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New species of *Malthodes* Kiesenwetter, 1852 from the Caucasus, with taxonomic notes on Malthininae (Coleoptera: Cantharidae) of Russia

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Abstract. Three new species of malthinine soldier-beetles, *Malthodes seregiusi* sp. n., *M. vikhrevi* sp. n. and *M. vladimiri* sp. n., are described from the Caucasus (the first two from Krasnodar Region of Russia, the third from Adzharia, Georgia). The following new synonymy is established: *Malthinus flaveolus* (Herbst, 1786) = *Malthinus robustus* Motschulsky, 1853, **syn. n.**, *Malthodes brevicollis* (Paykull, 1798) = *Malthodes viridiventris* (Motschulsky, 1853), **syn. n.**, and *Malthodes obscuricollis* (Motschulsky, 1853) = *Malthodes moczarskii* Ganglbauer, 1912, **syn. n.** = *Malthodes tauricus* Pic, 1917, **syn. n.** A neotype is designated for *Malthodes obscuricollis* (Motschulsky, 1853) to be deposited at the Zoological Museum of Moscow University (Moscow, Russia).

Key words: Coleoptera, Cantharidae, Malthininae, new species, taxonomy, Palaearctic region.

Новые виды *Malthodes* Kiesenwetter, 1852 с Кавказа с таксономическими замечаниями по Malthininae (Coleoptera: Cantharidae) России

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Резюме. С Кавказа описано три новых вида жуков-мягкотелок подсемейства Malthininae: *Malthodes seregiusi* sp. n., *M. vikhrevi* sp. n. (Краснодарский край, Россия) и *M. vladimiri* sp. n. (Аджария, Грузия). Установлена синонимия: *Malthinus flaveolus* (Herbst, 1786) = *Malthinus robustus* Motschulsky, 1853, **syn. n.**, *Malthodes brevicollis* (Paykull, 1798) = *Malthodes viridiventris* (Motschulsky, 1853), **syn. n.** и *Malthodes obscuricollis* (Motschulsky, 1853) = *Malthodes moczarskii* Ganglbauer, 1912, **syn. n.** = *Malthodes tauricus* Pic, 1917, **syn. n.** Обозначен неотип *Malthodes obscuricollis* (Motschulsky, 1853), который передан на хранение в Зоомузей МГУ (Москва, Россия).

Ключевые слова: Coleoptera, Cantharidae, Malthininae, новые виды, таксономия, Палеарктическая область.

The soldier-beetles of the subfamily Malthininae are widespread around the globe [Delkeskamp, 1977]. They are characterized by the small size, the smallest being just above 1 mm, pointed globular palpomeres and, unlike other cantharids, in most cases can be distinguished only by the shape of the ultimate abdominal segments and/or male genitalia [Brancucci, 1980]. Some of the taxa of malthinines from the territory of the Russian Federation were introduced in the middle of the 19 century by the famous Russian coleopterist Victor Motschulsky, but have remained unknown for specialists in the group and never included in any identification keys, although sometimes mentioned in lists of the regional or Palaearctic fauna [Medvedev, 1965; Brancucci, 1980; Wittmer, 1992; Kazantsev, Brancucci, 2007; Kazantsev, 2011].

Unfortunately, no type specimens of soldier-beetles described by Motschulsky from the territory of the former Russian Empire have been found in the Zoological Museum of Moscow University (Moscow, Russia), where the Motschulsky collection is housed. Neither have they been found in the Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia) where a smaller part of this collection is deposited. It seems to be the same case as with the Lampyridae collection, with almost all Motschulsky's types available, but not the ones from Russia and adjacent countries [Kazantsev, Nikitsky,

2008; Kazantsev, 2011]. This could have happened if all type 'Cantharoidea' material from this territory had been set aside for/by and sent to/taken by a specialist in this group. In Russia there was only one such person, Mr V.V. Barovskij of Leningrad, a specialist in Cantharidae and Lycidae. The material could then have disappeared after the arrest of Mr Barovskij in the 1930s and his deportation first to Totma in Vologda Region, then to Irkutsk Region, where he passed away in 1942 (<http://zin.ru/Animalia/Coleoptera/rus/barovsk.htm>).

