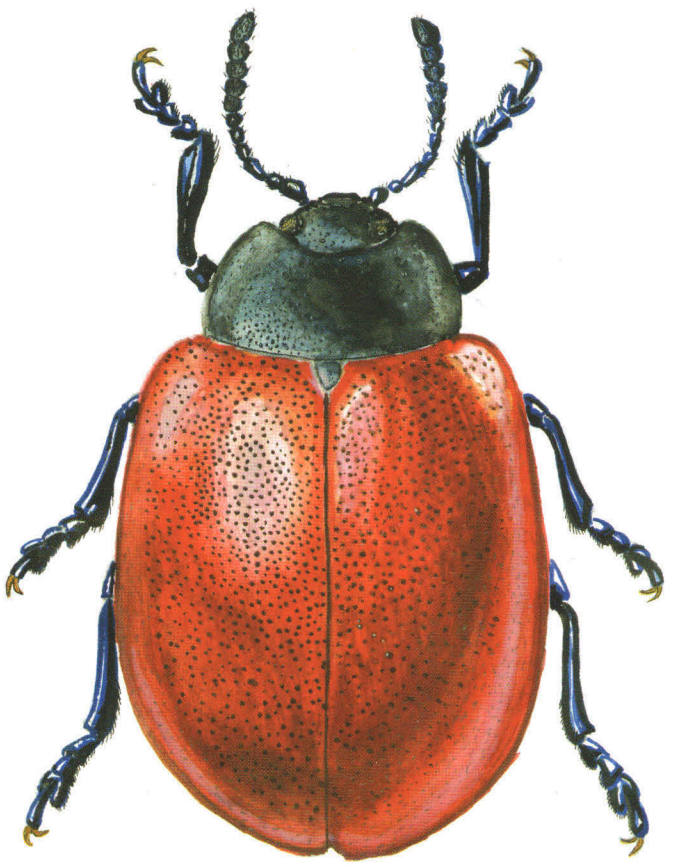
LEAF-BEETLES (COLEOPTERA: CHRYSOMELIDAE) OF THE EASTERN EUROPE

New key to subfamilies, genera, and species



BY

ANDRZEJ O. BIEŃKOWSKI

Moscow , 2004

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This book provides the most complete guide for the identification of the leaf–beetles (Insecta: Coleoptera: Chrysomelidae) of the European Russia, Ukraine, Moldova, Byelarus, Lithuania, Latvia, and Estonia. A key to 655 species is given together with distributional and host plant information. The guide is designed for entomologists (including amateurs), all biologists which deal with leaf–beetles, specialists in plant protection, and students.

Reviewer - Medvedev L.N., Doctor of Science (Moscow, Russia).

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Front cover: Red poplar leaf-beetle (*Chrysomela populi* Linnaeus, 1758).

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Leaf–beetles (Coleoptera: Chrysomelidae) of the Eastern Europe New key to subfamilies, genera, and species

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Foreword

Leaf–beetles (Chrysomelidae) is one of the most abundant families of Coleoptera. No less than 50000 species can be counted all over the world (Brovdij, 1985). Leaf–beetles inhabit various natural and man-made communities in all climatic zones. A number of species are known to be pests of field, vegetable, garden, and arboreal plants. Certain leaf–beetles are used for biological control of weeds. Early keys to Chrysomelidae of the European part of USSR (Jacobson, 1927; Ogloblin, 1928, 1933; Tarbinskiy, Plavil'shchikov, 1948) included principally widespread species and agricultural pests. A fundamentally new guide (Medvedev, Shapiro, 1965) was included in the voluminous publication "Key to insects of the European part of the USSR". This guide covers the majority of the species inhabiting the European part of the USSR (532 species, or 81%).

In succeeding years taxonomic monographs appeared on the Chrysomelidae of adjacent territories: Central Europe (Mohr, 1966, 1985; Kippenberg, Döberl, 1994), Poland (Warchałowski, 1985a, 1991a, 1993, 1994, 1995, 1998, 2000), Bulgaria (Gruev, Tomov, 1984, 1986), Central Asia and Kazakhstan (Lopatin, 1977; Lopatin, Kulenova, 1986), Siberia (Medvedev, Dubeshko, 1992), Azerbaijan (Mirzoeva, 1988) and several Republics of the European part of the USSR: Ukraine (Brovdij, 1973, 1977a, 1983), Byelarus, Estonia, Latvia, and Lithuania (Lopatin, 1986).

In the past four decades many systematic revisions on European fauna have been developed including Bieńkowski (1989a) (Chrysolina (Anopachys)), Döberl (2000) (Epitrix), Dubeshko (1983) (Phratora), Konstantinov (1991a) (Asiorestia), Konstantinov (1996b) (Crepidodera), Konstantinov (1998) (Aphthona), Leonardi (1971) (Psylliodes), Leonardi, Doguet (1990) (Longitarsus), Lohse (1989) (Galerucella), Lopatin (1967) (Entomoscelis), Lopatin, Dovgailo, 2002 (Cryptocephalus), Matis (1973) (Cassida), Medvedev (1976) (Crosita), Medvedev (1990) (Clytrinae), Mohr (1981) (Dibolia), Siede (1998) (Altica), Warchałowski (1985b) (Labidostomis), Warchałowski (1991b) (Coptocephala), Warchałowski (1996) (Longitarsus), Warchałowski (1999) (Cryptocephalus (Burlinius)).

Faunistic reports cover various regions including European Russia (Konstantinov, 1988, 1990, 1991b, 1996a), Baltic countries and Byelarus (Barševskis, 2001), Estonia (Miländer, 1971; Hamberman, 1971), Latvia (Putele, 1971a,b, 1981; Stiprais, 1977), Byelarus (Alexandrovitch, *et al.*, 1996; Solodovnikov, Suschko, 2001), Ukraine (Brovdij, 1976a,b, 1977b, 1980; Ogul', 1970; Mirshavko, Sheshyrak, 1992; Gonchar, 1990), Crimea (Mal'tsev, Mosiakin, 1980; Apostolov, Mosiakin, 1986), Moldova (Calestru, 2003), several regions of European Russia: Voronezh reg. (Skuf'in, 1978), Komi Republic (Sedykh, 1974; Medvedev A., *et al.*, 2001), Vyatka reg. (Shernin, 1974), the Volga river basin (Pavlov, 1977, 1980, 1988; Veselova, Medvedev, 1986; Roschinenko, 1972; Egorov, Grigor'eva, 1996), Kalmykia (Fomicheva, 1982; Fomichev, 1984; Korostov, 1990), and the Urals (Dulkin, *et al.*, 1970; Shutak, 1975; Lagunov, 1992; Lagunov, Novozhenov, 1996; Mikhailov, 1997, 1999; Gus'kova, 2000; Chaschina, 2002).

In 1960s–2000s new taxa were described, nomenclature was altered in part. The key by Medvedev, Shapiro (1965) is not always available for foreign workers because it became rare and was published in Russian. So I decided to prepare a new guide to the leaf-beetles of Eastern Europe.

Lopatin (1979) reported 589 species of leaf-beetles from European part of USSR. The present guide includes 655 species. Specimens of all species except *Cryptocephalus krutovskyi*, *C. orotshena*, *Pachybrachis pallidulus*, *Longitarsus salarius*, and *Dibolia russica* were examined during the preparation of the keys (** follows the specific name when the specimens were available from Eastern Europe, * — from other regions). Many new diagnostic characters were suggested. Original keys for several genera are proposed. The most up-to-date nomenclature (Seeno, Wilcox, 1982; Warchałowski, 1985a, 1991a, 1993, 1994, 1995, 1998; Kippenberg, Döberl, 1994; Biondi, Daccordi, 1998; Bieńkowski, 2001) is used. The commonly occuring invalid names are added in brackets. Subspecific names are mentioned only when some other subspecies besides (or except) the nominotypical one occurs in Eastern Europe.

The present guide covers the entire territories of Moldova, Ukraine (including Crimea), Byelarus, Lithuania, Latvia, Estonia, and European Russia. Distribution of the species within Eastern Europe is based on countries (Map 1) and/or natural zones (Map 2), general area (for widespread species) or distribution outside of Eastern Europe follows the former.

Materials from the following museums and collections were studied: Deutsches Entomologisches Institut (DEI, Eberswalde, Germany), Biological Faculty of Moscow State University (MSU, Moscow, Russia), Ilmensky Zapovednik (IZ, Chelyabinsk reg., Russia), Karelian State University (KSU, Petrozavodsk, Russia), Museum für Tierkunde Dresden (MTD, Dresden, Germany), Udmurt State University (USU, Izhevsk, Russia), Ukrainian Entomological Society (UES, Kharkov, Ukraine), Zapovednik Galichia Gora (ZGG, Lipetsk reg., Russia), Zoological Department, Moscow Pedagogical State University (MPSU, Moscow, Russia), Zoological Institute of Russian Academy of Sciences (ZIN, St.-Petersburg, Russsia), Zoological Museum of Byelarus State University (BSU, Minsk, Byelarus), Zoological Museum of Moscow State University (ZMMU, Moscow, Russia), Zoological Museum of University of Helsinki (ZMUH, Helsinki, Finland), collection by A.Yu. Isajev (Ulyanovsk, Russia), collection by I.K. Lopatin (Minsk, Byelarus), collection by L.N. Medvedev (Moscow, Russia), collection by P.V. Romantsov (St.-Petersburg, Russsia), collection by A. Warchałowski (Wrocław, Poland), author's collection (Zelenograd, Moscow, Russia).

Many species of leaf-beetles are oligophagous or monophagous. Therefore, information on host plants is of major importance for the verification of the determination of species. However, leaf-beetles because of their mobility can be found on unusual plants. Only nutritional observations of adults and larvae in nature and laboratory provide information on host plants with certainty. Families and genera of host plants are cited mostly after Medvedev, Roginskaya (1988). In addition, original data are included. Botanic nomenclature is used according to Gubanov, *et al.* (1991).

In 1999, the author published "Guide to the identification of leaf-beetles (Coleoptera Chrysomelidae) of the Eastern Europe", in Russian. The present book is the first key on leaf-beetles of Eastern Europe in English.

Compared to my previous key (Bieńkowski, 1999), I have added 30 species occuring in the region under consideration. The present key is supplied with 744 figures (696 - original) including 91 original total figures (one species from each genus, number of each total figure corresponds to the number of the respective genus in the key).

After the publication of my "Guide..." (1999), I examined new materials from Murmansk reg., Karelia, Ukraine (including Carpathians and Crimea), Moldova, Astrakhan reg., Volgograd reg., Lipetsk reg., Voronezh reg., S. Urals, Saratov reg., Moscow reg., Udmurt Republic, Ulyanovsk reg., Leningrad reg., and Komi Republic. This allowed me to make improvements on the distribution and diagnostic characters of many species. I will take into consideration any comments on the new book and investigate new materials with interest.

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Terms and abbreviations

Abdominal sternites — Fig. 1: 2J
Aedeagus (it is really the median lobe of aedeagus) — Fig. 2: 5 –7
Alae of aedeagus — Fig. 19: 6A
Antebasal impression of pronotum — Fig. 30: 10A
Antenna — Fig. 1: 2B
Antennal callus — Fig. 2: 2F
Antennal impression — Fig. 28: 9C
Antennal insertion — Fig. 2: 1J, 2: 2C, 28: 9E
Antennomere — segment of antenna
Anterior border of eye — Fig. 2: 1D
Anterior border of frons — Fig. 2: 1I
Anterior border of labrum — Fig. 2: 1H
Anterior border of pronotum — Fig. 1: 1: O
Anterior border of prothorax — Fig. 1: 2C
Anterior corner of pronotum — Fig. 1: 1B
Anterior coxal cavities closed behind — Fig. 1: 7
Anterior coxal cavities open behind — Fig. 1: 6
Anterior setiferous pore of pronotum — Fig. 3: 12B
Anterolateral callus of pronotum — Fig. 3: 12A
Apex of aedeagus — Fig. 2: 6A
Apex of elytron — Fig. 1: 1I
Apex of femur — Fig. 1: 5C
Apex of tibia — Fig. 1: 5I
Apical opening of aedeagus — Fig. 2: 6B, 7B
Apical spur of tibia — Fig. 29: 3A
Appendiculate claw — Fig. 25: 3
Basal border of elytron (pronotum) — border attached to the base of pronotum (elytron) — Fig. 1: 1L
Basal furrow of pronotum — Fig. 30: 10B
Basal opening of aedeagus — Fig. 2: 5C, 6C
Base of aedeagus — Fig. 2: 6D
Base of antenna — Fig. 1: 2A
Base of femur — Fig. 1: 5A
Base of pronotum — Fig. 1: 1N
Base of tibia — Fig. 1: 5D
Bifid claw — Fig. 25: 4
C. = Central
Claw — Fig. 1: 2H
Claw tarsomere — fourth visible tarsomere; it is really the 5th tarsomere
Clypeus — anterior part of frons, clypeus is separated from the remainder part of frons by suture in few chrysomelid species
Confused punctation — punctures not arranged in rows
Coxa — Fig. 1: 2G
Coxal cavity — place of attachment of the coxa — Fig. 1: 6, 7
Declivity of elytron — Fig. 2: 3A
Disk — mid area of elytron or pronotum
Distr. = District
Dorsal surface of aedeagus — Fig. 2: 7

E. = Eastern
Elytral base — Fig. 1: 1E
Elytron — Fig. 1: 1H
Envir. = Environs of...
Epipleura of elytron — Fig. 1: 2P
ER = European Russia — Map 1
Exterior border of epipleura — Fig. 1: 2N
Exterior side of femur — Fig. 1: 5K
Exterior side of tibia — Fig. 1: 5E
Femur — Fig. 1: 2E
Filiform antenna — Fig. 1: 2B
Flagellum — Fig. 6: 10A, 7: 13A, 14, 15
Frons — Fig. 2: 1F
Frontal pore — Fig. 28: 9F
Frontal ridge — Fig. 2: 2D, 28: 9D
Frontal suture — Fig. 49: 5A
Gena — Fig. 2: 2E
Head — Fig. 1: 1A
Humeral callus — Fig. 1: 3A
Humeral marking — colour spot at humeral callus
Humerus of elytron — Fig. 1: 1M
Hypomera of prothorax — Fig. 1: 2T
Intercoxal prosternal process — Fig. 1: 2D
Interior border of epipleura — Fig. 1: 2L
Interior border of eye — Fig. 2: 1C
Interior side of tibia — Fig. 1: 5N
Interval between elytral puncture rows — Fig. 1: 3D
Isl. = Island
Knee — part of tibia and femur close to articulation between them
Labrum — Fig. 2: 1E
Lateral area of aedeagus — Fig. 31: 3A
Lateral border of pronotum — Fig. 1: 1C
Lateral callus of elytron — Fig. 1: 4A
Lateral callus of pronotum — Fig. 20: 12B
Lateral furrow of pronotum — Fig. 18: 10, 11
Lateral impression of pronotum — Fig. 20: 12A
Lateral side of elytron — Fig. 1: 1G
Lateral slope of elytron — Fig. 2: 4A
Lower border of femur — Fig. 1: 5L
Lower side of tibia — Fig. 1: 5J
Lower side of tibial apex — Fig. 29: 3B
Mandible — Fig. 1: 2V
Margin of pronotum (elytron) — narrow ridge at anterior, lateral, or basal border of pronotum, or at basal border of elytron
Maxillary palpomere — segment of maxillary palpus
Maxillary palpus — Fig. 1: 2U
Mesepimeron — Fig. 1: 2: O
Mesepisternum — Fig. 1: 2R
Mesosternum — Fig. 1: 2X
Metasternum — Fig. 1: 2K

Metatarsomere — segment of hind tarsus
Metepisternum — Fig. 1: 2M
Mid area of aedeagus — Fig. 31: 3B
Mt. (-s.) = Mountain (-s)
N. = Northern
Orbital line — Fig. 2: 2B
Outer apical corner of elytron — Fig. 37: 10A
Penins. = Peninsula
Posterior border of eye — Fig. 2: 1A
Posterior corner of pronotum — Fig. 1: 1D
Posterior margin of elytron — Fig. 1: 1J
Posterior margin of pronotum — Fig. 1: 1L
Pronotum — Fig. 2: 1B
Prosternum — Fig. 1: 2S
Protarsomere — segment of fore tarsus
Puncture row (or stria) of elytron — Fig. 1: 3E
Pygidium — Fig. 2: 3B
Rasp-shaped punctures — relief of tibial surface looks like a rasp — Fig. 26: 1
Reg. = Region
Res. = Reservation
S. = Southern
Scutellum — Fig. 1: 1F
Serrate antenna — Fig. 7: 11
Shagreened — covered by microsculpturation in form of cells
Simple claw — Fig. 25: 5
Sole of tarsus — Fig. 1: 5H
Spermatheca — Fig. 2: 8A
Supracallinal sulcus — Fig. 2: 2A; 28: 9A
Sutural corner of elytron — Fig. 1: 3G; 2: 4B
Sutural interval of elytron — Fig. 1: 3C
Sutural marking of elytron — Fig. 6: 18A
Sutural puncture row of elytron — Fig. 1: 3B
Sutural stria of elytron — Fig. 1: 3F
Sutural stripe of elytron — colour longitudinal stripe near suture
Suture of elytra — Fig. 1: 1K
Tarsomere — segment of tarsus
Tarsus — Fig. 1: 2I
Temple — Fig. 7: 8A
Tibia — Fig. 1: 2F
Trochanter — Fig. 1: 5M
Upper border of femur — Fig. 1: 5B
Upper external border of mandible — Fig. 8: 1A
Upper external border of tibia — Fig. 1: 5F
Upper side of tibia — Fig. 1: 5G
Vaginal palpi of female — Fig. 23: 6A; 2: 8B
Vaginal sternite of female — Fig. 23: 6B; 2: 8B
Ventral ovipositor valve — Fig. 3: 17, 18
Ventral surface of aedeagus — Fig. 2: 5
Vertex — Fig. 2: 1G; 2: 2G
W. = Western

Key to subfamilies

1(26) Pronotum and elytra without spines.
2(9) Head with temples behind eyes and with constriction behind temples laterally (Fig. 7: 8). Pronotum immarginate laterally.
3(8) Pronotum laterally without denticles (Fig. 3: 12 –14; 4: 3, 4; 5: 7, 8; 6: 5 – 9, 12, 13).
4(7) Elytra with punctures arranged in rows. Claws simple or with small denticle at base.
5(6) First antennomere elongate (Fig. 5: 3, 4). Scutellum pubescent. Eyes with interior border not emarginate. . . . . **Donaciinae**
6(5) First antennomere short (Fig. 6: 1, 2). Scutellum glabrous. Eyes with interior border emarginate. . . . . **Criocerinae**
7(4) Elytra with punctation confused. Claws appendiculate. . **Zeugophorinae**
8(3) Pronotum laterally with small denticles (Fig. 7: 8). Elytra with dense punctures partly arranged in rows. . . . . **Synetinae**
9(2) Head without constriction behind temples. Pronotum mostly margined laterally (immarginate in *Bromius*, *Malegia*, and *Orsodacne* only).
10(13) Fourth abdominal sternite strongly constricted medially (Fig. 7: 9), if slightly constricted, then antennae serrate (Fig. 7: 11). In female, 5th abdominal sternite with rounded depression (Fig. 7: 9).
11(12) Antennae short, serrate from 3rd or 4th antennomere to apex. . . . . **Clytrinae**
12(11) Antennae long, filiform. . . . . **Cryptocephalinae**
13(10) Fourth abdominal sternite not constricted or only slightly constricted medially (Fig. 7: 10). Antennae always not serrate. In female, 5th abdominal sternite without rounded depression.
14(21) Antennal insertions widely separated and displaced above bases of mandibles (Fig. 2: 1J).
15(18) Third tarsomere deeply (almost to its base) emarginate. Fore-coxae rounded.
16(17) Elytral epipleura with 3 depressions; hind depression very deep. Seventh and 9th–11th antennomeres enlarged, 8th one small (Fig. 7: 12). . . . . **Lamprosomatinae**
17(16) Elytral epipleura without depressions. Apical antennomeres more or less gradually enlarged. . . . . **Eumolpinae**
18(15) Third tarsomere with shallow apical emargination, reaching at most middle of its length. Fore-coxae transverse.
19(20) Head elongate anterior to bases of antennae. Pronotum immarginate laterally, constricted near base, considerably narrower than elytral base. . . . . **Orsodacninae**
20(19) Head not elongate anterior to antennal bases. Pronotum margined laterally, not constricted at base, not narrower or only slightly narrower than elytral base. . . . . **Chrysomelinae**
21(14) Antennal insertions displaced between eyes or at level of anterior borders of eyes, close to each other (Fig. 2: 2C).
22(25) Head at least partly visible from above, with mouthparts directed forwards and downwards.

23(24) Hind-femora not incrassate (in nature, beetles cannot jump). Pronotum with neither basal furrows nor antebasal impression. Antennal calli more or less elongate anteriorly and extending between antennal insertions. . . . . **Galerucinae**

24(23) Hind-femora incrassate (in nature, beetles can jump). If hind-femora slightly incrassate, then pronotum with antebasal impression or with basal furrows. Antennal calli with anterior corners short and obtuse. . **Halticinae**

25(22) Head covered by pronotum, invisible from above, with mouthparts directed backwards. . . . . **Cassidinae**

26(1) Pronotum laterally and elytra throughout covered with pointed spines. . . . . **Hispinae**

Donaciinae

Beetles inhabit waterbodies and swamps, feed on leaves or pollen of water plants. Larvae develop under water, feed on plant sap, pupate within cocoons attached to roots, rhizomes, or leaves under water. Life cycle is two- or three-years in various species.

Key to genera

1(2) Claw tarsomere longer than others combined; elytra with outer apical corner produced into spine (Fig. 3: 1, 4, 5). . . . . 1. *Macroplea* Sam.

2(1) Claw tarsomere not longer than others combined; elytra with outer apical corner rectangular, obtuse, or rounded, but not spine-like (Fig. 3: 8-10; 4: 3, 4; 5: 1, 2).

3(4) Suture of elytra straight to apex (Fig. 3: 9). . . . . 2. *Donacia* F.

4(3) Suture of elytra sinuate near apex (Fig. 3: 10). . . . 3. *Plateumaris* Thoms.

1. Macroplea Sam., 1819 (Haemonia Dej., 1821)

Beetles occur under water, crawl on plants and bottom.

1(2) Elytra with outer apical corner produced into long spine with narrow base (Fig. 3: 1). Second metatarsomere 2.8 -3.4 X as long as 3rd (measure along dorsal side!) (Fig. 3: 2). Yellow, with underside, head, antennae, 2 markings on pronotum, scutellum, sutural interval and puncture striae of elytra, and tarsomeres apically black. Aedeagus as in Fig. 3: 3. Total fig. 1. Length 5.2–8.5 mm. Various lentic and lotic fresh waterbodies. From taiga zone to deciduous forest zone. Europe, Siberia. *Ranunculus divaricatus, Carex, Potamogeton, Myriophyllum*. . . . . *M. appendiculata* (Pz., 1794) **

2(1) Elytra with outer apical corner produced into short spine with broad base (Fig. 3: 4, 5). Second metatarsomere 2.5 X as long as 3rd (measure along dorsal side!) (Fig. 3: 6). Coloration as in previous species, or black stripes on 5th and 6th elytral striae joined together, or elytra entirely black. Aedeagus as in Fig. 3: 7. Length 4.5–6.0 mm. Baltic Sea, White Sea, and Caspian Sea shores; Byelarus; Ukraine: Crimea; ER: taiga zone, semidesert zone. Transpalaearctic species. Lakes, estuaries. *Potamogeton, Ruppia, Zostera, Zannichellia*. . . . . *M. mutica* (F., 1792) **

2. Donacia F., 1775

Beetles occur mostly above water, lay eggs on submerged parts of plants. Species determination is often based on the elytral relief (Fig. 3: 8).

1(42) Pronotum and elytra glabrous.

2(23) Antennae and legs partly or entirely rufous.

3(12) Hind-femora strongly clavate (Fig. 4: 1), especially in males, with one or several subapical teeth or tubercles on lower border.

4(5) Pronotum impunctate, finely wrinkled. Elytral intervals without distinct transverse wrinkles. Subgenus *Donacia* s.str. Hind-femora with 1 (female) or 2 (male) subapical teeth. Dorsum violet, rarely bronze-green or coppery, punctures in elytral rows with golden lustre. Length 8.1–10.8 mm. From taiga zone to steppe zone. Europe, Kazakhstan, Siberia. *Nuphar, Nymphaea.* ..... *D. crassipes* F., 1775 **

5(4) Pronotum with punctures distinct and interspaces wrinkled or smooth. Subgenus *Donaciomima* L.Medv., 1973.

6(9) Elytra with rows of fine punctures narrower than intervals; at mid-point of elytra punctures as large as those on pronotal disk. Intervals between elytral rows finely wrinkled (Fig. 5: 5). In male, hind-femora with 1 large and 1 small subapical tooth.

7(8) Elytra with shallow 1st and 2nd sutural impressions. Dorsum golden-green, elytra usually with coppery reflection near suture and laterally. Length 7.0-9.0 mm. Moldova (specimens from Kishinev). Mediterranean reg..... ..... *D. polita* Kunze, 1818 **

8(7) Elytra without impressions (only trace of 1st sutural impression visible). Dorsum unicolorous golden-green, or with coppery reflection along suture, or entirely coppery. Length 7.0–8.6 mm. ER: E. steppe zone, semidesert zone, desert zone, S. Urals (Chelyabinsk reg.: Arkaim Res. (Mikhailov, 1999)). W. Kazakhstan..... *D. aequidorsis* Jcbs., 1894 **

9(6) Elytra with rows of coarse punctures usually not narrower than intervals; if slightly narrower, then elytral punctures considerably larger than those on pronotal disk. Intervals between puncture rows coarsely wrinkled (Fig. 5: 6). In male, hind-femora with 2 equal subapical teeth.

10(11) Sutural corner of elytra rounded. Hind-femora with 2 almost opposite subapical teeth (male) or with 1 small tubercle (female). In male, 1st abdominal sternite devoid of tubercles. Dark violaceous, elytra with golden-green lateral stripe and golden punctures. Length 6.2–8.9 mm. From taiga zone to deciduous forest zone. Europe, Caucasus, Kazakhstan, Siberia. *Typha, Potamogeton natans* (beetles sometimes creep into the water on lower side of floating leaves)..... *D. versicolorea* (Brahm, 1790) **

11(10) Sutural corner of elytra distinct. Hind-femora with 2 non-opposite subapical teeth (male, Fig. 4: 1) or with 1 tooth (female). In male, 1st abdominal sternite with 2 tubercles medially. Green with golden reflection, coppery (sometimes with violet tint), or, rarely, violet; elytra laterally golden-green; colour of punctures in elytral rows usually does not differ from background (differs slightly only in rare dark violet specimens). Length 7.0–8.8 mm. From taiga zone to steppe zone. Europe, E. Kazakhstan, Siberia. *Alisma, Sagittaria, Typha.* ..... *D. dentata* Hoppe, 1795 **

12(3) Hind-femora slightly clavate (Fig. 4: 2), devoid of subapical teeth or tubercles on lower border. Subgenus *Donaciomima* L.Medv., 1973.

13(16) Elytra with distinct 1st and shallow 2nd sutural impressions. Femora rufous in basal 1/4–1/3, dark metallic in the remainder, with sharp border between rufous and metallic parts (Fig. 4: 2).

14(15) Apex of elytra emarginate, with outer apical and sutural corners distinct (Fig. 5: 1). Green or bronze, elytra usually bearing longitudinal coppery, golden, purple, or blue stripe bordered with purple along suture. Length 6.2–9.0 mm. From taiga zone to semidesert zone. Transpalaearctic species. *Typha, Glyceria, Sparganium* (beetles sometimes creep into the water on lower side of floating leaves)..... *D. vulgaris* Zschach, 1788 **

15(14) Apex of elytra without emargination, with outer apical and sutural corners rounded (Fig. 5: 2). Unicolorous bronze, coppery, or greenish, rarely purple or blue. Length 5.4–9.4 mm. From taiga zone to desert zone. Transpalaearctic species. *Sparganium*..... *D. simplex* F., 1775 **

16(13) Elytra without impressions or with only indistinct 1st sutural impression. Femora entirely or partly rufous, in the latter case, not so coloured, as in couplet 13.

17(20) Femora entirely rufous or with more or less distinct darkening at incrassate part (rufous and dark parts indistinctly separated).

18(19) Body elongate, with parallel lateral sides of elytra (Fig. 4: 4). Third antennomere longer than 2nd. Pronotum with transverse wrinkles and uneven fine punctation. Anterolateral callus of pronotum protruding, delimited by impression above (Fig. 4: 4; 5: 8). Dorsum green or bronze. Length 8.3–10.5 mm. From taiga zone to steppe zone. Transpalaearctic species. *Phragmites, Eleocharis*..... *D. clavipes* F., 1798 **

19(18) Body robust, elytra laterally rounded (Fig. 4: 3). Third antennomere as long as 2nd. Pronotum with even coarse dense punctation, devoid of wrinkles. Anterolateral callus of pronotum not protruding, not delimited by impression above (Fig. 4: 3; 5: 7). Dorsum golden-green, elytra with bronze or coppery stripes at 1st–4th intervals, or dorsum entirely coppery. Length 5.8–7.8 mm. From taiga zone to semidesert zone. Europe, Siberia. *Glyceria*. ..... *D. semicuprea* Pz., 1796 **

20(17) Femora rufous with dark metallic stripe at upper border of incrassate part.

21(22) Pronotum and elytra rufous without metallic reflection. Apices of elytra obliquely truncate. Mid line of pronotum deeply impressed only in basal half. Length 6.5–8.5 mm. Byelarus; Estonia and Latvia (Silfverberg, 1992); Lithuania (Barševskis, 2001); ER: taiga zone, deciduous-coniferous forest zone (Moscow reg. (Melgunov, 1892)), S. Urals. N. Europe, Siberia (eastwards to Yakutia). *Scolochloa*..... *D. fennica* Pk., 1800 **

22(21) Dorsum dark violaceous with pronotum laterally and elytra golden or green, rarely pronotum and elytra brown (ab. *arundinis* Ahr.). Apices of elytra transversely or obliquely truncate or rounded. Mid line of pronotum impressed before and behind middle. Length 6.7–10.0 mm. Byelarus; Ukraine; ER: from taiga zone to deciduous forest zone. C. and E. Europe. Sporadic species. *Glyceria* (beetles sometimes creep into the water on lower side of floating leaves)..... *D. malinovskyi* Ahr., 1810 (*malinovskii* auct.) **

23(2) Legs entirely metallic-coloured. Subgenus *Donaciomima* L.Medv., 1973.

24(27) Hind-femora long, extending beyond apical margin of 4th abdominal sternite, bearing 1 large and usually 1–2 small subapical teeth on lower side.

25(26) Elytra shining; sutural interval as wide as punctures in 1st row. Third–5th antennomeres swollen at apex (Fig. 5: 3). Dorsum coppery, greenish, or dark violet, laterally usually golden-green. Length 6.0–8.5 mm. From taiga zone (specimens from N. Karelia: Loukhi Distr.) to deciduous forest zone. Europe, Siberia. *Sparganium, Myriophyllum*..... *D. sparganii* Ahr., 1810 **

26(25) Elytra sericeous shining; sutural interval broader than punctures in 1st row. Third–5th antennomeres gradually broadened towards apex (Fig. 5: 4). Head and pronotum coppery or blue, elytra bluish-green or golden-green with broad purple longitudinal stripe, rarely dorsum entirely blue. Length 6.7–8.8 mm. Total fig. 2. From taiga zone to steppe zone. Transpalaearctic species. *Glyceria, Ranunculus lingua, Carex, Eleocharis, Sparganium, Typha, Potamogeton, Juncus, Alisma*..... *D. aquatica* (L., 1758) **

27(24) Hind-femora short, not extending beyond apical margin of 4th abdominal sternite.

28(37) Claw metatarsomere shorter, less than half of its length extending beyond lobes of 3rd tarsomere.

29(32) Hind-femora with large subapical tooth (Fig. 5: 10).

30(31) Elytra depressed from above, each with 6–7 impressions (scutellar, 1st and 2nd or 1st–3rd sutural, 1st and 2nd lateral, and humeral ones). Dorsum sericeous shining, golden-green (apple-green), or golden, rarely blue or bronze-coppery. Underside covered with golden pubescence. Length 8.0–10.2 mm. From taiga zone to desert zone. Europe, Kazakhstan, Uzbekistan, Siberia. *Sparganium, Carex*.... *D. bicolora* Zschach, 1788 (*bicolor* auct.) **

31(30) Elytra convex above, each with distinct 1st and 2nd sutural impressions and sometimes with very shallow humeral and scutellar ones. Dorsum bronze or brassy, rarely reddish-coppery or blue. Underside covered with silvery pubescence. Length 6.6–8.3 mm. From taiga zone to steppe zone. Transpalaearctic species. *Eleocharis* (pollen), *Glyceria*..... ..... *D. thalassina* Germ., 1811 **

32(29) Hind-femora with weak denticle (Fig. 5: 9).

33(34) Sutural interval of elytra covered with longitudinal and oblique wrinkles, others with transverse wrinkles. Dorsum bronze or reddish-coppery. Length 6.7–8.4 mm. From taiga zone to desert zone. Europe, Kazakhstan, Siberia. *Scirpus lacustris* (pollen)..... *D. impressa* Pk., 1799 **

34(33) Sutural interval of elytra covered with transverse wrinkles as well as other intervals.

35(36) Pronotum with very dense punctures and shagreened interspaces. Dorsum coppery, dark coppery, or blackish. Length 7.2–8.5 mm. Estonia; Latvia; Lithuania (Silfverberg, 1992); Byelarus; Moldova (Calestru, 2003)—should be confirmed; ER: taiga zone, deciduous forest zone (specimen from Ulyanovsk reg.), S. Urals (Ilmensky Res. (Lagunov, Novozhenov, 1996)). Europe. *Scirpus lacustris*..... *D. brevicornis* Ahr., 1810 **

36(35) Pronotum with more sparse punctures and glabrous shining interspaces. Dorsum bronze, rarely blue, elytra with violaceous, purple, or golden-green lateral stripe, or dorsum entirely brightly coppery. Length 8.0–10.0 mm. From taiga zone to desert zone. Europe, Kazakhstan, Uzbekistan, Siberia. *Carex, Scolochloa, Sparganium*..... *D. marginata* Hoppe, 1795 **

37(28) Claw metatarsomere longer, half of its length extending beyond lobes of 3rd tarsomere. Hind-femora with distinct subapical tooth.

38(39) Elytra with 1st–5th puncture rows between humeral callus and scutellum completely confused, with additional punctures as large as those arranged in rows. Dorsum dull, dark bronze, rarely black with greenish tint. Length 8.1–10.7 mm. From taiga zone to deciduous forest zone. Transpalaearctic species. *Carex* (pollen). ..... *D. obscura* Gyll., 1813 **

39(38) Elytra with 1st–5th puncture rows between humeral callus and scutellum distinct. Dorsum shining.

40(41) Elytra with scutellar, humeral, 1st and 2nd sutural, and 1st lateral impressions strong (as in *D. bicolor*). Dorsum dark bronze. Length 7.0–9.0 mm. Byelarus; Estonia; Latvia; Lithuania (Barševskis, 2001); ER: taiga zone, S. Urals (specimens from Belaya river valley). Europe. *Carex, Scirpus*. .... *D. antiqua* Kunze, 1818 **

41(40) Elytra usually with 1st and 2nd sutural impressions only, rarely indistinct 1st lateral and humeral impressions also present. Impressions shallower than in *D. bicolora*. Dorsum brigth bronze, very rarely blue. Length 7.0–8.3 mm. Estonia; Latvia; Lithuania; Byelarus; ER: taiga zone (Karelia (Silfverberg, 1992), specimen from Leningrad reg.); deciduous-coniferous forest zone (specimens from Tver reg. and Moscow reg.), deciduous forest zone (specimens from Penza reg.). Europe. *Carex vesicaria* (pollen) .... *D. brevitarsis* Thoms., 1884 **

42(1) Pronotum and elytra entirely pubescent.

43(44) Third antennomere 2.0–3.6 X as long as 2nd. Fore-tibiae weakly broadened towards apex, devoid of apical projection at exterior side (Fig. 5: 12). Subgenus *Donaciella* Rtt., 1920. Pronotum and elytra (under pubescence) coppery, green, or blackish, with elytral epipleura usually rufous with metallic reflection. Dorsum covered with yellow pubescence. Length 6.1–9.4 mm. From taiga zone to desert zone. Europe, Caucasus, Kazakhstan, Uzbekistan, Siberia. *Butomus*. ..... *D. tomentosa* Ahr., 1810 **

44(43) Third antennomere 1.2–1.6 X as long as 2nd. Fore-tibiae broadened towards apex and bearing apical projection at exterior side (Fig. 5: 11). Subgenus *Donaciomima* L.Medv., 1973. Pronotum and elytra (under pubescence) coppery, with elytral epipleura metallic, as remaining surface of elytra. Dorsum covered with silvery pubescence. Length 7.3–10.5 mm. From taiga zone to desert zone. Europe, Caucasus, Kazakhstan, Uzbekistan, Siberia. *Typha, Carex*. ..... *D. cinerea* Hbst., 1784 **

3. Plateumaris Thoms., 1859

Beetles occur on above-water part of plants, lay eggs, probably, in plant tissues.

1(4) Hypomera of prothorax with strong transverse impression (Fig. 3: 11). Pronotum with fine rugosity and indistinct fine punctures. Dorsum bronze, green, blue, coppery-red, violet, golden, purple, or black, antennae and legs

entirely metallic, or bases of 2nd–11th antennomeres, bases of tarsomeres, and bases of tibiae rufous.[1]

2(3) Third antennomere 1.5 X as long as 2nd, 4th antennomere 2 X as long as 2nd, 4th–11th antennomeres 3-4 X as long as wide. Length 5.5–8.5 mm. Total fig. 3. From taiga zone to desert zone. Transpalaearctic species. *Carex, Iris, Scirpus, Sparganium*..... *P. sericea* (L., 1761) **

3(2) Third and 4th antennomeres slightly longer than 2nd, 4th–11th antennomeres 2-2.5 X as long as wide. Lenght 6.6–8.0 mm. From taiga zone to steppe zone. Europe. *Carex, Eleochares* (pollen), *Juncus, Eriophorum, Caltha, Trichophorum*..... *P. discolor* (Pz., 1795) **

4(1) Hypomera of prothorax with weak transverse impression or without it. Pronotum with coarse punctures not narrower than punctures on head.

5(6) Body elongate, 8.9–9.2 mm long. Pronotum with strong anterolateral calli delimited by impressions from above. Elytral intervals with strong sparse wrinkles and very minute dense punctures. Dorsum blackish-green or violet-black, with pronotum blue or violet. Antennae, legs, and abdominal sternites rufous. From taiga zone to steppe zone. Europe, Caucasus, Kazakhstan, Siberia. *Phragmites, Carex*..... *P. braccata* (Scop., 1772) **

6(5) Body length 5.7–8.0 mm. Pronotum with small or indistinct anterolateral calli. Elytral intervals covered with fine dense wrinkles.

7(8) Pronotum convex from above; its width between anterior setiferous pores less than between anterolateral calli (Fig. 3: 12). In male, pygidium rounded at apex. In female, ventral valve of ovipositor finely serrate at apical margin (Fig. 3: 17). Dorsum bronze, coppery, green, or blackish. Antennae, tibiae, and tarsi partly rufous. Length 6.0–8.0 mm. Lithuania; Ukraine; Byelarus; ER: Komi (Syktyvkar (Medvedev A., *et al.*, 2001)). Urals. Europe, Siberia, Far East. *Carex, Caltha*..... *P. consimilis* (Schrnk., 1781) **

8(7) Pronotum depressed from above; its width between anterior setiferous pores not less than between anterolateral calli (Fig. 3: 13, 14). In male, pygidium truncate or slightly emarginate at apex. In female, ventral valve of ovipositor not serrate at apical margin (Fig. 3: 18).

9(10) Exterior side of hind-femora glabrous between punctures. Aedeagus as in Fig. 3: 16. Green, bronze, coppery, or bluish. Length 5.7–6.7 mm. ER: taiga zone (specimens from St. Petersburg and Pechora river valley: Ust Tsilma; Karelia (Silfverberg, 1992)). N. Europe, Siberia, Far East, Mongolia. *Carex*. ..... *P. weisei* Duvivier, 1885 **

10(9) Exterior side of hind-femora shagreened between punctures. Aedeagus as in Fig. 3: 15. [2]

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[1] *P. sericea* and *P. discolor* are traditionally considered as two separate species (Medvedev, Shapiro, 1965; Mohr, 1985; Warchałowski, 1985a; Lopatin, 1986). Askevold (1991) examined specimens from Europe, the Caucasus, China, and Japan and found no genitalic differences between beetles of geographically divergent areas. Also, he found great individual diversity in pronotal rugosity. Therefore, he placed *P. discolor* as a junior synonym of *P. sericea*. However, the ratio of the lengths of antennomeres was studied only in a qualitative sense until now, despite the fact that this character is convenient for statistical treatment.

[2] *P. rustica* and *P. affinis* are usually considered as two separate species (Medvedev, Shapiro, 1965, Mohr, 1985; Warchałowski, 1985a; Lopatin, 1986). However, differences between them are indistinct. I could not see the difference in the male aedeagi as figured by Warchałowski (1985a). Askevold (1991) noted that such distinguishing characters of these species as coloration of legs, antennae, and underside of body, size of tooth on hind-femora are very variable. Therefore he synonymized *P. affinis* with *P. rustica*.

11(12) Pronotum laterally weakly convergent towards base (Fig. 3: 13). Pronotum along middle almost evenly densely punctate. Dorsum black with violet, blue, or green tint (male), or bronze (female). Length 7.2–7.9 mm. From taiga zone to steppe zone. Europe, N. America (Canada). *Carex, Scirpus, Caltha, Glyceria, Iris*..... *P. affinis* (Kunze, 1818) **

12(11) Pronotum laterally almost rectilinear and more convergent towards base (Fig. 3: 14). Pronotum along middle very densely punctate anteriorly and more sparsely punctate basally. Coloration as in previous species. Length 7.2–8.0 mm. From taiga zone to steppe zone. Europe, Siberia. *Carex, Phragmites, Glyceria, Butomus, Cladium*..... *P. rustica* (Kunze, 1818) **

Criocerinae

Adults and larvae occur on herbaceous plants. Adults can stridulate using the special organ at their abdomen. Larvae feed openly on leaves or internally within berries, pupate in cocoons in the soil.

Key to genera

1(4) Claws fused together in basal half (Fig. 6: 4).

2(3) Supracallinal sulci forming obtuse angle to each other (Fig. 6: 1). Pronotum constricted more basally (Fig. 6: 6, 7)..... 6. *Oulema* Gozis

3(2) Supracallinal sulci forming angle of slightly less than 90 degrees to each other (Fig. 6: 2). Pronotum constricted at middle of its length (Fig. 6: 5). ..... 7. *Lema* F.

4(1) Claws separate, not fused at bases (Fig. 6: 3).

5(6) Pronotum not constricted laterally at middle of its length, more or less distinctly constricted before base (Fig. 6: 8)..... 5. *Crioceris* Müll.

6(5) Pronotum strongly constricted laterally at middle or just behind middle of its length (Fig. 6: 9)..... 4. *Lilioceris* Rtt.

4. Lilioceris Rtt., 1912

Adults and larvae occur on leaves of host plants. Larvae cover themselves with their excreta.

1(2) Head, underside, antennae, and legs black, pronotum and elytra orange. Length 6.0–8.0 mm. Estonia; Latvia; Lithuania; Byelarus; Ukraine; ER: from deciduous-coniferous forest zone to steppe zone, S. Urals. Europe, Siberia, N. America. This species is rarer than *L. merdigera*. *Lilium, Convallaria, Fritillaria, Smilax, Allium*..... *L. lilii* (Scop., 1763) **

2(1) Legs orange with black knees and tarsi; head entirely orange or darkened in part; pronotum and elytra orange; antennae black. Pro-, meso-, and metasternum black, First–2nd abdominal sternites black, 3rd–5th orange. Rarely, antennae and/or legs entirely orange, much more rarely, posterior half of pronotum black. Length 6.0–7.5 mm. Total fig. 4. From taiga zone to steppe zone. Transpalaearctic species. *Lilium, Convallaria, Allium, Scilla, Smilax, Maianthemum, Polygonatum*..... *L. merdigera* (L., 1758) **

5. Crioceris Müll., 1764

Adults feed on leaves. Larvae do not cover themselves with excreta, feed openly on leaves or internally within berries in various species.

1(10) Elytra yellow or rufous, with black markings. Underside entirely rufous, or with black markings, or entirely black, always without metallic reflection.

2(5) Elytral suture pale.

3(4) Pronotum without black markings. Each elytron with 6 black markings, partly reduced or fused together in some specimens. Elytral apex pale. Length 4.3–6.0 mm. Total fig. 5. From deciduous–coniferous forest zone to desert zone. Transpalaearctic species; introduced into N. America. *Asparagus*. Larvae develop within berries (Medvedev, Zaitsev, 1980)..... ..... *C. duodecimpunctata* (L., 1758) **

4(3) Pronotum with transverse row of 4 black markings and, in some specimens, with 1 small black spot before base. Each elytron with 7 black markings, partly reduced or fused together in some specimens. Elytral apex black almost without exception. Length 5.0–6.0 mm. Byelarus; Ukraine; Moldova; ER: from deciduous forest zone to steppe zone. Transpalaearctic species. *Asparagus*. Larvae live openly.... *C. quatuordecimpunctata* (Scop., 1763) **

5(2) Elytral suture entirely or mostly black.

6(7) First-4th antennomeres and tibiae rufous. Black sutural stripe narrow, not reaching elytral apex. Each elytron with 4 black markings, without black apical marking. Length 4.5–5.5 mm. ER: desert zone (Kalmykia: Chernye Zemli Distr. (Fomicheva, 1982)). Kazakhstan, Turkmenistan..... ..... *C. iliensis* Wse., 1900 *

7(6) Antennae and tibiae entirely black.

8(9) Pronotum laterally very convex. Sutural stripe of elytra strongly widened behind level of humeral calli. Elytra usually with black humeral and preapical markings, not connected with sutural stripe (Fig. 6: 16). In some specimens, preapical marking divided into 2 parts. Length 5.0–6.0 mm. Byelarus; Ukraine; Moldova; ER: forest steppe and steppe zones, S. Urals. E. Europe. *Asparagus*..... *C. quinquepunctata* (Scop., 1763) **

9(8) Pronotum laterally slightly convex. Sutural stripe of elytra slightly widened at level of humeral calli. Elytra with apex and 4 markings (each of 2 posterior markings divided into 2 parts in some specimens) black (Fig. 6: 18). Length 5.2–6.0 mm. ER: semidesert zone (specimen from Volgograd: "Sarepta"). Greece, Asia Minor, Cyprus, Jordan, Caucasus, Uzbekistan, Tadzhikistan.. ..... *C. bicruciata* (C. Shlb., 1823) **

10(1) Elytra dark bluish-green, with lateral stripe (widened at apex) orange and 3 markings pale yellow (2 posterior markings connected with lateral stripe). Pronotum rufous with large bluish-green mid marking or, rarely, with trace of this marking only. Underside dark bluish-green, with metallic shine. Length 5.0–6.5 mm. Byelarus; Latvia; Ukraine; ER: from deciduous–coniferous forest zone to desert zone. Europe, Mediterranean reg.; introduced into N. America. *Asparagus*. Larvae live openly... *C. asparagi* (L., 1758) **

6. Oulema Gozis, 1886

Adults and larvae feed openly on leaves of Poaceae, larvae cover themselves with excreta.

1(6) Legs rufous, with tarsi brown or black in some specimens.

2(5) Pronotum reddish-orange, head and elytra blue or bluish-green. Length 4.5–4.8 mm. [1]

3(4) Flagellum as in Fig. 7: 13, 14. From taiga zone to steppe zone. Distribution is studied insufficiently because some records of *O. melanopus* evidently belong to the following species. Transpalaearctic species, introduced into N. America. Many cereals and wild Poaceae..... *O. melanopus* (L., 1758) **

4(3) Flagellum as in Fig. 7: 15. Distribution is studied insufficiently. I have one male from Ukraine: Crimea (Kerch). Europe (Kippenberg, Döberl, 1994). *Triticum*, *Hordeum*, wild Poaceae..... *O. duftschmidi* (L. Redt., 1874) **

5(2) Head, pronotum, and elytra bluish-green, blue, blackish-green, or blackish-blue. Length 3.5–4.1 mm. Forest steppe and steppe zones, flood-lands in desert zone. Transpalaearctic species. Many cereals and wild Poaceae..... ..... *O. tristis* (Hbst., 1786) **

6(1) Body including legs metallic.

7(10) Transverse constriction before base of pronotum evenly impressed and covered with fine dense punctures (Fig. 6: 7). Length 4.0–4.5 mm. [2]

8(9) Apex of aedeagus pointed (Fig. 6: 10). Dorsum bluish-green, with pronotum dark bronze-green. Distribution is studied insufficiently because some records possibly refer to the following species. I have males from the following regions: Ukraine (Transcarpathian reg.), ER: taiga zone (Leningrad reg., Arkhangelsk reg., Yaroslavl reg.), deciduous–coniferous forest zone (Moscow reg., Kaluga reg., Ryazan reg., Vladimir reg.), forest steppe zone (Lipetsk reg., Kursk reg., Voronezh reg.), S. Urals (Chelyabinsk reg.). Europe, Siberia, Far East. *Glyceria fluitans* (personal communication by Dr. M. Cox)..... *O. erichsonii* (Sffr., 1841) (*erichsoni* auct.) **

9(8) Apex of aedeagus rounded (Fig. 6: 11). Colour as in previous species, or dorsum bluish-green, blue, dark blue, or black. Distribution in the territories in question is unknown. Widely distributed in W. Europe. I also have specimens from the Caucasus and the Far East (Khabarovsk Krai)..... ..... *O. septentrionis* (Wse., 1880) *

10(7) Transverse constriction before base of pronotum not punctate or with sparse punctures, with more or less distinct longitudinal wrinkles or smooth dorsally, more impressed laterally (Fig. 6: 6). Dorsum blue, green, or black. Length 3.0–4.2 mm. Total fig. 6. From taiga zone to steppe zone. Transpalaearctic species. Many cereals and wild Poaceae..... ..... *O. gallaeciana* (Heyd., 1870) (*lichenis* Voet, 1806) **

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[1] There are two very close species which distinguishes mostly by the shape of the flagellum of the aedeagus. Eversion of the internal sac of aedeagus is necessary for the examination of the flagellum. I used the method of the preparation of internal sac after Askevold (1991). One more close species, namely *O. rufocyanea* (Sffr., 1847) has been found only in C. and S.-E. Europe until now (Warchałowski, 1985).

[2] Recent authors (Mohr, 1985, Warchałowski, 1985a, Kippenberg, Döberl, 1994) regard *O. septentrionis* as a separate species. However, its difference from *O. erichsonii* is very insignificant and concerns only the shape of aedeagus apex. Variability of this character is not studied until now.

7. Lema F., 1798

Adults and larvae feed openly on leaves of Asteraceae.

1(1) Blue or violet, rarely black with metallic shine. Length 3.5–5.0 mm. Total fig. 7. From taiga zone to desert zone. Transpalaearctic species. *Cirsium, Carduus, Silybum*..... *L. cyanella* (L., 1758) **

Synetinae

Adults feed on pollen. Larvae develop on roots of *Alnus* and *Betula* and pupate in the soil.

8. Syneta Dej., 1835

1(1) Dorsum brown, with pronotum, suture, and longitudinal stripes (or ridges) on elytra more or less darkened, or dorsum blackish-brown, with lateral margins of elytra yellowish-rufous. Antennae and legs rufous. Length 5.4–7.5 mm. Total fig. 8. Estonia; ER: taiga zone, Middle Urals, S. Urals (specimens from Nurgush Mt. and Ilmensky Res.). Finland, Sweden, Norway, Siberia, Far East, Mongolia..... *S. betulae* (F., 1792) **

Zeugophorinae

Adults feed on leaves of *Salix* and *Populus*. Larvae develop within leaf mines and pupate in the soil.

9. Zeugophora Kunze, 1818

1(8) Elytron black, lateral margin below humeral callus reddish in some specimens. Pronotum rufous.

2(5) Head entirely rufous.

3(4) Punctures on pronotum coarse, not smaller or slightly smaller than those on elytra. Body smaller (length 2.7–3.5 mm, less than 3.0 mm in most specimens). Total fig. 9. From taiga zone to steppe zone. Transpalaearctic species. *Populus, Salix*..... *Z. subspinosa* (F., 1781) **

4(3) Punctures on pronotum fine, 1.5–2 X smaller than those on elytra. Body larger (length 3.5–4.1 mm in most specimens, rarely 3.0 mm in males). From taiga zone to steppe zone. Europe, Siberia; introduced into N. America. *Populus*..... *Z. scutellaris* Sffr., 1840 **

5(2) Head bicolorous.

6(7) Anterolateral calli of pronotum pointed (Fig. 6: 13). Head rufous, with vertex black. Body smaller (length 2.5–3.5 mm). Aedeagus as in Fig. 6: 20. From taiga zone (Komi Republic (Medvedev A., *et al.*, 2001)) to steppe zone. Europe, Siberia. *Populus*..... *Z. flavicollis* (Marsh., 1802) **

7(6) Anterolateral calli of pronotum obtuse (Fig. 6: 12). Head rufous, with vertex or frontal marking black. Body larger (length more than 3.5 mm). Aedeagus as in Fig. 6: 19. Estonia, Latvia, and Lithuania (Silfverberg,

1992); ER: forest steppe zone (specimen from Lipetsk reg.). Europe, Siberia. *Populus*. ..... *Z. frontalis* Sffr., 1840 **

8(1) Dorsum entirely yellowish-rufous. Anterolateral calli of pronotum rounded. Length 3.2–3.6 mm. Estonia; Lithuania; Byelarus; ER: taiga and deciduous-coniferous forest zones. Europe, Siberia, Mongolia. *Populus*. .... *Z. turneri* Power, 1863 **

Orsodacninae

Adults feed on pollen.

10. Orsodacne Latr., 1802

1(2) Pronotum and elytra glabrous or with indistinct sparse pubescence not seen at magnification of 8 X. Coloration very variable: from yellow to black or blackish-blue with many intermediate variants; head, pronotum, and elytra uniformly or differently-coloured. Length 4.5–6.4 mm. Total fig. 10. Lithuania; Byelarus; Ukraine; ER: from taiga zone to steppe zone. Europe, Caucasus, Siberia. *Rosaceae, Apiaceae, Acer, Syringa, Populus*. .... *O. cerasi* (L., 1758) **

2(1) Pronotum and elytra with dense pubescence, distinct at magnification of 8 X. Coloration as in previous species. Length 4.4–7.9 mm. Ukraine; Moldova. Europe, Mediterranean reg. *Syringa, Crataegus, Prunus, Pyrus, Acer*. ..... *O. lineola* (Pz., 1795) **

Clytrinae

Adults occur on herbaceous plants and foliar trees. Larvae live within their larval cases, occur in ground-litter or within ant-hills depending on the species.

Key to genera

1(4) Posterior corners of pronotum raised above elytral base (viewed from behind and slightly from above), if posterior corners weakly raised (in *Cheilotoma*), then separated from disk by oblique impressions. In male, clypeus with wide deep emargination (Fig. 8: 1, 7, 8).

2(3) Pronotum entirely metallic, with posterior corners prominent, distinct. Elytra yellow or rufous, mostly with dark humeral marking. In one species, dorsum entirely metallic blue. In male, fore-legs distinctly longer than others. ..... 11. *Labidostomis* Germ.

3(2) Pronotum bicolorous, rufous with diskal marking metallic blue or green, with posterior corners indistinct, broadly-rounded. Elytra entirely metallic blue or green. In male, fore-legs not longer than others. The beetles have a superficial resemblance to *Smaragdina xanthaspis* and *S. affinis* and differ from them by the pronotum with oblique impressions near posterior corners; males also differ by their large head (it is slightly narrower than pronotum) and clypeus (it is deeply emarginate)..... 17. *Cheilotoma* Chevr.

4(1) Posterior corners of pronotum not raised above elytral base and not separated from disk by oblique impressions (in *Coptocephala*, males sometimes have weak transverse impressions near posterior corners). In male, clypeus without wide, deep emargination (Fig. 8: 2).
5(6) Pronotum covered with long dense setae. . . . . 12. *Lachnaia* Chevr.
6(5) Pronotum without setae.
7(10) Body without metallic coloration, 6.5–13.0 mm long.
8(9) Tarsi robust, 1st metatarsomere 1.6–1.8 X as long as broad (measure along ventral side!). Anterior tibiae not longer than others. Intercoxal prosternal process not extending beyond basal margin of prosternum. 15. *Clytra* Laich.
9(8) Tarsi slender, 1st metatarsomere 1.9–2.6 X as long as broad (measure along ventral side). Anterior tibiae longer than others (this character more conspicuous in male). Intercoxal prosternal process extending beyond basal margin of prosternum. . . . . 13. *Tituboea* Lac.
10(7) Body with metallic coloration, 2.5–7.3 mm long.
11(12) In male, head large, slightly narrower than pronotum (Fig. 8: 5). Elytra yellowish-rufous, with dark metallic markings or bands, or elytra metallic blue with apices rufous; if dorsum entirely blue, then pronotum covered with very minute, dense punctures. . . . . 16. *Coptocephala* Chevr.
12(11) In male, head distinctly narrower than pronotum (Fig. 8: 6). Elytra dark metallic, pronotum partly or entirely rufous, if dorsum entirely green, blue, or violet, then pronotum covered with coarse, uneven punctures. . . . . 14. *Smaragdina* Chevr.

11. Labidostomis Germ., 1822

Larvae feed on leaf-litter, young ones also feed on leaves, pupate on grasses.

1(20) Labrum pitchy black, sometimes with rufous anterior margin.
2(11) Pronotum glabrous.
3(10) Pronotum weakly shining, covered with coarse punctures almost as large as those on elytra.
4(5) In male, mandibles short, only slightly longer and broader than in female (Fig. 8: 14). Elytra without humeral marking. Pronotum blue. Length 6.0–9.0 mm. From taiga zone to deciduous forest zone; Ukraine: Crimea. Transpalaearctic species. Various foliar trees, mostly *Betula, Salix*. . . . . *L. tridentata* (L., 1758) **
5(4) In male, mandibles large, distinctly longer and broader than in female, upper external border not angularly raised near base (Fig. 8: 12, 15).
6(7) Body larger (length 7.5–11.0 mm). In male, clypeus bidentate, mid emargination without denticle (Fig. 8: 8). Pronotum evenly, densely punctate, with interspaces not broader (many of them narrower), than punctures. Elytra with large black humeral marking. From deciduous-coniferous forest zone (Lithuania) to steppe zone, S. Urals. Europe, Asia Minor. *Quercus*. . . . . *L. humeralis* (Schneid., 1792) **
7(6) Body smaller (length 3.7–7.5 mm). In male, clypeus tridentate (rarely bidentate), with small mid denticle (Fig. 8: 7). Pronotum unevenly punctate, with several interspaces broader than punctures. Elytra with small humeral marking or brown humeral darkening, in some specimens without humeral marking.

8(9) Head, pronotum, and underside bronze-green or bronze with golden reflection. Length 4.2–7.0 mm. From taiga zone (Vyatka reg. (Shernin [Ed.], 1974); Udmurt Republic (Roschinenko, 1972)) and Middle Urals to steppe zone. Europe, Kazakhstan, Siberia. Various herbs and foliar trees..... ..... *L. longimana longimana* (L., 1761) **

9(8) Head, pronotum, and underside blue or green with blue reflection. Length 3.7–7.5 mm. Ukraine: Crimea. S. Europe, Asia Minor, Caucasus. Various herbs and foliar trees..... *L. longimana dalmatina* (Lac., 1848) ** [1]

10(3) Pronotum very shining, covered with fine punctures considerably smaller than those on elytra. In male, upper external border of mandibles angularly raised near base (Fig. 8: 9). Head, pronotum, and underside blue or green. Elytra with or without black humeral marking. Length 5.0–9.5 mm. Total fig. 11. Forest steppe and steppe zones. S.-E. Europe, Caucasus, Iran, Kazakhstan, Siberia..... ..... *L. lucida axillaris* (Lac., 1848) (*lucida sareptana* Krtz., 1872) **

11(2) Pronotum pubescent.

12(13) Pronotum entirely covered with long protruding setae (viewed in lateral view). In male, clypeus with large median denticle. Length 6.5–10.0 mm. Ukraine: Crimea (Medvedev, 1990). Balkan Penins., Asia Minor, Caucasus. *Pyrus, Cerasus, Crataegus*..... *L. propinqua* Fald., 1837 *

13(12) Pronotum covered with adpressed setae visible mostly near base.

14(19) In male, clypeus tridentate, with median denticle large, if the latter weak, then mandibles with upper external border straight.

15(16) In male, mandibles with upper external border angularly raised (Fig. 8: 10). Length 6.5–8.0 mm. From steppe zone to desert zone. Europe, Caucasus, Kazakhstan, W. Siberia. Various herbs and foliar trees..... ..... *L. beckeri* Wse., 1881 **

16(15) In male, mandibles with upper external border not angularly raised (Fig. 8: 11, 13).

17(18) In male, mandibles with upper external border straight (Fig. 8: 13), rarely left mandible with upper external border raised, arc-shaped. Aedeagus dorsally with borders not bent inside before apex (Fig. 6: 15). Length 5.0–8.5 mm. ER: steppe zone (specimens from Saratov reg.), desert zone. Caucasus, Kazakhstan, C. Asia, N.-W. China, Mongolia. Various herbs and bushes..... *L. senicula* (Krtz., 1872) **

18(17) In male, mandibles with upper external border raised, arc-shaped (Fig. 8: 11). Aedeagus dorsally with borders curved inside before apex (Fig. 6: 14). Length 5.0–8.0 mm. Ukraine: Crimea, ER: semidesert and desert zones. Caucasus, Kazakhstan. Various herbs and bushes..... ..... *L. metallica* Lef., 1872 **

19(14) In male, emargination of clypeus without median denticle or with very weak projection; mandibles with upper external border arc-shaped. Aedeagus with elongate-triangular apex, dorsally with borders not bent inside before apex (Fig. 7: 1). Length 6.0–8.5 mm. Ukraine (including steppe in Crimea), ER: semidesert zone. Caucasus..... ..... *L. pachysoma* L.Medv., 1965 (*humeralis pachysoma* L.Medv.) **

[1] Warchałowski (1985b) treated the name *dalmatina* as a junior synonym of the nominotypical subspecies. Later, Medvedev (1990) examined a number of specimens from various localities and considered *dalmatina* to be a valid subspecies.

20(1) Labrum yellow.

21(22) Dorsum entirely blue. Pronotum glabrous. Length 4.5–6.5 mm. ER: E. steppe zone (specimens from Orenburg reg.: Totskoje Vill.), S. Urals (specimens from envir. Turgojak lake and Shulgan-Tash Res.). Kazakhstan, Siberia, Mongolia, N. China. Various herbs. ... *L. sibirica* (Germ., 1824) **

22(21) Elytra yellow without humeral marking.

23(24) Disk of pronotum with long dense setae not shorter than setae arranged in row above posterior border of eye. In male, clypeus with trapezoidal emargination, without median denticle. Pronotum covered with fine sparse punctures. Length 7.0–12.0 mm. From forest steppe zone to desert zone. S. Europe, Asia Minor, Caucasus, Kazakhstan, Siberia. *Salix, Populus*..... ..... *L. pallidipennis* (Gebl., 1830) **

24(23) Disk of pronotum glabrous or with very short setae much shorter than setae arranged in row above posterior border of eye.

25(26) Disk of pronotum covered with setae; more or less evenly densely punctate, punctures as large as those on elytra. In male, upper external border of mandibles arc-shaped. Aedeagus as in Fig. 9: 1. Length 5.0–8.0 mm. From taiga zone (Vyatka reg. (Jakovlev, 1910)) to steppe zone, S. Urals (specimen from Chelyabinsk reg.). Europe, Caucasus, Kazakhstan, Siberia, Mongolia. *Salix, Populus*..... *L. cyanicornis* Germ., 1822 **

26(25) Pronotum glabrous; disk unevenly punctate, punctures mostly smaller than those on elytra. In male, upper external border of mandibles raised near base. Aedeagus as in Fig. 9: 2. Length 6.3–7.6 mm. Latvia; Lithuania; Byelarus; Ukraine; ER: taiga zone (Udmurt Republic), deciduous-coniferous forest zone (Moscow reg.), deciduous forest zone (Ryazan, Tatarstan), forest steppe zone (Lipetsk reg., Kursk reg., Saratov reg.), S. Urals. Europe, Siberia. *Salix*..... *L. lepida* Lef., 1872 **

12. Lachnaia Chevr., 1837 (Lachnaea L. Redt., 1845)

Larvae occur in the soil litter.

1(1) Head, pronotum, and underside black with blue or greenish tint. Elytra pale yellow with 3 black markings (1, 2). Head and pronotum covered with dense, erect setae. Length 9.0–13.0 mm. Total fig. 12. Ukraine; Moldova. Europe, Asia Minor. *Quercus, Salix, Corylus*..... ..... *L. sexpunctata* (Scop., 1763) **

13. Tituboea Lac., 1848 (Antipa auct. nec Deg., 1778)

Larvae occur within ant-hills.

1(1) Head, underside, 5th–11th antennomeres, scutellum, humeral marking, and 2 postmedian markings (in some specimens, the latter are joined together or disappear) on each elytron black; 1st–4th antennomeres, pronotum, and tibiae rufous; elytra yellow; in male, femora rufous, knees brown, tarsi rufous

or brown; in female, femora and tarsi brown. Length 9.0–13.0 mm. Total fig. 13. Ukraine: forest steppe and steppe zones, Crimea; ER: semidesert zone (specimens from Volgograd: "Sarepta"and Elton). C. and S. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia. *Quercus, Rubus, Anthyllis, Hypericum, Inula*..... *T. macropus* (Ill., 1800) **

14. Smaragdina Chevr., 1837

One subgenus, *Smaragdina* s.str. (*Calyptorhina* Lac., 1848, *Monrosia* L. Medv., 1971) is represented in the territories under consideration. Larvae occur in ground-litter.

1(2) Dorsum entirely metallic, violet or blue, with pronotum and sometimes elytra greenish, 2nd–4th antennomeres rufous. Pronotum covered with coarse, uneven punctures. Legs entirely metallic. Length 2.5–4.0 mm. Ukraine: steppe zone, Crimea. Balkan Penins., Asia Minor, Caucasus. *Quercus*..... ..... *S. hypocrita* (Lac., 1848) **

2(1) Pronotum rufous or bicolorous. Legs entirely or partly yellow or rufous.

3(8) Pronotum yellowish-rufous with mid longitudinal stripe black or blue.

4(5) Elytra black with weak metallic reflection, coxae and basal parts of femora blackish. Pronotal longitudinal stripe almost parallel-sided. Length 4.5–6.0 mm. Forest steppe and steppe zones. Europe, Asia Minor, Kazakhstan, Siberia, Far East, N.-E. China, Japan. Various foliar trees and herbs..... ..... *S. aurita* (L., 1767) **

5(4) Elytra dark blue, rarely dark green. Pronotal longitudinal stripe distinctly narrowed anteriorly.

6(7) All coxae, trochanters, and basal parts of all femora black with metallic reflection. Body larger. Length 4.5–6.0 mm. Steppe zone (Medvedev, Shapiro, 1965). Europe, Asia Minor, Caucasus. Various herbs and shrubs..... ..... *S. xanthaspis* (Germ., 1824) *

7(6) Hind-coxae black, legs entirely rufous or only bases of hind-femora black. Body smaller. Length 2.5–4.0 mm. Total fig. 14. Estonia; Latvia; Lithuania; Byelarus; Ukraine: forest steppe and steppe zones; Moldova; ER: from taiga zone to steppe zone. Europe, Caucasus. Various trees, mostly *Salix*..... ..... *S. affinis* (Ill., 1794) **

8(3) Pronotum rufous throughout, rest of body blue, bluish-green, or violet. Legs entirely rufous or with hind-femora metallic blue in basal 1/2–2/3. There are two species which can be accurately identified exactly only on aedeagus structure.

9(10) Aedeagus as in Fig. 9: 4. Frons glabrous, with broad transverse impression, or frons pubescent, with small rounded impression. Elytra more coarsely punctate. Body usually larger. Length 4.5–6.5 mm. From taiga zone to steppe zone. Europe, Asia Minor, Caucasus, Siberia. Various herbs and foliar trees, mostly *Salix* and *Alnus* in the north, Rosaceae in the south. ..... *S. salicina* (Scop., 1763) (*cyanea* F., 1775) **

10(9) Aedeagus as in Fig. 9: 3. Frons pubescent, with small rounded impression. Elytra more finely punctate. Body usually smaller. Length 3.5–5.0 mm. From taiga zone to steppe zone. Europe, Asia Minor, Caucasus. Various herbs and foliar trees..... *S. flavicollis* (Charp., 1825) **

15.Clytra Laich, 1781

Larvae develop and pupate within ant-hills.

1(4) Elytra with 4 black markings (1, 1, 2) usually joined together in pairs forming oblique anterior and transverse posterior bands; sutural marking in anterior 1/3 present (Fig 9: 11). Pronotum rufous throughout or with 1–7 very variable markings. Subgenus *Clytrella* L. Medv., 1961

2(3) Head black. Length 6.7–11.0 mm. Ukraine; ER: forest steppe zone (Samara reg. (Pavlov, 1988)) and steppe zone. Europe, Caucasus, S.-W. Asia, Kazakhstan, C. Asia, Altai. Various trees and herbs, mostly *Atraphaxis*. . . . . *C. atraphaxidis atraphaxidis* (Pall., 1773) **

3(2) Head rufous-red throughout or with black frontal marking, more rarely head black with vertex rufous-red. Length 6.5-10.5 mm. ER: E. steppe zone, desert zone (Medvedev, 1961). Kazakhstan, C. Asia, N. Iran. . . . . *C. atraphaxidis maculifrons* (Zoubkoff, 1883) *

4(1) Elytra with 3 black markings (1, 2), posterior markings usually joined together forming transverse band behind middle or reduced; sutural marking in anterior 1/3 absent (Fig. 9: 12).

5(6) Pronotum rufous or red, with 2 or 4 black markings fused together in some specimens. Length 7.5–12.5 mm. Ukraine: steppe zone; ER: W. steppe zone, desert zone. Balkan Penins., Asia Minor, Caucasus. Various trees and herbs. . . . . *C. (Clytrella) valeriana valeriana* (Mén., 1832) (*valerianae* auct.) **

6(5) Pronotum black throughout or with dark rufous sides and pitchy brown marking at disk. Subgenus *Clytra* s.str. + *C. (Clytrella) valeriana taurica.*

7(10) Pronotum broadly turned up and covered with wrinkles laterally.

8(9) Pronotum laterally densely, rugosely punctate, without vertical outer border. Length 7.4–9.5 mm. From taiga zone to forest steppe zone, Middle and S. Urals. N. and C. Europe, Siberia, Mongolia. Various trees (mostly *Salix*), rarely herbs. . . . . *C. quadripunctata quadripunctata* (L., 1758) **

9(8) Pronotum laterally finely rugose, with vertical outer border in anterior half. Length 7.5–11.5 mm. Forest steppe (ER: specimens from Saratov reg.) and steppe zones. S. Europe, Caucasus, Kazakhstan, C. Asia. Various trees (mostly *Salix*), rarely herbs. . *C. quadripunctata appendicina* (Lac., 1848) **

10(7) Pronotum with narrow lateral border only.

11(12) Pronotum very convex (Fig. 7: 2), black, with dark rufous sides and mostly pitchy brown marking at disk; disk evenly obsoletely finely punctate or almost smooth. Elytral posterior markings usually fused together. Length 9.5–12.0 mm. Ukraine: steppe zone, Crimea (in some specimens from Evpatoria, coloration of pronotum as in nominotypical subspecies, see couplet 5(6)). . . . . *C. valeriana taurica* L.Medv., 1961 **

12(11) Pronotum weakly convex (Fig. 7: 3), usually black throughout.

13(14) Disk of pronotum shining, covered with distinct punctures (see at magnification of 16 X). Aedeagus with apex enlarged, diamond-shaped (Fig. 9: 10). Elytra with black postmedial band very reduced or entirely absent. Length 7.7–11.0 mm. ER: N. and Middle Urals. Kazakhstan, Siberia, Far East, Mongolia, Korea, Japan. Various trees (mostly *Salix*) and herbs. . . . . *C. arida* Wse., 1889 **

14(13) Disk of pronotum very shining, covered with indistinct punctures (see at magnification of 16 X). Aedeagus slightly broadened towards apex (Fig.

9: 9), with deep longitudinal impression laterally. Elytra with black postmedial band well developed, narrowly interrupted at suture. Length 8.0–12.0 mm. Total fig. 15. Taiga zone (ER: Vyatka reg. (Shernin [Ed.], 1974), specimens from Udmurt Republic), deciduous-coniferous forest zone (Estonia and Latvia (Silfverberg, 1992)), from forest steppe zone to desert zone. Europe, Asia Minor, Caucasus, Kazakhstan, Kyrghyzstan, Siberia, Mongolia, China. Various trees, more rarely herbs..... *C. laeviuscula* (Ratz., 1837) **

16.Coptocephala Chevr., 1837

Larvae of *C. rubicunda* occur in ant-hills.

1(2) Body length 3.1–3.7 mm. Colouration variable: 1) dorsum entirely blue, in some specimens with greenish tint; 2) dorsum blue with apices of elytra rufous; 3) dorsum blue with apices of elytra and lateral sides of pronotum rufous. In specimens from Ukraine (Crimea) all three variants of colouration occur. Pronotum covered with very minute, dense punctures. Forest steppe (Moldova (Calestru, 2003)), steppe and semidesert (specimens from ER: Volgograd reg.: Elton) zones. Europe, Caucasus, Kazakhstan. Apiaceae (flowers), *Quercus*..... *C. chalybaea* (Germ., 1824) (*apicalis* Lac., 1848) **

2(1) Body length 4.2–7.3 mm. Pronotum entirely rufous. Elytra yellowish-rufous, each with 2 dark metallic spots or bands.

3(8) Labrum and legs black.

4(5) In male, mandibles broadened towards apex (viewed from the front). Aedeagus ventrally without membranous "windows" near apex (Fig. 9: 6). Length 4.8–6.0 mm. Ukraine and Moldova (Warchałowski, 1991a). C. and S. Europe. Flowers of Asteraceae and Apiaceae... *C. scopolina* (L., 1767) *

5(4) In male, mandibles narrowed towards apex (viewed from the front). Aedeagus ventrally with 2 membranous "windows" near apex (Fig. 9: 8).

6(7) Elytra with 2 transverse bands, anterior band narrowed towards scutellum. In some specimens from Volgograd reg., anterior band is reduced and presented by humeral marking slightly extending towards suture. Length 5.0–7.0 mm. Total fig. 16. Byelarus; Ukraine (including Crimea); ER: steppe zone, S. Urals. Caucasus, Kazakhstan, Siberia..... ..... *C. rubicunda rossica* L.Medv., 1977 [1] (*scopolina* auct. nec L., 1767) **

7(6) Elytra with longitudinal humeral marking and transverse band behind middle. Length 4.2–6.0 mm. Ukraine: Carpathians. Europe. Apiaceae (flowers). ..... *C. rubicunda rubicunda* (Laich., 1781) **

8(3) Labrum and most of legs rufous.

9(10) Frons covered with coarse punctures not smaller than those on elytra. In male, upper external border of mandibles slightly raised near base (Fig. 8: 4) and not bent to midline of head. Clypeus and bases of mandibles rufous. Aedeagus as in Fig. 9: 5. Length 5.7–7.3 mm. From forest steppe zone (Voronezh reg., Samara reg. (Pavlov, 1977)) to semidesert zone. S.-E. Europe, Asia Minor, Caucasus, Kazakhstan, Kyrghyzstan, Siberia. *Artemisia*, Apiaceae (flowers)..... *C. gebleri* Gebl., 1841 **

[1] Warchałowski (1991b) treated subspecies *rossica* as a junior synonym of the nominotypical subspecies.

10(9) Frons covered with fine punctures or impunctate. In male, upper external border of mandibles strongly raised basally (Fig. 8: 3) and bent to midline of head. Clypeus and mandibles entirely metallic or clypeus and bases of mandibles rufous (ab. *phenax* Jcbs.). Aedeagus as in Fig. 9: 7. Length 4.6–4.9 mm. From deciduous-coniferous forest zone to steppe zone. Europe, Caucasus, Kazakhstan, C. Asia, Siberia, Mongolia. Various herbs, mostly flowers.. *C.quadrimaculata* (L., 1767) (*unifasciata* auct. nec Scop., 1763) **

17.Cheilotoma Chevr., 1837 (Chilotoma L. Redt., 1845)

Larvae occur in forest soil-litter.

1(2) In male, clypeal emargination parallel-sided, or slightly convergent, or slightly divergent (Fig. 7: 7). Apex of aedeagus triangular (Fig. 7: 5). Length 3.5–5.5 mm (male), 3.5–6.0 mm (female). From deciduous forest zone (specimens from Moscow reg.: Serebrianye Prudy Distr. and Ryazan reg.) to desert zone. S.-E. Europe, Caucasus, Kazakhstan, Siberia. Various herbs. ..... *Ch. musciformis* (Gz., 1777) **

2(1) In male, lateral sides of clypeal emargination distinctly divergent, rarely nearly parallel (Fig. 7: 6). Aedeagus with apex narrowly drawn out (Fig. 7: 4). Length 4.8–7.0 mm (male), 5.1–6.4 mm (female). Total fig. 17. From steppe zone to desert zone. Bulgaria, Caucasus, Kazakhstan. Various herbs. ..... *Ch. erythrostoma* (Fald., 1837) **

Cryptocephalinae

Adults occur mostly on herbs and foliar trees, often on flowers, rarely on coniferous trees. Larvae live within larval cases, inhabit ground-litter, sometimes occur on plants, feed on leaf-litter or fresh leaves (especieally in young instars), pupate in the soil or on stems of herbs.

Key to genera

1(2) Base of pronotum crenulate, but not margined (normally basal denticles invisible, pronotum should be moved aside from elytra to observe them). Base of elytra not thickened. Scutellum large, not covered by base of pronotum. ..... 18. *Cryptocephalus* Geoffr.

2(1) Base of pronotum margined, but not crenulate. Base of elytra thickened and raised.

3(4) Scutellum large, not covered by base of pronotum. Dorsum glabrous..... ..... 19. *Pachybrachis* Chevr.

4(3) Scutellum small, covered by base of pronotum and invisible from above. Dorsum pubescent..... 20. *Stylosomus* Sffr.

18.Cryptocephalus Geoffr., 1762

1(30) More than half (usually about 2/3) of 4th tarsomere of hind-tarsi extending beyond lobes of 3rd tarsomere (Fig. 10: 1). Elytra covered with short suberect setae at least in apical 1/3. Subgenus *Asionus* Lop., 1988 (*Asiopus* Lop., 1965).

2(23) Pronotum rufous throughout or with black or brown pattern cover large part of pronotal disk in some specimens.

3(6) Metasternum, metepisternum, and abdominal sternites entirely or mostly rufous-yellow. Elytra with punctures arranged in regular rows.

4(5) Underside rufous-yellow, with metasternum and 5th abdominal sternite black. Elytral puncture rows indistinct because of coarse, dense punctures in intervals. Elytra yellow throughout. Length 3.0–3.7 mm. ER: semidesert zone (specimen from Volgograd reg.: envir. Elton lake). Caucasus, Kazakhstan. *Atriplex, Limonium, Tamarix*..... *C. atriplicis* Lop., 1967 **

5(4) Underside entirely rufous-yellow. Elytra with punctures arranged in distinct regular rows and fine punctures in intervals. Dorsum with brown pattern like letter "M" on pronotum and 4 (2, 2) markings (fused together in most specimens) on each elytron. Length 3.4–5.0 mm. ER: E. steppe zone, semidesert and desert zones. Caucasus, Kazakhstan, C. Asia, N.-W. China, Mongolia. *Tamarix*.... *C. tamaricis* Sols., 1867 (*astracanicus* Sffr., 1867) **

6(3) Metasternum, metepisternum, and abdominal sternites entirely black, or only metepisternum yellow in some specimens. Elytra with confused punctation.

7(18) Elytra yellow or red, each with 4 (2, 2) rounded or slightly elongate black markings; in some specimens, these markings fused together and cover large part of elytra or partly reduced, but not forming longitudinal stripes on disk.

8(9) Body robust (Fig. 11: 1), pronotum 2 X as wide as long. Dorsum red, pronotal pattern usually forming 4 longitudinal stripes fused together at base and not reaching anterior border. In male, 5th abdominal sternite with transverse ridge bearing 2 tubercles anteriorly, and with shallow semicircular impression at middle. Femora brown, fore- and mid-femora with rufous stripe on upper border; tibiae and usually tarsi red or rufous. Length 4.7–7.0 mm. Steppe and semidesert zones, S. Urals (Chelyabinsk reg.: Arkaim Res., Mikhalilov, 2000). Caucasus, Kazakhstan, Uzbekistan, Kyrghyzstan. *Artemisia, Camphorosma*..... *C. coronatus* Sffr., 1847 **

9(8) Body slender (Fig. 11: 2). Pronotum yellow or rufous, with black markings. These markings fused together and cover large part of surface in some specimens. Elytra paler than pronotum.

10(13) In female, pygidium with 1 or 2 deep impressions. In male, 5th abdominal sternite with 2 denticles or projections. Legs entirely rufous or with black knees and stripe on upper border of femora.

11(12) In female, pygidium with 2 deep cavities laterally (Fig. 12: 8). In male, 5th abdominal sternite with 2 bifurcated projections. Pronotum with 4 black markings. Length 4.5–5.4 mm. ER: steppe zone (Lopatin, 1977), semidesert zone (specimen from Volgograd: "Sarepta"). Kazakhstan. *Artemisia*..... ..... *C. impressipygus* Ogl., 1956 **

12(11) In female, pygidium with deep longitudinal furrow near base. In male, 5th abdominal sternite with 2 sharp denticles. Pronotum with 6-8 black markings. Elytra: humeral and lateral posterior markings connected by

brown longitudinal stripe in some specimens. Length 3.5–4.0 mm (male), 4.7–5.0 mm (female). ER: Volgograd (Lopatin, Dovgailo, 2002), E. steppe and semidesert zones (east of Volga). Kazakhstan. *Atraphaxis*..... ..... *C. beckeri* Mor., 1860 (*suffriani* Dohrn, 1859) **

13(10) In female, pygidium without deep impressions, with only weak longitudinal furrow near base. In male, 5th abdominal sternite without denticles, or with 1 short denticle anteriorly, or with longitudinal ridge.

14(15) In male, 5th abdominal sternite without denticle or ridge. Femora rufous, with black stripe on upper border and yellow marking on exterior side near apex. Pronotum reddish-yellow with basal border and 4 or 6 markings forming transverse row, black. Length 5.1–7.0 mm. Steppe zone. Kazakhstan, Kyrghyzstan. Various herbs and trees..... *C. flavicollis* F., 1781 **

15(14) In male, 5th abdominal sternite with denticle or ridge.

16(17) In male, 5th abdominal sternite with short, sharp denticle at anterior border. Pronotum reddish-yellow with 4 black markings forming transverse row; in some specimens also with 2 small spots before base. Femora rufous, with black stripe on upper border and yellow marking on exterior side near apex. Aedeagus as in Fig. 10: 3. Length 4.5–6.3 mm. ER: taiga zone (Udmurt Republic (Roschinenko, 1972)) — should be confirmed, forest steppe zone (males from Ulyanovsk reg.: Sengiley Distr. and from Bashkortostan: Aksenovo). C. and S.-E. Europe, Asia Minor. *Artemisia, Seseli, Lithospermum, Anthericum*..... *C. quatuordecimmaculatus* Schneid., 1792 **

17(16) In male, 5th abdominal sternite with very short, fine longitudinal ridge near anterior border. Pronotum reddish-yellow with 6 black markings (4, 2) or black with anterior and lateral stripes reddish-yellow (ab. *aipetrensis* L. Medv.). Femora black throughout or with yellow marking at exterior side near apex. Aedeagus as in Fig. 10: 4. Length 4.8–6.5 mm. Ukraine: Crimea. *Artemisia*..... *C. floralis* Kryn., 1834 **

18(7) Elytra yellow, with diskal longitudinal stripes black.

19(20) Elytra with black elongate marking near scutellum and pattern like Greek letter "gamma", formed by longitudinal humeral marking and 2 small longitudinal stripe behind middle (Fig. 10: 5), these stripes mostly fused with humeral marking, or reduced in some specimens. Pronotum black, with smooth mid stripe not reaching basal border, anterior and lateral stripes, and 2 markings before scutellum, yellow. Legs yellow with black pattern. Length 4.0–6.5 mm. From forest steppe zone (specimens from Lipetsk reg.) to semidesert zone. S.-E. Europe, Caucasus, Kazakhstan, Kyrgyzstan, W. Siberia. *Artemisia*..... *C. gamma* H.-S., 1829 **

20(19) Elytra with broad longitudinal diskal stripe not reaching apex and sutural stripe black (Fig. 10: 6, 7).

21(22) Elytra with sutural stripe not broadened basally and broad diskal stripe more or less parallel-sided (Fig. 10: 6). Pronotum glabrous, black, with anterior and lateral sides, abbreviated mid stripe, and 2 markings near base, yellow. Legs rufous, with apex of femora, in some specimens also exterior side whitish. Length 3.7–4.7 mm. Forest steppe, steppe, and desert (ER: Astrakhan reg.: Akhtuba river (Lopatin, Dovgailo, 2002)) zones. C. and S.-E. Europe, Caucasus, Kazakhstan, Siberia. *Artemisia*..... ..... *C. bohemius* Drap., 1819 **

22(21) Elytra with sutural stripe broadened basally, diskal stripe prominent towards suture behind mid-point of elytra (Fig. 10: 7). Pronotum covered

with short setae, black, with anterior and lateral stripes yellow. Legs rufous, with tarsi brown; in most specimens, femora with upper border black and apical marking white. Length 3.4–5.0 mm. Steppe zone (east of Dnepr). Bulgaria, Caucasus, Kazakhstan, Kyrghyzstan, Siberia (Altai). *Artemisia*. . . . . *C. flexuosus* Kryn., 1834 **

23(2) Pronotum at least partly dark blue or dark green, usually with pattern yellow or reddish.

24(27) Disk of pronotum with yellow pattern.

25(26) Elytra pale yellow, with humeral marking bluish-green or blackish, in some specimens also with dark line along suture behind mid-point of elytra. Pronotum bluish-green, with anterior border, broad lateral stripes, and 2 markings before scutellum, yellow. Length 4.2–5.0 mm. ER: semidesert and desert zones, S. Urals, Caucasus, Kazakhstan. Various herbs. . . . . *C. ergenensis* Mor., 1863 **

26(25) Elytra yellow, with blackish-green suture and broad longitudinal stripe slightly defused at sides and not reaching apex. Pronotum blackish-green, with mid line, lateral stripes (almost interrupted at middle), and narrow basal stripe divided into 2 parts in some specimens, yellow. Length 3.0–4.0 mm. ER: E. steppe and desert zones (east of Volga). Caucasus, Kazakhstan, W. Siberia. *Artemisia*. . . . . *C. sareptanus* Mor., 1863 **

27(24) Pronotum without yellow diskal pattern, entirely dark metallic or with anterior border and posterior corners yellow.

28(29) Mid- and hind-tibiae dark blue or green. Body dark blue or green; posterior corners of pronotum (in male, also anterior border), 2 large markings (fused together in some specimens) at lateral sides of elytra, lower side of fore- (sometimes also mid-) femora, and apical marking at mid- and hind-femora yellow; fore-tibiae and tarsi rufous. Rarely elytra yellow, with sutural stripe narrowed towards apex, narrow basal stripe, and 2–3 more or less interrupted lines at disk behind mid-point of elytra, black or blackish-blue. Length 4.0–6.5 mm. Forest steppe (ER: Lipetsk reg.) and steppe zones, Crimea, C. and S.-E. Europe, Caucasus, Kazakhstan, Siberia. *Artemisia*. . . . . *C. apicalis* Gebl., 1830 **

29(28) All tibiae and tarsi, apices of femora, and broad lateral elytral stripe, rufous. Body blackish-green; in some specimens posterior corners of pronotum reddish or lateral elytral stripe interrupted at mid-point of elytra. Length 2.3–3.3 mm. Crimea (specimen from Evpatoria), steppe zone (east of Dnepr). S.-E. Europe, Caucasus, Kazakhstan, Siberia (Altai, Sayan Mts.). *Pyrethrum, Artemisia, Carduus* (pollen). . . . . *C. lateralis* Sffr., 1863 **

30(1) Less than half of 4th tarsomere of hind-tarsi extending beyond lobes of 3rd tarsomere (Fig. 10: 2). Elytra glabrous or pubescent.

31(34) Elytral epipleura almost horizontal, with only broad anterior part visible in lateral view.

32(33) Dorsum glabrous. Fore-tibiae strongly incrassate, especially in male (Fig. 10: 8). Subgenus *Disopus* Chevr., 1837. Brownish rufous, elytra yellow throughout, rarely with disk blackish. Length 3.3–5.0 mm. Estonia; Latvia; Lithuania; Byelarus; Ukraine; Moldova; ER: taiga and deciduous-coniferous forest zones. Europe, Siberia, Far East. *Abies, Pinus, Picea, Juniperus, Larix*. . . . . *C. pini* (L., 1758) **

33(32) Dorsum pubescent. In male, hind-tibiae with broad lobe at interior side near apex (Fig. 10: 9). Subgenus *Protophysus* Chevr., 1837. Blue or bluish-

green, with 1st–5th antennomeres rufous, genae yellow. In female, also legs and apices of elytra yellowish-rufous. Length 5.0–6.5 mm. Forest steppe and steppe zones. C. and S. Europe, Near East, Asia Minor, Caucasus, Kazakhstan, Siberia. Various foliar trees..... *C. schaefferi* Schrnk., 1789 **

34(31) Elytral epipleura oblique or almost vertical, visible along entire length in lateral view.

35(122) Head large or moderately large. Eyes large, distinctly emarginate, this emargination very deep in most species (Fig. 10: 10; 12: 1, 4). Aedeagus diversely formed (e.g. Fig. 11: 7–13; 13: 3, 4, 7–13), but not fork-like with mostly 3, rarely 2 lobes. Normally, larger species (length 2.7–7.5 mm). Elytral punctures confused or arranged in regular rows. [1]

36(89) Elytra confusedly punctate, if puncture rows present near suture or laterally, then they are irregular, with additional punctures.

37(38) Underside and legs entirely yellowish-brown (in some specimens, tarsi brown). Dorsum brownish-yellow or rufous, densely punctate, with 2 markings on pronotum and 5 on each elytron black, in some specimens markings entirely or partly reduced. Elytra covered with short setae. Length 3.6–6.1 mm. From deciduous forest zone to steppe zone. Europe, Caucasus. Various foliar trees..... *C.* (s.str.) *octomaculatus* Rossi, 1790 **

38(37) Underside black or metallic.

39(40) Elytra covered with short setae. Body green or bronze-green, with pronotum laterally, elytra, bases of antenna, tibiae and tarsi yellow, each elytron with 1–3 (1,0; 1,1; or 2,1) markings black or dark metallic. Length 4.0–5.0 mm. Deciduous-coniferous forest zone (Byelarus; ER: Moscow reg.), forest steppe and steppe zones. C. and S. Europe, Caucasus, Kazakhstan, W. Siberia. *Galium*, Asteraceae..... *C.* (s.str.) *lactus* F., 1792 **

40(39) Elytra glabrous.

41(70) Dorsum without metallic coloration. Underside black.

42(61) Elytra yellow, rufous, or red, with markings black; in some specimens, markings missing.

43(44) Pronotum unicolorous: black in male, rufous in female. Elytra rufous throughout or each with 2 (1,1) markings. Length 5.8–7.5 mm. From taiga zone (ER: Murmansk reg.) to steppe zone. Transpalaearctic species. Various foliar trees..... *C. (Homalopus) coryli* (L., 1758) **

44(43) Pronotum black, with pattern rufous, yellow, or white; rarely pronotum rufous, with pattern black.

45(58) Lateral borders of elytra broad, simultaneously visible along entire length behind humeral calli in dorsal view.

46(47) First and 2nd tarsomeres and tibiae except bases rufous. Femora black with white marking before apex. Elytra red, each with 2 (1,1) markings; in some specimens these markings missing. Length 5.4–6.7 mm. From taiga zone to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, Siberia, Mongolia, Far East. Various foliar trees... *C.* (s.str.) *cordiger* (L., 1758) **

47(46) Tibiae and tarsi black.

48(53) Femora without white or yellow markings.

49(52) Elytra with narrow black sutural stripe.

[1] Key to species of subgenera *Cryptocephalus* s.str., *C.* (*Lamellosus* Tomov, 1979), and *C.* (*Homalopus* Chevr., 1837) does not follow the subgeneral system for making the determination of species easier. So, each specific name is supplied with subgeneral one.

50(51) Elytra yellowish-rufous, with narrow sutural stripe along entire length, each with 1–4 black markings (Fig. 11: 5, 6). Pronotum black, with anterior and lateral margins, and transverse marking near base, yellow. Length 4.7–6.0 mm. Aedeagus as in Fig. 11: 8. From taiga zone to steppe zone (specimens from ER: Saratov reg.: Nizhniaya Bannovka). Europe, Kazakhstan, Siberia, Far East, Mongolia. *Betula, Salix, Corylus*..... ..... *C.* (s.str.) *distinguendus* Schneid., 1792 **

51(50) Elytra reddish-brown, with narrow sutural stripe, each with humeral marking and transverse basal stripe, black. Pronotum black, with lateral sides and longitudinal diskal stripe (more or less developed) rufous. Length 6.8–6.9 mm. Aedeagus as in Fig. 11: 10. ER: Polar Urals (envir. Labytnangi), N. Urals (Denezhkin Kamen Mt.), S. Urals (Nurgush ridge) (all localities — after Mikhailov, 1997). Siberia, Far East, Mongolia. *Dasiphora fruticosa*..... *C.* (s.str.) *krutovskyi* Jcbs., 1900

52(49) Elytra with wide sutural stripe and wide diskal stripe, black. Pronotum black, with lateral and anterior sides yellow. Aedeagus as in Fig. 11: 9. Length 5.5–5.8 mm. ER: Polar Urals (Rai-Iz and Pai-Er Mts. (Fridolin, 1936); envir. Labytnangi (Mikhailov, 1997)). Siberia (Yamalo-Nenets Autonomous area, Transbaikalia, Yakutia). Far East (Magadan reg.)..... ..... *C.* (s.str.) *orotshena* Jcbs., 1925

53(48) Femora with white or yellow marking at exterior side before apex.

54(55) In both sexes, pygidium with turned up border, without impressions. In male, 5th abdominal sternite with weak simple mid impression only. Pronotum usually black, with narrow transverse anterior stripe, diskal longitudinal stripe at anterior 1/2 of pronotum and broad lateral stripes yellowish-rufous; rarely rufous pattern extends over most of pronotum. Elytra reddish-rufous, with suture and 3 (2,1) markings black, these markings usually connected to sutural stripe. Length 4.5–7.0 mm. Ukraine; ER: taiga zone (Arkhangelsk reg. (Lopatin, Dovgailo, 2002), Komi: Syktyvkar (Medvedev A., *et al.*, 2001), Udmurt Republic (Roschinenko, 1972)), forest steppe zone (Moldova: Prut river (Lopatin, Dovgailo, 2002)), steppe zone (Saratov reg.: Krasnoarmeisk), N. Urals (Ekaterinburg reg. (Mikhailov, 2000)), Middle Urals, S. Urals, Europe, Caucasus. *Alnus, Populus, Salix*..... ..... *C.* (s.str.) *quinquepunctatus* (Scop., 1763) (*signatus* Laich., 1781) **

55(54) Pygidium convex in male, with 3 deep impressions in female. In male, 5th abdominal sternite with deep impression bearing 1 spine-like projection laterally.

56(57) Black humeral marking covering not less than basal half (mostly whole surface) of humeral callus. Elytra with 3–4 (2,1 or 2,2) large markings, mostly fused together to form transverse bands. Pronotum with pattern yellow or rufous. Length 4.5–6.5 mm. From taiga zone to steppe zone. Transpalaearctic species. Various foliar trees..... ..... *C.* (s.str.) *sexpunctatus* (L., 1758) **

57(56) Black humeral marking (if present) placed behind humeral callus or covering only its posterior 1/4. Elytra with 3–4 (2,1 or 2,2), in some specimens with 2 (1,1) moderately large markings, or without markings. Pronotum with pattern yellowish-white, rarely rufous. Length 5.0–6.3 mm. From taiga zone to steppe zone. Europe, W. Siberia, E. Kazakhstan, China. Various foliar trees..... *C.* (s.str.) *octopunctatus* (Scop., 1763) **

58(45) Lateral borders of elytra very narrow, almost invisible in dorsal view.

59(60) In male, fore-tibiae emarginate on interior side before apex (Fig. 10: 12). Mid- and hind-femora with yellow marking on exterior side before apex. Pronotum red, with 4 markings (mostly fused) and stripe before base, black. Elytra red, with suture black with exception of its base, with 3 (2,1) black markings, sometimes fused together to form transverse bands. Aedeagus as in Fig. 13: 11. Length 4.0–5.4 mm. From taiga zone (Vyatka reg.) to steppe zone. C. and E. Europe, Caucasus, Kazakhstan, Siberia. Various plants, mostly trees. ..... *C. (Lamellosus) laevicollis* Gebl., 1830 **

60(59) In male, fore-tibiae without emargination on interior side before apex. Mid- and hind-femora with only indistinct pale marking on exterior side before apex. Pronotum black, with pattern yellow. Elytra yellowish-rufous, with one common triangular basal marking reaching mid-point of elytra, each with humeral and two postmedial markings (usually fused together) black; suture in apical half rufous (Fig. 11: 3, 4). Length 4.2–5.2 mm. Aedeagus as in Fig. 11: 7. ER: taiga zone (Leningrad reg.: Beloostrov (Lopatin, Dovgailo, 2002); specimens from Leningrad reg.: Pushkino). Sweden, Finland. *Betula nana* on swamps..... *C.* (s.str.) *cruciger* Hell., 1922 **

61(42) Elytra entirely black or black with yellow or red pattern (stripe, markings) laterally or on epipleura only.

62(63) Elytra including epipleura entirely black, with lateral border narrow, sharp along entire length. In both sexes, head yellow, with vertex and spot near interior border of each eye black. In male, pronotum with yellow lateral border narrow anteriorly and broadened posteriorly or only with yellow anterior border. In female, pronotum black. Legs yellow with hind femora and upper border of fore and mid femora black. Length 2.5–3.8 mm (male), 3.5–4.5 mm (female). Distribution is studied insufficiently. Moldova (Lopatin, Dovgailo, 2002). C., S. Europe, Asia Minor. *Corylus, Quercus.* .... *C.* (s.str.) *signatifrons* Sffr., 1847 *

63(62) Elytra black with yellow or red pattern (stripe, markings) laterally or on epipleura only.

64(69) Elytra with lateral border broadened in anterior half.

65(68) Frons, clypeus, and labrum yellow throughout or with 1 spot at clypeus and 1 spot near interior border of each eye, black. Anterior part of elytral lateral border, legs (entirely or with exception of hind-femora), and bases of antennae pale yellow. In male, anterior and lateral borders of pronotum usually pale yellow.

66(67) In male, sclerotized plate of internal sac of aedeagus (Fig. 12: 6A) as in Fig. 12: 3. In female, head yellow with only vertex black (Fig. 12: 1), spermatheca as in Fig. 12: 2. Length 3.0–4.2 mm (male), 3.5–5.0 mm (female). Distribution should be restudied because this species was not previously separated from the following. I have specimens from Ukraine: steppe zone (Lugansk reg.); ER: S. Urals (Bashkortostan, Chelyabinsk reg.). Europe, Caucasus, Kazakhstan, Turkmenistan, N. Iran, Siberia, Far East. Various foliar trees..... *C.* (s.str.) *flavipes* F., 1781 **

67(66) In male, sclerotized plate of internal sac of aedeagus as in Fig. 12: 6A, 7. In female, head yellow with 1 spot on clypeus, 1 spot near interior border of each eye, and vertex, black (Fig. 12: 4), spermatheca as in Fig. 12: 5. Length 2.7–3.6 mm (male), 3.2–4.4 mm (female). Distribution insufficiently studied because this species was not previously separated from *C. flavipes*. Byelarus (Lopatin, Dovgailo, 2002). I have specimens from

Ukraine: Crimea (Alushta, Kerch) and ER: deciduous-coniferous forest and forest steppe zones (Moscow reg., Saratov reg.). Spain, France, Germany, Italy, Austria, Czechia, Slovakia, Hungary, Croatia, Greece, Caucasus (specimens from N. Osetia and Krasnodar Krai: Tuapse), Iran, Siberia (Irkutsk reg.). *Quercus pubescens* (in Crimea, confirmed in cages), *Fragaria, Genista, Prunus, Rosa*..... *C.* (s.str.) *bameuli* Duhaldeborde, 1999 **

68(65) Frons black, clypeus and labrum rufous. Lateral borders of pronotum, elytral epipleura, marking below humeral callus, and transverse marking before elytral apex rufous; bases of femora, bases of antennae, tibiae and whole fore-legs, yellow. There is also a melanistic aberration (ab. *aethiops* Wse.) with the following characters: elytral marking below humeral callus reduced to narrow stripe along epipleura (female), or only elytral lateral border and epipleura rufous (male); fore-tibiae and fore-femora, mid- and hind-legs dark. All available specimens from several localities in Murmansk reg. and Karelia belong to this aberration. Length 3.5-4.5 mm. From taiga zone to forest steppe zone. Europe, W. Siberia. *Abies, Picea, Larix*..... ..... *C.* (s.str.) *quadripustulatus* Gyll., 1813 **

69(64) Elytra with lateral border narrow along entire length. Elytral epipleura, marking behind humeral callus, and transverse marking before elytral apex rufous or red; rarely markings missing. Head and legs black. Length 4.0–5.5 mm. From taiga zone (Vyatka reg., Udmurt Republic) and Middle Urals (Visimskii Res.) to steppe zone. C. and S. Europe, Caucasus, Kazakhstan, Siberia, Mongolia. *Alnus, Salix, Populus, Quercus, Rosa*..... ..... *C.* (s.str.) *quadriguttatus* Richt., 1820 **

70(41) Body metallic throughout, or with frons, antennae, pronotal borders, and legs at least partly, yellow.

71(84) Pronotum, legs, and antennae entirely metallic.

72(81) Pronotum with lateral border broad and covered with transverse and oblique wrinkles.

