Subgenus *Polystictella* Bechyné, 1952a

Diagnosis

Above with contrasting coloration, including pale spots on dark background of elytra; elytral pattern always symmetrical.

Last maxillary palpomere oval or cylindrical, slightly narrower than penultimate one, similar in both sexes.

Pronotum swollen laterally, without lateral impression. Pronotal disc smooth or finely punctate; large punctures present mostly along lateral sides. Anterior side ciliate in all species, it is entirely marginated in most species, and immarginated medially in *Ch. curata* only. Anterior setiferous pore present.

Prothoracic hypomeron almost flat or weakly convex, with narrow deep lateral groove along entire length. Basal fold weak or absent.

Metasternum entirely marginated anteriorly.

Elytra without humeral calli or with weak calli, each with 11 equidistant regular puncture rows or with dense, mostly irregular punctures which partly arranged in short undulate rows. Intervals flat.

Elytral epipleura horizontal, barely visible in lateral view in anterior 1/2, invisible in lateral view in posterior 1/2, densely ciliate along entire length or densely ciliate posteriorly and sparsely ciliate anteriorly.

Hind wings normally developed or reduced.

Tarsomeres 1–3 wholly pubescent beneath in both sexes. In male tarsomere 1 or 3 slightly broader than the respective in female in all tarsi. Claw tarsomere with very fine denticles or without denticles beneath.

Pygidium with deep or weak sulcus along entire length, or with impression in basal ½, or without impression.

Last abdominal sternite evenly weakly convex in both sexes or depressed medially (in male of *Ch. duodecimstillata*).

Aedeagus tube-shaped, with apex broadly or narrowly triangular. Flagellum exposed, simple, narrow or moderately wide.

Differential diagnosis

Subgenus *Polystictella* inhabits S and E Africa, mostly southern from equator in savannah and South African desert zones. It is morphologically closest to the genus *Camerounia* from equatorial forest zone of Africa and differs from the latter by the elytral epipleura horizontal, lateral sides of pronotum without emarginations before posterior angles, and metasternum entirely marginated between mid-coxae.

Key to species

1(4) Hind wings absent or strongly reduced.

2(3) Elytron covered by large, mostly irregular punctures which arranged in short undulate rows here and there. Elytron bluish black with 6 (2, 1, 2, 1) yellow spots. Pronotum laterally with unevenly placed large punctures. Head, pronotum, and rest of the body (including legs and antennae) black. Hind wings absent or very short, as long as metathorax. Pygidium with broad deep sulcus along entire length. Basal fold of prothoracic hypomeron absent. Orbital line developed only along upper border of eye. Length 8.1–8.6 mm (male), 11.0–11.7 mm (female). Figs. 17–21. Tanzania.

Ch. duodecimstillata (Weise, 1898)

3(2) Elytron covered by punctures arranged in: abbreviated scutellar row, 6 discal equidistant regular rows, and 3 lateral irregular ones. Elytron black with 4 (2, 2) yellow spots. Pronotum with single moderately large punctures near anterior and posterior angles. Head, pronotum, and rest of the body black. Hind wings reduced, narrow, reaching apex of abdomen or not reaching (species is apterous according to original description, Bechyné, 1952a, however syntype has hind wings narrow, reaching apex of abdomen). Pygidium with triangular impression in basal ½. Basal fold of prothoracic hypomeron weak. Orbital line developed along upper border of eye or reaching clypeus. Length 11.1 mm (female). Figs. 22, 23. Male is unknown. Tanzania.

Ch. latipleura Bechyné, 1952a

4(1) Hind wings normally developed.

5(6) Elytron covered by fine, mostly irregular punctures which partly arranged in short undulate rows. Elytron purely black or with weak greenish bronze tint, with 7 yellow spots: 2 large rounded spots near base, 1 small spot before mid-length, 1 large, constricted spot behind mid-length, 2 rounded spots at apical slope, and 1 spot at apex. Head and pronotum red, pronotum with black basal spot; body red; antennae, labrum, mandibles, palpi, scutellum, tibiae, tarsi, exterior side of mid- and hind-femora, metasternum laterally, abdominal sternites 1 and 2 medially, and part of coxae black, elytral epipleura red with black lateral stripe. Pygidium with distinct sulcus along entire length. Basal fold of prothoracic hypomeron absent. Orbital line developed only along upper border of eye. Length 9.5–11.0 mm. Fig. 13. Tanzania.

Ch. curata (Weise, 1907a)

6(5) Elytron covered by regular equidistant puncture rows. Orbital line reaching clypeus or antennal insertion.

7(12) Elytron smooth, with intervals between puncture rows covered by fine punctures and sparse wrinkles and very finely shagreen. Elytron with 4 rounded yellow spots. Basal fold of prothoracic hypomeron weak.

8(11) Elytron without any rufous lateral stripe. Head and pronotum deep red or reddish brown. Elytral background light or dark brown, with more or less distinct violet or blue tint. Clypeus and lateral sides of vertex (along inner edge of eyes) covered by thick dense white setae.

9(10) Elytral yellow spots covered by punctures which as large as punctures on dark elytral areas, or only slightly smaller than that punctures. This character is best visible on antero-lateral elytral spot. 4th tarsomere ventrally without 2 fine apical denticles. Apical projection of aedeagus constricted laterally. Pygidium with weak sulcus along entire length. Underside including elytral epipleura red or brown, antennae, tibiae and tarsi dark brown, 2–4 basal antennomeres partly yellow. Length 7.1–8.6 mm (male), 9.0–9.5 mm (female). Figs. 11, 12. Natal, Transvaal, Mozambique, Kenya.

Ch. clarkii (Baly, 1864)

10(9) Elytral yellow spots covered by punctures which much smaller than punctures on dark elytral areas. This character is best visible on antero-lateral elytral spot. Apical margin of 4th tarsomere drawn in the form of 2 fine denticles ventrally. Apical projection of aedeagus with parallel lateral sides. Pygidium without sulcus. Underside including elytral epipleura brown or rufous, antennae dark brown with antennomeres 1–3 yellow below, maxillary palpi dark brown. Length 7.0–8.8 mm (male), 8.4–9.4 mm (female). Figs. 7–10. Tanzania, Namibia.

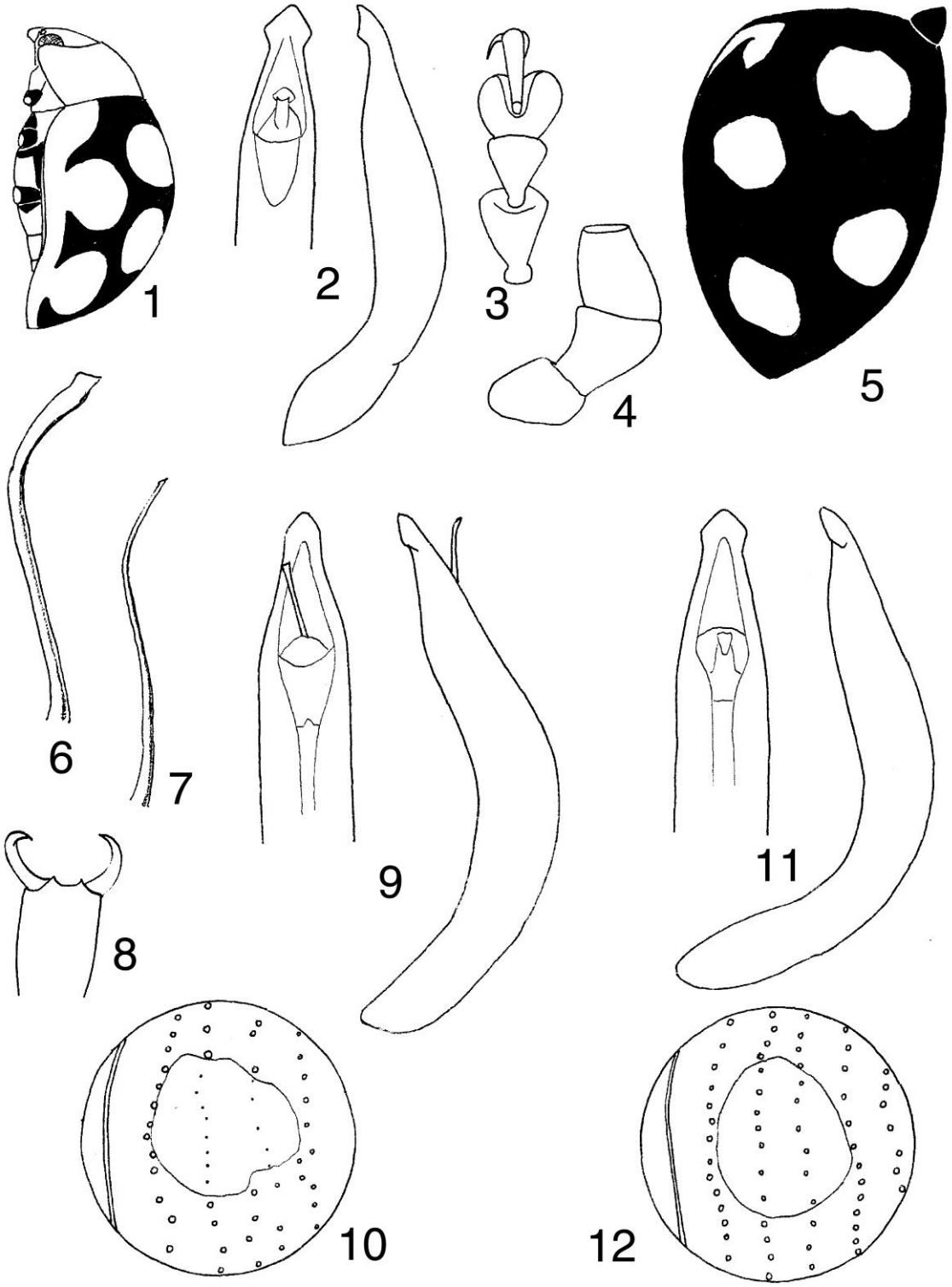
Ch. elysia Bechyné, 1954a

11(8) Elytron with rufous lateral stripe along entire length or at least anteriorly. Head and pronotum light rufous. Elytron with very large yellow spots, one or two lateral spots usually fused with rufous lateral stripe; elytral background black without metallic tint. Clypeus and lateral sides of vertex (along inner edge of eyes) glabrous or covered by sparse, thin setae. Apical margin of 4th tarsomere drawn in the form of 2 fine denticles ventrally. Apical projection of aedeagus constricted laterally. Pygidium with weak sulcus in basal ½. Underside including elytral epipleura rufous, coxae, trochanters, metepisterna, and metasternum sometimes black, scutellum yellowish, antennae yellow with antennomeres 6–11 brown. Length 6.5–8.0 mm (male), 7.3–9.3 mm (female). Figs. 1–6. Mozambique, Natal, Transvaal.

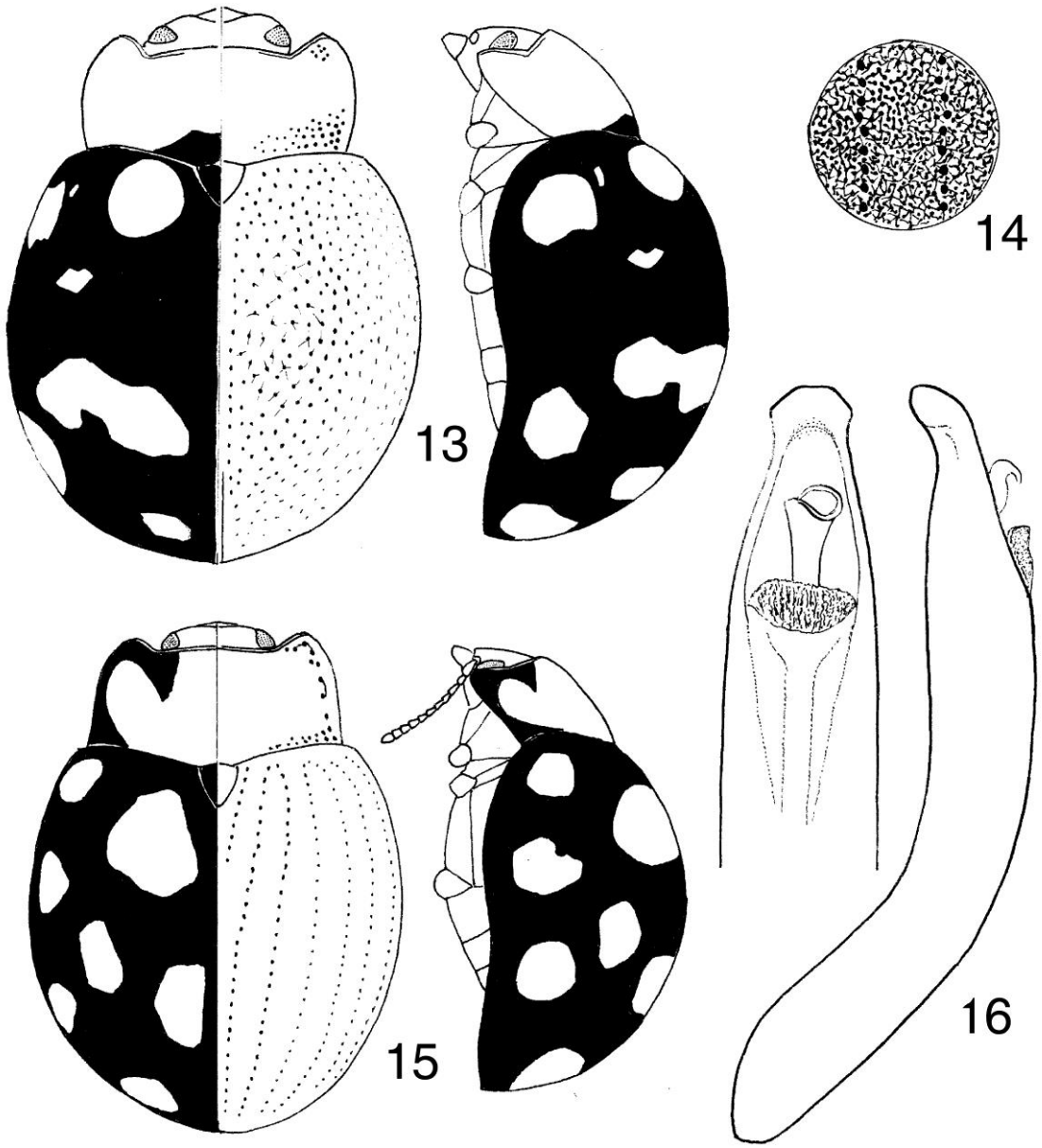
Ch. semirufa (Fairmaire, 1894)

12(7) Elytron dull, with intervals between puncture rows distinctly shagreen, covered by very dense, fine punctures (visible at magnification 8 X); most punctures connected to each other with irregular wrinkles. Head and pronotum reddish, pronotum with lateral stripe or with only narrow lateral margin black, rarely head rufous with black spots, and pronotum entirely black. Elytron purely black or with weak bronze green tint, with 6–7 yellow spots (2, 3 (or 2), 1, 1) arranged in diagonal rows. Basal fold of prothoracic hypomeron absent. Pygidium without sulcus. Underside including most part of femora rufous, tibiae, tarsi, apices of femora, and mandibles black, labrum and antennae (darkened apically) yellow, elytral epipleura rufous with black outer margin. Length 8.3–8.5 mm (male), 9.2–10.5 mm (female). Figs. 14–16. Congo, Uganda, Rwanda, Cameroon.

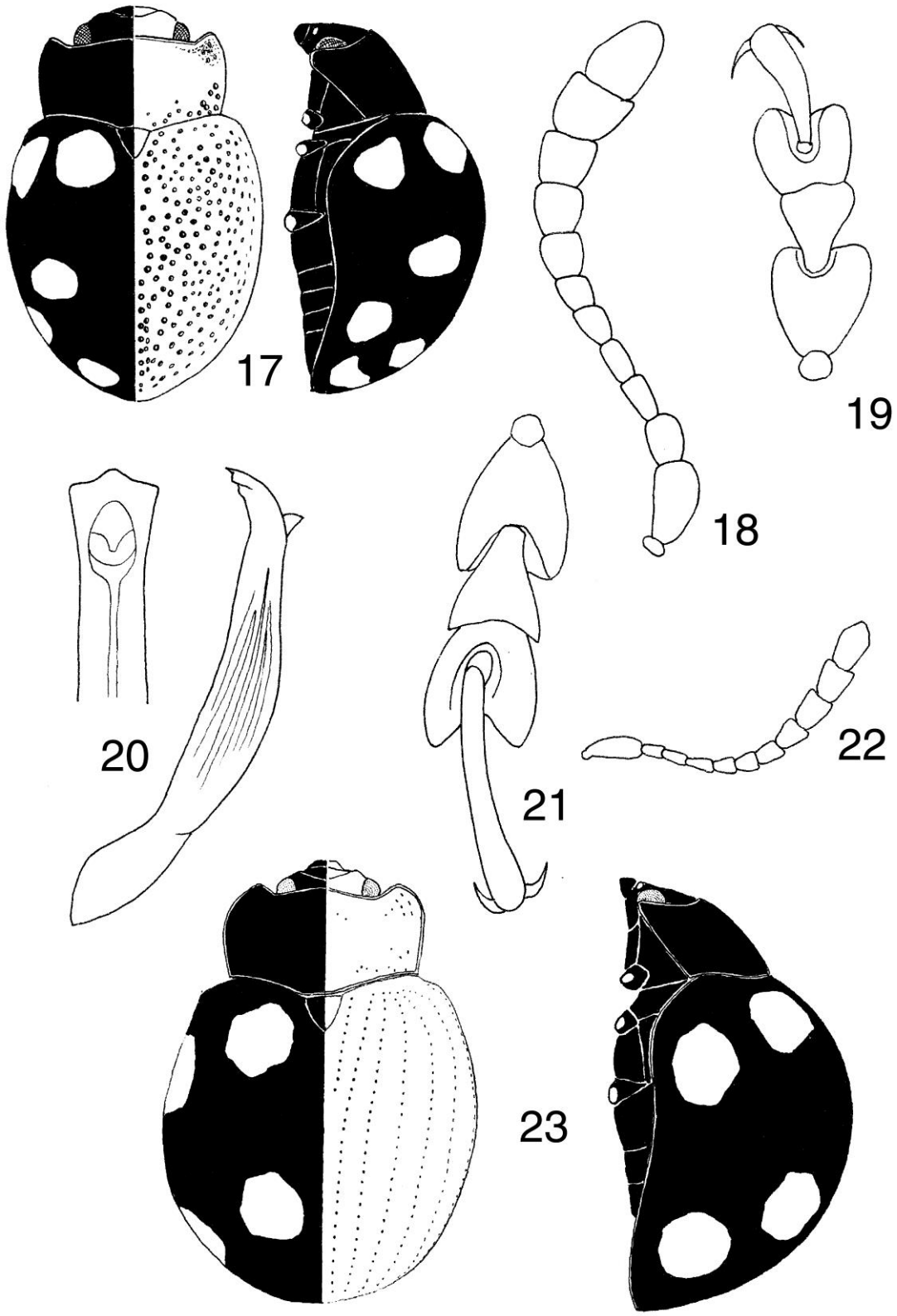
Ch. guttipennis (Weise, 1913)



***Polystictella* figures 1–12:** 1–6 – *Chrysolina semirufa*, male (S Africa): 1 – total lateral view, 2 – aedeagus, 3 – fore-tarsus, 4 – maxillary palpus, 5 – left elytron (another male), 6 – flagellum of aedeagus; 7–10 – *Ch. elysia*, male (Tanzania): 7 – flagellum of aedeagus, 8 – 4th tarsomere from below, 9 – aedeagus, 10 – left elytron, antero-lateral spot; 11–12 – *Ch. clarkii*, male (Tanzania): 11 – aedeagus, 12 – left elytron, antero-lateral spot. (Orig.)



Polystictella **figures 13–16:** 13 – *Chrysolina curata*, female (syntype, Tanzania), total dorsal and lateral view; 14–16 – *Ch. guttipennis*: 14–15 – female (Uganda): 14 – elytral relief, 15 – total dorsal and lateral view, 16 – male (Cameroon), aedeagus.(Orig.)



Polystictella **figures 17–23:** 17–21 – *Chrysolina duodecimstillata,* male (Tanzania): 17 – total dorsal and lateral view, 18 – antenna, 19 – fore-tarsus, 20 – aedeagus, 21 – hind-tarsus; 22–23 – *Ch. latipleura*, female (Tanzania): 22 – antenna, 23 – total dorsal and lateral view. (Orig.)

Subgenus *Pseudocrosita* Lopatin, 1999

Diagnosis

Body elongate, convex (Fig. 1). Dorsum unicolorous, purely black or with bronze tint, moderately shining.

Last maxillary palpomere similar in both sexes, narrow, elongate oval, obliquely truncate, as long as penultimate one and slightly narrower than latter (Figs. 2, 8).

Antenna inserted 1.3–1.7 X closer to clypeus than to eye, narrow.

Pronotum (Fig. 1) very swollen transversely and longitudinally from side to side, broadest basally or near mid-length, moderately swollen laterally along entire length, with lateral impression narrow, deep basally, moderately deep anteriorly, covered with large, numerous, partly coalescent punctures. Pronotal disc evenly minutely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron weakly convex, with narrow impression and transverse wrinkles laterally, with narrow lateral border. Basal fold strong. Intercoxal prosternal process longitudinally impressed along entire length.

Metasternum entirely marginated anteriorly.

Elytron (Fig. 1) with weak humeral callus. Elytral puncturation moderately large and more or less distinctly arranged in 10 paired regular rows, which sometimes hardly visible among dense fine puncturation in intervals, or elytral puncturation mostly irregular, double, consists of large and fine, dense punctures, with large punctures partly arranged in paired rows in anterior 1/2. Intervals flat.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings reduced, narrow, reaching base of pygidium or only twice longer than metathorax.

Tarsomeres 1–3: male (Figs. 3, 4, 9–11): all tarsomeres 1, hind-tarsomeres 2 and 3 with broad glabrous stripe beneath, others with entire sole; female (Figs. 6, 7, 12–14): all tarsomeres 1–3 with broad glabrous stripe beneath. Claw tarsomere without denticles beneath.

Pygidium with longitudinal furrow along entire length.

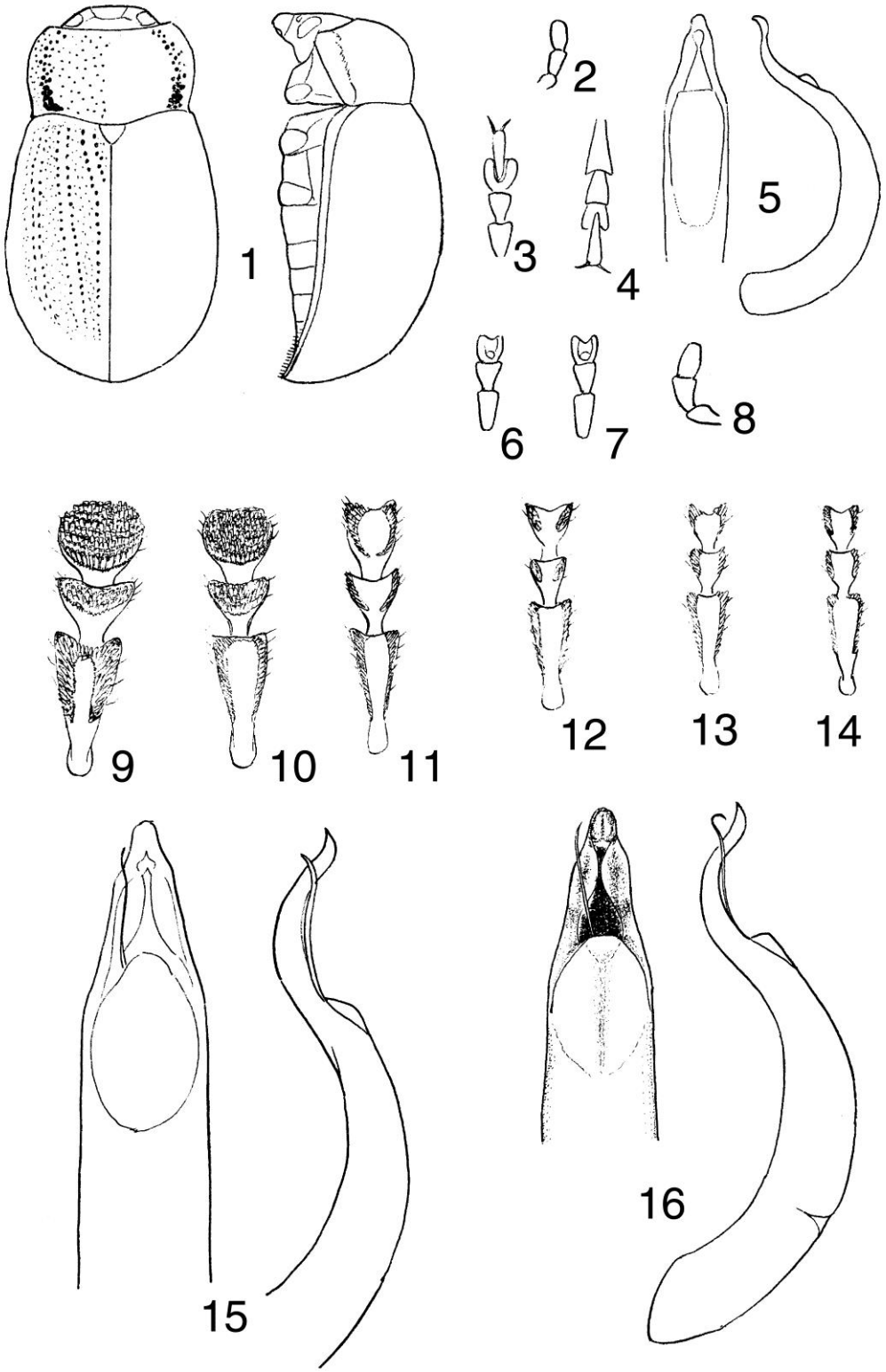
Last abdominal sternite similar in both sexes, evenly convex, with apical margin broadly truncate.

Aedeagus (Figs. 5, 15, 16) flattened in cross-section, strongly curved at mid-length, S-shaped apically in lateral view, with apex long, narrow, without apical denticles, with flagellum exposed, narrow, whip-shaped.

Length 8.7–9.0 mm (male), 9.8–10.8 mm (female).

Differential diagnosis

This Central Asian endemic subgenus externally looks like the subgenera *Bittotaenia* and *Gnathomela* and differs from both in the pronotum very swollen from side to side. Besides that, it differs from *Bittotaenia* in pronotal lateral impression never furrow-shaped, more reduced hind wings, aedeagus shape (S-shaped in lateral view, without apical denticles), and flagellum narrower, whip-shaped. Besides that, it differs from *Gnathomela* in the presence of humeral calli and hind wings. Subgenus *Pseudocrosita* contains one species, *Ch. bactriana* (Lopatin, 1961) occurring in S Tajikistan and Kyrgyzstan.



***Pseudocrosita* figures 1–16:** *Chrysolina bactriana:* 1–5 – male (topotype, S Tajikistan): 1 – dorsal and lateral view, 2 – maxillary palpus, 3 – fore-tarsus, 4 – hind-tarsus, 5 – aedeagus; 6–8 – female (topotype, S Tajikistan): 6 – fore-tarsus, 7 – hind-tarsus, 8 – maxillary palpus; 9–12 – male (Kyrgyzstan): 9–11 – tarsal sole: 9 – fore-tarsus, 10 – mid-tarsus, 11 – hind-tarsus; 12–14 – female (Kyrgyzstan), tarsal sole: 12 – fore-tarsus, 13 – mid-tarsus, 14 – hind-tarsus; 15–16 – aedeagus, dorsal and lateral view: 15 – male (holotype *Ch. globicollis*, Kyrgyzstan), 16 – male (Kyrgyzstan). (Orig.)

Subgenus *Pseudolithoptera* L. Medvedev, 1970

Diagnosis

Body convex, elongate oval. Head, pronotum, and scutellum moderately shining; elytra dull; dorsum black with weak violet reflection, which more distinct at anterior border of pronotum, elytral lateral side, pygidium, and apical part of elytral suture, pronotal lateral calli with greenish or violet reflection, underside (including elytral epipleura) and legs violet, antennae green basally and violet apically or violet along entire length, with antennomeres 1 and 2 rufous apically.

Last maxillary palpomere oval, beveled, 1.2 X longer than broad, similar to penultimate palpomere in length and width, similar in both sexes (Fig. 2).

Antenna inserted much closer to clypeus than to eye. Antennomeres 7–11 moderately broadened. Orbital lines long, distinct, almost reaching antennal insertions.

Pronotum (Fig. 1) broadest behind mid-length, with lateral sides arc-shaped. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent. Pronotum laterally weakly swollen along entire length. Pronotal lateral impressions broad, gently sloping, moderately deep in basal ½, obsolete in anterior ½; pronotal lateral sides broadly flattened. Pronotal impression and inner part of pronotal lateral callus covered by numerous, moderately large, separate punctures. Punctures at pronotal disc dense, fine.

Prothoracic hypomeron convex, weakly impressed and covered by wrinkles along outside. Basal fold distinct. Intercoxal prosternal process medially impressed along entire length.

Metasternum entirely marginated anteriorly, anterior margin broadened and elevated between coxae.

Elytron with moderately or weakly convex humeral callus, entirely irregularly punctate at whole surface. Punctures fine, sometimes connected by fine wrinkles; because of that, elytral surface looks like slightly wrinkled.

Elytral epipleura inclined outside in basal ⅔ and visible there in lateral view, almost horizontal in apical ⅓ and invisible in lateral view; densely ciliate near apex.

Hind wings narrow, reduced, reaching 2nd abdominal tergite.

Tarsomeres 1–3 with entire sole in both sexes, all tarsomeres 1 slightly broadened in male (Fig. 3). Claw tarsomere without denticles beneath.

Pygidium convex, without impression, covered by dense, moderately large punctures.

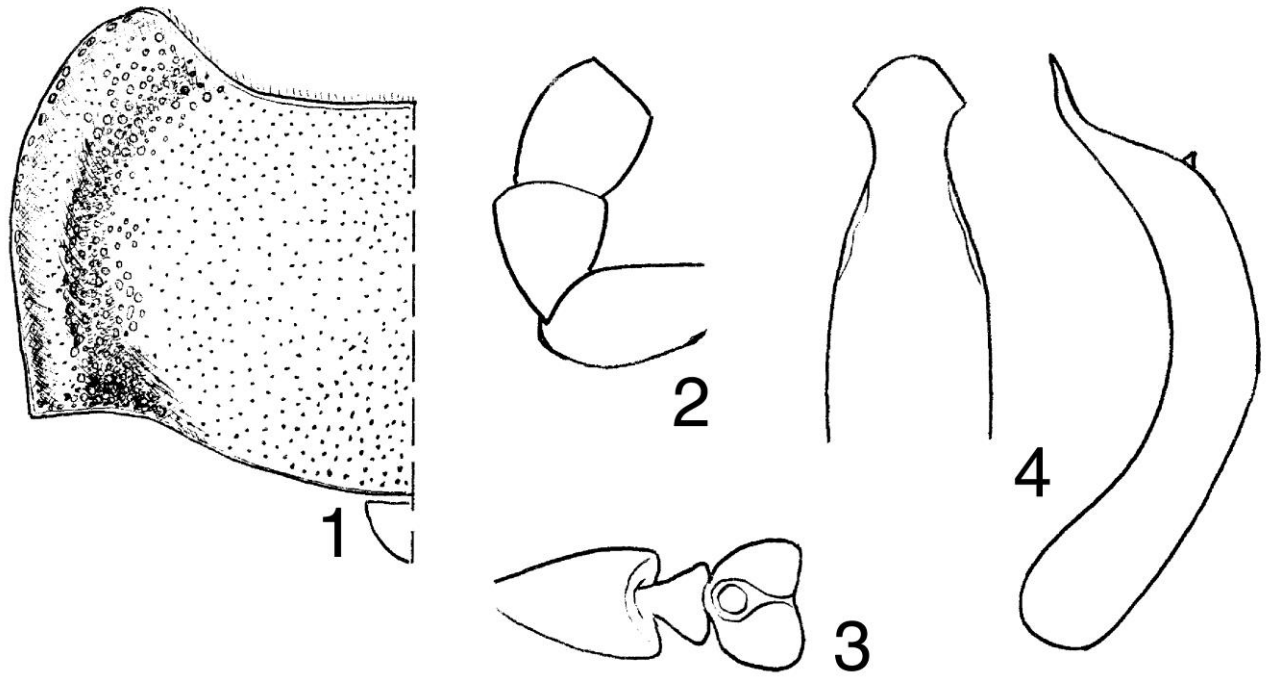
Male 1st abdominal sternite marginated anteriorly at lateral sides, immarginated and bearing triangular elevation between hind-coxae, with impression at middle of this elevation; female 1st sternite immarginated between coxae, without elevation. Male last abdominal sternite convex, with longitudinal medial furrow, apically marginated and deeply, broadly emarginated; female last sternite convex and slightly swollen, with apical margin slightly bisinuate.