The present study is a further contribution to the knowledge of Malthininae of the European part of Russia. Examination of the Cantharidae material from the Zoological Institute of the Russian Academy of Sciences, Zoological Museum of Moscow University and Insect Centre (Moscow) has led to the discovery of three new species of *Malthodes* Kiesenwetter, 1852 from the Caucasus, as well as to the possibility to address the problem of attribution of Motschulsky's Malthininae taxa described from the mentioned territory.

Material and methods

The studied specimens were glued on cardboard plates. For examination the abdomina were detached from the relaxed specimens and treated for several

hours in 10% KOH at room temperature, then, with the extracted genitalia, placed in a microvial with glycerin for photography. Drawings were made from photographs using Adobe Illustrator CS5 and Photoshop Elements 9.

MSP-1 zoom stereoscopic dissecting microscope with 8–80× magnification range were used. Photographs were taken with a Canon EOS 6D camera and Canon MP-E 65 mm lens.

The following acronyms are used in the paper:

ICM – Insect Center (Moscow, Russia);

ZIN – Zoological Institute (Saint Petersburg, Russia);

ZMMU – Zoological Museum of Moscow University (Moscow, Russia).

Family Cantharidae
Subfamily Malthininae

Tribe Malthinini

Genus *Malthinus* Latreille, 1806

Malthinus Latreille, 1806: 261.

Type species: *Cantharis flaveola* Herbst, 1786.

Malthinus flaveolus (Herbst, 1786)

Cantharis flaveola Herbst, 1786: 171.

Necydalis punctata Geoffroy, 1785: 174 (homonym).

Telephorus minimus A.G. Olivier, 1790: no 26: 17.

Cantharis immunitis Marsham, 1802: 374.

Cantharis collaris Latreille, 1806: 262.

Cantharis flava Latreille, 1806: 262.

Malthinus robustus Motschulsky, 1853: 4, **syn. n.**

Malthinus subfuscus Pic, 1906: 24.

Malthinus griseipennis Pic, 1913: 97.

Notes. The type of *Malthinus robustus* Motschulsky, 1853, as of all the other types of Cantharidae from the territory of Russia and adjacent countries appears to have been lost. However, the description of *M. robustus* is quite clear (the species is placed in the group with ‘espèces à bout des élytres couleur de souffre’): “De la taille et couleurs du *M. flaveolus*, mais avec un corselet encore plus étroit, à cotés et angles postérieurs presque droits, sans sinuosités latérales; ligne médiane remplacée par une large foveole à la base, tâches très peu marquées. Stries des élytres effacées. Articles des antennes plus larges. Russ. mer.” [Motschulsky, 1853: 4]. This description of a *Malthinus* from ‘southern Russia’ perfectly fits to *M. flaveolus* (Herbst, 1786), the most common representative of the genus in the area. Motschulsky does compare his taxon to *M. flaveolus*, but, in the same paper, he notes that in *M. flaveolus* pronotal sides are almost parallel and elytral striae are very distinct, which is characteristic not of *M. flaveolus*, but of *M. facialis* Thomson, 1864 [Ganglbauer, 1911]. Therefore, *Malthinus robustus* Motschulsky, 1853, **syn. n.** is proposed to be regarded as a junior synonym of *Malthinus flaveolus* (Herbst, 1786).

Tribe Malthodini

Genus *Malthodes* Kiesenwetter, 1852

Malthodes Kiesenwetter, 1852: 242.

Type species: *Malthinus marginatus* Latreille, 1806.

Malthodes obscuricollis (Motschulsky, 1853)

(Figs 1, 5–8)

Hapaloderus obscuricollis Motschulsky, 1853: 10.

Hapaloderus pumilus Motschulsky, 1853: 13 (homonym).

Malthodes moczarskii Ganglbauer, 1912: 181, **syn. n.**

Malthodes tauricus Pic, 1917: 13 (replacement name), **syn. n.**

Malthodes tauricus Istomina, 1969: 1104.