73(76) Body larger, length 6.0–7.5 mm, width 3.4–4.4 mm. Lateral border of pronotum more or less "S"-shaped in lateral view. Aedeagus conspicuously curved downwards at apex (Fig. 10: 14).

74(75) In male, 5th abdominal sternite with transverse fold bearing 2 short obtuse denticles. Golden-green, green, violet, blue, purple, or coppery-red. Length 6.0–7.5 mm. From taiga zone (Komi: Ukhta (Sedykh, 1974)) to desert zone. C. and S. Europe, Caucasus, Kazakhstan, Siberia, Mongolia. Various herbs, mostly flowers..... *C.* (s.str.) *sericeus* (L., 1758) **

75(74) In male, 5th abdominal sternite medially explanate, with neither denticles, nor impression. Green, blue, or violaceous. Length 5.5–7.8 mm. From taiga zone to desert zone. Europe, Caucasus, Near East, Asia Minor, Kazakhstan, W. Siberia. Various herbs, mostly flowers..... ..... *C.* (s.str.) *aureolus* Sffr., 1847 **

76(73) Body smaller, length 4.0–5.6 mm, width 2.6–3.1 mm. Lateral border of pronotum straight or almost so in lateral view. Aedeagus slightly curved downwards at apex (Fig. 10: 15). In male, 5th abdominal sternite with shallow mid impression, but without denticles. Green, bronze-green, or bluish-green.

77(78) Aedeagus with apex not sinuous in lateral view, ventral surface with sharp median ridge (Fig. 11: 13). Ukraine: Crimea (Leonardi, Sassi, 2001). Caucasus, Asia Minor, Romania..... *C.* (s.str.) *praticola* Wse., 1889 *

78(77) Aedeagus with apex sinuous in lateral view (Fig. 11: 11, 12), ventral surface convex, but without sharp ridge.

79(80) Aedeagus usually distinctly narrowed at sides of apical opening, with apical projection less distinct (Fig. 11: 12). Various flowers. Byelarus (Vitebsk), Ukraine (Zhitomir), Urals (Ekaterinburg) (all localities after Leonardi, Sassi, 2001); specimens from ER: deciduous-coniferous forest zone (Moscow reg.), deciduous forest zone (Ulyanovsk reg.), forest steppe zone (Saratov reg.). C. and S.-E. Europe, Asia Minor, Kazakhstan, Uzbekistan, Siberia..... *C.* (s.str.) *solivagus* Leonardi et Sassi, 2001 **

80(79) Aedeagus usually less narrowed at sides of apical opening (mostly with parallel-sides), with apical projection more distinct (Fig. 11: 11). ER: taiga zone (Karelia (Leonardi, Sassi, 2001)). Europe..... ..... *C.* (s.str.) *hypochaeridis* (L., 1758) (*cristula* Dufour, 1843) *

81(72) Pronotum with lateral border narrow and smooth.

82(83) Frons evenly densely pubescent. Pronotum moderately shining; disk covered with dense punctures; many interspaces not broader than diameter of punctures. Dark blue, usually with greenish or violet tint. Aedeagus as in Fig. 13: 2. Length 4.0–6.0 mm. Lithuania; Ukraine; Moldova; ER: taiga zone (Udmurt Republic (Roschinenko, 1972)), from deciduous forest zone to steppe zone, S. Urals (Chelyabinsk reg., (Mikhailov, 2000)). C. and S. Europe, Asia Minor, Caucasus. Various herbs and foliar trees..... ..... *C.* (s.str.) *violaceus* Laich., 1781 **

83(82) Frons densely pubescent anteriorly and sparsely pubescent or glabrous posteriorly (between posterior borders of eyes). Pronotum very shining, disk covered with sparse punctures, many interspaces broader than diameter of punctures. Blue, green, or bluish-green with violet elytra, rarely golden-green. Aedeagus as in Fig. 13: 1. Length 4.5–5.5 mm. From deciduous forest zone to steppe zone, S. Urals. C., S. Europe, Asia Minor, Kazakhstan, Siberia, Mongolia. Various herbs..... *C.* (s.str.) *virens* Sffr., 1847 **

84(71) Base of antennae rufous.

85(86) Pronotum 1.4–1.5 X as broad as long, densely punctate. Legs entirely blackish-blue, or only fore-tibiae on interior side yellow or reddish-brown. Dorsum dark blue, head without yellow pattern. Antennomeres 1-4 yellow. Length 3.5–4.2 mm. Deciduous forest zone (ER: Ulyanovsk reg.), forest steppe and steppe zones. Europe, Kazakhstan, Siberia, Mongolia. *Sanguisorba, Caragana*..... *C.* (s.str.) *elongatus* Germ., 1824 **

86(85) Pronotum 1.5–1.8 X as broad as long, smooth, very finely, sparsely punctate. Legs partly or entirely rufous. Clypeus and genae yellow.

87(88) Blackish-blue. Clypeus, genae, and small spot (more distinct in male) near interior border of eyes yellow. In female, legs rufous throughout; in male, legs blackish with fore-femora (with exception of upper border black), fore-tibiae, fore-tarsi (with exception of 3rd and 4th tarsomeres, blackish), and bases of mid-femora rufous. Aedeagus as in Fig. 13: 4. Length 3.5–5.0 mm. From taiga zone to steppe zone. Europe, W. Siberia. *Quercus, Salix, Betula, Corylus*..... *C.* (s.str.) *nitidus* (L., 1758) **

88(87) Pale green or blue. Legs (with exception of hind-femora) rufous, anterior border and posterior corners of pronotum mostly rufous. Aedeagus as in Fig. 13: 3. Length 3.5–5.2 mm. From taiga zone to forest steppe zone. Europe, Siberia, Far East, China, Korea, Japan. Various foliar trees..... ..... *C.* (s.str.) *nitidulus* F., 1787 **

89(36) Elytral punctures arranged in regular rows, at least near suture and laterally.

90(91) Elytra with short setae on declivity. In male, 1st tarsomere of fore- and mid-tarsi broadened, much broader than 2nd tarsomere (Fig. 13: 5). Dorsum yellowish-rufous, with narrow black line at basal border of pronotum; elytra with humeral marking and transverse postmedial band, brown (in some specimens, these markings and band missing). Length 4.0–5.0 mm. ER: semidesert zone (Medvedev, Shapiro, 1965). Daghestan, Kazakhstan, Turkmenistan, Uzbekistan. *Atraphaxis, Calligonum*..... ..... *C.* (s.str.) *rufofasciatus* Sols., 1882 *

91(90) Elytra glabrous. In male, 1st tarsomere of fore- and mid-tarsi weakly broadened or not broadened at all, slightly broader than 2nd tarsomere (Fig. 13: 6).

92(105) Upper side and most of legs metallic blue or green, in some specimens elytra with yellow markings, or yellow with green pattern. Antennal bases rufous.

93(94) Pronotum extremely fine punctured, looks smooth at magnification up to 16 X, evenly convex. Head and upperside without yellow pattern. Dark blue or blackish-blue. Length 3.0–4.1 mm. ER: E. steppe zone, semidesert zone (Volgograd: "Sarepta"). Kazakhstan, Siberia. *Ferula*..... ..... *C.* (s.str.) *modestus* Sffr., 1848 **

94(93) Pronotum covered with coarse punctures visible at magnification of 8 X. At least anterior border of clypeus and genae yellow.

95(96) Lateral border of pronotum very narrow along entire length. Dark blue or bluish-green. In male, head yellow, with vertex and markings near interior border of eyes blue; in female, head blue, with clypeus, genae, and markings near posterior border of eyes yellow. Pronotum densely punctate; in male, anterior border or only anterior corners yellow. Length 2.7–4.5 mm. Deciduous-coniferous forest zone (Latvia, Lithuania, Byelarus (Lopatin, Dovgailo, 2002)), from deciduous forest zone to steppe zone. Transpalaearctic species. Various herbs and foliar trees..... ..... *C.* (s.str.) *janthinus* Germ., 1824 **

96(95) Lateral border of pronotum broad, broadened toward base.

97(98) Trochanters rufous. In most specimens pronotum with coarse punctures and deep oblique impressions. Dorsum entirely dark blue or bluish-green. Aedeagus as in Fig. 13: 7. Length 2.8–4.5 mm. From taiga zone to desert zone. Transpalaearctic species. Various foliar trees, mostly *Betula*..... ..... *C.* (s.str.) *parvulus* Müll., 1776 **

98(97) Trochanters dark metallic.

99(100) Declivity of elytra covered with punctures much finer than those on disk, puncture rows usually confused on declivity. In most specimens, pronotum with fine punctures and weak oblique impressions. Dorsum entirely dark blue. Aedeagus as in Fig. 13: 8. Length 3.5–5.5 mm. From taiga zone to steppe zone. Europe, Caucasus, Iran, Kazakhstan, Turkmenistan, Siberia, Far East, Mongolia, China. *Betula, Corylus, Populus*..... ..... *C.* (s.str.) *caerulescens* C. Shlb., 1839 (*coerulescens* auct.) ** Unicolorous dark blue aberration of *C. bicolor* (see couplet 101) also keys out here.

100(99) Declivity of elytra covered with distinct punctures arranged in regular rows. Dorsum dark blue. In female, elytra with variable yellow or rufous

pattern; in male, elytra unicolorous dark blue or with yellow (rufous) apical marking.

101(102) In male, elytra unicolorous dark blue. In female, elytra with broad longitudinal stripe yellowish-rufous. Aedeagus as in Fig. 13: 10. Length 3.8–4.5 mm (male), 4.6–5.1 mm (female). Ukraine: steppe zone. S. and S.-E. Europe, Asia Minor, Caucasus, Iran. *Salix, Populus, Quercus, Pistacia.* ..... *C.* (s.str.) *bicolor* Esch., 1818 (*concinnus* Sffr., 1853) **

102(101) In male, elytra dark blue with yellow or rufous apical marking.

103(104) Aedeagus as in Fig. 12: 9. In female, elytra dark blue with broad longitudinal stripe yellow or rufous. Length 3.5–4.5 mm (male), 4.0–5.0 mm (female). Ukraine (Lopatin, Dovgailo, 2002).[1] C., S. Europe. *Betula, Fagus, Quercus, Salix.* ..... *C.* (s.str.) *marginatus* F., 1781

104(103) Aedeagus as in Fig. 13: 9. In female, elytra dark blue with longitudinal stripe or apical marking yellow or rufous. Length 3.7–4.7 mm. Ukraine: Crimea (mts. and N. foothills). *Salix.* ... *C.* (s.str.) *biguttulus* Sffr., 1848 **

105(92) Upper side without metallic coloration.

106(115) Head, pronotum, and legs entirely black.

107(110) Elytra black, with apical marking, in some specimens, also with marking behind scutellum red, rufous, or yellow.

108(109) Elytral apical marking yellow or rufous with convex anterior border. Length 4.5–6.0 mm. From taiga zone to steppe zone. Europe, Asia Minor, Kazakhstan, Siberia. Various foliar trees and bushes, mostly in flower..... ..... *C.* (s.str.) *biguttatus* (Scop., 1763) **

109(108) Elytral apical marking rufous or red with concave anterior border (1), besides that, in some specimens, with red marking near scutellum (2)..... ..... *C.* (s.str.) *bipunctatus* ab. *thomsoni* Wse. (1) **, ab. *quadrinotatus* H.-S. (2) (see also couplet 113)

110(107) Elytra red, rufous, or yellow, with black pattern.

111(114) Elytra red or rufous, with diskal markings and narrow sutural stripe not reaching 2nd puncture row black.

112(113) Elytra with 3 (1,2) black markings. Length 4.5–7.0 mm. Forest steppe zone. C. and S. Europe, Asia Minor, Caucasus. *Corylus, Betula, Quercus.* . ..... *C.* (s.str.) *imperialis* Laich., 1781 **

113(112) Elytra with 2 (1,1) black markings, sometimes fused together forming broad longitudinal stripe (ab. *sanguinolentus* Scop. **). Length 4.0–6.0 mm. From taiga zone to desert zone. Transpalaearctic species. Various foliar trees and herbs..... *C.* (s.str.) *bipunctatus* (L., 1758) **

114(111) Elytra yellow, with 2 broad longitudinal stripes black: one at suture and other at disk; in some specimens, these stripes fused together before apex, or also fused behind scutellum: sutural stripe reaching 2nd puncture row. Length 3.0–4.6 mm. From deciduous-coniferous forest zone (Latvia, Lithuania) to steppe zone. Europe. *Chrysanthemum, Leucanthemum, Centaurea, Spartium, Tanacetum, Achillea, Genista, Sarothamnus.*..... ..... *C.* (s.str.) *vittatus* F., 1775 **

115(106) Head and legs, at least partly, yellow.

116(117) Elytra with punctures arranged in partly confused or geminate rows. Dorsum black, elytra with epipleura and anterior part of lateral margin yel-

[1] The finding of *C. marginatus* in the Crimea (Warchałowski, 1991a) should be confirmed. Really, another, closely-related species, *C. biguttulus* Sffr., 1848, inhabits the Crimea.

low, in male, also anterior and lateral borders of pronotum yellow. Length 3.2–4.8 mm. ..... *C.* (s.str) *flavipes* F., 1781 and *C.* (s.str.) *bameuli* Duhaldeborde, 1999 (see couplets 66 and 67)

117(116) Elytra with punctures arranged in regular rows throughout.

118(121) Pronotum covered with distinct punctures, visible at magnification of 16 X.

119(120) Pronotum without transverse impressions laterally, but with narrow furrow delimiting yellow triangle near posterior corner. Body black, with epipleura and 2 markings at lateral side of each elytron red or yellow; these markings variable in size, in some specimens, they occupy most part of elytral disk. Pronotum with anterior border (sometimes only at sides) and posterior corners yellow. Head black with markings yellow. Fore-legs partly yellow. Length 3.0–5.0 mm. From taiga zone to steppe zone. Europe, Caucasus, Kazakhstan, Iran, Siberia. Various herbs, mostly *Hypericum*. .... *C.* (s.str.) *moraei* (L., 1758) **

120(119) Pronotum with transverse impressions laterally. Dorsum yellow, with very variable black pattern, in some specimens, upper side black, with narrow longitudinal stripe on pronotum. Underside black throughout, or with mesepisterna, mesepimera, and sometimes metepisterna yellow or rufous. Aedeagus as in Fig. 13: 12, 13. Length 3.5–5.0 mm. From taiga zone to steppe zone, S. Urals (Ilmeusky Res.), Europe, W. Siberia. *Salix, Alnus*.... ..... *C.* (s.str.) *decemmaculatus* (L., 1758) (*bothnicus* L., 1758; *frenatus* Laich., 1781) **

121(118) Pronotum very smooth, covered with finest sparse punctures invisible at magnification of 16 X. Body black, with fore-legs, genae, bases of antennae, 4 markings (1,2,1) on each elytron partly fused together in some specimens, in male also anterior margin and posterior corners of pronotum, clypeus, and middle of frons yellow or rufous, very rarely elytra entirely black. Length 3.4–5.0 mm. From taiga zone (ER: Kostroma reg.: Manturovskii Distr.; Udmurt Republic) to semidesert zone, floodlands in desert zone. C. and S. Europe, Asia Minor, Near East, Caucasus, Kazakhstan, Kyrgyzstan, C. Asia, Siberia, N.-W. China. Various herbs and foliar trees..... ..... *C.* (s.str.) *anticus* Sffr., 1848 (*octacosmus* Bedel, 1891) **

122(35) Head small. Eyes very slightly emarginate (Fig. 10: 11). Aedeagus apically forked into usually 3, rarely 2 branches (Fig. 13: 14; 14: 1–6). Normally, smaller species (length 1.5–4.0 mm). Elytra with punctures arranged in regular rows. Subgenus *Burlinus* Lop., 1965.

123(126) Elytra dark blue.

124(125) Pronotum black, with anterior margin yellow in both sexes; pronotal punctures fine on disk and coarser laterally. Fore- and mid-legs rufous, with upper border of femora mostly blackish; hind-legs black. Length 2.4–3.5 mm. From taiga zone (Komi (Medvedev A., *et al.*, 2001); specimens from ER: Murmansk reg.: Kandalaksha Distr.) to forest steppe zone. N. and C. Europe, Kazakhstan, Siberia. *Salix, Populus, Betula, Caragana*..... ..... *C. punctiger* Pk., 1799 **

125(124) Pronotum black, in male with anterior corners yellow; impunctate. Legs yellow, with exterior side of hind-femora blackish at middle. Length 2.4–3.5 mm. From taiga zone to forest steppe zone. N. and C. Europe, Kazakhstan, Siberia, Far East, Mongolia. *Salix, Betula*..... ..... *C. pallifrons* Gyll., 1813 **

126(123) Elytra black throughout, or black with yellow (red) pattern, or yellow throughout, or yellow with black pattern, but always without metallic tint.

127(136) Pronotum with distinct punctures or longitudinal furrows.

128(133) Pronotum densely punctate.

129(130) Dorsum yellow, with basal border of pronotum and elytral base blackish in some specimens. Length 2.2–3.0 mm. Ukraine: steppe zone (Askania Nova Res., lower reaches of Dnepr river (Lopatin, 1960; Lopatin, Dovgailo, 2002)). Europe, N. Africa, Near East, Iran, Armenia. *Populus*..... ..... *C. ochroleucus* Fairm., 1859 *

130(129) Pronotum black with anterior and lateral margins yellow. Elytra yellow with black pattern, or black with yellow markings.

131(132) Elytra yellow, with suture and longitudinal diskal vitta black, in some specimens, latter vitta missing. Base of hind-femora not blackish. Length 2.0–3.5 mm. Deciduous-coniferous forest zone (ER: Moscow reg.: Serpukhov Distr., (Melgunov, 1892)), forest steppe zone (specimens from Lipetsk reg. and Ulyanovsk reg.), steppe zone. Europe, N. Africa, Near East, Caucasus, Asia Minor, Kazakhstan. Various Lamiaceae and Asteraceae..... ..... *C. pygmaeus* F., 1792 **

132(131) Elytra pale yellow, with suture and diskal vitta black; these stripes joined together by bands near base and usually near apex. Base of hind-femora blackish. In some specimens, elytra black, with anterior and lateral margins, one marking at apex and other near suture at mid-point of elytra, yellow. Length 1.5–2.5 mm. Total fig. 18. Deciduous-coniferous forest zone (Latvia, Lithuania, and Byelarus (Lopatin, Dovgailo, 2002), ER: Tatarstan: Kazan (Lebedev, 1906; cited after Warchałowski, 1991a)), forest steppe and steppe zones. Transpalaearctic species. Various trees and herbs, mostly *Artemisia*..... *C. elegantulus* Grav., 1807 **

133(128) Pronotum strigose.

134(135) Pronotum with long, sharp striae, dull, with sericeous sheen. Body black, with elytra, legs, anterior and lateral margins of pronotum yellow, sutural and diskal stripes on each elytron black; pronotum mostly with 2 yellow markings before base; frons yellow with black pattern. Length 2.0–3.0 mm. From taiga zone to desert zone. Transpalaearctic species. Various Asteraceae, Apiaceae, Plumbaginaceae..... *C. bilineatus* (L., 1767) **

135(134) Pronotum with short, weak, usually indistinct striae, shining. Body black, with legs yellow, hind-femora (with exception apices) black. In male, frons yellow with mid stripe black; in female, frons black with anterior half yellow. Length 2.0–3.2 mm. From taiga zone to steppe zone (east of Dnepr). Europe, Kazakhstan, Siberia, Far East, China, Korea, Japan. *Salix, Alnus, Betula, Corylus, Caragana, Populus, Cirsium, Carduus*..... ..... *C. exiguus* (Schneid., 1792) **

136(127) Pronotum smooth, very shining, without punctures or striae, or with minute, indistinct punctures.

137(154) Pronotum black throughout or black with anterior and lateral margins yellow.

138(149) Elytra black throughout or with only epipleura yellow.

139(142) Anterior margin of pronotum with narrow yellow stripe broadened near anterior corners.

140(141) Scutellum entirely black; elytral epipleura black, pitchy brown, or rufous; head black with labrum, clypeus, genae and 2 markings on frons

yellow; legs yellow. Aedeagus as in Fig. 14: 2. Length 2.5–3.5 mm. Byelarus: Belovezhskaya Puscha (Lopatin, Dovgailo, 2002); Ukraine: Carpathians (Warchałowski, 1999); ER: taiga zone (Karelia (Dr. I.K. Lopatin, personal communication)), deciduous-coniferous forest zone (Moscow reg. (Melgunov, 1892)). C. Europe. *Salix*..... *C. saliceti* Zebe, 1855 *

141(140) Scutellum black with yellow spot; elytral epipleura usually yellow; head yellow with vertex and longitudinal frontal stripe black; hind-femora black. Length 2.3–3.0 mm. From taiga zone (ER: Karelia (Silfverberg, 1992), Udmurt Republic (Roschinenko, 1972)) to steppe zone. Europe, Kazakhstan, Siberia, Far East, Mongolia, China, Korea. *Betula, Populus, Salix, Crataegus, Quercus*..... *C. frontalis* Marsh., 1802 **

142(139) Pronotum, scutellum, and elytral epipleura black. Labrum and genae yellow or reddish.

143(144) Lateral border of pronotum visible from above along entire length. Apex of aedeagus without dorsal branch (Fig. 14: 1). Four or five basal antennomeres, labrum, genae, tibiae, and trochanters reddish. Length 2.5–3.0 mm. Ukraine (Transcarpathians)[1]. C. and S.-E. Europe. *Fagus*..... ..... *C. carpathicus* Frivaldszky, 1883 **

144(143) Lateral border of pronotum visible from above only near base. Aedeagus trident-like.

145(146) Frons with 2 large yellow markings. Legs usually yellow throughout. Anterior border of prosternum without denticle (viewed laterally). Length 2.4–4.0 mm. From taiga zone (Vyatka reg., Udmurt Republic) to steppe zone. Europe, Near East, Caucasus, Kazakhstan, W. Siberia, Iran. Various foliar trees, mostly *Populus, Salix*..... *C. ocellatus* Drap., 1819 **

146(145) Frons mostly black, without yellow markings, or entirely yellow, if frons black with yellow markings, then anterior border of prosternum with denticle (viewed laterally).

147(148) Anterior border of prosternum without denticle. Legs yellow, in some specimens, bases of hind-femora darkened, elytra with weak steel-blue tint. Frons black, in some specimens, with small red marking near interior border of eye (ab. *subocularis* Rtt.), or clypeus black (ab. *paganensis* Pic), or frons yellow. Length 2.5–3.4 mm. From taiga zone (ER: Komi: Ukhta (Sedykh, 1974), specimens from Udmurt Republic) to steppe zone (?). Europe. *Betula, Quercus*..... *C. querceti* Sffr., 1848 **

148(147) Anterior border of prosternum with denticle. Legs yellow, with hind-femora and part of tibiae black, fore- and mid-legs darkened in some specimens. Frons black, in some males, with 2 yellow markings (ab. *ocularis* Heyd.). Length 2.0–2.8 mm. From tundra zone to steppe zone. Europe, Caucasus, Kazakhstan, Siberia, Far East, Mongolia. Various foliar trees and shrubs..... *C. labiatus* (L., 1761) **

149(138) Elytra dichromatic.

150(153) Elytra black, with yellow markings near base or apex.

151(152) Each elytron with 2 yellow markings: one at base and other laterally in anterior part. Length 2.0–3.0 mm. W. Ukraine (Warchałowski, 1991a), C. and S.-E. Europe. *Alnus, Mentha, Thymus*... *C. strigosus* Germ., 1824 *

152(151) Elytra with yellow apices. Length 2.0–3.5 mm. From deciduous forest

[1]Material: Transcarpathians, Rakhov Distr., Chernaja Tisa Vill., 800m, K. Nadein leg.: 6.7.2000: 1 male.

(S. Byelarus (Lopatin, Dovgailo, 2002)) to steppe zone. Europe, Caucasus, Siberia (Sayans). Various foliar trees..... *C. chrysopus* Gmel., 1788 **

153(150) Elytra brownish-yellow, each with narrow black sutural vitta and broad black (in some specimens reduced) longitudinal diskal vitta mostly fused together before apex. Pronotum black, with broad anterior and lateral stripes yellow or rufous-yellow, in some specimens also with narrow rufous longitudinal stripe or small diskal spot. Length 2.4–3.2 mm. Forest steppe and steppe zones. Mediterranean reg., E. Europe, Caucasus, Kazakhstan, C. Asia. *Ulmus*..... *C. connexus* Ol., 1807 **

154(137) Pronotum entirely yellow, rufous, or red, rarely with only basal margin black.

155(156) Claws appendiculate. Fore-tibiae strongly curved anteriorly, especially in male, (viewed laterally). Dorsum yellow or yellowish-rufous, with base of pronotum, base of elytra, and sometimes elytral suture black. Aedeagus as in Fig. 13: 14. Length 2.3–3.1 mm. From deciduous forest zone to steppe zone. C. and S. Europe, Caucasus, Kazakhstan, Siberia, Far East. *Populus, Salix*..... *C. populi* Sffr., 1848 **

156(155) Claws simple. Fore-tibia straight.

157(162) Elytra yellow throughout or with humeral calli and indistinct longitudinal stripe blackish-brown.

158(159) Elytral epipleura with deep punctures arranged in short row. Elytra entirely yellow. Pygidium black. Length 2.0–3.3 mm. From deciduous forest zone to steppe zone. S.-E. Europe, Caucasus, Iran, Kazakhstan, Siberia. *Prunus, Pyrus, Rubus, Rosa, Euphorbia*..... *C. planifrons* Wse., 1882 **

159(158) Elytral epipleura impunctate. Elytra yellow, with humeral calli and indistinct longitudinal stripe (missing in some specimens) dark brown, with broad brown or narrow black sutural stripe. Apex of pygidium yellow or rufous.

160(161) Declivity of elytra with punctures slightly finer than those on disk. Fifth–9th intervals convex at mid-point of elytra. Aedeagus as in Fig. 14: 3. Length 2.0–3.0 mm. From taiga zone (ER: Vyatka reg., Udmurt Republic, Karelia) to desert zone. Transpalaearctic species. Various herbs..... ..... *C. fulvus* Gz., 1777 **

161(160) Declivity of elytra with punctures much finer than those on disk. Only 9th interval convex, others flat. Aedeagus as in Fig. 14: 4. Length 2.0–2.6 mm. Ukraine: steppe zone (Zaporozhye (Warchałowski, 1991a)). C. and S. Europe, Tunisia, Near East, Azerbaijan, Iran. Various foliar trees, shrubs, and herbs..... *C. macellus* Sffr., 1860 *

162(157) Elytra yellow, with variable dark pattern, at least with transverse band behind mid-point, or elytra black, with yellow or red pattern laterally.

163(164) Aedeagus as in Fig. 14: 5. Elytra black, with lateral stripe along entire length or only in basal half and transverse apical marking yellow; or elytra yellow with markings black or brown. Length 2.2–3.0 mm. From taiga zone to steppe zone. N. Africa, Europe, Caucasus, Kazakhstan, Turkmenistan, Siberia. Various foliar trees..... *C. pusillus* F., 1777 **

164(163) Aedeagus as in Fig. 14: 6. Elytra black, with lateral stripe in basal half yellow, in some specimens, also with transverse apical marking yellow. Length 2.5–3.4 mm. Ukraine: steppe zone (Warchałowski, 1991a). Europe, N. Africa. *Salix, Populus*..... *C. rufipes* (Gz., 1777) *

19. Pachybrachis Chevr., 1837 (Pachybrachys auct.)

1(6) Elytra yellow, yellowish-green, or reddish-yellow, with punctures darker, but without black pattern.

2(5) Aedeagus with prominence ventrally before apex (Fig. 14: 7, 8).

3(4) Aedeagus constricted at sides of apical opening, with apex pointed (Fig. 14: 7). Elytra reddish-yellow with rufous punctures. Length 2.4–3.5 mm. ER: semidesert zone (Lopatin, 1977). Caucasus (Daghestan), Kazakhstan, Iran. *Hieracium*..... *P. vermicularis* Sffr., 1854 *

4(3) Aedeagus not constricted at sides of apical opening, with apex rounded (Fig. 14: 8). Elytra yellow with black punctures. Length 3.0–4.5 mm. ER: semidesert zone (specimen from Astrakhan reg.: Bolshoj Bogdo Mt.; Kalmykia (Korostov, 1990)). Kazakhstan. *Alhagi, Glycyrrhiza, Tamarix*. . . .. *P. pistor* Breit, 1921 **

5(2) Aedeagus without prominence ventrally before apex (Fig. 14: 9). Elytra yellowish-green, with punctures blackish-brown. Length 2.5–3.6 mm. ER: semidesert zone (Kalmykia (Lopatin, 1977)). Kazakhstan, C. Asia. *Salsola*.. ..... *P. cribricollis* Pic, 1907 *

6(1) Elytra yellow, with pattern black, or elytra black, with pattern yellow, or elytra entirely black.

7(14) Elytra with flat or very weakly convex yellow markings covered with numerous punctures, or elytra black.

8(13) Mesepimera yellow or black with yellow spot. Coloration very variable. Examination of aedeagus is necessary for precise determination of species.

9(10) Narrow lateral border of pronotum yellow along entire length or slightly darkened anteriorly. Pygidium with 2 large yellow markings usually fused together. Aedeagus as in Fig. 15: 5. Length 2.9–3.2 mm. Ukraine: deciduous forest zone (Ivano-Frankovsk reg.: Bolekhov (Węgrzecki, 1963)). France, Germany, Czechia, Hungary, former Yugoslavia, Romania..... ..... *P. pallidulus* (Sffr., 1851)

10(9) Narrow lateral border of pronotum yellow, brown, or black. Aedeagus not as above.

11(12) Femora with black spot or stripe on upper border. Black elytral markings almost always partly fused together; very rarely elytra black. Pygidium black throughout or with 2 separate yellow markings. Aedeagus as in Fig. 14: 10. Length 2.9–4.5 mm. From taiga zone to steppe zone. Transpalaearctic species. Various foliar trees and shrubs (mostly *Salix*), *Trifolium*..... ..... *P. hieroglyphicus* (Laich., 1781) **

12(11) Femora entirely rufous or weakly darkened, rarely with black stripe at upper border. Black elytral markings almost always separated, or elytra black with obsolete yellow pattern, or elytra black throughout. Pygidium black throughout or with 2 yellow markings fused together or separate. Aedeagus as in Fig. 14: 11. Length 3.0–4.0 mm. Forest steppe zone (Moldova (Calestru, 2003)), steppe and semidesert (specimens from Astrakhan reg.: Bolshoj Bogdo Mt.) zones, S. Urals. Europe, Asia Minor, Near East, Caucasus, Kazakhstan, Siberia, Far East, Mongolia, N. China, Korea. Various herbs and shrubs..... *P. scriptidorsum* (Mars., 1875) **

13(8) Mesepimera entirely black. Elytra with yellow markings occupying area

slightly less than black background. Aedeagus as in Fig. 15: 4. Length 3.4–4.2 mm. Ukraine and Moldova. C. and S. Europe, Asia Minor, Georgia. ..... *P. sinuatus* (Muls. et Rey, 1859) **

14(7) Elytra with distinctly convex yellow markings covered with sparse punctures or devoid of punctures at all.

15(16) Elytra with narrow yellow marginal stripe not bearing appendix near apex (Fig. 16: 1). Aedeagus with triangular apex, ventrally with denticle before apex (Fig. 14: 12). Length 3.2–4.1 mm. W. Ukraine (Lomnicki, 1913, cited after Warchałowski, 1991a). Mediterranean reg. *Quercus*. .... *P. limbatus* (Mén., 1836) *

16(15) Narrow yellow marginal stripe of elytra with appendix directed forward near apex (Fig. 16: 2), if without such appendix, then aedeagus with "crown"-shaped apex (Fig. 15: 2, 3).

17(18) Pygidium with 2 yellow markings. Aedeagus as in Fig. 15: 1. Length 3.0–4.5 mm. Total fig. 19. Forest steppe and steppe zones. C., S. Europe, Asia Minor, Caucasus, Iran. ..... *P. tessellatus* (Ol., 1791) **

18(17) Pygidium black, without yellow markings.

19(20) Apex of aedeagus with 3 denticles (Fig. 15: 2). Length 2.2–3.7 mm. Moldova (specimens from Pridnestrovie); Ukraine (specimens from Crimea); ER: E. steppe zone, S. Urals (specimens from Chelyabinsk reg.). Distribution should be restudied because this species was not separated before from the following. C. and S. Europe, Asia Minor, Caucasus. *Lathyrus, Onobrychis, Lespedeza, Caragana*. ..... *P. fimbriolatus* (Sffr., 1848) **

20(19) Apex of aedeagus with 5 denticles (Fig. 15: 3). Length 2.6–3.8 mm. Ukraine (specimens from Kherson reg. and Donetsk reg.); Moldova (Lopatin, Konstantinov, 1995; specimens from Pridnestrovie); ER (Voronezh reg.). Caucasus, Kazakhstan, Kyrghyzstan, Siberia, Far East, W. China. .... *P. mendax* Sffr., 1860 **

20. Stylosomus Sffr., 1848

1(2) Elytra with punctures arranged in regular rows throughout. Subgenus *Stylosomus* s.str. Dorsum yellow; in many specimens, with head, pronotum, and elytral suture brown, base of pronotum black. Length 1.5–2.5 mm. Total fig. 20. Ukraine: steppe zone; ER: from steppe zone to desert zone. Caucasus, Kazakhstan, C. Asia. *Tamarix, Myricaria*. .... *S. tamaricis* (H.-S., 1838) **

2(1) Elytra with punctures confused on disk and arranged in regular rows laterally and in apical half. Subgenus *Microstylus* Rey, 1883. Head and pronotum brown, base of pronotum black, elytra reddish-yellow, sutural stripe and diffuse marking near base brown. Length 2.0–2.8 mm. Ukraine: steppe zone; ER: steppe zone. Caucasus, Kazakhstan. Salt-marshes. *Limonium, Tamarix*. ..... *S. cylindricus* Mor., 1860 **

Lamprosomatinae (Lamprosominae)

21. Oomorphus Curt., 1831 (Lamprosoma Kby., 1818)

Adults and larvae occur on leaves of the host plants.

1(1) Shining, black with bronze reflection, 2nd antennomere orange. Pronotum covered with dense fine punctures. Elytra with punctures arranged in rows, intervals finely punctured. Length 2.0–3.0 mm. Total fig. 21. Latvia (Silfverberg, 1992); Ukraine: Carpathians, steppe zone (Dnepropetrovsk). C. and S. Europe, Caucasus. *Hedera*, Apiaceae... *O. concolor* (Sturm, 1807) *

Eumolpinae

Adults feed on leaves, larvae occur in the soil, feed on underground parts of plants, pupate in the soil.

Key to genera

1(8) Pronotum with lateral margins, if margin not along entire length, then mid- and hind-tibiae emarginate on upper side near apex.
2(3) Dorsum pubescent or scalely. Elytral punctures arranged in regular rows. ..... 24. *Pachnephorus* Chevr.
3(2) Elytra glabrous.
4(5) Elytral punctures arranged in regular rows. Colour not metallic. Claws simple, without incision at inner edge..... 23. *Chloropterus* Mor.
5(4) Elytra with punctures confused. Colour metallic. Claws with incision at inner edge, or bifid.
6(7) Claws bifid almost to middle of their length (Fig. 16: 4). Mesosternum between mid-coxae, broad (Fig. 16: 6)..... 26. *Eumolpus* Ill.
7(6) Claws with short incision at inner edge near middle of their length (Fig. 16: 3). Mesosternum between mid-coxae, narrow (Fig. 16: 5)..... ..... 25. *Chrysochares* Mor.
8(1) Pronotum without lateral margins. Dorsum with adpressed pubescence.
9(10) Smaller (length 2.3–4.0 mm). Dorsum with dense pubescence. Head at eye level almost as wide as pronotum (Fig. 16: 7)..... 27. *Malegia* Lef.
10(9) Larger (length 5.0–6.0 mm). Dorsum with more sparse pubescence. Head at eye level 1.4 X narrower than pronotum (Fig. 16: 8)..... ..... 22. *Bromius* Chevr.

22. Bromius Chevr., 1837 (Adoxus Kby., 1837)

1(1) Black, with 1st–4th antennomeres rufous. In some specimens, elytra and tibiae also rufous. Length 5.0–6.0 mm. Total fig. 22. From tundra zone to steppe zone. Holarctic species. *Chamerion, Epilobium, Rumex*..... ..... *B. obscurus* (L., 1758) **

23. Chloropterus Mor., 1861

1(2) Smaller. Length 2.6–3.2 mm (male), 3.5–4.5 mm (female). Pronotum covered with very short setae, or glabrous. Coloration variable: yellowish-rufous throughout, or with head and pronotum entirely brown, or head and pronotum with black markings, or head and pronotum black; or with elytral suture brown or black, underside black. Ukraine: steppe zone, Crimea; Moldova; ER: steppe and desert zones. Caucasus, Kazakhstan, Turkmenistan. Salt-marshes. *Limonium*..... ..... *Ch. versicolor* Mor., 1860 (*moldaviensis* Pic, 1909 ?) **

2(1) Larger (length 4.0–4.8 mm). Pronotum with distinct, small setae. Dorsum yellowish-rufous, mostly with pronotum, scutellum, sutural stripe, and transverse band at mid-point of elytra brown or pitchy black; in some specimens, this band broadly interrupted at suture; underside brownish-black. Total fig. 23. ER: desert zone (specimens from Astrakhan reg.: Krasnyj Yar Distr.). Caucasus, Kazakhstan, C. Asia, Iran, Saudi Arabia. *Tamarix*..... ..... *Ch. lefevrei* Rtt., 1890 **

24. Pachnephorus Chevr., 1827

1(2) Dorsal surface under scales pitchy black, without metallic reflection. Pronotum and elytra covered with broad pale grey scales. Length 1.9–3.0 mm. Ukraine (Churiuk Isl. (Lopatin, 1960)). Mediterranean reg., Caucasus (Daghestan). Salt-marshes..... *P. canus* Wse., 1882 *

2(1) Dorsal surface under scales or setae with distinct bronze reflection.

3(4) Pronotum covered with coarse transverse furrows with narrow wrinkled intervals laterally and basally, and fine dense longitudinal furrows anteriorly and medially. Dorsum with small markings of white scales. Length 2.7–4.0 mm. Total fig. 24. Ukraine: steppe zone, Crimea; ER: deciduous-coniferous forest zone (Moscow reg. (Melgunov, 1892)). C. and S. Europe, Asia Minor, Caucasus. *Cirsium*..... *P. villosus* (Duft., 1825) **

4(3) Pronotum evenly covered with fine punctures.

5(8) Intervals between elytral puncture rows covered with fine dense confused punctures.

6(7) Pronotum less prominent laterally (Fig. 16: 9). Dorsum covered with dense scales, mostly masking bronze background. Claws with small prominence at inner side, near base (Fig. 16: 11). Length 2.2–3.5 mm. From deciduous-coniferous forest zone to desert zone (flood-lands). Transpalaearctic species. *Helianthus, Cirsium, Triticum, Hordeum*.....*P. tessellatus* (Duft., 1825) **

7(6) Pronotum more prominent laterally (Fig. 16: 10). Dorsum covered with sparse scales not masking background. Claws without prominence at inner side (Fig. 16: 12). Length 2.5–3.5 mm. From taiga zone to steppe zone. Europe, Asia Minor, Siberia. Asteraceae..... *P. pilosus* (Rossi, 1790) **

8(5) Intervals between elytral puncture rows with 1 row of fine punctures. Dorsum covered with sparse, hair-like scales. Length 2.5–4.0 mm. Steppe and desert (ER: Astrakhan reg.) zones. Mediterranean reg., Caucasus, Kazakhstan. *Limonium*..... *P. cylindricus* Luc., 1849 **

25. Chrysochares Mor., 1861

1(1) Head and pronotum green or blue, elytra reddish-purple or violet, legs bluish-green. Length 13.0–17.0 mm. Total fig. 25. Ukraine: steppe zone; ER: deciduous forest zone (Samara reg.: Zhigulevskie Mts. (Pavlov, 1977)), steppe zone (Rostov reg.), semidesert zone (Volgograd reg.), desert zone (Kalmykia, Astrakhan reg.). Caucasus, Kazakhstan, C. Asia. *Trachomitum, Capparis, Cynanchum, Calystegia*..... *Ch. asiatica* (Pall., 1771) ** [1]

26. Eumolpus Ill., 1798 (Chrysochus Chevr., 1837)

1(1) Dorsum dark blue or violet. Length 7.4–10.0 mm. Total fig. 26. Lithuania; Byelarus; Ukraine; ER: taiga zone (Vyatka reg.), from deciduous-coniferous forest zone (Tatarstan) to semidesert zone (Volgograd reg.). C. and S. Europe, Kazakhstan, W. Siberia. *Cynanchum*..... ..... *E. asclepiadeus* (Pall., 1776) **

27. Malegia Lef., 1883

1(1) Blackish-green or blackish-bronze, covered with dense adpressed pale setae masking background, legs and bases of antennae rufous, tarsi and bases of femora (or trochanters only) blackish in many specimens. Length 2.3–4.0 mm. Total fig. 27. ER: desert zone (Medvedev, Shapiro, 1965). Kazakhstan, C. Asia..... *M. turkestanica* Rtt., 1890 (*turcestanica* auct.) *

Chrysomelinae

Key to genera

1(10) Interior border of elytral epipleura near apex setate (Fig. 16: 13).
2(3) Claws fused together at base (Fig. 16: 15)..... 30. *Zygogramma* Chevr.
3(2) Claws separated at base (Fig. 16: 16).
4(5) Last maxillary palpomere much shorter than penultimate (Fig. 16: 17). Elytra yellow or rufous, with black suture and each with 5 black longitudinal stripes.....29. *Leptinotarsa* Stål
5(4) Last maxillary palpomere not shorter than penultimate (Fig. 16: 18). Coloration not as in couplet 4.

[1] Korostov (1990) recorded *Ch. asiatica orientalis* Lop., 1963 from Kalmykia. According to Lopatin (1963), *Ch. asiatica asiatica* is distributed in E. Caucasus and lower reaches of Volga, and *Ch. asiatica orientalis* in Kazakhstan and C. Asia. The taxonomic position of the subspecies *orientalis* is unclear. Such characters as punctation of frons, clypeus, pronotum, and elytra, shape of pronotum, presence or absence of impression between frons and clypeus are variable. Only coloration of body is more or less valid distinguishing character. However, I have the specimens of nominotypical subspecies (body is blue, with greenish tint on pronotum, elytra are redish purple with golden tint) from Volgograd reg., and the specimens of the subspecies *orientalis* (body is green with golden tint, elytra are violet or bluish violet) from Rostov reg., Astrakhan reg., and Stavropol Kral, and intermediate form (body is bluish green, with elytra violet) from Rostov reg.

6(7) Third metatarsomere deeply emarginate at apex (Fig. 17: 11). Wingless. ..... 31. *Crosita* Motsch.

7(6) Third metatarsomere shallowly emarginate at apex (Fig. 17: 12). Winged or wingless.

8(9) First abdominal sternite measured along mid line shorter than metasternum. Body oval or elongate, winged or wingless. Elytra with punctures arranged in rows or confused, with small or moderately developed humeral calli..... 32. *Chrysolina* Motsch.

9(8) First abdominal sternite measured along mid line not shorter than metasternum. Body elongate, winged. Elytra confusedly punctate, with prominent humeral calli..... 33. *Oreina* Chevr.

10(1) Interior border of elytral epipleura glabrous (Fig. 16: 14).

11(26) Disk of elytra confusedly punctate.

12(13) Wingless. Elytra fused together. Metasternum very short (Fig. 17: 1). ..... 28. *Timarcha* Latr.

13(12) Winged. Elytra not fused together. Metasternum longer (Fig. 17: 2).

14(23) Elytra without sutural stria (or with short stria near apex).

15(16) Elytra drawn out at apices (Fig. 17: 3), without prominent lateral callus. ..... 34. *Colaphus* Dahl

16(15) Elytra not drawn out at apices (Fig. 17: 4), mostly with prominent lateral callus.

17(18) Elytral epipleura concave, with outer border sharp. Body rounded or rounded-oval. Lateral callus of pronotum not separated from disk by depression..... 35. *Plagiodera* Chevr.

18(17) Elytral epipleura flat, with outer border obtuse or slightly sharpened.

19(20) Lateral callus of pronotum not separated from disk. Body elongate..... ..... 36. *Plagiosterna* Motsch.

20(19) Lateral callus of pronotum separated from disk by depression or furrow.

21(22) Body elongate-oval or elongate, moderately convex. Lateral callus of pronotum separated from disk by depression..... 37. *Chrysomela* L.

22(21) Body oval, very convex, externally similar to *Chrysolina aurichalcea*. Lateral callus of pronotum separated from disk by narrow deep furrow in basal 1/3. One unusual species with elytral epipleura devoid of setae..... ..... 32. *Chrysolina* Motsch.
Only *Chrysolina eurina* Frivaldszky keys out here (See also key to species of the genus 32. *Chrysolina*)

23(14) Apical third of elytra with sutural stria.

24(25) Elytra red or rufous, with black suture and with black mid stripe or without it. Anterior coxal cavities closed behind (Fig. 1: 7)..... ..... 38. *Entomoscelis* Chevr.

25(24) Elytra metallic. Anterior coxal cavities open behind (Fig. 1: 6)..... ..... 39. *Gastrophysa* Chevr.

26(11) Disk of elytra with punctures arranged in longitudinal rows or striae.

27(42) Claws simple, not appendiculate at bases.

28(39) Elytra without yellow or rufous lateral stripe.

29(30) Third tarsomere shallowly emarginate (Fig. 17: 5). Wingless..... ..... 47. *Sclerophaedon* Wse.

30(29) Third tarsomere deeply emarginate (Fig. 17: 6).

31(32) Wingless. Lateral border of elytra extending beyond their mid-point but not reaching apex..... 48. *Sternoplatys* Motsch.

32(31) Winged.
33(38) Lateral border of elytra reaching apex.
34(35) Metasternum near anterior outer corner with impunctate triangular area separated by distinct border from the remainder, which is punctate (Fig. 17: 9)..... 46. *Phaedon* Dahl
35(34) Metasternum uniformly coarsely punctate (Fig. 17: 10).
36(37) Base of pronotum margined..... 44. *Prasocuris* Latr. (part)
37(36) Base of pronotum not margined..... 43. *Hydrothassa* (Subgenus *Agrostithassa* Jcbs.)
38(33) Lateral border of elytra not reaching their mid-point..... 45. *Neophaedon* Jcbs.
39(28) Elytra with yellow or rufous lateral stripe.
40(41) Base of pronotum margined..... 44. *Prasocuris* Latr. (part)
41(40) Base of pronotum not margined..... 43. *Hydrothassa* (s.str.) Thoms.
42(27) Claws appendiculate at base.
43(44) Mid- and hind-tibiae on upper side near apex without tooth-like process (Fig. 17: 8). Dorsum unicolorous, metallic, rarely black..... 42. *Phratora* Chevr.
44(43) Mid- and hind-tibiae on upper side near apex with large tooth-like process (Fig. 17: 7). Dorsum not metallic, yellow, rufous, red, brown, grayish-yellow, or grayish-green, with black markings or without them, rarely black throughout.
45(46) Winged..... 40. *Gonioctena* Chevr.
46(45) Wingless..... 41. *Cercyonops* Jcbs.

28. Timarcha Latr., 1829

Adults and larvae feed on leaves of herbaceous plants, pupae occur in the soil.

1(2) Pronotum without lateral margin (Subgenus *Metallotimarcha* Motsch., 1860). Colour metallic: coppery, bronze, or brown with strong bronze reflection. Length 5.0–10.0 mm. Ukraine: Carpathians. C. and S. Europe. *Galium*..... *T. metallica* (Laich., 1781) **
2(1) Pronotum with lateral margin (Subgenus *Timarcha* s.str). Colour black, mostly with weak metallic reflection: blue, violet, or green.
3(6) Exterior border of elytral epipleura replaced by wide prominent callus beyond mid-point of elytra.
4(5) Elytra finely punctate, punctures as large as those on head, interspaces flat. Dorsum dull. Usually larger. Length 11.0–18.0 mm. Ukraine: steppe zone, Crimea; ER: steppe zone (Rostov reg. (Warchałowski, 1993); Orenburg reg.). Europe, Asia Minor, Caucasus. *Galium, Rubia, Asperula*..... *T. tenebricosa* (F., 1775) **
5(4) Elytra coarsely punctate, punctures much larger than those on head, interspaces convex. Dorsum shining. Usually smaller. Length 8.0–13.0 mm. Ukraine: from deciduous forest zone to steppe zone, Crimea; Moldova. S.-E. Europe. *Galium*..... *T. rugulosa* H.-S., 1838 **
6(3) Exterior border of elytral epipleura almost reaching apex of elytra. Dorsum dull or weakly shining. Length 8.0–13.0 mm. Total fig. 28. Latvia; Byelarus; Ukraine; Moldova; ER: deciduous forest (specimens from Tula reg.

and Ryazan reg.) and forest steppe (specimens from Orel reg., Kursk reg., Lipetsk reg., and Voronezh reg.) zones. Europe. *Galium, Asperula*..... ..... *T. goettingensis* (L., 1758) (*coriaria* Laich., 1781) **

29. Leptinotarsa Stål, 1858

One species was introduced from N. America. It is a serious pest of potato. Adults and larvae feed on leaves, adults also damage tubers in storage. Females lay eggs on leaves. Pupae develop in the soil. Adults hibernate in the soil.

1(1) Body from dirty rufous to pale yellow, elytra mostly paler than head and pronotum; head, pronotum, underside, and legs with black markings, elytra with black suture, each with 5 black stripes. Length 9.0–12.0 mm. Total fig. 29. Estonia; Latvia; Lithuania; Byelarus; Ukraine; ER: from taiga zone (Karelia) to desert zone, eastwards to Transural Region (Chelyabinsk reg.). Europe, Caucasus, N. America. *Solanum tuberosum, S. dulcamara, S. lycopersicum, Atropa bella-donna, Hyoscyamus niger*..... ..... Colorado potato beetle — *L. decemlineata* (Say, 1824) **

30. Zygogramma Chevr., 1837

One species was introduced from N. America for control of serious weed *Ambrosia*. Adults and larvae feed on leaves, females lay eggs on leaves, pupae develop in the soil, adults hibernate in the soil.

1(1) Body rufous with bronze or greenish reflection. Elytra with 3rd interval, broad lateral stripe, and epipleura (with exception of narrow dark stripes along interior and exterior borders), pale yellow. Length 5.0–6.8 mm. Total fig. 30. Ukraine (steppe zone (Kovalev, Medvedev, 1983)). Europe: Balkan Penins., Caucasus, Far East (Primorski Krai), China, N. America. *Ambrosia artemisiifolia, A. psilostachya*.....*Z. suturalis* (F., 1775) **

31. Crosita Motsch., 1860

Adults feed on leaves.

1(1) Dorsum blackish-violet, blackish-purple, coppery-red, or purple, with frons red, labrum blue, pronotal lateral calli red, pronotal lateral margins, antennae, and scutellum green, suture red, coppery or green, elytral epipleura red anteriorly and green posteriorly, elytral lateral margins, prosternum, mesosternum, metasternum, and legs green, abdomen red. Elytra with punctation confused and interspaces wrinkled. Length 7.0–13.0 mm. Total fig. 31. ER: steppe (Orenburg reg.) and desert (Astrakhan) zones, S. Ural Mts. (specimen from Ural riverhead). Kazakhstan, Siberia (Altai), Mongolia, W. China. *Artemisia*.....*C. altaica* (Gebl., 1823) ** [1]

[1] Medvedev (1976) recorded *C. altaica faldermanni* (Kryn., 1832) from Astrakhan and *C. altaica maximovitchi* (Zoubkoff, 1833) from Orenburg region. Lopatin (1977) considered these names as junior synonyms of the nominotypical subspecies.

32. Chrysolina Motsch., 1860 (Chrysomela auct. nec L., 1758)

Adults and larvae feed on herbaceous plants, pupae occur in the soil. Some species ovoviviparous. Hibernating stage is usually adult, rarely egg (e.g. in *Ch. aurichalcea*).

1(76) Hind wings well-developed, at least as long as elytra.

2(3) Elytra with rounded smooth spots arranged in regular rows and densely confusedly punctate background. Subgenus *Lithopteroides* Strand, 1935. Pronotum along its entire length with lateral impressions deep and covered by coalescent punctures basally. In female, 1st tarsomere with glabrous mid stripe beneath. Elytra rufous with black suture and smooth spots (in specimens from Polar Urals). Length 6.5–11.2 mm. ER: Polar Urals (Labytnangi (Fridolin, 1936), specimens from Sob' river basin). N. Siberia (Taimyr, Yakutia), S. Siberia, Mongolia. *Artemisia, Thymus*..... ..... *Ch. exanthematica gemmifera* (Motsch., 1860) **

3(2) Elytra without rounded smooth spots, with punctures confused or arranged in rows.

4(5) Claw tarsomere with 2 apical denticles beneath (Fig. 18: 1). Subgenus *Fastuolina* Warch., 1991 (*Dlochrysa* auct. nec Motsch., 1860). Dorsum green with longitudinal stripes red, golden, blue, and violet. Length 4.5–7.4 mm. From taiga zone to steppe zone. Europe, Caucasus, Kazakhstan, Siberia. Lamiaceae, *Urtica*..... *Ch. fastuosa* (Scop., 1763) **

5(4) Claw tarsomere without denticles beneath (Fig. 18: 2).

6(31) Elytra black or dark metallic (bronze, blue, violet, or green), with rufous lateral stripe. If elytra brown with rufous lateral stripe, then body elongate, and pronotum basally with lateral impressions, but without deep narrow lateral grooves.

7(14) Elytral punctures coarse, funnel-shaped, entirely confused on disk. Subgenus *Stichopiera* Motsch., 1860

8(9) Lateral sides of pronotum straight, strongly convergent anteriorly (Fig. 19: 7). Dorsum black with weak blue reflection; elytra with rufous lateral stripe reaching 2nd puncture row from lateral side. Length 7.5–9.5 mm. Ukraine: Transcarpathians (specimen from Rakhov). C. and S. Europe. Scrophulariaceae, *Veronica, Linaria*..... *Ch. rossia* (Ill., 1802) **

9(8) Lateral sides of pronotum rounded (Fig. 19: 8).

10(11) Dorsum dark blue or black; elytra with narrow rufous lateral stripe reaching only upper side of 1st puncture row from lateral side. Punctures of elytra coarse, interspaces convex, wrinkled. Aedeagus parallel-sided up to apical opening (Fig. 18: 3). Length 7.0–10.0 mm. Byelarus (Alexandrovitch, *et al.*, 1996); Ukraine: from deciduous forest zone to forest steppe zone (Brovdij, 1976), Crimea (Mal'tsev, Mosiakin, 1980). C. and S. Europe. Lamiaceae... ..... *Ch. kuesteri* (Hell., 1911) *

11(10) Dorsum dark blue or black (sometimes with bronze reflection); elytra with rufous lateral stripe broader, reaching at least 2nd puncture row from lateral side. Aedeagus broadened at sides of apical opening (Fig. 18: 4, 5).

12(13) Usually larger (length 8.2–11.0 mm, width 5.4–7.5 mm). Elytra with interior border of lateral stripe uneven, extending beyond 2nd or reaching 3rd puncture row from lateral side. Punctures of elytra coarser, in-

terspaces convex, wrinkled. Aedeagus as in Fig. 18: 5. From taiga zone to semidesert zone. Europe, N. Africa, Asia Minor, Caucasus, Kazakhstan, C. Asia. *Linaria, Salvia, Artemisia, Rumex... Ch. gypsophilae* (Küst., 1845) **

13(12) Usually smaller (length 6.5–8.4 mm, width 4.4–6.3 mm). Elytra with interior border of lateral stripe even, usually reaching 2nd puncture row from lateral side, rarely partly extending beyond this row. Punctures of elytra finer, interspaces slightly convex or flat. Aedeagus as in Fig. 18: 4. From taiga zone to forest steppe zone. Europe, N. Africa, Asia Minor, Caucasus, Kazakhstan, Far East, Mongolia. *Linaria, Plantago*. .... *Ch. sanguinolenta* (L., 1758) **

14(7) Punctures of elytra finer, partly or mostly arranged in rows on disk.

15(26) Last maxillary palpomere as broad as previous palpomere in both sexes. Pronotum without lateral impressions near base or with wide shallow impressions covered by more or less coalescent punctures, if with more deep narrow impressions, then elytral rufous lateral stripe not extending along elytral base. Aedeagus with apex triangular, acute, or bottle-shaped in dorsal view (Figs. 18: 6–9). Subgenus *Chalcoidea* Motsch., 1860.

16(17) Elytra with rufous lateral stripe extending along base and reaching scutellum. Bronze-black, head and pronotum greenish-bronze or dark green, rufous stripe at base of elytra with diffuse inner border. Length 6.0–8.2 mm. From forest steppe zone to desert zone. Hungary, Kazakhstan, Kyrghyzstan. *Artemisia*..... *Ch. cinctipennis* (Harold, 1874) **

17(16) Elytra with rufous lateral stripe not extending along base.

18(19) Pronotum without lateral impressions, disk smooth, impunctate. Dark blue, dark violet, or dark green, with head and pronotum black in some specimens. Elytra with rufous lateral stripe extending beyond very lateral puncture row. Length 3.5–6.5 mm. From taiga zone (specimens from St.-Petersburg, Yaroslavl, and Udmurt Republic) to steppe zone. Europe. *Artemisia*..... *Ch. analis* (L., 1767) **

19(18) Pronotum with lateral impressions covered with coarse, partly coalescent punctures, disk with dense punctures.

20(21) Puncture rows of elytra indistinct among rather coarse punctation of intervals. Elytral rufous lateral stripe extending beyond 2nd or reaching 3rd puncture row from lateral side. Pygidium rufous with apical margin black. Dorsum black with weak blue or bronze tint. Aedeagus (Fig. 18: 6). Length 5.5–9.0 mm. From deciduous-coniferous forest zone to steppe zone. Europe, Kazakhstan. *Artemisia*..... *Ch. carnifex* (F., 1792) **

21(20) Puncture rows of elytra more distinct among fine punctation in intervals. Elytral rufous lateral stripe not extending beyond 2nd puncture row from lateral side. Pygidium black througout.

22(23) Pronotum with moderately deep, narrow lateral impressions near base. Aedeagus with apex triangular (Fig. 18: 9). Dorsum black with bronze or bluish tint. Length 7.0–9.0 mm. ER: semidesert zone (specimens from Saratov reg.: Aleksandrov-Gai and Volgograd reg.: Elton; Kalmykia (Korostov, 1990)), desert zone (specimens from Astrakhan reg.: Basinskaja). Caucasus, Kazakhstan. *Artemisia, Salvia*..... *Ch. hyrcana* (Wse., 1884) **

23(22) Pronotum with shallow lateral impressions near base. Aedeagus with apex bottle-shaped (Fig. 18: 7, 8).

24(25) Body dark bronze (elytra rarely brown), elongate, with sides almost parallel. Rufous lateral stripe of elytra distinct, reaching 1st or 2nd puncture

row from lateral side. Length 5.0–6.8 mm. From tundra zone (specimens from Kola Penins.: Barents Sea shore) to desert zone. Europe, Siberia. *Artemisia, Achillea, Leucanthemum, Chrysanthemum, Matricaria, Astragalus.* ..... *Ch. marginata marginata* (L., 1758) **

25(24) Body bronze or green, oval, less elongate. Rufous lateral stripe of elytra mostly diffuse. Length 4.7–6.8 mm. ER: polar and subpolar Urals, N. Siberia (S. Yamal, Gydanskiy Penins., Taimyr Penins.). ..... *Ch. marginata borealis* L. Medv., 1980 **

26(15) Last maxillary palpomere distinctly broader than previous palpomere in both sexes. Lateral impressions at base of pronotum deep, narrow, with vertical outer slope. Aedeagus with apex broadly rounded in dorsal view. Rufous lateral stripe extending along elytral base. Subgenus *Craspeda* Motsch., 1860.

27(30) Aedeagus evenly curved at apex in lateral view (Fig. 18: 12).

28(29) Body bronze-black. Rufous lateral stripe of elytra narrow (Fig. 18: 14). Length 6.6–9.0 mm. From taiga zone (Vyatka reg., Udmurt Republic) to steppe zone. Europe, Caucasus, Siberia eastwards to Baikal. Poaceae, Rosaceae, Plantaginaceae, Asteraceae, Lamiaceae, Caryophyllaceae. ..... *Ch. limbata limbata* (F., 1775) **

29(28) Body blue or blackish-blue. Rufous lateral stripe of elytra wide (Fig. 18: 15). Length 5.4–7.9 mm. ER: desert zone (specimens from Astrakhan reg.). S.-E. Europe, Caucasus, Kazakhstan, Siberia, Mongolia. *Artemisia, Thymus*, Poaceae. ..... *Ch. limbata discipennis* (Fald., 1835) **

30(27) Aedeagus S-shaped at apex in lateral view (Fig. 18: 13). Body blackish-blue. Rufous lateral stripe of elytra wide. Length 4.8–8.7 mm. ER: forest steppe zone (Tambov (Medvedev, Okhrimenko, 1991)). Caucasus, Kazakhstan, Siberia (Krasnoyarsk Krai, Irkutsk reg., Buryatia, Yakutia), Mongolia. *Veronica* ..... *Ch. jenisseiensis* (Breit, 1920) *

31(6) Combination of characters not as in couplet 3.

32(39) Elytra rufous, with bronze reflection or without it; pronotum without deep narrow lateral grooves in anterior 1/2. If elytra brown with rufous basal and lateral sides, then pronotum with deep narrow lateral grooves in basal 1/2.

33(34) Body entirely rufous, with more or less distinct bronze reflection. Subgenus *Chrysolina* s.str. Lateral calli of pronotum separated from disk by impressions covered with coarse punctures along entire length. Length 5.9–8.1 mm. Total fig. 32. From tundra zone (Barents Sea shore) to steppe zone. Holarctic species. Lamiaceae, Ranunculaceae, Plantaginaceae. ..... *Ch. staphylaea* (L., 1758) (*staphylea* auct.) **

34(33) Elytra rufous. Head, pronotum, and underside metallic or black.

35(36) Elytra with punctation confused. Subgenus *Erythrochrysa* Bech., 1950. Head, pronotum, underside, and legs metallic green, very rare blue, in some specimens, disk of pronotum reddish purple. Length 5.9–8.6 mm. From taiga zone to semidesert zone. Transpalaearctic species. Lamiaceae. ..... *Ch. polita* (L., 1758) **

36(35) Elytra with punctures arranged in regular rows. Subgenus *Taeniosticha* Motsch., 1860.

37(38) Disk of pronotum with fine punctures clearly visible at magnification of 16 X. Lateral grooves at base of pronotum shorter, not reaching half of length of lateral side. Elytra unicolorous rufous, rarely brown with basal and lateral

sides rufous. Aedeagus bent down apically, with flagellum hook-shaped (Fig. 20: 4). Length 4.8–6.6 mm. Taiga zone (ER: specimens from Udmurt Republic), deciduous-coniferous forest zone (Estonia; Lithuania; ER: Moscow reg. (Melgunov, 1892)), forest steppe and steppe zones. S. Europe, Asia Minor, Caucasus, Kazakhstan, Siberia (Sayans). *Artemisia, Stachys*..... ..... *Ch. reitteri* (Wse., 1884) (*lurida* L., 1767, nec Scop., 1763) **

38(37) Disk of pronotum with sparse finest punctures usually not visible at magnification of 16 X. Lateral grooves at base of pronotum longer, reaching half of length of lateral side or almost so. Elytra brown with rufous basal and lateral sides or unicolorous rufous. Aedeagus not bent down apically, with flagellum straight (Fig. 20: 3). Length 5.5–7.2 mm. ER: semidesert zone (specimen from Volgograd: "Sarepta"). Caucasus (Chechnya, Georgia, Azerbaijan), Turkmenistan, Iran, Afghanistan..... ..... *Ch. imperfecta* (Breit, 1920) **

39(32) Elytra metallic or black, if reddish brown throughout, then pronotum with deep narrow lateral grooves along entire length (Fig. 18: 11).

40(43) Tarsi rufous.

41(42) Elytral punctation homogenous, dense, double: interspaces between coarse punctures covered with fine punctures. Coarse punctures partly arranged in 1–2 abbreviated rows on disk, rows faintly visible among confused punctation. Pronotum without lateral depressions and grooves or with very weak lateral depressions near base. Subgenus *Colaphosoma* Motsch., 1860. Body usually dark violet; in ab. *polonica* Wse. from Ukraine body green. Length 6.7–6.9 mm (male), 8.7–9.6 mm (female). From taiga zone (Vyatka reg., Udmurt Republic) to steppe zone. E. Europe, Caucasus, Kazakhstan, C. Asia, Siberia. *Galium, Glechoma, Cirsium, Linaria*..... *Ch. sturmi diversipes* (Bedel, 1892) (*violacea* auct.; *goettingensis* L., 1761) **

42(41) Elytra with punctures coarse, arranged in regular paired rows, intervals smooth, with punctures fine, indistinct. Pronotum with lateral depressions broad, shallow, covered with numerous coarse punctures along entire length. Subgenus *Taeniochrysea* Bechyne, 1950. Head green with purple vertex, pronotum bluish-green with purple spots, elytra purple with narrow intervals between rows of each pair, bluish-green, ventral side, antennae, and legs mostly rufous with greenish reflection. Length: 6.7–8.1 mm. Latvia (Silfverberg, 1992). S. Europe, N. Africa, England (Isle of Wight), Belgium. ..... *Ch. americana* (L., 1758) *

43(40) Tarsi black or metallic.

44(55) Elytra with punctures arranged in regular rows, punctures in rows much coarser than punctures in intervals.

45(50) Pronotum with deep lateral grooves along entire length or almost so (Fig. 18: 10, 11).

46(49) Disk of pronotum with very fine punctures, appears impunctate at magnification of 8X. Subgenus *Sulcicollis* J. Shlb., 1913 (*Minckia* Strand, 1935).

47(48) Lateral sides of pronotum less convex (Fig. 18: 10), almost straight, disk smooth. Elytra dull, shagreened. Blue, more rarely bronze; in some specimens, elytra black with blue or bronze reflection. Length 6.5–9.1 mm. Lithuania (Silfverberg, 1992); Ukraine: deciduous forest zone (specimen from Lutsk), Crimea; ER: deciduous-coniferous forest zone (Moscow reg. (Melgunov, 1892)). Europe, Siberia (envir. Baikal?). Apiaceae..... ..... *Ch. oricalcia* (Müll., 1776) (*orichalcea* auct.) **

48(47) Lateral sides of pronotum rounded (Fig. 18: 11), disk dull, shagreened (as well as elytra). Bronze or coppery-bronze; in some specimens, elytra rufous or brown with bronze reflection. Length 5.0–7.2 mm. Forest steppe and steppe zones. S.-E. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Near East. *Anthriscus*..... *Ch. chalcites* (Germ., 1824) **

49(46) Disk of pronotum with distinct dense punctures clearly visible at magnification of 8 X. Subgenus *Ovosoma* Motsch., 1860. Black with bronze reflection. Length 6.6–10.0 mm. Taiga zone (specimen from Udmurt Republic), deciduous forest zone (specimen from Ulyanovsk reg.), forest steppe zone (specimen from Lipetsk reg.), steppe zone, S. Urals (Chelyabinsk reg.). Europe, Caucasus, Kazakhstan, Siberia (Altai). Poaceae (?)..... ..... *Ch. susterai* Bech., 1950 (*morio* Kryn., 1832) **

50(45) Pronotum with only short lateral grooves near base. Subgenus *Hypericia* Bedel, 1899.

51(52) Elytral rows consist of sparse punctures (4th and 5th rows each of 14–18, rarely 20 punctures). Body coppery-green, green, bronze, blue, bluish-violet, or black; elytral punctures usually darker than intervals. Aedeagus — Fig. 19: 3. Length 5.0–7.3 mm. From deciduous-coniferous forest zone to steppe zone, Middle Urals (Visimskii Res. (Ukhova, *et al.*, 1996)). Europe, N. Africa, Asia Minor, Caucasus, Kazakhstan, Uzbekistan, introduced into U.S.A. and Australia. *Hypericum*..... *Ch. hyperici* (Först., 1771) **

52(51) Elytral rows consist of more dense punctures (4th and 5th rows each of 20–30 punctures); punctures and intervals of the same colour.

53(54) Elytra with 8th and 9th rows of punctures sparse, each of about 20 punctures. Body shining. Lateral sides of pronotum evenly convex (Fig. 19: 1). Green, bluish-green, bronze with coppery reflection, dark coppery, violet, black, or bicolored: pronotum blue, elytra green, violet, or coppery, or pronotum coppery, elytra green. Aedeagus — Fig. 19: 4. Length 6.1–7.5 mm. Byelarus; Ukraine: deciduous forest zone; ER: S. Urals (specimen from Chelyabinsk reg.: Sukhaja Atja Vill.). Europe, Asia Minor, Siberia (Altai, Sayan Mts.), introduced into U.S.A. and Australia. *Hypericum*..... ..... *Ch. cuprina* (Duft., 1825) **

54(53) Elytra with 8th and 9th rows of punctures dense, each of about 30 punctures. Body dull (especially elytra). Lateral sides of pronotum nearly straight from base to anterior 1/3 (Fig. 19: 2). Violet, blue (in some specimens, with coppery or purple reflection), bronze, or black. Aedeagus — Fig. 19: 5. Length 6.3–9.0 mm. From taiga zone to steppe zone. Europe, Caucasus. *Hypericum*..... *Ch. geminata* (Pk., 1799) **

55(44) Elytra with punctures confused; if punctures arranged in abbreviated rows, they are as large as punctures in intervals.

56(57) Pronotum trapeziform, with straight lateral sides, strongly convergent anteriorly. Subgenus *Colaphodes* Motsch., 1860. Punctation of elytra mostly confused. Blackish-blue or black with weak bronze reflection. Length 5.0–9.0 mm. From taiga zone to steppe zone. Europe, Caucasus. *Plantago, Galium, Linaria*..... *Ch. haemoptera* (L., 1758) **

57(56) Pronotum with lateral sides more or less convex.

58(67) Basal third of pronotum with deep lateral impressions covered with coarse, partly coalescent punctures, anterior 2/3 with shallower, but distinct lateral depressions.

59(60) In female, 5th abdominal sternite slightly evenly convex. In male, aedeagus strongly curved near apex (in lateral view) (Fig. 20: 5). Subgenus *Chrysomorpha* Motsch., 1860. Upper side usually with bright blue, green, bronze, violet, or red longitudinal stripes. Poaceae, Lamiaceae, Asteraceae, Fabaceae, Euphorbiaceae..... *Ch. cerealis* (L., 1767)
There are several intraspecific forms. Their taxonomical range should be revised.
a) Elytra with intervals between puncture rows 2–3, 4–5, and 6–7 weakly convex and more shining than adjacent ones. Length 7.0–8.0 mm. ER: from taiga zone (St.-Petersburg) to forest steppe zone (Voronezh reg.), S. Urals. N., C., and S.-E. Europe..... *Ch. cerealis cerealis* (L., 1767) **
b) Elytra with intervals between puncture rows 2–3, 4–5, and 6–7 flat and slightly more shining than adjacent ones. Length 7.5–11.0 mm. Ukraine: Crimea; ER: steppe zone (Rostov reg.). Caucasus..... ..... *Ch. cerealis rufolineata* (Motsch., 1860) **
c) Elytra with intervals between puncture rows 2–3 and 4–5 indistinct, 6–7 missing. Body weakly convex. Length 7.0–10.0 mm. Ukraine. C. Europe... ..... *Ch. cerealis alternans* (Pz., 1799) **

60(59) In female, 5th abdominal sternite more or less turned down at apex or more or less convex. In male, aedeagus weakly curved along entire length (in lateral view) (Fig. 20: 1, 6, 7). Subgenus *Anopachys* Motsch., 1860. Upper side unicolorous, or pronotum and elytra differently coloured, but without longitudinal coloured stripes.

61(62) Lateral callus of elytra convex, with very fine punctures. Aedeagus slightly narrowed at sides of apical opening, broadly obtuse and sometimes weakly impressed at apex (Fig. 20: 6). Upper side very shining. Coloration varies: 1) head and pronotum black with blue, violet, brassy, or bronze reflection, elytra violet, brassy, violet-black with bronze reflection, or greene-bronze black, 2) unicolorous, dark bronze, brassy, black, or blue with weak green or violet reflection. Length 5.9–7.9 mm. ER: taiga zone (Murmansk reg.: White sea shore), Urals. Alps, Siberia, Far East. *Sonchus humilis* (on White Sea shore)..... *Ch. relucens* (Rosenh., 1847) **

62(61) Lateral callus of elytra slightly convex or flat, usually with coarser punctation. Upper side usually less shining. Aedeagus not as above.

63(66) Pronotum with wide lateral impression. Interior border of elytral epipleura ciliate near apex. In male, aedeagus anchor-shaped (Fig. 20: 7), tarsi narrow, 5th abdominal sternite without impression. In female, 5th abdominal sternite convex and more or less turned back at apex, rarely not turned back.

64(65) Dorsum blue or violet, sometimes with greenish tint; in some specimens, pronotum and elytra differently coloured. Elytral epipleura with very sparse setae near apex. Length 6.0–8.6 mm. Ukraine (specimens from Carpathians, Kiev reg., Podolia). Germany, Czechia, E. and partly W. Alps. *Vincetoxicum, Artemisia*..... *Ch. aurichalcea bohemica* (J. Müller, 1948) **

65(64) Dorsum bronze, coppery, or green. Elytral epipleura with dense setae near apex. Length 5.3–9.6 mm. Ukraine (specimen from Crimea: Sevastopol); ER: from taiga zone to steppe zone. Azerbaijan, Kazakhstan, Kyrghyzstan, Siberia, Far East, Mongolia, China, Korea, Japan, Vietnam. *Artemisia*..... *Ch. aurichalcea aurichalcea* (Gebl. in Mnnh., 1825) **

66(63) Pronotum with deep narrow lateral impression, almost as in the members of the subgenus *Hypericia*. Interior border of elytral epipleura glabrous along entire length. In male, aedeagus weakly gradually narrowed laterally in apical 1/2, broadly truncate at apex (Fig. 20: 1), all tarsi strongly incrassate (Fig. 20: 2), 5th abdominal sternite with large deep impression. In female, 5th abdominal sternite evenly convex. Dorsum bronze. Length 5.1 mm (male), 6.3 mm (female). ER: deciduous forest zone (Moscow reg.: Lukhovitsy Distr., Orekhovo-Zuyevo Distr.)[1]. Czechia, Slovakia, Austria, Romania, Hungary. *Tanacetum vulgare*... *Ch. eurina* (Frivaldszky, 1883) **

67(58) Pronotum with only weak short lateral impressions near base or without impressions at all.

68(69) Body smaller (length 4.5–6.0 mm, width 3.1–4.2 mm); broadly-oval. Anterior margin of pronotum without setae. Subgenus *Sphaeromela* Bedel, 1899. Green, blue, coppery, or bronze. From taiga zone to steppe zone. Europe, Caucasus, Siberia, introduced into N. America. *Hypericum*..... ..... *Ch. varians* (Schall., 1783) **

69(68) Body larger (length 6.8–11.0 mm, width 4.2–6.3 mm), elongate. Anterior margin of pronotum with dense setae (clearly visible in upper and slightly posterior view, if head of beetle turned toward light source, at magnification of 56 X).

70(75) Elytral epipleura posterior to middle, horizontal and not visible in lateral view (Fig. 20: 10). Subgenus *Synerga* Wse., 1900 (*Menthastriella* Bech., 1950).

71(72) Intercoxal prosternal process with longitudinal groove covered with coarse transverse wrinkles. Dorsum unicolorous, green, golden green, coppery, or blue. Aedeagus with broad, rounded prominence at apex (Fig. 20: 8). Length 7.0–11.0 mm. From taiga zone (specimens from Udmurt Republic) to desert zone. Europe, Asia Minor, Caucasus, C. Asia, Iran. Lamiaceae. ..... *Ch. herbacea* (Duft., 1825) (*menthastri* Sffr., 1851) **

72(71) Intercoxal prosternal process with smooth longitudinal groove. Aedeagus with narrow, obtuse apical denticle (Fig. 20: 9).

73(74) Larger: length 7.0–8.5 mm. Dorsum entirely blue or with longitudinal blue, green, or golden coppery stripes. Estonia (Silfverberg, 1992); Byelarus (Alexandrovitch *et al.*, 1996); Ukraine; ER: taiga zone (Karelia (Silfverberg, 1979)). Finland, C. Europe (Mts.). *Mentha*..... ..... *Ch. coerulans coerulans* (Scriba, 1791) *

74(73) Smaller: length 6.8 mm. Dorsum entirely green. ER: C. Transural Region (envir. Ekaterinburg)..... *Ch. coerulans relicta* L. Medv., 1977 **

75(70) Elytral epipleura posterior to middle, oblique, visible along entire length in lateral view (Fig. 20: 11). Subgenus *Euchrysolina* Bech., 1950. Dorsum green, elytra usually with golden-red or golden lateral stripe and broad stripe along suture and narrow bluish-green sutural stripe, or pronotum coppery-red, elytra coppery-red with green suture and epipleura. Length 7.7–10.5 mm. From taiga zone (Murmansk reg. and Komi) to semidesert zone. Transpalaearctic species. Asteraceae, Lamiaceae..... *Ch. graminis* (L., 1758) **

76(1) Hind wings strongly reduced or absent.

[1]The four specimens from Moscow reg. (Lukhovitsy Distr.: Chernaja village, pitfall trap, N.B. Nikitsky leg.: 27.7.–31.8.2000: 1 male, 1 female; the same place, V. Semenov leg.: 31.8.2000: 1 female; Orekhovo-Zuyevo Distr.: Dorofeevo, V. Semenov leg.: 21.7.2000: 1 female) compare well with the available specimens of *Ch. eurina* from Austria.

most as in the mem-
epipleura glabrous
narrowed laterally
tarsi strongly in-
deep impression.
bronze. Length
(Moscow reg.:
Slovakia, Austria,
Frivaldszky, 1883) **
near base or without

broadly-oval. An-
Sphaeromela Bedel,
to steppe zone.
Hypericum.....
Schall., 1783) **
elongate. Anterior
upper and slightly
at magnification

visible in lateral
Menthastriella Bech.,

groove covered with
golden green, cop-
at apex (Fig. 20:
from Udmurt Repub-
Asia, Iran. Lamiaceae.
thastri Sffr., 1851) **
groove. Aedeagus

with longitudinal
1992); Byelarus
Karelia (Silfverberg,
.....
(Scriba, 1791) *
ER: C. Transural Re-
L. Medv., 1977 **
along entire length
Bech., 1950. Dorsum
and broad stripe
pronotum coppery-
Length 7.7–10.5
desert zone. Trans-
graminis (L., 1758) **

village, pitfall trap.
V. Semenov leg.:
leg.: 21.7.2000: 1
Austria.

77(78) Tibiae angularly dilated apically (Fig. 16: 19). Subgenus *Cecchiniola* Jcbs., 1908. Dorsum finely densely punctate, dull, black with weak blue or violet reflection; underside blackish-blue or violet. Lateral callus of pronotum separated from disk by depression at base. Length 7.7–9.0 mm. Ukraine: Crimea (N. foothills of Crimean Mts.). Rare species..... ..... *Ch. platyscelidina* (Jcbs., 1898) **

78(77) Tibiae not angularly dilated apically (Fig. 16: 20).

79(98) Elytra with punctures mostly confused.

80(85) Pygidium with longitudinal groove along entire length.

81(82) Hypomera of prothorax flat, without border along exterior margin. Subgenus *Crositops* Mars., 1883. Upper side dull, dark bronze-green or black with coppery tint. Length 7.6–9.5 mm (male), 10.0–11.0 mm (female). ER: deciduous forest zone (specimens from Lipetsk reg.: Galichia Gora Res.[1], Samara reg.: Zhigulevskie Mts.), S. Urals (Belaya river valley: Irgizly (Jacobson, 1896); specimens from Bashkirsky Res. and Ilmensky Res.). Rare species. Some specimens were collected on *Centaurea ruthenica*..... ..... *Ch. roddi* (Jcbs., 1896) **

82(81) Hypomera of prothorax with border along exterior margin. Lateral impressions of pronotum are only near base. Subgenus *Ovostoma* Motsch., 1860.

83(84) Lateral impressions of pronotum very shallow or obsolete, covered with coarse punctures. Dark violet with purple tint, rarely dark blue with green reflection. Length 7.6–13.0 mm. Ukraine: Carpathians. Mts. of C. and S. Europe. *Cirsium, Galeobdolon*..... *Ch. globipennis* (Sffr., 1851) **

84(83) Lateral impressions of pronotum deep, covered with partly coalescent coarse punctures. Dark blue, violet, green, or blackish blue. Length 6.5–9.0 mm. Ukraine; Moldova (Orgeev Distr.). Mts. of C. and S. Europe. *Salvia*..... *Ch. olivieri* (Bedel, 1892) (*coerulea* Ol., 1807) **

85(80) Pygidium without distinct longitudinal groove, with shallow depression along entire length or only in basal half.

86(95) Punctation of elytra double: coarse punctures mostly confused and partly arranged in rows and numerous very fine punctures placed in interspaces. Subgenus *Colaphoptera* Motsch., 1860.

87(90) Pronotum without lateral grooves.

88(89) Brownish-red with violet or bronze reflection. In male, 1st protarsomere narrower than 3rd. Length 6.0–10.0 mm. Estonia (Silfverberg, 1992); Ukraine: Carpathians. C. Europe (Mts.). *Petasites*..... ..... *Ch. rufa squalida* (Sffr., 1851) (*lapidaria* Bech., 1950) **

89(88) Dark olive-green with bronze reflection. In male, 1st protarsomere broader than 3rd. Aedeagus as in Fig. 17: 14. Length 7.0–10.0 mm. Ukraine: Carpathians. C. Europe (Mts.)..... ..... *Ch. umbratilis* (Wse., 1887) (*olivacea* Sffr., 1851) **

90(87) Lateral callus of pronotum separated from disk by groove near base (Fig. 20: 12, 13).

91(92) Lateral callus of pronotum separated from disk only near base. Pitchy brown, coppery-bronze, purple, or violet. Length 7.0–9.0 mm. Ukraine: Carpathians. C. Europe (Mts.). *Chaerophyllum, Geranium, Petasites*..... ..... *Ch. marcasitica* (Germ., 1824) **

[1]Material: Galichia Gora Res., meadow, Panteleeva leg.: 10.6.1987: 1 female.

92(91) Lateral rallus of pronotum separated from disk by basal groove extending as depression to anterior margin.

93(94) In male, last maxillary palpomere broader than previous one. Pronotum more narrowed anteriorly, with lateral impressions straight (Fig. 20: 12). Reddish-brown, upper side with strong purple or violet reflection or blackish-violet. Length 6.0–9.0 mm. Ukraine: Carpathians (Brovdij, 1977a). Europe. ..... *Ch. purpurascens* (Germ., 1822) *

94(93) In male, last maxillary palpomere not broader than previous one. Pronotum less narrowed anteriorly, with lateral impressions arched (Fig. 20: 13). Reddish-brown, brown with purple or bluish-violet reflection, or dark violet. Length 6.0–8.0 mm. Ukraine: Crimea (Mts.). *Sideritis taurica*. .... *Ch. pliginskii* (Rtt., 1913) **

95(86) Elytra with punctation confused throughout, all punctures subequal-size. Subgenus *Heliostola* Motsch., 1860.

96(97) Pronotum usually widened from base to middle and then narrowed anteriorly, with deep lateral impression along entire length. Upper side weakly shining, blackish-green, olive-green, bronze, blackish-violet, or blackish-blue, rarely pronotum or elytra dull. Length 5.5–7.5 mm. Aedeagus (Fig. 19: 10): apical orifice with apical margin narrowly bent down. Ukraine: Carpathians (Brovdij, 1977a). C. Europe (Mts.). *Senecio*... *Ch. lichenis* (Richt., 1820) *

97(96) Lateral sides of pronotum usually rounded or straight, convergent from base to apex; lateral impression shallow or absent. Upper side blackish-violet, blackish-blue, or blackish-green, usually dull (at least, in female). Length 5.5–7.5 mm. Aedeagus (Fig. 19: 11): apical orifice with apical margin broadly bent down. Ukraine: Carpathians. C. Europe (Mts.)..... .... *Ch. carpathica* (Fuss, 1856) **

98(79) Elytra with punctures arranged in 9 regular rows (or only 5th–7th rows confused or undulate).

99(100) Elytra with punctures arranged in pair rows: 2–3, 4–5, 6–7, 8–9; rows 5–7 undulate or irregular, others regular. Elytral intervals flat, with punctures finer than in rows, but very dense; therefore, rows hardly visible. Dark bronze. Length 7.4–8.1 mm (male), 9.2 mm (female). Subgenus *Pezocrosita* Jcbs., 1991. ER: forest steppe zone (Ulyanovsk reg.[1]). C., N., E. Kazakhstan. Altai, Tuva, Sayan Mts. *Lamium, Artemisia*..... ..... *Ch. ordinata* (Gebl., 1823) **

100(99) Elytra with punctures arranged in equidistant rows, regular or 5–7th confused or undulate. Elytral intervals from flat to keel-shaped.

101(102) In male, aedeagus as in Fig. 17: 13. In female, 5th abdominal sternite evenly slightly convex. Subgenus *Arctolina* Kont., 1959. Dark bronze, dark green, or dark coppery. Length 5.0–7.2 mm. ER: taiga zone (Komi, Perm reg.; Basegi Res.), forest steppe zone (Lipetsk reg.[2]), Polar Urals, N. Urals, S. Urals (Chelyabinsk reg.). Siberia. *Ranunculus, Delphinium*..... ..... *Ch. tundralis* (Jcbs., 1910) (*septentrionalis* auct. nec Mén., 1851) **

102(101) In male, aedeagus with very large alae (Fig. 19: 6). In female, 5th abdominal sternite inflated. Subgenus *Pleurosticha* Motsch., 1860.

[1]Material: Ulyanovsk reg.: Radischevo Distr., 8 km southwards from Viazovka Vill., salt steppe. A.Yu. Isajev leg.: 27.4.2001: 3 males, 28.4.2001: 2 females). Specimens compare well with specimens of *Ch. ordinata* from Kazakhstan and Tuva.

[2]Material: Lipetsk reg.: 35 km north-east-east from Elets: Phuschan' Forestry, clearing in the wood, pitfall trap, Panteleeva leg.: 27.7.1977: 1 male.

103(104) Upper side dark violet, dark green, dark coppery, dark bronze, or black with metallic lustre. Legs and 5th abdominal sternite entirely dark metallic, rarely brown or reddish. Length 6.5–8.3 mm. ER: S. Urals (Bolshoi and Malyi Iremel Mts.). Siberia, Far East, Japan (Hokkaido)..... ..... *Ch. subcostata* (Gebl., 1848) ** [1]

104(103) Upper side black, in some specimens, with indistinct green or violet lustre. Legs rufous with brown tarsi. Apex of 5th abdominal sternite rufous. Length 7.6–10.6 mm. ER: Polar Urals (Mikhailov, 1997). Arctic Asia. *Parrya*..... *Ch. tolli* (Jcbs., 1910) (*cavigera* auct., nec J. Shlb., 1887) *

33. Oreina Chevr., 1837

Adults and larvae feed on leaves of herbaceous plants, pupae occur in the soil. Ovoviviparity is typical of this genus.

1(2) Upper side entirely red or with black pattern, in some specimens entirely black; antennae and legs without metallic lustre. Subgenus *Protorina* Wse., 1894. Elytra usually with black sutural stripe not reaching scutellum and apex; head, underside, and legs black. Length 8.0–10.0 mm. Ukraine: Carpathians. Europe: Carpathians, Alps, Balkan Penins., Bulgaria. *Doronicum*..... *O. plagiata* (Sffr., 1861) **

2(1) Body mostly metallic, if black, then antennae, legs, or underside almost always with metallic reflection.

3(8) Antennae entirely metallic.

4(5) Lateral callus of pronotum not separated from disk by depression. Apical maxillary palpomere broadly truncate apically (Fig. 21: 2). Subgenus *Virgulatorina* Kühnelt, 1984. Body unicolorous, blackish-blue, violet, green; in some specimens reddish-coppery, or elytra with sutural and diskal coloured stripes. Aedeagus as in Fig. 21: 13. Length 7.0–8.5 mm. Ukraine: Carpathians. Europe: Carpathians, Sudeten, Beskids. *Cirsium, Carduus*..... ..... *O. virgulata praefica* Wse., 1884 **

5(4) Lateral callus of pronotum more or less separated from disk by depression along entire length. Apical maxillary palpomere attenuate towards apex (Fig. 21: 1). Subgenus *Chrysochloa* Hope, 1840.

6(7) Pronotum broadest at mid-point or of equal width from base to mid-point (Fig. 21: 3). Lateral callus of pronotum at least partly strongly punctate. Intercoxal prosternal process convex, without groove. Dark blue, green, in some specimens, with bluish-green or violet stripes on elytra. Aedeagus as in Fig. 21: 9. Length 8.0–11.0 mm. Ukraine: Carpathians. Europe: Carpathians, Sudeten. *Senecio, Adenostyles*..... ..... *O. cacaliae senecionis* Schumm., 1844 **

7(6) Pronotum broadest basally, gradually narrowed towards apex (Fig. 21: 4). Lateral callus of pronotum almost smooth. Intercoxal prosternal process with longitudinal groove. Coloration as in couplet 6. Aedeagus as in Fig.

[1] Available specimens of *Ch. subcostata* from the Urals have 5th–7th puncture rows of elytra confused or undulate and, probably, belong to the taxon described as *Chrysomela poretzkyi* Jcbs., 1897 from Bashkortostan (Belaya river valley). In this case, the latter should be regarded as subspecies: *Chrysolina subcostata poretzkyi*.

21: 10. Length 6.0–11.0 mm. Ukraine: Carpathians. Europe: Carpathians. Record from ER: Moscow reg. (Melgunov, 1892) is doubtful. C. Europe (Mts.). *Senecio*..... *O. speciosissima fuscoaenea* Schumm. 1843 **

8(3) First and 2nd antennomeres below or apically rufous.

9(10) Prosternum between fore-coxae slightly convex or flat, without longitudinal depression. Elytra without distinct punctures, with large, convex, shining wrinkles. Subgenus *Intricatorina* Kühnelt, 1984. Dark blue, blackish-violet, bluish-violet, bluish-green, or almost black. Aedeagus as in Fig. 21: 12. Length 7.0–10.7 mm. Ukraine: Carpathians. Mts. of C. and S.-E. Europe. *Senecio*..... *O. intricata* (Germ., 1824) **

10(9) Prosternum between fore-coxae with deep longitudinal groove. Elytra with distinct punctures at least in interior half.

11(14) Lateral callus of pronotum separated from disk by distinct depression of equal depth along entire length. Subgenus *Allorina* Wse., 1902.

12(13) Aedeagus with apical denticles beneath (Fig. 21: 7). Bluish-green, dark blue, or dark violet. Length 9.0–11.8 mm. Ukraine: Carpathians (Lvov reg. (Brovdij, 1976a)). Europe: Carpathians, Pyrenees, Alps, Apennines. *Petasites, Senecio, Chamerion, Centaurea, Aposeris*..... ..... *O. bidentata* Bontems, 1981 (*tristis* auct. nec F.) *

13(12) Aedeagus without apical denticles beneath (Fig. 21: 8). Dark blue or dark violet, rarely greenish. Length 8.5–12.0 mm. Total fig. 33. Byelarus (Belovezhskaya Puscha Res.), Ukraine (Carpathians, Dnepropetrovsk reg., Kherson reg.), ER: taiga zone (Karelia, Leningrad reg., Yaroslavl reg., Vyatka reg., Perm reg.), deciduous-coniferous forest zone (Kaluga reg., Tatarstan), deciduous forest zone (Ryazan reg.), steppe zone (Rostov reg., Saratov reg.), Middle Urals (Ekaterinburg reg.), S. Urals (Bashkortostan), Europe (Mts.). *Centaurea*... *O. coerulea* (Ol., 1790) (*rugulosa* Sffr., 1851) **

14(11) Lateral callus of pronotum separated from disk by depression shallow or absent anteriorly and deep posteriorly. Subgenus *Oreina* s.str. The precise identification requires examination of aedeagus.

15(16) Elytra with interspaces between punctures smooth, shining. Usually dark bluish-violet or green; in some specimens pronotum bluish-green, or golden-green, and elytra blackish or violet-blue, or elytra with longitudinal diskal stripe dark violet or black. Aedeagus as in Fig. 21: 11. Length 7.0–10.3 mm. Ukraine: Carpathians. Europe (Mts.). *Chaerophyllum, Aegopodium, Anthriscus, Senecio, Cirsium, Centaurea*... *O. alpestris* (Schumm., 1844) **

16(15) Elytra with interspaces between punctures dull, shagreened.

17(18) Apex of aedeagus asymmetric, not curved (Fig. 21: 5). Bright green or golden. Elytra usually with bluish tint and violet-blue stripe. Pronotum almost always with dark blue transverse fascia at base. Length 8.0–11.0 mm. Ukraine: Carpathians (Brovdij, 1976a). Europe: Carpathians. Sudeten. *Mutellina, Chaerophyllum, Aegopodium*..... ..... *O. bifrons decora* Richter, 1820 (*heterocera* Rtt., 1917) *

18(17) Apex of aedeagus symmetric, strongly curved (Fig. 21: 6). Green, sometimes blackish-blue, violet, or coppery-red; rarely elytra golden or bearing coloured stripes. Pronotum without dark blue transverse fascia at base. Length 7.0–10.0 mm. Ukraine: Carpathians (Goverla Mt. (Brovdij, 1976a)). Europe: Carpathians. *Meum, Chaerophyllum*..... ..... *O. viridis merkli* Wse., 1884 *

34. Colaphus Dahl, 1823 (Colaphellus Wse., 1916)

Adults and larvae feed on leaves of Brassicaceae, pupae occur in the soil.

1(2) Femora and tibiae rufous throughout, or only bases of femora dark bronze-green or dark blue. Body blue or green. Length 4.0–6.0 mm. Total fig. 34. Ukraine: steppe zone, Crimea; Moldova; ER: from deciduous forest zone (Ryazan (Machatschke, 1954)) to desert zone, S. Urals. Asia Minor, Caucasus, Kazakhstan, C. Asia, W. Siberia. *Brassica, Lepidium, Raphanus, Sisymbrium*..... *C. hoeftii* (Mén., 1832) (*hoefti* auct.) ** [1]

2(1) Femora blue; tibiae rufous with blue bases. Body blue or green. Length 4.0–5.8 mm. Latvia; Lithuania; Byelarus; Ukraine: deciduous forest and steppe zones, Crimea; Moldova; ER: taiga zone (Udmurt Republic: Vyatka valley), deciduous-coniferous forest zone (specimens from Moscow reg.), forest steppe and steppe zones, eastwards to Vyatka reg. and Penza reg. C. Europe, Caucasus. *Brassica, Raphanus, Sisymbrium*... *C. sophiae* (Schall., 1783) **

35. Plagiodera Chevr., 1837

Adults, larvae, and pupae occur on leaves.

1(1) Dorsum metallic, blue or green, rarely violet, in some specimens coloration of pronotum (together with head) and elytra different. Underside, femora, and tibiae black; 1st (partly or entirely), 2nd–4th or 2nd–6th antennomeres rufous; tarsi brown. Length 2.5–4.8 mm. Total fig. 35. From tundra zone (Kola Penins.: Khibini Mts.) to steppe zone. Holarctic species. *Salix, Populus*..... *P. versicolora* (Laich., 1781) **

36. Plagiosterna Motsch., 1860 (Linaeidea Motsch., 1860; Melasoma Steph., 1831 partim)

Adults, larvae, and pupae occur on leaves.

1(1) Body metallic green, rarely golden-coppery, violet, or blue. Length 6.3–8.5 mm. Total fig. 36. From taiga zone to steppe zone. Europe, Kazakhstan, Siberia, Mongolia. *Alnus*..... *P. aenea* (L., 1758) **

[1] *C. hoeftii* is often regarded as an eastern subspecies of *C. sophiae*. However, both taxa occur in Crimea in the same biotopes, occupy the same territory, and, consequently, cannot exist as subspecies (Mal'tsev, Mosiakin, 1980).

37. Chrysomela L., 1758 (Melasoma Steph., 1831 partim; Microdera Steph., 1834 nec Esch., 1831; Strickerus Lucas, 1920; Microlina L. Medvedev, 1982; Pachylina L. Medvedev, 1969)

Adults and larvae feed on leaves of Salicaceae, rarely *Betula* (*Ch. lapponica*); pupae attach themselves to the lower surface of leaves in most species, occur in the soil in *Ch. collaris*.

1(2) Humeral callus not delimited with depression interiorly. Body blackish-blue; lateral sides of pronotum yellow or rufous with small black spot; elytra blue, violet, or bronze. Legs rufous with black knees and tarsi. Length 5,5–7,7 mm. From taiga zone to steppe zone. Transpalaearctic species. *Salix*, rarely *Populus*. ..... *Ch. collaris* L., 1758 (*collare* auct.) **

2(1) Humeral callus prominent, delimited with depression interiorly.

3(8) Elytra metallic throughout or yellow (rufous) with black or metallic markings, rarely unicolorous rufous with metallic lustre.

4(5) Upper side of tibiae with longitudinal groove only in apical half. Pronotum blackish-green with yellow or rufous lateral sides, elytra yellow, usually with suture and each with 10 markings dark green or black, pattern variable. Length 6.5–8.5 mm. Total fig. 37. From taiga zone to forest steppe zone. Transpalaearctic species. *Salix, Populus*. .... *Ch. vigintipunctata* (Scop., 1763) **

5(4) Upper side of tibiae with longitudinal groove along entire length. Pronotum unicolorous dark metallic.

6(7) Pronotum with very fine longitudinal mid groove. Blackish-green or blackish-bronze throughout or elytra violet or coppery, more rarely elytra rufous with metallic lustre, in some specimens pronotum with golden shine. Length 7.0–10.0 mm. From taiga zone to steppe zone, S. Urals. Transpalaearctic species. *Salix, Populus*. ..... *Ch. cuprea* F., 1775 **

7(6) Pronotum without longitudinal mid groove. Body dark blue, bluish-green, or blackish-green with golden tint, elytra yellowish-rufous, with suture, basal marking or transverse band, mid transverse band, and hook-shaped apical marking bluish-green, in some specimens pattern entirely or partly missing or extending over most of elytra. Length 5.0–8.0 mm. From tundra zone (Kola Penins.: Khibini Mts.) to deciduous-coniferous forest zone (Byelarus: Minsk reg.; ER: Moscow reg.), Middle Urals, S. Urals. Transpalaearctic species. *Salix, Populus, Betula*. ..... *Ch. lapponica* L., 1758 **

8(3) Elytra unicolorous, rufous or red, without metallic lustre. Body blackish-blue or blackish-green.

9(10) Elytra with 1 puncture row between lateral callus and exterior border of epipleura. Sutural corner of elytra with small black spot. Length 10.0–12.0 mm. From taiga zone to steppe zone. Transpalaearctic species. *Populus, Salix*. ..... *Ch. populi* L., 1758 **

10(9) Elytra with 2 puncture rows between lateral callus and exterior border of epipleura. Sutural corner of elytra usually without black spot.

11(12) Fourth tarsomere with 2 small apical denticles beneath. Lateral borders of pronotum usually straight or slightly emarginate (Fig. 21: 14). Aedeagus as in Fig. 21: 16. Length 7.5–10.0 mm. From taiga zone to steppe zone. Transpalaearctic species. *Populus, Salix*..... ..... *Ch. tremula* F., 1787 (*tremulae* auct.) **

12(11) Fourth tarsomere without denticles beneath. Lateral borders of pronotum usually convex (Fig. 21: 15). Aedeagus as in Fig. 21: 17. Length 6.0–9.0 mm. From taiga zone to steppe zone. Transpalaearctic species. *Salix, Populus*..... *Ch. saliceti* Sffr., 1849 **

38. Entomoscelis Chevr., 1837

Adults and larvae feed on herbaceous plants, pupation takes place in the soil.

1(2) Pronotum with black longitudinal stripe reaching anterior border (Fig. 22: 1). Clypeus and genae black. Elytra with black suture, each with black longitudinal diskal vitta, rarely without it. Length 6.6–10.0 mm. Total fig. 38. Latvia; Lithuania; Ukraine; Moldova; ER: from taiga zone (specimens from Udmurt Republic) to desert zone. C. and S.-E. Europe, Asia Minor, Syria, Caucasus, Iran, Kazakhstan, C. Asia, Siberia, Mongolia, N. America. Brassicaceae, *Adonis*..... *E. adonidis* (Pall., 1771) **

2(1) Pronotum with black longitudinal stripe not reaching anterior border (Fig. 22: 2). Clypeus and genae rufous. Elytra with black suture, each without black diskal vitta. Length 6.0–7.5 mm. Ukraine: steppe zone; Moldova; ER: taiga zone (specimens from Udmurt Republic), forest steppe zone (Samara reg. (Pavlov, 1988)), steppe zone (Rostov reg.). S.-E. Europe, Asia Minor, Caucasus, Iraq, Iran, Kazakhstan, C. Asia. *Glaucium*, Brassicaceae..... ..... *E. suturalis* Wse., 1882 **

39. Gastrophysa Chevr., 1837 (Gastroeidea Hope, 1840, Gastroidea auct.)

Adults and larvae feed on Polygonaceae (*Polygonum, Rumex, Rheum*), pupation takes place in the soil.

1(2) Pronotum, prosternum, femora, tibiae, 1st–4th antennomeres, 5th abdominal sternite, and pygidium reddish, 1st tarsomere reddish or brown, head and elytra blue, bluish-green, or violet, 2nd–4th tarsomeres and 5th–11th antennomeres black. Length 3.9–5.0 mm. Total fig. 39. From taiga zone to semidesert zone (Kalmykia). Holarctic species.... *G. polygoni* (L., 1758) **

2(1) Upper side and legs green, in some specimens, with golden reflection, underside blue or blackish-blue. Length 4.0–6.0 mm. From tundra zone to steppe zone. Holarctic species..... *G. viridula* (Deg., 1775) **

40. Gonioctena Chevr., 1837 (Phytodecta Kby., 1837)

Adults and larvae feed on tree foliage or herbaceous plants. Pupation takes place in the soil. Some species are ovoviviparous.

[illegible] (Fig. 22: 3). Humeral callus reduced or absent.