Aedeagus tube-shaped, strongly curved dorso-ventrally, with apex narrow, slightly anchor-shaped (Fig. 4).

Length: 11.7 mm (male), 11.6 mm (female).

Differential diagnosis

Monotypical subgenus *Pseudolithoptera* externally looks like some species of the subgenus *Chrysocrosita* and differs in pygidium without impression, and aedeagus with narrow apical projection. The present subgenus contains one species, *Ch. interlucea* L.Medvedev, 1970 occurring in Korea.



***Pseudolithoptera* figures 1–4:** *Chrysolina interlucea:* 1–2 – female (S Korea: Chungnamdo Prov.): 1 – pronotum, 2 – maxillary palpus; 3–4 – male (holotype, N Korea: Pyongyang): 3 – hind-tarsus, 4 – aedeagus, ventral and lateral view. (After: Medvedev, 1970: 4; others – orig.)

Subgenus *Pseudotimarchomima* Daccordi, 1980b

Diagnosis

Body very convex, broadly obovate, constricted between pronotum and elytra (Fig. 1). Coloration: female: head, and pronotum dark coppery, pro-, meso-, metasternum, and legs dark greenish bronze, elytra rufous, abdominal sternites brown medially and rufous laterally, with strong bronze reflection. Antennae brown with weak blue reflection, antennomeres 1 and 3 rufous apically, 2 rufous below, maxillary palpi dark brown. Male: head coppery, pronotum and scutellum brown with strong golden reflection, prosternum brown, meso-, metasternum, and abdominal sternites rufous, legs dark brown with bluish green reflection, elytra rufous. Antennae brown with weak blue reflection, antennomeres 1 and 3 rufous apically, 2 rufous below, maxillary palpi dark brown.

Last maxillary palpomere rather securiform, 1.5 X longer than broad, 1.3 X longer and 1.5 X broader than penultimate one in female (Fig. 4); almost parallel-sided, 1.6 X longer than broad, 1.3 X longer and 1.2 X broader than penultimate palpomere in male (Fig. 6).

Antenna inserted 2.4–2.7 X closer to clypeus than to eye; narrow, with segments 7–11 slightly broadened (Fig. 2).

Orbital lines distinct, but not reaching antennal insertion.

Pronotum (Fig. 3) broadest before mid-length, with lateral sides arc-shaped, very shallowly emarginated before posterior corners. Anterior side of pronotum entirely marginated, densely ciliate. Anterior setiferous pore placed interiorly to pronotal border. Pronotal lateral sides: weakly swollen, forming narrow lateral calli along entire length, which separated from disc by lateral impressions. Pronotal lateral impressions: distinct, broad, shallow, present in posterior ¾. Pronotal punctures: 1) fine dense punctures on whole surface, 2) numerous, not coalescent, large punctures covering lateral impression and inner part of lateral callus.

Prothoracic hypomeron weakly convex, laterally with almost smooth (without wrinkles or with obsolete wrinkles) impression which delimited outside by raised smooth stripe. Basal fold of prothoracic hypomeron absent.

Metathorax entirely marginated anteriorly.

Elytron without humeral callus, evenly minutely densely irregularly punctate and minutely scratched. Only lateral interval, margined by regular puncture row, devoid of punctures.

Elytral epipleura inclined outside, visible along entire length in lateral view, densely ciliate in apical ¼.

Hind wings absent.

Tarsi (Figs. 5, 7) similar in both sexes; female: tarsomeres 1–3 with entire sole and trace of narrow glabrous stripe in basal 1/2 of 1st mid- and hind-tarsomeres (fore-tarsi are not examined), male: tarsomeres 1–3 with entire sole. Claw tarsomere with 2 small, acute apical denticles beneath.

Pygidium: female: with distinct, narrow longitudinal furrow along entire length; male: convex, without furrow.

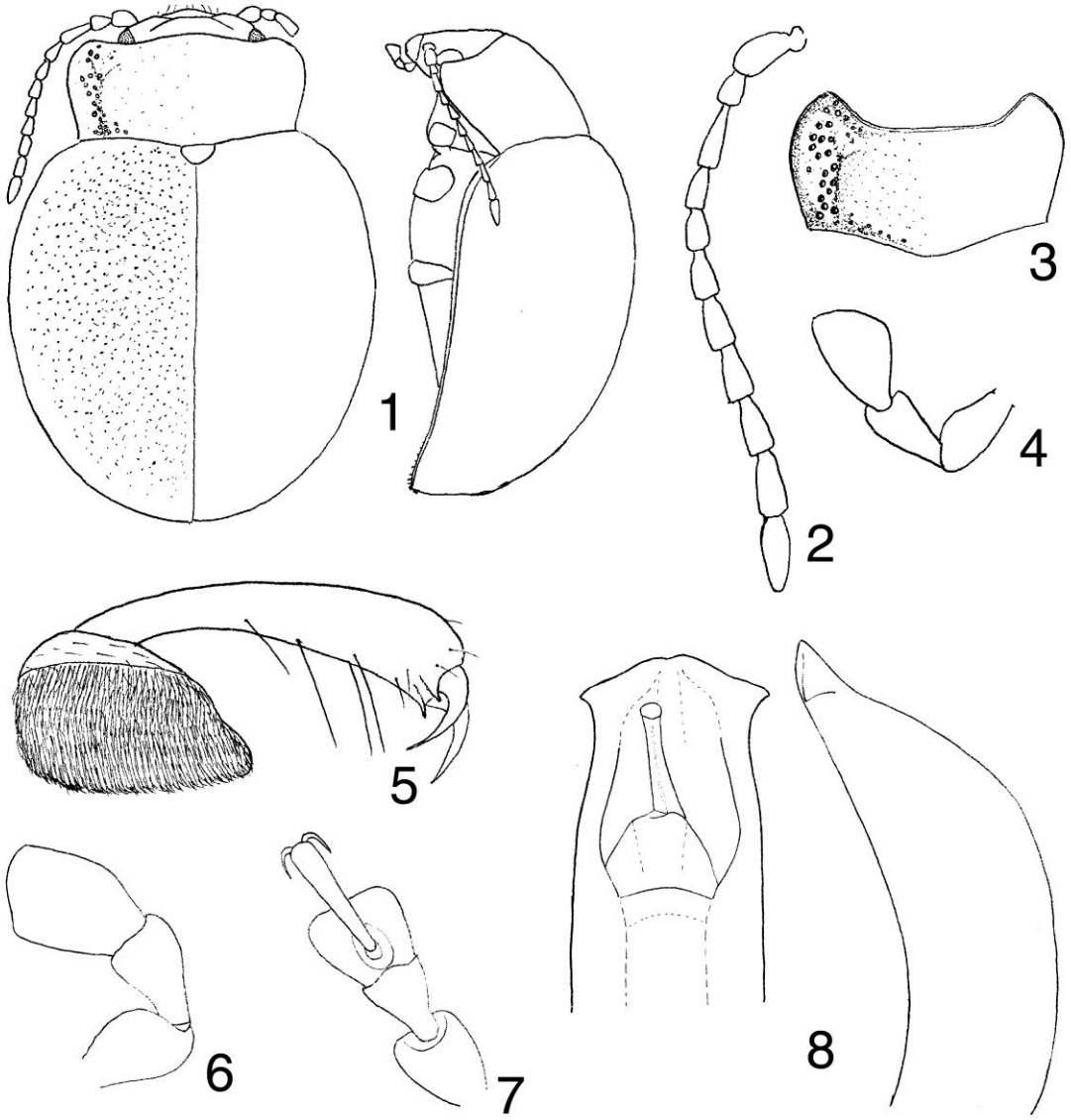
Last abdominal sternite similar in both sexes, convex, with apical margin broadly truncate.

Aedeagus tube-shaped, with anchor-shaped apex, with flagellum simple, exposed (Fig. 8).

Length: 6.6 (male); 8.9 mm (female). According to Daccordi (1976a), length 7.9 mm (male), 8.5 mm (female).

Differential diagnosis

This subgenus from Tanzania differs from African subgenera *Polysticta*, *Atechna*, *Polystictella*, *Ghesquiereita*, *Taeniochrysea* and from the genus *Camerounia* by the shape of last maxillary palpomere: more or less securiform, and by presence of distinct shallow pronotal lateral impression along almost entire length. The present subgenus includes one species, *Chrysolina luminosa* Daccordi, 1976a.



***Pseudotimarchomima* figures 1–8:** *Chrysolina luminosa:* 1–5 – female (paratype, Tanzania): 1 – dorsal and lateral view, 2 – antenna, 3 – pronotum, 4 – maxillary palpus, 5 – 3rd and 4th mid-tarsomeres; 6–8 – male (Tanzania): 6 – maxillary palpus, 7 – fore-tarsus, 8 – aedeagus. (Orig.)

Subgenus *Rhyssoloma* Wollaston, 1854

Diagnosis

Body convex, elongate-oval; dark metallic (bronze, green, blue, olivaceous).

Last maxillary palpomere weakly trapeziform with rounded sides or oval, truncate, similar in both sexes or broader in male than in female.

Antenna inserted closer to clypeus than to eye, narrow up to apex.

Orbital lines narrow, distinct, long in *Ch. costalis* and *Ch. wollastoni*, broad, shallow in *Ch. fragariae*, ending far from antennal insertion.

Pronotum broadest basally, with lateral sides arc-shaped and almost parallel near base, convergent anteriorly. Anterior side of pronotum marginated, with setae or without of them (in *Ch. wollastoni*). Anterior setiferous pore present in *Ch. fragariae*, absent in two other species. Pronotum laterally swollen along entire length. Pronotal lateral impression shallow or wide and deep, developed along entire length or basally only; covered with sparse punctures. Punctures at pronotal disc dense, very minute, disc looks like impunctate.

Prothoracic hypomeron almost flat, laterally with shallow to obsolete impression covered with obsolete wrinkles or without them at all; without lateral border. Basal fold absent in *Ch. fragariae*, distinct, with broad impression in two other species. Metasternum immarginated in *Ch. fragariae*, distinctly marginated in two other species anteriorly between mid-coxae.

Elytron with weak humeral callus. Elytral punctures arranged in 11 sparse regular rows (in *Ch. wollastoni*, rows consist of very fine punctures and therefore rows hardly visible), including abbreviated scutellar one and marginal one. Entire rows 2–3, 4–5, 6–7, and 8–9 close together in pairs. Intervals flat or slightly convex, covered by sparse obsolete punctures or smooth, impunctate; in *Ch. fragariae* lateral intervals largely irregularly wrinkled. Sutural stria absent in *Ch. fragariae*, present at apical slope in two other species.

Elytral epipleura inclined outside, visible in lateral view in anterior ⅔, horizontal and invisible in lateral view in posterior ⅓; ciliate near apex.

Hind wings narrow, with venation reduced, reaching the base of pygidium.

Tarsomeres 1–3 with entire sole in both sexes; similar in both sexes or tarsomere 1 of all tarsi slightly broader in male, than in female. Claw tarsomere without distinct denticles beneath, but its apical margin projected, 2–denticulate below, more clearly in *Ch. wollastoni* and *Ch. fragariae*.

Pygidium without distinct furrow, but with broad longitudinal impression in basal ½–⅔.

Last abdominal sternite similar in both sexes, weakly convex.

Aedeagus tube-shaped, moderately curved dorso-ventrally, with apex simple, rounded; flagellum thin, exposed in *Ch. costalis* and *Ch. wollastoni*; aedeagus is flattened dorso-ventrally, without flagellum in *Ch. fragariae*.

Differential diagnosis

Large (7.5–14.0 mm long), convex, elongate, dark metallic species of the present subgenus, inhabiting Madeira and Canary Isls., are easily separated from other subgenera by the combination of the following characters: last maxillary palpomere weakly trapeziform or oval, rather narrow, prothoracic hypomeron without distinct impression, wrinkles and lateral border, elytral punctures arranged in paired rows, hind wings narrow, reduced, reaching base of pygidium, pygidium without furrow in apical ⅓, tarsomeres 1–3 narrow, almost similar in both sexes, with entire sole, claw tarsomere without distinct denticles, but its apical margin projected, 2–denticulate at underside.

Key to species

1(2) Elytral lateral slope with large irregular ridges and wrinkles, have a monstrous appearance. Pronotum with anterior setiferous pores. Dorsum shining, metallic green, head and pronotum with blue tint, elytra with golden or coppery tint. Metasternum immarginated between mid-coxae. Species from Madeira. Length 10.2–14.0 mm. Figs. 1–7. Madeira.

Ch. fragariae (Wollaston, 1854)

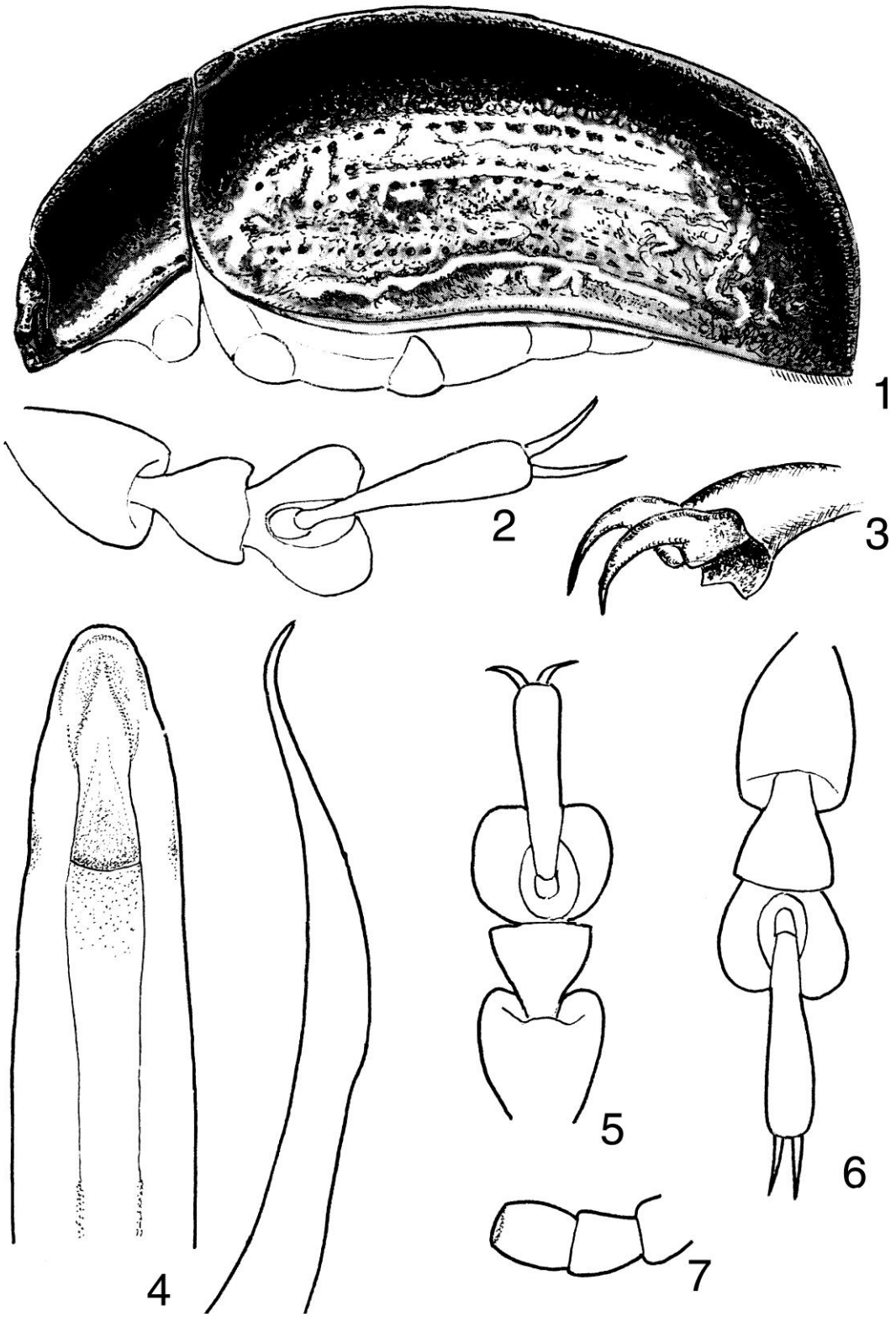
2(1) Elytral lateral slopes even, without strong irregular sculpture. Pronotum without anterior setiferous pores. Metasternum marginated between mid-coxae. Two species from Canary Isls.

3(4) Dorsum sericeous, distinctly shagreen, black with distinct bronze, greenish, bluish or olivaceous reflection. Pronotal lateral impressions shallow, narrow, developed in posterior ⅓–⅔, covered there with few small punctures, impressions obsolete anteriorly. Elytral rows consist of punctures much larger than those at pronotal disc. Length 7.5–8.1 mm (male), 8.8–10.6 mm (female). Fig. 14. Canary Isls.

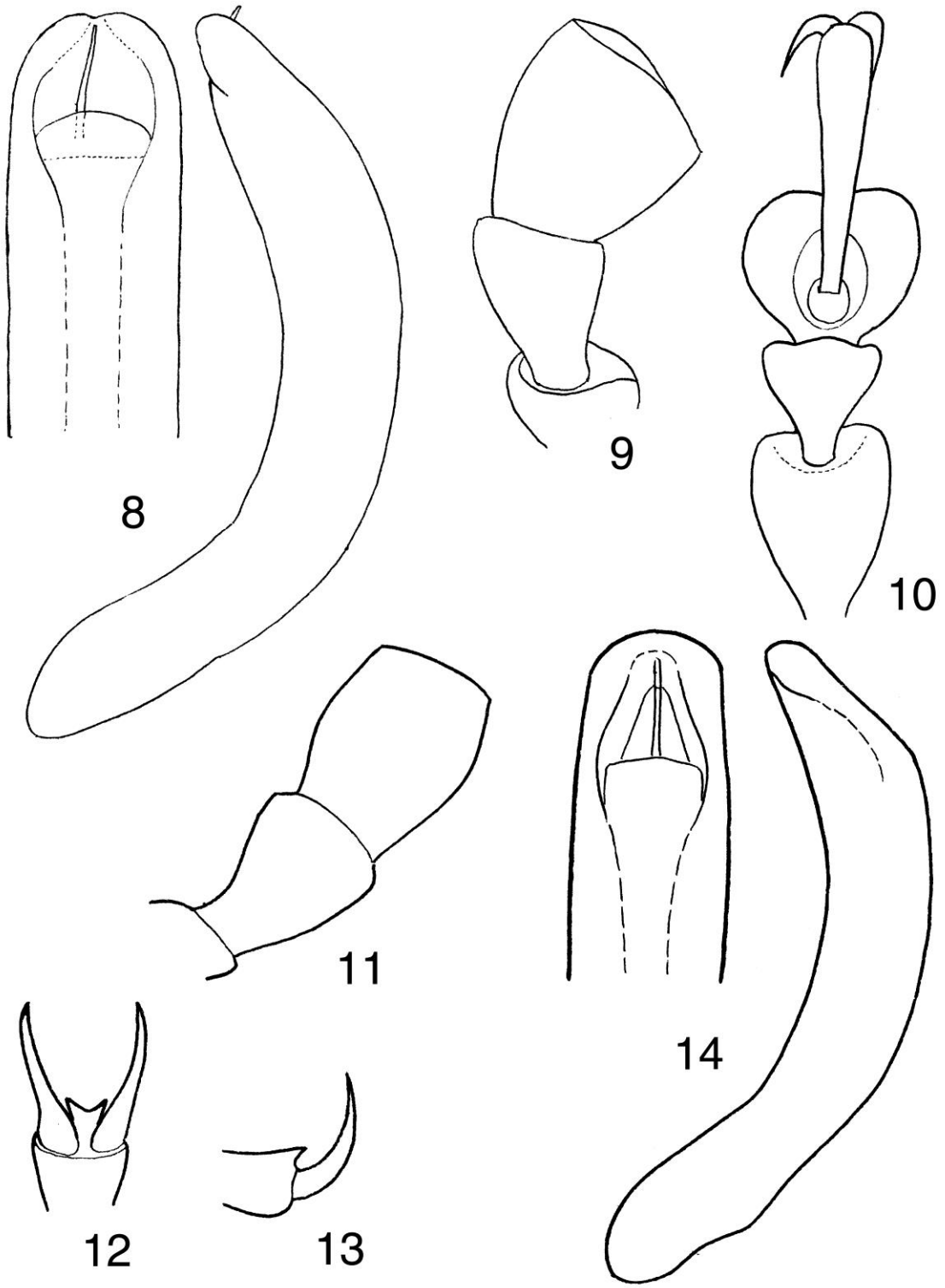
Ch. costalis (Olivier, 1807)

4(3) Dorsum shining, smooth, dark bronze. Pronotal lateral impressions wide and deep, declivous, present along almost entire length, covered by large punctures. Elytron covered with very minute punctures, hardly visible, almost as large as those at pronotal disc. Length 9.3 mm (male), 9.8–10.0 mm (female). Figs. 8–13, 15–17. Canary Isls.

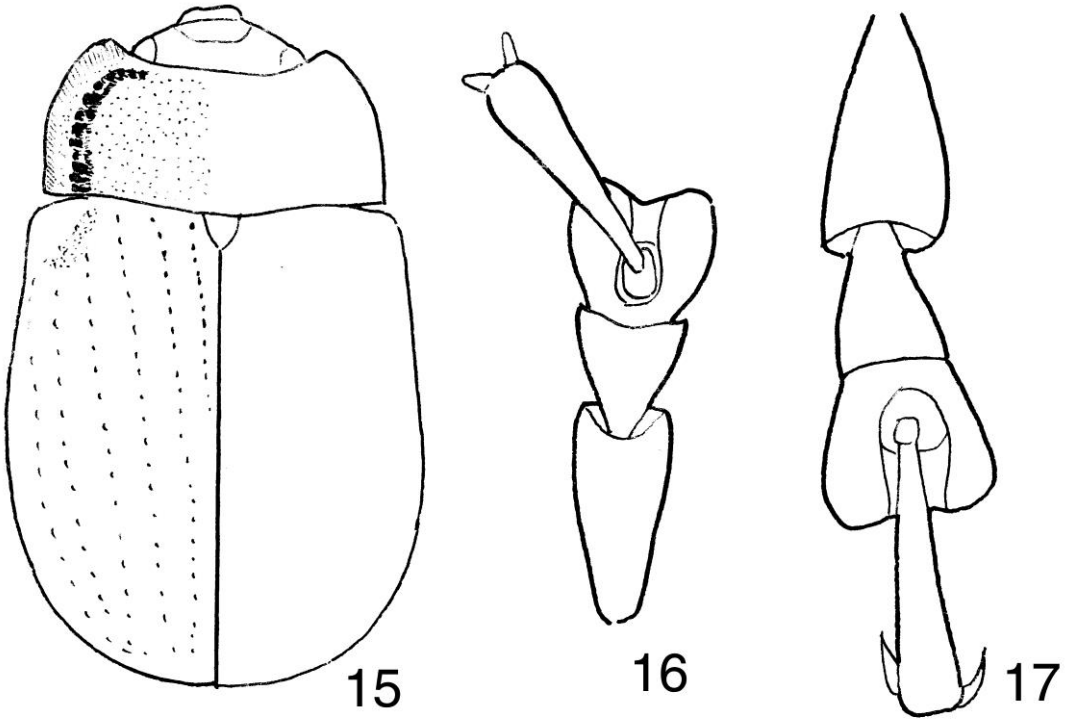
Ch. wollastoni (Bechyné, 1957)



***Rhyssoloma* figures 1–7:** *Chrysolina fragariae* (Madeira Isl.): 1–3 – female: 1 – lateral view, 2 – fore-tarsus, 3 – 4th hind-tarsomere; 4–7 – male: 4 – aedeagus, dorsal and lateral view, 5 – fore-tarsus, 6 – hind-tarsus, 7 – maxillary palpus. (Orig.)



***Rhyssoloma* figures 8–14:** 8–13 – *Chrysolina wollastoni* (Canary Isls.: Gomera Isl.): 8–10 – male: 8 – aedeagus, dorsal and lateral view, 9 – maxillary palpus, 10 – fore-tarsus; 11–13 – female: 11 – maxillary palpus, 12, 13 – 4th fore-tarsomere, dorsal and lateral view. 14 – *Ch. costalis*, male (Canary Isls.: Tenerife Isl.), aedeagus, dorsal and lateral view. (Orig.)



***Rhyssoloma* figures 15–17:** *Chrysolina wollastoni*, female (Canary Isls.: Gomera Isl.): 15 – total dorsal view, 16 – fore-tarsus, 17 – hind-tarsus. (Orig.)

Subgenus *Semenowia* Weise, 1889a

Diagnosis

Body moderately convex, elongate-oval. Head and pronotum moderately shining, elytra sericeous-shining. Dorsum and elytral epipleura black with golden tint; mouth parts, underside, and legs black or piceous, antennae black with antennomeres 1 and 2 rufous below.

Last maxillary palpomere broader in male than in female; in male it is as long as wide, broadly truncate at apex, 1.4 X wider than penultimate one (Fig. 3); in female it is 1.2 X longer than wide, 1.2 X wider than penultimate one.

Antennal insertion 1.5 X closer to clypeus than to eye. Antennae short, narrow, with antennomeres 7–11 moderately broadened.

Pronotum (Fig. 5) broadest at mid-length or basally. Anterior border marginated and densely ciliate. Lateral calli convex along entire length, separated from disc by broad, shallow impression filled with large punctures in anterior ½, and by narrow, very deep furrow in basal ½. Pronotal disc and lateral calli covered with fine sparse punctures.

Prothoracic hypomeron (Fig. 4) convex, laterally depressed and covered with transverse wrinkles there. Distinct basal fold absent and replaced by wide impression. Antero-lateral portion of prosternum with sharp keel, bordered with furrow from behind.

Metasternum entirely marginated anteriorly.

Elytron with obsolete humeral callus, with 7 fine longitudinal striae, which equidistant, slightly undulate, filled with fine, dense punctures. Scutellar puncture row absent. Intervals covered with very fine, sparse punctures and fine irregular wrinkles. Sutural stria usually distinct at apical slope.

Elytral epipleura oblique, well visible in lateral view along entire length, with very short sparse setae apically (Fig. 6).

Hind wings absent.

Tarsomeres 1–3 with entire sole in both sexes. In female tarsomeres 1–3 narrow (Fig. 8), in male all tarsomeres 1 broadened (Fig. 2). Claw tarsomere without denticles.

Pygidium without longitudinal medial furrow, it is shagreen, dull, impunctate in basal ⅓, shining, covered with large punctures and wrinkles in apical ⅔.

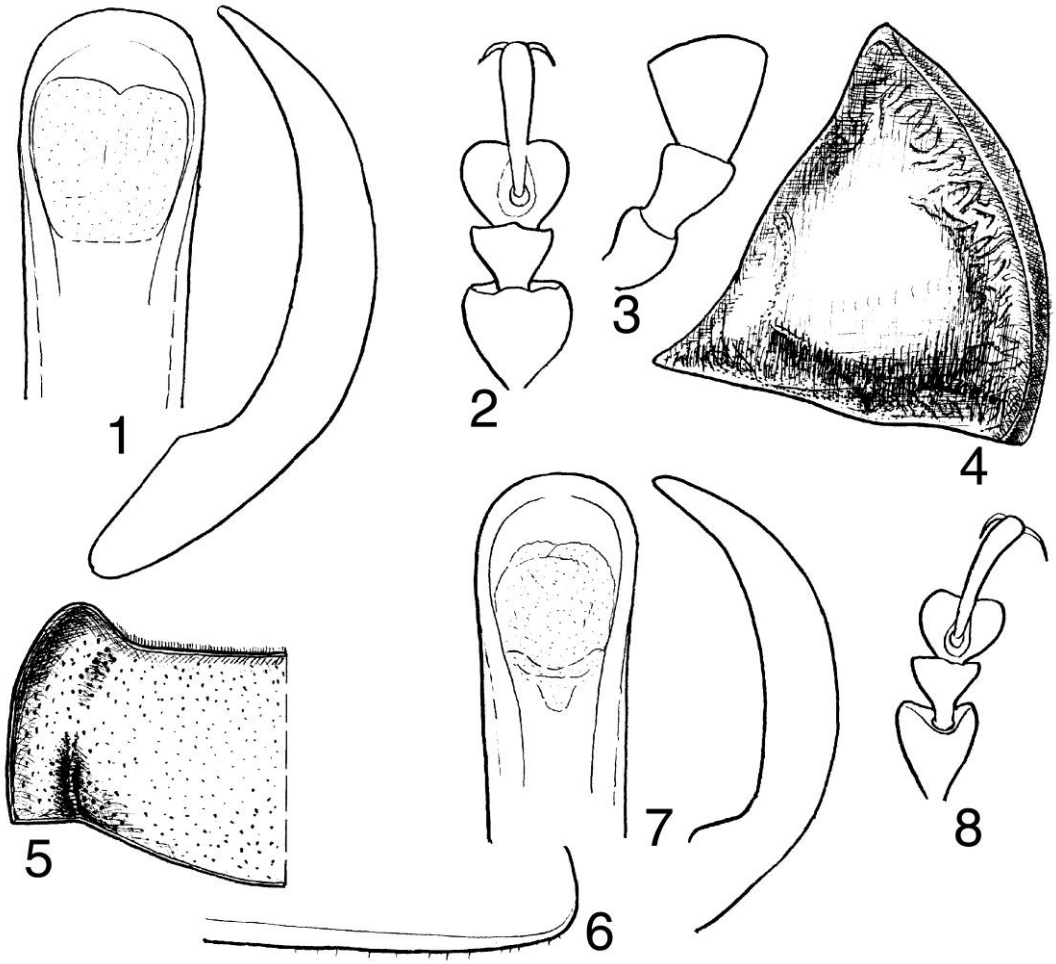
Last abdominal sternite evenly convex, with narrow furrow along apical margin, similar in both sexes.

Aedeagus flattened dorso-ventrally, evenly curved in lateral view, rounded at apex (Figs. 1, 7). Flagellum invisible.

Length 6.1–6.3 mm (males), 6.4–6.6 mm (females).

Differential diagnosis

Subgenus *Semenowia* is a monotypic and includes *Ch. (S.) chalcea* (Weise, 1889a) only. This species occurs in China (Tibet, Gansu). Subgenus *Semenowia* is close to subgenus *Pezocrosita*, and differs in the presence of seven elytral puncture rows. This character was already mentioned by Weise (1889a).



***Semenowia* figures 1–8:** *Chrysolina chalcea*: 1–6 – male (syntype, China: Amdo): 1 – aedeagus, 2 – fore-tarsus, 3 – maxillary palpus, 4 – prothoracic hypomeron, 5 – pronotum, 6 – apical part of elytral epipleuron, lateral view; 7 – male (holotype *Ch. bienkowskii*, China: Gansu), aedeagus; 8 – female (paratype *Ch. bienkowskii*, China: Gansu), fore-tarsus. (Orig.)

Subgenus *Sibiriella* L.Medvedev, 1999a

Diagnosis

Above black with weak metallic reflection or dark metallic: bronze, violet, green, blackish green, or greenish blue.

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

Pronotum rounded laterally, with lateral sides swollen. Lateral impression very shallow, broad, along entire length or interrupted at mid-length, or almost absent. Anterior border marginated, ciliate. Anterior setiferous pore present in *Ch. montana*, absent in the others. Disc densely punctate.

Prothoracic hypomeron 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; intervals covered by dense punctures which sometimes conceal puncture rows.

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

Tarsomeres 1–3 wholly pubescent beneath in both sexes, in male tarsomeres 1–3 very broad, much broader than in female. Claw tarsomere without denticles beneath.

Pygidium convex, without distinct sulcus, at least, in apical ⅔.

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 not so strongly and evenly curved, with flagellum bifurcate apically.

Differential diagnosis

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

Ch. montana occupies a separate position within the subgenus *Sibiriella*. The presence of long narrow hind wings, the shape of aedeagus, and especially bifurcate flagellum differ this species from all other members of *Sibiriella*. But I think *Ch. montana* to be closer 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*. See also the characters to distinguish *Ch. montana* from the members of the subgenus *Bechynia* in "Differential diagnosis" of the latter.

Key to species

1(2) Hind wings reduced, narrow, but reaching elytral apical slope. Aedeagus with flagellum bifurcate at apex. 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. 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 metallic reflection. Tarsi dark brown. Antennae dark brown with antennomere 1 rufous apically, 2 and 3 entirely rufous. Length 6.6–7.2 mm (male), 7.0 mm (female). Figs. 24–26. Altai.

Ch. montana (Gebler, 1848)

2(1) Hind wings absent. Aedeagus with flagellum filiform (in *Ch. katonica* a shape of flagellum is unknown). Last abdominal sternite of male medially with depression or evenly convex.

3(6) Aedeagus genuflexed near mid-length in lateral view.

4(5) Elytral rows equidistant or slightly paired, intervals covered by punctures distinctly finer (about 4 X) than punctures in rows, therefore rows distinct. Apical blade of aedeagus is rounded. In female, head, pronotum, and scutellum moderately shining, elytra dull; in male, dorsum entirely moderately shining. Dorsum dark metallic: bronze, coppery, violet, or brassy, elytral epipleura usually with golden reflection, legs, antennae, and underside black with weak metallic reflection, antennomeres 1 and 2 rufous on underside. Length 6.5–7.5 mm (male), 7.8–8.5 mm (female). Figs. 13–17. W Altai.