Material. Neotype, ♂ (ZMMU), Crimean Reserve, Chuchelsky Pass, 1100 m, 17.07.1959 (M.K. Tikhonravov) (printed label), “Neotype, Kazantsev des.” (handwritten, red rectangle), “*Malthodes obscuricollis* Mots., S. Kazantsev det. 2021” (printed label).

Additional material. 1♂ (ZIN), Simferopol, Ayanskaya Dacha, 20.05.19107, (O.G. and K. Khristoforovs), “*M. mozarskii* Ganglb.”; 1♂, 2♀ (ZMMU), Crimean Reserve, Chuchelsky Pass, 1100 m, 30.06.1957 (M.K. Tikhonravov); 1♂, 1♀ (ZMMU), Crimean Reserve, Alabach, 3.07.1957 (M.K. Tikhonravov); 1♀ (ZMMU), Crimean Reserve, Khyr-Alan, 12.07.1957 (M.K. Tikhonravov); 2♀ (ZMMU), Crimean Reserve, Nikitskaya Yayla, 1400 m, 17.07.1959 (M.K. Tikhonravov); 1♂ (ICM), [Crimea], Chatyrdag Mt., foothills, 700 m, 10.07.1960 (B. Rodendorf); 1♂ (ICM), “USSR, Crimea, Yaila Mts, 800 m, 3.VI.1983, J. Strejcek leg.”; 2♂, 1♀ (ICM), Crimea, 15 km S Bakhchisarai, 440–570 m, on elder flowers, 2–3.05.2010 (S. Kazantsev).

Notes. The type of *Malthodes obscuricollis*, as that of *Malthinus robustus*, mentioned above, and all the other types of Cantharidae from the territory of Russia and adjacent countries appears to have been lost. However, the description of *M. obscuricollis* is quite clear (the species is placed in the group with ‘corselet unicolore, obscure, étroit et en selle c.a.d. fortement incliné sur les bords latéraux’): “Forme voisine des précédents (*angusticollis* M., *maurus* Ziegl, *fuscescens* Duft), corselet également en selle, mais un peu plus petit et proportionnellement plus large que [chez] le Hapal. *fuscescens* Duft. D’un gris cendré clair, corselet, tête et antennes noires. Ceux-ci très longues, art. 2 presque aussi long que 3. Segment pygidial du mâle en dessous prolongé en crochet très long, courbé vers l’abdomen et terminé par une fourche à faces dilatés en palettes. Tauride et midi de la France” [Motschulsky, 1853: 10]. This description of a malthinine from ‘Tauride’ corresponds to *M. moczarskii* Ganglbauer, 1912, also from Crimea [Ganglbauer, 1912]. As there seem to be no other *Malthodes* in the peninsula that could be distinguished by this shape of the abdominal terminalia, the latter taxon apparently also belongs to *M. obscuricollis*. As for *M. tauricus* Pic, 1917, it was suggested as a replacement name for *M. pumilus* (Motschulsky, 1853) due to its homonymy with *M. pumilus* (Brébisson, 1835). The description of *M. pumilus* (Motschulsky, 1853) from the group with ‘corselet unicolore, obscure, large, peu incliné sur les cotés, qui sont sinueux’ reads as follows: “Taille, forme et couleurs du Hapal. *brevicollis* Payk., mais antennes encore plus courtes et plus épaisses que chez le Hapal. *obscurcellus* Schüpp., a peine de la longueur de la moitié du corps. Angles antérieurs du corselet moins saillants que chez le Hapal. *brevicollis*, cotés latéraux droits. Élytres recouvrant à peine la moitié de l’abdomen. Tauride” [Motschulsky, 1853: 13]. This description suggests it is a female (in case of males Motschulsky tends to describe ultimate abdominal segments) and fits to a *M. obscuricollis* female.

For these reasons *Malthodes moczarskii* Ganglbauer, 1912, **syn. n.** and *M. tauricus* Pic, 1917, **syn. n.** are proposed to be regarded as junior synonyms of *Malthodes obscuricollis* (Motschulsky, 1853), and a neotype of *M. obscuricollis* is designated to be deposited in ZMMU.



Figs 1–4. General view of *Malthodes*, males.