2(3) Punctures in elytral rows fine, intervals between rows as wide as 3–4 diameters of punctures, punctation in intervals as dense and coarse as punctation on disk of pronotum or coarser. Subgenus *Spartomena* Rtt., 1912. Head, underside, and femora black or rufous; pronotum and elytra rufous, pronotum usually with 2 black markings, elytra with common marking at suture and each with 3 more markings. In some specimens, markings partly or entirely missing or occupy most part of upper side. Aedeagus as in Fig. 22: 5. Length 5.0–7.0 mm. Ukraine; Moldova. S.-E. Europe, Asia Minor. *Medicago, Trifolium*..... *G. fornicata* (Brüggm., 1873) **

3(2) Punctures in elytral rows coarse, intervals between rows not wider than two diameters of punctures in rows, punctation in intervals sparser and usually finer than punctation on disk of pronotum. Subgenus *Spartophila* Chevr., 1837. Upper side, legs, and antennae in living beetles grayish-yellow, grayish-green, or pale brown, in dry specimens dark yellow, rufous, or pale brown; elytra usually with black suture and each with longitudinal diskal vitta, coloration of pronotum and elytra variable; underside of same colour as upper side or darker, almost entirely black. Aedeagus as in Fig. 22: 6. Length 3.7–5.2 mm. Distribution is studied insufficiently. Byelarus (Minsk, Gomel reg.); Ukraine (Lvov reg., Rovno reg., Chernovtsy Reg., Zhitomir, Kharkov reg.). Europe, N. Africa. *Genista, Laburnum, Lupinus, Sarothamnus*..... ..... *G. olivacea* (Först., 1771) **

4(1) Elongate, moderately convex (Fig. 22: 4). Humeral calli usually distinct.

5(22) Fore-tibiae with large denticle at exterior side before apex. Subgenus *Gonioctena* s.str.

6(19) Intervals between elytral puncture rows shining, covered with fine, distinct punctures.

7(10) Clypeus and legs entirely reddish.

8(9) Upper side with black markings (2 on pronotum and 5 on each elytron), very rarely, markings partly missing. Aedeagus as in Fig. 24: 8. Length 5.5–7.5 mm. From taiga zone to forest steppe zone. Holarctic species. *Salix, Populus*..... ..... *G. decemnotata* (Marsh., 1802) (*rufipes* Deg., 1775 nec L., 1758) **

9(8) Upper side entirely reddish or reddish with head and pronotum black. Aedeagus as in Fig. 24: 7. Length 5.5–6.5 mm. ER: taiga zone (Udmurt Republic)[1]. C., E. Siberia, Far East, Mongolia. *Padus, Sorbus*..... ..... *G. sibirica* (Wse., 1893) **

10(7) Femora and clypeus black.

11(12) Legs black, rarely with tibiae rufous. Aedeagus constricted before apex (Fig. 22: 7). Upper side red or rufous, with black markings (2 on pronotum, 5 on each elytron), markings usually fused together, sometimes absent, rarely upper side entirely black. Usually larger. Length 5.5–7.0 mm. Total fig. 40. From taiga zone to steppe zone. Holarctic species. *Salix, Populus*..... ..... *G. viminalis* (L., 1758) **

12(11) Most part of tibiae rufous. Apex of aedeagus drawn out (Fig. 22: 8, 9, 11). Usually smaller. Length 4.5–6.5 mm.

13(14) Aedeagus with longer apical projection (Fig. 22: 9). Pronotum mostly or entirely rufous. Elytra rufous with variable black markings. Length 4.7–

[1]Material: Udmurt Republic, Siumsi Distr., Kilmez Vill., 06.1965: 3 males.

6.0 mm. ER: taiga zone (Karelia (Palmen, 1945)). N. Europe, Siberia, Far East. *Salix*..... *G. sundmani* (Jcbs., 1901) (*sundmanni* auct.) *

14(13) Aedeagus with shorter apical projection (Fig. 22: 8, 11; 24: 9).

15(16) Aedeagus as in Fig. 22: 8. Pronotum entirely black, elytra red or brown, without markings, more rarely, elytra entirely black. Length 4.5–5.5 mm. Latvia; Lithuania; Ukraine (Carpathians); ER: taiga zone (Karelia: Kindasovo). Norway, Sweden, Finland, C. Europe (Mts.), Siberia, Far East, Mongolia. *Salix, Populus, Betula, Alnus*..... *G. flavicornis* (Sffr., 1851) **

16(15) Pronotum bicolored or entirely black. Elytra mostly with markings, rarely black or rufous throughout. Aedeagus not as above.

17(18) Aedeagus with apical projection shorter (Fig. 22: 11). Pronotum (Fig. 24: 11, 12) black, mostly with anterior corners rufous, or entirely black, elytra rufous throughout or with 1–5 black markings fused together in some specimens, or elytra entirely black..... ..... *G. linnaeana* (Schrnk., 1781) ** (see couplet 21)

18(17) Aedeagus with apical projection longer (Fig. 24: 9). Pronotum always rufous with black bilobed basal marking (Fig. 24: 10). Elytra rufous with 5 black markings. Length 4.4–5.2 mm. ER: taiga zone (Karelia: mts. near border of Finland (Silfverberg, 1992 and his personal communication)). Finland, Sweden, Norway..... *G. norvegica* (Strand, 1936) *

19(6) Intervals between elytral puncture rows shagreened, dull, with indistinct punctures or without them.

20(21) Antennae long, 3rd antennomere significantly longer than 5th; 7th–10th antennomeres elongate, each of them 1.4 X as long as wide, or longer. Pronotum entirely black or with rufous anterior and lateral margins; elytra rufous throughout or with 5 variable markings black; or upper side entirely black. Aedeagus as in Fig. 22: 10. Length 5.0–6.5 mm. ER: taiga zone (Kola Penins., Arkhangelsk reg., Komi), Polar Urals (Narodnaya Mt.), S. Urals (Gus'kova, 2000). N. Europe, Siberia, Far East, Mongolia, N.-E. China, Japan, N. America. *Spiraea, Salix*..... *G. arctica* (Mnnh., 1853) (*decaspilota* Achard, 1924; *affinis* Gyll., 1808 nec F., 1787) **

21(20) Antennae short, 3rd antennomere not significantly longer than 5th; each of 7th–10th antennomeres 1.1 X as long as wide, or shorter. Pronotum (Fig. 24: 11, 12) black, mostly with anterior corners rufous, or entirely black, elytra rufous throughout or with 1–5 black markings fused together in some specimens, or elytra entirely black. Aedeagus as in Fig. 22: 11. Length 5.0–6.5 mm. From tundra zone and Polar Urals to forest steppe zone. Transpalaearctic species. *Salix*..... *G. linnaeana* (Schrnk., 1781) **

22(5) Fore-tibiae without denticle on upper side before apex. Subgenus *Goniomena* Motsch., 1860.

23(26) Aedeagus gradually narrowed at sides of apical opening (Fig. 22: 12, 13).

24(25) Humeral calli weak. Wings reduced, not extending past apices of elytra. Posterior part of head of same colour as frons and vertex (or darker than frons and vertex in melanistic specimens only). Pale rufous, elytra usually without black markings. Aedeagus as in Fig. 22: 12. Length 4.6–7.0 mm. From tundra zone to steppe zone. Europe, Kazakhstan, Siberia, Mongolia. *Sorbus, Crataegus, Padus, Salix, Populus*..... *G. pallida* (L., 1758) **

25(24) Humeral calli distinct. Wings normal, when straightened longer than elytra. Posterior part of head brown or blackish, even in pale coloured spe-

cimens, visible through anterior margin of pronotum. From pale rufous to black, elytra unicolorous or with black markings. Aedeagus as in Fig. 22: 13. Length 4.3–6.0 mm. Ukraine: Carpathians (Warchałowski, 1994). Alps, Sudeten. *Alnus*. ..... *G. interposita* (Franz et Palmen, 1950) *

26(23) Aedeagus broadened at sides of apical opening and slightly drawn out at apex (Fig. 22: 14, 15).

27(28) Flagellum hook-shaped at apex (Fig. 22: 14). Coloration variable: pale rufous throughout or with 5 black markings on each elytron, or entirely black. Length 5.0-6.5 mm. From taiga (with exception of S. Karelia) to steppe zone. Europe (including Scandinavian Penins.), with exception of Finland. Siberia. *Sorbus, Padus, Corylus, Salix*. .... *G. quinquepunctata quinquepunctata* (F., 1787) **

28(27) Flagellum not hook-shaped at apex (Fig. 22: 15). Coloration as in previous species. Length 4.5–6.7 mm. Estonia; ER: taiga zone (Murmansk reg., Karelia, Leningrad reg.). S. Norway, Finland, C. Europe (Alps, Beskids, Bieszczads, Croatia, Hungary). *Padus, Sorbus, Prunus*. .... *G. quinquepunctata intermedia* (Hell., 1913) ** [1]

41. Cercyonops Jcbs., 1900

Adults and larvae feed on leaves of legumes.

1(1) Body black, elytra yellow-rufous with black suture and each usually with 4 black markings usually fused together, extending over most of elytron, in this case only elytral lateral stripe, basal half of antennae, tibiae, and apices of femora rufous; tarsi, femora (with exception of apices), apical half of antennae black. Length 3.5–4.5 mm. Total fig. 41. ER: taiga zone (Komi Republic), S. Urals (Gus'kova, 2000). Siberia. Fabaceae. .... *C. caraganae* (Gebl., 1823) **

42. Phratora Chevr., 1837 (Phyllodecta Kby., 1837)

Adults and larvae feed on foliage of trees and shrubs. Females lay eggs on leaves. Pupation takes place in the soil. The precise identification requires examination of aedeagus of the male or vaginal sternite and vaginal palpi of the female (Fig. 2: 8B; 23: 6).

1(2) Base of pronotum very finely margined. Fourth-6th antennomeres with numerous long setae beneath (Fig. 23: 1). Subgenus *Chaetoceroides* Strand,

[1] External differences between *Gonioctena quinquepunctata* and *G. intermedia*, noted by Palmen (1948), are very unreliable. Only structure of aedeagus allows the separation of these forms. Palmen preliminary regarded them as separate species, because he did not have specimens with intermediate characters. I have studied 88 males from the coast of the Kandalaksha Bay (environs of Poyakonda Vill.) and found specimens with aedeagi corresponding to both *G. quinquepunctata* and *G. intermedia* (15 specimens of each, 17%) as well as intermediate variants comprising most part of the material examined (58 specimens, 66%). This fact indicates the high level of hybridization in the locality in question. No ecological and phenological differences were found. On this basis and taking into account that these forms are geographical vicariants in Fennoscandia (Palmen, 1948), I regard *G. intermedia* as a subspecies of *G. quinquepunctata*.

1935. Dark blue, in some specimens, bluish-green. Aedeagus as in Fig. 23: 3. Vaginal sternite and vaginal palpi as in Fig. 23: 4. Length 4.0–5.5 mm. From taiga zone to steppe zone. Holarctic species. *Salix, Populus, Betula*. . ..... *Ph. vulgatissima* (L., 1758) **

2(1) Base of pronotum not margined. Each of 4th–6th antennomeres with only a few setae near apex as on other antennomeres (Fig. 23: 2). Subgenus *Phratora* s.str.

3(4) Frons and vertex with deep depression broadened anteriorly along their entire lenght. Dark blue or bluish-green. Aedeagus as in Fig. 23: 5, vaginal sternite and vaginal palpi of female as in Fig. 23: 6. Length 3.7–5.0 mm. Total fig. 42. From taiga zone (Komi, specimens from Murmansk reg.: Kandalaksha Distr.: Arctic Circle) to steppe zone. Transpalaearctic species. *Salix, Populus*..... *Ph. laticollis* (Sffr., 1851) **

4(3) Frons only slightly depressed anteriorly, its posterior half and vertex weakly convex.

5(8) Claw with small denticle (Fig. 23: 13).

6(7) In male, aedeagus with triangular apex (Fig. 23: 7). In female, vaginal sternite with almost straight posterior border; vaginal palpi narrow, elongate (Fig. 23: 8). Dark blue or dark bronze. Length 3.5–4.5 mm. From taiga zone (specimens from Murmansk reg.: Kandalaksha Distr.: Arctic Circle) to steppe zone. Europe, Siberia, Far East, Mongolia. *Salix, Populus, Betula*... ..... *Ph. atrovirens* (Corn., 1857) **

7(6) In male, apex of aedeagus trapeziform with concave lateral sides (Fig. 23: 15). In female, vaginal sternite with posterior border oblique at sides and broadly emarginate medially; vaginal palpi short, broad, rounded at apex (Fig. 23: 16). Green, bronze, dark blue, or bluish-violet; with tarsi and tibiae reddish (sometimes tarsi brown), or legs entirely dark metallic (ab. *cornelii* Wse.). Length 4.7–5.0 mm. Taiga zone (ER: Vyatka reg. (Shernin [Ed], 1974)), from deciduous-coniferous forest zone to forest steppe zone. Europe, Caucasus, Kazakhstan. *Salix, Populus*..... *Ph. tibialis* (Sffr., 1851) **

8(5) Claw with large denticle (Fig. 23: 14).

9(10) In male, apex of aedeagus trapeziform (Fig. 23: 11). In female, vaginal sternite with posterior border oblique at sides and broadly emarginate medially (Fig. 23: 12). Blue, bronze, bronze-green, blackish-bronze, or black; legs dark metallic throughout or with tibiae rufous (ab. *reitteri* Lop.). Length 3.8–4.6 mm. ER: taiga zone (specimens from Murmansk reg., Karelia, Komi), Polar Urals. Island, Fennoscandia, north of W. Siberia, E. Siberia, Far East, Mongolia. *Salix, Betula*... *Ph. polaris* (Schneid., 1886) **

10(9) In male, aedeagus rounded at apex (Fig. 23: 9). In female, vaginal sternite with almost straight posterior border (Fig. 23: 10). Blue, bronze-green, or bluish-green. Length 3.8–5.0 mm. From tundra (Khibini Mts.) to steppe zone. Holarctic species. *Salix, Populus*..... *Ph. vitellinae* (L., 1758) **

43. Hydrothassa Thoms., 1866

Adults and larvae feed on leaves of Ranunculaceae in humid habitats. Females lay eggs in the stems. Larvae feed on leaves, more rarely within the stems or leafstalks. Pupation takes place in the stems or on underside of leaves.

1(4) Pronotum bicolored, metallic with lateral sides rufous. Lateral margin of pronotum visible in dorsal view. Subgenus *Hydrothassa* s.str.

2(3) Body dark blue or blackish-bronze-green; elytra with rufous lateral stripe, without rufous longitudinal diskal stripe. Punctures in elytral rows finer, interval between 5th and 6th rows at mid-point of elytron wider than diameter of punctures in rows. Length 3.4–4.5 mm. From taiga zone to steppe zone. Europe, Kazakhstan, Siberia. *Caltha, Ranunculus*, adults and larvae feed on leaves and flowers. ..... *H. marginella* (L., 1758) **

3(2) Body blackish-blue, elytra with lateral and diskal longitudinal stripes rufous (diskal stripe rarely interrupted or absent). Punctures in elytral rows coarser, interval between 5th and 6th rows at mid-point of elytron as broad as diameter of punctures in rows or narrower. Length 3.5–5.0 mm. From taiga zone and Polar Urals to steppe zone. Europe, Siberia. *Caltha, Ranunculus.* ..... *H. hannoveriana* (F., 1775) (*hannoverana* auct.) **

4(1) Pronotum metallic throughout. Lateral margin of pronotum invisible in dorsal view. Subgenus *Agrostithassa* Jcbs., 1921. Body bronze-green or blue throughout or with lateral sides of elytra rufous (ab. *aucta* F.). Length 3.0–4.0 mm. Total fig. 43. From taiga zone to steppe zone. Europe, N.-W. Africa, W. Siberia. *Ranunculus*..... *H. glabra* (Hbst., 1783) **

44. Prasocuris Latr., 1802

Adults and larvae inhabit the banks of waterbodies and wet meadows, occur on leaves, larvae sometimes feed within the stems. Pupation takes place in the stems or on underside of leaves.

1(2) Upper side dark bronze-green or dark blue, with lateral sides of pronotum, longitudinal lateral and diskal stripes of elytra yellow (rarely diskal stripe interruped or absent). Underside and legs blackish-green, with majority of tibiae, base of femora, pygidium, and 5th abdominal sternite partly rufous. Length 4.7–6.0 mm. From taiga zone to steppe zone. Holarctic species. *Cicuta, Sium, Oenanthe, Caltha*..... *P. phellandrii* (L., 1758) **

2(1) Body blue, blackish-green, or black, with pygidium, and 5th abdominal sternite (partly) yellow. Length 3.9–5.0 mm. Total fig. 44. From deciduous-coniferous forest zone to steppe zone. Europe, N. Africa, Caucasus. *Veronica, Cicuta, Sium, Oenanthe*..... *P. junci* (Brahm, 1790) **

45. Neophaedon Jcbs., 1901

Adults feed on leaves.

1(1) Blackish-bronze, blackish-green, or blue, with antennae and legs pitchy black. Length 2.8–4.0 mm. Total fig. 45. From deciduous-coniferous forest zone (Byelarus; ER: Moscow reg.) to steppe zone. C. and S. Europe, Asia Minor, Caucasus, Kazakhstan, Kyrghyzstan, Iran, Afghanistan. *Ranunculus*..... *N. pyritosus* (Rossi, 1792) **

46. Phaedon Dahl, 1823

Adults and larvae occur on leaves of herbaceous plants, sometimes on banks of waterbodies, marshes, and wet meadows. Pupation takes place in the soil.

1(2) Body short-oval, almost hemispherical (Fig. 24: 1). Lateral callus of elytra without coarse punctures arranged in row, more rarely with sparse punctures arranged in row. Dark bronze or dark coppery, in some specimens, with greenish or violet reflection. Usually smaller. Length 2.5–3.0 mm. Taiga zone (ER: Komi: specimens from Ukhta, Vilgort), deciduous-coniferous forest zone: (Estonia; Lithuania; Byelarus; ER: Moscow reg.: specimens from Orekhovo-Zuevo Distr.), from deciduous forest zone to steppe zone. C. and S. Europe, Caucasus. *Galeopsis*..... ... *Ph. laevigatus* (Duft., 1825) (*gramicus* Duft., 1825; *grammicus* auct.) **

2(1) Body elongate-oval or ovoid, not very convex (Fig. 24: 2). Lateral callus of elytra with distinct punctures arranged in row, these punctures as large as punctures in 8th row, but sparser. Usually larger. Length 3.0–4.7 mm.

3(4) Antennae metallic, with 1st and 2nd antennomeres rufous beneath. Fifth puncture row on elytral base not deeper than 6th. Last abdominal sternite with very narrow brown stripe at posterior margin. Length 3.0–4.0 mm. From taiga zone to steppe zone. Transpalaearctic species, introduced in N. America. Brassicaceae..... *Ph. cochleariae* (F., 1792) **

4(3) Antennae entirely metallic. Fifth puncture row on elytral base deepened forming groove, 6th row traversing humeral callus and usually shallower than 5th.

5(6) Upper side unicolorous, blue or blackish-blue. Last abdominal sternite with pale rufous apical stripe, occupying about posterior half of its length. Aedeagus as in Fig. 24: 4. Length 3.7–4.7 mm. Total fig. 46. From tundra zone to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Siberia, Mongolia, Canada, U.S.A. *Rorippa, Veronica, Ceratophyllum, Hippuris, Myosotis*..... *Ph. armoraciae* (L., 1758) **

6(5) Upper side usually bicolored: head and pronotum blackish-bronze, elytra violet, blue, or green; rarely upper side unicolorous bronze or green. Last abdominal sternite with faintly visible narrow brown apical stripe. Aedeagus as in Fig. 24: 3. Length 3.2–4.1 mm. Estonia; ER: tundra zone (specimens from Barents Sea shore: envir. Murmansk), taiga zone (specimens from Murmansk reg.: Kandalaksha Distr.: Arctic Circle; Komi: Pechora valley), Middle Urals (Visimskii Res. (Ukhova, *et al.*, 1996)). Scandinavia, North Sea and Baltic Sea shores, Siberia, Far East, Mongolia. Larvae feed on *Triglochin maritimum*, adults also feed on *Plantago salsa, Cochlearia arctica*, and in flowers of *Ranunculus repens*..... *Ph. concinnus* Steph., 1831 **

47. Sclerophaedon Wse., 1882

Adults and larvae occur on leaves.

1(2) Usually smaller. Pronotum and elytra distinctly shagreened, sericeous. Aedeagus slightly emarginate at apex (Fig. 24: 6). Dark brown with strong steely, coppery, greenish, blue, or violet reflection, or black with bronze reflection; antennae and legs pitchy brown with metallic reflection. Length

3.2–3.8 mm (male), 3.6–4.3 mm (female). Ukraine: Carpathians. Europe (Mts.). *Stellaria, Caltha, Cardamine, Malachium*. .... *S. carniolicus* (Germ., 1824) **

2(1) Usually larger. Pronotum and elytra shining; elytra distinctly shagreened only in immature adults. Aedeagus not emarginate at apex (Fig. 24: 5). Dark brown, blackish-coppery, or almost black with bronze reflection, more rarely with brassy greenish tint; antennae and legs dark brown, with knees and antennae (partly) reddish-brown or red, or femora dark brown, tibiae, tarsi, and antennae reddish-brown. Length 3.7–4.5 mm (male), 4.2–5.0 mm (female). Total fig. 47. Ukraine: Carpathians. Europe: S. and E. Carpathians. *Caltha, Stellaria*..... *S. carpathicus* (Wse., 1875) **

48. Sternoplatys Motsch., 1860

1(1) Blackish-bronze with green reflection, rarely bronze or dark blue; with legs and antennae dark brown; tarsi, knees, apices of tibiae, and partly 1st and 2nd antennomeres reddish-brown. Length 3.1-4.0 mm. Total fig. 48. Ukraine: Carpathians (Medvedev, Shapiro, 1965). Alps, Dinara Mts. *Myosoton, Stellaria*..... *S. segnis* Wse., 1884 *

Galerucinae

Key to genera

1(14) Antennal insertions placed at level of anterior borders of eyes or more anteriorly (Fig. 25: 1). Vertex and pronotum with deep dense punctures. Claws simple or bifid (as in Fig. 25: 4,5).

2(9) Anterior coxal cavities closed behind (as in Fig. 1: 7).

3(6) Claws bifid (Fig. 25: 4).

4(5) Fourth metatarsomere not longer than 1st (Fig. 25: 6)..... ..... 49. *Galeruca* Geoffr.

5(4) Fourth metatarsomere longer than 1st (Fig. 25: 7)... 52. *Diorhabda* Wse.

6(3) Claws simple (Fig. 25: 5).

7(8) Pronotum and elytra glabrous, unicolorous rufous. Third tarsomere not broader than 2nd (Fig. 25: 8)..... 51. *Theone* Gistl

8(7) Pronotum and elytra pubescent, yellow with dark ridges on elytra. Third tarsomere broader than 2nd (Fig. 25: 9)..... 50. *Pallasiola* Jcbs.

9(2) Anterior coxal cavities opened behind (as in Fig. 1: 6).

10(11) Elytra glabrous, bearing lateral callus along its whole length..... ..... 53. *Lochmaea* Wse.

11(10) Elytra covered with adpressed setae, without lateral callus, or with very weak lateral callus at middle.

12(13) Head large, slightly narrowed before and behind eyes, its width across eyes only slightly less than width of pronotum (Fig. 25: 10). Genae 1.5 X shorter than minimum width of eye. Dorsum dull, shagreened, elytra with very fine dense punctation. Underside entirely rufous... 54. *Pyrrhalta* Joann.

13(12) Head small, distinctly narrowed before and behind eyes, its width with eyes much less than width of pronotum (Fig. 25: 11). Genae 1.6–2.9 X

shorter than minimal width of eye. Dorsum more or less shining, elytra with punctation coarser. Underside partly black..... 55. *Galerucella* Crotch

14(1) Antennal insertions placed behind anterior borders of eyes (Fig. 25: 2). Vertex and pronotum finely punctate or impunctate, rarely more coarsely punctate. Tarsal claws appendiculate (Fig. 25: 3).

15(16) Elytral epipleura absent (do not confuse with thin lateral margin of elytra)..... 56. *Phyllobrotica* Chevr.

16(15) Elytral epipleura distinct, at least, near base.

17(24) Anterior coxal cavities broadly opened behind (as in Fig. 1: 6).

18(19) Lateral border of pronotum with numerous (not less than 9) short setae distinctly visible at magnification of 32 X. Body large (length 5.5–8.0 mm), head black, pronotum rufous, elytra blue or green..... 57. *Exosoma* Jacoby

19(18) Lateral border of pronotum glabrous or with sparse (usually 1–2, rarely up to 5) short setae. Body smaller (length up to 5.0 mm), if larger (up to 7.2 mm), then upper side not coloured as in couplet 18.

20(23) Pygidium with uniform relief over whole surface (Fig. 25: 13). Lateral margins of elytra not visible from above or visible only in apical 1/4.

21(22) Third antennomere approximately as long as 2nd..... 59. *Calomicrus* Dillwyn

22(21) Third antennomere distinctly, usually twice as long as 2nd..... 60. *Luperus* Müll.

23(20) Pygidium with shining, glabrous, finely shagreened basal half and pubescent, densely punctate apical half, with distinct border between these parts (Fig. 25: 12). Lateral margins of elytra visible from above from the level of humeral calli to apex. ..... 58. *Agelastica* Chevr.

24(17) Anterior coxal cavities closed behind (as in Fig. 1: 7) or very narrowly open.

25(26) Base of pronotum margined along its whole length. Pronotum metallic, dark blue, without depressions on disk..... 61. *Euluperus* Wse.

26(25) Base of pronotum margined only near posterior corners. Pronotum yellowish rufous, with 2 depressions on disk..... 62. *Sermylassa* Rtt.

49. Galeruca Geoffr., 1762

Adults and larvae feed on herbaceous plants, pupation takes place in the soil. Identification of species and subspecies often requires examination of elytral relief (primary and secondary costae), see Fig. 26: 3.

1(16) Mid-tibiae with rasp-shaped punctures and sparse setae on exterior side (Fig. 26: 1). Usually larger: length 6.0–12.0 mm. Subgenus *Galeruca* s.str.

2(3) Elytra with lateral margin rounding humerus and reaching middle of elytral basal border. Elytra without ridges or with very weak ridges. Body entirely black, very rarely with vertex brown. Length 6.0–10.8 mm. Total fig. 49. From taiga zone (specimens from ER: Murmansk reg.: Kandalaksha Disr.: Arctic Circle) to semidesert zone. Transpalaearctic species. Asteraceae, Brassicaceae, Caryophyllaceae, Lamiaceae, Solanaceae, Plantaginaceae, Boraginaceae, Ranunculaceae..... *G. tanaceti* (L., 1758) **

3(2) Elytra with lateral margin ending at humerus or at level of posterior angles of pronotum. Elytra with convex costae, if costae weak or absent, then pronotum and elytra brownish yellow.

4(7) Pronotum with lateral groove forming very deep wide impression curved to anterior border (Fig. 26: 4). Elytra with costae I–IV.

5(6) Elytra with developed secondary costae 1 and 2, or only 1. Body black, with pronotum and elytra yellowish brown, disk or only depressions of pronotum usually dark brown, vertex mostly reddish, 5th abdominal sternite usually with 2 yellowish brown markings; rarely body unicolorous black (ab. *anthracina* Wse.). Length 6.0–12.0 mm. From taiga zone to desert zone. Europe, Asia Minor, Caucasus, N. Iran, Kazakhstan, Siberia, Mongolia, introduced into U.S.A. Asteraceae, Brassicaceae..... ..... *G. pomonae pomonae* (Scop., 1763) **

6(5) Elytra without secondary costae or these costae interrupted many times. Unicolorous, black or pitchy black. Length 8.4–11.5 mm. ER: semidesert zone (Kalmykia (Ogloblin, 1936)). Caucasus (Daghestan)..... ..... *G. pomonae petschenega* Jcbs., 1925 *

7(4) Lateral groove of pronotum only slightly impressed near anterior corners (Fig. 26: 5).

8(13) Fore-tibiae lobately produced laterally at apex (Fig. 26: 7).

9(10) At least, elytral costae II and III interrupted many times. Body black, with pronotum and elytra yellowish brown, elytral costae and most part of pronotal disk pitchy brown or almost black, head usually with vertex and frons reddish. Length 5.5–8.5 mm. Byelarus (Vitebsk reg.); W. Ukraine. C. and S. Europe, N.-W. Africa, Asia Minor..... ..... *G. interrupta interrupta* (Ill., 1802) **

10(9) At least, elytral costae I, II, and IV entire, III abbreviated or absent.

11(12) Sutural corner of elytra broadly rounded (Fig. 26: 8). Dark brown, with pronotum laterally and elytra pale yellowish brown, costae dark; in some specimens body entirely black. Length 6.0–9.5 mm. From taiga zone (Vyatka reg. (Shernin [Ed.], 1974; specimens from Murmansk reg.; Udmurt Republic) to steppe zone. C. and S. Europe, Asia Minor, Syria, Caucasus, Kazakhstan, Siberia, Mongolia, Tibet. *Artemisia, Sisymbrium*..... ..... *G. interrupta circumdata* Duft., 1825 **

12(11) Sutural corner of elytra almost right-angled (Fig. 26: 9). Black, with pronotum and elytra pale yellowish brown, disk of pronotum, scutellum, and elytral costae very dark brown. Length 7.9–10.0 mm. Ukraine: Crimea (Simferopol, Sevastopol, Evpatoria); ER: semidesert zone (Volgograd reg.), desert zone (Astrakhan reg.). Caucasus, Kazakhstan, C. Asia, Iran..... ..... *G. interrupta armeniaca* Wse., 1886 **

13(8) Fore-tibiae not lobately produced at apex (Fig. 26: 6). Elytral costae extremely slight or absent. Pronotum and elytra brownish yellow.

14(15) Pronotum with anterior corners prominent (Fig. 26: 10). Black, with pronotum, elytra, and usually upper side of head brownish yellow. Length 5.5–8.0 mm. Taiga zone (ER: Udmurt Republic (Roschinenko, 1972)), from deciduous forest zone (Ogloblin, 1936) to steppe zone, Ukraine: Crimea (Warchałowski, 1994). Europe, Siberia. *Cirsium, Thalictrum*..... ..... *G. dahli* (Joann., 1866) *

15(14) Pronotum with anterior corners rounded (Fig. 26: 11). Black, with pronotum and elytra brownish yellow. Length 6.0–9.0 mm. Estonia; Latvia; Byelarus; Ukraine: deciduous forest zone (Podolsk Hills), ER: taiga zone (Karelia: Svir valley; S. and W. Arkhangelsk reg.; Komi: Syktyvkar),

deciduous-coniferous forest zone (Moscow reg.), S. Urals (Ilmensky Res.). Europe, Kazakhstan, Siberia. *Thalictrum, Aconitum, Trollius*..... ..... *G. laticollis* (C. Shlb., 1837) **

16(1) Mid-tibiae with fine dense punctures and dense setae on exterior side (Fig. 26: 2). Usually smaller. Length 3.5–6.5 mm.

17(18) Hind-tibiae with apical spur (Fig. 26: 12). Winged. Subgenus *Emarhopa* Wse., 1886. Elytra with coarser punctures, intervals narrow, convex, fused together, forming longitudinal wrinkles. Black, with pronotum, elytra, and scutellum rufous or reddish rufous, frons and vertex entirely or partly rufous. Length 4.5–6.5 mm. Forest steppe and steppe zones, Crimea. C. and S. Europe, Asia Minor. *Convolvulus*..... *G. rufa* (Germ., 1824) **

18(17) Hind-tibiae without apical spur (Fig. 26: 13). Wingless (very rarely winged). Subgenus *Haptoscelis* Wse., 1886. Elytra with finer punctures, interspaces flat, shagreened, not fused together into longitudinal wrinkles. Black, with pronotum and elytra red, scutellum black. Length 3.5-6.0 mm. Byelarus (Minsk reg.: Stolbtsy Distr.); ER: taiga zone (specimens from Murmansk reg.: Kandalaksha Distr.: Arctic Circle), forest steppe and steppe zones. Europe, Caucasus, W. Siberia. *Rumex, Polygonum*..... ..... *G. melanocephala* (Ponza, 1805) **

50. Pallasiola Jcbs., 1925

Adults and larvae occur on leaves, pupation takes place in the soil.

1(1) Pale yellow, with antennae, vertex, transverse marking on pronotum, scutellum, suture, and 3 longitudinal costae on each elytron, markings on sides of mesosternum, metasternum, and abdominal sternites, knees, and tarsi black. Dorsum densely punctate. Length 5.5–8.0 mm. Total fig. 50. ER: forest steppe zone (Bashkortostan: Ufa, Uzun-Kul' lake), S. Urals (Chelyabinsk reg.: Agapovka). Kazakhstan, Kyrghyzstan, Tadzhikistan, Siberia, Far East, N. Mongolia, N. and C. China. *Artemisia, Helianthus*..... ..... *P. absinthii* (Pall., 1773) **

51. Theone Gistl, 1857

Adults and larvae occur on herbaceous plants, pupation takes place in the soil, hibernating stage is egg.

1(1) Black, with pronotum and elytra yellowish-rufous or reddish-rufous, frons and vertex usually reddish-brown. Elytra with faintly visible longitudinal costae. Length 7.0–9.7 mm. Total fig. 51. Ukraine: forest steppe zone (envir. Kharkov: Gaidary Vill. (S.A. Mosiakin, personal communication)); ER: E. steppe zone, semidesert zone (Kalmykia), desert zone (Astrakhan reg.). Caucasus, Kazakhstan, C. Asia, N. Iran. *Artemisia*, Fabaceae..... ..... *T. silphoides* (Dalm., 1823) **

52. Diorhabda Wse., 1883

Adults and larvae occur on leaves, pupation takes place in the soil.

1(4) Elytra entirely covered with dense adpressed setae. Body flattened.

2(3) In male, 4th antennomere angularly prominent near base and bearing bundle of dense erect setae (Fig. 27: 2). Antennal calli very convex, distinctly separated from vertex. Upper side with coarser punctation and sparser setae. Yellowish-rufous, head and pronotum usually with black markings, in some specimens, elytra with black sutural stripe. Length 4.5–6.0 mm. Ukraine: Crimea. Asia Minor, Caucasus, C. Asia, Iran. Fabaceae: *Alhagi*. . . . . *D. fischeri* (Fald., 1837) **

3(2) In male, 4th antennomere not angularly prominent near base and without bundle of erect setae (Fig. 27: 1). Antennal calli slightly convex, indistinctly separated from vertex. Upper side with finer punctation and denser setae. Yellowish-brown or brown, with markings on vertex and pronotal disk, scutellum, and ventral surface black, in some specimens prosternum and abdominal sternites (partly) yellowish-brown. Length 4.3–6.0 mm. Ukraine: Crimea (Mosiakin, 1987); ER: E. steppe zone, desert zone. Syria, Caucasus, Kazakhstan, C. Asia, Iran, Afghanistan. Fabaceae: *Alhagi*. . . . . *D. persica* (Fald., 1837) **

4(1) Disk of elytra with very sparse setae. Lateral slopes separated by longitudinal costa from above and covered with dense adpressed setae. Body convex. Sulphureous or reddish-yellow, with marking on frons, mesepimera, metepisterna, lateral sides of metasternum and abdominal sternites, tarsi, and 6-11th antennomeres black, elytra usually with 2 black longitudinal stripes, pronotum with black markings. Length 4.5–8.0 mm. Total fig. 52. ER: E. steppe zone, semidesert zone (Kalmykia), desert zone (Astrakhan reg.). Caucasus, Kazakhstan, C. Asia, Iraq, Iran, Mongolia. *Tamarix, Myricaria, Halimodendron*. . . . . *D. elongata* (Brullé, 1832) **

53. Lochmaea Wse., 1883

Adults and larvae occur on leaves of trees and shrubs.

1(4) Pronotum and elytra brownish-yellow or pale brown, without red tint, pronotum usually with black markings or entirely black. Head and underside black. Elytral epipleura with faintly visible setae only in anterior half. [1]

2(3) Aedeagus as in Fig. 25: 15. Length 4.3–6.0 mm. From taiga zone to forest steppe zone, Middle Urals. Europe. *Calluna*. . . . . *L. suturalis* (Thoms., 1866) **

3(2) Aedeagus as in Fig. 25: 14. Length 4.0–6.0 mm. Total fig. 53. From taiga zone (Khibini Mts., Komi) to forest steppe zone. Transpalaearctic species. *Salix, Populus, Betula, Vaccinium, Ledum*. . . . . *L. caprea* (L., 1758) (*capreae* auct.) **

4(1) Head, pronotum, and elytra red or brownish-red, sometimes with black pattern. Underside black, with abdominal sternites rufous along middle or only apex of abdomen rufous, in some specimens prosternum partly rufous.

[1] External characters do not permit the separation *L. caprea* and *L. suturalis*. Warchałowski (1994) paid attention on the different structure of aedeagus in these species. I examined his drawings, found them very strange, and thought that they represent artefacts or belong to young, unsclerotized specimens. However, I found the same structures in the specimens at my disposal! Therefore, the genitalic characters are the real taxonomical difference between *L. caprea* and *L. suturalis*!

Elytral epipleura with distinct setae along entire length. Length 3,7–5,5 mm. From deciduous-coniferous forest zone to steppe zone. Transpalaearctic species. *Crataegus, Malus, Prunus*.....*L. crataegi* (Först., 1771) **

54. Pyrrhalta Joann., 1866 (Galerucella Crotch, 1873 partim)

Adults and larvae feed on leaves. Female lays eggs in the small holes gnawed in the branches and then covers them with excrement. Eggs hibernate. Pupation takes place in the soil.

1(1) Brownish-yellow, covered with short sericeous setae; marking on vertex, 3 longitudinal lines on pronotum, base of scutellum, and humeral calli black. Length 4.5–6.5 mm. Total fig. 54. From taiga zone to deciduous forest zone, steppe zone (only in plantations). Europe, Caucasus, Kazakhstan, Siberia, Far East, N.-E. China, Korea, Japan. *Viburnum, Sambucus*..... .....*P. viburni* (Pk., 1799) **

55. Galerucella Crotch, 1873

Members of the subgenus *Galerucella* (s.str.) inhabit waterbodies, swamps, and wet meadows, adults and larvae feed on leaves, pupae occur on leaves of the host plants. Adults and larvae of *G. (Xanthogaleruca) luteola* feed on leaves of elms; pupation takes place in the soil. Members of the subgenus *G. (Neogalerucella)* inhabit wetlands, pupate in the soil.

1(2) Third antennomere not longer than 4th. Subgenus *Xanthogaleruca* Lab., 1934. Yellow, with antennal calli entirely or partly black, upper side of antennae, marking on head, 3–4 markings on pronotum, longitudinal stripe behind humeral callus, longitudinal stripe near base of each elytron interiorly to humeral callus, metasternum, and abdominal sternites black. Length 6.0–8.0 mm. From taiga zone (Vyatka reg.) to desert zone. Europe, N. Africa, Asia Minor, Caucasus, Kazakhstan, C. Asia, Iran, Afghanistan, W. Siberia, Far East, N. China, introduced in N. America. *Ulmus*..... ..... *G. luteola* (Müll., 1766) **

2(1) Third antennomere distinctly longer than 4th.

3(10) Disk of pronotum with shining glabrous mid area. Subgenus *Galerucella* s.str.

4(5) Sutural corner of elytron rounded (Fig. 27: 3). Eighth–10th antennomeres twice as long as wide. Brownish-yellow, with mesosternum, metasternum, and abdominal sternites partly black, marking on vertex, scutellum, antennae, tarsi (throughout or partly) and sometimes humeral calli black. Length 3.7–5.5 mm. From taiga zone (northwards to S. Karelia and Komi) to forest steppe zone. Europe, Siberia, Far East, China. *Polygonum, Rumex, Filipendula, Fragaria, Comarum, Lysimachia*..... *G. grisescens* (Joann., 1866) **

5(4) Sutural corner of elytron drawn out (Fig. 27: 4). Eighth–10th antennomeres 1.5 X as long as wide or shorter. *G. (nymphaeae)* species group. [1]

6(9) Length 5.4–6.3 mm.

7(8) In female, 5th abdominal sternite with narrow apical incision or without incision. Pronotum yellow with 2–3 dark brown markings, head dark brown with yellow anterior part, elytra dark brown with yellow lateral borders. Length 5.6–6.3 mm. Total fig. 55. From taiga zone (ER: Khibini Mts.) to deciduous forest zone. Palaearctic species. *Nymphaea, Nuphar*. . . . . *G. nymphaeae* (L., 1758) **

8(7) In female, 5th abdominal sternite with deep wide triangular apical incision (Fig. 7: 10). Upper side brownish yellow, with vertex, 2 markings on pronotum, scutellum, humeral callus, diffuse longitudinal stripe behind humeral callus, and sometimes also diffuse stripe along suture dark brown. Length 5.4–6.0 mm. Distribution is studied insufficiently. ER: taiga zone (Karelia (Gerd, 1965)), deciduous-coniferous forest zone (specimens from Moscow reg.: Istrinskoe Reservoir), S. Urals (specimens from Ilmensky Res.). Europe. *Polygonum amphibium, Rumex hydrolapathum*. . . . . *G. aquatica* (Fourcroy, 1785) **

9(6) Length 4.5–5.1 mm. Coloration as in *G. nymphaeae*. Distribution is studied insufficiently. Byelarus (Alexandrovitch, *et al.*, 1996): ER: taiga zone (Karelia: Tivdia, Unitsa (Gerd, 1965), specimens from Loukhi Distr. and Valaam Isl.); deciduous-coniferous forest zone (specimens from Moscow reg.: envir. Zvenigorod). Europe. *Comarum palustre*. . . . . *G. sagittariae* (Gyll., 1813) **

10(3) Disk of pronotum covered with setae, without glabrous mid area. Subgenus *Neogaleruella* Chûjô, 1962

11(12) Elytra with epipleura gradually narrowing from base to apex and not reaching sutural corner. Antennomeres bicolored dorsally: bases yellow, apices black, and entirely yellow ventrally. Body yellowish-brown, with markings on vertex and pronotal disk, scutellum, humeral calli, mesosternum, metasternum, and 1st–4th abdominal sternites black; in many specimens, with diffuse longitudinal marking behind humeral callus brown. Aedeagus with apex asymmetrical. Length 4.6–6.0 mm. From taiga zone to steppe zone. Transpalaearctic species. *Salix, Populus, Alnus*. . . . . *G. lineola* (F., 1781) **

12(11) Elytra with epipleura of equal width along almost whole length and narrowing just before apex, reaching sutural corner. Antennae gradually darkened from base to apex.

13(14) In male, aedeagus three times curved, blunted at apex (Fig. 27: 5); in female, 5th abdominal sternite with deep apical emargination (Fig. 27:

[1] Silfverberg (1974) believed *G. sagittariae* to be a junior synonym of *G. nymphaeae*. Lohse (1989) revised this species group and established four separate species. Their taxonomical position and distribution are known insufficiently. Differences in structure of aedeagus, shape of last abdominal sternite, size and coloration of body are weak (Lohse, 1989; Kippenberg, Döberl, 1994; Warchałowski, 1994). Three species occur in territory under consideration. They feed on different host plants (see key). *G. kerstensi* Lohse, 1989 has been found only in W. Europe (including Finland) until now. Total area of this group occupies the entire Holarctic. On the other hand, it was recently shown that North American "*G. nymphaeae*" is more close to *G. grisescens* than to European *G. nymphaeae* on the base of chemical composition and morphological structure of egg chorion, structure of larval integument, and life cycles (Nokkala, *et al.*, 1998).

11). Coloration variable. Usually, rufous, with 4th–11th antennomeres, vertex, spot at pronotal disk, scutellum, spot at humeral callus attached to longitudinal stripe behind humeral callus, fore-coxae, meso-, metasternum, and abdominal sternites (with exception of 1–3 last sternites), black. Black pattern missing in various degrees in some specimens. Length 3.7–5.5 mm. From taiga zone to steppe zone. Transpalaearctic species, U.S.A. *Lythrum*. ..... *G. calmariensis* (L., 1767) **

14(13) In male, aedeagus evenly curved, pointed at apex, shape variable (Fig. 27: 6); in female, 5th abdominal sternite without apical emargination or with only shallow emargination. [1]

15(16) Pronotum with anterior, lateral, and posterior sides inflated, glabrous; pubescence presents at midline and 2 diskal impressions. In male, 5th abdominal sternite with small to moderate impression and shallow apical emargination (Fig. 27: 8); in female, 5th abdominal sternite without apical emargination (Fig. 27: 7). Rufous, with vertex, pronotal spot, scutellum (with exception of its apex), meso-, metasternum, and abdominal sternites 1–4 black. In some specimens, scutellum entirely rufous, or basal part of 5th abdominal sternite black. Length 3.0–4.2 mm. From taiga zone to steppe zone. Transpalaearctic species. *Filipendula, Fragaria, Spiraea, Potentilla, Geum*..... *G. tenella* (L., 1761) **

16(15) Pronotum with only anterior side inflated, glabrous, and pubescent at the remainder. In male, 5th abdominal sternite with large triangular impression and deep apical emargination (Fig. 27: 10); in female, 5th abdominal sternite with shallow apical emargination (Fig. 27: 9). Rufous, usually, vertex, scutellum (entirely or with exception of apex), meso-, metasternum, abdominal sternites 1–2 or 1–3 black. In some specimens meso-, metasternum, and abdominal sternites rufous throughout, or humeral calli and 4th abdominal sternite black. Length 3.5–4.8 mm. From taiga zone to steppe zone. Europe, Asia Minor, Syria, Caucasus, Kazakhstan, Kyrghyzstan, Siberia, Mongolia, China. *Lythrum*..... *G. pusilla* (Duft., 1825) **

56. Phyllobrotica Chevr., 1837

Adults occur on leaves, larvae feed on roots, pupation takes place in the soil.

1(2) Pronotum not margined at base. Yellow, with vertex, 2 markings on each elytron, metasternum, abdominal sternites, and hind-coxae black. Length 5.0–7.0 mm. Total fig. 56. From taiga zone to steppe zone. Europe, Caucasus, Kazakhstan, Siberia. *Scutellaria, Stachys*..... ..... *Ph. quadrimaculata* (L., 1758) **

2(1) Pronotum margined at base.

[1] *Galerucella tenella* and *G. pusilla* are very close. Besides the typical forms I have some intermediate variants, e.g. 1) male: pronotum with only anterior side glabrous, 5th abdominal sternite with large impression and shallow apical emargination (S. Karelia: Svir valley); 2) male: pronotum with anterior side and 2 tubercles near posterior side glabrous, 5th abdominal sternite with large impression and deep emargination; female: pronotum as in male, 5th abdominal sternite without apical emargination (Crimea: Simferopol); 3) male: pronotum with anterior, posterior, and lateral sides glabrous, 5th abdominal sternite with large impression and shallow emargination; female: pronotum as in male, 5th abdominal sternite without apical emargination (S. Urals: Ilmensky Res.). Probably, these variants are results of the hybridization between the two species.

3(4) Ochraceous or rufous. Head black throughout or with frons and clypeus brown, vertex, common triangular marking at bases of elytra, marking in apical part of each elytron, scutellum, mesosternum, metasternum, abdominal sternites, apical antennomeres, bases of fore-femora, mid- and hind-legs (with exception of knees) black. In some specimens, scutellum, mid- and hind-tibiae rufous. Length 4.5–6.5 mm. Ukraine; Moldova; ER: steppe zone. Black Sea basin, Caucasus. ..... *Ph. elegans* Krtz., 1866 **

4(3) Rufous, with elongate marking behind the mid-point of each elytron, mid-femora (partly), mid-tarsi, hind-legs (with exception of knees), scutellum, apices of antennae, mesosternum, metasternum, and abdominal sternites black. Length 5.0–6.6 mm. Ukraine; Moldova. C. and S.-E. Europe. *Stachys, Teucrium, Asperula*..... *Ph. adusta* (Creutz., 1799) **

57. Exosoma Jacoby, 1903

1(1) Head, scutellum, mesosternum, metasternum, femora, and tibiae black, tarsi and knees brown, in some specimens, scutellum and legs partly rufous (ab. *russica* Pic), labrum rufous or brown, pronotum, prosternum, and abdominal sternites rufous, antennae black with bases of antennomeres rufous or brown, elytra blue or green, in some specimens, with violet tint. Length 5.5–8.0 mm. Total fig. 57. Byelarus; Ukraine; ER: forest steppe and steppe zones. Caucasus, Caspian Sea Coastal Plain, Kazakhstan, S.-W. Siberia. *Hemerocallis, Agropyron*. ..... *E. collare* (Humm., 1825) **

58. Agelastica Chevr., 1837

Adults and larvae feed on leaves of trees and shrubs, pupae occur in the soil.

1(1) Dark blue or blackish-blue, with elytra violet or bluish-violet. Length 5.9–7.2 mm. Total fig. 58. From taiga zone to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, W. Siberia. *Alnus, Salix, Betula, Corylus, Rubus*... ..... *A. alni* (L., 1758) **

59. Calomicrus Dillwyn, 1824

Adults feed on leaves, larvae of *C. circumfusus* feed on roots, pupate in the soil.

1(2) Elytra black with wide yellow longitudinal stripe, pronotum yellow, with black transverse basal band having 2 prominences anteriorly, head, underside, and legs black, fore-tibiae rufous, antennae black with rufous bases. Length 3.0–4.5 mm. Byelarus (Medvedev, Shapiro, 1965); Ukraine (Ogloblin, 1936); Moldova (Warchałowski, 1994); ER: deciduous-coniferous forest zone (Smolensk reg. (Ogloblin, 1936)). Europe, Tunisia. Fabaceae, Lamiaceae... ..... *C. circumfusus* (Marsh., 1802) *

2(1) Elytra, mesosternum, metasternum, abdominal sternites, and head black, prosternum rufous. Legs rufous, with bases of femora black, or with femora black with apices rufous. Antennae brown with bases rufous. Coloration of pronotum varies from rufous to pitchy or black (ab. *silvestris* Wse.). Length

2.3–4.3 mm. Total fig. 59. Estonia; Latvia; Lithuania; Byelarus; Ukraine; ER: from taiga zone to deciduous forest zone. Europe. *Pinus*. .... *C. pinicola* (Duft., 1825) **

60. Luperus Müll., 1764

Adults occur on trees and grasses. Larvae feed on roots, pupate in the soil.

1(2) In male, 3rd abdominal sternite with 1, 4th with 2 long outgrowths (Fig. 27: 12). In female, basal half of pygidium swollen (Fig. 27: 13). Blackish bronze green, elytra blackish-blue, apices of femora, tibiae, and bases of antennae rufous, tarsi brown. Length 3.5–5.5 mm. From forest steppe zone (ER: Samara) to desert zone. Caucasus, Kazakhstan..... ..... *L. pravei* (Jcbs., 1901) (*Nymphius pravei* Jcbs.) **

2(1) In male, abdominal sternites without outgrowths (Fig. 27: 14). In female, pygidium not swollen (Fig. 27: 15).

3(14) Pronotum entirely black or pitchy brown, or with sides reddish.

4(7) Legs entirely rufous, dorsum black without metallic tint.

5(6) Frons not wrinkled anteriorly to frontal ridge, frontal ridge mostly without punctures, rarely with only several punctures. Length 4.0–6.0 mm. Byelarus (Alexandrovitch, *et al.*, 1996); Ukraine; ER: from deciduous forest zone to steppe zone. C. and S.-E. Europe, Caucasus, Kazakhstan, Kyrghyzstan. Various foliar trees. ..... *L. xanthopoda* (Schrnk., 1781) **

6(5) Frons wrinkled anteriorly to frontal ridge, frontal ridge with numerous fine deep punctures. Length 4.0–5.6 mm. Ukraine: Crimea (S. shore). Bulgaria, Caucasus. ..... *L. armeniacus* Kiesw., 1878 **

7(4) Legs rufous, with at least bases of mid- and hind-femora black.

8(13) Elytra black with blue or green tint (more distinct in sunlight).

9(10) Frontal ridge wide, flattened, with small wrinkles and several coarse punctures, almost fused with antennal calli. Length 4.0–5.3 mm. ER: Volga valley: steppe, semidesert, and desert zones. Caucasus, Kazakhstan. *Ulmus*. ..... *L. kiesenwetteri* Joann., 1866 **

10(9) Frontal ridge convex, glabrous, without coarse punctures, distinctly separated from antennal calli.

11(12) Frontal ridge narrow. Elytra with very weak greenish reflection, covered with homogenous punctures. Length 3.5-5.0 mm. From deciduous-coniferous forest zone to forest steppe zone, Ukraine: Crimea (specimen from Degermenkoi). Europe, Siberia, Mongolia. *Ulmus, Salix, Alnus*..... ..... *L. luperus* (Sulz., 1776) (*lyperus* Bedel, 1897) ** males (see also couplet 18 — females)

12(11) Frontal ridge wide, triangular. Elytra blackish-blue, covered with mixed coarse and fine punctures. Length 4.0–6.0 mm. Ukraine: steppe zone, Crimea (S. shore); Moldova. Balkan Penins..... *L. cyanipennis* Küst., 1848 **

13(8) Elytra black without metallic reflection. Frontal ridge triangular, convex. Bases of all femora and usually apices of tibiae black. Pronotum black or pitchy brown, in some specimens, with reddish sides. Length 3.5–5.0 mm. From taiga zone to steppe zone. Europe, Caucasus, Siberia, Far East. Various foliar trees. ..... *L. longicornis* (F., 1781) **

14(3) Pronotum rufous or yellowish-rufous throughout.

15(20) Elytra black, with or without very slight greenish tint.

16(17) Legs entirely yellowish-rufous. Body black, maxillary palpi, mandibles, genae, anterior border of labrum, 3–6 basal antennomeres, and prosternum yellowish-rufous, in some specimens labrum entirely brown, coxae black or blackish-brown, with exception of yellow anterior side of fore-coxae. Ukraine: Crimea (foothills and mountain forests). Length 3.8–4.7 mm..... .....*L. kiritshenkoi* Ogl., 1936 **

17(16) At least basal half of femora black.

18(19) Elytra black with very slight green tint, with punctation dense, homogenous, evenly-placed. Basal half of femora black. Length 3.5–5.0 mm..... .....*L. luperus* (Sulz., 1776) ** females (see couplet 11 — males)

19(18) Elytra purely black, with mixed coarse and fine punctures, unevenly distributed on disk. Basal half of fore-femora, most part of mid- and hind-femora black. Length 3.6–5.0 mm. Total fig. 60. From taiga zone to steppe zone. Transpalaearctic species. Various foliar trees...*L. flavipes* (L., 1767) **

20(15) Elytra bluish-green, bronze, or dark blue. Head black. Legs yellowish-rufous, with bases of fore- and mid-femora, basal halves of hind-femora, and apices of tarsi black or pitchy brown. Length 3.5–5.0 mm. From taiga zone (ER: Komi: Ukhta (Sedykh, 1974)) to forest steppe zone (Ogloblin, 1936). Europe (Mts.), Siberia, Far East, Mongolia. *Alnus*..... .....*L. viridipennis* Germ., 1824 *

61. Euluperus Wse., 1886

1(1) Dark blue, head and pronotum usually with greenish tint, tibiae, tarsi, and apices of femora yellowish-rufous, antennae yellowish-rufous with apices darkened. Length 4.0–5.0 mm. Total fig. 61. Steppe and semidesert (ER: Kalmykia: Ergeni) zones. C. and S.-E. Europe, Caucasus. Various foliar trees..... *Eu. xanthopus* (Duft., 1825) **

62. Sermylassa Rtt., 1912

Adults and larvae occur on leaves, pupation takes place in the soil.

1(1) Yellowish-rufous, with vertex, elytra, and markings on hypomera of prothorax green, golden-green, or bluish-green; antennae, apices of tibiae, tarsi (partly), and scutellum black; in some specimens, antennae, tibiae, and tarsi entirely rufous, and hypomera of prothorax without markings. Length 4.4–7.0 mm. Total fig. 62. Latvia (Barševskis, 2001); Lithuania (Silfverberg, 1992), Ukraine, ER: forest steppe and steppe zones, S. Urals. Europe, Caucasus, Kazakhstan, W. Siberia. *Galium, Urtica*.... *S. halensis* (L., 1767) **

Halticinae (Alticinae)

Key to genera

1(46) Antenna with 11 antennomeres (Figs. 29: 1, 2; 35: 3–7). Hind-tarsi attached to apex of tibiae (Figs. 28: 1–3, 7, 8; 29: 3, 4; 35: 8, 9).

2(45) Hind-tibiae with apical spur pointed (Figs. 28: 1–3; 29: 3, 4; 37: 11, 12).
3(44) Mid- and hind-tibiae without subapical excavation on upper side (Fig. 28: 1, 2).
4(21) Pronotum with antebasal impression (Fig. 30: 9, 10A), if impression very shallow or obsolete, then: 1) elytra densely pubescent, or 2) dorsum entirely rufous and pronotum with basal furrows.
5(20) Antebasal impression of pronotum delimited laterally by basal furrows (Fig. 30: 9, 10B), if furrows weak or absent, then ends of antebasal impression turned to base of pronotum.
6(19) Elytra with punctures arranged in rows at least laterally. Anterior coxal cavities closed behind.
7(18) Elytra glabrous or only declivity pubescent.
8(11) Antennal calli separated from vertex by sharp supracallinal sulci.
9(10) Head and pronotum rufous or pitchy black. Antennal calli large, rounded or triangular. ..... 63. *Derocrepis* Wse.
10(9) Head and pronotum with metallic coloration. Antennal calli short, more or less wide. ..... 66. *Crepidodera* Chevr.
11(8) Antennal calli weakly separated from vertex.
12(13) Elytra bronze with apex rufous. ..... 64. *Hippuriphila* Foudr.
13(12) Elytra unicolorous: yellow, rufous, brown, dark metallic, or black with metallic tint.
14(17) Vertex smooth or finely wrinkled, but without coarse dense punctures. If length less than 2.5 mm, then body entirely dark metallic dorsally.
15(16) Ninth and 10th antennomeres elongate, each 2–3 X as long as wide. Intercoxal prosternal process curved to anterior margin of mesosternum. ... . 68. *Neocrepidodera* Hktg.
16(15) Ninth and 10th antennomeres short, each 1.5 X as long as wide. Intercoxal prosternal process not curved to anterior margin of mesosternum and partly superimposed on the latter. ..... 76. *Orestia* Germ.
17(14) Vertex distictly shagreened and densely coarsely punctate. Length 2.1–2.5 mm, body entirely yellow dorsally. ..... 67. *Ochrosis* Foudr.
18(7) Elytra with setae arranged in rows throughout. ..... 65. *Epitrix* Foudr.
19(6) Elytra with punctation entirely confused. Anterior coxal cavities open behind. ..... 73. *Hermaeophaga* Foudr.
20(5) Antebasal impression of pronotum not delimited laterally with basal furrows and almost reaching lateral sides of pronotum. Elytra with punctation confused. Coloration entirely metallic. ..... 69. *Altica* Geoffr.
21(4) Pronotum without antebasal impression (Fig. 28: 10–13). Elytra glabrous. When pronotum with basal furrows, then body is not entirely rufous dorsally.
22(27) Pronotum with basal furrows (Fig. 28: 10, 11). Anterior coxal cavities closed behind.
23(24) Elytra with punctation at least partly confused. Head and pronotum rufous, elytra metallic. ..... 70. *Podagrica* Chevr.
24(23) Elytra with punctation arranged in regular rows.
25(26) Body broadly-oval (Fig. 28: 11). Antennal calli present. Dorsum black or pitchy brown with weak metallic tint. ..... 74. *Minota* Kutsch.
26(25) Body narrowly-oval (Fig. 28: 10). Antennal calli absent. Dorsum entirely metallic, or with elytra bicolored. ..... 71. *Mantura* Steph.
27(22) Pronotum without basal furrows (Fig. 28: 12, 13).

28(37) Body elongate, elongate-oval, or oval, weakly or moderately convex (Fig. 28: 13; 33: 1–13).

29(32) Elytra with punctures arranged in regular rows.

30(31) Humeral calli convex; hind wings present. Dorsum yellow, rufous, or brown, not metallic. Anterior coxal cavities closed behind. . . . . 72. *Lythraria* Bedel

31(30) Humeral calli and hind wings absent. Dorsum dark metallic or black. Anterior coxal cavities open behind. . . . . 77. *Batophila* Foudr.

32(29) Elytra with punctation confused.

33(36) First metatarsomeres less than 0.5 mostly 0.3 X as long as length of hind-tibiae (Fig. 28: 2).

34(35) Apical spur of hind-tibiae placed at middle of lower edge of its apex (Fig. 29: 4). Dorsum black or metallic, unicolorous, or elytra with yellow pattern, rarely elytra yellow throughout or with only humeral calli brownish. . . . . 78. *Phyllotreta* Chevr.

35(34) Apical spur of hind-tibiae placed at exterior side of lower edge of its apex (Fig. 29: 3). Dorsum yellow (unicolorous or with head and elytral suture brown or black), metallic, or black, but without yellow pattern on elytra. . . . . 79. *Aphthona* Chevr.

36(33) First metatarsomeres 0.5 X as long as length of hind-tibiae or longer (Fig. 28: 1). Apical spur of hind-tibiae placed at middle of lower edge of its apex. . . . . 80. *Longitarsus* Berthold

37(28) Body broadly-oval or almost rounded, very convex (Fig. 28: 12).

38(39) Elytra with punctures arranged in regular rows. Seventh–11th antennomeres gradually broadened. . . . . 83. *Apteropeda* Chevr.

39(38) Elytra with punctures entirely confused or with only few abbreviated puncture rows.

40(43) Body large (length 2.3–5.0 mm). Hind wings present. Antennae slender, without broadened antennomeres (Fig. 29: 2).

41(42) Anterior border of clypeus straight, without emargination. Fourth antennomere as long as 3rd and shorter than 5th. . . . 81. *Sphaeroderma* Steph.

42(41) Anterior border of clypeus deeply emarginate. Fourth antennomere approximately as long as 5th and considerably longer than 3rd. . . . . 82. *Argopus* Fisch.

43(40) Body small (length 0.8–1.5 mm). Hind wings absent. Ninth–11th antennomeres broadened (Fig. 29: 1). . . . . 75. *Mniophila* Steph.

44(3) Mid- and hind-tibiae with subapical excavation covered by long setae on upper side (Fig. 28: 3). . . . . 84. *Chaetocnema* Steph.

45(2) Hind-tibiae with apical spur strongly broadened and bifurcated (Fig. 28: 7, 8). . . . . 85. *Dibolia* Latr.

46(1) Antenna with 10 antennomeres. Hind-tarsi attached to tibiae at certain distance from its apex (Fig. 28: 4–6). . . . . 86. *Psylliodes* Berthold

63. Derocrepis Wse., 1886

Adults occur on leaves of leguminous plants.

1(2) Pronotum 1.3–1.5 X as wide as long. Winged. Subgenus *Derocrepis* s.str. Head, pronotum, prosternum, antennae, and legs rufous, elytra bluish-green,

blackish-blue, or blackish-green, mesosternum, metasternum, and abdominal sternites black. Aedeagus evenly narrowed and pointed at apex; evenly arc-shaped in lateral view (Fig. 30: 1). Length 2.3–3.8 mm. Total fig. 63. From taiga zone to steppe zone. Europe, Asia Minor, Caucasus, Siberia. Fabaceae. ..... *D. rufipes* (L., 1758) **

2(1) Pronotum 1.2 X as wide as long or narrower. Wingless. Subgenus *Aeschrocnemis* Wse., 1888. Head, pronotum, prosternum, antennae, and legs rufous; in female, head, pronotum, and prosternum usually pitchy black. Elytra greenish-black or bluish-black. Aedeagus constricted before apex; undulate in lateral view (Fig. 30: 2). Length 2.3–3.1 mm.

3(4) Pronotum usually with distinct sharp basal furrows. Elytra glabrous or with sparse setae on declivity. Ukraine: Crimea (Warchałowski, 1998). S. and S.-E. Europe, Asia Minor. Fabaceae. .... *D. serbica serbica* (Kutsch., 1860) *

4(3) Pronotum with faintly visible basal furrows being mostly flattened or absent. Ends of antebasal impression curved to base of pronotum. Declivity of elytra without distinct setae. Ukraine: Crimea (N. foothills, mountain forests, Jaila Plateau 1100–1200 m)..... *D. serbica jailensis* Hktg., 1915 **

64. Hippuriphila Foudr., 1860

Larvae develop within internodes of horsetails.

1(1) Body broadly-oval. Elytra with punctures arranged in regular rows. Bronze, with apices of elytra, bases of antennae, and legs (except dark hind-femora) yellow. Length 1.8–2.5 mm. Total fig. 64. From tundra zone to steppe zone. Europe, Asia Minor, Caucasus, Siberia, Kamchatka, Mongolia, N. America. Mostly in swamps. *Equisetum*..... *H. modeeri* (L., 1761) **

65. Epitrix Foudr., 1860 (Epithrix Bedel, 1897)

Adults feed on leaves, larvae develop on roots of Solanaceae.

1(6) Elytra unicolorous, purely black or black with metallic reflection, rarely brownish-red or rufous with black sides and suture (or only suture).

2(3) Sutural puncture row of elytra extending far beyond mid-point of elytra and disappearing only in apical 1/4. Elytra unicolorous black. Length 1.3–1.7 mm. Steppe zone, Ukraine: Crimea (specimen from Alma river valley). S.-E. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Iran, Himalaya. *Lycium, Solanum*..... *E. caucasica* (Hktg., 1950) **

3(2) Sutural puncture row of elytra reaching only mid-point of elytra or slightly extending beyond it.

4(5) Pronotum with antebasal impression sharp. Body broadly-oval (Fig. 29: 6). Elytra black, rarely brownish-red or rufous with black lateral sides and suture (or only suture). Length 1.5–2.0 mm. Total fig. 65. From taiga zone (ER: S. Karelia, Udmurt Republic) to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Iran, W. Siberia. *Solanum, Lycium, Hyoscyamus, Atropa*..... *E. pubescens* (Koch, 1803) **

5(4) Pronotum with antebasal impression indistinct. Body elongate-oval (Fig. 29: 5). Elytra black with slight greenish tint. Length 1.5–2.1 mm. Ukraine, including Crimea (Palij, 1959; Medvedev, Shapiro, 1965). S. Europe, Asia Minor, Caucasus. *Solanum*..... *E. intermedia* Foudr., 1860 *

6(1) Elytra black with apical marking, in some specimens also with humeral marking rufous. Sutural puncture row extending beyond mid-point of elytra. Pronotum with antebasal impression distinct. Length 1.2–2.0 mm. From deciduous forest zone to steppe zone. N. Africa, Europe, Asia Minor, Caucasus. *Lycium, Atropa, Hyoscyamus, Solanum*..... ..... *E. atropae* Foudr., 1860 **

66. Crepidodera Chevr. in Dej., 1836 (Chalcoides Foudr., 1860)

Adults occur on willows and poplars, larvae of *C. aurata* were reared on osier roots (Steinhausen, 1996).

1(14) Sutural corner of elytra without denticle. Disk of elytra with punctures arranged in regular rows.

2(13) Antenna yellow throughout or with no more than 3–6 apical antennomeres darkened.

3(12) Pronotum with mixed uneven coarse and very fine punctures.

4(7) Antenna yellow, with 4–6 apical antennomeres pitchy black or dark brown. Upper side bicolored: head and pronotum green, golden-green, or coppery-red, elytra dark blue or dark violet.

5(6) Aedeagus constricted at middle of its length (Fig. 29: 7). Length 2.5–3.3 mm. From taiga zone to steppe zone. Transpalaearctic species. *Salix, Populus*..... *C. aurata* (Marsh., 1802) **

6(5) Aedeagus with parallel lateral sides (Fig. 29: 8)..... ..... *C. fulvicornis lapponica* (Hktg., 1950) (see couplet 10)

7(4) Antenna yellow throughout or with 3-5 apical antennomeres slightly darkened, pale brown.

8(11) Area between antennal callus and interior border of eye with coarse punctures and wrinkled interspaces. Lateral sides of pronotum emarginate before base.

9(10) Upper side green, golden-green, coppery-red, usually elytra with bluish stripe along lateral margin, rarely upper side blue. Length 2.5–3.5 mm. Total fig. 66. From taiga zone to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, Siberia, Mongolia. *Salix, Populus*..... ..... *C. fulvicornis fulvicornis* (F., 1792) **

10(9) Upper side bicolored: head and pronotum golden-green or coppery-red, elytra dark blue or dark violet. Length 2.7–2.9 mm. ER: taiga zone (specimens from Murmansk reg.: Kandalaksha Distr.: Arctic Circle). Scandinavia. *Salix*..... *C. fulvicornis lapponica* (Hktg., 1950) **

11(8) Area between antennal callus and interior border of eye smooth. Lateral sides of pronotum almost straight before base. Upper side golden-green, blue, coppery-red, or purple-red with green reflection along lateral margin of pronotum and elytra. Length 2.5–3.8 mm. From taiga zone to forest steppe

zone, Ukraine: Crimea. Denmark, C. and S. Europe, Asia Minor, Caucasus, Kazakhstan, Siberia. *Salix, Populus*..... *C. aurea* (Geoffr., 1785) **

12(3) Pronotum with fine homogenous punctation. Upper side unicolorous, golden-green, blue, bronze, or coppery-red, or head and pronotum green, and elytra blue. Length 3.0–4.0 mm. Forest steppe and steppe zones, Ukraine: Crimea (Shapiro, 1961). Norway, C. and S. Europe, Asia Minor, Caucasus. *Salix, Populus*..... *C. lamina* (Bedel, 1901) **

13(2) Antennomeres 1–4 yellow, others black. Upper side coppery-green, green, or blue, usually pronotum green or golden and elytra blue. Length 2.5–3.2 mm. From taiga zone to steppe zone. Transpalaearctic species. *Salix, Populus*..... *C. plutus* (Latr., 1804) **

14(1) Sutural corner of elytra with small denticle. Disk of elytra with punctures arranged in partly confused rows. Pronotum golden-red or green, elytra blue or violet. Length 3.0–4.2 mm. From taiga zone to steppe zone. Europe, Siberia. *Salix, Populus*..... *C. nitidula* (L., 1758) **

67. Ochrosis Foudr., 1860

1(1) Body yellow, in some specimens head and apices of antennae darkened; metasternum and abdominal sternites dark brown or black. Length 2.1–2.5 mm. Total fig. 67. Latvia (Brocenos (Putele, 1971)); Ukraine: steppe zone (Askaniya Nova (Lopatin, 1960)). Europe, Mediterranean reg. *Solanum, Anagallis, Pistacia*..... *O. ventralis* (Ill., 1807) *

68. Neocrepidodera Hktg., 1911 (Asiorestia Jcbs., 1926; Crepidodera auct. nec Chevr., 1837)

Larvae occur within stems of herbaceous plants.

1(14) Upper side unicolorous, from reddish yellow to pale chestnut.

2(7) Elytra with punctures arranged in regular rows everywhere.

3(6) Aedeagus curved downwards at apex (Fig. 30: 4). Antebasal impression of pronotum shallower. Punctation of pronotum coarser, distinctly visible at magnification of 16 X.

4(5) More robust, rounded at sides (Fig. 30: 10). Humeral callus weakly separated interiorly. On pronotum, part of basal margin between basal furrow and posterior corner slightly longer than basal furrow (Fig. 30: 10). Apex of aedeagus short-triangular (Fig. 30: 5). Length 3.0–3.6 mm. From taiga zone to steppe zone. Europe, N. Africa, Asia Minor, Caucasus, Kazakhstan, Siberia. Asteraceae, Poaceae, Fabaceae, Polygonaceae, Urticaceae, Boraginaceae..... *N. ferruginea* (Scop., 1763) (*exoleta* L., 1761) **

5(4) More slender (Fig. 30: 9). Humeral callus separated by depression interiorly. On pronotum, part of basal margin between basal furrow and posterior corner not longer than basal furrow (Fig. 30: 9). Apex of aedeagus elongate-triangular (Fig. 30: 4). Length 2.5–3.8 mm. Estonia; Lithuania; Byelarus; ER: taiga zone (specimens from Karelia and Udmurt Republic), deciduous-coniferous forest zone (specimens from Moscow and Moscow reg.), S. Urals

(specimens from Bashkortostan and Chelyabinsk reg.). Europe, Caucasus, Kyrghyzstan, W. Siberia. ..... *N. motschulskii* (Konstantinov, 1991) (*sublaevis* auct. from Europe nec *sublevis* Motsch., 1859) **

6(3) Aedeagus not curved downwards at apex (Fig. 30: 3). Antebasal impression of pronotum deeper. Punctation of pronotum finer, disk seeming to be almost smooth at magnification of 16 X. Length 3.0–4.0 mm. Deciduous-coniferous forest zone (Latvia (Silfverberg, 1992)); forest steppe and steppe zones. C. and S. Europe, Caucasus, Kazakhstan, Siberia. *Centaurea*..... ..... *N. crassicornis* (Fald., 1837) **

7(2) Elytral puncture rows geminate or confused at least near scutellum or posterior to middle.

8(9) Aedeagus before apex broader than at base (Fig. 30: 6). Basal furrows of pronotum short, as long as 1/3 of pronotum. Length 3.1–4.5 mm. West-European species (Apennines, Alps, Bavaria, Sweden, Denmark), recently reported also from E. Poland (Białowieży (Borowiec, 1988)). Probably, it will be found in Byelarus. ..... *N. brevicollis* (Daniel, 1904) *

9(8) Aedeagus before apex not broader than at base (Fug. 30: 8).

10(13) Larger species, length mostly 4.0–5.5 mm, more rarely smaller. Elytral declivity smooth or covered with fine punctures, much smaller than punctures in rows at basal half.

11(12) Punctation of pronotum coarse, distinctly visible at magnification of 16 X. Aedeagus not curved at apex (Fig. 30:8). Length 4.0–5.0 mm. Estonia; Lithuania; Byelarus; Ukraine; ER: taiga (Vyatka reg. (Shernin [Ed.], 1974)) and steppe zones. Europe, Asia Minor, Mesopotamia, Caucasus, Kazakhstan. *Cirsium, Carduus, Echium*... *N. transversa* (Marsh., 1802) **

12(11) Punctation of pronotum very fine, disk seems to be smooth at magnification of 16 X. Aedeagus curved downwards at apex (Fig. 30: 7). Length 4.0–5.5 mm. Records from south of European part of the former USSR (Medvedev, Shapiro, 1965; Konstantinov, 1991; Alexandrovitch, *et al.*, 1996) and Byelarus (Solodovnikov, Suschko, 2001) should be confirmed. Sweden, Germany, Mediterranean reg. eastwards to Bulgaria and Asia Minor. *Limonium vulgare*..... *N. impressa* (F., 1801) *

13(10) Smaller species, length 2.8–3.3 mm. Elytral declivity covered with distinct punctures as large as punctures in rows at basal half or only slightly smaller. Latvia (Putele, 1970, 1971); Byelarus (Alexandrovitch, *et al.*, 1996); Ukraine: forest steppe zone (Shapiro, Tshernyshenko, 1963), Crimea (Shapiro, 1961); ER: taiga zone (specimens from Karelia and Kostroma reg.), deciduous-coniferous forest zone (specimens from Moscow reg.). Denmark, N. Germany, Finland, Kazakhstan, Siberia, Mongolia, Far East. *Potentilla, Fragaria, Rubus, Carduus, Cirsium*.... *N. interpunctata* (Motsch., 1859) **

14(1) Elytra dark blue, dark green, blackish-blue, or black with metallic tint.

15(20) Head and pronotum yellow or reddish rufous.

16(19) Body elongate-oval. Humeral calli well developed, convex.

17(18) Elytra blackish-blue, tibiae and tarsi rufous, all femora black. Elytra rounded together at apex. Length 3.1–4.5 mm. Total fig. 68. Tundra zone, taiga zone, deciduous-coniferous forest zone (Estonia, Lithuania), forest steppe zone, Carpathians. Fennoscandia, C. Europe (Mts.), S. Europe, Siberia. *Galeopsis, Galeobdolon.* In Murmansk reg. and Karelia (ER) adults feed on leaves of *Sonchus humilis, Rhinanthus, Euphrasia*, and flowers of *Ranunculus repens*. ..... *N. femorata* (Gyll., 1813) **

18(17) Elytra dark green with slight coppery tint or blackish-blue, legs rufous, with only hind-femora darkened at middle of their length. Elytra pointed together at apex. Length 2.8–3.5 mm. Ukraine: Carpathians (Medvedev, Shapiro, 1965). Alps, Liguria, Dinara Mts., Bikhor Mts., S. Carpathians. *Carduus, Cirsium, Parnassia, Gentiana*..... ..... *N. melanostoma* (L. Redt., 1849) *

19(16) Body short-oval. Humeral calli weakly developed. Elytra black with slight blue or bronze reflection, legs reddish yellow or pale chestnut. Length 2.5–3.3 mm. Ukraine: Carpathians. Europe: Carpathians. *Sonchus, Cirsium, Carduus*..... *N. transsilvanica* (Fuss, 1864) (*transsylvanica* auct.) **

20(15) Head and pronotum dark metallic.

21(22) Larger species (length 3.0–4.0 mm). Humeral calli developed. Body elongate-oval. Upper side dark blue, in some specimens with pronotum blackish-green; antennae and tibiae yellowish-rufous, rarely tibiae blackish. Elytral puncture rows distinct to apex (at least 1st, 8th, and 9th). Ukraine: Carpathians. Europe: Alps, Carpathians. *Aconitum, Veratrum*..... ..... *N. cyanescens* (Duft., 1825) **

22(21) Smaller species (length 1.5–2.5 mm). Humeral calli not developed. Body short-oval. Elytral puncture rows at declivity obsolete. Upper side blackish blue; antennae, tibiae, and tarsi brown. Estonia; Latvia; Lithuania; Byelarus; Ukraine: deciduous forest zone; ER: taiga zone (S. Karelia). C. Europe..... *N. nigritula* (Gyll., 1813) **

69. Altica Geoffr., 1762 (Haltica Koch, 1803)

Adults and larvae occur on foliar trees, shrubs, and herbaceous plants. Identification requires examination of male aedeagus (Fig. 31: 3).

1(4) Antennal calli elongate-triangular, supracallinal sulcus distinct, curved at right angle, more rarely at obtuse angle (Fig. 31: 1).

2(3) Lateral areas of aedeagus covered with oblique shading, not impressed at apex; mid area convex, with 3 longitudinal grooves at apex (Fig. 31: 3). Humeral calli not so well developed as in the following species, humeri weakly prominent (Fig. 32: 8). Length 4.5–5.5 mm. Steppe zone (ER: Saratov reg.: specimen from N. Bannovka). Caucasus, Kazakhstan, C. Asia, Iran, Afghanistan, N.-W. China. *Glycyrrhiza*..... ..... *A. deserticola* (Wse., 1889) **

3(2) Lateral areas of aedeagus covered with oblique shading, with short longitudinal grooves apically; mid area with longitudinal ridge along almost entire length, with slight longitudinal depression at apex (Fig. 31: 4). Humeral calli well developed, humeri conspicuously projecting (Fig. 32: 7). Length 3.8–5.2 mm. From taiga zone to steppe zone. C. and S. Europe, Asia Minor, Caucasus, Kazakhstan, W. Siberia, Mongolia, N. China, Korea. *Myricaria, Tamarix, Salix, Populus*..... *A. tamaricis* Schrnk., 1785 **

4(1) Antennal calli rounded, rounded-triangular, or triangular, but not elongate, supracallinal sulci straight or curved at obtuse angle (Fig. 31: 2).

5(22) Ventral surface of aedeagus with more or less convex longitudinal ridges, at least, in apical 1/2 (Fig. 31: 5–8, 10, 12–14; 32: 4).

6(17) Ventral surface of aedeagus with longitudinal ridges only in apical 1/2 (Fig. 31: 5–8, 13; 32: 4).

7(12) Mid area of aedeagus impressed at apex. It is flat or with thin longitudinal furrow at apex, before impression with convex longitudinal callus (Fig. 31: 5, 6; 32: 4).

8(11) Larger species (in male, length 3.8–4.5 mm). In male, 1st tarsomere of fore- and mid-tarsi narrow or slightly broadened (Fig. 29: 9).

9(10) Ventral surface of aedeagus with well developed, elevated ridges, strongly drawn together before apex, then gradually diverging to apex, ridges high, covered with oblique wrinkles basally, narrow, glabrous apically; lateral areas of aedeagus before apex impressed, partly covered with oblique wrinkles (Fig. 31: 5). Elytra with lateral longitudinal fold or without it (ab. *saliceti* Wse.). From deciduous-coniferous forest zone to steppe zone. Europe, Caucasus. *Quercus*..... *A. quercetorum* Foudr., 1860 (*saliceti* Wse., 1888) **

10(9) Ventral surface of aedeagus with weakly developed low ridges, not so strongly drawn together before apex as in previous species, ridges covered with oblique wrinkles basally; lateral areas of aedeagus impressed before apex, partly covered with oblique wrinkles (in some specimens wrinkles almost obsolete) (Fig. 31: 6). Elytra without lateral longitudinal fold. From taiga zone to steppe zone. C. and S. Europa, Asia Minor, Caucasus, Kazakhstan. *Corylus*... *A. brevicollis* Foudr., 1860 (*chamaenerii* Lindb., 1926) **

11(8) Smaller species (in male, length 2.8–3.2 mm). In male, 1st tarsomere of fore- and mid-tarsi strongly broadened (Fig. 29: 10). Ventral surface of aedeagus with ridges drawn together before apex and then diverging near apex, ridges covered with oblique wrinkles basally; lateral areas of aedeagus impressed before apex (Fig. 32: 4). Estonia; Latvia; Byelarus; ER: taiga zone (Murmansk reg., Karelia). N. Europe, Poland, Mts. of C. and W. Europe. *Calluna, Erica, Empetrum*..... *A. longicollis* (Allard, 1860) (*brittoni* Sharp, 1914; *sandini* Kommer, 1919) **

12(7) Mid area of aedeagus not impressed at apex. It is flat or convex, and with longitudinal furrows or calli at apex (Fig. 31: 7, 8, 13).

13(16) Aedeagus slightly broadened towards apex.

14(15) Aedeagus broader. Mid area of aedeagus with 2 curved ridges at apex; lateral areas with oblique wrinkles mostly extending to the basal opening (Fig. 31: 7). Length 3.5–5.0 mm. Distribution is studied insufficiently. S. Europe, Mediterranean reg., Caucasus. *Vitis, Oenothera*..... ..... *A. ampelophaga* (Guer., 1858) *

15(14) Aedeagus narrower. Mid area of aedeagus mostly without distinct longitudinal ridges or grooves at apex; lateral areas with oblique wrinkles at apical half of ventral surface of aedeagus (Fig. 31: 13). Length 3.5–5.4 mm. From taiga zone to steppe zone. Europe, Caucasus. *Epilobium, Lythrum*... ..... *A. lythri* Aubé, 1843 **

16(13) Aedeagus parallel-sided, not broadened towards apex; mid area of aedeagus with 3 well defined subapical longitudinal grooves of different length (Fig. 31: 8). Length 4.2–5.5 mm. Estonia; Latvia; Lithuania; Byelarus; Ukraine; ER: taiga zone (Murmansk reg., Karelia, Komi, Udmurt Republic, Ulyanovsk reg.). Europe. *Betula, Alnus, Chamerion*..... ..... *A. nemorosus* (Wse., 1888) (*engstroemi* J. Shlb., 1893) **

17(6) Ventral surface of aedeagus with ridges at entire (or almost entire) length, in basal half ridges look like convex calli; mid area flat, impressed, or bearing longitudinal callus (Fig. 31: 10, 12, 14).

18(19) Apex of aedeagus without denticle, rounded (Fig. 31: 12). Length 3.0–4.0 mm. Total fig. 69. From taiga zone to steppe zone. Transpalaearctic species. *Epilobium, Oenothera, Lythrum, Polygonum, Rumex, Cirsium, Calluna*..... *A. oleracea* (L., 1758) ** [1]

19(18) Apex of aedeagus with prominent denticle (Fig. 31: 10, 14).

20(21) Ventral surface of aedeagus with ridges strongly drawn together at middle, then strongly diverging to apex (Fig. 31: 10). Length 3.2–3.8 mm. Latvia; Ukraine: deciduous forest zone, Crimea; ER: from deciduous-coniferous forest zone to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Siberia, Far East. *Cirsium, Carduus, Sonchus*..... ..... *A. carduorum* (Guer., 1858) **

21(20) Ventral surface of aedeagus with ridges almost parallel along entire length, weakly drawn together at middle, then weakly diverging to apex (Fig. 31: 14). Length 2.8–4.1 mm. From taiga zone to steppe zone. Europe, N. Africa, Asia Minor, Caucasus, Kazakhstan, C. Asia. *Lythrum, Epilobium*. ..... *A. palustris* (Wse., 1888) **

22(5) Ventral surface of aedeagus without ridges (Fig. 31: 9, 11; 32: 1–3, 9).

23(26) Ventral surface of aedeagus with spoon-shaped impression at apex (Fig. 31: 11), or ventral surface with 2 large impressions and narrow mid ridge between them (Fig. 31: 9).

24(25) Aedeagus broader, curved upwards at apex (Fig. 31: 11). Ventral surface of aedeagus with spoon-shaped impression at apex, this impression and lateral areas covered with oblique wrinkles (Fig. 31: 11). Length 2.9-3.9 mm. Estonia (Silfverberg, 1992); Latvia (Putele, 1970, 1971); Lithuania (Pileckis, 1976, after Warchałowski, 1998); Ukraine; ER: S. Urals. Europe, Caucasus, Kazakhstan, Siberia. *Sanguisorba*..... ..... *A. helianthemi* (All., 1859) (*pusilla* Duft., 1825 nec Gyll., 1813) **

25(24) Aedeagus narrower, not curved upwards at apex. Ventral surface of aedeagus with 2 large impressions and narrow mid ridge between them (Fig. 31: 9). Length 4.0–5.5 mm. From deciduous forest zone to desert zone. C. and S.-E. Europe, N. Africa, Asia Minor, Israel, Iraq, N. Iran. *Eupatorium, Lythrum, Epilobium*..... *A. impressicollis* (Reiche, 1862) **

26(23) Ventral surface of aedeagus without spoon-shaped impression or 2 large impressions near apex, mid area broad, with 3 longitudinal grooves near apex (Fig. 32: 1–3, 9).

27(28) Mid area of aedeagus flat or with groove at middle of its length; lateral areas with wrinkles only in apical half; in lateral view, aedeagus not curved or weakly curved (Fig. 32: 3). Length 3.0–4.0 mm. Latvia (Putele, 1971); Byelarus; Ukraine: Carpathians (Konstantinov, 1991); ER: taiga zone (Leningrad reg.[2]). Pyrenees, Scandinavia, Netherlands, Germany, S. Alps, Balkans, Caucasus, C. Asia (Mts.), Siberia (envir. Baikal). *Lathyrus pratensis* (Dr. M. Cox, personal communication).. *A. carinthiaca* (Wse., 1888) **

28(27) Mid area of aedeagus with longitudinal ridge at middle of its length; lateral areas with wrinkles along almost entire length; in lateral view, aedeagus distinctly twice curved (Fig. 32: 1–2, 9). Length 3.6–4.2 mm. Ukraine (Poltava reg.); Moldova (specimens from Pridnestrovie: Jagorlyk). C. and S.-E. Europe. *Swida*..... *A. cornivorax* Kral, 1969 **

[1] *Altica opacifrons* (Lindberg, 1938) from Sweden, Finland, and ER (Karelia) is probably a subspecies or synonym of *Altica oleracea*.

[2] Material: Leningrad reg.: Kirovsky Distr., Sinyavino Vill.: 1 male.

70. Podagrica Chevr. in Dej., 1836

Adults and larvae occur on Malvaceae, larvae feed on bark of root collar, on roots, within stems, or infructescences.

1(2) Vertex black or blackish-brown. Femora usually blackish, tibiae and tarsi rufous. Length 2.5–3.6 mm. Total fig. 70. Deciduous forest zone (Byelarus: Gomel Reg. (Laurova, 1986)), steppe zone. S. Europe, Mediterranean, Black, and Caspian Sea basins, C. Asia. *Althaea, Malva, Hibiscus*..... ..... *P. malvae* (Ill., 1807) **

2(1) Head and legs entirely rufous.

3(4) Punctures on pronotum as large as on elytra, distinctly visible at magnification of 16 X. Length 3.2–5.0 mm. From steppe zone to desert zone. S. and S.-E. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia. Malvaceae. ..... *P. menetriesi* (Fald., 1837) **

4(3) Punctures on pronotum much finer than on elytra, pronotum apparently almost smooth at magnification of 16 X. Length 3.0–5.0 mm. From deciduous-coniferous forest zone (Latvia (Silfverberg, 1992); specimen from ER: Moscow reg.: Kolomna Distr.) to semidesert zone (ER: Volgograd reg.). Europe, N. Africa, Asia Minor, Caucasus. *Althaea, Malva, Lavatera*..... ..... *P. fuscicornis* (L., 1767) **

71. Mantura Steph., 1831

Larvae develop within leaf mines, probably, also on roots in the soil.

1(4) Dorsum dark, unicolorous (in some specimens, elytral apex pale brown, but without distinct yellow apical marking).

2(3) Dorsum shining, pitchy-brown or brownish-red, mostly with bronze reflection, or dark bronze. Length 1.8–2.7 mm. Total fig. 71. From taiga zone to forest steppe zone. N. and C. Europe, N.-W. Africa. *Rumex, Chrysanthemum, Leucanthemum*..... *M. chrysanthemi* (Koch, 1803) **

3(2) Dorsum dull, black with obscure greenish or bluish tint. Length 1.8–2.6 mm. Distribution is insufficiently studied. Estonia (Silfverberg, 1992); Latvia (Putele, 1970, 1971); Ukraine: Carpathians (Palij, 1959); ER: deciduous-coniferous forest zone (specimens from Moscow reg.: Kolomna Distr., Voskresensk Distr.). Europe. *Rumex*..... *M. obtusata* (Gyll., 1813) **

4(1) Head and pronotum green, bronze-green, or bluish-green, elytra bicolored: yellow with dark sutural stripe or dark blue (or bluish-green) with apices yellow. Length 2.0–2.8 mm. From taiga zone (S. Karelia and Udmurt Republic) to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Siberia, Far East, Mongolia, Japan. *Rumex, Polygonum, Rheum*..... ..... *M. rustica* (L., 1767) **

72. Lythraria Bedel, 1897

1(1) Head, pronotum, and prosternum rufous-yellow, rarely blackish-brown; elytra yellow, with narrow dark sutural stripe not reaching scutellum; mesosternum, metasternum, and abdominal sternites rufous, brown, or black. Length 1.8–2.0 mm. Total fig. 72. From taiga zone (ER: Komi and Murmansk reg.

(Kandalaksha Distr.: Arctic Circle)) to steppe zone. Europe, Palaearctic Asia, Iraq. *Lysimachia; Trientalis europaea* (in Murmansk reg.)..... ..... *L. salicariae* (Pk., 1800) **

73. Hermaeophaga Foudr., 1860

Larvae develop on roots of *Mercurialis*.

1(1) Broadly-oval, very convex. Dark blue. Length 2.3–3.0 mm. Total fig. 73. Estonia (Lopatin, 1986); Byelarus; Ukraine (Khmelnitski reg., Sumy reg., Kharkov reg., Crimea); Moldova (Pridnestrovie); ER: taiga zone (specimen from Yaroslavl reg.). Europe, Asia Minor, Caucasus. *Mercurialis*..... ..... *H. mercurialis* (F., 1792) **

74. Minota Kutsch., 1859

1(1) Pronotum broad, strongly narrowed from base to apex. Antennal calli distinct, supracallinal sulci sharp. Apical antennomeres gradually incrassate. Dorsum shining, pitchy brown or black, with bronze or red-violet reflection. Length 2.1–2.6 mm. Total fig. 74. Ukraine: Carpathians. Europe: Alps, Sudeten, Carpathians, Bihor Mts..... ..... *M. carpathica* Hktg., 1911 (*obesa carpathica* Hktg.) **

75. Mniophila Steph., 1831

Beetles occur in moss, feed, probably, on detritus.

1(1) Almost hemisphaerical, very small. Black with weak bronze tint or pitchy brown, shining. Length 1.0–1.5 mm. Total fig. 75. Ukraine: Carpathians and Crimea (Medvedev, Shapiro, 1965). Europe, Caucasus..... ..... *M. muscorum* (Koch, 1803) *

76. Orestia Germ., 1845

1(2) Broadly-oval. Pronotum with antebasal impression distinctly curved forward (Fig. 32: 6). Length 1.7–2.2 mm. Ukraine: Carpathians (Medvedev, Shapiro, 1965). Europe: Carpathians, Serbia, Montenegro. *Thymus*..... ..... *O. aubei* All., 1859 *

2(1) Elongate-oval. Pronotum with antebasal impression almost straight, rarely slightly curved (Fig. 32: 7). Length 2.2–2.5 mm. Total fig. 76. Ukraine: Carpathians (Medvedev, Shapiro, 1965). Europe: Carpathians, Bihor Mts.. ..... *O. carpathica* Rtt., 1880 *

77. Batophila Foudr., 1860

Larvae develop on roots of host plants.

1(2) Pronotum 1.3–1.4 X as broad as long, almost rectelinearly narrowed at sides from middle to base. Dorsum black, in some specimens with bronze

reflection. Length 1.2–2.1 mm. Total fig. 77. Steppe zone, Ukraine: Crimea (mountain forest region). Europe (S.-E. Poland, Slovakia, Hungary, Romania), Asia Minor, Caucasus, C. Asia. *Fragaria, Rubus, Cornus, Symphytum, Myosotis*..... *B. fallax* Wse., 1888 **

2(1) Pronotum 1.5 X as broad as long, rounded at sides. Dorsum black, in some specimens with indistinct bronze reflection. Length 1.4–2.1 mm. From taiga zone to steppe zone. Europe, Caucasus, W. Siberia. *Rubus, Fragaria*..... ..... *B. rubi* (Pk., 1799) **

78. Phyllotreta Chevr. in Dej., 1836

Beetles feed on leaves, larvae develop mostly on roots and rhizomes, some mine stems or leaves. Some species damage Brassicaceae or cereal crops.

1(30) Elytra yellow throughout or bicolored: black, bronze, green, or blue, with vittae or markings yellow.

2(29) Elytra dark with pattern yellow.

3(4) Elytra with yellow vitta broad, covering humeral calli (Fig. 33: 1). Fourth–11th antennomeres, head, pronotum, femora, narrow sutural and lateral stripes on elytra black, 1st–3rd antennomeres, tibiae, and tarsi yellow. Length 2.8–3.5 mm. From taiga zone to steppe zone. Holarctic species. *Armoracia, Brassica*..... *Ph. armoraciae* (Koch, 1803) **

4(3) Elytra with yellow vitta narrower, not covering humeral calli, in several species vitta divided into 2 markings (Fig. 33: 2–13).

5(6) Elytra with black sutural stripe distinctly constricted at middle, yellow vitta narrow, undulate (Fig. 33: 2). In male, 4th–5th antennomeres incrassate, 5th very long, as long as 1st. Length 2.3–2.8 mm. ER: taiga (specimens from St.-Petersburg and Perm reg.) and deciduous-coniferous forest zones. Sweden, Finland, N. and E. Siberia, Far East, N. America. *Rorippa, Berteroa*..... *Ph. zimmermanni* Crotch, 1873 **

6(5) Elytra with black sutural stripe not constricted or very weakly constricted at middle (Fig. 33: 3–13).

7(18) Lateral margin of elytral yellow vitta with wide shallow emargination or without emargination at all (Fig. 33: 3–5, 11–12), stripe always entire, not divided into 2 parts.

8(9) Vertex with punctures forming broad transverse band behind antennal calli, and smooth, devoid of punctures behind level of posterior border of eyes. Head, pronotum, sutural and lateral elytral stripes black. Both ends of yellow elytral vitta curved towards suture (Fig. 33: 3). Length 2.0–2.8 mm. From taiga zone to steppe zone. Europe, Caucasus, Kazakhstan, C. Asia, Siberia, Far East, Mongolia. Various Brassicaceae..... ..... *Ph. undulata* (Kutsch., 1860) **

9(8) Vertex entirely covered with punctures.

10(13) Yellow elytral vitta indistinctly curved towards suture anteriorly; its outer side not enveloping humeral callus from behind (Fig. 33: 4). First–3rd antennomeres rufous (with exception of dark upper side of 1st antennomere), others black.

11(12) Usually larger, length 2.4–3.5 mm. Pronotum weakly convex in lateral view. Head and pronotum black with bronze, bluish, or greenish tint. Aedeagus as in Fig. 34: 7. Total fig. 78. From taiga zone to semidesert zone.

Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Iran, Far East, Korea. Various Brassicaceae..... *Ph. nemorum* (L., 1758) **

12(11) Usually smaller, length 2.0–2.5 mm. Pronotum more convex in lateral view. Head and pronotum black. Aedeagus as in Fig. 34: 6. Ukraine: forest steppe zone (Cherkassy reg.: Kanev (Konstantinov, 1990)). C. and S. Europe..... *Ph. christinae* Hktg., 1941 *

13(10) Outer side of yellow elytral vitta enveloping humeral callus interiorly and behind (Fig. 33: 5, 11, 12).

14(15) First–4th antennomeres rufous, 5th black with base rufous. Anterior end of yellow elytral vitta not curved towards suture or turned very slightly, reaching 5th or 6th puncture row (including short sutural row) (Fig. 33: 5). Head and pronotum dark green or black with greenish tint. Length 1.8–2.3 mm. From taiga zone to semidesert zone. Transpalaearctic species. Various Poaceae including cereal crops, Brassicaceae..... ..... *Ph. vittula* (L. Redt., 1849) **

15(14) First–5th or 1st–6th antennomeres rufous throughout. Anterior end of yellow elytral vitta distinctly curved towards suture, reaching 3rd puncture row (including short sutural row) (Fig. 33: 11, 12).

16(17) Pronotum black with well-defined metallic green tint. Yellow elytral vitta almost parallel-sided, slightly broadened anteriorly and not reaching exterior border of epipleura, with distinct apical margin (Fig. 33: 12). Tibiae rufous. Length 1.8–2.4 mm. Forest steppe and steppe zones. S.-E. Europe, Asia Minor, Near East, Caucasus, C. Asia, Iran, Afghanistan, Siberia (Buryat), Mongolia. Brassicaceae..... *Ph. erysimi* Wse., 1900 **

17(16) Pronotum bronze-black. Yellow elytral vitta strongly broadened anteriorly, reaching exterior border of elytral epipleura (or almost so), with diffuse apical margin, usually very broadened (Fig. 33: 11) (see also couplet 29); tibiae rufous. If yellow vitta as in couplet 16, then tibiae darkened medially or pitchy black. Length 1.5–2.0 mm. Ukraine: steppe zone; ER: from steppe zone to desert zone. Caucasus, Kazakhstan, C. Asia, Iran, Siberia, Mongolia, Tibet. Brassicaceae, Chenopodiaceae, Nitrariaceae..... ..... *Ph. pallidipennis* Rtt., 1891 (*turcmenica* Wse., 1900, *schreineri* Jcbs., 1915) **

18(7) Lateral margin of elytral yellow vitta deeply emarginate or divided into 2 parts. (Fig. 33: 6–10, 13). Head and pronotum black.

19(20) Elytral yellow vitta with very narrow emargination externally (Fig. 33: 13). Femora black, tibiae and tarsi rufous or brown. Antennae without incrassate antennomeres in both sexes. Length 2.2–2.5 mm. Ukraine: Crimea (envir. Simferopol (Mosiakin, 1987), specimens examined); ER: semidesert zone (Kalmykia (Konstantinov, 1990)). Kazakhstan, Uzbekistan..... ..... *Ph. reitteri* Hktg., 1911 **

20(19) Elytral yellow vitta with broad emargination externally (Fig. 33: 6–10).

21(22) Anterior part of elytral vitta not curved towards suture or curved very slightly (Fig. 33: 10). Legs black, with knees brown. Length 2.5–3.0 mm. From taiga zone to steppe zone. Transpalaearctic species. *Nasturtium, Barbarea, Cardamine, Rorippa*..... *Ph. flexuosa* (Ill., 1794) **

22(21) Anterior part of elytral stripe distinctly curved towards suture (Fig. 33: 6–9).

23(24) All tibiae, fore- and mid-femora rufous, hind-femora black. Fifth antennomere considerably longer than 4th or 6th in both sexes (Fig. 35: 3)

and strongly incrassate in male. Aedeagus with small denticle at apex (Fig. 34: 8). Length 2.0–3.0 mm. From taiga zone to desert zone. Europe, Asia Minor, Siberia, Far East, Korea, Japan. Various Brassicaceae..... ..... *Ph. ochripes* (Curt., 1837) **

24(23) Tibiae black at least in apical half, femora black throughout or black with apices rufous. In female, 5th antennomere as large as 4th or 6th (Fig. 35: 4).

25(26) First–3rd, 1st–4th, or 1st–5th antennomeres rufous, others dark. Body smaller (length 1.5–1.8 mm). Tibiae with basal 1/3–1/2 rufous. Elytra ovoid. Yellow vitta on each elytron usually divided into 2 (Fig. 33: 6), which rarely narrowly connected. In male, 5th antennomere considerably longer and broader than 4th or 6th. Aedeagus broadly emarginate apically (Fig. 34: 10). From taiga zone to forest steppe zone. Europe, Caucasus, Siberia, Far East. In swamps and on river banks. *Cardamine*..... ..... *Ph. exclamationis* (Thunb., 1784) **

26(25) First–2nd, 1st–3rd, or 2nd–3rd antennomeres rufous, others dark. Body larger (length 1.9–3.5 mm). Tibiae with only base rufous.

27(28) Antennomeres 1–3 rufous. Elytra ovoid (Fig. 33: 7). Yellow vitta on each elytron usually divided into 2 markings (Fig. 33: 7), rarely narrowly connected. In male, 4th and 5th antennomeres as large as adjacent ones. Aedeagus rounded at apex (Fig. 34: 12). Length 2.6–3.5 mm. From taiga zone (swamps) to steppe zone. Europe, Caucasus, Siberia. *Cardamine, Nasturtium, Rorippa*..... *Ph. tetrastigma* (Com., 1837) **

28(27) Antennomeres 1–3, or 2–3, or only 2 rufous. Elytra elongate (Fig. 33: 8). Yellow vitta in each elytron usually entire (Fig. 33: 8), rarely divided into 2 markings. Fifth antennomere longer than 4th and 6th (in both sexes), and broader than these antennomeres (in male only). Aedeagus with small denticle at apex (Fig. 34: 9). Length 1.9–2.5 mm. From taiga zone to forest steppe zone. Holarctic and Oriental areas. Various Brassicaceae..... ..... *Ph. striolata* (F., 1803) (*vittata* F., 1801) **

29(2) Elytra yellow throughout or with only humeral calli brownish..... ..... *Ph. pallidipennis* Rtt., 1891, pale specimens (see couplet 17)

30(1) Elytra unicolorous: black or metallic, without yellow pattern.

31(64) Hind-tibiae straight (Fig. 35: 9).

32(59) Vertex entirely covered with punctures or with broad band formed by dense punctures between eyes.

33(42) Dorsum metallic or black with distinct metallic tint.