Ch. capricornus Mikhailov, 2000a

5(4) Elytral rows strongly paired, intervals covered by punctures slightly finer than punctures in rows, therefore puncture rows almost invisible. Apical blade of aedeagus is almost trapezoidal. Above moderately shining. 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 1–3, each antennomere brown basally and rufous apically, antennomere 1 yellow apically on underside. Length 7.1 mm (male) (Figs. 1–12). Female is unknown. Sayan Mts.?

Ch. paradoxa L.Medvedev, 1999a

6(3) Aedeagus strongly curved near mid-length in lateral view.

7(10) Aedeagus emarginated at sides of apical orifice, in lateral view S-shaped apically.

8(9) Body dark violet, bronze, green, or greenish bronze above. Aedeagus with apical lobe broad and short. Elytral epipleura sparsely ciliate near apex. Above moderately shining (male) or moderately shining with elytra dull (female), shagreen. Underside black with metallic reflection, legs black. Antennae black with segments 1–4 light brown beneath and apically. Length 6.3–7.5 mm (male), 6.4–7.5 mm (female). Figs. 27–30. E Kazakhstan (W Altai).

Ch. dudkoi Mikhailov, 2000a

9(8) Body greenish blue above. Aedeagus with apical lobe elongate. Setae on elytral epipleura invisible. Above moderately shining. Underside and legs black with weak blue reflection. Antennae black with antennomere 1 light brown beneath, antennomeres 2–5 light brown apically. Length 6.5 mm (male). Figs. 34, 35. Female is unknown. W Altai.

Ch. kholsunica Mikhailov, 2001

10(7) Aedeagus evenly narrowed at sides of apical orifice, in lateral view evenly curved apically.

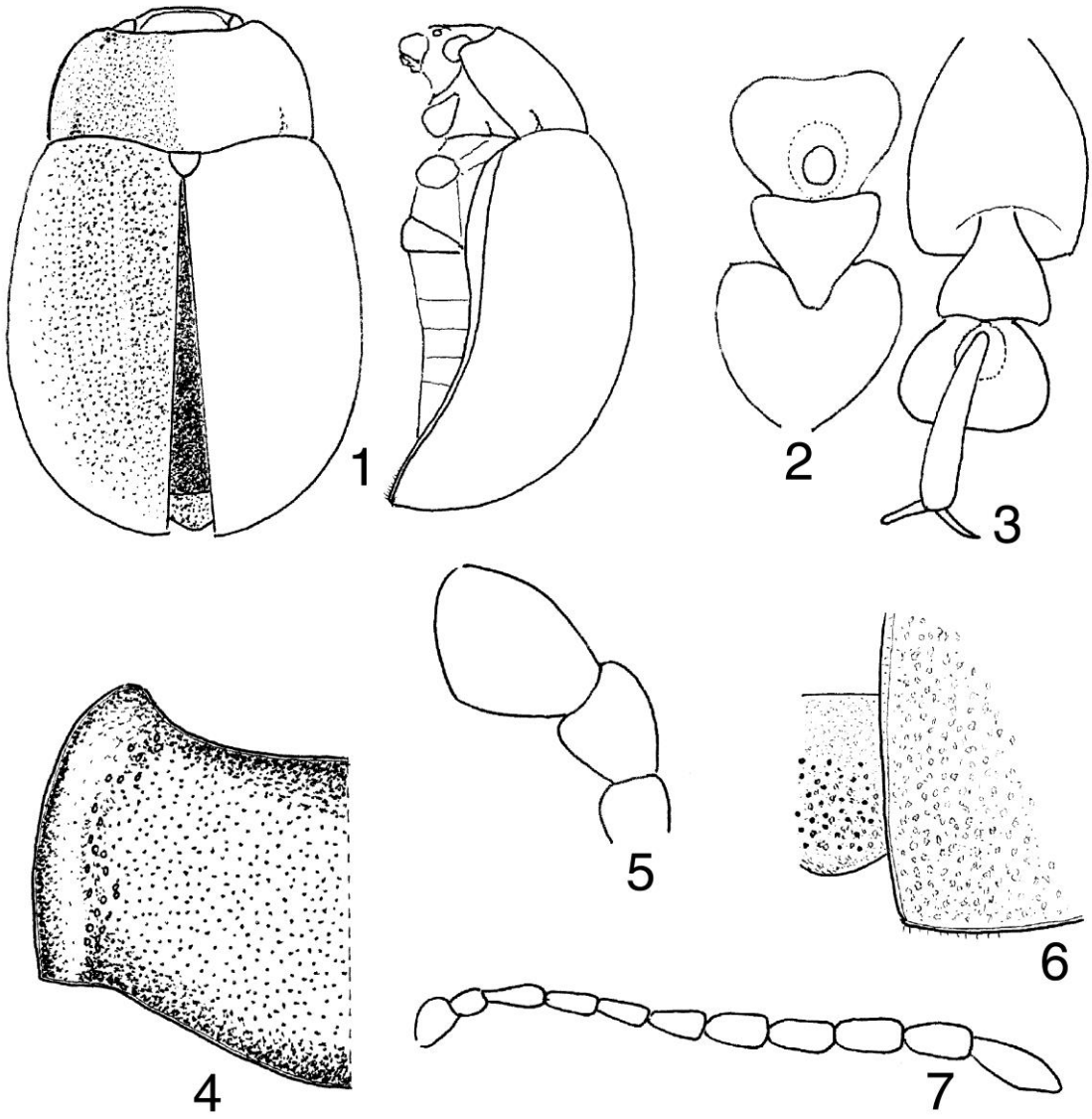
11(12) Above dark violet or bronze. Aedeagus parallel-sided till the level of apical orifice. Elytral epipleura with only several very short, hardly visible setae near apex. Above moderately or sericeous shining, shagreen, unicolorous, dark violet or bronze. Underside violet or golden,

legs black with golden reflection. Antennae brown with antennomeres 1 and 2 rufous beneath. Length 6.0–6.2 mm (male), 6.6–6.8 mm (female). Figs. 18–23, 31–33, 36. Altai, Sayans, C Siberian Plateau.

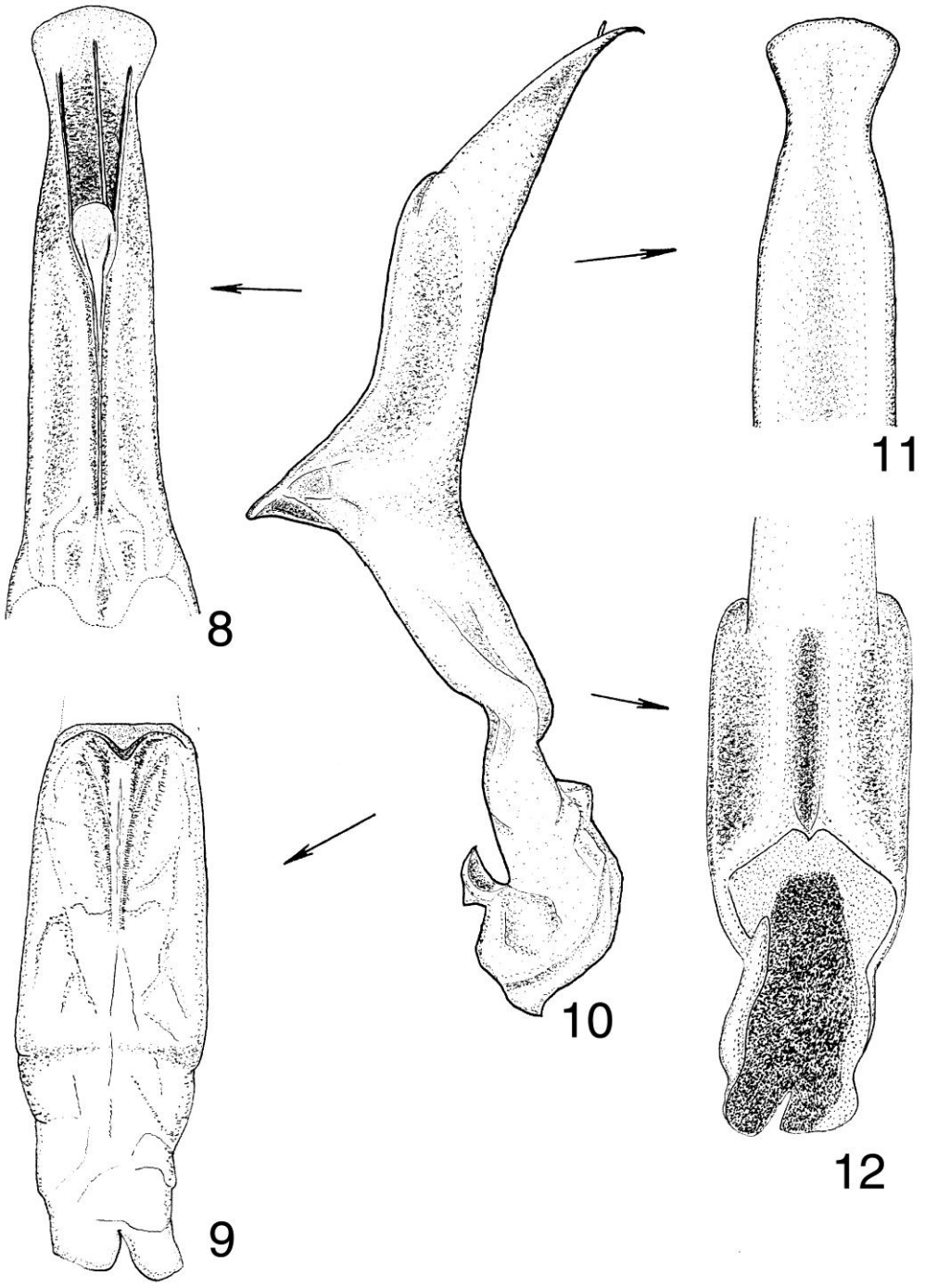
Ch. schewyrewi (Jacobson,1895)

12(11) Above black with weak blue reflection (male), or greenish black (female), shagreen. Aedeagus broadened at sides of apical orifice. Elytral epipleura distinctly, sparsely ciliate near apex. Antennae with antennomeres 1 and 2 reddish beneath. Length 6.0 mm (male), 7.5 mm (female). Figs. 37–42. E Kazakhstan.

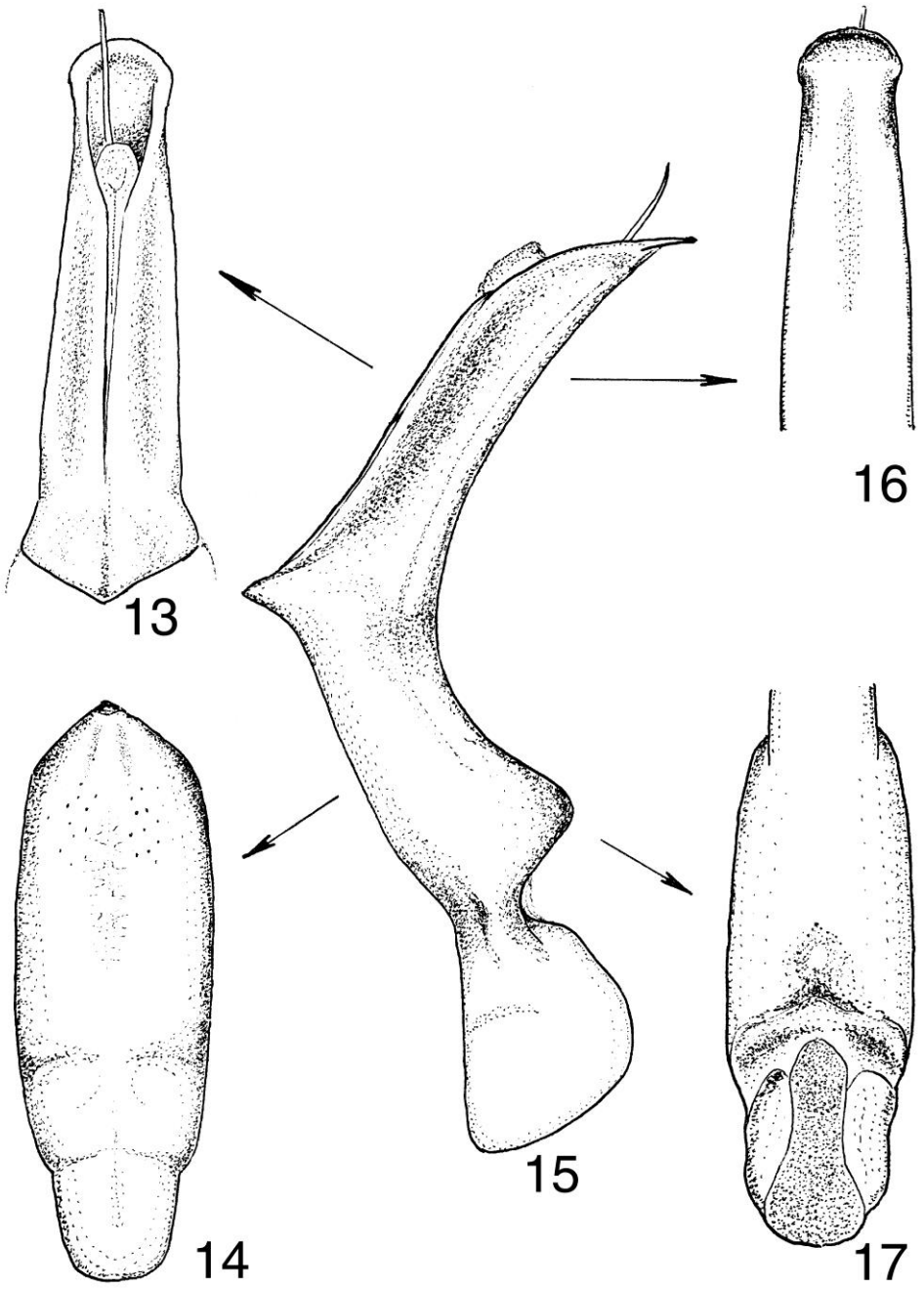
Ch. katonica Lopatin, 1988



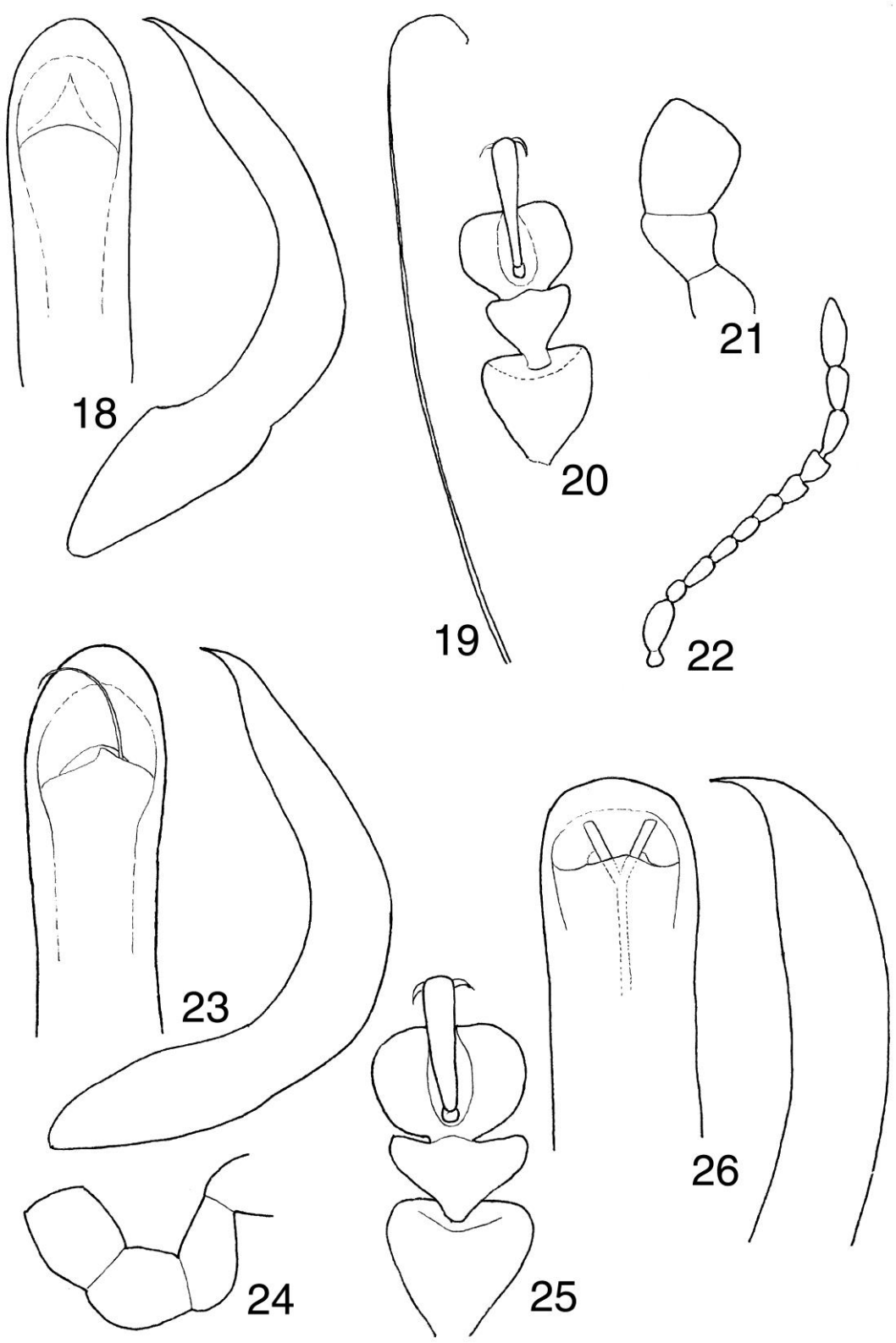
***Sibiriella* figures 1–7:** *Chrysolina paradoxa*, male (holotype, Siberia: Sayans?): 1 – total dorsal and lateral view, 2 – fore-tarsus, 3 – hind-tarsus, 4 – pronotum, 5 – maxillary palpus, 6 – pygidium and elytral apex, 7 – antenna. (Orig.)



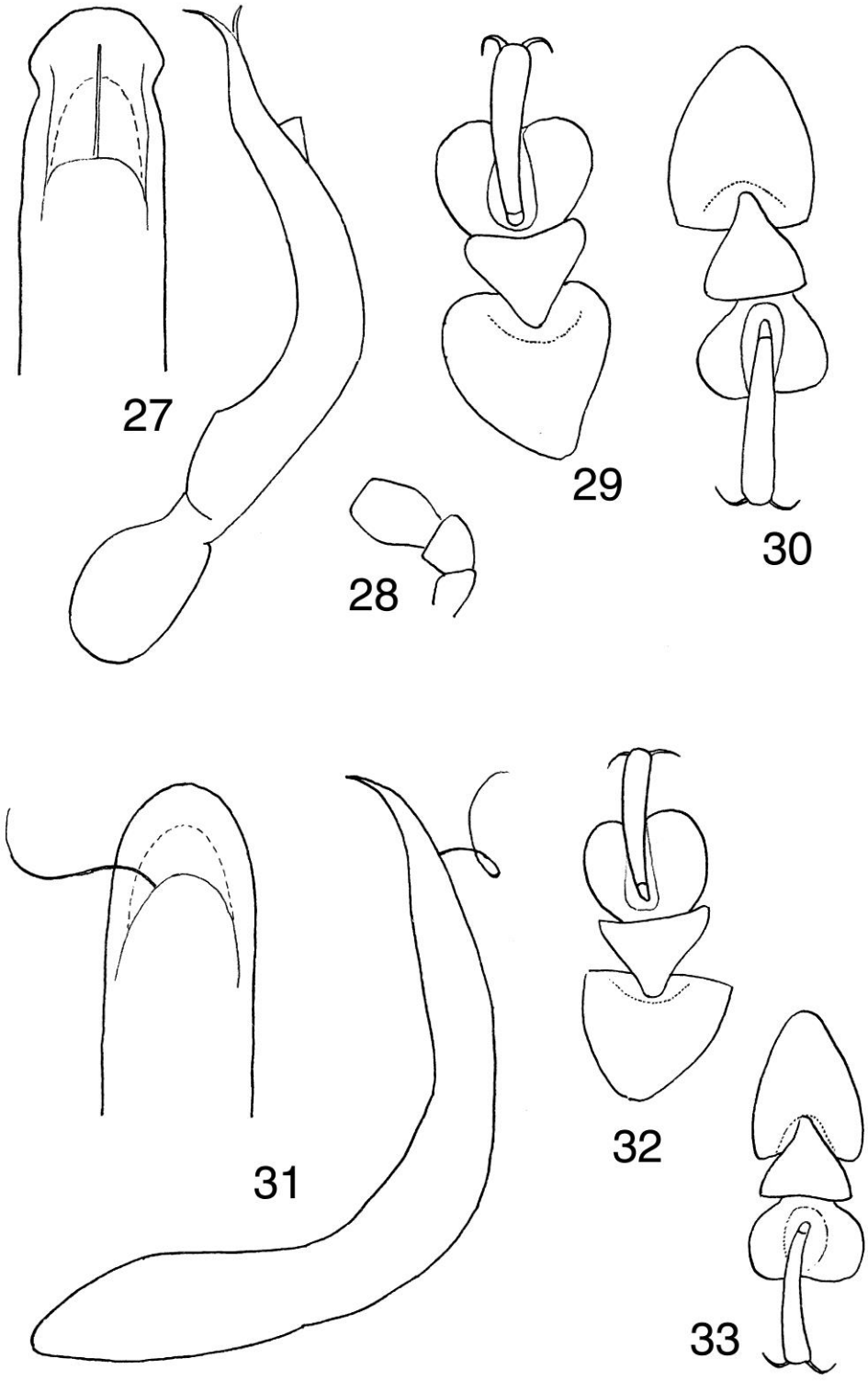
***Sibiriella* figures 8–12:** *Chrysolina paradoxa*, male (holotype, Siberia: Sayans?), aedeagus: 8 – apical part dorsally, 9 – basal part, dorsally, 10 – lateral view, 11 – apical part, ventrally, 12 – basal part, ventrally. (Orig.)



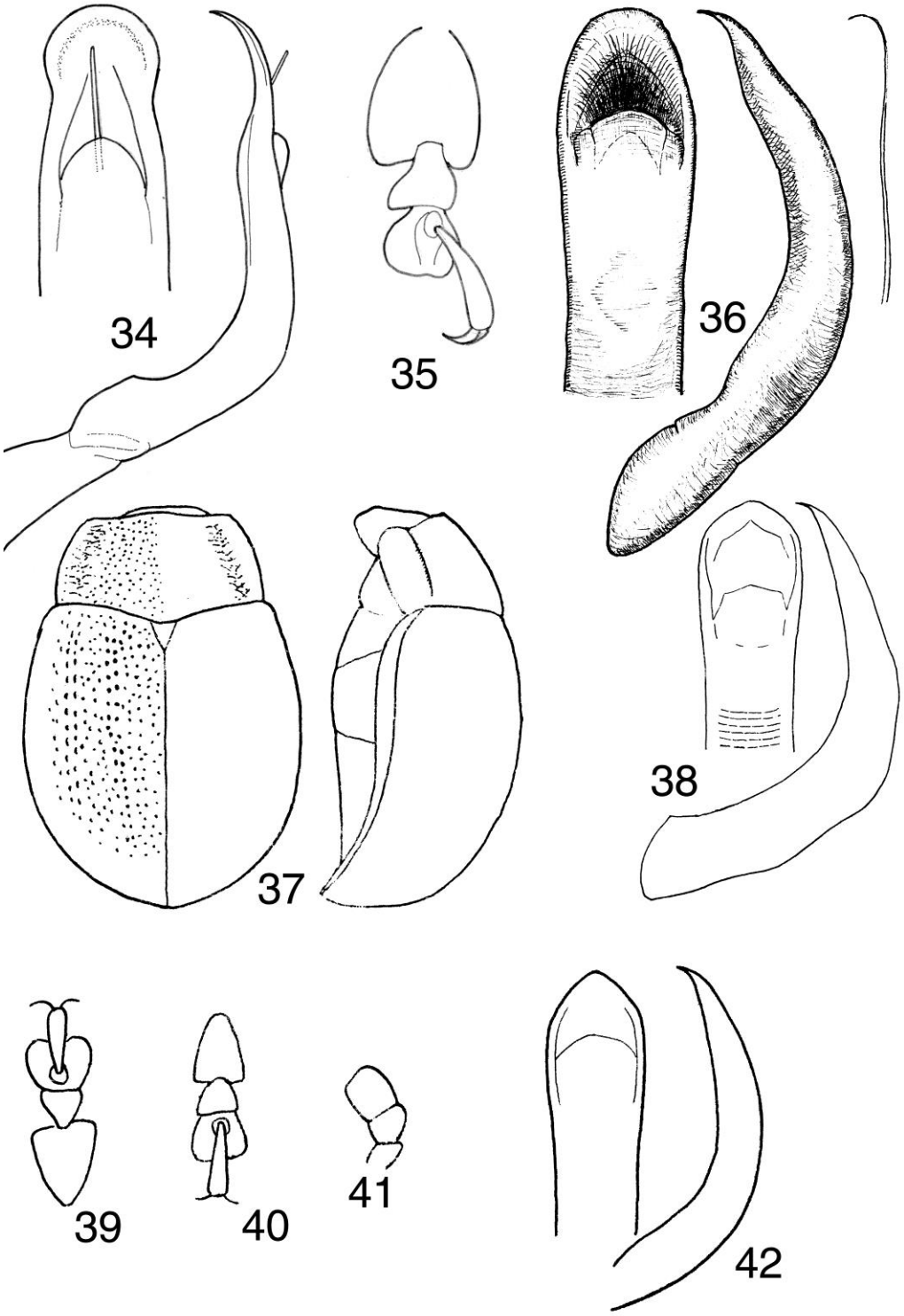
***Sibiriella* figures 13–17:** *Chrysolina capricornus*, male (E Kazakhstan: Kholsun Mt. R.), aedeagus: 13 – apical part dorsally, 14 – basal part, dorsally, 15 – lateral view, 16 – apical part, ventrally, 17 – basal part, ventrally. (Orig.)



Sibiriella **figures 18–26:** 18–23 – *Chrysolina schewyrewi*: 18–22 – male (Siberia: Tomsk): 18 – aedeagus, 19 – flagellum, 20 – fore-tarsus, 21 – maxillary palpus, 22 – antenna; 23 – male (paratype *Chrysomela despecta*, Siberia: Krasnojarsk), aedeagus; 24–26 – *Ch. montana*, male (lectotype, Altai: "Mont. Kusnetsk."): 24 – maxillary palpus, 25 – fore-tarsus, 26 – aedeagus. (Orig.)



***Sibiriella* figures 27–33:** 27–30 – *Chrysolina dudkoi*, male (E Kazakhstan): 27 – aedeagus, 28 – maxillary palpus, 29 – fore-tarsus, 30 – hind-tarsus; 31–33 – *Ch. schewyrewi*, male (Altai): 31 – aedeagus, 32 – fore-tarsus, 33 – hind-tarsus. (Orig.)



***Sibiriella* figures 34–42:** 34–35 – *Chrysolina kholsunica*, male (holotype *Ch. ogloblini* Mikhailov, W Altai): 34 – aedeagus, 35 – hind-tarsus; 36 – *Ch. schewyrewi*, male (lectotype, Siberia: Tomsk), aedeagus, flagellum; 37–42 – *Ch. katonica*: 37–41 – male (E Kazakhstan): 37 – dorsal and lateral view, 38 – aedeagus, 39 – fore-tarsus, 40 – hind-tarsus, 41 – maxillary palpus, 42 – holotype (E Kazakhstan), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Sphaerochrysolina* Kippenberg, 2010

Diagnosis

Body (Fig. 1) entirely unicolorous, black with metallic olivaceous reflection, 7.0–10.0 mm long.

Last maxillary palpomere similar in both sexes. It is oval, obliquely truncate apically, similar to the penultimate one in length and width (Fig. 5).

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally, swollen laterally along entire length. Lateral impression absent or obsolete. Pronotal disc densely finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex, laterally with obsolete irregular wrinkles; without outer border. Basal fold presents, but weak. Intercoxal prosternal process with shallow longitudinal medial impression.

Metasternum entirely marginated anteriorly.

Elytron without humeral callus. Elytral puncturation double (large and fine punctures), dense, entirely irregular (Fig. 3).

Elytral epipleura inclined outside, visible along entire length in lateral view, densely ciliate near apex.

Hind wings very reduced, shorter than metathorax.

Tarsomeres 1–3 with entire sole; they are narrow in female; all tarsomeres 1 very broad in male (Fig. 4). Claw tarsomere without denticles beneath.

Pygidium with weak longitudinal impression in basal ½.

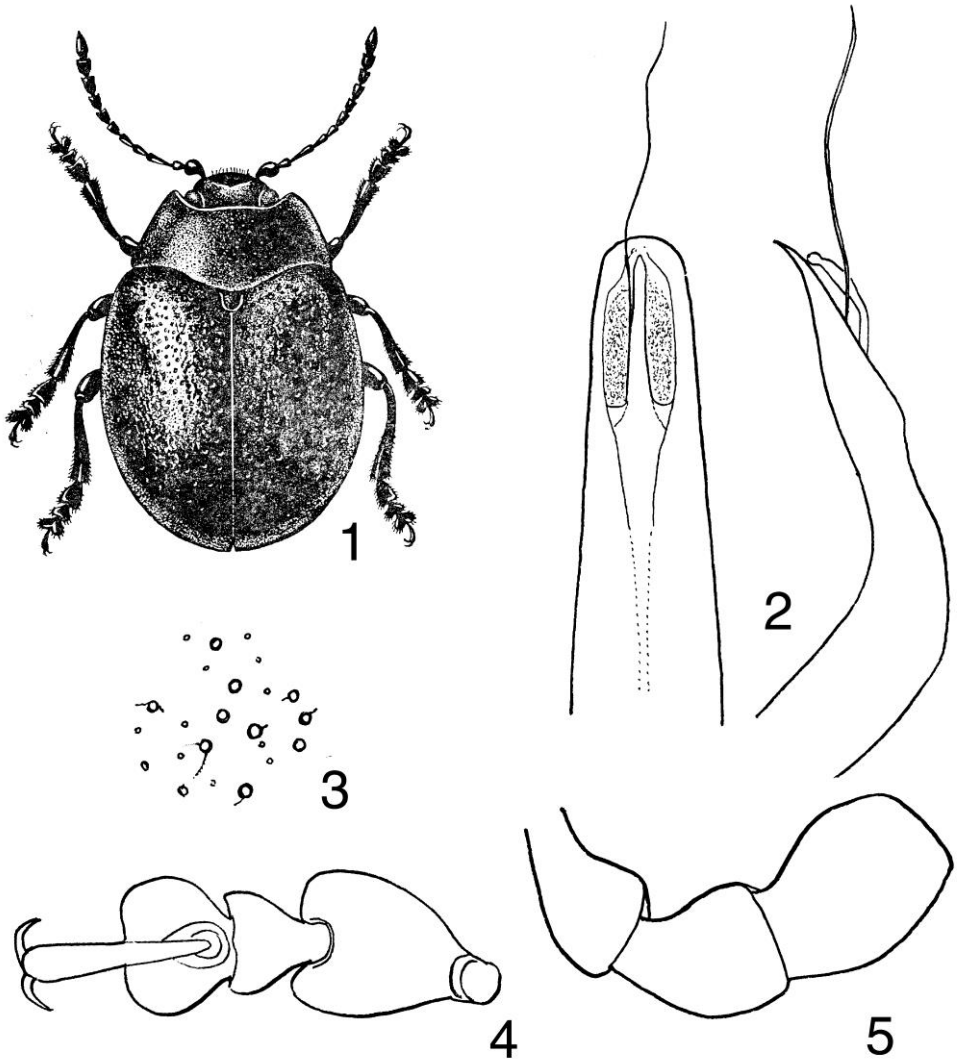
Last abdominal sternite evenly convex, with apical margin shallowly broadly emarginated in male, rounded in female.

Aedeagus (Fig. 2) narrow, very long, tube-shaped, with apex obtuse, without apical denticles on the ventral side. Flagellum narrow, very long, whip-shaped, exposed.

Differential diagnosis

Sphaerochrysolina is morphologically close to the subgenera *Colaphoptera*, *Chrysolina* s.str., *Cyrtochrysolina*, *Lopatinica*, and *Timarchida*. It differs from *Chrysolina* s.str. and *Timarchida* in male last maxillary palpomere narrow. It differs from *Colaphoptera*, *Chrysolina* s.str., and *Lopatinica* in male tarsomere 1 very broad. It differs from *Colaphoptera* and *Cyrtochrysolina* in the aedeagus without apical denticles on ventral side. It also differs from *Cyrtochrysolina* in the absence of lateral furrows near the pronotal base.

This subgenus includes the single species, *Ch. umbratilis* (Weise, 1887b) occurring in mountains of C Europe.