1 – *M. obscuricollis*; 2 – *M. seregiusi* sp. n.; 3 – *M. vikhrevi* sp. n.; 4 – *M. vladimiri* sp. n. 1 – neotype; 2–4 – holotypes.

Рис. 1–4. Общий вид *Malthodes*, самцы.

1 – *M. obscuricollis*; 2 – *M. seregiusi* sp. n.; 3 – *M. vikhrevi* sp. n.; 4 – *M. vladimiri* sp. n. 1 – неотип; 2–4 – голотипы.

Malthodes brevicollis (Paykull, 1798)
(Fig. 9)

Cantharis brevicollis Paykull, 1798: 269.

Malthodes nigellus Kiesenwetter, 1852: 307.

Hapaloderus viridiventrus Motschulsky, 1853: 12, **syn. n.**

Malthodes lunifer Czwalina, 1884: 272.

Notes. The type of *Malthodes viridiventrus* (Motschulsky, 1853), as of all the other types of Cantharidae from the territory of Russia and adjacent countries, as mentioned above, appears to have been lost.

However, the description of *M. viridiventrus* seems to be fairly clear (the species is placed in the group with 'corselet unicolore, obscure, large, peu incliné sur les cotes, qui sont sinueux'): "De la forme élargie du *Hapal. biguttatus*, mais beaucoup plus petit, à peu près de la taille du *Hapal. morio*, avec lequel il a la plus grande ressemblance. Couleur aussi noir, premières segments de l'abdomen d'un vers jaunâtre sale, genoux et tarsi brunâtres. Corselet très transversal, au milieu avec une large impression longitudinale, cotes latérales concaves, ce qui fait surtout ressortir les angles qui sont un peu relevés. Élytres plus longues que chez *Hapal. morio*. Segment pygidial du dessus prolonge chez le mâle en arrière droite, tandis que le celui du dessous a l'apparence d'un Y grec, pas plus long que les appendices des côtés latéraux. Ile de Walaam sur le Lac de Ladoga" [Motschulsky, 1853: 12]. This description of a malthinine from northern Russia fits only to *M. brevicollis*, a very common *Malthodes* species in the area (Fig. 9). Therefore, *Malthodes viridiventrus* (Motschulsky, 1853), **syn. n.** is proposed to be regarded as a junior synonym of *Malthodes brevicollis* (Paykull, 1798).

Malthodes seregiusi Kazantsev, **sp. n.**
(Figs 2, 10–13)

Material. Holotype, ♂ (ICM): [South Russia], "Sochi reg., 30 km NNE Adler, Chvizhipse V., 220–550 m, 29.IV–6.V.2013, S. Kurbatov leg.," Paratype: 1♂ (ICM), same label.

Diagnosis. *Malthodes seregiusi* **sp. n.** is similar to *M. pseudobesucheti* Wittmer, 1970, described from Turkey, with the same type of aedeagus, differing in the uniformly dark brown pronotum, just with narrow light brown anterior and posterior margins, parallel-sided, not widening distally and only slightly incised apically ultimate sternite and distinctly shorter parallel-sided ultimate tergite, with semi-rectangular apical incision, as well as by the conspicuously less hooked in lateral aspect laterophyses of the aedeagus with more bulging in dorsal aspect bases (Figs 10–13).

Description. Male. Dark brown to black, with lighter anterior tibiae and elytral apices; anterior and posterior pronotal margins narrowly, as well as antennomeres 1–2 and base of antennomere 3 light brown.

Head transverse, with fine scarce punctation below antennal prominence. Eyes relatively large, interocular dorsal distance ca. 1.3 times greater than eye diameter. Antennae filiform, attaining to elytral apices, with antennomere 3 ca. 1.1 times shorter than pedicel (antennomere 2) and ca. 1.4 times shorter than antennomere 4; with sub-erect, dense short pubescence (Fig. 2).

Pronotum transverse, ca. 1.5 times as wide as long, narrowly margined throughout, convex basally, straight anteriorly, with slightly diverging anteriorly straight sides, small posterior and canted anterior angles, with fine scarce punctation. Scutellum triangular, rounded at apex (Fig. 2).