34(35) Antennae entirely black, sometimes with articulations between antennomeres 1 and 2, 2 and 3, 3 and 4 pale. Vertex punctate throughout. Length 1.9–2.8 mm. From taiga zone (specimens from ER: Udmurt Republic; Karelia (Silfverberg, 1992)) to steppe zone. Europe, N. Africa, Asia Minor, Israel, Caucasus, Iran, Afghanistan, Siberia. Various Brassicaceae..... ..... *Ph. nigripes* (F., 1775) **

35(34) At least 2nd and 3rd antennomeres paler than others.

36(37) Vertex with coarse, deep punctures forming broad transverse band between eyes and without punctures behind posterior border of eyes. Length 1.8–2.5 mm. Forest steppe and steppe zones (Medvedev, Shapiro, 1965). Mediterranean reg., Caucasus, Kazakhstan, Tadzhikistan, Afghanistan. *Diplotaxis, Nasturtium, Raphanus, Eruca*, Resedaceae..... ..... *Ph. corrugata* (Reiche, 1858) *

37(36) Vertex entirely covered with punctures.

38(39) Pronotum covered with coarse punctures. Elytra with punctures arranged in rows. Dorsum metallic: blackish-blue or blackish-green, pronotum (mostly) and elytra (rarely) with brassy tint, rarely dorsum entirely blackish-bronze. Length 1.8–2.5 mm. From deciduous-coniferous forest zone to steppe zone. Europe, N. and E. Africa, Asia Minor, Caucasus, Kazakhstan, C. Asia, Iran, Iraq, Afghanistan, Siberia, Mongolia. Brassicaceae, Resedaceae..... ..... *Ph. cruciferae* (Gz., 1777) **

39(38) Pronotum covered with fine punctures. Elytra with punctures entirely confused. Dorsum black with bronze, brassy, or coppery tint.

40(41) Body, on average, shorter (length 1.6–2.0 mm). Aedeagus (Fig. 34: 5) without transverse wrinkles at dorsal side..... *Ph. aerea* All., 1859 (*punctulata* Marsh., 1802) rare aberration. (see couplet 55)

41(40) Body, on average, longer (length 1.7–2.2 mm). Aedeagus (Fig. 34: 13) with transverse wrinkles on dorsum. Distribution insufficiently studied. Ukraine: steppe zone (Krivoj Rog (Konstantinov, Lopatin, 1992)), Crimea (specimens from envir. Simferopol). Europe: Spain, England, Germany, Czechia, Austria, Italy, Hungary, Bulgaria. *Descurainia*..... ..... *Ph. scheuchi* Hktg., 1941 **

42(33) Dorsum black, or with very weak metallic reflection.

43(46) Antennae entirely black, in some specimens pale articulations between antennomeres 1 and 2, 2 and 3, 3 and 4.

44(45) Frontal ridge narrow, sharp. In male, 3rd antennomere with denticle. Aedeagus as in Fig. 34: 1. Length 1.7–2.1 mm. From deciduous forest zone (meadows) to desert zone. Asia Minor, Caucasus, C. Asia. Various Brassicaceae..... *Ph. weiseana* Jcbs., 1901 **

45(44) Frontal ridge wide, nearly flat. In male, 3rd antennomere without denticle. Aedeagus as in Fig. 34: 2. Length 1.7–2.0 mm. ER: S. Urals (Ilmensky Res. [1]). Siberia (Sayans, Transbaikalia), Mongolia. Brassicaceae..... ..... *Ph. misella* Jcbs., 1901 **

46(43) At least 2nd and 3rd antennomeres entirely or mostly paler than others.

47(50) Vertex with punctures forming broad transverse band between eyes and without punctures behind posterior border of eyes. Length 1.8–2.5 mm. Examination of male aedeagus or female spermatheca is necessary for distinguishing the following species.

48(49) Aedeagus as in Fig. 34: 4. Spermatheca as in Fig. 35: 2. Distribution is insufficiently studied, because some records probably refer to the following species. ER: deciduous forest zone (specimens from Ulyanovsk reg.). Europe (Hungary, Bulgaria, Sweden), N. Africa, Asia Minor, Iraq, Caucasus, C. Asia, India. Various Brassicaceae..... *Ph. diadema*ta Foudr., 1860 **

49(48) Aedeagus as in Fig. 34: 3. Spermatheca as in Fig. 35: 1. ER: desert zone (Astrakhan reg. (Lopatin, 1977b)). Hungary, Yugoslavia, Bulgaria, Turkey, Caucasus..... *Ph. astrachanica* Lop., 1977 *

50(47) Vertex entirely covered with punctures.

51(56) Second and 3rd antennomeres and sometimes apex of 1st antennomere pale, others black.

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[1]Material: Ilmensky Res., Demidovskie Hills, A.O.Bieńkowski and O.E.Chaschina leg.: 3.8.2000: 2 males, 3 females.

52(53) Humeral calli weak. In male, 1st tarsomere strongly dilated. Distribution is insufficiently studied. C. Europe (Warchałowski, 1995), Caucasus, Siberia, Far East. *Sisymbrium, Brassica*..... *Ph. austriaca* Hktg., 1909 *

53(52) Humeral calli prominent. In male, 1st tarsomere weakly dilated.

54(55) Elytra covered with coarse, deep punctures, arranged in rows on disk. Vertex covered with coarse punctures considerably larger than facets of eye. Dorsum black, in some specimens head and pronotum with indistinct bronze tint. Aedeagus as in Fig. 34: 11. Length 1.8–2.4 mm. From taiga zone to semidesert zone. Transpalaearctic species. Various Brassicaceae..... ..... *Ph. atra* (F., 1775) **

55(54) Elytra covered with fine, shallow, entirely confused punctures. Vertex covered with fine punctures not larger than facets of eye. Aedeagus as in Fig. 34: 5. Length 1.6–2.0 mm. Forest steppe and steppe zones (Warchałowski, 1995). Europe, Israel, Asia Minor, Caucasus, N. America. Various Brassicaceae..... ..... *Ph. aerea* All., 1859 (*punctulata* Marsh., 1802) * (see also couplet 40)

56(51) At least 1st–4th antennomeres pale, others black.

57(58) Frontal ridge very narrow, sharp. Length 2.0 mm. Taxonomical rank and distribution are insufficiently studied. ER: steppe zone (Rostov-on-Don), desert zone (Astrakhan). Poland, Slovakia, Austria, Yugoslavia, Greece, Asia Minor, Afghanistan..... *Ph. acutecarinata* Hktg., 1941 **

58(57) Frontal ridge wide, obtuse. Length 1.5–2.0 mm. Forest steppe and steppe zones. S. and S.-E. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Afghanistan. Various Brassicaceae..... *Ph. balcanica* Hktg., 1909 **

59(32) Vertex glabrous, impunctate or with only sparse punctures at middle and several punctures near posterior border of eyes.

60(61) Pygidium entirely covered by elytra, or only apex of pygidium visible from above (Fig. 35: 10). First antennomere not longer than 2nd and 3rd combined (Fig. 35: 5). Dorsum dark bronze. Length 1.6–2.1 mm. From forest steppe zone to desert zone. S. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Iran, Siberia, N.-W. China, India, Mongolia. *Nasturtium, Berteroa, Sinapis, Brassica, Capsella*..... ..... *Ph. praticola* Wse., 1887 (*fucata* Wse., 1890) **

61(60) Pygidium not covered by elytra (Fig. 35: 11). First antennomere longer than 2nd and 3rd combined (Fig. 35: 6, 7).

62(63) Antennae similar in both sexes, without incrassate antennomeres. Trochanter with tooth-like appendage. Dorsum pale bronze or brassy. Length 2.2–3.0 mm. Deciduous forest zone (Byelarus; Moldova), steppe zone. C. and S. Europe, N. Africa, Asia Minor, Near East, Caucasus, C. Asia, Iran. *Reseda, Brassica, Armoracia*.... *Ph. procera* (L. Redt., 1849) **

63(62) In male, 4th antennomere incrassate forming large triangular plate (Fig. 35: 7); in female, antenna without incrassate antennomeres. Dorsum bicolored: head and pronotum bronze, elytra black with bronze tint. Length 2.5–3.0 mm. From deciduous forest zone to steppe zone. Europe, Asia Minor, Caucasus, Iran. *Reseda*..... *Ph. nodicornis* (Marsh., 1802) **

64(31) Hind-tibiae strongly bent (Fig. 35: 8). Vertex, pronotum, and elytra covered with dense deep punctures. Dorsum dark bronze. Length 1.8 mm. Ukraine: steppe zone (Kherson reg.: Askaniya Nova). Brassicaceae..... ..... *Ph. ogloblini* Shapiro, 1960 **

79. Aphthona Chevr. in Dej., 1836

Larvae occur in the leaf axils or in the soil on roots.

1(24) Pronotum and elytra yellow or rufous-yellow throughout or with elytral suture black.

2(9) Antennal calli indistinctly separated from vertex, supracallinal sulci obsolete.

3(4) Suture of elytra black in apical 1/2–2/3. Body rufous-yellow; with vertex reddish-brown; prosternum, mesosternum, metasternum, apices of hind-femora, apical antennomeres, and tarsi partly black. Aedeagus as in Fig. 36: 1. Length 2.0–2.5 mm. From tundra zone to steppe zone. Europe, N. Africa, Asia Minor, Near East, Caucasus, Kazakhstan, Iran, W. Siberia, Mongolia. *Rubus chamaemorus* (in Murmansk reg.), *Filipendula*, *Lythrum*. . . . . *A. lubricans* (Gyll., 1813) **

4(3) Elytra unicolorous.

5(6) Larger (length 2.1–2.4 mm in male, 2.2–2.6 mm in female). Underside and hind-femora entirely pale. Aedeagus as in Fig. 36: 2. Forest steppe and steppe zones. Mediterranean reg. *Asparagus*. In Ukraine, specimens were collected on *Euphorbia*. . . . . *A. kuntzei* Roubal, 1931 **

6(5) Smaller (length 1.6–2.0 mm). Underside at least partly darkened.

7(8) Humeral calli convex. Upper side and legs pale; mesosternum, metasternum, and abdominal sternites brown; in some specimens mesosternum rufous, and head brownish. Aedeagus as in Fig. 36: 3. Length 1.8–2.0 mm. From deciduous forest zone to steppe zone. C. and S.-E. Europe, Asia Minor, Near East, Caucasus, Siberia (Altai). *Euphorbia*. . . *A. franzi* Hktg., 1944 **

8(7) Humeral calli weak or obsolete. Head and underside piceous; pronotum and elytra pale, usually amber-coloured; legs pale, with hind-femora piceous. Aedeagus as in Fig. 36: 4. Length 1.6–1.9 mm. Deciduous forest and forest steppe zones. S. and E. Europe. *Linum*. . . . . *A. placida* Kutsch., 1864 **

9(2) Antennal calli distinctly separated from vertex by deep supracallinal sulci.

10(15) Frontal ridge wide. Body larger (length usually 2.1–3.8 mm).

11(12) Body smaller (length 2.1–2.6 mm). Body entirely yellow. Vertex with weak transverse wrinkles. . . . . *A. kuntzei* Roubal, 1931 ** (see couplet 5)

12(11) Body larger (length 2.9–3.8 mm).

13(14) Scutellum dark brown. Femora usually darkened. Vertex with weak transverse wrinkles. Aedeagus apically pointed (Fig. 36: 5). Length 2.9–3.5 mm. From deciduous-coniferous forest zone to desert zone. Europe, Asia Minor, Caucasus, Kazakhstan, N. America. *Euphorbia*. . . . . *A. nigriscutis* Foudr., 1860 (*cyparissiae nigriscutis* Foudr.) **

14(13) Scutellum yellow. Femora usually pale. Vertex without transverse wrinkles. Aedeagus apically emarginate (Fig. 36: 6). Length 3.0–3.8 mm. Deciduous-coniferous forest zone (Latvia (Silfverberg, 1992)), deciduous forest and forest steppe zones, S. Urals (specimens from Ilmensky Res.). Europe, Caucasus, N. America. *Euphorbia*. . . . . *A. cyparissiae* (Koch, 1803) **

15(10) Frontal ridge narrow. Smaller (length 1.5–2.3 mm). Hind-femora rufous.

16(23) Mesosternum, metasternum, and abdominal sternites black.

17(20) Head dark brown or black throughout or with antennal calli and frons pale brown or rufous.

18(19) Scutellum and elytral suture pale. Length 1.5–2.0 mm. From deciduous-coniferous forest zone to steppe zone. Europe, Caucasus. *Geranium, Erodium*..... *A. pallida* (Bach, 1856) **

19(18) Scutellum and elytral sutural stripe (narrow at base, broad at middle) not reaching apex, black. Length 1.5–1.8 mm. Forest steppe and steppe zones, S. Urals. Europe, N. Africa, Asia Minor, Near East, Caucasus. *Juncus, Erodium, Geranium*..... *A. nigriceps* (W. Redt., 1842) **

20(17) Head entirely yellow or with vertex rufous and labrum blackish.

21(22) Elytral suture usually pale, in some specimens brown; labrum pale or blackish. Aedeagus narrow, convex (Fig. 36: 7). Length 2.0–2.3 mm. From deciduous-coniferous forest zone to desert zone. Europe, Caucasus, Kazakhstan, Iran, Afghanistan, Siberia, Mongolia, China, Japan, Vietnam. *Euphorbia*..... *A. abdominalis* (Duft., 1825) **

22(21) Elytral suture at mid-point of elytra and labrum blackish. Aedeagus broad, flat (Fig. 36: 8). Length 1.5–1.8 mm. ER: desert zone (Konstantinov, 1996a). E. Mediterranean reg., Caucasus, Kazakhstan, C. Asia, Iraq..... ..... *A. maculata* All., 1876 *

23(16) Mesosternum, metasternum, and abdominal sternites rufous, head rufous. Length 1.7–2.2 mm. From deciduous forest zone to desert zone (Konstantinov, 1996a). S. and S.-E. Europe, N.-W. Africa, Asia Minor, Jordan, Caucasus, Kazakhstan, C. Asia, Iraq, Afghanistan. *Euphorbia, Linum*..... ..... *A. flaviceps* All., 1859 *

24(1) Dorsum black or metallic blue, green, or bronze.

25(32) Frontal ridge wide, flattened. Fore- and mid-legs yellow.

26(31) Dorsum green or blue, if blackish-blue then hind-femora rufous.

27(30) Macropterous. Humeral calli convex.

28(29) Body broadly-oval. Hind-femora rufous throughout. Upper side blackish-blue. Aedeagus as in Fig. 36: 9. Length 1.7–2.5 mm. Total fig. 79. From tundra zone to deciduous forest zone. Transpalaearctic species. In swamps. *Carex, Marchantia*..... *A. erichsoni* (Zett., 1838) **

29(28) Body elongate. Hind-femora rufous with apices black. Upper side blue, rarely green. Aedeagus as in Fig. 36: 10. Length 2.5–3.5 mm. From taiga zone to desert zone. Europe, Asia Minor, Near East, Caucasus, Kazakhstan, Iran, W. Siberia. *Iris*..... ..... *A. nonstriata* (Gz., 1777) (*coerulea* Geoffr., 1785) **

30(27) Brachypterous. Humeral calli very weak. Upper side blue or green, hind-femora rufous with blackish marking at upper border subapically. Length 2.5–4.2 mm. From deciduous forest zone to steppe zone. S. and E. Europe, Caucasus, N. America. *Euphorbia*..... *A. lacertosa* (Rosenh., 1847) **

31(26) Dorsum black with blue tint. Hind-femora black. Macropterous. Length 2.5–3.2 mm. From forest steppe zone to desert zone. Poland, Caucasus, Kazakhstan, Siberia, Mongolia. *Euphorbia*..... *A. beckeri* Jcbs., 1896 **

32(25) Frontal ridge narrow, convex.

33(58) Macropterous. Humeral calli convex.

34(49) Antennal calli convex; supracallinal sulci sharp.

35(42) Hind-femora dark in most specimens, fore- and mid-femora yellow or reddish.

36(41) Antennal calli rounded or weakly transverse.

37(40) Dorsum black, black-violet, or black with weak blue or bluish-green reflection.

38(39) Aedeagus as in Fig. 36: 11. Elytral disk with punctures arranged in irregular rows. Elytra black or black-violet; hind-femora brownish. Length 1.6–2.0 mm. From deciduous-coniferous forest zone (Lithuania (Silfverberg, 1992)) to steppe zone (Konstantinov, 1996a). Europe, N. Africa, Caucasus, Iran. *Euphorbia*..... ..... *A. atrocaerulea* (Steph., 1831) (*cyanella* L. Redt., 1849) *

39(38) Aedeagus as in Fig. 36: 12. Elytral disk with punctures entirely confused. Elytra black, with or without weak blue or bluish-green reflection, hind-femora usually black. Length 1.5–2.0 mm. From taiga zone to steppe zone. Europe, Asia Minor, Near East, Egypt, Caucasus. *Euphorbia*..... ..... *A. pygmaea* Kutsch., 1861 (*substriata* L. Medv., 1962) **

40(37) Dorsum green or blue. Elytra with rather coarse punctures. Aedeagus as in Fig. 36: 13. Length 2.5–3.2 mm. From deciduous forest zone to desert zone. C. and E. Europe, Caucasus, Kazakhstan, Kyrghyzstan, Siberia, Mongolia, N. America. *Euphorbia*..... ..... *A. ezwalinae* Wse., 1888 (*ezwalinai* auct.) **

41(36) Antennal calli very elongate, narrow. Elytral punctures coarse. Dorsum blue-black, usually with green tint, basal antennomeres reddish, legs reddish with hind-femora darkened. Aedeagus as in Fig. 36: 14. Length 3.0–4.0 mm. Steppe and desert zones (Konstantinov, 1996a). Transpalaearctic species, India. *Iris, Anabasis*..... *A. semicyanea* All., 1859 *

42(35) Hind-femora entirely dark brown. Fore- and mid-femora brown, at least in part.

43(46) Vertex smooth, covered with transverse wrinkles. Antennal calli elongate.

44(45) Aedeagus with apex obtuse (Fig. 36: 18). Length 1.8–2.0 mm. Dorsum black with blue tint..... *A. venustula* Kutsch., 1861 (see couplet 53)

45(44) Aedeagus with apex triangular (Fig. 36: 14). Length 3.0–4.0 mm. Dorsum blue-black, usually with green tint, antennae black, with 2nd and 3rd antennomeres rufous..... *A. semicyanea* All., 1859 (see couplet 41)

46(43) Vertex shagreened, sericeous. Antennal calli nearly subovoid.

47(48) Aedeagus as in Fig. 36: 15. Hind-femora dark brown, bases of fore- and mid-femora pale brown; all tibiae and apices of fore- and mid-femora yellow. Black, elytra with indistinct violet tint. Length 1.9–2.5 mm. From deciduous forest zone to desert zone. Romania, Turkey, Caucasus, Kazakhstan, C. Asia, Iraq, Iran, Afghanistan. *Euphorbia*..... *A. gracilis* Fald., 1837 **

48(47) Aedeagus as in Fig. 36: 16. Hind-femora brown, fore- and mid-femora pale brown; all tibiae pale brown. In specimens from S. Urals, tibiae and apical 1/2 of fore- and mid-femora yellow. Dorsum blackish blue. Length 2.0–2.8 mm. From deciduous-coniferous forest zone to steppe zone. Europe, Caucasus, Siberia. *Euphorbia, Iris*..... *A. violacea* (Koch, 1803) **

49(34) Antennal calli indistinct or not separated from vertex; supracallinal sulci obsolete.

50(51) Larger (length 2.2–2.5 mm). Dorsum dark green or dark bronze; tibiae, tarsi, and apical 1/4 of fore- and mid-femora rufous-yellow. Ventral surface of aedeagus with longitudinal ridge, delimited by furrows at sides (Fig. 36: 17). Ukraine: Crimea (Kerch (Konstantinov, 1998)). Caucasus, Kazakhstan, Uzbekistan..... ..... *A. rugipennis* Ogl., 1926 *

51(50) Smaller (length 1.5–2.1 mm).

52(55) Humeral calli well developed.

53(54) Pronotal punctation fine. Ventral surface of aedeagus with longitudinal ridge and 2 small apical impressions (Fig. 36: 18). Dorsum dark blue. Length 1.8–2.0 mm. From deciduous-coniferous forest zone to forest steppe zone (Konstantinov, 1996a). Europe, Caucasus. *Euphorbia*..... ..... *A. venustula* Kutsch., 1861 *

54(53) Pronotal punctation moderately coarse. Ventral surface of aedeagus with longitudinal impression broadened towards apex (Fig. 36: 19). Dorsum black with blue or brassy reflection. Length 1.8–2.0 mm. From tundra zone to desert zone. Europe, N. Africa, Syria, Caucasus, Kazakhstan, Siberia. *Euphorbia, Peganum, Linum*..... *A. cuphorbiae* (Schrnk., 1781) **

55(52) Humeral calli weakly developed. Ventral surface of aedeagus with longitudinal impression not broadened towards apex.

56(57) Punctation of pronotum moderately fine. Aedeagus with small apical denticle (Fig. 36: 25). Dorsum black with blue or brassy reflection. Length 1.9–2.1 mm. Ukraine: Crimea (Bakhchisarai reg. (Konstantinov, 1998)). Asia Minor, Caucasus..... *A. konstantinovi* Lop., 1998 *

57(56) Punctation of pronotum coarse. Aedeagus rounded at apex (Fig. 36: 20). Dorsum bronze or green-black with bronze reflection. Length 1.5–2.1 mm. Steppe zone. S. Europe, Caucasus. *Euphorbia, Linum*..... ..... *A. aeneomicans* All., 1875 **

58(33) Brachypterous. Humeral calli very weak or absent.

59(62) Body elongate-oval (Fig. 37: 1).

60(61) Dorsum bright green or blue, underside black, legs yellow or rufous. Aedeagus as in Fig. 36: 21. Length 1.5–2.0 mm. Ukraine: Carpathians, Crimea (Yalta). S. Europe, N. Africa. *Helianthemum*..... ..... *A. herbigrada* (Curt., 1837) **

61(60) Black with green or bluish tint, legs rufous, with hind-femora black. Aedeagus as in Fig. 36: 22. Length 1.5–1.8 mm. Forest steppe (specimen from ER: Lipetsk reg.) and steppe zones. C. and E. Europe, Caucasus. *Euphorbia, Helianthemum, Linum*..... *A. atrovirens* (Först., 1849) **

62(59) Body broadly-oval (Fig. 37: 2).

63(64) Antennal calli separated from vertex by narrow, deep supracallinal sulci. Dorsum black with violet or bluish tint, underside brown, legs yellow, with hind-femora black. Aedeagus as in Fig. 36: 23. Length 2.0–2.2 mm. Forest steppe and steppe zones. Caucasus (Daghestan). *Euphorbia*..... ..... *A. sarmatica* Ogl., 1928 **

64(63) Antennal calli separated from vertex by broad impressions. Black with weak bluish reflection, legs yellow, with hind-femora and sometimes bases of fore- and mid-femora black. Aedeagus as in Fig. 36: 24. Length 1.8–2.8 mm. From deciduous forest zone to steppe zone. C. and S. Europe, N. Africa, Caucasus. *Euphorbia*..... *A. ovata* Foudr., 1860 **

80. Longitarsus Berthold, 1827

Larvae feed on roots or mine the leaf stems (*L. melanocephalus*), pupate in the soil.

The following diagnoses may aid in determining the species group among a great number of *Longitarsus* species.

1) Orbital lines distinct, supracallinal sulci absent. Apical spur of hind-tibiae long (as long as width of hind-tibiae). On Lamiaceae, Boraginaceae, Scrophulariaceae, Lentibulariaceae. Couplets 4-23.
2) Orbital lines distinct. Pronotum less than 1.3 X as wide as long. Dorsum yellow, head and elytral suture sometimes brown, but black sutural stripe absent. Apical spur of hind-tibiae short. On Boraginaceae. Couplets 27-28.
3) Orbital lines distinct. Body entirely reddish to brown. Apical spur of hind-tibiae short. On Ranunculaceae, Scrophulariaceae, Asteraceae, Rosaceae, Lamiaceae. Couplets 32-41, 43.
4) Orbital lines distinct. Dorsum black, with or without metallic reflection. Apical spur of hind-tibiae short. Lateral slope of elytron evenly convex, without fold and vertical outer part. On Boraginaceae, Scrophulariaceae, Lamiaceae, Asteraceae, Linaceae. Couplets 46-67, 77.
5) Orbital lines distinct, supracallinal sulci absent. Pronotum 1.5 X as wide as long. Head, metathorax, and abdomen dark, pronotum pale, elytra pale, without distinct black sutural stripe, suture sometimes brown. Apical spur of hind-tibiae short. On Plantaginaceae. Couplets 70-76.
6) Elytra black with pale pattern (spots or lateral stripe). On Lamiaceae, Scrophulariaceae, Asteraceae. Couplets 29, 81-88.
7) Orbital lines distinct, supracallinal sulci absent. Elytra pale with sutural stripe black. Apical spur of hind-tibiae short. Elytral apex prominent and covered with coarse dense punctures similar to those on elytral disk. On Plantaginaceae. Couplets 91-94.
8) Orbital lines distinct, supracallinal sulci absent. Pronotum black or brown, considerably darker than elytra. Elytra pale, with black sutural stripe and sometimes lateral (apical) margin. Apical spur of hind-tibiae short. Elytral apex not prominent, covered with punctures either smaller or shallower than those on disk. On Boraginaceae, Ranunculaceae, Scrophulariaceae, Lamiaceae, Fabaceae, Asteraceae. Couplets 97-102.
9) Orbital lines distinct, supracallinal sulci absent. Dorsum pale (sometimes pronotum slightly darker than elytra). Elytra with black sutural stripe. Apical spur of hind-tibiae short. Elytral apex not prominent, covered with punctures either smaller or shallower than those on disk. On Boraginaceae, Plantaginaceae, Scrophulariaceae, Asteraceae. Couplets 104-113.
10) Orbital lines distinct, supracallinal sulci absent. Dorsum entirely pale, elytral suture sometimes brown. Apical spur of hind-tibiae short. Pronotum 1.5 X as wide as long. On Boraginaceae, Convolvulaceae, Fabaceae, Asteraceae. Couplets 115-136.
11) Orbital lines obsolete, supracallinal sulci sharp. On Lamiaceae. A) Above dark. Couplets 139-144. B) Elytra pale with or without sutural stripe. Couplets 146-153.
12) Lateral slope of elytra with distinct fold (viewed obliquely from behind). Body black, with or without metallic reflection. On Boraginaceae. Couplets 155-158.

Key to species

1(154) Lateral slope of elytra evenly convex, without fold and vertical outer part (viewed obliquely from behind, Fig. 41: 6). Elytra rounded together or

separately at apex, but not truncate, outer apical corner absent (Fig. 37: 3, 4, 13, 14). Subgenus *Longitarsus* s. str.

2(137) Orbital lines distinct, deep; antennal calli usually indistinctly separated from vertex, if antennal calli delimited by supracallinal sulci then orbital lines deeply incised.

3(24) Apical spur of hind-tibiae long, about as long as maximal width of hind-tibiae.

4(17) Upper side of hind-tibiae with 2 borders: one at exterior margin (this border bears fine denticles or spines) and other at upper side (do not confuse it with interior margin!); latter border glabrous, usually abbreviated and indistinct. Body usually larger (length 2.3–4.2 mm).

5(10) Dorsum dark metallic.

6(7) Orbital lines not sharp because of strong punctation at sides of vertex. Metasternum densely and strongly punctate at sides. Humeral calli weak. Dorsum bluish-green or bronze, rarely green. First antennomere dark metallic in most part. Aedeagus with small emargination at apex (Fig. 38: 1). Length 2.4–4.0 mm. Forest steppe and steppe zones. Europe, N. Africa, Asia Minor, Caucasus, Afghanistan. *Anchusa, Echium, Cynoglossum*..... ..... *L. echii* (Koch, 1803) **

7(6) Orbital lines sharp. Metasternum very sparsely punctate at sides. Aedeagus pointed at apex.

8(9) Humera strongly prominent. Dorsum mostly dark blue, rarely dark green. First antennomere entirely rufous. Aedeagus as in Fig. 38: 2. Length 2.5–3.5 mm. Forest steppe and steppe zones. C. and S. Europe, N. Africa, Asia Minor, Caucasus, C. Asia. *Symphytum, Echium*..... ..... *L. linnaei* (Duft., 1825) **

9(8) Humera weakly prominent. Dorsum mostly black with conspicuous bronze reflection. First antennomere dark at least basally. Aedeagus as in Fig. 38: 3. Length 2.3–3.4 mm. Ukraine: forest steppe and steppe zones; Moldova; ER: forest steppe zone (Voronezh reg.), lower reaches of Volga. S. Europe, Asia Minor, Lebanon, Caucasus, C. Asia, Iran, Afghanistan..... ..... *L. fallax* Wse., 1888 (*cynoglossi* Palij, 1970, *dimidiatus* All., 1866) **

10(5) At least elytra pale (yellow, yellowish-brown, or brown), usually with black pattern, in melanistic forms elytra pitchy brown, but always without metallic reflection.

11(12) Elytra with interspaces between punctures distinctly shagreened. Aedeagus with long narrow apical projection, "S"-shaped at apex in lateral view (Fig. 38: 4). Usually, head and pronotum brown, elytra yellow, with suture and sometimes longitudinal marking at side black; coloration variable. Body length 2.3–3.2 mm. From deciduous-coniferous forest zone (Latvia, Byelarus) to steppe zone. C. and S. Europe, N. Africa, Asia Minor, Near East, Caucasus, Kazakhstan, C. Asia, Iraq, Iran, Afghanistan, W. Siberia. *Verbascum, Scrophularia*..... *L. nigrofasciatus* (Gz., 1777) **

12(11) Elytra with interspaces between punctures glabrous, smooth or scarcely shagreened. Aedeagus without long apical projection, weakly curved at apex in lateral view (Fig. 38: 5).

13(14) Body elongate (Fig. 37: 13). Elytra indistinctly shagreened. Apex of aedeagus more acute (Fig. 38: 5). Length 2.8–3.1 mm. Ukraine: Carpathians (Warchałowski, 1996 — map); Moldova (specimen from Pridnestrovie: Jagorlyk). C. and S. Europe, N. Africa..... *L. foudrasi* Wse., 1893 **

14(13) Body broad (Fig. 37: 14). Apex of aedeagus more obtuse.

15(16) Pronotum entirely black or piceous, in pale specimens pronotum chestnut brown with indistinct blackish marking on disk. Colour of elytra variable, from dark yellow to pale reddish brown, with sutural stripe black. Lateral side of elytra without black marking, however epipleura and lateral margin of elytra brown. Aedeagus as in Fig. 38: 6. Length 2.9–4.2 mm. Ukraine: steppe zone (Odessa), Crimea (Simferopol, Kerch). S.-E. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Iraq, Iran, Afghanistan. *Verbascum*... ..... *L. picicollis* Wse., 1900 **

16(15) Pronotum entirely pale: yellow or rufous. Elytra yellow, with black sutural stripe or without it. In rare melanistic specimens pronotum with diffuse blackish marking, in this case, lateral side of elytra always with black marking. Length 3.0–4.1 mm. From taiga zone to steppe zone. Europe, N. Africa, Asia Minor, Israel, Caucasus, Kazakhstan, C. Asia, Iran, Afghanistan, Siberia, Mongolia. *Verbascum, Scrophularia, Veronica*..... ..... *L. tabidus* (F., 1775) **

17(4) Upper side of hind-tibiae with only 1 border at exterior margin. Body usually smaller (length 1.5–2.6 mm, mostly less than 2.4 mm).

18(19) Body black, legs entirely dark brown or blackish. Elytra considerably broader than pronotum, with prominent humeral calli. Length 1.5–2.2 mm. From taiga zone to forest steppe zone, S. Urals (Ilmensky Res. (Chaschina, 2002)). Europe, Caucasus, Siberia (Sayans). *Utricularia*..... ..... *L. nigerrimus* (Gyll., 1827) **

19(18) Dorsum pale.

20(21) Underside usually dark. Head, pronotum, prosternum, and legs rufous, elytra yellow. Antennal calli delimited by distinct supracallinal sulci behind and by orbital lines laterally. Humeral calli very weak. Aedeagus as in Fig. 38: 7. Length 1.9–2.6 mm. Deciduous-coniferous forest zone (Latvia (Putele, 1970)), forest steppe and steppe zones. Europe, N. Africa, Asia Minor, Near East, Caucasus, Kazakhstan, C. Asia, Iran. Lamiaceae, Boraginaceae..... ..... *L. ballotae* (Marsh., 1802) **

21(20) Body entirely rufous or with only meso- and metasternum pitchy black. Supracallinal sulci indistinct. Humeral calli obtuse.

22(23) Metasternum pitchy black. Body larger. Aedeagus as in Fig. 38: 8. Length 2.6 mm. ER: desert zone (Astrakhan reg. (Konstantinov, 1990)). Kazakhstan..... *L. salarius* Lop. et Kulenova, 1985

23(22) Body entirely rufous, smaller. Antennae entirely pale. Body pale, amber-coloured. Aedeagus as in Fig. 40: 2. Length 1.9–2.2 mm. Ukraine: Crimea (Kerch Penins. (Konstantinov, 1990)). Asia Minor, Israel, Iran..... ..... *L. karlheinzi* Warch., 1972 *

24(3) Apical spur of hind-tibiae short, considerably shorter than maximal width of hind-tibia.

25(30) Pronotum black, less than 1.5 X as wide as long; or pronotum pale, less than 1.3 X as wide as long. Aedeagus lanceolate, curved dorsally at apex, "S"–shaped in lateral view, with mid area narrow at middle and broad near apex on ventral side (Fig. 38: 9, 10; 39: 10).

26(29) Dorsum yellow, with only head and elytral suture dark amber yellow or reddish-brown in some specimens (determination of the species on the base of the coloration is possible for mature, fully-coloured specimens only).

27(28) Antenna pale, reddish, with apex slightly darkened, brownish. Hind-femora darkened apically. Aedeagus as in Fig. 38: 9. Length 2.4–3.0 mm. Ukraine: from deciduous forest zone to steppe zone, Crimea (specimen from S. coast); ER: deciduous forest zone (specimen from Ulyanovsk reg.). C. and S.-E. Europe, Caucasus. *Pulmonaria, Symphytum*..... ..... *L. pulmonariae* Wse., 1893 **

28(27) 5–6 apical antennomeres black or brown. Hind-femora with black marking in apical half. Aedeagus as in Fig. 38: 10. Length 2.6–3.1 mm. From deciduous-coniferous forest zone to desert zone. Europe, N. Africa, Asia Minor, Caucasus, Tadzhikistan, Afghanistan. *Echium, Symphytum, Cynoglossum, Anchusa, Cerinthe*..... *L. exsoletus* (L., 1758) **

29(26) Pronotum black. Elytra black, each with 2 pale markings, in some specimens markings missing. Aedeagus as in Fig. 39: 10. Length 2.1–2.7 mm. Estonia; Latvia; Byelarus; Ukraine (including Crimea). Europe, Asia Minor, Caucasus. *Cynoglossum, Digitalis, Nonea*..... ..... *L. quadriguttatus* (Pont., 1763) ** (see also couplet 84)

30(25) Pronotum usually 1.5 X as wide as long or broader. Other characters mentioned in couplet 25 absent or not present in the same specimen.

31(42) Coloration of body rather uniform, without contrasting pattern: reddish, reddish-brown, or brown. In pale specimens, suture sometimes brownish, but distinct dark dorsal pattern always absent.

32(33) Posterior margin of elytra with long setae. A seta nearest to sutural corner as long as half length of 1st metatarsomere. Aedeagus as in Fig. 38: 11. Length 1.8–2.3 mm. From taiga zone to steppe zone. Europe, Caucasus, Kazakhstan, Kyrghyzstan, Siberia, Far East. Ranunculaceae..... ..... *L. brunneus* (Duft., 1825) **

33(32) Posterior margin of elytra with more or less equal short setae.

34(35) Body broadly-oval, very convex. In male, first protarsomere strongly dilated. Aedeagus as in Fig. 38: 12. Length 2.0–2.5 mm. Ukraine: Carpathians. Europe: Alps, Sudeten. *Digitalis, Ranunculus*..... ..... *L. rubellus* (Foudr., 1860) **

35(34) Body elongate, less convex.

36(37) Pronotum and elytra finely punctate, elytral punctures not coarser than those on pronotal disk. Humeral calli weak or absent. In male, 1st protarsomere very strongly dilated. Aedeagus as in Fig. 38: 13. Length 1.8–2.2 mm. S.-W. Ukraine: forest steppe and steppe zones west of Dnepr; Moldova; ER: forest steppe zone (specimens from Lipetsk reg.), steppe zone (specimens from Saratov reg.: Agarevka). S.-E. Europe. *Senecio*..... ..... *L. languidus* Kutsch., 1863 **

37(36) Pronotum and elytra moderately or coarsely punctate, elytral punctures coarser than those on pronotal disk.

38(39) Elytra glabrous, very smooth, not shagreened. Humeral calli prominent. In some specimens pronotum and basal or apical part of elytra slightly paler than rest of dorsal surface. Aedeagus as in Fig. 38: 15. Length 1.8–2.4 mm. From deciduous-coniferous forest zone (Latvia (Silfverberg, 1992), Byelarus (Alexandrovitch *et al.*, 1996)) to steppe zone (Medvedev, Shapiro, 1965), Crimea (Shapiro, 1961). Europe, Caucasus, Siberia..... ..... *L. fulgens* (Foudr., 1860) *

39(38) Elytra distinctly shagreened. Humeral calli weak.

40(41) Aedeagus (Fig. 38: 14) constricted at sides preapically. Coloration variable: pale yellowish-brown, reddish-brown, chestnut-brown, or pitchy brown. Length 1.5–2.3 mm. From taiga zone to steppe zone. Transpalaearctic species. *Ranunculus, Aconitum, Pulsatilla, Comarum*..... ..... *L. luridus* (Scop., 1763) **

41(40) Aedeagus (Fig. 38: 16) parallel-sided. Body reddish-brown. Length 1.2–2.0 mm. Ukraine: Carpathians (Warchałowski, 1996). Europe, N. Africa, Asia Minor. *Teucrium, Ballota, Stachys, Sideritis, Phlomis*..... ..... *L. minusculus* (Foudr., 1860) *

42(31) Coloration of body not as in couplet 31.

43(44) Dorsum brown or piceous, elytra each with 2 diffuse pale, usually reddish, markings: one at humerus and other at apex. Colour variations of *L. fulgens* (Foudr., 1860) and *L. luridus* (Scop., 1763) (see couplets 38 and 40, and also 29 and 84 for comparison with *L. quadriguttatus* (Pont., 1763))

44(43) Coloration of dorsum not as in couplet 43.

45(68) Elytra unicolorous: black, pitchy black, or black with metallic reflection.

46(55) Humeral calli indistinct or absent.

47(48) Pronotum shagreened, finely punctate. Elytra smooth, very indistinctly shagreened, deeply punctate. Contrast between dull pronotum and shining elytra distinctly visible. Body rather convex. Length 1.7–2.1 mm. Ukraine (Lopatin, Konstantinov, 1991): forest steppe zone (Kiev, Poltava), Crimea; ER: semidesert zone (Volgograd reg.). Steppe of Europe (Hungary, Bulgaria), Caucasus..... *L. tristis* Wse., 1888 (*pannonicus* Kaszab, 1962) *

48(47) Pronotum and elytra both dull, shagreened or shining.

49(50) Pronotum and elytra distinctly deeply shagreened; upper side sericeous shining or almost dull, black. Body weakly convex. Hind wings absent. Aedeagus as in Fig. 38: 17. Length 1.4–1.8 mm. Ukraine; ER: taiga zone (specimens from Udmurt Republic), forest steppe zone (specimens from Lipetsk reg.: Dankov, Elets and Ulyanovsk reg.), steppe zone (Saratov reg.: Agarevka, Nizh. Bannovka), S. Urals (specimens from Bashkortostan: Irgizly; Ilmensky Res.). Sweden, C. and S.-E. Europe. *Veronica*..... ..... *L. medvedevi* Shapiro, 1956 **

50(49) Pronotum and especially elytra very indistinctly, shallowly, or partly obsoletely shagreened. Upper side rather shining.

51(52) Body weakly convex. Aedeagus as in Fig. 38: 18. Length 1.3–1.9 mm. Deciduous-coniferous forest zone (Latvia (Putele, 1970)), forest steppe zone (ER: specimens from Ulyanovsk reg.: Radischevo Distr.), and steppe zone (Medvedev, Shapiro, 1965). Europe, Asia Minor, Israel, Caucasus, Mongolia. *Artemisia, Tanacetum*..... *L. absynthii* Kutsch., 1862 (*absinthii* auct.) **

52(51) Body convex, oval.

53(54) Aedeagus as in Fig. 38: 19. Length 1.7–2.1 mm. Ukraine: Crimea (Mts.). Bulgaria, Asia Minor. *Trachystemon*. In Crimea, beetles were collected on *Symphytum tauricum*..... *L. jailensis* Hktg., 1913 **

54(53) Aedeagus as in Fig. 41: 3. Length 1,8–2,5 mm..... ..... *L. (Testergus) pinguis* Wse., 1888 (see couplet 158)

55(46) Humeral calli more or less developed.

56(57) All legs very darkened: black, piceous, or dark brown..... ... *L. plantagomaritimus* Dollmann, 1912. Melanistic form. (see couplet 94)

57(56) At least tarsi, fore- and mid-tibiae pale.

58(59) Hind-tibiae black or dark brown. Aedeagus as in Fig. 39: 13. Length 2.4–2.7 mm. ..... *L. plantagomaritimus* Dollmann, 1912 (see couplet 94)

59(58) Hind-tibiae pale or slightly darker than fore- and mid-tibiae.

60(61) Length mostly 2.2–2.6 mm, rarely up to 1.9 mm. Elytra slightly drawn out at apex (as in *L. melanocephalus* and *L. plantagomaritimus*), but punctation in apical part weaker than anteriorly. Dorsum black, without metallic reflection. Aedeagus as in Fig. 38: 20. From deciduous-coniferous forest zone to steppe zone (Warchałowski, 1995). Europe, Asia Minor, Caucasus, Afghanistan. *Anchusa, Echium*. ..... *L. niger* (Koch, 1803) *

61(60) Length 1.2–2.3 mm. Elytra not drawn out, evenly rounded at apex.

62(63) Elytral punctures arranged in almost regular rows. Dorsum black, without metallic reflection. Aedeagus - Fig. 39: 1. Length 1.7–2.3 mm. Ukraine: Crimea (Warchałowski, 1996). S. and S.-E. Europe, N.-W. Africa, Asia Minor, Near East, Caucasus, Kazakhstan, C. Asia, Iraq, Iran, Afghanistan. *Majorana* ..... *L. rectilineatus* (Foudr., 1860) (*rectelineatus* auct.) *

63(62) Elytra with confused punctation.

64(65) Pronotum and elytra shagreened, sericeous shining or almost dull. Punctation of upper side very fine and shallow. Aedeagus as in Fig. 39: 2. Length 1.2–1.8 mm. From taiga zone to steppe zone. Europe, N. Africa, Asia Minor, Near East, Caucasus, Siberia. *Linum*, Boraginaceae. ..... *L. parvulus* (Pk., 1799) **

65(64) Pronotum and elytra shining, with weak bronze or leaden reflection. Elytral punctation coarse and deep.

66(67) Elytra with humeral calli weak. Aedeagus as in Fig. 39: 3. Length 1.6–1.9 mm. ER: semidesert zone (Volgograd reg.). Caucasus, C. Asia, Siberia, Mongolia, W. China. Scrophulariaceae, Boraginaceae, Lamiaceae. ..... *L. violentus* Wse., 1893 **

67(66) Elytra with humeral calli prominent. Aedeagus as in Fig. 39: 4. Length 1.7–2.0 mm. ..... *L. weisei* Guill., 1895 (see couplet 155)

68(45) Coloration of elytra not as in couplet 45.

69(78) Pronotum 1.5 X as wide as long. Head brown or blackish, considerably darker than elytra. Underside mostly or entirely dark: brown or blackish. Elytra and usually pronotum pale, sometimes with very narrow diffuse blackish line on elytral suture, but distinct black sutural stripe always absent; or elytra brown (blackish) with diffuse pale markings at humeri and before apex. Head and pronotum weakly shining, very distinctly shagreened. Antennae short, approximately 2/3 as long as body.

70(77) Elytra yellow or yellowish-brown throughout, or with suture darkened.

71(72) Elytra almost always without humeral calli. Aedeagus narrower (Fig. 39: 5). Length 1.4–1.8 mm. Ukraine: steppe zone (Lugansk reg. (Gruev, 1991)), Crimea (Leonardi, Doguet, 1990); ER: deciduous forest zone (specimen from Ulyanovsk reg.). Pyrenees, Apennines, Balkan Mts., Caucasus, Siberia. ..... *L. minimus* Kutsch., 1864 **

72(71) Elytra with more or less distinct humeral calli. Aedeagus broader.

73(76) Apex of aedeagus weakly curved upwards (Fig. 39: 6, 7). In male, 4th protarsomere shorter than 1st.

74(75) In male, 1st protarsomere weakly broadened. Aedeagus with lateral areas bearing bend between ventral and lateral sides (Fig. 39: 6). Elytra yellow, with suture reddish. Length 1.4–2.1 mm. Estonia; Latvia; Lithuania; Byelarus; Ukraine: deciduous forest zone (Kiev reg.), Crimea; Moldova

(specimen from Pridnestrovie); ER: forest steppe zone (Lipetsk reg.). Europe, N. Africa, Asia Minor, Israel, Caucasus, Kazakhstan, C. Asia, Iran. *Plantago*..... *L. pratensis* (Pz., 1794) **

75(74) In male, 1st protarsomere strongly broadened. Aedeagus with lateral areas without bend between ventral and lateral sides (Fig. 39: 7). Elytra yellow throughout or with abbreviated dark sutural line. Length 1.5–2.1 mm. Estonia (Silfverberg, 1992); Latvia (Putele, 1970); Byelarus (Alexandrovitch, *et al.*, 1996); Moldova (specimen from Pridnestrovie); ER (Karelia (Silfverberg, 1992)). Spain, France, Italy, Yugoslavia, Albania, Greece, Bulgaria, Caucasus, Finland. *Plantago*... *L. scutellaris* (Muls. et Rey, 1874) **

76(73) Apex of aedeagus strongly curved upwards (Fig. 39: 8). In male, 4th protarsomere not shorter than 1st. Elytra usually yellow with blackish sutural line not reaching base and apex. Length 1.7–2.3 mm. Ukraine; ER: taiga zone (Perm), deciduous-coniferous forest zone (specimens from Moscow city and Moscow reg.), forest steppe zone (specimens from Lipetsk reg.: Elets), S. Urals (specimens from Ilmensky Res.). Europe, Caucasus, Kyrghyzstan, Afghanistan, Siberia, Far East, Mongolia, China, Korea, Japan, Vietnam. *Plantago*..... *L. lewisii* (Baly, 1874) **

77(70) Elytra brown or blackish with diffuse pale markings at humeri and before apex..... *L. medvedevi* Shapiro, 1956. Colour variation. (see couplet 49)

78(69) Another combination of characters.

79(114) Elytra black, blackish-bronze, or pitchy brown with pale pattern, or elytra pale with black or brown pattern, mostly with sutural stripe.

80(89) Elytra black, blackish-bronze, or pitchy brown, with pattern yellow, rufous, or red.

81(82) Elytra black, margined laterally and apically by pale yellowish bands. Pronotum entirely yellow, yellow with brownish spot, or entirely yellowish-brown. Length 1.9–2.6 mm. Ukraine: steppe zone (Kherson (Lopatin, 1977b)). N. Africa, Spain, Portugal, France, N. Italy, England, Netherlands, S.-W. Germany. *Senecio*..... *L. dorsalis* (F., 1781) *

82(81) Elytra with 1 or 2 pale markings.

83(86) Elytra with 2 large red or rufous markings.

84(85) Elytra with background purely black or with very weak metallic tint, with pale markings usually distinct, rarely diffuse..... ..... *L. quadriguttatus* (Pont., 1763) (see couplet 29)

85(84) Elytra with background pitchy brown. Markings diffuse, forming pale areas at humerus and elytral apex. Colour variations of *L. fulgens* (Foudr., 1860) and *L. luridus* (Scop., 1763) (see couplets 38, 40, and 43).

86(83) Elytra each with one apical yellow or red marking, rarely also with small humeral spot.

87(88) Dorsum black or blackish-bronze. Elytra posteriorly with yellow marking reaching apex, rarely also with small rufous humeral spot. Elongate, with humeri rounded (Fig. 37: 4). Aedeagus as in Fig. 39: 9. Length 2.3–3.4 mm. From taiga zone to steppe zone. Europe, Caucasus, Siberia. *Stachys, Salvia, Centaurea*..... *L. apicalis* (Beck, 1817) **

88(87) Dorsum black. Elytra posteriorly with yellow (or red) marking not reaching apex, sometimes marking extending to whole apical half. Broadly-oval, with humeri prominent (Fig. 37: 3). Aedeagus as in Fig. 39: 11. Length 1.5–2.4 mm. From tundra zone to steppe zone. Europe, Siberia, Far East,

Japan. *Veronica, Gratiola, Pedicularis palustris* (in Murmansk reg.). In swamps..... *L. holsaticus* (L., 1758) **

89(80) Elytra pale, with pattern (sutural stripe in most of species) dark.

90(95) Elytral apices prominent and covered with coarse dense punctures similar to those on elytral disk.

91(92) Aedeadus elongate, 5.2–5.8 X as long as wide (Fig. 39: 12). Spermatheca as in Fig. 37: 8. Head mostly chestnut brown, pitchy, or black, rarely pale. Length 2.3–3.1 mm. From taiga zone (ER: Karelia, Vyatka reg.) to steppe zone. Transpalaearctic species. *Plantago*..... ..... *L. melanocephalus* (Deg., 1775) **

92(91) Aedeagus shorter, 4.2–4.7 X as long as wide (Fig. 39: 13, 14).

93(94) In male, 1st tarsomere of fore- and mid-tarsi long, 1.8–1.9 X as long as wide (Fig. 37: 5). Aedeagus as in Fig. 39: 14. Spermatheca as in Fig. 37: 9. Length 1.7–2.4 mm. Byelarus; ER: taiga zone (specimens from Karelia and Leningrad reg.), deciduous-coniferous forest zone (specimens from Moscow reg. and Vladimir reg.). Europe, N. Africa, Caucasus, Siberia, Far East, China, Korea. *Plantago*..... *L. kutscherae* (Rye, 1872) **

94(93) In male, 1st tarsomere of fore- and mid-tarsi short, 1.4–1.5 X as long as wide (Fig. 37: 6). Head black. Aedeagus as in Fig. 39: 13. Spermatheca as in Fig. 37: 7. Length 2.0–2.4 mm. ER: taiga zone (specimens from Murmansk reg.: Kandalaksha Distr.: Arctic Circle, sea shore). North Sea shores. *Plantago salsa*..... *L. plantagomaritimus* Dollmann, 1912 **

95(90) Elytra with apices not prominent, covered with weak or almost obsolete punctures (punctures either finer, or shallower than those on disk).

96(103) Pronotum black, brown, or reddish-brown, pronotum always considerably darker than background of elytra.

97(102) Sutural stripe as well as lateral or apical margin of elytra darkened.

98(99) Elytra with large black marking behind humeri (Fig. 41: 8). Humeral calli weak, hind wings absent. Aedeagus as in Fig. 41: 7. Length 1.5–1.8 mm. Ukraine: Carpathians, Crimea (Shapiro, 1961); Moldova (Medvedev, Shapiro, 1965). C. and S.-E. Europe, Asia Minor, Near East, Caucasus. Boraginaceae..... *L. lateripunctatus personatus* Wse., 1893 *

99(98) Elytra without large black marking behind humeri.

100(101) Black sutural stripe not reaching elytral apex. Epipleura and diffuse lateral stripe before the mid-point of elytra brown or blackish. Head and pronotum brown or pitchy black, usually with metallic reflection. Aedeagus as in Fig. 39: 15. Length 1.8–2.6 mm. Latvia (Putele, 1970); Lithuania (Silfverberg, 1992); Byelarus: deciduous forest zone (Alexandrovitch, *et al.*, 1996); Ukraine: steppe zone, Crimea. Mediterranean reg., C. Asia, Afghanistan. *Lithospermum, Symphytum, Verbascum, Phlomis*..... ..... *L. aeneicollis* (Fald., 1837) (*suturalis* Marsh., 1802) **

101(100) Black sutural stripe reaching elytral apex, and extending forward along lateral side up to humeral calli. Head and pronotum black or pitchy brown, usually with metallic tint. Aedeagus as in Fig. 39: 16. Length 1.5–2.1 mm. From taiga zone to semidesert zone. Transpalaearctic species. Boraginaceae. ..... *L. nasturtii* (F., 1792) **

102(97) Elytra with black sutural stripe, but without lateral or apical darkening. Head and pronotum brown or reddish-brown, with bronze tint, sometimes head pitchy black. Aedeagus as in Fig. 39: 17. Length 2.0–3.0 mm. From taiga zone (swamps) to steppe zone. Europe, N.-W. Africa, Asia Minor,

Caucasus, Turkmenistan, Iran, Siberia, Far East. *Medicago, Onobrychis, Achillea, Aconitum*..... *L. atricillus* (L., 1761) **

103(96) Coloration of pronotum and elytra similar, yellow, or pronotum only slightly darker (rufous).

104(105) Pronotal punctures coarse and dense at base, finer and sparser anteriorly. Black sutural stripe mostly abbreviated anteriorly and posteriorly. Sutural corner of elytra bearing one very long seta (easily broke off) directed upwards, as long as 1st metatarsomere. Length 1.6–2.0 mm. From taiga zone to deciduous-coniferous forest zone. Europe, Siberia, Far East. *Plantago, Veronica*..... *L. longiseta* Wse., 1888 **

105(104) Pronotal punctures more uniform. Elytral apex with equal short setae.

106(109) Pronotum with very fine or obsolete punctures.

107(108) Elytra elongate, moderately convex, with humeral calli prominent. Black sutural stripe usually abbreviated anteriorly and posteriorly, if not abbreviated, then broad at middle and abruptly narrowed anteriorly. Aedeagus as in Fig. 39: 19. Length 1.7–2.3 mm..... ..... *L. gracilis* Kutsch., 1864 ** (see couplet 125)

108(107) Elytra rather convex, with humeral calli weak. Black sutural stripe not reaching elytral apex. Aedeagus as in Fig. 39: 18. Length 1.8–2.8 mm. From taiga zone (ER: Karelia (Silfverberg, 1992)) to steppe zone. Transpalaearctic species. *Tussilago, Senecio, Petasites, Lithospermum*..... ..... *L. suturellus* (Duft., 1825) **

109(106) Pronotum distinctly and more or less coarsely punctate. Sutural stripe not abbreviated either anteriorly, or posteriorly, extending from scutellum to elytral apex.

110(113) Elytral sutural stripe narrow, in some specimens only suture itself darkened. Body smaller, length 1.7–2.2 mm.

111(112) Usually macropterous. Humeral calli prominent. Aedeagus as in Fig. 39: 20. Length 1.7–2.0 mm. Distribution is insufficiently studied because some records may belong to the following species. Byelarus (Alexandrovitch, *et al.*, 1996). Europe, N. Africa, Caucasus, Tadzhikistan. *Echium, Symphytum, Myosotis, Pulmonaria*..... *L. curtus* (All., 1860) *

112(111) Brachypterous. Humeral calli rounded. Aedeagus as in Fig. 39: 21. Length 1.8–2.2 mm. Distribution is insufficiently studied because this species was considered a synonym of *L. curtus* for a long time. Byelarus: deciduous-coniferous forest zone (specimens from Minsk); ER: S. Urals (specimens from Bashkortostan: Irgizly). Europe..... *L. monticola* Kutsch., 1863 **

113(110) Elytral sutural stripe wide, slightly diffuse, sometimes reddish-brown. Body larger, length 2.2–2.6 mm. Aedeagus as in Fig. 39: 22. From taiga zone (ER: Karelia (Silfverberg, 1992)) to steppe zone. Transpalaearctic species. *Senecio*..... *L. ganglbaueri* Hktg., 1912 **

114(79) Pronotum and elytra entirely pale, in some specimens elytral suture no more than slightly darkened, rust-coloured or brown, but distinct sutural stripe always absent.

115(118) Hind-femora black or pitchy-black, at least apically (do not confuse with brown jumping apodema visible sometimes through the surface of femur).

116(117) Hind-femora black apically. Underside yellow. Aedeagus as in Fig. 39: 23. Length 2.0–2.8 mm. From deciduous-coniferous forest zone to

steppe zone. Europe, N. Africa, Asia Minor, Caucasus. *Matricaria, Achillea, Tanacetum, Artemisia*..... *L. ochroleucus* (Marsh., 1802) **

117(116) Hind-femora pitchy-black throughout or with base reddish. Abdomen black. Aedeagus as in Fig. 39: 28. Length 2.2–2.9 mm. From deciduous forest zone to steppe zone. C. and S.-E. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Siberia. *Convolvulus*..... ..... *L. longipennis* Kutsch., 1863 **

118(115) Hind-femora yellow throughout or with apex slightly darkened.

119(122) Body mostly longer (length 2.4–3.5 mm). Elytra dull. Second metatarsomere gradually widened towards its apex. Labrum and maxillary palpi black.

120(121) Aedeagus broader, with apical prominence (Fig. 37: 15). Length 2.4–3.5 mm. From deciduous-coniferous forest zone to steppe zone (Warchałowski, 1996). Europe, N. Africa, Caucasus, Kazakhstan, Kyrghyzstan, Siberia, Mongolia. *Senecio*..... *L. jacobaeae* (Waterh., 1858) *

121(120) Aedeagus narrower, without apical prominence (Fig. 39: 25). Length 2.6–3.4 mm. ER: forest steppe zone (Lipetsk reg.)[1], Moldova: Pridnestrovie (male from Jagorlyk). Britain, Ireland, France, Belgium, Iberian Penins., N. Africa..... *L. flavicornis* (Steph., 1831) **

122(119) Body mostly shorter (length 1.7–2.9 mm). Elytra shining. Second metatarsomere narrow.

123(124) Pronotal punctures very coarse, dense; interspaces slightly wrinkled, rough. Aedeagus as in Fig. 39: 27. Length 2.2–2.7 mm. From taiga zone to steppe zone. Transpalaearctic species. *Calystegia, Convolvulus*..... ..... *L. rubiginosus* (Foudr., 1860) **

124(123) Pronotal punctures moderately coarse or fine; interspaces smooth, plane.

125(126) Antenna with apical half dark, usually blackish or at least considerably darker than basal half. Coloration of body very pale, in live beetles whitish, in dry specimens pale yellow. Hind-femora yellow. Aedeagus as in Fig. 39: 19. Length 1.7–2.3 mm. From deciduous-coniferous forest zone to steppe zone. Europe, N. Africa, Asia Minor, Caucasus. *Tussilago, Senecio, Petasites*..... *L. gracilis* Kutsch., 1864 **

126(125) Antenna entirely pale or with apical half gradually darkened, however this darkening not contrasting, brownish, but not blackish.

127(128) Antenna very long, longer than body in both sexes, narrow, entirely pale. Fifth–8th antennomeres narrow, elongate, each 4.5–4.8 X as long as wide. Coloration of body very pale, straw-coloured, slightly translucent. In male, 1st protarsomere elongate and broadened, but not broader than apex of fore-tibiae. Aedeagus as in Fig. 39: 26. Length 2.1–2.9 mm. Latvia (Putele, 1970); Lithuania (Silfverberg, 1992); Byelarus (Alexandrovitch, *et al.*, 1996); ER: forest steppe zone (Voronezh (Gruev, 1973, cited after Warchałowski, 1995)). C. and S. Europe, Caucasus, Siberia. *Symphytum, Myosotis*..... ..... *L. symphyti* Hktg., 1912 *

128(127) Antenna usually shorter, thicker, slightly darkened at apex. If antenna almost as long as in *L. symphyti*, then each of 5th–8th antennomeres not more than 4 X as long as wide.

[1]Material: Lipetsk reg., 30km eastward from Elets, Morozova Gora forestry, steppe, Arkharova leg.: 22.7.1996: 1 male.

129(132) Humeral calli well developed.

130(131) Aedeagus "S"-shaped in lateral view (Fig. 40: 1). Antennae darkened in apical half. Metathorax under elytral base with two dark markings visible through elytra in live beetles. In dry specimens these markings can be seen when insect is moistened with water. Length 1.9–2.4 mm. Ukraine: Crimea; ER: forest steppe zone (Voronezh reg.). C. and S. Europe, Mediterranean reg., Caucasus, Turkmenistan, Tadzhikistan, Iraq, Iran, Afghanistan. *Heliotropium* ..... *L. albineus* (Foudr., 1860) **

131(130) Aedeagus as in Fig. 40: 3. Length 2.0–2.6 mm. From taiga zone (ER: Vyatka reg.) to steppe zone. Europe, N. Africa, Kazakhstan, C. Asia, Siberia, Mongolia, India. *Convolvulus, Phaseolus, Glycyrrhiza*..... ..... *L. pellucidus* (Foudr., 1860) **

132(129) Humeral calli weakly developed or absent.

133(134) Antenna comparatively short, distinctly shorter than body, with 8th–10th antennomeres short, each not more than 2–2.5 X as long as wide. Aedeagus as in Fig. 40: 4. Length 1.6–2.2 mm. Ukraine: steppe zone; ER: deciduous forest zone (Ulyanovsk reg.[1]). Europe, N. Africa..... ..... *L. celticus* Leonardi, 1975 **

134(133) Antenna long, about as long as body (male), or slightly shorter (female), with 8th–10th antennomeres long, each 3–4 X as long as wide.

135(136) Aedeagus as in Fig. 40: 5. In male, 1st protarsomere not broadened (Fig. 40: 15). Length 1.8–2.7 mm. Total fig. 80. From taiga zone to steppe zone. Palaearctic, Nepal, India, Vietnam. Asteraceae..... ..... *L. succineus* (Foudr., 1860) **

136(135) Aedeagus as in Fig. 40: 6. In male, 1st protarsomere broadened (Fig. 40: 16). Length 1.7–2.5 mm. Latvia (Gruev, 1982); Ukraine: Carpathians, Crimea (specimen from S. coast); ER: deciduous-coniferous forest zone (specimens from Smolensk, Moscow city, and Moscow reg.), forest steppe zone (specimen from Lipetsk reg.). C. and S.-E. Europe, Caucasus. ..... *L. noricus* Leonardi, 1976 **

137(2) Orbital lines very shallow or obsolete; antennal calli elongate, distictly separated from vertex by sharp supracallinal sulci.

138(145) Dorsum black (usually with weak metallic reflection), pitchy, or chestnut-coloured.

139(140) Aedeagus with apex rounded and bearing small denticle (Fig. 39: 24). Hind-tibiae with apical spur short. Length 1.6–1.8 mm. Ukraine: steppe zone (Lugansk (Warchałowski, 1995)). S.-E. Europe, Black Sea basin, Kyrghyzstan, Iran. *Nepeta, Majorana, Ballota*..... ..... *L. alfierii furthi* Gruev, 1982 *

140(139) Aedeagus without apical denticle (Fig. 40: 7-9). Hind-tibiae with apical spur usually long.

141(142) Ventral surface of aedeagus bearing wide furrow with parallel sides along almost entire length (Fig. 40: 7). Length 1.2–1.6 mm. From deciduous forest zone to steppe zone. C. and S. Europe, Asia Minor, Near East, Caucasus, Kazakhstan, W. Siberia, Iran, Afghanistan. *Salvia, Thymus, Satureja, Origanum, Prunella, Melissa*..... *L. obliteratus* (Rosenh., 1847) **

[1]Material: Ulyanovsk reg.: Sengeleevskyi Distr.: Shilovka Vill., on *Leonurus quinquelobatus*, A.Yu. Isajev leg.: 2 males, 1 female.

142(141) Ventral surface of aedeagus bearing furrow gradually narrowed from middle to basal opening.

143(144) Length 1.7–1.9 mm in male, 1.9–2.0 mm in female. In male, last abdominal sternite with broad shallow impression. Aedeagus as in Fig. 40: 8. Ukraine including Crimea (envir. Simferopol: foot-hills; Kerch Penins.: Yurkino); ER: forest steppe zone (Kursk reg.: Streletskaya Steppe Res.; Lipetsk reg.: Galichia Gora), S. Urals (Bashkortostan: Irgizly). C. and S. Europe, Caucasus. *Salvia*..... *L. salviae* Gruev, 1975 **

144(143) Length 1.8–2.0 mm in male, 2.0–2.5 mm in female. In male, last abdominal sternite without impression, in some specimens with 2 oblique calli. Aedeagus as in Fig. 40: 9. Ukraine: Crimea. Israel, Iran, Afghanistan, C. Asia. *Mentha*..... *L. eminus* Warch., 1967 **

145(138) Dorsum with at least elytra pale: straw-coloured, ochraceous, or pale brown, sometimes with dark sutural stripe. Examination of aedeagus is necessary for the determination. External characters mentioned below concern the typical colour forms only.

146(149) Length: 1.7–2.1 mm in male, 1.9–2.4 mm in female.

147(148) Humeral calli weak. Elytral suture sometimes brownish, labrum and abdominal sternites pitchy or black. Aedeagus as in Fig. 40: 10. Length 1.8–2.1 mm (male), 2.0–2.4 mm (female). Deciduous-coniferous forest zone (Latvia; Lithuania; ER: Tver reg.), deciduous forest zone (specimen from Ukraine: Lvov). Europe, N. Africa, Caucasus. *Lycopus, Mentha, Teucrium.* ..... *L. ferrugineus* (Foudr., 1860) **

148(147) Humeral calli distinct. Head and underside pitchy or black. Aedeagus as in Fig. 40: 11. Length 1.7–2.0 mm. S. Ukraine: steppe zone (Askaniya Nova (Lopatin, 1960)), Crimea (Warchałowski, 1996). Europe, Caucasus. *Glechoma*..... *L. substriatus* Kutsch., 1863 *

149(146) Length: 1.3–1.7 mm in male, 1.6–1.9 mm in female.

150(153) Hind-femora uniformly coloured, mostly pale. In dark specimens femora also dark, but darkening occupies whole femora without differently coloured parts.

151(152) Pronotum very short, densely and deeply shagreened, weakly shining. Body comparatively slender, especially in male. Aedeagus as in Fig. 40: 12. Length 1.4–1.7 mm. Deciduous-coniferous forest zone (Latvia (Putele, 1970)), deciduous forest zone (ER: Ulyanovsk reg.), and steppe zone. Europe, Caucasus. *Teucrium, Stachys, Marrubium*..... ..... *L. nanus* (Foudr., 1860) **

152(151) Pronotum longer, shallowly shagreened, only in young weakly sclerotized specimens more strongly shagreened. Body robust. Aedeagus as in Fig. 40: 13. Length 1.6–1.8 mm. Forest steppe and steppe zones (Medvedev, Shapiro, 1965). Europe. *Teucrium, Mentha*..... ..... *L. membranaceus* (Foudr., 1860) *

153(150) Hind-femora darkened in apical part. Aedeagus as in Fig. 40: 14. Length 1.5–1.9 mm. From taiga zone (ER: Karelia (Silfverberg, 1992)) to steppe zone. Europe, N.-W. Africa, Chad, Near East, Saudi Arabia, Yemen, Asia Minor, Iraq, Iran, Caucasus, Kazakhstan, Tadzhikistan, Siberia, Mongolia. *Mentha, Lycopus*..... *L. lycopi* (Foudr., 1860) **

154(1) Lateral slope of elytra with distinct fold and vertical outer part (seen obliquely from behind, Fig. 41: 5). Elytral epipleura reaching only outer

apical corner. Elytra more or less truncate at apex, not covering pygidium (Fig. 37: 10).

155(156) Hind wings normally developed or elytra obscurely truncate, without outer apical corner. Subgenus *Longitarsus* s.str. Dorsum black, pronotum and elytra with bronze reflection. Ukraine: Carpathians (specimen from Transcarpathians: Kamenitsa); ER: deciduous forest zone (specimen from Ulyanovsk reg.). C. and S. Europe, Kyrghyzstan, Tadzhikistan, Iran, Afghanistan, Siberia (Jakutsk), China (Hupeh), Nepal. *Cynoglossum*..... ..... *L. weisei* Guill., 1895 **

156(155) Hind wings reduced, elytra distinctly truncate, with distinct outer apical corner. Subgenus *Testergus* Wse., 1893.

157(158) Hind-tibiae turned outside apically (seen from above) (Fig. 37: 11). Dorsum purely black or black with metallic reflection. Aedeagus as in Fig. 41: 1. Length 1.7–2.1 mm. Deciduous-coniferous forest zone (Latvia (Putele, 1970)), forest steppe and steppe zones. C. and S. Europe, Asia Minor, Near East, Caucasus, C. Asia, Iran. *Cynoglossum, Echium, Lithospermum, Anchusa, Alkanna*..... *L. fuscoaeneus* L. Redt., 1849 **

158(157) Hind-tibiae almost straight (Fig. 37: 12). Dorsum purely black or black with very weak, indistinct metallic reflection.

a) Aedeagus as in Fig. 41: 2. Length 1.6–2.6 mm. From deciduous-coniferous forest zone to steppe zone. Europe, Asia Minor, Near East, Caucasus, Kazakhstan, C. Asia, Iraq, Iran, Afghanistan, Siberia. Boraginaceae..... ..... *L. anchusae* (Pk., 1799) **

b) Aedeagus as in Fig. 41: 3. Length 1.8–2.5 mm. Byelarus (Alexandrovitch, *et al.*, 1996); Ukraine and Moldova (Warchałowski, 1995). C. and S.-E. Europe, Asia Minor, Caucasus. *Echium*..... *L. pinguis* Wse., 1888 *

c) Aedeagus as in Fig. 41: 4. Length 1.6-2.0 mm. Ukraine: Crimea (specimens from envir. Simferopol)..... ..... *L.* sp. ** (close to *L. sogdianus* Lop., 1956 from Tadzhikistan)

81. Sphaeroderma Steph., 1831

Larvae develop within leaf mines, pupate in the soil.

1(2) Broadly-oval (Fig. 28: 12). Anterior corners of pronotum prominent from general outline of lateral side (Fig. 42: 2). Pronotum with coarse punctures near base and fine punctures anteriorly. Lateral sides of pronotum swollen, therefore lateral margin not visible from above. Length 2.5–4.5 mm. Total fig. 81. From deciduous-coniferous forest zone (Estonia and Latvia (Silfverberg, 1992)) to steppe zone. Europe, Caucasus. *Cirsium, Carduus*..... ..... *S. testacea* (F., 1775) **

2(1) Sub-circular (Fig. 42: 3). Anterior corners of pronotum not prominent from general outline of lateral side (Fig. 42: 1). Pronotum uniformly finely punctate. Lateral sides of pronotum not swollen, therefore lateral margin visible from above. Length 2.3–3.1 mm. Lithuania; Byelarus; ER. Europe, N. Africa, Asia Minor, Caucasus. *Centaurea, Carduus, Onopordum*..... ..... *S. rubida* (Graells, 1858) **

82. Argopus Fisch., 1824

Larvae develop within leaf mines, pupate in the soil.

1(2) Upper side of mid- and hind-tibiae in apical half with broad longitudinal furrow delimited by ridges. Entirely rufous. Length 3.5–4.8 mm. Total fig. 82. From deciduous-coniferous forest zone to forest steppe zone. C. and S.-E. Europe, Caucasus. *Clematis*..... ..... *A. ahrensii* (Germ., 1817) (*ahrensi* auct.) **

2(1) Upper side of mid- and hind-tibiae without furrow, but with narrow longitudinal mid ridge.

3(4) Dorsum rufous, 4th–11th antennomeres, underside, and legs black, hypomera of prothorax rufous. Length 3.5–5.0 mm. Forest steppe and steppe zones. Caucasus. *Clematis, Pulsatilla*..... *A. bicolor* Fisch., 1824 **

4(3) Body rufous, with 4th–11th antennomeres, tibiae, and tarsi black. Length 3.6–4.2 mm. From taiga zone (ER: Udmurt Republic) to forest steppe zone, steppe zone east of Dnepr. E. Europe, Kazakhstan, Siberia, Mongolia, China, Korea, Japan. *Pulsatilla, Adonis, Clematis, Phytolacca*..... ..... *A. nigritarsis* (Gebl., 1823) **

83. Apteropeda Chevr. in Dej., 1836

Larvae develop within leaf mines, pupate in the soil.

1(2) Fourth and 5th antennomeres subequal in length (Fig. 42: 5). Dorsum metallic green, blue, violet, coppery, or bronze-brown. Antennal calli very small, separated from each other and from vertex by furrows. Anterior corners of pronotum laciniate. Length 2.2–2.6 mm. Total fig. 83. Ukraine: Carpathians (Medvedev, Shapiro, 1965). Denmark, C. and S. Europe (mostly in mts.). Lamiaceae, Scrophulariaceae, Asteraceae, Plantaginaceae, Primulaceae..... *A. orbiculata* (Marsh., 1802) *

2(1) Fifth antennomere distinctly longer than 4th (Fig. 42: 4). Dorsum black with metallic green or blue reflection.

3(4) Vertex covered with coarse punctures as large as those on pronotal disk. Antennal calli small, separated from each other and from vertex by deep furrows. Length 2.5–3.0 mm. Ukraine: Carpathians (Medvedev, Shapiro, 1965). Denmark, Pyrenees, Alps, Sudeten, Dinara Mts. Lamiaceae..... ..... *A. globosa* (Ill., 1794) *

4(3) Vertex covered with fine punctures considerably smaller than those on pronotal disk. Antennal calli large, separated from each other and from vertex by indistinct impressions. Length 2.4–2.8 mm. Ukraine: Carpathians (Medvedev, Shapiro, 1965). Denmark, C. Europe (mts.). *Ajuga, Plantago, Veronica*..... *A. splendida* All., 1860 *

84. Chaetocnema Steph., 1831

Larvae occur on roots or within the stems of herbaceous plants.

1(22) Frontal ridge convex, narrow, delimited by furrows at sides (Fig. 43: 2), if frontal ridge flattened, broad, then elytra yellow with dark pattern. Subgenus *Tlanoma* Motsch., 1845.

2(19) Dorsum metallic: blue, green, or bronze.

3(8) Pronotum weakly narrowed towards apex. Body elongate, usually 3 mm long or more.

4(5) Pronotum with punctation homogenous. Anterior corners of pronotum strongly prominent outside. Dorsum usually dark blue. Length 2.6–4.0 mm. From deciduous forest zone to semidesert zone. S. Europe, N. Africa, Asia Minor, Israel, Mesopotamia, Iran, Caucasus, Kazakhstan, N.-E. China. *Calamagrostis*..... *Ch. major* (Jacquelin du Val, 1852) **

5(4) Pronotum with mixed coarse and very fine punctures. Anterior corners of pronotum weakly prominent. Body pale blue, green, or bronze.

6(7) Pronotum with basal furrows distinct, deep. Aedeagus with apex symmetrical (Fig. 29: 11). Length 3.0–3.5 mm. Total fig. 84. Deciduous-coniferous forest zone (ER: Moscow reg. (Melgunov, 1892)), forest steppe and steppe zones, Carpathians. C. Europe, Mediterranean and Black Sea basins. *Calamagrostis*..... *Ch. chlorophana* (Duft., 1825) **

7(6) Pronotum with basal furrows reduced or absent. Aedeagus with apex asymmetrical (Fig. 29: 12). Length 2.5–3.5 mm. Ukraine: Crimea (Gruev, 1992, cited after Warchałowski, 1998); ER: desert zone (Shapiro, 1969). Mediterranean reg., Caucasus, Iran..... *Ch. coyei* (All., 1863) *

8(3) Pronotum distinctly narrowed towards apex. Body smaller (length 1.1–3.0 mm), oval, with humeral calli developed; if body elongate, with weak humeral calli, then length 1.7–2.2 mm. Pronotum without deep basal furrows, at most with shallow oblique impressions.

9(10) Elongate (Fig. 43: 11). Humeral calli very weak, not separated by impression interiorly. Vertex with 10–12 punctures at each side. Pronotum without impressions. Elytral intervals covered with fine punctures. Bronze. Length 1.7–2.2 mm. From deciduous-coniferous forest zone to steppe zone. Mediterranean reg., Caucasus, C. Asia, Iraq, Iran. *Fagopyrum, Rumex, Polygonum.* ..... *Ch. scheffleri* (Kutsch., 1864) **

10(9) Oval (Fig. 43: 12). Humeral calli prominent.

11(16) Pronotum near basal border with row of punctures coarser than those on disk, and with shallow oblique impressions near base on each side.

12(13) Vertex with no less than 10 punctures on each side. Head and pronotum bronze, elytra blue or bluish-green, rarely bronze. Fore- and mid-legs entirely rufous. Length 2.0–3.0 mm. From taiga zone to steppe zone. C. and S. Europe, Asia Minor, Caucasus, Kazakhstan, Siberia. *Calamagrostis, Phalaris, Salix*..... *Ch. semicoerulea* (Koch, 1803) **

13(12) Vertex with 3–6 punctures on each side. Dorsum dark bronze, some specimens greenish. Fore- and mid-femora black, tibiae usually darkened, tarsi rufous.

14(15) In male, last antennomere flask-shaped, blunted apically (Fig. 43: 3); 1st protarsomere 1.3–1.6 X as broad as 2nd. Aedeagus distinctly broadened in apical half, thicker (0.10–0.12 mm) in lateral view (Fig. 43: 5). First antennomere, as a rule, slightly darkened, 2nd and 3rd pale, others gradually darkened. Length 1.8–2.4 mm. From taiga zone to steppe zone. Transpalaearctic species. *Rumex, Polygonum, Rheum*..... ..... *Ch. concinna* (Marsh., 1802) **

15(14) In male, last antennomere spindle-shaped, pointed apically (Fig. 43: 4); 1st protarsomere 1.5–2.0 X as wide as 2nd. Aedeagus almost parallel-sided, not broadened towards apex, thinner (0.06–0.10 mm) in lateral view (Fig. 43:

6). Coloration of antennae as in previous species or darker. Length 1.7–2.3 mm. Estonia; Latvia; Lithuania; Byelarus; Ukraine; Moldova (Pridnestrovie); ER: from deciduous-coniferous forest zone to forest steppe zone, S. Urals. Europe, Algeria, Caucasus, Kyrghyzstan, Siberia, Far East. *Polygonum*..... *Ch. laevicollis* (Thoms., 1866) (*heikertingeri* Lyubischev, 1963) **

16(11) Pronotum near basal border without coarse punctures and without oblique impressions.

17(18) Aedeagus bent down at apex (Fig. 43: 8). Vertex usually with 8–10 punctures on each side near eye. Length 1.5–2.0 mm. Latvia (Putele, 1970); Ukraine; Moldova; ER: from deciduous-coniferous forest zone to steppe zone. Mediterranean reg., Caucasus, Kazakhstan, C. Asia, Mesopotamia, Iran, Afghanistan. *Beta, Atriplex, Chenopodium, Salsola, Salicornia*..... ..... *Ch. tibialis* (Ill., 1807) **

18(17) Aedeagus not bent down at apex (Fig. 43: 7). Vertex usually with 3–5 punctures on each side near eye. Length 1.5–2.1 mm. Latvia (Putele, 1970); Ukraine; Moldova; ER: from deciduous-coniferous forest zone to desert zone. S.-E. Europe, Asia Minor, Syria, Caucasus, Kazakhstan, C. Asia (mts.), Siberia, Mongolia, N. China, Korea. *Atriplex, Beta, Chenopodium, Haloxylon, Salsola*, Amaranthaceae..... *Ch. breviuscula* (Fald., 1837) **

19(2) Elytra yellow or rufous, with dark pattern.

20(21) Elytra yellow, with suture, lateral stripe, and humeral calli black or pitchy brown. Head and pronotum bronze-green. Vertex with numerous punctures, only longitudinal mid line devoid of them. Length 1.6–2.0 mm. Ukraine: steppe zone; ER: from deciduous forest zone to semidesert zone. Mediterranean reg., Caucasus, Kazakhstan, C. Asia. *Carex, Eleocharis, Juncus*, Poaceae..... *Ch. conducta* (Motsch., 1838) **

21(20) Elytra rufous, with diffuse transverse brown band reaching scutellum. Head and pronotum bronze-green. Vertex with only several punctures at sides near each eye. Length 1.5–2.5 mm. Steppe and semidesert zones, S. Urals (Ilmensky Res. (Lagunov, Novozhenov, 1996)). Caucasus, Kazakhstan, Kyrghyzstan. Chenopodiaceae. Mostly on salt-marshes..... ..... *Ch. nebulosa* Wse., 1886 **

22(1) Frontal ridge wide, flat (Fig. 43: 1). Dorsum dark metallic or black with metallic reflection. Subgenus *Chaetocnema* s.str.

23(24) Mesepisterna, mesepimera, metepisterna, and lateral side of abdominal sternites covered with dense white setae. Elytra with punctures arranged in regular rows at whole surface or partly double and confused (mostly near scutellum). Humeral calli weakly prominent. Dorsum bronze, blue, greenish, or dichromatic: head and pronotum bronze-black with green reflection, elytra dark blue. Length 2.0–2.8 mm. From taiga zone (specimens from Udmurt Republic) to forest steppe zone, river valleys in desert zone (ER: Astrakhan reg.). C. and S. Europe, N. Africa, Asia Minor, Near East, Caucasus, Kazakhstan, Siberia. *Alopecurus, Juncus, Eleocharis, Carex*. In swamps..... ..... *Ch. obesa* (Boield., 1859) (*meridionalis* Foudr., 1859) **

24(23) Mesepisterna, mesepimera, metepisterna, and lateral side of abdominal sternites without dense white setae.

25(30) Elytra with punctures arranged in regular rows, only abbreviated sutural row sometimes with 1–3 additional punctures or doubled.

26(27) Elytra broad, with humeral calli convex (Fig. 43: 13). Sutural row with 1–3 additional punctures or doubled. Vertex covered with deep dense

punctures. Dorsum shining, coppery-bronze or black with bronze reflection. Length 1.6–2.2 mm. From taiga zone to steppe zone. Europe, Caucasus, Siberia. *Scirpus, Eleocharis.* In swamps..... *Ch. aerosa* (Letzn., 1847) **

27(26) Elytra narrow, without humeral calli (Fig. 43: 14). Sutural puncture row without additional punctures, not doubled.

28(29) Pronotum less convex at sides, not forming distinct constriction between pronotum and elytra. Dorsum usually unicolorous black with weak greenish or bluish reflection. Vertex covered with indistinct punctures. Aedeagus as in Fig. 29: 13. Length 1.5–2.2 mm. From taiga zone (specimens from Udmurt Republic) to steppe zone. C. Europe, Black Sea basin, Kazakhstan. *Carduus*..... *Ch. compressa* (Letzn., 1847) **

29(28) Pronotum more convex at sides, forming distinct constriction between pronotum and elytra. Dorsum usually bicolorous: head and pronotum black with bronze reflection, elytra black with violet, bluish, or greenish reflection. Vertex covered with distinct punctures as large as pronotal punctures. Aedeagus similar to that of previous species. Length 1.8–2.4 mm (male), 2.0–2.7 mm (female). From deciduous forest zone to steppe zone (Konstantinov, 1988), Carpathians (Palij, 1959). Mediterranean reg..... ..... *Ch. procerula* (Rosenh., 1856) *

30(25) Elytra with puncture rows (besides sutural row) confused or double along suture or near base, or elytral disk entirely confusedly punctate, or elytra with punctures arranged in double rows in most part and almost regular rows laterally.

31(32) Pronotal disk with fine dense punctures and almost smooth interspaces. Body short and broad. Elytra with coarse punctures. Dorsum black with weak greenish or bluish tint. First–4th antennomeres, tibiae, and tarsi rufous. In male, 1st tarsomere strongly broadened, but not broader than 3rd. Length 1.8–2.5 mm. Estonia and ER: taiga zone (Karelia) (Warchałowski, 1998); Latvia (Putele, 1970); Ukraine: Crimea (Simferopol). Europe, Asia Minor, Caucasus. *Juncus, Carex*..... *Ch. confusa* (Boh., 1851) **

32(31) Pronotal disk with coarse or fine punctures and distinctly shagreened intervals.

33(42) Dorsum bronze, coppery or bronze-green.

34(37) Punctures on pronotum coarse, deep, almost as large as those on elytra.

35(36) Basal antennomeres darkened dorsally. Aedeagus with lateral sides convex; ventrally with mid depression 2 X as broad as lateral callus (Fig. 44: 1). Length 1.8–2.6 mm. ER: S. Urals (Bashkortostan (Konstantinov, 1988)). S.-E. Europe, Asia Minor, Caucasus, C. Asia, Afghanistan..... ..... *Ch. montenegrina* Hktg., 1912 *

36(35) First antennomere always rufous, several following usually rufous. Aedeagus arc-shaped in lateral view; laterally parallel-sided; ventrally with mid depression as broad as lateral callus (Fig. 44: 2). Length 1.5–2.3 mm. From taiga zone to semidesert zone. Transpalaearctic species. Cereals and wild Poaceae, *Chenopodium, Cyperus*..... *Ch. hortensis* (Geoffr., 1785) **

37(34) Punctures on pronotum fine, shallow, considerably smaller than those on elytra. First antennomere usually darkened.

38(41) Elytral punctation confused on disk and arranged in rows on lateral sides.

39(40) Elongate-oval (Fig. 43: 9). Elytral punctation sparser and coarser. Body dark bronze. First antennomere darkened above. Aedeagus as in Fig. 44: 3. Length 2.0–2.5 mm. From taiga zone (Komi: Syktyvkar; specimens from

ER: Murmansk reg.: Kandalaksha Distr.: Arctic Circle) to steppe zone. Transpalaearctic species. Cereals and wild Poaceae..... ..... *Ch. aridula* (Gyll., 1827) **

40(39) Broadly-oval (Fig. 43: 10). Elytral punctation denser and shallower. Bronze-green. Aedeagus as in Fig. 44: 4. Length 2.0–2.5 mm. Ukraine: Crimea (mts. (Medvedev, Shapiro, 1965; Warchałowski, 1998)). Mediterranean reg., Caucasus. *Poa, Bromus*..... *Ch. arenacea* (All., 1860) *

41(38) Elytral punctation mostly regular and confused only along suture or near base. Broadly-oval, with humeral calli weakly convex. Dark bronze-green. Length 1.5–2.0 mm. Latvia (Putele, 1970); Lithuania (Pileckis, 1976, cited after Warchałowski, 1998); forest steppe and steppe zones (Medvedev, Shapiro, 1965); Crimea (mts. (Shapiro, 1961)); Carpathians (Konstantinov, 1991). C. Europe, Mediterranean and Black Sea basins. *Carex, Cyperus, Juncus*..... *Ch. arida* Foudr., 1860 *

42(33) Dorsum blue, bluish-green, violet, or black with blue tint.

43(44) Pronotal punctures coarse and deep, punctures near pronotal base almost as large as those on elytra near base. Dorsum dark blue, rarely violet or bluish-green. First–5th antennomeres, tibiae, and tarsi rufous, 1st antennomere darkened from above, 4th tarsomere darkened apically. Length 1.8–2.3 mm. From taiga zone to steppe zone. Europe, Asia Minor, Caucasus, Siberia, Far East, Mongolia. *Carex, Alopecurus.* In swamps..... ..... *Ch. sahlbergii* (Gyll., 1827) (*sahlbergi* auct.) **

44(43) Pronotal punctures fine.

45(46) Humeral calli convex (Fig. 45: 1). Elytral disk usually with punctures arranged in double rows. At least 2nd–4th antennomeres, tibiae, and tarsi rufous; tibiae usually darkened medially. Dark blue, usually with violet tint. Body larger (length 2.2–2.8 mm). From taiga zone to semidesert zone. Europe, Caucasus, Kazakhstan, C. Asia, Siberia, Mongolia. Cereals and wild, especially, marsh Poaceae..... ..... *Ch. mannerheimii* (Gyll., 1827) (*mannerheimi* auct.) **

46(45) Humeral calli weak or absent (Fig. 45: 2). Elytral disk with punctures confused, but not arranged in double rows. Second–4th antennomeres, tibiae, and tarsi rufous or brown. Sometimes, tibiae pitchy black with bases reddish. Blackish-blue. Body smaller (length 1.8–2.2 mm). Taiga zone (specimens from ER: Murmansk reg.: Kandalaksha Distr.: Arctic Circle), from deciduous forest zone to steppe zone. Europe. *Carex, Juncus, Eleocharis, Dactylis, Glyceria.* In swamps..... *Ch. subcoerulea* (Kutsch., 1864) **

85. Dibolia Latr., 1829

Larvae mine leaves, pupate in the soil.

1(6) First metatarsomere below with brush of setae in apical half only (Fig. 28: 8). Legs rufous with exception of dark hind-femora.

2(3) Elytra sericeous shining, covered with fine punctures confused or arranged in rows. Dorsum brownish-bronze, bronze-black, bronze-green, or blackish-green. Length 3.0–4.0 mm. Total fig. 85. Deciduous forest zone (Byelarus: Gomel reg. (Laurova, 1986)), forest steppe and steppe zones, semidesert zone (specimen from ER: Saratov reg.: Aleksandrov-Gai), desert zone (specimen

from ER: Astrakhan reg.: Bolshoj Bogdo Mt.), Crimea. C. and S.-E. Europe, Asia Minor, Caucasus, Kazakhstan. *Salvia*.....
.....*D. metallica* Motsch., 1845 (*schillingii* Letzn., 1847) **

3(2) Elytra very shining, with punctation coarser.

4(5) Body smaller. Dorsum black with weak blue tint. Elytral disk with punctures arranged in distinct rows. Length 2.8 mm (female). Byelarus (Minsk, Bobruisk (Mohr, 1981), Gomel reg.: Petrikov Distr. (Laurova, 1986)); ER: semidesert zone (Volgograd: "Sarepta" (Mohr, 1981)), Europe: Croatia (Vinkovce). *Salvia* (?).....*D. russica* Wse., 1893

5(4) Body larger. Dorsum bronze-green, bluish-green, bronze-brown, or blackish. Elytra with confused punctation. Length 3.0–3.8 mm. From deciduous forest zone to steppe zone, Crimea (Shapiro, 1961). C. and S. Europe, N. Africa, Caucasus. *Salvia*.....*D. femoralis* L. Redt., 1849 **

6(1) First metatarsomere below with brush of setae along entire length (Fig. 28: 7).

7(8) Legs rufous with exception of dark hind-femora. Dorsum unicolorous bluish-green or dichromatic: pronotum dark bronze-green, bronze, or bluish-bronze, elytra blackish-blue. Length 2.6–3.0 mm. From deciduous forest zone to steppe zone, S. Urals. S.-E. Europe, Asia Minor, Caucasus, Kazakhstan. *Nepeta*.....*D. carpathica* Wse., 1893 **

8(7) Fore- and mid-femora almost entirely blackish-brown.

9(18) Antennal impression long, margined from above (Fig. 28: 9C).

10(11) Frontal pores (Fig. 28: 9F) connected with sharp straight supracallinal sulcus (Fig. 28: 9A). Body elongate. Dorsum sericeous shining, dark bronze, usually with greenish tint. Length 2.7–3.3 mm. Ukraine: Carpathians (Medvedev, Shapiro, 1965). C. and S. Europe, N.-W. Africa, Caucasus. *Eryngium*.....*D. timida* (Ill., 1807) *

11(10) Frontal pores not connected with supracallinal sulcus (Fig. 45: 7), or connected with only indistinct arc-shaped impression.

12(15) Dorsum black, sometimes with weak metallic reflection.

13(14) Elytra with dense punctures arranged in rows; interspaces between these punctures not wider than diameter of puncture; intervals between rows finely punctate. Legs rufous with exception of dark femora. Antennae pale, with 10th and 11th antennomeres slightly darkened. Dorsum black without metallic reflection. Aedeagus as in Fig. 45: 5. Length 2.4–3.2 mm. From taiga zone (specimens from ER: Udmurt Republic) to steppe zone, Crimea. C. and S. Europe, Caucasus. *Stachys, Betonica*.....*D. foersteri* Bach, 1859 **

14(13) Elytra with sparse punctures arranged in rows; interspaces between punctures in row usually wider than diameter of punctures; intervals between rows covered with punctures as large as those in rows. At least mid- and hind-legs with brown tibiae. Five–7 apical antennomeres dark. Dorsum black with bronze tint, more distinct on pronotum. Aedeagus as in Fig. 45: 6. Length 2.3–3.0 mm. From taiga zone to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, Siberia. Lamiaceae .....
.....*D. depressiuscula* (Letzn., 1847) **

15(12) Dorsum bright bronze, greenish, coppery, or bluish. Tibiae and tarsi rufous, with hind-tibiae not more than weakly darkened.

16(17) Pronotum and elytra with numerous, rather coarse punctures and shining, more or less wrinkled interspaces. Elytra usually with punctures arranged in rows. Dorsum coppery-green, very shining. Length 2.4–3.0 mm.

Estonia and Latvia (Silfverberg, 1992); Ukraine (from deciduous forest zone to steppe zone (Warchałowski, 1998)); ER: steppe zone (Rostov reg.). Europe, W. Siberia. *Stachys, Cynoglossum, Marrubium*..... ..... *D. cynoglossi* (Koch, 1803) *

17(16) Pronotum and elytra very finely shagreened, sericeous. Pronotum covered with fine punctures. Elytra without distinct rows of punctures. Dorsum bronze-green. Length 2.6–3.2 mm. Forest steppe and steppe zones. Europe, Caucasus, W. Siberia. *Stachys, Salvia, Mentha*..... ..... *D. rugulosa* L. Redt., 1849 **

18(9) Antennal impression absent or very short and not margined from above.

19(20) Fore- and mid-tibiae pitchy brown with knees pale. First antennomere dark at least in basal half. Dorsum unicolorous: blackish-green with weak metallic reflection or dichromatic: pronotum bronze, elytra blackish-bluish-green. Humeral calli convex (Fig. 45: 3). Length 2.4–2.7 mm. From deciduous-coniferous forest zone to steppe zone. Europe, N. Africa, Asia Minor. *Mentha, Leonurus*..... *D. occultans* (Koch, 1803) **

20(19) Fore- and mid-tibiae rufous. First antennomere pale. Dorsum dark green with bronze reflection or dark bronze. Humeral calli very weak (Fig. 45: 4). Length 1.8–2.6 mm. From deciduous-coniferous forest zone (Estonia and Lithuania (Silfverberg, 1992)) to steppe zone. C. and S. Europe, Caucasus, Kazakhstan, W. Siberia. *Eryngium, Salvia, Mentha*, Boraginaceae..... .....*D. cryptocephala* (Koch, 1803) **

86. Psylliodes Berthold, 1827

Larvae occur on roots or within the stems, pupate in the soil.

1(4) Hind-tarsi attached to tibiae exactly at middle of its length; 1st metatarsomere with apex reaching base of tibia (or almost so) (Fig. 28: 4). Head easily visible from above (Fig. 46: 7, 8). Subgenus *Semicnema* Wse., 1888.

2(3) Labrum with anterior border straight. Elytra 3.3–4.2 X as long as pronotum (Fig. 46: 7). Body dark bronze-green or blackish-green, sometimes reddish-brown, with pronotum and elytra bearing bronze-green tint; antennae and legs rufous with exception of dark hind-femora. Aedeagus as in Fig. 46: 2. Length 2.2–3.5 mm. *Phragmites.*

a) Deciduous forest zone. Europe.....*P. reitteri reitteri* Wse., 1888 **

b) ER: semidesert and desert zones (lower reaches of Volga). Kazakhstan, C. Asia, Siberia, Far East, Mongolia.... *P. reitteri parallelus* Wse., 1890 **

3(2) Labrum with anterior border emarginate. Elytra 2.9–3.2 X as long as pronotum (Fig. 46: 8). Body bronze-green, blackish-bronze, or dark brown; antennae and legs rufous with exception of hind-femora, sometimes also fore- and mid-femora blackish. Aedeagus as in Fig. 46: 1. Length 1.7–2.2 mm. ER: semidesert and desert zones. Kazakhstan. *Agropyron, Achnatherum*... ..... *P. macellus agropyri* Palij, 1961 (*agropyri* Palij) **

4(1) Hind-tarsi usually attached to tibiae near tibial apex (in *P. cucullatus*, tarsi attached near middle and only slightly closer to apex of tibia than to base, however, in this species head almost invisible from above, Fig. 47: 13); 1st tarsomere of hind-tarsi with apex usually not reaching base of tibia (Fig. 28: 5, 6). Subgenus *Psylliodes* s.str.

5(56) Body mostly elongate-oval (Fig. 47: 11–14), if broadly-oval, convex, then humeral calli well-defined.

6(45) Hind-tibiae weakly broadened at middle (Fig. 28: 5).

7(36) Elytra blue, green, bronze, or black with metallic reflection throughout or with apex reddish.

8(9) Head almost invisible from above. Body narrow. Pronotum with lateral slopes almost plumb (Fig. 47: 13). Body dark bronze with green tint, rarely bluish. Legs rufous, with hind-femora bronze, fore- and mid-femora usually darkened. Length 2.0–2.8 mm. From taiga zone to steppe zone. Europe, Caucasus, Kazakhstan, C. Asia, Siberia, Far East, Mongolia, China. Brassicaceae, Poaceae, Polygonaceae, *Allium, Spergula*. . . . . *P. cucullatus* (Ill., 1807) **

9(8) Head oblique, clearly visible from above. Body broader. Pronotum more gently sloping laterally (Fig. 47: 11, 12, 14).

10(11) Supracallinal sulci sharp. Dorsum bronze-green or bronze-black, with elytral apices usually reddish; in some specimens, reddish marking almost invisible. Length 1.8–2.6 mm. From taiga zone to desert (specimen from ER: Astrakhan reg.: Akhtuba river valley) zone. Transpalaearctic species. *Cannabis, Humulus, Urtica, Phaseolus, Solanum, Chenopodium, Beta, Linum, Arctium*. . . . . *P. attenuatus* (Koch, 1803) **

11(10) Supracallinal sulci weak or absent. Coloration of elytra metallic or black throughout.

12(13) Lateral margin of pronotum without angular projection in anterior 1/4 (Fig. 47: 6). Dorsum bluish-green, with frons, clypeus, labrum, basal antennomeres, and legs rufous with exception of hind-femora bronze-black and bases of fore- and mid-femora usually black. Length 3.0–4.5 mm. From taiga zone to steppe zone. Europe, N. Africa, Caucasus, Kazakhstan, Siberia. Brassicaceae. . . . . *P. chrysocephalus* (L., 1758) (*sophiae* Ill., 1807) **

13(12) Lateral margin of pronotum bearing angular projection in anterior 1/4 (Fig. 47: 5).

14(15) Head and pronotum rufous (rarely pronotum black), elytra blue or green. Length 2.8–3.8 mm. From deciduous-coniferous forest zone to steppe zone. Europe, N. Africa, Asia Minor, Caucasus, Kazakhstan, C. Asia, Siberia. *Sisymbrium, Descurainia*. . . . . *P. tricolor* Wse., 1888 (*sophiae* Hktg., 1914 nec Ill., 1807; *cyanoptera* L. Redt., 1849) **

15(14) Dorsum unicolorous metallic, or metallic with head brown with metallic reflection.

16(35) Hind-femora black or metallic: green, blue, or coppery.

17(22) Elytra less than 3.4 (male) or 3.55 (female) X as long as pronotum. Pronotum convex.

18(19) Fore- and mid-legs yellow, rarely with femora partly darkened. Dorsum shining, blackish-blue, rarely green; head usually brown with strong metallic reflection. Body broader, broadly-oval (Fig. 47: 12). Pronotum usually slightly narrowed from base to anterior setiferous pores; lateral margins thick, clearly visible from above. Elytra 3.2 (male) or 3.25 (female) X as long as pronotum, or more. Maximal width of elytra near their mid-point. Aedeagus as in Fig. 47: 3. Length 2.3–3.0 mm. From taiga zone to steppe zone. Europe, N.-W. Africa, Asia Minor, Caucasus, Kazakhstan, Siberia. Brassicaceae. . . . . *P. napi* (F., 1792) **

19(18) Fore- and mid-legs mostly with partly darkened femora. Dorsum black with blue, green, or brown tint. Body usually more spindle-shaped. Pronotum more narrowed from base to anterior setiferous pores. Maximal width of elytra in basal 1/3.

20(21) Body usually larger, with pronotum less transverse, elytra usually more than 1.9 mm long. Hind wings normally developed or reduced, but usually more than 0.6 X as long as elytra. Fore- and mid-tibiae usually pale or weakly darkened. Elytra less than 3.2 (male) or less than 3.25 (female) X as long as pronotum. Elytral rows with punctures usually fine; intervals weakly convex, usually covered with punctures fine but distinct. In male, 1st protarsomere broadened or not. Aedeagus as in Fig. 47: 2. Length 2.7–3.4 mm. Ukraine: Crimea (Alushta (Konstantinov, 1990)); ER: deciduous forest zone (Ulyanovsk reg.). Sweden, C. and S.-E. Europe..... ..... *P. brisouti* Bedel, 1898 **

21(20) Body usually smaller, with pronotum more transverse (Fig. 47: 14), elytra usually less than 1.9 mm long. Hind wings reduced, usually not more than 0.6 X as long as elytra. Fore- and mid-legs rather dark, femora, tibiae, and usually tarsi more or less darkened. Elytra 3.15–3.35 (male) or 3.2–3.5 (female) X as long as pronotum. Elytral rows with punctures usually very coarse; intervals convex (as in *P. napi*), dull, finely shagreen, impunctate. In male, 1st protarsomere very broadened (Fig. 47: 14). Aedeagus as in Fig. 47: 4. Length 2.5–2.9 mm. Ukraine: forest steppe zone (Poltava (Lopatin, 1977b)). Germany, Austria, Italy, Slovakia, Asia Minor..... ..... *P. vindobonensis* Hktg., 1914 *

22(17) Elytra usually 3.4 (male) or 3.55 (female) X as long as pronotum or more. Pronotum moderately convex or flattened. Body elongate-oval (Fig. 47: 11).

23(24) Elytra distinctly flattened dorsally (Fig. 47: 9). Elytral striae with coarse punctures. Punctures in posterior half of elytral disk coarser than punctures on pronotum near base. Elytral intervals more or less convex on declivity. Dorsum bronze-green with blue tint, antennae rufous-yellow with apices darkened, apices of femora, tibiae, and tarsi rufous-brown, femora and usually middle of tibiae darkened. Ventral surface of aedeagus with mid area broad along entire length and gradually deepened from base to middle (Fig. 47: 1). Length 2.9–3.3 mm. Ukraine: steppe zone (specimen from Odessa). Caucasus.....*P. deplanatus* L. Medv., 1962 **

24(23) Elytra convex (Fig. 47: 10). Elytral striae with finer punctures. Elytral intervals flat on declivity.

