

A review of the subgenus *Sibiriella* L.Medvedev, 1999
of the genus *Chrysolina* Motschulsky, 1860
(Coleoptera: Chrysomelidae: Chrysomelinae)

Обзор подрода *Sibiriella* L.Medvedev, 1999
рода *Chrysolina* Motschulsky, 1860
(Coleoptera: Chrysomelidae: Chrysomelinae)

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КЛЮЧЕВЫЕ СЛОВА: Chrysomelidae, *Chrysolina*, *Sibiriella*, систематика, обзор.

ABSTRACT. Six species are included in the subgenus *Sibiriella* herewith. Lectotypes of *Chrysolina montana* Gebler, 1848 and *Chrysolina schewyrewi* Jacobson, 1895 are designated. The following new synonymy is established: *Chrysolina* (*Sibiriella* L.Medvedev, 1999) (= *Chrysolina* (*Altailina*) Mikhailov, 2000) and *Chrysolina montana* (Gebler, 1848) (= *Chrysolina substrangulata* Bourdonné, 1986). The following species are transferred to the subgenus *Sibiriella*: *Chrysolina katonica* and *Chrysolina schewyrewi* from the subgenus *Heliostola*, *Chrysolina montana* from the subgenus *Bechynia*, *Chrysolina dudkoi* and *Chrysolina kholsunica* from the subgenus *Altailina*.

РЕЗЮМЕ. К подроду *Sibiriella* отнесены шесть видов. Обозначены лектотипы *Chrysolina montana* Gebler, 1848 и *Chrysolina schewyrewi* Jacobson, 1895. Предложена новая синонимия: *Chrysolina* (*Sibiriella* L.Medvedev, 1999) (= *Chrysolina* (*Altailina*) Mikhailov, 2000) и *Ch. montana* (Gebler, 1848) (= *Chrysolina substrangulata* Bourdonné, 1986). Следующие виды перенесены в подрод *Sibiriella*: *Chrysolina katonica* и *Chrysolina schewyrewi* из подрода *Heliostola*, *Chrysolina montana* из подрода *Bechynia*, *Chrysolina dudkoi* и *Chrysolina kholsunica* из подрода *Altailina*.

Introduction

Dr. L.N. Medvedev described 15 species of the genus *Chrysolina* Motschulsky, 1860 till now. Among them, *Ch. paradoxa* L.Medvedev, 1999 is the most surprising member of the genus as a whole because of very strange, complicated aedeagus shape (Figs 34–38). A monotypical subgenus *Sibiriella* L. Medvedev, 1999 was established for this species.

Mikhailov [2000] described a new subgenus *Altailina* to include three new species, namely *Ch. dudkoi* Mikhailov, 2000 (with new subspecies *ivanovskiana* Mikhailov, 2000), *Ch. ogloblini* Mikhailov, 2000 (later replaced to *kholsunica* Mikhailov, 2001 because of homonymy), and *Ch. capricornus* Mikhailov, 2000. According to the original description, the latter species is close to *Ch. paradoxa* in many features including a very unusual aedeagus shape.

I compared a holotype of *Ch. (Sibiriella) paradoxa* with paratype of *Ch. (Altailina) capricornus* and found these two taxa to be truly very close. Only the shape of pronotal lateral impressions, puncturation of elytral intervals, and puncturation covering the depression of last abdominal sternite permit to distinguish these two species (see key to species). According to the original diagnosis [Mikhailov, 2000], *Altailina* differs from *Sibiriella* in “punctate-striate elytra with presutural sulcus on the apical slopes and feebly marked lateral calli of pronotum”. However, *Ch. paradoxa* shares all these features. On the other hand, *Ch. capricornus* is really close to *Ch. dudkoi* and *Ch. kholsunica* in many features including some characters of aedeagus, which is strongly curved, rounded apically, bearing filiform flagellum. Therefore, I believe *Altailina* to be a new junior synonym of *Sibiriella*. Besides the above-named species, *Ch. schewyrewi* (Jacobson, 1895) and *Ch. katonica* Lopatin, 1988 share the diagnosis of the subgenus *Sibiriella* (in the present interpretation) both in external morphology and aedeagus structure.

Kontkanen [1957] and Medvedev & Dubeshko [1992] included *Ch. montana* (Gebler, 1848) and *Ch. schewyrewi* in the subgenus *Heliostola* Motschulsky, 1860. *Ch. katonica* was originally described as a member of the subgenus *Heliostola* too. However, *Ch. katonica*, and *Ch. schewyrewi* differ from the other members of the subgenus *Heliostola* [*Ch. carpathica* (Fuss,

1856), *Ch. lichenis* (Richter, 1820) and *Ch. schneideri* (Weise, 1882)] by longer, strongly curved near mid-length aedeagus and with paired puncture elytral rows.

Ch. montana is externally rather close to *Ch. dudkoi* and *Ch. schewyrewi*. Moreover, Mikhailov [2001] paid attention on the allopatric distribution of *Ch. dudkoi* and *Ch. montana* in W Altai and assumed they to be vicarious forms. On the other hand, the presense of reduced hind wings, the shape of aedeagus, and especially bifurcate flagellum differ *Ch. montana* from all other members of *Sibiriella*. But I think *Ch. montana* to be more close to the members of the subgenus *Sibiriella* than to any other subgenera, and there is no point in the establishment of new monotypical subgenus for *Ch. montana*.

Material

I have examined the type specimens from the Dr. L.N. Medvedev collection, Moscow (MC); Naturhistorisches Museum, Wien, Austria (NHMW); Siberian Zoological Museum, Novosibirsk, Russia (SZM); Zoological Institute of Russian Academy of Sciences, St.-Petersburg, Russia (ZISP); Zoological Museum of University of Helsinki, Helsinki, Finland (ZMUH); and additional materials from the Deutsches Entomologisches Institut, Eberswalde, Germany; Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, Germany; Hungarian Natural History Museum, Budapest, Hungary; Museum für Naturkunde, Humboldt-Universität, Berlin, Germany; Staatliches Museum für Tierkunde, Dresden, Germany; Zoological Institute of Russian Academy of Sciences, St.-Petersburg, Russia; Zoological Museum of the Moscow State University, Moscow, Russia; and Dr. I.K. Lopatin collection, Minsk, Byelarus.

Subgenus *Sibiriella* L.Medvedev, 1999

Chrysolina (*Sibiriella*) L.Medvedev, 1999: 1014 (type species: *Chrysolina paradoxa* L.Medvedev, 1999, by the original designation).

Chrysolina (*Altailina*) Mikhailov, 2000: 133 (type species: *Chrysolina dudkoi* Mikhailov, 2000, by the original designation). **syn. n.**

DIAGNOSIS. Above black with weak metallic reflection or dark metallic.

Last maxillary palpomere in male slightly wider than in female or similar in both sexes, as long as previous palpomere or slightly longer than latter.

Pronotum rounded laterally, with lateral sides swollen. Lateral impression very shallow, broad, presents along entire length or interrupted at mid-length, or almost absent. Disk densely punctate. Prothoracic hypomera weakly convex or flat, with very shallow impression filled with weak transverse wrinkles or without impression at all, with fold near base.

Elytron without humeral callus. Punctures arranged in paired, slightly undulate rows. Rows distinct or more or less confused. Intervals flat or slightly convex, but not forming ridges, covered by dense punctures which sometimes conceal puncture rows.

Hind wings absent in most species; they present, but reduced, narrow, not reaching elytral apex in *Ch. montana* only.

Tarsomeres I–III wholly pubescent beneath in both sexes, in male they much broader than in female.

Pygidium convex, without sulcus, at least, in apical $\frac{2}{3}$.

Last abdominal sternite convex in both sexes, in male mostly with depression.

Aedeagus narrow, long, in most species strongly curved or genuflexed near mid length, with apex rounded or slightly tapered, flagellum filiform; only in *Ch. montana* aedeagus evenly and not so strongly curved, with flagellum bifurcate apically.