***Sphaerochrysolina* figures 1–5:** *Chrysolina umbratilis:* 1 – total dorsal view, 2–5 – male (Ukraine, Carpathians): 2 – aedeagus, 3 – elytral punctures, 4 – fore-tarsus, 5 – maxillary palpus. (After: Brovdij, 1977: 1; others – orig.)

Subgenus *Sphaeromela* Bedel, 1899

Diagnosis

Dorsum shining, metallic: green, blue, coppery, or bronze, unicolorous, or head+pronotum differ in coloration from elytra. Body 4.5–6.0 mm long.

Last maxillary palpomere similar in both sexes. It is broadly oval, obliquely truncate apically, similar to the penultimate one in length and width.

Antenna inserted much closer to clypeus than to eye, narrow.

Pronotum broadest basally or just before base, with rounded lateral sides, swollen laterally along entire length. Lateral impression absent or obsolete and visible mostly near base. Pronotal disc densely finely punctate. Anterior side of pronotum marginated, without setae (Fig. 2). Anterior setiferous pore present.

Prothoracic hypomeron convex, laterally with impression filled with irregular wrinkles; without outer border. Basal fold strong. Intercoxal prosternal process with longitudinal medial impression.

Metasternum entirely marginated anteriorly.

Elytron with weak to obsolete humeral callus. Elytral puncturation double (large and fine punctures), dense, entirely irregular.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings normally developed.

Tarsomeres 1–3 with entire sole; they are narrow in female, slightly broadened in male. Claw tarsomere without denticles beneath.

Pygidium with distinct longitudinal furrow along entire length.

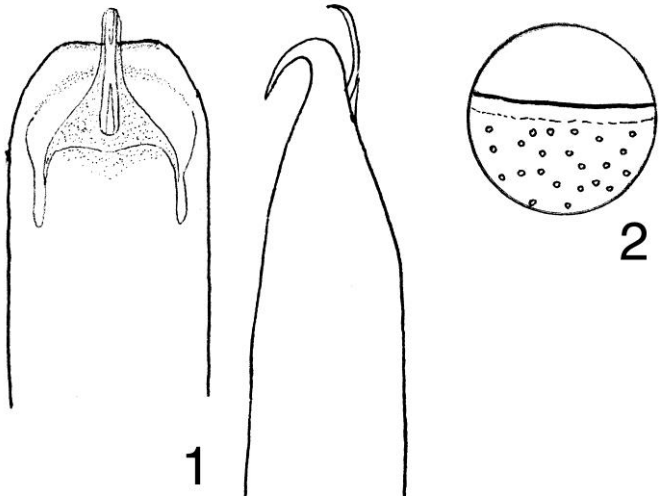
Last abdominal sternite convex, with impression apically in male, evenly convex in female.

Aedeagus (Fig. 1) tube-shaped, with parallel lateral sides, hook-shaped apically. Flagellum simple, narrow, exposed.

Differential diagnosis

Sphaeromela differs from the most subgenera of *Chrysolina* in the absence of setae at pronotal anterior side. Besides that, it differs from *Colaphodes* in pronotal lateral sides rounded, from *Colaphosoma* in body smaller and tarsi dark metallic. *Sphaeromela* externally looks like the members of the subgenus *Heliostola*, especially *Ch. lichenis* and *Ch. carpathica*, and differs in the presence of long, normally developed hind wings.

This subgenus includes the single species, *Ch. varians* (Schaller, 1783) occurring in Europe and Siberia.



***Sphaeromela* figures 1–2:** *Chrysolina varians*, (European Russia): 1 – male aedeagus, dorsal and lateral view, 2 – anterior border of pronotum. (Orig.)

Subgenus *Stichoptera* Motschulsky, 1860a

Diagnosis

Dorsum black or dark blue, with elytron bearing rufous lateral stripe, rarely projecting along base, or with elytron rufous with black spots (each spot includes one puncture), or dorsum entirely black or dark blue. Elytral punctures large.

Last maxillary palpomere broader than penultimate one, securiform in male, slightly broader than penultimate one or as broad as latter in female. It is broader in male than in female.

Antennal insertion closer to clypeus than to eye.

Pronotum along entire length with convex or depressed lateral callus and with broad, shallow or obsolete lateral impression (usually deepened and furrow-shaped basally), which covered by large punctures. Anterior border marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron convex, laterally with wrinkles more or less distinct, with or without impression, without outer border. Basal fold strong.

Metasternum entirely marginated anteriorly.

Elytron with weak humeral callus, with paired regular puncture rows or punctures more or less confused.

Elytral epipleura oblique, visible along entire length in lateral view, densely ciliate apically.

Hind wings normally developed or slightly reduced, reaching elytral apex.

Pygidium with sharp medial furrow along entire length.

Last abdominal sternite slightly swollen or evenly convex in male, convex in female, apically broadly truncate and marginated with shallow furrow in both sexes.

Tarsomeres 1–3 with entire sole in both sexes, moderately broadened in male. Claw tarsomere without denticles beneath.

Aedeagus depressed dorso-ventrally, strongly curved in lateral view, bearing 2 fine ventro-lateral apical denticles more or less distinct. Flagellum narrow, simple, exposed.

Differential diagnosis

Most *Stichoptera* species, which are black (dark metallic) with rufous stripe along elytral lateral side, externally similar to *Zeugotaenia* and differ in elytral punctures larger, visible even without magnification, and in aedeagus bearing ventro-lateral apical denticles more or less distinct.

Ch. (*Stichoptera*) *stachydis* externally looks like some members of *Bittotaenia* and differs in all tarsomeres 1–3 with entire sole.

Ch. (*Stichoptera*) *colasi* similar to *Oreina*, mainly the members of the subgenus *Protorina*, and differs in elytral epipleuron oblique, visible along entire length in lateral view, aedeagus with simple flagellum and distinct ventro-lateral denticles at apex.

Key to species and subspecies

1(24) Body distinctly bicolorous: black (or dark metallic) with rufous (red in alive insects).
2(23) Elytra marginated with rufous.
3(6) Pronotum trapezoidal or almost so.
4(5) Lateral sides of pronotum straight or slightly emarginated along entire length or almost so, except near anterior corners. Aedeagus sufficiently broadened at sides of apical orifice, with apex rounded-triangular, bearing long ventro-lateral borders without distinct denticle. Pronotal lateral calli convex, lateral impressions distinct along entire length, mostly shallow and moderately deepened only basally. Body bluish black; elytral rufous lateral stripe occupies 1.5–2 external intervals. Hind wings slightly reduced, reaching elytral apex. Length 7.5–10.0 mm. Figs. 7, 20. C, S-E Europe.

Ch. rossia (Illiger, 1802)

5(4) Lateral sides of pronotum slightly arc-shaped. Aedeagus broadened at sides of apical orifice, but not as much as in *Ch. rossia*, with apex rounded-triangular, bearing long ventro-lateral borders without distinct denticle. Pronotal lateral calli convex, lateral impressions shallow in anterior ⅔, moderately deep, furrow-shaped in basal ⅓. Body entirely bluish black, or with elytra bearing weak greenish tint. Elytral rufous lateral stripe occupies 1.5–2 external intervals. Hind wings normally developed. Length 8.1–11.2 mm. Figs. 6, 22. S-E Europe.

Ch. limitata (Küster, 1845)

6(3) Pronotum not trapezoidal, more rounded laterally.
7(22) Body elongate-oval, with pronotum slightly narrower than elytra. Aedeagus evenly arc-shaped in lateral view.
8(9) Antennomeres 7–9 each as long as broad or shorter than long. Apical ventro-lateral denticles of aedeagus small to very small but distinct in lateral view. Hind wings slightly reduced, reaching elytral apex or some shorter. Variable species, with 10 valid subspecies.

Ch. latecincta (Demaison, 1896)

There are 10 subspecies.

(a) subsp. *latecincta*. S-E France. Dorsum shining; elytral rufous lateral stripe occupies 2½–3 external intervals; pronotum broadest before base or at base, with lateral sides straight or slightly rounded in basal ½; elytra smooth; aedeagus with apex triangular. Figs. 58–61.

(b) subsp. *bourdonnei* Daccordi et Ruffo, 2005. Apennines. Dorsum shining, black, with weak bluish tint on head and pronotum; elytral rufous lateral stripe occupies 1.5, or 2, or 2.5 (in holotype) external intervals; pronotum broadest basally, with lateral sides almost straight in basal ½; elytra slightly wrinkled; aedeagus with apex rounded triangular, short, slightly more than rectangular, with apical denticles small, sharp. Hind wings slightly reduced, reaching elytral apex. Length 8.4–8.8 mm. Figs. 30–32.

(c) subsp. *graja* (Franz, 1938). W Alps. Dorsum moderately shining or dull, bluish black; elytral rufous lateral stripe occupies 3.5–4 external interval; pronotum narrowed to the base, with lateral sides rounded; elytra smooth or moderately wrinkled; aedeagus with apex rounded triangular. Figs. 9–11, 16.

(d) subsp. *hellieseni* Silfverberg, 1977. S-E Norway. Dorsum moderately shining, black, usually with weak bluish tint; elytral rufous lateral stripe occupies 1.5–2 external

interval; pronotum broadest basally, with lateral sides straight in basal ½; elytra wrinkled; aedeagus with apex triangular, obtuse. Figs. 55, 56.

(e) subsp. *hustachei* (Laboissiere, 1939). W Alps. Dorsum shining or moderately shining, bluish black; elytral rufous lateral stripe occupies 1.5–2 external intervals; pronotum broadest basally, with lateral sides straight in basal ½; elytra moderately wrinkled; aedeagus with apex rounded triangular, slightly less than right angle.

(f) subsp. *intermedia* (Franz, 1938). Great Britain. Dorsum dull (female) or shining (male), black; elytral rufous lateral stripe occupies 2 external interval; pronotum narrowed to base, with lateral sides rounded; elytra strongly wrinkled; aedeagus with apex rounded triangular, elongate. Fig. 17.

(g) subsp. *norica* (Holdhaus, 1914). C-E and E Alps. Dorsum shining, bluish black; elytral rufous lateral stripe occupies 1.5–2.5 external interval; pronotum narrowed to base, with lateral sides rounded; elytra slightly wrinkled; aedeagus with apex triangular, slightly less than right angle. Figs. 12, 13.

(h) subsp. *raetica* (Franz, 1938). E Alps. Dorsum very shining, black with very weak bluish tint on head and pronotum; elytral rufous lateral stripe occupies 1 external interval; pronotum lateral sides rounded or slightly emarginated in basal ½; elytra smooth; aedeagus with apex triangular, slightly less than right angle. Figs. 14, 15.

(i) subsp. *tarragonensis* Bechyné, 1950a. S-E Spain. Dorsum moderately shining, bluish black; elytral rufous lateral stripe mostly occupies 3.5–4 external intervals, it extends to the fifth interval only posteriorly; pronotum broadest basally or before base, with lateral sides rounded; elytra slightly wrinkled; aedeagus with apex triangular, short, slightly more than rectangular.

(j) subsp. *vallesiaca* (Franz, 1949). Pennine Alps. Dorsum shining, bluish black; elytral rufous lateral stripe occupies 2–3 external intervals; pronotum broadest basally, with lateral sides straight in basal ½; elytra moderately wrinkled; aedeagus with apex rounded triangular, elongate.

+ one unknown subspecies. S-E European Russia (Volgograd reg.). Dorsum weakly shining, bluish black; elytral rufous stripe occupies 3–3.5 external intervals laterally and extending basally up to scutellum; pronotum broadest basally, with lateral sides slightly emarginate in basal ½; elytra slightly wrinkled; aedeagus with apex rounded triangular, rectangular, with apical denticles small, but sharp. Length 8.9 mm (male) or 9.3 mm (female). Figs. 63–66.

9(8) Antennomeres 7–9 each longer than broad.

10(13) Pronotal lateral impression shallow, only slightly deepened posteriorly. Prothoracic hypomeron without distinct lateral impression. Aedeagus with parallel lateral sides up to apical orifice, with apex rounded-triangular, bearing fine, obtuse ventro-lateral denticles. Dorsum black, sometimes with weak violet tint on pronotum, with elytral rufous lateral stripe usually occupies 1–1.5 external intervals, rarely only 0.5 intervals; elytral surface wrinkled. Hind wings normally developed or slightly reduced, reaching elytral apex.

11(12) Elytral punctures usually finer, with intervals mostly broader than punctures. Subspecies from W Europe except Iberian Penins. Length 7.6–9.5 mm. Figs. 1, 29.

Ch. kuesteri kuesteri (Helliesen, 1912)

12(11) Elytral punctures usually larger, with intervals mostly as wide as punctures or narrower. Subspecies from Iberian Penins. Length 7.8–9.5 mm. Figs. 26.

Ch. kuesteri epipleurica (Reitter, 1913a)

13(10) Pronotal lateral impression distinctly deepened posteriorly. Prothoracic hypomeron with lateral impression. Aedeagus broadened at sides of apical orifice.

14(15) Aedeagus with moderately large ventro-lateral denticles at apex. Elytral rufous lateral stripe occupies 2 external intervals. Hind wings normally developed or slightly reduced, reaching elytral apex. Length 6.6–8.5 mm. Figs. 2, 8, 28, 57. Palaearctic.

Ch. sanguinolenta (Linnaeus, 1758)

15(14) Aedeagus with fine or obsolete apical ventro-lateral denticles, or without denticles at all.

16(17) Pronotal lateral impression basally deep with vertical outer border, filled there with wrinkles; lateral callus convex. Dorsum bluish black, color more or less similar in pronotum and elytron. Elytral rufous lateral stripe occupies 2–3 external intervals, stripe with uneven, denticulate upper edge. Hind wings normally developed. Length 8.2–11.3 mm. Figs. 3, 5, 27. Europe, Algeria, Caucasus, Asia Minor, Iran, Israel, Kyrgyzstan, Kazakhstan, Syria, Siberia.

Ch. gypsophilae (Küster, 1845)

17(16) Pronotal lateral impression basally moderately deep, without vertical outer border, filled there with punctures. Pronotal lateral callus depressed and covered with numerous large punctures.

18(21) Aedeagus apically with long ventro-lateral border bent to ventral side and bearing fine denticle (visible in lateral view). Hind wings normally developed.

19(20) Head, pronotum, and scutellum black with weak blue reflection. Elytra black, with rufous lateral stripe occupying 1–2.5 external intervals, this stripe with even upper edge. Length 8.3–10.6 mm. Figs. 4, 18, 19, 24, 25, 62. Sardinia, Portugal, Spain, Morocco, Tunisia, Algeria, Libya.

Ch. lucidicollis lucidicollis (Küster, 1845)

20(19) Head, pronotum, and scutellum usually metallic blue. Elytra black, with rufous lateral stripe occupying 1–2.5 external intervals, this stripe with even or uneven upper edge. Length 7.5–9.1 mm. Canary Isls.

Ch. lucidicollis grossepunctata (Lindberg, 1950)

21(18) Aedeagus apically with long ventro-lateral border bent to ventral side, but without any denticle (in lateral view). Dorsum violet-black, with rufous elytral lateral stripe occupying 2–3 external intervals, this stripe with uneven upper edge. Hind wings normally developed. Length 7.3–9.6 mm. Figs. 44–54. S-W France.

Ch. oceanoripensis Bourdonné, Doguet, Petitpierre, 2013

22(7) Body broadly-oval, with pronotum much narrower than elytra. Aedeagus with 2 bends in lateral view. Pronotum with convex lateral calli and obsolete lateral impressions. Dorsum black, shining, elytral rufous lateral stripe occupies 3–8 external intervals and sometimes extending along elytral base. Hind wings normally developed. Length 6.4–6.8 mm. Figs. 33–38. N Portugal, N and N-W Spain.

Ch. mactata (Fairmaire, 1859b)

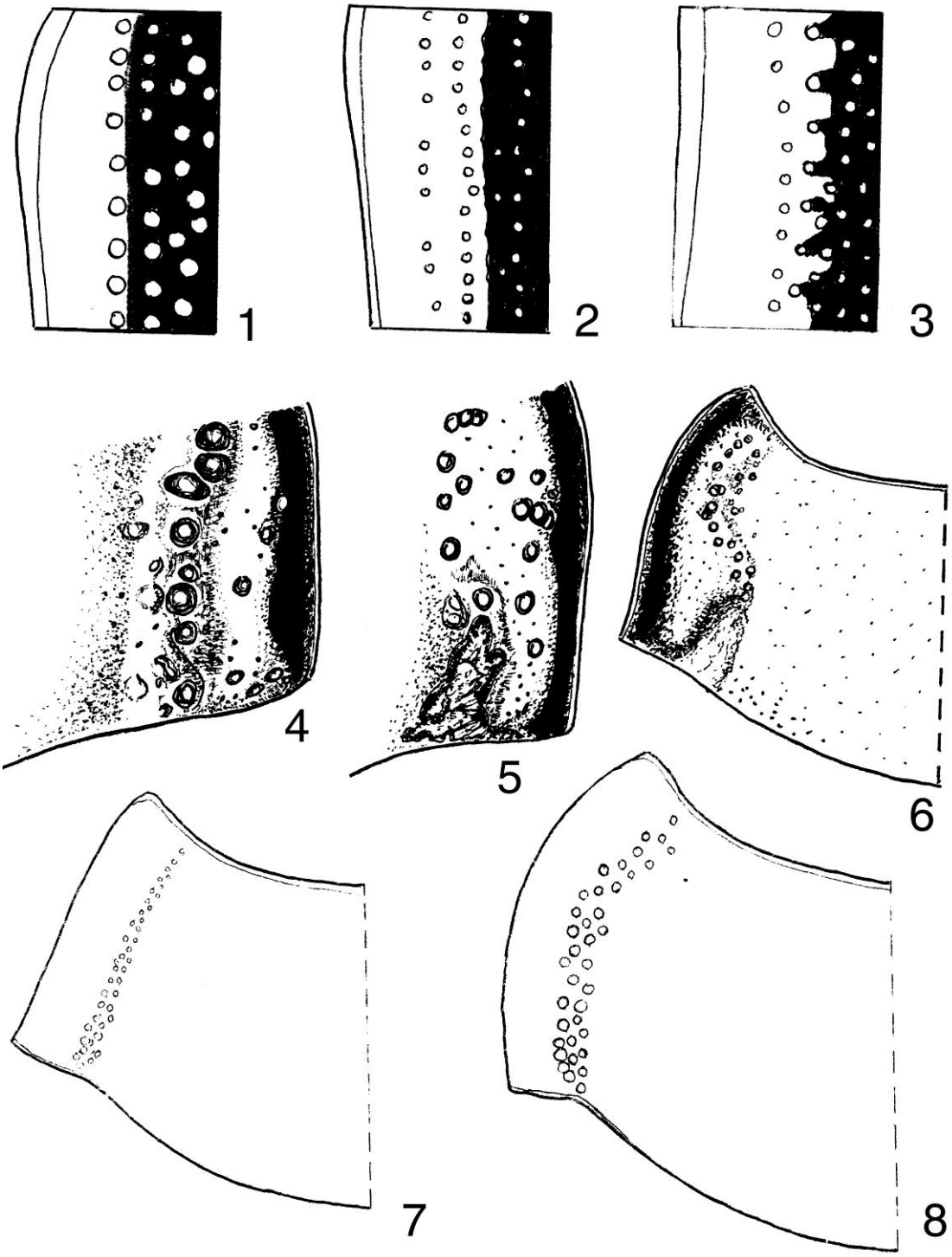
23(2) Elytra rufous with black spots and narrow sutural stripe, rest parts of body are bluish black. Pronotum with convex lateral calli and moderately deep lateral impressions, which deeper posteriorly than anteriorly. Aedeagus broadened at sides of apical orifice, apically rounded, with fine, sharp ventro-lateral denticles. Hind wings normally developed. Length 8.7–9.1 mm. Fig. 23. Sicily, S Italy, Malta.

Ch. variolosa (Petagna, 1819)

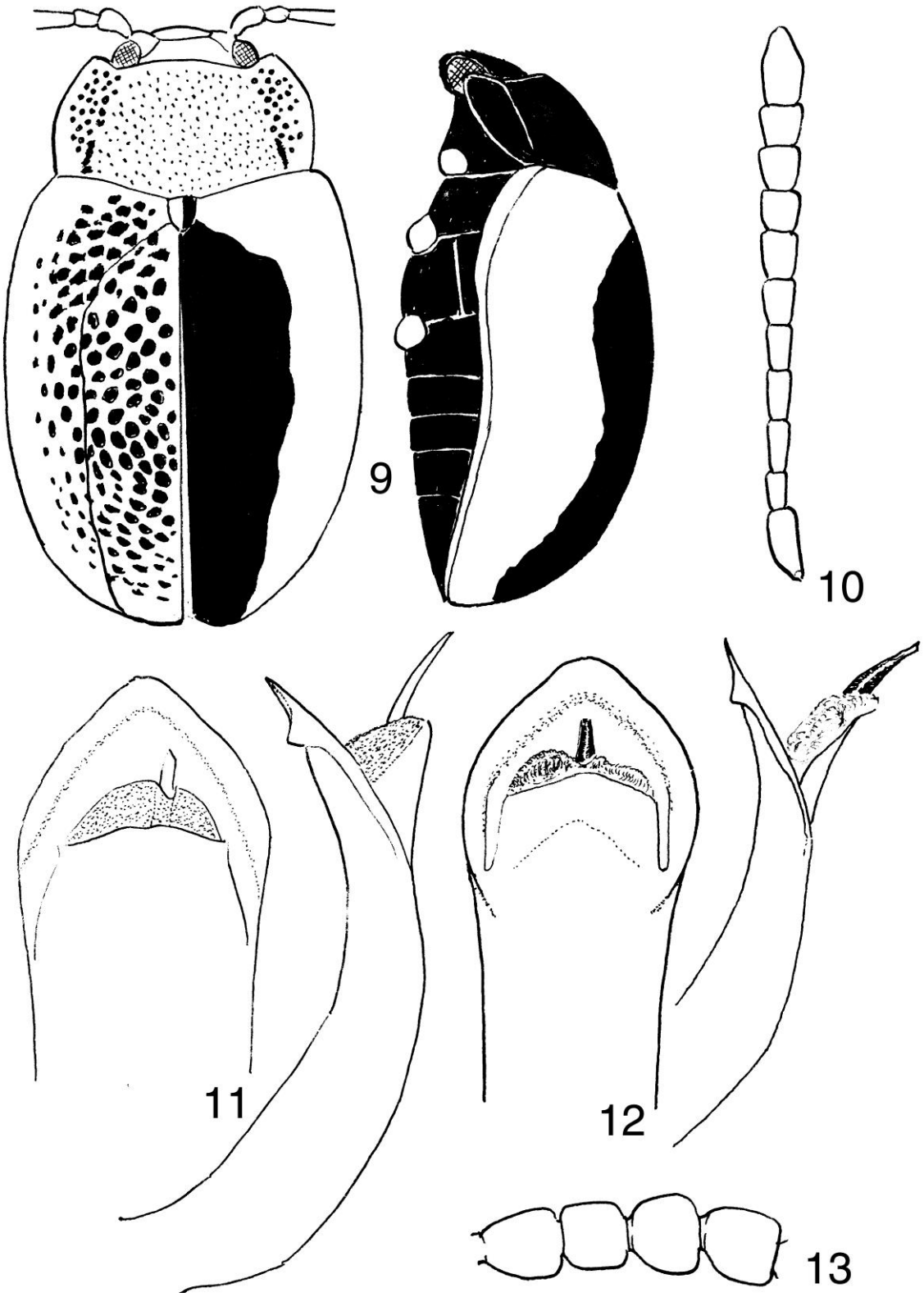
24(1) Body entirely dark metallic or black (in *Ch. stachydis* elytral epipleura and outermost interval sometimes interlucent with dark reddish). Hind wings slightly reduced, reaching elytral apex.

25(26) Elytra with regular paired rows of large punctures. Rows distinct on background shining, impunctate. Aedeagus with apical ventro-lateral denticles depressed to surface of aedeagus. Dorsum bluish black. Length 7.5–9.6 mm. Fig. 21. Sardinia, Corsica, Italy?
Ch. stachydis (Gené, 1839)

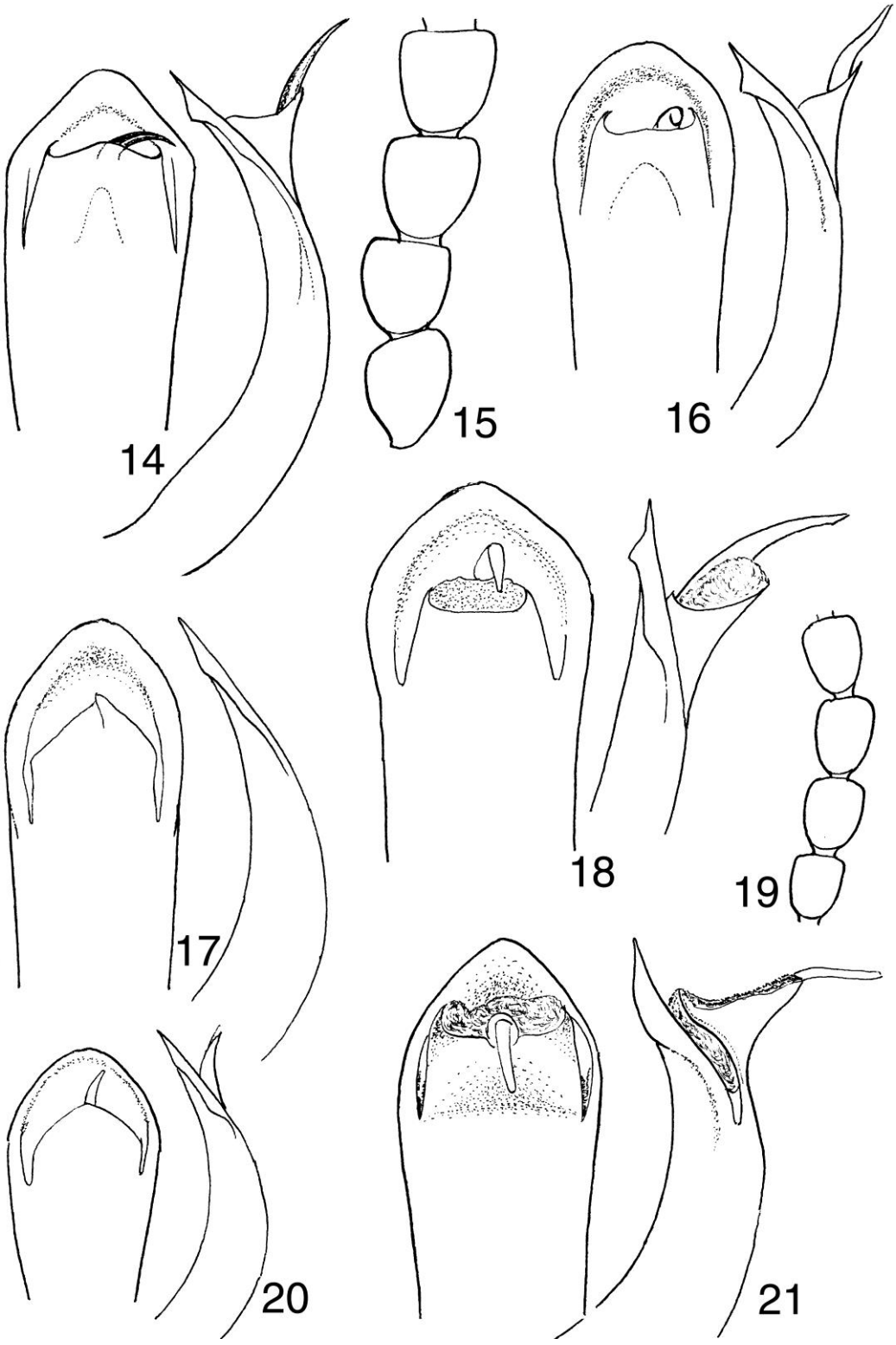
26(25) Elytra with rows of fine punctures, rows invisible on background dull, reticulate, densely punctate. Aedeagus with apical ventro-lateral denticles sharp, turn-up. Body black with only elytral epipleura rufous in anterior ⅓; head and pronotum moderately shining, elytra dull. Length 7.6–9.8 mm. Figs. 39–43. S Spain. *Ch. colasi* (Cobos, 1952)



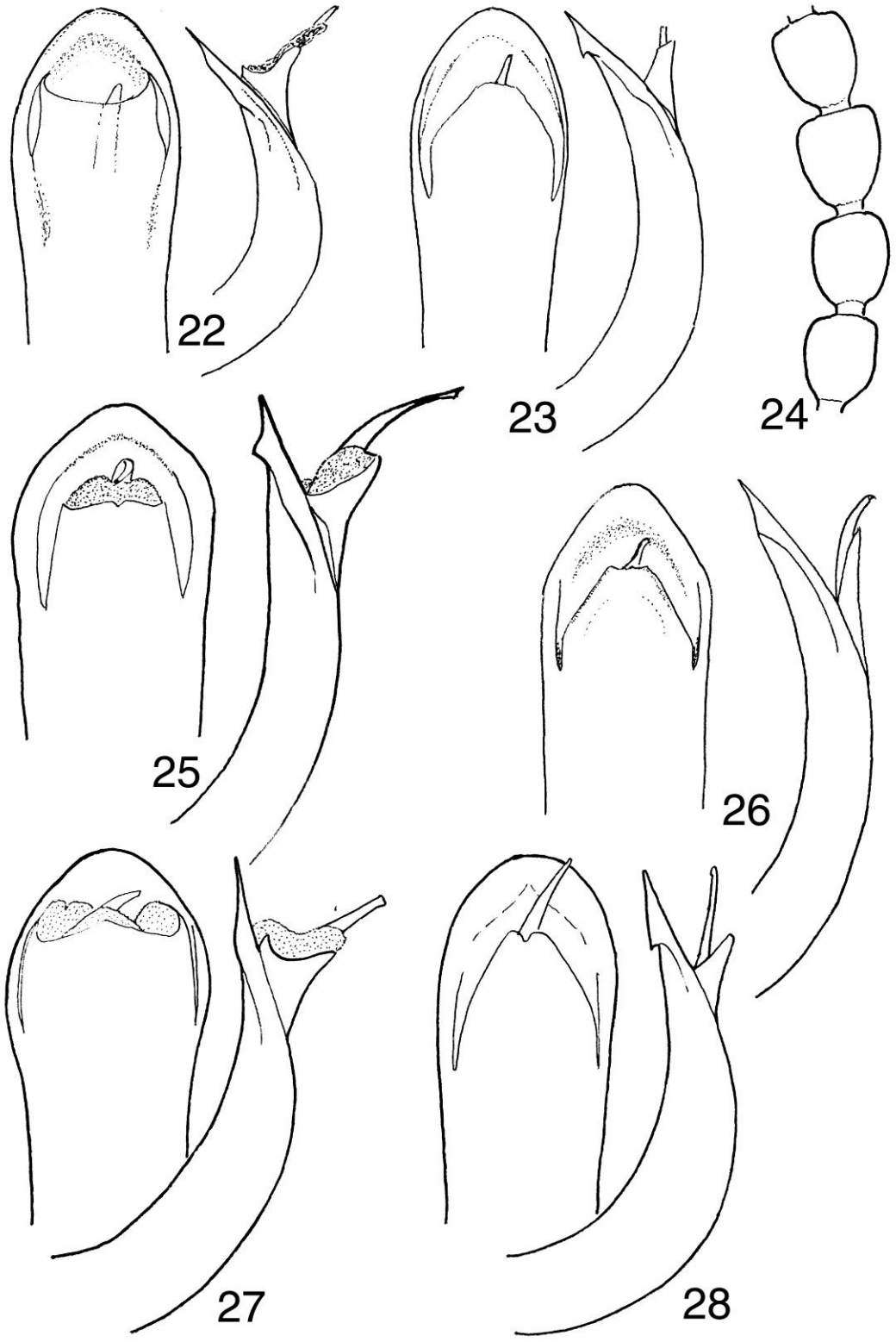
***Stichoptera* figures 1–8:** 1–3 – lateral side of elytron: 1 – *Chrysolina kuesteri kuesteri* (Poland), 2 – *Ch. sanguinolenta* (European Russia), 3 – *Ch. gypsophilae* (S European Russia); 4–5 – right posterior corner of pronotum: 4 – *Ch. lucidicollis lucidicollis*, male (syntype *Ch. latecincta sierrana*, Spain, Sierra Guadarrama), 5 – *Ch. gypsophilae*, male (S European Russia); 6–8 – pronotum, left ½: 6 – *Ch. limitata*, male (S-E France), 7 – *Ch. rossia* (Italy), 8 – *Ch. sanguinolenta* (S European Russia). (Orig.)