Elytra elongate, ca. 2.2 times as long as wide at humeri, shortened, attaining to abdominal apex, slightly narrowing distally, without traces of longitudinal costae; apices somewhat swollen; pubescence relatively dense, short and decumbent (Fig. 2).

Legs slender, tibiae straight, subequal in length to femurs, hind tarsus ca. 1.3 times shorter than hind tibia (Fig. 2).

Terminal tergite transverse, parallel-sided, with broad shallow rectangular distal incision, penultimate tergite elongate, almost parallel-sided, with almost unmodified sides; ultimate sternite elongate, gradually narrowing distally, slightly bent in the middle in lateral view, with minute triangular distal incision (Figs 10, 11).

Aedeagus semi-oval, with narrowed distally, slightly curved median lobe and prominent laterophyses, almost unhooked in lateral aspect and conspicuously bulging bases (Figs 12, 13).

Length (from anterior head margin to end of folded wings): 2.9–3 mm. Width (humeral): 0.6–0.7 mm.

Female. Unknown.

Etymology. The name of the new species is derived from the latinized first name of Dr Sergey Kurbatov (Moscow, Russia), who collected the type series.

Malthodes vikhrevi Kazantsev, **sp. n.**
(Figs 3, 14–17)

Material. Holotype, ♂ (ICM): "South Russia, NW Caucasus, Sochi, Khosta, 3–9.V.2011, N. Vikhrev leg."

Diagnosis. *Malthodes vikhrevi* **sp. n.** is related to *M. caucasicus* Wittmer, 1958 and *M. adjaricus* Wittmer, 1992, distinguishable, from the former, by the shorter paired apical processes of the terminal sternite and conspicuously concave pre-apically, in lateral aspect, median lobe of the aedeagus, and from the latter, by the distinctly widened, in lateral view, laterophyses (Figs 14–17).

Description. Male. Dark brown to black; pronotum broadly at angles and knees light brown.

Head transverse. Eyes small, interocular dorsal distance ca. 2.3 times greater than eye diameter. Antennae filiform, long, attaining by antennomere 10 to apices of folded wings, with antennomere 3 ca. 1.3 times longer than pedicel (antennomere 2) and ca. 1.2 times shorter than antennomere 4; pubescence sub-erect and relatively short (Fig. 3).

Pronotum transverse, ca. 1.2 times as wide as long, convex basally and slightly concave anteriorly, almost straight at sides, margined before bulging anterior angles, with small rounded anterior and posterior angles. Scutellum triangular, rounded at apex (Fig. 3).

Elytra elongate, 2.6 times as long as wide at humeri, shortened, slightly narrowing distally; with coarse punctation in distal third; apices somewhat swollen (Fig. 3).

Legs long and slender, tibiae straight, noticeably longer than femurs, tarsi narrow, hind tarsus ca. 1.5 times shorter than hind tibia (Fig. 3).