DIFFERENTIAL DIAGNOSIS. Subgenus *Sibiriella* is close to subgenus *Heliostola* inhabiting European mountains till Carpathians eastward, and can be distinguished by the elytral punctures arranged in more or less distinct paired rows (in *Heliostola* elytral puncturation is entirely confuse, without even traces of rows). In addition, aedeagus is strongly curved or genuflexed near mid-length in all *Altailina* members except *Ch. montana* (in *Heliostola* aedeagus is arc-shaped, slightly evenly curved).

DISTRIBUTION. Asia: Altai Mountains, Sayans, Central Siberian Plateau, Transbaikalia. Europe: Hungary (?).

Chrysolina capricornus Mikhailov, 2000

Figs 1–3

Chrysolina (*Altailina*) *capricornus* Mikhailov, 2000: 139 (“West Altai mts, Kholzun range, upper left tributary of river Bannaya”, types in SZM and Yu.E. Mikhailov coll., examined).

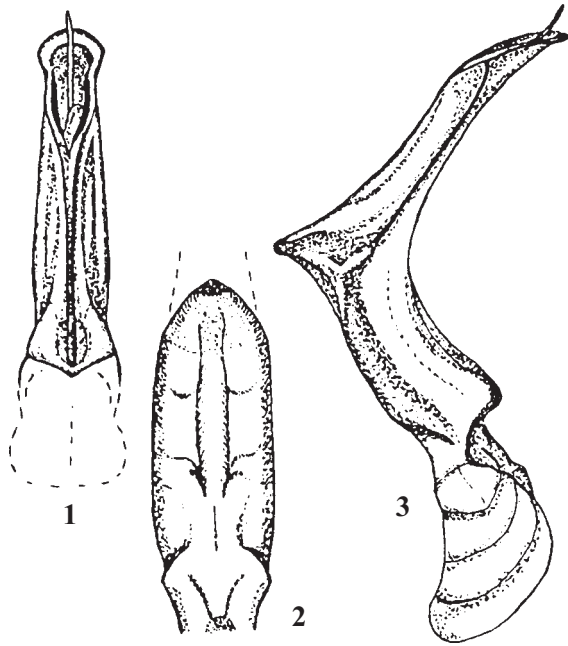
Female. Oval, moderately convex. Head, pronotum, and scutellum moderately shining, elytra dull, dorsum shagreen, besides that pronotum microscopically punctulate. Dorsum dark bronze, elytra including epipleura with golden reflection, legs, antennae, and underside black with weak metallic reflection, antennomeres 1 and 2 rufous on underside.

Clypeus and vertex covered by fine dense punctures (slightly larger than those in *Ch. paradoxa*). Orbital line deep, presents only above eye, forming short, broad impression, not reaching antennal insertion.

Last maxillary palpomere slightly securiform, 1.4× longer than broad, 1.3× broader and 1.5× longer than previous one.

Antenna inserted 1.5× closer to clypeus than to eye; short, with antennomere IX reaching mid-coxa, antennomere XI slightly not reaching hind coxa; antennomeres VII–XI hardly broadened, antennomere X 1.6× longer than wide.

Pronotum 2.0× broader than long, broadest basally, with lateral sides almost evenly rounded and convergent anteriorly. Anterior side finely marginate, without setae. Anterior angles without setiferous pores. Disk with fine, dense punctures. Lateral sides slightly swollen at entire length, densely and very finely punctate. Lateral impressions present only basally and apically, very shallow, only slightly deepened, covered by numerous punctures, which slightly larger than those on disk, these punctures denser and partly coalescent basally and apically.



Figs 1–3. *Chrysolina capricornus*, ♂, aedeagus: 1 — apical part, dorsal view, 2 — basal part, dorsal view, 3 — lateral view [after Mikhailov, 2000].

Рис. 1–3. *Chrysolina capricornus*, ♂, эдеагус: 1 — верхинная часть, вид сверху, 2 — основная часть, вид сверху, 3 — вид сбоку [по: Mikhailov, 2000].

Prothoracic hypomera almost flat, laterally with very shallow impression and distinct (but not coarse) transverse wrinkles. Basal fold weak. Intercoxal prosternal appendix narrow between fore coxae and slightly broadened apically, flat, irregularly wrinkled, with weak lateral ridges in apical $\frac{1}{2}$. Anterolateral prosternal portions flat, with deep furrow along posterior margin. Metasternum entirely marginate anteriorly.

Scutellum triangular, rounded laterally, 1.2× longer than broad, finely punctate at whole surface.

Elytron each 2.4× longer than wide, without humeral callus, with punctures arranged in 10 rows (including short scutellar one). Rows equidistant, rows 6 and 7 very irregular; on apical slope rows invisible, and puncturation entirely confuse. Rows consist of dense, moderately large punctures. Intervals covered by dense, very fine punctures. Intervals between rows 2–3 and 4–5 slightly elevated. Marginal stria with distinct, dense, moderately large punctures. Sutural stria fine, presents along posterior half of apical slope. Epipleura inclined outside, visible at entire length in lateral view, sparsely ciliate near apex.

Hind wings very reduced: very short and narrow, shorter than metathorax.

Tarsomeres I–III wholly pubescent beneath, narrow; IV without denticles.

Pygidium convex, without furrow. Last abdominal sternite convex and slightly swollen longitudinally along mid-length, punctate and wrinkled, with apical margin arc-shaped.

Length 7.8mm. Width 4.6mm.

Male [after Mikhailov, 2000]. Below dark green with metallic reflection, above bronze-violet, pronotum or elytron, or both with coppery tinge, clypeus somewhat greenish. Tarsomeres I–III densely pubescent beneath, with tarsomere I strongly broadened, elongate, cordiform, especially in hind-tarsi. Last abdominal sternite with apical margin broadly arcuately truncate, apically with shallow triangular depression in the middle, which covered with denser punctures than the rest surface of the sternite. Aedeagus — Figs 1–3.

Variability [after Mikhailov, 2000]. Body length: 6.5–7.0 mm (♂), 7.8–8.0 mm (♀); width: 3.8–4.2 mm (♂), 4.5–4.9 mm (♀).

DISTRIBUTION. W Altai.

MATERIAL TYPE: *Chrysolina capricornus*, paratype with labels: “АЛТАЙ, хр. Холзун, верх. р. Банная, h=1300–1600 м., лес. А. et R. Dudko leg. 12–14.6.1999”, “PARATYPUS *Chrysolina capricornus* sp. n. Yu.Mikhailov det. 1999”: 1 ♀ (SZM).

Chrysolina dudkoi Mikhailov, 2000

This species includes two subspecies.

Chrysolina dudkoi dudkoi Mikhailov, 2000

Figs 4–8.

Chrysolina (Altailina) dudkoi dudkoi Mikhailov, 2000: 134 (“Eastern Kazakhstan, West Altai mts, 35 km NNE Leninogorsk, 20km NW mt. Lyamin Belok”, types in SZM and Yu.E. Mikhailov coll., examined)

Chrysolina (Altailina) dudkoi: Mikhailov, 2001: 327.

Oval, convex. Above entirely moderately shining (♂) or moderately shining with elytra dull (♀), shagreen, one-coloured, dark violet or bronze. Underside black with metallic reflection, legs black. Antennae black with antennomeres I–IV light brown beneath and apically.

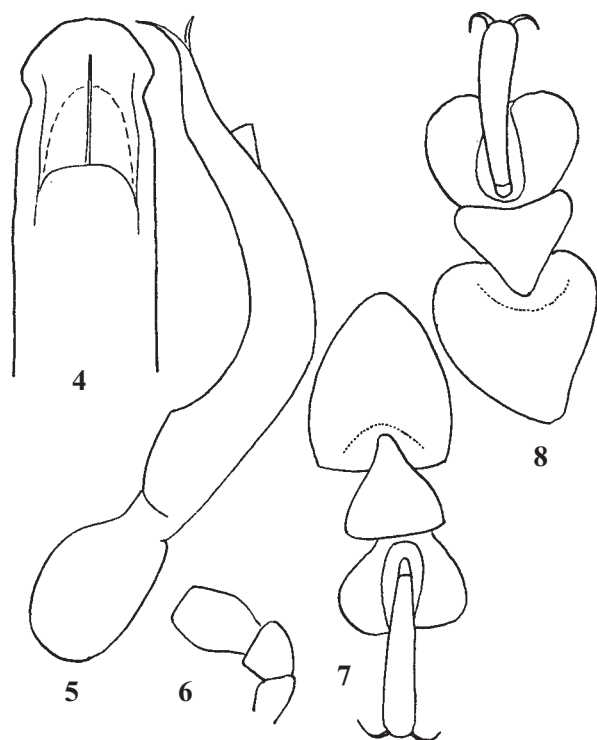
Last segment of maxillary palpus in male (Fig. 6) as long as wide, 1.2× broader than previous and as long as the latter; in female 1.1× longer than wide, similar to previous in length and width.

