbaijan [Frisch, 2007]. Recently, it was also found in Krasnodar Province (Sochi, mouth of Psakhe River, 18–19.09.2008, leg. Enustschenko (Alexey Shavrin Private Collection, Irkutsk, Russia)). The total distribution of *S. pusillus* reaches from West Europe eastwards to Altai and Baikal. The new records of *S. chalcodactylus* reveal that both species occur in the Greater Caucasus, but further finds are necessary to resolve the question if they are sympatric there.

Bionomics. Habitat and microhabitat requirements of *Scopaeus chalcodactylus* were never published before. Like most *Scopaeus*, the species predominantly inhabits humid, sandy or gravelly, insolated ground with sparse pioneer vegetation, usually on the banks and shores of running waters [Frisch et al., 2002]. In Iran and Turkey, the second author frequently collected *S. chalcodactylus* along creeks and rivers in the uppermost interstice of sandy soil, under gravel and stones, in ground vegetation and phytodebris. Likewise, the new localities in the Central Caucasus are situated close to watercourses except for a humid meadow, where the species was repeatedly sifted from compost.

According to Frisch et al. [2002], the occurrence of most *Scopaeus* species depends more on the availability of suitable habitat structures near flowing waters than on the altitude of the habitat. Consequently it is not surprising, that *S. chalcodactylus* occurs in a wide span of altitude. In Iran it is known from 300 m to 2950 m a.s.l., in Turkey from 300 m to 2500 m a.s.l., and in Georgia the species was found at 1370 m a.s.l. [Frisch, 2007, 2010]. In the North Caucasus, the first author collected *S. chalcodactylus* from 698 m a.s.l. up to 1759 m a.s.l. in the temperate, humid anthropogenic and natural intrazonal habitats within the forest communities of the “Elbrus” (Эльбрусский) and “Terek” (Терский) variants of vertical zonation. In Armenia it was registered in both the “Karabakh-Zangezur” (Карабах-Зангезурский) and the “Central-Lesser Caucasus” (Центрально-малокавказский) variants of vertical zonation, and in Azerbaijan and Georgia in the latter variant only.

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