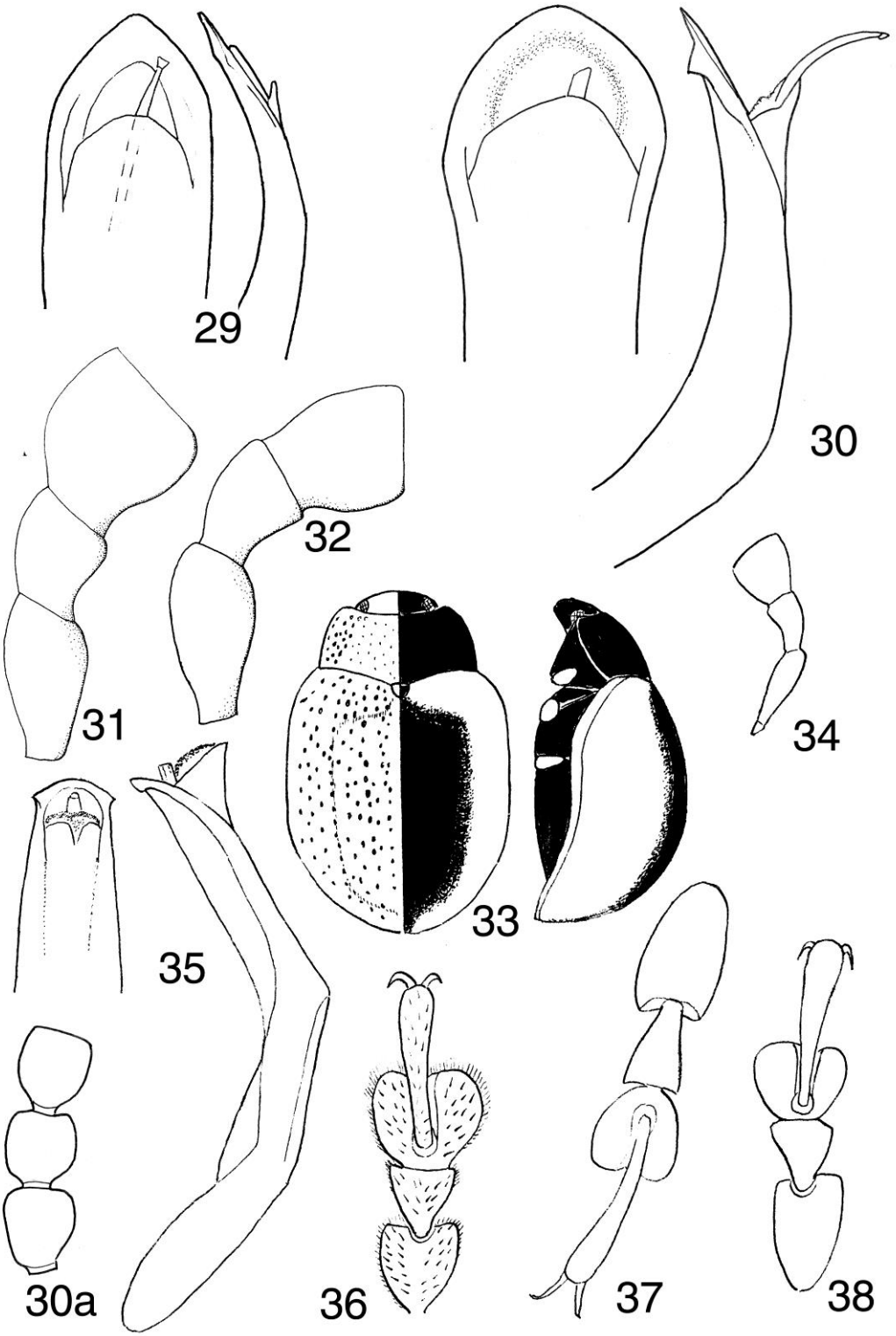
***Stichoptera* figures 9–13:** 9–11 – *Chrysolina latecincta graja*, male (N-W Italy): 9 – dorsal and lateral view, 10 – antenna, 11 – aedeagus; 12–13 – *Ch. latecincta norica*, male (syntype, C-E Alps): 12 – aedeagus, 13 – antennomeres 7–10. (Orig.)



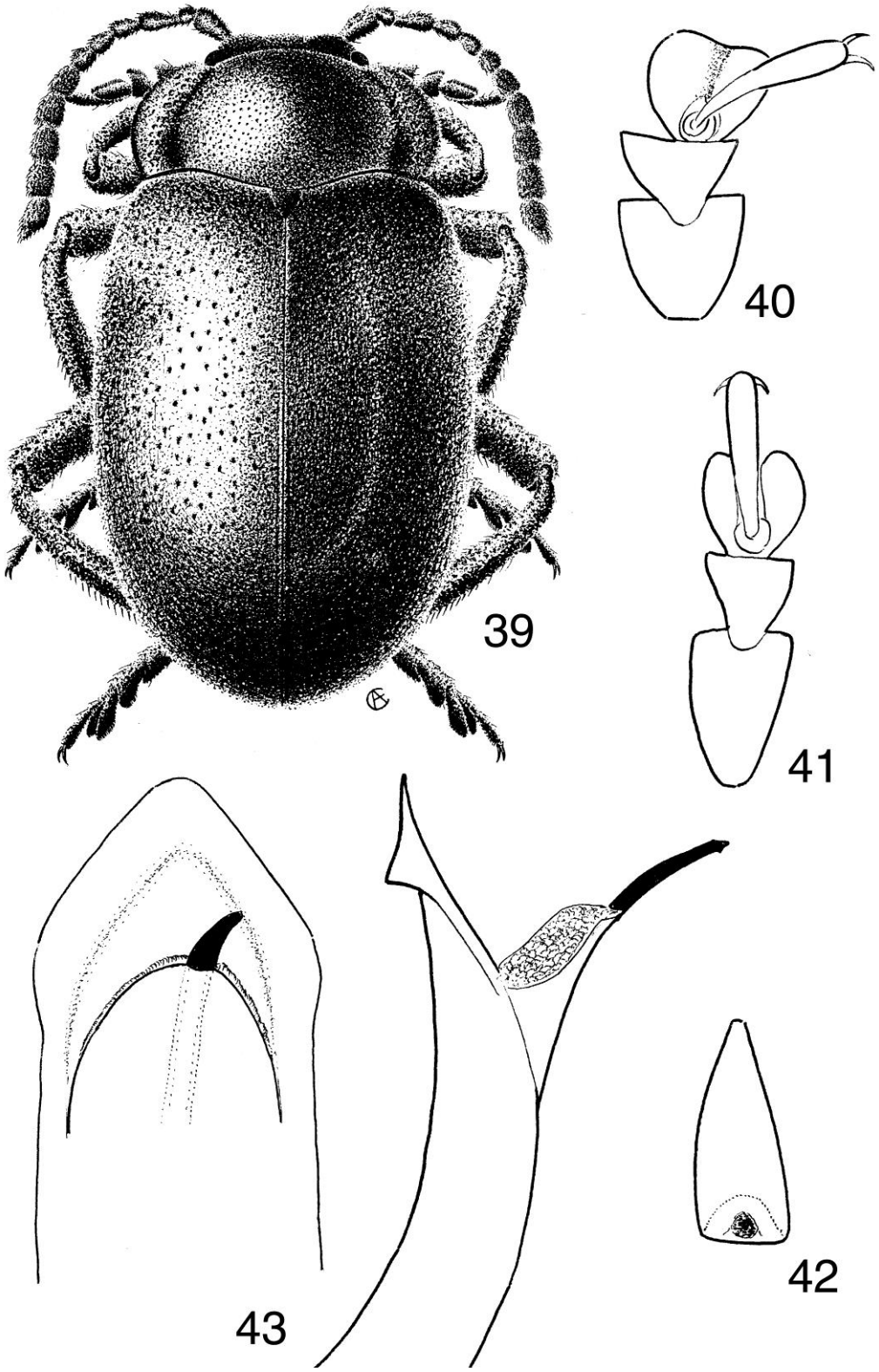
***Stichoptera* figures 14–21:** 14–15 – *Chrysolina latecincta raetica*, male (syntype, E Alps): 14 – aedeagus, 15 – antennomeres 7–10; 16–17 – aedeagus: 16 – *Ch. latecincta graja* (syntype, W Alps), 17 – *Ch. latecincta intermedia* (topotype, Scotland); 18–19 – *Ch. lucidicollis lucidicollis*, male (syntype *Ch. latecincta sierrana*, Spain, Sierra Guadarrama): 18 – aedeagus, 19 – antennomeres 7–10; 20–21 – aedeagus: 20 – *Ch. rossia* (N Italy), 21 – *Ch. stachydis* (Corsica). (Orig.)



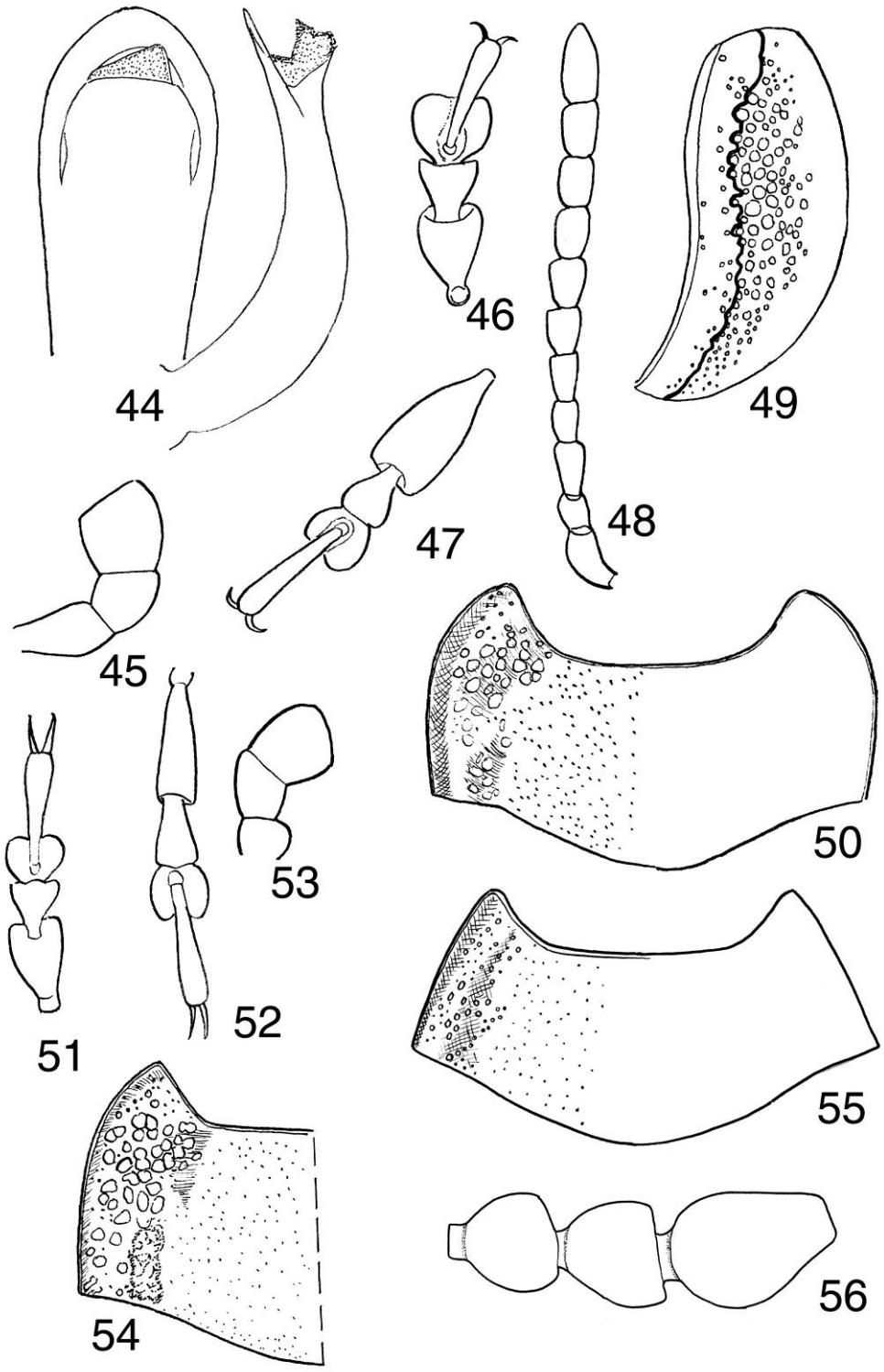
***Stichoptera* figures 22–28:** 22–23 – aedeagus: 22 – *Chrysolina limitata* (S-E France), 23 – *Ch. variolosa* (Sicily); 24–25 – *Ch. lucidicollis lucidicollis*, male (syntype *Ch. latecincta sierrana*, Spain, Sierra Guadarrama): 24 – antennomeres 7–10, 25 – aedeagus; 26–28 – aedeagus: 26 – *Ch. kuesteri epipleurica* (syntype *Ch. sanguinolenta* var. *epipleurica*, Asturia), 27 – *Ch. gypsophilae* (Ukraine), 28 – *Ch. sanguinolenta* (European Russia). (Orig.)



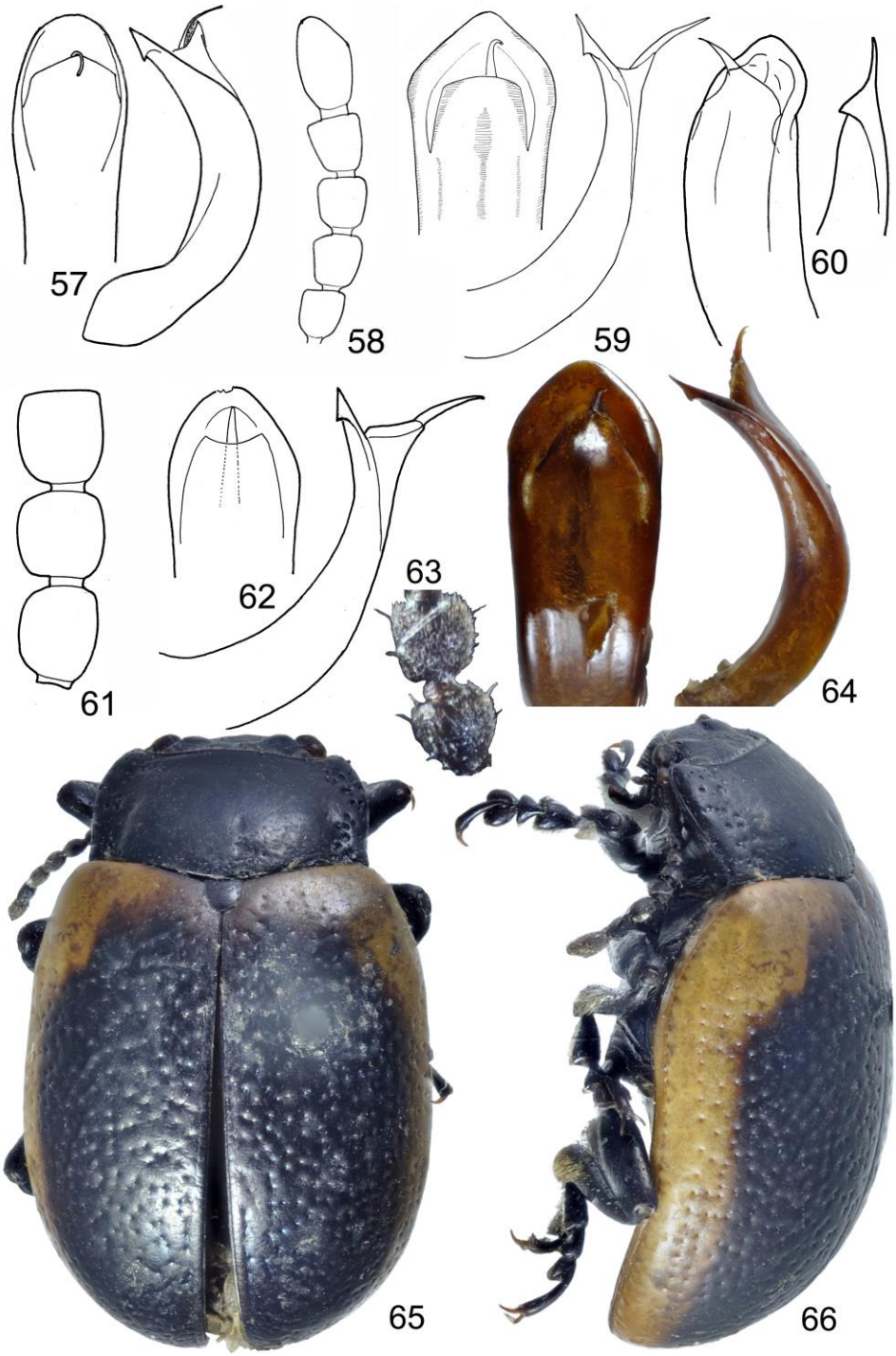
***Stichoptera* figures 29–38:** 29–30 – aedeagus: 29 – *Chrysolina kuesteri kuesteri* (S France), 30–30a – *Ch. latecincta bourdonnei* (Italy, Abruzzo), male: 30 – aedeagus, 30a – 7–9th antennomeres; 31–32 – *Ch. latecincta bourdonnei* (Italy), maxillary palpus: 31 – male (holotype), 32 – female (paratype); 33–38 – *Ch. mactata*: 33–37 – male (Spain): 33 – dorsal and lateral view, 34 – maxillary palpus, 35 – aedeagus, 36 – fore-tarsus, 37 – hind-tarsus; 38 – female (S France), fore-tarsus. (After: Daccordi, Ruffo, 2005: 31–32; others – orig.)



***Stichoptera* figures 39–43:** *Chrysolina colasi* (S Spain): 39 – male (holotype), dorsal view; 40–43 – male (topotype): 40 – fore-tarsus, 41 – mid-tarsus, 42 – 1st hind-tarsomere, 43 – aedeagus. (After: Cobos, 1952: 39; others – orig.)



***Stichoptera* figures 44–56:** 44–54: *Chrysolina oceanoripensis*: 44–50 – male (paratype, S-W France, Bains-d'Huchet): 44 – aedeagus, 45 – maxillary palpus, 46 – fore-tarsus, 47 – hind-tarsus, 48 – antenna, 49 – elytron laterally, 50 – pronotum; 51–54 – female (paratype, S-W France, Gironde Montalivet): 51 – fore-tarsus, 52 – hind-tarsus, 53 – maxillary palpus, 54 – pronotum; 55–56 – *Ch. latecincta hellieseni*, female (syntype *Ch. crassicornis*, Norway): 55 – pronotum, 56 – antennomeres 9–11. (Orig.)



***Stichoptera* figures 57–66:** 57 – *Chrysolina sanguinolenta*, male (neotype *Chrysomela marginalis*, Austria), aedeagus, dorsal and lateral view; 58–61 – *Ch. latecincta latecincta*: 58 – female (Alpes-Maritimes), 7–11th antennomeres, 59 – male (S-E France), aedeagus, dorsal and lateral view, 60–61 – male (holotype *Chrysomela crassicornis breiti*, type locality?): 60 – aedeagus, dorso-lateral and lateral view, 61 – antennomeres 7–9; 62 – *Ch. lucidicollis lucidicollis* (paratype *Chrysomela latecincta decipiens*, Pyrenees), aedeagus, dorsal and lateral view; 63–66 – *Ch. latecincta* unknown subspecies, male (S-E European Russia, Volgograd reg.): 63 – 7–8th antennomeres, 64 – aedeagus, dorsal and lateral view, 65 – total dorsal view, 66 – total lateral view. (Orig.)

Subgenus *Sulcicollis* J. Sahlberg, 1913

Diagnosis

Dorsum dark metallic (bronze, olivaceous, blue) or rufous (brown) with bronze tint.

Last maxillary palpomere narrow, oval, obliquely truncate, as wide as penultimate one or slightly narrower than latter, as long as penultimate one; similar in both sexes.

Antennal insertion closer to clypeus than to eye.

Pronotum with convex lateral callus separated by deep lateral furrow along entire length. Lateral furrow devoid of large punctures. Anterior border of pronotum marginated and ciliate. Anterior setiferous pore absents in *Ch. impavida*, presents in the others.

Prothoracic hypomeron weakly convex or almost flat, laterally with obsolete wrinkles or without them, without distinct lateral impression and outer border. Basal fold distinct.

Metasternum entirely marginated anteriorly.

Elytron with weak or obsolete humeral callus, with punctures arranged in 9 regular rows or 14 slightly irregular rows in different species. Puncture rows equidistant or paired.

Epipleuron oblique, visible along entire length in lateral view, ciliate apically.

Hind wings normally developed.

Pygidium with sharp medial furrow along entire length.

Last abdominal sternite evenly convex, marginated with furrow apically, with apical border truncate in male, rounded in female.

Tarsomeres 1–3 with entire sole in both sexes, moderately broadened in male, narrow in female. Claw tarsomere without denticles beneath.

Aedeagus tube-shaped, curved dorso-ventrally, with apex broadly truncate or rounded, with more or less distinct apical denticles or without them ventrally. Flagellum narrow, long and whip-shaped or short and slightly exposed.

Differential diagnosis

Subgenus *Sulcicollis* is characteristic with the combination of the following characters: narrow elongate last maxillary palpomere, deep glabrous lateral furrow along entire length of pronotum, mostly regular puncture rows at elytra, developed hind wings, and tarsomeres 1–3 with entire sole in both sexes. *Ch.* (*Ovosoma*) *susterai* looks like the members of *Sulcicollis* and differs by the pronotal lateral furrow deeply impressed near base and quite deviated shape of male aedeagus. *Ch.* (*Colaphoptera*) *purpurascens* differs from the members of *Sulcicollis* in elytral punctures mostly irregular and hind wings reduced.

Key to species

1(4) Lateral sides of pronotum rounded. Elytral punctures arranged in 9 regular or slightly undulate entire rows and one abbreviated scutellar row.

2(3) Punctures in elytral rows sparse, not numerous; 5th row includes 17–27 punctures; rows mostly equidistant and only 8th and 9th ones paired. Pronotal disc and elytral intervals dull, finely punctate. Apical orifice of aedeagus with large, protruding covering plate; apical denticles absent; flagellum long, narrow, strongly curved. Dorsum bronze or coppery bronze, rarely with elytra rufous or brown with bronze tint. Length 5.0–7.4 mm. Figs. 1–5. Europe, Asia Minor, Caucasus, Kazakhstan, C Asia, Near East, W Siberia.

Ch. chalcites (Germar, 1824)

3(2) Punctures in elytral rows dense, numerous; 5th row includes 40–57 punctures; rows equidistant. Pronotal disc and elytral intervals finely punctate, pronotal disc dull, elytral intervals moderately shining. Apical orifice of aedeagus with small, adpressed covering plate; 2 apical denticles large, adpressed; flagellum straight. Dorsum brown or rufous with bronze tint. Length 5.9–7.2 mm. Figs. 14–16. S and W Europe.

Ch. rufoaenea (Suffrian, 1851)

4(1) Lateral sides of pronotum less rounded or almost straight.

5(8) Elytral large punctures arranged in 9 regular entire rows and one abbreviated scutellar row, sometimes with single large punctures in intervals. Legs dark metallic.

6(7) Pronotal disc smooth, impunctate, mirrow-like shining; elytra dull. Apical orifice of aedeagus almost completely covered by large adpressed plate; 2 apical denticles large, distinct; flagellum long, whip-shaped. Elytral puncture rows equidistant. Dorsum blue or bronze. Length 7.3–9.1 mm. Figs. 6–10. Europe, Asia Minor.

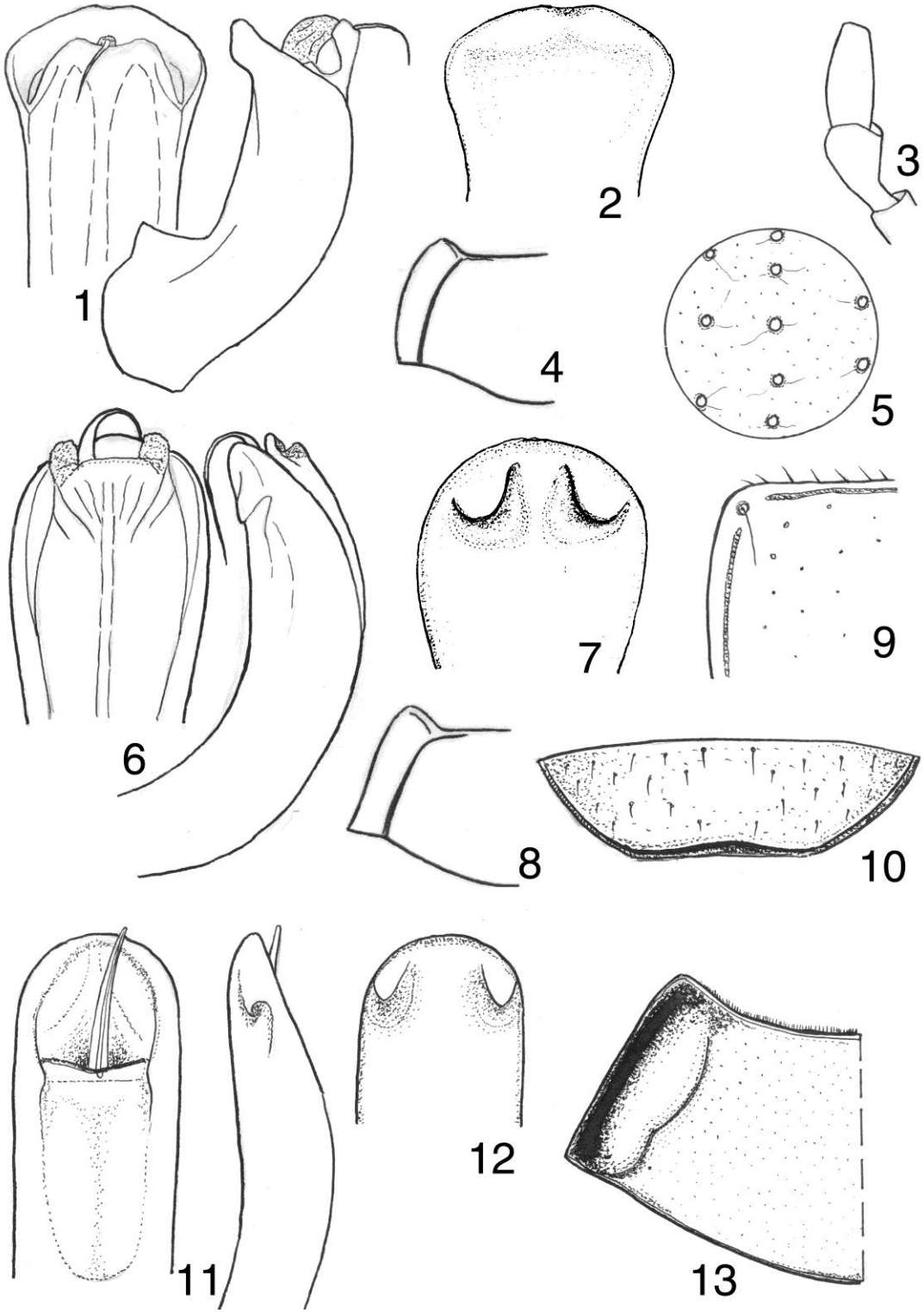
Ch. oricalcia (O. Müller, 1776)

7(6) Pronotal disc moderately shining or dull, distinctly minutely punctate; elytra moderately shining or dull. Apical orifice of aedeagus basally covered by small adpressed plate; aedeagus with 4 small sharp denticles at apex ventrally (2 denticles at each side); flagellum short, slightly exposed. Elytral puncture rows paired. Dorsum blue, olivaceous, or bronze. Length 8.1–9.6 mm. Figs. 17–18. Asia Minor, Israel, Rhodes, Greece, Cyprus, Syria.

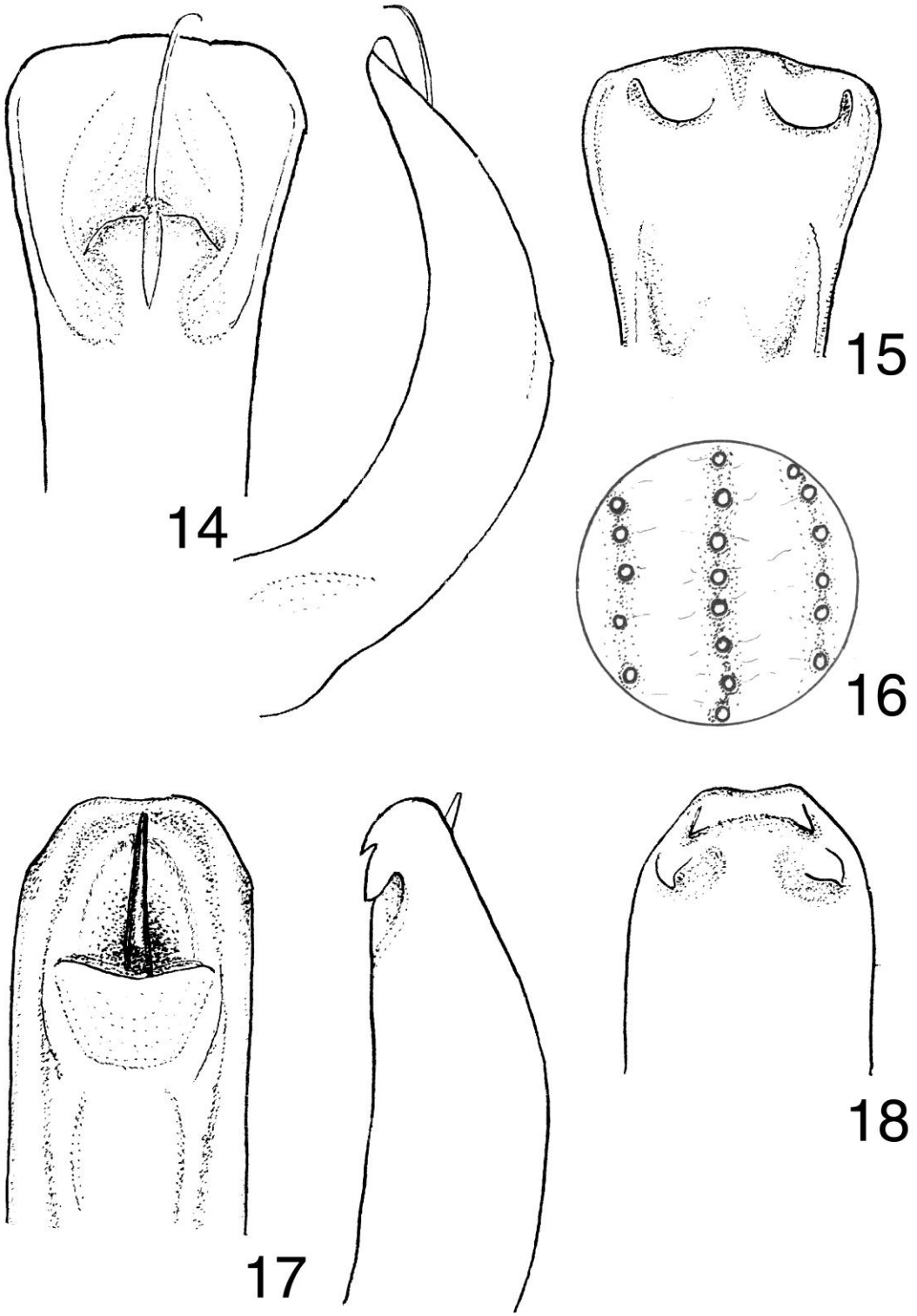
Ch. impavida Bechyné, 1949b

8(5) Elytron with moderately large to small, dense punctures arranged in 14 slightly irregular entire rows and one abbreviated scutellar row; rows equidistant or slightly paired. Legs and antennae rufous. Dorsum shining, bronze (sometimes with greenish tint) or dark olivaceous. Apical orifice of aedeagus entirely opened, basally covered by very small adpressed plate; aedeagus with 2 small sharp apical denticles; flagellum short, slightly exposed. Length 6.1–9.5 mm. Figs. 11–13. S Europe, N Africa.

Ch. peregrina (Herrich-Schaeffer, 1839)



***Sulcicollis* figures 1–13:** 1–5– *Chrysolina chalcites*, male (S Russia: Krasnodar Krai): 1 – aedeagus, dorsal and lateral view, 2 – aedeagus, ventral view, 3 – maxillary palpus, 4 – pronotum, 5 – elytral relief; 6–10 – *Ch. oricalcia*: 6–8 – male (Ukraine): 6 – aedeagus, dorsal and lateral view, 7 – aedeagus, ventral view, 8 – pronotum, 9–10 – male (Germany): 9 – left anterior angle of pronotum with setiferous pore, 10 – last abdominal sternite; 11–13 – *Ch. peregrina*, male (France): 11 – aedeagus, dorsal and lateral view, 12 – aedeagus, ventral view, 13 – pronotum. (Orig.)



***Sulcicollis* figures 14–18:** 14–16 – *Chrysolina rufoaenea*, male (N Spain): 14 – aedeagus, dorsal and lateral view, 15 – aedeagus, ventral view, 16 – elytral relief; 17–18 – *Ch. impavida*, male (Rhodes Isl.): 17 – aedeagus, dorsal and lateral view, 18 – aedeagus, ventral view. (Orig.)

Subgenus *Synerga* Weise, 1900

Diagnosis

Dorsum entirely metallic, differently colored: 1) unicolorous, mostly green, blue, violet, or coppery, or 2) coppery with strong violet reflection at elytra, or 3) bicolorous or tricolorous with golden, red, green, blue, or violet pattern on head and pronotum and longitudinal stripes on elytra.