Antenna inserted 1.1–1.2× closer to clypeus than to eye, narrow. Segment X 1.6× longer than wide.

Pronotum broadest basally, or at mid-length, or before mid-length, with lateral sides rounded, more narrowed anteriorly than posteriorly. Disk covered by moderately large, dense punctures. Anterior margin ciliate. Lateral sides swollen at entire length, densely minutely punctate. Lateral impression very shallow, broad, presents at entire length or only basally and apically, filled with several punctures which slightly larger than those on disk.

Propleura very weakly convex, with obsolete lateral impression covered with weak transverse wrinkles. Basal fold weak.

Elytron without humeral callus, with punctures arranged in 10 rows (including abbreviated scutellar row). Rows 2–3, 4–5, 6–7, and 8–9 arranged in pairs. Rows regular, slightly undulate, consist of very dense punctures, which mostly as large as distances between them. On apical slope rows invisible, and puncturation entirely confuse. Intervals flat or slightly raised, densely punctate. Punctures as large as those at pronotal disk. Epipleura inclined outside, visible at entire length in lateral view, sparsely ciliate near apex.



Figs 4–8. *Chrysolina dudkoi dudkoi*, ♂: 4 — aedeagus, dorsal view, 5 — the same, lateral view, 6 — maxillary palpus, 7 — hind-tarsus, 8 — fore-tarsus.

Рис. 4–8. *Chrysolina dudkoi dudkoi*, ♂: 4 — аedeagus, вид сверху, 5 — то же, вид сбоку, 6 — челюстной щупик, 7 — задняя лапка, 8 — передняя лапка.

Hind wings absent.

Tarsomeres I–III wholly pubescent beneath in both sexes, in male strongly dilated, much broader than in female. In male fore tarsomere I (Fig. 8) as broad as III and 1.3× broader than II, hind tarsomere I (Fig. 7) 1.4× broader than II and 1.2× broader than III.

Pygidium with weak longitudinal impression in basal half only.

Last abdominal sternite in female convex, with apical margin arc-shaped; in male with medial depression and apical impression, with apical margin broadly truncate and shallowly emarginate.

Aedeagus — Figs 4–5.

Length 6.3–7.5 mm (♂), 6.9–7.5 mm (♀).

DISTRIBUTION. W Altai.

HOST PLANTS [Mikhailov, 2001] — *Saussurea latifolia* (Asteraceae).

MATERIAL. TYPE: *Chrysolina dudkoi dudkoi*, paratype with labels: “З Алтай, 35 км ССВ Лениногорска 20 км СЗ г. Лямин Белок, h=800 м, черневая тайга R. Dudko leg. 14.06.1996”, “PARATYPUS *Chrysolina dudkoi dudkoi* sp. et ssp. n. Yu.Mikhailov det. 1999” [red]: 1 ♀ (SZM).

Additional specimens. Eastern Kazakhstan: Ivanovsky mt. range, subalpine meadows, 1700 m, Yu. Mikhailov leg. 6–7.6.2000: 4 ♂♂, 4 ♀♀; Ivanovsky mt. range, 10 km SW Leninogorsk, 600 m, fir forest, R.Dudko & A.Vorontzov leg. 30.5.1996: 2 ♀♀; 35 km NNE from Leninogorsk, 20 km NW Liamin Belok Mt., 800 m, taiga, R.Dudko leg. 14.6.1996: 1 ♀.

Chrysolina dudkoi ivanovskiana Mikhailov, 2000

Chrysolina (Altalina) dudkoi ivanovskiana Mikhailov, 2000: 136 (“Eastern Kazakhstan, West Altai mts, Ivanovsky range, 15 km SE Leninogorsk, mt. Rossypnoi Belok”, types in SZM and Yu.E. Mikhailov coll., examined)

Above dark brassy-green. Elytral intervals covered by dense and rather large punctures (not more than 2× finer than punctures in rows) which partly conceal elytral rows.

Length: 6.3 mm (♂), 6.4–7.3 mm (♀).

Aedeagus length: 2.4 mm

DISTRIBUTION. W Altai (type localities of subspecies *dudkoi dudkoi* and *dudkoi ivanovskiana* are spaced 42 km apart).

MATERIAL. TYPES: *Chrysolina dudkoi ivanovskiana*, paratypes with labels: “З Алтай, Ивановский хр., 15 км ЮВ Лениногорска, 3 склон г.Россыпной Белок, h=2000 м, тундра курумник R.Dudko leg. 1.06.1996”: 1 ♀ (SZM); “З Алтай, Ивановский хр., 15 км ЮВ Лениногорска, верш. г.Россыпной Белок, h=2300 м, тундра R. Dudko, A. Vorontzov 2.06.1996”: 1 ♀ (SZM), both specimens with red label: “PARATYPUS *Chrysolina dudkoi ivanovskiana* ssp. n. Yu.Mikhailov det. 1999”.

Additional specimens. “Altai”: 1 ♂; “Siberia”: 1 ♀; Without label: 1 ♂.

Chrysolina katonica Lopatin, 1988

Figs 9–15

Chrysolina (Heliostola) katonica Lopatin, 1988: 590 (“Восточный Казахстан, северные отроги хр. Сарымсақты, 45 км юго-зап. Катон-Карагая, южнее пос. Орнек”, types in I.K. Lopatin coll.)

Obovate, convex (Figs 14–15). Above dull, black with weak blue reflection (♂), or greenish black (♀), shagreen. Antennomeres 1 and 2 reddish beneath.

Last maxillary palpomere (Fig. 13) oval, beveled, longer and slightly broader than previous one, similar in both sexes.

Antenna inserted 3.6× closer to clypeus than to eye. Antennomeres I–VI narrow, VII–XI broadened.

Pronotum broadest near mid-length or basally. Lateral sides rounded, swollen at entire length. Disk covered with fine, dense punctures. Anterior margin ciliate. Lateral impression shallow at entire length (♂) or presented by obsolete short impressions only basally and apically (♀). Impression filled with punctures which deeper and larger than those on disk, partly coalescent in basal 1/2.

Prothoracic hypomerae weakly convex, without depression or wrinkles along outside. Basal fold presents.

Elytron without humeral callus, with punctures arranged in short irregular paired rows, which hardly visible among the dense confuse punctures which as large as those in rows. Epipleura inclined outside, visible at entire length in lateral view, sparsely ciliate near apex.

