

THE PALAEARCTIC
CHRYSOMELIDAE

Andrzej
WARCHAŁOWSKI

**THE PALAEARCTIC
CHRYSOMELIDAE**

Identification keys

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EDITED BY
Dariusz Iwan

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Corresponding address:
Katarzyna Wiśniewska (President)
ul. Wilcza 64, 00-679 Warszawa, Poland
e-mail: kata@miiz.waw.pl

DTP
Beata Jankowska

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Countries and provinces belonging to the discussed area in SE Asia

The provinces names of China are differently transcribed. In this work are mostly applied names after Gressit and Kimoto (1961); corresponding or partly corresponding recent official names are also listed below:

- | | |
|------------------------------|-------------------------------|
| Anhwei = Anhui | Kwantung = Guandong |
| Chahar = Nei Menggu (partly) | Kweichow = Guizhou |
| Chekiang = Zhejiang | Liaoning = Liaoning |
| Fukien = Fujian | Ningsia = Gansu (partly) |
| Hainan = Hainan | Shansi = Shaanxi |
| Heilungkiang = Heilongjiang | Shantung = Shandong |
| Honan = Henan | Shensi = Shaanxi |
| Hopeh = Hebei | Sikang = Xizang (partly) |
| Hunan = Hunan | Sinkiang = Xinjiang |
| Hupeh = Hubei | Suiyuan = Nei Menggu (partly) |
| Kansu = Gansu | Szechuan = Sichuan |
| Kiangsu = Jiangsu | Tibet = Xizang |
| Kiangsi = Jiangxi | Tsinghai = Qinghai |
| Kirin = Jilin | Yehol = Nei Menggu (partly) |
| Kwangsi = Guangxi | Yunnan = Yunnan |

Subfamily *Galerucinae*

Key to tribes

1. Anterior process of metasternum long and thick, often finger-like, separating mid coxa and covering hind margin of mesosternum ***Gallerucidini*** (p. 662).
- . Metasternum does not cover hind margin of mesosternum **2.**
2. Occiput and pronotum strongly punctured. Antennal insertions situated at level of anterior margins of eyes or even somewhat before. In male posterior border of anal sternite never trilobed ***Galerucini*** (p. 630).
- . Occiput and pronotum finely or moderately strongly punctured, often smooth. Antennal insertions situated behind anterior margins of eyes. In male posterior border of anal sternite almost always trilobed **3.**
3. Body large, uniformly oval, convex, epipleuron entirely inflexed against underside, visible in its anterior part only or apparently absent. Claws bifid ***Oidini*** (p. 721).
- . Body variously shaped, only rarely oval, combination of external characters always other than in thesis 3 ***Luperini*** (p. 664).

Tribe *Galerucini*

Key to genera

1. Body very small, blue-black, length under 3.5 mm. Shape very peculiar, abdomen strongly broadened and in great part exposed, elytra strongly shortened, obliquely cut ***Marseulia*** (p. 652).
- . Not as above **2.**
2. Elytra strongly shortened, body often somewhat *Meloe*-like, dorsal side of abdomen in great part exposed **3.**
- . Elytra not shortened, dorsal side of abdomen at most sometimes (in some species of *Galeruca*, antithesis 18) partly visible in females during egg production **8.**
3. Claws appendiculate. Here females of *Geinula*, see antithesis 7.
- . Claws simple, bifid or incised **4.**
4. Claws simple, upperside covered by hairs ***Nyctiphantus*** (p. 653).
- . Claws bifid or incised **5.**
5. Lateral sides of pronotum with marginal ridge **6.**
- . Lateral sides of pronotum without marginal ridge **7.**
6. Pronotum as broad as long, elytra gaping (dehiscent?) at apex ***Shaira*** (p. 658).
- . Pronotum distinctly broader than long, elytra not gaping (dehiscent?) at apex ***Geinella*** (p. 649).
7. W Mediterranean species ***Arima*** (p. 634).
- . Asian species. Here males of ***Geinula*** (p. 650).
8. Claws simple. Anterior coxal cavities closed **9.**
- . Claws incised, bifid or appendiculate **12.**
9. Elytra distinctly haired ***Pallasiola*** (p. 653).
- . Elytra bare or almost bare, very sparsely and indistinctly haired **10.**
10. Length of body under 6.5 mm **11.**

- Length of body at least 8.0 mm. Body black without metallic reflex, pronotum and elytra castaneous. Forms from Asia **Theone** (p. 659).
- 11. Externally similar to *Radymna* (thesis 20), entirely rust-brown; apices of antennae, tarsi and abdomen darkened. Forms from Asia **Farsogaleruca** (p. 637).
- Body entirely black, upperside with weak metallic reflex. Forms from N Africa ...
..... **Belarima** (p. 634).
- 12. Claws appendiculate, elytra metallic green or green-blue, pronotum yellow, yellow with black median spot or black. Body elongate, not rounded laterally. Anterior coxal cavities open. Here females of *Apophyllia*, see thesis 13.
- Claws bifid or incised **13**.
- 13. Elytra metallic green or green-blue, pronotum yellow, yellow with black median spot or black. Body elongate, not rounded laterally. Anterior coxal cavities open. Here males of **Apophyllia** (p. 632).
- Not as above **14**.
- 14. Upper side with strong metallic sheen and vivid colours, green, golden and red, smooth and bare. Length of body about 7.0–8.0 mm **Clitenella** (p. 635).
- Body without metallic tinge. Metallic reflex, usually very weak, present in several species of genus *Pyrrhulta* only, but then elytra are matt and pubescent **15**.
- 15. Elytra bare or with sparsely scattered hairs along lateral border only **16**.
- Elytra hairy or pubescent **19**.
- 16. Hind tibia shining, sparsely punctured and sparsely covered by semi-erect setae. Elytra often with longitudinal costae **17**.
- Hind tibia almost matt, finely and densely punctured, covered by adpressed pubescence **Lochmaea** (p. 650).
- 17. Claw tarsomere as long or longer than tarsomeres 1+2, sometimes indistinctly shorter. Body elongate, elytra with subparallel sides, upper side usually pale, finely or moderately strongly punctured, length 4.0–7.0 mm **Diorhabda** (p. 635).
- Claw tarsomere distinctly shorter than tarsomeres 1+2 **18**.
- 18. Upperside covered by conspicuously strong and deep puncturation. Elytra without longitudinal ridges **Pseudadimonia** (p. 654).
- Upperside moderately or strongly, but not conspicuously strongly punctured. If elytra very strongly punctured, than simultaneously present also distinct, elevate longitudinal ridges **Galeruca** (p. 637).
- 19. Epipleura short, 1/4–1/5 as long as elytra. Pronotum subquadrate
..... **Chujoa** (p. 634).
- Epipleura longer, at least 1/2 as long as elytra **20**.
- 20. Antenna relatively short and robust, antennomeres 8–10 short, at most 1.5 × longer than broad, often shorter than broad, antennomere 4 usually longer than 3 or 5
..... **21**.
- Antennomeres 8–10 always at least 2 × longer than broad **22**.
- 21. Body length under 8.0 mm, elytra dull brown **Radymna** (p. 658).
- Body length over 10.0 mm, elytra black blue or black with margins narrowly brownish **Clitena** (p. 635).
- 22. Third antennomere distinctly longer than the fourth. Epipleura in lateral view visible on whole length **23**.
- Third antennomere not longer than the fourth. Epipleura in lateral view visible in anterior 3/4 only **Xanthogaleruca** (p. 661).

23. On the middle of pronotum a great, approximately triangular, shining, hairless area. In male mid tibiae without a spine-like process apically *Galerucella* (p. 647).
- . Pronotum without shining median bare area **24.**
24. Pronotum finely pubescent, elytra with longer or long erect hairs. A few species, in discussed area known from Tibet only *Zangastra* (p. 661).
- . Pronotum and elytra not distinctly differently haired or pubescent **25.**
25. Tibiae on dorsal surface with a ridge in whole length *Tricholochmaea* (p. 660).
- . Tibiae on dorsal surface at most with traces of a ridge in basal part *Pyrrhalta* (p. 654).

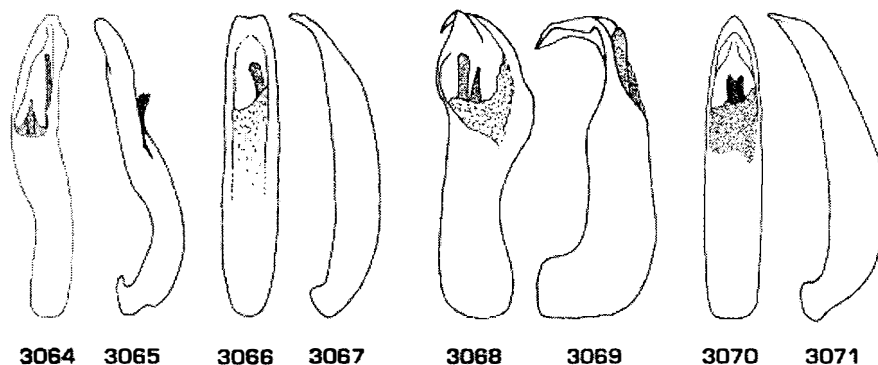
Genus *Apophyllia* THOMSON, 1858

Literature: BEZDĚK 2003a, b, c.

A large genus, comprising over 120 species distributed mainly in Palaetropical superregion. Seven E Asiatic species occur in discussed area.

Key to species

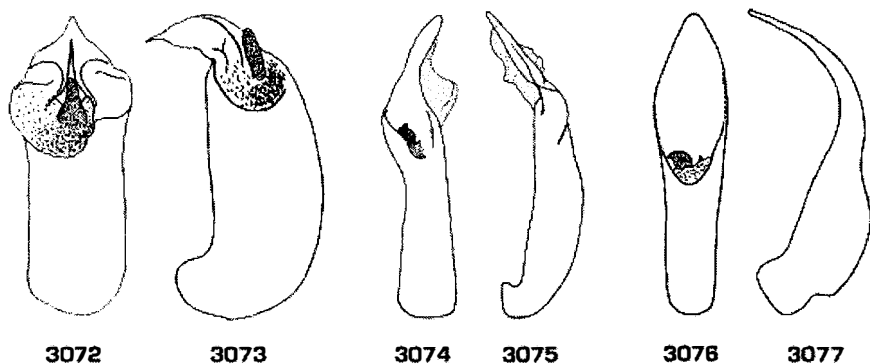
1. Head black, pronotum yellow with median black spot, elytra metallic green **2.**
- . Head bicolorous **3.**



Figs 3064-3071. Aedeagus in dorsal and lateral view (after BEZDĚK 2003): 3064, 3065 – *Apophyllia eoa*; 3066, 3067 – *A. elsholtziae*; 3068, 3069 – *A. kimotoi*; 3070, 3071 – *A. viridipennis*.

2. Aedeagus (figs **3064**, **3065**) in dorsal view asymmetrical, on apex obtusely rounded. Length of body 4.8–6.7 mm (= *loukashkini* GRESSIT et KIMOTO, 1961). Distributed in basin of Ussuri, N China and Korea *ea* OGLOBLIN, 1936.
- . Aedeagus in (figs **3066**, **3067**) dorsal view almost symmetrical, on apex shallowly emarginate. The local form *alticola* CHEN, 1976, differing from the typical form by

- less enlarged antennomeres, by extended bat-shaped black pronotal spot and by the higher altitude of its occurrence, was described as a subspecies, but from the same locality. Distributed in Tibet *elsholtziae* CHEN, 1976.
3. Pronotum black 4.
 - . Pronotum yellow or rust-yellow, sometimes with median darker or black spot. Here four species distinguishable by shape of aedeagus 5.
 4. Aedeagus (figs **3068**, **3069**) short and thick, its apical part (about 1/5 of total length) strongly bent ventrally. Length of body about 4.5 mm. Distributed in Japan (Kyushu) *kimotoi* BEZDĚK, 2003.
 - . Aedeagus (figs **3070**, **3071**) in dorsal view slightly assymetrical, in lateral view wavy. General view as in plate LXXV, **phot. 667**. Length of body 4.8–5.6 mm. Distributed in Japan *viridipennis* (JACOBY, 1885).



Figs 3072-3077. Aedeagus in dorsal and lateral view (after BEZDĚK 2003): 3072, 3073 – *Apophyllia flavovirens*; 3074, 3075 – *A. grandicornis*; 3076, 3077 – *A. beeneni*.

5. Aedeagus (figs **3072**, **3073**) short and thick. Length of body 4.5–5.8 mm (= *pectoralis* PIC, 1927, *thoracica* GRESSIT et KIMOTO, 1961). General view as in plate LXXV, **phot. 667**. Distributed in Indochina, Taiwan, China and Korea *flavovirens* FAIRMAIRE, 1878).
- . Aedeagus more slender 6.
6. Aedeagus (figs **3074**, **3075**) in dorsal view fairly asymmetrical (= *shirozui* TAKIZAWA, 1985). Distributed in China, Japan and Korea. Here possibly also the insufficiently studied species, *thalassina* (FALDERMANN, 1835) *grandicornis* (FAIRMAIRE, 1888).
- . Aedeagus (figs **3076**, **3077**) in dorsal view slightly asymmetrical, in lateral view its apical part strongly bent ventrally. Length of body 4.4–6.0 mm. Distributed in Vietnam, S China, Taiwan and Korea *beeneni* BEZDĚK, 2003.

Genus *Arima* CHAPUIS, 1875

Literature: HAVELKA 1959.

Similarly as in some other wingless *Chrysomelidae* (*Cyrtonus*, *Oreina*, *Timarcha*), the genus *Arima* CHAPUIS displays a very wide individual and local variability, which provided a basis for description of ca. 15 forms ranked as “nationes”, subspecies or even species. Actually it is possible to distinguish 4 (?) species. In my opinion, this is one species only, with very numerous individual and local forms.

Key to species

1. Forms distributed in SE France (Provence) and NW Italy (Liguria) **2**.
- . Forms distributed in S Italy (vicinity of Napoli), reported also (erroneously?) from Basses-Alpes **brachyptera** (KÜSTER, 1844).
2. Body more elongate. Body length 7.0–12.0 mm (males) to 9.0–16.0 mm (females). Body black. Border of pronotum, lateral border of elytra and several basal antennomeres (partly) red. General view as in plate LXXV, **phot. 668**. Five subspecies and a few “nationes” were described based on very subtle differences of aedeagus shape (nominotypical subspecies, subsp. *caprai* HAVELKA, 1959, subsp. *obenbergeri* HAVELKA, 1959, subsp. *heyrovskyi* HAVELKA, 1959, subsp. *pseudobrachyptera* HAVELKA, 1959, subsp. *freyi* HAVELKA, 1959). All cited forms live sympatrically on a relatively small area in SE France and NW Italy **marginata** (FABRICIUS, 1781).
- . Body less elongate **3**.
3. Body narrower oval. On average larger. Body length 9.0–12.5 mm (males) to 12.0–24.0 mm (females). Two subspecies were described (subsp. *fascensis* HAVELKA, 1959 and *brigaensis* HAVELKA, 1959). Distributed on very narrow stripe along Ligurian Coast between Genua and Massa **maritima** BUA, 1953.
- . Body broadly oval. On average smaller. Body length 8.0–8.5 mm (males) to 12.0–12.5 mm (females). Described from San Remo (Italy, Liguria) **buai** HAVELKA, 1959.

Genus *Belarima* REITTER, 1912

One species only. Body entirely black, upper side or elytra only with feeble purplish-violaceous reflex. General view as in plate LXXV, **phot. 669**. Length 5.0–6.0 mm. Distributed in northern Algeria (Djurdjura, Annaba) **violacea** (LUCAS, 1849).

Genus *Chujoa* GRESSIT et KIMOTO, 1961

One species only. Upper side closely covered by fine pubescence. Antenna about 3/4 as long as body, pronotum subquadrate with two lateral depressions and a median longitudinal furrow. Entirely reddish brown, antennomeres 5–11 darkened. Length 5.8–8.0 mm. Distributed in Japan (Honshu, Shikoku, Kyushu) **uetsukii** (CHŪJŌ, 1954).

Genus *Clitena* BALY, 1864

In the genus *Clitena* three SE Asiatic species were described. In discussed area occurs one species, *C. maculipennis* CHEN, 1942 probably belonging to *Radydna* (see). Body colouration brownish, body length 4.2 mm, not corresponding with both remaining Oriental species (body length over 10.0 mm, elytra black blue or black with margins narrow brownish). From discussed area were described two species: *Galleruca tibialis* BALY, 1874, later transferred to *Clitena* and finally into *Pyrrhalta* (p. 654), and *Clitena maculipennis* CHEN, 1942, here discussed in the genus *Radydna* (p. 658).

Genus *Clitenella* LABOISSIERE, 1927

Genus *Clitenella* LABOISSIERE, contains six species distributed in E Asia. In discussed area two species.

Key to species

1. Abdomen yellow. Upperside metallic green, on each elytron two large purplish-cupreous spots, often fused into a long median stripe. Length 6.8–8.7 mm (= *coerulea* CHŪJŌ, 1938). Distributed in Mongolia, N China, S China and Taiwan ***fulminans*** (FALDERMANN, 1835).
- . Abdomen black with metallic reflex. Pronotum purplish-cupreous with green borders. Elytra variable in colour, but mostly colouration of body similar to *fulminans* (thesis 1), usually with a greenish or bluish dot in the middle of each purplish-cupreous spot. Length about 8.0 mm. Distributed in S China, reported also from S Kansu ***ignitincta*** (FAIRMAIRE, 1878).

Genus *Diorhabda* WEISE, 1883

The unclear species *Galleruca quadrimaculata* REDTENBACHER, 1850 from Iran is to exclude from this genus (length about 5.8 mm, elytra brown, with greenish hue, each with two yellow spots, last antennomere with a subsegment).

Key to species

1. Elytra brown with greenish reflex, on each elytron two yellow spots. Length about 5.8 mm. This insufficiently studied Iranian species is listed usually as *Diorhabda*, but its systematic position should be regarded as tentative ***quadrimaculata*** (REDTENBACHER, 1850).
- . Elytra not brown-greenish with yellow spots **2.**
2. On each elytron 4 raised costae (the 3th shortened). Upper side dark yellow or pale brownish-yellow. Length 5.0–7.0 mm. Distributed in Syria and Iraq ***octocostata*** GAHAN, 1896.
- . On each elytron one or three costae **3.**
3. On each elytron three costae. Posterior angles of pronotum slightly marked, situated near basis level. On elytron apart lateral costa a median and also a sutural costae

- are well-perceptible. Length about 5.0 mm. Described from southern Russia; in Iran occurs a distinct subspecies *meridionalis* BERTI et RAPILLY, 1973, differing by stronger concavity of anterior margin of pronotum and by elytra not widened posteriorly
- *carinulata* DESBROCHERS, 1870.
- . On each elytron one sublateral costa or a distinct trace of costa 4.
 - 4. Lateral borders of pronotum narrow, not flattened, hind angles obtuse, distinct 5.
 - . Lateral borders of pronotum on whole length broadly flattened, hind angles rounded. Body oval, convex. Antennae short, shorter than half of body. Pronotum and elytra similarly, deeply punctured. Elytra without costae. Length 5.5–8.0 mm. Distributed in Mongolia, N China (Kansu) and Transbaikalia *tarsalis* WEISE, 1889.
 - 5. Hind angles of pronotum distinct, their tips slightly elevated. Body black, margins of prothorax and elytra dark testaceous. General view as in plate LXXV, **phot. 670**. Body somewhat flattened, externally similar to representatives of *Radymina* (p. 658). Marginal ridge of elytra not sharp, but slightly thickened on almost whole length. Punctures on elytra much finer than on pronotum. Elytron with a obtuse lateral costa and usually also with a weak costa running parallel to suture. Length 4.2–7.5 mm. Distributed in Uzbekistan, Tadzhikistan and NW China *rickmersi* WEISE, 1900.
 - . Hind angles of pronotum obtuse or rounded, not elevated. Body rather elongate, convex. Hind angles of pronotum situated before layer of basal margin 6.
 - 6. Elytral puncturation similar than on pronotum 7.
 - . Puncturation on elytra much finer and more dense than on pronotum. Elytra uniformly pale or with darker blurred longitudinal patch in apical part 8.
 - 7. On pronotum 5 dark oblong patch forming a transverse row, usually fused into a large spot, on elytron two narrow, blurred, dark longitudinal stripes, apices of elytra entirely rounded. Length 5.0–6.0 mm. Described from basin of Ili (O Kazakhstan) *koltzei* WEISE, 1900.
 - . Similarly coloured as *koltzei* (thesis 7), but the dark pattern more blurred, on pronotum not divided into five spots, on elytra sometimes a narrow, longitudinal, curved black stripe. If puncturation of elytra here and there fused into short irregular stripes, interstices slightly convex. Lateral costa usually developed as a trace only. Length 5.0–8.0 mm. Distributed in Mongolia and NW China (Sinkiang, Kansu) *rybakovi* WEISE, 1890.
 - 8. Length 6.0–8.0 mm. Posterior angles of pronotum usually well-marked, situated distinctly before basis level. On elytron one (lateral) costa, running parallel to lateral margin. General view as in plate LXXV, **phot. 671**. Length 5.2–7.3 mm (= ?*carinata* FALDERMANN, 1837, *costalis* MULSANT, 1852, *bipustulata* NORMAND, 1937). Variations: on each elytron two apically joined longitudinal brownish stripes, on each elytron a blackish spot near scutellum, ab. *bipustulata* Normand, 1937). Forms two subspecies: nominotypical subspecies distributed in western part of area (Mediterranean area, Asia Minor, Caucasian countries, W Transcaспia) and subsp. *sublineata* LUCAS, 1849 (= *deserticola* CHEN, 1961) head and pronotum with black spots, lateral costa on elytron in hind part slightly convergent with lateral margin distributed in Central Asia from E Transcaспia to Mongolia and NW China *elongata* (BRULLÉ, 1932).
 - . Body length about 5.0 mm. Posterior angles of pronotum slightly marked, situated near basis level. See *carinulata* (thesis 3).

Genus *Farsogaleruca* LOPATIN, 1981

Genus *Farsogaleruca* contains two species, described from Iran.

Key to species

1. Body rust-brown, head covered by rather sparse und short hairs. Length 4.7–5.5 mm. Described from S Iran ***rufina*** LOPATIN, 1981.
- . Body similar but darker coloured than in *rufina* (thesis 1), head covered by more dense and longer hairs. Described from E Iran ***insperabilis*** LOPATIN, 1981.

Genus *Galeruca* MÜLLER, 1764

Key to subgenera

1. Elytra in both sexes shortened, hind wings absent. Metasternum very short, its length smaller than diameter of mesocoxal cavities **2.**
- . Elytra not shortened, abdomen entirely covered at least in male. Metasternum longer, its length at least equal as diameter of mesocoxal cavities **4.**
2. Himalayan and Tibetan species. Apex of elytra obliquely cut, lateral groove at level of humerus shallow ***Galemira*** (p. 637).
- . W Mediterranean species. Apex of elytra rounded, lateral groove at level of humerus deep **3.**
3. Mid coxae distinctly separate. Subgenus endemic to Pyrenees ***Galerima*** (p. 639).
- . Mid coxae almost contiguous. One species from Morocco ***Fassatia*** (p. 638).
4. Four apical antennomeres in female entirely matt, in male with a narrow longitudinal shining stripe on inner side only **5.**
- . Four apical antennomeres usually less shining as the remaining, but not matt **6.**
5. Pronotum behind anterior angles with a deep incision ***Galerotoma*** (p. 639).
- . Pronotum behind anterior angles without a deep incision ***Galeruca*** (p. 639).
6. Tibiae broad. Elytra convex with great humeral calli. Hind wings present ***Emarhopa*** (p. 637).
- . Tibiae slender. Humeral calli normal. Hind wings absent ***Haptoscelis*** (p. 647).

Subgenus *Emarhopa* WEISE, 1886

In discussed area three species.

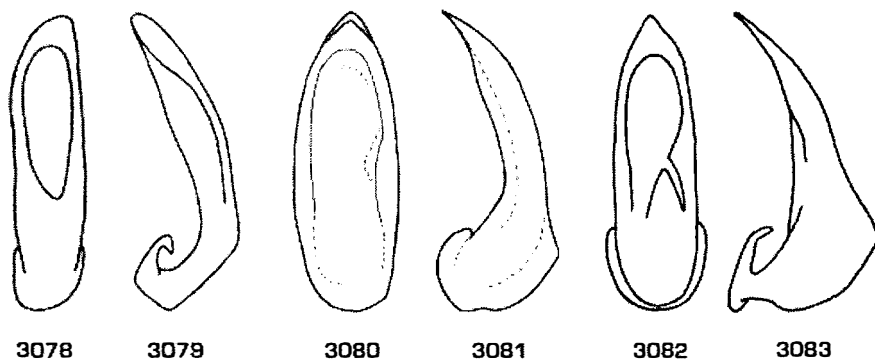
Key to species

1. Legs black **2.**
- . Legs reddish. On frons a black spot, pronotum with blackish, longitudinal stripe. Longitudinal median furrow on pronotum distinct. Remaining external characters similar as in *maculaticeps* (antithesis 2); perhaps also a race or form of *rufa*. Length 5.0 mm. Described from Asia Minor ***impressicollis*** PIC, 1934.

2. Smaller. Upper side and 2–4 basal antennomeres rust-reddish, remaining parts of body black. Vertex and pronotum sometimes with a blurred dark central spot or entirely brown. Longitudinal median furrow on pronotum variously formed, often absent, usually shallow, sometimes distinct. Aedeagus as in figs 3078, 3079. General view as in plate LXXV, phot. 672. Length 4.7–6.2 mm (= *reticulata* KÜSTER, 1844). Distributed in southern France, Italy, basin of Danube, Balkan Peninsula and Ukraine, to basin of lower Volga *rufa* GERMAR, 1824.
- . Larger. Similar to *rufa*, but outline of body more elongate and upper side stronger punctured. Length 7.0 mm. Probably a form (race?) of *rufa* (thesis 2). Described from Syria *maculaticeps* PIC, 1920.

Subgenus *Fassatia* HAVELKA, 1955

One species, described based on one female only. Body black with two red spots on frons. Length 11.0 mm. Male unknown. Occurs in High Atlas (Morocco)
 *microptera* HAVELKA, 1955.



Figs 3078–3083. Aedeagus in dorsal and lateral view (after WARCHALOWSKI 1994): 3078, 3079 – *Galeruca (Emarhopa) rufa*; 3080, 3081 – *Galeruca (Galeruca) sicana*; 3082, 3083 – *G. (G.) tanaceti*.

Subgenus *Galemira* BEENEN, 2003

Subgenus *Galemira* BEENEN contains six Himalayan and Tibetan species. In discussed area three species.

Key to species

1. Elytra pale with primary costae black, pronotum black. Length 5.0–6.2 mm. Distributed in W China (Sikang) and Tibet *barovskyi* JACOBSON, 1925.
- . Pronotum yellow with black marking or red-piceous, ground of elytra black 2.

2. Elytra black, basal and lateral borders yellowish-brown, on pronotum a large black spot. Length 5.5 mm. Described from Tibet (Xizang), basen on one male only *comaica* CHEN et JIANG, 1981.
- . Elytra black, suture, apical margin and epipleura brownish. Head, scutellum and underside black, pronotum red-piceous, its margins and propleura paler. Length 6.5 mm (male) to 8.0–9.0 mm (female). Described from Tibet (Xizang), based on three specimens *gyangzea* CHEN et JIANG, 1981.

Subgenus *Galerima* REITTER, 1903

Literature: BERTI and RAPILLY 1983.

A small subgenus, containing four Pyrenaean species.

Key to species

1. Punctures of elytra arranged in longitudinal furrows. Length 6.6–7.8 mm. Distributed in western Pyrenees *miegi* (PEREZ, 1874).
- . Punctures of elytra confuse **2.**
2. Scutellum without longitudinal furrow. General view as in plate LXXV, **phot. 673.** Length 5.2–7.9 mm. Distributed in almost all Pyrenees *monticola* (KIESENWETTER, 1850).
- . Scutellum with longitudinal furrow **3.**
3. Larger. Length 5.6–7.1 mm. Punctures of pronotum and elytra here and there confluent. General view as in plate LXXV, **phot. 674.** Distributed in eastern Pyrenees ... *canigouensis* FAUVEL, 1892.
- . Smaller. Length 4.4–5.8 mm. Punctures of pronotum and elytra nowhere confluent. Described from central part of Pyrenees *villiersi* BERTI et RAPILLY, 1983.

Subgenus *Galerotoma* REITTER, 1903

One species only. Elytra dark testaceous or brown, pronotum brown in central part with a great, blurred blackish spot, remaining parts of body black. General view as in plate LXXV, **phot. 675.** Length 8.0–10.5 mm (= *hamaticollis* FAIRMAIRE, 1868). Distributed in Iberian Peninsula and in MOROCCO *haagi* (JOANNIS, 1866).

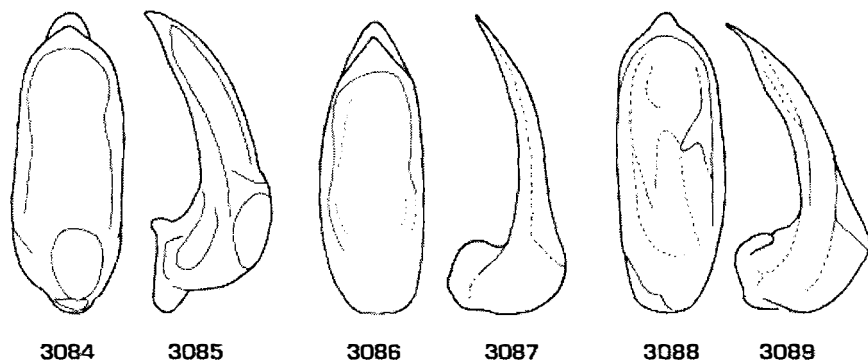
Subgenus *Galeruca* s. str.

Galeruca zangana CHEN et JIANG, 1987 from Tibet, very probably not congeneric (pronotum reddish brown with three black spots, elytra blue, without costae), not included in the key.

Key to species

1. Marginal gutter of elytron anteriorly reaching to the middle of anterior margin between scutellum and humeral callus (*tanaceti*-group) **2.**
- . Marginal gutter of elytron ending near humeral callus **8.**

2. Metasternum short, without median furrow. Externally resembling to a great *tanaceti* (thesis 3), with feeble but perceptible two (forma typica) or four (ab. *nebroden-sis* RAGUSA, 1887) costae on elytra. Aedeagus as in figs 3080, 3081. Length 10.0–13.0 mm. Endemic to Sicily **sicana** (REICHE, 1860).
- . Metasternum longer, with a fine but distinct median furrow **3.**
3. Tibiae covered by short, thick, dark (pitchy brown or black), semierect setae. Lateral margin of pronotum in anterior 1/4 obliquely narrowed. Elytra entirely confusedly punctured or with very feebly marked costae. Aedeagus as in figs 3082, 3083. Length 5.2–13.0 mm (= *tristis* SCOPOLI, 1863, *bonvouloiri* JOANNIS, 1866, *declivis* JOANNIS, 1866, *cicatricosa* CHEVROLAT, 1872). Very variable, forms numerous local and geographical variations often considered as subspecies: on average larger (10.0–13.0 mm), pronotum very short, upper side evenly convex, alpine form of southern Europe (ssp. *gibbosa* REICHE, 1866), upper side strongly convex, alpine form from Caucasus (ab. *convexa* JACOBSON, 1925), body oblong-oval, vertex often reddish, on elytra with distinctly marked costae (ab. *rufifrons*, LABOISSIÈRE, 1912 from Central Asia); further forms are described from Central and Eastern Asia. Distributed from Ireland and Portugal to Korea, introduced also in Northern America **tanaceti** (LINNAEUS, 1758).
- . Tibiae covered by brownish, reddish or yellowish hairs **4.**

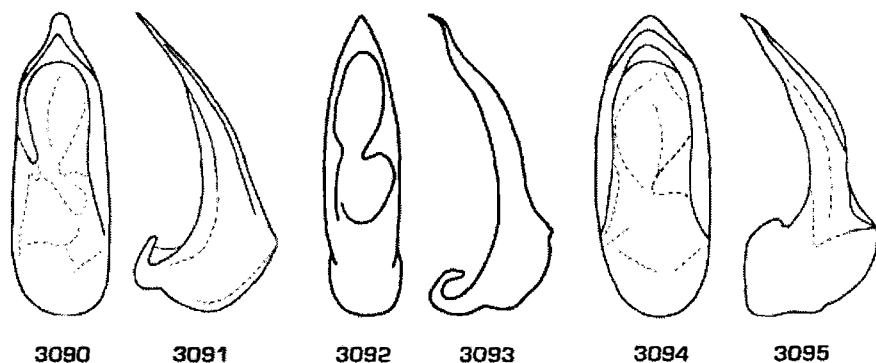


Figs 3084-3089. Aedeagus in dorsal and lateral view (after HAVELKA 1958): 3084, 3085 – *Galeruca (Galeruca) angelae*; 3086, 3087 – *Galeruca (G.) macchoi*; 3088, 3089 – *G. (G.) hunyadensis*.

4. Similar to *tanaceti* (thesis 3), but perceptibly more flat and slender. Remaining external characters except the reddish hairs on legs as in *tanaceti*. Tubular part of aedeagus (figs 3084, 3085) dorsally, near phallobasis, with a roundish impression. Described from N Spain (Asturia) **angelae** HAVELKA, 1958.
- . Not as above **5.**
5. Anterior angles of pronotum slightly but distinctly projecting out, elytra very coarsely or coarsely punctured **6.**
- . On pronotum anterior angles not projecting, rather obtuse, lateral margin rounded or obliquely narrowed, without emarginations **7.**

6. Distributed in Iberian Peninsula. Elytra coarsely punctured. Aedeagus as in figs **3086, 3087**. Length 9.0–11.0 mm **macchoi** (JOANNIS, 1866).
- . Distributed in Sardinia. Elytra very coarsely punctured. General view as in plate LXXVI, **phot. 676**. Length 9.5–11.0 mm. Distributed in Sardinia, Algeria and Tunisia, reported also from Spain **sardoa** (GÉNÉ, 1839).
7. Elytra without costae, punctures heterogenous, strong and thick, fused in short, irregular furrows. Aedeagus as in figs **3088, 3089**. Length 7.0–8.0 mm. Described from Romania **hunyadensis** CSIKI, 1952.
- . Elytra with two inner costae (feebly marked), very densely punctured. Aedeagus as in figs **1911, 1912**. See *angelae* (thesis 4).
8. On pronotum anterior part of marginal gutter conspicuously impressed, formed as a deep hollow (*pomona*-group) **9**.
- . Anterior angles of pronotum without conspicuously deep impressed hollow **19**.
9. E Palaearctic species. General characters as in *pomona* (thesis 17). Upperside rust-brownish or rust-grey, mesosternum and legs (usually except joints) and antennae black. On each elytron four costae, costae 3 and 4 often divided into separate granulae, costae 1 and 2 entire, but often interrupted by a few punctures. Hind wings well-developed. Length 10.0–13.0 mm. Distributed in basin of Ussuri and in Korea **heydeni** WEISE, 1887.
- . W Palaearctic species **10**.
10. Upper side distinctly covered by relatively long hairs. Black, feebly shining, elytra strongly punctured, costae hardly visible. Length 9.0–11.8 mm. Distributed in central and southern part of Iberian Peninsula **artemisiae** (ROSENHAUER, 1856).
- . Upper side hairless or apical part of elytra covered with hairs only **11**.
11. Elytra in apical part with relatively long (twice longer than diameter of puncture) hairs crooked upwards and reaching to next puncture **12**.
- . Elytra usually hairless or in apical part with very short, erect or semi-erect hairs, shorter than diameter of punctures **13**.
12. Hairs on elytra whitish grey. Dark pitchy brown or black, elytra strongly punctured, two inner costae well-developed. Length 7.5–11.0 mm (= *fuliginosa* JOANNIS, 1866). Here perhaps also *obscura* JOANNIS, 1866, described from Dalmatia and Greece). Distributed in European part of eastern Mediterranean (Dalmatia, Greece, Crete) **littoralis** (FABRICIUS, 1787).
- . Hairs on elytra reddish grey. Upper side entirely or elytra only brown, remaining parts of body black. Costae of elytra usually indistinct. Length 8.0–10.0 mm. Distributed in Sicily **reichei** (JOANNIS, 1866).
13. Anterior angles of pronotum sharp, projecting, lateral margin anteriorly deep emarginate. Elytra usually dark rust-red or reddish brown **14**.
- . Lateral margin of pronotum not deeply emarginate anteriorly. Pronotum short and broad. Costae on elytra fine, but almost always distinct **15**.
14. On each elytron four primary costae distinct. Pronotum dark red with undefined blurred blackish lateral spots, very uneven and heterogeneously punctured, interstices here and there very high, shining. Head usually bicolorous, black with red frons and vertex. General view as in plate LXXVI, **phot. 677**. Aedeagus as in figs **3090, 3091**. Length 11.0–14.0 mm. Variation: upper side black (ab. *pelleti* JOANNIS, 1866). In Iran and Central Asia occurs subsp. *orientalis* OSCULATI, 1844, entirely black, rather matt, smaller (10.0–12.0 mm), in Iran subsp. *lacericollis* SEMENOV, 1909 black, on elytra

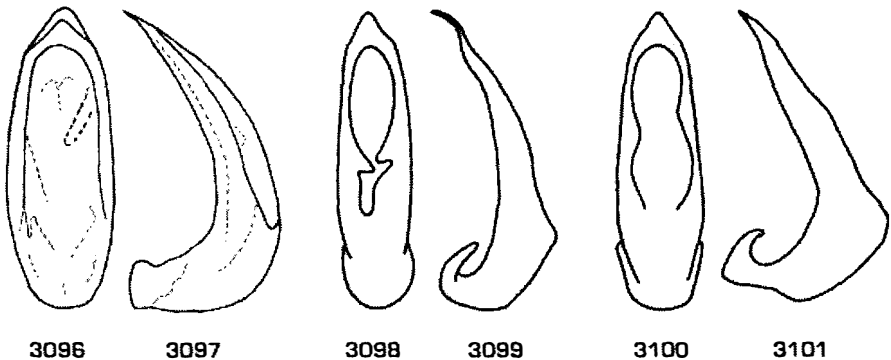
- costae 1, 2 and 4 well-developed, costa 3 reduced or absent. Distributed in Balkan Peninsula, Asia Minor, Syria, Iran and Central Asia **spectabilis** FALDERMANN, 1837.
- . Elytral costae obsolete. Length 11.4 mm. Insufficiently studied species, described from Lenkoran in Aserbeidshan based on one specimen only (sex not determined), perhaps a form of *spectabilis* (thesis 14) **hyrcana** MEDVEDEV et MIRZOEVA, 1969.
15. Marginal gutter of elytra conspicuously broad. Primary and secondary costae distinct, usually well-developed. Length 8.0–10.0 mm. Distributed in Western Alp **abbreviata** (JOANNIS, 1866).
- . Marginal gutter of elytra normal, not conspicuously broad **16**.
16. Legs covered by dark (blackish) hairs **18**.
- . Legs covered by pale hairs **17**.
17. Fore angles of pronotum rather broad. Upper side usually light or dark brown, antennae and legs black, underside blackish or black. Aedeagus as in figs **3092**, **3093**. Length 7.2–10.7 mm (= *rustica* SCHALLER, 1883, *dispar* JOANNIS, 1866, *erratica* JOANNIS, 1866). Very variable. Variations: costae disappearing almost entirely, sometimes one or two lateral costae present but feebly perceptible (unnamed), upper side pitchy brown (ab. *gredleri* JOANNIS, 1866). Local forms: upper side reddish yellow, head brown or blackish with reddish vertex (ab. *rufescens* JOANNIS, 1866, from Alpes Maritimes), upper side entirely pure black (ab. *anthracina* WEISE, 1886, from France, Switzerland and Italy). In E Mediterranean area (Croatia, Greece, Crete, Turkey) occur larger black forms (usually over 9.0 mm), perhaps ageographical race, described as *cretica* WEISE, 1889, sometimes with elytra blackish brown (*rugosa* JOANNIS, 1866, *ida* HAVELKA, 1956). In S Russia (basin of Low Wolga, Dagestan) occurs black coloured form without secondary costae on elytra, considered as a subspecies, *petshenega* JACOBSON, 1925. Distributed from Portugal and Ireland to Central Asia, introduced also in Northern America **pomonae** (SCOPOLI, 1763).
- . Fore angles of pronotum more sharp. Remaining external characters as in *pomonae* (thesis 17) characters. Distributed in Asian Turkey and in Caucasian countries **circassica** REITTER, 1889.



Figs 3090-3095. Aedeagus in dorsal and lateral view (3092, 3093 after WARCHALOWSKI 1994, remaining after HAVELKA 1958): 3090, 3091 – *Galeruca (Galeruca) spectabilis*; 3092, 3093 – *Galeruca (G.) pomonae*; 3094, 3095 – *G. (G.) improvisa*.

18. Larger, body length over 12.0 mm. Upper side black, strongly shining. Two inner costae very fine. Aedeagus as in figs **3094, 3095**. Described from Algeria
 ***improvisa*** HAVELKA, 1956.
- . Smaller, body length 7.0–11.0 mm. Elytra without costae, sometimes costae I and IV present, but hardly perceptible. Aedeagus as in figs **3096, 3097**. Distributed in southern France and northern Spain ***luctuosa*** JOANNIS, 1866.
19. Body and upper side black, elytra fattened, parallel, without costae. Length 5.8 mm (male) to 6.6 mm (female). Described from Tibet based on one pair only
 ***parallelipennis*** BEENEN, 2002.
- . Mentioned two characters (black colouration of body and absence of costae on elytra) do not occur simultaneously **20**.
20. Apex of fore tibia with a roundish lobe covering tarsal insertion **21**.
- . Apex of fore tibia cut obliquely, tarsal insertion only insignificantly covered. Pronotum and elytra dark yellow to ochraceous, underside and legs black **27**.
21. External side of mid and hind tibia apex not punctured, shiny (*barbara*-group) ...
 **22**.
- . External side of mid and hind tibia apex punctured (*interrupta*-group) **25**.
22. Primary costae high, shining, secondary costae usually distinct at least in anterior half of elytra. African species **23**.
- . Primary costae distinct but not high, secondary costae usually absent. Length 7.6–10.5 mm. European species. Distributed in France and Iberian Peninsula, reported also from Sicily. Reports from Algeria concern *barbara* (thesis 22)
 ***angusta*** (KÜSTER, 1849).
23. Lateral margins of pronotum anteriorly emarginate. Body pitchy black. Length 12.0–13.0 mm. Distributed in High and Middle Atlas ***angulicollis*** KOCHER, 1958.
- . Lateral margins of pronotum note marginate **24**.
24. Elytral punctures roundish, strong, ground usually distinctly reticulate. Body uniformly black or black with two dark red spot on vertex, sometimes also with reddish anterior margin of pronotum. General view as in plate LXXVI, **phot. 678**. Length 8.5–11.2 mm (= *goudoti* JOANNIS, 1866). Variation: body smaller (7.0–9.5 mm), shining, elytra strongly widened posteriad, general outline of body stout (ab. *atlasica* KOCHER, 1958). Forms a subspecies (subsp. *baetica* WEISE, 1891) with finer and more dense puncturation of elytra and less elevated costae on them. Distributed in Morocco and Algeria, subspecies occurs in S Spain ***barbara*** (ERICHSON, 1841).
- . Elytral punctures elongate, moderately strong, ground usually very finely reticulate, shining. Length 7.5–9.0 mm. Distributed in High Atlas (Morocco) and Tell Atlas (Algeria). Erroneously reported also from Caucasus
 ***montigena*** PEYERIMHOFF, 1915.
25. Anterior angles of pronotum broadly rounded. A doubtful species described from Constantinople based on one specimen (sex not determined) only
 ***lobata*** JOANNIS, 1866.
- . Anterior angles not particularly broadly rounded **26**.
26. Ventral side of abdomen very regularly, distinctly, deeply, transversely rugose. Body black, elytra dark yellow or ochraceous, costae not darker than ground. Length 8.0–11.0 mm. Variation: body entirely black (ab. *aterrima* WEISE, 1886). Endemic to Corsica ***corsica*** (JOANNIS, 1866).