Last maxillary palpomere oval, obliquely truncate, similar to penultimate one in length and width, similar in both sexes.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally, or before base, or at mid-length, moderately swollen laterally along entire length. Lateral impressions absent or more or less developed, they present basally or along entire length; covered by moderately large punctures which are mostly separated. Pronotal disc covered by dense or sparse punctures, which are fine or moderately large. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron weakly convex, laterally impressed and wrinkled; with outer border or without border. Basal fold strong. Intercoxal prosternal process medially longitudinally impressed, covered by wrinkles or without of them.

Metasternum entirely marginated anteriorly.

Elytron with humeral callus weak to obsolete. Elytral puncturation mostly irregular, usually with more or less regular rows visible at inner ½ of elytron.

Elytral epipleura inclined outside, visible in lateral view in basal ½; epipleura horizontal, invisible in lateral view in apical ½; densely ciliate near apex.

Hind wings normally developed.

Tarsomeres 1–3 narrow in female, fore- and mid-tarsomeres 1 slightly broadened in male. All tarsomeres 1–3 with entire sole in both sexes. Claw tarsomere without denticles beneath.

Pygidium with furrow in basal ½ only.

Last abdominal sternite: ♀: evenly convex, with apical margin rounded, ♂: convex, with shallow longitudinal medial furrow or without of furrow, broadly truncate or twice S-shaped apically.

Aedeagus tube-shaped, strongly curved dorso-ventrally, with apex simple, bearing broad or narrow apical projection. Flagellum narrow, simple, slightly exposed.

Differential diagnosis

Synerga externally looks like the species of the subgenus *Euchrysolina*, and differs from them in the elytral epipleura posterior to middle horizontal, invisible there in lateral view. Two subspecies of *Ch.* (*Synerga*) *coerulans*, namely *angelica* and *bella*, look like *Ch.* (*Fastuolina*) *fastuosa* and

differ in the absence of denticles on 4th tarsomere below. *Ch.* (*Synerga*) *suffriani* looks like some color variations of *Ch.* (*Erythrochrysa*) *polita* and differs in elytral epipleura posterior to middle horizontal, invisible there in lateral view, and prothoracic hypomeron with distinct lateral impression covered by more or less strong wrinkles.

Key to species and subspecies

1(2) Pronotum with broad shallow lateral impression along entire length. Prothoracic hypomeron dull because of distinct microscopical reticulation. Head and pronotum metallic violet or coppery, elytra brown with metallic violet reflection. Apex of aedeagus broadly rounded. Length 7.5–10.0 mm. Fig. 1. Corsica, Sardinia.

Ch. suffriani (Fairmaire, 1859a)

2(1) Pronotum without lateral impression, or with very shallow impression near base. Prothoracic hypomeron shining, without distinct reticulation.

3(8) Apex of aedeagus broadly truncate. Prothoracic hypomeron with lateral wrinkles stronger. Dorsum mostly unicolorous, usually green, golden green, bluish green, coppery, very rarely blue or violet, always without color stripes on elytron, but sometimes green with narrow blue band along pronotal base.

4(5) Punctures at pronotal disc as large as those at elytral apical slope or slightly finer. Dorsum usually entirely green or golden green, sometimes with narrow blue band along pronotal base. Length 7.1–11.0 mm. Figs. 3, 12. Europe, Asia Minor, Caucasus, Siberia, Turkmenistan, Iran, Syria.

Ch. herbacea (Duftschmid, 1825)

5(4) Punctures at pronotal disc much finer than those at elytral apical slope.

6(7) Dorsum usually green or golden green. Length 6.9–9.0 mm. Morocco, Tunisia, Algeria, Portugal, S Spain, S Italy, Sicily, Balearic Isls.

Ch. viridana chloris (Lucas, 1849)

7(6) Dorsal coloration varies, usually coppery, almost never green. Length 6.0–8.1 mm. Fig. 2. Corsica, Sardinia, Isle of Wight.

Ch. viridana viridana (Küster, 1844)

8(3) Apex of aedeagus narrowly truncate. Prothoracic hypomeron with lateral wrinkles finer. Dorsum unicolorous, usually blue or violet, or bicolorous or tricolorous with color stripes on elytron.

9(10) Dorsum blue or violet. Apical projection of aedeagus short and narrow. Length 5.9–8.8 mm. Figs. 4, 5, 9. C Europe, Bulgaria, Balkan Penins. (intermediate form between *coerulans coerulans* and *coerulans angelica* occurs in Asia Minor).

Ch. coerulans coerulans (Scriba, 1791)

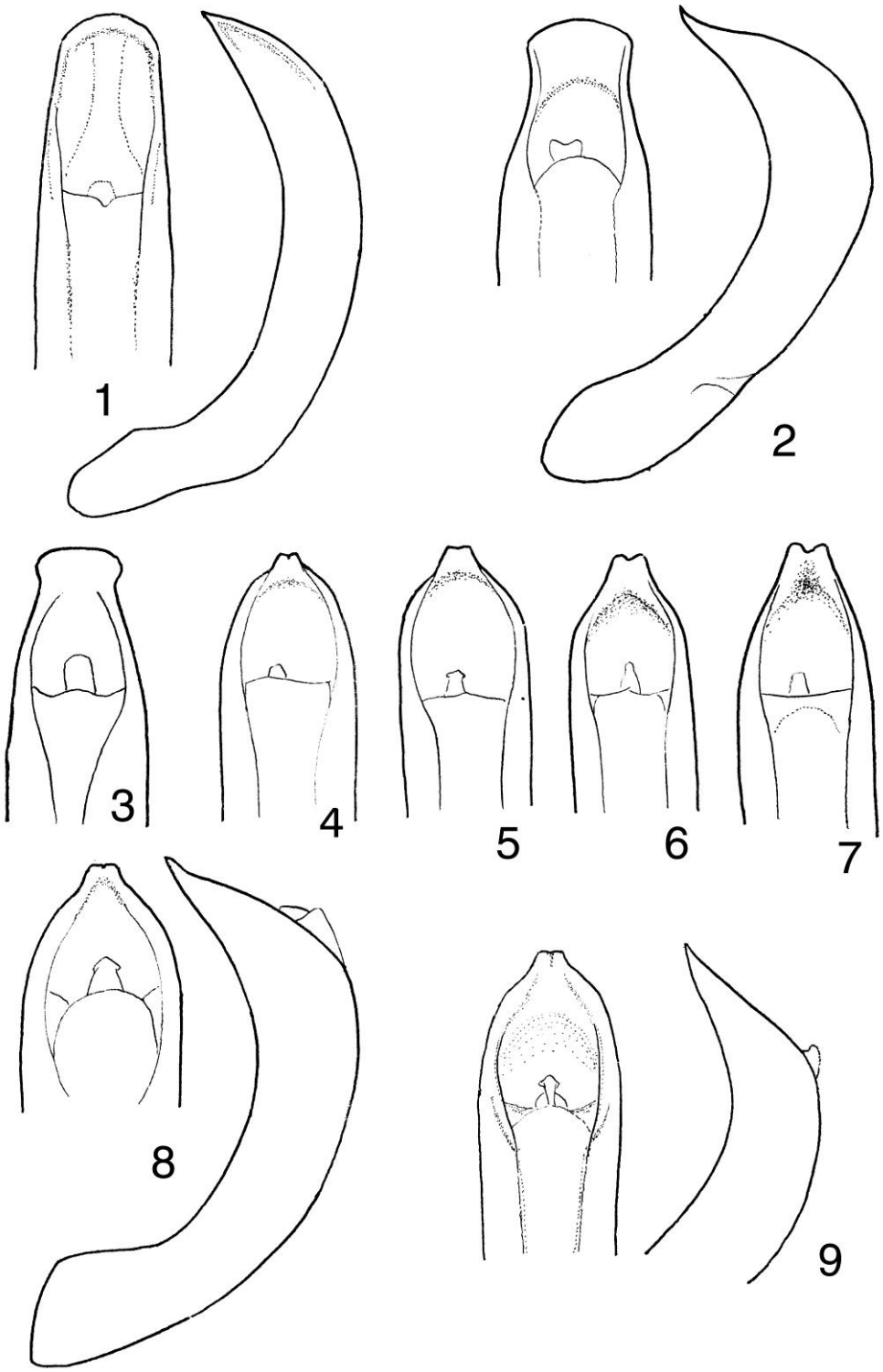
10(9) Dorsum usually bicolorous or tricolorous with red, golden, green, blue, or violet stripes on elytron.

11(12) Apical projection of aedeagus shorter and narrower. Length 5.3–9.0 mm. Fig. 8. Egypt, Syria, Israel, Palestinian Authority, Dagestan, Transcaucasia, Iran, Iraq, Turkmenistan, Cyprus.

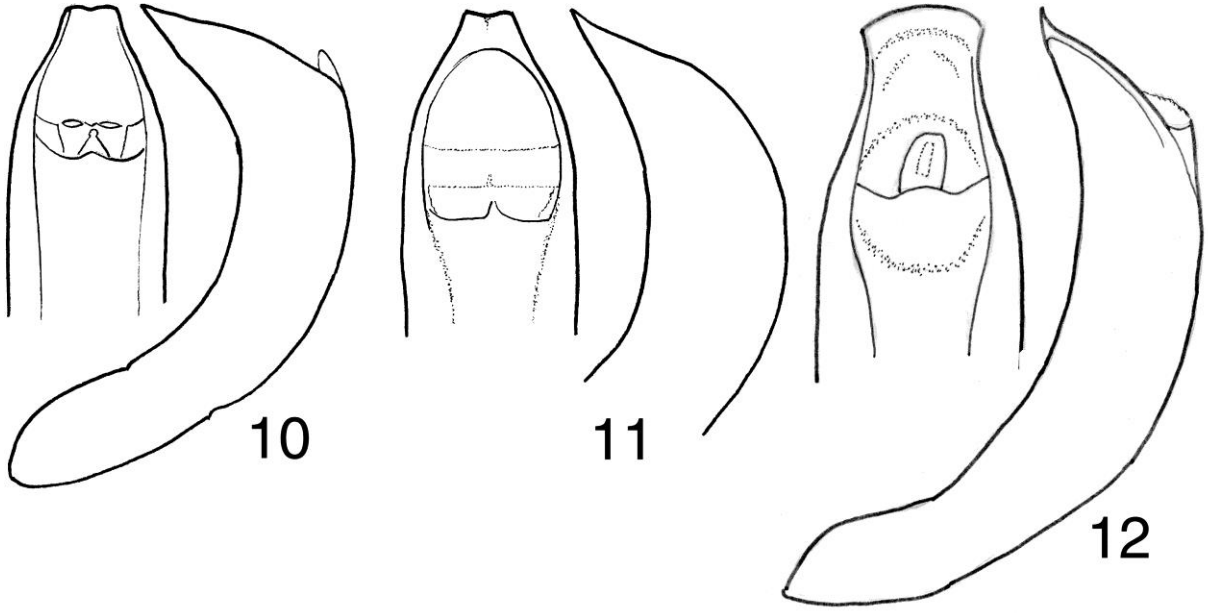
Ch. coerulans angelica (Reiche et Saulcy, 1858)

12(11) Apical projection of aedeagus longer and broader, emarginated apically. Length 6.2–9.2 mm. Figs. 6, 7, 10, 11. Tajikistan, Uzbekistan, Afghanistan, Pakistan, Kashmir; east of C China: Hubei (?).

Ch. coerulans bella (Jacoby, 1890)



***Synerga* figures 1–9:** 1 – *Chrysolina suffriani* (Sardinia Isl.); 2 – *Ch. viridana* (Corsica Isl.); 3 – *Ch. herbacea* (European Russia); 4–7 – *Ch. coerulans*, variability (variants 1–4, respectively, see the chapter "Comments... ", Comm. 260): 4, 5 – *Ch. coerulans coerulans*: 4 – Switzerland, 5 – Hungary, 6, 7 – *Ch. coerulans bella*: 6 – Afghanistan, 7 – Tajikistan; 8 – *Ch. coerulans angelica* (syntype *Ch. coerulans iranica,* Iran, Kuh – e Lalezar), 9 – *Ch. coerulans coerulans* (holotype *Ch. coerulans relicta*, Urals). 1, 2, 8, 9 – aedeagus, dorsal and lateral view, 3–7 – aedeagus, dorsal view. (Orig.)



Synerga **figures 10–12:** Aedeagus, dorsal and lateral view: 10–11 – *Chrysolina coerulans bella:* 10 – male (syntype *Ch. coerulans piffli*, Pakistan, Karakorum), 11 – male (syntype *Ch. coerulans uzbekorum*, Uzbekistan: Samarkand); 12 – *Ch. herbacea* (neotype, Austria). (Orig.)

Subgenus: *Taeniochrysea* Bechyné, 1950a

Diagnosis

Dorsum entirely metallic, usually with longitudinal elytral color stripes. Antennae and legs rufous with metallic reflection, or they metallic with antennomeres 1 and 2 rufous apically.

Last maxillary palpomere oval, obliquely truncate, similar to penultimate one in length and width, similar in both sexes.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally, or before base, or at mid-length, weakly swollen laterally along entire length. Lateral impression shallow, obsolete, or absent, covered by numerous large punctures which mostly separated. Pronotal disc smooth, impunctate or covered by sparse fine punctures. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron weakly convex, laterally impressed and wrinkled; without outer border in *Ch. americana*, with border in *Ch. superba*. Basal fold distinct. Intercoxal prosternal process medially slightly longitudinally impressed.

Metasternum entirely marginated in *Ch. americana*, usually immarginated (very rarely marginated) in the others.

Elytron with humeral callus weak but distinct, separated interiorly by grooved basal part of 5th elytral puncture row. Elytral puncturation regular, forming dense puncture rows strongly paired. Intervals between row covered by sparse fine punctures.

Elytral epipleura inclined outside and slightly visible in lateral view in basal ½; epipleura horizontal, invisible in lateral view in apical ½; densely ciliate near apex.

Hind wings normally developed.

Tarsomeres 1–3 similar in both sexes, narrow, with entire sole. Claw tarsomere without denticles beneath.

Pygidium with shallow furrow in basal ⅔ only.

Last abdominal sternite weakly convex in both sexes, with apical margin rounded in female, broadly truncate in ♂.

Aedeagus tube-shaped, curved dorso-ventrally, with apex triangular, bearing apical denticles on underside. Flagellum narrow, simple.

Differential diagnosis

Taeniochrysea members well differ from other *Chrysolina* due to dorsum bright metallic, usually with longitudinal color stripes on elytra; elytra with regular paired rows of dense punctures, elytral

epipleura invisible in lateral view in apical ½. *Ch.* (*Taeniochrysea*) *ambrostomoides* externally looks like *Ch.* (*Ghesquiereita*) *ruandana* and differs in elytral epipleura invisible in lateral view in apical ½ and in hind wings developed.

Key to species (and to subspecies of *Ch. americana*)

1(4) Metasternum entirely marginated anteriorly. Aedeagus with parallel sides up to triangular apical margin. Species from Mediterranean region.

2(3) Elytra usually red or golden red, with contrast green or bluish green stripes at narrow intervals, rarely elytra purple with golden narrow stripes; elytral punctures not differently colored. Length 6.3–8.4 mm. Subspecies from Europe (except Corsica and Elba Isls.) and N Africa. Figs. 1, 2.

Ch. americana americana (Linnaeus, 1758)

3(2) Predominant color of elytra blue, bluish green or purple, usually with little contrast color stripes at narrow intervals between puncture rows, or without differently colored stripes, usually with elytral punctures differently colored, purple or golden. Length 6.4–8.3 mm. Subspecies from Corsica and Elba Isls.

Ch. americana ubertini (Marseul, 1887)

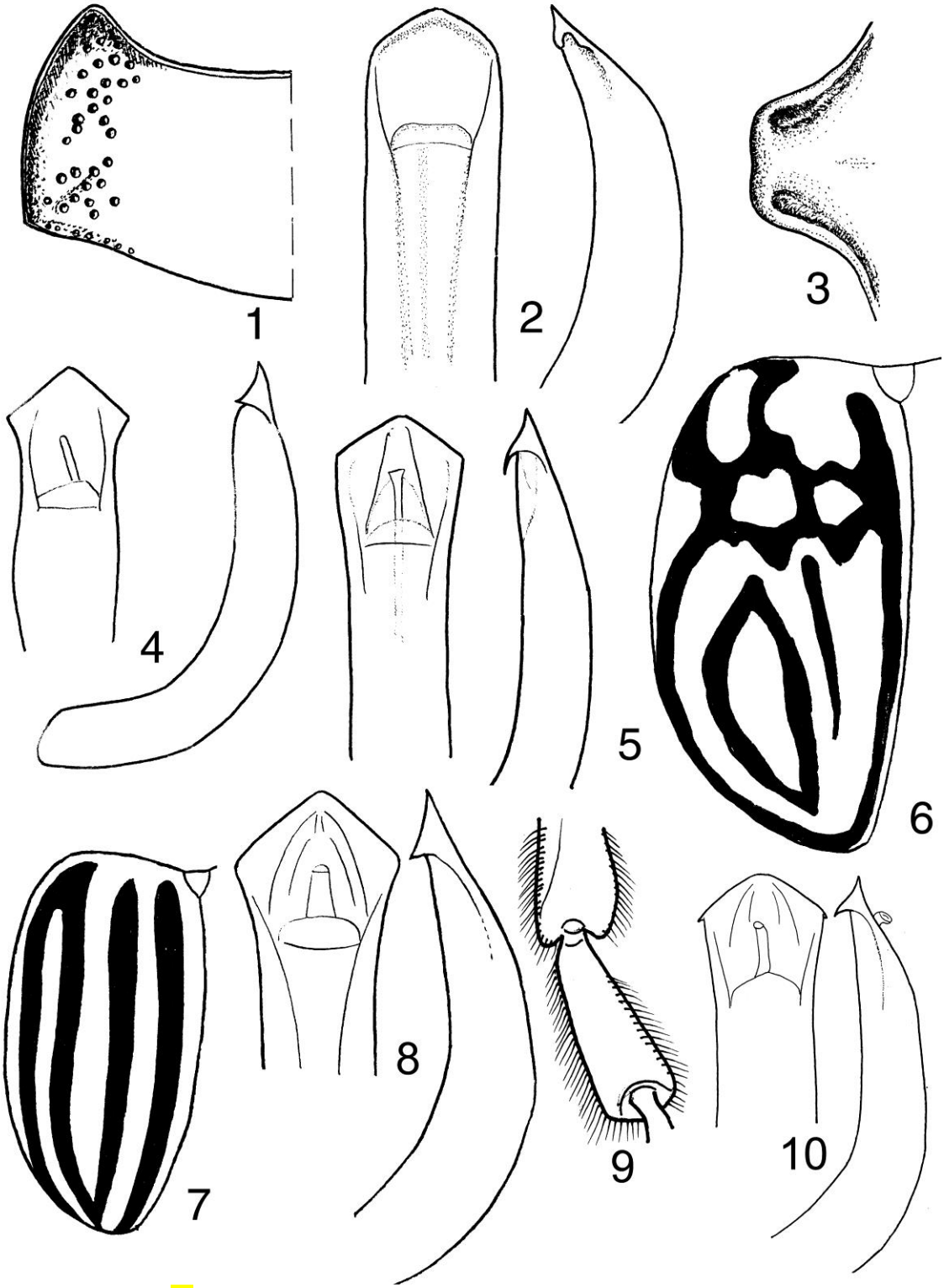
4(1) Metasternum usually immarginated (very rarely marginated in *Ch. superba*) anteriorly. Aedeagus broadened at sides of apical orifice. Species from E and S Africa south from Sahara.

5(6) Aedeagus weakly and rectilinearly extended at sides of apical orifice. Hind-tarsomere 1 as broad as apex of hind-tibia. Length 6.6–11.0 mm. Species includes 5 valid subspecies. Figs. 3, 5, 7, 8, 10. E, C, S Africa.

Ch. superba (Thunberg, 1787)

6(5) Aedeagus with protruding lateral corners at sides of apical orifice (Fig. 4). Hind-tarsomere 1 slightly narrower than apex of hind-tibia (Fig. 9). Dorsum very smooth, with elytral puncture rows hardly visible, bluish-green with clypeus, vertex, orbital lines, pronotal lateral impressions, base, and medial line, elytral suture and lateral sides purple, epipleura yellow with metallic reflection. Length 6.5 mm (male), 8.5 mm (female). Rwanda.

Ch. ambrostomoides Bechyné, 1955a



***Taeniochrysea* figures 1–10:** 1, 2 – *Chrysolina americana americana*: 1 – pronotum (Tunis), 2 – aedeagus (Italy, Roma); 3 – *Ch. superba superba*, female, metasternum (Ethiopia); 4 – *Ch. ambrostomoides*, male (paratype, Rwanda), aedeagus; 5 – *Ch. superba tribunicia*, male (syntype, Kenya), aedeagus; 6 – *Ambrostoma quadriimpressa*, left elytron (S Siberia, Buryatia); 7–8 – *Ch. superba superba*, male (neotype, Ethiopia): 7 – left elytron, 8 – aedeagus; 9 – *Ch. ambrostomoides*, female (holotype, Rwanda), hind tibia and tarsomere 1; 10 – *Ch. superba gandensis*, male (paratype, C. Africa), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Taeniosticha* Motschulsky, 1860a

Diagnosis

Dorsum bicolorous: head, pronotum and scutellum black with or without metallic reflection, elytra: 1) rufous with black suture, with or without weak metallic reflection, or 2) rufous with dark suture, puncture rows 1 and 2, and intervals 3, 5 and 7 between puncture rows, or 3) dark brown with rufous lateral and basal sides.

Last maxillary palpomere oval, truncate apically, similar to 3rd palpomere in length and width, or slightly wider than latter; almost similar in both sexes.

Antenna inserted closer to clypeus than to eye; narrow.

Pronotum broadest basally, before base or near mid-length, with swollen lateral calli at entire length, with lateral impression different: 1) narrow, furrow-shaped in basal ⅓–½, very shallow or absent in anterior ½–⅔; 2) developed along entire length, deep basally and shallow apically; 3) narrow, deep, with steep outer border at base and apex, and impression very shallow near mid-length. Anterior side of pronotum marginated and densely ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron longitudinally weakly convex or flat, laterally covered by weak wrinkles, with or without lateral impression, without outer border. Basal fold strong in most species, weak in *Ch. bergeali*. Intercoxal prosternal process longitudinally impressed in apical part.

Metasternum entirely marginated anteriorly.

Elytron with weak to obsolete humeral callus; with abbreviated scutellar row and 9 entire rows, which regular, equidistant or paired. Punctures in rows fine of moderately large, dense, numerous, always well visible. Intervals between elytral puncture rows flat or slightly convex.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings normally developed or more or less reduced, broad or narrow, reaching pygidium, or elytral mid-length, or very short, slightly longer than metathorax, or absent.

Tarsomeres 1–3 in female: narrow, with narrow glabrous stripe on tarsomere 1; in male: wholly pubescent beneath. Male tarsomeres 1–3 moderately or weakly broadened in all tarsi or only in fore- and mid-tarsi. Claw tarsomere without denticles beneath.

Pygidium with only weak impression basally in *Ch. alatavica*, *Ch. bergeali*, *Ch. dzhungarica*, *Ch. kuldzhensis*, *Ch. sairannurica*, or with broad shallow impression at almost entire length in *Ch. koktumensis* and *Ch. tianshanica*, or with distinct longitudinal sulcus along entire length in others.

Last abdominal sternite convex in both sexes, more convex in female than in male. Apical margin shallowly broadly emarginated in male, rounded in female.

Aedeagus flattened in cross-section, strongly or moderately curved dorso-ventrally. Apex triangular or rounded. Flagellum simple, thin, exposed.

Differential diagnosis

Subgenus *Taeniosticha* is well identified by the combination of black head and pronotum and rufous (brown) elytra with regular puncture rows. It some looks like subgenus *Palaeosticta* and differs from the latter in pronotum without steep lateral slopes, and with convex lateral calli along entire length. *Ch.* (*Jeanclaudia*) *tuvensis* is morphologically very similar to the members of *Taeniosticha* and differs in male characters: fore- and mid-tarsomeres 1–3 broader, last maxillary palpomere distinctly broader than 3rd one, last abdominal sternite impressed in apical ½.

Key to species and subspecies

1(10) Hind wings normally developed or reduced. In the latter case, they reaching elytral mid-length, or reaching elytral apex, or slightly projecting beyond elytral apex.

2(7) Flagellum of aedeagus more projecting beyond apical orifice, hook-shaped. Pronotal disc distinctly punctate.

3(6) Body oval. Male fore-tarsomeres 1–3 slightly to moderately broadened. Pronotum with discal punctures finer; with lateral impression narrow, furrow-shaped in basal ⅓, very shallow or absent in anterior ⅔. Tip of aedeagus is less bent downward. Body black, with elytra rufous, without metallic reflection, with suture black, or with elytra darkened at most part of surface.

4(5) Hind wings slightly reduced, narrow or broad, reaching pygidium, or normally developed. Subspecies from Europe (except Italy), the Caucasus, Asia Minor, W Siberia, and W Kazakhstan. Length 4.2–6.0 mm (male), 4.8–6.8 mm (female). Figs. 1–3, 5, 52–54.

Ch. pseudolurida pseudolurida (Roubal, 1917)

5(4) Hind wings strongly reduced, narrow, reaching at most elytral mid-length. Subspecies from Italy. Length 4.8–6.1 mm (male), 5.5–7.8 mm (female). Figs. 4, 55.

Ch. pseudolurida obscurefacta Bechyné, 1952a

6(3) Body elongate. Male fore-tarsomeres 1–3 very broadened. Pronotum with discal punctures larger; with lateral impression developed along entire length, deep basally and shallow apically. Hind wings narrow, reaching mid-length of elytron. Tip of aedeagus is more bent downward. Body black, elytra rufous, without metallic reflection, with suture black, with pronotal lateral calli sometimes brown. Elytral puncture rows equidistant; intervals flat or slightly convex, covered by fine dense punctures. Length 6.0–7.2 mm. Fig. 6. Caucasus (Georgia, N Ossetia).

Ch. reitteri (Weise, 1884b)

7(2) Flagellum of aedeagus less projecting beyond apical orifice, straight. Pronotal disc smooth, impunctate or covered by very fine punctures.

8(9) Apex of aedeagus elongate rounded-triangular. Pronotal lateral furrow reaching ⅓–½ of the length from the base. Hind wings reduced, reaching at most the elytral apex, or normally developed. Elytra dark brown with rufous lateral and basal sides, or elytra rufous with black suture. Length 5.5–7.0 mm (male), 6.1–7.5 mm (female). Figs. 14–32, 50, 51. Turkmenistan, Uzbekistan, N-E Iran, Transcaucasia.

Ch. imperfecta (Breit, 1920)

9(8) Apex of aedeagus, short, broadly rounded. Pronotal lateral furrow reaching about ½ of the length from the base. Hind wings reaching mid-length of elytron. Body black, elytra light reddish brown with black basal border and suture. Length 5.0–6.0 mm (male), 6.0–7.0 mm (female). Figs. 7–12, 13. Spain (Catalonia, E Pyrenees).

Ch. petitpierrei Kippenberg, 2004a

10(1) Hind wings absent or very short, slightly longer than metathorax.
11(14) Species from Europe and the Caucasus.
12(13) Species from the Caucasus. Hind wings very short, slightly longer than metathorax. See also couplet 6.

Ch. reitteri (Weise, 1884b)

13(12) Subspecies from Italy. See also couplet 5.

Ch. pseudolurida obscurefacta Bechyné, 1952a

14(11) Species from Tien Shan and Dzhungaria. Hind wings absent.
15(20) Pronotal lateral impression narrow, deep, with steep outer border at base and apex, and impression very shallow near mid-length; impression covered by few punctures.
16(19) Aedeagus rounded apically; with fine or obsolete apical denticles on underside. Elytra rufous, reddish brown, or brown, but not piceous brown.
17(18) Body slightly narrower. Elytra rufous or reddish brown, with dark suture, without metallic reflection. Flagellum of aedeagus moderately curved, with oval apical opening. Body (with exception of rufous or brown elytra) black, without metallic reflection. Elytral intervals convex or flat. Length: 6.0–6.8 mm (male), 6.8–7.2 mm (female). Figs. 45, 56. Tien Shan.

Ch. tianshanica (Jacobson, 1910a)

18(17) Body slightly broader. Elytra brown or reddish brown, with rufous lateral and basal sides, with bronze or violet reflection. Flagellum of aedeagus hook-shaped, with narrow apical opening. Body (with exception of brown elytra) black with violet or bronze reflection. Elytral intervals flat. Length 5.6–6.9 mm (male), 6.5–7.8 mm (female). Fig. 43. Tien Shan, N-W China.

Ch. kuldzhensis Lopatin, 1976

19(16) Aedeagus triangular apically; with distinct apical denticles on underside. Body black, without metallic reflection, elytra piceous-brown with weak metallic violet reflection, with broad rufous basal and lateral stripes. Elytral intervals weakly convex. Length 5.8–6.5 mm (male), 7.6 mm (female). Figs. 46, 47. China (Xinjiang).

Ch. khalyktavica Lopatin, 2005a

20(15) Pronotal lateral impression broad, deepest basally, covered by numerous large punctures.
21(30) Elytron without distinct dark alternate intervals between puncture rows.
22(25) Aedeagus with apical denticles obsolete. Elytral puncture rows at least partly paired.
23(24) Aedeagus parallel-sided up to apex, with broadly rounded apical margin. Body black, head and pronotum with green and violet reflection (these colors are stained all over the surface), Elytra reddish brown with black suture. Elytral puncture rows mostly equidistant, only rows 5–6 and 7–8 slightly paired; intervals weakly convex. Length 6.4–6.7 mm (male), 7.0–7.2 mm (female). Tien Shan.

Ch. dzhungarica (Jacobson, 1910a)

24(23) Aedeagus slightly broadened at sides of apical orifice, with triangular apical margin. Body black, head and pronotum with bluish green reflection, elytra brick-brown with narrow intervals 3, 5, 7 slightly darkened or not. Elytral puncture rows 3–4, 5–6, 7–8 paired, intervals convex. Length 6.4–6.7 mm (male), 7.0–7.2 mm (female). Fig. 48. S-E Kazakhstan.

Ch. klimenkoi Romantsov, 2008

25(22) Aedeagus with distinct apical denticles on underside. Elytral puncture rows equidistant or almost so.
26(29) Aedeagus slightly broader.

27(28) Apical denticles of aedeagus distinct, well visible in dorsal view. Body larger, male 6.4–7.6 mm long, female 6.9–8.4 mm long. Body black, head and pronotum with green or violet reflection, elytra rufous with suture black. Elytral intervals convex. Fig. 44. Tien Shan.

Ch. alatavica (Jacobson, 1910a)

28(27) Apical denticles of aedeagus less visible in dorsal view. Body smaller, male 5.7–6.1 mm long, female 5.7–6.0 mm long. Body black, head and pronotum with violet reflection, elytra reddish brown or rufous, with dark suture. Elytral intervals slightly convex or flat. Fig. 42. Dzhungar Alatau, China (Xinjiang).