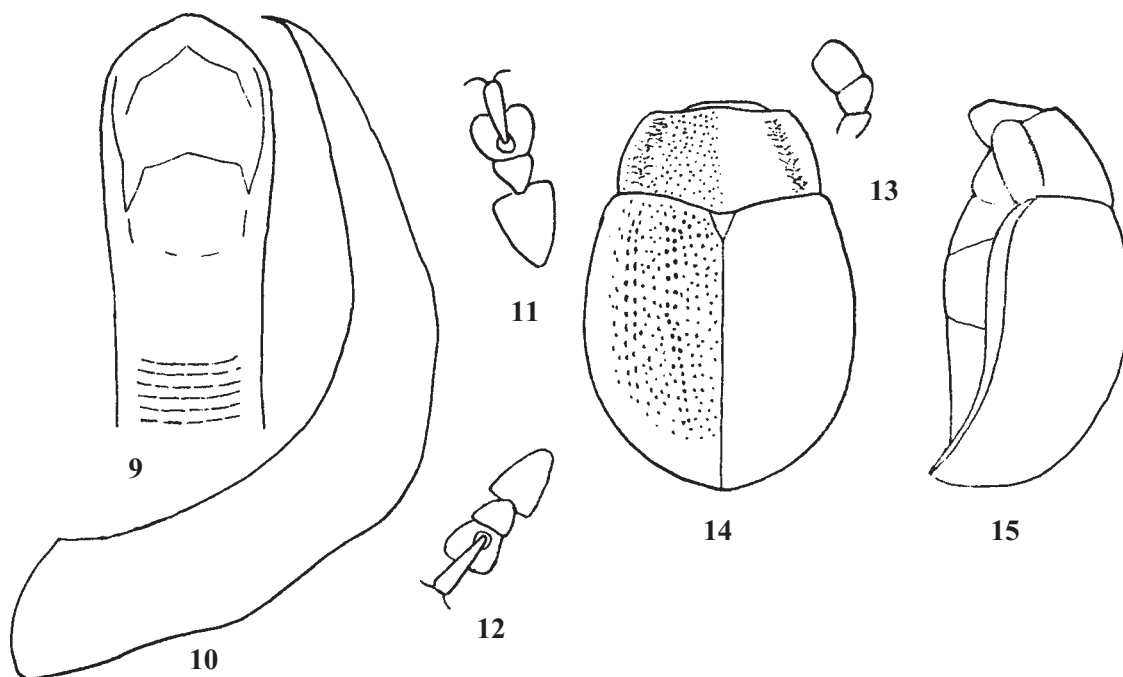
Hind wings absent.

Tarsomeres I–III wholly pubescent beneath in both sexes, in male strongly dilated, much broader than in female. In male fore-tarsi only just broader than mid- and hind-tarsi, which are similar in width (Figs 11–12).

Pygidium without groove.

Last abdominal sternite convex in both sexes.

Aedeagus — Figs 9–10.



Figs 9–15. *Chrysolina katonica*, ♂: 9 — aedeagus, dorsal view, 10 — the same, lateral view, 11 — fore-tarsus, 12 — hind-tarsus, 13 — maxillary palpus, 14 — dorsal view, 15 — lateral view.

Рис. 9–15. *Chrysolina katonica*, ♂: 9 — эдеагус, вид сверху, 10 — то же, вид сбоку, 11 — передняя лапка, 12 — задняя лапка, 13 — челюстной щупик, 14 — вид сверху, 15 — вид сбоку.

DISTRIBUTION. Altai.

MATERIAL. Kazakhstan: Eastern Kazakhstan, envir. Semipalatinsk: 1 ♂; envir. Zyrjanovsk, R. Andreeva leg. 14.6.1993: 1 ♀; Zyrjanovsk Distr., envir. Stolboukha Vill, Kostin leg., 18.5.1955: 1 ♀.

Chrysolina kholsunica Mikhailov, 2001

Figs 16–18

Chrysolina (Altalina) ogloblini Mikhailov, 2000: 137 (W Altai: “Kozlushka – Kholzun”, holotype in SZM), nec *Chrysolina ogloblini* Ter-Minasian, 1950: 131.

Chrysolina kholsunica Mikhailov, 2001: 334 nomen substitutus pro *Chrysolina ogloblini* Mikhailov, 2000: 137.

This species is unknown to me. According to the original description [Mikhailov, 2000], it is close to *Ch. dudkoi dudkoi* and differs in greenish blue colouration, aedeagus (Figs 16–17) elongate triangular apically, male last abdominal sternite with elongate triangular apical depression, and proportions of hind tarsomeres (Fig. 18): tarsomere I more elongate, tarsomeres II and III narrower.

DISTRIBUTION. W Altai.

Chrysolina montana (Gebler, 1848)

Figs 19–22

Chrysolina montana Gebler, 1848: 23 (“Mont. Kusnetsk”, lectotype in ZMUH, examined)

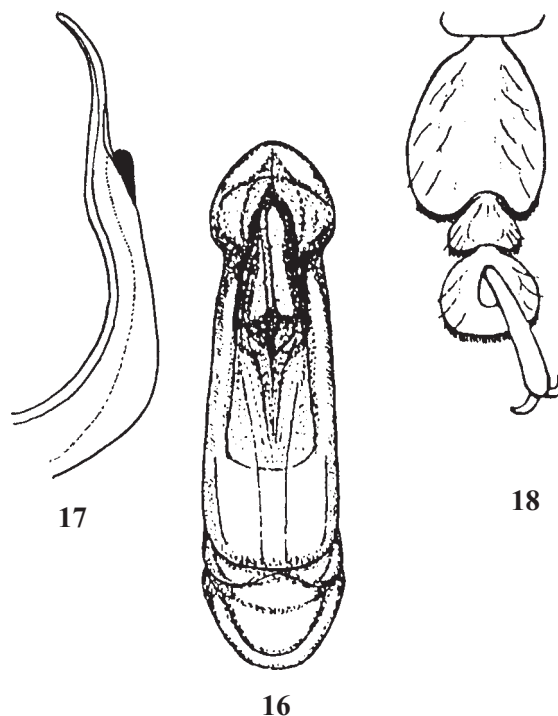
Helioskola montana: Motschulsky, 1860: 224.

Chrysolina (Bechynia) substrangulata Bourdonne, 1986: 237 (“Hongrie”, holotype in Dr. J.-C. Bourdonne collection) **syn. nov.**

Chrysolina (Helioskola) montana: Kontkanen, 1957: 209; Medvedev, Dubeshko, 1992: 102.

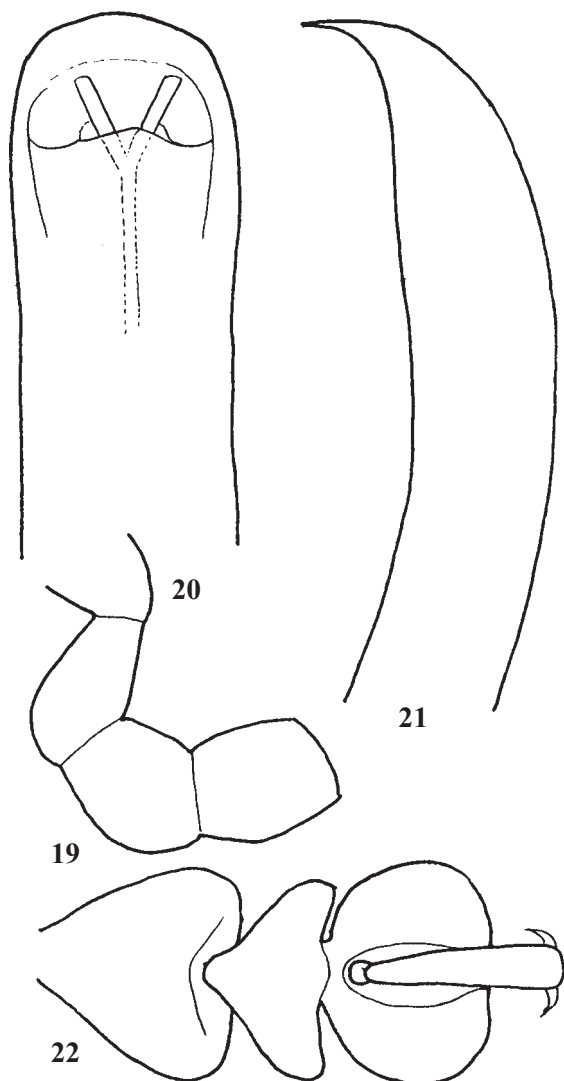
Chrysolina (Bechynia) montana: Mikhailov, 2000: 144.

Elongate-oval, convex. Above moderately or sericeous shining, shagreen, unicolorous, dark violet or black with (or without) weak metallic reflection. Underside, femora, and tibiae black with (or without) weak



Figs 16–18. *Chrysolina kholsunica* (holotype, ♂): 16 — aedeagus, dorsal view, 17 — the same, lateral view, 18 — hind-tarsus [after Mikhailov, 2000].