- . Ventral side of abdomen very finely and shallowly transversely rugose. Upper side light brownish, underside and legs blackish or black. Costae differently interrupted, usually darker than ground. Aedeagus as in figs **3098**, **3099**. Length 6.0–8.5 mm. (= *hungarica* FRIVALDSZKY, 1876). Variations: upper side uniformly pale (ab. *jucunda* FALDERMANN, 1837), elytra pale, pronotum and elytral costae darker, brownish (ab. *usitata* JACOBSON, 1925), upper side dark brown or black (ab. *oelandica* BOHEMAN, 1849). Forms five subspecies: at least costae II and III several times interrupted; distributed in western and northern part of Europe (nominotypical subspecies), all costae continuous; distributed in Italy and Sicily (subsp. *sicelidis* WEISE, 1886), costa III shortened or absent, apical angles of elytra well-marked, suture convex; distributed in eastern Turkey, Caucasian countries and Central Asia (subsp. *armeniaca* WEISE, 1886, =? *tripoliana* CHEVROLAT, 1873), costa III shortened or absent, apical angles of elytra rounded, suture feebly convex; distributed in basin of Danube, Balkan Peninsula and Ukraine (subsp. *circumdata* DUFTSCHMID, 1825 = *florentina* REDTENBACHER, 1844 = *sequensi* REITTER, 1903), upperside blackish, margins of pronotum and elytra paler. Primary costae on elytra shining, convex, usually black, distributed in Kirgisia and Kazakhstan (subsp. *fulvimargo* REITTER, 1901) **interrupta** (ILLIGER, 1802).

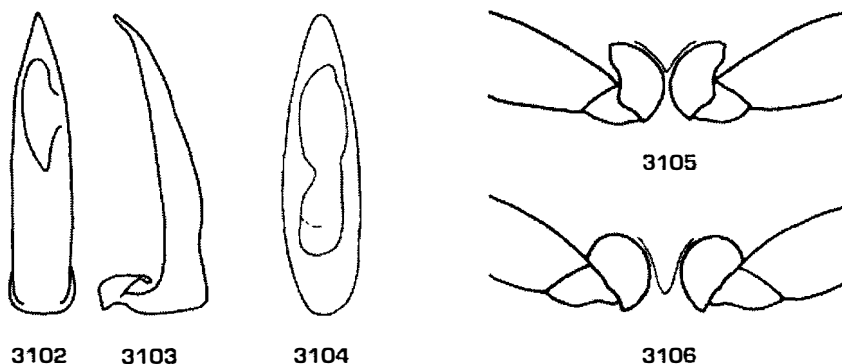


Figs 3096–3101. Aedeagus in dorsal and lateral view (3096, 3097 after HAVELKA 1958, remaining after WARCHAŁOWSKI 1994): 3096, 3097 – *Galeruca (Galeruca) luctuosa*; 3098, 3099 – *G. (G.) interrupta*; 3100, 3101 – *G. (G.) dahli*.

27. Elytra without costae, almost parallel, not widened in hind part, body entirely black. Length about 6.0 mm. Described based on two specimens only. Distributed in Tibet ...
..... **parallelipennis** BEENEN, 2002.
- . Elytra with costae **28**.
28. Pronotum broadest in anterior half, anterior part of lateral borders broadly flattened, primary costae on elytra often interrupted **29**.
- . Pronotum feebly broadened anteriorly, lateral borders not broadly flattened **30**.
29. Anterior part of lateral margin of pronotum relatively feebly elevated. Punctuation of elytra moderately strong, mostly not stronger than punctuation of pronotum.

- Primary costae 1 and 2 sometimes fused, both several times interrupted. Colouring of body relatively pale, yellowish-grey, underside darkened. Length 11.0–13.2 mm (= *banghaasi* WEISE, 1894). Distributed in E Siberia, China, Korea and Japan *extensa* MOTSCHULSKY, 1861.
- . Anterior part of lateral margin of pronotum strongly elevated. Puncturation of elytra stronger. Primary costae 1 and 2 not interrupted, costae 1 and 4 fused at apex. Colouring of body darker, brown-grey, costae darkened, underside black. General view as in plate LXXVI, **phot. 679**. Length 8.2–10.4 mm. Distributed in basins of Amur and Ussuri alike in Korea *reichardti* JACOBSON, 1925.
30. Primary costae on elytra black, contrasting on much paler ground or at least distinctly darker than ground **31**.
- . Primary costae coloured similar as remaining surface of elytra **36**.
31. Pronotum black, elytra brownish with black suture and primary costae **32**.
- . Ground of pronotum and elytra coloured similarly **33**.
32. Pronotum more than twice as broad as long, its central area distinctly raised, smooth, non-rugose and very sparingly punctate; on each side of raised area is a deep longitudinal depression, limited by a strong swelling. Length 7.5 mm. Described based on one female from Tibet (Xizang) only *altissima* CHEN et JIANG, 1981.
- . Pronotum without peculiar structures. Sides of pronotum serrate. Primary costae strongly raised, fairly broad. Length 9.0–9.5 mm. Sometimes considered as subspecies of *nigrolineata*. Forms a subspecies, subsp. *rutoga* CHEN et JIANG, 1981, differing from nominotypical form by smaller size (6.5–7.5 mm), entirely black antennae and not distinctly serrate sides of pronotum. Distributed in Afghanistan, N Pakistan and N India, subsp. *rutoga* in Tibet (Xizang) *vittatipennis* BALY, 1878.
33. Vertex and hind part of frontal calli very tightly punctured. Upperside almost matt. Body black, ground of pronotum and elytra pale yellowish-grey, transverse spot on pronotum with blurred margins, often absent, suture and primary 3–4 costae on elytra pitchy black. Length 5.6–8.0 mm. Distributed in NW China (Tibet, Kansu, Tsinghai) *pallasia* JACOBSON, 1925.
- . Vertex densely, but not thickly punctured **34**.
34. Pronotum black **35**.
- . Pronotum at most somewhat darker than elytra, more than 2 × broader than long, almost rectangular, antennae short and robust. General view as in plate LXXVI, **phot. 680**. Length 9.5–10.8 mm. Described from Iran (Lorestan), known also from E Turkey *planiusdula* LABOISSIÈRE, 1937.
35. Species from Central Asia. Marginal gutter of pronotum shallow but rather broad, in anterior part lateral border of pronotum inclined, broader. General view as in plate LXXVI, **phot. 681**. Length 6.2–11.0 mm. Forms two subspecies: smaller, body length 6.2–9.0 mm, secondary costae on elytra present (nominotypical subspecies), larger, body length 7.5–11.0 mm, secondary costae on elytra absent (subsp. *major* JACOBSON, 1901). Nominotypical subspecies distributed in W Kirgisia, and E Kazakhstan to Altai, subsp. *major* in E Usbekistan, E Kazakhstan and China (Sinkiang) *nigrolineata* MANNERHEIM, 1825.
- . Species from NE Asia. Marginal gutter of pronotum shallow and narrow, in anterior part lateral border of pronotum low, almost vertical. Secondary costae on elytra absent, primary costae 1 and 2 distinct and elevated. Upper side brown in different hues with darker elytral costa. Length 6.0–11.0 mm. Variation: upperside entirely

- pitchy black or black (= *sedakovi* JOANNIS, 1866, *mongolica* CSIKI, 1901). Distributed in Mongolia, China, E Siberia and Korea *daurica* JOANNIS, 1866.
36. Upperside pitchy black or black. Here dark forms of *daurica* (antithesis 32).
 - Pronotum and elytra brownish or brown. Primary and secondary costae on elytra not distinctly different 37.
37. Body black, head except for vertex, pronotum and elytra yellowish-grey. Length 6.0–11.0 mm. Variation: upper side entirely pitchy black (ab. *aetha* JACOBSON, 1925). Distributed in Mongolia, N China and Siberia from Altai to basin of Ussuri
 *weisei* REITTER, 1903.
 - Head entirely or in most part black 38.
38. Head entirely black or pitchy-black. Lateral margin of pronotum not emarginate anteriorly. Length 6.0–7.8 mm (= *confinis* GEBLER, 1848, *fontinalis* BOHEMAN, 1851, *flava* KÜSTER, 1855). Variation: body greater (about 9.0 mm, pronotum and elytra pale rust-reddish (ab. *villae* COMOLLI, 1837). Distributed from eastern France and northern part of Central Europa (Germany, Poland, southern part of Fennoscandia) to basin of Amur *laticollis* SAHLBERG, 1837.
 - Head black with yellowish or reddish frontal calli, rarely entirely pitchy-black. Lateral margin of pronotum slightly but distinctly emarginate anteriorly 39.
39. Costae on elytra feebly developed. Length 6.5–8.0 mm Aedeagus as in figs 3100, 3101. Variation: head unicolorous (unnamed). Distributed from France to Korea and Sakhalin. In Europe known from France, northern Italy, Germany, Austria, northern part of basin of Danube, southern Poland, Romania, southern Ukraine and Crimea *dahli* (JOANNIS, 1866).
 - Costae on elytra stronger developed, body larger, 9.0–11.0 mm long (= *dahli* subsp. *japonica* WEISE, 1894). Remaining characters as in *dahli* (thesis 35). Distributed in Mongolia, E Siberia, N China, Kurile Islands, Korea and Japan
 *vicina* SOLSKY, 1872.



Figs 3102-3106. Aedeagus in dorsal and lateral view, mid coxa (3104 after HAVELKA 1958, remaining after WARCHALOWSKI 1994): 3102, 3103 – *Galeruca (Haptoscelis) melanocephala melanocephala*; 3104 – *G. (H.) melanocephala baltica*; 3105 – *Galerucella grisescens*; 3106 – *G. nymphaeae*.

Subgenus *Haptoscelis* WEISE, 1886

In discussed area one species only. Pronotum and elytra red, remaining parts of body black. On pronotum two deep hollow-like impressions and a shallow median furrow. General view as in plate LXXVI, **phot. 682**. Aedeagus as in figs **3102, 3103**. Length 3.8–5.2 mm (= *aptera* BONELLI, 1812, *haematidia* GERMAR, 1824, *kubanensis* FORMANEK, 1900). Variation: impressions on pronotum shallow, on hind part of scutellum a longitudinal furrow, aedeagus somewhat different (fig. **3104**) (ab. *baltica* WEISE, 1904, perhaps a distinct subspecies from N Germany and N Poland). Distributed in France, Germany and basin of Danube, reported also from eastern Ukraine
 *melanocephala* (PONZA, 1805).

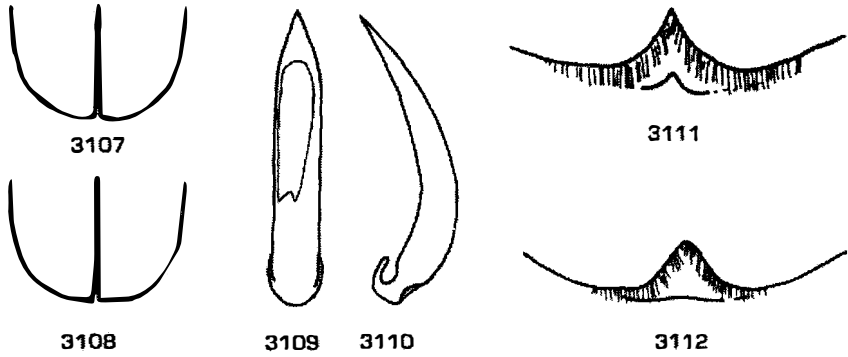
Genus *Galerucella* CROTCH, 1873

An unclear species, *G. rubi* TAMANUKI, 1938 described from Sakhalin, not included in the key.

Key to species

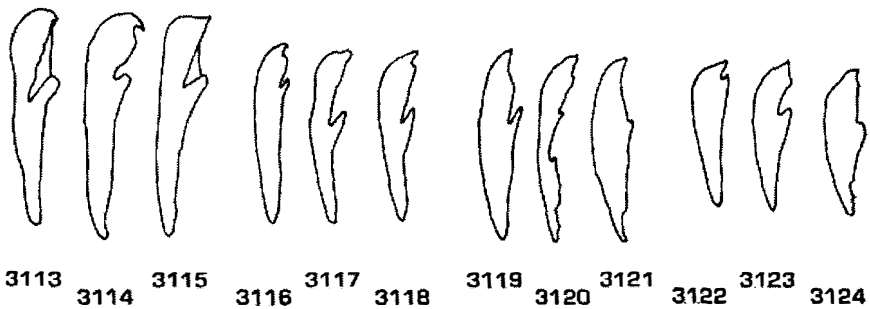
1. Apex of elytron angulate or sharp and slightly protruding **2**.
- Apex of elytron obtuse, rounded **7**.
2. Apex of elytra not sharply angulate. Mid coxae much approached (fig. **3105**). Apex of elytra at sutural angle not emarginate, obtuse (fig. **3107**). Body yellowish grey to dark ochraceous. Hind part of head, scutellum, most part of mesosternum and often also of metasternum, labrum, antennae almost entirely, a spot on the middle of pronotum and humeral calli brown or blackish. Length 3.9–5.2 mm (= *vittaticollis* BALY, 1874, *angulosa* PIC, 1928, *rubi* TAMANUKI, 1938, *reducta* CHEN, 1942). In Japan occurs a darker form, considered usually as subspecies (subsp. *distincta* BALY, 1874), with a longitudinal blackish stripe on each elytron. Transpalearctic species, distributed from Great Britain to Japan *grisescens* (JOANNIS, 1866).
- Apex of elytra at sutural angle usually somewhat emarginate, sharpened (fig. **3108**). Mid coxae separate (fig. **3106**). Complex of *G. nymphaeae*. The taxonomic rank of the forms classified here seems questionable. Only males can be distinguished, and, besides, interspecific crosses yielded fertile progeny **3**.
3. Larger, length of body over 5.0 mm (in E Palearctic forms somewhat shorter **4**.
- Length of body under 5.0 mm **6**.
4. Upper side brown **5**.
- Upper side pale, yellowish grey. In female apical margin of last abdominal sternite deeply incised (fig. **3111**). Inner sclerite of aedeagus as in figs **3116–3118**
 *aquatica* (GEOFFROY, 1785).
5. Pronotum about 2.0 × broader than long. In female apical margin of last abdominal sternite not or only very shallowly incised. Aedeagus as in figs **3109, 3110**. Inner sclerite of aedeagus as in figs **3113–3115**. Length 5.0–6.5 mm (= *marginella* KIRBY, 1837, *femoralis* MELSHEIMER, 1847, *luctuosa* MANNERHEIM, 1852). General view as in plate LXXVI, **phot. 683**. In Europe distributed (in relation to entire complex) in almost whole area between 42th and 69th parallel, but distributed to E Siberia
 *nymphaeae* (LINNAEUS, 1758).

- Pronotum about $1.5 \times$ broader than long. General view as in plate LXXVI, **phot. 684**. Length 4.8–6.0 mm (= *paludosa* WEISE, 1922). E Palearctic species, distributed in E Siberia and Japan ***nipponensis*** (LABOISSIÈRE, 1922).



Figs 3107-3112. (3111, 3112 after LOHSE 1989, remaining after WARCHAŁOWSKI 1994): 3107, 3108 – apex of elytra, 3109, 3110 – aedeagus in dorsal and lateral view, 3111, 3112 – pygidium: 3107 – *Galerucella grise-scens*; 3108-3110 – *G. nymphaeae*; 3111 – *G. aquatica*; 3112 – *G. sagittariae*.

6. Upper side darker, brownish. Last abdominal sternite entirely black. In female apical margin of last abdominal sternite not incised (fig. **3112**). Inner sclerite of aedeagus as in figs **3119**, **3120**. Length 4.5–5.0 mm. Variation: on pronotum a great, blackish spot, elytra very dark, pitchy, with narrow pale borders (ab. *fergussoni* FOWLER, 1910). Palearctic species, but its distribution within general area of *nymphaeae*-complex not yet exactly defined ***sagittariae*** (GYLLENHAL, 1813).
- Upper side pale yellowish brown. Last abdominal sternite entirely or at least in hind part reddish yellow. In female apical margin of last abdominal sternite incised as in *aquatica* (fig. **3111**). Inner sclerite of aedeagus as in figs **3122–3124**. It would seem it is a European species, but its distribution within general area of *nymphaeae*-complex not yet exactly defined ***kerstensi***, LOHSE, 1989.



Figs 3113-3124. Internal sclerites of aedeagus (after LOHSE, 1989): 3113-3115 – *Galerucella* (*Galerucella*) *nymphaeae*; 3116-3118 – *G. (G.) aquatica*; 3119-3121 – *G. (G.) sagittariae*; 3122-3124 – *G. (G.) kerstensi*.

7. Basal half of pronotum laterally covered by sparse and indistinct punctures, basal margin distinctly emarginate at middle. Body brown, vertex, antenna and underside blackish. Length about 5.0 mm. Described from Japan (Honshu) *ozeana* NAKANE, 1963.
- . Basal half of pronotum laterally covered by rather strong and dense puncturation, basal margin indistinctly emarginate at middle or almost straight. Body blackish, clypeus and pronotum usually paler. Length 5.3–6.0 mm. Distributed in Japan (Honshu) *ohkurai* KIMOTO et TAKAHASHI, 1992.

Genus *Geinella* STRAND, 1935

= *Swagria* MAULIK, 1936

All eleven hitherto described species are endemic to Tibet (Xizang, Tsinghai and Sinkiang).

Key to species

1. Head, elytra and dorsal side of abdomen greenish-blue, pronotum with yellow borders, legs at least partly yellow **2.**
- . Body differently coloured **4.**
2. Borders of pronotum broadly yellow, anterior and posterior margins thickened **3.**
- . Borders of pronotum narrowly yellow, anterior and posterior margins not thickened. Upperside of femora black or blackish. First tarsomere in male strongly dilated, oval, laterally rounded, not heart-shaped. Length 5.0–7.5 mm *limbatipennis* CHEN et JIANG, 1981.
3. Patch on pronotum brownish or blackish. Femora with a black spot on dorsal side, tibia dark yellowish, sometimes weakly darkened in apical part. First tarsomere in male dilated, laterally not rounded, usually heart-shaped. General view as in plate LXXVII, **phot. 686.** Length 5.2–10.0 mm *nila* (MAULIK, 1936).
- . Patch on pronotum deep metallic blue. Femora entirely or almost entirely and apical half of tibiae black. Length 4.5–7.5 mm *brevicollis* CHEN et JIANG, 1981.
4. Upperside black or black with bluish reflex **5.**
- . Upperside golden-cupreous with rather strong metallic sheen **9.**
5. Antennae very short, robust, about 1/3 body length. Similar to *invenusta* (thesis 4), but larger, pronotum strongly rugose and antennomere 4 distinctly longer than 3. First tarsomere of hind tarsi as long as the following ones together. Length of body 8.5 mm. Described from Tibet (Xizang) *crassicornis* CHEN et JIANG, 1987.
- . Antennae slender, longer than 1/2 the length of body **6.**
6. Antennae very long, filiform, in male as long or longer than the body, in female slightly shorter **7.**
- . Antennae much shorter, in male at most 2/3 body length. Upperside pure black or with very feeble bluish metallic reflex **8.**
7. Upper side black with distinct bluish-greenish-violaceous metallic reflex. Body outline oblong, legs and antennae slender, no antennomeres widened apically. First tarsomere of hind tarsi as long as the following ones together. General view as in plate LXXVII, **phot. 687.** Pronotum with two shallow impressions in anterior half, tra-

- pezoidal, widest at anterior margin, its lateral margins almost straight. Elytra a little longer, covering almost entirely the first abdominal tergite. Length without abdomen 4.8–5.2 mm, with abdomen 6.2–9.9 mm *trapezicollis* WARCHAŁOWSKI, 2001.
- . Body entirely black. Pronotum with a transverse impression. Length 6.5 mm. Described from Tibet, based on one female only *krishna* (MAULIK, 1936).
8. Pronotum almost 2 × broader than long. Legs and antennae more robust, antennae reaching midlength of body, antennomeres 4–7 apically widened, semitriangular. Pronotum with two shallow, transverse furrows, widest before midlength, its lateral-sides rounded. Elytra very short, covering anterior part of the first abdominal tergite only. First tarsomere of hind tarsi shorter than the following ones together. Length 5.0 mm. Described from China (E Tibet) about 34°N nad 94°E *invenusta* (JACOBSON, 1925).
- . Pronotum about 1.5 × broader than long. Pronotum and elytra entirely rugose. Antennae filiform. First tarsomere of hind tarsi as long as the following ones together. Length 5.0–8.0 mm. Described from Tibet (Xizang) *rugosa* CHEN et JIANG, 1987.
9. Length under 5.0 mm. Upperside cupreous or golden-cupreous, in variations blue-greenish. Antennae and legs black. Antenna always shorter than body. Pronotum 1.5 × broader than long, apparently impunctate. Frontal tubercles strongly convex. Length 4.0–4.7 mm *cuprea* CHEN et JIANG, 1981.
- . Length over 6.0 mm **10.**
10. Upperside golden cupreous, antennae black, legs brown. Elytra distinctly wrinkled and very finely punctate. Pronotum about 2 × broader than long. Length (male) 6.5 mm. Described from Tibet (Xizang) *intermedia* CHEN et JIANG, 1981.
- . Elytra and abdomen golden cupreous, head and pronotum greenish cupreous. Antennae and legs black. Pronotum somewhat less than 2 × broader than long, moderately strongly wrinkled. Elytra not wrinkled, but covered with fairly large punctures mixed with minute ones. Length (female) 9.0 mm *punctipennis* CHEN et JIANG, 1987.

Genus *Geinula* OGLOBLIN, 1936

In discussed area one species only. Remaining seven species distributed in SW China. Black with weak bronzy reflex, elytra green with golden or violaceous hue, anterior part of head, anterior and posterior borders of pronotum, prosternum laterally, antennae and legs yellow. Externally resembling to representatives of *Apophyllia* (p. 632), but differs by reduced hind wings, alike absence of epipleura and marginal ridge on pronotum. Length 4.2–5.0 mm. Described from Tibet *jacobsoni* OGLOBLIN, 1936.

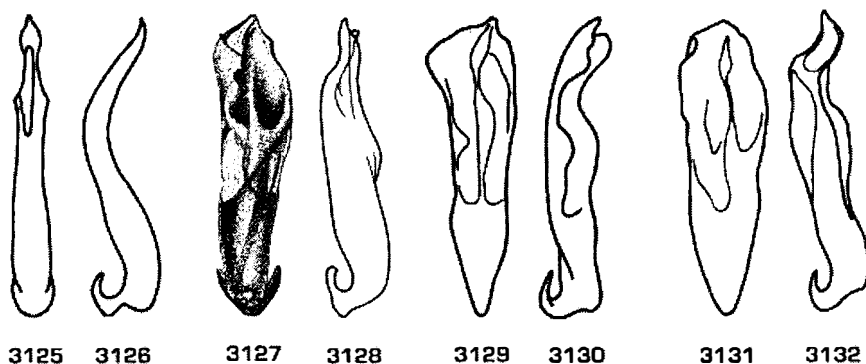
Genus *Lochmaea* WEISE, 1883

Literature: BEZDĚK, 2004.

Key to species

1. Frontal tubercles small. Epipleura rather densely pubescent. Ground colour of pronotum and elytra red or brownish red. In female upperside, legs and apex of abdo-

- men rust-reddish, remaining part of underside black, hind tibiae straight. In male femora, two spots on pronotum, scutellum and a short longitudinal stripe on each elytron blackish, hind tibiae in male more or less curved. Here four species, rather similar to each other (*crataegi*-group) **2.**
- . Frontal tubercles large. Epipleura sparsely pubescent, hind tibiae in male straight ...
..... **5.**
2. Head, pronotum and legs black, elytra dark brown with darker longitudinal stripe behind humeral calli. Length 4.0–5.0 mm. Distributed in Israel, Jordan, Turkey and Iran ***limbata*** PIC, 1898 (male).
- . Pronotum reddish, sometimes with central black spot **3.**
3. Upperside and legs pale brown, pronotum with blackish spots, vertex black. In female anal sternite with distinct deep incision (= *setulosa* SAHLBERG, 1913). Females of *limbata* (thesis 2).
- . Upperside uniformly reddish, pronotum without black spot, anal sternite of female without incision. Two species very similar to each other, distinguishable by shape of aedeagus **4.**
4. Aedeagus as in figs **3125, 3126**. General view as in plate LXXVII, **phot. 688**. Length 3.9–5.2 mm (= *sanguinea* FABRICIUS, 1775, *femorialis* DUFTSCHMID, 1825, *tibialis* DUFTSCHMID, 1825, *pallida* JOANNIS, 1866 nec HERBST, 1783). Variations: upperside entirely yellow (ab. *flava* DONISTHORPE, 1934), in male blackish pattern of upperside absent (ab. *orientalis* WEISE, 1924), in male on each elytron two irregular, blurred longitudinal stripes blackish (ab. *nigronotata* PIC, 1912), in female on each elytron a longitudinal blackish stripe (ab. *lineata* PIC, 1927), in male black pattern strongly developed, pronotum almost entirely black (ab. *binotata* DUFTSCHMID, 1825), an extreme melanotic form: in male upper side almost entirely black (ab. *obscura* KASZAB, 1962). Distributed from northern Spain and England to Asia Minor, basin of Volga and Mongolia ***crataegi*** (FORSTER, 1771).
- . Apical half of aedeagus in dorsal view distinctly broader than the basal half, in lateral view strongly bent dorsally. Distributed in Caucasian countries, Iran and Turkey
..... ***machulkai*** ROUBAL, 1926.



Figs 3125–3132. Aedeagus in dorsal and lateral view (3127, 3128 after COBOS 1955, remaining after WARCHALOWSKI 1994): 3125, 3126 – *Lochmaea crataegi*; 3127, 3128 – *L. scutellata*; 3129, 3130 – *L. caprea*; 3131, 3132 – *L. suturalis*.

5. Ground colour of pronotum and elytra ochraceous or light orange brownish. Aedeagus as in fig. **3137**, **3128**. Length 5.2–6.6 mm (= *joliveti* COBOS, 1955). Distributed in Iberian Peninsula **scutellata** (CHEVROLAT, 1840).
- . Ground colour of pronotum and elytra yellowish or testaceous **6**.
6. Elytral suture not (or sometimes very slightly) darkened. Head, scutellum, underside and femora black, basal part of antennae and tibiae often reddish or yellowish. On pronotum usually three spots: two in lateral depressions and one in the middle. General view as in plate LXXVII, **phot. 689**. Aedeagus as in figs **3129**, **3130**. Length 4.5–6.0 mm (= *capreae* auctorum, *griseonitida* DEGEER, 1775, *longicornis* Degeer, 1775, *polygonata* LAICHARTING, 1781, *pallida* HERBST, 1783, *livida* GEOFFROY, 1785, *pallescens* GMELIN, 1790, *saturata* STEPHENS, 1834, *scitellata* CHEVROLAT, 1840). Variations: pronotum, elytra and tibiae uniformly yellow (ab. *reitteri* LABOISSIÈRE, 1914), pronotum black, elytron entirely yellow or with black humeral spot, legs black (ab. *pallidipennis* KÜSTER, 1847), pronotum and most part of elytra black (ab. *luctuosa* WEISE, 1886). Subspecies: lateral margin of pronotum in its midlength forms a large, protruding, obtuse tooth (subsp. *cribrata* SOLSKY, 1872). Lives on *Salix* and *Betula*. Transpalaeartic species, distributed from Spain, Ireland and northern Norway to Japan, subsp. *cribrata* distributed east of Baikal (E Siberia, N China, Sachalin, Korea, Japan) **caprea** (LINNAEUS, 1758).
- . Elytral suture usually darkened. Colouring of body as in *caprea* (thesis 3), blackish pattern on pronotum feebly developed. Aedeagus as in figs **3131**, **3132**. Length 5.0–6.0 mm. Variations: pronotum and elytra without blackish spots (typical form), on pronotum three little black spots, sometimes fused into a transverse stripe (unnamed), a very rare melanotic form, body black, basis of tibiae, lateral margins of pronotum and elytral epipleura yellow (ab. *nigrita* WEISE, 1886). Lives on *Calluna vulgaris* L. Distributed in northern part of Iberian Peninsula, British Islands, France, northern Italy, Germany, Poland, Fennoscandia and Russia to basin of Volga **suturalis** (THOMSON, 1866).

Genus **Marseulia** JOANNIS, 1866

One species only. Outline of body very characteristic. General view as in plate LXXVII, **phot. 690**. Body entirely black, upper side with blue reflex. Length 2.2–3.5 mm. Distributed in Near East (Syria, Israel) **dilativentris** REICHE, 1858.

Genus **Nepalogaleruca** KIMOTO, 1970

The genus *Nepalogaleruca* comprises 7 species; of these two occur in the discussed area (Tibet), remaining five species distributed in Nepal.

Key to species

1. Yellowish brown, pronotum with two longitudinal spots, on each elytron two longitudinal stripes. Abdomen pale with blackish markings laterally. Antennae and legs reddish brown. Fourth antennomere longest, 1.5 × as long as third. Length 6.0–6.5 mm. Distributed in Nepal (not in the discussed area) **elegans** KIMOTO, 1970.
- . Aedeagus shaped differently **2**.

2. Colouring of body as in *elegans* (thesis 1). Fourth antennomere only slightly longer than third. Length 6.0–6.6 mm. Described from Tibet (Xizang) ***conformis*** CHEN et JIANG, 1987.
- . Abdominal sternites black except hind border of each. Length 5.5–6.5 mm. Described from Tibet (Xizang) ***nigriventris*** CHEN et JIANG, 1987.

Genus ***Nyctiphantus*** SEMENOV, 1902

Four Asiatic species belong to the genus *Nyctiphantus*.

Key to species

1. Pronotum 2 × broader than long. Abdomen entirely or in most part black. General view as in plate LXXVII, **phot. 691**. Length 6.0–9.7 mm. Distributed in mountains of E Kazakhstan (Karatau mountains) ***custos*** SEMENOV, 1902.
- . Pronotum about 1.5 × broader than long. Body almost unicolorous, dark rust brown **2.**
2. In male tarsomere 2 of mid legs 2 × longer than 3 and almost as long as 1. Elytra not much longer than head and pronotum together. Joints of legs and tarsi darkened. Length 7.0 mm. Described from Kazakhstan (vicinity of Balkhash lake) ***bergi*** SEMENOV, 1904.
- . In male tarsomere 2 of mid legs slightly longer than 3 and considerably shorter than 1 **3.**
3. Pronotum about 1.5 × broader than long. Elytra in hind part over 1.5 × broader than pronotum. Hairs on legs and elytra long, erect. General view as in plate LXXVII, **phot. 692**. Length 6.2–9.2 mm. Distributed in E Kazakhstan, NW China and Mongolia ***hirtus*** (WEISE, 1886).
- . Pronotum about 1.6–1.7 × broader than long. Elytra in hind part less than 1.5 × broader than pronotum. Hairs on legs and elytra moderately long. Length 4.3–8.5 mm. Distributed in Turkmenistan and Uzbekistan ***nocturnus*** (SEMENOV, 1891).

Genus ***Pallasiola*** JACOBSON, 1925

= *Pallasia* WEISE, 1886, nec ROBINEAU-DESVOIDY, 1840 (*Diptera*)

The genus *Pallasiola* JACOBSON includes 3 species; of these two occur in the discussed area. Third species, *P. rosti* (JACOBSON, 1911) is known from Kashmir only.

Key to species

1. Upperside yellowish, on each elytron three blackish costae. Underside covered by whitish pubescence. General view as in plate LXXVII, **phot. 693**. Length 5.5–8.0 mm. Broadly distributed in Transcaspia, Siberia, Mongolia and NW China ***absinthii*** (PALLAS, 1773).
- . Head black, remaining parts of upper side brownish red, without costae. Underside covered by sparse black hairs. Length 5.0–5.5 mm. Described from Pamir ***pamirica*** Mandl, 1968.

Genus *Pseudadimonia* DUVIVIER, 1891

Genus *Pseudadimonia* DUVIVIER includes nine species, distributed from Nepal and Tibet to N Indochina and Yunnan. In the discussed area occur six species, of these five are known from Xizang (Tibet) only.

Key to species

1. On average larger species, body length in male 9.0–10.0 mm, in female 11.0–12.0 mm **2.**
- . On average smaller species, body length in male 7.0–9.0 mm, in female 8.0–10.0 mm ...
..... **3.**
2. Body black except for a yellow zone on all femora and narrowly reddish apex of last abdominal sternite. Pronotum mostly relatively long, about 1.3 × broader than long, but in populations from western part of distribution area sometimes much larger. General view as in plate LXXVIII, **phot. 694**. Distributed from Nepal and S Tibet to N Thailandia and Yunnan *variolosa* (HOPE, 1831).
- . Body black except yellow-brown last abdominal segment and reddish frons. Puncturation of elytra very large. Length 11.2–12.5 mm. Described from Xizang (Tibet)
..... *punctipennis* JIANG, 1991.
3. Body black, upper side sark blue, covered by aenescant and golden hairs. In male antennomeres 5–7 on underside flattened, in female antennomeres 6–7 broader than other. Length 7.0–9.0 mm. Described from Xizang (Tibet) *hirtipes* JIANG, 1991.
- . Upperside not covered by metallic hairs **4.**
4. Body brown or pitchy, frontal tubercles, frons, vertex and pronotum violaceous. Antennomeres 10–11, coxae, last abdominal sternite and mid zone of femora yellowish-brown. Length 8.5–9.0 mm. Described from Xizang (Tibet)
..... *femoralis* JIANG, 1991.
- . Body black, head and pronotum not violaceous **5.**
5. Sides of pronotum strongly dilated behind middle. Similar to *variolosa* (thesis 2), but antennae longer and more slender. Described from Xizang (Tibet)
..... *dilatata* JIANG, 1991.
- . Sides of pronotum not strongly dilated, antennae much shorter. Length 8.1–9.7 mm. Described from Xizang (Tibet) *pararugosa* JIANG, 1991.

Genus *Pyrrhalta* JOANNIS, 1966

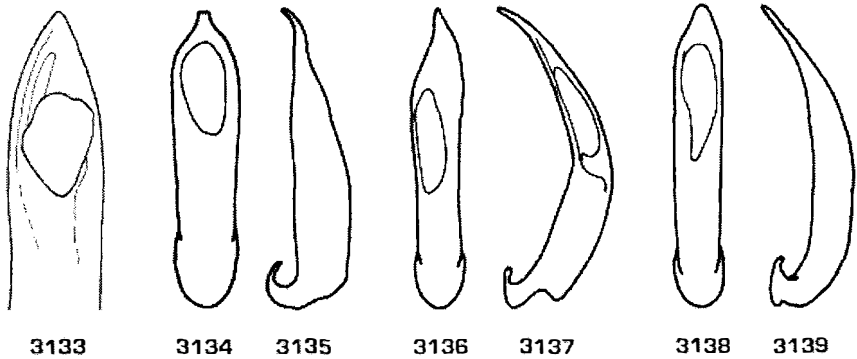
Genus *Pyrrhalta* JOANNIS was originally created only for *P. viburni* PAYKULL, but other genera and species groups in different arrangements were included into it later on, therefore, at present, it is hard to determine clearly the number of species belonging here. Genus *Galerucella* CROUCH is discussed separately in this work (p. 647), but species grouped into genus *Neogalerucella* CHŪJŌ, 1962 were included into key for determination of species of *Pyrrhalta*.

Key to species

1. Elytra greenish, pronotum pale with black spots **2.**
- . Upperside differently coloured **3.**

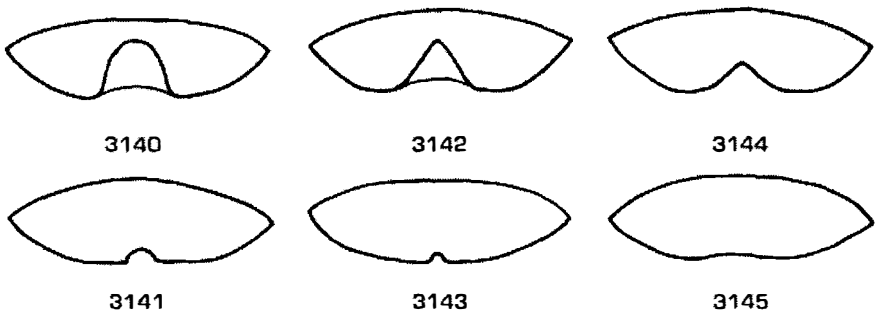
2. Larger. Punctuation of elytra moderately strong. External borders of elytra gradually declined to margin. General view as in plate LXXVIII, **phot. 695**. Length 6.9–8.7 mm (= *thalassina* YUASA, 1936). Distributed in basin of Ussuri and in NE China ... *aenescens* (FAIRMAIRE, 1878).
- Smaller. Punctuation of elytra strong. General view as in plate LXXVIII, **phot. 696**. External borders of elytra steeply declined to margin. Length about 5.0 mm. Distributed in NE China (Shantung, Liaoning) *orientalis* (OGLOBLIN, 1936).
3. Upperside pale, occiput, three spots on pronotum, scutellum and an oblong spot on each humeral callus black **4**.
- Upperside differently coloured, at least lateral spots on pronotum or/and humeral spot absent **8**.
4. Epipleura not narrowed toward apex but subequal in whole length from base to apex. General view as in plate LXXVIII, **phot. 697**. Length 7.0–8.2 mm. Distributed in Japan (Honshu) *esakii* NAKANE, 1963.
- Epipleura narrowed posteriad **5**.
5. Antenna short, about 2 × shorter than body. Hairs on upperside rather sparse, erect. Length 6.0–7.0 mm. Distributed in E Siberia and in a great area in China *maculicollis* (MOTSCHULSKY, 1853).
- Antenna long, almost as long as body. Hairs on upperside densely scattered **6**.
6. Antennomere 3 more than twice as long as 2. Length 5.5–6.5 mm. Distributed in China from southern provinces to Liaoning and in Taiwan *humeralis* (CHEN, 1942).
- Antennomere 3 shorter, only 1.5 × as long as 2 **7**.
7. Smaller, body length at most 6.5 mm. Body yellowish grey with blackish pattern formed by dorsal side of most antennomeres, a spot on vertex, median stripe and lateral margins on pronotum, humeral calli, blurred longitudinal stripe on elytron, usually also scutellum. Body entirely covered by pale, adpressed, fine hairs. Last abdominal sternite as in figs **3144, 3145**. General view as in plate LXXVIII, **phot. 698**. Aedeagus as in figs **3134, 3135**. Length 5.0–6.5 mm. Variation: a melanotic form, most part of upperside blackish (ab. *nigrescens* OCHS, 1925). Distributed in European area of deciduous-coniferous forests, from Ireland and Pyrenees to basin of Ural and Caucasian countries *viburni* (PAYKULL, 1799).
- Larger, body length about 8.0 mm. Similar to *viburni* (thesis 7), but legs partly and antennae partly or entirely blackened. Often considered as E Palaearctic race of *viburni* (thesis 7). Distributed in E Siberia, China and Japan ... *annulicornis* (BALY, 1874).
8. Body over 6.5 mm long, in males sometimes somewhat shorter **9**.
- Body length under 6.2 mm **11**.
9. Upper side uniformly pale, without black spots, antenna, tibiae and tarsi black. Length 6.8–9.2 mm (= *nigrimembris* FAIRMAIRE, 1880). Distributed in Japan (Honshu, Kyushu, Shikoku) and in China *tibialis* (BALY, 1874).
- Upper side with black spots or partly black **10**.
10. Pronotum pale with three black spots in basal part. Vertex, scutellum, apices of femora, tibiae, tarsi and antennae black. Elytra somewhat darker, yellowish-green with very weak bronzy reflex. Length 7.0–8.0 mm (= *rosinae* PIC, 1905). Distributed in basin of Amur and Ussuri, Korea and Japan *fuscipennis* (JACOBY, 1885).
- Pronotum black with basal border narrowly rust-yellow or reddish. Antennae, legs and underside black, elytra pale testaceous. See *Xanthogaleruca seminigra*, p. 661.

11. Elytra with a heart-shaped depression behind scutellum. Body brown, head, antennae, scutellum, legs, meso- and metathorax black. On pronotum three large black spots. Length 4.3–4.7 mm. Described from Tibet (Xizang) *xizangana* CHEN et JIANG, 1981.
- . Elytra without depressions 12.



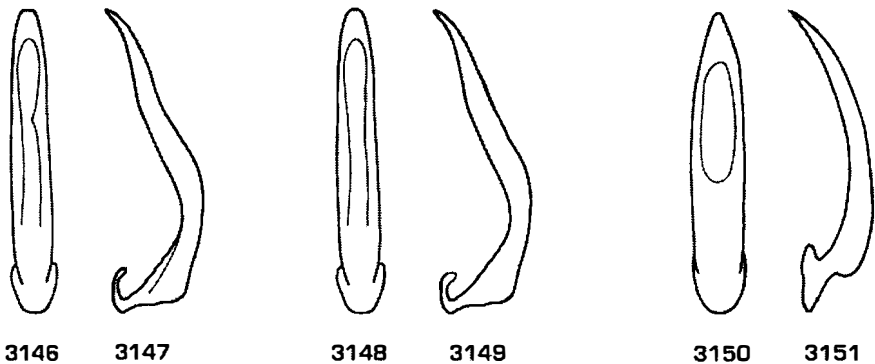
Figs 3133-3139. Aedeagus in dorsal and lateral view (3133 after MEDVEDEV 1992, remaining after WARCHALOWSKI 1994): 3133 – *Pyrrhalta maculicollis*; 3134, 3135 – *P. viburni*; 3136, 3137 – *P. lineola*. 3138, 3139 – *L. tenella*.

12. Elytral epipleura shortened to 2/3 length of lateral margin. Lateral margin of elytra convex, thickened posteriad. Flattened lateral margin of elytra in dorsal view not distinctly broader anteriorly. Middle of pronotum, antennae, scutellum, tibiae, tarsi and apices of femora on dorsal side black. Length 5.2–5.3 mm. Described from Japan (Honshu) *kawashimai* KIMOTO, 1964.
- . Femora black. Elytral epipleura distinct at least to 3/4 length of lateral margin 13.



Figs 3140-3145. Pygidium of male and female (after WARCHALOWSKI 1994): 3140, 3141 – *Pyrrhalta calmaniensis*; 3142, 3143 – *P. pusilla*; 3144, 3145 – *P. viburni*.