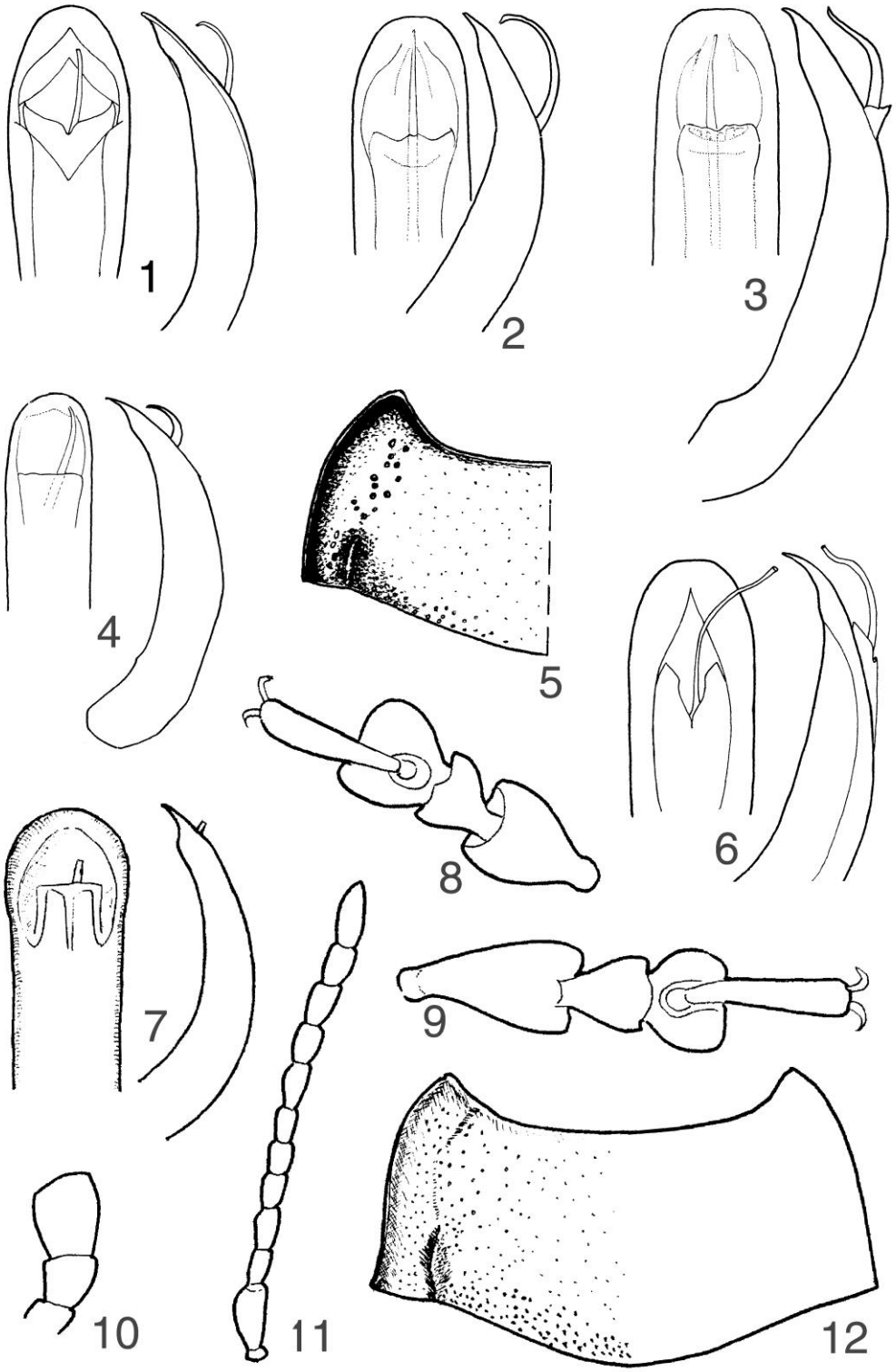
Ch. bergeali (Bourdonné, 2005)

29(26) Aedeagus slightly narrower, rectilinearly narrowing at sides of apical orifice, rounded apically, with denticles hardly visible in dorsal view. Body black, head and pronotum with violet, coppery or green reflection, elytra rufous or light brown with black suture. Elytral intervals 4–9 weakly convex. Length 6.3–7.2 mm (male), 6.4–7.0 mm (female). Fig. 49. Dzhungar Alatau, China (Xinjiang).

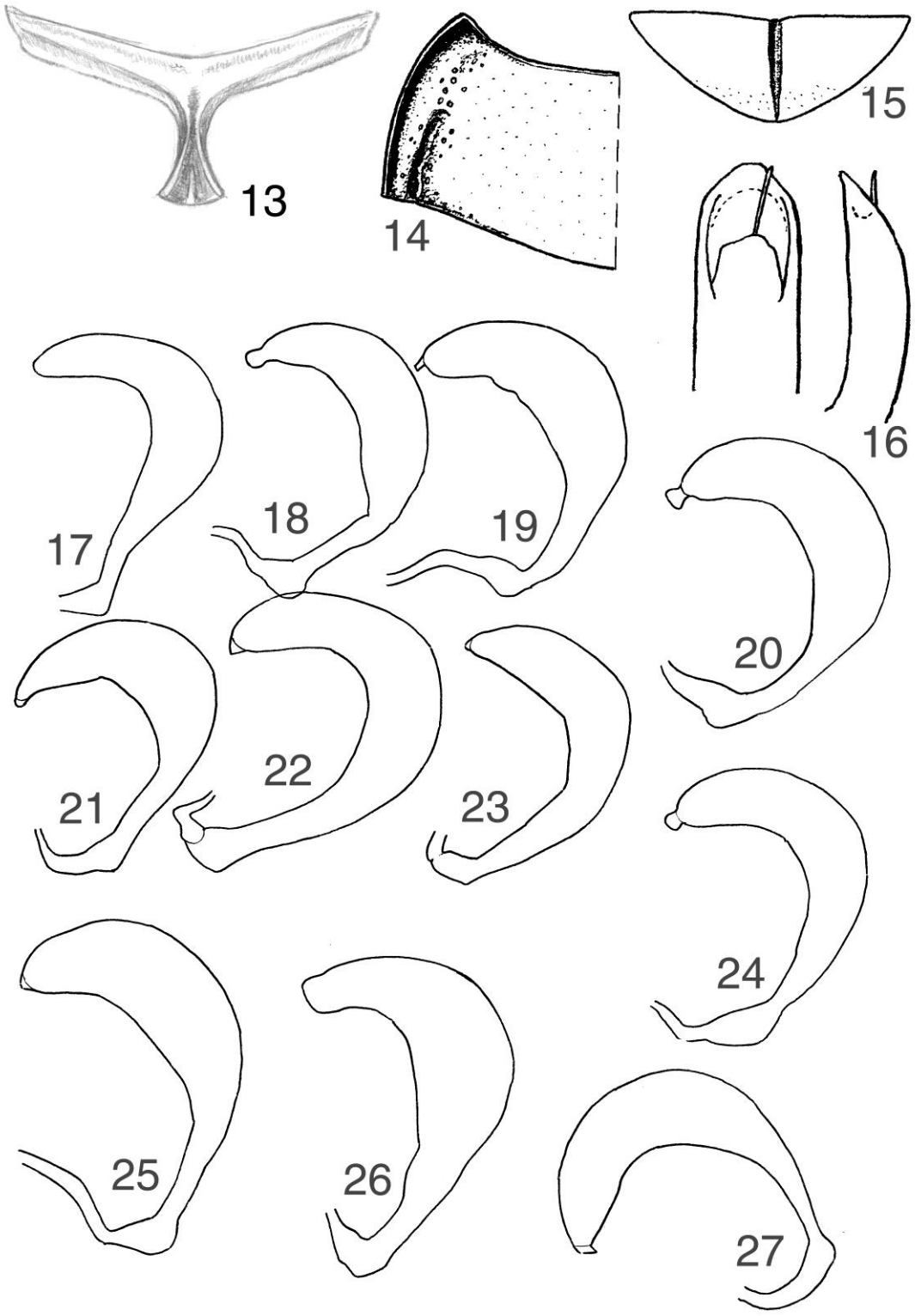
Ch. sairannurica Romantsov, 2008

30(21) Elytron rufous, with dark: suture, puncture rows 1 and 2, and intervals 3, 5 and 7 between puncture rows. Body black, without metallic reflection. Aedeagus with parallel sides up to the apex, rounded apically, with apical denticles obsolete. Length 6.0–6.5 mm (male), 7.4 mm (female). Figs. 33–41. S-E Kazakhstan.

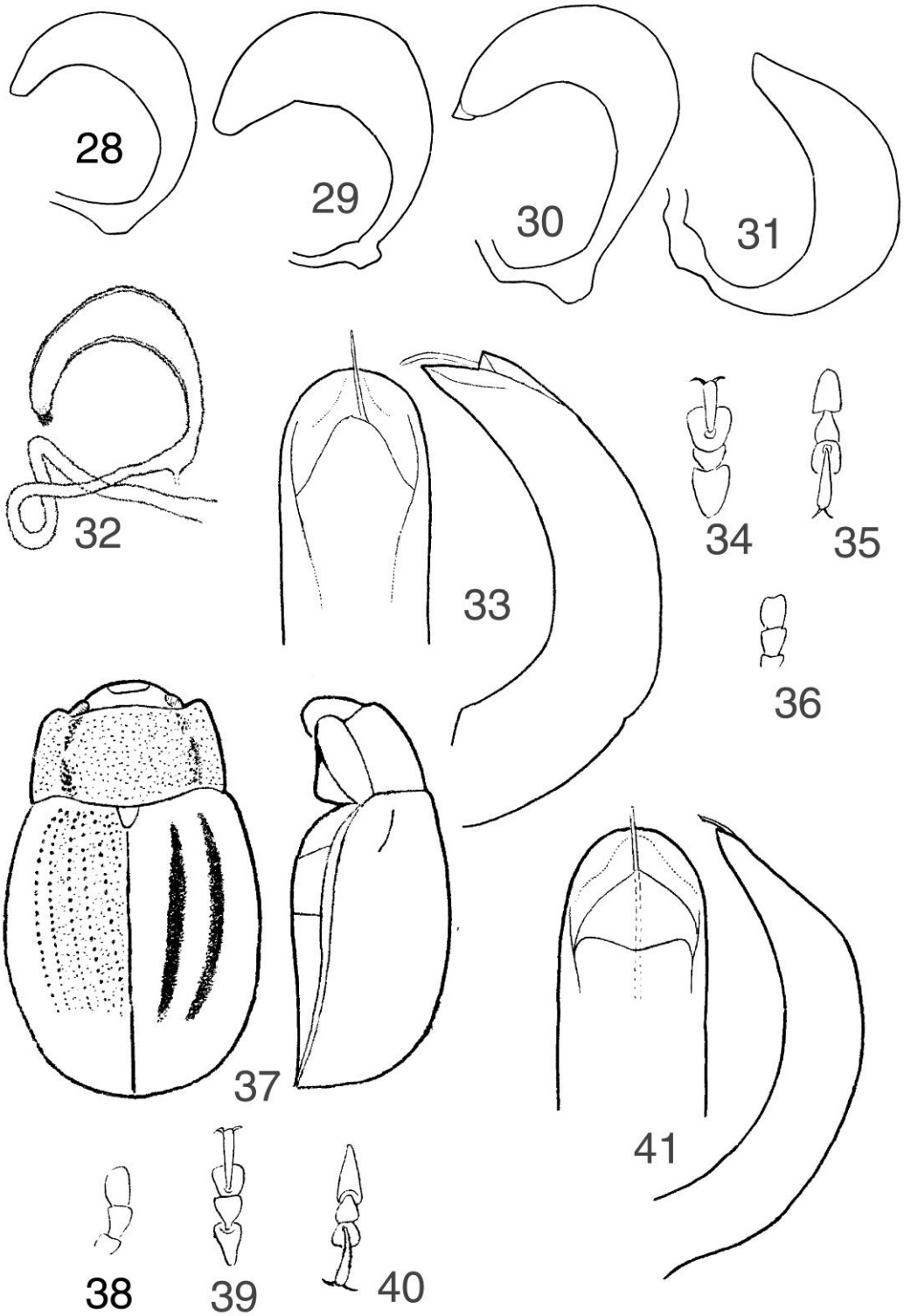
Ch. koktumensis Lopatin et Kulenova, 1987



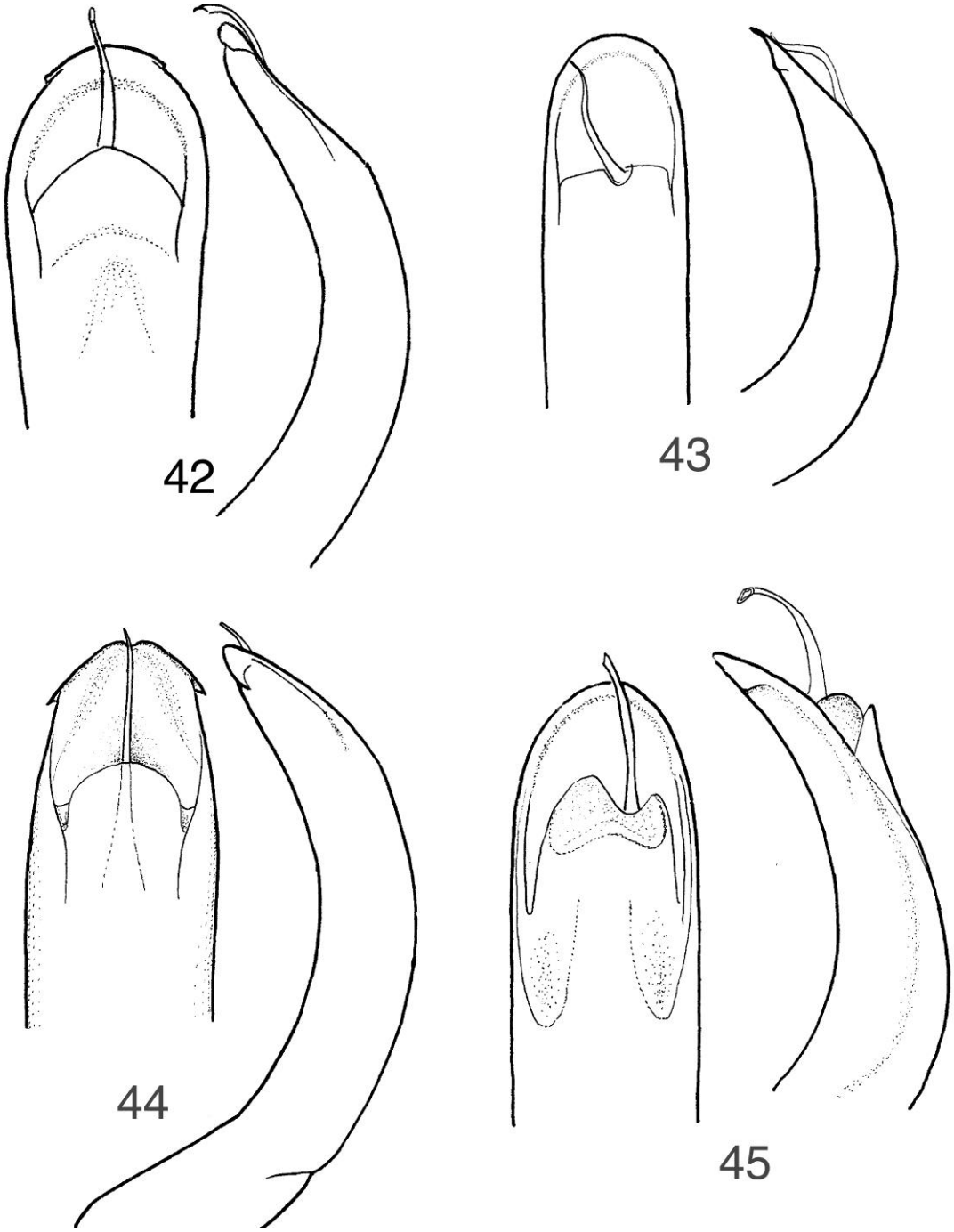
Taeniosticha **figures 1–12:** 1–3 – *Chrysolina pseudolurida pseudolurida*, aedeagus, dorsal and lateral view: 1 – topotype (Caucasus: Kislovodsk), 2, 3 – Turkey; 4 – *Ch. pseudolurida obscurefacta*, aedeagus, dorsal and lateral view, topotype (Italy: Abruzzen); 5 – *Ch. pseudolurida pseudolurida*, pronotum (European Russia); 6 – *Ch. reitteri* (Caucasus: Kabardino-Balkaria); 7–12 – *Ch. petitpierrei*, male (holotype, Spain, Catalonia): 7 – aedeagus, 8 – fore-tarsus, 9 – hind-tarsus, 10 – maxillary palpus, 11 – antenna, 12 – pronotum. (Orig. fig. by I.K. Lopatin: 1, 6; others – figs. by the author)



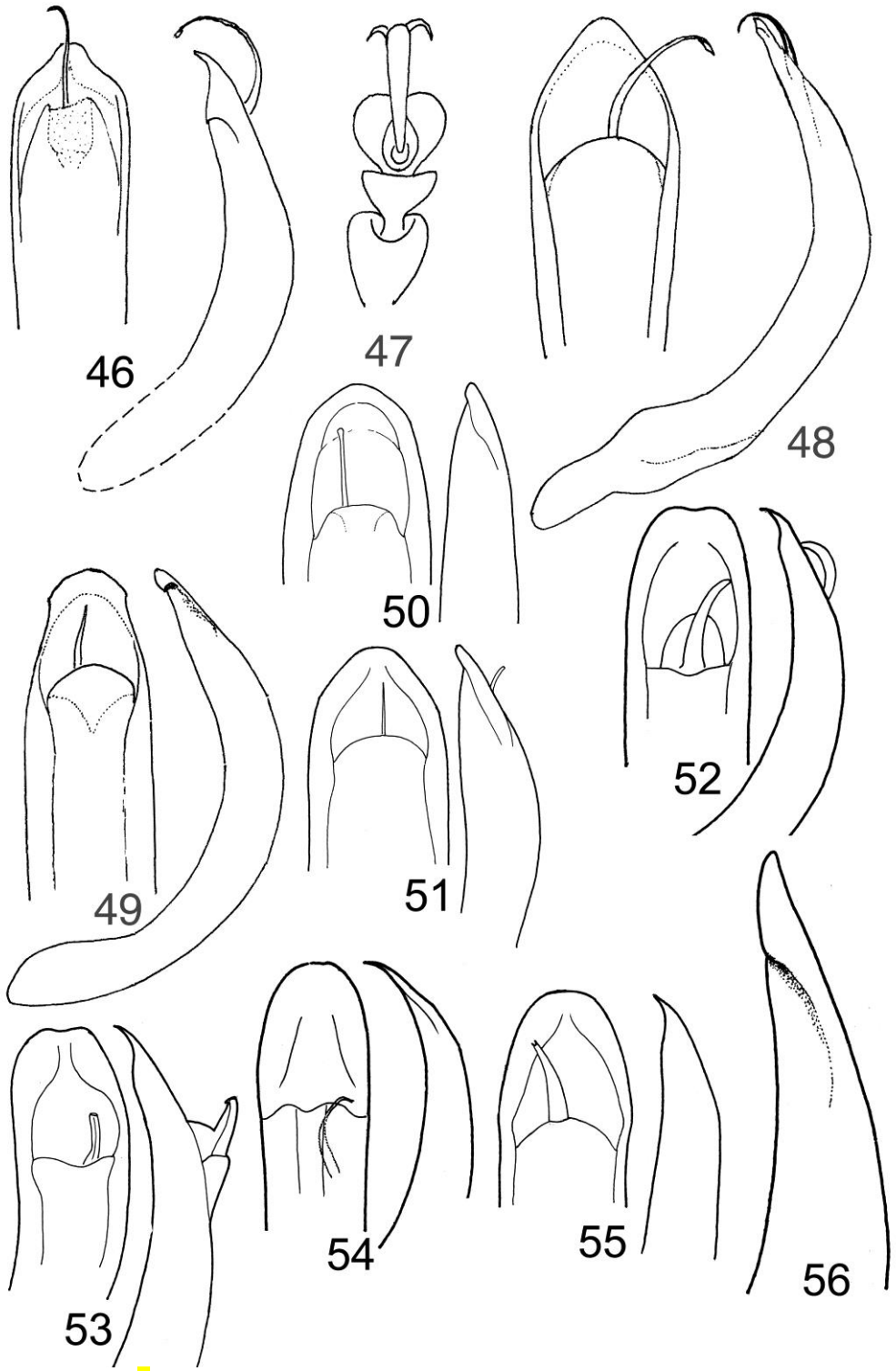
***Taeniosticha* figures 13–27:** 13 – *Chrysolina petitpierrei*, male (holotype, Spain, Catalonia), prosternum; 14–27 – *Ch. imperfecta*: 14 – pronotum, 15 – pygidium, 16 – aedeagus, 17–27 – female spermatheca: 17–23 – Turkmenistan, 24–27 – Azerbaijan. (Orig.)



Taeniosticha **figures 28–41:** 28–32 – *Ch. imperfecta*, female spermatheca: 28–31 – Azerbaijan, 32 – Turkmenistan, Serhetabat (= Kushka) (holotype *Ch. imperfecta plusquamperfecta*); 33–41 – *Ch. koktumensis*: 33–37 – male (Dzhungar Alatau): 33 – aedeagus, 34 – fore-tarsus, 35 – hind-tarsus, 36– maxillary palpus, 37 – total dorsal and lateral view, 38–40 – female (Dzhungar Alatau): 38 – maxillary palpus, 39 – fore-tarsus, 40 – hind-tarsus, 41 – male (holotype, Dzhungar Alatau). (After: Bourdonné, 2005: 32; others – orig.)



***Taeniosticha* figures 42–45:** Aedeagus, dorsal and lateral view: 42 – *Chrysolina bergeali* (China: Xinjiang), 43 – *Ch. kuldzhensis* (holotype, N-W China, Juldus), 44 – *Ch. alatavica* (Tien Shan), 45 – *Ch. tianshanica* (Tien Shan). (Orig.)



Taeniosticha **figures 46–56:** 46–47 – *Chrysolina khalyktavica*, male (holotype, China: Xinjiang): 46 – aedeagus, dorsal and lateral view, 47 – fore-tarsus; 48–55 – aedeagus, dorsal and lateral view: 48 – *Ch. klimenkoi* (holotype, Dzhungar Alatau), 49 – *Ch. sairannurica* (holotype, China: Xinjiang), 50 – *Ch. imperfecta* (lectotype, Iran), 51 – *Ch. imperfecta* (lectotype *Ch. lurida bakuensis*, Azerbaijan), 52 – *Ch. pseudolurida pseudolurida* (syntype *Ch. lurida jailensis*, Crimea), 53 – *Ch. pseudolurida pseudolurida* (syntype *Ch. lurida mangaliana*, Bulgaria), 54 – *Ch. pseudolurida pseudolurida* (syntype *Ch. lurida nevesinjensis*, Bosnia), 55 – *Ch. pseudolurida obscurefacta* (syntype, Italy); 56 – *Ch. tianshanica* (paratype *Craspeda kungeyana*, SE Kazakhstan), aedeagus, lateral view. (Orig.)

Subgenus *Threnosoma* Motschulsky, 1860a

Diagnosis

Dorsum entirely black or dark metallic in most species, or with elytra margined laterally by red stripe (in two species from Europe and one species from Near East), or entirely rufous (in one species from Near East). Legs entirely dark metallic or with femora and tibiae red.

Last maxillary palpomere short, broadly oval, truncate, as broad as penultimate one or hardly narrower than latter, similar in both sexes.

Antenna inserted closer to clypeus than to eye; long, reaching hind-coxa; with antennomeres 6–11 broadened or narrow in different species.

Pronotum broadest before base or at mid-length, with rounded lateral sides, swollen laterally along entire length, with lateral impression different: 1) absent or obsolete, 2) developed only posteriorly, 3) developed along entire length, shallow anteriorly and moderately deep posteriorly. Pronotal disc covered by dense fine or moderately large punctures, or almost impunctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present in most species, absent in *Ch. anceyi*.

Prothoracic hypomeron weakly convex, reticulate, dull, laterally with shallow to obsolete impression filled by wrinkles; without distinct outer border. Basal fold deep in most species, very weak in *Ch. cribrosa*, *Ch. timarchoides*. Intercoxal prosternal process with medial keel or impression along entire length or only apically.

Metasternum entirely marginated anteriorly.

Elytron without humeral callus or with obsolete callus. Elytral puncturation dense, double (large and fine punctures) or homogeneous, wholly irregular in most species or mostly irregular with rare traces of puncture rows in *Ch. arambourgi* and *Ch. mairei*.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate apically.

Hind wings strongly reduced, as long as 2 X metathorax, or narrow, reaching pygidium (in *Ch. weisei*), or narrow, slightly longer than elytron (in *Ch. osellai*).

Tarsi: all tarsomeres 1–3 with entire sole in both sexes, male: all tarsomeres 1 and 3 broadened or fore- and mid-tarsomeres 1–3 broadened; female: tarsomeres 1–3 narrow. Claw tarsomere without denticles beneath.

Pygidium with deep longitudinal impression along entire length.

Last abdominal sternite convex, with apical margin more or less emarginated and bearing narrow sulcus along apical margin in male, or this sternite with rounded or slightly emarginated apical margin in female.

Aedeagus broad, curved, flattened, with apical denticles laterally or ventrally in most species, or with narrow, short apical projection, without apical denticles in *Ch. tagana*; with flagellum narrow, simple, tube-shaped, slightly exposed in most species, long and exposed in *Ch. weisei*.

Differential diagnosis

Members of subgenus *Threnosoma* look like those of subgenus *Crositops*, especially *Ch. kabaki* and *Ch. roddi*, and differ from them in: 1) hind wings reduced but present, 2) anterior setiferous pore present in all species except *Ch. anceyi*, 3) aedeagus with small distinct apical denticles in all species except *Ch. tagana*.

Key to species

1.*Taxa from Morocco, Algeria, and Tunisia*

1(4) Pronotal lateral impression developed along entire length or almost so, wide, with steep outer slope in basal ½, impression filled with numerous moderately large punctures.

2(3) Elytra covered with large shallow irregular punctures and convex, wrinkled intervals. Body very convex. Dorsum black with or without weak bronze or brassy tint, legs brown with violet reflection. Antennomeres 6–11 moderately broadened. Apical denticles of aedeagus invisible, when viewing the apex from above. Length 11.1–13.2 mm. Figs. 2, 4, 9. Species includes two subspecies. Algeria, Morocco, Tunisia.

Ch. afra (Erichson, 1841)

3(2) Elytra covered with fine irregular punctures and flat (or almost flat) intervals; intervals covered with very fine punctules. Body very convex. Dorsum black, legs black with weak bronze tint, or dark blue. Antennomeres 6–11 moderately broadened. Apical denticles of aedeagus hardly visible, when viewing the apex from above. Length 10.0–14.0 mm. Fig. 12. Tunisia.

Ch. inflata vitiosa Bechyné, 1950a

4(1) Pronotal lateral impressions developed in basal ¼–⅓ only.

5(10) Elytral puncturation wholly irregular. Body very convex.

6(9) Pronotal lateral impression deep, with steep outer slope in basal ¼.

7(8) Elytra covered with large shallow irregular punctures and convex, wrinkled intervals. Dorsum moderately shining, black, usually with weak bronze or brassy reflection. Femora and tibiae red with blue tint, tarsi metallic blue. Antennomeres 6–11 moderately broadened. Aedeagus broadly truncate apically. Length 9.2–11.4 mm. Figs. 3, 5, 10. Algeria.

Ch. vermiculosa (Marseul, 1886)

8(7) Elytra covered with fine or moderately large irregular punctures and weakly convex intervals. Dorsum dull, black. Legs entirely metallic blue, femora sometimes with dark red dorsal edge. Antennomeres 6–11 narrow. Aedeagus broadly rounded apically. Length 10.0–14.2 mm. Figs. 7, 14. Algeria.

Ch. solata (Fairmaire, 1879)

9(6) Pronotal lateral impression very shallow even in basal ¼. Elytra covered with moderately large irregular punctures and weakly convex, more or less wrinkled intervals. Dorsum moderately shining or dull, black, usually with weak bronze, coppery or brassy reflection.

Legs entirely metallic blue, or with femora and tibiae rufous with strong blue reflection; femora and tibiae rufous only in immature specimens. Antennomeres 6–11 narrow. Aedeagus rounded apically. Length 9.2–13.0 mm. Figs. 1, 8. Algeria.

Ch. tortipennis (Fairmaire, 1865)

10(5) Elytral punctures forming irregular rows, at least in part. Aedeagus rounded apically. Dorsum dull or weakly shining, black.

11(14) Elytral punctures not extremely fine, but moderately large. Legs and antennae entirely dark blue, metallic, sometimes with femora red (in *Ch. mairei*).

12(13) Antennomeres 6–11 broadened. Antennomere 10 as long as broad. Pronotal disc covered with distinct dense punctures. Length 8.0–11.5 mm. Figs. 6, 11, 13. Algeria.

Ch. arambourgi (Peyerimhoff, 1938)

13(12) Antennomeres 6–11 moderately broadened. Antennomere 10 longer than broad. Pronotal disc impunctate. Length 10.5–11.3 mm. Figs. 15, 16. Species includes two subspecies. Morocco.

Ch. mairei (Peyerimhoff, 1928)

14(11) Elytral punctures extremely fine, obsolete, punctures sometimes joined by very fine scratches, intervals smooth. Antennomere 10 about as long as broad. Pronotal disc extremely finely punctate. Dorsum black, weakly shining or sericeous, legs black with weak blue tint, shining. Length 11.0 mm (male), 12.0 mm (female). Fig. 17. Morocco.

Ch. serdanensis Jolivet, 1966

2. *Taxa from Europe and one species from Near East*

1(24) Hind wings strongly reduced, at most as long as 2 X metathorax.

2(19) Pronotal lateral impression distinct basally.

3(10) Pronotal lateral impression developed along entire length (or almost so), distinct posteriorly and shallow anteriorly.

4(5) Dorsum dull. Elytral punctures fine, sparse; intervals flat. Pronotal disc covered by distinct fine punctures, which some smaller than those at elytron. Aedeagus with apex rounded; small apical denticles invisible in dorsal view. Dorsum black, pronotum sometimes with weak metallic tint, legs metallic dark blue. Antennomeres 6–11 moderately broadened. Length 10.0–14.0 mm. Fig. 35. Sicily, S Italy.

Ch. inflata inflata (Weise, 1916)

5(4) Dorsum moderately shining. Elytral puncturation double: 1) large dense punctures, which larger than those at pronotal disc, 2) fine dense punctures, which sometimes faintly visible. Aedeagus anchor-shaped apically, with apical denticles protruding laterally and well visible in dorsal view; with apex not bent downwards.

6(9) Outermost elytral interval smooth, distinct, covered by fine transverse wrinkles and minute punctules.

7(8) Elytra covered by larger punctures with convex and slightly wrinkled intervals. Apical anchor of aedeagus as wide as 0.8 X aedeagus width measured at mid-length, apical margin rounded. Dorsum dark metallic: blackish blue, elytra sometimes with greenish tint, elytral epipleura and sometimes outermost interval brown, or dorsum blackish bronze or blackish blue with elytral lateral stripe including epipleura red or rufous; legs metallic dark blue. Antennomeres 6–11 moderately broadened. Length 8.0–11.0 mm. Figs. 18, 34. Czechia, Slovakia, Austria, Hungary, Romania, N Italy.

Ch. fimbrialis fimbrialis (Küster, 1845)

8(7) Elytra covered by smaller punctures with flat intervals. Apical anchor of aedeagus as wide as aedeagus width measured at mid-length, apical margin triangular. Dorsum black or blackish bronze with elytral lateral stripe including epipleura red or rufous; legs metallic dark blue. Antennomeres 6–11 narrow. Length 8.0–10.8 mm. Fig. 38. Bosnia, Croatia, Slovenia.

Ch. avulsa Bechyné, 1946

9(6) Outermost elytral interval indistinct, covered by large punctures, which as large as those at elytral disc. Apical anchor of aedeagus as wide as 0.8 X aedeagus width measured at mid-length. Body including legs dark metallic blackish blue. Antennomeres 6–11 moderately broadened. Length 8.9 mm. Only one male, holotype is known till now. Probably, it is an aberrant specimen of *Ch. fimbrialis*. Fig. 29. Romania.

Ch. obenbergeri Bechyné, 1950a

10(3) Pronotal lateral impression developed only in posterior ¼.

11(16) Dorsum moderately or weakly shining.

12(13) Pronotal lateral impression broad, shallow in basal ¼. Dorsum black, with 1–1.5 outermost lateral elytral intervals red; in one paratype only epipleura red. Pronotal disc covered by dense fine punctures, lateral sides, including impressions covered by numerous moderately large punctures, elytral puncturation double: large dense punctures, some larger than those at pronotal lateral sides, and very small punctures in intervals. Outermost lateral interval covered by dense very small punctures, without distinct wrinkles. Length 9.0 mm (male), 10.0–11.0 mm (female). Fig. 39. Italy.

Ch. fimbrialis langobarda Daccordi et Ruffo, 1979

13(12) Pronotal lateral impression moderately deep, narrow, with vertical outer border in basal ¼. Elytral entirely black.

14(15) Elytral punctures dense, but not very dense, distinctly double: 1) large dense punctures, which larger than those at pronotal disc, 2) dense fine punctures. Aedeagus anchor-shaped apically, with apical margin rounded, with apical denticles protruding laterally and well visible in dorsal view; with apex not bent downwards; apical anchor as wide as 0.9 X aedeagus width measured at mid-length. Dorsum black with metallic tint: blue, violet, green, or without metallic tint; legs metallic dark violet or blue. Antennomeres 6–11 narrow. Length 7.8–13.0 mm. Figs. 19, 32, 40. Species includes two subspecies. Croatia, Bosnia-Herzegovina, Montenegro, C, S Italy.

Ch. cribrosa (Ahrens, 1812b)

15(14) Elytral punctures almost homogeneous, punctures slightly differ in size, very dense, as large as those at pronotal disc. Aedeagus anchor-shaped apically, with apical margin rounded, with apical denticles protruding laterally and well visible in dorsal view; with apex bent downwards; apical anchor as wide as 0.6 X aedeagus width measured at mid-length. Dorsum black with weak metallic greenish tint; legs metallic dark blue. Antennomeres 6–11 moderately broadened. Length 9.5–10.0 mm. Fig. 30. E France.

Ch. joliveti Bechyné, 1950a

16(11) Dorsum dull. Elytral punctures homogeneous or almost so.

17(18) Elytral punctures fine, dense, as large as those at pronotal disc or smaller. Aedeagus anchor-shaped apically, with apical margin triangular, with apical denticles protruding laterally and well visible in dorsal view; with apex bent downwards. Dorsum pure black or black with very weak violet tint; legs dark violet. Antennomeres 6–11 broadened. Length 8.0–12.5 mm. Figs. 24–28, 41. N Italy, S France.