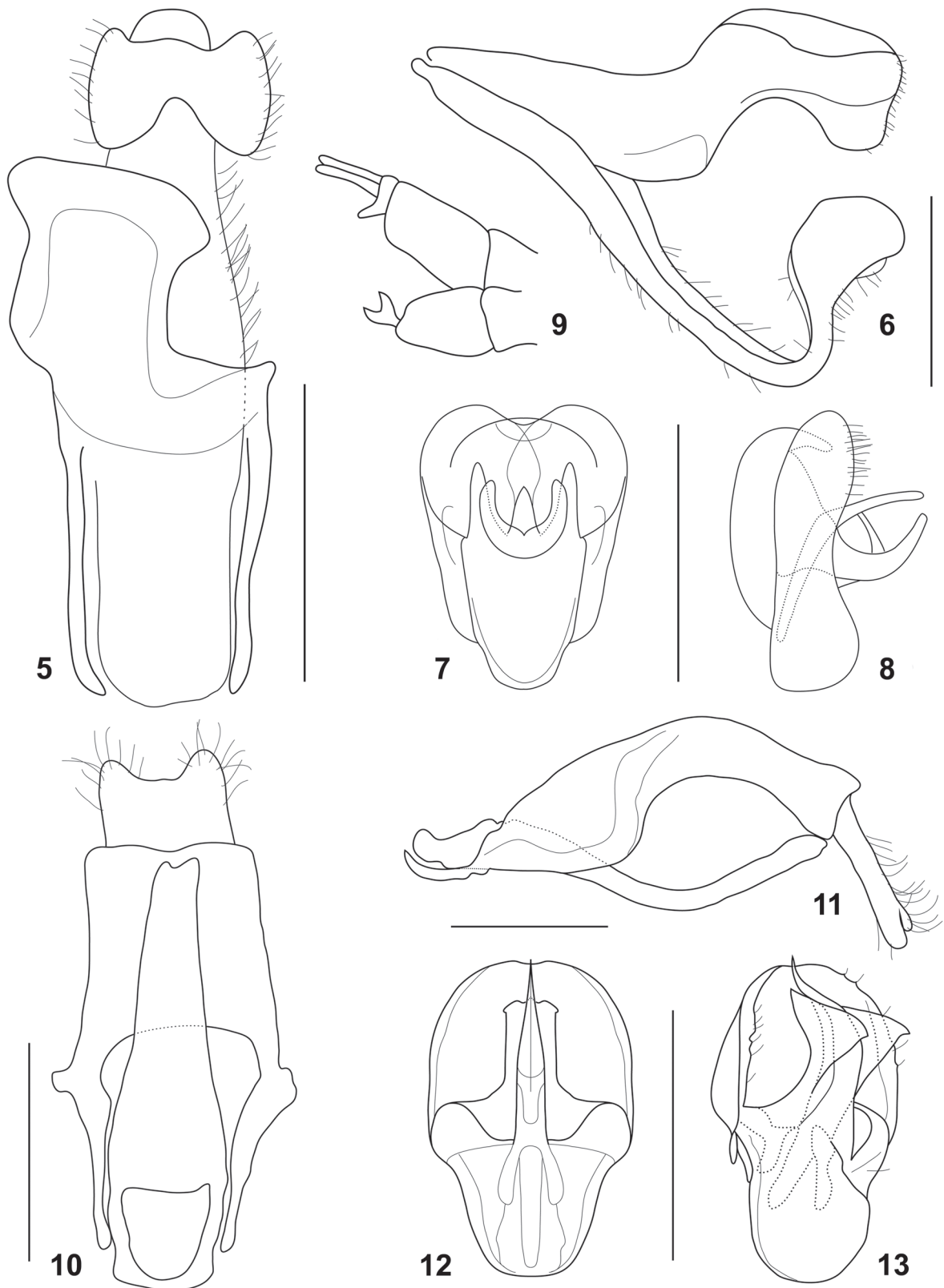
Terminal tergite transverse, widening distally, with elongate paired apical processes, penultimate tergite elongate, somewhat constricted in the middle, with unmodified sides; terminal sternite elongate, narrowed before apex, with relatively short paired apical processes (Figs 14, 15).

Aedeagus widening distally, with relatively short and concave before apex, in lateral aspect, median lobe, elongate, rounded and slightly widening distally parameres and distinctly widened, in lateral aspect, laterophyses (Figs 16, 17).