13. Femora black. Head black with dark reddish frontal tubercles, remaining parts of upper side reddish brown, underside of thorax and abdomen entirely lack. Lateral margins of pronotum sinuate before hind angles. Length 5.2–6.0 mm. Described from Japan (Honshu) **takeii** (CHŪJŌ, 1950).
- . Femora pale. Lateral margins of pronotum at most shortly emarginate before hind angles (*calmariensis* group = genus *Neogalerucella* CHŪJŌ auctorum) **14**.
14. Antennomeres bicolorous, basally pale and apically blackish, give an impression of being dark and light ringed. Flattened lateral margin of elytra in dorsal view distinctly broader behind humeral part. General view as in plate LXXVIII, **phot. 699**. Antennomeres Upper side dark beige, vertex and a spot in the middle of pronotum black. Length 4.5–6.0 mm (= *pici* LABOISSIÈRE, 1913, *maculicornis* FALDERMAN, 1837). From Italy one subspecies was described: on average larger, hind angles of pronotum more protruding, puncturation of upper side coarser (susp. *solarii* BURLINI, 1942). Transpalaeartic species, distributed from NW Africa and British Islands to Japan **lineola** (FABRICIUS, 1781).
- . Antennomeres not bicolorous. Flattened lateral margin of elytra in dorsal view not broader behind humeral part **15**.
15. Lateral margins of pronotum hairless and shining. Upperside yellowish clay, usually rather pale, with blackish pattern: a great spot on vertex, longitudinal median stripe on pronotum and a spot on humeral calli, usually prolonged and blurred posteriorly. Meso- and metasternum black. Abdomen black, anal sternite yellowish only. Apical margin of last abdominal sternite as in figs **1871**, **1872**. Aedeagus as in figs **3138**, **3139**. Length 3.0–4.1 mm (= *parva* HERBST, 1783, *semenovi* RYBAKOV, 1889). Variation: body very pale, almost entirely pale rust-yellowish, from Caspian area (ab. *flavidula* REITTER, 1912). Lives on *Rosaceae* (*Filipendula*, *Potentilla*). Distributed from Catalonia, eastern England and western Norway to basin of Amur and Ussuri **tenella** (LINNAEUS, 1761).
- . Lateral margins of pronotum punctured and covered by fine hairs **16**.



Figs 3146-3151. Aedeagus in dorsal and lateral view (3148, 3149 after MEDVEDEV 1992, remaining after WARCHAŁOWSKI 1994): 3146, 3147 – *Pyrrhalta calmariensis*; 3148, 3149 – *P. flavescens*; 3150, 3151 – *P. pusilla*.

16. Pronotum with black median stripe. Body colouring as in *tenella* (thesis 2). Last abdominal sternite as in figs **3140**, **3141**. Pygidium in male and female as in figs **3152**, **3153**. Aedeagus as in figs **3146**, **3147**. Length 3.9–5.3 mm. Variations: humeral spot absent (ab. *lythri* GYLLENHAL, 1813), a melanotic form, upperside entirely blackish (ab. *nigrina* DELAHON, 1913). Transpalaeartic species, distributed from Catalonia and The British Isles to Japan ***calmariensis*** (LINNAEUS, 1767).
- . Black median stripe on pronotum absent **17**.
17. Aedeagus (figs **3148**, **3149**) in apical half broadened, in dorsal view asymmetric. Upper side unicolorous, pale, antennae on dorsal side blackened. Length 4.0–5.0 mm. Here perhaps also *konishii* KIMOTO, 1963 (described from Japan, specific characters unknown, aedeagus not studied). Distributed in basins of Amur and Ussuri ***flavescens*** (WEISE, 1887).
- . Aedeagus as in figs **3150**, **3151**, in apical half not broadened. General body colouring as in *tenella* (thesis 15), but lighter. Last abdominal sternite as in figs **3142**, **3143**. Pygidium in male and female as in figs **3154**, **3155**. Length 3.6–4.6 mm. Distributed from Catalonia and The British Isles to Mongolia ***pusilla*** (DUFTSCHMID, 1825).

Genus ***Radyмна*** REITTER, 1912

Prophyllis REITTER, 1912, *Galerupipla* MAULIK, 1936

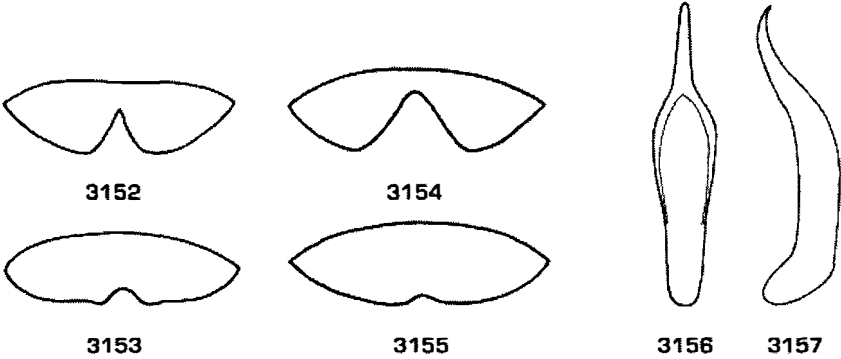
Key to species

1. Fourth antennomere shorter than 3. Upperside testaceous, on pronotum longitudinal median stripe and on each side a lateral spot black. On elytra seven spots: one common postmedian and on each elytron three (basal, premedian and postmedian lateral) black with feeble bronzy reflex. Length 3.8–4.2 mm. Described from N China (Kansu). Described as *Clitena*, here tentatively ranked as *Radyмна* ***maculipennis*** (CHEN, 1942).
- . Fourth antennomere longer than 3. Elytra unspotted, at most with shortened black sutural stripe **2**.
2. Fourth antennomere in male on underside slightly excavated, with a brush of setae. Body light rust-reddish, unicolorous (more rare typical form), usually occiput, scutellum and a longitudinal median stripe on pronotum black (more common ab. *subnigra* WEISE, 1878). Length 4.0–5.0 mm. Distributed in Asia Minor, Caucasian countries and Central Asia ***fischeri*** (FALDERMANN, 1837).
- . Fourth antennomere in male normal, without a brush of setae. Body colouring as in *fischeri* (thesis 1), but usually paler, uniformly pale testaceous or with darker longitudinal median stripe on pronotum. General view as in plate LXXVII, **phot. 685**. Length 4.2–5.4 mm. Distributed in Syria, Iran and Central Asia ***persica*** (FALDERMANN, 1837).

Genus ***Shaira*** MAULIK, 1936

In discussed area one species only, remaining 6 species distributed in India, China and Taiwan.

Black, elytra dark yellowish-brown, blackened along suture. Anterior part of pronotum brown, basal part blackish. Surface of pronotum apparently impunctate. Legs long and slender, hind metatarsus longer than remaining tarsomeres together. Length 6.3 mm. Described from Tibet (Xizang), based on one female only
 ***tenuipes*** CHEN et JIANG, 1981.



Figs 3152-3157. Pygidium of male and female, aedeagus in dorsal and lateral view (3156, 3157 after WARCHALOWSKI 2003, remaining after WARCHALOWSKI 1994): 3152, 3153 – *Pyrrhalta calmariensis*; 3154, 3155 – *P. pusilla*; 3156, 3157 – *P. subcoerulescens*.

Genus ***Theone*** GISTL, 1857
 Literature: MANDL 1968, 1970.

Genus *Theone* GISTL includes four species distributed from Caucasian countries to NW China (Sinkiang).

Key to species

- 1. Elytra stronger convex, with distinctly elevate, shining, smooth costae **2.**
- Elytra more flat, with feebly elevate, weakly shining, often punctured or rugose costae **3.**
- 2. On each elytron 3 costae. Body, antennae, legs and scutellum black, pronotum yellowish brown. Externally similar to *octocostata* (antithesis 2), but third costa entirely absent. Punctures on elytra very irregular, partly rugose, rugosities here and there fused into small elevate convexities. Length 9.0–11.0 mm. Distributed in Turkmenistan (Kopet Dag) ***filicornis*** (JAKOB, 1957).
- On each elytron 4 costae. Two discal and one lateral costa long, reachin from basal to apical part of elytra. Third costa distinct and shining, but narrower and shortened, present on hind part of elytron only. Body, antennae, legs and scutellum black or pitchy, pronotum and elytra uniformly brownish. Length 7.0–12.0 mm. Forms 8 subspecies: intervals rugosely punctate, pronotum and elytra yellowish brown (nominotypical subspecies, distributed from N Caspian area to Mongolia), intervals rugosely punctate, pronotum and elytra cinnamon brown. General view as in plate LXXVIII,

- phot. 700.** (subsp. *ovata* JAKOB, 1957, distributed in Kashmir and W Himalayas), intervals simply punctured, underside black (subsp. *afghanistanica* MANDL, 1968, distributed in NE Afghanistan), intervals simply punctured, underside pitchy, body larger, in male 8.0–9.5 mm, in female 9.0–12.0 mm (subsp. *ornata* JAKOB, 1957 from Tadzhikistan), intervals simply punctured, underside pitchy, body smaller, in male 7.0–8.5 mm, female 8.5–9.0 mm (subsp. *bucharica* MANDL, 1968), three further subspecies (subsp. *woehrli* MANDL, 1970, *lopatini* MANDL, 1970 and *beludshistanica* MANDL, 1970) described from Hindukush-area (sensu lato) are very similar to each other and, it seems, should to be treated together. Areas of distribution given above **octocostata** (WEISE, 1912).
3. Elytra very coarsely rugose, punctures almost invisible. Colouration of body as in *silphoides* (antithesis 3). Forms two subspecies: underside, antennae and legs black, length 10.0 mm, described from Margelan (nominotypical subspecies, one specimen known only); underside, antennae, legs and scutellum dark brown, pronotum and elytra brown, length in male under 7.0 mm, in female under 9.0 mm (subsp. *rugulosa* JAKOB, 1957, described from Transcaspia) **margelanica** KRAATZ, 1882.
- . Elytra rugose, rugose punctate or punctate. Body, antennae, legs and scutellum black, pronotum and elytra brown. Length 7.3–9.0 mm. Forms five subspecies, differing mainly by more or less distinct costae on elytra: on each elytron two elevate costae present (subsp. *scrobiculata* MANDL, 1968, described from E Kazakhstan), on each elytron 3 1/2 distinctly elevate costae (subsp. *costipennis* KIRSCH, 1860 from W Turkmenistan), on each elytron 2 1/2 distinct but weakly elevate costae (nominotypical subspecies broadly distributed from N Caspian area to NE Mongolia General view as in plate LXXVIII, **phot. 701**; on each elytron costae as in nominotypical subspecies, but not smooth, rather nothed (subsp. *artemisiae* JACOBSON, 1895 from SE Kazakhstan), on elytra costae strongly shortened and indistinct (subsp. *kuldshensis* Mandl, 1968 from E Kazakhstan and NW China) **silphoides** (DALMAN, 1823).

Genus *Tricholochmaea* LABOISSIÈRE, 1932

Genus *Tricholochmaea* LABOISSIÈRE contains nine species. One species (*punctipennis* MANNERHEIM, 1843) occurs in N America, remaining distributed mostly in E Asia.

Key to species

1. Pronotum 2.5 × broader than long **2.**
- . Pronotum at most 2 × broader than long **3.**
2. Upperside pale reddish or rust-yellow, pronotum usually paler than elytra. General view as in plate LXXVIII, **phot. 702**. Head rust-yellow, maxillae blackish, on vertex an blackish spot, often vertex and occiput black. Scutellum blackish. On pronotum often a blurred dark spot in the middle, in dark variations pronotum almost entirely darkened or blackish. Apex of aedeagus angulate. Underside, legs and antennae black, except 3–4 basal antennomeres often paler. Length 3.4–5.4 mm. Distributed in E Siberia, NE China and Japan (Honshu, Hokkaido, Kyushu, Shikoku) **semifulva** (JACOBY, 1885).

- . Underside and femora reddish brown, pronotum red or reddish without spots, elytra yellowish brown. Length about 4.0 mm. Distributed in NE China (Shansi, Hupeh) ...
..... **limbata** CHEN, 1942.
- 3. Body length over 5.0 mm. Pronotum, scutellum and elytra reddish brown, without blackish pattern, head black, frontal tubercles dark reddish. Underside, legs and antennae except basal 1–2 antennomeres black. Length 5.2–6.0 mm. Distributed in Japan (Honshu) **takeii** (CHŪJŌ, 1950).
- . Body length not over 5.0 mm. Body dirty brown, head partly, antenna, scutellum, underside and legs piceous or black. Externally similar to *Galerucella grisescens* (p. 647), but darker. Length 3.9–4.9 mm (= *rugosa* JACOBY, 1884, *mastersi* BLACKBURN, 1896, *vartiani* LOPATIN, 1966). Distributed in India, Sri Lanka, Indochina, Indonesia and Australia, reported also from Afghanistan, perhaps wrongly
..... **placida** (BALY, 1878).

Genus *Xanthogaleruca* LABOISSIÈRE, 1934

Genus *Xanthogaleruca* LABOISSIÈRE encloses three species.

Key to species

1. Ground colour of upper side in living insects yellow or yellowish grey, in dry specimens yellow clay or ochraceous. Black pattern formed by blackening of dorsal side of several basal antennomeres, frontal calli, spot on vertex, three spots on pronotum and on elytra by a long longitudinal stripe extending from humeral calli to apical part, a short longitudinal stripe at scutellum and by narrow blackening of sutural ridge. Upper side entirely covered by short, fine, adpressed hairs. Length 5.5–7.5 mm (= *xanthomelaena* SCHRANK, 1781, *ulmi* GEOFFROY, 1785). Variations: upper side blackish with blurred, pale longitudinal stripe on each elytron (ab. *obscuridorsis* ROUBAL, 1926), body black, epipleura and legs (partly) yellowish (ab. *nigra* CSIKI, 1953). Lives on elms (*Ulmus* L.). Distributed from Portugal, western France and Denmark to Caucasian countries and Central Asia **luteola** (MÜLLER, 1766).
- . Upper side differently coloured **2.**
2. Elytra dark brown usually with blue metallic sheen, rather densely pubescent. Remaining parts of body yellowish brown, on vertex and on central part of pronotum often black spots. Legs robust. General view as in plate LXXIX, **photo 703**. Aedeagus very characteristic (figs **3156**, **3157**). Length about 4.5 mm. Poorly studied species, distributed in Asia Minor **subcoerulescens** (WEISE, 1884).
- . Pronotum black with basal border narrowly rust-yellow or reddish. Antennae, legs and underside black, elytra pale testaceous. General view as in plate LXXIX, **photo 704**. Length 5.8–7.2 mm. Distributed in Japan (Honshu, Kyushu, Shikoku). Often ranked as *Pyrrhalta* (see genus *Pyrrhalta*, antithesis 10)
..... **seminigra** (JACOBY, 1875).

Genus *Zangastra* CHEN et JIANG, 1981

The genus *Zangastra* CHEN et JIANG includes 6 species; one species occur in Nepal, remaining five in the discussed area, all known from Tibet only.

Key to species

1. Body piceous, legs partly pale, apex of abdomen whitish yellow. Length 7.0 mm. Described from Tibet (Xizang), based on one male only **picea** JIANG, 1988.
 - . Elytra with distinct golden-green reflex or shine **2.**
2. Sculpture of pronotum with characteristic depressions and strong punctures. Body brown or castaneous, antennae pitchy black with pale apices of segments. Length 6.0–7.0 mm. Distributed in Tibet **tuberosa** CHEN et JIANG, 1981.
 - . Sculpture of pronotum different **3.**
3. Pronotum sculptured similar as in *tuberosa* (thesis 2), but not rugose and its puncturation much finer. Hairs on elytra relatively short, shorter as in other species of *Zangastra*. Length 6.5 mm. Described from Tibet (Xizang), based on one pair only ...
..... **nitidicollis** CHEN et JIANG, 1981.
 - . Sculpture of pronotum different **4.**
4. Pronotum with four depressions and a median longitudinal furrow, very sparsely and finely punctured, colouring of body as in *picea* (thesis 1). Length 6.0–7.5 mm. Described from Tibet (Xizang), based on one pair only **angusta** JIANG, 1988.
 - . Depressions on pronotum shallow, ill-defined, surface almost glabrous and impunctate. Head, pronotum and a basal spot on each elytron very pale, whitish-yellow, scutellum and underside dark brown or blackish. Length 6.0 mm. Described from Tibet (Xizang), based on one male only **pallidicollis** CHEN et JIANG, 1981.

Tribe *Gallerucidini*

Tribe *Gallerucidini* in recent catalogues considered as a section of the tribe *Sermylini* WILCOX, 1965, contains a few genera distributed mainly in the Oriental region. In E Palearctica area three genera are represented.

Key to genera

1. Pronotum with a transverse furrow. Puncturation of elytra entirely random
..... **Agelasa** (p. 662).
 - . Pronotum with two lateral or without any depressions. Puncturation of elytra forms longitudinal stripes, sometimes arranged in regular rows **2.**
2. Claws bifid. Body very large, 12.0–15.5 mm long **Yunaspes** (p. 664).
 - . Claws appendiculate (= *Eustetha* BALY, 1861, *Melospila* BALY, 1861, *Hylaspes* BALY, 1865, *Galerucida* CHAPUIS, 1875, *Coptomesa* WEISE, 1912, *Eusthetha* WEISE, 1924) ...
..... **Gallerucida** (p. 663).

Genus *Agelasa* MOTSCHULSKY, 1860

One species only. Elytra metallic green, pronotum orange. General view as in plate LXXIX, **photo 705**. Length 5.8–7.8 mm. Distributed in E Siberia, China and Japan ...
..... **nigriceps** MOTSCHULSKY, 1860.

Key to species

1. Elytra with distinct pattern or at least with numerous pale or dark dots **2.**
- . Elytra unicolorous, sometimes with differently coloured zones or iridescent, but without distinct pattern **7.**
2. Sutural stripe yellow **3.**
- . Sutural stripe black **4.**
3. Body black with weak bluish metallic reflex, on each elytron apical margin and three transverse stripes (basal, postmedian, preapical) and two longitudinal stripes (sutural and lateral) yellow. General view as in plate LXXIX, **photo 707**. Length 5.8–7.0 mm. Distributed in N China (Kansu) ***gansuica*** (CHEN, 1942).
- . Elytra yellowish with numerous, hollow-like black dots. General view as in plate LXXIX, **photo 703**. Length 7.0–7.8 mm. Distributed in S China (Sikang, Shansi, Sichuan, Yunnan), its appearance in discussed area not confirmed ***nigrofoveolata*** (FAIRMAIRE, 1889).
4. Elytra pale, yellowish or orange, suture narrowly and lateral margins basally blackish. Head, antennae, tibiae and tarsi black or blackish, pronotum and scutellum brown. Length 6.0–6.5 mm. Variation (unnamed): elytra uniformly pale, perhaps here also *heilongjiangana* YANG, 1994 described from NE China (Heilungkiang). Distributed in N China (Suiyuan, Hopei, Shansi) ***limbatella*** CHEN, 1992.
- . Elytra blackish with pale pattern **5.**
5. Punctures on elytra strong and uniform. Body black, on each elytron dark yellowish spot on humeral callus, a curved transverse stripe behind middle and transverse stripe before apex yellowish. Length about 6.5 mm. Distributed in Japan (Honshu, Shikoku) ***lewisii*** (JACOBY, 1885).
- . Punctures on elytra double, strong and fine **6.**
6. Body black, on elytra rather variable yellow or orange pattern as in plate LXXIX, **photo 708**. Length 7.4–9.8 mm (= *nigromaculata* BALY, 1861, *consociata* BALY, 1879). Widely distributed in E Siberia, China, Korea, Taiwan and Japan ***bifasciata*** MOTSCHULSKY, 1860.
- . Similar to *bifasciata* (thesis 6), but generally paler, dark parts of body with greenish metallic reflex, elytra pale yellowish, dark pattern brown, consisting mostly of short, longitudinal stripes. Length 7.0–8.0 mm. Insufficiently studied species, described from Wand N China (Sichuan, Kansu) ***aenescens*** WEISE, 1889.
7. Elytra entirely pitchy black with weak metallic reflex, their puncturation of two kinds, the large ones tending to form semiregular rows. Length about 7.0 mm. Male unknown. Described from E Mongolia, based on one female only ***submetallica*** GRESSIT et KIMOTO, 1961.
- . Elytra differently coloured **8.**
8. Upper side iridescent with strong metallic gloss, legs and antennae black. General view as in plate LXXIX, **photo 709**. Length 7.5–8.5 mm (= *seriata* FAIRMAIRE, 1878, *jacobsoni* OGLOBLIN, 1936). Widely distributed in E Siberia, Korea and N China approximately to the valley of Yang-Tse ***gloriosa*** (BALY, 1861).
- . Elytra entirely or partly pale, yellowish, reddish or brownish, sometimes with weak metallic reflex **9.**

9. Upper side entirely dark red red, with distinct, blue or bluish metallic reflex. Antennomeres 1–3 reddish, femora dark red to pitchy, remaining part of antennae, tibiae and tarsi black or blackish **10.**
- . Colouration of body different **11.**
10. Length of body over 7.0 mm. In male antennomeres 7–10 distinctly broadened. General view as in plate LXXIX, **photo 710**. Length 7.0–8.5 mm. Distributed in W and N China (Sichuan, Sikang, Kansu) ***aeneomicans*** (OGLOBLIN, 1936).
- . Length of body under 5.0 mm. Coloured as *aeneomicans* (thesis 10). In male antennae not distinctly broadened. Described from ?Tibet
..... ***rufometallica*** GRESSIT et KIMOTO, 1961.
11. Elytra entirely pale yellowish, pronotum darkened or blackish. Remaining parts of body coloured as in limbatella (thesis 4). General view as in plate LXXIX, **photo 711**. Length 6.8–8.0 mm. Described from Ussuria ***flavipennis*** (SOLSKY, 1872).
- . Upper side entirely pale. Anterior process of metasternum short, thickened, mesosternum almost horizontal. Body yellow strow, tibiae, tarsi and antennomeres 5–11 black. Length 8.0 mm. Described from Ussuria, based on one male only
..... ***flava*** OGLOBLIN, 1936.

Genus *Yunaspes* CHEN, 1976

Genus *Yunaspes* comprises two species, of these one species occurs in the discussed area. Upper side testaceous, underside brown, antennae dark yellowish; scutellum, knees and tarsi black. Elytra very densely punctate. Process of metasternum long, finger-shaped. Length 15.0–15.5 mm. Male unknown. Described from Tibet (Xizang)
..... ***medogensis*** JIANG, 1988.

Tribe *Luperini*

Key to genera

1. Antennae with 10 antennomeres. Elytral epipleura absent. Pronotum broadest in 1/3 of its length, approximately as broad as long and slightly broader than anterior part of elytra. Length of body about 4.0 mm ***Decarthrocera*** (p. 682).
- . Antennae with 11 antennomeres **2.**
2. Mid coxae widely separated, space between them at least as broad as diameter of coxa. Prothorax widened anteriorly, body outline remembers some species of *Chrysomela*. Upperside with metallic shine, length 4.4–6.0 mm ***Capula*** (p. 681).
- . Mid coxae contiguous or close, space between them much narrower than diameter of coxa **3.**
3. In male apical spine of posterior tibia thickened, spoon-shaped. A few species from S and W China ***Zangia*** (p. 721).
- . In male apical spine of posterior tibia normal or absent **4.**
4. Body outline unusual in *Galerucinae*. Pronotum narrow, longer than broad, head elongate, tempora as long as eyes, elytra shortened, pygidium exposed
..... ***Tschitscherinula*** (p. 720).
- . Not as above **5.**

5. Body outline unusual in *Galerucinae*. Length of body 2.5–3.8 mm, elytra and abdomen conspicuously broadened posteriad (see tribe *Galerucini*) ***Marseulia*** (p. 652).
 –. Not as above **6.**
6. Antennomeres 3–5 or 3–7 thickened, each elytron with four costae, upper side pubescent ***Falsoplatyoxantha*** (p. 686).
 –. Not as above **7.**
7. Hind claws conspicuously enlarged, about 4 × larger than in remaining legs. Punctuation of elytra arranged in regular rows, intervals distinctly convex, almost costae-shaped ***Doryscus*** (p. 682).
 –. Not as above **8.**
8. Epipleura absent. Body elongate, upperside testaceous or ochraceous with black or dark pattern ***Phyllobrotica*** (p. 711).
 –. Epipleura present at least in their anterior part **9.**
9. Posterior border of pronotum rectangularly emarginate near angle, as a result of which the angle is displaced antreiad **10.**
 –. Pronotum without rectangular emargination near posterior angle **11.**
10. Elytra with one or two longitudinal carinae starting from humerus ***Japonitata*** (p. 687).
 –. Elytra without carinae ***Euliroetis*** (p. 683).
11. Anterior and posterior border of pronotum unmarginated or at least apparently unmarginated. Large insects, body length over 8.5 mm **12.**
 –. At least anterior or posterior border of pronotum marginated **14.**
12. Pronotum strongly or at least distinctly narrowed behind, at anterior border broader than at base **13.**
 –. Pronotum not narrowed behind ***Meristata*** (p. 699).
13. Pronotum conspicuously broadened anteriorly, uniformly pale ***Spitiella*** (p. 716).
 –. Pronotum distinctly, but not conspicuously broadened anteriorly with a great black spot in the middle ***Paraspitiella*** (p. 709).
14. Claws bifid **15.**
 –. Claws appendiculate **20.**
15. Pronotum without transverse furrow or impression. Body bicolorous, yellowish orange with blue or green elytra **16.**
 –. Pronotum with transverse furrow, sometimes interrupted in the middle **17.**
16. Body length under 6.0 mm. Elytra green with lateral margins narrowly reddish. Species from E China and Japan ***Clerotilia*** (p. 681).
 –. Body length over 9.0 mm. Elytra unicolorous, dark blue. Species from Caucasian countries and N Iran ***Falsoexosoma*** (p. 686).
17. Tibiae unspined ***Hoplasoma*** (p. 687).
 –. Tibiae with spine at apex **18.**
18. Epipleura strongly narrowed behind basal 1/3 ***Aulacophora*** (p. 670).
 –. Epipleura narrowed gradually **19.**
19. Length under 8.5 mm. Elytron laterally with a carina ***Paragetocera*** (p. 708).
 –. Length over 11.0 mm. Elytron without carina ***Agetocera*** (p. 669).
20. Pronotum as broad as long, with longitudinal impression on each side. At basal margin, before scutellum, two tooth-like humps ***Cerophysella*** (p. 681).

- . Impressions on pronotum absent, transverse or roundish, basal margin without tooth-like humps **21.**
- 21. Pronotum evenly convex or flattened, without impressions **22.**
- . Pronotum with transverse furrow or lateral impressions **47.**
- 22. Basal border of pronotum margined near side only **Hamushia** (p. 686).
- . Basal border of pronotum entirely margined **23.**
- 23. Anterior border of pronotum unmargined or anterior and posterior border margined indistinctly **24.**
- . Anterior border of pronotum margined **26.**
- 24. Anterior and posterior border of pronotum indistinctly margined. Body *Luperus*-like, shorter than 3.2 mm, upper side dark obscure metallic green, underside black **Apteromicrus** (p. 669).
- . Anterior border of pronotum unmargined **25.**
- 25. Body length over 9.0 mm **Pseudoliroetis** (p. 713).
- . Body length under 5.0 mm **Erganoides** (p. 682).
- 26. First tarsomere of hind legs as long or longer than remaining tarsomeres together ...
..... **27.**
- . First tarsomere of hind legs shorter than remaining tarsomeres together **32.**
- 27. Antennomeres 2 and 3 equal or subequal in length
..... **Calomicrus** (partly) (p. 671).
- . Third antennomere at least 1.2 × or more longer than the second **28.**
- 28. Elytral epipleura suddenly narrowed at end of basal 1/3, at midlength distinctly over 2 × narrower than basally. Hind tibia usually with a long spine **29.**
- . Elytral epipleura narrowed gradually, at midlength wider than 1/2 of its basal breadth
..... **31.**
- 29. Anterior coxal cavities open **30.**
- . Anterior coxal cavities closed **Monolepta** (p. 700).
- 30. Length over 5.0 mm. On elytra blackish stripes along margins
..... **Atrachya** (p. 669).
- . Length under 4.0 mm. On elytron black longitudinal stripe run along the middle
..... **Medythia** (p. 699).
- 31. In male elytron with a pair of impressions or hollows behind scutellum, front without excavation **Paleosepharia** (p. 707).
- . In male elytra without impressions, frons deeply excavated **Macrima** (p. 698).
- 32. Antennomeres 2 and 3 very short, in male subequal, in female antennomere 3 somewhat longer than 2 **33.**
- . Antennomeres 2 and 3 not particularly short, or at least antennomere 3 much longer than 2 **36.**
- 33. Fore coxal cavities open **34.**
- . Fore coxal cavities closed here non-Palaeartic *Arthrotus* MOTSCHULSKY, 1857.
- 34. Fore and mid tibiae spined at apex. Length of body under 6.5 mm
..... **Tuomueria** (p. 720).
- . Fore and mid tibiae unarmed **35.**
- 35. Length of body under 6.5 mm, usually between 3.5–4.5 mm. Pronotum relatively large, species externally similar to *Calomicrus* (antithesis 45). Upper side (except for one doubtful species) metallic green or blue, abdomen often partly or entirely pale ...
..... **Taphinellina** (p. 717).

- Length of body 7.0–11.5 mm. Pronotum relatively small, species externally not similar to *Calomicrus* **Arthrotidea** (p. 669).
- 36. Labrum in anterior half at least laterally, moderately strong, irregularly punctured. Pronotum reddish, elytra metallic blue, green or black, length 5.0–8.5 mm **Cneorane** (p. 681).
- Labrum with a row of punctures at anterior margin **37**.
- 37. Epipleura distinct only before middle, in hind half extremely narrow, formed as double margin or entirely disappearing. Pronotum yellowish or reddish with 4–5 small, roundish black spots, elytra metallic blue or blue-black **Morphosphaera** (p. 704).
- Epipleura visible on their whole or almost whole length **38**.
- 38. Pygidium densely punctured in apical half only, basal half finely reticulate **Agelastica** (p. 668).
- Pygidium uniformly punctured **39**.
- 39. First tarsomere of hind tarsi at least as long as three remaining tarsomeres together **40**.
- First tarsomere much shorter than three remaining tarsomeres together **41**.
- 40. First tarsomere of hind tarsi approximately as long as three remaining tarsomeres together. Hind wings absent. Head and pronotum reddish, elytra bluish black with metallic sheen **Leptomona** (p. 688).
- First tarsomere of hind tarsi blackened basally, much longer than three remaining tarsomeres together. Hind wings developed. Elytra without metallic sheen (see *Monolepta*, antithesis 29).
- 41. Fore coxae separate by a narrow process of prosternum. Body rather broad. Upper side orange or bicolorous (pronotum orange or yellow, elytra black or metallic) **Exosoma** (p. 684).
- Fore coxae contiguous. Body rather slender **42**.
- 42. Apical sternite of abdomen in both sexes strongly transformed: in male deeply cut out and with characteristic process, in female with a longitudinal furrow and two parallel convexities **Nymphius** (p. 704).
- Apical sternite without characteristic particularities, in male trilobed, sometimes with a hollow only **43**.
- 43. Fore coxal cavities close **Euluperus** (p. 683).
- Fore cavities open **44**.
- 44. Third antennomere about as long as the second **45**.
- Third antennomere distinctly, at least 1 1/2 ×, but usually about 2 × longer than the second **Luperus** (p. 689).
- 45. Asiatic species. Upper side metallic blue, green or greenish-blue **46**.
- Not only Asiatic species. Upper side variously coloured. Length of body rarely and only slightly larger than 4.0 mm **Calomicrus** (p. 671).
- 46. Length of body over 4.0 mm **Scelolyperus** (p. 713).
- Length of body under 4.0 mm. Here smallest forms of some *Taphinellina* (p. 717).
- 47. Basal border of pronotum at least partly unmarginated **48**.
- Basal border of pronotum entirely margined **51**.
- 48. Basal border of pronotum unmarginated only near hind angles **49**.
- Basal border of pronotum unmarginated on its whole length **Paridea** (p. 709).
- 49. Pronotum with a large and deep fovea on each side of middle **50**.

- . Pronotum with two shallow subtransverse impressions laterally *Sphenoraia* (p. 715).
- 50. Pronotum orange, elytra green or blue-green with metallic shine *Sermylassa* (p. 715).
- . Pronotum black with pale lateral borders, elytra bicolorous *Himaplosonyx* (p. 687).
- 51. Elytra with costae below humeri *Zizonia* (p. 721).
- . Elytra without costae below humeri **52.**
- 52. Epipleura narrow on whole length **53.**
- . Epipleura distinctly broadened at least in basal 1/3 **55.**
- 53. Epipleura very narrow, only immediately at base somewhat broader. On pronotum three small and shallow, often somewhat indistinct impressions, one before scutellum, two other laterally. Hind femora slender *Liroetis* (p. 688).
- . Epipleura narrow, feebly and gradually narrowed from base to apex. Pronotum with two distinct sublateral impressions **54.**
- 54. Hind femora slightly thickened. Length of body at most 4.5 mm *Stenoluperus* (p. 716).
- . Hind femora always slender. Length of body at least 6.5 mm long *Mimastra* (p. 700).
- 55. Anterior border of pronotum entirely margined *Proegmena* (p. 712).
- . Anterior border of pronotum unmargined **56.**
- 56. Upper side covered by hairs (in the unique palaeartical species extremely short). Frons similar in both sexes *Trichomimastra* (p. 720).
- . Upper side bare, at most with several short hairs near apex of elytra. In male frons deeply excavated and with a process before antennal insertions *Fleutiauxia* (p. 686).

Genus *Agelastica* CHEVROLAT, 1837

To the genus *Agelastica* six species are ranked, but three of these (from S Africa, Sumatra and Australia) belong probably not here.

Key to species

- 1. Third antennomere 1.5 × and fourth 2 × longer than the second **2.**
- . Third antennomere as long as the second, fourth 1.5 × longer. Anterior angles of pronotum distinct. Length 6.0–7.2 mm. Possibly an E Palaeartical race of *alni* (thesis 2). Distributed in whole E Palaeartic from Jacutia to N China, Korea, Japan and Ryukyu Islands *coerulea* BALY, 1860.
- 2. Anterior angles of pronotum distinct. Length 6.0–7.0 mm (= *violacea* GEOFFROY, 1762, *nigroviolacea* GOEZE, 1777). General view as in plate LXXX, **phot. 712**. Distributed in Europe, Mediterranean area, Asia Minor, and W Siberia *alni* (LINNAEUS, 1758).
- . Anterior angles of pronotum obtuse. Length 7.0–8.6 mm. Usually ranked as C Asiatic race of *alni* (thesis 2) Distributed in Transcaspia, Iran, NW China and ?Mongolia *orientalis* BALY, 1878.

Genus *Agetocera* HOPE, 1840

23 species are included in the genus *Agetocera*. In the discussed area one species only. Head, pronotum, femora and antennomeres 1–10 rust yellow to reddish brown, distal part of tibiae, tarsi and antennomere 11 blackish, elytra black with purplish or greenish reflex. Length 11.5–12.0 mm (= *pulchella* CHAPUIS, 1875). General view as in plate LXXX, **phot. 713**. In male antennomere 8 very large, swollen, antennomere 9 with two strong swellings. Distributed from Indonesia and Birmania to India and Tibet
..... *hopei* BALY, 1865.

Genus *Apteromicrus* CHEN et JIANG, 1981

One species only. Upper side dark obscure metallic green, underside black, legs reddish, tarsomeres 3 and 4 piceous. Antennae gradually darkened towards apex, four apical antennomeres black. Length 2.7–3.1 mm. Described from Tibet (Xizang)
..... *flavipes* CHEN et JIANG, 1981.

Genus *Arthrotidea* CHEN, 1942

The genus *Arthrotidea* includes six species. Four species occur in the discussed area.

Key to species

1. Antennae yellow. Body uniformly rust-reddish, abdomen laterally blackened. Length 9.5 mm. Described from Tibet (Xizang), based on one female only
..... *rubrica* CHEN et JIANG, 1981.
- . Antennae blackish brown **2.**
2. Scutellum black. Body testaceous, elytra paler, antennae, apices of femora, tibiae, tarsi and underside darkened. Length 9.5–10.0 mm. Described from Tibet (Xizang) ...
..... *scutellaris* JIANG, 1988.
- . Scutellum testaceous or reddish **3.**
3. In male antennomeres 4–11 pubescent. Upper side yellowish, elytral suture pale brownish, antennae black, first antennomere fulvous. Tibiae and tarsi blackish brown. On pronotum before scutellum a small hollow. Length 8.0 mm. Described from Tibet (Xizang), based on one male only *cheni* YANG, 1996.
- . In male antennomeres 2–11 or 3–11 pubescent. Tibiae and tarsi blackish brown. Head and pronotum reddish, elytra yellow with basal part ochraceous. General view as in plate LXXX, **phot. 714**. Length 7.0–12.0 mm. Distributed from Yunnan to Sikang and Tibet (Xizang) *ruficollis* CHEN, 1942.

Genus *Atrachya* CHEVROLAT, 1837

To the genus *Atrachya* belong 27 species, distributed in a great part of Palaeotropical superregion, not only in Oriental region, but also in Afrika. In the discussed area one species only.

Body testaceous or pale rust-brownish, underside partly, basal part of femora, tarsi, antennomeres 4–11 and scutellum brown or blackish. Elytra pale with marginal and often also apical area black, sometimes whole hind and lateral parts of elytra blackened, rarely elytra entirely black. General view as in plate LXXX, **phot. 715**. Length 4.7–6.9 mm (= *discrepans* BALY, 1865 *nigripennis* MOTSCHULSKY, 1860 *praeusta* MOTSCHULSKY, 1860). Distributed in E Siberia, China and Japan *menetriesii* (FALDERMANN, 1835).

Genus *Aulacophora* CHEVROLAT, 1837

A large genus, comprising about 185 species, distributed mainly in eastern part of Palaeotropical superregion (SE Asia, Philippine Islands, Indonesia), several species also in New Guinea and Australia. To Palaearctic fauna belong a few species only.

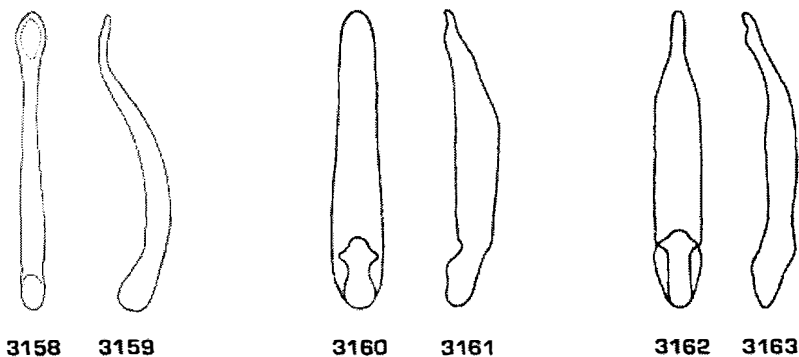
Key to species

1. Elytra black. Body dark yellow to pale rust-reddish; labrum, legs and sternum black. Length 6.5–7.5 mm (= *atripennis* HOPE, 1845 nec FABRICIUS, 1801). In Taiwan and Loo-Choo Islands forms a variation with bluish reflex on elytra, often considered as a subspecies (var. *nitidipennis* CHŪJŌ, 1935). Distributed in E Siberia, Korea, Japan and China *nigripennis* MOTSCHULSKY, 1857.
 - . Elytra entirely pale **2.**
2. Scutellum black or blackish. Legs largely pitchy. In male humerus bare and antennae not modified. Length about 7.0 mm. Distributed from Assam and Tibet to Taiwan *almora* MAULIK, 1926.
 - . Scutellum pale. In male first antennomere thickened, remains not modified. Four species, very similar to each other **3.**
3. In male humeral pubescence absent. Aedeagus not studied. Length about 7.0 mm. Distributed in Arabia (Oman), Pakistan, India, Sri Lanka and Maldives *calva* ANAND et COX, 1986.
 - . In male humeral pubescence present **4.**
4. In male humeral pubescence relatively long and dense. Aedeagus in lateral view in basal 2/3 almost straight, not wavy, on pronotum behind transverse furrow two convexities. In female anal sternite deeply, triangularly excised. General view as in plate LXXX, **phot. 716**. Length 5.9–7.6 mm (= *similis* OLIVIER, 1808, *femoralis* MOTSCHULSKY, 1857 and several other synonyms). Distributed in Afghanistan, India, Pakistan, E Siberia, Korea, China, Japan, Indochina, Indonesia and New Guinea *indica* (GMELIN, 1790).
 - . In male humeral pubescence short, sparsely scattered. Aedeagus in lateral view somewhat wavy, on pronotum behind transverse furrow two small, elevated tubercles. In female anal sternite shallowly excised. General view as in plate LXXX, **phot. 717**. Length 6.0–7.7 mm (= *nigriventris* Redtenbacher, 1850, *delata* Allard, 1888, *africana* Weise, 1903). Distributed in almost whole Tropical and Mediterranean Africa, S Balkans, Near East, Kuwait and Afghanistan *foveicollis* (LUCAS, 1849).

In the genus *Calomicrus* STEPHENS are included about 90 Eurasian and a few Ethiopian species. In discussed area occur about 57 species. *C. albanicus* CSIKI, 1940 from Albania, insufficiently described, not included in the key.

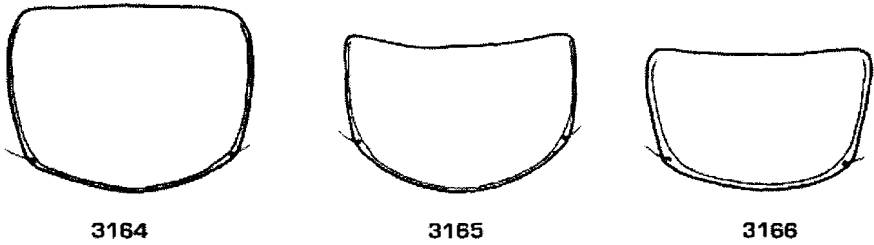
Key to species

1. Upper side entirely yellowish or testaceous, rarely darker brown-grey, but always uniformly coloured without contrasting black parts and always without metallic reflex **2.**
- At least frons and vertex black or black with metallic reflex **28.**
2. Claws very feebly appendiculate, sometimes almost simple. Claw tarsomere in all legs longer than in other species. Upper side very sparsely covered by long, erect hairs, particularly on latareal and apical part of elytra. Four species from Transcaspia **3.**
- Claws distinctly appendiculate **6.**
3. Body pale yellowish, head and pronotum somewhat darker, pale rust-yellow **4.**
- Upper side rather dark brown-grey. Lateral sides of pronotum slightly but distinctly rounded, basal margin arched. Apex of aedeagus triangularly sharpened. Length 2.7–3.5 mm. Described from Uzbekistan (Gissarskij Hrebet) *hissaricus* (OGLOBLIN, 1936).
4. First tarsomere of hind legs as long as the remaining together (without claws). Aedeagus (figs **3158**, **3159**) narrow, its apex broadened, spoon-like. Length 3.0–3.2 mm. Described from Tadzhikistan based on one couple *ghilarovi* LOPATIN, 1988.
- Upper side pale testaceous or yellowish. Lateral sides of pronotum and basal margin almost straight **5.**
5. Vertex finely reticulate. Apical part of aedeagus (figs **3160**, **3161**) rounded. Length 3.2–3.8 mm. Described from Turkmenistan *deserticola* (OGLOBLIN, 1936).
- Vertex smooth. Apical part of aedeagus (figs **3162**, **3163**) suddenly narrowed. Length 2.5–3.5 mm. Described from Turkmenistan *gussakovskiyi* (OGLOBLIN, 1936).