25(34) Orbital line deep, reaching antennal callus (Fig. 46: 11).

26(31) Elytral striae with punctures considerably coarser than punctures on pronotal disk.

27(30) Dorsum blue, bluish-green, green, or coppery-green. Elytra moderately shining, shagreened.

28(29) Tibiae medially and usually fore- and mid-femora dark. Ventral surface of aedeagus with mid area shallow basally and deep medially, with sharp plumb ledge between these parts (Fig. 46: 4). Length 2.6–3.8 mm. Steppe zone. C. and S. Europe. *Lepidium, Isatis.* ..... *P. thlaspis* Foudr., 1860 **

29(28) Fore- and mid-legs mostly yellow. Ventral surface of aedeagus with mid area gradually deepened from base to middle, covered with distinct transverse furrows (Fig. 46: 3). Length 2.9–4.1 mm. Ukraine: steppe zone (Black

Sea Coastal Plain: Skadovsk (Leonardi, Arnold, 1995)); Moldova (specimen from Pridnestrovie: Jagorlyk). Yugoslavia, Caucasus..... ..... *P. wrasei* Leonardi et Arnold, 1995 **

30(27) Dorsum dark coppery or blackish-bronze. Elytra very shining, not shagreened. Fore- and mid-femora basally and usually tibiae medially black. Elytral intervals narrow, at middle of disk 1.5 X as wide as diameter of punctures in rows or narrower. Length 2.2–2.6 mm. Ukraine; ER: deciduous-coniferous forest zone (Tatarstan). C. Europe, Caucasus, Kazakhstan, Uzbekistan, Kyrghyzstan, Siberia, Mongolia. Brassicaceae, Chenopodiaceae..... ..... *P. cupreatus* (Duft., 1825) **

31(26) Elytral striae with punctures fine (punctures almost as large as punctures on pronotal disk or slightly larger).

32(33) Dorsum blue, shining. Fore-legs usually entirely pale. Aedeagus with apex more produced and tapered (Fig. 46: 6). Length 2.5–3.2 mm. From deciduous-coniferous forest zone to steppe zone. Europe, Caucasus, Kazakhstan, Uzbekistan, Siberia, Mongolia. *Isatis, Lepidium.* Mostly in salt-marshes..... *P. isatidis* Hktg., 1913 (*cuprea* morpha *isatidis* Hktg.) **

33(32) Dorsum dark bronze-green or blue, sericeous. Legs rufous with exception of dark hind-femora, in some specimens also fore- and mid-femora darkened basally. Aedeagus with apex rounded and less produced (Fig. 46: 5). Length 2.5–3.2 mm. From deciduous-coniferous forest zone to steppe zone. Europe, N. Africa, Caucasus, Kazakhstan, Kyrghyzstan, Siberia. Brassicaceae..... ..... *P. cupreus* (Koch, 1803) **

34(25) Orbital line deep only near posterior border of eye, distinctly narrowed towards antennal callus (Fig. 46: 10). Humeral calli weakly developed. Black with bronze tint or dark green. Elytral intervals wrinkled and covered with obsolete punctation. Length 2.0–2.5 mm. From deciduous-coniferous forest zone to steppe zone. S. Europe, N. Africa, Asia Minor, Caucasus. *Sinapis, Erysimum, Alyssum, Iberis, Fagus.*... *P. instabilis* Foudr., 1860 **

35(16) Hind-femora rufous or reddish-brown, with upper border darkened near apex. Body bluish-green or bronze-green. Elytral intervals with rather coarse punctures, arranged in 2 rows in each interval. Length 2.8–3.8 mm. Ukraine (west of Dnepr (Medvedev, Shapiro, 1965)). Mediterranean reg., Poland, Caucasus..... *P. fusiformis* (Ill., 1807) *

36(7) Elytra unicolorous: yellow, rufous, brown, or rufous with black suture.

37(40) Body longer (length 2.8–4.9 mm). Dorsum unicolorous, rufous or rufous-yellow.

38(39) Usually shorter (length 2.8–3.6 mm). Rufous, in some specimens with hind-femora brown. Vertex and pronotum with coarse punctation (punctures distinctly larger than those on elytral intervals) and with interspaces slightly wrinkled. Elytral puncture rows deepened forming furrows with convex intervals. Estonia (Silfverberg, 1992); Latvia (Baltic Sea shore (Lopatin, 1986)); Ukraine: Crimea (Black Sea shore, foot-hills, jaila) (Shapiro, 1961); ER: taiga zone (Karelia (Silfverberg, 1992)). Sea shores of Europe and N. Africa northwards to Gulf of Bothnia, Caucasus. *Cakile, Crambe, Alyssum.* ..... *P. marcidus* (Ill.. 1807) *

39(38) Usually longer (length 3.5–4.9 mm). Rufous or rufous-yellow, in some specimens with metasternum and abdominal sternites darkened. Vertex and pronotum with fine punctation (punctures almost as large as in elytral intervals) and with interspaces plane. Elytral puncture rows not deepened,

intervals flat. ER: deciduous forest (Ulyanovsk), steppe (Rostov reg.) and semidesert (Volgograd reg.) zones. Kazakhstan. *Solanum*..... ..... *P. rhaica* Jcbs., 1922 **

40(37) Body shorter (length usually 1.8–2.8 mm, if length up to 3.0 mm, then head, elytral suture and apex darkened).

41(42) Head and pronotum reddish-brownish-yellow with metallic green reflection, elytra pale yellow, hind-femora usually blackish. Length 1.8–2.5 mm. Forest steppe and steppe zones east of Dnepr, Crimea. Caucasus. Kazakhstan. *Atriplex, Chenopodium, Beta*..... ..... *P. saulcyi* All., 1867 (*atriplicis* Jcbs., 1922) **

42(41) Dorsum without metallic reflection; elytral suture usually darkened; hind-femora usually brown or black.

43(44) Vertex shagreened, impunctate. Rufous, with black (brown) sutural stripe not broadened apically, head brown or black, underside and hind-femora (entirely or apically) blackish. Length 2.0–2.8 mm. Total fig. 86. From taiga zone to forest steppe zone, Crimea. Europe, Caucasus, Siberia, N. America. Solanaceae..... *P. affinis* (Pk., 1799) **

44(43) Vertex covered with well-defined, dense punctures. Rufous, with head and sometimes pronotum pitchy black; black sutural stripe apically broadened and extending over entire apical part of elytra. Length 2.2–3.0 mm. Ukraine: Crimea (mts. (Shapiro, 1961)). S. Europe, Algeria, Asia Minor, Caucasus, W. Siberia. Brassicaceae, Solanaceae..... ..... *P. circumdatus* (W. Redt., 1842) *

45(6) Hind-tibiae strongly broadened at middle (Fig. 28: 6).

46(51) Dorsum rufous-yellow, rufous, brown, or black, not metallic. Shorter (length 2.0–2.8 mm).

47(48) Body black, shining. Antennae and legs rufous with exception of brown hind-femora. Length 2.0–2.5 mm. Ukraine (Carpathians (Medvedev, Shapiro, 1965)); Moldova (specimen from Pridnestrovie). Europe: Carpathians, Romania (Bikhor Mts.)..... *P. frivaldszkyi* Wse., 1888 **

48(47) Dorsum usually rufous or brown, rarely black, in the latter case, only basal half of antennae and anterior legs rufous.

49(50) Vertex, as a rule, smooth, impunctate. Dorsum shining, chestnut brown, with anterior half of head and antennae rufous, legs rufous with hind-femora dark brown in basal 3/4; or dorsum dark brown (including head), legs rufous. Length 2.2–2.8 mm. From taiga zone to steppe zone, S. Urals (Ilmensky Res. (Chaschina, 2002)). Europe, Asia Minor, Mesopotamia, Caucasus. *Quercus, Ulmus, Corylus, Eupatorium, Cirsium*..... *P. picinus* (Marsh., 1802) **

50(49) Vertex usually with coarse punctures. Body entirely rufous-yellow, or with mesosternum, metasternum, and abdominal sternites black; hind-femora with upper border darkened. Length 2.2–2.8 mm. From deciduous-coniferous forest zone to steppe zone. C. and S. Europe, N.-W. Africa, Asia Minor, Caucasus. *Quercus, Ulmus, Carpinus, Populus, Robinia, Lysimachia, Lythrum*, Solanaceae..... *P. luteolus* (Müll., 1776) **

51(46) Dorsum metallic: blue, bluish-green, green, or bronze. Longer (length 2.8–4.0 mm).

52(55) Supracallinal sulci distinct. Tibiae and tarsi rufous-yellow, in some specimens, tibiae medially darkened.

53(54) Pronotum with lateral sides curved from base to apex (Fig. 47: 7). Dorsum bluish-green. Fore-femora mostly pitchy black. Length 2.8–3.8 mm.

From taiga zone to steppe zone. Europe, N. Africa, Asia Minor, Caucasus, Kazakhstan, Kyrghyzstan, Siberia, Far East. *Carduus, Cirsium*. . . . . *P. chalcomerus* (Ill., 1807) **

54(53) Pronotum with lateral sides almost straight in basal part and curved apically (Fig. 47: 8). Dorsum unicolorous green or dark bronze, in some specimens with coppery reflection, or head and pronotum dark bronze, and elytra dark green. Fore-legs entirely rufous-yellow, very rarely with fore-femora slightly darkened. Length 2.8–3.8 mm. From taiga zone to steppe zone. Europe, N. Africa, Asia Minor, Caucasus, Kazakhstan, Kyrghyzstan, Uzbekistan, Siberia. *Hyoscyamus, Datura, Atropa, Solanum*. . . . . *P. hyoscyami* (L., 1758) **

55(52) Supracallinal sulci usually indistinct, mostly replaced by punctures. Legs pitchy black, rarely with tibiae reddish. Dorsum dark blue, very rarely dark bluish-green. Length 3.0–4.0 mm. From taiga zone to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, W. Siberia, Mongolia. *Solanum, Atropa, Hyoscyamus*. . . . . *P. dulcamarae* (Koch, 1803) **

56(5) Body broadly-oval, convex; humeral calli absent or weakly developed (Fig. 46: 9).

57(60) Humeral calli not developed at all.

58(59) Black, with antennae and legs rufous with exception of black hind-femora, head anteriorly dark brown or black. Vertex coarsely densely punctate, indistinctly shagreened. Length 2.0–2.6 mm. Fig. 46: 9. Ukraine: Carpathians. Europe: Alps, Carpathians, Balkan Mts. . . . . *P. glaber* (Duft., 1825) (*glabra* Duft., 1825) **

59(58) Black with blue or green metallic tint, antennae rufous, legs rufous with exception of black femora. Vertex finely punctate and distinctly shagreened. Length 2.4–3.0 mm. Ukraine: Carpathians (Medvedev, Shapiro, 1965). Europe: E. Alps, W. and S. Carpathians. . . . . *P. subaeneus* Kutsch., 1864 *

60(57) Humeral calli developed, but small. Vertex very finely punctate. Dorsum dark bronze or black with metallic reflection; fore-femora black, tibiae rufous. Pronotum and elytra shagreened, slightly wrinkled. Length 1.8–2.5 mm. Ukraine: Carpathians (Medvedev, Shapiro, 1965). Europe: Carpathians. *Thlaspi, Arabis*. . . . . *P. aereus austriacus* Hktg., 1911 *

Hispinae

87. Hispa L., 1767 (Hispella Chap., 1875)

Adults feed on grasses, larvae develop and pupate in leaf mines (each mine includes one larva).

1(1) Black. Pronotum with 10 spines at sides, elytra with coarse punctures arranged in rows and numerous spines in intervals. Length 3.0–4.6 mm. Total fig. 87. From deciduous-coniferous forest zone (Byelarus; ER: Moscow reg.) to steppe zone. Transpalaearctic species. *Poa, Agropyron, Calamagrostis*. . . . . *H. atra* L., 1767 **

Cassidinae

Females lay eggs on leaves. In many species, larvae cover themselves by apical abdominal appendages curved forward and bearing faeces and exuviae (or only exuviae).

Key to genera

1(2) Body very convex; elytra with sides including apical declivity steeply declivous (Fig. 48: 1, 6, 7)..... 88. *Ischyronota* Wse.

2(1) Body moderately convex or flattened; elytra with sides not so steeply declivous (Fig. 48: 3). If body very convex, with elytral sides steeply declivous, then at least elytral declivity turned up (Fig. 48: 2).

3(6) Hypomera of prothorax with groove outside of fore-coxal cavities for reception of antenna.

4(5) Elytra with punctures arranged in regular rows. Claws with tooth basally. ..... 89. *Pilemostoma* Desbr.

5(4) Elytra confusedly punctate. Claws without tooth basally..... ..... 90. *Hypocassida* Wse.

6(3) Hypomera of prothorax without groove outside of fore-coxal cavities..... ..... 91. *Cassida* L.

88. Ischyronota Wse., 1893

1(2) Elevated ridge between prosternum and hypomera of prothorax present. Frons covered by coarse dense punctures, with interspaces not broader than diameter of punctures. Fore-claws asymmetrical: outer one thicker and longer than inner one (Fig. 48: 5). Length 3.8–5.0 mm. From forest steppe zone (ER: Ulyanovsk reg.: Novospasskoe and Radischevo) to desert zone. Turkey, Caucasus, Kazakhstan, C. Asia, Siberia (Tuva), Mongolia, W. China. Chenopodiaceae, *Tamarix*. On salt-marshes..... ..... *I. desertorum* (Gebl., 1833) **

2(1) Elevated ridge between prosternum and hypomera of prothorax absent. Frons covered by fine sparse punctures, with interspaces broader than diameter of punctures. Fore-claws symmetrical (Fig. 48: 4).

3(4) Elytra short, not more than 1.1 X longer than their total width at level of humeri. Body more convex (viewed from lateral side) (Fig. 48: 6). Length 3.9–5.0 mm. ER: semidesert zone (Kalmykia). Caucasus, Kazakhstan, C. Asia, Iran. Chenopodiaceae..... *I. elevata* (Rtt., 1890) **

4(3) Elytra long, 1.2–1.3 X longer than their total width at level of humeri. Body less convex (viewed from lateral side) (Fig. 48: 7). Length 4.4–6.0 mm. Total fig. 88. Semidesert (specimen from ER: Saratov reg.: Aleksandrov-Gai) and desert (specimen from Astrakhan reg.: Staraya Shkola, Dosang) zones. Caucasus (Daghestan), Kazakhstan. *Haloxylon*..... ..... *I. spaethi* Rtt., 1901 **

89. Pilemostoma Desbr., 1891

1(1) Pronotum red, with pattern or only basal border black; elytra red, with markings black; head, prosternum, mesosternum, metasternum, abdominal sternites, and legs black; antennae with bases rufous and apices black. Length 4.2–6.2 mm. Total fig. 89. From taiga zone (ER: Vyatka reg., Udmurt Republic) and deciduous-coniferous forest zone (Latvia, Byelarus (Barševskis, 2001)) to steppe zone. Transpalaearctic species. Asteraceae. . . . . *P. fastuosa* (Schall., 1783) **

90. Hypocassida Wse., 1893

1(1) Pronotum and elytra yellow, rufous, or brown, usually with black spots; basal borders of pronotum and elytra, head (with exception of frons), prosternum, mesosternum, metasternum, and abdominal sternites (with exception of lateral sides) black; legs, frons, antennae, and lateral sides of abdominal sternites yellow. Length 4.9–6.0 mm. Total fig. 90. Taiga zone (ER: Karelia (Silfverberg, 1992); specimen from Udmurt Republic), deciduous-coniferous forest zone (Estonia; Latvia; Lithuania; Byelarus; ER: Moscow reg.), forest steppe, steppe, and semidesert zones. Transpalaearctic species. *Convolvulus*. . . . . *H. subferruginea* (Schrnk., 1776) **

91. Cassida L., 1758

1(8) Claws appendiculate (Fig. 48: 9) or angularly broadened (Fig. 48: 8) basally.

2(3) Legs black throughout. Claws appendiculate. Subgenus *Pseudocassida* Desbr., 1891. Dorsum brick-red or green (with rufous tint in dry specimens). Elytra with punctures arranged in regular rows, usually with black pattern. Length 7.0–8.1 mm. . . . . *C. murraea* L., 1767 ** (see couplet 17)

3(2) Legs entirely or mostly yellow. Elytra with punctation confused.

4(5) Pronotum and elytra with margins turned up. Claws angularly broadened basally (Fig. 48: 8). Subgenus *Lordiconia* Rtt., 1926. Pronotum and elytra brown (with strong golden reflection in live beetles), covered with small dark brown spots; head, prosternum, mesosternum, metasternum, and abdominal sternites (with exception of lateral sides) black; legs rufous, with bases of femora black. Length 9.0–10.0 mm. From deciduous forest zone to steppe zone. S. and S.-E. Europe, Kazakhstan, W. Siberia. *Salvia*. . . . . *C. canaliculata* Laich., 1781 **

5(4) Pronotum and elytra with margins not turned up. Claws appendiculate (Fig. 48: 9).

6(7) Large, oval, slightly convex (Fig. 48: 10). Subgenus *Odontionycha* Wse., 1891. In live beetles, dorsum green, dull; in dry specimens, dorsum usually brownish-green or yellow. Length 8.0–10.0 mm. From taiga zone to steppe zone. Transpalaearctic species. Lamiaceae. . . . . *C. viridis* L., 1758 **

7(6) Small, almost semicircular (Fig. 48: 11). Subgenus *Mionychella* Spaeth, 1952. Dorsum green or yellow, weakly shining. Length 3.5–5.0 mm. From taiga zone to steppe zone. Europe, N. Africa. *Silene, Dianthus, Gypsophila*. . . . . *C. hemisphaerica* Hbst., 1799 **

8(1) Claws simple, neither appendiculate, nor angularly broadened basally.

9(14) Claws short, not extending beyond setae at apical margin of lobes of 3rd tarsomere (Fig. 48: 12). Elytral disk with punctures arranged in regular rows. Body circular or broadly-oval. Subgenus *Mionycha* Wse., 1894.

10(13) Elytra each with 2 distinct impressions, one near scutellum, and other at disk before middle.

11(12) Posterior corners of pronotum broadly rounded. In dry specimens, dorsum yellow, elytra with diffuse pink markings; live beetles dorsally with perlaceous reflection. Length 4.0–6.0 mm. From taiga zone (specimens from ER: Udmurt Republic) to steppe zone. C. and S. Europe, N. Africa, Kazakhstan, Siberia. *Silene, Saponaria*..... ..... *C. azurea* F., 1801 (*ornata* Creutz., 1799) **

12(11) Posterior corners of pronotum obtuse but distinct. Upper side yellow in dry specimens and golden in live ones. Length 4.0–5.0 mm. Taiga zone (specimens from ER: Udmurt Republic), deciduous-coniferous forest zone (ER: Moscow reg. (Melgunov, 1892)), forest steppe and steppe zones. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, Iran, Siberia, Far East, Mongolia. Caryophyllaceae..... *C. subreticulata* Sffr., 1844 **

13(10) Elytra without impressions or each with 2 very shallow impressions. Upper side yellow in dry specimens, green with perlaceous reflection in live ones. Length 3.5–4.5 mm. From taiga zone (ER: Kostroma reg. and Udmurt Republic) to steppe zone. Europe, Asia Minor, Caucasus, Kazakhstan, Siberia. Caryophyllaceae, Lamiaceae, Asteraceae... *C. margaritacea* Schall., 1783 **

14(9) Claws long, extending beyond setae at apical margin of lobes of 3rd tarsomere (Fig. 48: 13).

15(62) Elytral lateral sides feebly declivous, forming bend with disk (Fig. 48: 3), if lateral sides steeply declivous, then elytral interspaces covered with setae.

16(23) Elytra with punctures arranged in regular rows over entire surface with exception of explanate lateral sides.

17(18) Frons black. Subgenus *Pseudocassida* Desbr., 1891. Dorsum brick-red or green (with rufous tint in dry specimens), elytra mostly with black markings. Length 7.0–8.1 mm. Total fig. 91. From taiga zone (ER: Karelia and Udmurt Republic) to steppe zone. Europe, Caucasus, Kazakhstan, C. Asia, Siberia, Mongolia. Asteraceae (mostly *Inula*), *Salvia*..... ..... *C. murraea* L., 1767 ** (see also couplet 2)

18(17) Frons rufous. Subgenus *Cassida* s.str. (part).

19(20) Lateral border of elytra incrassate at middle of length (Fig. 48: 14). Dorsum green, brownish-rufous, or yellow, elytra with numerous small black spots. Length 6.0–7.7 mm. From taiga zone (ER: S. Karelia; Komi: Vilgort, Ukhta) to steppe zone. Transpalaearctic species, introduced in N. America. *Beta, Atriplex, Chenopodium*..... *C. nebulosa* L., 1758 **

20(19) Lateral border of elytra not incrassate everywhere (Fig. 48: 15).

21(22) Frons covered with fine punctures not larger than facets of eye. Dorsum yellow, unicolorous or with small black spots on elytra. Length 4.0–6.0 mm. From taiga zone to steppe zone. Transpalaearctic species. Caryophyllaceae, *Honkenya*..... *C. flaveola* Thunb., 1794 **

22(21) Frons covered with coarse dense punctures considerably larger than facets of eye. Dorsum yellow or brownish-yellow throughout, rarely with black spots. Length 3.5–5.0 mm. Steppe zone (Medvedev, Shapiro, 1965). Sweden,

S.-E. Europe, Caucasus, Kazakhstan, C. Asia, Siberia, Far East, Mongolia, N. China. *Atriplex, Chenopodium*..... *C. berolinensis* Sffr., 1844 *

23(16) Elytra at least partly confusedly punctate. Subgenus *Cassida* s.str. (part).

24(25) Legs black. Dorsum dull, black, with 2 markings at anterior margin of pronotum, brown. Length 6.0–7.2 mm. From deciduous-coniferous forest zone (Latvia; Byelarus) to steppe zone. S.-E. Europe, Asia Minor, Caucasus. *Salvia*..... *C. atrata* F., 1787 **

25(24) Legs entirely or partly yellow, elytra not unicolorous black.

26(27) Elytra rufous, yellow, or green, with black longitudinal vittae on humeral calli and black vittae or spots on several intervals. Length 5.0–8.0 mm. Taiga zone (specimen from ER: Udmurt Republic), deciduous-coniferous forest zone (ER: Moscow reg.), from deciduous forest zone to steppe zone. Transpalaearctic species. *Artemisia*..... *C. lineola* Creutz., 1799 **

27(26) Elytra without black vittae on humeral calli.

28(31) Pronotum rufous or yellow, with broad brown basal fascia (widely interrupted at middle). Elytra anteriorly with common triangular marking red or brown; marking uniformly coloured or consisting of dark and pale small spots.

29(30) Legs and antennae entirely yellow. Length 6.0–7.0 mm. From taiga zone to steppe zone. Transpalaearctic species. *Taraxacum officinale* (in Moscow reg.), *Tragopogon, Scorzonera, Arctium, Cirsium*..... ..... *C. panzeri* Wse., 1907 **

30(29) Basal 1/2 or 2/3 of femora and 8th–11th antennomeres black. Lenght 5.5–6.0 mm. Taiga zone (ER: Vyatka reg. (Shernin [Ed.], 1974), specimen from Udmurt Republic), deciduous-coniferous forest zone (Estonia (Silfverberg, 1992); Byelarus; ER: Moscow reg. (Melgunov, 1892)), forest steppe and steppe zones (Ukraine (Brovdij, 1980)), S. Urals (specimens from Ilmensky Res.). Europe, Kazakhstan, W. Siberia. *Pulicaria*..... ..... *C. ferruginea* Gz., 1777 **

31(28) Pronotum green or yellow throughout or with disk reddish brown.

32(41) Elytral interspaces with short pale setae inclined backwards (visible in lateral view at magnification of 16 X or more).

33(34) Body short, narrow (length 5.4–6.2 mm, width 3.3–3.8 mm), almost parallel-sided (Fig. 49: 6). Elytra with explanate margins narrow, steeply declivous at lateral sides, gently declivous, almost horizontal at apex. Pronotum rufous-yellow throughout or with disk reddish-brown in dry specimens and green in live specimens. Elytra green, with markings reddish brown, markings usually joined together basally and along suture. Legs pale, with bases of femora black; rarely legs entirely pale (mostly, in specimens from east of Volga), trochanters usually reddish. Ukraine: steppe zone (Lugansk reg. (Matis, 1973)); ER: semidesert zone (Volgograd: "Sarepta"). Caucasus (Stavropol Krai), Kazakhstan..... *C. elongata* Wse., 1893 **

34(33) Body broadly-oval, if body elongate-oval, then length 6.5–8.3 mm and width 4.4–5.7 mm. Elytra with explanate margins broad and gently declivous everywhere.

35(36) Dorsum very shining, unicolorous yellow in dry specimens, green, with scutellum and elytral bases partly pale red in live ones, without dark pattern. Legs yellow, with hind-coxae usually black. Length 5.5–7.0 mm. Lithuania; Byelarus; Ukraine; ER: S. taiga zone (specimens from Udmurt Republic:

Sarapul Distr.), S. Urals (Bashkortostan: Irgizly). Europe, N. Africa, Caucasus. Asteraceae..... *C. seladonia* Gyll., 1827 **

36(35) Dorsum dull or weakly shining.

37(40) Femora black, with apical 1/4–1/3 pale, if femora pale in most part and only narrowly darkened at bases, then body broadly-oval (Fig. 49: 7).

38(39) Elytra green or yellowish-green, with wide brown longitudinal stripe or markings along suture and usually with small brown spot at middle of lateral slope. Length 5.5–7.0 mm. From taiga zone to steppe zone. Transpalaearctic species. *Centaurea, Cirsium, Carduus, Arctium, Serratula, Silybum, Lappa, Onopordum*..... *C. vibex* L., 1767 **

39(38) Elytra unicolorous: yellow or brownish-green in dry specimens, green in live ones. Length 5.7–6.4 mm. Ukraine: steppe zone. Caucasus (Stavropol Krai, Daghestan)..... *C. fausti* Spaeth, 1926 **

40(37) Femora yellow throughout or narrowly darkened at bases. Body elongate-oval (Fig. 49: 8). Elytra yellowish-green, with brown markings at base and along suture. Length 6.5–8.3 mm. Byelarus; Ukraine; Moldova (Calestru, 2003); ER: taiga zone (specimens from Udmurt Republic), deciduous forest zone (specimens from Samara reg.: Zhygulevsky Res.), forest steppe zone (Lipetsk reg.), steppe zone. S. and S.-E. Europe, Asia Minor, Caucasus, Kazakhstan, C. Asia, W. Siberia. *Centaurea*.... *C. pannonica* Sffr., 1844 **

41(32) Elytral interspaces without setae.

42(45) Femora black or dark brown, with apical 1/3 yellow.

43(44) Elytra yellowish-green in dry specimens, green in live ones, with triangular common basal marking brown and spot at posterior corner of this triangle black (in dry specimens dark pattern sometimes faintly visible). Body longer. Length 6.0–8.0 mm. From taiga zone to steppe zone. Holarctic species. Asteraceae..... *C. rubiginosa* Müll., 1776 **

44(43) Elytra green, with disk mostly or only basally pink or red. Body smaller. Length 4.5–5.8 mm. Ukraine; ER: forest steppe (Lipetsk reg.) and steppe zones. S.-E. Europe. *Achillea*..... *C. aurora* Wse., 1907 **

45(42) Femora mostly rufous or yellow throughout, very rarely narrowly darkened basally.

46(47) Frons between anterior borders of eyes narrow (Fig. 48: 18). Elytra unicolorous: yellow or green. Length 6.1–6.9 mm. Steppe zone east of Dnepr (Medvedev, Shapiro, 1965). Near East, Iran, Caucasus, Kazakhstan, C. Asia. *Cousinia*..... *C. palaestina* Reiche, 1858 *

47(46) Frons between anterior borders of eyes broad (Fig. 48: 19).

48(49) Prosternum, mesosternum, metasternum, and abdominal sternites rufous, sometimes with mid longitudinal line brown. Head black. Length 6.4–8.0 mm. From forest steppe zone (ER: Saratov reg.: Korsakovka Vill.) to semidesert zone. Caucasus (Daghestan), Kazakhstan. Beetles were captured on *Salvia*..... *C. sareptana* Krtz., 1873 **

49(48) Head, prosternum, mesosternum, metasternum, and abdominal sternites (with exception of lateral sides) black, mesepimera and mesepisterna yellow or black, lateral sides of abdominal sternites yellow.

50(51) Prosternum, mesosternum, mesepimera, metasternum, and abdominal sternites (with exception of yellow lateral sides of abdominal sternites) black with bronze reflection. Fore- and mid-coxae yellow, hind-coxae yellow with outer side brown. Body flattened (Fig. 48: 20). Length 5.5–6.5 mm. Ukraine: Crimea (Mosiakin, 1987); ER: semidesert and desert zones

(Lopatin, 1977a). E. Europe, Mediterranean reg., Asia Minor, Caucasus, Turkmenistan. *Anthemis, Chrysanthemum*..... *C. inquinata* Brullé, 1832 *

51(50) Prosternum, mesosternum, metasternum, and abdominal sternites without metallic reflection. Coxae entirely or mostly black. Body convex (Fig. 48: 21).

52(53) Pronotum distinctly narrower than elytral base; humeri projecting anteriorly and enveloping base of pronotum (Fig. 49: 1). Mesepimera yellow or brown. Length 5.5–6.3 mm. Dorsum green, each elytron with 2 red spots: one near scutellum and other at middle of basal border. From taiga zone (specimens from Udmurt Republic) to steppe zone. Europe, Caucasus, Kazakhstan, C. Asia, Siberia, China. *Tanacetum*..... ..... *C. stigmatica* Sffr., 1844 **

53(52) Pronotum not narrower than elytral base; humeri not enveloping base of pronotum (Fig. 49: 2, 3).

54(57) Labrum with anterior emargination broad and shallow (Fig. 48: 16).

55(56) Body broadly-oval (Fig. 49: 2). Dorsum green or yellow, base of elytra with triangular pattern (united marking or group of spots) brown or red. Length 6.0–8.0 mm. From taiga zone to steppe zone. Europe, Daghestan, Kazakhstan, Siberia. *Achillea, Tanacetum*..... *C. sanguinosa* Sffr., 1844 **

56(55) Body elongate-oval (Fig. 49: 3). Dorsum green or yellow, disk of elytra in basal 2/3 pink and gradually becoming green at declivity. Length 6.0 mm. Steppe zone. Europe, Caucasus. *Matricaria, Achillea, Anthemis*..... ..... *C. rufovirens* Sffr., 1844 **

57(54) Labrum with anterior emargination narrow and deep (Fig. 48: 17). Precise identification of the species requires an examination of male and female genitals.

58(61) Pronotum 1.67–1.82 X (male) or 1.68–1.80 X (female) broader than long. Male genitals: apodema short (Fig. 50: 3, 4).

59(60) Mesepimera black. Male genitals: apodema asymmetrical (Fig. 50: 4) or symmetrical (as in the following species). Female genitals: duct irregularly twisted (Fig. 50: 5C), ampulla long (Fig. 50: 5B). Length 5.1–7.9 mm. From deciduous-coniferous forest zone to forest steppe zone. Transpalaearctic species. *Achillea, Artemisia, Matricaria, Tanacetum*..... ..... *C. denticollis* Sffr., 1844 **

60(59) Mesepimera at least partly yellow. Male genitals: apodema symmetrical (Fig. 50: 3). Female genitals: duct forming regular spiral (Fig. 50: 6C), ampulla short (Fig. 50: 6B). Length 4.5–6.5 mm. From deciduous forest zone to semidesert zone. Europe, Caucasus, Kazakhstan, Siberia, Far East, Mongolia, N. China. *Achillea, Matricaria*..... *C. prasina* Ill., 1798 **

61(58) Pronotum 1.50–1.66 X (male) or 1.64–1.65 X (female) broader than long. Mesepimera at least partly yellow. Male genitals: apodema long (Fig. 50: 2). Female genitals: duct forming regular spiral, ampulla short. Length 4.0–6.0 mm. From deciduous-coniferous forest zone to steppe zone. Europe, Caucasus, Kazakhstan, Siberia, Far East. *Achillea*..... ..... *C. sanguinolenta* Müll., 1776 **

62(15) Lateral sides of pronotum and elytra steeply declivous (Fig. 48: 2). Elytra glabrous. Subgenus *Cassidulella* Strand, 1928.

63(64) Frons rufous. Dorsum brownish-yellow, legs rufous. Length 4.3–5.2 mm. Steppe and semidesert (Kalmykia) zones. Transpalaearctic species. *Atriplex, Chenopodium*..... *C. parvula* Boh., 1854 **

64(63) Frons black. Dorsum brownish-yellow, in live beetles each elytron with longitudinal vitta silvery or perlaceous between 2nd and 5th puncture rows.

65(66) Frontal sutures joined together apart from antennal bases (Fig. 49: 4). Femora with basal half black and apical half yellow. Length 4.0–6.0 mm. From taiga zone to steppe zone. Transpalaearctic species. *Silene, Spergula, Stellaria, Atriplex, Chenopodium, Beta*..... *C. nobilis* L., 1758 **

66(65) Frontal sutures joined together near antennal bases (Fig. 49: 5). Femora entirely yellow, or with bases narrowly darkened. Length 5.0–6.0 mm. From taiga zone to steppe zone. Transpalaearctic species. *Spergula, Beta, Urtica.* ..... *C. vittata* Vill., 1789 **

Species being erroneously recorded before from European Russia, Ukraine, Moldova, Byelarus, Lithuania, Latvia, and Estonia.

1. *Crioceris paracenthesis* (L., 1767) (Fig. 6: 17) was recorded from the south of the steppe zone by Medvedev, Shapiro (1965) and then cited by Bieńkowski (1999). This is a west Mediterranean species which occurs in Spain, N. Africa, S. France, Italy, and the Balkan Peninsula (Warchałowski, 1985).
2. *Smaragdina discolor viridiceps* Wse., 1892 was recorded from Kalmykia by Korostov (1990). This record is very doubtful, because the subspecies *viridiceps* occurs in the mountains of Kyrghyzstan, Uzbekistan, Tadzhikistan, and S.-E. Kazakhstan (Lopatin, 1977).
3. *Cryptocephalus concolor* Sffr., 1847 was recorded from the Ukraine (steppe zone east of Dnepr) by Ogul'(1970) and then cited by Bieńkowski (1999). This species is really distributed only in Azerbaijan, Turkmenistan, and Iran (Lopatin, 1984).
4. *Chrysolina quadrigemina* (Sffr., 1851) was recorded from south-west of European part of USSR by Medvedev, Shapiro (1965). However, this is a west Mediterranean species (Warchałowski, 1993).
5. *Gonioctena kaufmanni* (Mill., 1881) was recorded from the Carpathians by Medvedev, Shapiro (1965). This species occurs in the eastern Alps only (Warchałowski, 1994).
6. *Phaedon bogdanovikatjkovi* Jcbs., 1921 was recorded from the south-east of European part of USSR by Medvedev, Shapiro (1965). This little-known species is known only from the type locality in W. Kazakhstan (Emba river valley) (Jacobson, 1921).
7. *Sclerophaedon orbicularis* (Sffr., 1851) was recorded from the Ukraine (Brovdij, 1977a). However, this species is distributed in W. Europe, mostly in the Alps (Warchałowski, 1994).
8. *Entomoscelis sacra* (L., 1758) was recorded from the steppe zone by Medvedev, Shapiro (1965). This species was originally described from Israel and reliably known in Europe from Austria and Slovakia only (Kippenberg, Döberl, 1994; Warchałowski, 1994).
9. *Neocrepidodera cyanipennis* (Kutsch., 1860) was recorded from the Carpathians by Medvedev, Shapiro (1965) and then cited by Bieńkowski (1999). This species occurs in the Alps only (Warchałowski, 1998).

10. *Batophila aerata* (Marsh., 1802) was recorded from the Carpathians and Caucasus by Medvedev, Shapiro (1965) and then cited by Bieńkowski (1999). This is a west Mediterranean species reaching England, the Atlantic Sea shore of Spain, France, and Belgium (Warchałowski, 1998).
11. *Phyllotreta consobrina* (Curt., 1837) was recorded from the forest steppe and steppe zones and Crimea by Medvedev, Shapiro (1965) and Konstantinov (1991). However, this is a west Mediterranean species (Warchałowski, 1995).
12. *Aphthona stussineri* Wse., 1888 was recorded from the Carpathians by Medvedev, Shapiro (1965). This species occurs in the eastern Alps, Dinara Mts., western and southern Carpathians and is absent in the Ukrainian Carpathians (Warchałowski, 1995; Konstantinov, 1996).
13. *Longitarsus aeruginosus* (Foudr., 1860) was recorded from the forest steppe and steppe by Medvedev, Shapiro (1965). This species occurs in West Europe, western and central parts of the Mediterranean region only (Warchałowski, 1996).
14. *Longitarsus cerinthes* (Schrnk., 1798) (*nervosus* Wollaston, 1854) was recorded from the steppe zone by Konstantinov (1991). According to Warchałowski (1995), this species is distributed in central and western parts of the Mediterranean region, eastwards to Crete.
15. *Longitarsus desertorum* Hktg., 1913 was recorded from forest steppe and east of the steppe zones by Konstantinov (1991). According to Warchałowski (1996), this species is distributed in Central Asia, Afghanistan, and Mongolia.
16. *Longitarsus suturatus* (Foudr., 1860) was recorded from the Crimea (Lopatin, 1977b) and steppe zone (Konstantinov, 1991). According to Warchałowski (1995), this species is distributed in France, Algeria, the Elba, Sardinia, and the Iberian Peninsula.
17. *Chaetocnema schlaefflii* Stierlin, 1866 (*tarda* Motsch., 1845) was recorded from south of the steppe zone and Caucasus by Medvedev, Shapiro (1965) and then cited by Bieńkowski (1999). According to Lopatin (1977), this species is distributed in Turkmenistan, Iran, Iraq, and N.-W. China.

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Surnames of the authors and their abbreviations used in the Key

Ahr. — Ahrens
All. — Allard
Bech. — Bechyné
Boh. — Bohemann
Boield. — Boieldieu
Brüggm. — Brüggemann
Chap. — Chapuis
Charp. — Charpentier
Chevr. — Chevrolat
Com. — Comolli
Corn. — Cornelius
Creutz. — Creutzer
Curt. — Curtis
C. Shlb. — C. Sahlberg
Dalm. — Dalman
Deg. — Degeer
Dej. — Dejean
Desbr. — Desbrochers des Loges
Drap. — Drapiez
Duft. — Duftschmidt
Esch. — Eschscholtz
F. — Fabricius
Fairm. — Fairmaire
Fald. — Faldermann
Fisch. — Fischer
Först. — Förster
Foudr. — Foudras
Gebl. — Gebler
Geoffr. — Geoffroy
Germ. — Germar
Gmel. — Gmelin
Grav. — Gravenhorst
Guer. — Guerin-Meneville
Guill. — Guillebeau
Gyll. — Gyllenhal
Gz. — Goeze
Hbst. — Herbst
Hell. — Hellen
Heyd. — Heyden
Hktg. — Heikertinger
Humm. — Hummel
H.-S. — Herrich-Schaeffer
Ill. — Illiger
Jcbs. — Jacobson
Joann. — Joannis
J. Shlb. — J. Sahlberg
Kby. — Kirby
Kiesw. — Kiesenwetter
Kont. — Kontkanen
Krtz. — Kraatz
Kryn. — Krynicky
Küst. — Küster
Kutsch. — Kutschera
L. — Linnaeus
Lab. — Laboissière
Lac. — Lacordaire
Laich. — Laicharting
Latr. — Latreille
Lef. — Lefèvre
Letzn. — Letzner
Lindb. — Lindberg
Lop. — Lopatin
Luc. — Lucas
L. Medv. — L. Medvedev
L. Redt. — L. Redtenbacher
Mars. — Marseul
Marsh. — Marsham
Mén. — Ménétriés
Mill. — Miller
Mnnh. — Mannerheim
Mor. — Morawitz
Motsch. — Motschulsky
Müll. — O.F. Müller
Muls. — Mulsant
Ogl. — Ogloblin
Ol. — Olivier
Pall. — Pallas
Pk. — Paykull
Pont. — Pontoppidan
Pz. — Panzer
Ratz. — Ratzeburg
Richt. — Richter
Rosenh. — Rosenhauer
Rtt. — Reitter
Sam. — Samouelle
Schall. — Schaller
Schneid. — Schneider
Schrnk. — Schrank
Schumm. — Schummel
Scop. — Scopoli
Sffr. — Suffrian
Sols. — Solsky
Steph. — Stephens
Sulz. — Sulzer
Thoms. — Thomson
Thunb. — Thunberg
Vill. — Villers
Warch. — Warchałowski
Waterh. — Waterhouse
Westh. — Westhoff
Wse. — Weise
W. Redt. — W. Redtenbacher
Zett. — Zetterstedt

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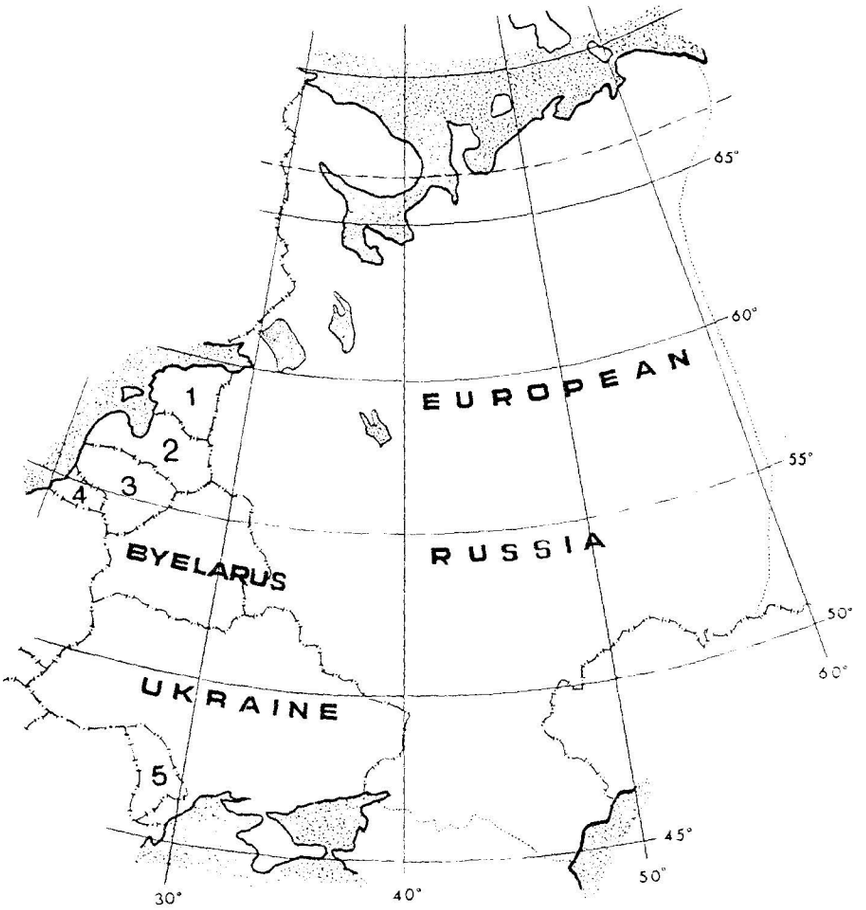
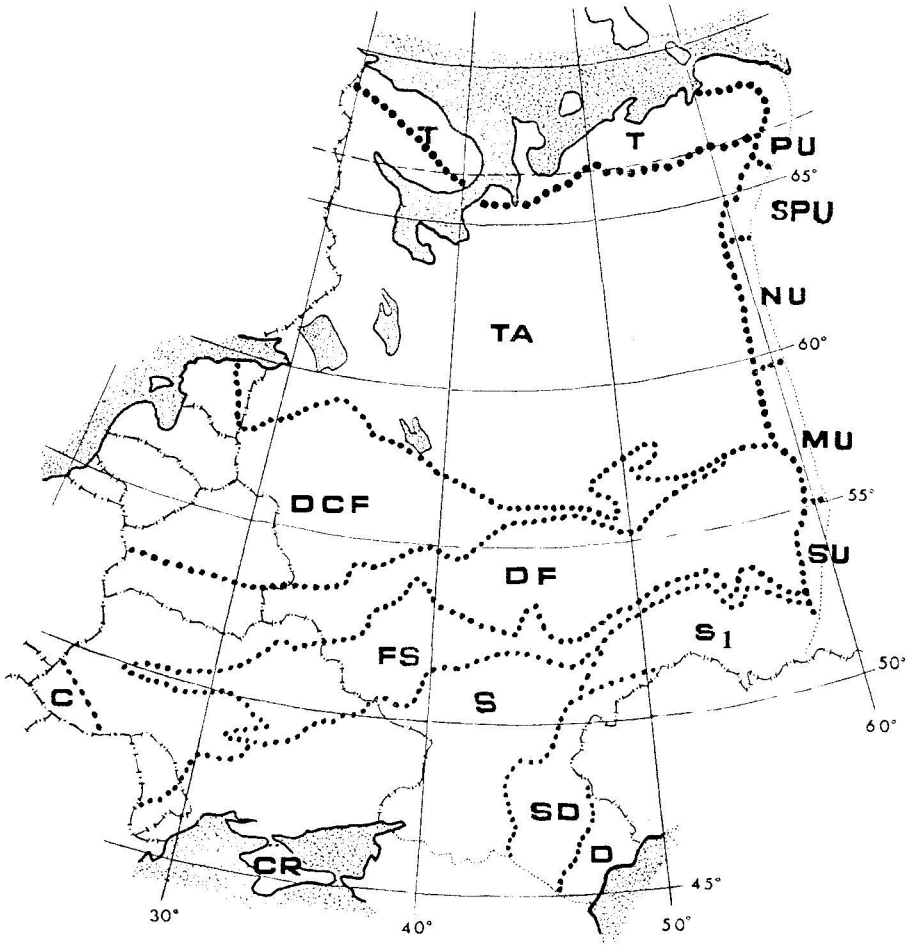
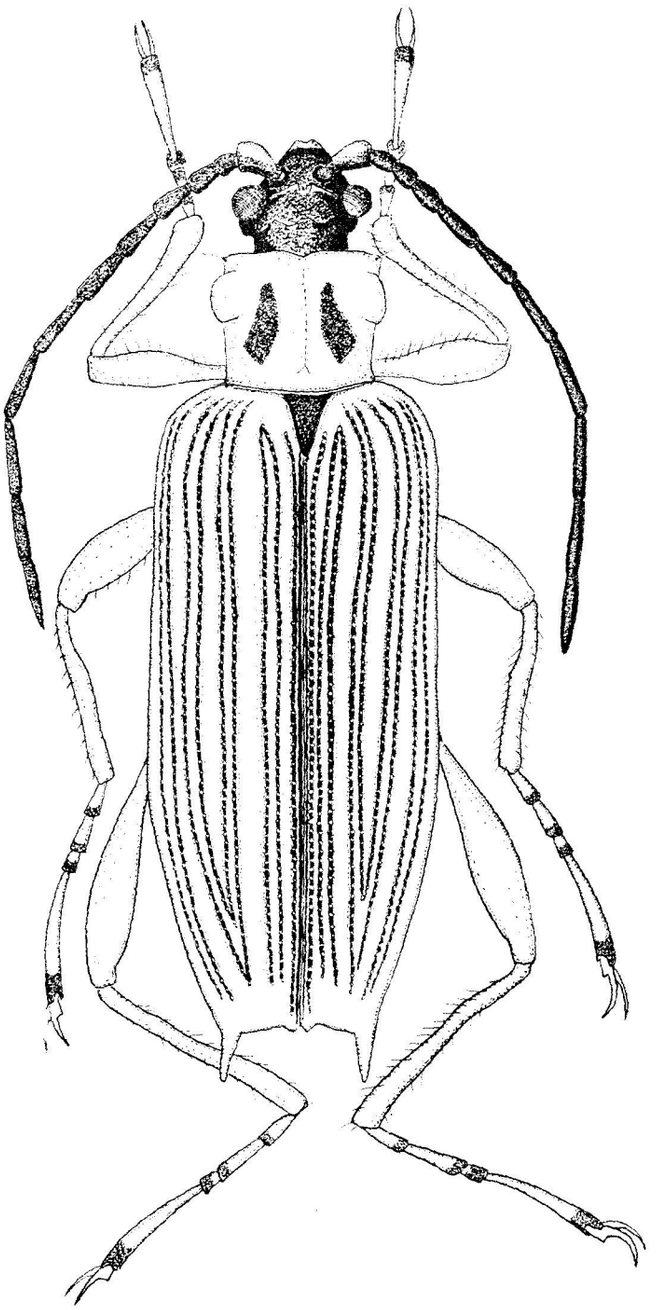


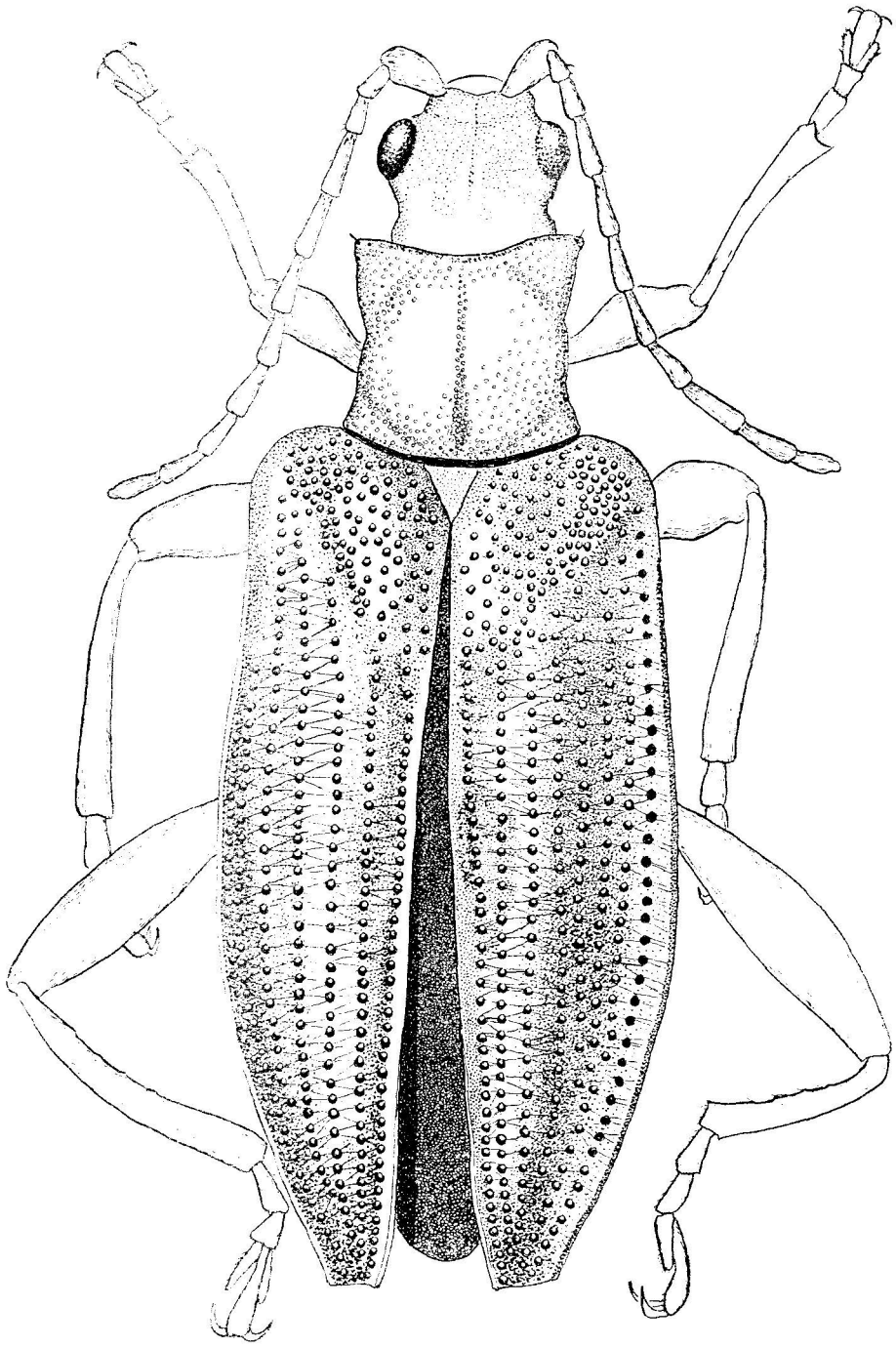
Map 1. Countries of Eastern Europe (1 — Estonia, 2 — Latvia, 3 —Lithuania, 4 — Russia: Kaliningrad reg., 5 — Moldova).



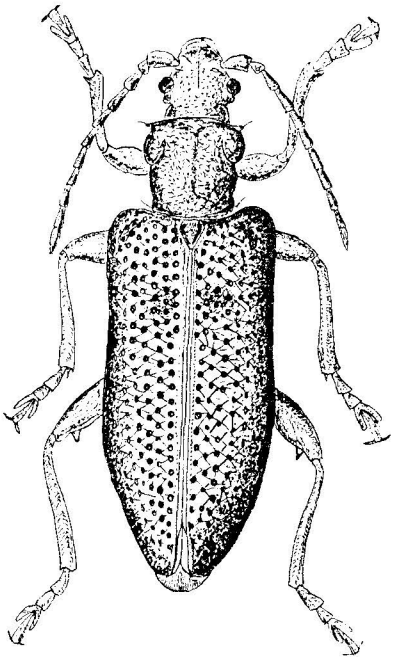
Map 2. Natural zones and mountain regions of Eastern Europe: C — Carpathians, CR — Crimean Mountains, D — desert zone, DCF — deciduous-coniferous forest zone, DF — deciduous forest zone, FS — forest steppe zone, MU — Middle Urals, NU — Northern Urals, PU — Polar Urals, S — steppe zone, S1 — east of steppe zone, SD — semidesert zone, SPU — Subpolar Urals, SU — Southern Urals, T — tundra zone, TA — taiga zone.



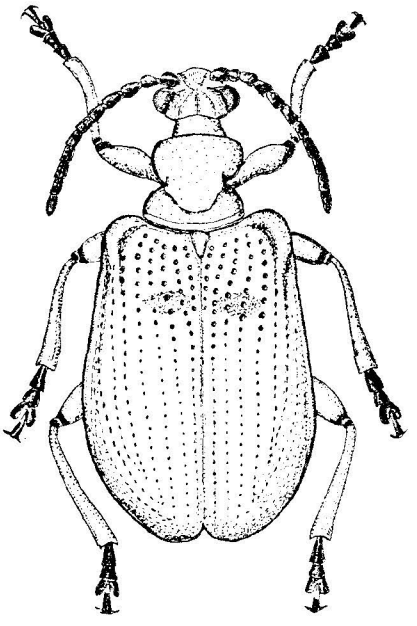
Total figure 1. *Macroplea appendiculata.* Length 5.2–8.5 mm.



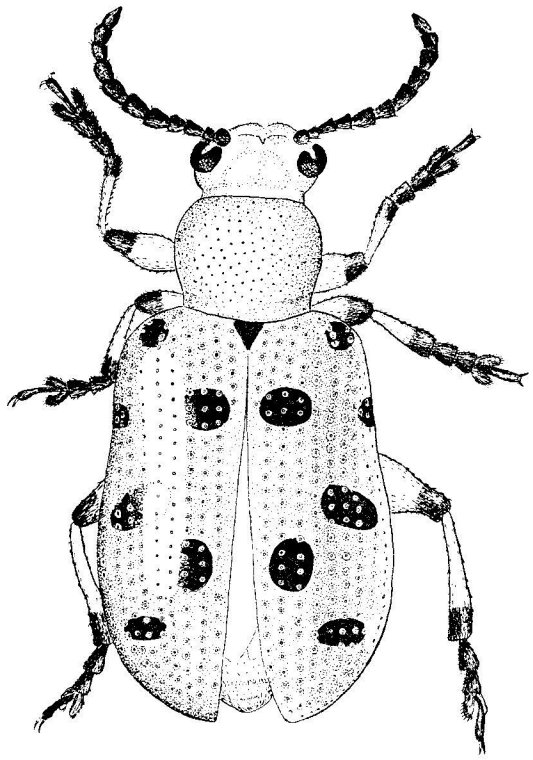
Total figure 2. *Donacia aquatica.* Length 6.7–8.8 mm.



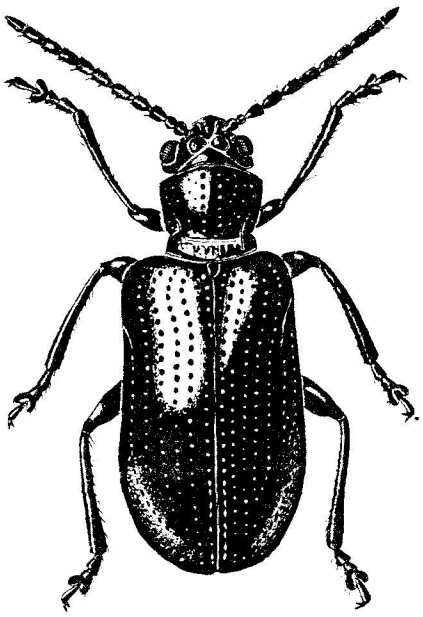
Total figure 3. *Plateumaris sericea.* Length 5.5–8.5 mm.



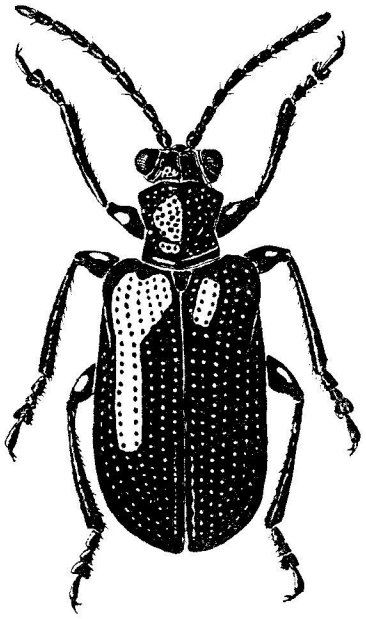
Total figure 4. *Lilioceris merdigera.* Length 6.0–7.5 mm.



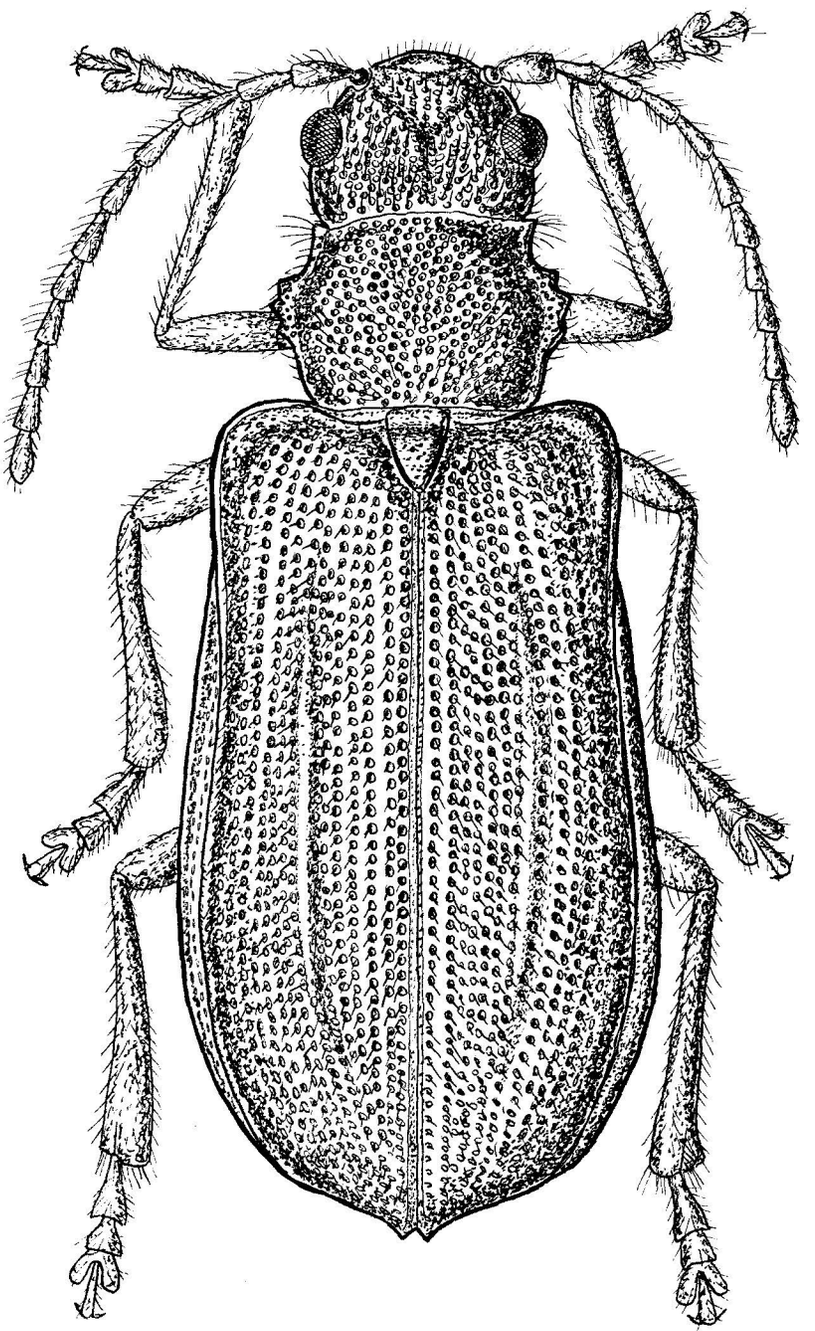
Total figure 5. *Crioceris duodecimpunctata.* Length 4.3–6.0 mm.



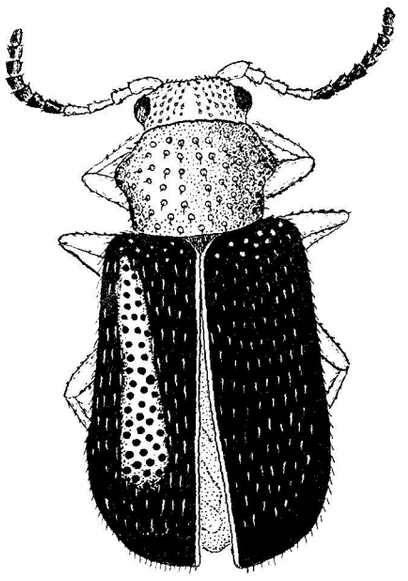
Total figure 6. *Oulema gallaeciana.* Length 3.0–4.2 mm.



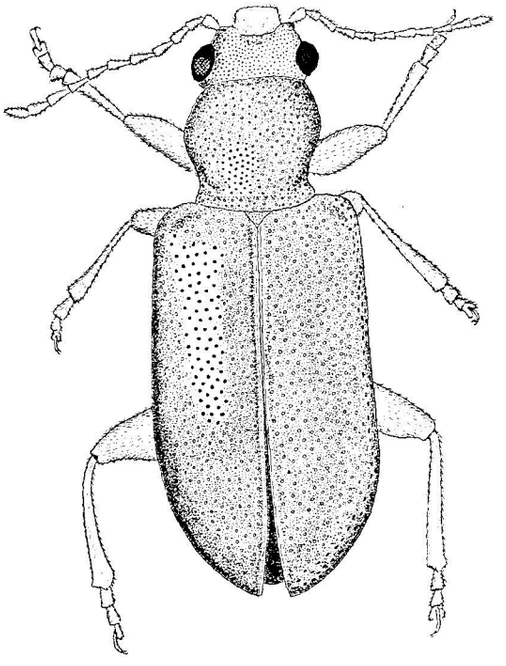
Total figure 7. *Lema cyanella.* Length 3.5–5.0 mm.



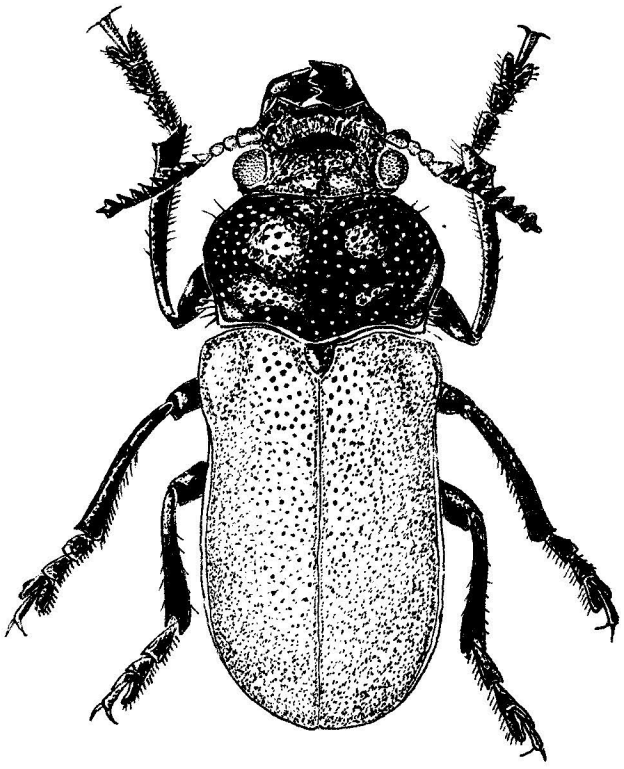
Total figure 8. *Syneta betulae.* Length 5.4–7.5 mm.



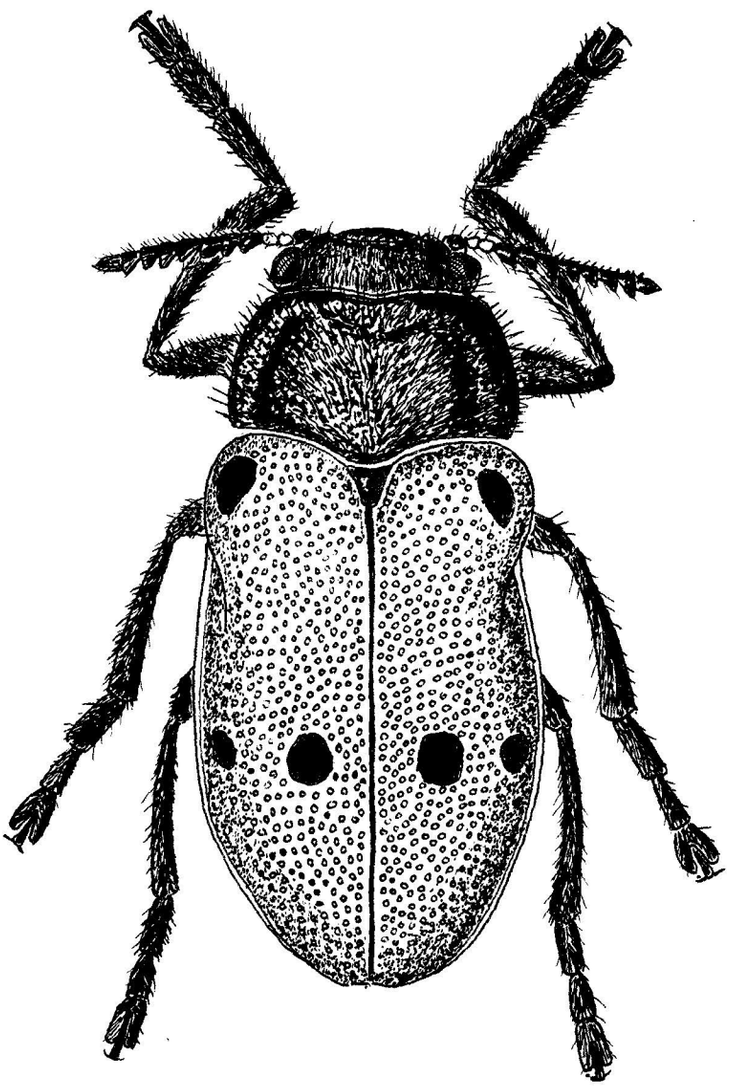
Total figure 9. *Zeugophora subspinosa*. Length 2.7–3.5 mm.



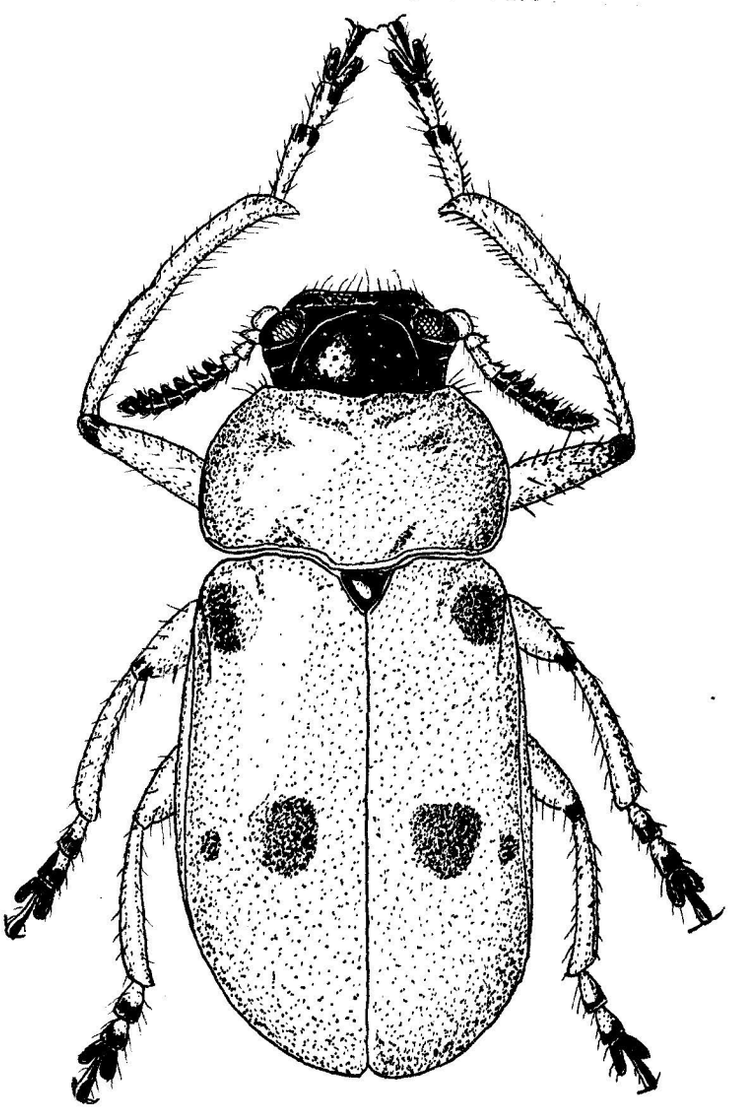
Total figure 10. *Orsodacne cerasi*. Length 4.5–6.4 mm.



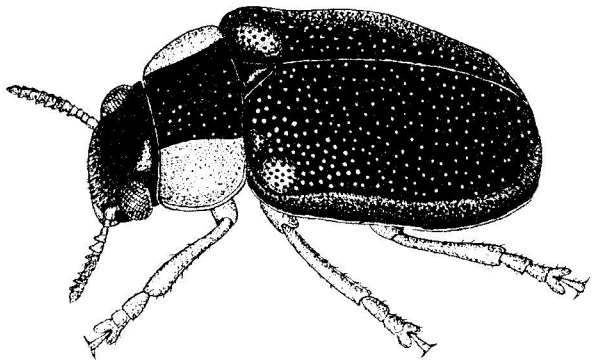
Total figure 11. *Labidostomis lucida axillaris*, male. Length 5.0–9.5 mm.



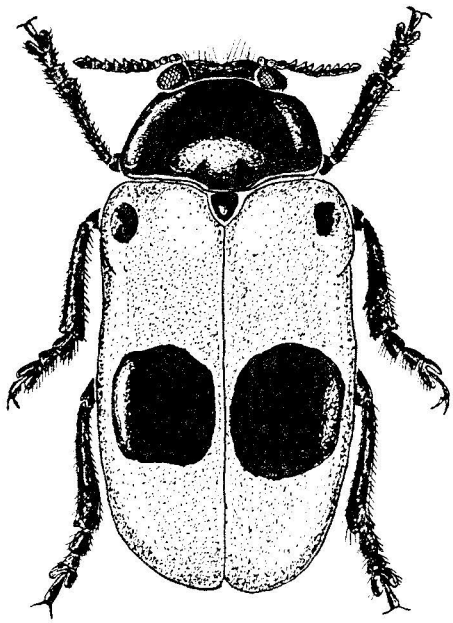
Total figure 12. *Lachnaia sexpunctata.* Length 9.0–13.0 mm.



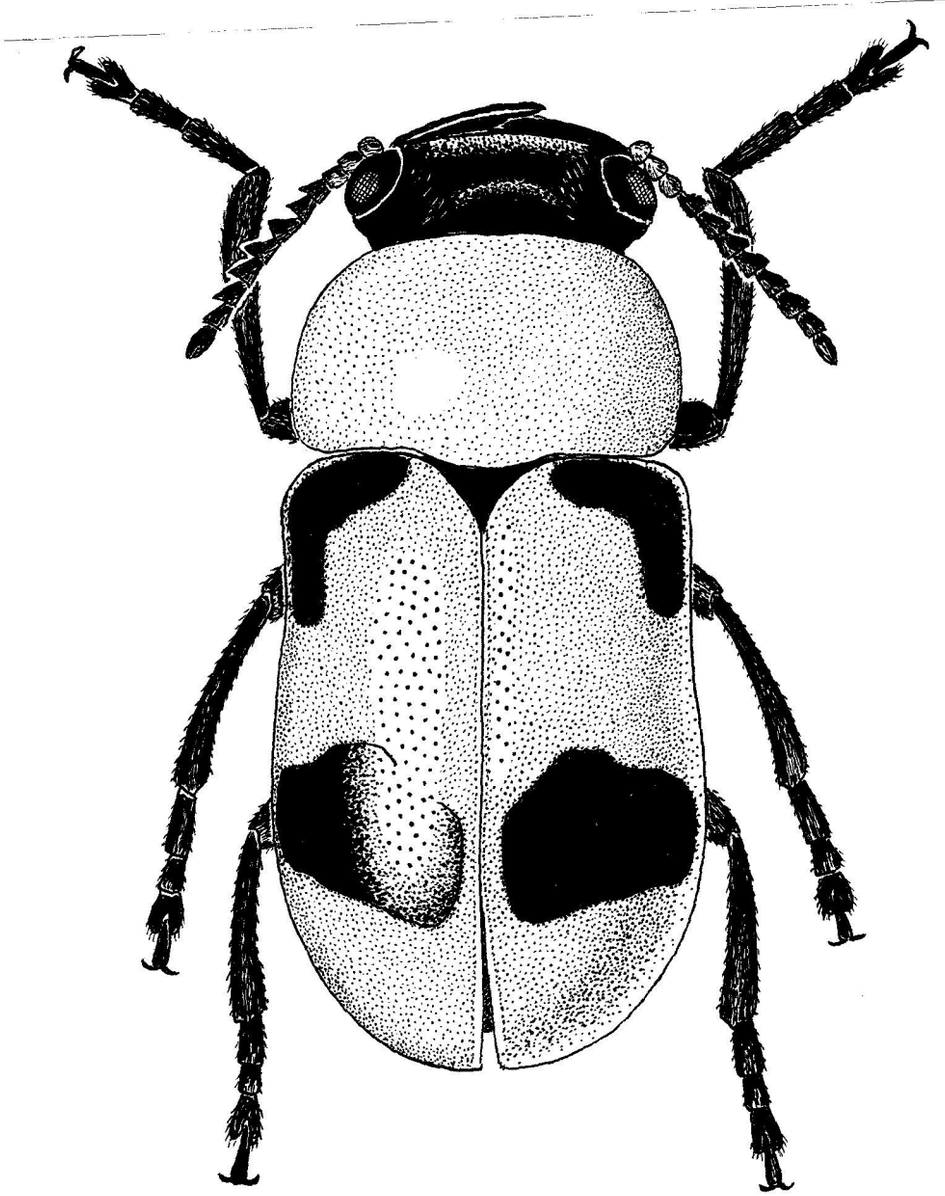
Total figure 13. *Tituboea macropus*. Length 9.0–13.0 mm.



Total figure 14. *Smaragdina affinis*, male. Length 2.5–4.0 mm.

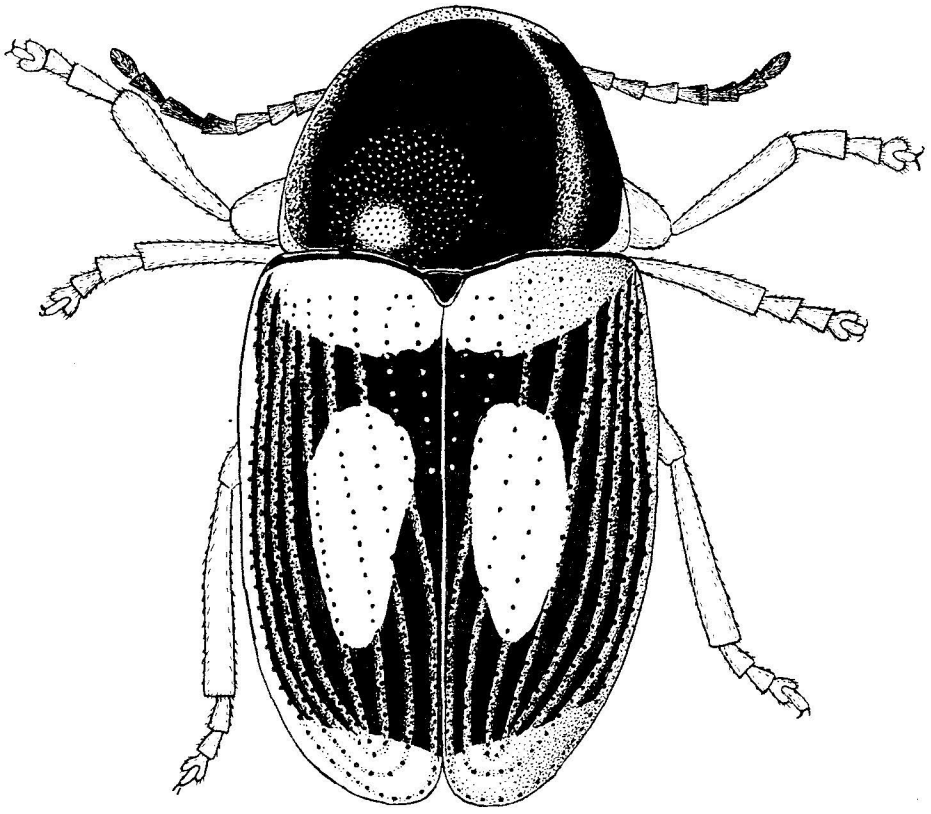


Total figure 15. *Clytra laeviuscula*. Length 8.0–12.0 mm.

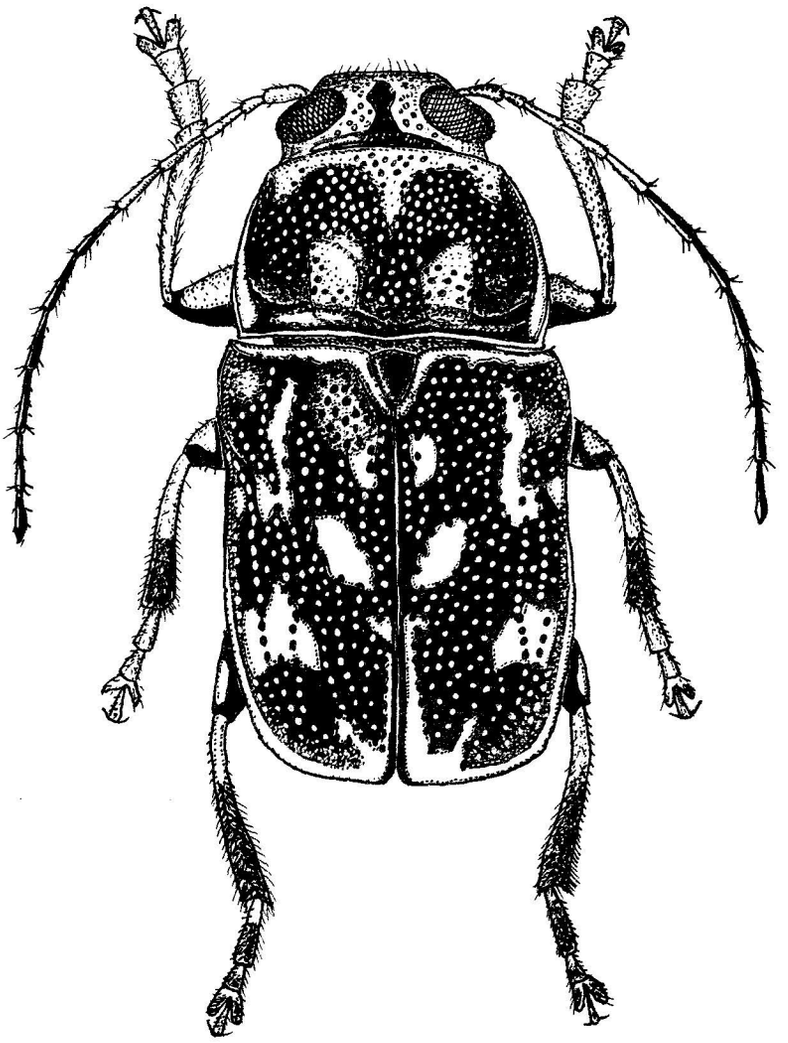


Total figure 16. *Coptocephala rubicunda rossica*, male. Length 5.0–7.0 mm.

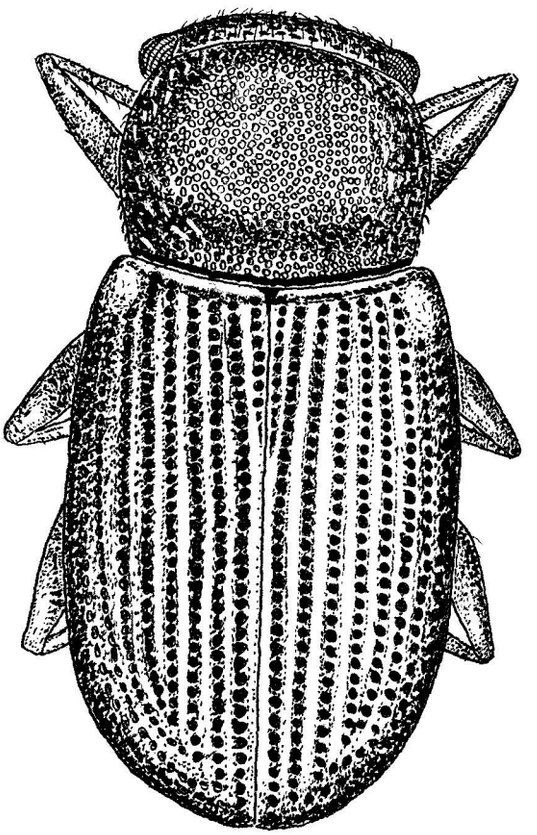
Total figure 17. *Cheilotoma erythrostoma*, male. Length 4.8–7.0 mm.



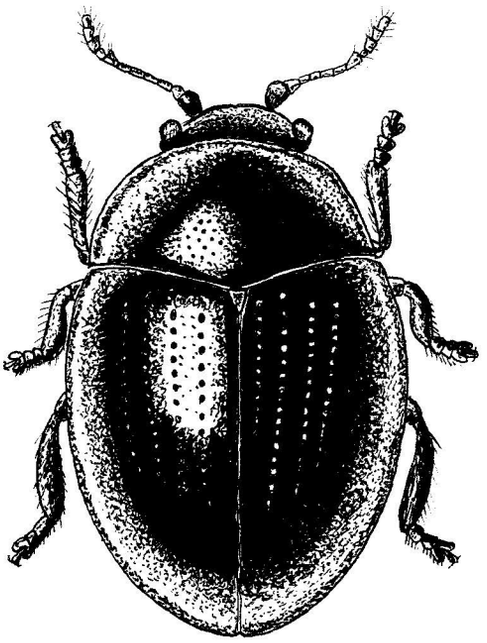
Total figure 18. *Cryptocephalus elegantulus*. Length 1.5–2.5 mm.



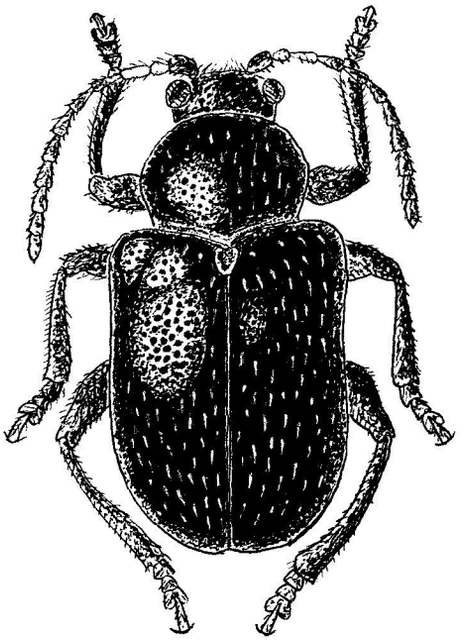
Total figure 19. *Pachybrachis tessellatus*. Length 3.0–4.5 mm.



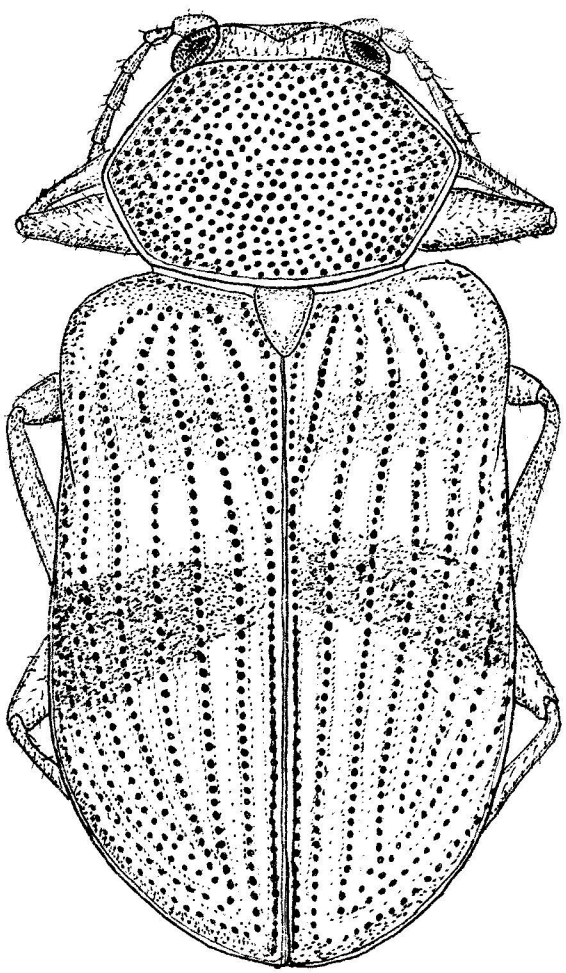
Total figure 20. *Stylosomus tamaricis*. Length 1.5–2.5 mm.



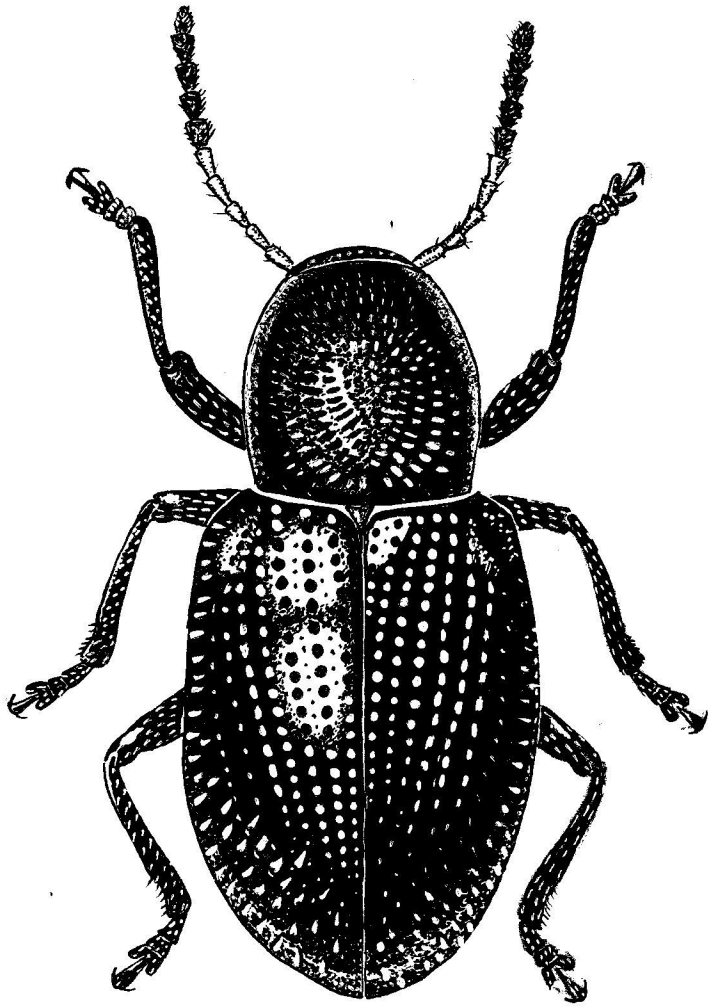
Total figure 21. *Oomorphus concolor*. Length 2.0–3.0 mm.



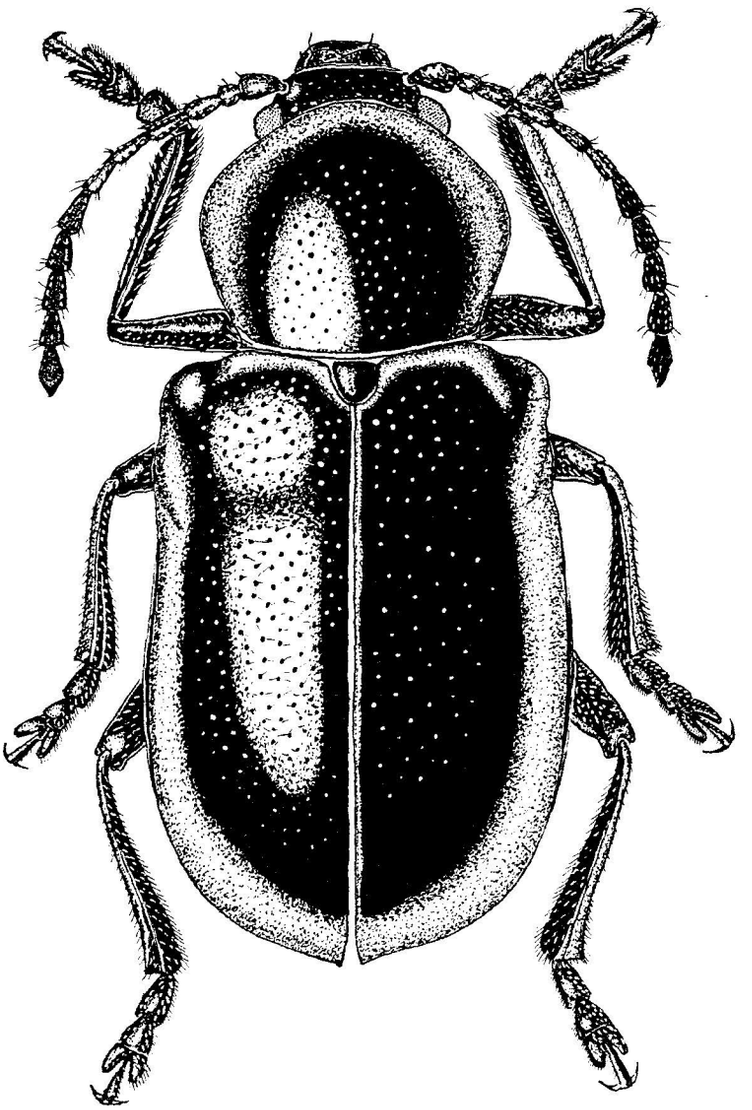
Total figure 22. *Bromius obscurus*. Length 5.0–6.0 mm.



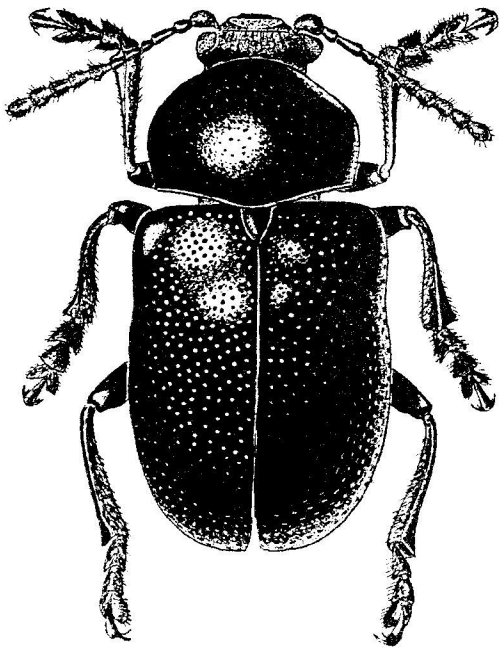
Total figure 23. *Chloropterus lefevrei.* Length 4.0–4.8 mm.



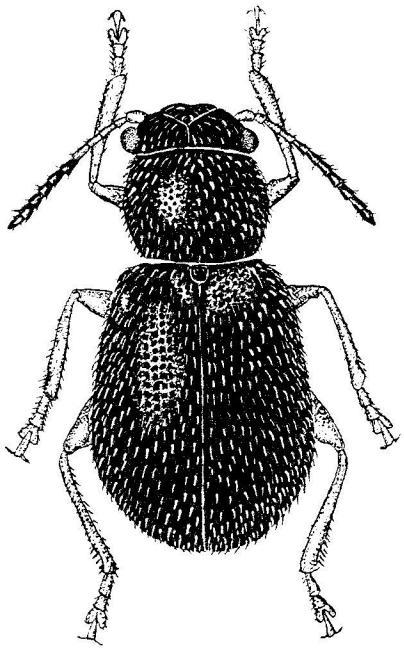
Total figure 24. *Pachnephorus villosus.* Length 2.7–4.0 mm.



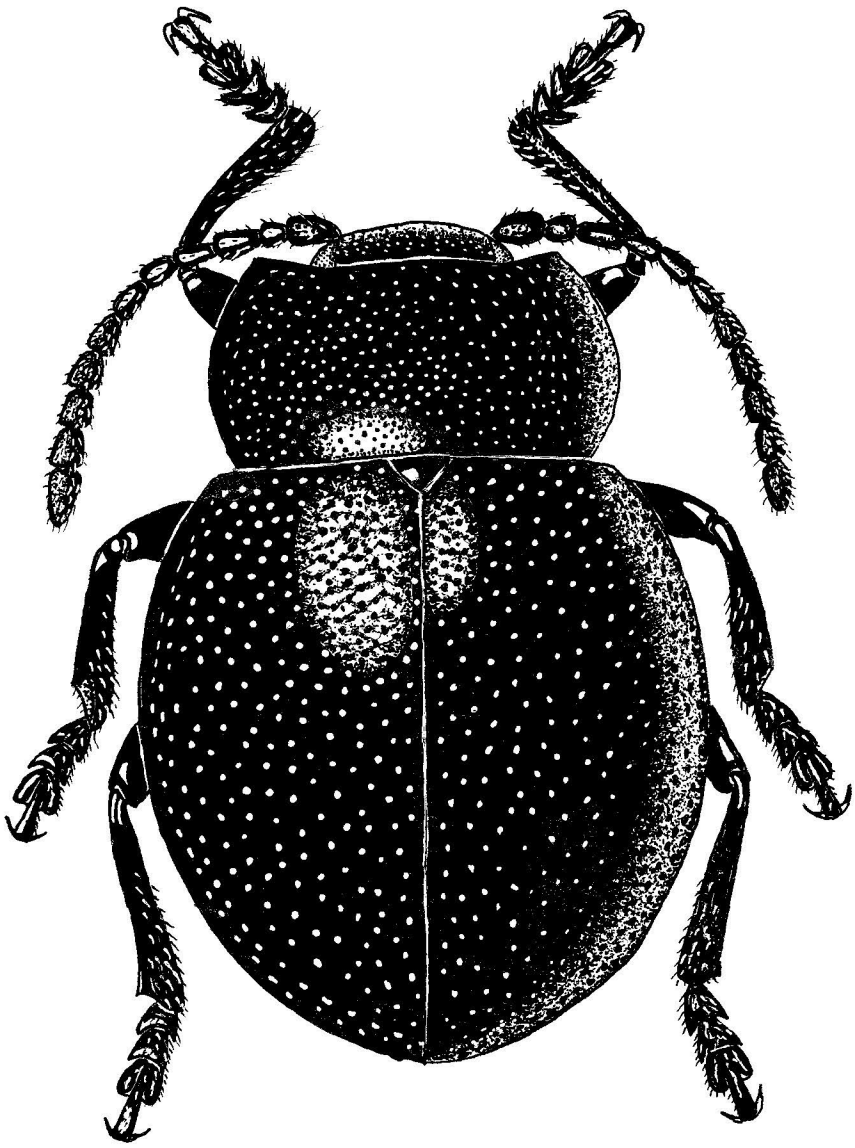
Total figure 25. *Chrysochares asiatica.* Length 13.0–17.0 mm.



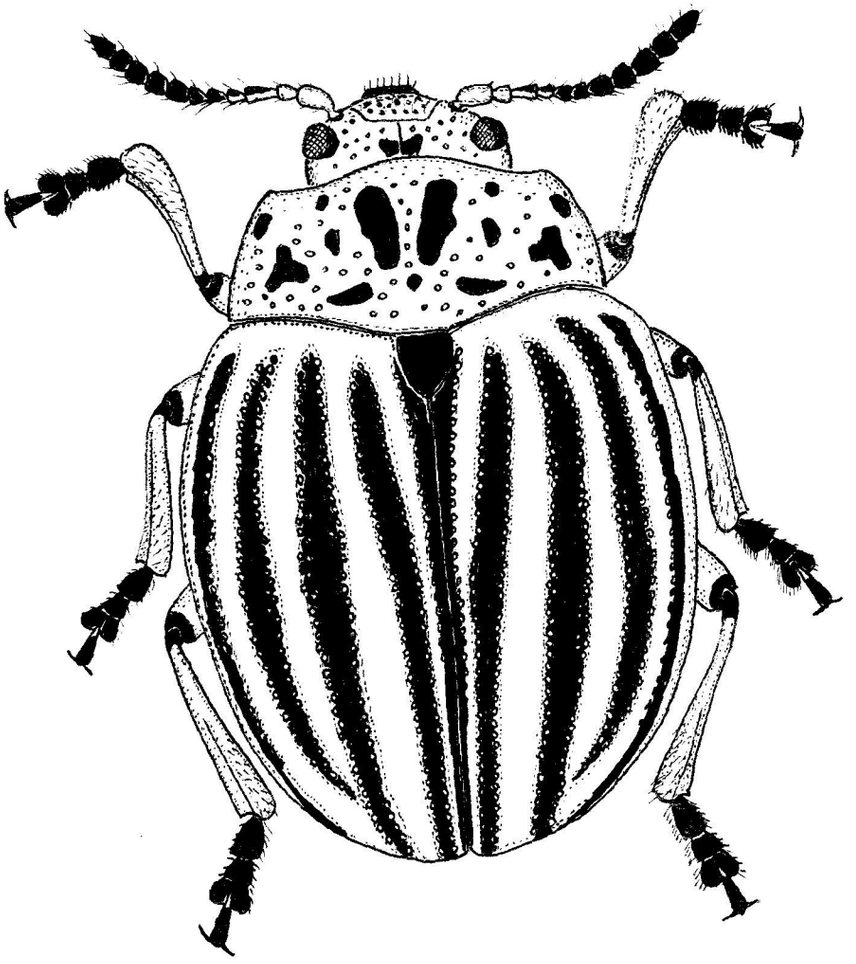
Total figure 26. *Eumolpus asclepiadeus.* Length 7.4–10.0 mm.



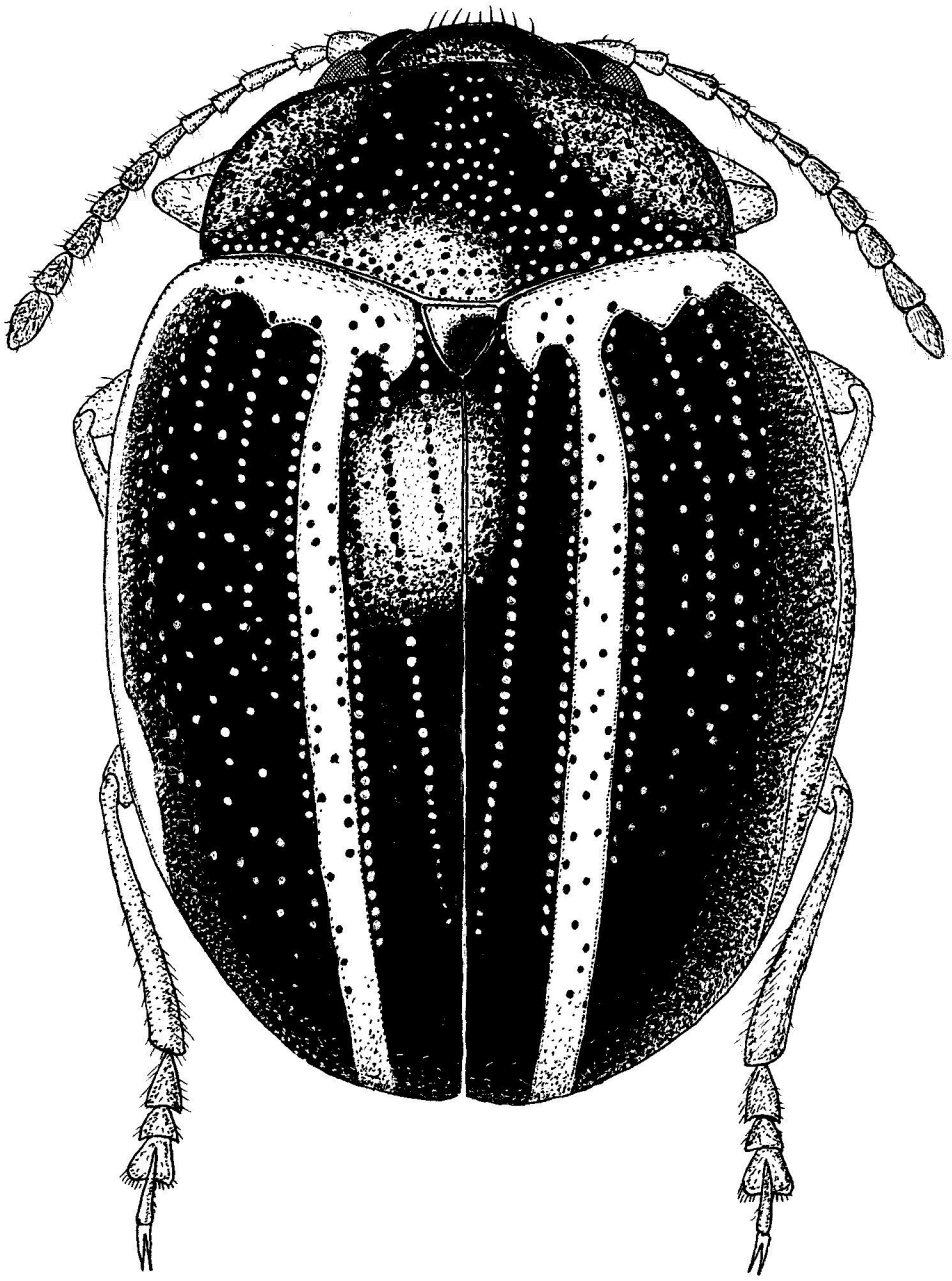
Total figure 27. *Malegia turkestanica.* Length 2.3–4.0 mm.