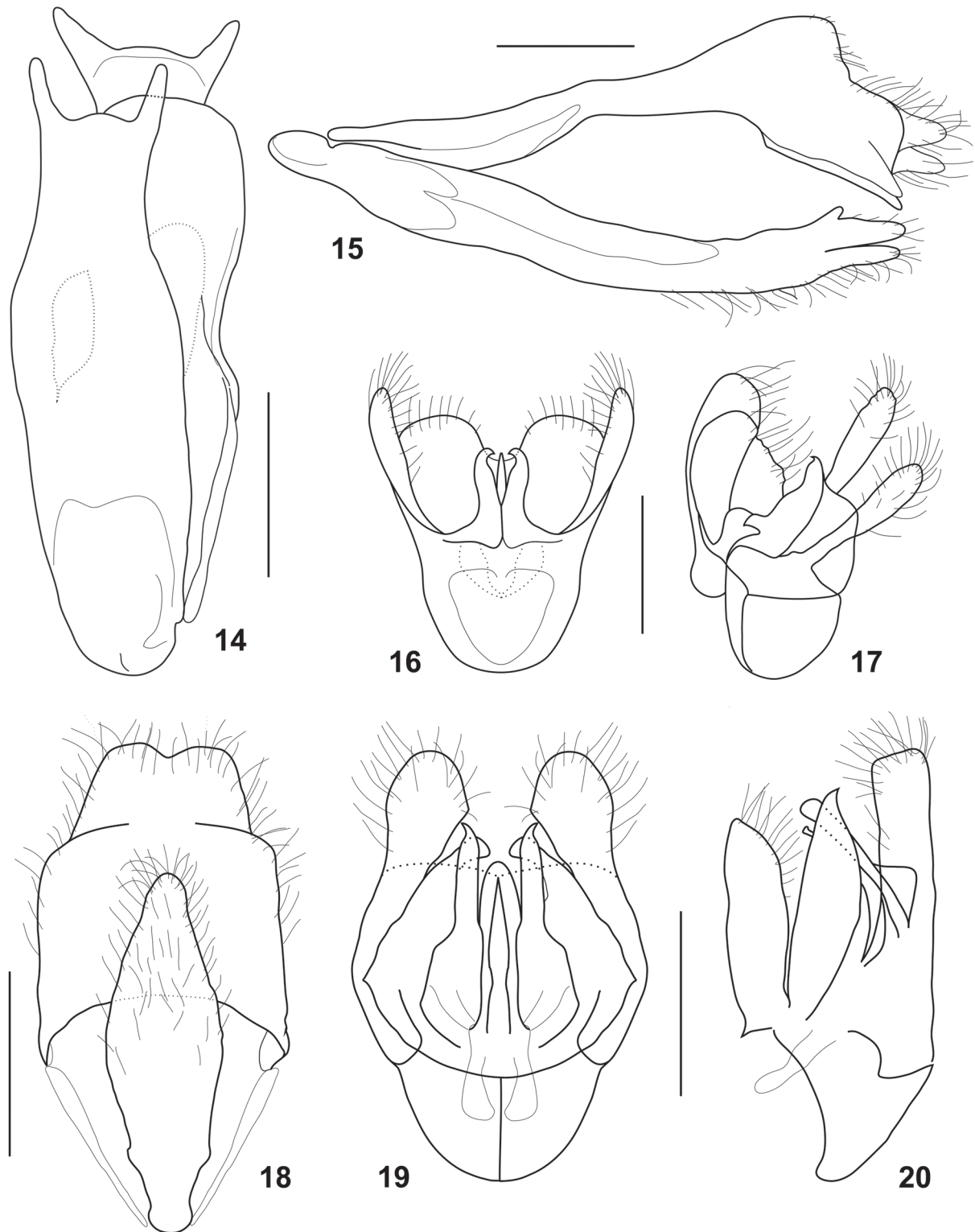
Length (from anterior head margin to end of folded wings): 4 mm. Width (humeral): 0.8 mm.

Female. Unknown.

Etymology. The new species is named after Dr Nikita Vikhrev (Moscow, Russia), who collected the type specimen.



Figs 5–13. Details of *Malthodes*, males.
 5–8 – *M. obscuricollis*; 9 – *M. brevicollis*; 10–13 – *M. seregiusi* sp. n., holotype. 5, 6, 9–11 – abdominal terminalia; 7, 8, 12–13 – aedeagus; 5, 7, 10, 12 – dorsally; 6, 8, 9, 11, 13 – laterally. Scale bars 0.25 mm. Figure 9 after Ganglbauer [1911].
 Рис. 5–13. Детали строения *Malthodes*, самцы.
 5–8 – *M. obscuricollis*; 9 – *M. brevicollis*; 10–13 – *M. seregiusi* sp. n., голотип. 5, 6, 9–11 – вершинные сегменты брюшка; 7, 8, 12–13 – эдеагус; 5, 7, 10, 12 – вид сверху; 6, 8, 9, 11, 13 – вид сбоку. Масштабные линейки 0.25 мм. Рисунок 9 по [Ganglbauer, 1911].