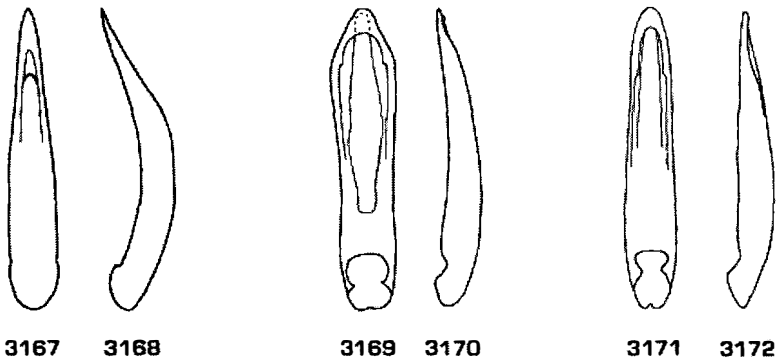
Figs 3158-3163. Aedeagus in dorsal and lateral view (3158, 3159 after LOPATIN 1988, remaining after LOPATIN 1963): 3158, 3159 – *Calomicrus ghilarovi*; 3160, 3161 – *C. deserticola*; 3162, 3163 – *C. gussakovskiyi*.

6. Species from western part of Mediterranean area (Canary Islands, Iberian Peninsula, Morocco, Algeria, Tunisia) 7.
- . Species distributed from eastern part of Mediterranean area, Asia Minor Near East, Caucasian countries and Transcaspia to E Asia and Japan 14.
7. Pronotum very distinctly narrowed posteriad. Length 3.5 mm. General view as in plate LXXX, **phot. 718**. Externally similar to *setulosus* (thesis 9), but differing by form of pronotum, blackened antennomeres 4–11 and lacking setae on lateral borders of elytra. Distributed in Morocco (Middle and High Atlas)
 *mercurini* (LABOISSIÈRE, 1917).
- . Pronotum formed normally 8.



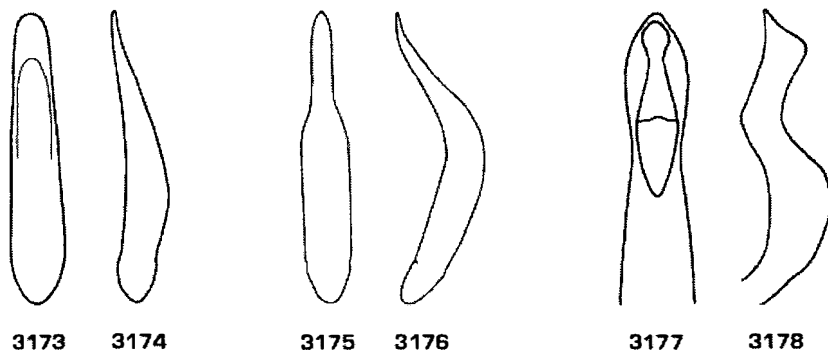
Figs 3164-3166. Outline of pronotum (after WARCHAŁOWSKI 1991): 3164 – *Calomicrus setulosus*; 3165 – *C. fallax*; 3166 – *C. nigritarsis*.

8. Pronotum long (fig. 3164) 9.
- . Pronotum short (figs 3165, 3166) 11.



Figs 3167-3172. Aedeagus in dorsal and lateral view (3167, 3168 after WARCHAŁOWSKI 1991; 3169, 3170 after WARCHAŁOWSKI 2003; 3171, 3172 after ISRAELSON 2000): 3167, 3168 – *Calomicrus setulosus*; 3169, 3170 – *C. wollastoni*; 3171, 3172 – *C. bispiniger*.

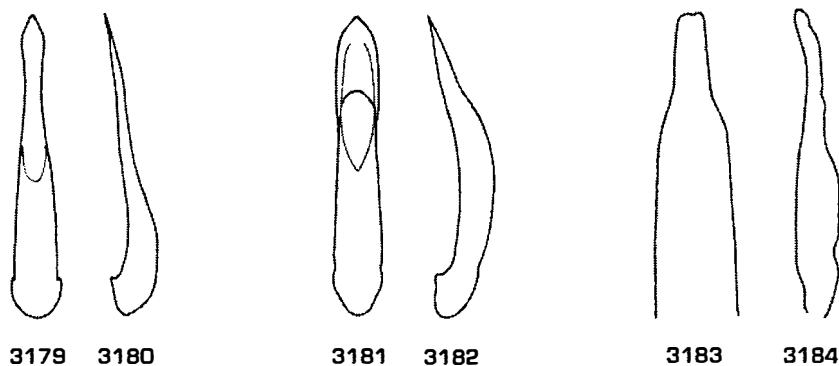
9. Underside pale, abdomen usually brownish. Elytra not only in hind part, but also anteriorly with sparse erect hairs along lateral borders. Antennae brownish in apical part only feebly darkened. Outline of pronotum as in fig. 3164. Aedeagus as in figs 3167, 3168. Length 2.9–3.2 mm (= *tripolitanus* PIC, 1939). Occurs in Algeria **setulosus** (WEISE, 1886).
- On underside at least abdomen blackish. Elytra with sparse erect hairs in hind part only **10.**
10. Body length under 4.5 mm. Hind metatarsus as long as remaining tarsomeres together. Aedeagus as in figs 1988, 1989. Endemic to Canary Islands (Tenerife, La Palma, Hierro) **wollastoni** PAIVA, 1861.
- Body length over 4.5 mm (to 5.5 mm). Hind metatarsus longer as remaining tarsomeres together, almost as long as in genus *Monolepta*. Aedeagus as in figs 1990, 1991. Endemic to Canary Islands, known from La Palma only **bispiniger** ISRAELSON, 1968.
11. Metasternum (in female) or metasternum and abdomen (in male) black. First tarsomere of hind tarsi long as three remaining tarsomeres together, its basis blackened **12.**
- Underside entirely pale. First tarsomere of hind tarsi as long as 2+3. Pronotum 1.5 × broader than long **13.**



Figs 3173-3178. Aedeagus in dorsal and lateral view (3173-3176 after WARCHAŁOWSKI 1991; 3177, 3178 after TOMOV 1985): 3173, 3174 – *Calomicrus fallax*; 3175, 3176 – *C. nigritarsis*; 3177, 3178 – *C. macedonicus*.

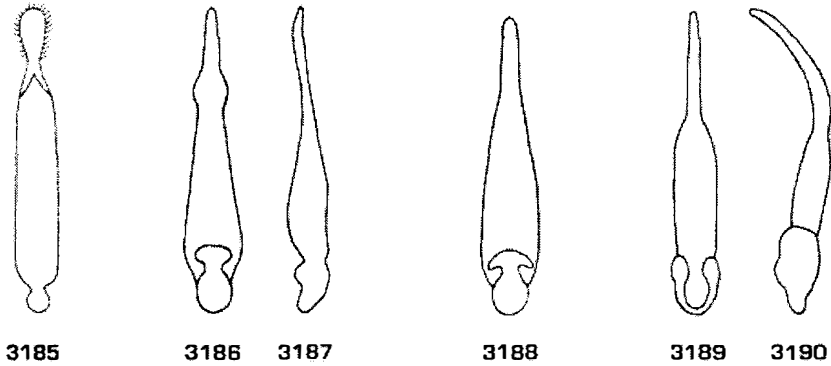
12. Head in proportion to pronotum not very large, pronotum (fig. 3165) longer. First tarsomere of hind tarsi as long as 2+3+4. Aedeagus as in figs 3173, 3174. Length 3.0–4.0 mm (= *?lethierryi* GUILLEBEAU, 1891, = *?porrectus* NORMAND, 1937). Known from southern Spain and Algeria **fallax** (JOANNIS, 1866).
- Head in proportion to pronotum very large, pronotum shorter. Aedeagus as in *sordidus* (thesis 31), but shorter. Length about 3.5 mm. Variation: upper side very pale (ab. *pallidipennis* CODINA, 1963). Described from MOROCCO **pardoi** (CODINA, 1961).
13. Larger. Pronotum 1.5 × broader than long. Length about 4.75 mm. Species insufficiently studied, described from Spain based on females only **espanoli** CODINA, 1963.

- . Smaller. N African species distributed in Morocco, Algeria and Tunisia. Pronotum (fig. 3166) more than 1.5 × broader than long. Aedeagus as in figs 3175, 3176. Length 3.0–3.8 mm (= ?*lethierryi* GUILLEBEAU, 1891). Variation: antennae and tarsi entirely pale (ab. *dissonus* CODINA, 1963). Distributed in Morocco and Algeria *nigritarsis* (JOANNIS, 1866).
- 14. Species from E Mediterran area, Asia Minor, Caucasian countries and Near East ... 15.
- . Species from Transcaspia, Iran, Afghanistan, Arabian Peninsula, Himalayan countries and E Asia 19.
- 15. Pronotum very short and broad (breadth/length about 1.6:1). Aedeagus as in figs 3177, 3178. Length 2.5–3.7 mm (= *balcanicus* APFELBECK, 1912 *macedonicus* TOMOV, 1975). Occurs in Macedonia *graecus* WEISE, 1886.
- . Pronotum not particularly short and broad 16.
- 16. Pronotum very long, almost as long as broad. Entirely yellow; only antennomeres 4–12 usually darkened, sometimes black. Aedeagus as in figs 3179, 3180. Length 2.5–3.7 mm (= *punctatissimus* FAIRMAIRE, 1884, *heydeni* WEISE, 1900). Distributed in eastern Turkey, Syria and Lebanon *lividus* (JOANNIS, 1866).
- . Pronotum not particularly long 17.
- 17. Larger. Underside pale. Aedeagus not studied. Length 3.5–4.0 mm (= *brevicollis* WEISE, 1898). Described from Syria, reported also from Israel *syriacus* (WEISE, 1889).
- . Smaller. Metasternum and abdomen pitchy brown or black. Aedeagus as in figs 3181, 3182. Length 2.3–3.2 mm. Distributed in Asia Minor *malkini* WARCHAŁOWSKI, 1991.
- 18. Species from Transcaspia, Iran, Afghanistan and Arabian Peninsula 19.
- . Species from Himalayan countries and E Asia 26.
- 19. Pronotum uniformly convex, without impressions. Underside pale. Species from Afghanistan and Iran 20.
- . Pronotum with a shallow transverse impression behind midlength 24.



Figs 3179–3184. Aedeagus in dorsal and lateral view (3179–3182 after WARCHAŁOWSKI 1991; 3183, 3184 after LOPATIN 1966): 3179, 3180 – *Calomicrus lividus*; 3181, 3182 – *C. malkini*; 3183, 3184 – *C. patanicus*.

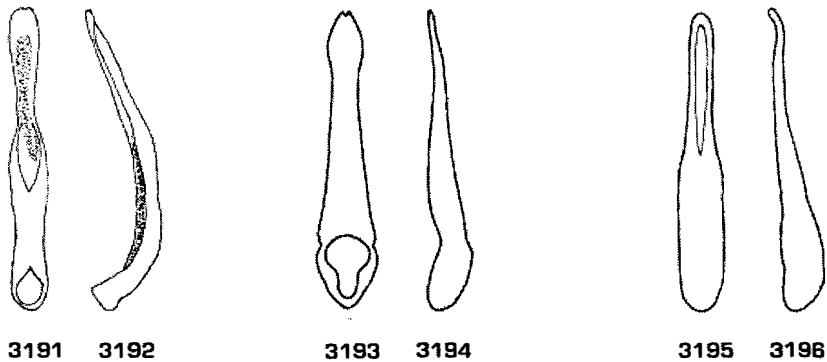
- 20. Upper side distinctly and rather deep punctate **21.**
- Puncturation of upperside very fine and shallow, almost disappearing **22.**
- 21. Pronotum long. Breadth of interstices on elytra feebly varied. Aedeagus as in figs **3183, 3184**. Length 3.0–3.2 mm. Described from Afghanistan *patanicus* (LOPATIN, 1966).
- Pronotum very short (breadth/length about 1.8). Aedeagus (fig. **3185**) strongly constricted behind apical part. Described from Afghanistan *nuristanicus* MEDVEDEV, 1985.



Figs 3185-3190. Aedeagus in dorsal and lateral view (3185 after MEDVEDEV 1985; 3186-3188 after LOPATIN 1963; 3189, 3190 after LOPATIN 1984): 3185 – *Calomicrus nuristanicus*; 3186, 3187 – *C. kaszabi*; 3188 – *C. ophthalmicus*; 3189, 3190 – *C. wilcoxi*.

- 22. First tarsomere of fore legs about 1.5 × longer than the second. Aedeagus as in figs **3186, 3187**. Length 3.8–4.8 mm. Described from Afghanistan *kaszabi* (LOPATIN, 1963).
- First tarsomere of fore legs about 1.5–2.0 × shorter than the second **23.**
- 23. Eyes large, very convex. Frons narrow, about as broad as diameter of eye. Aedeagus as in fig. **3188**. Length about 3.2 mm. Described from Iran *ophthalmicus* (OGLOBLIN, 1936).
- Eyes smaller, not very convex. Frons broader, about 1.5 broader than diameter of eye. Aedeagus as in figs **3189, 3190**. Length 2.7–4.5 mm. Described from Iran *wilcoxi* LOPATIN, 1984.
- 24. First tarsomere of hind legs very long, longer than the remaining tarsomeres (with claws). Aedeagus (figs **3191, 3192**) strongly narrowed before its midlength and further gradually broadened toward apex. Apex obtuse, very slightly emarginate. Length 4.0 mm. Described from Yemen based on one male only, perhaps belonging not here, but in the genus *Monolepta* (p. 700) *vanharteni* LOPATIN, 2001.
- First tarsomere of hind legs shorter than the remaining tarsomeres (without claws) together **25.**
- 25. Underside blackish. Aedeagus as in fig. **3193**. Length 3.0–4.5 mm. Described from Tadshikistan *populi* (LOPATIN, 1963).

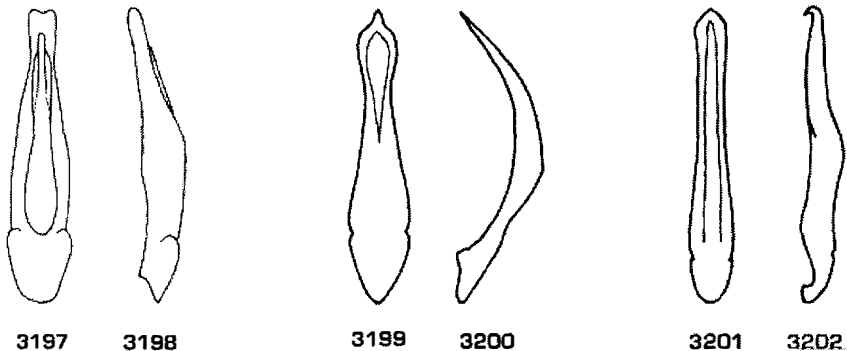
- . Underside pale. Aedeagus as in figs **3195**, **3196**. Length 2.5–3.4 mm. Described from Turkmenistan **sugonjaevi** (LOPATIN, 1983).
- 26. A smaller species from Bhutan. Body uniformly pale. Pronotum 1.5 × broader than long. Third antennomere barely longer than the second. Aedeagus not studied. Length 3.5–4.0 mm **fulvus** KIMOTO, 1977.
- . Relatively larger species from Indochina **26**.
- 27. Pronotum 1.5× broader than long. Legs always pale. Aedeagus not studied. Length 6.6–6.9 mm. Distributed in Laos and Vietnam **persimilis** KIMOTO, 1989.
- . Pronotum more transverse, 1.6–1.7 × broader than long. Tibiae and tarsi darkened, sometimes dark brown. Aedeagus not studied. Length 4.8–6.0 mm (= *flavus* JACOBY, 1892, nec ROSENHAUER, 1856). Described from Birmania **kimotoi** WARCHAŁOWSKI, 1991.
- 28. Pronotum and elytra yellowish, at most in hind part of pronotum sometimes three blurred, brownish spots; frons and vertex black **29**.
- . At least elytra with black pattern or entirely black **32**.



Figs 3191-3196. Aedeagus in dorsal and lateral view (3191, 3192 after LOPATIN 2001; 3193, 3194 after LOPATIN 1963; 3195, 3196 after LOPATIN 1983): 3191, 3192 – *Calomicrus vanharteni*; 3193, 3194 – *C. populi*; 3195, 3196 – *C. sugonjaevi*.

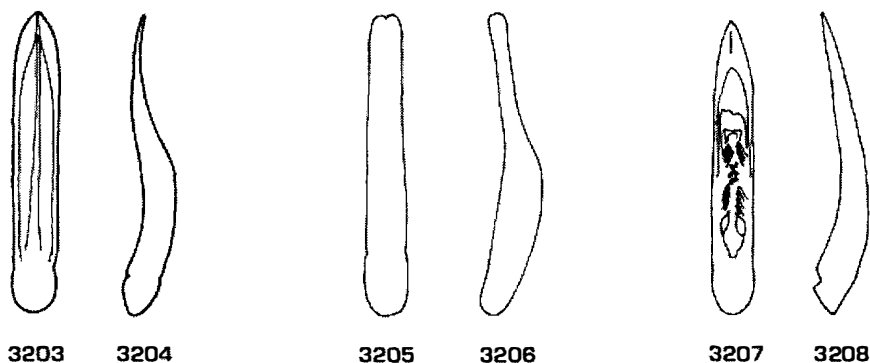
- 29. Pronotum relatively short (breadth/ length > 1.6), transversely impressed **30**.
- . Pronotum distinctly longer (breadth/length < 1.4) **31**.
- 30. Body smaller, aedeagus as in figs **3197**, **3198**. Length 2.8–3.2 mm. Distributed in S Spain **sordidus** (KIESENWETTER, 1873).
- . Body larger, length 3.2–4.8 mm. Here colour variation of *moralesi* described from Morocco (antithesis 40).
- 31. Pronotum with transverse impression. Species insufficiently studied, described from Algeria based on one female only **descarpentriesi** CODINA, 1963.
- . Pronotum without transverse impression. General view as in plate LXXX, **phot. 719**. Aedeagus as in figs **3199**, **3200**. In male femora slightly thickened, black with pale apex, in female femora entirely pale or (in darker coloured specimens) partly brown. Length 3.2–4.3 mm (= *atrocephalus* REITTER, 1895, *peyroni* PIC, 1899). Variations:

- elytra with a brownish or blackish apical spot (unnamed), darkened part of suture enlarged, forms a triangular spot around scutellum (unnamed). Distributed in Asia Minor and Syria *apicalis* DEMAISON, 1891.
32. Elytra yellowish with black or brown pattern **33**.
 - Elytra entirely dark (dark brown, black or black with metallic sheen) **37**.
33. Elytra pale, on each an apical spot brown or blackish. Suture often darkened in anterior 1/4 **34**.
 - Elytra pale with black sutural or sutural and lateral stripe, without apical spots **35**.
34. Spot on elytra situated on apex (colour variation of *apicalis*, antithesis 32).
 - Spot on elytra situated before apex. Length 4.0 mm (= *bimaculatus* PIC, 1907, nec PERRAUD, 1864). Species insufficiently studied, described from Algeria based on one female only *algericus* (WEISE, 1924).
35. Elytra with a triangular dark spot around scutellum. Length 3.3–3.8 mm, perhaps a colour variation of *apicalis* (antithesis 31) described from Lebanon, known as ab. *peyroni* PIC, 1899.
 - Elytra yellowish with black, rather broad, sutural stripe and with usually darkened lateral borders. Pronotum with blackened basal border and often with two black spots, usually fused with black basal stripe. Here belong two species, distinguishable only by shape of aedeagus **36**.
36. Apex of aedeagus (figs **3201**, **3202**) hooked. General view as in plate LXXX, **phot. 720**. Length 2.7–4.0 mm (= *brassicae* PANZER, 1794, *spartii* KOCH, 1803, *nigripennis* BEDEL, 1892 *nigrofasciatus* WEISE, 1886, *bipunctatus* LABOISSIÈRE, 1912, *talensis* PIC, 1912, *bedeli* WEISE, 1924, *luteovittatus* PIC, 1934). Distributed in great part of Europe: Iberian Peninsula, France, England, Germany, northern Italy, basin of Danube, Romania, Silesia and Ukraine *circumfusus* (MARSHAM, 1802).
 - Apex of aedeagus (figs **3203**, **3204**) not hooked. Length 2.7–3.6 mm. General view as in plate LXXXI, **phot. 721**. Variation: colour of body generally darker (ab. *intermedia* CODINA, 1963). Distributed in Iberian Peninsula, the ab. *intermedia* (if conspecific?) from Morocco *suturalis* (JOANNIS, 1866).



Figs 3197–3202. Aedeagus in dorsal and lateral view (3197, 3198 after VELA and BASTAZO 1990, remaining after WARCHAŁOWSKI 2001): 3197, 3198 – *Calomicrus sordidus*; 3199, 3200 – *C. apicalis*; 3201, 3202 – *C. circumfusus*.

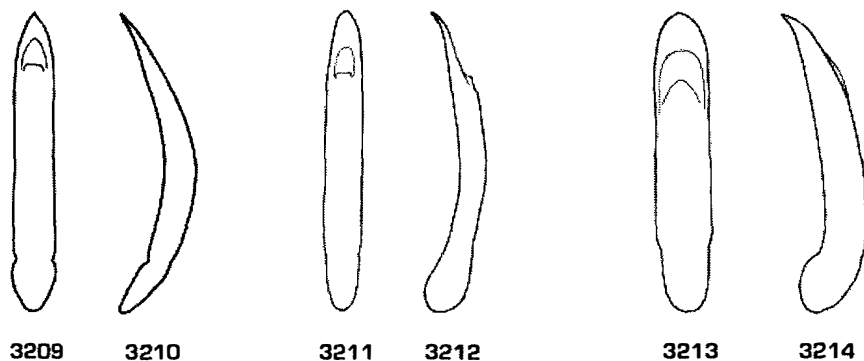
37. Pronotum pale, elytra blackish or black with metallic shine **38**.
 - Upper side entirely dark, black or black with metallic reflex **44**.
 38. Legs entirely pale yellowish (sometimes tarsi slightly darkened) **39**.
 - At least femora distinctly darkened **41**.
 39. Elytra with distinct, green, metallic sheen. Pronotum with three roundish impressions in hind part and with two longitudinal, short, shallow furrows anteriorly. Length about 4.0 mm. Aedeagus not studied. Described from southern Spain
 ***impressithorax*** (PIC, 1898).
 - Elytra pitchy black or pure black, without metallic sheen. Pronotum rather feebly transversely impressed **40**.



Figs 3203-3208. Aedeagus in dorsal and lateral view (3207, 3208 after VELA and GARCIA BERCERRA 1996, remaining after WARCHAŁOWSKI 1994): 3203, 3204 - *Calomicrus suturalis*; 3205, 3206 - *C. quercus*; 3207, 3208 - *C. doramasensis*.

40. Length of body 3.0-3.5 mm. Aedeagus as in figs **3205**, **3206**. Described from Algeria ***quercus*** (PIC, 1895).
 - Length of body 3.2-4.8 mm. Three species described from N Africa (*moralesi* CODINA, 1963, *kocheri* CODINA 1963, *prujai* CODINA, 1963) perhaps conspecific with *quercus* (thesis 41).
 41. Legs entirely dark brown to black. Aedeagus as in figs **3207**, **3208**. Length 2.8-3.5 mm. Distributed in Gran Canaria
 ***doramasensis*** VELA et GARCIA BERCERRA, 1996.
 - Legs yellowish, only femora darkened **42**.
 42. Underside of head light reddish **43**.
 - Head entirely dark. Aedeagus as in figs **3209**, **3210**. Length 2.8-4.2 mm (= *concolor* APFELBECK, 1912, *silvestris* WEISE, 1886). Distributed from Catalonia and northern France to Bulgaria, basin of Dnieper and Finland ***pinicola*** (DUFTSCHMID, 1825).
 43. Distributed in Alps. Aedeagus as in figs **3211**, **3212**. Length 2.9-4.8 mm
 ***gularis*** (GREDLER, 1857).
 - Species insufficiently described from Asia Minor. Length 4.0-4.5 mm
 ***angorensis*** (PIC, 1912).

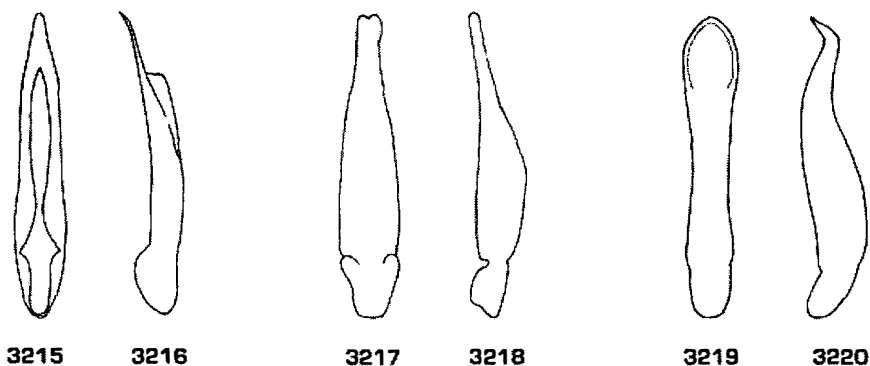
44. Upper side dark, often beautiful blue with distinct metallic sheen. Legs pale yellowish, hind and mid femora sometimes more or less darkened basally **45**.
 - Upper side black, without metallic sheen, at most with very feeble aeneous reflex **49**.
45. Upper side with metallic shine, two last abdominal sternites testaceous. Hind wings absent. Two species described from Tibet (supposedly not congeneric with remaining *Calomicrus*, perhaps belonging to genus *Taphinellina*) **46**.
 - Colouring of body not as above **47**.
46. Upper side purplish-aeneous, underside except two last abdominal sternites black with blue shine, antennae black. Aedeagus not studied. Length 4.0 mm. Described from Tibet (Xizang) based on one male only **mainlingus** CHEN et JIANG, 1981.
 - Upper side metallic blue, underside except two last abdominal sternites black, antennae black. Length 4.0–4.5 mm. Described based on one male and two females from Tibet (Quinghai) **yushunicus** CHEN et JIANG, 1981.
47. Puncturation of elytra rather deep and dense, interstices as broad as diameter of punctures. Metallic shine of upper side not blue, but greenish with weak golden hue. Antennae entirely black. Male unknown. Length 3.5–3.7 mm. Described from Tadshikistan **darvazicus** (LOPATIN, 1975).
 - Puncturation of elytra fine, metallic shine of upper side usually blue, more rarely violaceous or black-green, at least underside of basal antennomeres rust-brown or yellowish **48**.



Figs 3209-3214. Aedeagus in dorsal and lateral view (3209, 3210 after WARCHAŁOWSKI 1994, remaining after WARCHAŁOWSKI 2003): 3209, 3210 – *Calomicrus pinicola*; 3211, 3212 – *C. gularis*; 3213, 3214 – *C. chevrolati*.

48. Tubular part of aedeagus in its apical 1/3 not distinctly narrowed (figs **3213**, **3214**). Length 3.4–4.8 mm. Distributed in Greece and Near East. Possibly conspecific with *Luperus chevrolati* JOANNIS, 1866 **azureus** (FAIRMAIRE, 1884).
 - Tubular part of aedeagus in its apical 1/3 much narrower than at base, the narrowed apical part long, at least 1/3 as long as the tubular part. Length 4.8 mm (male) to 5.2 mm (female). Described from Armenia **nairicus** LOPATIN, 1990.

49. Pronotum with transverse depression **50**.
 - Pronotum without transverse depression, evenly convex **51**.
 50. Femora entirely pale. Aedeagus as in figs **3217**, **3218**. Length 2.7–3.8 mm. Distributed in southern Spain **foveolatus** (ROSENHAUER, 1856).
 - Femora darkened. Aedeagus not studied. Length about 3.0 mm. Described from Isle Kos (Sporades) **cous** (WEISE, 1889).



Figs 3215–3220. Aedeagus in dorsal and lateral view (3215, 3216 after LOPATIN 1990, remaining after WARCHAŁOWSKI 2003): 3215, 3216 – *Calomicrus nairicus*; 3217, 3218 – *C. foveolatus*; 3219, 3220 – *C. rottenbergi*.

51. Femora darkened **52**.
 - Femora entirely pale or only basally slightly darkened **53**.
 52. First tarsomere of hind legs as long as 2+3. Frontal tubercles black. Length 3.9–4.2 mm. Described from Transcaucasia **koenigi** (JACOBSON, 1898).
 - First tarsomere of hind legs longer than 2+3. Frontal tubercles yellow. Aedeagus not studied. Length 3.5–4.5 mm. Described from Kirghizstan **palii** (LOPATIN, 1965).
 53. Femora entirely pale **54**.
 - Femora basally slightly darkened. Anterior part of head testaceous. General view as in plate LXXXI, **phot. 722**. Aedeagus not studied. Length about 4.0 mm. Described from Caucase. In opinion of some authors synonymous with *koenigi* (thesis 53) ...
 **kasikoporanus** PIC, 1912.
 54. Larger. Body black except for legs and base of antennae. Upper side smooth and shining, pronotum very finely punctate on basal and lateral borders. Length 6.0 mm. Aedeagus not studied. Described from Morocco
 **carbunculus** (PEYERIMHOFF, 1949).
 - Smaller. Aedeagus as in figs **3219**, **3220**. Head black, mouth parts brownish red. Length 3.5–4.0 mm. Described from Sicily, probably endemic
 **rottenbergi** (RAGUSA, 1873).

Genus *Capula* JACOBSON, 1925

The genus *Capula* comprises 4 species distributed in China; in the discussed area one species. Body black with rather weak greenish, cupreous or blue metallic shine. General view as in plate LXXXI, **phot. 723**. Length 4.4–6.0 mm. Distributed in Tibet and in neighbouring provinces (Sikang, Tsinghai) *metallica* JACOBSON, 1925.

Genus *Cerophysella* LABOISSIÈRE, 1930

Genus *Cerophysella* includes five species. In discussed area one species only. Body elongate, shining, rust-yellow. Abdomen, antennomeres 4–11, meso- and metasternum black, basal part of femora, apical part of tibiae and entire tarsi dark brown. In male behind scutellum a heart-shaped hollow. Length 6.6 mm (= *tonkinensis* LABOISSIÈRE, 1930). Distributed from Sri Lanka to S China and Vietnam, reported also from Japan (Kyushu) *basalis* (BALY, 1874).

Genus *Clerotilia* JACOBY, 1885

One species only. Oblong, subparallel-sided. Antennae black, long. Elytra finely granulate and distinctly punctate, metallic green with lateral and apical margins narrowly brownish-red. Remaining parts of body brownish-red. General view as in plate LXXXI, **phot. 724**. Length 4.3–5.8 mm. Distributed in Japan (Honshu, Shikoku, Kyushu) and in E China *flavomarginata* JACOBY, 1885.

Genus *Cneorane* BALY, 1865

46 species distributed mainly in India, S China, Indochina and Indonesia. From the discussed area three species were reported.

Key to species

1. Legs entirely orange or tibiae slightly darkened in apical part. Elytra shining, green or bluish green. Length 5.5–8.2 mm (= *cyanipennis* CHUJO, 1938, *rufipes* WEISE, 1889). General view as in plate LXXXI, **phot. 725**. Distributed in E Siberia, Korea and China *violaceipennis* ALLARD, 1889.
- . At least hind legs entirely blackish, usually mid and hind legs strongly darkened. Elytra deep blue or dark violaceous, often almost black. Length 6.0–8.4 mm. (Here perhaps also *C. coeruleipes* CHEN et JIANG, 1976, described from Tibet without indication of differential characters, based on one female only). Distributed in China, Korea and Japan *elegans* BALY, 1874.

Genus *Decarthrocera* LABOISSIÈRE, 1937

A doubtful genus, belonging supposedly to Aethiopian fauna, described based on one specimen from S Algeria. Its systematic position also unclear, in catalogues sometimes cited as representative of the subfamily *Alticinae*. One species only. Body black, antennae and tarsi pale yellowish, articles of antennomeres and tarsomeres darkened at apex. Aedeagus not studied. Length 4.1 mm. Female unknown. Described from SE Algeria, the unique specimen found near Tébessa *viberti* LABOISSIÈRE, 1937.

Genus *Doryscus* JACOBY, 1887

Six species belong to the genus *Doryscus* JACOBY, of these one species occur in the discussed area. Body testaceous, in darker coloured specimens head, basal part of elytra and underside (partly) brownish. Elytra with 10 double rows of punctures. Interstices between paired rows strongly convex, smooth and shining. Claws of fore and mid legs small, appendiculate, claws of hind legs about 4 × larger, simple, curved. Length 4.4–4.9 mm (= *chujoi* TAKIZAWA, 1980). General view as in plate LXXXI, **phot. 726**. Perhaps conspecific with *testaceus* JACOBY, 1887. Distributed in Korea, Japan (Hokkaido) and Taiwan *varians* GRESSITT et KIMOTO, 1961.

Genus *Erganoides* JACOBY, 1903

The genus *Erganoides* JACOBY includes 11 species distributed in China, Thailand, Bhutan and India; three species occur in the discussed area.

Key to species

1. Elytral punctures extremely fine, often indistinct. Pronotum 1.5 × as broad as long, black or rust-yellow with a great, blurred blackish spot in the middle, without metallic reflex. Elytra metallic blue, abdomen or whole underside rust-yellow. Legs dark. Length 3.5–4.0 mm. Variation: legs, epipleura and a narrow lateral stripe on elytra yellowish (ab. *mundulus* WEISE, 1889). Distributed in C and N China (Sichuan, Kansu, Hupeh, Shensi) *capito* (WEISE, 1889).
- . Elytral punctures fine but distinct 2.
2. Abdomen pale. Dark blue, greenish or bronzy, scutellum black. Pronotum barely broader than long, with evenly rounded lateral margins, with a hollow before scutellum. Legs black with metallic reflex on femora, basal part of tibiae sometimes brown. Length 4.0–5.0 mm (= *hedini* LABOISSIÈRE, 1935). Distributed in China (Sichuan, Kansu, Sikang, Hupeh) *punctulatus* (WEISE, 1889).
- . Abdomen black with blue metallic shine and with posterior borders of sternites 1–4 narrowly red-brown. Remaining parts of body black with blue metallic reflex, antennomeres 3–11 pure black. Length about 4.0 mm. Distributed in China (Sikang) and Tibet (Xizang) *similis* CHEN, 1942.

Genus *Euliroetis* OGLOBLIN, 1936

The genus *Euliroetis* OGLOBLIN comprises 8 species; of these five occur in the discussed area.

Key to species

1. Pronotum punctured in hind part along basal border **2**.
- Pronotum smooth, without puncturation **4**.
2. Elytra black, head, pronotum and abdomen rust-yellow or pale reddish-brown. Length 5.8–6.6 mm. Variation: abdomen black (unnamed). Distributed in Japan (Honshu, Kyushu) **abdominalis** (BALY, 1874).
- Elytra bicolorous **3**.
3. Black sutural stripe in hind part strongly, triangularly broadened, almost reaching lateral margin. In male fifth abdominal sternite with deep, smooth excavation. Legs brownish, tarsi, apical part of tibiae and apices of femora black. Length about 6.0 mm. Variation: legs almost entirely blackish (ab. *obscuripes* OGLOBLIN, 1936). Distributed from N Vietnam and C China to basin of Amur **lameyi** LABOISSIÈRE, 1929.
- Black sutural stripe without triangular broadening. Head and pronotum reddish, elytra black with 2 large yellow spots on each, legs dark yellow with dorsal edge darkened, tarsi dark brown or blackish. In male abdominal sternites 1 and 2 split, on sternites 4 and 5 a very deep excavation. General view as in plate LXXXI, **phot. 727**. Length 4.5–5.8 mm. Variation: head dark (ab. *melanocephala* BOWDITCH, 1925). Distributed in E Siberia, Korea, N China and Japan (Kyushu) **ornata** (BALY, 1874).
4. Elytra pale with broad black sutural stripe reaching 5/6 elytral length. Head and pronotum rust yellow, ground of elytra pale yellow. Legs dark yellow, tarsi and antenna darkened. General view as in plate LXXXI, **phot. 728**. On male deep abdominal excavation on sternites 2–5. Length 5.0–6.2 mm. Distributed in China (from Kiangsu to Kansu and Sikang) **suturalis** (LABOISSIÈRE, 1929).
- Elytra without black pattern. Upper side reddish brown, head black, dorsal side of femora and tibiae blackened, tarsi black. Length 4.5 mm. Described from Japan (Kyushu) **nigripes** (BALY, 1874).

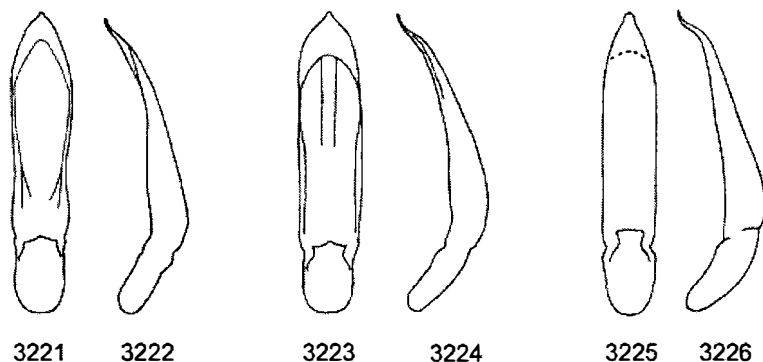
Genus *Euluperus* WEISE, 1886

Genus *Euluperus* WEISE comprises four species distributed in Europe and Near East. The fifth species, perhaps wrongly ranked, was described from equatorial Africa.

Key to species

1. All femora blackish with pale apex **2**.
- Legs entirely pale yellowish except pitchy claw tarsomeres and blackish base of hind femora. Upper side black-blue. Four basal antennomeres entirely pale, antennomere 5 darkened in apical part, antennomeres 6–11 pitchy. Lateral marginal ridge of pronotum in anterior part thickened. Aedeagus as in figs **3221**, **3222**. Length 4.5 mm. Described based on one male from Israel only **hermonensis** LOPATIN, 1997.

2. Smaller. Body length 3.2–4.4 mm. Sides of apical part of aedeagus (figs **3223**, **3224**) sinuate (= *costalis* JOANNIS, 1866). Distributed in south-western part of Balkan Peninsula (Dalmatia, Hercegovina, Albania, north-western Greece) **cyaneus** (JOANNIS, 1866).
 --. Larger. Body length 4.2–6.2 mm. Two species very similar to each other **3**.



Figs 3221-3228. Aedeagus in dorsal and lateral view (3221, 3222 after LOPATIN 1997, remaining after WARCHAŁOWSKI 1994): 3221, 3222 – *Euluperus hermonensis*; 3223, 3224 – *E. cyaneus*; 3225, 3226 – *E. xanthopus*; 3227, 3228 – *E. major*.

3. Tubular part of aedeagus (figs **3225**, **3226**) in lateral view distinctly bent. Upper side black with feeble but distinct blue reflex. Knees, tibiae, tarsi and 4–6 basal antennomeres yellow. Length 4.2–5.1 mm (= ? *chevrolati* JOANNIS, 1865, *fossulatus* JOANNIS, 1865, *tritici* ZABARINSKY, 1891, *violaceus* HAROLD, 187). Distributed in Austria, basin of Danube, Romania, Bulgaria, Ukraine, Asia Minor, Caucassian countries, Syria and (?) Kazakhstan. Often confused with *Calomicrus azureus* (FAIRMAIRE) **xanthopus** (DUFTSCHMID, 1825).
 --. Tubular part of aedeagus (figs **3227**, **3228**) in lateral view almost straight. Colouration of body as in *xanthopus* (thesis 3). General view as in plate LXXXI, **phot. 729**. Length 4.6–6.2 mm. Distributed in Romania, Bulgaria, reported also from Turkey ... **major** WEISE, 1886.

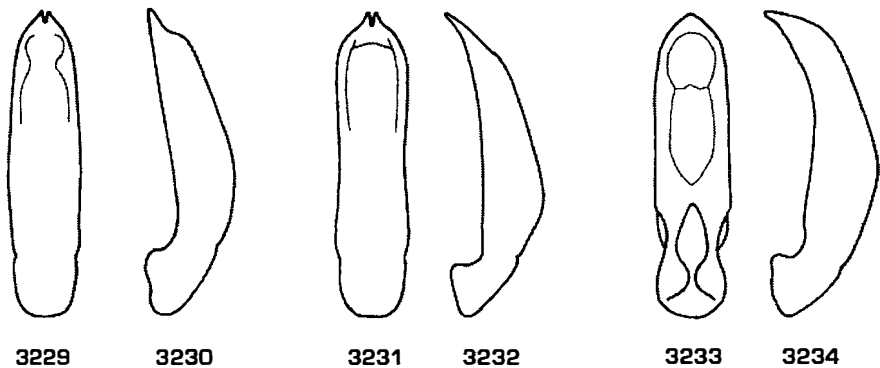
Genus *Exosoma* JACOBY, 1903

A large genus, including almost 100 species distributed mainly in equatorial and S Africa. Two further species described from Taiwan and Indonesia probably not congeneric. In discussed area 7 species.

Key to species

1. Upper side entirely reddish or orange **2**.

- Upper side bicolorous: pronotum yellowish or reddish, elytra black with or without metallic sheen **3.**
- 2. Abdomen orange or dark yellow. Head, mesosternum, metasternum and legs black. General view as in plate LXXXII, **phot. 730**. Aedeagus as in figs **3229, 3230**. Length 7.0–9.0 mm (= *testaceum* FABRICIUS, 1775, *nigripes* SCHÖNHERR, 1808, *abdominalis* SCHÖNHERR, 1808). Variation: pronotum darkened, brownish or blackish (ab. *hosti* LABOISSIÈRE, 1912). Distributed in France, Italy, Iberian Peninsula, Morocco, Algeria and Tunisia **lusitanicum** (LINNAEUS, 1767).
- Abdomen black. Described from Algeria based on one specimen only. A doubtful species, perhaps a colour aberration of *lusitanicum* **theryi** (GUILLEBEAU, 1897).
- 3. Elytra with metallic sheen or reflex **4.**
- Elytra pure black **5.**
- 4. Metallic sheen of elytra strong, green or greenish-blue, rarely dark blue. Head bicolorous, his anterior part yellow, vertex black. General view as in plate LXXXII, **phot. 731**. Legs and abdomen yellow, meso- and metasternum blackish. Length 7.2–8.6 mm. Distributed in Asia Minor and in Caucasian countries **flavipes** (HEYDEN, 1878).
- Metallic sheen of elytra distinct but rather feeble, usually bluish. Head usually entirely black. Legs black with reddish articulations, abdomen brownish or blackish. General view as in plate LXXXII, **phot. 7320**. Apex of aedeagus (figs **3231, 3232**) incised. Length 5.8–7.2 mm (= *cyanoptera* KRYNICKI, 1832, *luteicollis* GEBLER, 1830, *triumphans* FALDERMANN, 1837). Variation: scutellum red, legd and abdomen dark red (ab. *russica* PIC, 1915). Distributed in eastern Ukraine and basin of Caspian Sea **collare** (HUMMEL, 1825).