Рис. 16–18. *Chrysolina kholsunica* (голотип, ♂): 16 — эдеагус, вид сверху, 17 — то же, вид сбоку; 18 — задняя лапка [по: Mikhailov, 2000].



Figs 19–22. *Chrysolina montana* (lectotype, ♂): 19 — maxillary palpus, 20 — aedeagus, dorsal view, 21 — the same, lateral view, 22 — fore-tarsus.

Рис. 19–22. *Chrysolina montana* (лектотип, ♂): 19 — челюстной щупик, 20 — эдеагус, вид сверху, 21 — то же, вид сбоку, 22 — передняя лапка.

metallic reflection. Tarsi dark brown. Antennae dark brown with antennomere I rufous apically, II and III entirely rufous.

Last maxillary palpomere (Fig. 19) similar in both sexes, similar to previous in length and width, 1.3× longer than wide.

Antenna inserted 1.5× closer to clypeus than to eye, gradually moderately broadened from antennomere V to apex. Antennomere X 1.3× longer than wide.

Pronotum broadest at mid-length or before mid-length, with lateral sides rounded and slightly emarginate before hind angles, more narrowed anteriorly than posteriorly. Disk with moderately large, dense punctures. Anterior margin ciliate. Lateral sides swollen at entire length, densely minutely punctate. Lateral impression presents

basally and apically only, very shallow and short near base and obsolete near apex, covered with punctures which slightly larger than punctures at disk.

Prothoracic hypomerae weakly convex or almost flat, laterally with obsolete impression filled with weak transverse wrinkles. Basal fold strong.

Elytron without humeral callus, with punctures arranged in 10 rows (including abbreviated scutellar row). Rows 2–3, 4–5, 6–7, and 8–9 closely arranged in pairs. Rows undulate, 5–7 confused with interval punctures, or rows mostly confused with only 9th visible. Punctures in rows large, very dense, about as large as distances between them. On apical slope rows invisible, and puncturation entirely confuse. Intervals flat or slightly convex, covered by double dense punctures: 1) punctures slightly larger than those at pronotal disk, and 2) punctures very fine. Sutural stria presents along almost whole apical slope. Epipleura inclined outside, visible at entire length in lateral view, sparsely ciliate near apex.

Hind wings reduced, narrow, but reaching elytral apical slope.

Tarsomeres I–III wholly pubescent beneath in both sexes, in male strongly dilated, much broader than in female. In male fore tarsomere I 1.1× narrower than III and 1.1× broader than II (Fig. 22), hind tarsomere I 1.1× broader than II and III.

Pygidium with shallow groove in basal half only.

Last abdominal sternite in female convex, with apical margin arc-shaped; in male it medially slightly depressed, with longitudinal furrow, apically bisinuate.

Aedeagus — Figs 20–21.

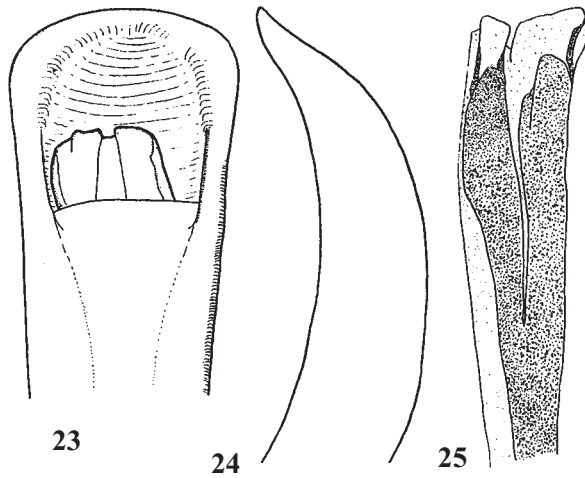
Length 6.6–7.2 mm (♂), 7.0 mm (♀).

DISTRIBUTION. Siberia: Altai; Europe: Hungary (?).

HOST PLANTS [Medvedev & Roginskaja, 1988]: *Crepis sibirica*, *Saussurea* sp. (Asteraceae).

REMARKS. Gebler [1848] has not indicated the type locality in the original description of *Chrysolina montana*. He noted only “Comes Mannerheim in lit.” In ZMUH (Mannerheim collection) I found one male labelled as “*montana*” and collected by Gebler. Because of Gebler [1848] have not indicated a number of the type specimens, I designate this male as lectotype. The designation of a lectotype is a necessary for the fixation of the recent interpretation [Medvedev & Dubeshko, 1992; Mikhailov, 2000, 2001] of *Ch. montana*. The collecting locality of this specimen (mentioned on the label) becomes the type locality of *Chrysolina montana* (according to ICZN, 2000, 76A.1.1., 76.2)

Mikhailov [2000] included *Ch. montana* in the subgenus *Bechynia* Bourdonné, 1977 on the base of the shape of aedeagus (bifurcate flagellum), longitudinal furrow on last abdominal sternite of male, and dilated fore tarsi in male. He compared aedeagus of *Ch. montana* with those of *Ch. (Bechynia) milleri* (Weise, 1884) and *Ch. (Bechynia) substrangulata* Bourdonne, 1986 and found them very similar. Specimens of *Ch. milleri* being at my disposal differs from *Ch. montana* in body much broader (*Ch. milleri*: 5.4 mm in ♂, 6.5 mm in ♀; *Ch. montana*: 4.2 mm in ♂, 4.5 mm in ♀), pronotal lateral



Figs 23–25. *Chrysolina milleri*, ♂: 23 — aedeagus, dorsal view, 24 — the same, lateral view, 25 — flagellum.

Рис. 23–25. *Chrysolina milleri*, ♂: 23 — адеагус, вид сверху, 24 — то же, вид сбоку, 25 — флагеллум.

impression deep, with vertical outer border in basal $\frac{1}{3}$ (this shape of lateral impression is typical of *Bechinia* members except *Ch. substrangulata*), prothoracic hypomerae convex, with distinct lateral impression covered by irregular wrinkles, hind wings absent, elytral punctures very dense, entirely irregular, double: large punctures mixed with very fine ones, pygidium with sharp furrow along almost entire length, flagellum of aedeagus broad and bifurcate in apical $\frac{1}{2}$ (Figs 23–25) (it is narrow and bifurcate only apically in *Ch. montana*, Figs 20). On the other hand, I compared available specimens of *Ch. montana* with the original description of *Ch. substrangulata* and found them very similar. Unfortunately, I have not possibility to study the type of *Ch. substrangulata*. This species was described on the base of the single male, which labelled “Hongrie” by Dr. Bonneuil. However, the original description of *Ch. substrangulata* is very detailed and supplied with a number of informative figures. Therefore, I believe *Ch. substrangulata* from Hungary to be conspecific with *Ch. montana* from Altai. Such a distribution is not unique. For example, *Oreina redikortzevi* (Jacobson, 1924) from Sayans is very close to European species *Oreina speciosissima* (Scopoli, 1763) and differs from the latter, at most, at subspecies level. However, a finding of *Ch. montana* in Hungary should be confirmed.

MATERIAL. TYPES: *Chrysolina montana* Gebler, lectotype (designated here), associate with ground label “*montana*” in Dr. Mannerheim collection, with labels: “Mont. Kusnetsk”, “Gebler”, “Coll. Mannerh.”, “*Chrysolina montana* Gebler, 1848. Bienkowski design. 2004” [red], “*Chrysolina montana* (Gebler). Bienkowski det. 2004”: 1 ♂ (ZMUH: coll. Lindroth). Paralectotypes (designated here) with labels: “Gebler.”, “Kolyvan.”, “Coll. Mannerh.”: 1 ♂ (abdomen lost) (ZMUH: coll. Lindroth); “Gebler.”, “Mont. Kusnetsk”, “Coll. Mannerh.”: 1 ♀ (ZMUH: coll. Lindroth).

Chrysolina Milleri, syntype with labels: “Nanos”, “*Milleri* n. sp.”, “Collect. Miller”, “*Milleri* Nanos, Bosn. Weise”, “Syntypus *Chrysolina milleri* Weise, 1884. Bienkowski vid., 2003” [red]: 1 ♂ (NHMW).