Figs 14–20. Details of *Malthodes*, holotype males.

14–17 – *M. vikhrevi* sp. n.; 18–20 – *M. vladimiri* sp. n. 14–15, 18 – abdominal terminalia; 16–17, 19–20 – aedeagus; 14, 16, 18–19 – dorsally; 15, 17, 20 – laterally. Scale bars 0.25 mm.

Рис. 14–20. Детали строения *Malthodes*, самцы, голотипы.

14–17 – *M. vikhrevi* sp. n.; 18–20 – *M. vladimiri* sp. n. 14, 15, 18 – верхинные сегменты брюшка; 16–17, 19–20 – эдеагус; 14, 16, 18–19 – вид сверху; 15, 17, 20 – вид сбоку. Масштабные линейки 0.25 мм.

Malthodes vladimiri Kazantsev, **sp. n.**
(Figs 4, 18–20)

Material. Holotype, ♂ (ICM): "W Georgia, Adzharia, Chakvistavi, UV light, 6.V.1987, S. Kazantsev leg.". Paratypes: 8♂ (ICM), same label; 2♂, 1♀ (ICM), W Georgia, Adzharia, Batumi, Bot. garden, sweeping, 19–20.05.1987 (S. Kazantsev).

Diagnosis. *Malthodes vladimiri* **sp. n.** belongs to the *M. tordi* Wittmer, 1970 group and is apparently close to *M. jaromiri* Švihla, 2002, separable by the outwardly hooked at apices (in dorsal aspect) interophyses and not toothed apically laterophyses of the median lobe of the aedeagus (Figs 19, 20).

Description. Male. Dark brown to black; pronotal anterior and posterior margins narrowly, pronotal posterior angles broadly, tibiae and tarsi light brown; elytral apices bright yellow.

Head transverse. Eyes moderately large, interocular dorsal distance ca. 1.5 times greater than eye diameter. Antennae filiform, long, attaining to apices of folded wings, with antennomere 3 ca. 1.5 times longer than pedicel (antennomere 2) and 1.3 times shorter than antennomere 4; pubescence erect, relatively dense and long (Fig. 4).

Pronotum transverse, ca. 1.1 times as wide as long, convex basally and straight anteriorly, conspicuously sinuate at sides in posterior half, margined before anterior angles, with rounded anterior and posterior angles. Scutellum triangular, rounded at apex (Fig. 4).

Elytra elongate, 2.2 times as long as wide at humeri, shortened, not narrowing distally; with coarser punctation in distal half; apices somewhat swollen (Fig. 4).

Legs long and slender, tibiae straight, noticeably longer than femurs, tarsi narrow, hind tarsus ca. 1.6 times shorter than hind tibia (Fig. 4).

Terminal tergite transverse, slightly narrowed distally, with minute triangular distal incision, penultimate tergite elongate, parallel-sided, with unmodified sides; terminal sternite elongate, oval, noticeably narrowed distally (Fig. 18).

Aedeagus semi-oval, with relatively short ventral plate; short, narrow median lobe; prominent widened distally parameres; straight outwardly hooked, in dorsal aspect, interophyses and swollen distally laterophyses (Figs 19, 20).

Length (from anterior head margin to end of folded wings): 4.8–5.3 mm. Width (humeraly): 1.1–1.2 mm.

Female. Similar to male, but eyes slightly smaller and antennae shorter.

Etymology. The new species is named in honour of the late Dr Vladimir Švihla (Prague, Czech Republic), a prominent Malthininae specialist.

Notes. *Malthodes tordi*, described from Turkey (Trabzon), was indicated for Abkhazia and Adzharia in the identification key to Malthininae of the Caucasus [Wittmer, 1992]. However, in Abkhazia a different species, close to *M. tordi*, was discovered – *M. jaromiri* Švihla, 2002 [Švihla, 2002]; and the re-examination of the Adzharia specimens, from the '*Malthodes tordi*' series housed in ICM, showed that they also belong to a different species, which is described as *Malthodes vladimiri* **sp. n.**

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