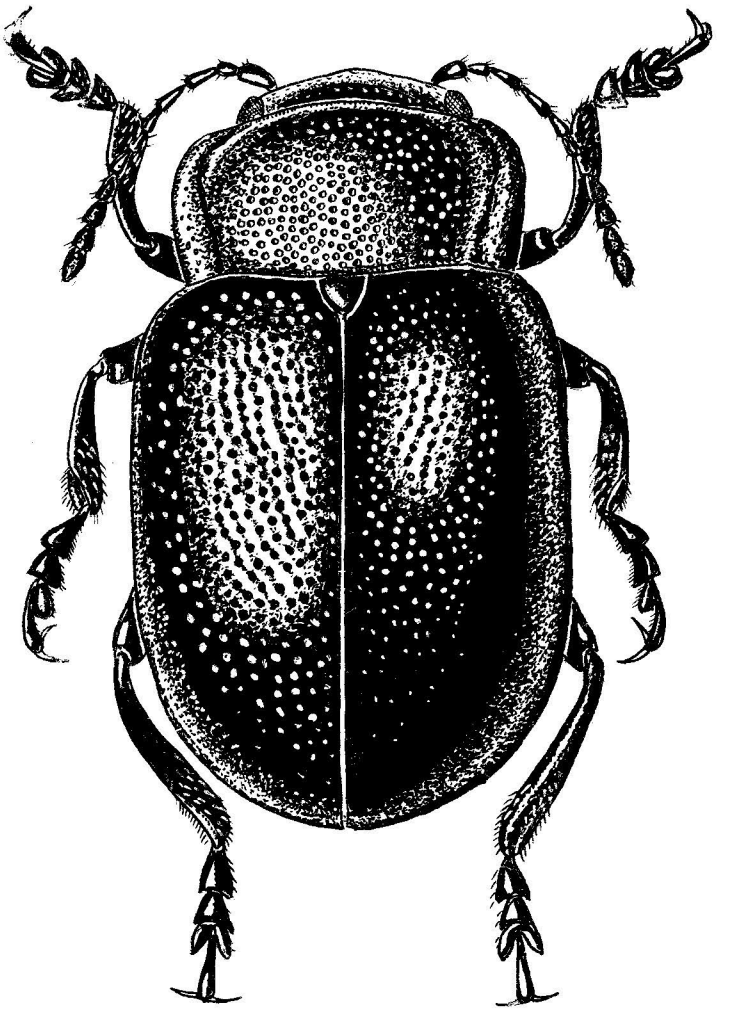
Total figure 28. *Timarcha goettingensis*. Length 8.0–13.0 mm.



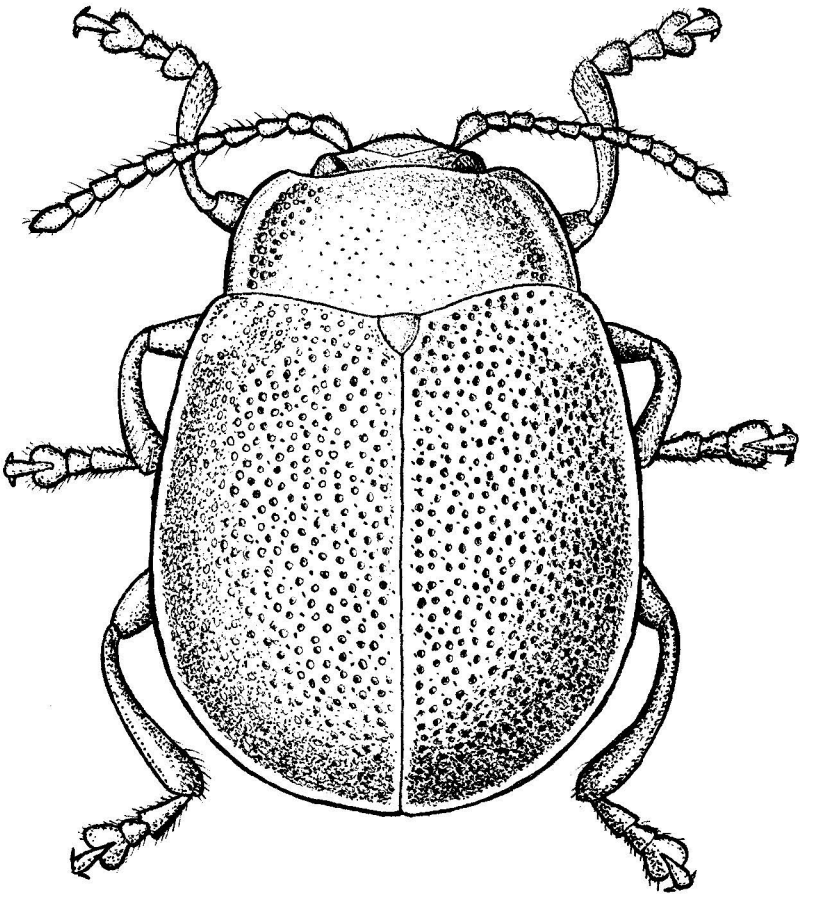
Total figure 29. *Leptinotarsa decemlineata.* Length 9.0–12.0 mm.



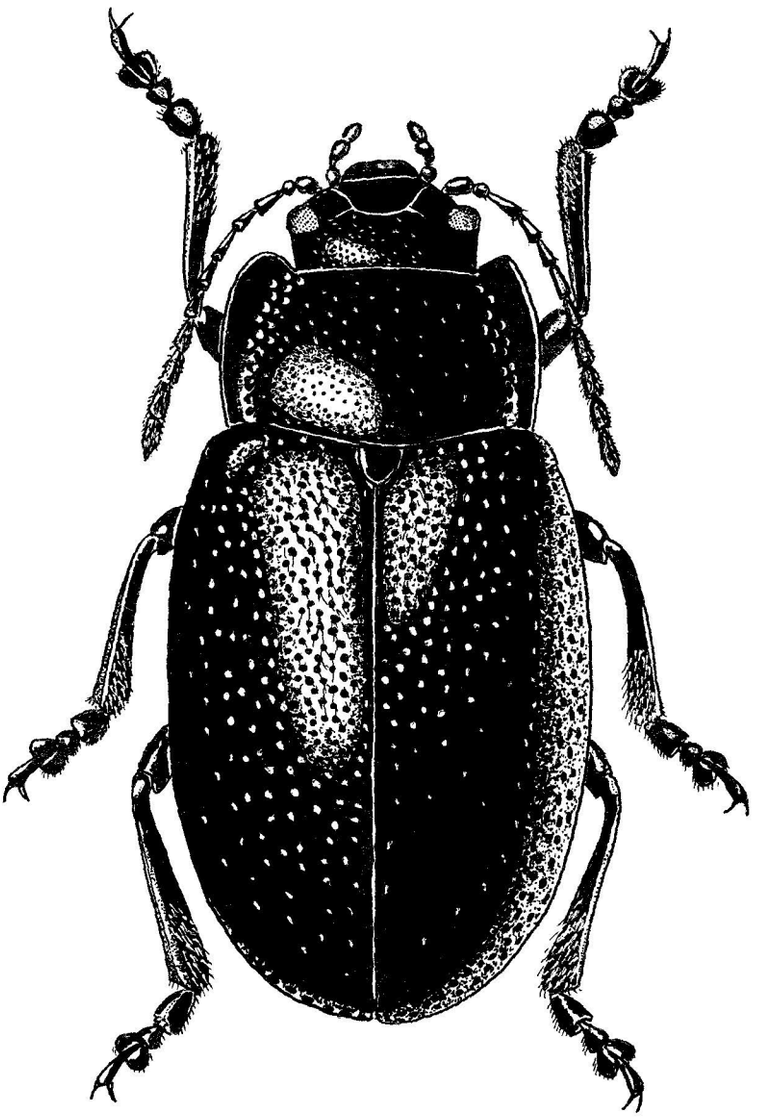
Total figure 30. *Zygogramma suturalis.* Length 5.0–6.8 mm.



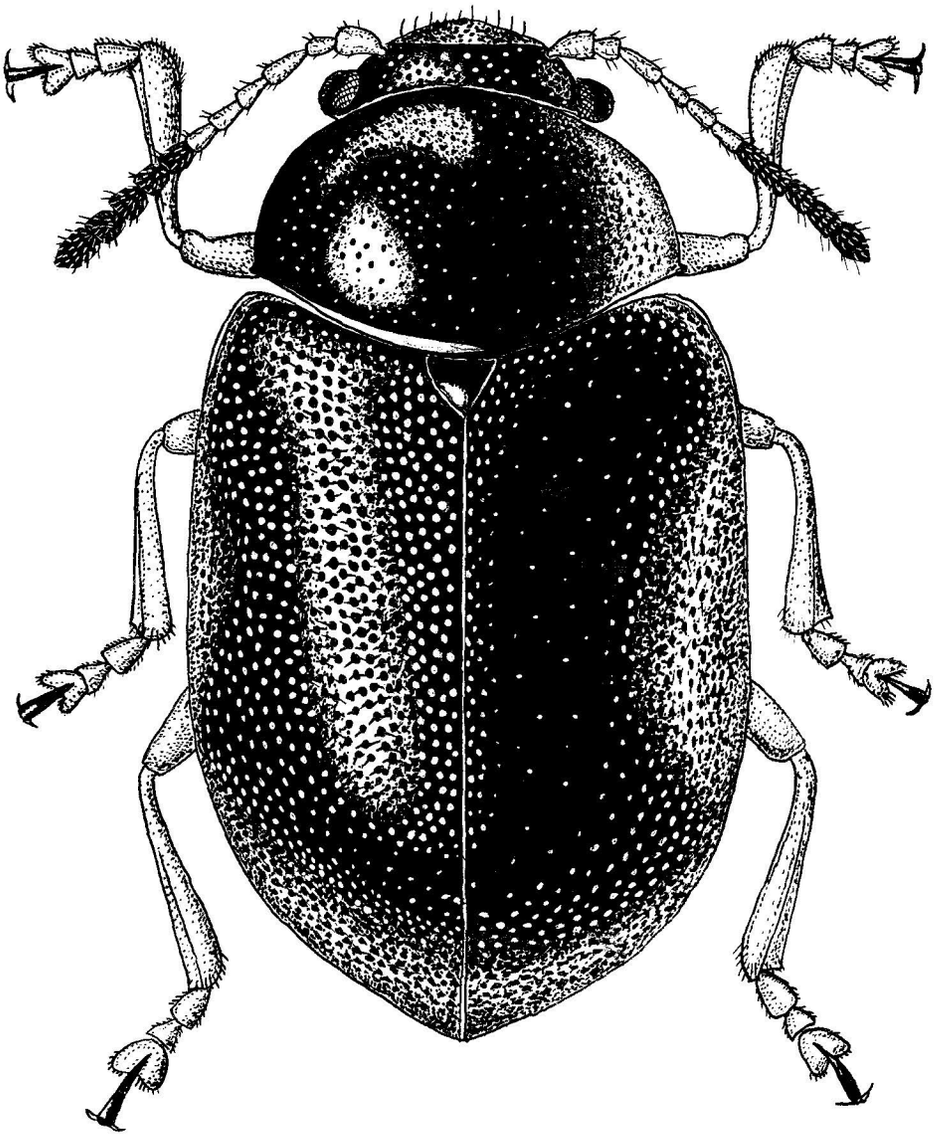
Total figure 31. *Crosita altaica.* Length 7.0–13.0 mm.



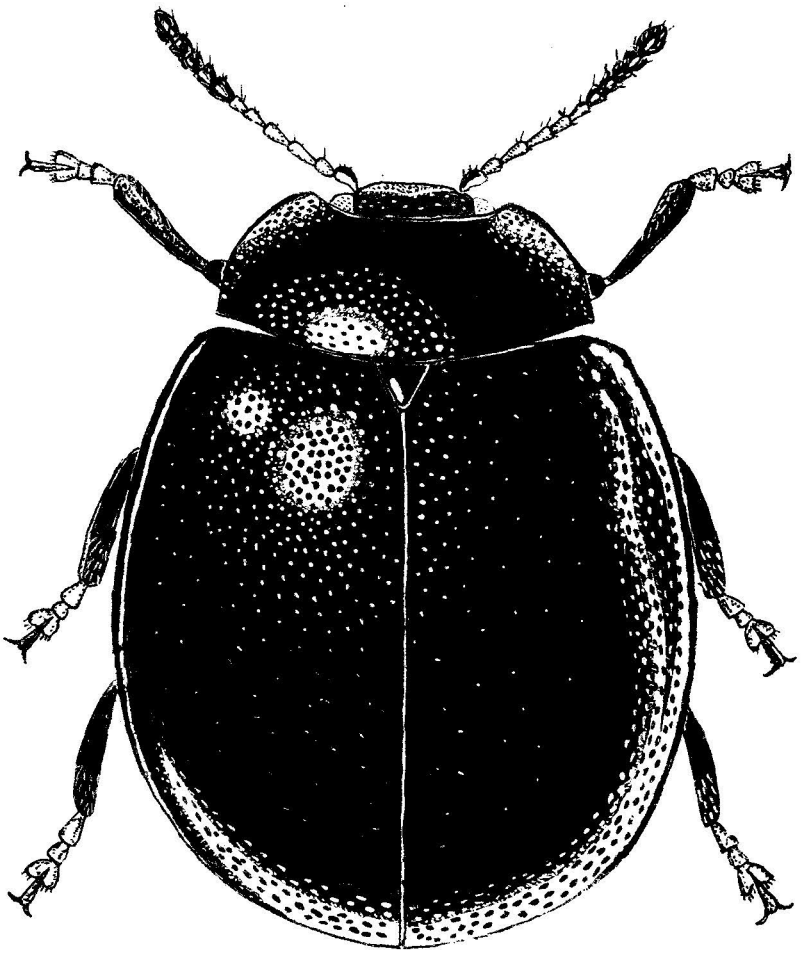
Total figure 32. *Chrysolina staphylaea.* Length 5.9–8.1 mm.



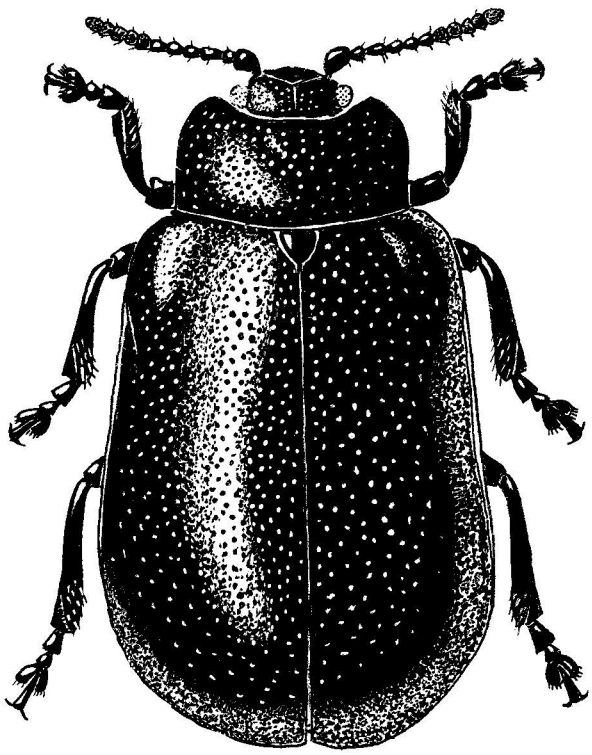
Total figure 33. *Oreina coerulea.* Length 8.5–12.0 mm.



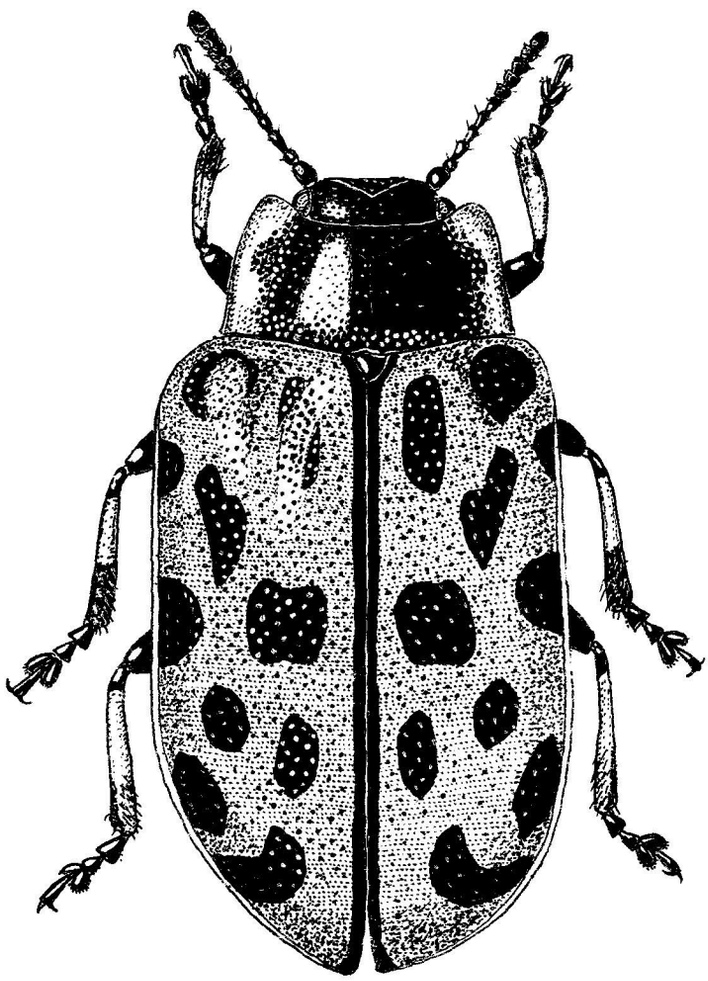
Total figure 34. *Colaphus hoeftii.* Length 4.0–6.0 mm.



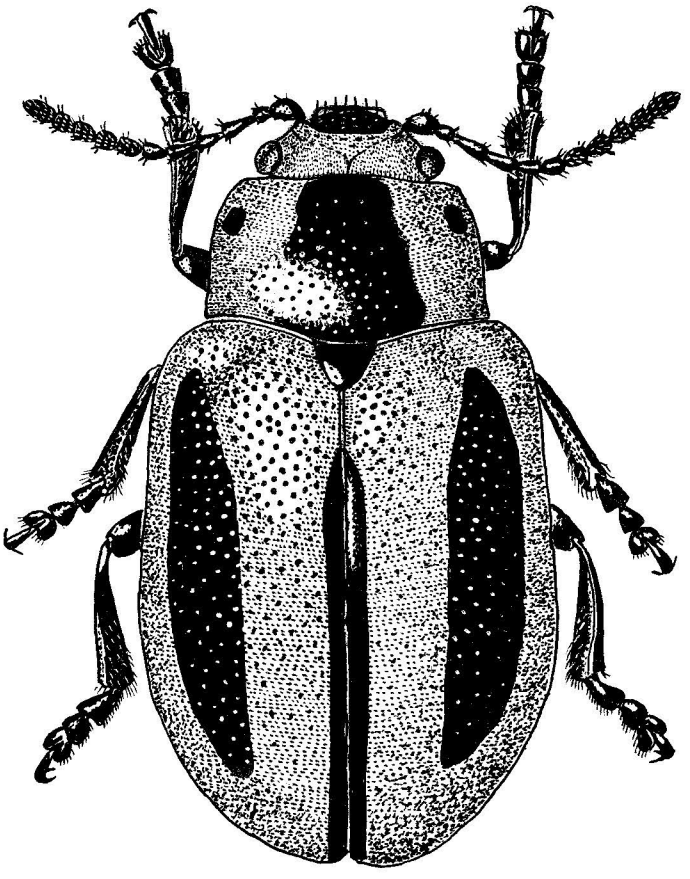
Total figure 35. *Plagiodera versicolora.* Length 2.5–4.8 mm.



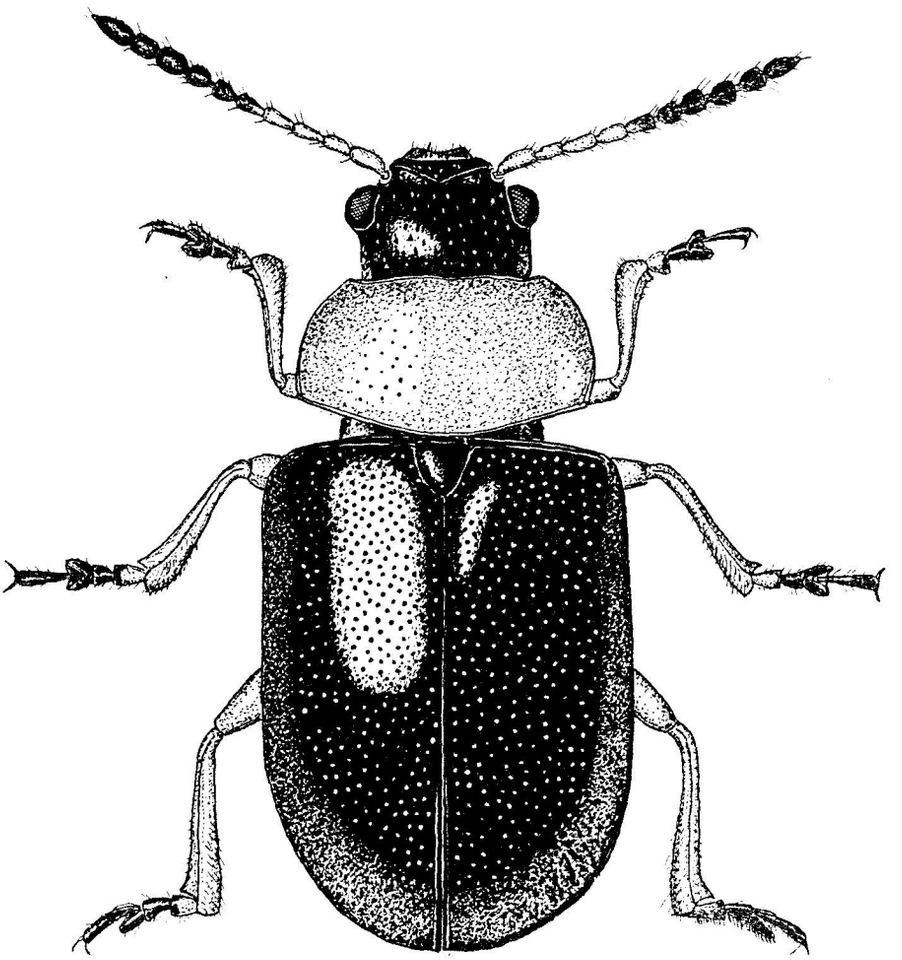
Total figure 36. *Plagiosterna aenea.* Length 6.3–8.5 mm.



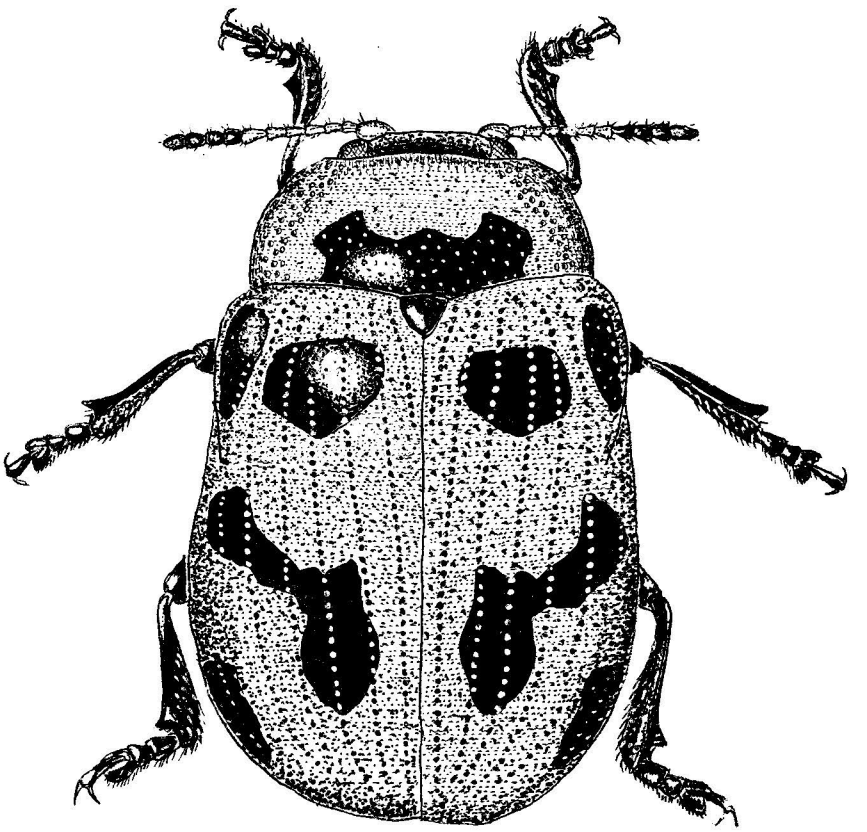
Total figure 37. *Chrysomela vigintipunctata.* Length 6.5–8.5 mm.



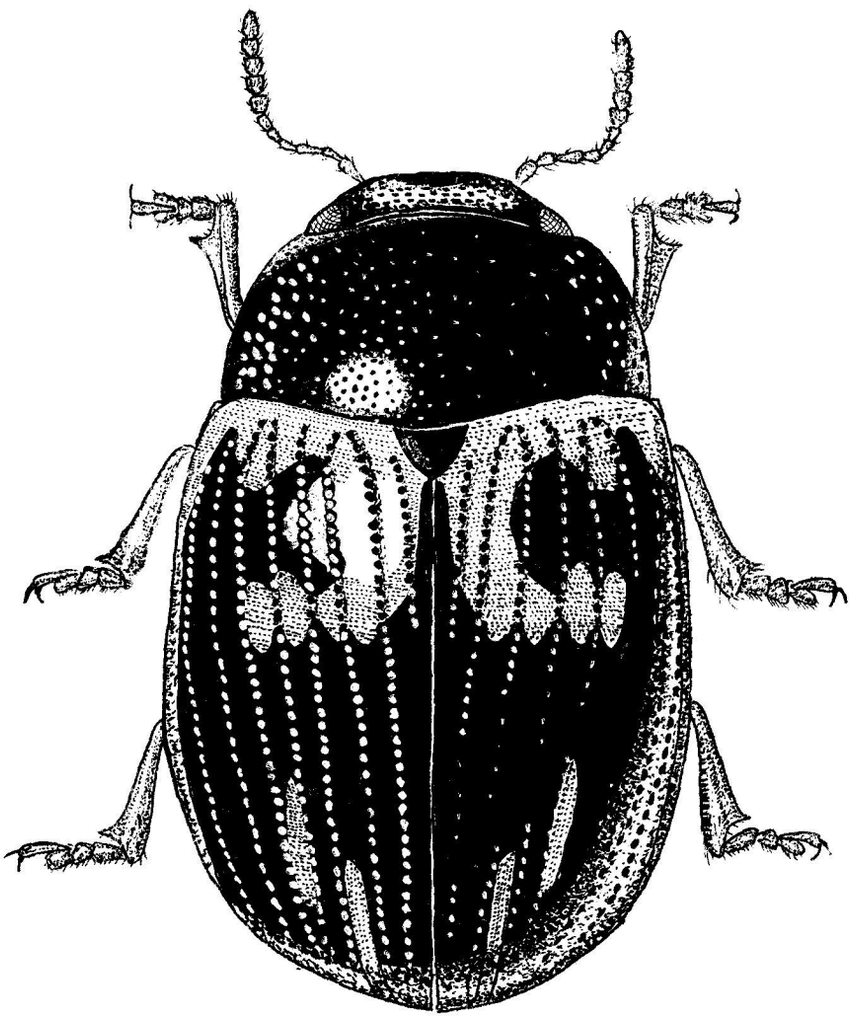
Total figure 38. *Entomoscelis adonidis.* Length 6.6–10.0 mm.



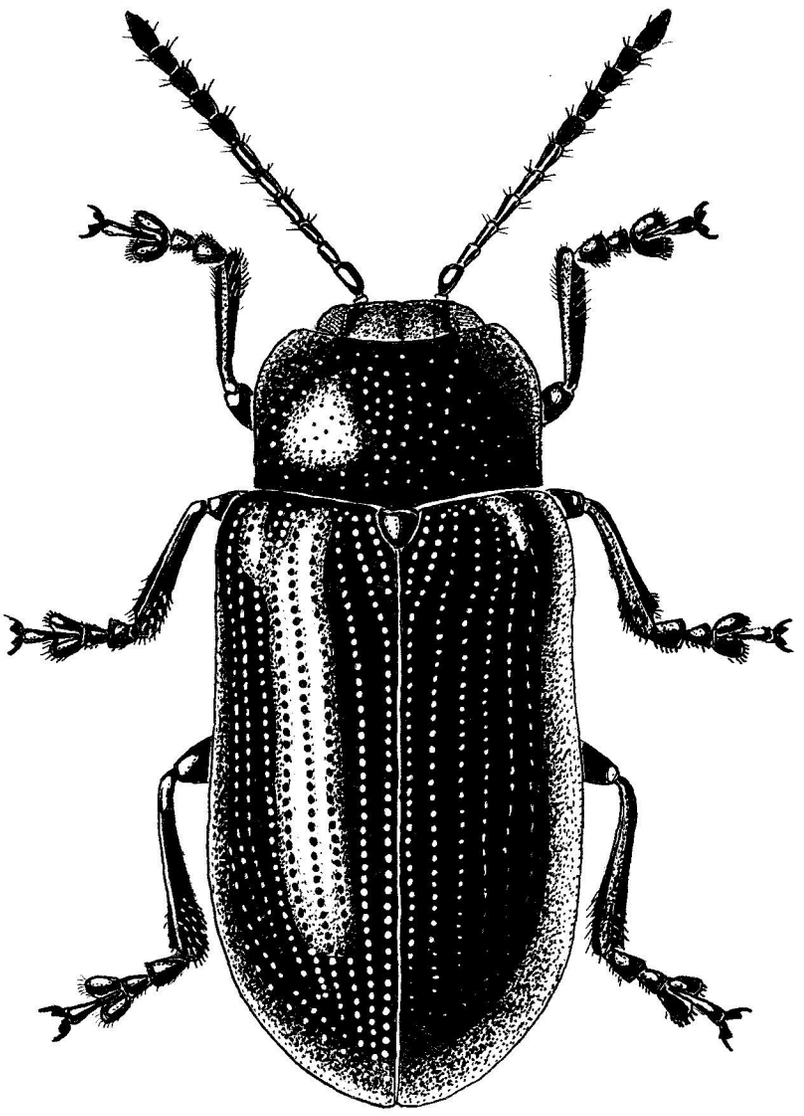
Total figure 39. *Gastrophysa polygoni.* Length 3.9–5.0 mm.



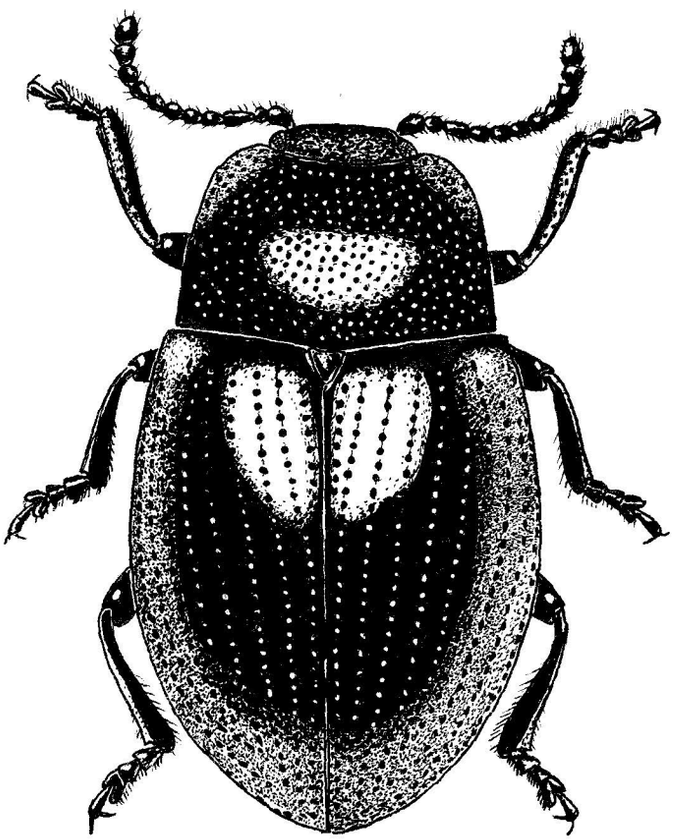
Total figure 40. *Gonioctena viminalis*. Length 5.5–7.0 mm.



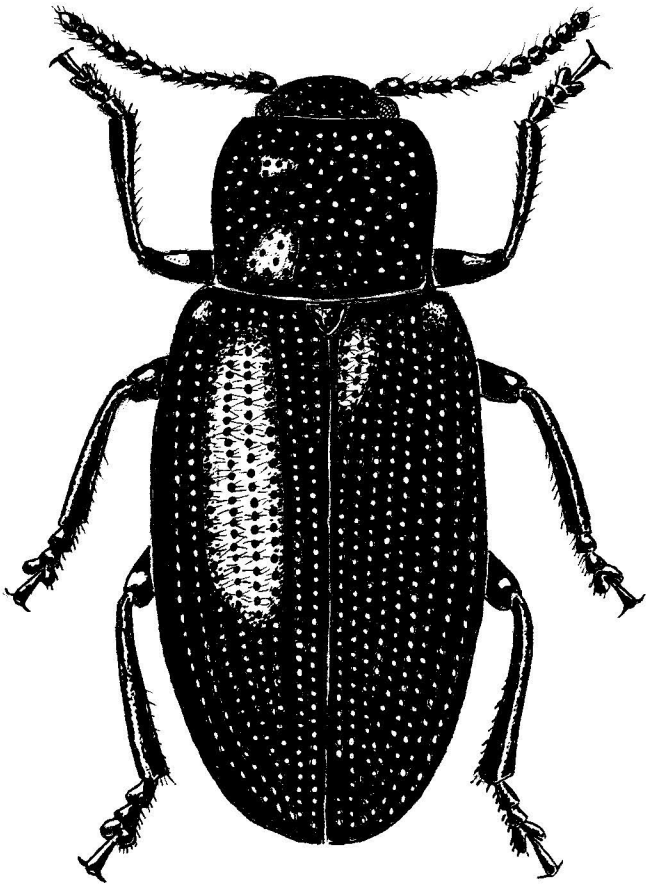
Total figure 41. *Cercyonops caraganae.* Length 3.5–4.5 mm.



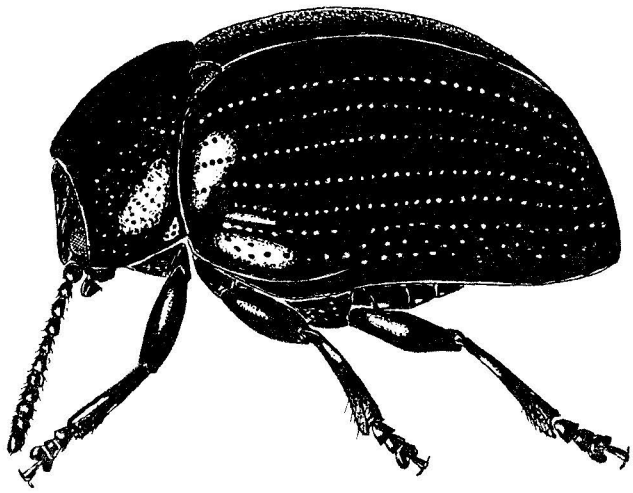
Total figure 42. *Phratora laticollis*. Length 3.7–5.0 mm.



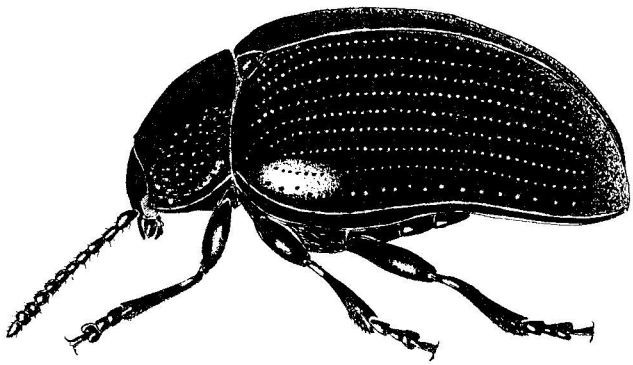
Total figure 43. *Hydrothassa glabra.* Length 3.0–4.0 mm.



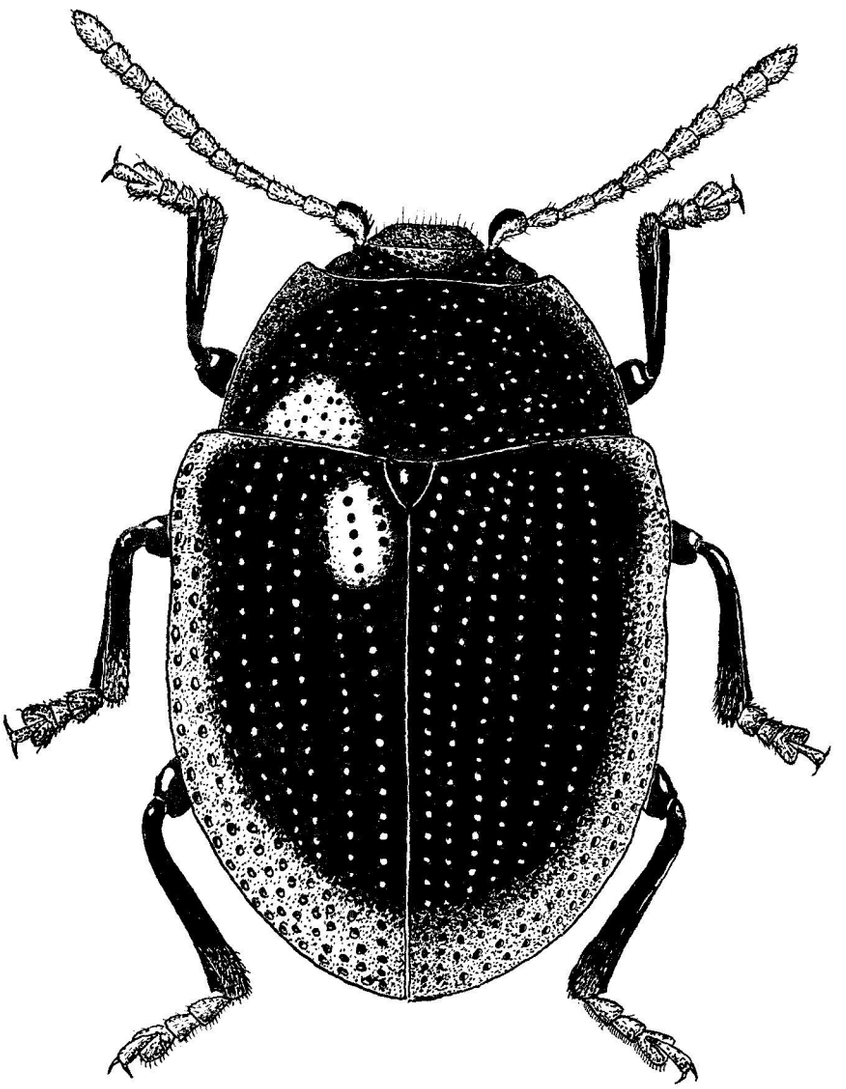
Total figure 44. *Prasocuris junci.* Length 3.9–5.0 mm.



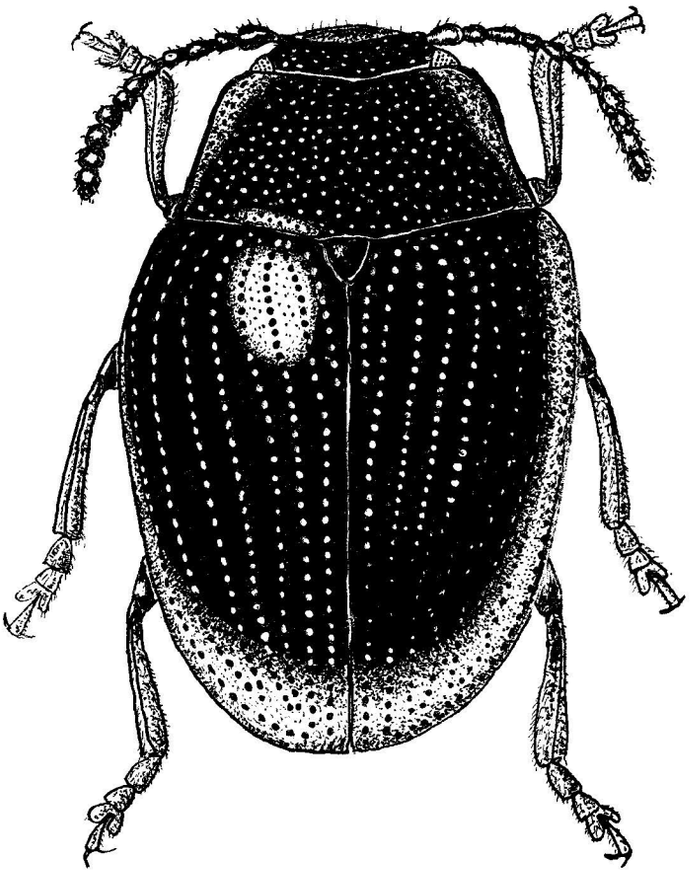
Total figure 45. *Neophaedon pyritosus.* Length 2.8–4.0 mm.



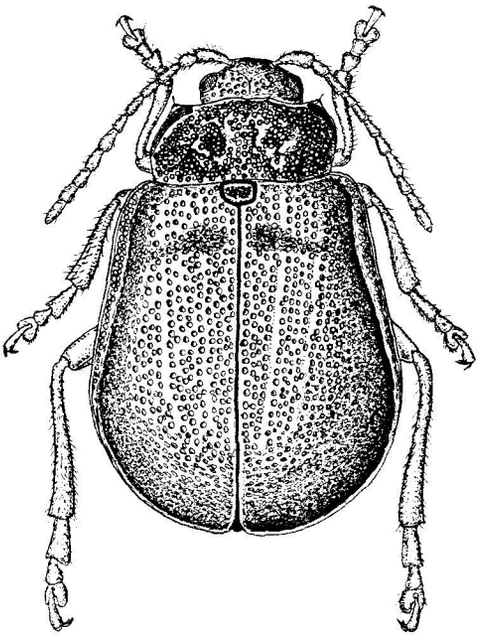
Total figure 46. *Phaedon armoraciae.* Length 3.7–4.7 mm.



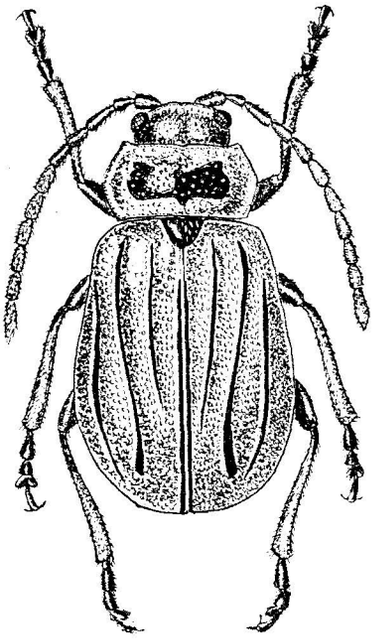
Total figure 47. *Sclerophaedon carpathicus*. Length 3.7–5.0 mm.



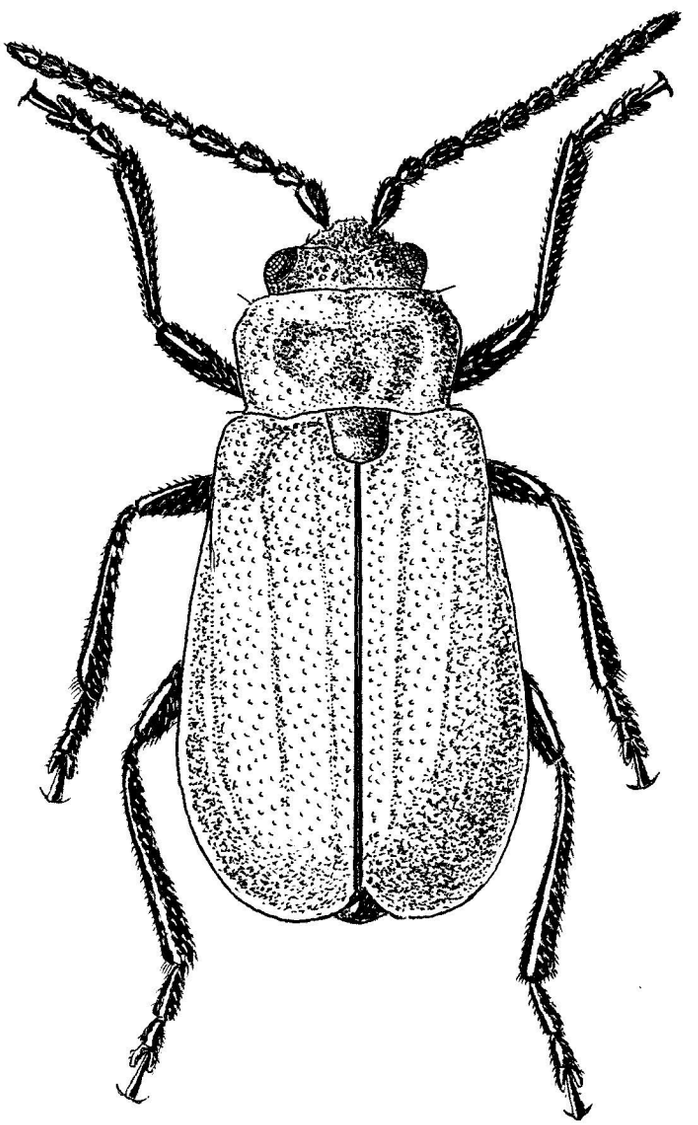
Total figure 48. *Sternoplatys segnis.* Length 3.1-4.0 mm.



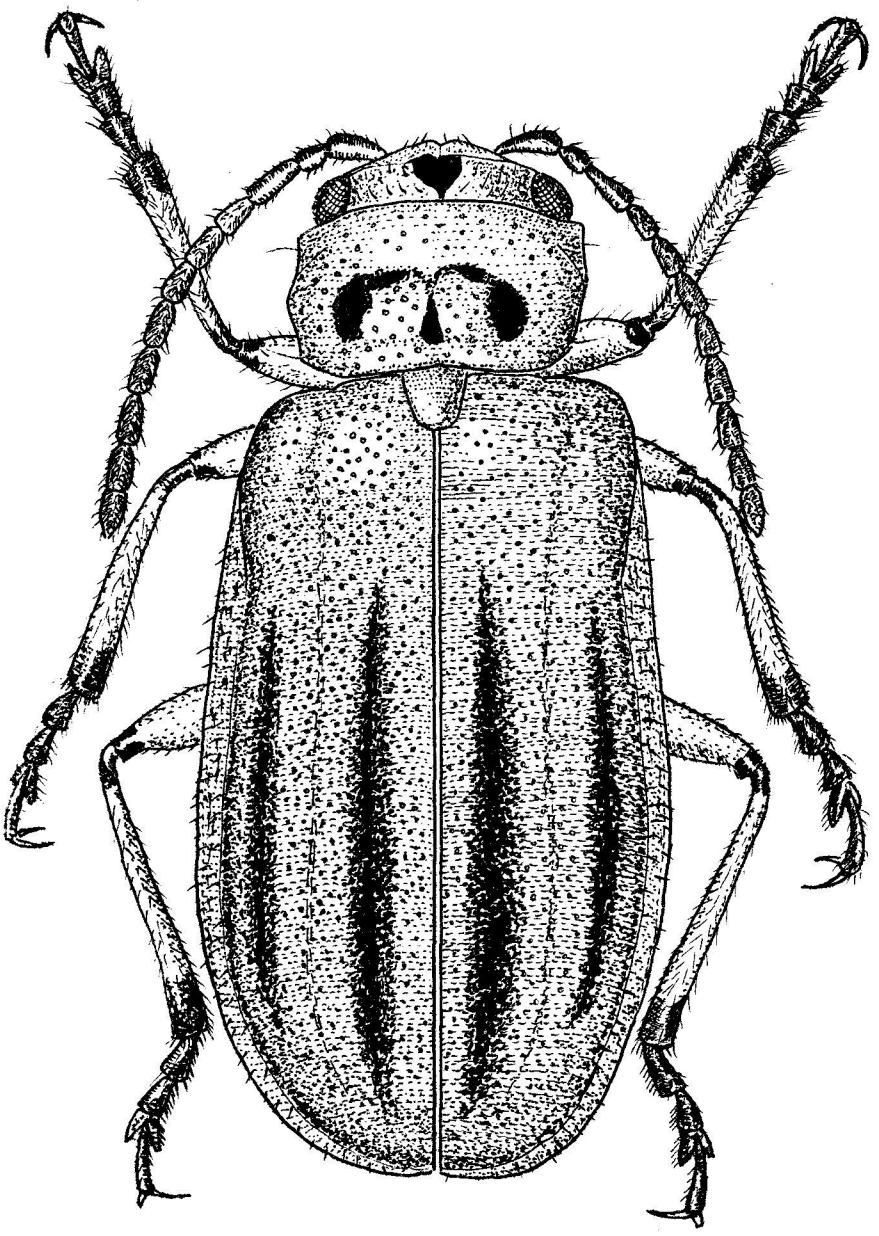
Total figure 49. *Galeruca tanaceti.* Length 6.0–10.8 mm.



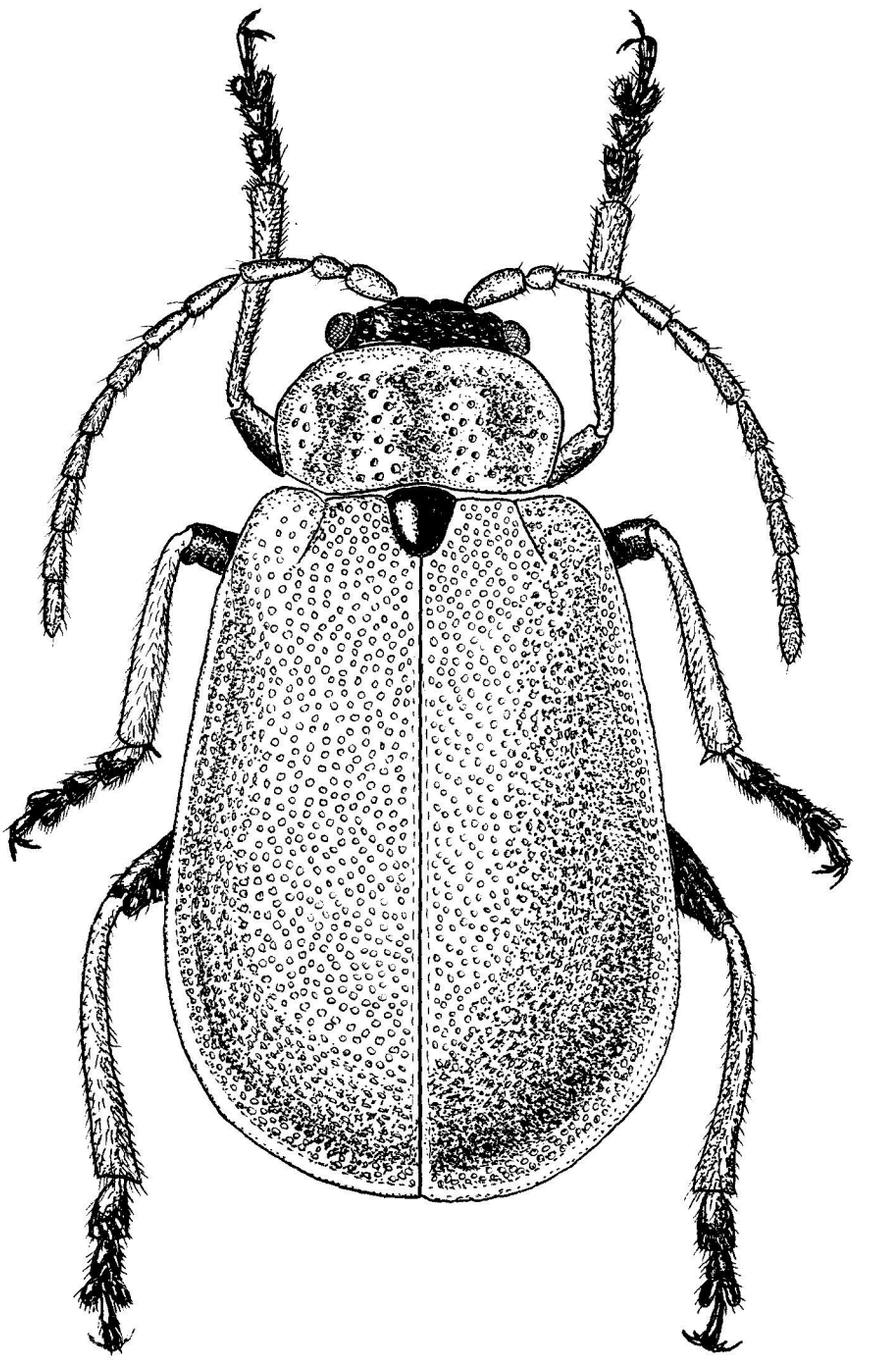
Total figure 50. *Pallasiola absinthii.* Length 5.5–8.0 mm.



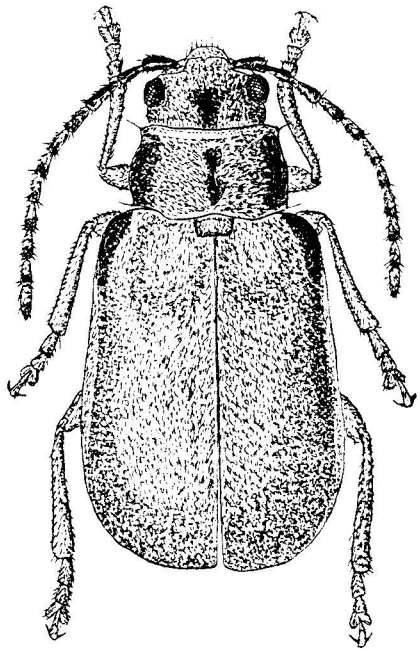
Total figure 51. *Theone silphoides*. Length 7.0–9.7 mm.



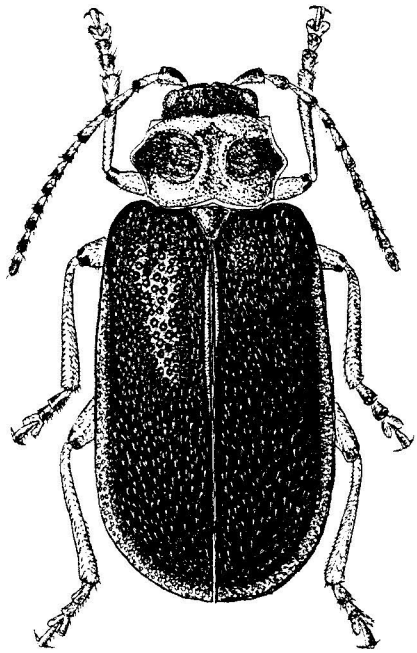
Total figure 52. *Diorhabda elongata.* Length 4.5–8.0 mm.



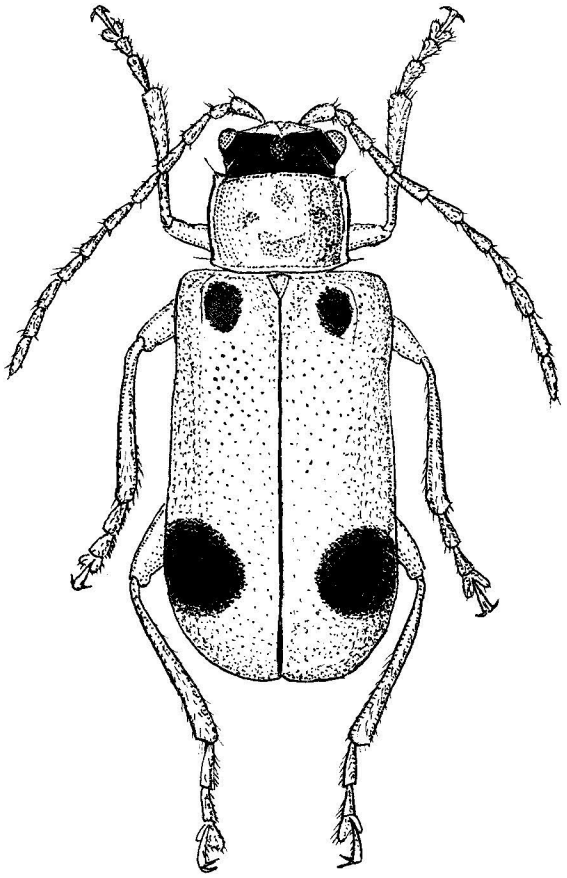
Total figure 53. *Lochmaea caprea*, male. Length 4.0–6.0 mm.



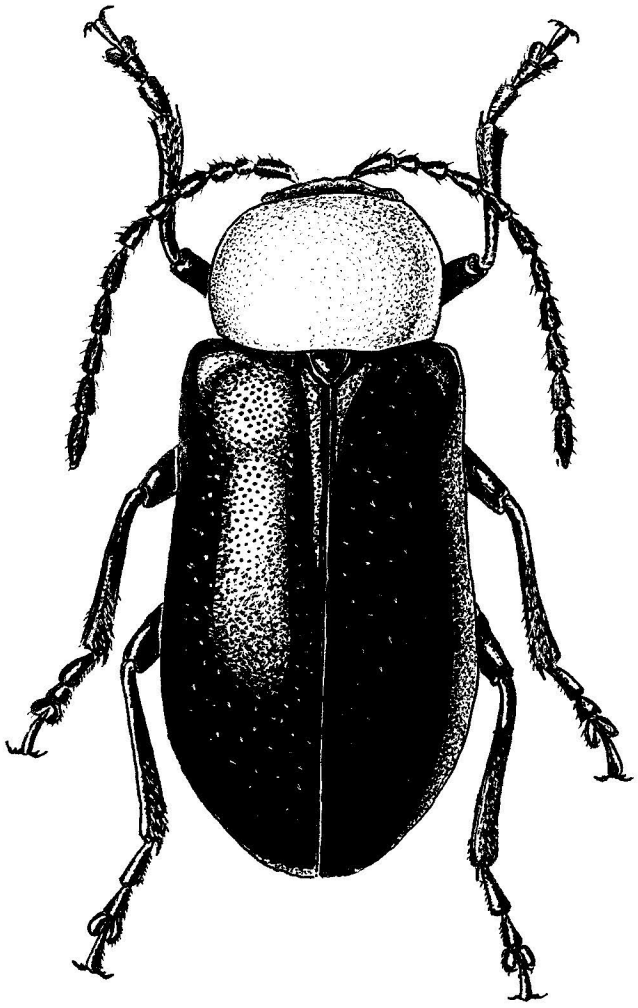
Total figure 54. *Pyrrhalta viburni.* Length 4.5–6.5 mm.



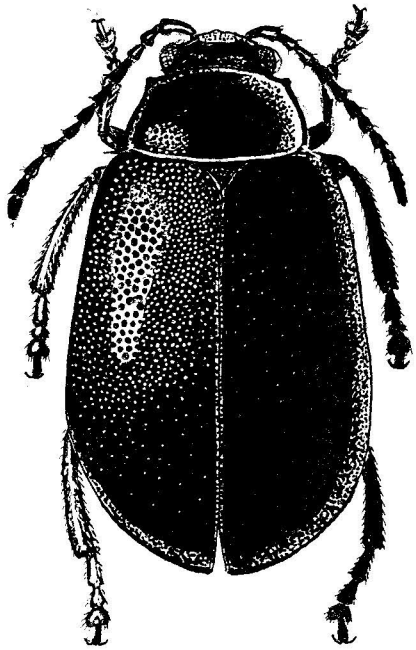
Total figure 55. *Galerucella nymphaeae.* Length 5.6–6.3 mm.



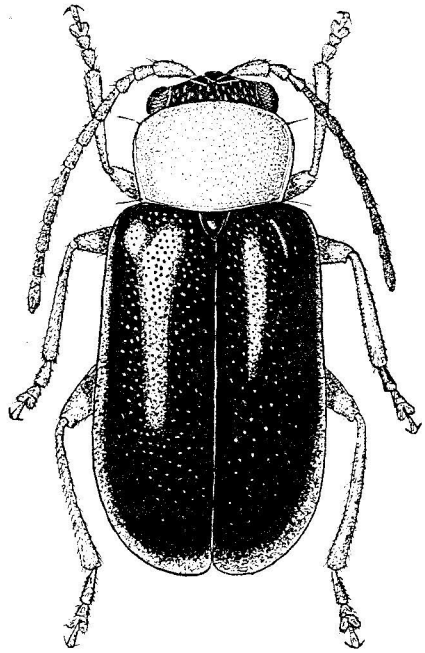
Total figure 56. *Phyllobrotica quadrimaculata.* Length 5.0–7.0 mm.



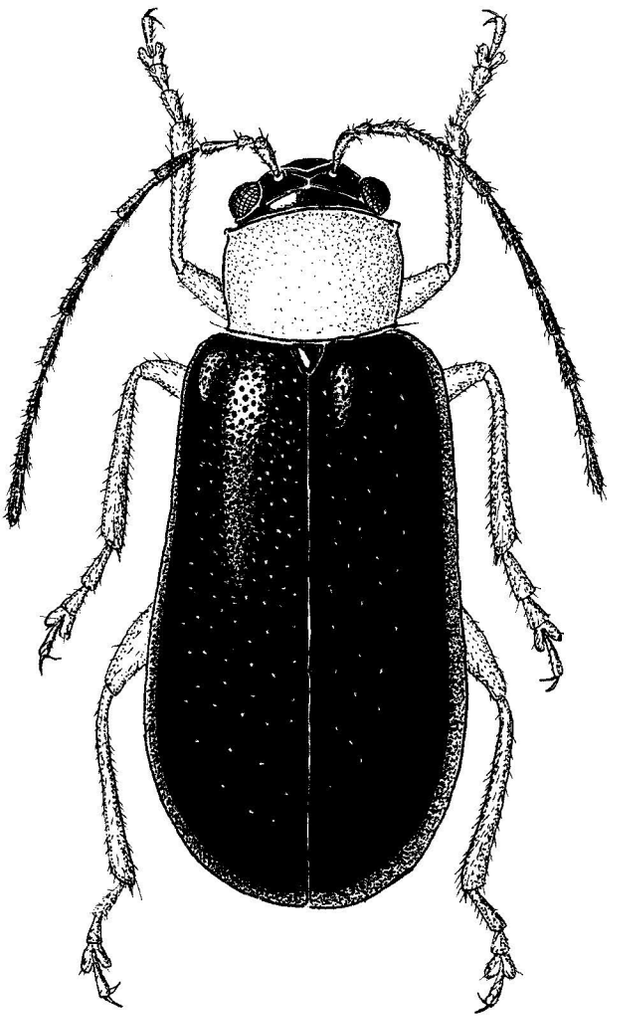
Total figure 57. *Exosoma collare.* Length 5.5–8.0 mm.



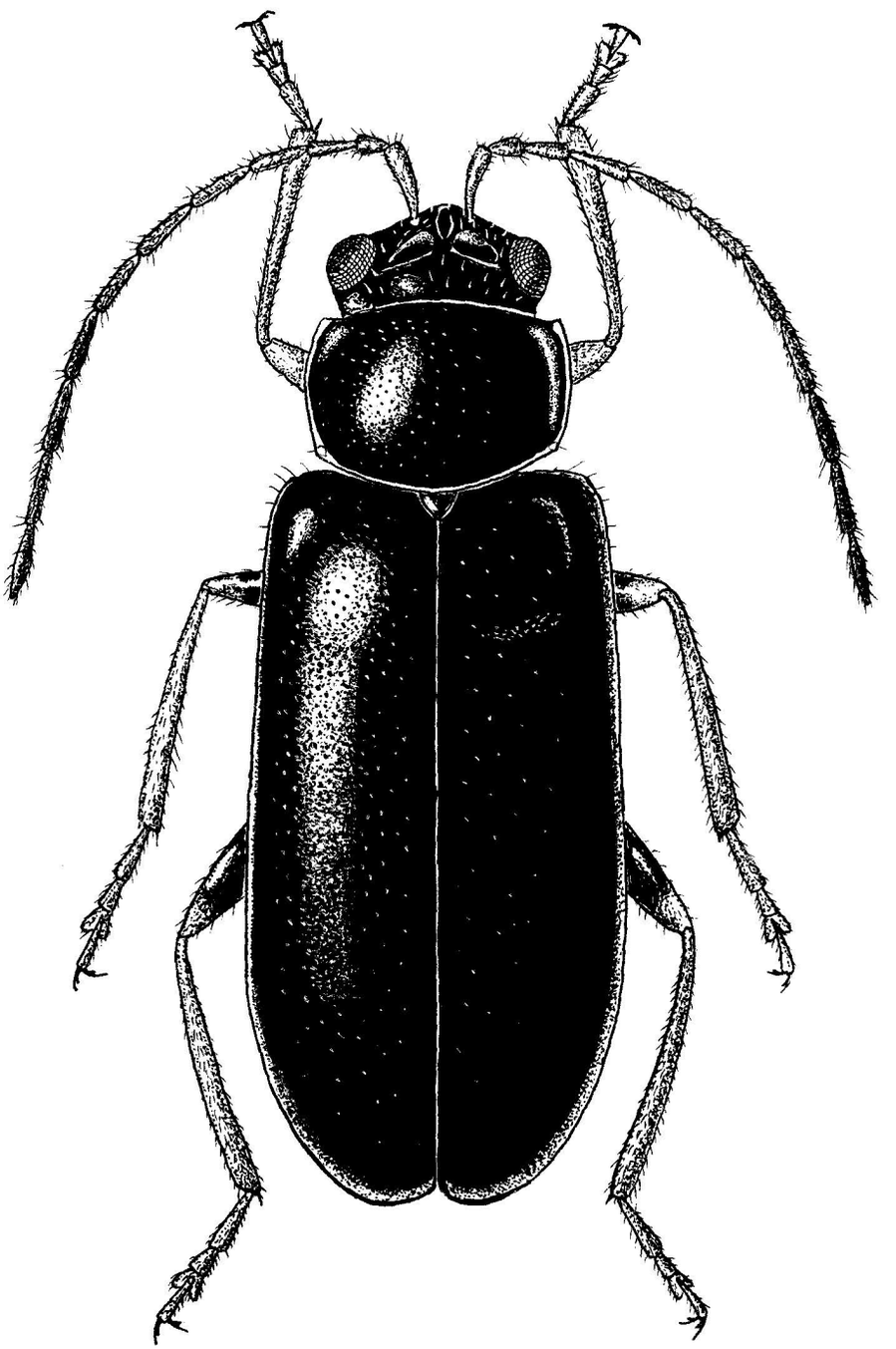
Total figure 58. *Agelastica alni.* Length 5.9–7.2 mm.



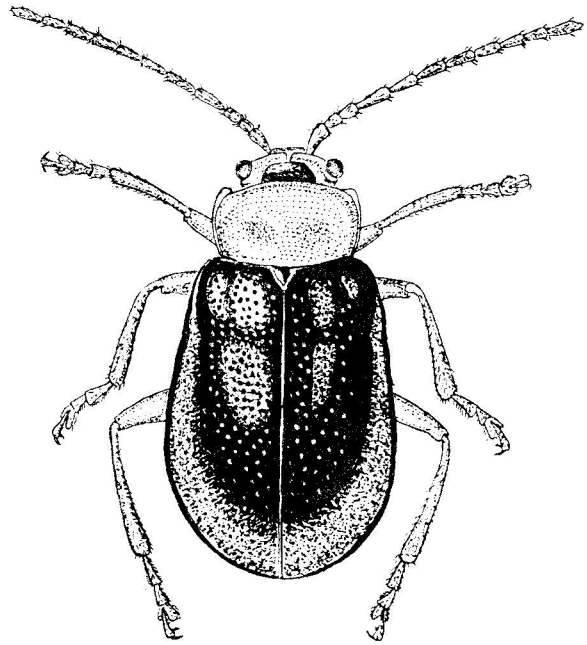
Total figure 59. *Calomicrus pinicola.* Length 2.3–4.3 mm.



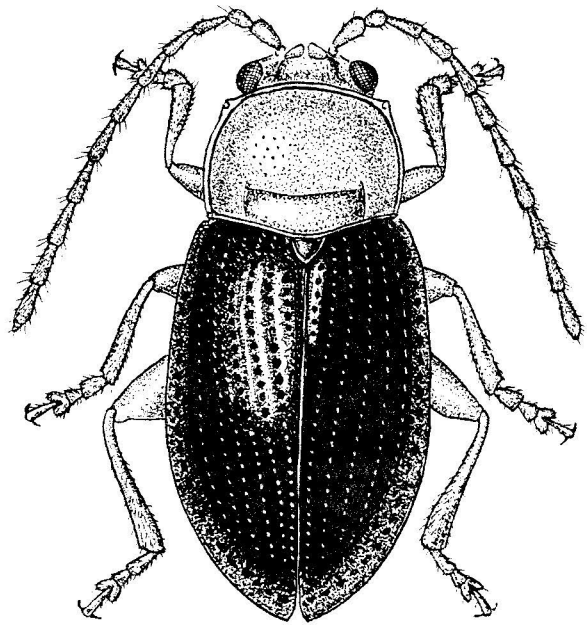
Total figure 60. *Luperus flavipes*, female. Length 3.6–5.0 mm.



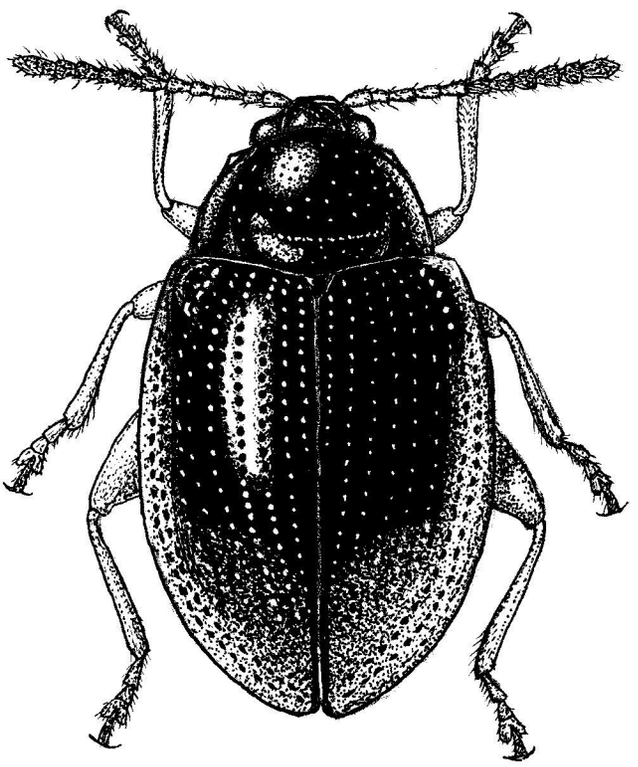
Total figure 61. *Euluperus xanthopus.* Length 4.0–5.0 mm.



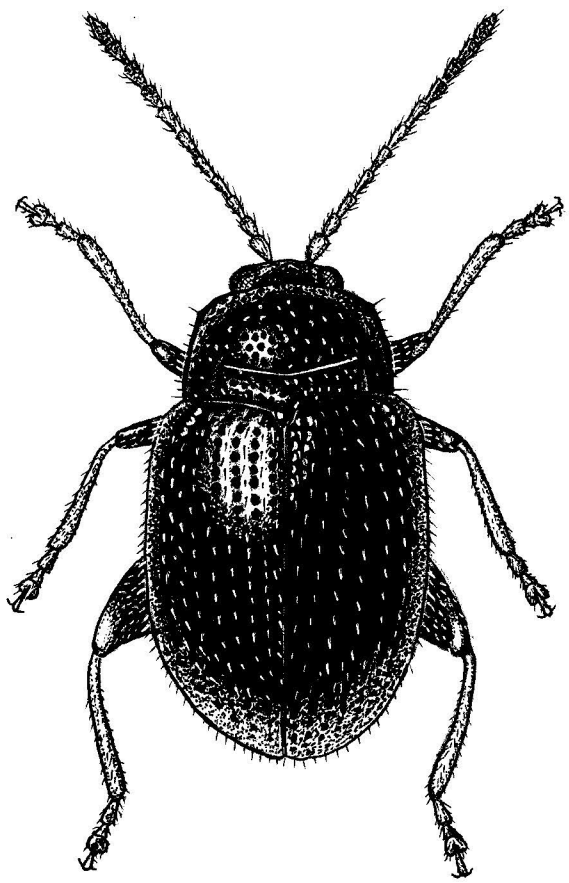
Total figure 62. *Sermylassa halensis.* Length 4.4–7.0 mm.



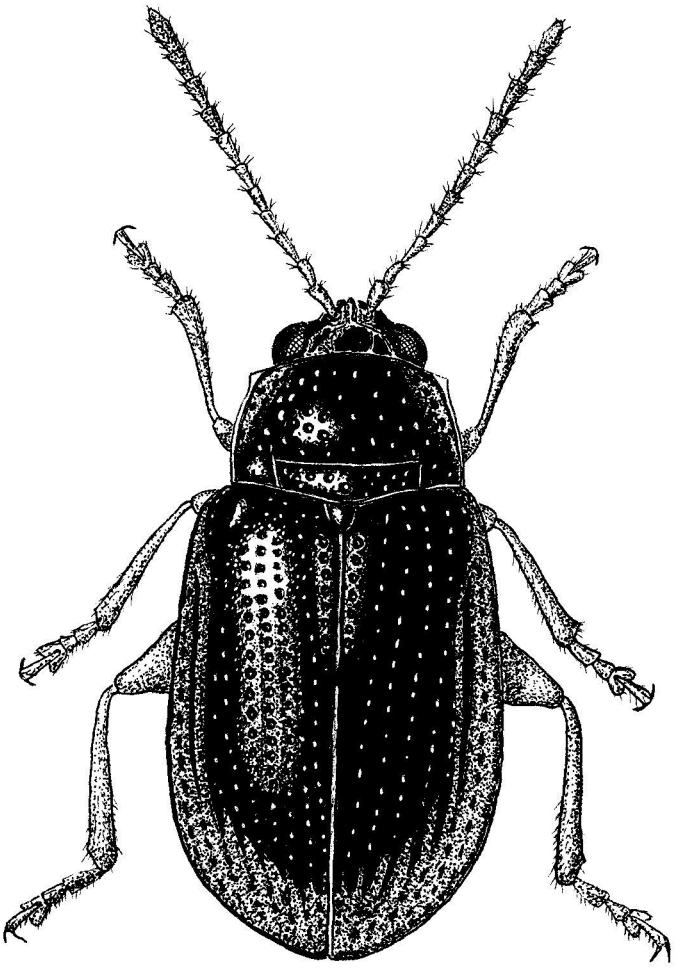
Total figure 63. *Derocrepis rufipes.* Length 2.3–3.8 mm.



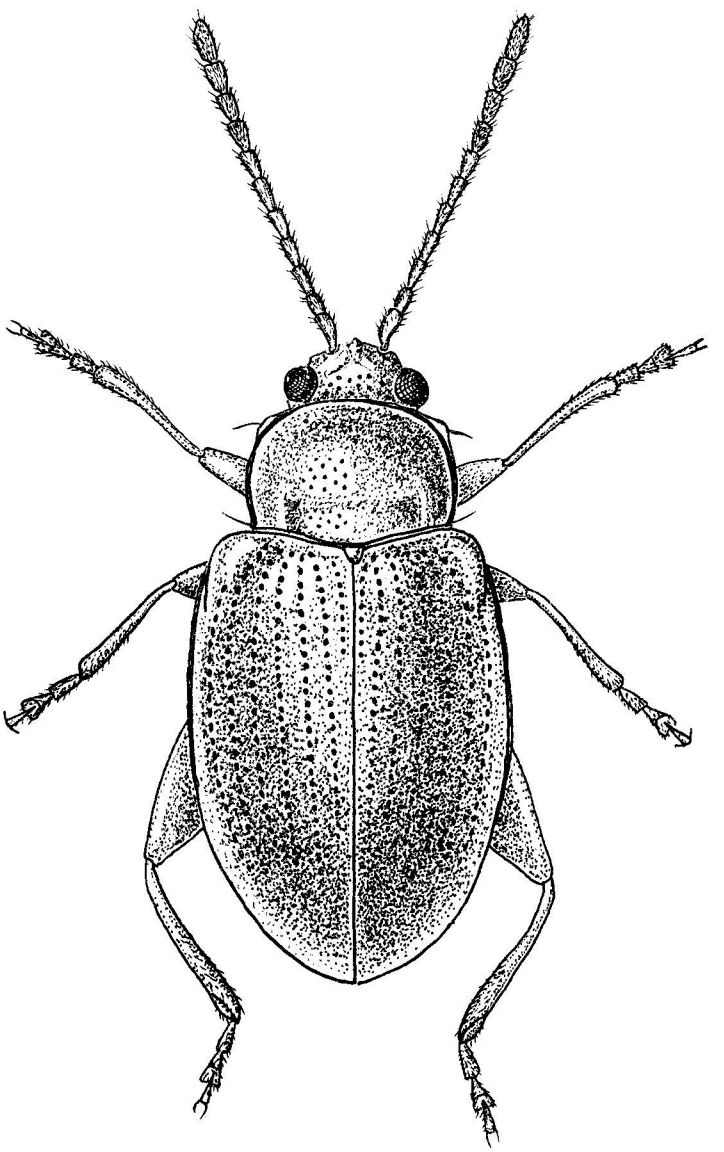
Total figure 64. *Hippuriphila modeeri.* Length 1.8–2.5 mm.



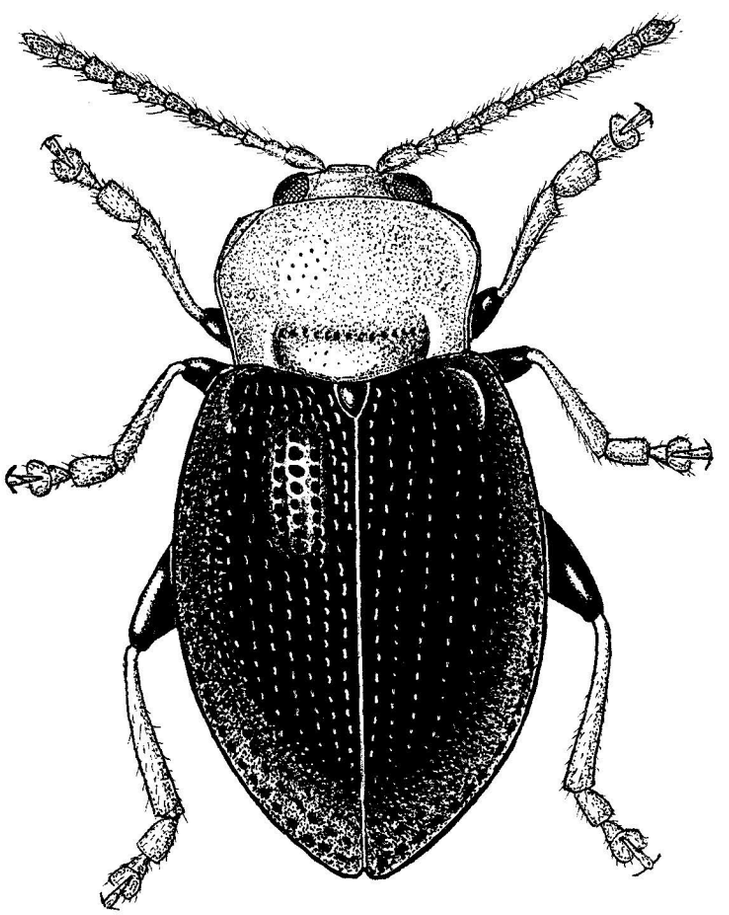
Total figure 65. *Epitrix pubescens*. Length 1.5–2.0 mm.



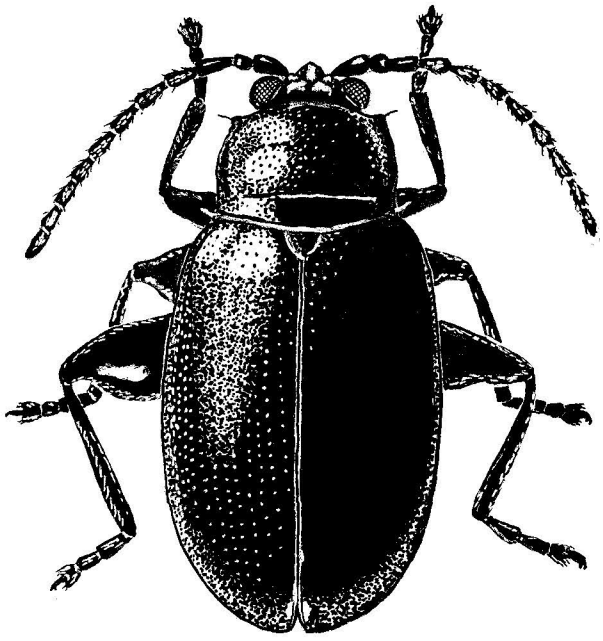
Total figure 66. *Crepidodera fulvicornis fulvicornis.* Length 2.5–3.5 mm.



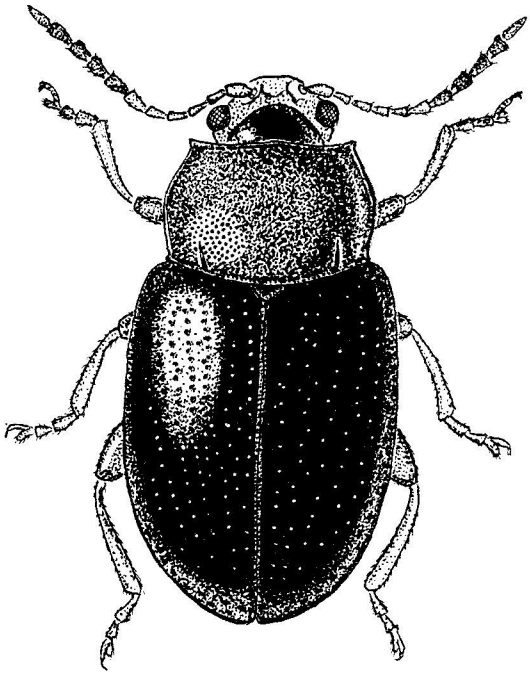
Total figure 67. *Ochrosis ventralis*. Length 2.1–2.5 mm.



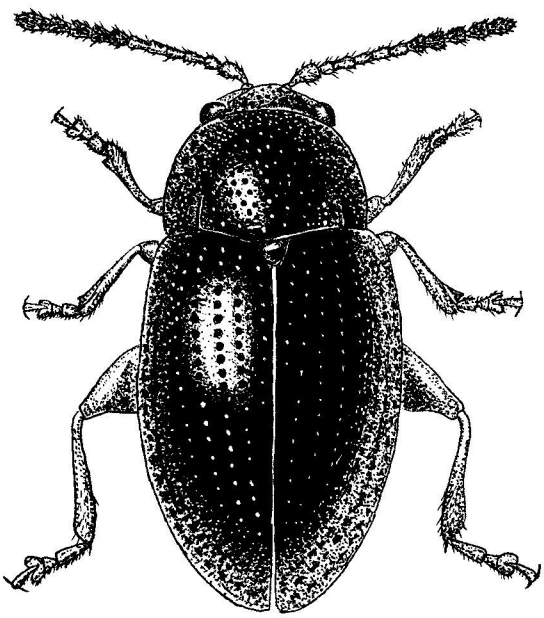
Total figure 68. *Neocrepidodera femorata.* Length 3.1–4.5 mm.



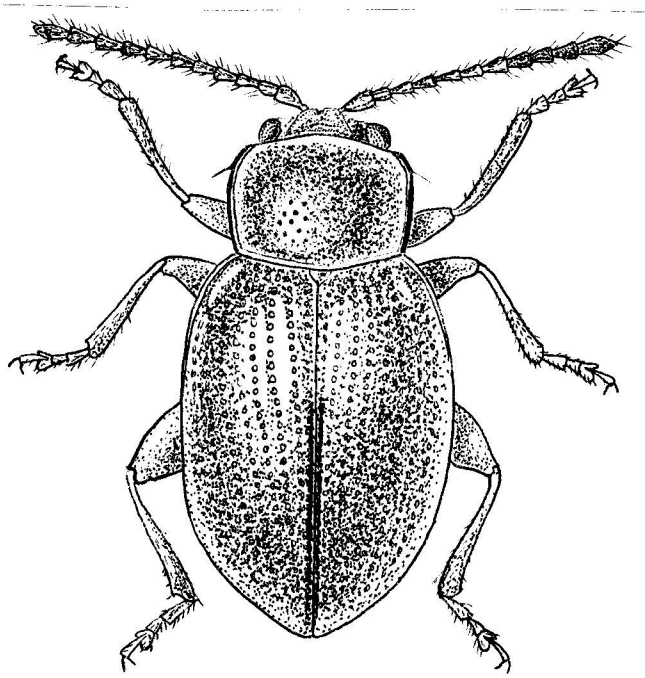
Total figure 69. *Altica oleracea.* Length 3.0–4.0 mm.



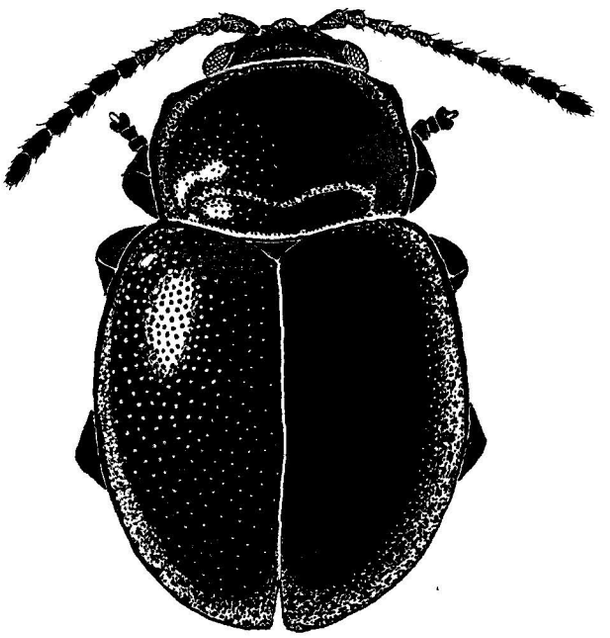
Total figure 70. *Podagrica malvae.* Length 2.5–3.6 mm.



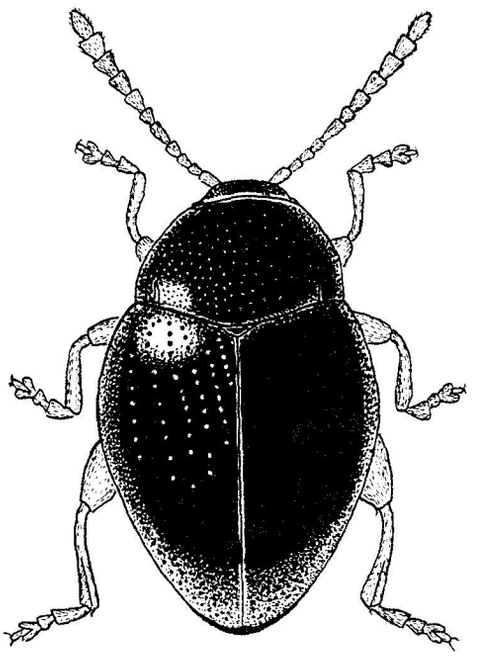
Total figure 71. *Mantura chrysanthemi.* Length 1.8–2.7 mm.



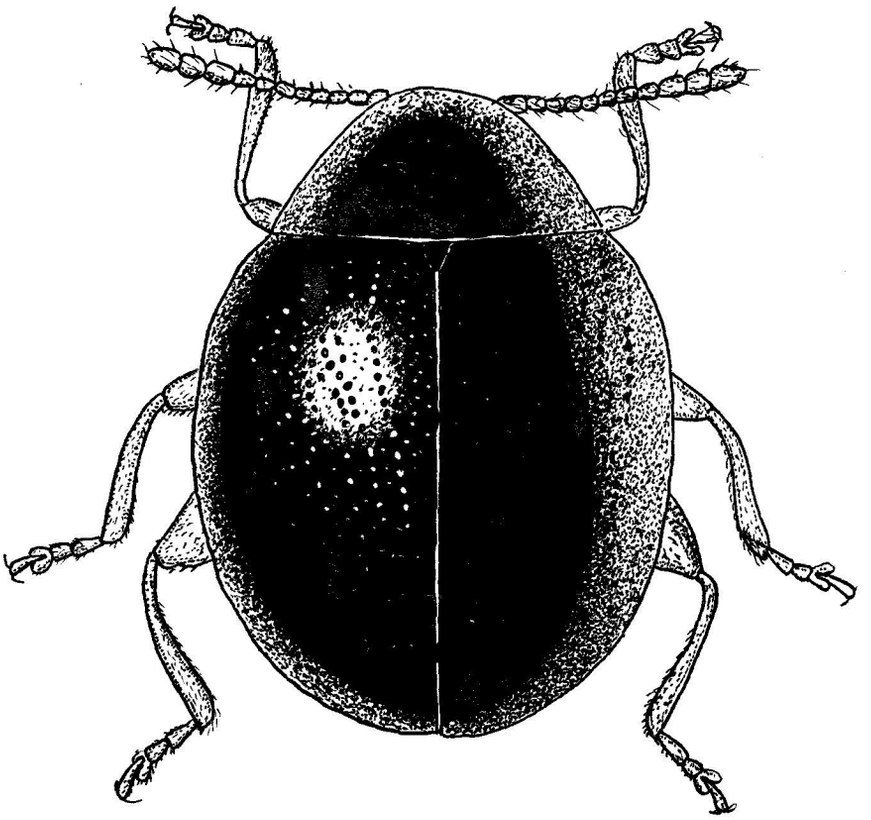
Total figure 72. *Lythraria salicariae.* Length 1.8–2.0 mm.



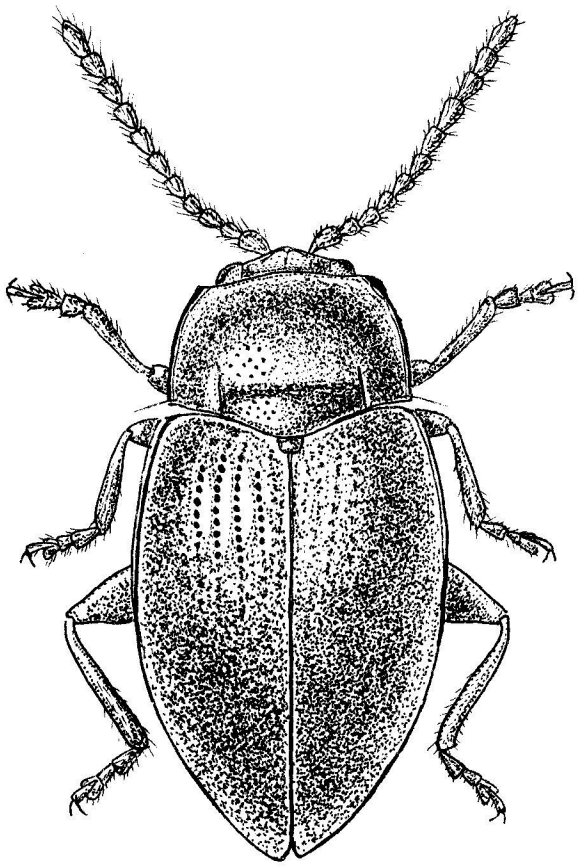
Total figure 73. *Hermaeophaga mercurialis.* Length 2.3–3.0 mm.



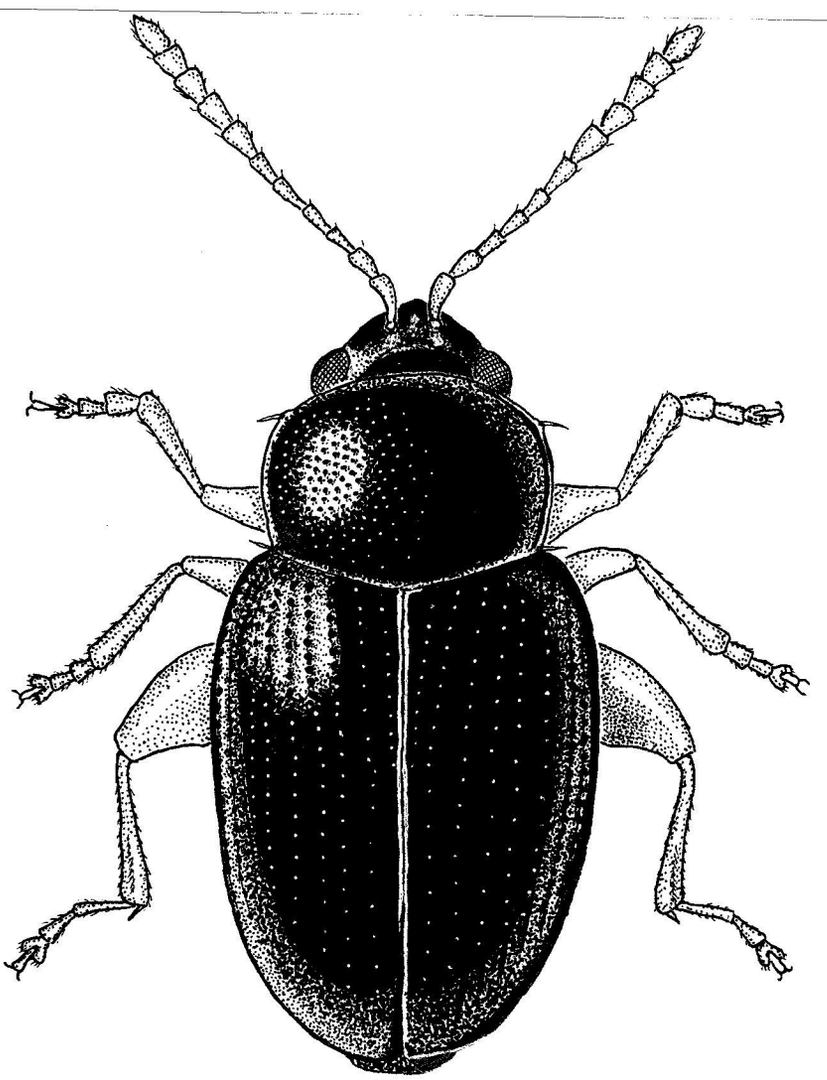
Total figure 74. *Minota carpathica.* Length 2.1–2.6 mm.



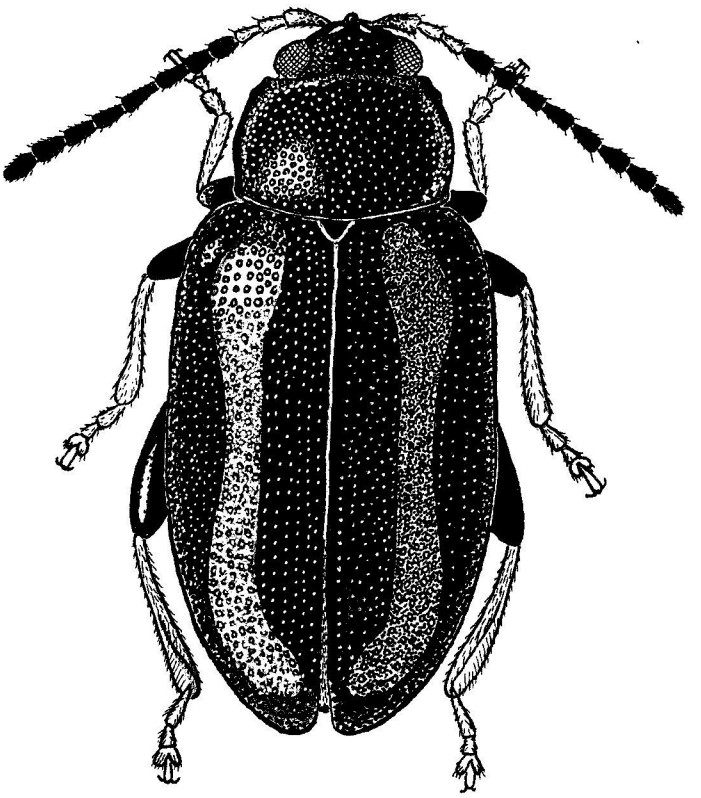
Total figure 75. *Mniophila muscorum.* Length 1.0–1.5 mm.



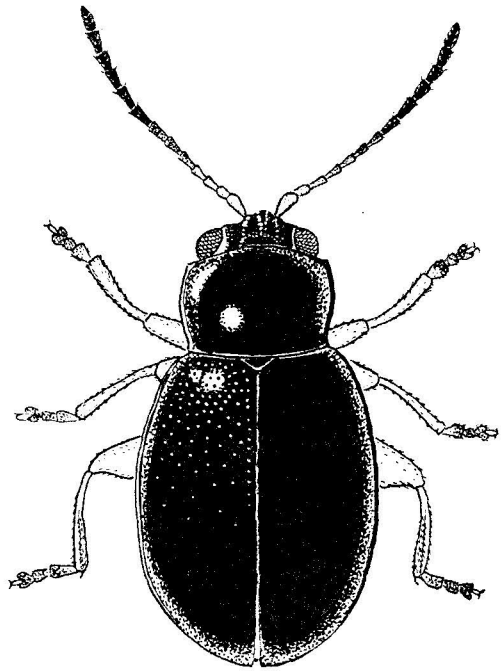
Total figure 76. *Orestia carpathica.* Length 2.2–2.5 mm.



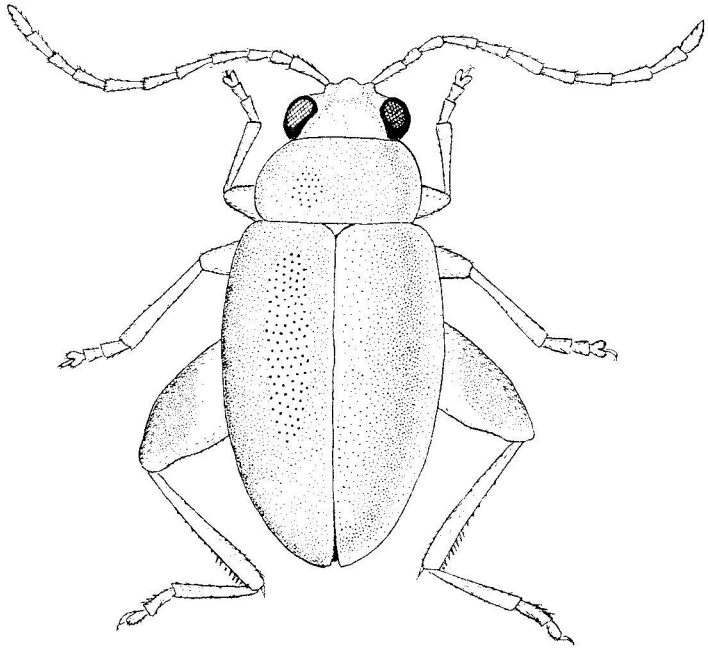
Total figure 77. *Batophila fallax.* Length 1.2–2.1 mm.



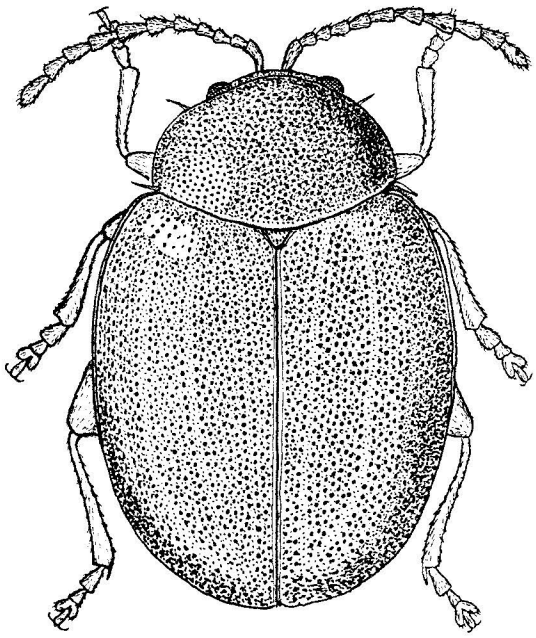
Total figure 78. *Phyllotreta nemorum.* Length 2.4–3.5 mm.



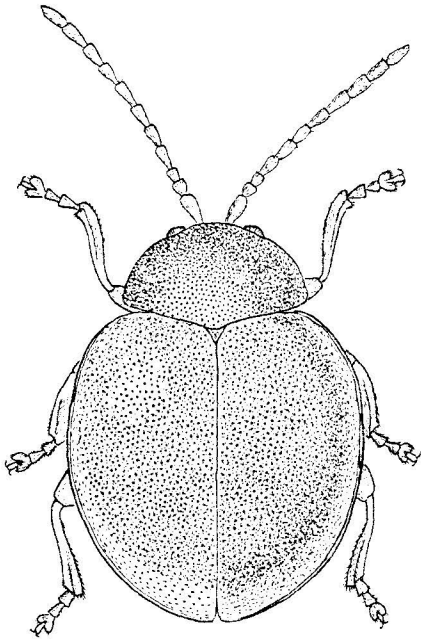
Total figure 79. *Aphthona erichsoni.* Length 1.7–2.5 mm.