Ch. obscurella (Suffrian, 1851)

18(17) Elytral punctures moderately large, much larger than those at pronotal disc. Aedeagus with 2 apical denticles protruding laterally. Dorsum black with weak bronze tint, legs violet. Antennomeres 6–11 narrow. Length 10.0–12.0 mm. Fig. 31. Andalusia.

Ch. helopioides (Suffrian, 1851)

19(2) Pronotal lateral impression absent, or obsolete, or faintly developed. Elytral puncturation distinctly double.

20(21) Body smaller, 6.7–8.5 mm long. Pronotum broadest at mid-length, strongly tapering forward and slightly tapering backward. Aedeagus anchor-shaped apically, with apical margin rounded, with apical denticles protruding laterally and well visible in dorsal view; with apex slightly bent downwards. Dorsum black, shining; legs dark metallic blue or greenish blue. Antennomeres 6–11 broadened. Elytra covered by very dense, moderately large punctures with wrinkled intervals. Figs. 22, 23. E Pyrenees.

Ch. timarchoides (Brisout de Barneville, 1883)

21(20) Body larger, 9.0–12.0 mm long. Pronotum broadest basally or just before base, strongly tapering forward and hardly tapering backward. Elytral surface flat or hardly wrinkled.

22(23) Dorsum rufous, reddish brown, legs rufous or brown, or dorsum olivaceous-green with elytra marginated by red, legs metallic greenish. Pronotal disc covered by dense punctures, elytra covered by more sparse punctures partly arranged in irregular rows. Antennomeres 6–11 narrow. Aedeagus anchor-shaped apically, with apical margin rounded, with apical denticles protruding laterally and well visible in dorsal view; with apex not bent downwards. Length 9.0–12.0 mm. Fig. 33. Species includes three subspecies. Egypt, Syria, Lebanon, Israel, Iraq.

Ch. anceyi (Marseul, 1868)

23(22) Dorsum black with bronze reflection, legs dark metallic: blue or violet. Pronotal disc and elytra covered by very dense similar punctures. Antennomeres 6–11 narrow. Aedeagus with narrow, short roundly quadrangular apical projection, without apical denticles. Length 9.7–11.0 mm. Fig. 36. Portugal.

Ch. tagana (Suffrian, 1851)

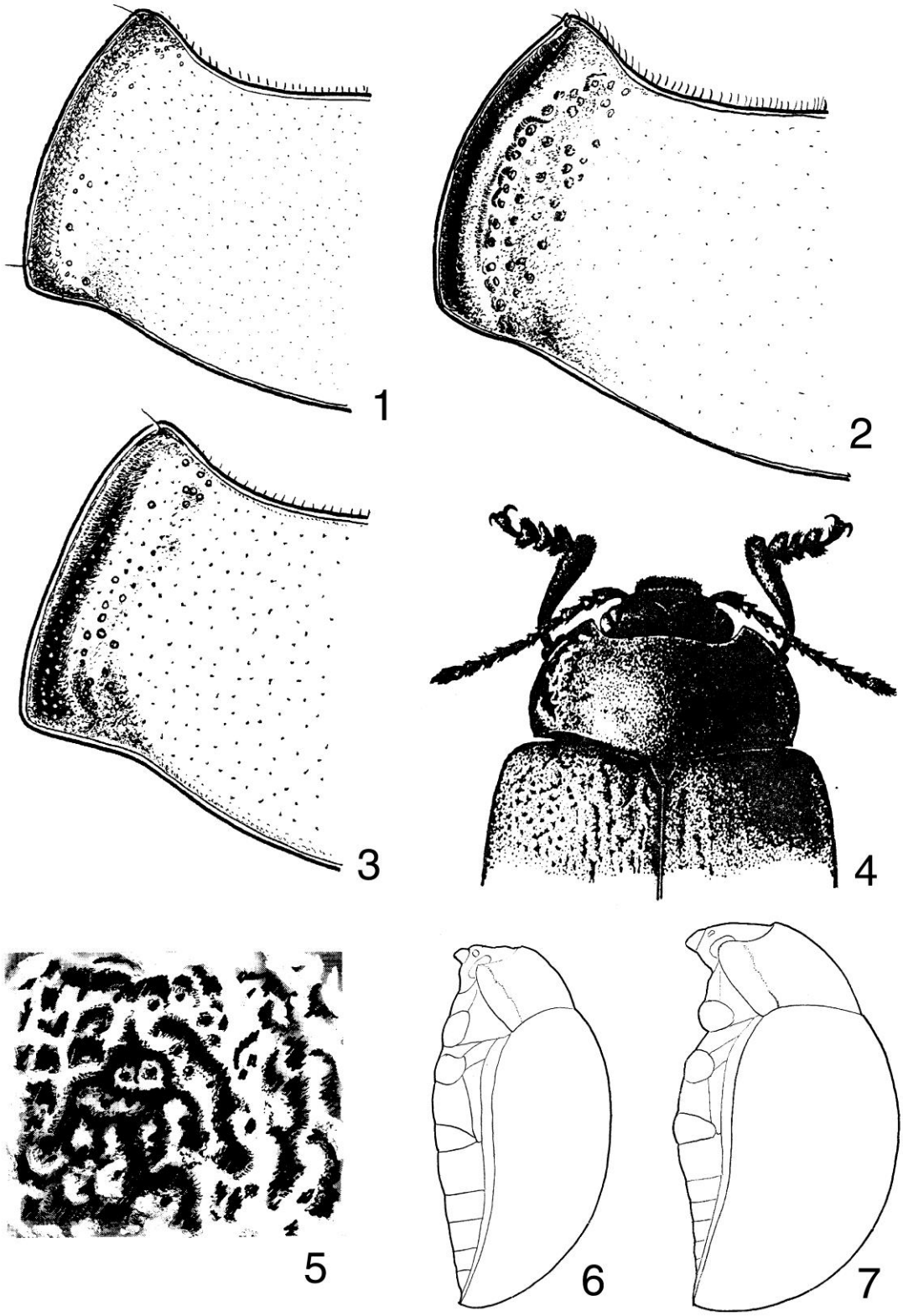
24(1) Hind wings reduced, narrow, but reaching at least the apex of abdomen.

25(26) Pronotal lateral impression absent. Dorsum shining, dark metallic, blackish blue, sometimes with greenish tint on elytra and brassy tint on pronotum; legs dark metallic blue. Elytra covered by double puncturation: 1) moderately large dense punctures, 2) very fine punctures. Pronotal disc covered by dense fine punctures. Hind wings very narrow, reaching pygidium. Antennomeres 6–11 narrow. Apex of aedeagus rounded, with apical denticles invisible in dorsal view. Length 7.1–9.5 mm. Fig. 37. Romania, Hungary.

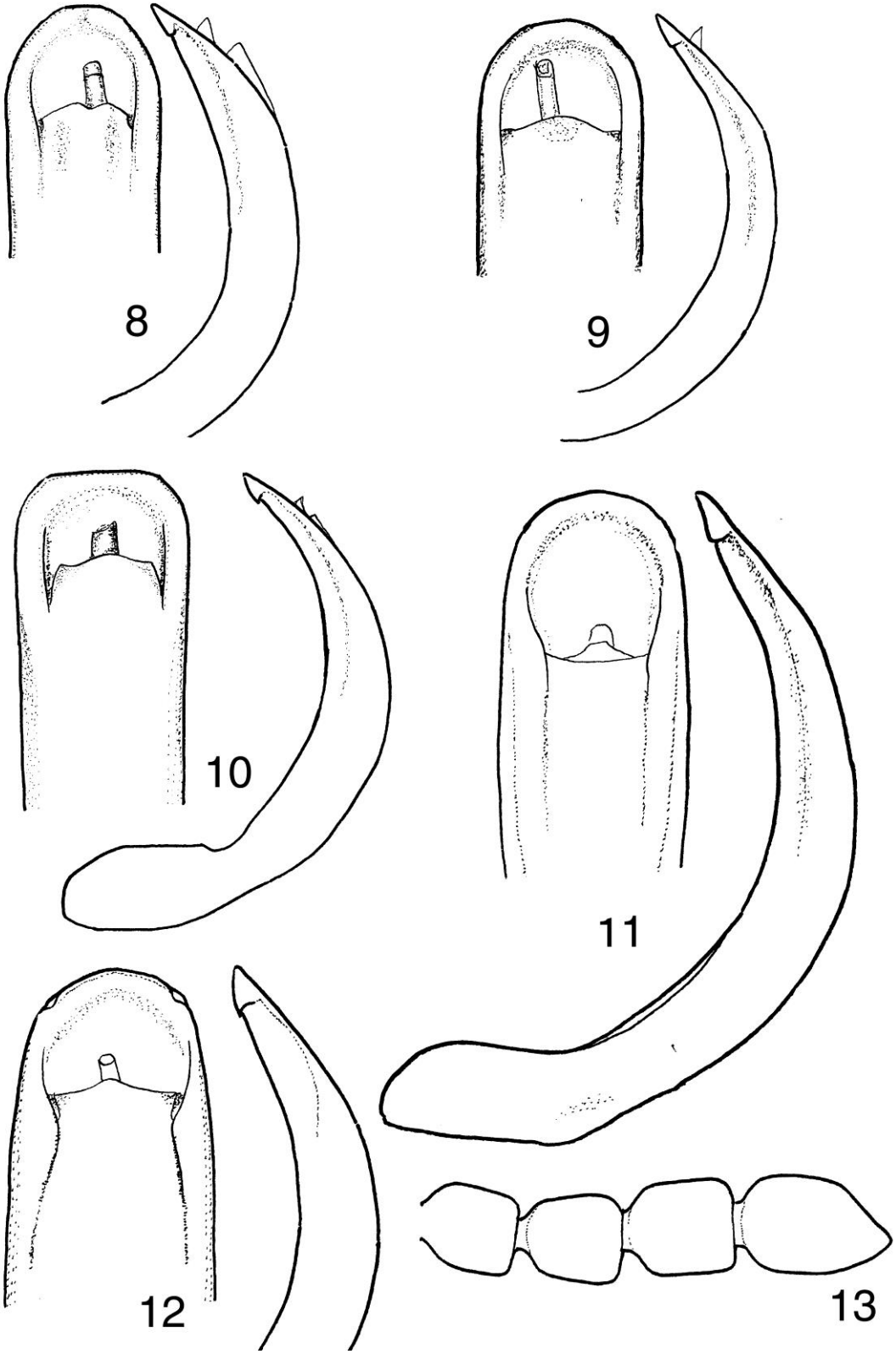
Ch. weisei (Frivaldszky, 1883)

26(25) Pronotal lateral impression developed along entire length, distinct posteriorly and shallow anteriorly. Dorsum dull, black, sometimes with weak bronze tint; legs metallic blue. Elytra covered by very dense moderately large double punctures, which slightly differing in size. Pronotal disc covered by moderately large dense punctures. Hind wings narrow, slightly longer than elytra. Antennomeres 6–11 moderately broadened. Apex of aedeagus rounded, with apical denticles invisible in dorsal view. Length 9.0–10.4 mm (male), 10.0 mm (female). Figs. 20, 21. N Italy.

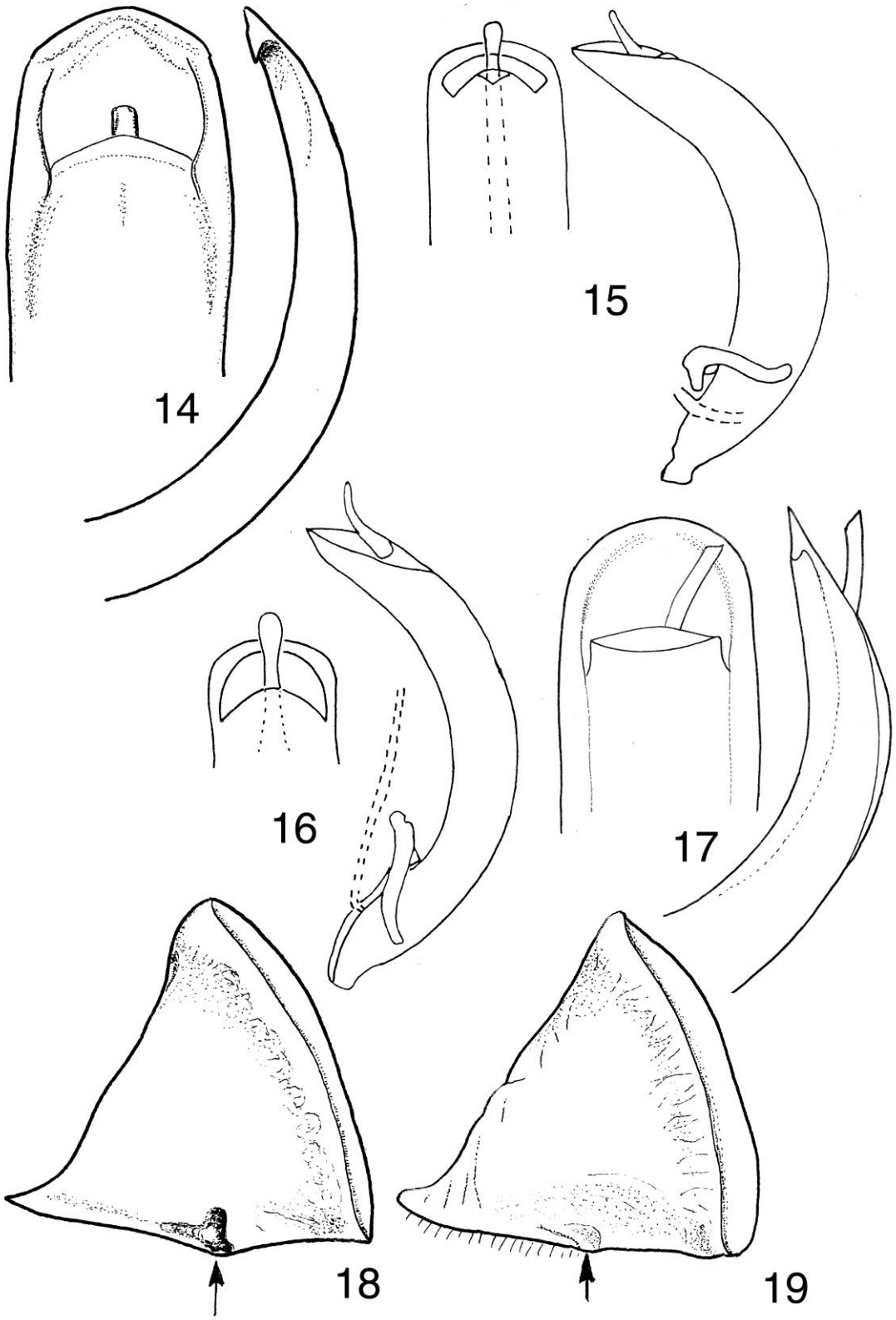
Ch. osellai Daccordi et Ruffo, 1979



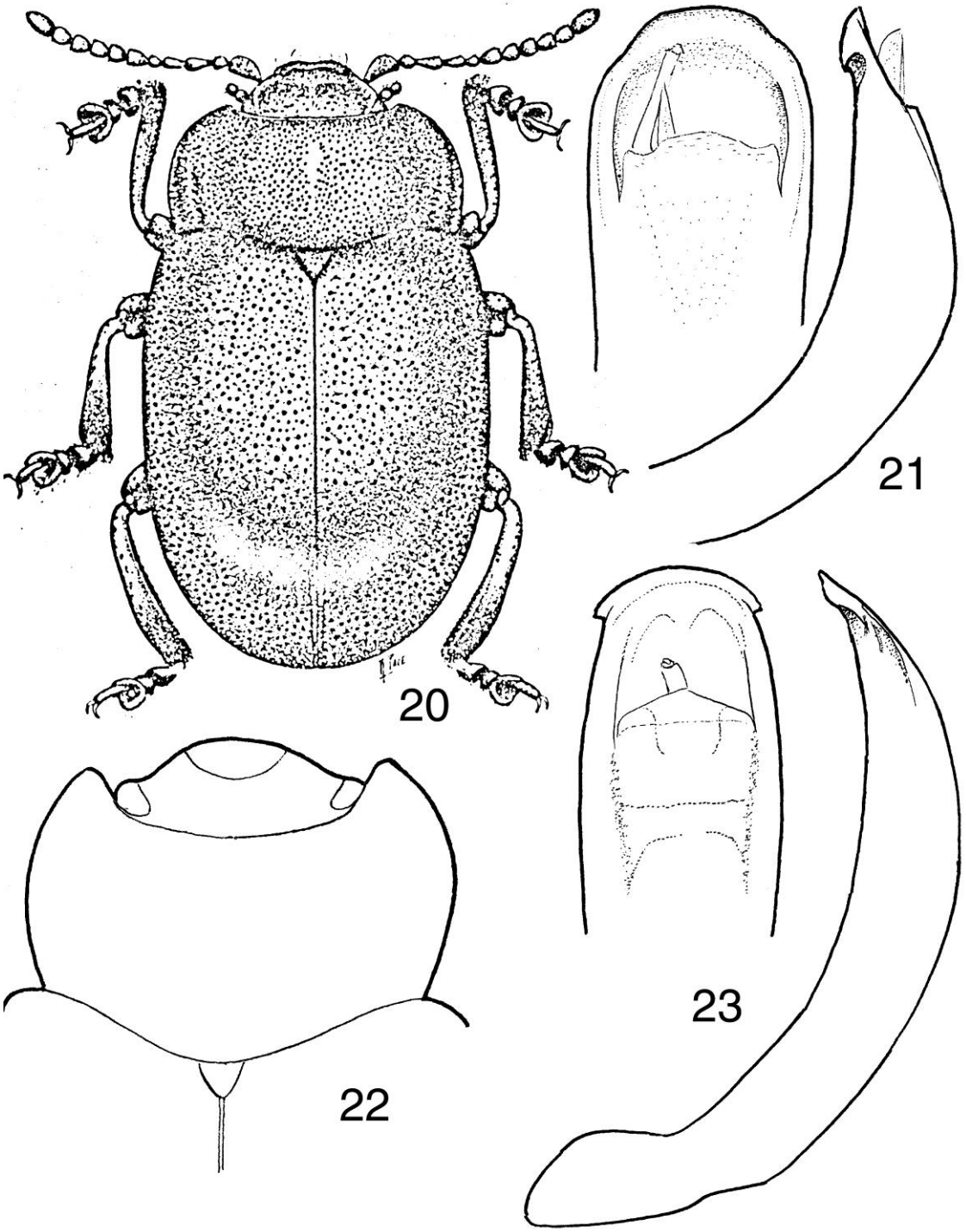
***Threnosoma* figures 1–7:** 1–3 – pronotum: 1 – *Chrysolina tortipennis* (Algeria), 2 – *Ch. afra afra* (Algeria), 3 – *Ch. vermiculosa* (Algeria); 4 – *Ch. afra afra* (syntype *Ch. tangeriana*, Morocco), dorsal view; 5 – *Ch. vermiculosa* (Algeria), relief of elytron; 6–7 – lateral view: 6 – *Ch. arambourgi* (Algeria), 7 – *Ch. solata* (Algeria). (After: Kocher, 1958: 4; others – orig.)



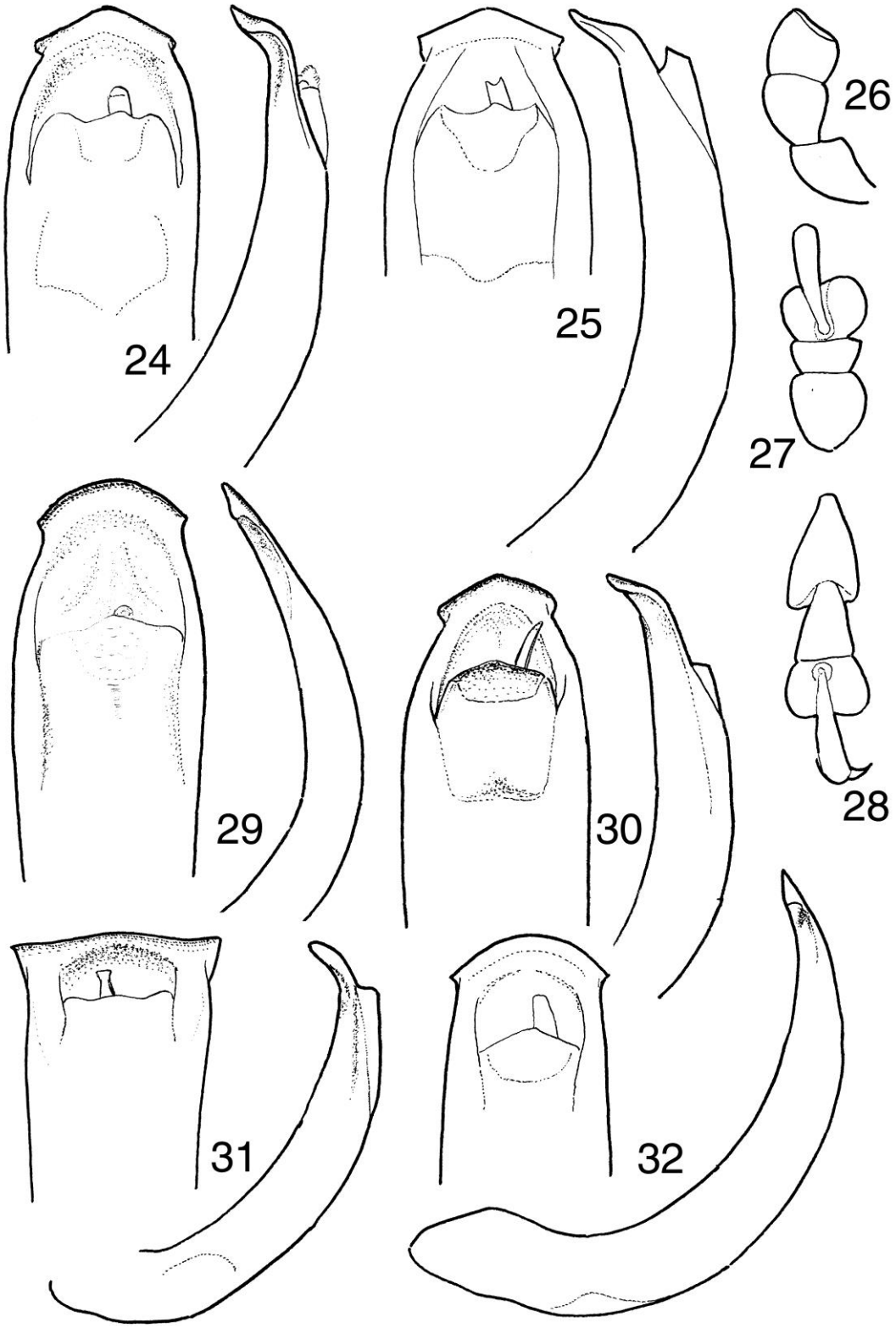
Threnosoma **figures 8–13:** 8–12 – aedeagus, dorsal and lateral view: 8 – *Chrysolina tortipennis* (Algeria), 9 – *Ch. afra afra* (Algeria), 10 – *Ch. vermiculosa* (Algeria), 11 – *Ch. arambourgi* (Algeria), 12 – *Ch. inflata vitiosa* (Tunisia); 13 – *Ch. arambourgi*, male (Algeria), antennomeres 8–11. (Orig.)



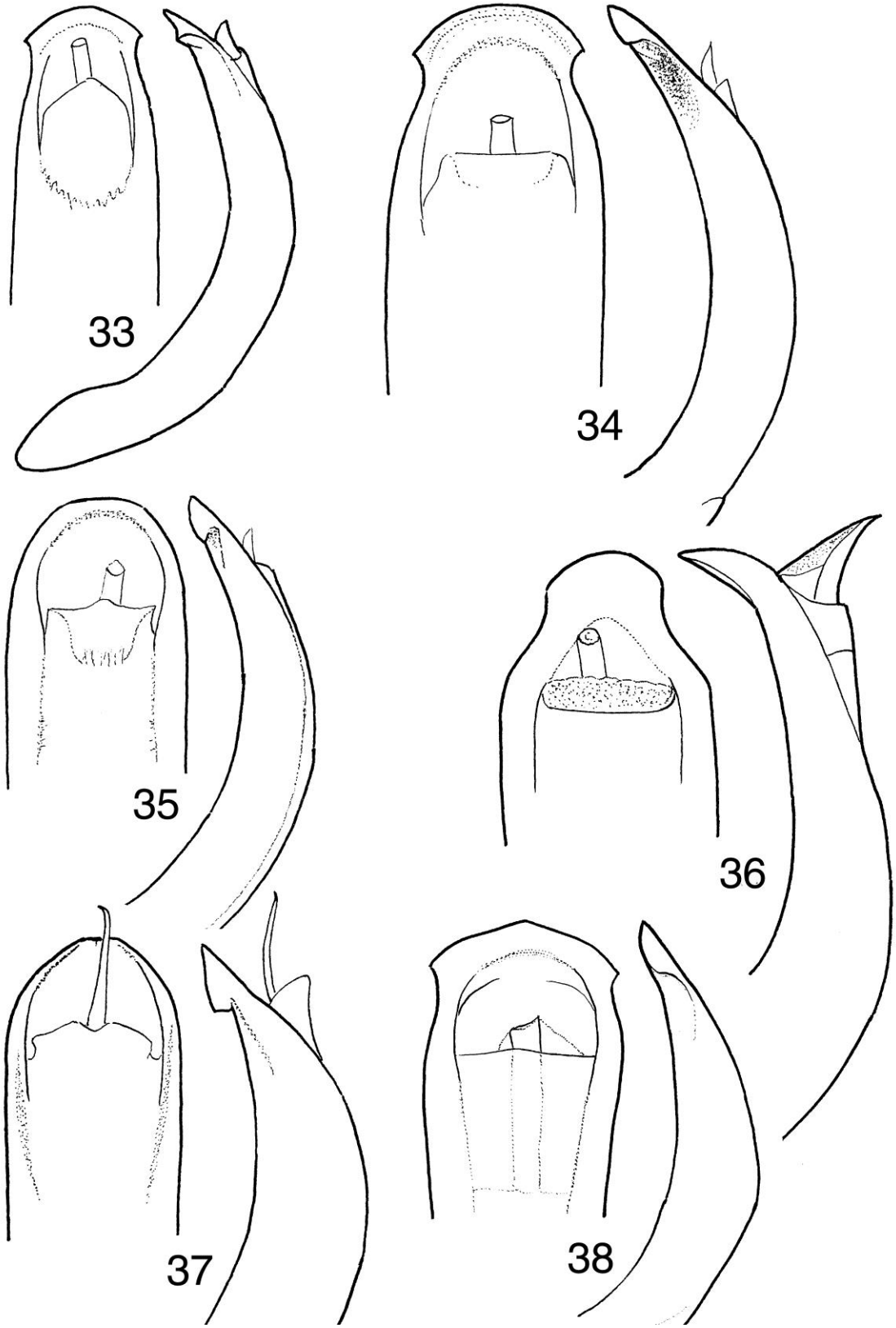
Threnosoma **figures 14–19:** 14–17 – aedeagus, dorsal and lateral view: 14 – *Chrysolina solata* (Algeria), 15 – *Ch. mairei pauliani* (Morocco), 16 – *Ch. mairei mairei* (Morocco), 17 – *Ch. serdanensis*, topotype (Morocco, Arbalou N'Cerdane); 18–19 – prothoracic hypomeron, basal fold marked with arrow: 18 – *Ch. fimbrialis fimbrialis* (Sardinia Isl.), 19 – *Ch. cribrosa sirentensis* (Italy). (After: Jolivet, 1966: 15–16; others – orig.)



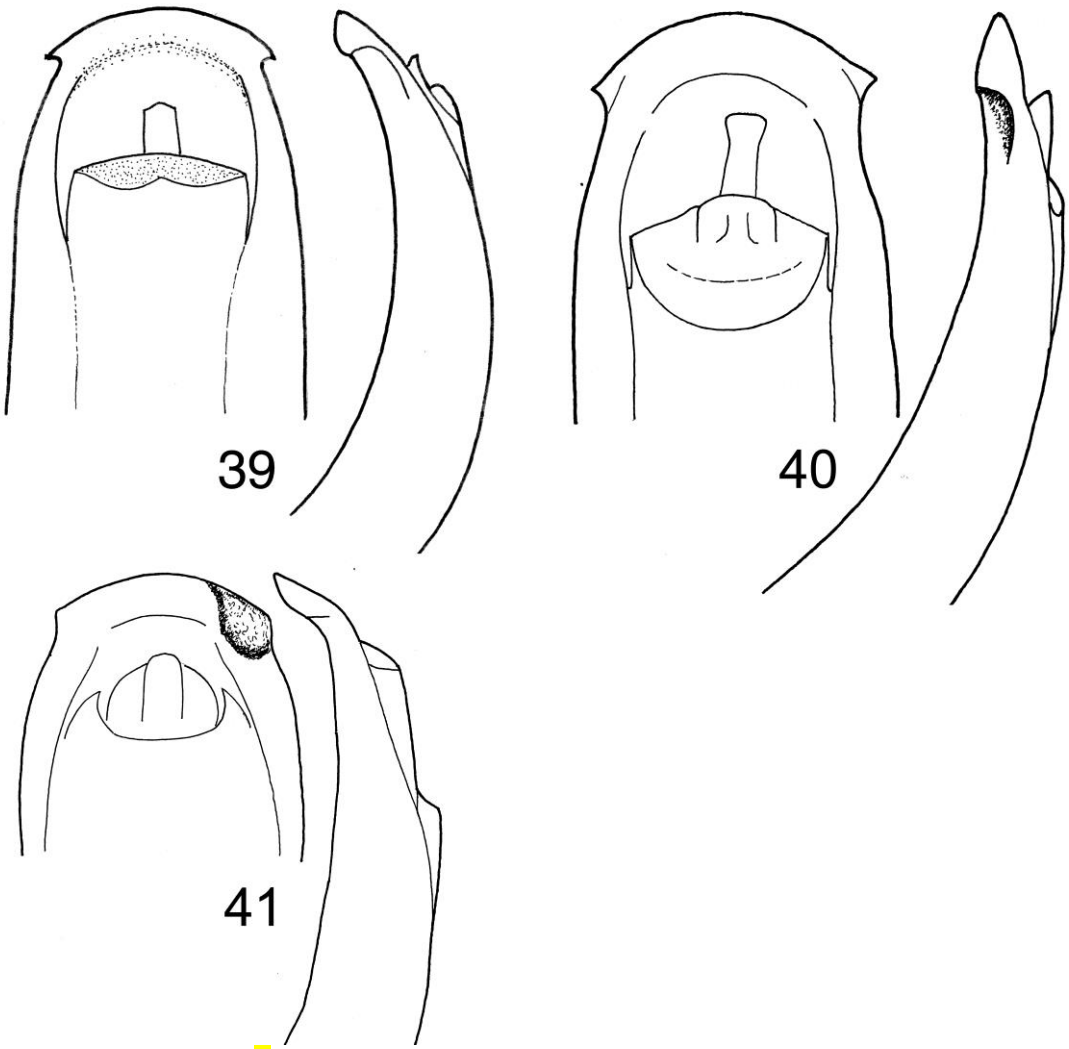
Threnosoma **figures 20–23:** 20–21 – *Chrysolina osellai*, male: 20 – holotype (Italy), dorsal view, 21 – male (Italy), aedeagus, dorsal and lateral view; 22–23 – *Ch. timarchoides*, male (Pyrenees): 22 – head and pronotum, 23 – aedeagus, dorsal and lateral view. (After: Daccordi, Ruffo, 1979: 20; others – orig.)



Threnosoma **figures 24–32:** 24–28 – *Chrysolina obscurella*: 24 – male, holotype (N Italy), aedeagus, dorsal and lateral view, 25–28 – male (S France): 25 – aedeagus, dorsal and lateral view, 26 – maxillary palpus, 27– fore-tarsus (claws broken off), 28 – hind-tarsus; 29–32 – aedeagus, dorsal and lateral view: 29 – *Ch. obenbergeri*, holotype (Romania), 30 – *Ch. joliveti*, holotype (E France), 31 – *Ch. helopioides* (S Spain: Andalusia), 32 – *Ch. cribrosa sirentensis* (Italy). (Orig.)



Threnosoma **figures 33–38:** aedeagus, dorsal and lateral view: 33 – *Chrysolina anceyi anceyi* (Egypt), 34 – *Ch. fimbrialis fimbrialis* (Sardinia), 35 – *Ch. inflata inflata* (Sicily), 36 – *Ch. tagana* (Portugal), 37 – *Ch. weisei* (Hungary), 38 – *Ch. avulsa*, holotype (Bosnia). (Orig.)



Threnosoma **figures 39-41:** aedeagus, dorsal and lateral view: 39 – *Chrysolina fimbrialis langobarda* (paratype, Italy), 40 – *Ch. cribrosa sirentensis* (syntype *Ch. maestitialis*, Italy), 41 – *Ch. obscurella* (holotype *Ch. obscurella remigrata*, Italy), apex slightly damaged. (Orig.)