Additional specimens. *Ch. montana*. Siberia: “Barnaul”, “Gebler”: 1 ♂; Altai, 4 km NE Yailu Vill., Torog ridge, 1100 m, A. & R. Dudko leg. 12.6.1994: 1 ♂; Altaysky Ridge, Siminsky pass

7.7.1952: 1 ♂; 8.7.1952: 2 ♂♂, 1 ♀; Altai Territory, envir. Biysk, Dzhezyn, Redikortsev leg. 21.6.1912: 1 ♂, 1 ♀; Tom river upper reaches, Magazy river, Kamzas river, Khvorov leg. 17.5.1908: 1 ♂.

Ch. milleri. Carniolia, Krauss leg.: 1 ♂, 1 ♀; Pljševeca, Dobiasch leg.: 1 ♂; Ad Rhenum: 1 ♂; Herzegovina, Ullok: 1 ♂.

Chrysolina paradoxa L. Medvedev, 1999

Figs 26–38

Chrysolina (Sibiriella) paradoxa L. Medvedev, 1999: 1014 (type locality is unknown, probably Sayans), holotype in MC, examined).

Male. Obovate, moderately convex (Figs 26, 27). Above moderately shining, shagreen. Head dull, dark green with vertex violet, pronotum dull violet, elytra brown with violet reflection, underside, femora, and tibiae brown with violet reflection, tarsi brown with paler apical margins of tarsomeres I–III, each antennomere brown basally and rufous apically, antennomere I yellow apically on underside.

Clypeus and vertex covered by fine dense punctures. Orbital line deep, presents only above eye, forming short, broad impression, not reaching antennal insertion.

Last maxillary palpomere (Fig. 31) slightly securiform, 1.2× longer than broad, 1.3× broader and longer than previous.

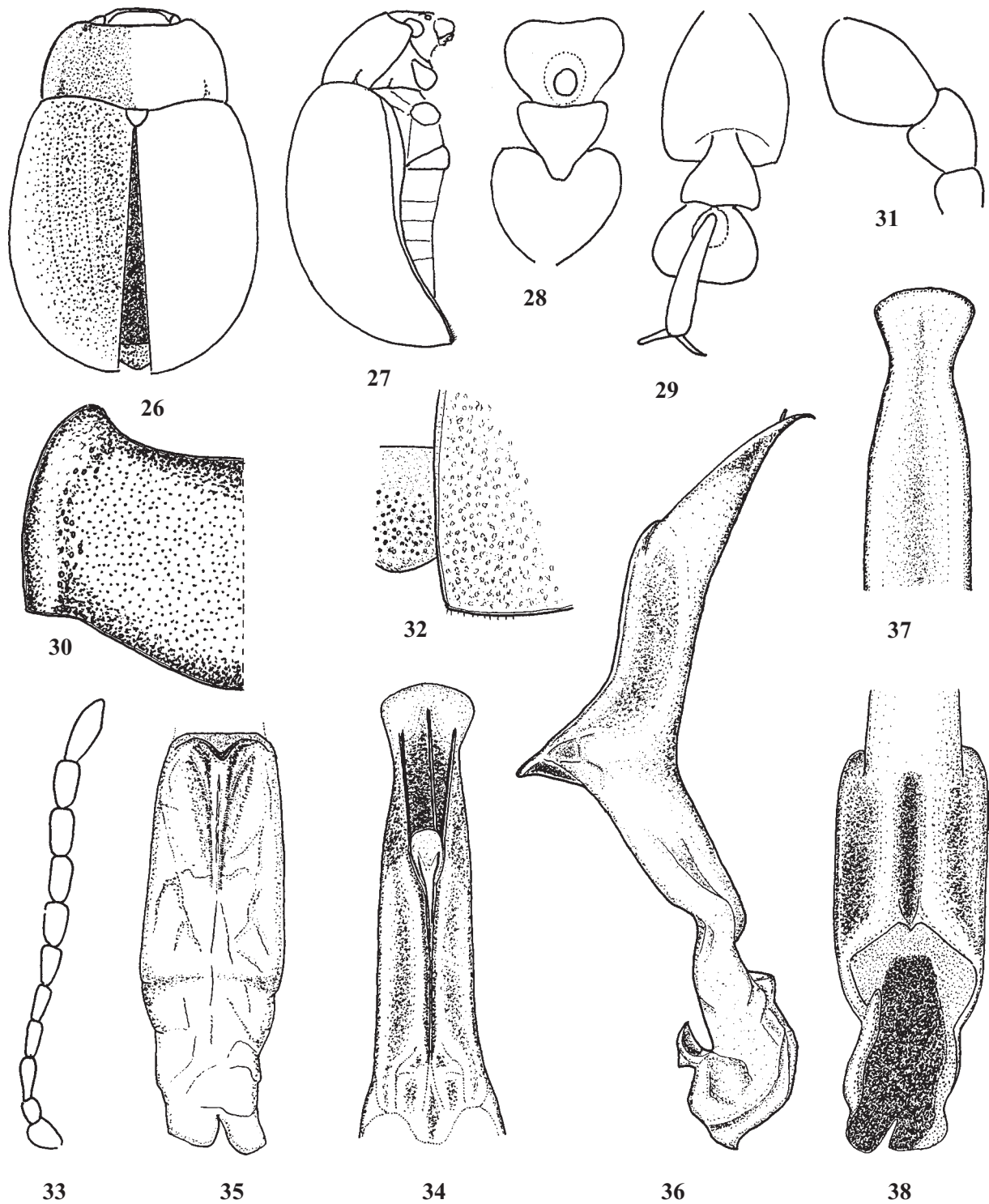
Antenna (Fig. 33) inserted 2.2× closer to clypeus than to eye; long, with antennomere 10 reaching hind coxa, narrow, antennomeres VI–IX slightly broadened, antennomere X 2.1× longer than wide.

Pronotum (Fig. 30) 1.9× broader than long, broadest basally, with lateral sides almost evenly rounded and convergent anteriorly. Anterior side finely marginate, without setae. Anterior angles without setiferous pore. Disk covered with fine, dense punctures. Lateral sides swollen at entire length, densely, very minutely punctate. Lateral impression presents along entire length, but very shallow, only slightly deepened basally, covered by punctures, which slightly larger than those on disk, and more dense and partly coalescent basally and apically.

Prothoracic hypomerae almost flat, laterally without impression, with only obsolete irregular wrinkles. Basal fold distinct, but not strong. Intercostal prosternal appendix narrow between fore coxae and slightly broadened apically, flat. Anterolateral prosternal portions flat, with deep furrow along posterior margin. Metasternum entirely marginate anteriorly.

Scutellum triangular, with lateral sides rounded, 1.1× broader than long, finely punctate in basal $\frac{1}{3}$.

Elytron (Fig. 26) each 2.2× longer than wide, without humeral callus, with punctures arranged in 10 rows (including abbreviated scutellar one). Rows 2–3, 4–5, 6–7, and 8–9 closely arranged in pairs, rows 5 and 6 abbreviated basally and apically. On apical slope rows invisible, and puncturation entirely confuse. Rows consist of dense, moderately large punctures, almost concealed by dense irregular punctures in intervals. Interval punctures slightly finer than those in rows. Intervals between rows 2–3 and 4–5 slightly elevated. Marginal stria with indistinct punctures. Sutural stria fine, presents along posterior half of apical slope (Fig. 32).



Figs 26–38. *Chrysolina paradoxa* (holotype, ♂): 26 — dorsal view, 27 — lateral view, 28 — fore-tarsus, 29 — hind-tarsus, 30 — pronotum, left half, 31 — maxillary palpus, 32 — pygidium and elytral apex, 33 — antenna; 34–38 — aedeagus: 34 — apical part, dorsally, 35 — basal part, dorsally, 36 — lateral view, 37 — apical part, ventrally, 38 — basal part, ventrally.