Figs 3229-3234. Aedeagus in dorsal and lateral view (after WARCHAŁOWSKI 1994): 3229, 3230 – *Exosoma lusitanicum*; 3231, 3232 – *E. collare*; 3233, 3234 – *E. gaudionis*.

- 5. Abdomen yellow. Length 6.4–7.2 mm. Distributed in Syria **thoracicum** (REDTENBACHER, 1843).
- Abdomen black, aedeagus apically not incised **6.**

6. On average larger. Body robust, elytra shining. Apex of aedeagus obtuse (figs **3233**, **3234**). Length 6.8–8.7 mm (= ?*albanicum* MESCHNIGG, 1934). Distributed in southern part of Balkan Peninsula (Albania, Greece, Bulgaria) *gaudionis* (REICHE, 1862).
- . On average smaller. Body more slender, elytra particularly in hind part reticulate, feebly shining. Apex of aedeagus slightly sharpened. Length 5.8–7.2 mm. Distributed in Asia Minor and in Caucasian countries *neglectum* MOHR, 1968.

Genus *Falsoexosoma* PIC, 1926

One species only. Body elongate, slender, elytra with parallel sides. Antennomeres 4–11 black, elytra deep blue with metallic sheen, shining, remaining parts of body yellowish orange. General view as in plate LXXXII, **phot. 733**. Length 9.5–13.0 mm. Described from northern Iran (Kopet-Dag mts.), reported also from Transcaucasia *cyanipectus* (REITTER, 1902).

Genus *Falsoplatyxantha* Pic, 1927

Genus *Falsoplatyxantha* comprises three species. A doubtful species, described based on one wrongly labelled specimen, was reputedly reported in Asia Minor, but probably distributed in India and possibly not congeneric with both other species (from India and Indochina). Body black, upper side testaceous, covered by grey pubescence, on pronotum one median longitudinal stripe and two lateral spots black. Four costae on each elytron distinct. Length 8.0 mm. Distribution unclear, probably a Palaeotropical species *diversicornis* PIC, 1931.

Genus *Fleutiauxia* LABOISSIÈRE, 1933

Literature: YANG 1993.

Eleven species distributed mainly in China; of these one species occurs in discussed area. Body black, elytra dark blue, anterior part of head yellowish. Antenna brown or blackish, paler in basal part. Hind legs pitchy, mid legs brown, fore legs yellow with blackish dorsal edge of tibia and femora, fore femora basally blackish. In male frons with cavity, in the middle of its hind border a small mushroom-shaped process. General view as in plate LXXXII, **phot. 734**. Length 5.0–6.5 mm. Distributed in E Siberia, Korea, N China and Japan (Hokkaido, Honshu, Shikoku, Kyushu) *armata* (BALY, 1874).

Genus *Hamushia* CHŪJŌ, 1956

Genus *Hamushia* is endemic to Japan; it comprises two species, in dorsal view similar to a rather small *Gallerucida* (p. 663) or *Sphenoraia* (p. 715), but without impressions on pronotum.

Key to species

1. Third antennomere distinctly shorter than fourth. Body black, on each elytron two pale yellowish markings at base and at apex. The apical spot rather transverse. Length 5.0–5.5 mm. Distributed in Japan (Honshu) **eburata** (HAROLD, 1879).
- . Third antennomere subequal to fourth. Colouring of body as in *eburata* (thesis 1), but pale markings on elytra are larger, the apical spot rather oblique. Length 5.0–5.5 mm. Distributed in Japan (Honshu, Shikoku, Kyushu) **konishii** CHŪJŌ, 1956.

Genus *Himaplosonyx* CHEN, 1976

One species only. Externally resembles the (here not discussed) Palaeotropical genus *Aplosonyx* CHEVROLAT, 1837. Disc of pronotum and elytra black with cupreous reflex. Lateral borders of pronotum reddish brown. Basal, lateral and apical borders of elytra also reddish brown. Pronotum finer punctured than elytra, on elytra punctures arranged in ten irregular longitudinal rows. Length 7.0 mm. Described from Tibet based on one female only **apterus** CHEN, 1976.

Genus *Hoplasoma* JACOBY, 1884

To the genus *Hoplasoma* belong 28 species, distributed mainly in SE Asia, Indonesia and Philippines; one species occurs also in Korea. Sides of elytra parallel, body relatively slender, upper side unicolorous, testaceous or yellowish, underside brownish, brown, sometimes blackish. Furrow on pronotum shallow. In male abdominal sternite 2 with two very characteristic finger-shaped processes (plate LXXXII, **phot. 736**). General view as in plate LXXXII, **phot. 735**. Length 7.0–8.5 mm (= *corniculata* ALLARD, 1888, *abdominalis* JACOBY, 1896, *simplicipennis* JACOBY, 1896, *ventralis* BALY, 1886, *annonica* CSIKI, 1953). Distributed in India, Indonesia, Philippines, Indochina and S China, reported also from Korea **unicolor** (ILLIGER, 1800).

Genus *Japonitata* STRAND, 1935

The genus *Japonitata* comprises 34 species; of these four occur in the discussed area.

Key to species

1. Body black, abdomen yellowish, on each elytron two costae **2**.
- . Upperside reddish or brownish **3**.
2. Interior costa interrupted at base. Antenna in male not modified. Length 4.0–5.8 mm. Distributed in Japan (Honshu, Shikoku, Kyushu) **nigrita** (JACOBY, 1885).
- . Interior costa not interrupted, in male antennae modified. Length 3.3–3.5 mm. Described from Tibet (Xizang) **abdominalis** JIANG, 1989.
3. Upperside reddish-brown, underside yellowish-brown. Antenna yellowish, antennomere 11 black. On elytron one humeral costa only, another costa near suture. Length 5.5–6.0 mm. Described from Tibet (Xizang) **ruficollis** JIANG, 1989.

- Body yellowish or reddish brown. Mesosternum laterally, metasternum and first four sternites of abdomen black. On each elytron a pair of costae starting from humeri and one short costa situated subapically between these two costae. Length 6.0–7.0 mm. Described from Tibet (Xizang) *tricostata* CHEN et JIANG, 1981.

Genus *Leptomona* BECHYNÉ, 1958

Key to species

- 1. Head entirely reddish **2.**
- Vertex black or dark brown, only in immature specimens dark yellowish. Remaining parts of body coloured as in *erythrocephala* (thesis 3). Length 2.8–3.6 mm (= *dubia* MOTSCHULSKY, 1838). Distributed in Caucasian countries and in Central Asia *russica* GMELIN, 1790.
- 2. Underside uniformly rust-reddish, lateral ridge of pronotum darkened. Length 3.0–3.5 mm. Described from Transbaikalia, possibly a variety of *russica* (antithesis 1) *subseriata* (WEISE, 1887).
- Mesosternum, metasternum and underside of abdomen black or at least distinctly darkened **3.**
- 3. W Mediterranean species. Pronotum, prosternum, mesosternum, legs and three basal antennomeres reddish, tarsi darkened. Elytra dark blue. Metasternum and abdomen black. General view as in plate LXXXII, **phot. 737**. Length 2.8–3.6 mm. Distributed in Italy, southern France, Iberian Peninsula, Morocco and Algeria *erythrocephala* OLIVIER, 1790.
- Japanese species. Morphological characters as in *russica* (antithesis 1), possibly conspecific with them. Described from Japan (Honshu) *fulvicollis* (JACOBY, 1885).

Genus *Liroetis* WEISE, 1889

The genus *Liroetis* WEISE includes 29 species; of these five occur in the discussed area.

Key to species

- 1. Upper side yellowish-grey or yellowish straw with 3 black spots on pronotum, and 4 black spots on elytra (1, 3). Scutellum black **2.**
- At least elytra uniformly coloured **3.**
- 2. Smaller. General view as in plate LXXXII, **phot. 738**. Length 7.1–9.0 mm. Antennomere 3 about 2.5 × longer than 2. Distributed in China (Yunnan, Sichuan, Sikang, Tsinghai) *octopunctata* (WEISE, 1889).
- Larger. Similar to preceding. Length 12.0–14.0 mm. Antennomere 3 over 3 × longer than 2. Described from Tibet (Xizang) *paragrandidis* JIANG, 1988.
- 3. Elytra yellow-brown. Body entirely pale, without black or metallic markings. Head, pronotum, scutellum, underside and femora rufous, antennae darker brownish, tibiae and tarsi red-brown. Length 8.5–12.0 mm. Described from Tibet (Xizang) ... *tibetana* JIANG, 1988.

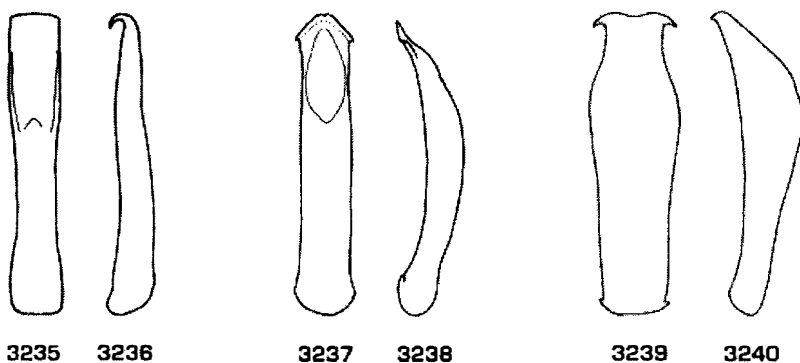
- Elytra with metallic shine 4.
- 4. Body, legs and pronotum rust-yellow, elytra greenish-blue with bronzy reflex, lateral impressions on pronotum absent. Length 6.5–8.0 mm. Distributed in China (Sichuan, Hupeh, Kansu) *aeneipennis* WEISE, 1889.
- Body, legs and pronotum black, elytra bluish-black, lateral impressions on pronotum distinct. Length 7.0–8.5 mm. Distributed in Japan (Honshu, Kyushu)
..... *coeruleipennis* WEISE, 1889.

Genus *Luperus* GEOFFROY, 1762

The genus *Luperus* GEOFFROY comprises about 90 Eurasian species distributed from Morocco and British Isles to Japan and Taiwan and about 15 species distributed in Ethiopian area. Two remaining species described from Hawaii and America probably belong not here. In discussed area about 50 species. The unclear species *L. kusanagii* CHŪJŌ, 1941 from Korea not included in the key.

Key to species

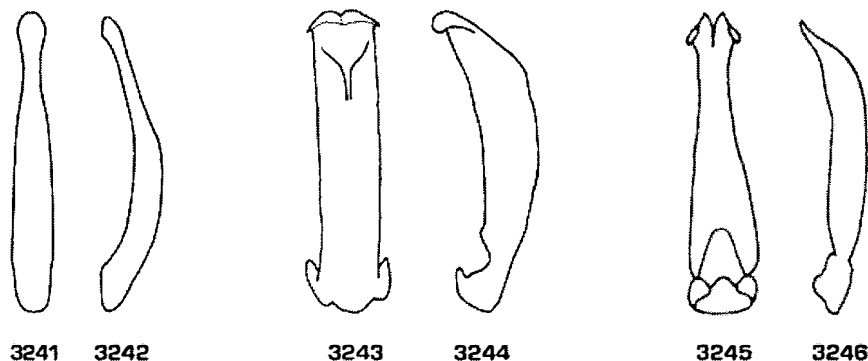
- 1. Pronotum and elytra entirely yellowish or rust-reddish 2.
- Upper side entirely or partly black, blackish or pitchy brown 7.
- 2. Species from Caucasian countries, Iran and Turkey 3.
- Species from W Mediterranean area 4.
- 3. Smaller, externally similar to *Calomicrus lividus* (p. 674), but easily distinguishable by third antennomere, 2.5 × longer than 2. Pronotum 1.5 × longer than broad. Apex of aedeagus crooked ventrally. General view as in plate LXXXIII, **phot. 739**. Length 2.7–3.3 mm. Distributed in O Turkey and Armenia *perlucidus* KHNZORIAN, 1956.
- Larger, body more elongate, third antennomere 2 × longer than 2. Pronotum 1.4 × longer than broad. Aedeagus not studied. Length about 4.2 mm. Described from Iran *silfverbergi* LOPATIN, 1984.



Figs 3235-3240. Aedeagus in dorsal and lateral view (3235, 3236 after WARCHAŁOWSKI 2003; 3237, 3238 after WARCHAŁOWSKI 1994; 3239, 3240 after GRESSIT and KIMOTO 1961): 3235, 3236 – *Luperus revelieri*; 3237, 3238 – *L. flavipennis*; 3239, 3240 – *L. semiflavus*.

4. Head and scutellum black, pronotum and elytra pale yellowish, antennae darkened in apical half. Aedeagus as in figs **3235, 3236**. Length 3.6–4.8 mm. Endemic to Corsica, reported also from Sardinia **reveliieri** PERRIS, 1864.
- . Head pale, scutellum sometimes darkened, not black **6**.
5. Upper side light rusty-brown to chest brown. Puncturation of elytra fine but deep. Sometimes on each elytron traces of 3–5 longitudinal costae. Metasternum black. Remaining characters as in *flavus* and *flavipennis* (thesis 7). General view as in plate LXXXIII, **phot. 740**. Length 4.6–6.0 mm. Known from Mid Atlas only **acutipennis** FAIRMAIRE, 1867.
- . Upper side light testaceous or testaceous. Puncturation of elytra fine and shallow. Metasternum coloured as upper side, often darkened in hind part, but never black ... **7**.
6. On average smaller. Metasternum pale, borders of episterna darkened only. Sometimes on each elytron traces of 3–5 longitudinal costae. Aedeagus as in figs **3237, 3238**. Length 4.0–5.2 mm. Distributed in Morocco and Algeria. African subspecies, *flavipennis* s. str. **flavipennis** LUCAS, 1849.
- . On average larger. Metasternum blackish. Aedeagus as in nominotypical subspecies (thesis 7). Elytra without any trace of longitudinal costae. Length 4.2–5.6 mm. European subspecies of *flavipennis*, *f. flavus* (ROSENHAUER, 1849). Distributed in southern and central Spain.
7. Abdomen entirely or partly yellow **8**.
- . Abdomen black or at least dark brown **10**.
8. E Palearctic species **9**.
- . W Mediterranean species, see thesis 27.
9. Head distinctly narrower than pronotum. Antennomere 3 longer than 1. Pronotum, legs and antennomeres 1–4 rusty-yellow, head and elytra black. Pronotum 1.5 × broader than long, shining, rather sparsely covered by extremely fine, barely visible punctures. First tarsomere of hind legs as long as the remaining together. Aedeagus as in figs **3239, 3240**. Length 4.4–4.8 mm (= *mandzhuricus* OGLOBLIN, 1936). Distributed in N China and E Siberia, reported also from Taiwan **semiflavus** OGLOBLIN, 1936.
- . Head as broad as pronotum. Antennomere 3 as long as 1. Here females of *flavimanus* (antithesis 26).
10. Upper side bicolorous: pronotum (usually entirely) yellow or reddish, elytra black with metallic sheen or reflex, pure black, blackish or dark pitchy brown **11**.
- . Pronotum and elytra of the same colour (black with metallic sheen or reflex, pure black, blackish or dark pitchy brown) **27**.
11. Antennae short and robust, in male reaching to 2/3, in female to 1/2 of elytra; antennomeres 4–11 under three times longer than wide. Pronotum, prosternum, legs and 4–6 basal antennomeres entirely yellow, anterior part of head yellowish or light reddish. Elytra blackish with very weak leady reflex, mesothorax, metathorax and abdomen entirely pitchy. Aedeagus as in figs **3241, 3242**. Length 3.2–3.8 mm. Probably endemic to Gran Sasso (Abruzzo, Italy) **florii** Weise, 1895.
- . Antennae slender, antennomeres 4–11 over three times longer than wide **12**.
12. Disc of pronotum distinctly and relatively strongly punctured. A colour aberration of *nigripes* (thesis 31).
- . Disc of pronotum very or extremely finely punctured **13**.

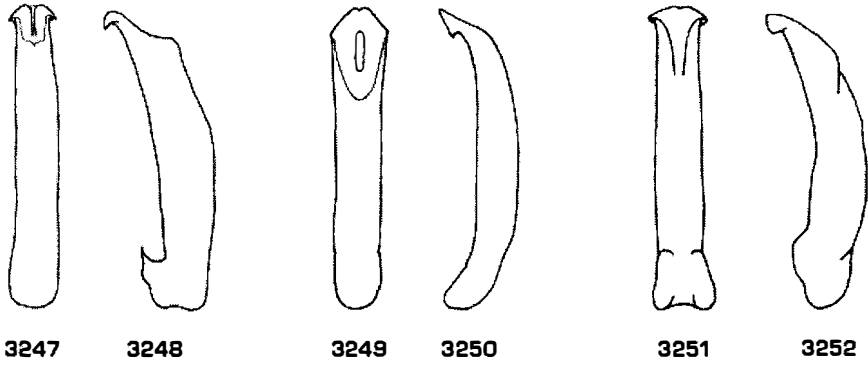
13. Elytra with green or blue metallic sheen, strongly and uniformly punctured. In male first tarsomere of fore tarsi distinctly widened (*viridipennis* group) **14**.
 -. Elytra pure black or with a extremely feeble metallic reflex. In male first tarsomeron of fore tarsi feebly widened **21**.
14. Antennae short, in male barely as long as the body, in female shorter. Underside entirely black, legs yellow, last tarsomere darkened. Aedeagus as in figs **3243**, **3244**. Length 4.0–5.0 mm. Distributed in Italy, from Sicily to Toscana ***biraghii*** RAGUSA, 1871.
 -. Antennae longer, in both sexes longer than the body **15**.
15. Species from Caucasian countries **16**.
 -. Species from European mountains **18**.
16. Mid and hindlegs darkened, fore legs yellow with darkened basis of femora. Metallic reflex on elytra perceptible, but weak. Nasal ridge longer and narrower. Aedeagus not studied. Length 4.0–4.6 mm. Distributed in Caucasus ***caucasicus*** WEISE, 1879.
 -. All legs pale, femora darkened basally only. Metallic reflex of elytra more distinct. Nasal ridge short and relatively broad **17**.
17. Hind femora darkened at base only. Aedeagus as in figs **3245**, **3246**. Length about 3.7 mm. Described from Armenia ***margaritae*** LOPATIN, 1990.
 -. Hind femora darkened in basal half. Length of body not given. Described from NW Caucasus based on one specimen (sex not determined) only. A doubtful species, perhaps conspecific with *margaritae* (thesis 17) ***circassicus*** MEDVEDEV, 1962.



Figs 3241-3246. Aedeagus in dorsal and lateral view (3241, 3242 after WARCHAŁOWSKI 2003; 3243, 3244 after VELA and BASTAZO 1990; 3245, 3246 after LOPATIN 1990): 3241, 3242 – *Luperus florii*; 3243, 3244 – *L. biraghii*; 3245, 3246 – *L. margaritae*.

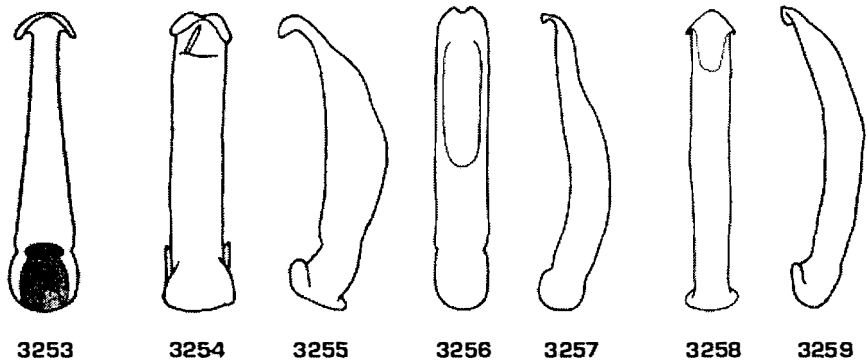
18. Fore part of head yellow. Elytra very finely punctate. Aedeagus not studied. Length 4.0–5.0 mm. Described from Bosnia ***flaviceps***, APFELBECK, 1912.
 -. Head entirely black **19**.
19. Legs entirely pale. Metallic sheen on elytra rather strong, greenish. Aedeagus as in figs **3247**, **3248**. Length 3.6–4.6 mm. Perhaps a western subspecies of *viridipennis* (antithesis 13). Distributed in Pyrenees and SE France ***pyrenaicus*** GERMAR, 1824.

- Femora blackened basally. Metallic sheen on elytra more weak, bluish **20.**
- 20. General view as in plate LXXXIII, **phot. 741.** Hind femora not broadened at base. Aedeagus as in figs **3249, 3250.** Length 3.2–4.5 mm. Distributed in Alps, Carpathians, Balkans, S Ural and Central Asia ***viridipennis*** GERMAR, 1824.
- In dorsal view similar to *viridipennis* (thesis 20). Hind femora broadened at base. Aedeagus as in *viridipennis* (thesis 20). Length 4.3–5.0 mm. By some authors considered as subspecies of *viridipennis*. Distributed in E Siberia, Sakhalin and Japan ...
..... ***laricis*** MOTSCHULSKY, 1859.



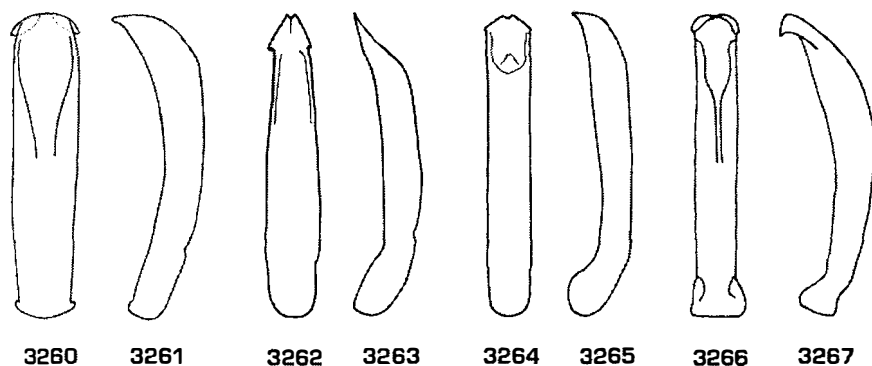
Figs 3247-3252. Aedeagus in dorsal and lateral view (3249, 3250 after WARCHALOWSKI 2003, remaining after VELA and BASTAZO 1990): 3247, 3248 – *Luperus pyrenaicus*; 3249, 3250 – *L. viridipennis*; 3251, 3252 – *L. leonardii*.

- 21. Legs entirely yellow **22.**
- At least basal part of mid and hind femora darkened or blackish **24.**



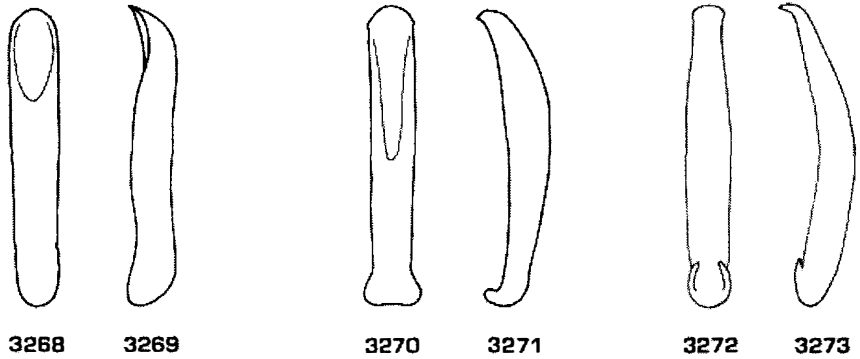
Figs 3253-3259. Aedeagus in dorsal and lateral view (3253 after OGLOBLIN 1926; 3256, 3257 after WARCHALOWSKI 2003; remaining after VELA and BASTAZO 1990): 3253 – *Luperus kiritshenkoi*, 3254, 3255 – *L. pygmaeus*; 3256, 3257 – *L. maculicornis*; 3258, 3259 – *L. flavipes*.

22. Elytra pure black, shallowly and not densely punctured. In male antennae significantly (by two last antennomeres) longer than body. Aedeagus as in figs **3251, 3252**. Length 3.1–3.9 mm (male) to 3.3–4.5 mm (female). Distributed in almost whole Italy **leonardii** FOGATO, 1978.
- . Elytra black, finely but rather densely and deeply punctate **23**.
23. Frontal ridge punctate, hind angles of pronotum slightly protruding laterally. Aedeagus as in fig. **3253**. Distributed in Crimea, possibly endemic **kiritshenkoi** OGLOBLIN, 1936.
- . Elytra usually with a feeble metallic reflex, better visible after covering the elytron with a drop of water or alcohol. In male antennae about as long as body. Aedeagus as in figs **3254, 3255**. Length 3.3–4.4 mm. Distributed in middle and northern part of Italy **pygmaeus** JOANNIS, 1866.
24. Elytral punctures particularly fine. Aedeagus as in figs **3256, 3257**. Length 3.3–4.2 mm. Endemic to Corsica **maculicornis** DESBROCHERS, 1872.
- . Elytral punctures moderately strong **25**.
25. Elytral punctures distinctly heterogenous. Lateral sides of pronotum feebly rounded. General view as in plate LXXXIII, **phot. 742**. Aedeagus as in figs **3258, 3259**. Length 3.8–5.0 mm (= *ochropus* GMELIN, 1790, *carniolicus*, KIESENWETTER, 1861). Distributed from Pyrenees, Ireland and southern Norway to Mongolia **flavipes** (LINNAEUS, 1767).
- . Elytral punctures homogenous or indistinctly heterogenous **26**.
26. Elytra not extremely finely punctate. Lateral sides of pronotum slightly but distinctly rounded. Length about 4.5 mm. Here females of *luperus* (thesis 47), often not distinguishable from females of *flavipes* (thesis 25).
- . Elytra extremely finely punctate. Aedeagus (figs **3260, 3261**) in apical half distinctly broadened and thickened. In male abdomen entirely blackish, in female entirely yellow. Distributed in China (Sichuan, Kiangsu, ?Shantung, ?Mongolia) **flavimanus** WEISE, 1889.



Figs 3260–3267. Aedeagus in dorsal and lateral view (3260, 3261 after GRESSIT and KIMOTO 1961; 3264, 3265 after VELA and BASTAZO 1990; remaining after WARCHAŁOWSKI 2003): 3260, 3261 – *Luperus flavimanus*, 3262, 3263 – *L. abdominalis*; 3264, 3265 – *L. mauritanicus*; 3266, 3267 – *L. nigripes*.

- 27. At least three last abdominal sternites yellow or light brownish. Pronotum black, elytra black with feeble, but distinct blue reflex **28.**
- Abdomen black or black with pale anal sternite only **29.**
- 28. Smaller. Aedeagus (figs **3262, 3263**) gradually narrowed towards apex. Length 3.6–4.8 mm. Distributed in S Spain **abdominalis** ROSENHAUER, 1856.
- Larger. Aedeagus (figs **3264, 3265**) not narrowed, sometimes even slightly broadened apically. Length 4.5–5.2 mm. Distributed in Morocco **mauritanicus** PIC, 1898.
- 29. Upper side or elytra with distinct metallic sheen or reflex **30.**
- Upper side pure black or dark pitchy brown. Metallic reflex, if present, extremely feeble or perceptible under a little drop water or alcohol only **44.**
- 30. Antennae and legs entirely or almost entirely (with basis of tibiae reddish only) black **31.**
- At least tibiae and apical part of femora yellow or reddish **32.**
- 31. Smaller. Aedeagus as in figs **3266, 3267**. Length 3.5–4.5 mm. Distributed in Alps ... **nigripes** KIESENWETTER, 1861.
- Larger. Length 4.5–5.5 mm. Here a melanotic variation (ab. *mixtus* Weise, 1886) of *caucasicus* (thesis 16).
- 32. Legs entirely pale **39.**
- At least femora basally darkened **33.**

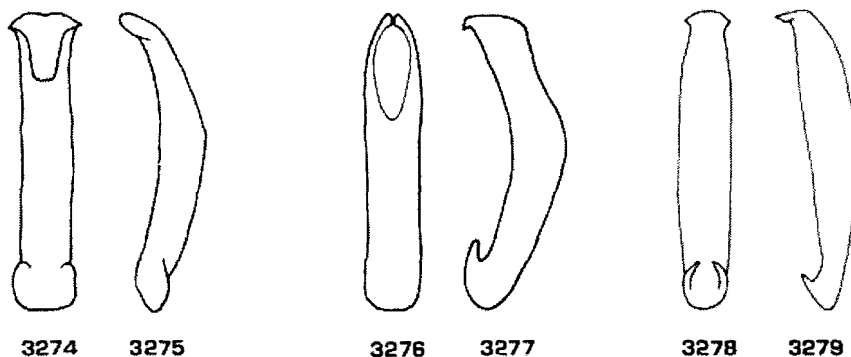


Figs 3268-3273. Aedeagus in dorsal and lateral view (3268, 3269 orig., remaining after WARCHAŁOWSKI 2003): 3268, 3269 – *Luperus kiesewetteri*, 3270, 3271 – *L. apollinis*; 3272, 3273 – *L. orientalis*.

- 33. Elytra laterally and posteriorly with sparse but distinct, relatively long, erect hairs ... **34.**
- Elytra without distinct hairs **37.**
- 34. Elytra black-green with distinct metallic shine. Legs and antennomeres 1–5 reddish-yellow. Pronotum smooth or laterally with extremely fine punctures. Aedeagus not studied. Length 5.0 mm. Described from Kirgisia **turkestanicus** WEISE, 1892.
- Elytra black or black with bluish metallic reflex **35.**

35. Species from basin of Volga, reported also from Caucasian countries and Syria. Pronotum about 1.3 × broader than long, its lateral margins very weakly rounded. Apex of aedeagus (figs **3268**, **3269**) gently bent down, without teeth. Length 4.1–5.0 mm
..... **kiesenwetteri** JOANNIS, 1866.
- Species from Balkan Peninsula **36**.
36. Smaller. Pronotum very finely reticulate and extremely finely punctured. Mandibulae yellow, remaining mouth parts blackish. Aedeagus as in figs **3270**, **3271**. Length 3.5–4.5 mm. Described from Karpenision Mountains (Greece)
..... **apollinis** APFEBECK, 1912.
- Larger. Pronotum not distinctly reticulate, basally and laterally distinctly punctured. Colouring of mouth parts not distinctly differentiate. Aedeagus not studied. Length 4.5–6.0 mm. Described from Montenegro **cyani pennis** KÜSTER, 1848.
37. Elytra very finely punctured. Aedeagus not studied. Length 3.5–4.5 mm. Described from Caucasian countries **discolor** FALDERMANN, 1837.
- Elytra moderately finely punctured **38**.
38. Metallic sheen of elytra distinct, usually greenish-bronzy. Aedeagus not studied. Length about 3.5 mm. Endemic to Rila Mountains (Bulgaria)
..... **rhilensis** WEISE, 1900.
- Metallic reflex of elytra bluish, extremely feeble, usually perceptible under a littledrop water (or alcohol) only. See *luperus* (thesis 34).
39. On elytra metallic sheen or reflex distinct, immediatly perceptible **40**.
- On elytra metallic reflex extremely feeble, usually perceptible under a littledrop water (or alcohol) only. Some forms of *xanthopoda*-group species (antithesis 54).
40. Upper side with feeble greenish-blue metallic reflex. Asiatic species **41**.
- Upper side with dark blue reflex. N African species **43**.
41. Legs pale. Vertex smooth. Pronotum more densely punctate. Elytron laterally and behind humerus finely reticulate, often shilky, with a tendency to form longitudinal, parallel convexities. Externally sometimes very similar to *Nymphius stylifer* (vide), but in *orientalis* clypeus is dark and the form of anal segment different. Apex of aedeagus (figs **3272**, **3273**) suddenly bent down. Length 4.1–5.3 mm (= *amoenus* FALDERMANN, 1837, *oxypterus* FALDERMANN, 1837). Distributed in Caucasian countries
..... **orientalis** FALDERMANN, 1837.
- Legs and antennae black or at least dark brown. Pronotum less densely punctate
..... **42**.
42. Frons smooth, impunctate, nasal ridge broad and convex, frontal calli large, transverse, moderately convex, separated by a deep fovea. Antennae 2/3 as long as body, third antennomere 2 × longer than the second. Pronotum 1.33 to 1.50 broader than long, anterior angles sharp, distinct. Disc of pronotum covered by very fine and rather sparse puncturation. Elytra with a tendency to form longitudinal, parallel convexities. Aedeagus not studied. Length 3.5–4.6 mm. Distributed in Altai and Mongolia
..... **anthracinus** OGLOBLIN, 1936.
- After descriptions all characters as in *anthracinus* (thesis 42). Length 4.0–4.6 mm. Male unknown. A doubtful species, described from E Turkey
..... **turcicus** MEDVEDEV, 1975.
43. Pronotum finely but distinctly punctate. Abdomen pitchy black or blackish. In male antennae shorter than body. Aedeagus not studied. Length 3.5–4.5 mm. Described from Morocco
..... **maroccanus** PEYERIMHOFF, 1923.

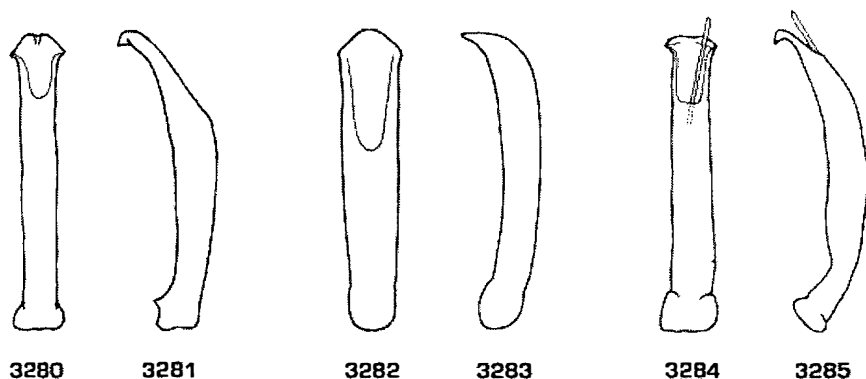
- Pronotum extremely finely punctured, almost impunctate. Abdomen brownish or brown. In male antennae longer than body. Here variations of *mauritanicus* (antithesis 28) with dark coloured abdomen.
- 44. At least femora basally darkened 45.
- Legs entirely pale 53.
- 45. Length of body in male over 3.1, in female over 3.5 mm 46.
- Length of body in male 2.5–3.0, in female under 3.5 mm 52.
- 46. Fore femora basally, mid femora in basal 1/3, hind femora almost entirely blackened, tibiae in apical part usually darker 47.
- Fore and mid femora basally, hind femora in basal 1/2 blackened. Pronotum and elytra black in both sexes 48.



Figs 3274–3279. Aedeagus in dorsal and lateral view (3274, 3275 after VELA and BASTAZO 1990; 3276, 3277 – after DÖBERL in litt., 3278, 3279 after WARCHAŁOWSKI 2003): 3278, 3279 orig.): 3274, 3275 – *Luperus luperus*, 3276, 3277 – *L. graecus*; 3278, 3279 – *L. moorii*.

- 47. Female bicolorous (see antithesis 16). In male head, including eyes, approximately as broad as pronotum or insignificantly broader. Aedeagus as in figs **3274, 3275**. Length 3.3–4.6 mm (= *niger* GOEZE, 1777, *rufipes* GOEZE, 1777, *erythromelas* GMELIN, 1790 *nigricans* GMELIN, 1790, *dispar* REDTENBACHER, 1874, *lyperus* BEDEL, 1897). Distributed in France, Italy, Dalmatia, southern part of Middle Europa and in basin of Danube ***luperus*** (SULZER, 776).
- Pronotum and elytra black in both sexes. Elytra deeply, very finely punctured and slightly rugose. Aedeagus not studied. Length 3.5–4.5 mm. Distributed in Caucasian countries ***floralis*** FALDERMANN, 1837.
- 48. In male antennae as long as body, in female distinctly shorter. Aedeagus as in figs **3276, 3277**. Length about 4.0 mm. Distributed in southern part of Balkan Peninsula. See p. 674, thesis 15, *Calomicrus graecus* ***graecus*** WEISE, 1886.
- In male antennae longer than body, head including eyes broader than pronotum, in female antennae as long as body **49**.
- 49. In male antennae distinctly (by 15–30%) longer than the body **50**.
- In male antennae much (by 50–60%) longer than the body. General view as in plate LXXXIII, **phot. 743**. Apical part of aedeagus (figs **3278, 3279**). strongly bent down. Legs somewhat darker coloured as in *longicornis* (thesis 51). Length 4.4–5.2 mm

- (= *antennalis* MEDVEDEV, 1998)⁶. Distributed in Japan and in basin of Ussuri
 **moorii** BALY, 1874.
50. Frontal calli flattened, separated by thin furrow, General view as in plate LXXXIII, **phot. 744**. Apex of aedeagus in dorsal view with small lateral teeth. Legs relatively pale, femora in basal part darkened **51**.
- Frontal calli convex, oblique, separated by an angular depression. Apex of aedeagus without teeth. Very similar to preceding, but smaller, in male eyes less convex, legs somewhat darker. Upper side pure black, without bluish reflex. Aedeagus not studied. Length 3.0–3.3 mm (male) to 4.0–4.6 mm (female). Distributed in Kazakhstan and Kirgisia **ehnbergi** JACOBSON, 1901.
51. In male eyes strongly convex. Aedeagus (figs **3280**, **3281**) in lateral view feebly bent. Length 3.5–5.0 mm (= *diniensis* BELLIER, 1870). Eurosiberian species, distributed from Iberian Peninsula and Great Britain to E Siberia
 **longicornis** (FABRICIUS, 1781).
- In male eyes less strongly convex. Aedeagus similar as in *longicornis* (thesis 51), but in lateral view somewhat stronger bent. Length about 4.0 mm. Perhaps conspecific with *longicornis* (thesis 51). Described from Altai
 **similis** IABLOKOFF-KHNZORIAN, 1970.

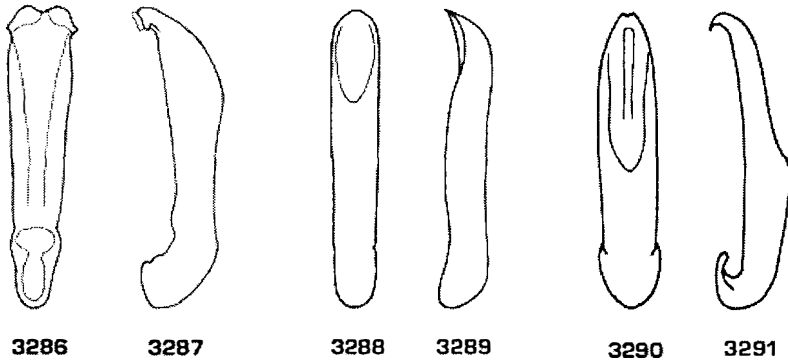


Figs 3280–3285. Aedeagus in dorsal and lateral view (3282, 3283 after WARCHALOWSKI 2003, remaining after VELA and BASTAZO 1990): 3280, 3281 – *Luperus longicornis*, 3282, 3283 – *L. aetolicus*; 3284, 3285 – *L. alpicus*.

52. Frontal keel broad and flattened. Aedeagus as in figs **3282**, **3283**, very small (about 0.4 mm). Length 2.5–3.4 mm. Distributed in eastern coast of the Adriatic Sea, from Istria to Greece **aetolicus** KIESENWETTER, 1861.
- Frontal keel narrower, elevated. In male head (measured together with eyes) not broader than pronotum. Aedeagus as in figs **3284**, **3285**. Length 2.3–3.0 mm. Distributed in Pyrenees, Alps and Dinaric Alps **alpicus** DESBROCHERS, 1898.

⁶ The detailed description given by MEDVEDEV corresponds very exactly and in all details (aedeagus shape incl.) with characters of *L. moorii*.

53. Labrum yellow. Pure black, strongly shining. Labrum, antennomeres 1–5 or 1–6 and legs yellow. Aedeagus (figs **3286**, **3287**) rather thick, in dorsal view gently broadened behind apex. Apical teeth in lateral view distinctly visible. Length 4.0–5.0 mm. Distributed in Usbekistan, Kirgisia and Tadzjikistan *flavilabris* OGLOBLIN, 1941.
- . Labrum brown or black **54**.



Figs 3286–3291. Aedeagus in dorsal and lateral view (3286, 3287 after LOPATIN 1977; 3288, 3289 after WARCHAŁOWSKI 2003; 3290, 3291 after WARCHAŁOWSKI 1994): 3286, 3287 – *Luperus flavilabris*, 3288, 3289 – *L. sulphuripes*; 3290, 3291 – *L. xanthopoda*.

54. Mandibulae blackish or black. Aedeagus (figs **3288**, **3289**) in dorsal view with parallel sides. Length 3.8–5.1 mm. Distributed in Iberian Peninsula *sulphuripes* GRAËLLS, 1858.
- . Mandibulae yellow. Upper side usually pure black, legs entirely pale. Aedeagus (figs **3290**, **3291**) narrowed in apical part. Length 4.0–5.6 mm (= *saxonicus* GMELIN, 1790, *armeniacus* KIESENWETTER, 1878, *rugifrons* WEISE, 1895, *rectangulus* WEISE, 1898). Further nominal taxa is still awaiting a detailed revision. Here perhaps also several doubtful species (*abeillei* GUILLEBEAU, 1891, *diversepunctatus* PIC, 1912, *ragusae* LABOISSIÈRE, 1912, *calabricus* LABOISSIÈRE, 1912, *vitalei* RAGUSA, 1923). Distributed from (?) Iberian Peninsula to Central Asia; forms probably different local or geographical variations: with feeble bluish reflex (*abeillei*, *calabricus*, *saxonicus*), with reticulate frons (*armeniacus*), with almost straight lateral sides of pronotum in male (*rectangulus*) *xanthopoda* SCHRANK, 1781.

Genus *Macrima* BALY, 1878

Literature: YANG 1992.

The genus comprises 11 species, in discussed area occur three species from Tibet.

Key to species

1. Frons above clypeus deeply and largely excavate in upper part, on upper edge of this excavation with three process (males) **2**.