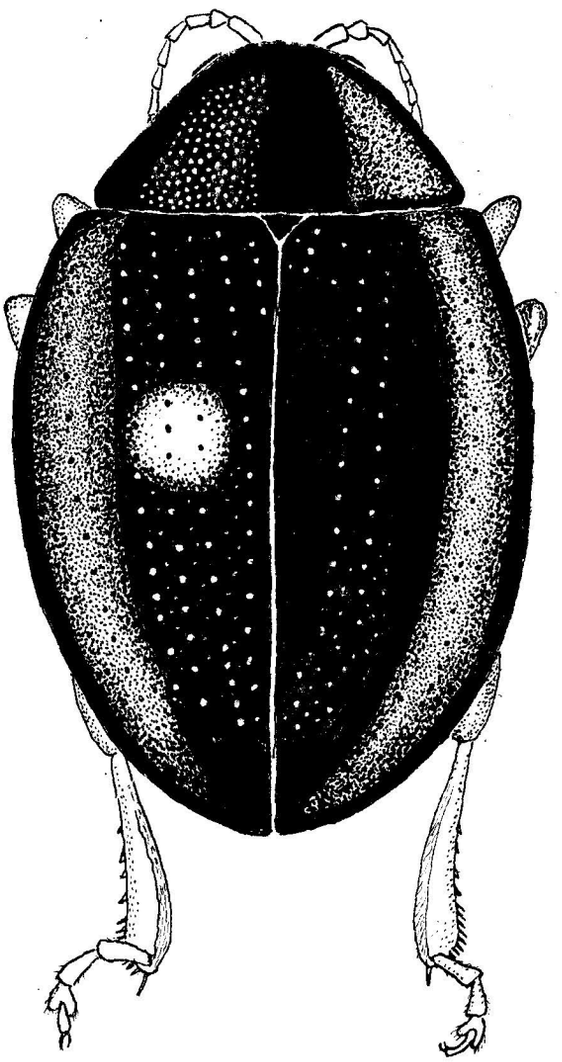
Total figure 80. *Longitarsus succineus.* Length 1.8–2.7 mm.



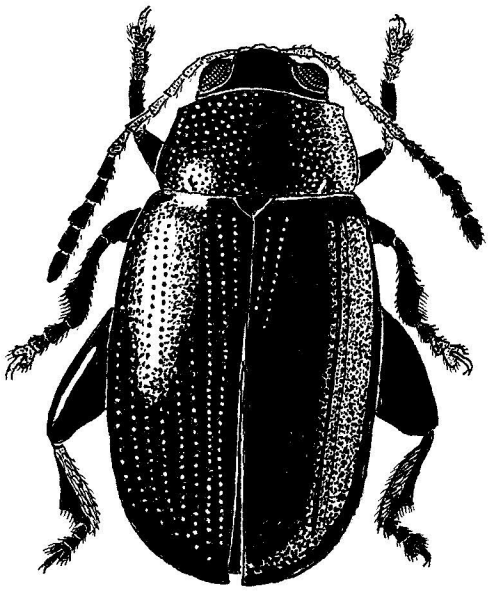
Total figure 81. *Sphaeroderma testacea.* Length 2.5–4.5 mm.



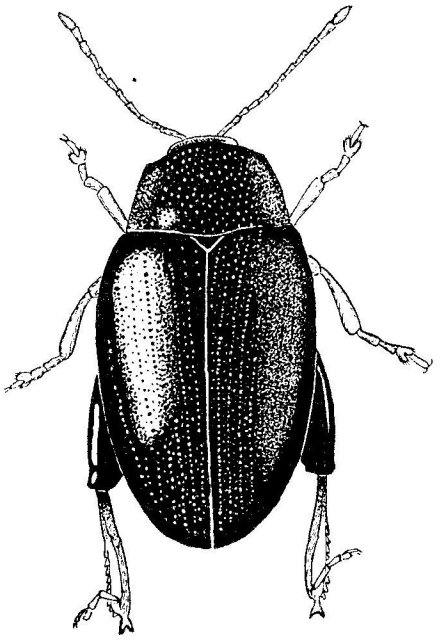
Total figure 82. *Argopus ahrensii.* Length 3.5–4.8 mm.



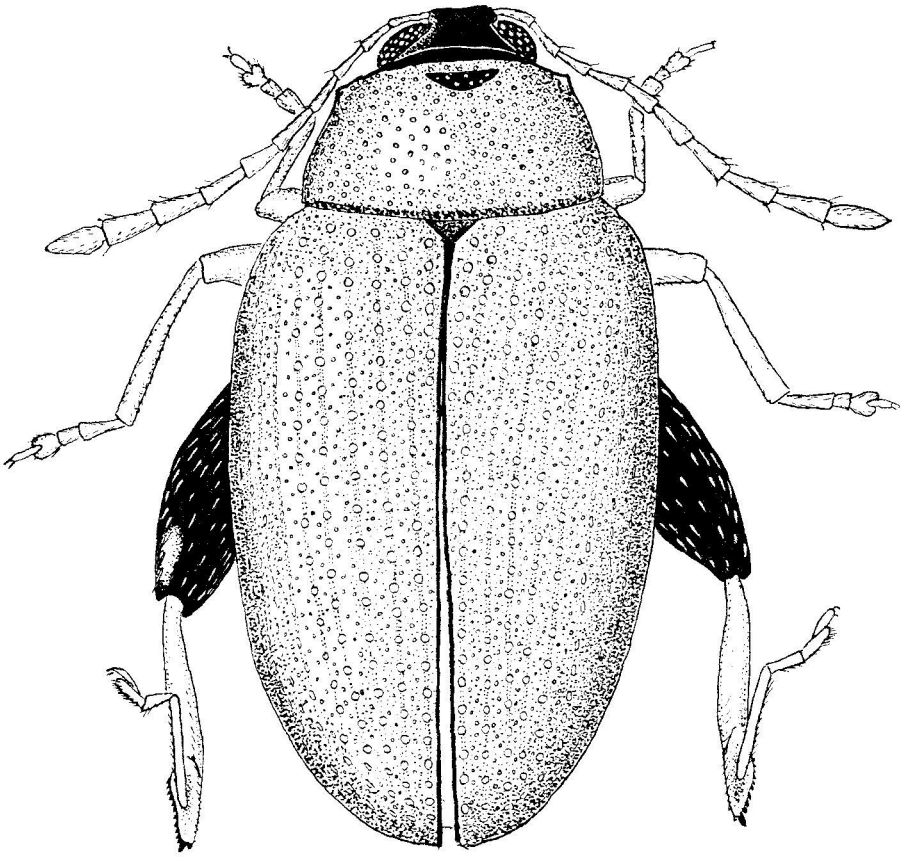
Total figure 83. *Apteropeda orbiculata.* Length 2.2–2.6 mm.



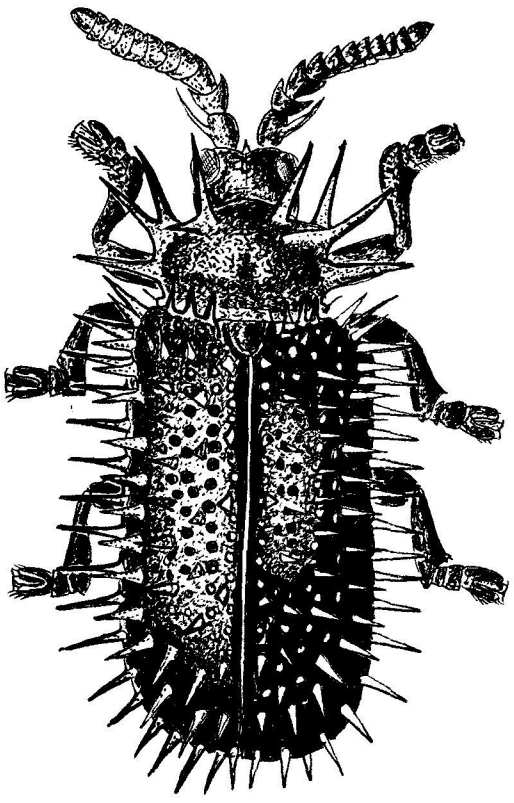
Total figure 84. *Chaetocnema chlorophana.* Length 3.0–3.5 mm.



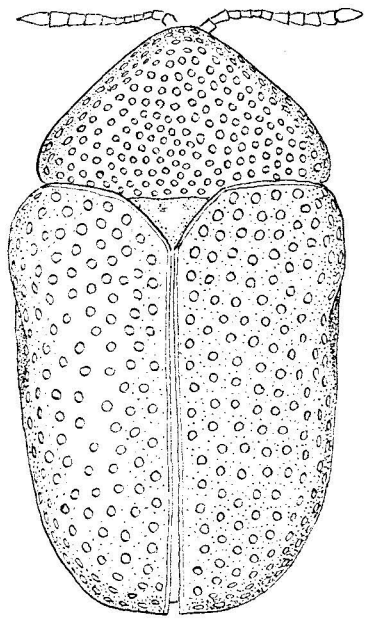
Total figure 85. *Dibolia metallica.* Length 3.0–4.0 mm.



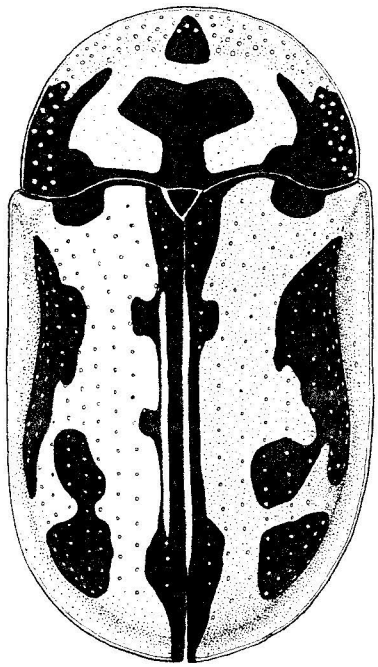
Total figure 86. *Psylliodes affinis*. Length 2.0–2.8 mm.



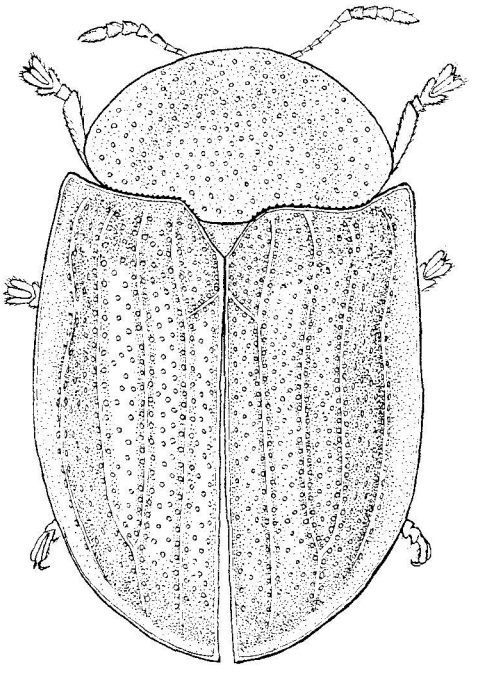
Total figure 87. *Hispa atra.* Length 3.0–4.6 mm.



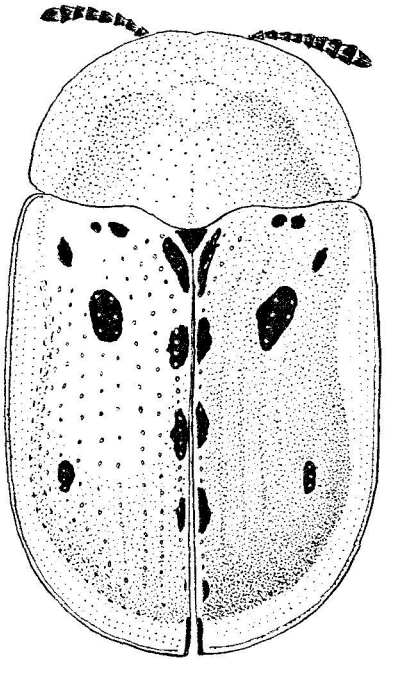
Total figure 88. *Ischyronota spaethi.* Length 4.4–6.0 mm.



Total figure 89. *Pilemostoma fastuosa.* Length 4.2–6.2 mm.



Total figure 90. *Hypocassida subferruginea.* Length 4.9–6.0 mm.



Total figure 91. *Cassida murraea.* Length 7.0–8.1 mm.

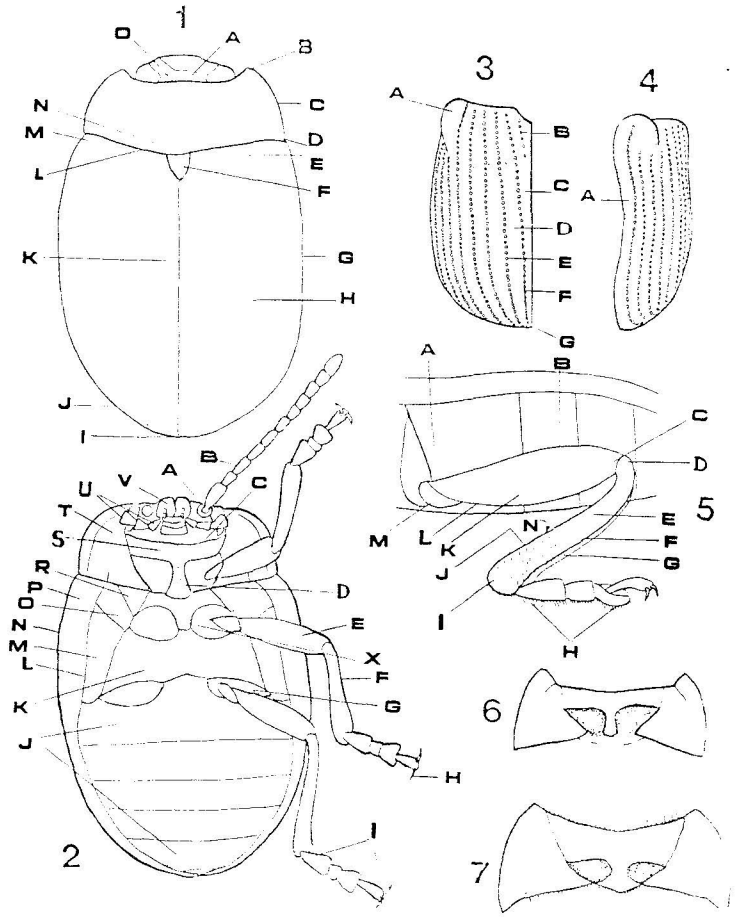


Figure 1: 1–2 — *Chrysolina sturmi*, dorsal and ventral view: 1: A — head, B — anterior corner of pronotum, C — lateral border of pronotum, D — posterior corner of pronotum, E — elytral base, F — scutellum, G — lateral side of elytron, H — elytron, I — apex of elytron, J — posterior margin of elytron, K — suture of elytra, L — posterior margin of pronotum, M — humerus of elytron, N — base of pronotum, O — anterior border of pronotum. 2: A — base of antenna, B — antenna, C — anterior border of prothorax, D — intercoxal prosternal process, E — femur, F — tibia, G — coxa, H — claw, I — tarsus, J — abdominal sternites, K — metasternum, L — interior border of elytral epipleura, M — metepisternum, N — exterior border of elytral epipleura, O — mesepimeron, P — epipleura of elytron, R — mesepisternum, S — prosternum, T — hypomera of prothorax, U — maxillary palpus, V — mandible, X — mesosternum. 3 — *Lilioceris merdigera*, elytron, dorsal view: A — humeral callus, B — sutural puncture row, C — sutural interval, D — interval between puncture rows, E — puncture row, F — sutural stria. 4 — *Lilioceris merdigera*, elytron, lateral view: A — lateral callus. 5 — *Chrysolina*, hind-leg: A — base of femur, B — upper border of femur, C — apex of femur, D — base of tibia, E — exterior side of tibia, F — upper external border of tibia, G — upper side of tibia, H — sole of tarsus, I — apex of tibia, J — lower side of tibia, K — exterior side of femur, L — lower border of femur, M — trochanter, N — interior side of tibia. 6 — *Gastrophysa viridula*, anterior coxal cavities open behind, 7 — *Entomoscelis adonidis*, anterior coxal cavities closed behind. (Orig.)

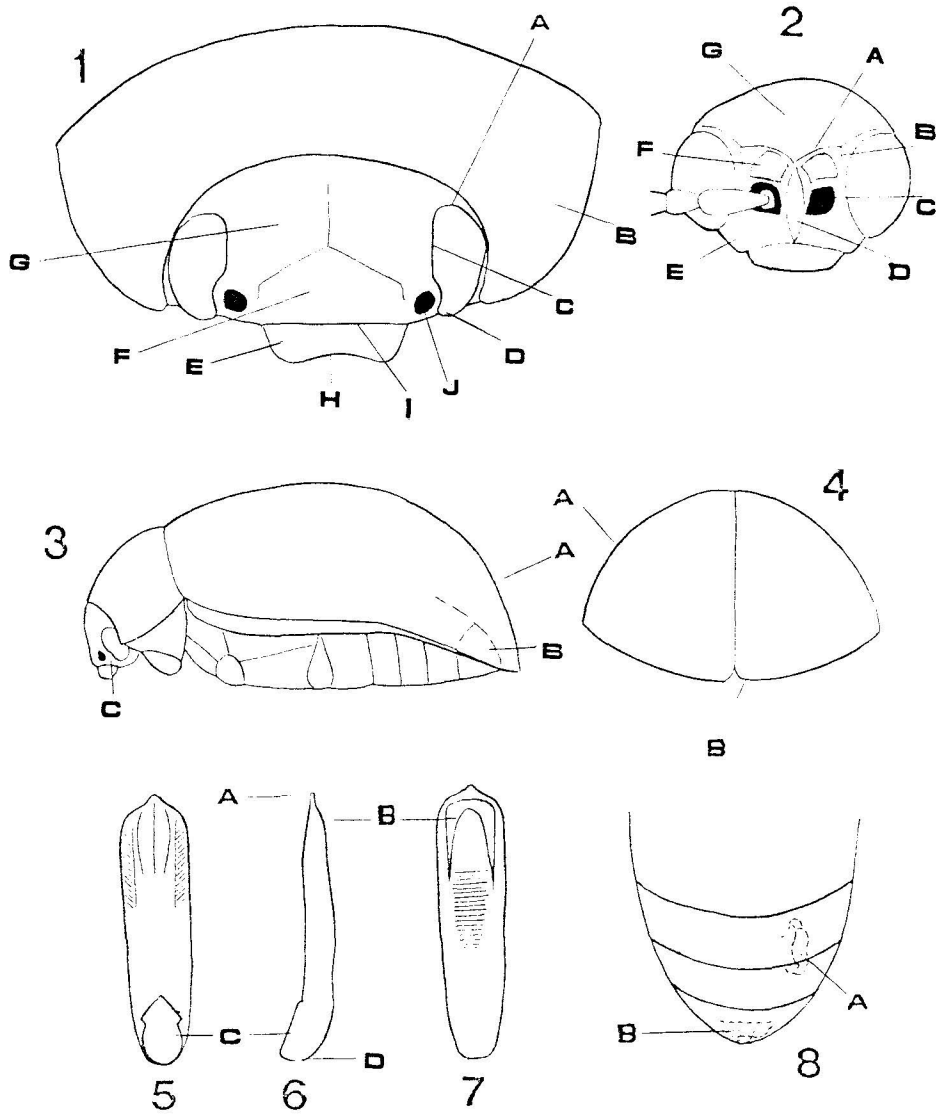


Figure 2: 1 — *Chrysolina sturmi*, head and pronotum: A — posterior border of eye, B — pronotum, C — interior border of eye, D — anterior border of eye, E — labrum, F — frons, G — vertex, H — anterior border of labrum, I — anterior border of frons, J — antennal insertion. 2 — *Crepidodera nitidula*, head: A — supracallinal sulcus, B — orbital line, C — antennal insertion, D — frontal ridge, E — gena, F — antennal callus, G — vertex. 3–4 — *Ch. sturmi*, lateral and posterior view: 3: A — declivity of elytron, B — pygidium, C — gena. 4: A — lateral slope of elytron. 5–7 — *Altica tamaricis*, aedeagus, ventral, lateral, dorsal view, respectively: A — apex, B — apical opening, C — basal opening, D — base. 8 — abdomen of female: A — spermatheca, B — vaginal sternite and vaginal palpi. (Orig.)

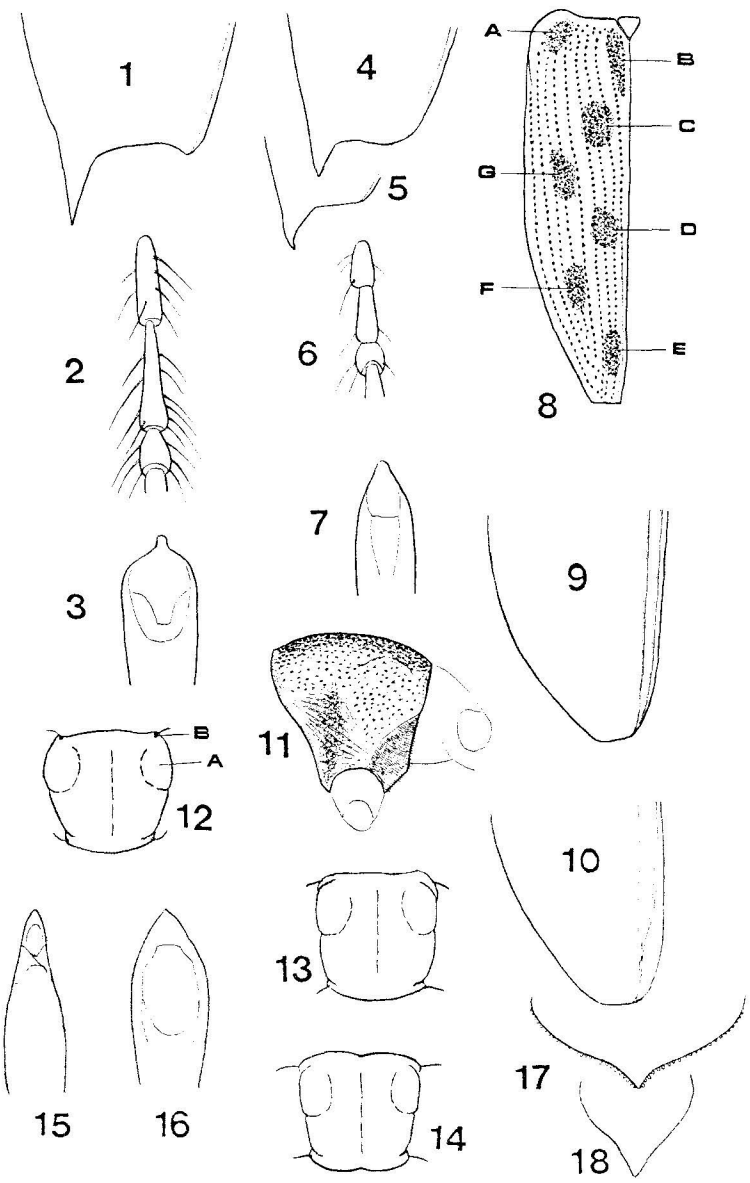


Figure 3: 1–3 — *Macroplea appendiculata*: 1 — apex of left elytron, 2 — 1st–3rd metatarsomeres, 3 — apex of aedeagus, dorsal view. 4–7 — *M. mutica*: 4–5 — apex of left elytron (4 — specimen from Karelia, 5 — specimen from Crimea), 6 — 1st–3rd metatarsomeres, 7 — apex of aedeagus, dorsal view. 8 — *Donacia bicolora*, A–G — impressions at left elytron: A — humeral, B — scutellar, C — 1st sutural, D — 2nd sutural, E — 3rd sutural, F — 2nd lateral, G — 1st lateral. 9–10 — apex of left elytron: 9 — *D. thalassina*, 10 — *Plateumaris sericea*. 11 — *P. discolor*, pronotum, lateral view. 12–14 — pronotum, dorsal view: 12 — *P. consimilis* (A — lateral callus, B — anterior setiferous pore), 13 — *P. affinis*, 14 — *P. rustica*. 15–16 — aedeagus, dorsal view: 15 — *P. affinis*, 16 — *P. weisei*. 17–18 — ventral ovipositor valve: 17 — *P. consimilis*, 18 — *P. affinis*. (Orig.)

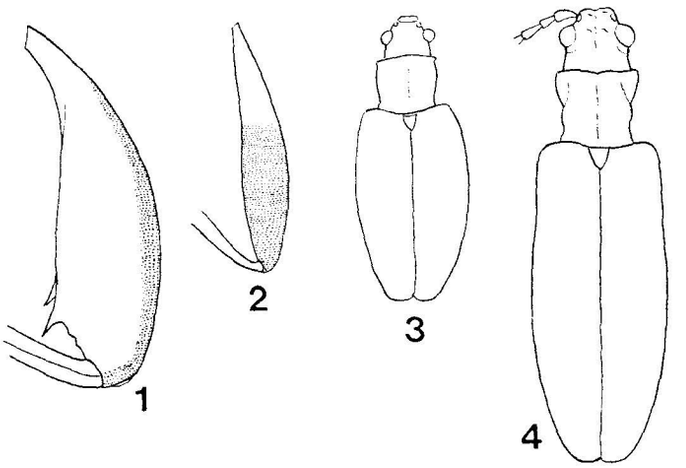


Figure 4: 1–2 — hind-femur: 1 — *Donacia dentata*, male, 2 — *D. vulgaris*, male. 3–4 — dorsal view: 3 — *D. semicuprea*, 4 — *D. clavipes*. (Orig.)

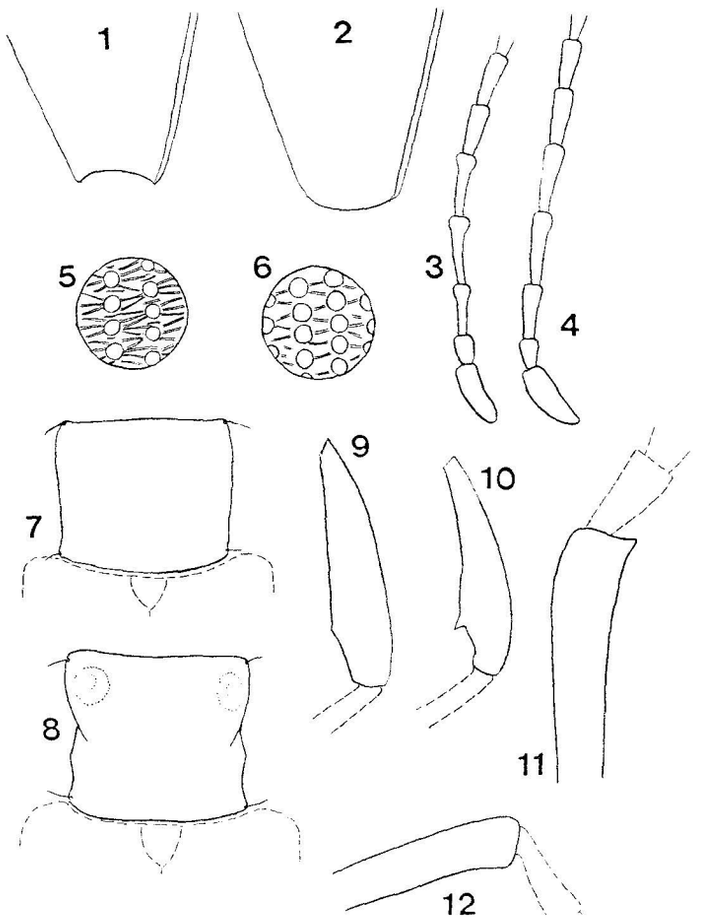


Figure 5: 1–2 — apex of left elytron: 1 — *Donacia vulgaris*, 2 — *D. simplex*. 3–4 — 1st–7th antennomeres: 3 — *D. sparganii*, 4 — *D. aquatica*. 5–6 — microrelief on elytron: 5 — *D. aequidorsis*, 6 — *D. dentata*. 7–8 — pronotum: 7 — *D. semicuprea*, 8 — *D. clavipes*. 9–10 — hind-femur: 9 — *D. impressa*, 10 — *D. thalassina*. 11–12 — apex of fore-tibia: 11 — *D. cinerea*, 12 — *D. tomentosa*. (Orig.)

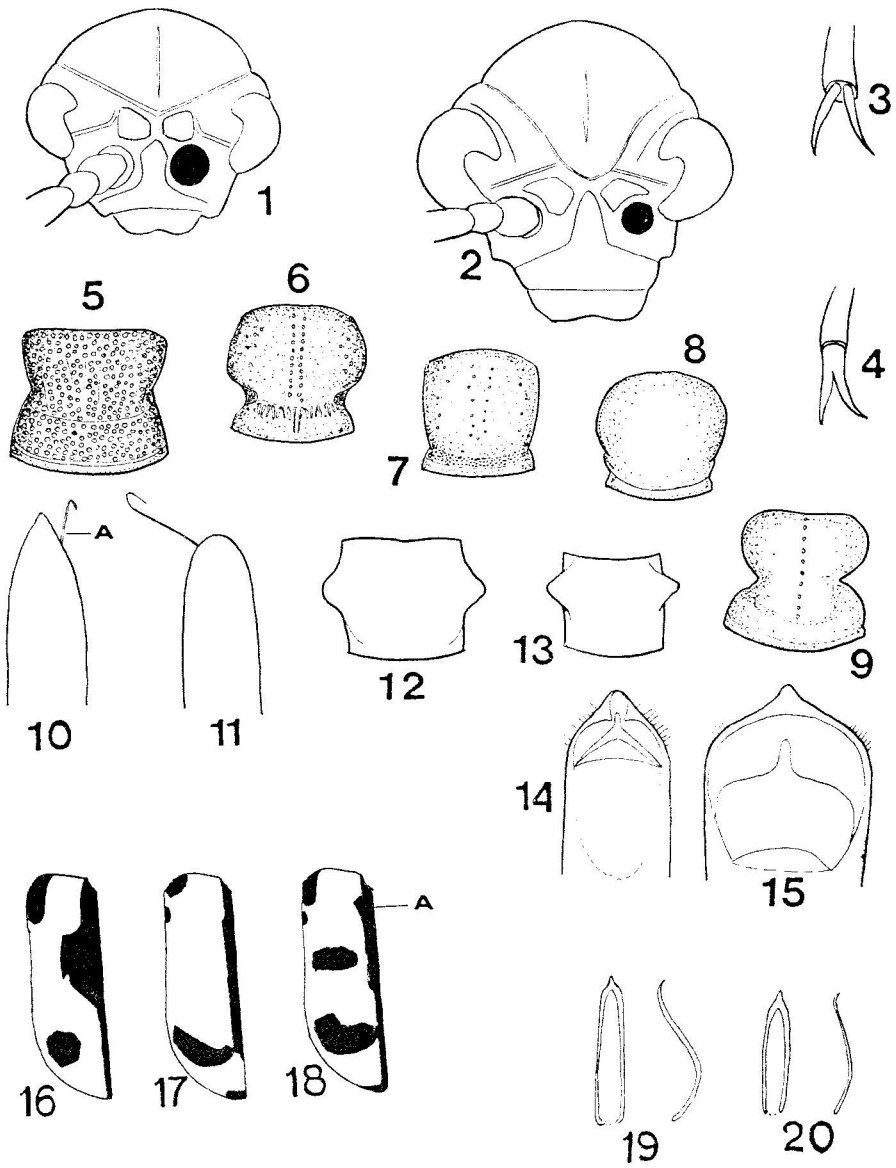


Figure 6: 1–2 — head: 1 — *Oulema erichsonii*, 2 — *Lema cyanella*. 3–4 — claws: 3 — *Lilioceris merdigera*, 4 — *Lema cyanella*. 5–9 — pronotum: 5 — *Lema cyanella*, 6 — *O. gallaeciana*, 7 — *O. erichsonii*, 8 — *Crioceris quinquepunctata*, 9 — *Lilioceris merdigera*. 10–11 — aedeagus, ventral view: 10 — *Oulema erichsonii* (A — flagellum), 11 — *O. septentrionis*. 12–13 — pronotum: 12 — *Zeugophora frontalis*, 13 — *Z. flavicollis*. 14–15 — aedeagus, dorsal view: 14 — *Labidostomis metallica*, 15 — *L. senicula*. 16–18 — left elytron: 16 — *Crioceris quinquepunctata*, 17 — *C. paracenthesis*, 18 — *C. bicruciata* (A — sutural marking). 19–20 — aedeagus: 19 — *Zeugophora frontalis*, 20 — *Z. flavicollis*. (after Steinhausen, 1985: 19, 20; others — orig.)

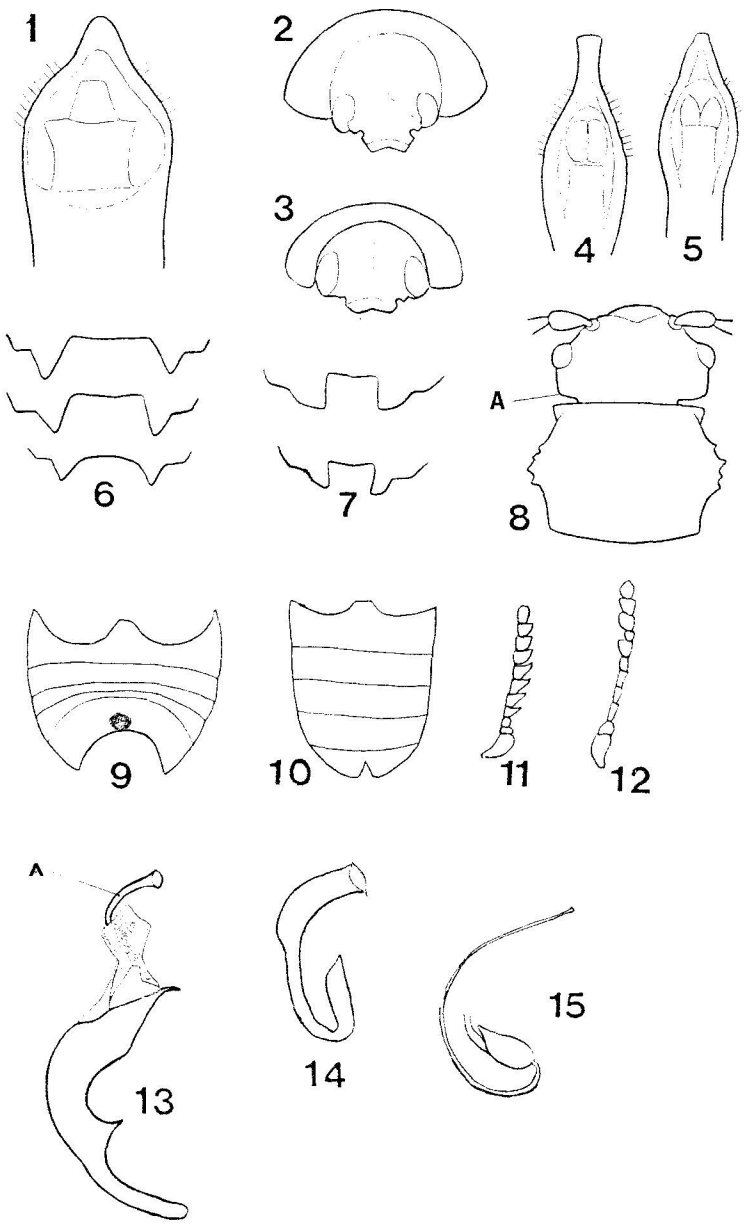


Figure 7: 1 — *Labidostomis pachysoma*, aedeagus, dorsal view. 2–3 — head and pronotum, anterior view: 2 — *Clytra valeriana taurica*, 3 — *C. laeviuscula*. 4–5 — aedeagus, dorsal view: 4 — *Cheilotoma erythrostoma*, 5 — *Ch. musciformis*. 6–7 — anterior border of clypeus in male: 6 — *Ch. erythrostoma*, 7 — *Ch. musciformis*. 8 — *Syneta betulae*, head and pronotum (A — temple). 9–10 — abdominal sternites of female: 9 — *Cryptocephalus octopunctatus*, 10 — *Galerucella aquatica*. 11–12 — antenna: 11 — *Clytra quadripunctata*, 12 — *Oomorphus concolor*. 13 — *Oulema melanopus*, aedeagus, lateral view (A — flagellum). 14–15 — flagellum: 14 — *Oulema melanopus* (Crimea: Simferopol), 15 — *O. duftschmidi* (Crimea: Kerch). (Orig.)

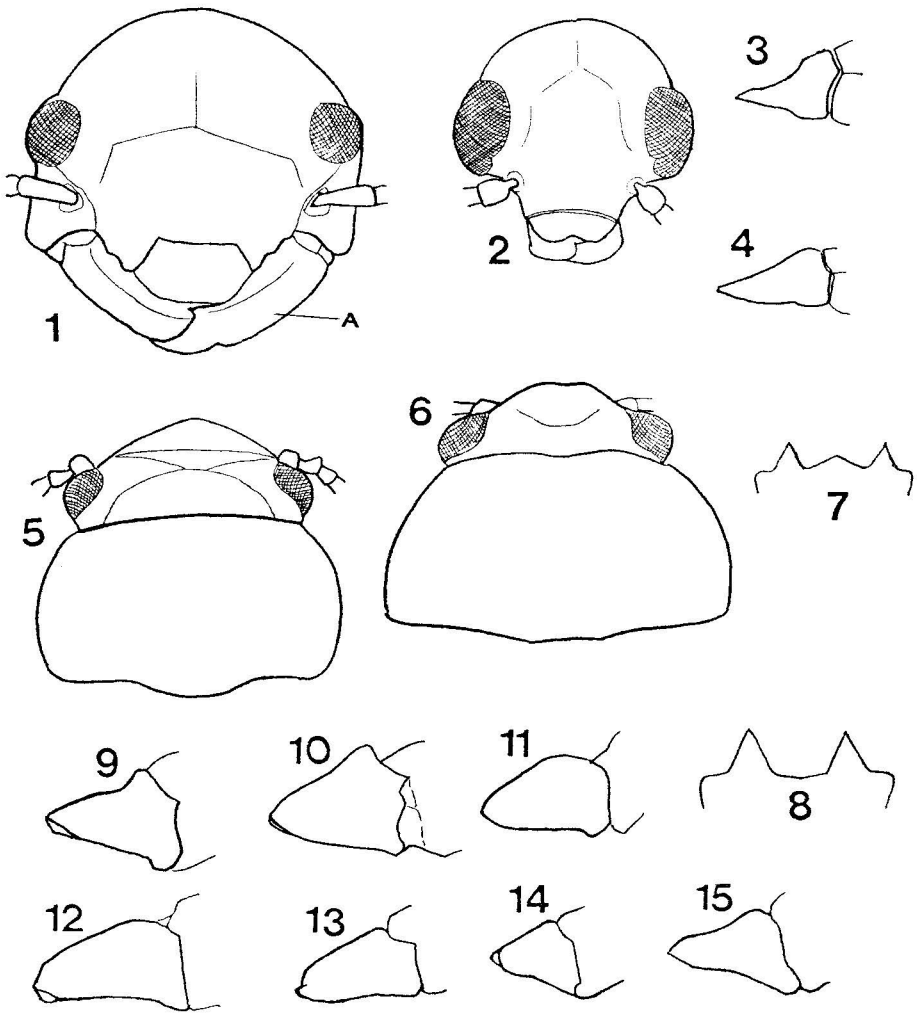


Figure 8: 1–2 — head of male: 1 — *Cheilotoma erythrostoma* (A — upper external border of mandible), 2 — *Clytra quadripunctata*. 3, 4 — left mandible of male, lateral view: 3 — *Coptocephala quadrimaculata*, 4 — *C. gebleri*. 5–6 — head and pronotum of male, dorsal view: 5 — *Coptocephala rubicunda rossica*, 6 — *Smaragdina salicina*. 7–8 — anterior border of clypeus in male: 7 — *L. longimana longimana*, 8 — *L. humeralis*. 9–15 — left mandible of male, lateral view: 9 — *Labidostomis lucida axillaris*, 10 — *L. beckeri*, 11 — *L. metallica*, 12 — *L. humeralis*, 13 — *L. senicula senicula*, 14 — *L. tridentata*, 15 — *L. longimana*. (Orig.)

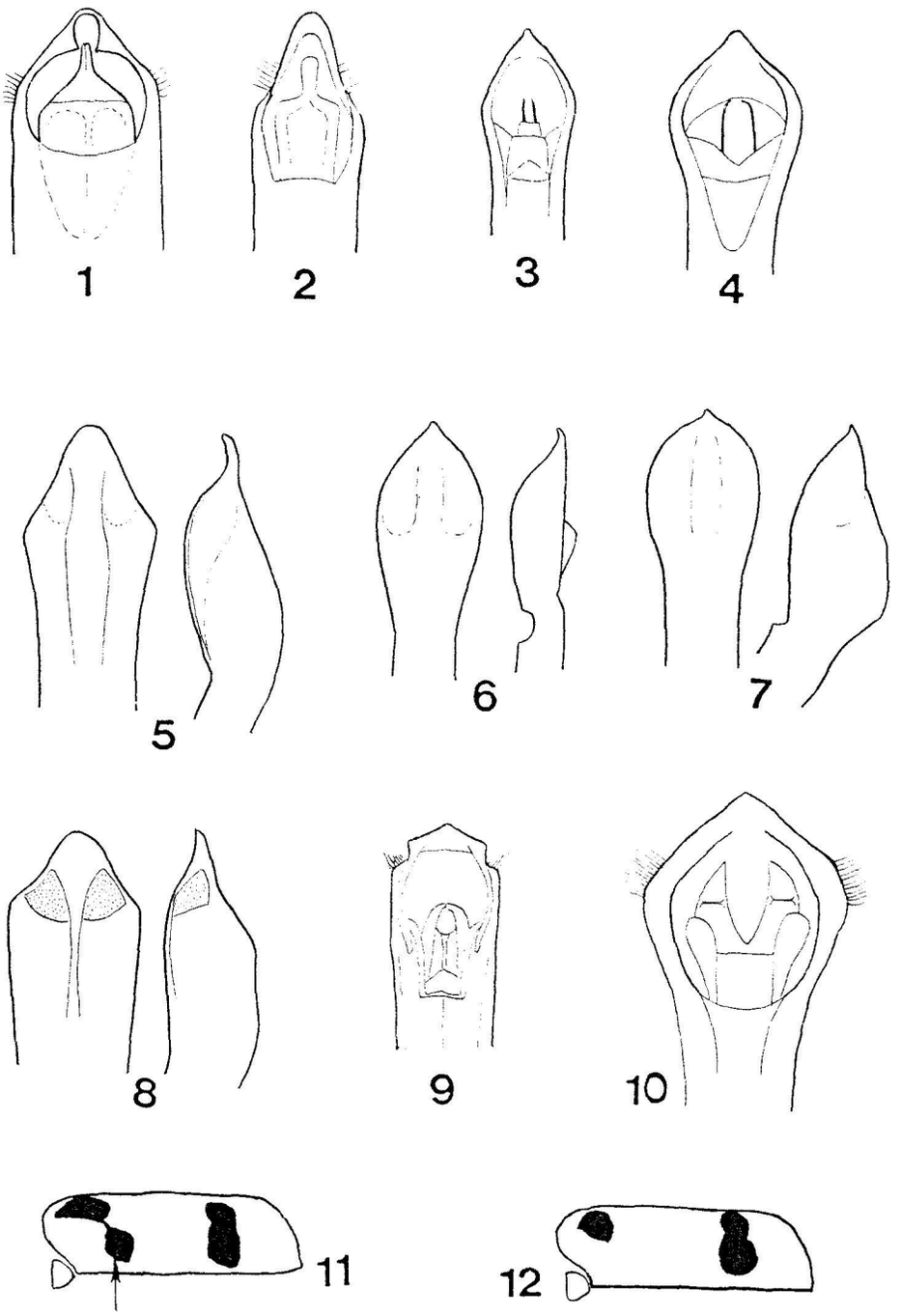


Figure 9: 1–10 — aedeagus (1–4, 9–10 — dorsal view, 5–8 — ventral and lateral view): 1 — *Labidostomis cyanicornis*, 2 — *L. lepida*, 3 — *Smaragdina flavicollis*, 4 — *S. salicina*, 5 — *Coptocephala gebleri*, 6 — *C. scopolina*, 7 — *C. quadrimaculata*, 8 — *C. rubicunda rubicunda*, 9 — *Clytra laeviuscula*, 10 — *C. arida*. 11–12 — right elytron: 11 — *Clytra atraphaxidis*, 12 — *C. valerianae*. (Orig.)

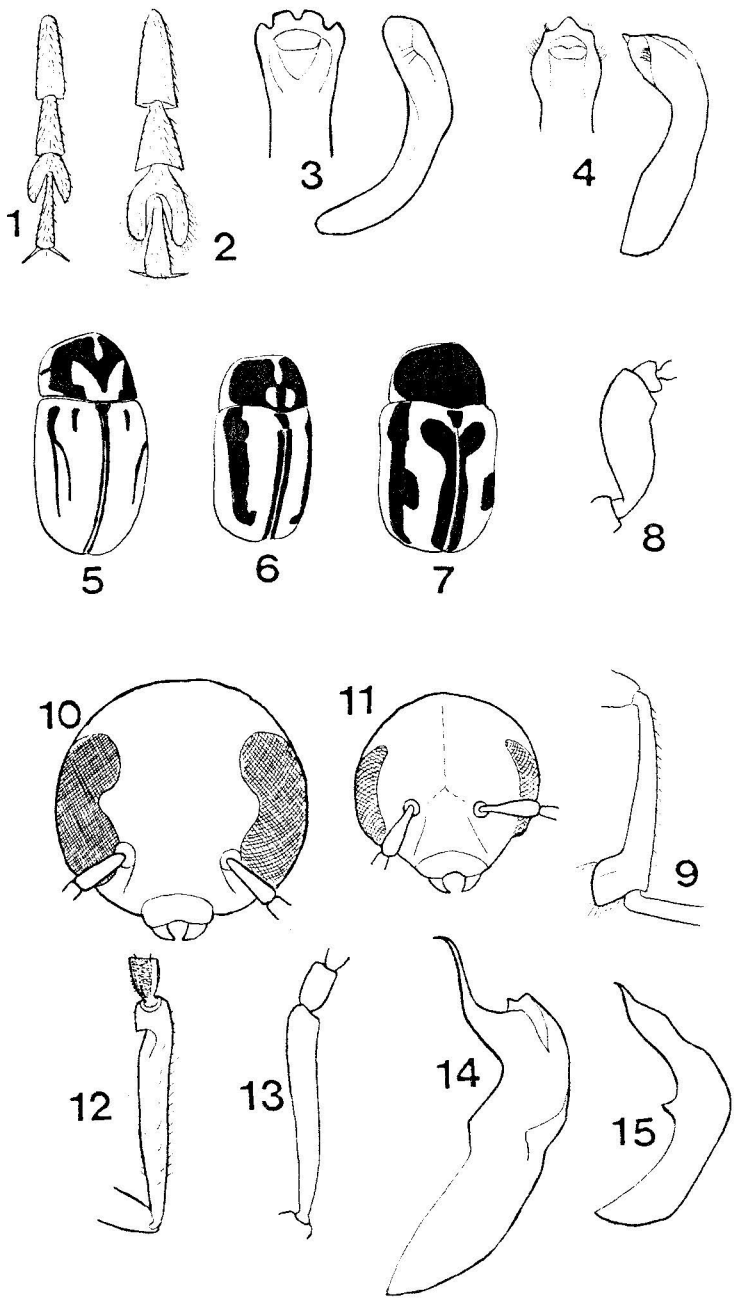


Figure 10: 1–2 — hind-tarsus: 1 — *Cryptocephalus (Asionus) apicalis*, 2 — *C.* (s.str.) *bipunctatus*. 3–4 — aedeagus, dorsal and lateral view: 3 — *C. quatuordecimmaculatus* (Bashkortostan: Aksjonovo Vill.), 4 — *C. floralis*. 5–7 — dorsal view: 5 — *C. gamma*, 6 — *C. bohemius*, 7 — *C. flexuosus*. 8 — *C. pini*, male, fore-tibia. 9 — *C. schaefferi*, male, hind-tibia. 10–11 — head: 10 — *C.* (s.str.) *sericeus*, 11 — *C. (Burlinius) ocellatus*. 12–13 — male, fore-tibia: 12 — *C. laevicollis*, 13 — *C. sericeus*. 14–15 — aedeagus, lateral view: 14 — *C. aureolus*, 15 — *C. solivagus*. (Orig.)

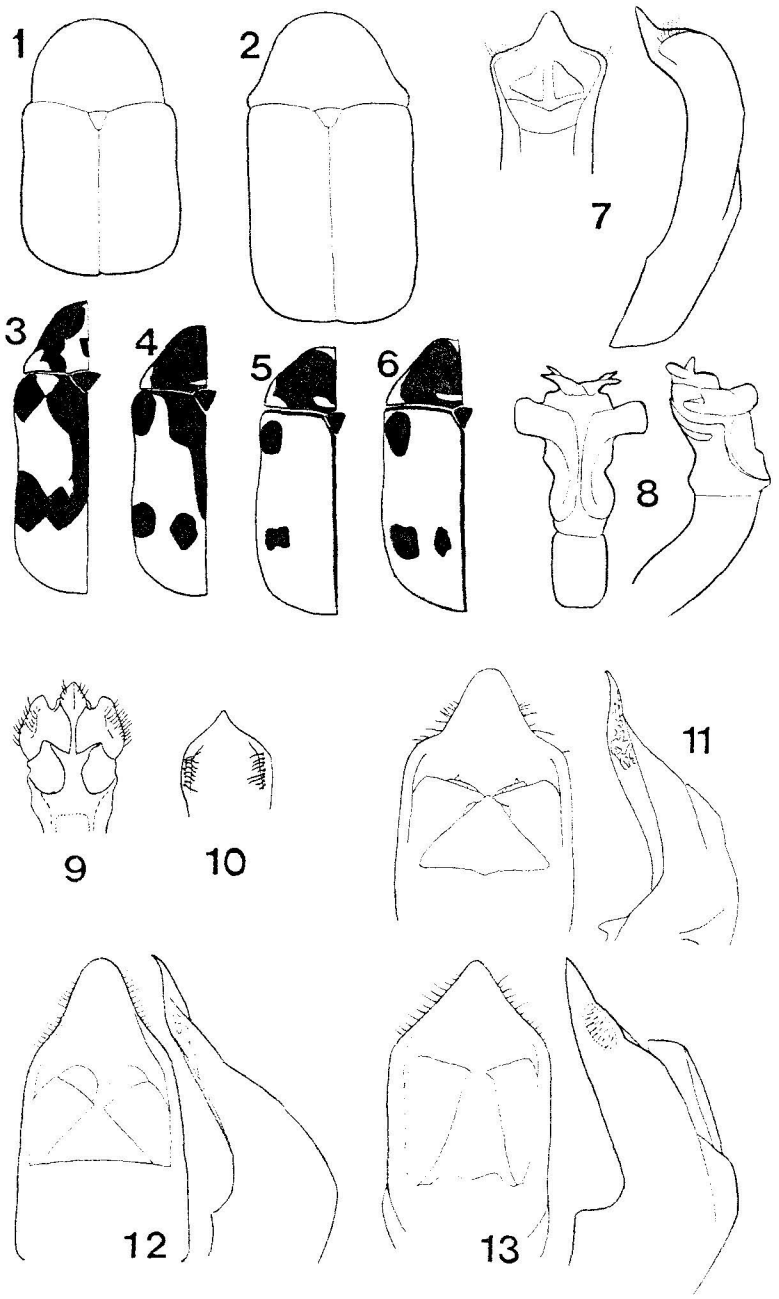


Figure 11: 1–2 — shape of body, dorsal view: 1 — *Cryptocephalus coronatus*, 2 — *C. flavicollis*. 3–6 — pronotal and elytral pattern, dorsal view: 3, 4 — *C. cruciger*: 3 — female, 4 — male (Leningrad reg.), 5, 6 — *C. distinguendus*. 7–8 — aedeagus, dorsal and lateral view: 7 — *C. cruciger* (Leningrad reg.), 8 — *C. distinguendus*. 9–10 — aedeagus: 9 — *C. orotshena*, 10 — *C. krutovskyi*. 11–13 — aedeagus, dorsal and lateral view: 11 — *C. hypochoeridis*, 12 — *C. solivagus*, 13 — *C. praticola*. (after Medvedev, Dubeshko, 1992: 9, 10; Leonardi, Sassi, 2001: 11; others — orig.)

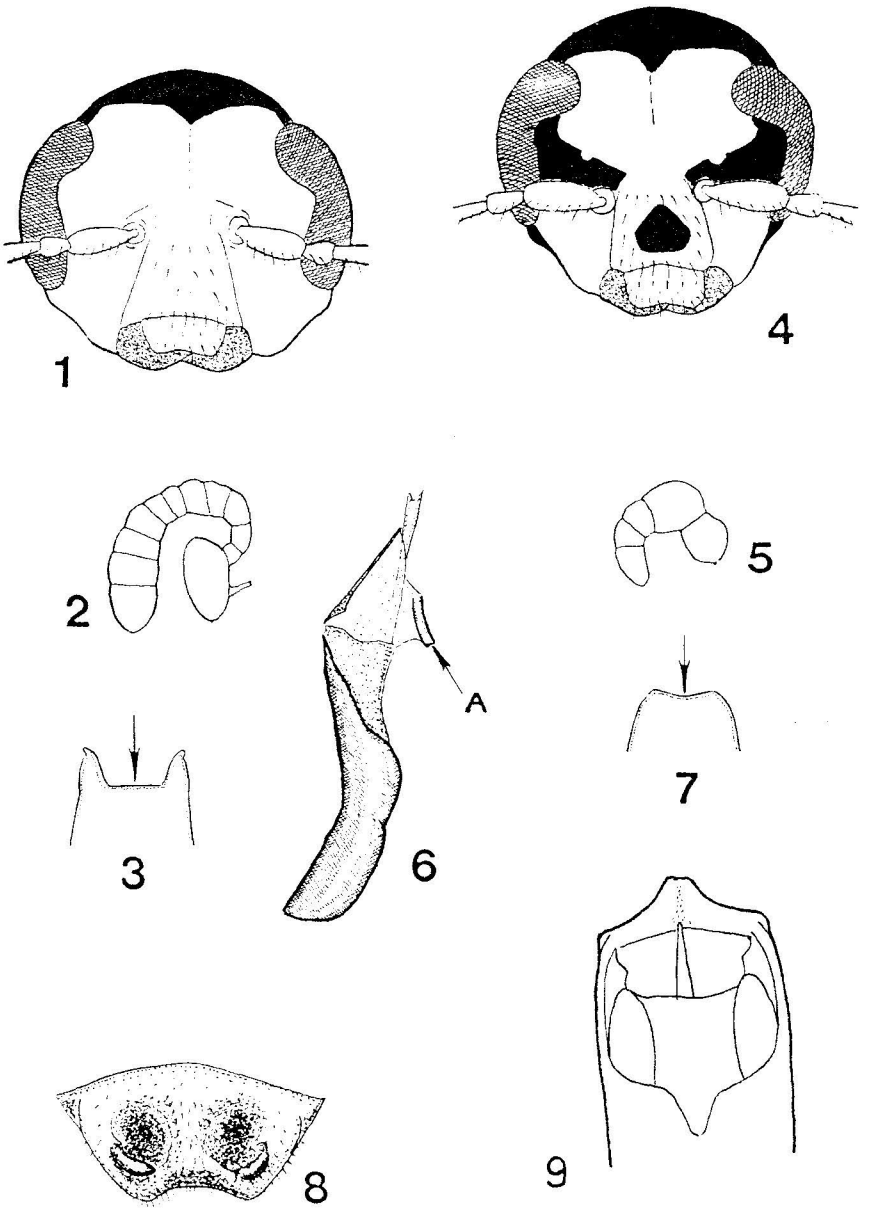


Figure 12: 1–3 — *Cryptocephalus flavipes* (1, 2 — Bashkortostan, 3 — Lugansk reg.): 1 — head of female, 2 — spermatheca of female, 3 — sclerotized plate of internal sac of aedeagus. 4–7 — *C. bameuli* (Moscow reg.): 4 — head of female, 5 — spermatheca of female, 6 — aedeagus with eversed internal sac, lateral view (A — sclerotized plate), 7 — sclerotized plate of internal sac of aedeagus. 8 — *C. impressipygus*, female, pygidium. 9 — *C. marginatus*, male, aedeagus, dorsal view. (Orig.)

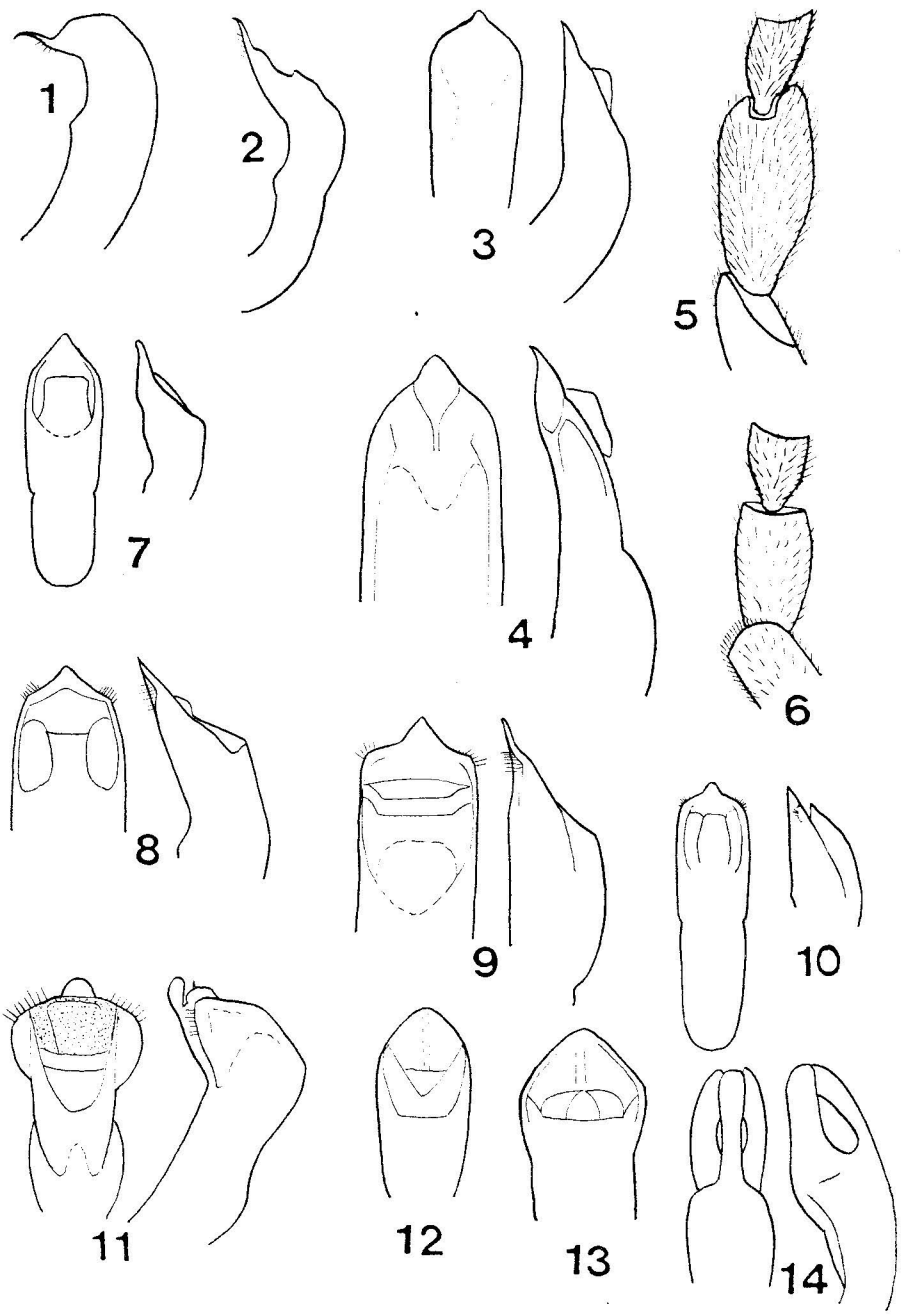


Figure 13: 1–2 — aedeagus, lateral view: 1 — *Cryptocephalus virens*, 2 — *C. violaceus*. 3–4 — aedeagus, ventral and lateral view: 3 — *C. nitidulus*, 4 — *C. nitidus*. 5, 6 — 1st and 2nd protarsomeres of male: 5 — *C. rufofasciatus*, 6 — *C. bipunctatus*. 7–11 — aedeagus, dorsal and lateral view: 7 — *C. parvulus*, 8 — *C. caerulescens*, 9 — *C. biguttulus*, 10 — *C. bicolor*, 11 — *C. laevicollis*. 12–13 — *C. decemmaculatus*, aedeagus, dorsal view. 14 — *C. populi*, aedeagus, dorsal and lateral view. (after Warchałowski, 1991a: 7, 10; others — orig.)

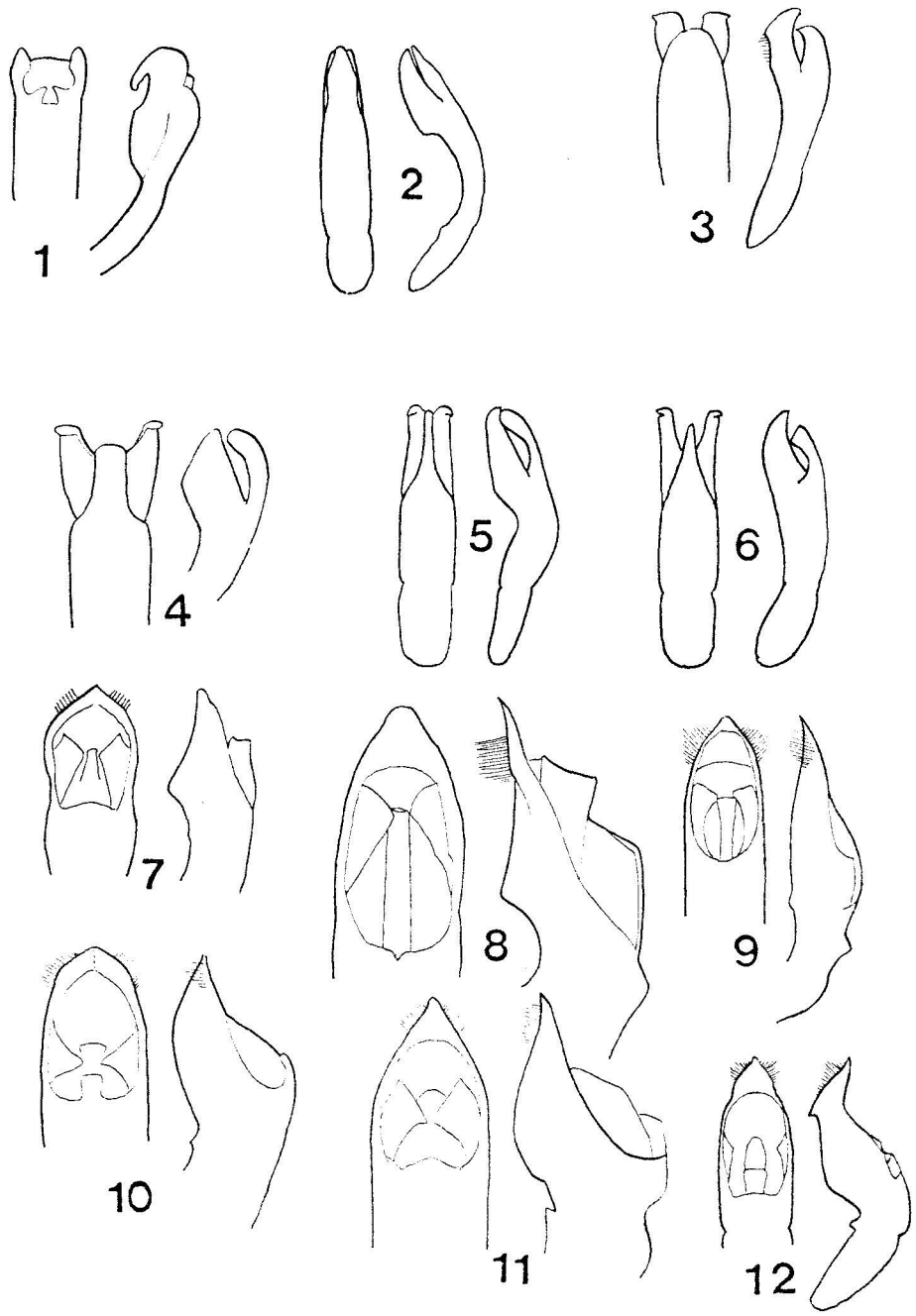


Figure 14: 1–12 — aedeagus, dorsal and lateral view: 1 — *Cryptocephalus carpathicus* (Transcarpathians), 2 — *C. saliceti*, 3 — *C. fulvus*, 4 — *C. macellus*, 5 — *C. pusillus*, 6 — *C. rufipes*, 7 — *Pachybrachis vermicularis*, 8 — *P. pistor* (Astrakhan reg.), 9 — *P. cribricollis*, 10 — *P. hieroglyphicus*, 11 — *P. scriptidorsum*, 12 — *P. limbatus*. (after: Warchałowski, 1999 — 2; Warchałowski, 1991a — 5, 6, 12; Lopatin, 1977 — 7; others — orig.)

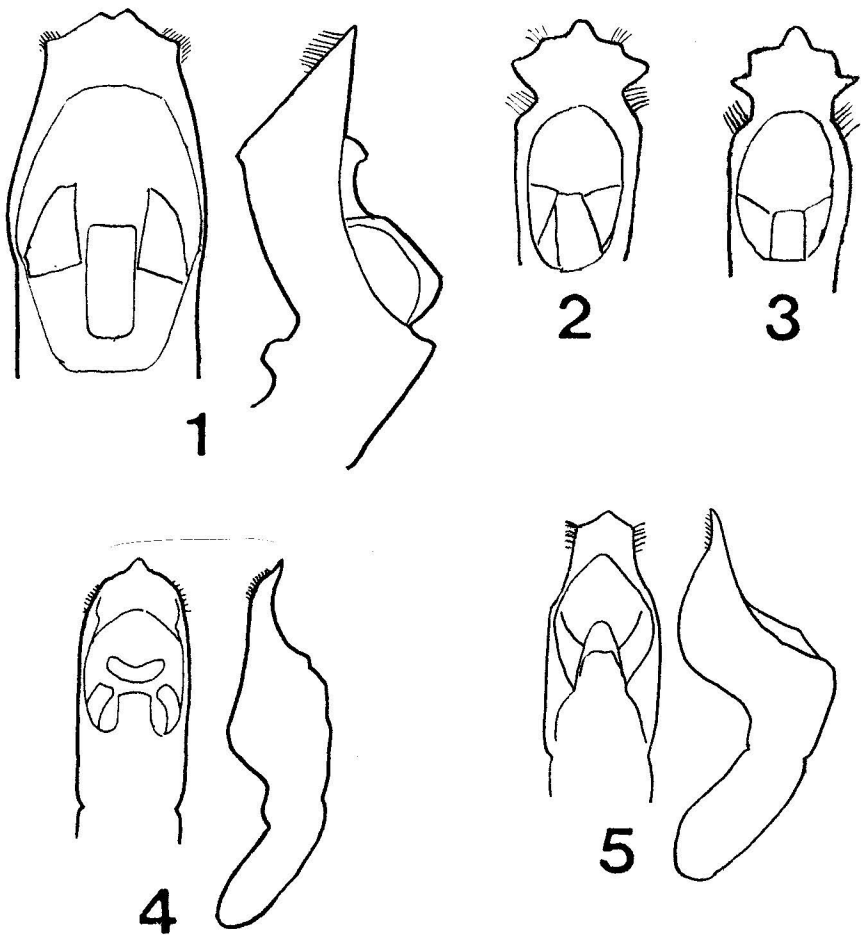


Figure 15: 1–5 —aedeagus (1, 4, 5 — dorsal and lateral view, 2 and 3 —dorsal view): 1 — *Pachybrachis tessellatus*, 2 — *P. fimbriolatus*, 3 — *P. mendax*, 4 — *P. sinuatus*, 5 — *P. pallidulus*. (after Warchałowski, 1991a: 4, 5, others — orig.)

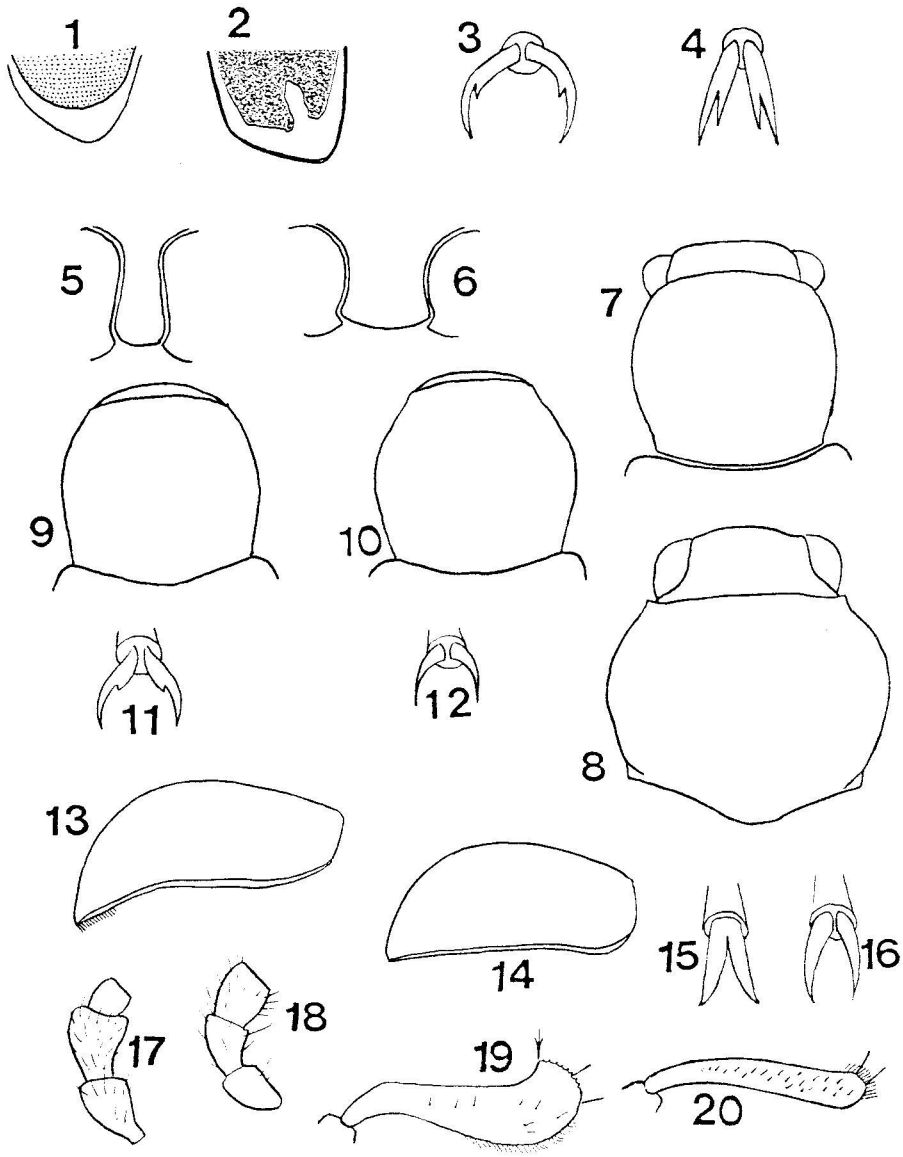


Figure 16: 1–2 — yellow marginal stripe on elytral apex: 1 — *Pachybrachis limbatus*, 2 — *P. tessellatus*. 3–4 — claws: 3 — *Chrysochares asiatica*, 4 — *Eumolpus asclepiadeus*. 5–6 — mesosternum between mid-coxae: 5 — *Chrysochares asiatica*, 6 — *Eumolpus asclepiadeus*. 7–10 — head and pronotum, dorsal view: 7 — *Malegia turkestanica*, 8 — *Bromius obscurus*, 9 — *Pachnephorus tessellatus*, 10 — *P. pilosus*. 11–12 — claws: 11 — *Pachnephorus tessellatus*, 12 — *P. pilosus*. 13–14 — right elytron, lateral view: 13 — *Chrysolina*, 14 — *Gonioctena*. 15–16 — claws: 15 — *Zygogramma suturalis*, 16 — *Chrysolina polita*. 17–18 — maxillary palpus: 17 — *Leptinotarsa decemlineata*, 18 — *Chrysolina herbacea*. 19–20 — fore-tibia: 19 — *Chrysolina platyscelidina*, 20 — *Ch. herbacea*. (after: Warchałowski, 1991a: 1; others — orig.)

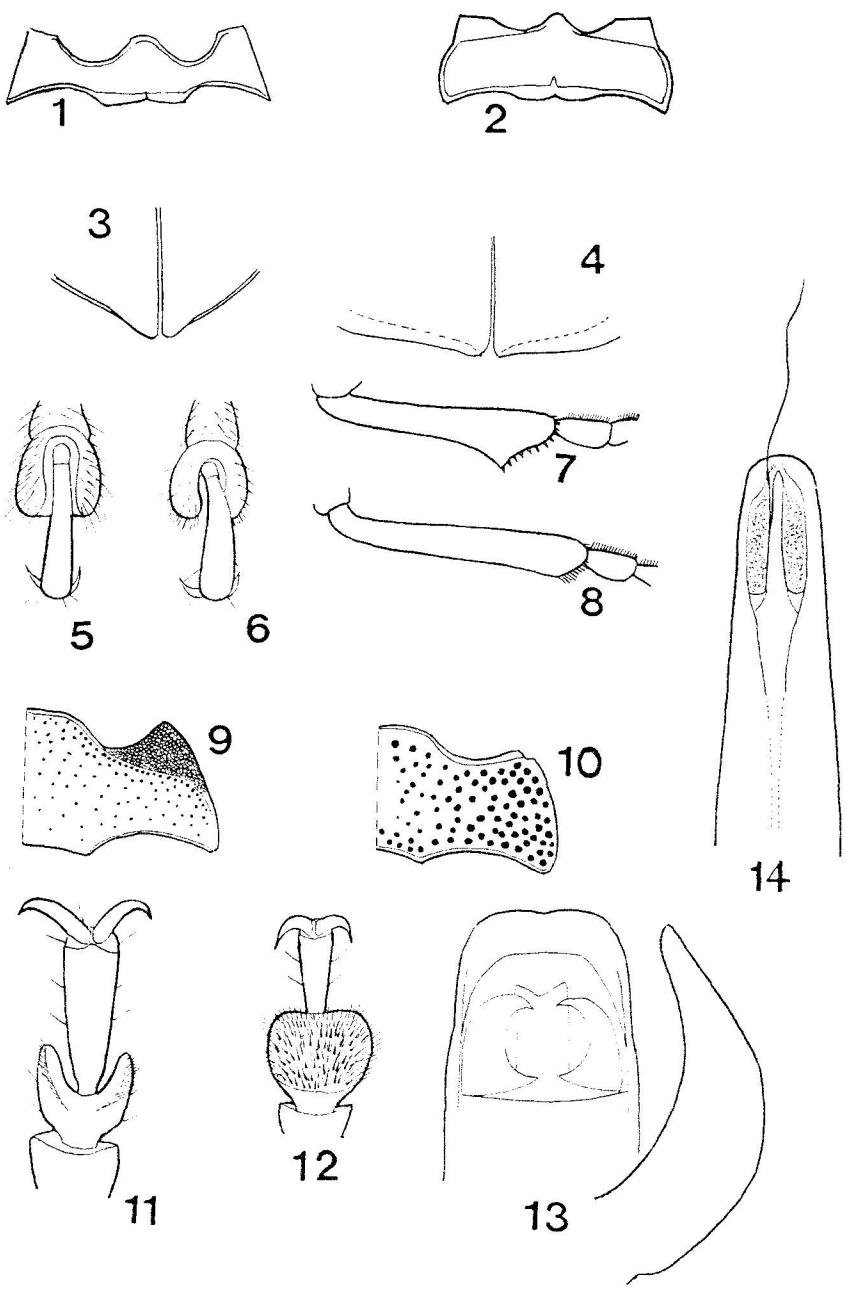


Figure 17: 1–2 — metasternum: 1 — *Timarcha tenebricosa*, 2 — *Chrysomela populi*. 3–4 — apices of elytra viewed from behind: 3 — *Colaphus sophiae*, 4 — *Plagiosterna aenea*. 5–6 — 3rd–4th tarsomeres, dorsal view: 5 — *Sclerophaedon carniolicus*, 6 — *Phaedon cochleariae*. 7–8 — hind-femur: 7 — *Gonioctena viminalis*, 8 — *Phratora vitellinae*. 9–10 — metasternum, left half: 9 — *Phaedon armoraciae*, 10 — *Hydrothassa glabra*. 11–12 — 3rd–4th metatarsomeres, ventral view: 11 — *Crosita altaica*, 12 — *Chrysolina herbacea*. 13 — *Chrysolina tundralis* (Lipetsk reg.: Pliuschan' Forestry), aedeagus, dorsal and lateral view. 14 — *Chrysolina umbratilis*, aedeagus, dorsal view. (Orig.)

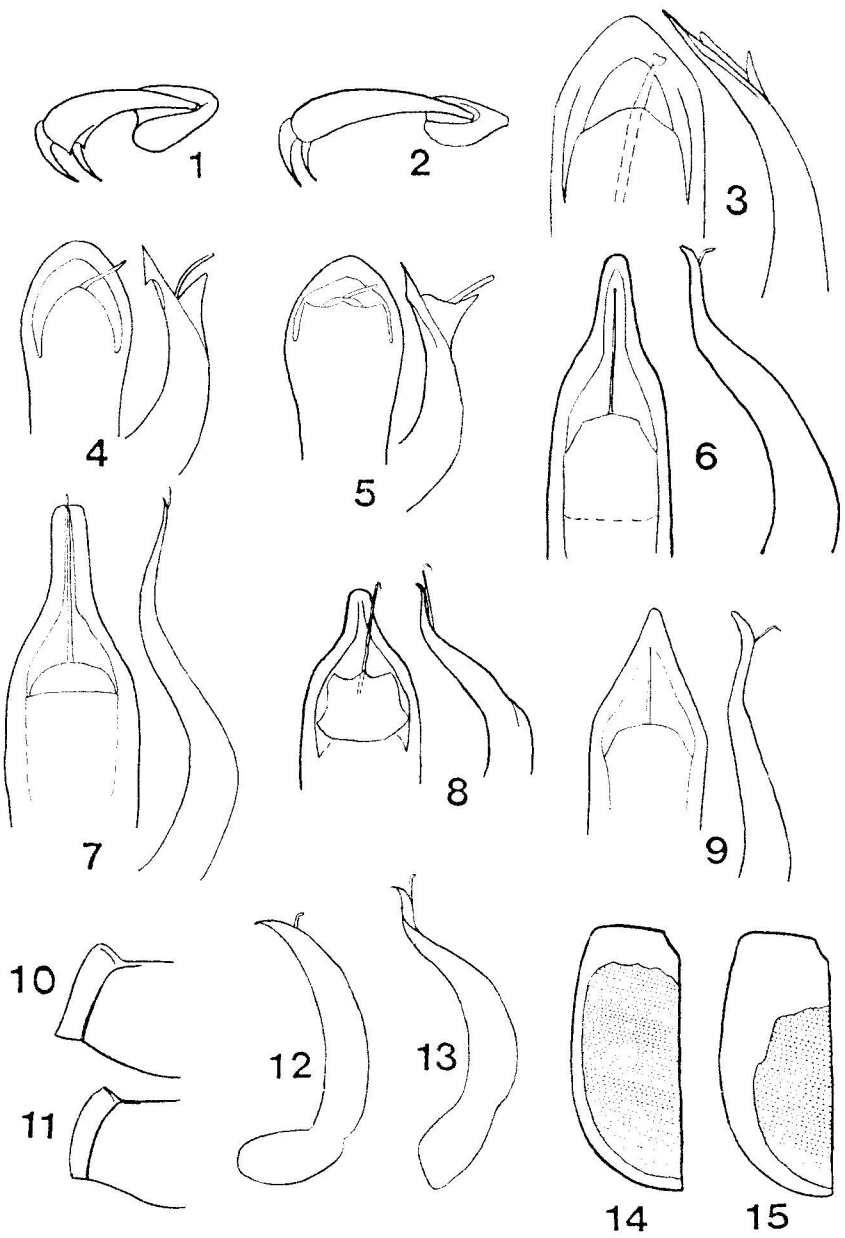


Figure 18: 1–2 — 3rd–4th tarsomeres: 1 — *Chrysolina fastuosa*, 2 — *Ch. polita*. 3–9 — aedeagus, dorsal and lateral view: 3 — *Ch. kuesteri*, 4 — *Ch. sanguinolenta*, 5 — *Ch. gypsophilae*, 6 — *Ch. carnifex*, 7 — *Ch. marginata marginata* (Chelyabinsk reg.), 8 — *Ch. marginata marginata* (Khibini Mts.), 9 — *Ch. hyrcana* (Volgograd reg.). 10–11 — pronotum, left half: 10 — *Ch. oricalcia*, 11 — *Ch. chalcites*. 12–13 — aedeagus, lateral view: 12 — *Ch. limbata*, 13 — *Ch. jenisseiensis*. 14–15 — left elytron, dorsal view: 14 — *Ch. limbata limbata*, 15 — *Ch. limbata discipennis*. (Orig.)

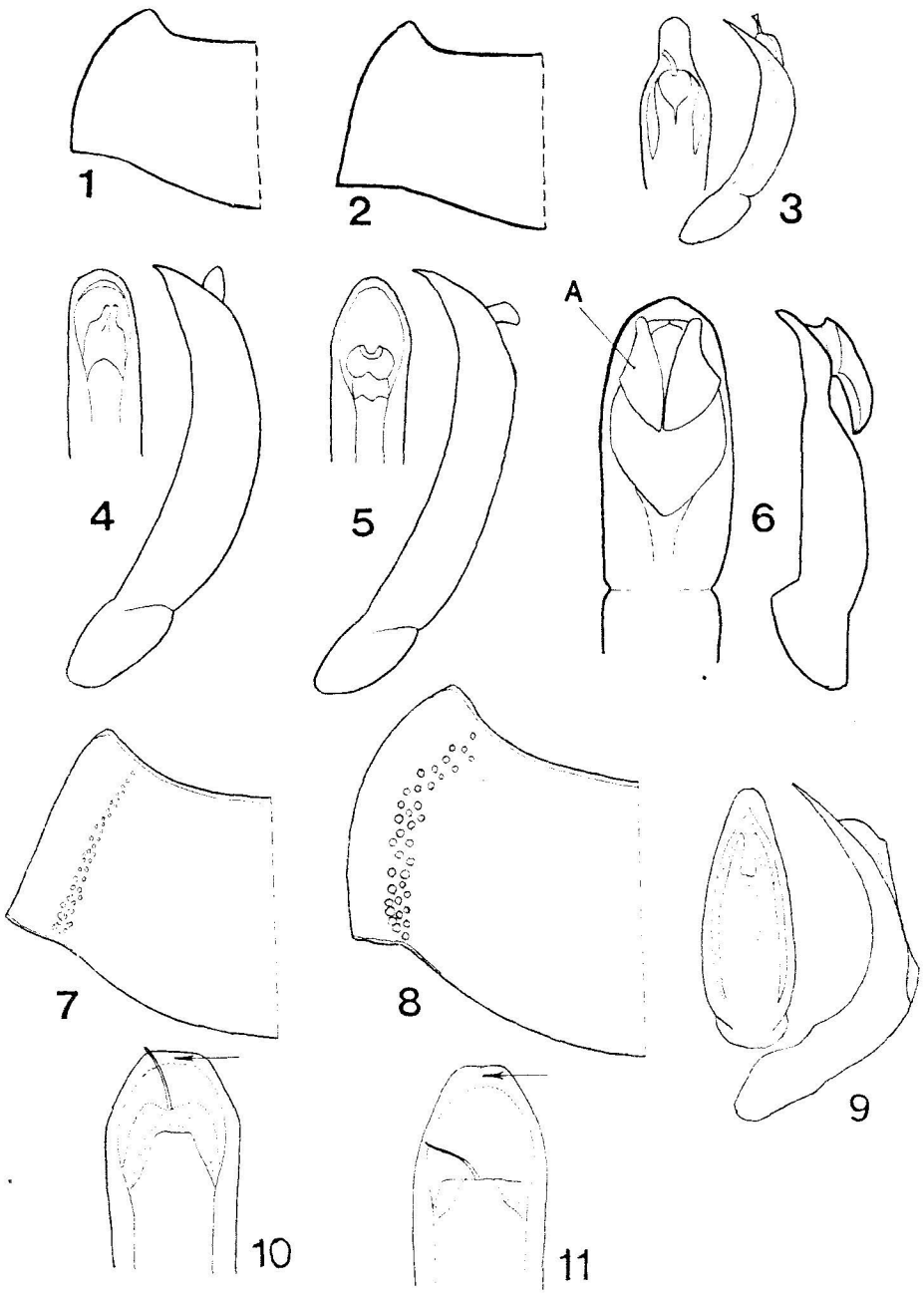


Figure 19: 1–2 — outline of pronotum, dorsal view, left half: 1 — *Chrysolina cuprina*, 2 — *Ch. geminata*. 3–6 — aedeagus, dorsal and lateral view: 3 — *Ch. hyperici*, 4 — *Ch. cuprina* (Chelyabinsk reg.), 5 — *Ch. geminata*, 6 — *Ch. tolli* (A — alae). 7–8 — pronotum, dorsal view, left half: 7 — *Ch. rossia*, 8 — *Ch. sanguinolenta*. 9–11 — aedeagus: 9 — *Ch. ordinata* (Ulyanovsk reg.: Radischevo Distr.), 10 — *Ch. lichenis*, 11 — *Ch. carpathica*. (Orig.)

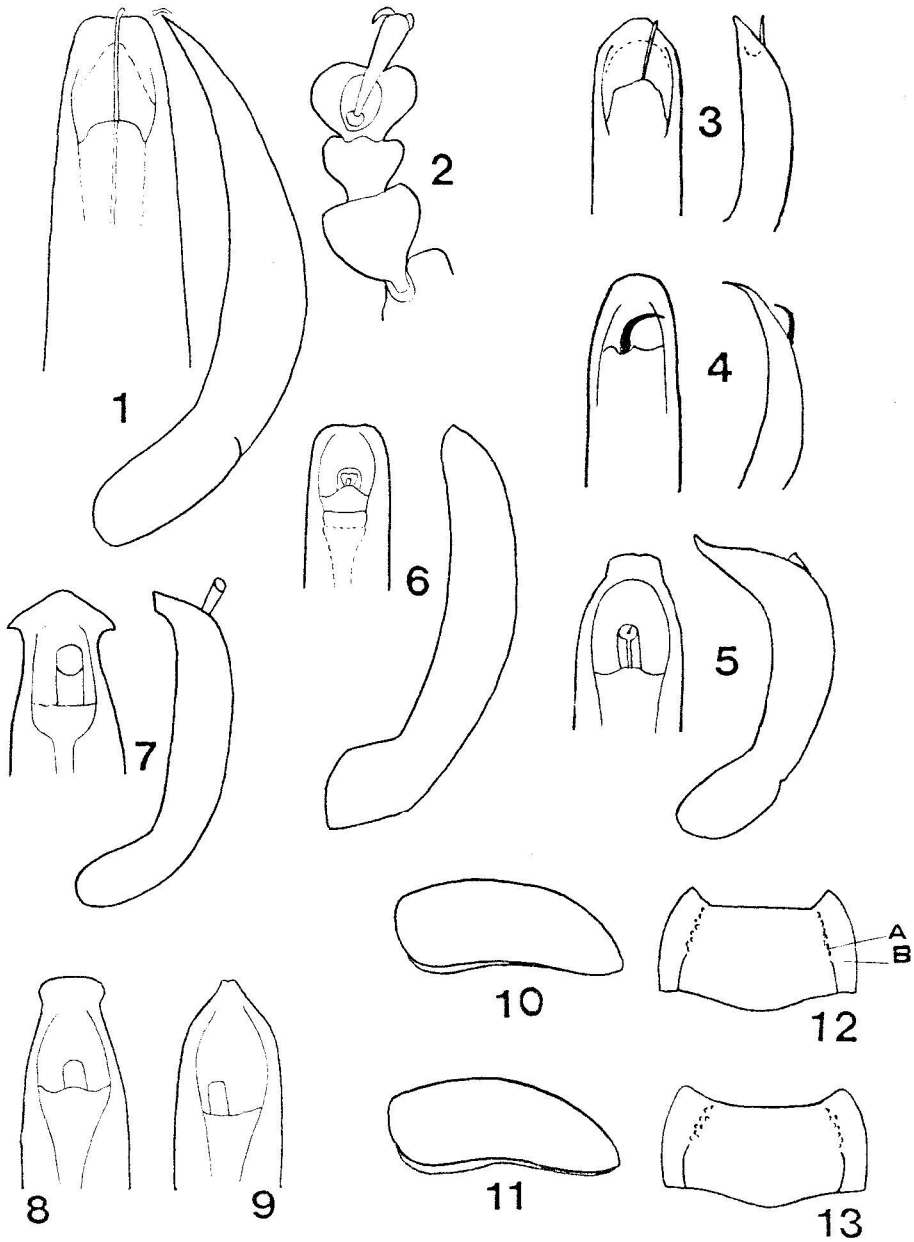


Figure 20: 1–2 — *Chrysolina eurina* (Moscow reg.: Lukhovitsy Distr.): 1 — aedeagus, dorsal and lateral view, 2 — male, fore-tarsus. 3–7 — aedeagus, dorsal and lateral view: 3 — *Ch. imperfecta* (Volgograd reg.), 4 — *Ch. reitteri*, 5 — *Ch. cerealis*, 6 — *Ch. relucens*, 7 — *Ch. aurichalcea bohemica*. 8–9 — aedeagus, dorsal view: 8 — *Ch. herbacea*, 9 — *Ch. coerulans*. 10–11 — elytron, lateral view: 10 — *Ch. herbacea*, 11 — *Ch. graminis*. 12–13 — pronotum, dorsal view: 12 — *Ch. purpurascens* (A — lateral impression, B — lateral callus), 13 — *Ch. pliginskii*. (Orig.)

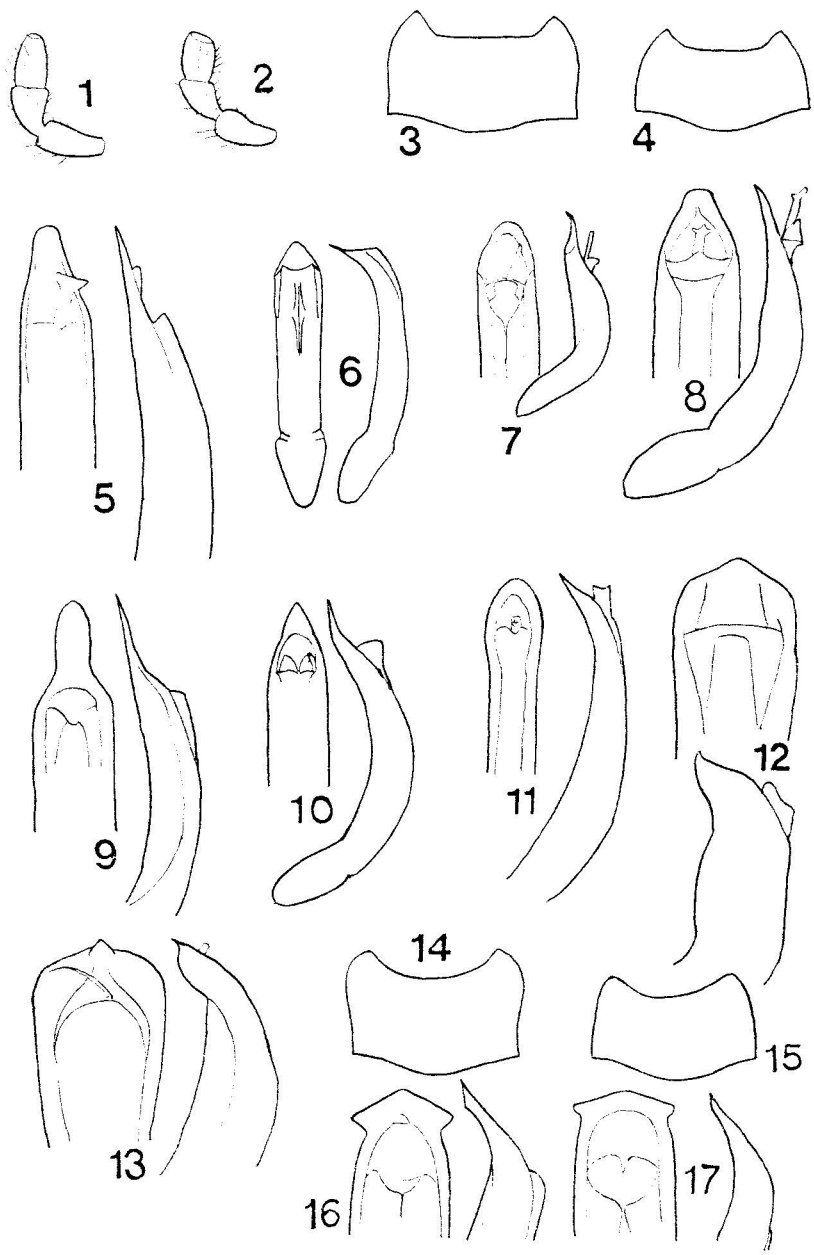


Figure 21: 1–2 — maxillary palpus of male: 1 — *Oreina cacaliae senecionis*, 2 — *O. virgulata praefica*. 3–4 — outline of pronotum: 3 — *O. cacaliae senecionis*, 4 — *O. speciosissima*. 5–13 — aedeagus, dorsal and lateral view: 5 — *O. bifrons*, 6 — *O. viridis*, 7 — *O. bidentata*, 8 — *O. coerulea*, 9 — *O. cacaliae senecionis*, 10 — *O. speciosissima*, 11 — *O. alpestris*, 12 — *O. intricata*, 13 — *O. virgulata*. 14–15 — outline of pronotum: 14 — *Chrysomela tremula*, 15 — *Ch. saliceti*. 16–17 — aedeagus, dorsal and lateral view: 16 — *Ch. tremula*, 17 — *Ch. saliceti*. (after Brovdij, 1977a: 6; others — orig.)

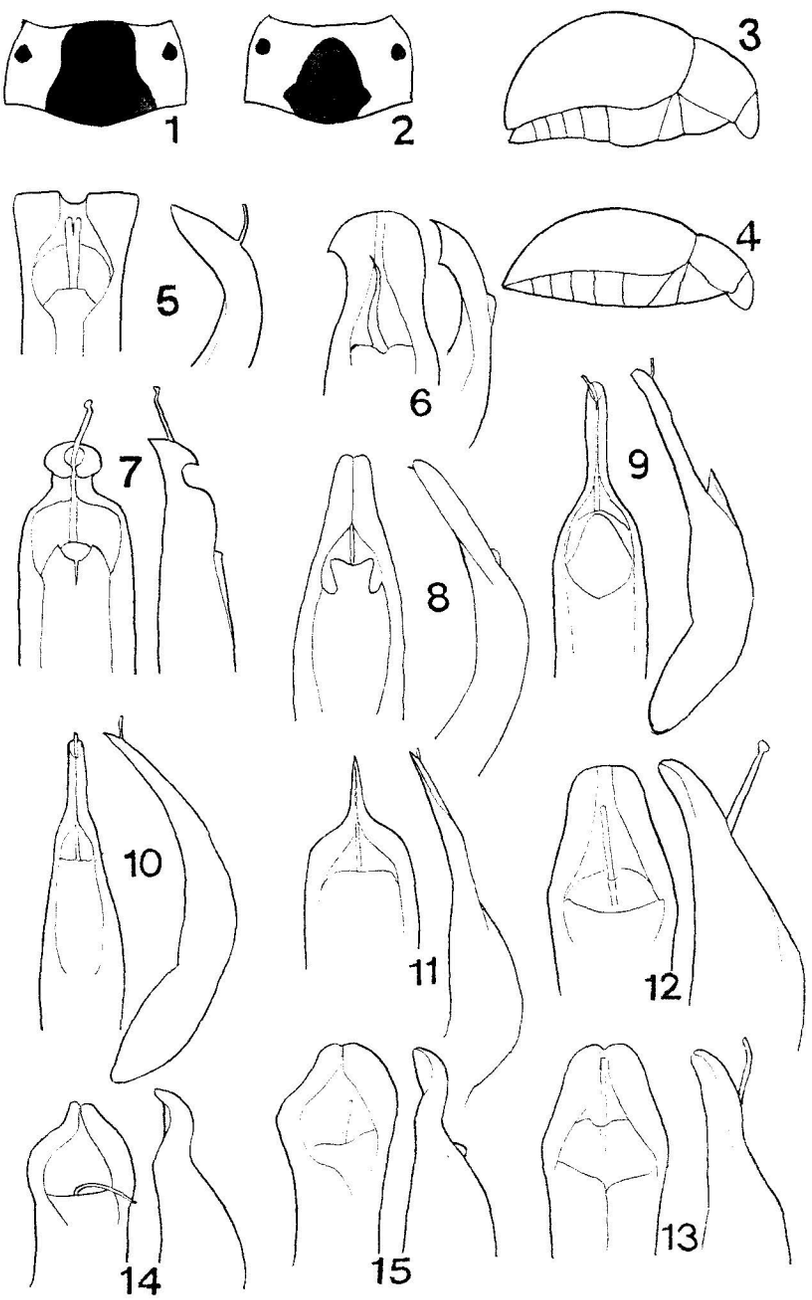


Figure 22: 1–2 — pronotum, dorsal view: 1 — *Entomoscelis adonidis*, 2 — *E. suturalis*. 3–4 — lateral view: 3 — *Gonioctena fornicata*, 4 — *G. decemnotata*. 5–15 — aedeagus, dorsal and lateral view: 5 — *G. fornicata*, 6 — *G. olivacea*, 7 — *G. viminalis*, 8 — *G. flavicornis*, 9 — *G. sundmani*, 10 — *G. decaspilota*, 11 — *G. linnaeana*, 12 — *G. pallida*, 13 — *G. interposita*, 14 — *G. quinquepunctata quinquepunctata*, 15 — *G. quinquepunctata intermedia*. (Orig.)

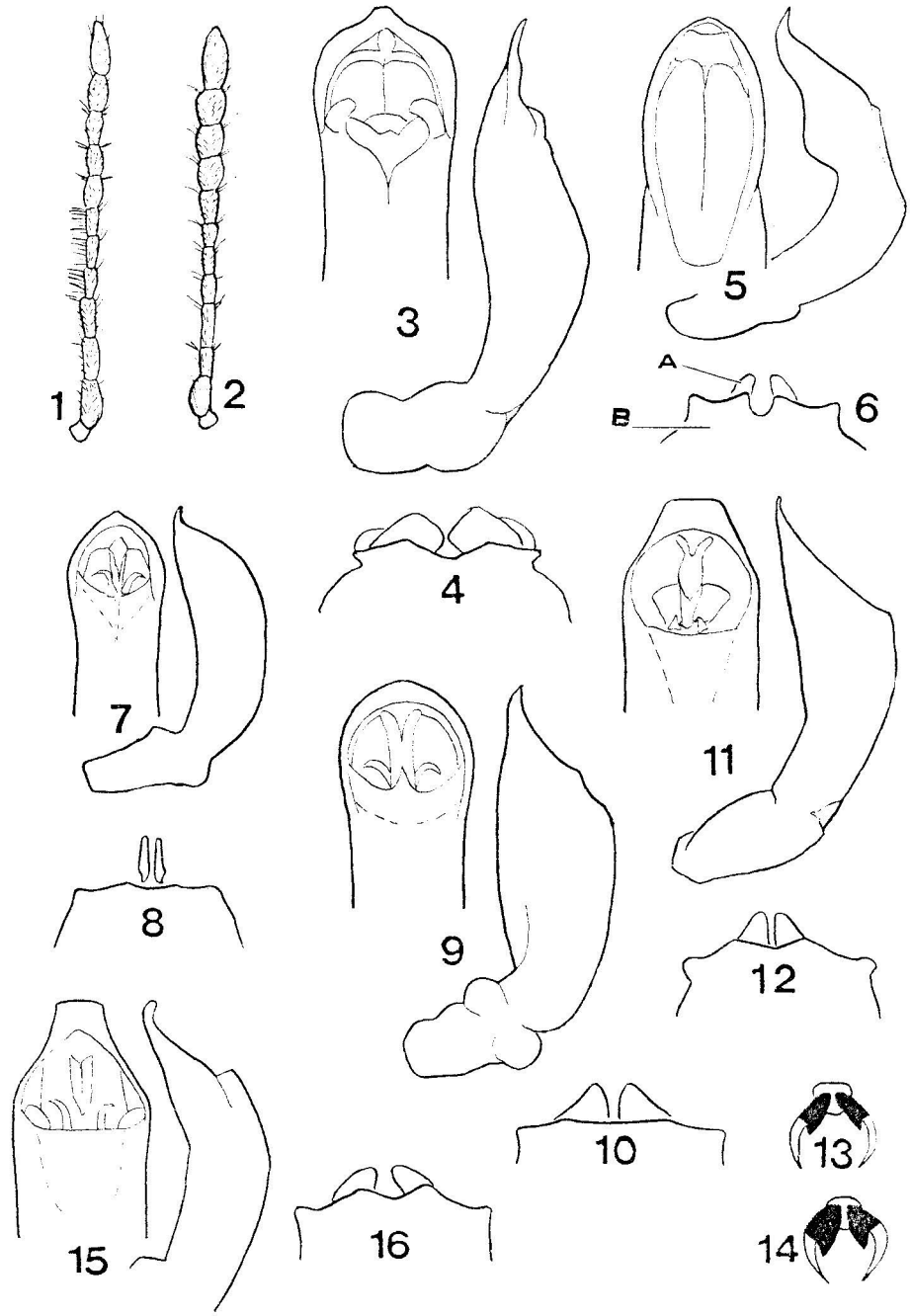


Figure 23: 1–2 — antenna: 1 — *Phratora vulgatissima*, 2 — *Ph. atrovirens*. 3, 5, 7, 9, 11, 15 — aedeagus, dorsal and lateral view; 4, 6, 8, 10, 12, 16 — vaginal sternite and vaginal palpi of female: 3, 4 — *Phratora vulgatissima*; 5, 6 — *Ph. laticollis* (A — vaginal palpi, B — vaginal sternite); 7, 8 — *Ph. atrovirens*; 9, 10 — *Ph. vitellinae*; 11, 12 — *Ph. polaris*; 15, 16 — *Ph. tibialis*. 13–14 — claws: 13 — *Ph. tibialis*, 14 — *Ph. polaris*. (Orig.)