Рис. 26–38. *Chrysolina paradoxa* (голотип, ♂): 26 — вид сверху, 27 — вид сбоку, 28 — передняя лапка, 29 — задняя лапка, 30 — переднеспинка, левая половина, 31 — челюстной щупик, 32 — пигидий и вершина надкрылья, 33 — усик, 34–38 — эдеагус: 34 — вершинная часть, вид сверху, 35 — основная часть, вид сверху, 36 — вид сбоку, 37 — вершинная часть, вид снизу, 38 — основная часть, вид снизу.

Epipleura inclined outside, visible at entire length in lateral view, densely ciliate near apex.

Hind wings absent.

Tarsomeres I–III wholly pubescent beneath, strongly dilated. Fore tarsomere I (Fig. 28) 1.5× broader than II, and 1.1× broader than III; hind tarsomere I (Fig. 29) 1.7× broader than II and 1.2× broader than I. Tarsomere IV without denticles.

Pygidium with shallow impression in basal 1/3 only.

Last abdominal sternite with shallow rounded impression in basal half and slightly deeper impression apically, impunctate, with apical margin marginate and broadly truncate.

Aedeagus (Figs 34–38) genuflexed near mid length in lateral view. Apical part emerges on the ventral side of basal part and, therefore, does not homologous to alae of the members of the subgenus *Pleurosticha* Motschulsky, 1860. Aedeagus of holotype not completely sclerotized, therefore it is slightly deformed, especially in basal part. Basal part has ridge along entire length on dorsal side. However, this ridge looks like interrupted at mid-length because the aedeagus is not completely sclerotized. Ventral side of basal part with longitudinal impression margined by low calli. Flagellum filiform.

Length: 7.1 mm. Width: 4.1 mm. Aedeagus length: 2.9 mm.

DISTRIBUTION. Sayans (?). Medvedev [1999] noted that the type specimen was received from the former Martjanov Museum (Minusinsk), and all materials deposited in that museum were collected in Sayans.

Material. TYPE: *Chrysolina paradoxa*, holotype with labels: “музей Мартьянова Минусинск 1916–1926”, “HOLOTYPUS *Chrysolina paradoxa* m. L. Medvedev det. 1998” [red]; ♂ (MC).

Chrysolina schewyrewi (Jacobson, 1895)

Figs 39–50

Chrysolina schewyrewi Jacobson, 1895: 547 (“Tomsk”, lectotype in ZISP, examined)

Chrysolina (Heliostola) despecta Kontkanen, 1957: 208 (“Krasnojarsk”, holotype and paratype in ZMNH, examined)

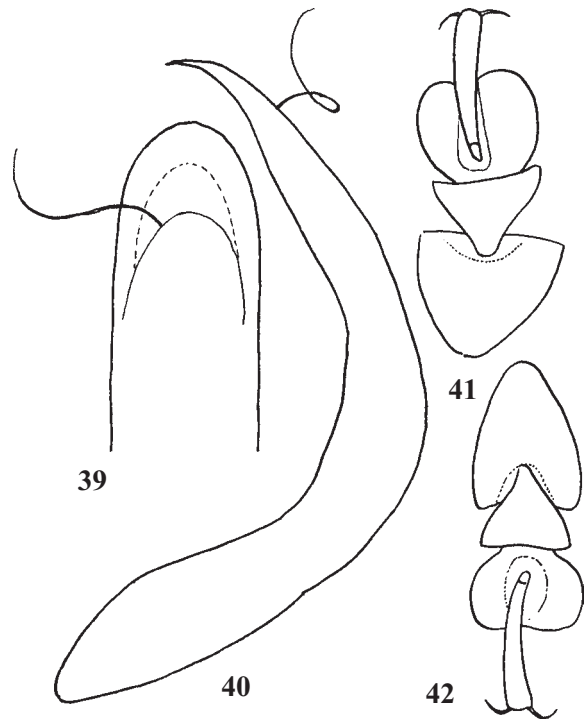
Chrysolina (Heliostola) schewyrewi: Medvedev, Dubeshko, 1992: 102; Mikhailov, 2001: 327.

Obovate, convex. Above moderately or sericeous shining, shagreen, unicolorous, dark violet or bronze. Underside violet or golden, legs black with golden reflection. Antennae brown with antennomeres I and II rufous beneath.

Last maxillary palpomere in male (Fig. 47) 1.6× broader and 1.3× longer than previous one, as long as wide; in ♀ 1.1× longer and wider than previous.

Antenna (Fig. 48) inserted 1.8× closer to clypeus than to eye, narrow, with antennomeres VI–XI slightly broadened. Antennomere X 1.5–1.6× longer than wide.

Pronotum broadest near mid-length or before mid-length, with lateral sides rounded, more narrowed anteriorly than posteriorly. Disk covered with moderately large, dense punctures. Anterior margin ciliate. Lateral sides swollen at entire length, densely minutely punctate. Lateral impression shallow, broad at entire length or obsolete, presents only basally and apically. Lateral impression filled with punctures which as large as those on disk or slightly larger.



Figs 39–42. *Chrysolina schewyrewi* (Alati, ♂): 39 — aedeagus, dorsal view, 40 — the same, lateral view, 41 — fore-tarsus, 42 — hind-tarsus.

Рис. 39–42. *Chrysolina schewyrewi* (Алтай, ♂): 39 — эдеагус, вид сверху, 40 — то же, вид сбоку, 41 — передняя лапка, 42 — задняя лапка.

Prothoracic hypomerae weakly convex or almost flat, laterally with very shallow impression filled with obsolete transverse wrinkles. Basal fold strong.

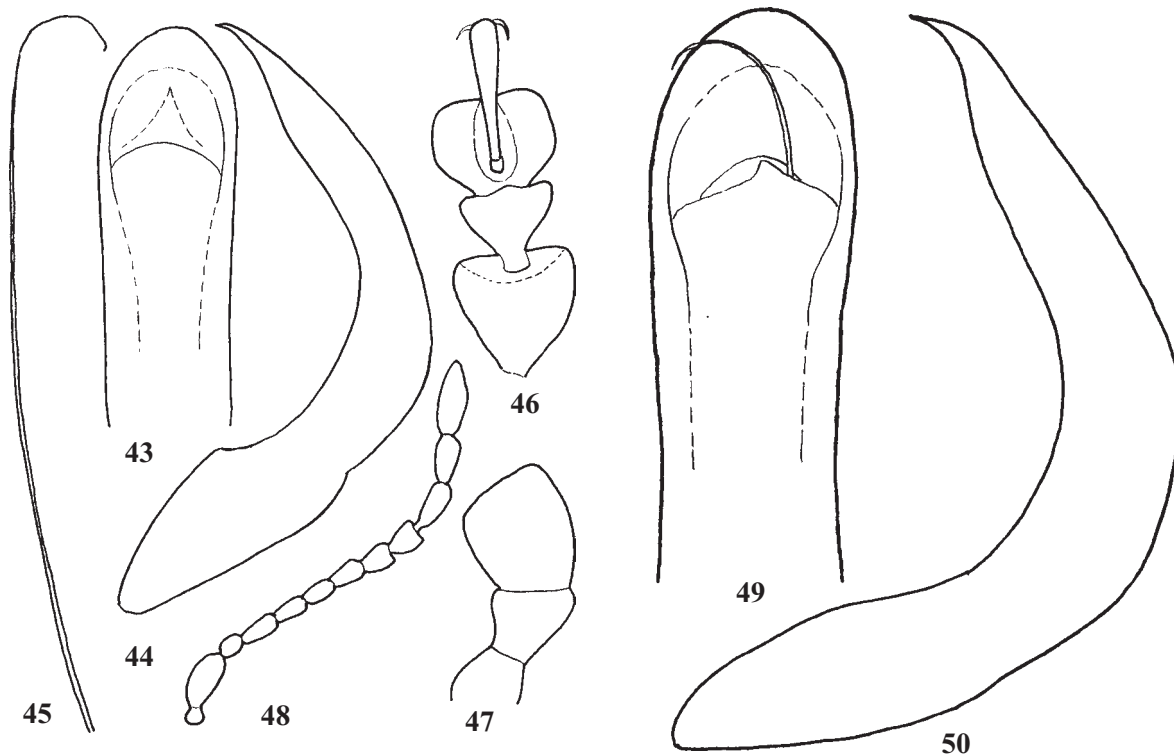
Elytron without humeral callus, with punctures arranged in 10 rows (including abbreviated scutellar row). Rows 2–3, 4–5, 6–7, and 8–9 closely arranged in pairs. Rows regular, or slightly undulate, or 4–5, 6–7, and 8 confused with interval punctures, or rows mostly confused with only 9th visible at entire length. Punctures in rows large, very dense, about as large as distances between them. On apical slope rows invisible, and puncturation entirely confuse. All intervals flat or narrow intervals between rows 2 and 3, 4 and 5 very slightly raised. Intervals densely covered by punctures which slightly differ in size, mostly they slightly larger than punctures at pronotal disk. Sutural stria presents along posterior half of apical slope or shorter. Epipleura inclined outside, visible at entire length in lateral view, with only several very short setae near apex.