- Frons without excavation, only with a depression (females) **4.**
- 2. Median process on frons black, triangular, lateral processes much smaller, spine-like. Pronotum 2.5 × as broad as long. Body pale rust-yellow. Measternum, scutellum, external edge of epipleura and sternites of abdomen (partly) black. Length 6.5–7.5 mm. Distributed in N India and in Tibet ***armata*** BALY, 1878.
- Median process on frons yellow. Before each eye a small process, not spine-like, but broad and acute **3.**
- 3. Frons over the median process triangularly impressed, this impression reaches to vertex. Colouring of body as in *armata* (thesis 2). Length 6.5–7.0 mm. Distributed in N India, Nepal, Bhutan and Tibet ***palida*** (LABOISSIÈRE, 1936).
- Frons over the median process shallowly impressed, this impression reaches to beginning of vertical furrow. Colouring of body similar as in both previous species. Length 7.5–9.0 mm. Described from Tibet (Xizang) ***ferrugina*** JIANG, 1990.
- 4. Pronotum short, at least 2.5 × broader than long. Frontal depression continuing as a triangle between antennal insertions (*armata*, thesis 2).
- Pronotum longer, less than 2 × as broad as long. Frontal depression with a small and short vertically protruding process in the middle **5.**
- 5. Body length under 7.5 mm. Frontal depression heart-like (*pallida*, thesis 3).
- Body length over 7.5 mm. Frontal depression transverse, sinuous (*ferrugina*, anti-thesis 3).

Genus *Medythia* JACOBY, 1886

The genus *Medythia* JACOBY comprises 17 species; of these two were reported from the discussed area.

Key to species

- 1. Antenna robust (preapical antennomeres twice as long as wide), black, antennomeres 1, 8–9 and usually also antennomere 10 pale. Body pale, head black, on each elytron a broad longitudinal black stripe sinuously narrowed in the middle. General view as in plate LXXXIII, **phot. 746**. Length 2.8–3.4 mm. Distributed from Indonesia to S and C China. Reports from N China, Korea and E Siberia concern *nigrobilineata* (antithesis 1) ***suturalis*** (MOTSCHULSKY, 1858).
- Antenna more slender (preapical antennomeres about 3 × as long as wide), pale only at base, antennomeres 3–11 brown or blackish. Body dark yellow or rust-testaceous, each elytron with a narrow, straight longitudinal black stripe. General view as in plate LXXXIII, **phot. 747**. Length 3.0–3.5 mm (= *vittata* WEISE, 1922). Variation: black stripe shortened, situated on hind part of elytra only (ab. *abbreviata* WEISE, 1922). Distributed in E Siberia, N China, Korea and Japan ***nigrobilineata*** (MOTSCHULSKY, 1860).

Genus *Meristata* STRAND, 1935

Literature: ZHANG and YANG 2002.

The genus *Meristata* includes 10 species, of these three occur in Tibet.

Key to species

1. Body black, elytra unicolorous, pale yellow. Length 9.0–10.0 mm. Described from Tibet ***elongata*** (JACOBY, 1898).
- . Elytra bicolorous **2.**
2. Elytra pale with 4 rows of small spots, sometimes fused into 4 narrow bands. General view as in plate LXXXIV, **phot. 749**. Length 10.0–12.0 mm. Distributed in India, Kashmir, Nepal, Bhutam and Tibet ***quadrifasciata*** (HOPE, 1831).
- . Elytra black with three transverse (postbasal, postmedian and apical) yellow bands interrupted by narrow black sutural stripe. General view as in plate LXXXIV, **phot. 750**. Length 10.0–12.5 mm. Distributed in India, Kashmir, Nepal, Bhutam and Tibet ***sexmaculata*** (KOLLAR et REDTENBNACHER, 1848).

Genus *Mimastra* BALY, 1865

Genus *Mimastra* includes 50 species, distributed mainly in India, S China, Indochina, Indonesia and Philippines. In discussed area one species only. Body slender, legs very long. Upper side very pale yellowish, antennomeres 2–11 piceous. Underside somewhat darker, upper edge of femora and tibiae darkened or blackish, tarsi piceous. On pronotum a depression in the middle, lateral impressions absent. Length 7.0–8.0 mm (= *nainitalensis* GANGOLA, 1969). Distributed in N India, Nepal and Tibet ...
..... ***gracilis*** BALY, 1878.

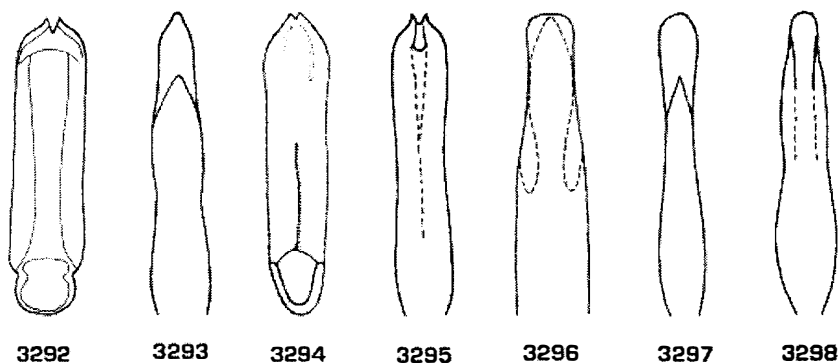
Genus *Monolepta* CHEVROLAT, 1837

The largest genus of subfamily *Galerucinae*, occurring in all continents and great archipelagos, except for Europe, N America and Antarktic. Hitherto more than 700 species mainly from tropical areas were described. In the Palaearctic region about 30 species, distributed mainly in E Asia.

Key to species

1. In male on suture just behind scutellum an odorator (fovea). Upper side pale, humerus, basal border of elytra and anterior 1/3 of suture blackish. Length 3.0–4.0 mm. Described from Tsushima ***shirozui*** KIMOTO, 1965.
- . No fovea behind scutellum in male **2.**
2. Upper side uniformly pale or pale with blurred grey pattern **3.**
- . Upper side not uniformly pale **14.**
3. Body entirely pale yellowish, elytra with blurred grey sutural stripe enlarged anteriorly and also blurred grey transverse stripe in midlength. Length 2.5–3.3 mm (= *nebulosa* OGLOBLIN, 1936, nec WEISE 1923). Described from basin of Ussuri
..... ***ogloblini*** PAPP, 1946.
- . Upper side uniformly pale, without pattern. Here several species usually distinguishable only by the structure of aedeagus and/or by their area of distribution **4.**
4. Underside partly or almost entirely black **5.**
- . Body entirely pale **6.**

5. Sternum and abdomen black. In male elytra without fovea behind scutellum. Apex of aedeagus (fig. **3292**) incised. Length 4.0–5.3 mm. Described from Afghanistan ...
 **afghana** LOPATIN, 1963.
- . Metasternum black, abdomen pale. In male just behind scutellum a fovea. Here pale variations of *shirozui* (thesis 1).
6. Length of body 5.5–6.0 mm. In male antennae reaching about 2/3 length of body. Described from Tibet **straminea** CHEN, 1976.
- . Length of body not exceeds 5.3 mm 7
7. Length of body under 3.2 mm. Exclusively Japanese species **13**.
- . Length of body over 3.2 mm. Not exclusively Japanese species only **8**.
8. Epipleuron in basal part nearly parallel-sided. Body pale reddish brown, legs and marginal area of elytra sometimes reddish. Antennae blackish, three or four basal antennomeres pale. Length 4.0–5.0 mm. Distributed in Japan (Honshu, Shikoku) ...
 **kurosawai** CHŪJŌ et OHNO, 1961.
- . Epipleuron in basal part gradually widened until 1/4 from basis and then strongly narrowed **9**.
9. Pronotum with shallow but distinct lateral impressions. Apex of aedeagus (fig. **3293**) not incised. Length 4.0–4.4 mm (very similar is *Calomicrus vanharteni*, from Yemen, see key to *Calomicrus*, thesis 25). Described from Saudi Arabia
 **saudica** MEDVEDEV, 1996.
- . Pronotum without impressions **10**.
10. Pronotum with distinct marginal ridge, shortened anteriorly and posteriorly. Apex of aedeagus (fig. **3294**) incised. Length 4.2–5.0 mm **kabakovi** MEDVEDEV, 1985.
- . Pronotum without marginal ridge **11**.
11. Apex of aedeagus (fig. **3295**) not narrowed, obtusely cut, slightly rounded. General view as in plate LXXXIV, **phot. 751**. Length 3.6–4.0 mm. Distributed in Asia Minor. In opinion of some authors conspecific with *Calomicrus syriacus* (see p. 674)
 **anatolica** BEZDĚK, 1998.
- . Apex of aedeagus emarginate or incised **12**.



Figs 3292–3298. Aedeagus in dorsal view (3292 after LOPATIN 1963; 3294 after MEDVEDEV 1985; 3295 after BEZDĚK 1998; remaining after MEDVEDEV 1996): 3292 – *Monolepta afghana*; 3293 – *M. saudica*; 3294 – *M. kabakovi*; 3295 – *M. anatolica*; 3296 – *M. arabica*; 3297 – *M. prasina*; 3298 – *M. heydeni*.

12. Apex of aedeagus (fig. **3296**) distinctly incised. Pygidium sometimes infusate. Length 3.2–4.2 mm. Described from Saudi Arabia *arabica* MEDVEDEV, 1996.
- . Apex of aedeagus not narrowed, shallowly emarginate. General view as in plate LXXXIV, **phot. 752**. Length 4.0–5.0 mm. Distributed in E Siberia, Korea, China, Japan, Taiwan and Indochina *pallidula* BALY, 1874.
13. Fourth antennomere almost 3 × longer than third. Body entirely yellowish brown. Length 3.0–3.2 mm. Distributed in Japan (Honshu) *hiurai* KIMOTO, 1965.
- . Fourth antennomere 1.5–2.0 × longer than third. Body reddish or brownish yellow, epipleural margins partly infusate. Length 2.8–3.0 mm (= *tsushimanum* KIMOTO, 1965). Distributed in Japan (Honshu, Kyushu) *nojiriensis* NAKANE, 1963.
14. Body pale yellowish with black pygidium. On elytra two transverse, blurred, brownish bands behind base and behind middle. Aedeagus as in fig. **3297**. Length 3.3–4.0 mm (= *pygidialis* JACOBY, 1906). Described from Africa, reported also from Saudi Arabia as *pygidialis*, but probably misidentified *prasina* (WEISE, 1907).
- . Body not pale with black pygidium **15**.
15. Elytra uniformly coloured, black, metallic or red **16**.
- . Elytra bi- or tricolourous **23**.
16. Elytra uniformly blood red. Body yellow, head black. In male on each elytron a kidney-shaped excavation. Length 4.5 mm. Female unknown. Described from Tibet *quadricavata* Chen, 1976.
- . Elytra black or metallic **17**.
17. Elytra uniformly greenish blue, underside entirely black, head a few basal antennomeres, pronotum and legs dark yellowish. Length 3.2 mm. Distributed in Japan (Honshu) *fulvicollis* JACOBY, 1885.
- . Elytra uniformly black or pitchy (sometimes their apices paler on tip), pronotum rust-reddish **18**.
18. Head except for labrum uniformly rust-reddish or rust-yellowish **19**.
- . Head entirely or at least occiput black **21**.
19. E Palaearctic species **20**.
- . W Palaearctic species. Body reddish-testaceous with pitchy-black elytra. Legs reddish-yellow, apex of hind tibia and base of corresponding metatarsus black. Aedeagus as in fig. **3298**. Length 4.0 mm, described based on one specimen (sex not determined) from Egypt, reported also from Yemen. Often wrongly ranked as *Leptomona* (p. 688) *heydeni* JOANNIS, 1866.
20. Larger, body length 3.3–4.4 mm. Occiput not reticulated, but rather indistinctly punctate. Antennae black, three basal antennomeres brownish. General view as in plate LXXXIV, **phot. 753**. Distributed in Sakhalin and Japan, in Kuril Islands subsp. *kurilensis* MEDVEDEV, 1966, differing from typical subspecies by reticulate occiput and partly darkened head *dichroa* HAROLD, 1877.
- . Smaller, body length about 3.2 mm. Antennae black, three basal antennomeres and antennomere II pale. Generic position uncertain. Described from China *longicornis* JACOBY, 1890.
21. Underside and legs yellow. Head rust-reddish with occiput black. Length 3.0–3.7 mm. Distributed in basin of Ussuri and W China (Sichuan) *semenovi* OGLOBLIN, 1936.
- . Underside, head (or at least occiput) and partly legs black **22**.

22. Occiput and pronotum smooth. Length 3.0 mm. Described from N China (Kansu) ...
 **epistomalis** LABOISSIÈRE, 1935.
- Occiput reticulate, pronotum densely punctate. Length 3.6–3.9 mm. Described from Kuril Islands. See *dichroa* subsp. *kurilensis*, thesis 20.
23. Elytra black with a large, pale longitudinal spot in the middle, all margins black. Head, pronotum and 4 anterior sternites of abdomen yellowish. Breast, tibiae and tarsi black, antennae brown with 3 basal antennomeres yellow. Length 3.5–4.5 mm. Described from Tibet **alnivora** Chen, 1976.
- Elytra differently coloured **24**.
24. Elytra tricolorous: each elytron red with two large yellowish spots, anteriorly and posteriorly with black margin. Length 5.0–6.0 mm (= *quadrimaculata* GOLDFUSS, 1805, *tricolor* FAIRMAIRE, 1888). African species, reported also from Aden
 **bioculata** (FABRICIUS, 1781).
- Elytra bicolorous, with pale and black or blackish pattern **25**.
25. Elytra with large pale spots **29**.
- Elytra with stripes or smaller patches **26**.
26. Elytra generally pale with black, metallic or blackish pattern **27**.
- Elytra generally black with pale spots. Body black. Head except for labrum, pronotum and abdomen yellowish. Elytron black with longitudinal spot in basal 1/3 and with small dot on before apex rust-yellow. Legs brownish red with basal part of femora infuscate, tibiae apically and tarsi black. Length 3.8–4.0 mm. Distributed in basin of Ussuri **eo**a OGLOBLIN, 1936.
27. Upper side, underside and legs rufotestaceous **28**.
- Body black, head except for labrum, pronotum and elytra rust-yellow, basal 1/4–1/3 of elytra black. In male on elytra behind scutellum a great and deep, diamond-shaped impression. Length 5.0 mm. Female unknown. Described from Iran
 **impressipennis** OGLOBLIN, 1936.
28. Elytra pale testaceous with two transverse black stripes (basal and postmedian). Head, pronotum, scutellum and underside reddish testaceous. Length 5.0 mm
 **lepida** REICHE, 1858.
- On each elytron blue postmedian patch not extending to apex or suture. Length 4.0 mm. Described from Aden **arvensis** BRYANT, 1957.
29. Abdomen and head black. Antennomeres 1–3 reddish, remaining black. General view as in plate LXXXIV, **phot. 754**. Length 3.0–3.7 mm. Distributed in E Siberia, N China and Japan **quadriguttata** (MOTSCHULSKY, 1860).
- Abdomen and head pale, reddish **30**.
30. Lateral and apical margins of elytra blackened or black. On each elytron two large yellowish spots on black ground. General view as in plate LXXXIV, **phot. 755**. Sometimes coloured as *hieroglyphica* (antithesis 27), but distinguishable by blackened apical margin of elytra. Length 3.2–3.8 mm. Distributed in Pakistan, Nepal, India, Sri Lanka, China, Indochina and Indonesia **signata** (OLIVIER, 1808).
- In hind and apical part of elytra margins not blackened. Anterior half of elytra black with a large, almost heart-shaped yellowish spot on each, hind half yellowish. General view as in plate LXXXIV, **phot. 756**. Length 3.2–3.8 mm. Distributed in Mongolia, E Siberia, Korea, China, Indochina, Indonesia, Taiwan and Philippines
 **hieroglyphica** (MOTSCHULSKY, 1858).

Genus *Morphosphaera* BALY, 1861

25 species, distributed mainly in Birmania, S China, Indochina, Taiwan, Indonesia and Philippines. In discussed area three species.

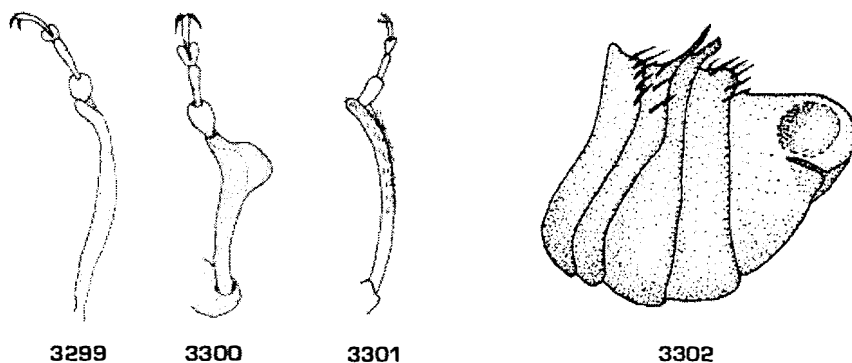
Key to species

1. Sternum black. Pronotum pale yellow with 5 black spots (4, 1) and with a short transverse stripe on hind border before scutellum. Elytra blue, bluish black or purplish black, in immature specimens dark brown with metallic reflex. Abdomen red-brown with lateral blackish spot on each sternite. General view as in plate LXXXIV, **phot. 748**. Length 8.0–9.0 mm. Distributed in E Siberia, China and Japan *japonica* (HORNSTEDT, 1788).
- . Sternum yellow or rust-reddish. Pronotum with 4 black spots, without darkening on hind border **2**.
2. Abdomen piceous. Length 6.0 mm. Described from Tibet, based on a single specimen only (sex not determined) *gracilicornis* CHEN, 1963.
- . Abdomen fulvous. Length 6.5 mm. Described from Tibet, based on one female only *quadrinotata* CHEN, 1976.

Genus *Nymphius*, WEISE, 1900

Key to species

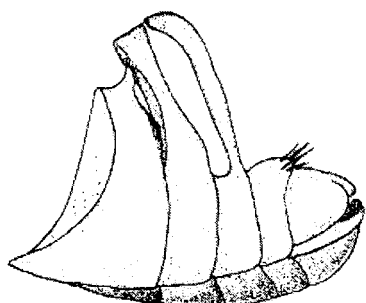
1. In male mid tibiae in apical part strongly curved or curved and conspicuously broadened **2**.
- . In male mid tibiae not curved **4**.



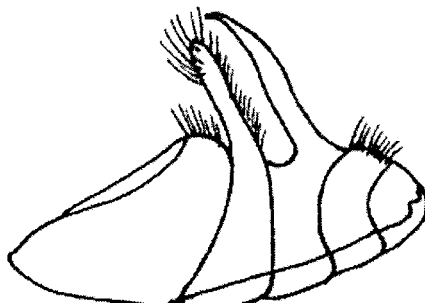
Figs 3299-3302. Mid tibia of male, abdomen of male (3301 after LOPATIN 2002, remaining after MEDVEDEV 1996): 3299 and 3302 – *Nymphius millingeni*, 3300 – *N. buettikeri*; 3301 – *N. friedmani*.

2. In male abdominal sternites 2 and 3 with long processes. Body entirely pale fulvous, apical antennomeres slightly darkened, base of hind metatarsus black **3**.

- In male abdominal sternites 2 and 3 with short processes (fig. 3302). Body entirely testaceous, apical antennomeres slightly darkened, base of hind metatarsus black. Mid tibia curved apically (fig. 3299). Aedeagus not studied. Length 4.0–4.8 mm. Distributed in Saudi Arabia **millingeni** (PIC, 1915).



3303



3304

Figs 3303, 3304. Abdomen of male (3303 after MEDVEDEV 1996; 3304 after LOPATIN 2002): 3303 – *Nymphius buettikeri*, 3304 – *N. friedmani*.

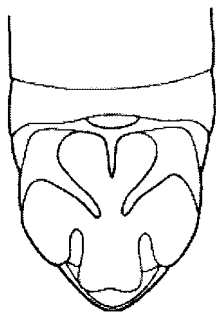
3. Mid tibia in male with a conspicuous broadening in apical part (fig. 3300). Abdominal segments 2 and 3 with short process (fig. 3303). Aedeagus not studied. Length 3.8 mm. Described from Saudi Arabia **buettikeri** (MEDVEDEV, 1996).
- Mid tibia in male distinctly bent, but without broadening in apical part (fig. 3301). Abdominal segments 2 and 3 with long process (fig. 3304). Length of body in original description not given, probably also about 4.0 mm. Described from Israel **friedmani** (LOPATIN, 2002).



3305



3306



3307



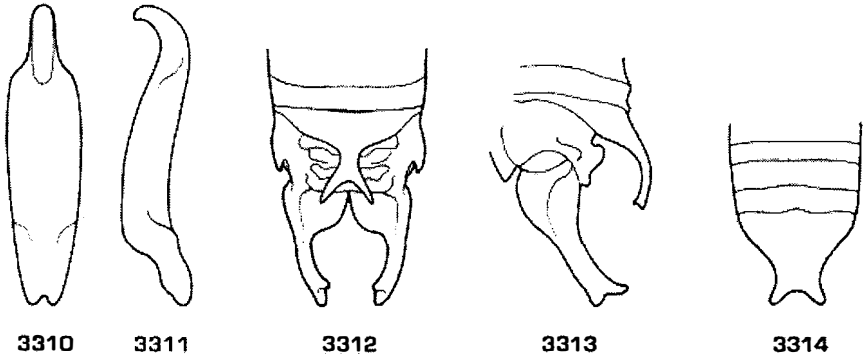
3308



3309

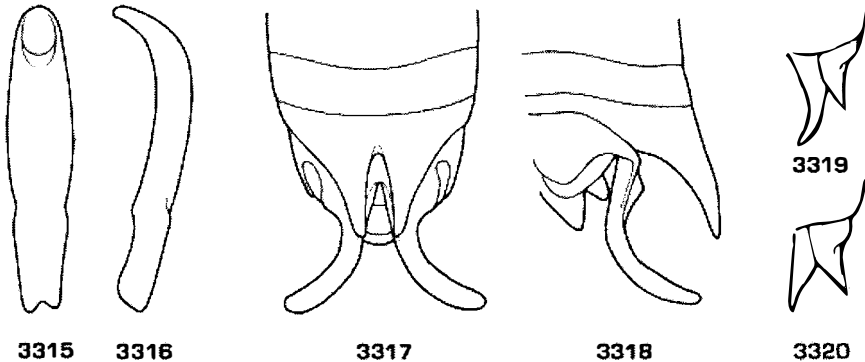
Figs 3305-3309. *Nymphius pravei* (after FOGATO 1981): 3305, 3306 – aedeagus in dorsal and lateral view; 3307, 3308 – abdomen of male in ventral and lateral view; 3309 – abdomen of female in lateral view.

4. Femora in great part blackish, tarsi usually darkened. Apical part of femora, tibiae, mouth parts and six basal antennomeres yellow. Upper side black with greenish or bluish metallic reflex, feebly shining. Ventral structures in male and female as in figs **3307–3309**. Aedeagus as in figs **3305, 3306**. Length 3.5–5.5 mm. Distributed in Ukraine and southern Russia to the east of Dniepr and in basin of Caspian Sea to north-eastern Kazakhstan ***pravei*** (JACOBSON, 1901).
- . Legs entirely yellow **5.**



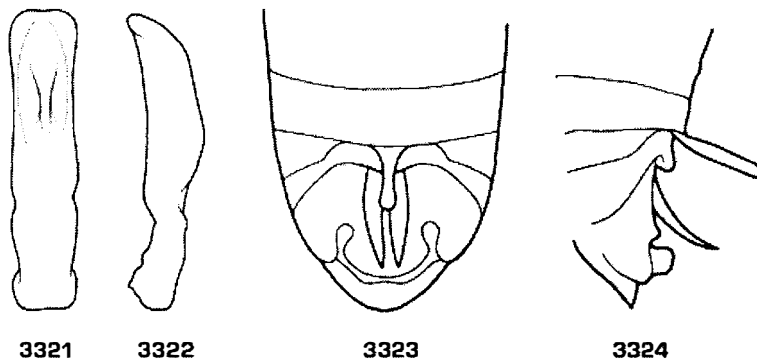
Figs 3310-3314. *Nymphius forcipifer* (after FOGATO 1981): 3310, 3311 – aedeagus in dorsal and lateral view; 3312, 3313 – abdomen of male in ventral and lateral view; 3314 – abdomen of female in lateral view.

5. Elytra rather densely, finely and heterogenously, but distinctly punctured. In male fourth abdominal sternite prolonged into two long process, in ventral view covering apical lobes of the fifth sternite **6.**
- . Punctures of elytra extremely fine, often indistinct. In male process of fourth sternite absent or short, in ventral view not covering apical lobes of the fifth sternite **7.**



Figs 3315-3320. *Nymphius stylifer* (after FOGATO 1981): 3315, 3316 – aedeagus in dorsal and lateral view; 3317, 3318 – abdomen of male in ventral and lateral view; 3319, 3320 – abdomen of female in lateral view.

6. In male process of fourth sternite as in figs **3312**, **3313**, in female fifth sternite bifurcate (fig. **3314**). Aedeagus as in figs **3310**, **3311**. Length 4.3–5.4 mm (male) to 4.7–6.3 mm (female). Distributed in Asia Minor **forcipifer** (WEISE, 1900).
- . In male process of fourth sternite as in figs **3317**, **3318**, in female fifth sternite (figs **3319**, **3320**) not bifurcate. Aedeagus as in figs **3315**, **3316**. Length about 3.9 mm (male) to 4.6–5.2 mm (female). One subspecies (subsp. *ogloblini* BOGATCHEV, 1947) was described from Iran, possibly a distinct species differing from *stylifer* s. str. by appendices of fourth abdominal sternite in male broadened at apex. Distributed in Transcaucasian countries, reports from eastern Carpathians sound incredible
..... **stylifer** (WEISE, 1899).



Figs 3321-3324. *Nymphius ensifer* (after FOGATO 1981): 3321, 3322 – aedeagus in dorsal and lateral view; 3323, 3324 – abdomen of male in ventral and lateral view.

7. In male fourth abdominal sternite with two short process (figs **3323**, **3324**), in female the fifth sternite with no particular characters. Aedeagus as in figs **3321**, **3322**. Length 3.4–4.0 mm (male) to about 4.0 mm (female). Distributed in Syria and Asia Minor **ensifer** (GUILLEBEAU, 1891).
- . In male fourth abdominal sternite without process (figs **3327**, **3328**), in female fifth sternite with a deep hollow limited by two broad ridges (figs **3329**, **3330**). Aedeagus as in figs **3325**, **3326**. Length 3.4–4.2 mm (male) to 3.7–4.8 mm (female). Distributed in Bulgaria, Asia Minor and Caucasian countries **lydius** (WEISE, 1886).

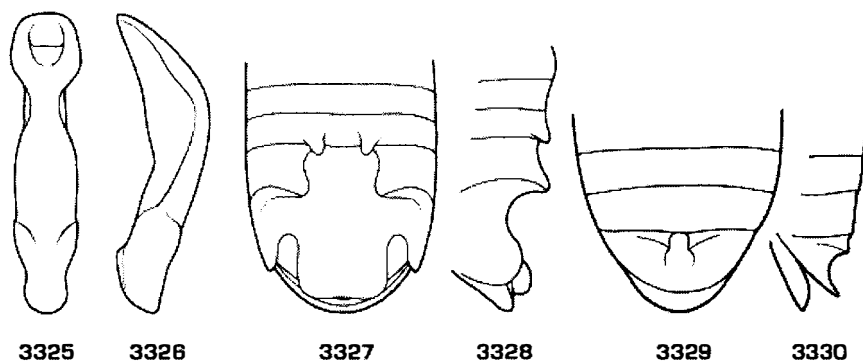
Genus ***Paleosepharia*** LABOISSIÈRE, 1936

57 species, distributed mainly in Indochina and S China. One unclear species described also from Tibet. Body almost entirely rust-brownish, anterior part of head and apex of abdomen brownish-black. On each elytron run a longitudinal costa from base to midlength (costae on elytra unusual in this genus). Aedeagus not studied. Length 5.7 mm. Described from Tibet (Xizang) based on one male only. Probably not congeneric with remaining species of *Paleosepharia* **costata** JIANG, 1990.

All eleven species belonging to genus *Paragetocera* are distributed in China. In discussed area four species.

Key to species

1. Pronotum black with yellowish borders, occiput and scutellum black. Antennomeres 4–11 pitchy brown, elytra metallic greenish-blue. Distributed in N China (Kansu) ...
..... ***nigricollis*** ZHANG et YANG, 2004.
- . Pronotum and occiput entirely yellowish or brownish **2.**



Figs 3325-3330. *Nymphius lydius* (after FOGATO 1981): 3325, 3326 – aedeagus in dorsal and lateral view; 3327, 3328 – abdomen of male in ventral and lateral view; 3329, 3330 – abdomen of female in ventral and lateral view.

2. Elytral border flattened, elytra strongly widened in hind part. Body yellowish brown, antennae, tibiae and tarsi darkened, elytra metallic blue. Length 5.5–7.0 mm. Distributed in China from Yunnan to Tibet (Xizang) ***involuta*** LABOISSIÈRE, 1929.
- . Elytral border not flattened, elytra not very strongly widened in hind part **3.**
3. Humeral ridge weak, reaching the midlength of elytra. Body yellowish brown, antennae, tibiae and tarsi pitchy, abdomen darkened, blackish, elytra dark blue with metallic reflex. Length 6.0–8.1 mm. In southern part of distribution area forms a subspecies with blackish metasternum and scutellum (subsp. *metasternalis* CHEN, 1942). Distributed in China from Yunnan to Kansu and Shansi, subspecies in Yunnan only ***parvula*** (LABOISSIÈRE, 1929).
- . Humeral ridge well-developed, reaching beyond midlength of elytra. Body yellowish brown, antennae, tibiae and tarsi darkened, elytra metallic blue. General view as in plate LXXXV, **phot. 757**. Length 4.5–7.5 mm. Distributed in China from Yunnan to Kansu and Shanxi ***flavipes*** CHEN, 1942.

Genus *Paraspitiella* CHEN et JIANG, 1981

One species only. Upper side pale yellow with black markings. Underside, head and antennae black. Antennae reaching to midlength of elytra. Male unknown. Length 10.0–10.5 mm. Described from Tibet (Xizang) *nigromaculata* CHEN et JIANG, 1981.

Genus *Paridea* BALY, 1888

Genus *Paridea* comprises about 85 hitherto described species, distributed mainly in eastern part of Palaetropical region. Several species belonging to the fauna of E Palaearctic occur in E Asia (N China, Korea, Japan).

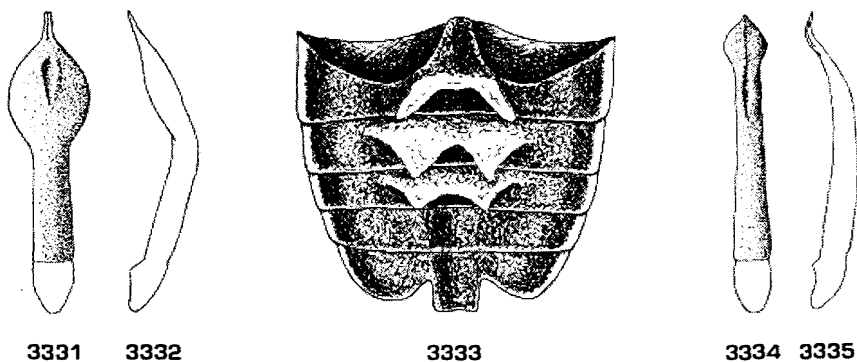
Key to subgenera

- 1. In female both pigidium and anal sternite entire *Paridea* s. str.
- . In female or pigidium either anal sternite incised **2.**
- 2. In female pigidium incised, anal sternite entire *Semacia*.
- . In female pigidium entire, anal sternite incised *Paraulaca*.

Key to species (common for all three subgenera)

- 1. Elytra entirely pale without black or blackish pattern **2.**
- . Elytra not entirely pale **4.**
- 2. Apex of last abdominal sternite in female incised, in male trilobed and its median lobe with a distinct longitudinal impression. Pale forms of *angulicollis* (see antithesis 10).
- . Apex of last abdominal sternite entire in both sexes **3.**
- 3. General view as in plate LXXXV, **phot. 760**. In male on anterior part of each elytron a longitudinal impression, separated from suture by a slightly curved ridge. In female pygidium long, forked and flattened, on apical margin narrowly blackish. Length 5.3–6.2 mm. Distributed in W China (Sichuan, Tsinghai)
..... *P. (Semacia) avicauda* (LABOISSIÈRE, 1930).
- . In male elytra without impressions, in female pygidium entire. General colour dark yellow or orange, antennae entirely pale, distinctly shorter than elytra. Body larger, length 6.3–7.1 mm. Described from Tibet (Xizang)
..... *P. (Paridea) euryptera* YANG, 1991.
- 4. Elytra black or black with yellowish spots **5.**
- . Elytra pale with black or blackish pattern **6.**
- 5. Elytra black, with a fairly long carina starting from humerus. Rest of body except antennomeres 5–11, scutellum and metasternum pale, on hind part of head and on anterior part of pronotum black spot. Length 4.8–5.4 mm. Distributed in W and S China (Kansu, Sichuan, Chekiang, Kiangsu) ... *P. (Paridea) costata* (CHŪJŌ, 1935).
- . Elytra without carina, black with a large yellowish spot behind scutellum. Relatively large species, length 6.0–7.3 mm. Distributed in Tibet (Xizang)
..... *P. (Semacia) flavipoda* YANG, 1991.
- 6. On each elytron 3 black spots (1, 2), both postmedian spots usually partly fused, forming a transverse band interrupted by suture. Body yellowish to pale reddish brown;

- metathorax, dorsal margins of femora, tarsi and abdominal sternites 1–4 black. In male legs covered by tufted hairs, abdomen deeply excavated in middle and trilobed at apex. Puncturation of elytra very dense, randomly scattered. Length 5.5–6.5 mm. Described from Tibet (Xizang) *P. (Paridea) hirtipes* CHEN et JIANG, 1981.
- . On each elytron one or two black spots, legs in male never tufted 7.
 - 7. On each elytron a large apical spot and a common spot covering scutellum. Females of *angulicollis* (see thesis 10).
 - . No common spot covering scutellum. On each elytron two or four black spots 8.
 - 8. On each elytron a large spot in apical part and a very small longitudinal stripe on humerus black. Length 5.5–6.8 mm. In female pygidium deeply incised. Distributed in China (Tibet, Hupeh Sichuan, Fukien) ... *P. (Semacia) biplagiata* (FAIRMAIRE, 1889).
 - . On each elytron two or four large spots 9.
 - 9. Each elytron with 4 spots (2, 2). These patches show a rather great deal of variation in their size, but their position is constant. Along ventral side of abdomen run a broad black median stripe, on pygidium two black patches laterally. Length 6.0–7.0 mm. Distributed in W Himalayas, India, Assam and Tibet *P. (s. str.) octomaculata* (BALY, 1886).
 - . On each elytron at most two large black spots 10.
 - 10. On each elytron two large black spots. General view as in plate LXXXV, **phot. 759**. Antennae pitchy black, legs dark reddish brown. Length 5.0–5.7 (= *inornata* CHEN, 1934, nec HEYDEN, 1889). Distributed in Japan (Honshu, Shikoku, Kyushu) and in S China *P. quadriplagiata* (BALY, 1874).
 - . On each elytron a large black apical spot. In male anterior part of elytra pale, behind scutellum at suture two small ovale hollow. General view as in plate LXXXV, **phot. 758**. In female behind scutellum no hollow, but onerather large, common blackish spot. Sometimes elytra uniformly pale, without black markings in both sexes. Length 4.5–5.5 mm (= *nipponensis* LABOISSIÈRE, 1930). Distributed in Japan (Hokkaido, Honshu, Shikoku, Kyushu), Taiwan and China (Kirin, Hopei, Fukien) *P. (Paraulaca) angulicollis* (MOTSCHULSKY, 1853).

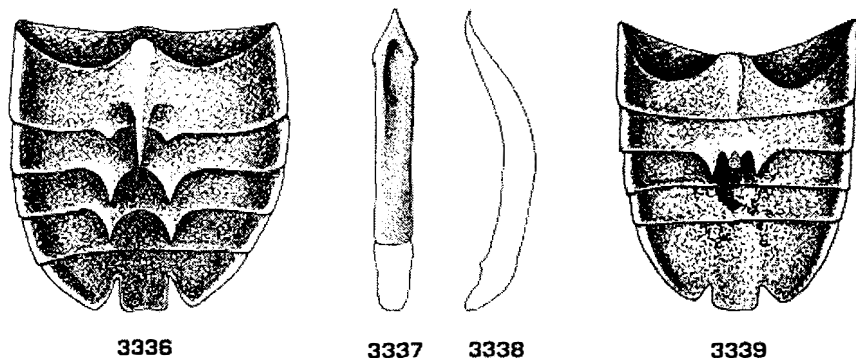


Figs 3331-3335. Aedeagus in dorsal and lateral view, abdomen of male in ventral view (after WARCHALOWSKI 1998): 3331, 3332 – *Phyllobrotica signata*; 3333-3335 – *P. binotata*.

In discussed area six species; remaining other six species distributed in Palaeotropical area (India, S China, Taiwan).

Key to species

1. On each elytron a longitudinal dark stripe, usually brownish-grey, rarely pure black, sometimes reduced to a spot near scutellum. General view as in plate LXXXV, **phot. 761**. Aedeagus conspicuously shaped, in apical part strongly widened, spoon-like (figs **3331**, **3332**). Length 5.7–7.0 mm (= *bisignata* GEBLER, 1830, *sibirica* JOANNIS, 1866). Distributed in E Siberia, N China and Korea ... *signata* (MANNERHEIM, 1825).
- . On elytra black spots, sometimes fused **2.**

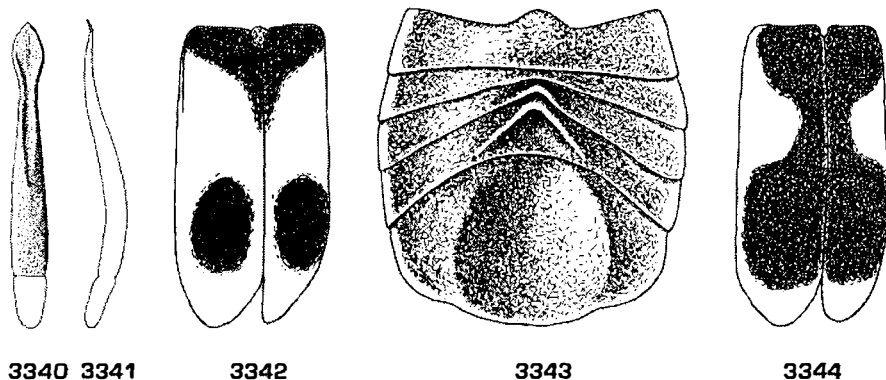


Figs 3336-3339. Aedeagus in dorsal and lateral view, abdomen of male in ventral view (after WARCHAŁOWSKI 1998): 3336-3338 – *Phyllobrotica adusta*; 339 – *P. elegans*.

2. Head entirely yellow
- . Head entirely or at least in hind part black
3. Scutellum, antennae and legs entirely yellow. Upper side yellowish, on hind part of each elytron a great blackish spot. General view as in plate LXXXV, **phot. 762**. Underside of abdomen in male as in fig. **3333**. Aedeagus as in figs **3334**, **3335**. Length 4.9–5.6 mm (= *aslani* WARCHAŁOWSKI, 1998). Species described from north-eastern Turkey based on one female only *binotata* OGLOBLIN, 1926.
- . Scutellum, apical part of antennae and legs partly, black. Upper side yellowish, on hind part of each elytron a great blackish spot. Underside of abdomen in male as in fig. **3336**. Aedeagus as in figs **3337**, **3338**. Length 5.2–6.9 mm. Variation: tibiae reddish (ab. *litoralis* MÜLLER, 1924). Distributed in Balkan Peninsula, basin of Danube and Ukraine *adusta* (CREUTZER, 1799).
4. Head entirely black, labrum and mouth parts brownish only. Upper side yellowish, on elytra a great triangular common spot near scutellum and a roundish spot in apical part. General view as in plate LXXXV, **phot. 763**. Underside of abdomen in male as in fig. **3339**. Aedeagus as in figs **3340**, **3341**. Length 5.0–5.6 mm (= *nigropunc-*

tata PIC, 1894). Variations: elytral pattern as in fig. 1966 (ab. *trimaculata* BALLION, 1890, fig. 3342), dark form: elytral pattern as in *frontalis* (antithesis 5) (unnamed). Distributed around the Black Sea (Asia Minor, European Turkey, Bulgaria, Moldavia, southern Ukraine) and in Caucasian countries *elegans* KRAATZ, 1866.

- Head bicolorous: anterior part and frontal calli pale yellow, vertex and hind part of frons pure black 5.



Figs 3340-3344. Aedeagus in dorsal and lateral view, abdomen of male in ventral view, elytral pattern (after WARCHALOWSKI 1998): 3340-3341 - *Phyllobrotica elegans*; 3342 - *P. elegans* ab. *trimaculata*; 3343 - *P. quadrimaculata*; 3344 - *P. frontalis* ab. *conjuncta*.

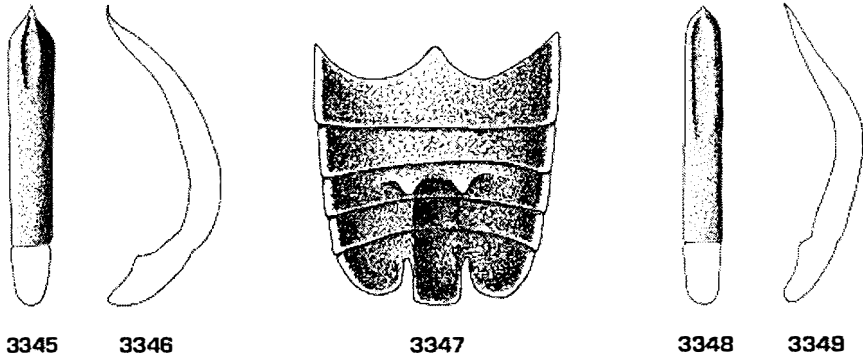
- 5. Humeral calli without hairs. Scutellum yellowish. Upper side yellowish, on each elytron two black spots. General view as in plate LXXXV, phot. 764. Underside of abdomen in male as in fig. 3343. Aedeagus as in figs 3345, 3346. Length 5.4-7.0 mm (= *bimaculata* PANZER, 1795, *melanogaster* GMELIN, 1790). Variations: dark form: two anterior spots enlarged and fused (unnamed), anterior spots absent (ab. *munda* WEISE, 1886). Distributed in a great part of Europa, from Ireland and southern Fennoscandia to basin of Ural and from Pyrenees and northern Italy to Bulgaria *quadrimaculata* (LINNAEUS, 1758).
- Humeral calli with sparse erect hairs. Scutellum blackish. Upper side yellowish with blackish pattern. Underside of abdomen in male as in fig. 3347. Aedeagus as in figs 3348, 3349. General view as in plate LXXXV, phot. 765. Length 6.2-7.1 mm (= *humeralis* KRAATZ, 1891). Variations: black pattern as in *elegans* (thesis 4) (typical form), black pattern as in fig. 3344 (ab. *conjuncta* PIC, 1904). Distributed in Asia Minor and in Caucasian countries *frontalis* WEISE, 1886.

Genus *Proegmena* WEISE, 1889

The genus *Proegmena* includes 5 species; of these two occur in the discussed area.

Key to species

1. Elytra metallic green, blue or bronzy. Pronotum pale with a transverse impression shallower in the middle. Puncturation of elytra entirely random. Length 7.0–8.5 mm. Distributed in Tibet and Sikang ***impressicollis*** (JACOBY, 1891).
- . Elytra yellow with reddish lateral borders and with a subapical roundish black spot on each. Pronotum reddish. Puncturation of elytra arranged in irregular longitudinal rows. Length 5.4 mm. Described from Kansu, based on one female only, perhaps not congeneric with remaining *Proegmena*-species ***bipunctata*** CHEN, 1942.