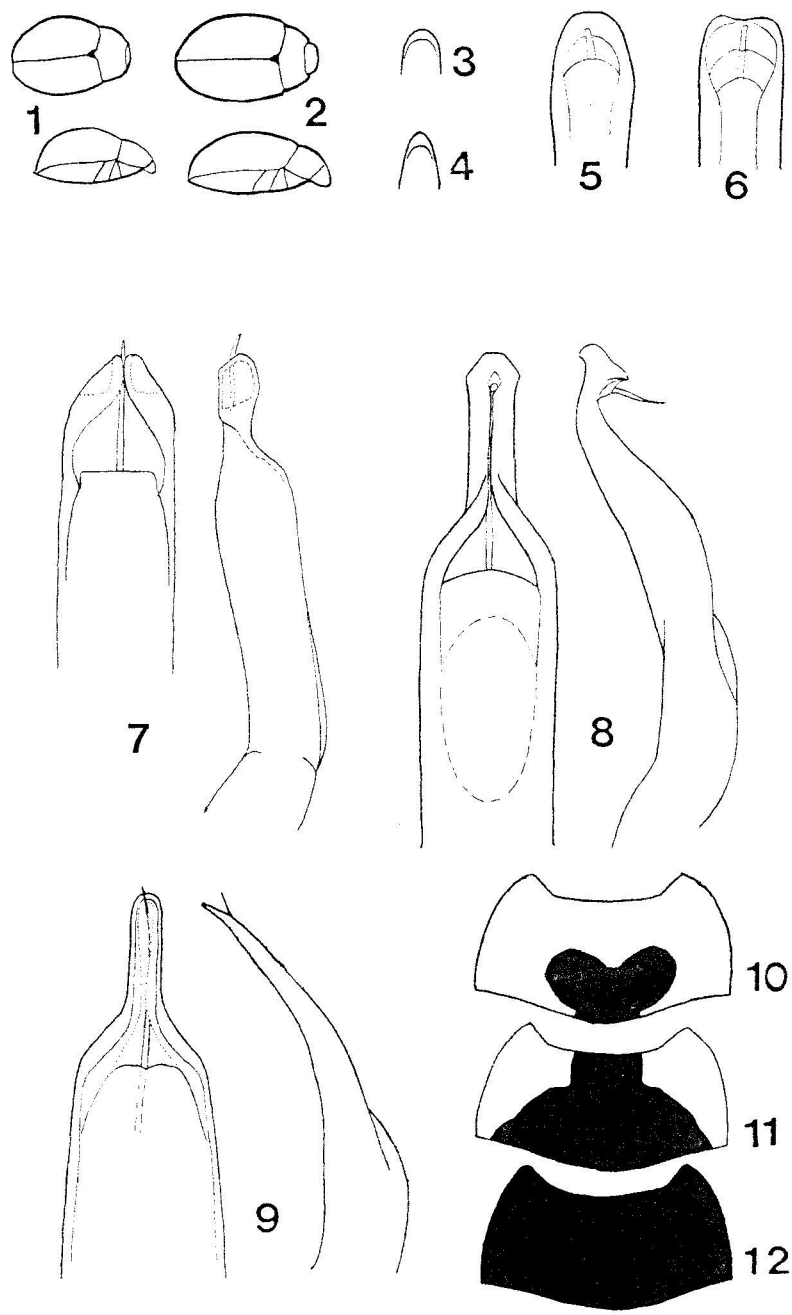


Figure 24: 1–2 — dorsal and lateral view: 1 — *Phaedon laevigatus*, 2 — *Ph. cochleariae*. 3–6 — apex of aedeagus, dorsal view: 3 — *Ph. concinnus*, 4 — *Ph. armoraciae*, 5 — *Sclerophaedon carpathicus*, 6 — *S. carniolicus*. 7–9 — aedeagus, dorsal and lateral view: 7 — *Gonioctena sibirica* (Udmurt Republic: Siumsi Distr.), 8 — *G. decemnotata*, 9 — *G. norvegica*. 10–12 — pronotum, dorsal view: 10 — *G. norvegica*, 11–12 — *G. linnaeana*. (Orig.)

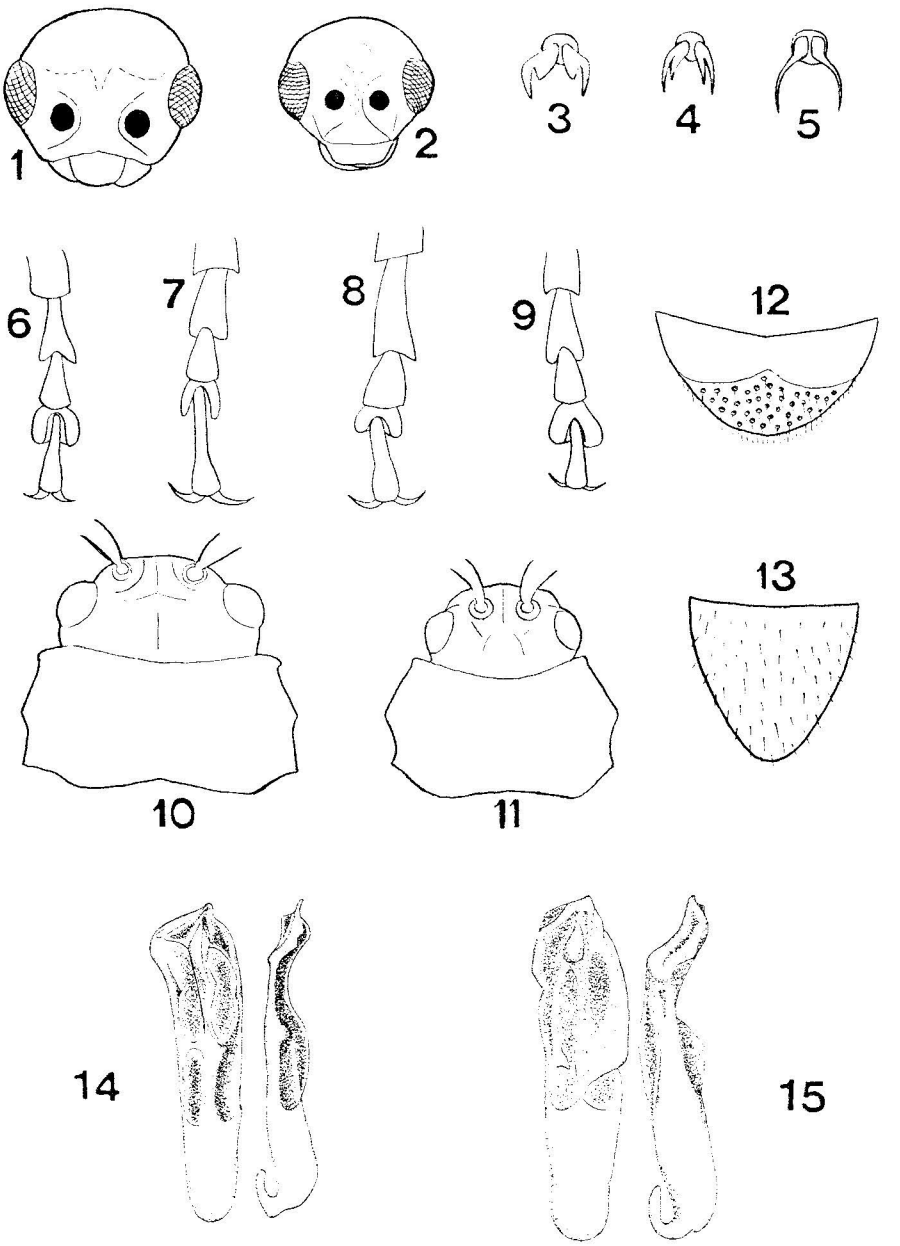


Figure 25: 1–2 — head with place of antennal insertions: 1 — *Galeruca tanaceti*, 2 — *Agelastica alni*. 3–5 — claws of different shape: 3 — appendiculate (*A. alni*), 4 — bifid (*G. tanaceti*), 5 — simple (*Theone silphoides*). 6–9 — hind-tarsus: 6 — *G. pomonae*, 7 — *Diorhabda elongata*, 8 — *T. silphoides*, 9 — *Pallasiola absinthii*. 10–11 — head and pronotum, dorsal view: 10 — *Pyrrhalta viburni*, 11 — *Galerucella nymphaeae*. 12–13 — pygidium: 12 — *A. alni*, 13 — *Luperus armeniacus*. 14–15 — aedeagus, dorsal and lateral view: 14 — *Lochmaea caprea*, 15 — *L. suturalis*. (Orig.)

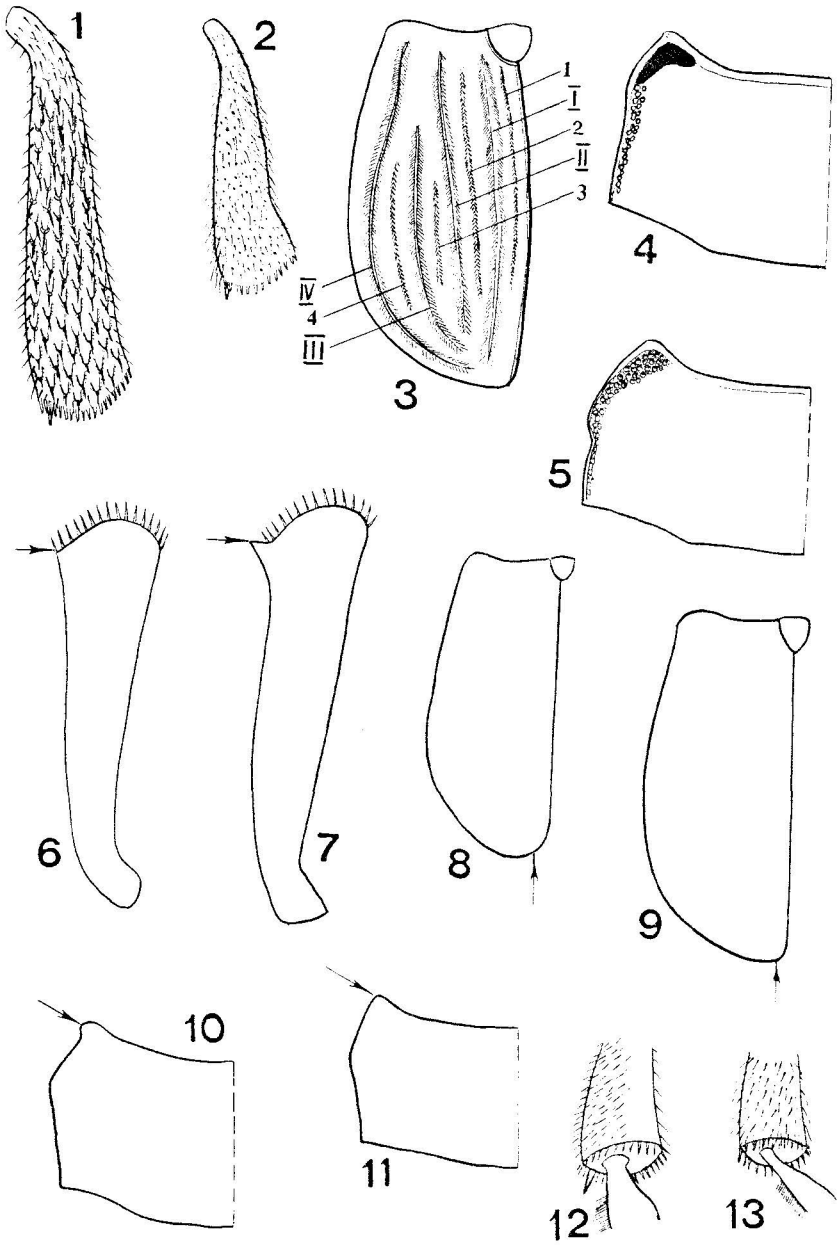


Figure 26: 1–2 — lateral side of mid-tibia: 1 — *Galeruca pomonae*, 2 — *G. rufa*. 3 — elytron of *Galeruca* (I–IV — primary costae, 1–4 — secondary costae). 4–5 — lateral furrow of pronotum in dorsal view: 4 — *G. pomonae*, 5 — *G. interrupta circumdata*. 6–7 — shape of fore–tibia: 6 — *G. laticollis*, 7 — *G. interrupta circumdata*. 8–9 — outline of elytron: 8 — *G. interrupta circumdata*, 9 — *G. interrupta armeniaca*. 10–11 — outline of pronotum, left half: 10 — *G. dahli*, 11 — *G. laticollis*. 12–13 — apex of hind-tibia: 12 — *G. rufa*, 13 — *G. melanocephala*. (Orig.)

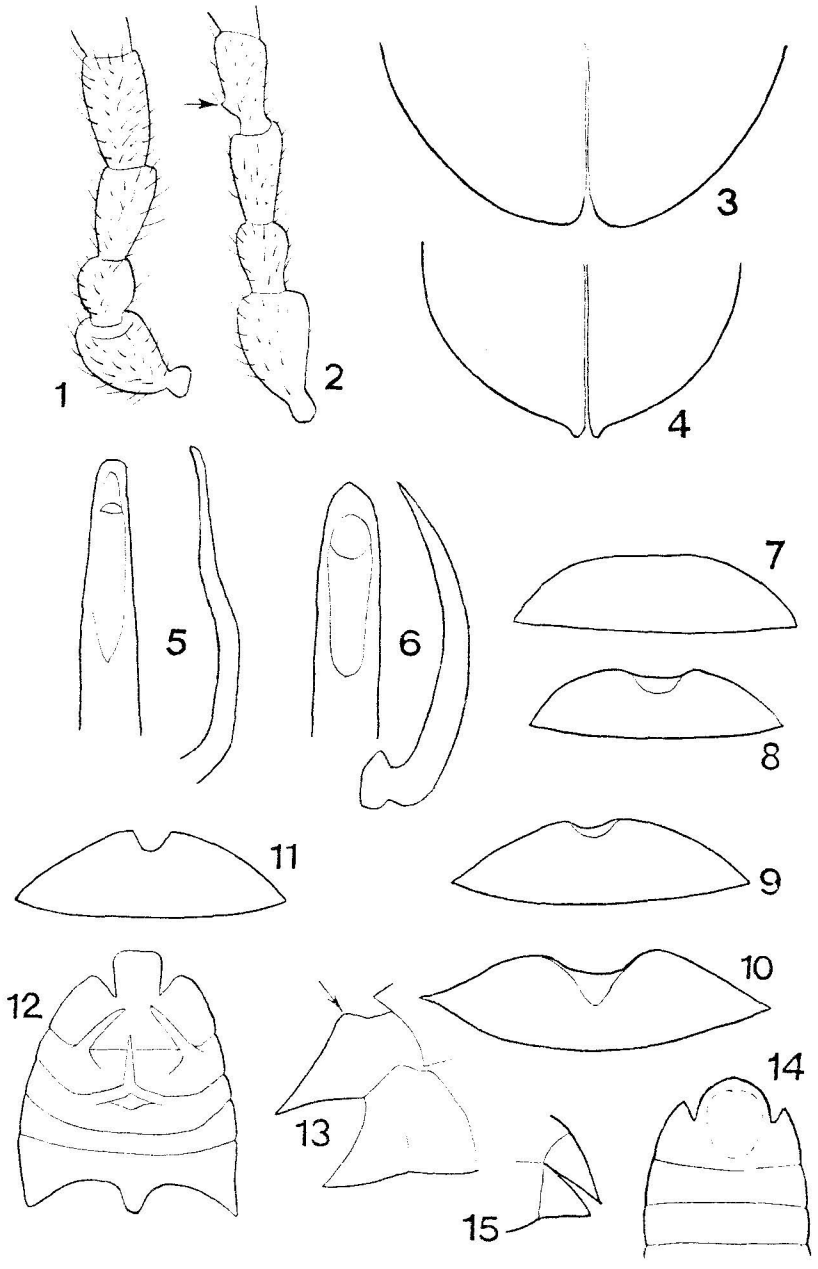


Figure 27: 1–2 — 1st–4th antennomeres of male: 1 — *Diorhabda persica*, 2 — *D. fischeri*. 3–4 — shape of elytral apex: 3 — *Galerucella grisescens*, 4 — *G. nymphaeae*. 5–6 — aedeagus, dorsal and lateral view: 5 — *G. calmariensis*, 6 — *G. tenella*. 7–11 — 5th abdominal sternite: 7 — *G. tenella*, female, 8 — *G. tenella*, male, 9 — *G. pusilla*, female, 10 — *G. pusilla*, male, 11 — *G. calmariensis*, female. 12–13 — *Luperus pravei*: 12 — abdominal sternites of male, 13 — apex of abdomen of female, lateral view. 14–15 — *L. armeniacus*: 14 — 3rd–5th abdominal sternites of male, 15 — apex of abdomen of female, lateral view. (Orig.)

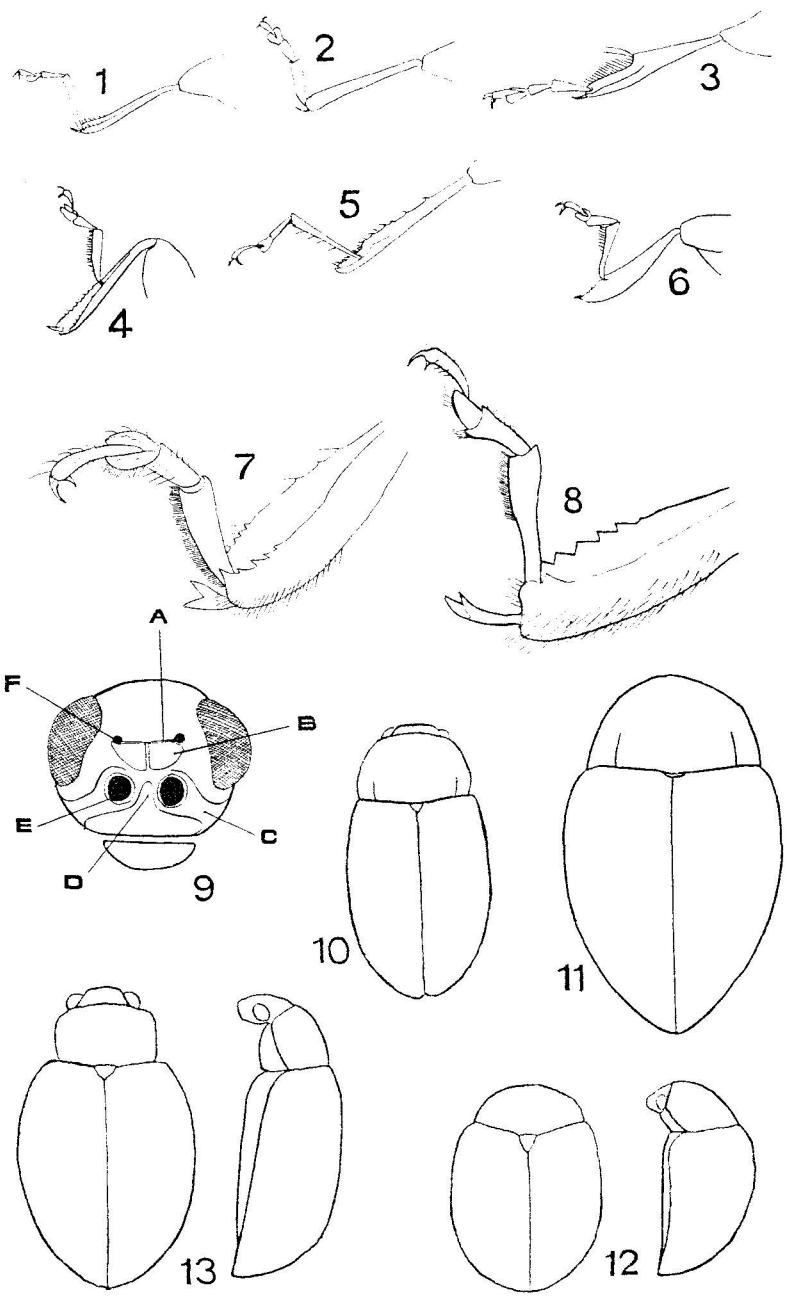


Figure 28: 1–8 — hind-tibia and tarsus: 1 — *Longitarsus pellucidus*, 2 — *Phyllotreta nigripes*, 3 — *Chaetocnema concinna*, 4 — *Psylliodes (Semicnema) macellus agropyri*, 5 — *P.* (s.str.) *attenuatus*, 6 — *P.* (s.str.) *hyoscyami*, 7 — *Dibolia rugulosa*, 8 — *D. metallica*. 9 — *Dibolia timida*, head (A — supracallinal sulcus, B — antennal callus, C — antennal impression, D — frontal ridge, E — antennal insertion, F — frontal pore). 10–13 — shape of body: 10 — *Mantura chrysanthemi*, 11 — *Minota carpathica*, 12 — *Sphaeroderma testacea*, 13 — *Aphthona erichsoni*. (Orig.)

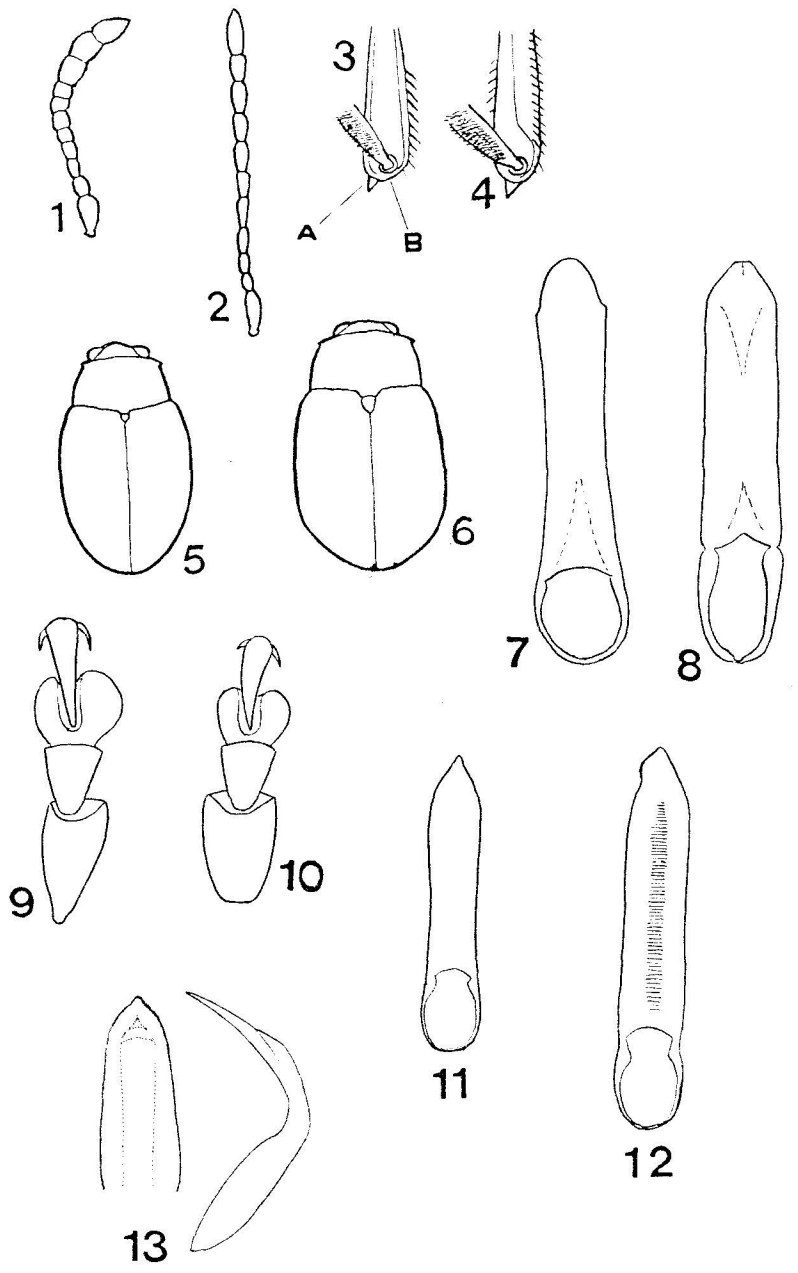


Figure 29: 1–2 — antenna: 1 — *Mniophila muscorum*, 2 — *Argopus ahrensii*. 3–4 — apex of hind-tibia, upper side: 3 — *Aphthona czwalinae* (A — apical spur, B — lower side of tibial apex), 4 — *Phyllotreta nemorum*. 5–6 — shape of body: 5 — *Epitrix intermedia*, 6 — *E. pubescens*. 7–8 — aedeagus: 7 — *Crepidodera aurata*, 8 — *C. fulvicornis lapponica* (Murmansk reg.). 9–10 — fore-tarsus of male: 9 — *Altica quercetorum*, 10 — *A. longicollis*. 11–13 — aedeagus: 11 — *Chaetocnema chlorophana*, 12 — *Ch. coyei*, 13 — *Ch. compressa*. (Orig.)

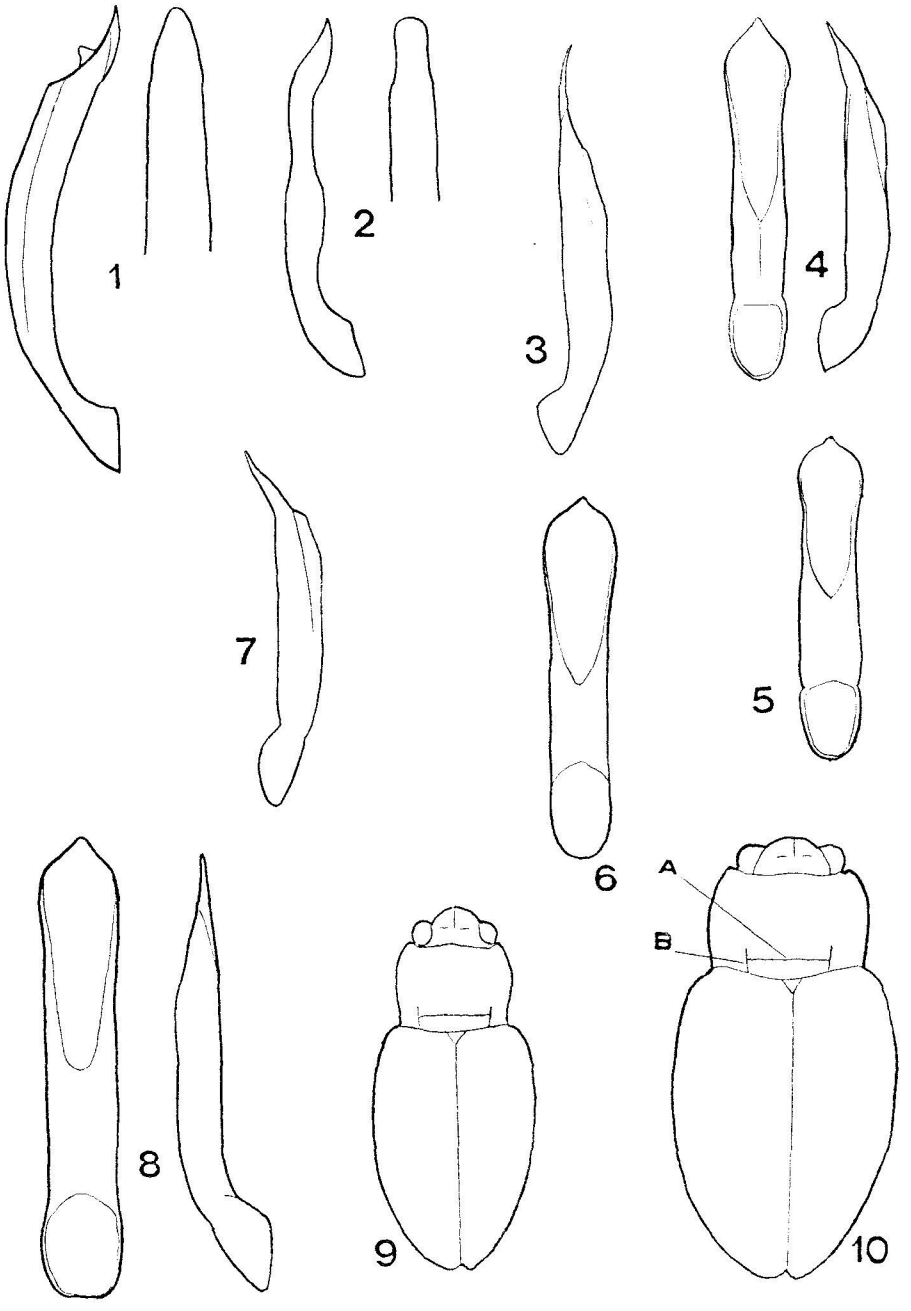


Figure 30: 1–8 — aedeagus: 1 — *Derocrepis rufipes* (lateral and ventral view), 2 — *D. serbica* (lateral and ventral view), 3 — *Neocrepidodera crassicornis* (lateral view), 4 — *N. motschulskii* (ventral and lateral view), 5 — *N. ferruginea* (ventral view), 6 — *N. brevicollis* (ventral view), 7 — *N. impressa* (lateral view), 8 — *N. transversa* (ventral and lateral view). 9–10 — general view from above: 9 — *N. motschulskii*, 10 — *N. ferruginea* (A — antebasal impression, B — basal furrow). (Orig.)

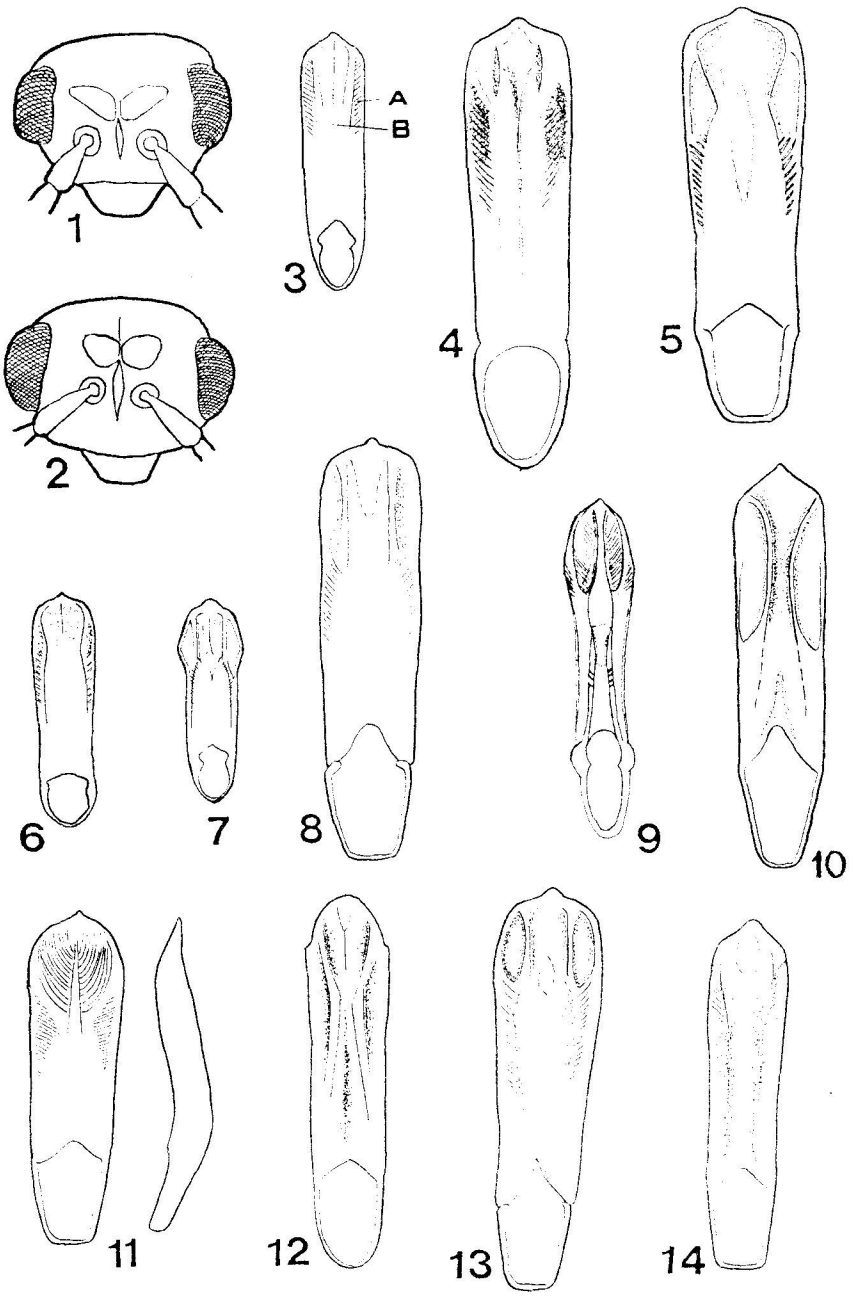


Figure 31: 1–2 — head: 1 — *Altica tamaricis*, 2 — *A. brevicollis*. 3–10 — aedeagus, ventral view: 3 — *A. deserticola* (A — lateral area, B — mid area), 4 — *A. tamaricis*, 5 — *A. quercetorum*, 6 — *A. brevicollis*, 7 — *A. ampelophaga*, 8 — *A. aenescens*, 9 — *A. impressicollis*, 10 — *A. carduorum*. 11 — *A. helianthemi*, aedeagus, ventral and lateral view. 12–14 — aedeagus, ventral view: 12 — *A. oleracea*, 13 — *A. lythri*, 14 — *A. palustris*. (after Warchałowski, 1998: 7; others — orig., including fig. 9 made by Mrs. O.E. Chaschina)

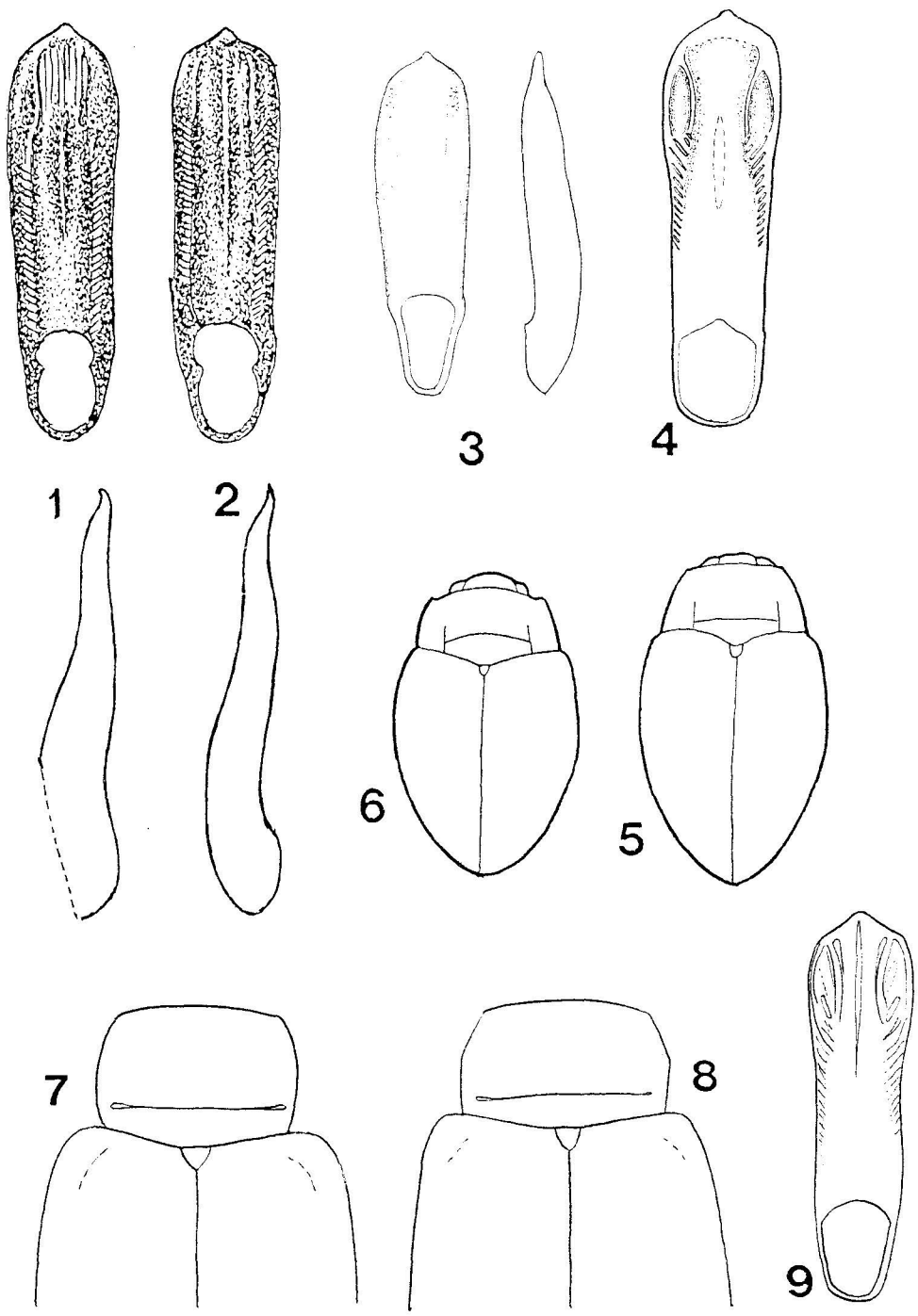


Figure 32: 1–3 — aedeadus, ventral and lateral view: 1, 2 — *Altica cornivorax*, 3 — *A. carinthiaca* (Leningrad reg.). 4 — *A. longicollis*, aedeagus, ventral view. 5–6 — general view from above: 5 — *Orestia carpathica*, 6 — *O. aubei*. 7–8 — pronotum and elytral base, dorsal view: 7 — *A. tamaricis*, 8 — *A. deserticola*. 9 — *A. cornivorax*, aedeagus, ventral view. (after Lyubischev, 1971 (manuscript): 1, 2; others — orig.)

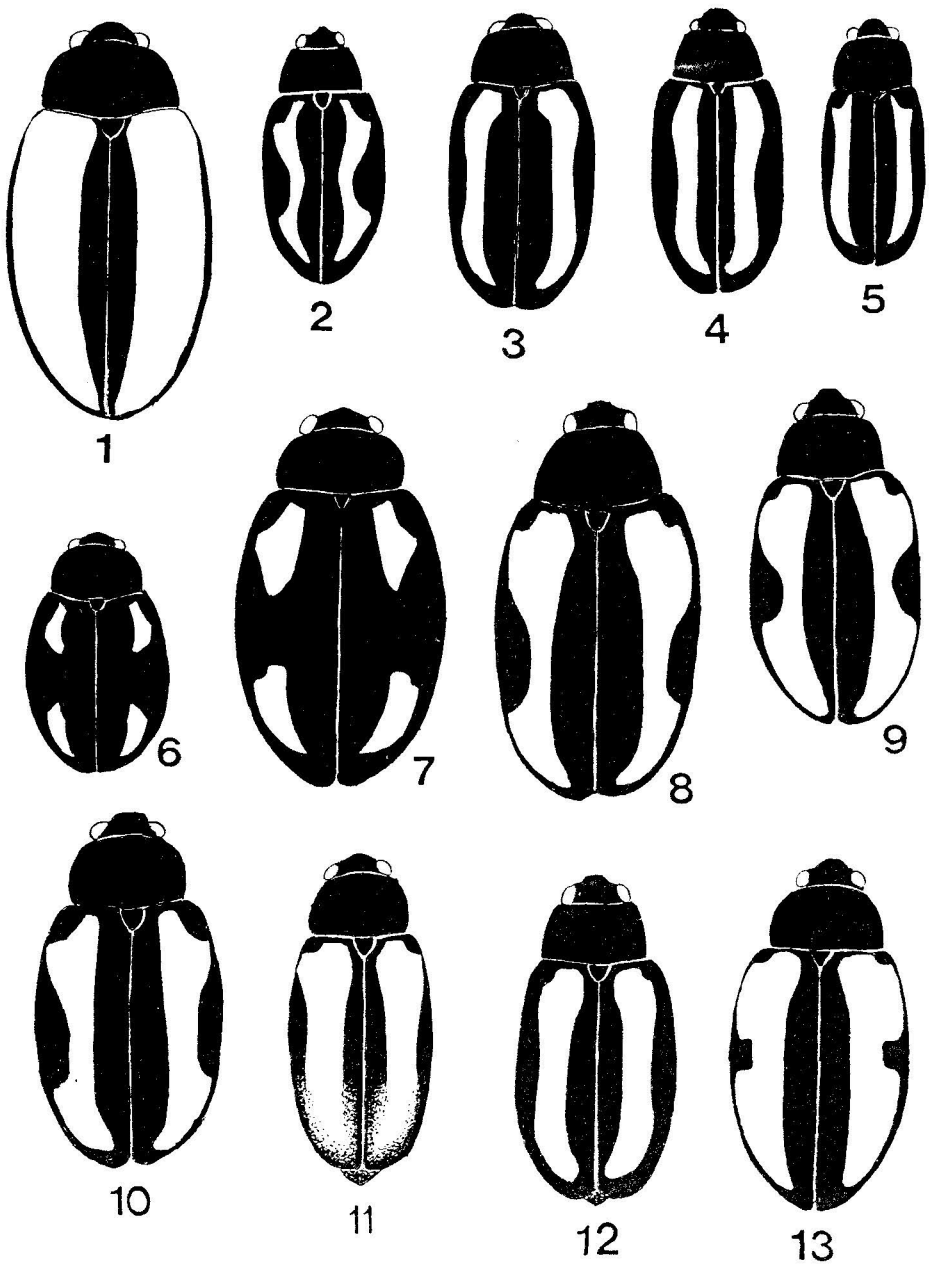


Figure 33: 1–13 — colour pattern of dorsal side: 1 — *Phyllotreta armoraciae*, 2 — *Ph. zimmermanni*, 3 — *Ph. undulata*, 4 — *Ph. nemorum*, 5 — *Ph. vittula*, 6 — *Ph. exclamationis*, 7 — *Ph. tetrastigma*, 8 — *Ph. striolata*, 9 — *Ph. ochripes*, 10 — *Ph. flexuosa*; 11 — *Ph. pallidipennis*, 12 — *Ph. erysimi*, 13 — *Ph. reitteri* (Crimea: envir. Simferopol). (Orig.)

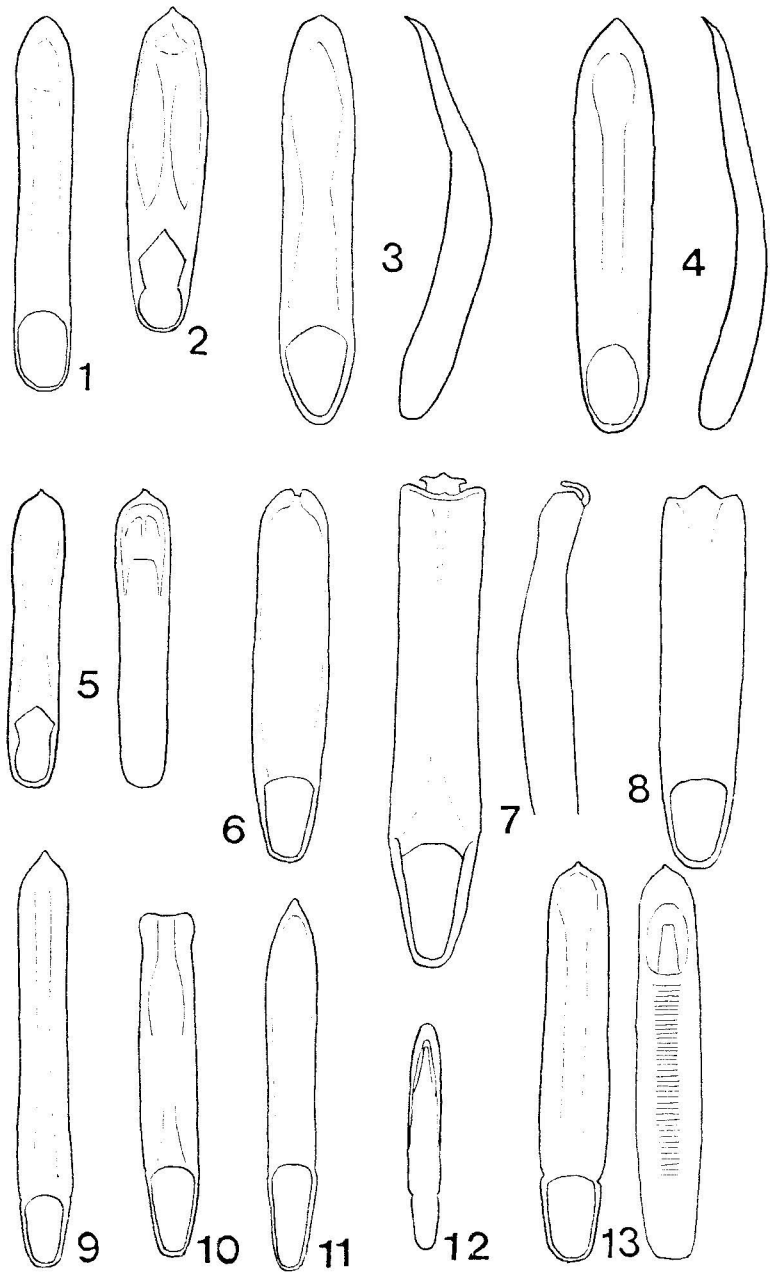


Figure 34: 1–13 — *Phyllotreta*, aedeagus: 1 — *Ph. weiseana*, 2 — *Ph. misella* (S. Urals: Ilmensky Res.), 3 — *Ph. astrachanica*, 4 — *Ph. diademata*, 5 — *Ph. aerea*, 6 — *Ph. christinae*, 7 — *Ph. nemorum*, 8 — *Ph. ochripes*, 9 — *Ph. striolata*, 10 — *Ph. exclamationis*, 11 — *Ph. atra*, 12 — *Ph. tetrastigma*, 13 — *Ph. scheuchi* (Crimea: envir. Simferopol). 1, 2, 6, 8–11 — ventral view; 3, 4, 7 — ventral and lateral view; 5, 13 — ventral and dorsal view; 12 — dorsal view. (after Warchałowski, 1995: 12; others — orig.)

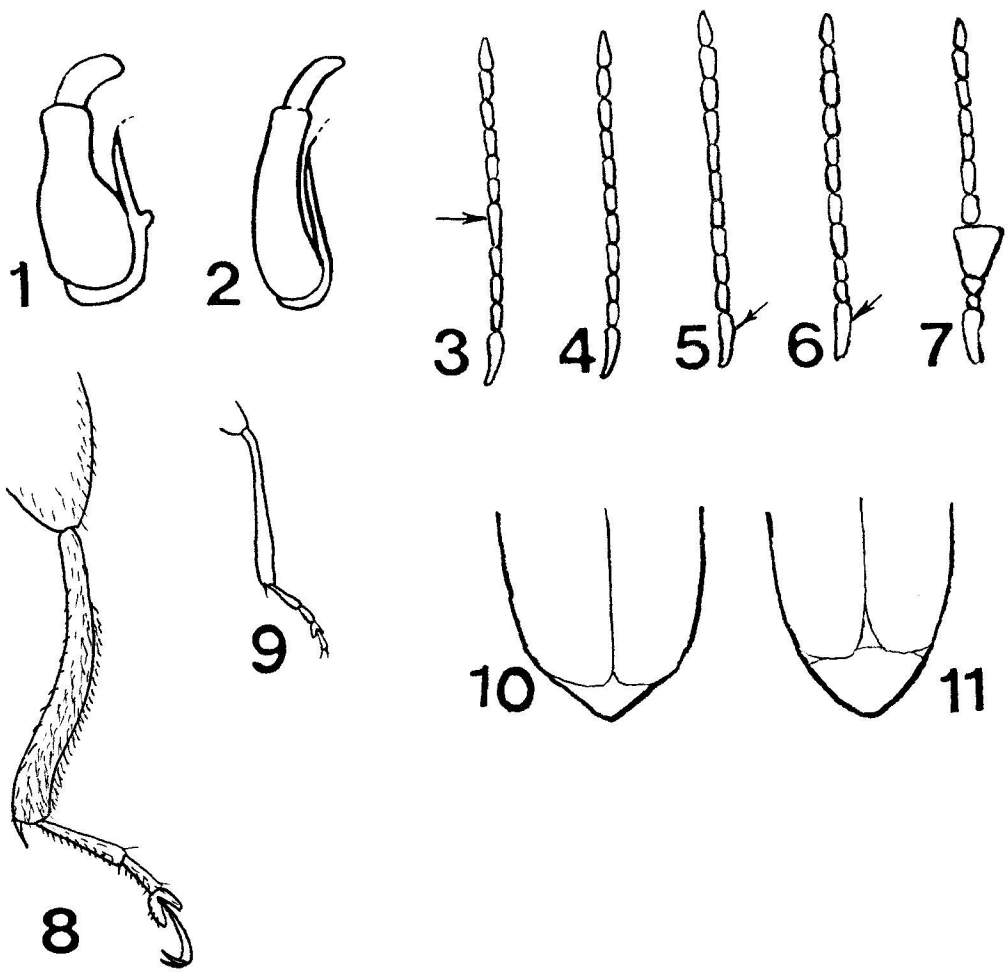


Figure 35: 1–2 — spermatheca: 1 — *Phyllotreta astrachanica*, 2 — *Ph. diademata*. 3–7 — antenna: 3 — *Ph. ochripes*, female; 4 — *Ph. striolata*, female; 5 — *Ph. praticola*, male; 6 — *Ph. procera*, female; 7 — *Ph. nodicornis*, male. 8–9 — hind-tibia and tarsus: 8 — *Ph. ogloblini*, 9 — *Ph. cruciferae*. 10–11 — elytral apex, dorsal view: 10 — *Ph. praticola*, 11 — *Ph. nodicornis*. (after: Warchałowski, 1995: 1, 2; others — orig.)

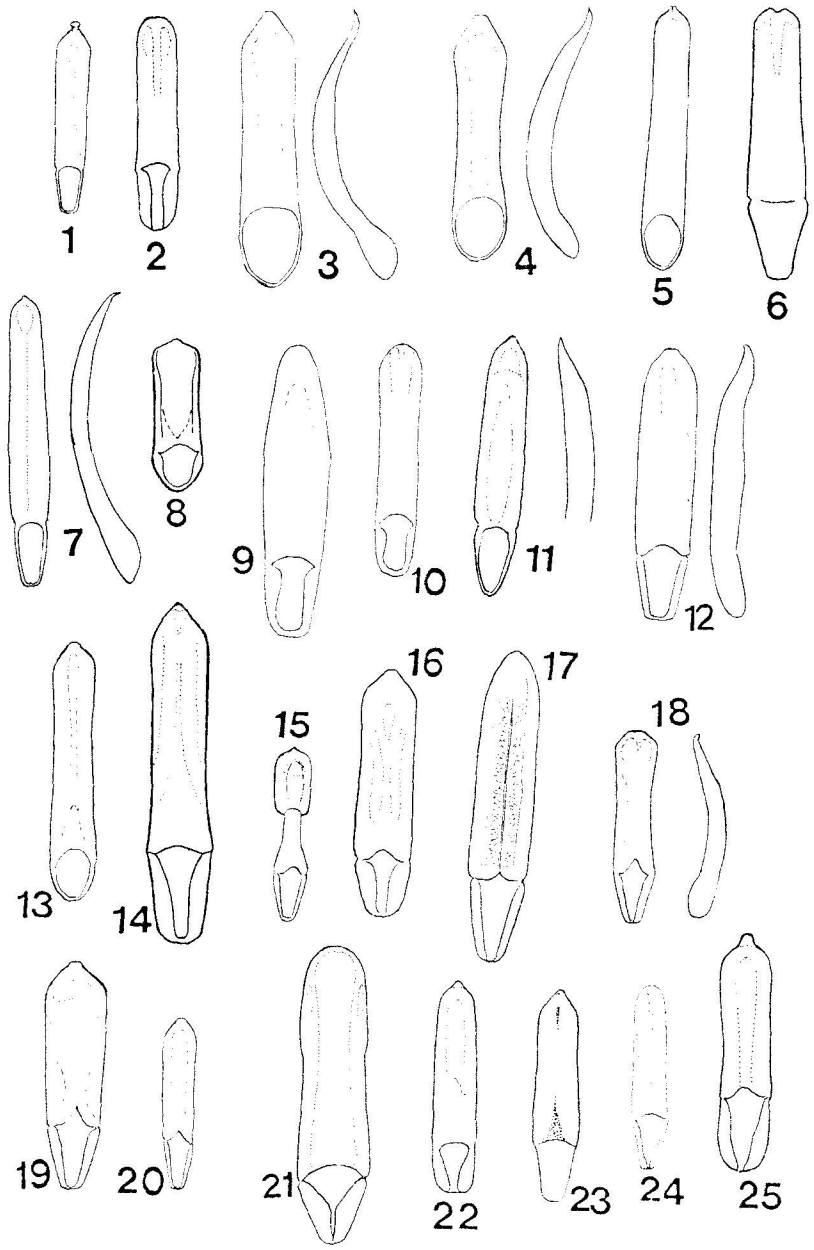


Figure 36: 1–25 — aedeagus: 1 — *Aphthona lutescens*, 2 — *A. kuntzei*, 3 — *A. franzi*, 4 — *A. placida*, 5 — *A. nigriscutis*, 6 — *A. cyparissiae*, 7 — *A. abdominalis*, 8 — *A. maculata*, 9 — *A. erichsoni*, 10 — *A. nonstriata*, 11 — *A. atrocaerulea*, 12 — *A. pygmaea*, 13 — *A. czwalinae*, 14 — *A. semicyanea*, 15 — *A. gracilis*, 16 — *A. violacea*, 17 — *A. rugipennis*, 18 — *A. venustula*, 19 — *A. euphorbiae*, 20 — *A. aeneomicans*, 21 — *A. herbigrada*, 22 — *A. atrovirens*, 23 — *A. sarmatica*, 24 — *A. ovata*, 25 — *A. konstantinovi*. (after Lopatin, 1977a: 8; Konstantinov, 1998: 2, 6, 14, 20–23, 25; others — orig.)

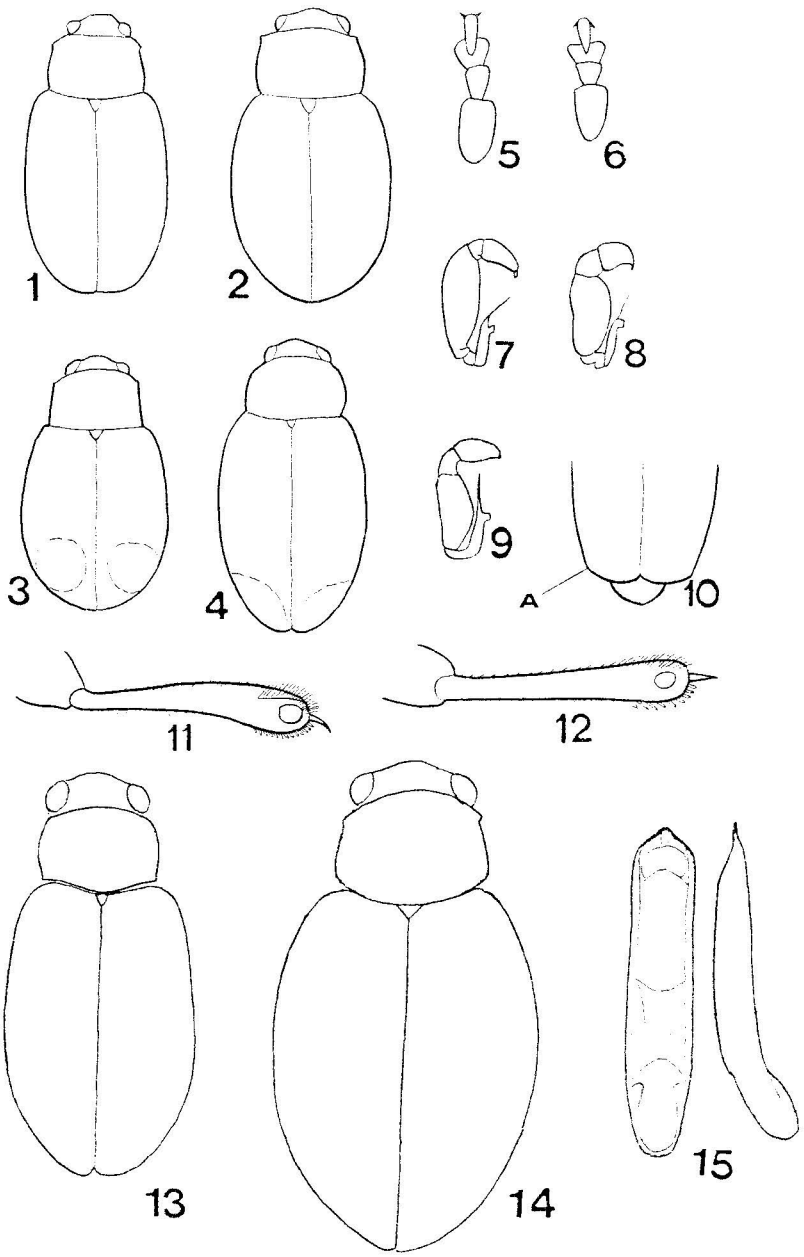


Figure 37: 1–4 — general view from above: 1 — *Aphthona herbigrada*, 2 — *A. sarmatica*, 3 — *Longitarsus holsaticus*, 4 — *L. apicalis*; 5–6 — protarsus of male: 5 — *L. kutscherae*, 6 — *L. plantagomaritimus*; 7–9 — spermatheca of female: 7 — *L. plantagomaritimus*, 8 — *L. melanocephalus*, 9 — *L. kutscherae*; 10 — *L. fuscoaeneus*, apex of elytron (A — outer apical angle of elytron); 11–12 — upper side of hind-tibia: 11 — *L. fuscoaeneus*, 12 — *L. anchusae*; 13–14 — general view from above (male): 13 — *L. foudrasi*, 14 — *L. tabidus*; 15 — *L. jacobaeae*, aedeagus, ventral and lateral view. (after Kippenberg, Döberl, 1994: 8; Bieńkowski, 1997: 5–7; others — orig.)

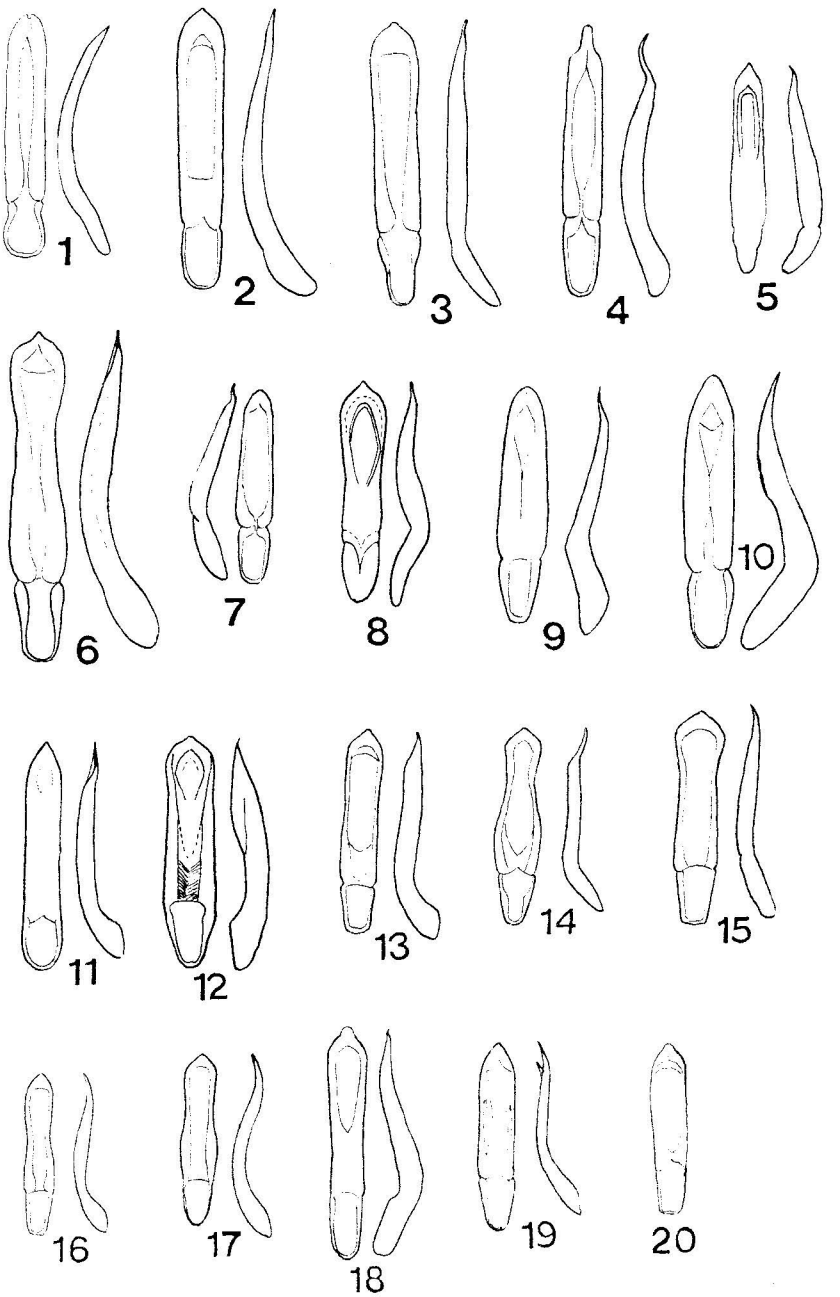


Figure 38: 1–20 — aedeagus: 1 — *Longitarsus echii*, 2 — *L. linnaei*, 3 — *L. fallax*, 4 — *L. nigrofasciatus*, 5 — *L. foudrasi*, 6 — *L. picicollis*, 7 — *L. ballotae*, 8 — *L. salarius*, 9 — *L. pulmonariae*, 10 — *L. exsoletus*, 11 — *L. brunneus*, 12 — *L. rubellus*, 13 — *L. languidus* (Saratov reg.: Agarevka Vill.), 14 — *L. luridus*, 15 — *L. fulgens*, 16 — *L. minusculus*, 17 — *L. medvedevi* (S. Urals: Ilmensky Res.), 18 — *L. absynthii*, 19 — *L. jailensis*, 20 — *L. niger*. (after Warchałowski, 1995: 8, 12, 18; Warchałowski, 1996: 5).

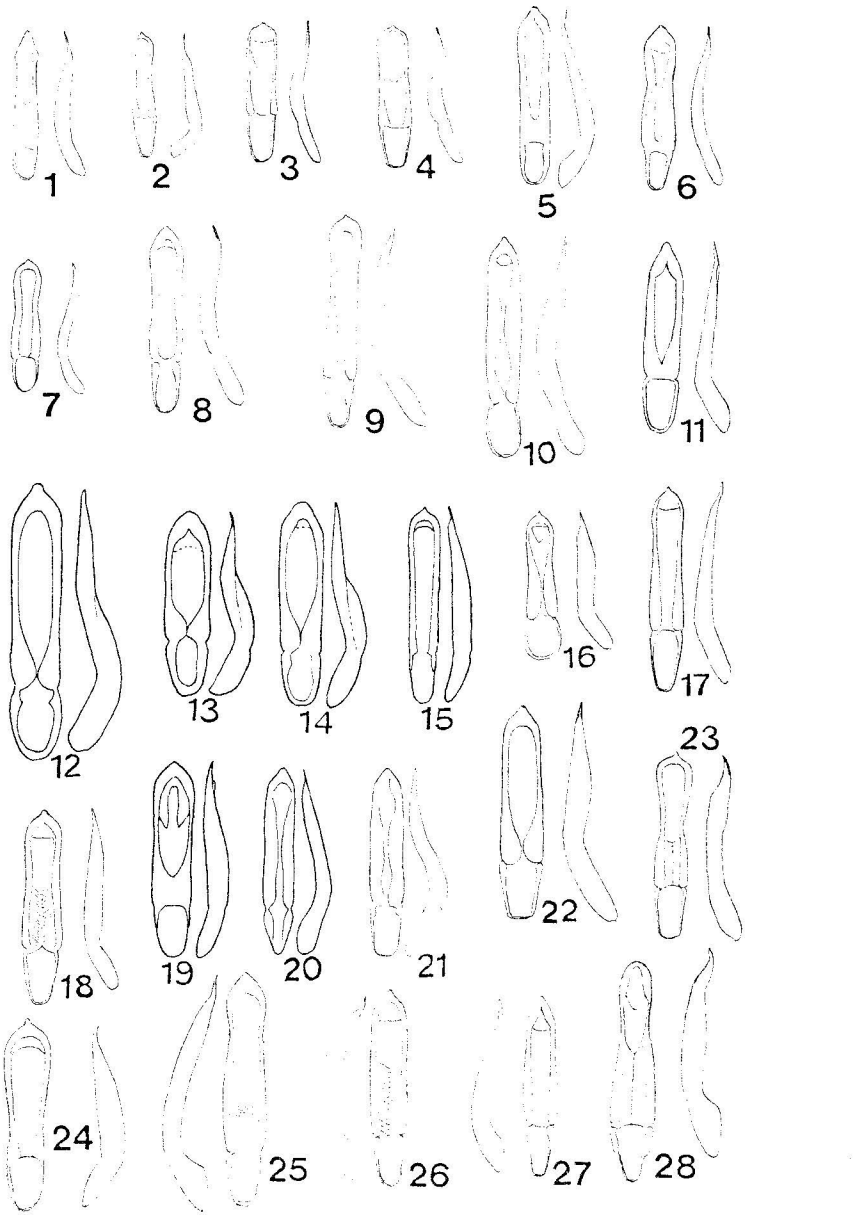


Figure 39: 1–28 — aedeagus: 1 — *Longitarsus rectilineatus*, 2 — *L. parvulus*, 3 — *L. violentus*, 4 — *L. weisei*, 5 — *L. minimus*, 6 — *L. pratensis*, 7 — *L. scutellaris*, 8 — *L. lewisii*, 9 — *L. apicalis*, 10 — *L. quadriguttatus*, 11 — *L. holsaticus*, 12 — *L. melanocephalus*, 13 — *L. plantagomaritimus*, 14 — *L. kutscherae*, 15 — *L. aeneicollis*, 16 — *L. nasturtii*, 17 — *L. atricillus*, 18 — *L. suturellus*, 19 — *L. gracilis*, 20 — *L. curtus*, 21 — *L. monticola*, 22 — *L. ganglbaueri*, 23 — *L. ochroleucus*, 24 — *L. alfierii*, 25 — *L. flavicornis* (ER: Lipetsk reg.), 26 — *L. symphyti*, 27 — *L. rubiginosus*, 28 — *L. longipennis*. (after Warchałowski, 1995: 15, 19, 20; Bieńkowski, 1997: 12–14; others — orig.)

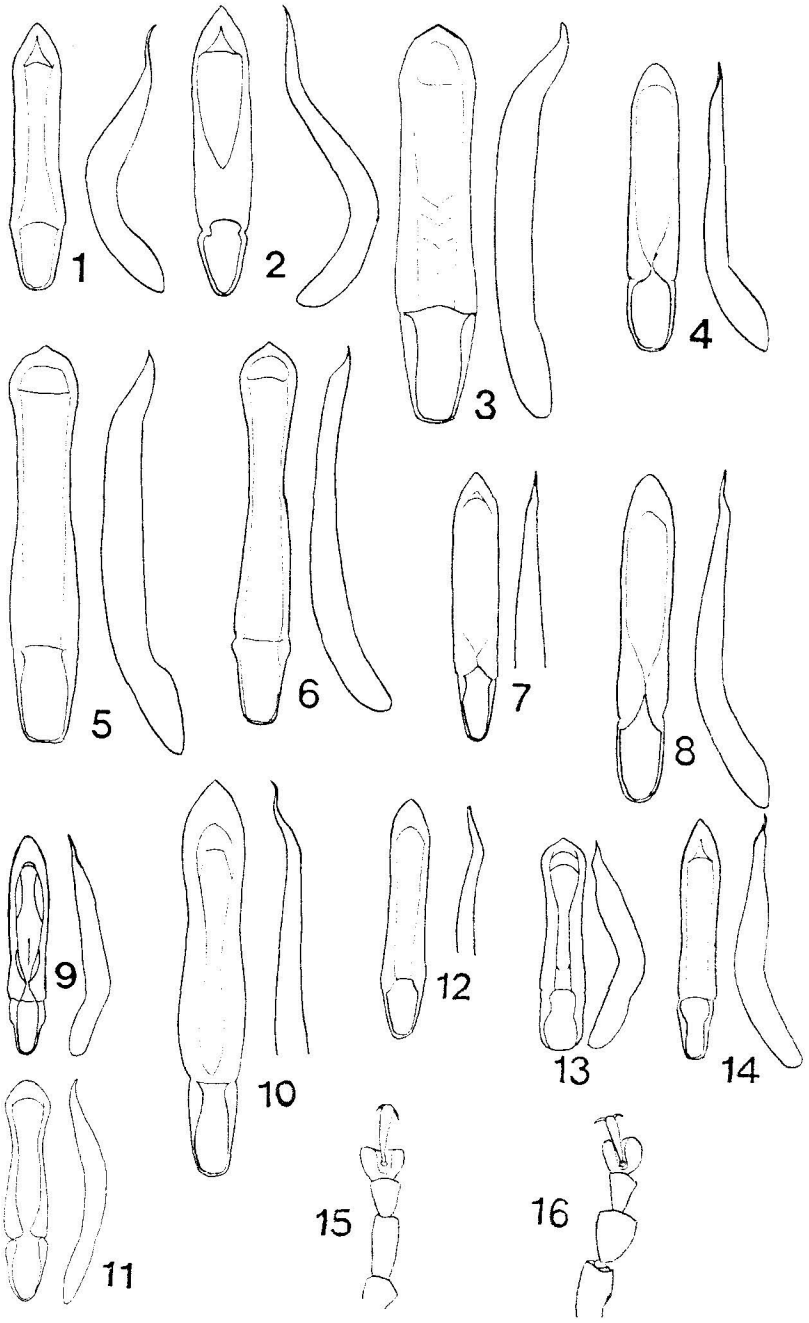


Figure 40: 1–14 — aedeagus: 1 — *Longitarsus albineus*, 2 — *L. karlheinzi*, 3 — *L. pellucidus*, 4 — *L. celticus*, 5 — *L. succineus*, 6 — *L. noricus*, 7 — *L. obliteratus*, 8 — *L. salviae*, 9 — *L. eminus*, 10 — *L. ferrugineus*, 11 — *L. substriatus*, 12 — *L. nanus*, 13 — *L. membranaceus*, 14 — *L. lycopi*. 15–16 — fore-tarsus in male: 15 — *L. succineus*, 16 — *L. noricus*. (after Warchałowski, 1995: 9, 13; others — orig.)

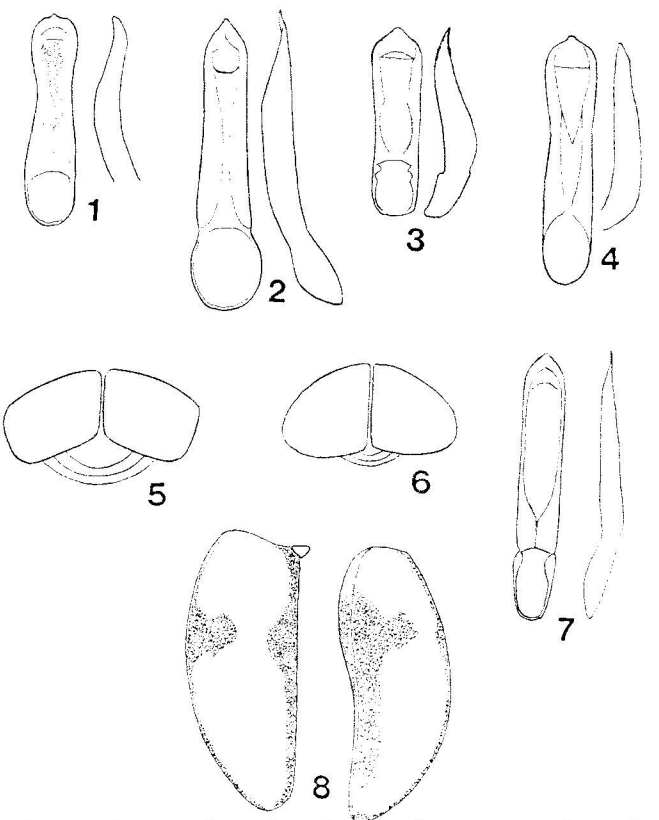


Figure 41: 1–4 — aedeagus: 1 — *Longitarsus fuscoaeneus*, 2 — *L. anchusae*, 3 — *L. pinguis*, 4 — *L.* sp. aff. *sogdianus* (Crimea, envir. Simferopol); 5–6 — elytra from behind: 5 — *L. (Testergus) anchusae*, 6 — *L.* (s.str.) *parvulus*. 7–8 — *L. lateripunctatus personatus*: 7 — aedeagus, 8 — left elytron, dorsal and lateral view. (Orig.)

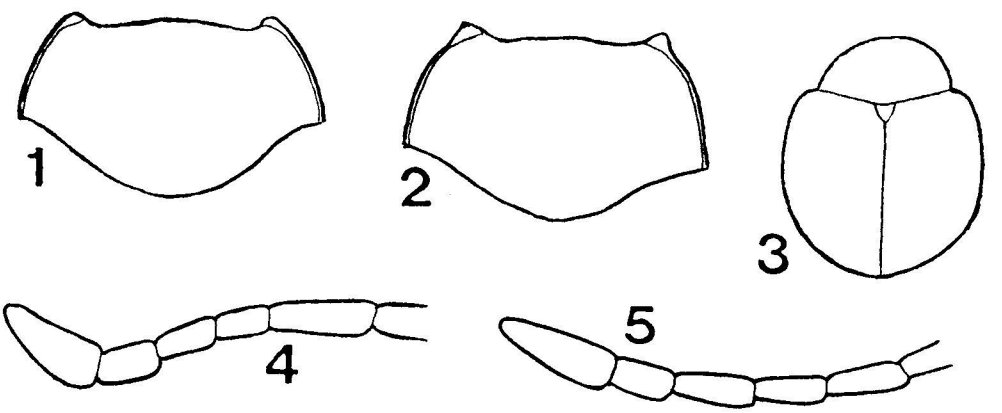


Figure 42: 1–2 — pronotum: 1 — *Sphaeroderma rubida*, 2 — *S. testacea*. 3 — *S. rubida*, general view from above. 4–5 — 1st–5th antennomeres: 4 — *Apteropeda splendida*, 5 — *A. orbiculata*. (Orig.)

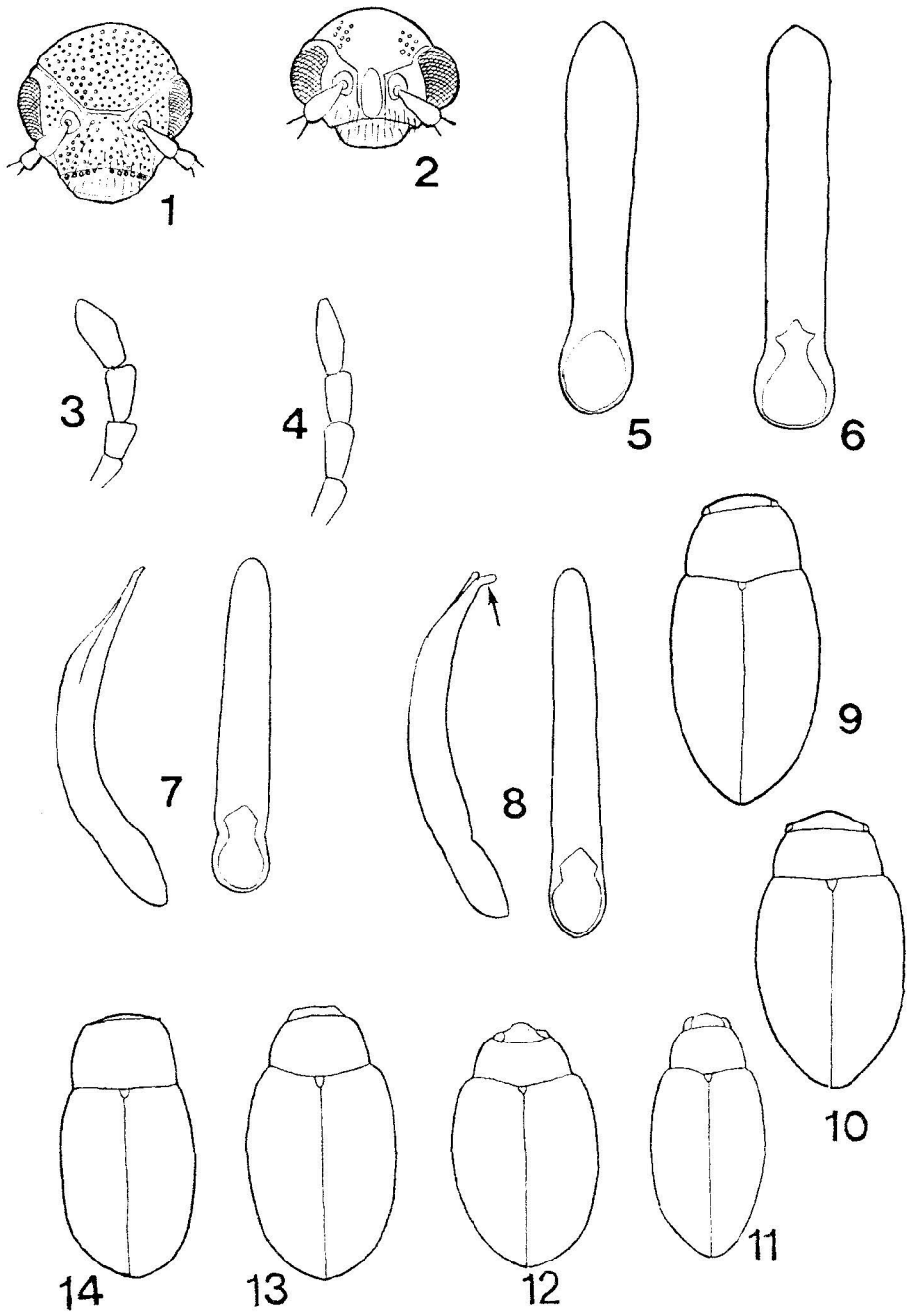


Figure 43: 1–2 — head: 1 — *Chaetocnema* (s.str.) *obesa*, 2 — *Chaetocnema (Tlanoma) semicoerulea*. 3–4 — 9th–11th antennomeres: 3 — *Ch. concinna*, 4 — *Ch. laevicollis*. 5–6 — aedeagus, ventral view: 5 — *Ch. concinna*, 6 — *Ch. laevicollis*. 7–8 — aedeagus, lateral and ventral view: 7 — *Ch. breviuscula*, 8 — *Ch. tibialis*. 9–14 — general view from above: 9 — *Ch. aridula*, 10 — *Ch. arenacea*, 11 — *Ch. scheffleri*, 12 — *Ch. tibialis*, 13 — *Ch. aerosa*, 14 — *Ch. compressa*. (Orig.)

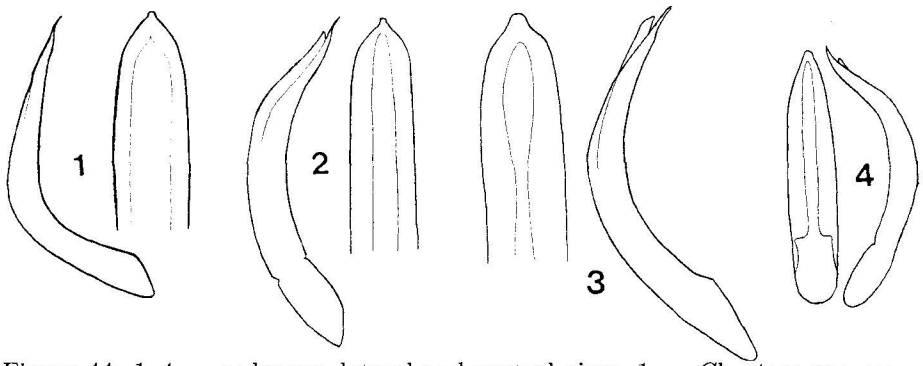


Figure 44: 1–4 — aedeagus, lateral and ventral view: 1 — *Chaetocnema montenegrina*, 2 — *Ch. hortensis*, 3 — *Ch. aridula*, 4 — *Ch. arenacea*. (after Biondi, 1989: 4; others orig.)

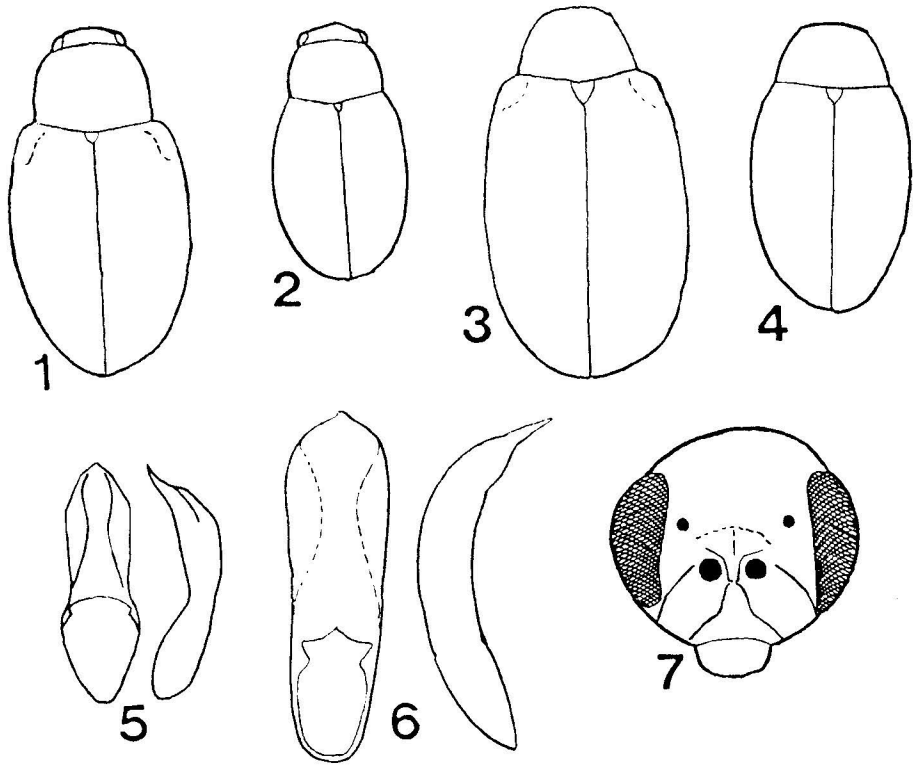


Figure 45: 1–4 — general view from above: 1 — *Chaetocnema mannerheimii*, 2 — *Ch. subcoerulea*, 3 — *Dibolia occultans*, 4 — *D. cryptocephala*. 5–6 — aedeagus, ventral and lateral view: 5 — *D. foersteri*, 6 — *D. depressiuscula*. 7 — *D. foersteri*, head. (after Mohr, 1981: 5; others — orig.)

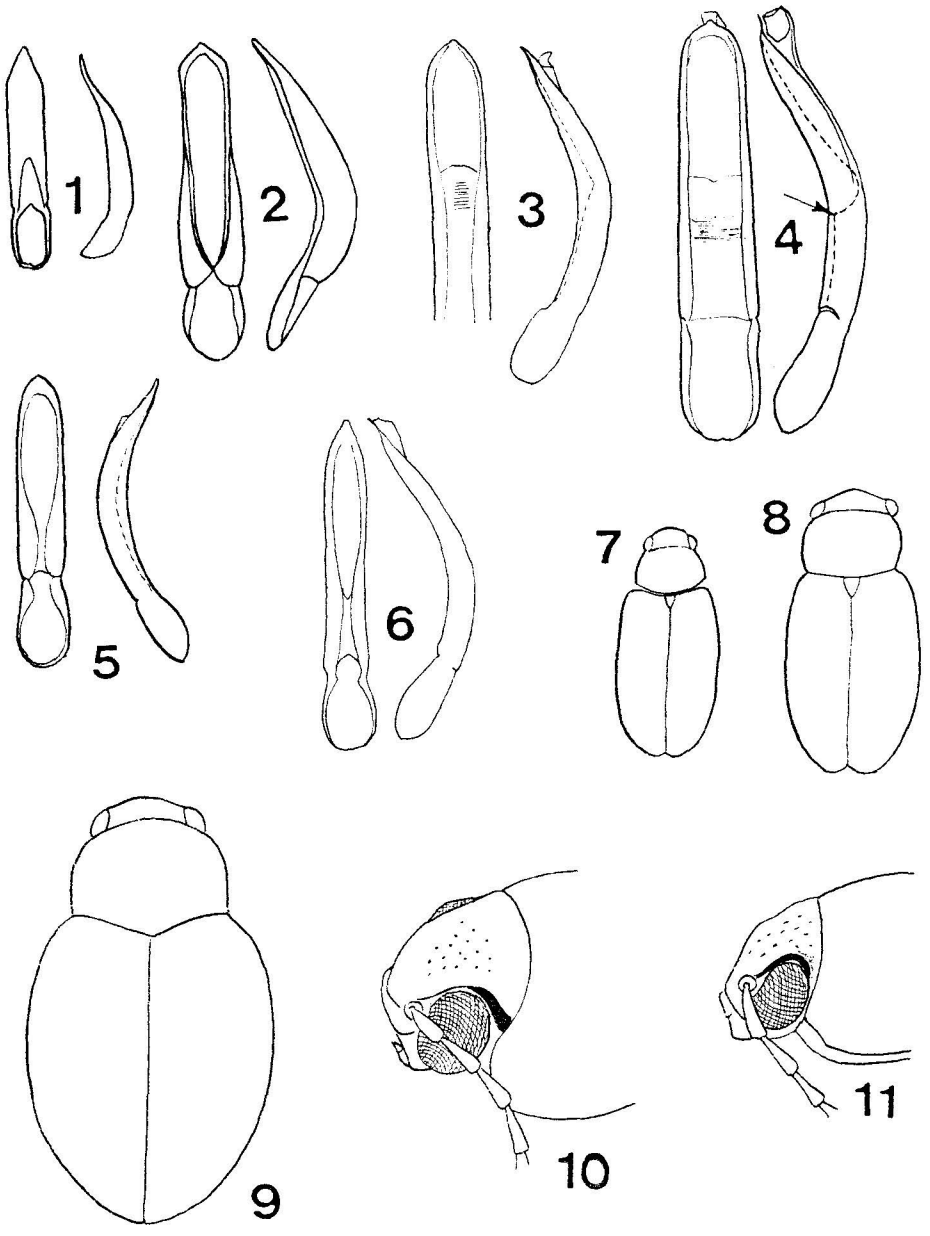


Figure 46: 1–6 — aedeagus, ventral and lateral view: 1 — *Psylliodes macellus agropyri*, 2 — *P. reitteri parallelus*, 3 — *P. wrasei*, 4 — *P. thlaspis*, 5 — *P. cupreus*, 6 — *P. isatidis*. 7–9 — general view from above: 7 — *P. reitteri parallelus*, 8 — *P. macellus agropyri*, 9 — *P. glaber*. 10–11 — head: 10 — *P. instabilis*, 11 — *P. cupreatus*. (after: Lopatin, 1977a: 2; Leonardi, Arnold, 1995: 4; Doguet, 1994: 6; others — orig.)

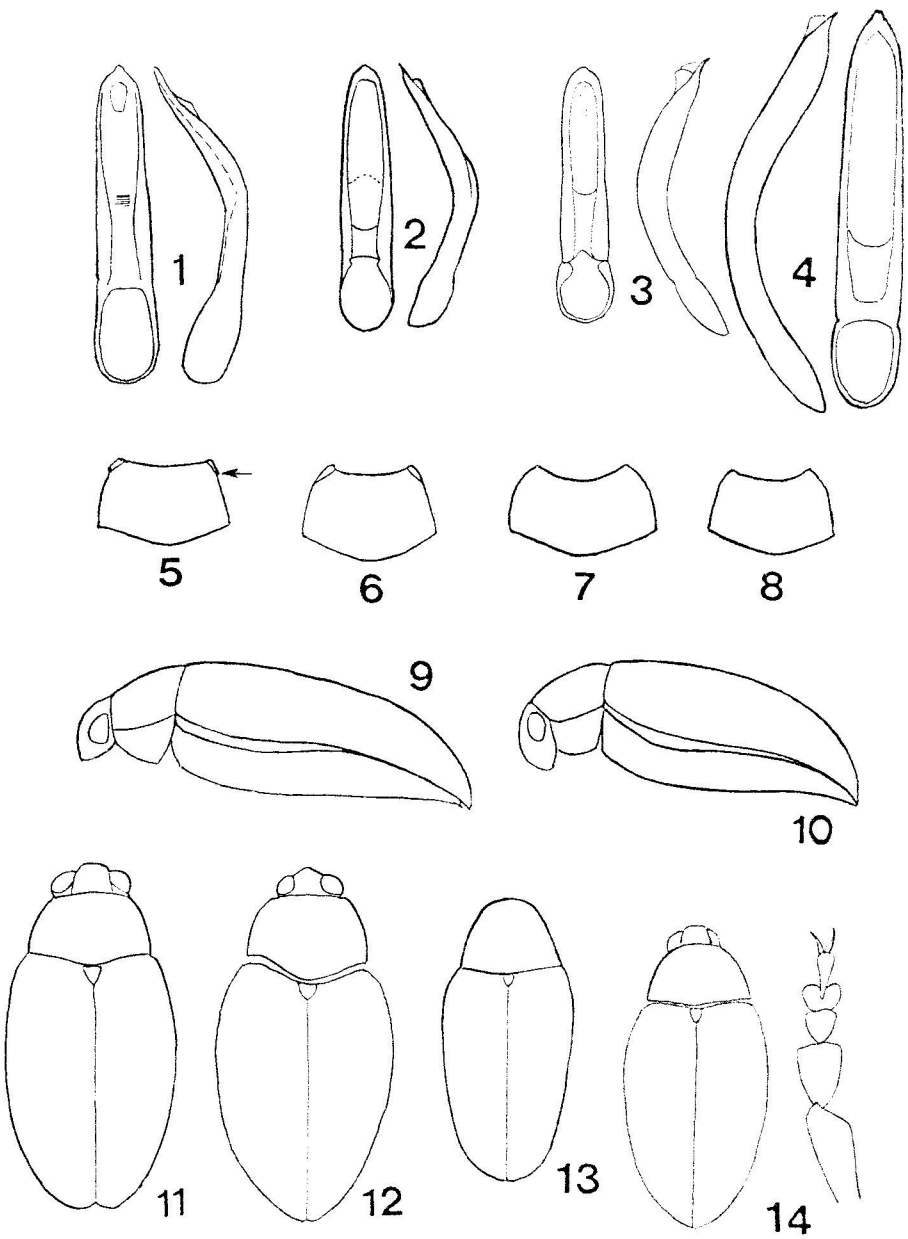


Figure 47: 1–4 — aedeagus, ventral and lateral view: 1 — *Psylliodes deplanatus*, 2 — *P. brisouti*, 3 — *P. napi*, 4 — *P. vindobonensis*. 5–8 — pronotum: 5 — *P. tricolor*, 6 — *P. chrysocephalus*, 7 — *P. chalcomerus*, 8 — *P. hyoscyami*. 9–10 — lateral view: 9 — *P. deplanatus*, 10 — *P. wrasei*. 11–13 — general view from above: 11 — *P. cupreus*, 12 — *P. napi*, 13 — *P. cucullatus*. 14 — *P. vindobonensis*, male, general view from above and fore-tarsus. (after Leonardi, 1971: 2; others — orig.)

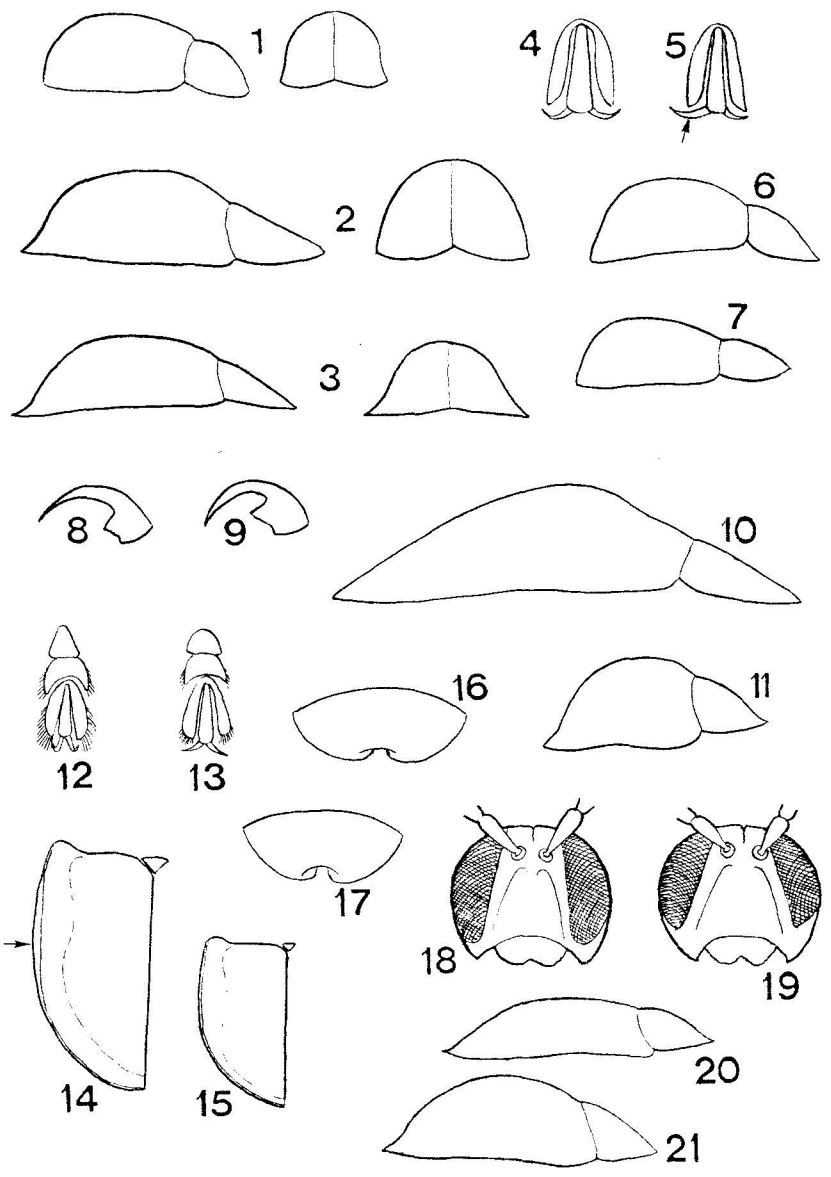


Figure 48: 1–3 — pronotum and elytra from lateral side and from behind: 1 — *Ischyronota desertorum*, 2 — *Cassida (Cassidulella) nobilis*, 3 — *Cassida* (s.str.) *flaveola*. 4–5 — 3rd–4th tarsomeres: 4 — *Ischyronota elevata*, 5 — *I. desertorum*. 6–7 — pronotum and elytra from lateral side: 6 — *I. elevata*, 7 — *I. spaethi*. 8–9 — claw: 8 — *Cassida canaliculata*, 9 — *C. viridis*. 10–11 — general view from lateral side: 10 — *C. viridis*, 11 — *C. hemisphaerica*. 12–13 — tarsus: 12 — *C. (Mionycha) subreticulata*, 13 — *C.* (s.str.) *berolinensis*. 14–15: left elytron, dorsal view: 14 — *C. nebulosa*, 15 — *C. flaveola*; 16–17 — labrum: 16 — *C. sanguinosa*, 17 — *C. denticollis*. 18–19 — head: 18 — *C. palaestina*, 19 — *C. sareptana*. 20–21 — pronotum and elytra from lateral side: 20 — *C. inquinata*, 21 — *C. sanguinosa*. (Orig.)

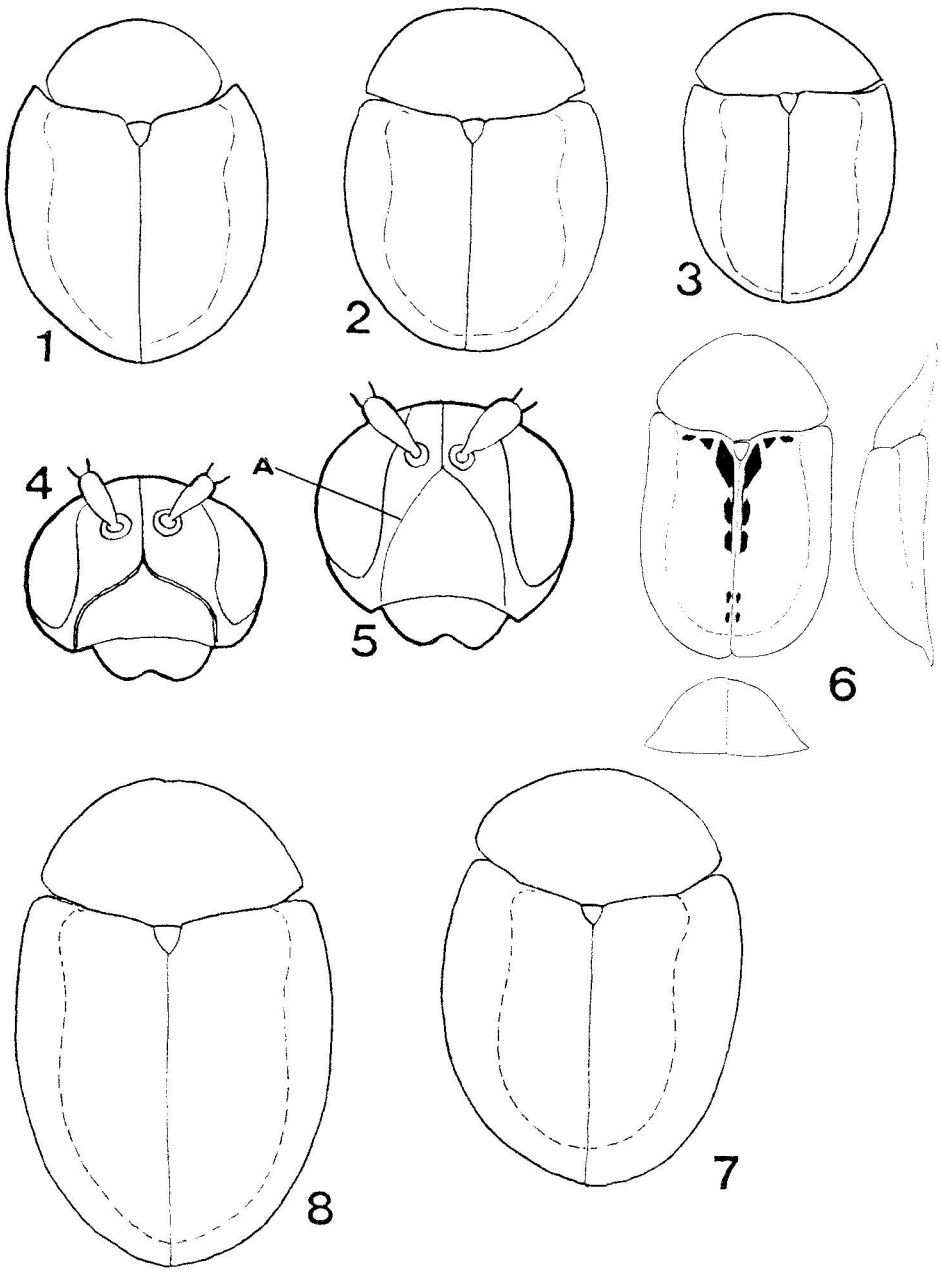


Figure 49: 1–3 — general view from above: 1 — *Cassida stigmatica*, 2 — *C. sanguinosa*, 3 — *C. rufovirens*. 4–5 — head: 4 — *C. nobilis*, 5 — *C. vittata* (A — frontal suture). 6 — *C. elongata* (Volgograd), general view from above, lateral side, and behind. 7–8 — general view from above: 7 — *C. vibex*, 8 — *C. pannonica*. (Orig.)

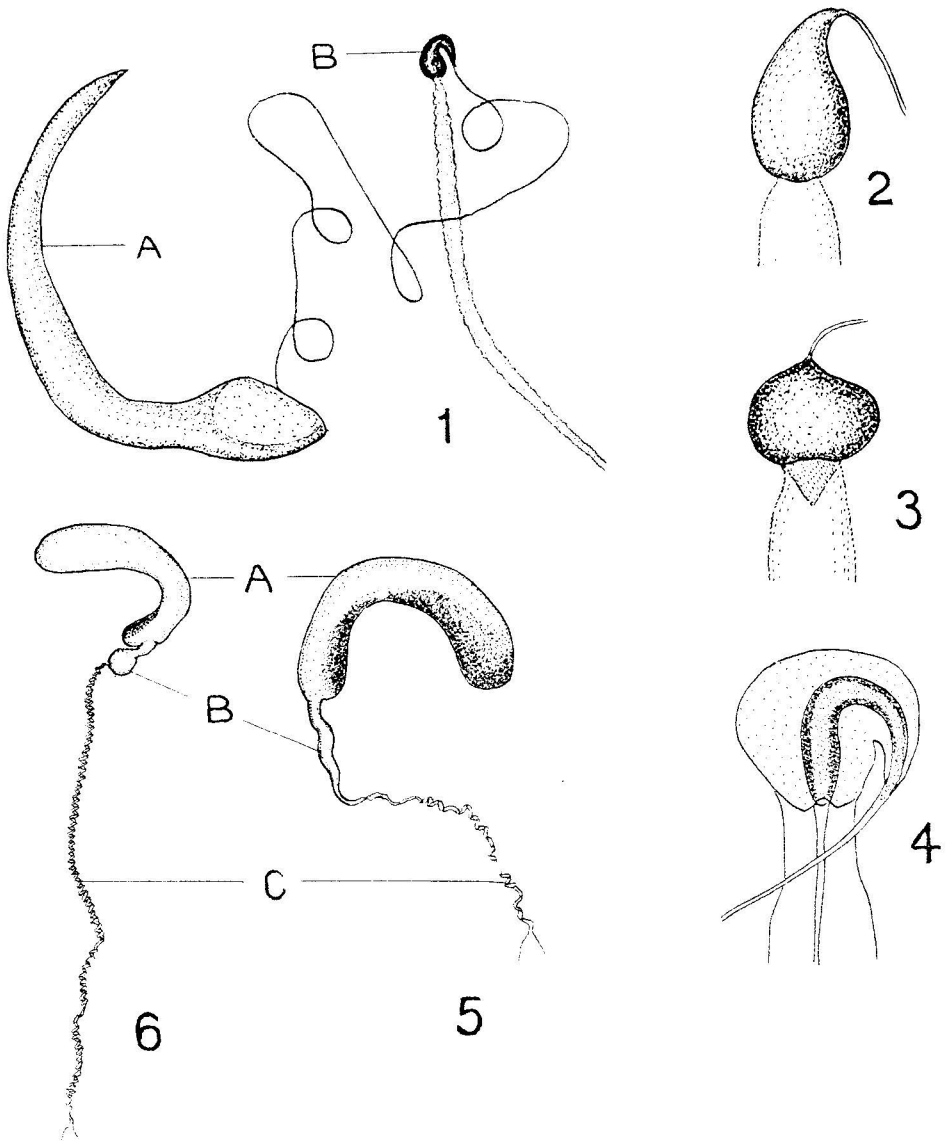


Figure 50: 1 — *Cassida sanguinolenta*, male genitals (A — aedeagus, B — apodema). 2–4 — male genitals, apodema: 2 — *C. sanguinolenta*, 3 — *C. prasina*, 4 — *C. denticollis*. 5–6 — female genitals (A — spermatheca, B — ampulla, C — duct): 5 — *C. denticollis*, 6 — *C. prasina*. (after Bordy, 1997: 4; others orig.)