Hind wings absent.

Tarsomeres I–III wholly pubescent beneath in both sexes, in male strongly dilated, much broader than in female. In male fore tarsomere I (Figs 41, 46) as broad as III, and 1.3× broader than II, hind tarsomere I 1.3× broader than II and 1.1× broader than III.

Pygidium with weak groove in basal half only.

Last abdominal sternite in female convex, with apical margin arc-shaped; in male it convex or medially slightly



Figs 43–48. *Chrysolina schewyrewi* (Tomsk, ♂): 43 — aedeagus, dorsal view, 44 — the same, lateral view, 45 — flagellum, 46 — fore-tarsus, 47 — maxillary palpus, 48 — antenna.

Рис. 43–48. *Chrysolina schewyrewi* (Томск, ♂): 43 — эдеагус, вид сверху, 44 — то же, вид сбоку, 45 — флагеллум, 46 — передняя лапка, 47 — челюстной щупик, 48 — усик.

Fig. 49–50. *Chrysolina schewyrewi* (*Chrysolina despecta*, paratype, ♂): 49 — aedeagus, dorsal view; 50 — the same, lateral view.

Рис. 49–50. *Chrysolina schewyrewi* (*Chrysolina despecta*, паратип, ♂): 49 — эдеагус, вид сверху; 50 — эдеагус, вид сбоку.

depressed, with narrow transverse impression at apex, apical margin broadly truncate and slightly emarginate.

Aedeagus — Figs 39–40, 43–45, 49–50.

Length: 6.0–6.2 mm (♂), 6.6–6.8 mm (♀).

DISTRIBUTION. Altai, Sayans, Central Siberian Plateau, Transbaikalia.

HOST PLANTS [Mikhailov, 2001]. *Saussurea latifolia* (Asteraceae).

REMARKS. Type specimens of *Chrysolina schewyrewi* (2 ♂♂, 1 ♀) were originally deposited in “coll. Instituti Sylvatici Petropolitani” [Jacobson, 1895]. In ZISP I found one male and one female labelled by Dr. G.G. Jacobson as “*Schewyrewi* m.” and collected by Dr. Brandenburg in Tomsk. The locality and collectors correspond to those mentioned in the original description [Jacobson, 1895]. Therefore, I designate the male as a lectotype.

MATERIAL TYPES: *Chrysolina schewyrewi* Jacobson, lectotype (designated here), with labels: “Томскъ Брандбрг.,” “*Schewyrewi* m.,” “Typus” [red, recent label], “Lectotype *Chrysolina schewyrewi* Jacobson, 1895. Bienkowski design. 2005” [red], “*Chrysolina schewyrewi* Jcbs. Bienkowski det. 2005”: ♂ (ZISP); paralectotype (designated here) with labels “Томскъ Брандбрг.,” “*Chrysolina schewyrewi* m. G. Jacobson det.”: ♀ (ZISP).

Chrysolina despecta Kontkanen, holotype with labels: “Krasnojarsk Streblhoff,” “236,” “Mus. Zool. Hifors Spec. typ. N2635, *Chr. despecta* Kontkanen”: ♂ (abdomen and aedeagus lost) (ZMUH: coll. Lindroth); Paratype (Figs 49–50) with labels:

“Krasnojarsk Streblhoff,” “*despecta* Kontk. P. Kontkanen det.,” “Paratype *Chrysolina despecta* Kontkanen, 1957. Bienkowski vid. 2004” [red], “*Chrysolina schewyrewi* (Jcbs.). Bienkowski det. 2004”: 1 ♂ (ZMUH: coll. Lindroth).

Additional specimens. Kazakhstan, East Kazakhstan reg.; Altai, Ivanovskij Belok ridge 17.6.1983: 1 ♀, 24.6.1983: 1 ♀; Siberia, Altai, northwards from Teletskoye lake, Artybash, Mikheev leg. 27.8.1987: 1 ♂, 1 ♀; Altai, N slope of Terektinskij Ridge, env. Khabarovka Vill., 1500m, under stones, A.V. Matalin leg. 11.6.1998: 1 ♂, 1 ♀; Central Altai. S-W slope of Iolgo Ridge, Albaganskij pass, 2200m, A.V. Matalin leg. 11.7.1999: 1 ♂; Novosibirsk reg., Ob' river valley, Suzun: 1 ♂, 1 ♀; Krasnojarsk 15.8.1975: 1 ♀, Tomsk 25.7.1909: 1 ♂.

KEY TO SPECIES OF THE SUBGENUS *CHRY SOLINA* (*SIBIRIELLA*).

- 1(2) Hind wings reduced, narrow, but reaching elytral apical slope. Aedeagus with flagellum bifurcate apically (Figs 20–21). Last abdominal sternite of male with narrow longitudinal furrow. Elytral epipleura distinctly, sparsely ciliate near apex. Pronotal lateral impression presents basally and apically only, very shallow and short
..... *Ch. montana*.
- 2(1) Hind wings absent. Aedeagus with flagellum filiform (in *Ch. katonica* a shape of flagellum is unknown) (Figs 1, 3, 4–5, 16–17, 34, 39–40, 45, 49). Last abdominal sternite of male medially with depression or evenly convex.
- 3(6) Aedeagus genuflexed near mid-length in lateral view (Figs 3, 36).
- 4(5) Pronotal lateral impression very weak, presents only at base and sometimes at apex. Elytral rows equidistant,

- intervals covered by punctures distinctly finer (about 4×) than punctures in rows *Ch. capricornus*.
- 5(4) Pronotal lateral impression presents along entire length, but shallow, only slightly deepened basally (Fig. 30). Elytral rows paired, intervals covered by punctures slightly finer than punctures in rows, therefore puncture rows almost invisible (Fig. 26) *Ch. paradoxa*.
- 6(3) Aedeagus strongly curved near mid-length in lateral view (Figs 4–5, 9–10, 16–17, 39–40, 43–44, 49–50).
- 7(10) Aedeagus emarginate at sides of apical orifice, in lateral view S-shaped apically (Figs 4–5, 16–17).
- 8(9) Body dark violet, bronze, green, or greenish-bronze above. Aedeagus with apical lobe broad and short (Figs 4–5). Elytral epipleura sparsely ciliate near apex .. *Ch. dudkoi*.
- 9(8) Body greenish-blue above. Aedeagus with apical lobe elongate (Figs 16–17) *Ch. kholsunica*.
- 10(7) Aedeagus evenly narrowed at sides of apical orifice, in lateral view evenly curved apically (Figs 9–10, 39–40, 43–44, 49–50).
- 11(12) Above dark violet or bronze. Aedeagus parallel-sided till the level of apical orifice (Figs 39–40, 43–44, 49–50). Elytral epipleura with only several very short, hardly visible setae near apex *Ch. schewyrewi*.
- 12(11) Above black with weak blue reflection (♂), or greenish black (♀), shagreen. Aedeagus broadened at sides of apical orifice (Figs 9–10). Elytral epipleura distinctly, sparsely ciliate near apex *Ch. katonica*.

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