Figs 3345-3349. Aedeagus in dorsal and lateral view, abdomen of male in ventral view (after WARCHAŁOWSKI 1998): 3345-3346 – *Phyllobrotica quadrimaculata*; 3347-3349 – *P. frontalis*.

Genus ***Pseudoliroetis*** LABOISSIÈRE, 1929

The genus *Pseudoliroetis* comprises 5 species; one species in discussed area. Upper side reddish brown or rust-yellow. Prosternum except pale lateral borders, meso- and metasternum black, head and abdominal sternites usually blackened. Legs with darkened tibiae and tarsi. Pronotum strongly narrowed anteriorly, its lateral margins rounded. In male hind margin of abdominal sternite 4 splited, two triangular lamellae overlap base of sternite 5. Length 9.5–11.0 mm. Distributed in Tibet and W China (Sikang) ***nigriceps*** LABOISSIÈRE, 1929.

Genus ***Scelolyperus*** CROTCH, 1874

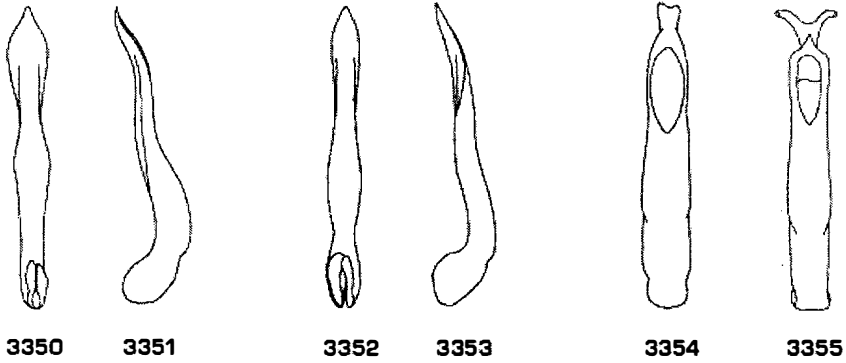
Literature: BEENEN and BEZDĚK 2006.

Six species, distributed in Asia from Caspian area to Transbaicalia.

Key to species

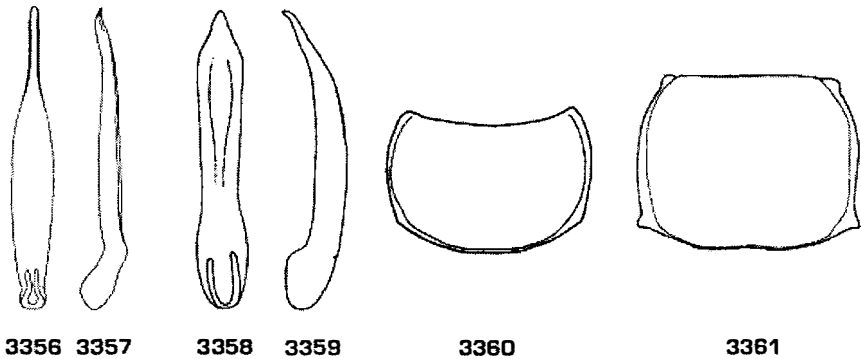
1. Elytra dorsally flat. Aedeagus distinctly narrowed behind apical part Legs dark metallic bluish-black or greenish-black **2.**

- Elytra not flat. Aedeagus not narrowed behind apical part. Legs partly yellow or brown 3.
- 2. Aedeagus (figs 3350, 3351) rather distinctly narrowed behind apical part. Elytra often showing in the middle a stretch which is finely shagreened. General view as in plate LXXXVI, phot. 766. Length 4.9–6.5 mm. Distributed in Kirgystan and Kasachstan *sericeus* (JACOBSON, 1894).
- Aedeagus (figs 3352, 3353) distinctly but more feebly narrowed behind apical part. Elytra evenly punctured. Length 4.2–5.1 mm. Described from Kyrgyzstan *caelesticus* BEENEN et BEZDĚK, 2006.



Figs 3350-3355. Aedeagus in dorsal and lateral view (after BEENEN 2007): 3350, 3351 – *Scelolyperus sericeus*; 3352, 3353 – *S. caelesticus*; 3354 – *S. grandis*; 3355, – *S. kroliki*.

- 3. In mid and hind legs tibiae entirely pale, yellow or brownish 4.
- In mid and hind legs tibiae black, at most their bases pale 5.



Figs 3356-3361. Aedeagus in dorsal and lateral view, outline of pronotum (after BEENEN 2007): 3356, 3357, 3361 – *Scelolyperus altaicus*; 3358-3360 – *S. pseudoaltaicus*.

4. Apex of aedeagus (fig. **3354**) sharpened, ventral lamella forked, protruding anteriorly. Distributed in SE Kazakhstan and in Kyrgyzstan **grandis** (JACOBSON, 1894).
- Apex of aedeagus (fig. **3355**) in dorsal view transversely cut or slightly emarginate, apical part slightly narrowed basally, with almost parallel sides. Upper side dark blue, femora black with yellow apices, tibiae yellow, tarsi less or more darkened. Antennae about 0.8 × as long as body, antennomeres 2–4 yellow, 7–11 black, antennomeres 1, 5 and 6 partly darkened. Length 6.4–6.7 mm. Described from Kyrgyzstan **kroliki** BOROWIEC, 2005.
5. Apex of aedeagus (figs **3356**, **3357**) very narrow and long, outline of pronotum as in fig. **3361**. General view as in plate LXXXVI, **phot. 767**. Elytra densely punctured, interstices very finely rugulose, almost matt. Length 4.7–6.3 mm. Distributed in Mongolia and Siberia from Altai to basin of Amur **altaicus** (MANNERHEIM, 1825).
- Apex of aedeagus (figs **3358**, **3359**) triangular, outline of pronotum as in fig. **3360**. Externally similar to *altaicus* (thesis 5); elytra densely and finely punctured, claws largely appendiculate. Length 4.5–5.6 mm. Described from N Iran (Mazandaran) ... **pseudoaltaicus** (MEDVEDEV, 1975).

Genus *Sermylassa* REITTER, 1912

One species only. Body yellow or rust-yellow, vertex and elytra dark with green, blue or bronzy metallic sheen. Antennae, apex of tibiae and scutellum black. General view as in plate LXXXVI, **phot. 768**. Length 5.0–7.0 mm (= *nigricornis* FABRICIUS, 1775, *viridis* GEOFFROY, 1785). Variations: elytra bronzy-cupreous (ab. *cuprina* WEISE, 1886), metallic shine very feeble, elytra almost black (ab. *picea* LABOISSIÈRE, 1911). Distributed in great part of Europe, from southern France to Kazakhstan and further in Central Asia to Altai and Mongolia **halensis** (LINNAEUS, 1767).

Genus *Sphenoraia* CLARK, 1865

Key to subgenera

1. Body more short oval, antenna robust, distinctly, often strongly, flattened in apical half ***Sphenoraioides*** (p. 715).
- Body more elongate, antenna filiform, not distinctly flattened ***Sphenoraia*** (p. 716).

Subgenus *Sphenoraioides* LABOISSIÈRE, 1934

The subgenus *Sphenoraioides* includes 8 species. In discussed area two species.

Key to species

1. Larger. Colouration of upper side metallic. Length 7.5–8.5 mm (= *fulgida* WEISE, 1922). Variations: elytra purplish or golden-green, pronotum bluish (typical form), upper side almost uniformly coloured, blue or bluish (ab. *coerulescens* WEISE, 1922 =

- cyanella* LABOISSIÈRE, 1934). Distributed in S China from Tibet to Fukien
 ***micans*** (FAIRMAIRE, 1888).
 -. Smaller. Pronotum black, elytra brownish red with 8 small, roundish spots on each.
 Length 5.0–5.5 mm. Male unknown. Described based on 5 females from N China
 (Kansu) ***nigra*** WANG, LI et YANG, 2000.

Subgenus ***Sphenoraia*** s. str.

The subgenus *Sphenoraia* s. str. includes 15 species. In discussed area three species.

Key to species

1. Elytra uniformly metallic black-blue or violaceous, without pale marking. Head, pronotum, underside of body and legs black. Underside of three or four antennomeres yellowish. Length 4.0–5.0 mm (= *japonica* CHŪJŌ, 1956). Distributed in Japan (Honshu) ***intermedia*** (JACOBY, 1885).
- . Elytra bicolorous 2.
2. Upper side and legs dark yellow or orange, hind part of head, a central spot on pronotum, scutellum and spots on elytra situated as in plate LXXXVI, **phot. 769** black with metallic reflex. Length about 5.0 mm. Distributed in China (Sichuan, Kansu). In southern part of distribution area occurs subsp. *omeiensis* CHEN, 1942 coloured paler, in north part the typical form, coloured darker, without the fore pale transverse stripe on elytra. Distributed in China (Sichuan, Kansu) ***picta*** CHEN, 1942.
- . Body black, elytra with pale stripes. Length 6.5 mm. Described from Tibet (Xizang) ***punctipennis*** JIANG, 1992.

Genus ***Spitiella*** LABOISSIÈRE, 1931

The genus *Spitiella* includes 2 species; in the discussed area one species only. Elytra much broader than pronotum, eyes very convex particularly in male. Pronotum conspicuously broadened anteriorly, without any trace of impressions. Underside, head, scutellum, legs and antennae black. and legs black. Pronotum pale yellowish, ground of elytra rust-yellow with a weak metallic reflex. On each elytron a few metallic green or bronzy spots: one spot at base, two before midlength and often also three before apex. Length 8.5–11.0 mm (= *auriculata* LABOISSIÈRE, 1931). Distributed in N Pakistan, N India, Himalaya and Tibet ***collaris*** BALY, 1878.

Genus ***Stenoluperus*** OGLOBLIN, 1936

The genus *Stenoluperus* includes 32 species; of these five occur in the discussed area.

Key to species

1. Legs pale. Upper side greenish-aeneous or cupreous, elytra often more greenish than pronotum. Antennae distinctly shorter than body. Lateral impressions on pronotum

- rather shallow, roundish. Puncturation of elytra strong, arranged in longitudinal semiregular rows, intervals distinctly convex. Length 3.0–3.6 mm. Described from N China (Kansu) **flavimembris** CHEN, 1942.
- . Legs black or bluish, in immature specimens purplish brown **2**.
 - 2. Elytron with lateral costa starting from humerus. Upper side bluish black. Under-side, legs and antennae black. Length 2.8–3.2 mm. Distributed in Japan (Honshu) ...
..... **bicarinatus** (WEISE, 1889).
 - . Elytra without carina **3**.
 - 3. Middle of pronotum almost impunctate. Upper side bluish black. Underside, legs and antennae black **4**.
 - . Middle of pronotum sparsely punctate, third antennomere shorter than fourth. Moderately strongly punctured. Upper side bluish black, underside, legs and antennae black. Length 3.5–4.0 mm. Distributed in Japan (Hokkaido, Honshu, Kyushu)
..... **cyaneus** (BALY, 1874).
 - 4. Third antennomere longer than fourth and 2–3 × longer than 2. Elytra moderately strongly punctured. General view as in plate LXXXVI, **phot. 770**. Length 3.5–4.0 mm (= *jacobyi* WEISE, 1924). Distributed in E Siberia, China, Korea, Japan (Hokkaido, Honshu, Shikoku, Kyushu) and Taiwan
..... **nipponensis** (LABOISSIÈRE, 1911).
 - . Third antennomere 1.5 × longer than 2. Elytra stronger punctured than in *nipponensis* (thesis 4). Length 3.0–3.8 mm. Distributed in China (Sichuan, Sikang, Kansu), reported also, perhaps erroneously, from Taiwan
..... **potanini** (WEISE, 1889).

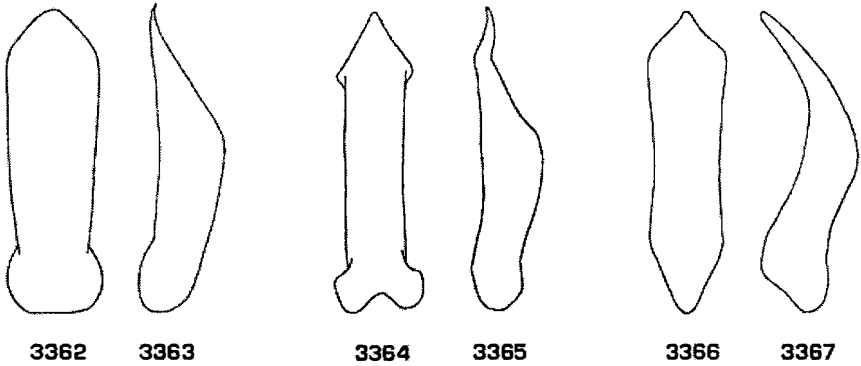
Genus *Taphinellina* MAULIK, 1936

Over 40 species are included in the genus *Taphinellina* MAULIK, but the systematic position of some species is not sufficiently justifiable. E Asiatic genus, distributed in India, China, Mongolia, E Siberia, Korea, Japan with Ryu-Kyu Isl., N Indochina and Taiwan. In the discussed area 13 species. Uclear species *T. hummeli* LABOISSIÈRE, 1935, described from (?) S Kansu, not included in the key.

Key to species

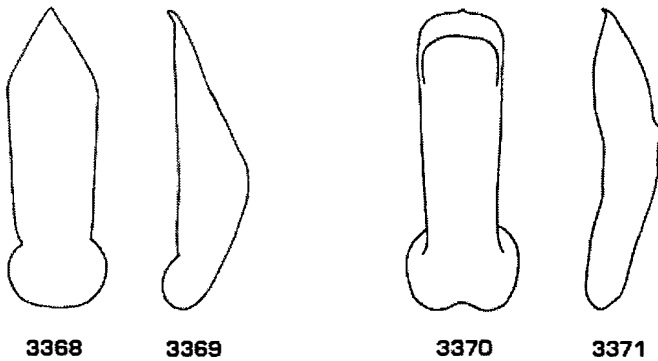
- 1. Upper side pale, sutural stripe black. Length 3.5–4.0 mm. Described from Mongolia, supposedly not congeneric **icterica** (WEISE, 1889).
- . Upper side metallic blue or green **2**.
- 2. Abdomen entirely or partly (in hind part) yellow **3**.
- . Abdomen entirely black or pitchy **7**.
- 3. Body small, length about 3.0 mm **4**.
- . Body larger, length 4.0–6.5 mm **5**.
- 4. Aedeagus (figs **3362**, **3363**) broadened anteriad, apex triangularly rounded, very tip obtuse. Upper side dark brown with aeneous shine. Pronotum short, elytra strongly but shallowly punctured, interstices covered by very fine punctulation and barely visible, erect hairs. Length about 3.0 mm. Described from Mongolia, reported also from some provinces of China (Kansu, Sichuan, Sikang, Yunnan)
..... **aeneofusca** WEISE, 1889.

- Aedeagus (figs **3364**, **3365**) parallel, apical part distinctly triangular. Length 2.8–3.2 mm. Distributed in Japan (Honshu, Shikoku, Kyushu) and in Taiwan. Reported also, perhaps erroneously, from China **akkoae** (CHŪJŌ, 1954).



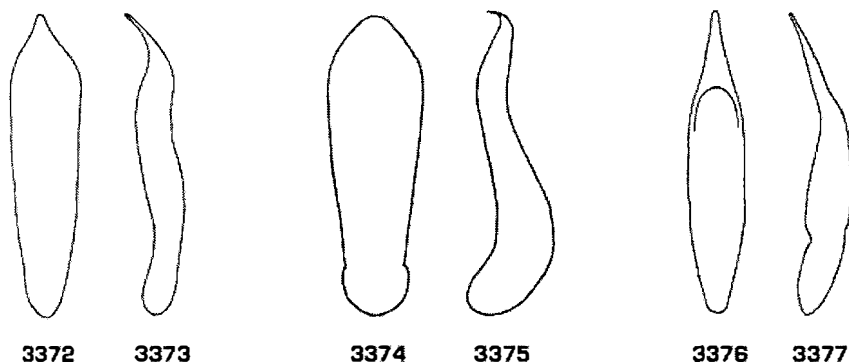
Figs 3362-3367. Aedeagus in dorsal and lateral view (3364, 3365 after KIMOTO and TAKIZAWA 1994, remaining after GRESSIT and KIMOTO 1961): 3362, 3363 – *Taphinellina aeneofusca*; 3364, 3365 – *T. akkoae*; 3366, 3367 – *T. iniqua*.

- 5. Pronotum with two transverse lateral impressions behind midlength. Apical part of aedeagus (figs **3366**, **3367**) in dorsal view with feebly differentiated lamella, in lateral view strongly bent ventrally. Length 4.4–6.5 mm. Distributed in China from Sichuan to Kansu **iniqua** (WEISE, 1889).
- Pronotum without impressions, evenly convex **6**.



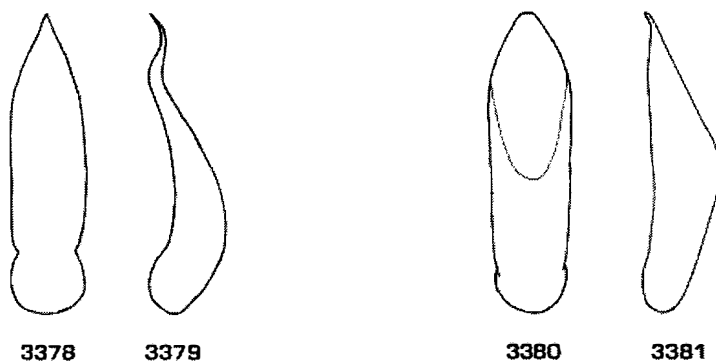
Figs 3368-3371. Aedeagus in dorsal and lateral view (after GRESSIT and KIMOTO 1961): 3368, 3369 – *Taphinellina flaviventris*; 3370, 3371 – *T. chujoi*.

6. Antennomere 4 distinctly longer than 1. Apex of aedeagus (figs 3368, 3369) in dorsal view sharp triangular. General view as in plate LXXXVI, **phot. 7771**. Length 4.5–5.2 mm. Broadly distributed in E Siberia, Korea, China and Japan *flaviventris* (MOTSCHULSKY, 1860).
- . Antennomere 4 not distinctly longer than 1. Apex of aedeagus (figs 3370, 3371) broadly rounded with a very small lamella. Length 4.0–5.0 mm. Distributed in E China and in Japan (Yakushima, Kyushu, Honshu) *chujo* (NAKANE, 1958).



Figs 3372–3377. Aedeagus in dorsal and lateral view (3374, 3375 after GRESSIT and KIMOTO 1961, remaining after KIMOTO and TAKIZAWA 1994): 3372, 3373 – *Taphinellina nobyi*; 3374, 3375 – *T. nigriiventris*; 3376, 3377 – *T. cyanea*.

7. Large species, length over 4.4 mm. Externally similar to *cyanea* (thesis 10), but much larger. Aedeagus (figs 3372, 3373) in lateral view wavy. Length 4.5–6.0 mm. Distributed in Japan (Honshu, Kyushu, Shikoku) *nobyi* (CHŪJŌ, 1954).
- . Smaller species, length of body at most 4.0 mm **8**.



Figs 3378–3381. Aedeagus in dorsal and lateral view (after GRESSIT and KIMOTO 1961): 3378, 3379 – *Taphinellina parvicollis*; 3380, 3381 – *T. minuta*.

8. Puncturation of elytra arranged in longitudinal stripes or irregular rows, intervals convex, elytra very feebly semicostate. Aedeagus not studied. Length 3.2 mm. Supposedly a representative of genus *Luperus* (p. 689). Distributed in China (Sichuan, Kansu) ***punctatolineata*** (LABOISSIÈRE, 1935).
- . Puncturation of elytra random. Four species, externally very similar to each other, distinguishable only by the shape of aedeagus **9.**
9. Apex of aedeagus (figs **3374, 3375**) in lateral view shortly crooked down. Length 3.3–4.0 mm. Distributed in China (Hupeh, Shansi) ***nigriventris*** (OGLOBLIN, 1936).
- . Apex of aedeagus in lateral view not shortly crooked, but gently crooked or only its very tip bent down **10.**
10. Apex of aedeagus (figs **3376, 3377**) in dorsal view elongate, strongly, gradually narrowed. Length 3.0–3.8 mm. Distributed in Japan (Honshu, Shikoku) ***cyanea*** (JACOBY, 1885).
- . Apex of aedeagus in dorsal view not elongate and strongly narrowed **11.**
11. Apex of aedeagus (figs **3378, 3379**) in dorsal view sharpened, in lateral view gently crooked. Length 3.2–4.0 mm. Distributed in China (Kansu, Sichuan, Sikang) ... ***parvicollis*** (WEISE, 1889).
- . Apex of aedeagus (figs **3380, 3381**) in dorsal view obtuse, in lateral view with very tip slightly bent down. Length 2.7–4.0 mm. Distributed in N China, E Siberia and Korea ***minuta*** (JOANNIS, 1866).

Genus ***Trichomimastra*** LOPATIN, 1962

Twenty species, distributed in oriental part of Palaetropical area from India to Indonesia. In discussed area one species only. Body yellowish, elongate, metasternum and abdomen except apex brownish-grey. General view as in plate LXXXVI, **phot. 772**. Hairs on elytra extremely short, apparently absent, visible only in hind part in lateral view. Length about 5.0 mm. Described from Afghanistan ***mauliki*** (LOPATIN, 1962).

Genus ***Tschitscherinula*** JACOBSON, 1908

One species only. Body black, elytra with silky shine. Legs rust-yellow, last tarsomeres blackish. Head elongate, tempora as long as eyes. Length about 4.0 mm. Described from Turkmenistan ***paradoxocara*** JACOBSON, 1908.

Genus ***Tuomeria*** CHEN et JIANG, 1986

Tuomeria CHEN et JIANG, 1988.

One species only. Upper side violaceous blue, in some specimens head and pronotum more blue. Three or four basal antennomeres, apices of femora, tibiae entirely and base of first tarsomeres brown, remaining parts of antennae and legs black. Antennae reaching to the middle of elytra, antennomere 2 short, third longer, further antennomeres still longer, approximately equal in length. Pronotum very finely and indistinctly pun-

cate, punctures on elytra fine, but distinct and densely scattered. Length 5.0–6.3 mm. Described from NW China (Sinkiang) **tibialis** CHEN et JIANG, 1986.

Genus **Zangia** CHEN, 1976

The genus *Zangia* includes 5 species; of these two in Tibet, remaining three species (with black or metallic elytra) in S China.

Key to species

- 1. Upper side yellowish-brown. Antennae piceous in both sexes, puncturation of elytra strong. In male anal sternite with a groove in the middle, fore tarsi not broadened. Length 6.8–8.5 mm. Described from Tibet (Xizang) **pallidula** JIANG, 1990.
- . Upper side yellowish-brown. Antennae in female pale, in male darkened. Abdomen dark brown or piceous. Elytra finely punctate. In male anal sternite without groove, first tarsomere of fore legs dilated. Length 6.5–7.5 mm. Described from Tibet
..... **latispina** CHEN, 1976.

Genus **Zizonia** CHEN, 1976

One species only. Antennae slender, mid and hind tibiae unspined. Upper side violaceous, head and pronotum more bluish, underside, legs and antennae black with bluish reflex. Elytra broadened behind middle, at base much broader than pronotum. Pronotum smooth, almost impunctate, puncturation of elytra fine but deep and dense. Length 5.0 mm. Male unknown. Described from Tibet, based on one female only
..... **tibetana** CHEN, 1976.

Tribe **Oidini**

Tribe *Oidini* WEISE includes six genera distributed in Palaetropical area, Australia and Pacific archipelagos. In the discussed area occur representatives of genus *Oides* only.

Genus **Oides** WEBER, 1801

A large genus comprising more than 160 species. In the discussed area three species.

Key to species

- 1. Elytron with a large metallic blue-green or blue-black discal spot, occupying most part of elytral surface. General view as in plate LXXXVI, **phot. 773**. Length 10.5–13.0 mm (= *elegans* LABOISSIÈRE, 1919). Distributed in Indochina, S China, Japan (Honshu) and Korea **bowringii** (BALY, 1863).
- . Elytron without metallic shining spot, flavous with black pattern **2**.

- 2. Upper side flavous, on each elytron 5 black spots, legs and antennae yellowish, antennomeres 9–11 black. General view as in plate LXXXVI, **phot. 774**. Length 9.0–12.5 mm. Distributed in Indochina, S China, Taiwan, N China (Hopei, Kirin) and Korea ***decempunctatus*** (BILLBERG, 1808).
- . Head and scutellum pitchy, pronotum castaneous, elytra flavous with narrow sutural black stripe. Underside black, antennae and legs black, three basal antennomeres on underside and tibiae brownish. Length about 10.0 mm. Described from Tibet (mts. Xizang) ***gyironga*** CHEN et JIANG, 1981.

Subfamily *Alticinae*

Key to genera

1. Antennae with 9 or 10 antennomeres **2**
- Antennae with 11 antennomeres **3**
2. Antennae with 9 antennomeres *Nonarthra* (p. 926).
- Antennae with 10 antennomeres *Psylliodes* (p. 976).
3. Hind tibia with very strongly prolonged apical part, longer than the remaining part of tibia *Aphthonoides* (p. 770).
- Apical part of hind tibia (beyond the base of tarsus) much shorter than the remaining tibiae **4**
4. Apical spur of hind tibia bifid or forked *Dibolia* (p. 805).
- Apical spur of hind tibia simple or (rarely) absent **5**
5. Claw tarsomere of hind tibia strongly thickened **6**.
- Claw tarsomere not thickened **8**.
6. Pronotum with transverse antebasal furrow or impression *Philopona* (p. 935).
- Pronotum without transverse furrow or impression **7**.
7. Upper side dark greenish-black with metallic reflex and with yellowish pattern. Species distributed in W Mediterranean area *Oedionychis* (p. 927).
- Upper side without mettalic reflex. Species distributed in E Asia *Hyphasis* (p. 826).
8. Pronotum without transverse furrow or impression **9**.
- Pronotum with transverse impression or/and longitudinal furrows in basal part ... **37**.
9. Mid and hind tibiae with obtuse tooth on external margin and with bristled excavation before apex *Chaetocnema* (p. 778).
- Mid and hind tibiae without tooth or bristled excavation **11**.
10. Pronotum with impressions or short longitudinal furrows at anterior margin. Body very large, its length over 7.0 mm **11**.
- Anterior part of pronotum without furrows or impressions **12**.
11. On pronotum two short longitudinal furrows at anterior margin only. Pronotm very short, 2.5–3.0 × broader than long *Blepharida* (p. 777).
- On pronotum two short longitudinal furrows at anterior margin, two short longitudinal furrows at basal margin and two curved lateral furrows connected with anterior furrows *Ophrida* (p. 929).
12. Primary elytral puncturation random **13**.
- Primary elytral puncturation of elytra arranged in longitudinal rows **27**.
13. First antennomere as long or longer than antennomeres 2–4 measured together. Length of body 3.0–3.4 mm *Schenklingia* (p. 1019).
- First antennomere shorter than antennomeres 2–4 measured together **14**.
14. Interantennal space as broad or broader than transverse diameter of eye. Length of body 2.0–2.5 mm *Ivalia* (p. 827).
- Interantennal space narrower than transverse diameter of eye **15**.
15. Body shortened oval, sometimes almost hemisphaerical, convex **16**.
- Body not particularly short oval and convex **20**.
16. Hind tibiae produced apically, projection curved, tarsus inserted preapically *Argopistes* (p. 772).
- Hind tibiae not produced, at most broadly tooth-like broadened, tarsus inserted apically **17**.

17. All tibiae dilated, fore tibiae in male rather peculiarly formed. Body rusty-yellow, on each elytron 4–6 black spots *Pentamesa* (p. 934).
 –. Not as above **18**.
18. Clypeus bilobed or deeply incised, antennomere 4 distinctly or much longer than 2 **19**.
 –. Clypeus entire, antennomeres 2–4 equal or subequal ... *Sphaeroderma* (p. 1019).
19. Prosternal process longitudinally channeled. Body brownish red, abdomen black; one feebly studied species from China *Parargopus* (p. 934).
 –. Prosternal process not channeled *Argopus* (p. 773).
20. Frontal calli melted together to unique callosity, vertex also strongly convex
 *Lanka* (p. 827).
 –. Frontal calli normally shaped, separated or absent **21**.
21. In hind legs first tarsomere as long as 1/2 length of tibia or longer, inserted on a small thickening at apex of tibia *Longitarsus* (p. 828).
 –. In hind legs first tarsomere shorter than 1/2 length of tibia, never inserted on a thickening at apex of tibia **22**.
22. Apex of elytra covered by sparse fine pubescence. Prosternum between coxae narrow. Antennomeres 2 and 3 very short, nearly equal in length ... *Luperomorpha* (p. 904).
 –. Whole surface of elytra bare **23**.
23. Hind tibiae with a gutter-like excavation extending at least from apex to basal 1/4 ...
 *Hemipyxis* (p. 822).
 –. Hind tibiae without a gutter-like excavation **24**.
24. Frontal calli flat, weakly limited behind. Body oblong, flattened
 *Phyllotreta* (p. 936).
 –. Frontal calli convex, body not flattened **25**.
25. Antennal calli triangular, slightly elongate, situated rather vertically
 *Trachyaphthona* (p. 1023).
 –. Antennal calli oval or subquadrate **26**.
26. Humeral calli very strongly developed, projecting. Puncturation of upper side strong and uneven *Heyrovskya* (p. 824).
 –. Humeral calli often well-developed, but not particularly projecting. Puncturation of upper side uniformly scattered, usually fine or very fine *Aphthona* (p. 743).
27. Space between antennal cavities as broad as transverse diameter of eye
 *Podagricomela* (p. 974).
 –. Space between antennal cavities much smaller than transverse diameter of eye ... **28**.
28. Frontal furrows deepened and prolonged to upper margin of eye
 *Dentisterna* (p. 801).
 –. Frontal furrows not prolonged, normal **29**.
29. Body very small (0.9–1.3 mm), round and convex. Labrum bilobed. Rows of elytral punctures often confused **30**.
 –. Body larger, not roundish and particularly convex. Labrum not bilobed **31**.
30. Hind femora strongly thickened *Mniophila* (p. 913).
 –. Hind femora barely thickened *Mniophilosoma* (p. 914).
31. Body bicolorous: pronotum red, elytra black. Length of body 2.0–2.5 mm
 *Aphthonomorpha* (p. 770).
 –. Body not bicolorous **32**.
32. Upper side dark brown, pitchy or black with metallic reflex **33**.
 –. Upper side yellowish or brown. Upper side without metallic reflex. Humeral calli protruding. Scutellum not transverse **35**.

33. Frontal calli distinct, well-limited. Length of body over 2.0 mm *Apteropeda* (p. 770).
 - Frontal calli indistinct or absent. Length of body almost always under 2.0 mm ... **34**.
34. Upper side with metallic refl ex. Humeral calli weakly developed. Scutellum transverse *Sinaltica* (p. 1019).
 - Upper side without metallic refl ex. Humeral calli distinct *Manobidia* (p. 907).
35. Body oblong, slightly flattened. Lateral margins of pronotum ciliate. First tarsomere of hind legs long, approximately as long as in *Longitarsus* ... *Anthobiodes* (p. 743).
 - Body oval, not flattened, pronotum not ciliated on lateral margins, first tarsomere of hind legs short **36**.
36. Upper side pale, finely punctate, humeral calli feebly developed but perceptible *Lytharia* (p. 906).
 - Upper side black or pitchy, usually with distinct metallic reflex, distinctly and deeply or strongly punctured, humeral calli absent *Batophila* (p. 775).
37. Upper side covered by hairs **38**.
 - On upper side no hairs (or at least with very sparse and indistinct hairs) **38**.
38. Pronotum somewhat cordiform, its lateral margins uneven, with two small teeth bearing setae and denticulate in hind part *Orthaltica* (p. 934).
 - Lateral margins of pronotum without teeth or denticles **39**.
39. Lateral sides of pronotum almost parallel. Last abdominal sternite as long as two previous sternites measured together *Lipromima* (p. 827).
 - Lateral sides of pronotum slightly converging anteriorly. Last abdominal sternite as long as three previous sternites measured together *Epitrix* (p. 817).
40. Primary puncturation of elytra randomly scattered **41**.
 - Primary puncturation of elytra arranged in regular rows **48**.
41. Pronotum with antebasal transverse impression or furrow **42**.
 - Pronotum without antebasal transverse impression or furrow *Podagrira* (p. 972).
42. Antebasal transverse impression reaches to lateral margins or to hind angles ... **43**.
 - Antebasal impression limited by two short longitudinal furrows *Hermaeophaga* (p. 823).
43. Mesosternum between mid coxae triangular with deep longitudinal impression. Frontal calli strongly inclined. Antennae robust *Phygasia* (p. 935).
 - Mesosternum between mid coxae rectangular without impression. Frontal calli differently situated. Antennae slender **44**.
44. Hind surface of mid tibiae with narrow longitudinal ridge *Altica* (p. 727).
 - Hind surface of mid tibiae without any ridge **45**.
45. Body yellow to brown, without metallic refl ex **46**.
 - Body dark blue with metallic refl ex *Aphthonaltica* (p. 770).
46. Frontal calli situated vertically. On pronotum ante-basal transverse impression rather shallow *Ziangua* (p. 1023).
 - Frontal calli situated obliquely, or ovate **47**.
47. Frontal calli with an anterior process extending to the interantennal space. On pronotum ante-basal transverse impression present *Zipanginia* (p. 1024).
 - Frontal calli without an anterior process extending to the interantennal space, on pronotum ante-basal transverse impression absent *Parazipangia* (p. 934).
48. Pronotum without antebasal transverse impression or furrow, but with two short longitudinal furrows at base **49**.
 - Pronotum with antebasal transverse impression or furrow **50**.

49. Body shorter oval. Nasal ridge generally narrow, narrowed near clypeus **Minota** (p. 911).
 - Body elongate oval. Nasal ridge very broad, broadened near clypeus **Mantura** (p. 907).
50. Antebasal transverse impression reaches to lateral margins or to hind angles ... **51**.
 - Antebasal impression limited by two short longitudinal furrows **52**.
51. Elytra with shallow but distinct transverse impression in $1/4$ – $1/3$ of length. Nasal ridge narrow **Manobia** (p. 907).
 - Elytra without transverse impression. Nasal ridge broad **Ogloblinia** (p. 928).
52. On disc of pronotum in anterior half two oval impressions, longitudinal furrows rather long **Sangariola** (p. 1018).
 - Disc of pronotum without impressions, longitudinal furrows short **53**.
53. Frontal calli large, elongate, situated vertically. Nasal ridge absent **54**.
 - Frontal calli small and short, nasal ridge present **58**.
54. On pronotum antebasal transverse impression and longitudinal furrows deep. Body large, at least 6.0 mm long **Pseudodera** (p. 975).
 - On pronotum antebasal transverse impression and longitudinal furrows shallow. Body smaller, at most 5.2 mm long **55**.
55. Pronotum strongly constricted in basal part. Elytra rather sparsely covered by relatively long, semierect hairs **Pseudoliprus** (p. 975).
 - Pronotum in basal part narrowed, but not constricted **56**.
56. Body length over 3.5 mm **Liprus** (p. 828).
 - Body length under 3.0 mm **57**.
57. Pronotum shining, almost impunctate, strongly narrowed posteriad. Elytra glabrous **Lipromela** (p. 827).
 - Pronotum densely covered by strong punctures, moderately narrowed posteriad. Elytra covered by semierect hairs **Lipromima** (p. 827).
58. Frontal calli weakly delimited behind **59**.
 - Frontal calli distinctly delimited behind **60**.
59. Upper side reddish brown or brown, rarely almost black, without metallic reflex **Orestia** (p. 929).
 - Upper side black with metallic reflex, apical part of elytra yellow or reddish, in rare variations almost entirely reddish **Hippuriphila** (p. 826).
60. Elytra yellowish red to pale rusty-brown, with longitudinal blackish stripes on intervals 3, 5 and 7 **Arrhenocoela** (p. 775).
 - Elytra without blackish longitudinal stripes **61**.
61. Upper side with distinct, usually strong, metallic lustre **Crepidodera** (p. 796).
 - Upper side without vivid metallic lustre **62**.
62. Between scutellum and humeral callus six rows of punctures (double sutural row not included) **Novofoudrasia** (p. 927).
 - Between scutellum and humeral callus 5 rows of punctures (sutural row not included) **63**.
63. Frontal calli elongate, claws bifid. Body testaceous, length 4.2–4.3 mm. One species from Korea **Crepidoderoides** (p. 801).
 - Frontal calli not elongate, claws simple **64**.
64. Hind margin of frontal calli rather indistinctly separated from upper part of frons. Pronotum narrower than base of elytra. Apex of tibiae not widened **Neocrepidodera** (p. 914).
 - Hind margin of frontal calli distinctly separated from upper part of frons by furrow ... **65**.

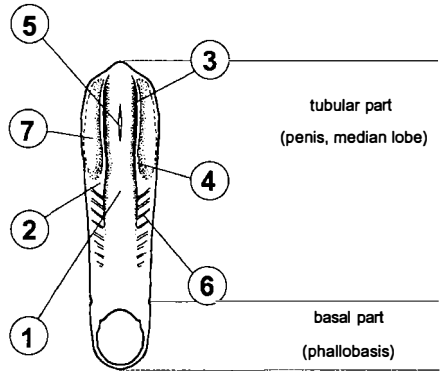
65. Pronotum narrower than elytra at base. Body uniformly coloured, without metallic reflex, usually yellowish or pale brownish, in melanotic variations pitchy brown. Apex of tibiae not widened. Frontal calli triangular, their apices turned down. Punctuation of elytra in hind part disappearing **Ochrosis** (p. 927).
- Pronotum usually as broad as base of elytra, body mostly bicolorous. Apex of tibiae slightly but distinctly widened **Derocrepis** (p. 801).

Genus **Altica** MÜLLER, 1764

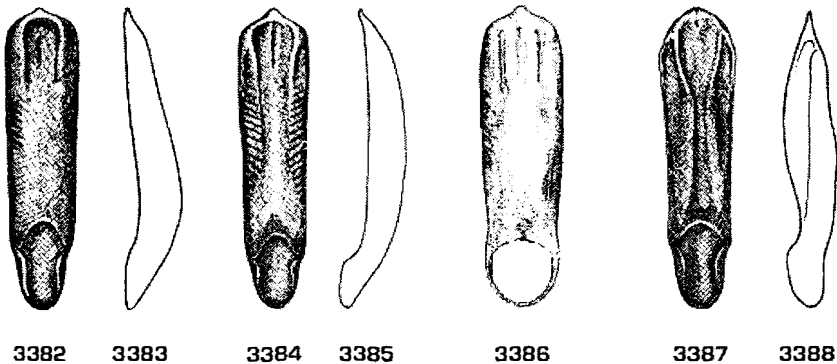
Literature: KRÁL 1964, 1966a, b, 1969, 1976, 1979, KANGAS and RUTANEN 1993.

External characters in *Altica* species are mostly very uniform, consequently the dichotomous identification keys are based almost exclusively on the structure of aedeagus. Females are often undeterminable, and differential characters are sought for.

Along ventral side of aedeagus run three longitudinal zones: the **central stripe** (1) and two **lateral stripes** (2). Inner margin of lateral stripe is often elevated, forming more or less sharp **lateral ridge** (4). In apical part of aedeagus the central stripe can be separated from lateral ridges by two **lateral furrows** (3), in some species strongly impressed and sometimes fovea-like broadened, often prolonged toward basal part. In apical part of aedeagus along the central stripe often run a short **median furrow** (5), sometimes but rather rarely prolonged posteriad. Lateral stripes are usually (not always on whole length and in different species on different sectors) covered by oblique **wrinkles** (short furrows) (6) and in apical part impressed by **lateral deepenings** (7).



(3), in some species strongly impressed and sometimes fovea-like broadened, often prolonged toward basal part. In apical part of aedeagus along the central stripe often run a short **median furrow** (5), sometimes but rather rarely prolonged posteriad. Lateral stripes are usually (not always on whole length and in different species on different sectors) covered by oblique **wrinkles** (short furrows) (6) and in apical part impressed by **lateral deepenings** (7).

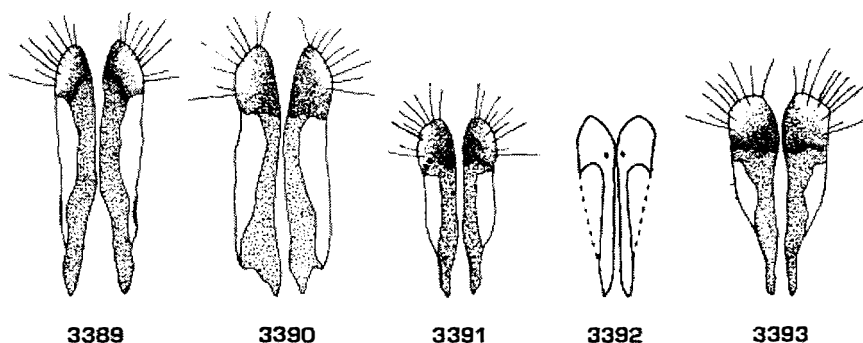


Figs 3382-3388. Aedeagus in ventral and lateral view (3386 after KRÁL 1979, remaining after WARCHALOWSKI 1998): 3382, 3383 – *Altica brevicollis*; 3384, 3385 – *A. quercetorum*; 3386 – *A. bicarinata*; 3387, 3388 – *A. oleracea*.

Four doubtful species: *inconspiqua* KRÁL, 1966 described from ?Spain, *sibirica* CSIKI, 1901 insufficiently described from W Siberia, *difficilis* OGLOBLIN, 1921 (male unknown) from Transcaspia and *tristis* OGLOBLIN (described as *Hermaphrodis* from E Siberia) are omitted from the key.

Key to species

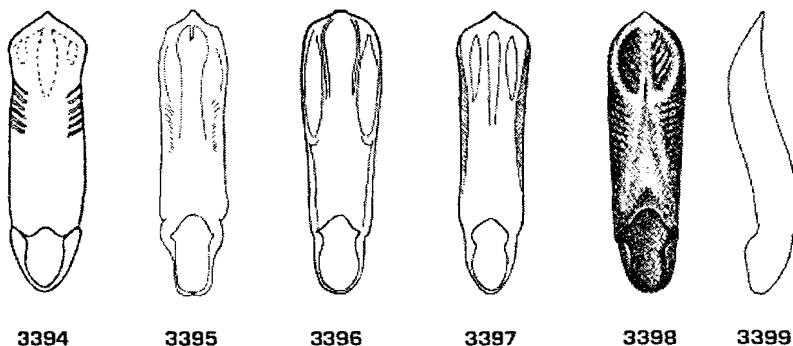
1. W Palaearctic species, distributed from Morocco, Canary Islands and Ireland to Arabian Peninsula, Afghanistan, E Kazakhstan and Cisbaicalia **2**.
- E Palaearctic species, distributed eastward of areas named above (N China, Transbaicalia, Russian Far East, Sakhalin, Korea and Japan) **45**.
2. Each elytron laterally with a longitudinal folt or ridge **3**.
- Elytra without folt or ridge, evenly convex **5**.
3. Sculpture of ventral side of aedeagus well-developed **4**.
- Sculpture of ventral side of aedeagus shallow, sometimes insistent, median furrow absent or very broad and shallow. Upper side shining, usually green, sometimes with feeble golden reflex, more rarely blue. Aedeagus as in figs **3382**, **3383**. In female styli as in fig. **3390**. Length 3.8–5.0 mm (= *coryli* ALLARD, 1860). Variations: on elytra longitudinal ridge absent (ab. *coryletorum* KRÁL, 1964, often considered as a subspecies, but occurring sympatrically together with typical form), upper side green or green with golden reflex (typical form), upper side blue (ab. *azurescens* WEISE, 1888). Lives on hazel (*Corylus avellana* L.). Distributed in a great part of Europe from N Spain and England to basin of Volga, in Asia Minor, Caucasian countries, Iran and Kazakhstan **brevicollis** FOU DRAS, 1860.



Figs 3389-3393. Styli (3392 after KANGAS and RUTANEN 1993, remaining after DOGUET 1994): 3389 – *Altica quercetorum*; 3390 – *A. brevicollis*; 3391 – *A. oleracea*; 3392 – *A. opacifrons*; 3393 – *A. helianthemii*.

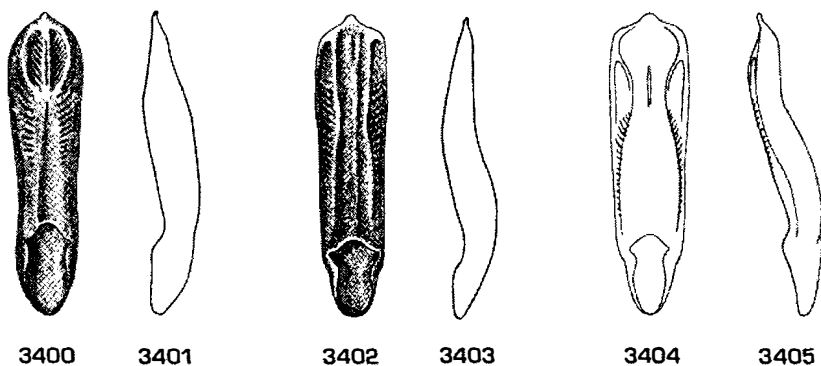
4. Lateral ridges on ventral side of aedeagus reaching to about 2/3 length of tubular part. Median furrow on apical convexity shallow or absent. Upper side dark greenish blue. Aedeagus as in figs **3384**, **3385**. In female styli as in figs **3389**. Length 4.0–5.1 mm. Variation: on elytra longitudinal ridge absent (ab. *saliceti* WEISE, 1888, often considered as a subspecies, but occurring sympatrically together with typical form). Lives on *Quercus* L., mostly on *Quercus robur* L. Distributed in Europe from N Spain, Netherlands and S Norway to basin of Volga, also in Asia Minor and Caucasian countries **quercetorum** FOU DRAS, 1860.

- Lateral ridges on ventral side of aedeagus short, reaching to 1/3 or at most to 1/2 length of tubular part. Externally similar to *brevicollis* (antithesis 3), but pronotum distinctly longer. Aedeagus as in fig. **3386**. Length 3.8–4.5 mm (male) to 4.3–5.0 mm (female) (= *ciliciensis* WEISE, 1889). Lives on *Rubus* L. Distributed in Greece, Cyprus, Egypt, Asia Minor, Near East and Saudi Arabia ***bicarinata*** (KUTSCHERA, 1860).
- 5. Apex of aedeagus rounded, without lamella **6**.
- Apex of aedeagus transversely cut with lamella, subtriangular or rounded with sharpened very tip **7**.
- 6. Upper side usually greenish with more or less strong bluish reflex. General view as in plate LXXXVII, **phot. 775**. Apex of aedeagus (figs **3387**, **3388**) rounded. In female styli as in figs **3391**. Length 3.2–3.9 mm (= *alchemillae* PALIJ, 1968). Species living on *Onagraceae*, *Rosaceae* and *Ericaceae*. Forms an (ecological?) subspecies, smaller (length on average about 3.2 mm), living on heather (*Calluna vulgaris* L. – *Ericaceae*) (subsp. *breddini* MOHR, 1958, distributed in Central and SE Europe). In Central Europe lives another form, unnamed, also small, more bluish and very similar to *helianthemii* (thesis 7) feeding on *Rosaceae*, found usually on *Sanguisorba* L. Nominotypical subspecies (length on average about 3.7 mm, = *sicula* ALLARD, 1859, *splendens* MULSANT et REY, 1874) living on *Onagraceae*, usually encountered on *Oenothera biennis* L., is a transpalearctic form, distributed from Spain and Ireland to Japan ***oleracea*** (LINNAEUS, 1758).
- Upper side greenish with bronzy reflex, in female styli as in fig. **3392**, remaining morphological characters as in *oleracea* (thesis 6). Lives on *Calluna vulgaris* L. Distributed in N Europe (Sweden, Finland, Karelia), perhaps a form or subspecies of *oleracea* ***opacifrons*** (LINDBERG, 1938).
- 7. On ventral side of aedeagus (fig. **3394**) median and lateral stripes are not distinguishable. Along whole ventral side run two elevate, roller-shaped obtuse lateral costae, separated by a median furrow, similarly as in *viridicyanea* (thesis 57). Oblique wrinkles, rather indistinct, present on anterior half of tubular part only. External characters resemble *oleracea* (thesis 6). Length 3.3–4.3 mm. Described from Kirghyzstan ***plotnikovi*** (PALIJ, 1963).
- On ventral side of aedeagus median and lateral stripes are distinguishable **8**.



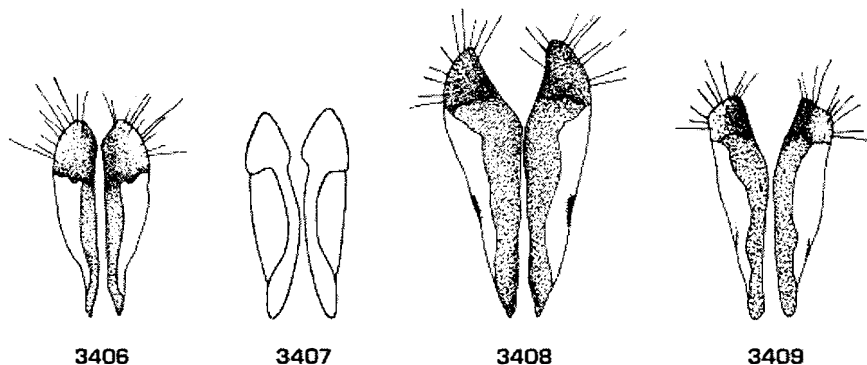
Figs 3394–3399. Aedeagus in ventral and lateral view (3398 after WARCHALOWSKI 1998, remaining after LOPATIN 1977): 3394 – *Altica plotnikovi*; 3395 – *A. talassicola*; 3396 – *A. balassogloi*; 3398, 3399 – *A. helianthemii*.

8. Large species, body length over 4.6 mm. Pronotal furrow on each end with shallow impression at hind margin. Frontal calli situated transversely, separated from overfrons by almost straight furrow. Aedeagus as in fig. 3395. Upper side black-blue with feeble greenish hue. Length 4.6–5.3 mm (males) to 4.8–5.9 mm (females). Distributed in Kirghyzstan and S Kazakhstan **talassicola** LOPATIN, 1976.
- . Species with other combination of characters 9.
9. Lateral deepenings on ventral side of aedeagus (fig. 3396) large and deep, together with lateral stripe situated in the plane of ventral side, reaching to 0.6 length of tubular part. Lateral furrows narrow, sublinear, distinctly narrower than median stripe. Median stripe moderately shallow. Frontal calli convex, subtriangular, strongly tilted to each other. Length 4.5–5.9 mm (= *suworovi* OGLOBLIN, 1921, *lopardini* PALIY, 1968b). Distributed in whole Transcaspia, Afghanistan and Pakistan **balassogloi** (JACOBSON, 1892).
- . Lateral deepenings on ventral side of aedeagus not particularly large and deep, situated on oblique lateral stripe 10.
10. Median and lateral furrows reach somewhat beyond 1/3 of length of tubular part. Lateral furrows broad, median furrow deep and narrow. Median and lateral stripes on hind half of tubular part fused, with longitudinal median obtuse, sometimes indistinct edge. Puncturation of elytra very fine and shallow, here and there merged with reticulation of ground. Length 4.3–5.1 mm (= *glycyrrhizae* Ogloblin, 1925, *chotanica* OGLOBLIN, 1925, *eichleri* OGLOBLIN, 1925). Broadly distributed from Near East, E Turkey, Circumcaspia and Caucasian countries to Iran, Transcaspia, Mongolia, N China and Korea **deserticola** (WEISE, 1889).
- . Ventral side of aedeagus differently sculptured 11.
11. Shape of aedeagus and general characters of body as in *deserticola* (thesis 10). On ventral side of tubular part the median furrow prolonged almost to base, however lateral furrows somewhat shorter than in *deserticola*. Length about 4.8 mm. Aedeagus not studied. Described from Afghanistan. Perhaps conspecific with *deserticola* **nuristanica** (LOPATIN, 1963).
- . Not as above 12.



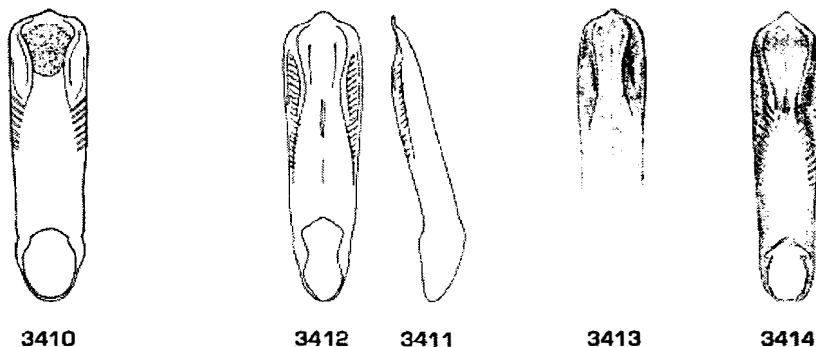
Figs 3400–3405. Aedeagus in ventral and lateral view (3400, 3401 after WARCHAŁOWSKI 1998; 3402, 3403 after KRÁL 1979; 3404, 3405 after DOGUET 1994): 3400, 3401 – *Altica impressicollis*; 3402, 3403 – *A. jarmilae*; 3404, 3405 – *A. ericeti*.

12. On apical part of ventral side of aedeagus lateral ridges indistinct, situated marginally, enclosing an oval deepening formed by broadened lateral furrows. Apical part of median stripe elevated, with well-incised median furrow **13**.
- Lateral ridges not always sharply pronounced, but never situated marginally **14**.
13. Mentioned deepening short-oval, spoon-shaped. In lateral view aedeagus (figs **3398**, **3399**) gently S-like bent. In female styli as in fig. **3393**. Upper side usually greenish-blue. Length 2.8–4.0 mm (= *pusilla* DUFTSCHMID, 1825 nec GYLLENHAL, 1813, *potentillae* ALLARD, 1859, *cognata* KUTSCHERA, 1864). Variation: upper side dark blue (ab. *montana* FOU DRAS, 1860). Lives on *Sanguisorba* L. (*Rosaceae*), another food plants (*Potentilla* L., *Helianthemum* L.) were also given in the literature. Distributed in Eurasia from Spain and England to Yakutia **helianthemi** (ALLARD, 1859).
- Mentioned deepening oblong-oval, not spoon-shaped. Upper side dark blue, often with slight violaceous reflex. Aedeagus as in figs **3400**, **3401**. In female styli as in fig. **3406**. Length 4.2–5.0 mm (= *lacunosa* WEISE, 1900). Lives on *Epilobium* L. (*Onagraceae*). Distributed in southern and central part of Europe from Germany to Balkans, Ukraine and basin of Volga, in Algeria, Corsica, Asia Minor, Near East, Caucasian countries and northern Iran **impressicollis** (REICHE, 1862).
14. In lateral view aedeagus gently but distinctly S-like bent **15**.
- In lateral view aedeagus straight or indistinctly bent **16**.
15. On aedeagus (figs **3402**, **3403**) apical part of median stripe and lateral ridges straight. In female styli as in fig. **3407**. Lateral furrows very long, reaching to near base. Length on average 3.9–4.2 mm, in female rarely about 5.0 mm. Upper side dark blue, sometimes bluish-green. Distributed in Balkans (Bulgaria, Greece), Asia Minor, Caucasian countries and Near East **jarmilae** KRÁL, 1979.
- On aedeagus (figs **3404**, **3405**) apical part of median stripe distinctly roundish broadened and lateral ridges bent. Median furrow distinct, narrow and deep. Female styli as in fig. **3408**. Upper side dark greenish-blue. Length 4.0–4.8 (male) to 4.4–5.5 mm (female). Lives on *Erica* L. (*Ericaceae*). Distributed in Iberian Peninsula, France, W Germany, Netherlands and England, reported also from Morocco ...
..... **ericeti** (ALLARD, 1859).



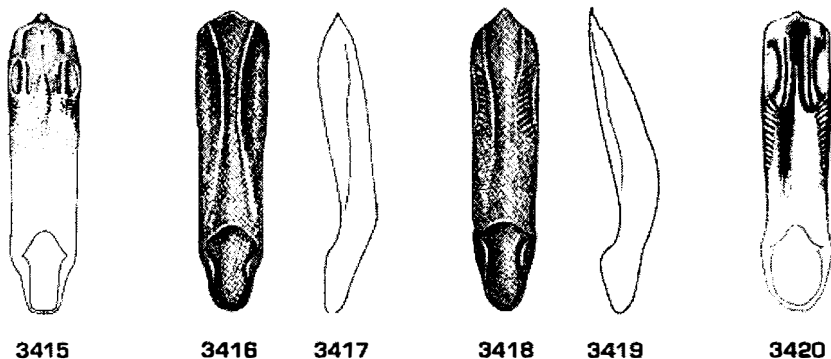
Figs 3406-3409. Styli (3407 after SIEDE in litt., remaining after DOGUET 1994): 3406 – *Altica impressicollis*; 3407 – *A. jarmilae*; 3408 – *A. ericeti*; 3409 – *A. longicollis*.

16. On apical part of ventral side of aedeagus lateral ridges rounded and in approximately 1/3 of length of tubular part distinctly narrowed, consequently apical part of median stripe roundish broadened **17**.
- . On apical part of ventral side of aedeagus lateral ridges straight or very weakly bent, consequently apical part of median stripe parallel or almost parallel and in approximately 1/3 of length of tubular part distinctly narrowed **21**.
17. On apical part of ventral side of aedeagus (figs **3410**, **3411**) lateral ridges strongly rounded, consequently apical part of median stripe roundish broadened. On the narrowed stretch almost 2 × narrower than on apical broadening **18**.
- . On apical part of ventral side of aedeagus lateral ridges gently rounded, on the narrowed stretch less than 2 × narrower than on apical broadening **20**.
18. Lamella distinct, broad (fig. **3410**). Species from Europe and Asia Minor **19**.
- . Lamella very short and obruse, very weakly developed. Species from Transcaспia. Length 3.5–4.5 mm (= *tianshanica* OGLOBLIN, 1921) **pamiranica** (WEISE, 1889).
19. Median stripe in 1/3 length of tubular part of aedeagus slightly narrowed. Upper side dark blue or blackish, sometimes with violaceous reflex. Length 3.5–4.0 mm. Synonymized with *khnzoriani* KRÁL, 1969, but most probably *khnzoriani* is conspecific with another species (*ancyrensis* WEISE, 1897, see thesis 32). Lives on *Rosaceae*. Distributed in Crimea, Asia Minor and Caucasian countries **hampei** (ALLARD, 1867).
- . Median stripe in 1/3 length of tubular part distinctly narrowed. Upper side greenish-blue. Frontal calli approximately triangular, distinctly separated from frons by deep frontal furrows. Pronotum very short. Aedeagus (figs **3411**, **3412**) in ventral view very similar as in *ericeti* (antithesis 15), but in lateral view not S-like bent. In female styli as in fig. **3409**. Length 3.5–4.0 mm (= *britteni* SHARP, 1914, *sandini* KEMNER, 1919). Distributed in northern and central part of Europe from N Spain, England and Norway to Germany, Poland and Karelia **longicollis** (ALLARD, 1860).
20. Aedeagus as in fig. **3413**. Poorly studied species, described from Romania based on one immature specimen. Reported from different countries (Spain, Austria, Ukraine), but probably misidentified **fruticola** (WEISE, 1888).
- . Aedeagus as in fig. **3414**. Upper side very dark, almost black. Humeral calli protruding. Length about 4.0 mm (male) to about 4.5 mm (female) (= *armeniaca* KHNZORIAN, 1954, *avellanae* KRÁL, 1964). Distributed in Caucasian countries and in northern Iran **viridula** (WEISE, 1889).



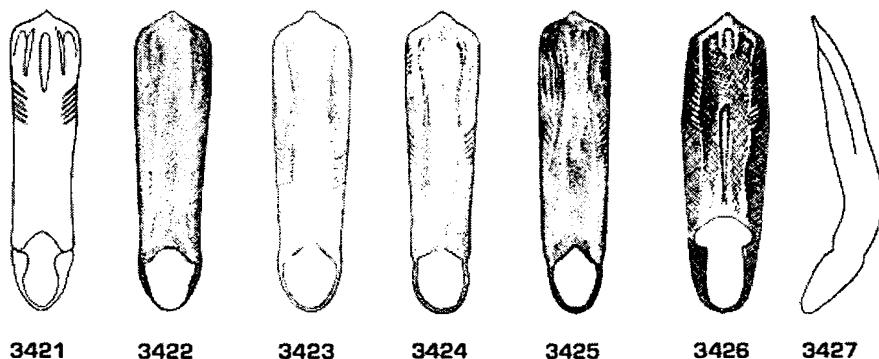
Figs 3410–3414. Aedeagus in ventral and lateral view (3410 after LOPATIN 1977; 3411, 3412 after DOGUET 1994; 3413 after KRÁL 1976; 3414 after KRÁL 1979): 3410 – *Altica pamiranica*; 3411, 3412 – *A. longicollis*; 3413 – *A. fruticola*; 3414 – *A. viridula*.

21. Large species, length of body over 5.7 mm. Lateral depenings distinct, shortened, groove-like, situated in certain distance from apical margin. Mid and basal part of ventral side of tubular part smooth and evenly convex. Frontal calli flattened, distinctly limited by deep furrows. Pronotum relatively long, about 1.4 × broader than long. Elytra finely and densely punctured, with traces of flat longitudinal costae
 **mohri** LOPATIN, 1990.
- Smaller species, length of body (except for *tsharynensis*, thesis 43) never reaches 5.7 mm **22.**
22. Lateral ridges sharp, long, reaching at least to 1/2 length of aedeagus **23.**
- Lateral ridges short, usually reaching to 1/4 or 1/3 length of aedeagus, sometimes longer, but in basal half of tubular part not sharp, formed as a roller-shaped convexity. See *cornivorax* (antithesis 35) **24.**
23. Lateral ridges in apical part of aedeagus (figs **3416**, **3417**) high elevated. In female styli as in fig. **3428**. Upper side greenish or bluish. Length 3.3–4.0 mm (= *basalis* ALLARD, 1859, Lives on *Cirsium* L. (*Asteraceae*). Distributed in central and southern part of Europe from England and Spain to Ukraine and southern Russia, in Asia Minor, Caucasian countries and Central Asia. From the second area (Fennoscandia, Latvia) known as morphologically not distinguishable subspecies *cirsii* ISRAELSON, 1956) **carduorum** GUÉRIN-MÉNEVILLE, 1858.
- Lateral ridges in apical part not elevated Lateral ridges sharp, sides of tubular part of aedeagus (figs **3418**, **3419**) approximetaly parallel. In female styli as in fig. **3429**. Upper side greenish-blue. Frontal calli large, continguous. Length 2.8–4.3 mm (= *?crassa* ALLARD, 1889). Variation: upper side black with bronzy reflex (ab. *lostiae* BURLINI, 1942). Lives on different *Epilobium*-species, mostly on *E. palustre* (L.) (*Onagraceae*). Distributed in W Palaearctic from England, France and Algeria to Central and SE Europe, Asia Minor and Central Asia **palustris** (WEISE, 1888).
24. Aedeagus parallel or subparallel-sided, its apex shortly rounded with lamella. Lateral furrows straight, parallel, reaching about 35–40% of length of tubular part, zone of oblique wrinkles situated in the mid 1/3 of tubular part **25.**
- Aedeagus usually slightly broadened anteriad, lateral furrows longer than 40% length of tubular side. If shorter, than zone of oblique wrinkles not limited to mid 1/3 of tubular part **28.**



Figs 3415-3420. Aedeagus in ventral and lateral view (3415 after LOPATIN 1990; 3420 after KONSTANTINOV 1991, remaining after WARCHAŁOWSKI 1998): 3415 – *Altica mohri*; 3416, 3417 – *A. carduorum*; 3418, 3419 – *A. palustris*; 3420 – *A. lencorana*.

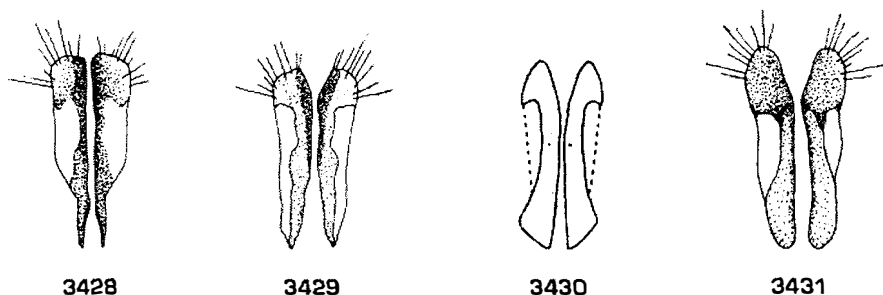
25. Apical part of median stripe narrower, its breadth less than 1/3 breadth of whole apical part. Median furrow of similar length, broader than lateral furrows, but relatively narrow and deep. Lateral deepenings well-developed. Pronotum somewhat longer than in neighbouring species, about 1.4 × broader than long. Aedeagus as in fig. 3420. Length 4.7–5.3 mm. Described from Azerbeidzhan *lenkorana* KONSTANTINOV, 1991.
- . Apical part of median stripe broader, its breadth more than 1/3 breadth of whole apical part. Pronotum shorter, usually about 1.6 × as broad as long. Median furrow of similar length, rather shallow, often indistinct. Three relatively large species from Transcaspia 26.
26. Frontal calli situated obliquely to each other 27.
- . Frontal calli situated parallel. Pronotum punctured conspicuously finer than elytra, interstices at least in central oart smooth and shining, without any microsculpture. Aedeagus insufficiently studied. Length 4.0–5.5 mm. Distributed in Turkmenistan, Kirghyzstan and Tadzhikistan *lubischevi* (PALY, 1963).
27. Antebasal transverse furrow on pronotum well-incised, deep. Here *tamaricis* (thesis 44) and *tsharynensis* (thesis 43).
- . Antebasal transverse furrow on pronotum feebly incised, shallow. Elytra distinctly and densely punctured. Aedeagus as in fig. 3421. Length 4.8–5.3 mm (male) to about 6.0 mm (female). Distributed in Transcaspia (Uzbekistan, Kirghyzstan, Tadzhikistan) and NW China *semenovi* (JACOBSON, 1892).
28. Lateral ridges slightly bent, median stripe very feebly and gently but perceptibly narrowed 29.
- . Lateral ridges straight, median stripe with parallel or almost parallel sides 33.



Figs 3421-3420. Aedeagus in ventral and lateral view (3421 after LOPATIN 1977; 3421-3425 after KRÁL 1969; 3426 after KRÁL 1979; 3427 after WARCHAŁOWSKI 1998): 3421 – *Altica semenovi*; 3422 – *A. breviscula*; 3423 – *A. globicollis*; 3424 – *A. bulgharensis*, 3425 – *A. ancyrensis*; 3426, 3427 – *A. carinthiaca*.

29. Sculpture of ventral side of aedeagus well-developed, deep, lateral furrows longer than 1/3 length of tubular part 30.
- . Sculpture of ventral side of aedeagus shallow, lateral furrows reaching at most to 1/3 length of tubular part 32.

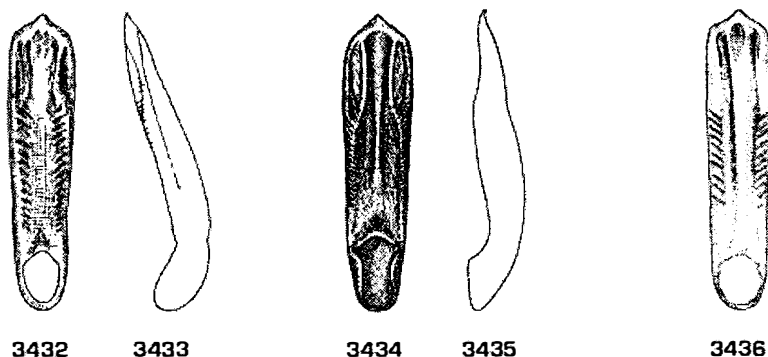
30. Length under 3.5 mm. Aedeagus as in fig. **3422**. Externally similar to *brevicollis* (antithesis 3), but pronotum considerably less convex. Distributed in Caucasian countries ***breviuscula*** (WEISE, 1900).
 - Length over 3.5 mm **31**.
31. Aedeagus as in fig. **3423**. Upper side dark blue. Frontal calli flat, rather feebly delimited. Furrow on pronotum very shallow. Length 3.5–4.5 mm. Distributed in Asia Minor, Caucasian countries and NW Iran ***globicollis*** (WEISE, 1889).
 - Aedeagus as in fig. **3424**. External characters as in *globicollis* (thesis 21). Length 3.0–3.5 mm. Described from Asia Minor, perhaps conspecific with *globicollis*
 ***bulgharensis*** KRÁL, 1969.
32. Larger. Aedeagus as in fig. **3440**. Upper side bluish, not strongly shining. Length 4.5–5.4 mm. Probably conspecific with *khnzoriani* KRÁL, 1969. Distributed in Asia Minor, Caucasian countries and Near East See also thesis 36
 ***ancyrensis*** (WEISE, 1897).
 - Smaller. Aedeagus known from verbal description only. In female styli as in fig. **3430**. Upper side shining blue or greenish blue. Length 3.5–4.5 mm. A septentrional (boreo-alpine?) species, distributed from Sweden and Norway to Kamchatka, reported also from Slovakia. Lives on *Epilobium* (*Chamaenerion*) *angustifolium* L. (*Rosaceae*), probably monophagous ***chamaenerii*** (LINDBERG, 1926).



Figs 3428-3431. Styli (3430 after KANGAS and RUTANEN 1993, remaining after DOGUET 1994): 3428 – *Altica carduorum*; 3429 – *A. palustris*; 3430 – *A. chamaenerii*; 3431 – *A. carinthiaca*.

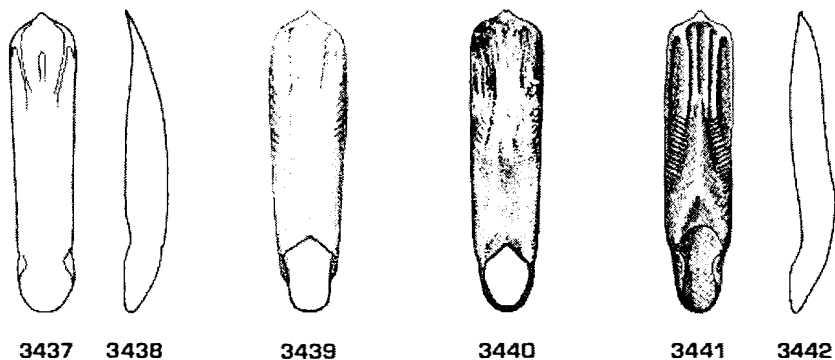
33. Apical half of tubular part broader than the basal half; aedeagus usually (not always!) widest in about 1/3 length of tubular part **34**.
 - Tubular part parallel or slightly, gradually widened towards apex **36**.
34. Lateral deepenings very feebly developed, median stripe in basal half of tubular part concave or almost flat. Length 3.2–4.1 mm. Broadly distributed from France, N Italy and S Norway to Ukraine, Caucasian countries and Transcaspia. Reports from E Siberia concern probably *ampelophaga* (antithesis 35)
 ***carinthiaca*** (WEISE, 1888).
 - Lateral deepenings normally developed, median stripe in basal half of tubular part convex **35**.

35. Aedeagus (figs **3432**, **3433**) usually more slender, lateral ridges slightly bent, stripe of oblique wrinkles longer. In female styli as in fig. **3443**. Upper side greenish-blue, more rarely greenish. Anterior angles of pronotum sharp, protruding forward. Length 3.5–4.4 mm (male) to 4.2–5.0 mm (female) (= *epilobii* ALLARD, 1859). Species living on *Onagraceae*. Distributed in central and southern part of Europe, from England and Spain to Greece, Ukraine and Caucasian countries **lythri** AUBÉ, 1843.
- . Aedeagus (figs **3434**, **3435**) usually broader, lateral ridges straight, stripe of oblique wrinkles shorter. In female styli as in fig. **3444**. Externally very similar to *lythri* (thesis 24), on average somewhat smaller (3.6–4.9 mm) (= *hispana* ALLARD, 1869, ?*convexipennis* OGLOBLIN, 1921) (see thesis 54). Species living on cultivated vine (*Vitis vinifera* L.). Distributed in Mediterranean area and basin of Danube, in E Palaearctis appears to race (perhaps distinct species) *koreana* OGLOBLIN, 1925. Here also *pon-tica* (OGLOBLIN, 1925), both species (races?) after some authors are conspecific with *lythri* (thesis 35). Here perhaps also *cornivorax* KRÁL, 1969: external characters and aedeagus shape not distinguishable from *ampelophaga*, living on *Cornus sanguinea* L. (*Cornaceae*); its relation to *ampelophaga* requires further recherches (possibly conspecific or an allophagous race). Distributed in Central and SE Europe from Switzerland and Poland to basin of Danube, Balkans and Ukraine, *cornivorax* reported also from Finland **ampelophaga** GUÉRIN-MÉNEVILLE, 1858.
36. Sculpture of underside of aedeagus flattened, oblique lateral ridges very shallow, not always distinct, median furrow shallow, sometimes very broad **37**.
- . Sculpture of underside of aedeagus well-pronounced, median furrow narrow or absent **41**.
37. Median furrow shallow, broad or very broad **38**.
- . Median furrow narrow **40**.
38. Lateral furrows short, limited to apical half of aedeagus **39**.
- . Lateral furrows long, reaching almost to about 3/4 length of tubular part. Frontal calli large, slightly oblong, obliquely situated. Puncturation of pronotum very fine and indistinct. Humeral calli rounded. Length about 4.5 mm (male) to about 5.0 mm (female). Aedeagus as in fig. **3436**. Described from Greece **graeca** KRÁL, 1969.



Figs 3432-3436. Aedeagus in ventral and lateral view (3432, 3433 after DOGUET 1994; 3434, 3435 after WARCHAŁOWSKI 1998; 3436 after KRÁL 1966): 3432, 3433 – *Altica lythri*; 3434, 3435 – *A. ampelophaga*; 3436 – *A. graeca*.

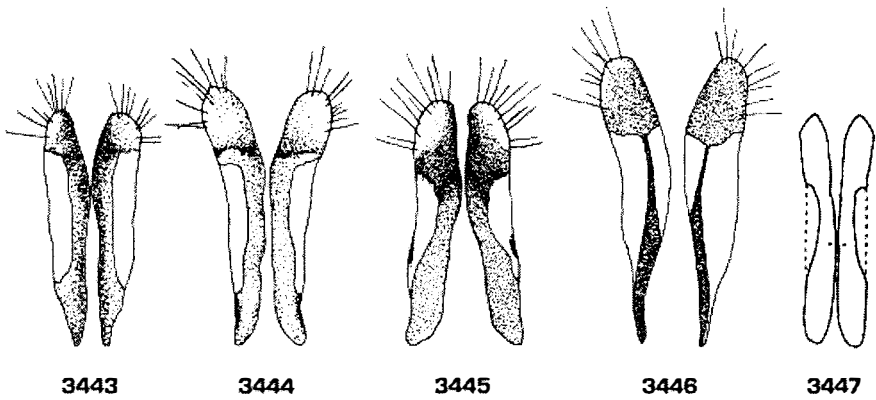
39. Westmediterranean species living on *Rosa* L. Upper side usually bicolorous: pronotum with bluish-violaceous, elytra with bluish-green metallic reflex. Frontal calli subquadrangular, not obliquely situated. Aedeagus as in figs **3437**, **3438**. Length 4.2–4.6 mm (male) to 4.5–5.4 mm (female) (= *constantini* DOGUET, 1972). Distributed in Iberian Peninsula, Morocco and Algeria **iberica** (WEISE, 1891).
- . Broadly distributed species living on hazel (*Corylus avellana* L.). Here specimens of *brevicollis* (antithesis 3) without longitudinal folt on elytra.



Figs 3437–3442. Aedeagus in ventral and lateral view (3437, 3438 after WARCHALOWSKI 1998; 3441, 3442 after WARCHALOWSKI 2003; remaining after KRÁL 1969): 3437, 3438 – *Altica iberica*; 3439 – *A. rosicola*; 3440 – *A. ancylrensis*; 3441, 3442 – *A. aenescens*.

40. Smaller. On pronotum furrow very shallow, feebly impressed. Aedeagus as in fig. **3439**. Length 3.5–3.9 mm (male) to 4.0–4.3 mm (female). Described from NW Caucasus **rosicola** KRÁL, 1969.
- . Larger. On pronotum furrow deep, distinctly impressed. Lateral furrows of aedeagus (fig. **3440**) slightly bent. Length 4.5–5.4 mm. Distributed in Asia Minor, Caucasian countries and Near East **ancylrensis** (WEISE, 1897).
41. In aedeagus (figs **3441**, **3442**) median furrow long. In female styli as in fig. **3014**. Upper side coloured usually very dark, sometimes almost black, usually dark blue, more rarely dark green, often with feeble violaceous reflex, sheen of surface feeble, silky. Elytra almost always with traces of longitudinal ribbs. Length 4.0–5.0 mm (= *weisei* KEMNER, 1919, nec JACOBSON, 1892). Lives on birchs, mostly on *Betula pubescens* EHRH. Distributed in northern and central part of Europe from France and Netherlands to Karelia and Poland. Reported also from Italy **aenescens** (WEISE, 1888).
- . In aedeagus median furrow very short or absent. Body relatively slender, sides of elytra almost parallel, pronotum narrower than elytra **42**.
42. Apical part of median stripe flat, as broad as 1/3 of aedeagus in apical part **43**.
- . Apical part of median stripe deeply impressed, narrower than 1/3 of aedeagus in apical part. Length about 4.7 mm. Species described from Azerbaijan. See *lenkorana*, thesis 25.

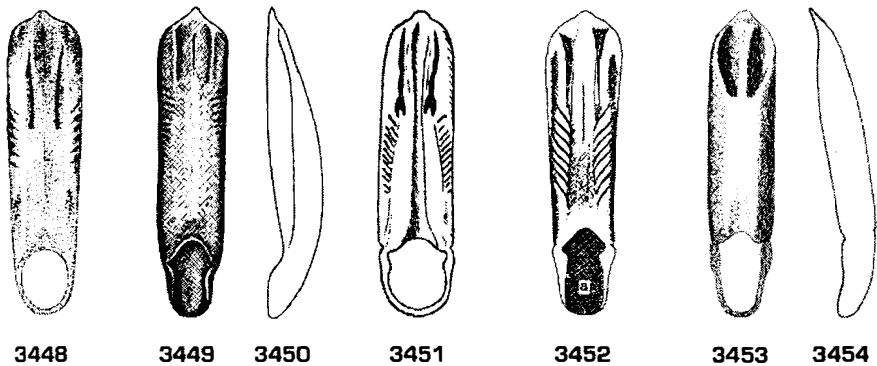
43. Lateral furrows short, at most as long as the breadth of apical part of aedeagus (fig. **3448**). Length 3.5–5.0 mm (male) to 4.0–6.0 mm (female) (= *stichai* KRÁL, 1964). Relatively large, dark blue, externally similar to *impressicollis* (antithesis 7). Distributed in Caucasian countries, reported also from Kazakhstan *tsharynensis* (OGLOBLIN, 1921).
- . Lateral furrows longer than the breadth of apical part of aedeagus **44.**
44. Upper side shining, usually dark blue. In male first tarsomere of fore tarsi strongly widened. Aedeagus as in figs **3449**, **3450**. In female styli as in fig. **3446**. Length 3.8–5.2 mm (= *erucae* FABRICIUS, 1792, *articulata* BECK, 1817, *consobrina* DUFTSCHMID, 1825, *azurea* KNOCH, 1843). Forms three subspecies: sides of tubular part of aedeagus approximately parallel, length usually under 5.0 mm (nominotypical subspecies), aedeagus in apical half slightly but perceptibly widened, length usually over 5.0 mm (subsp. *franzi* KRÁL, 1966 described from Spain). Distributed in Europe from N Spain and Netherlands to Greece, Crete, Poland, Ukraine and basin of Volga, in Asia Minor, Near East, Caucasian countries, Iran and Central Asia. Reports from Mongolia and Siberia concern, possibly, the subsp. *weisei* JACOBSON, 1892 (= *laeviuscula* WEISE, 1889, nec HAROLD, 1875), see also thesis 27 *tamaricis* SCHRANK, 1785.
- . Upper side rather matt, usually green with feeble bluish reflex. In male first tarsomere of fore tarsi not strongly widened. Aedeagus known from verbal description only. In female styli as in fig. **3447**. Length 4.0–5.0 mm. Lives on *Filipendula ulmaria* L. (*Rosaceae*), probably monophagous. Distributed in N Europe (Fennoscandia, Karelia) and Siberia to Kamchatka *engstroemi* (SAHLBERG, 1894).



Figs 3443-3447. Styli (3447 after KANGAS and RUTANEN 1993, remaining after DOGUET 1994): 3443 – *Altica lythri*; 3444 – *A. ampelophaga*; 3445 – *A. aenescens*; 3446 – *A. tamaricis*; 3447 – *A. engstroemi*.

45. On each elytron, parallel to lateral margin, usually in hind half, runs a ridge, costa or furrow **46.**
- . Elytron evenly convex, without costa or furrow laterally **47.**
46. Elytron with longitudinal ridge or costa running along lateral side, in some specimens somewhat indistinct, but always perceptible. Puncturation of elytra very fine

- and shallow, surface reticulated. Length 4.5–5.6 mm. Forms one subspecies distributed only in Japan, without costa on elytron (subsp. *subcostata* OHNO, 1960, see antithesis 51). Distributed in Japan and W China ***latericosta*** (JACOBY, 1885).
- Elytron with relatively deep and smooth furrow, reaching usually from midlength almost to apex. Pronotum finely, but distinctly punctured and very finely reticulated. On ventral side of aedeagus (fig. 3451) median furrow long, running on almost whole length of the organ. Length 4.0–4.6 mm. Distributed in NE Asia from Mongolia to Russian coasts of the Pacific ***bisulcata*** WEISE, 1887.
 - 47. Humeral callus indistinct, lateral sides of elytra from humerus to about 2/3 of length almost linear broadened, hind part of elytra broad and convex, general shape of body somewhat pear-shaped, unusual in the genus *Altica*. Length 3.0–3.7 mm. Described from Sinkiang (Kuku-nor) ***pyriformis*** (JACOBSON, 1892).
 - Humeral callus more or less distinct, body not pear-shaped **48.**
 - 48. Puncturation of elytra very fine and shallow, consequently somewhat indistinct, surface very finely reticulated. Antebasal transverse impression on pronotum without any longitudinal furrows or dimples **50.**
 - Puncturation of elytra sometimes fine, but always distinct **49.**
 - 49. Antebasal transverse impression on pronotum with a pair of short and shallow longitudinal furrows or dimples. Upper side shining, black with bluish or greenish reflex. Aedeagus as in fig. 3452. Length 3.5–4.5 mm. Known from Honshu (Japan) only ...
..... ***nipponica*** OHNO, 1960.
 - Antebasal transverse impression on pronotum without low longitudinal furrows or dimples **52.**
 - 50. External characters similar as in *tamaricis* (thesis 44), but pronotal furrow more shallow, elytra very finely punctured and in anterior part narrower. See *tamaricis* subsp. *weisei* (thesis 44).
 - Pronotal furrow well-developed. Puncturation of elytra very fine and shallow, here and there merged with reticulation of ground **51.**



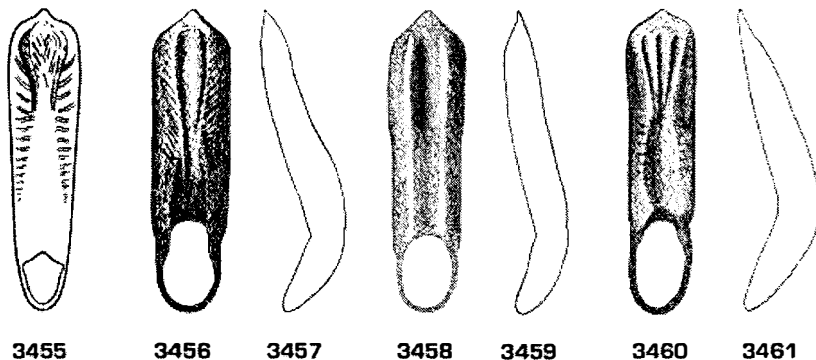
Figs 3448-3454. Aedeagus in ventral and lateral view (3448 after KRÁL 1964; 3449, 3450 after WARCHALOWSKI 1998; 3451 after MEDVEDEV 1982; 3452 after OHNO 1960; 3453, 3454 orig.): 3448 – *Altica tsharynensis*; 3449, 3450 – *A. tamaricis*; 3451 – *A. bisulcata*; 3452 – *A. nipponica*; 3453, 3454 – *A. cyanea*.

51. On average smaller, length 4.3–5.1 mm. See *deserticola* (thesis 10).
 –. On average larger, length 4.5–5.6 mm. See *latericosta subcostata* OHNO, 1960 (thesis 46).
52. Surface of elytra smooth and shining 53.
 –. Surface of elytra feebly shining, reticulated, granulose or wrinkled 56.
53. Large species, usually over 5.0 mm long. Antennomere 3 almost 2 × longer than 2. Upper side black-blue, often with violaceous reflex. Central part of pronotum smooth, impunctate. Ventral side of aedeagus (figs 3453, 3454) without wrinkles, in apical part with two deep grooves separated by strong and smooth median stripe. Length 4.9–5.8 mm (= *ianthina* ILLIGER, 1807, *aenea* OLIVIER, 1808, *australis* BLACKBURN, 1889, *birmanensis* JACOBY, 1896, *nepalensis* CHÛJÔ, 1966). Very broadly distributed in India, Indochina, China, Japan, Taiwan, Philippines, Sunda Archipelago and N Australia. In southern populations often is present a feeble posthumeral costa, running from humerus to midlength of elytron. Consequently *A. cyanea* is sometimes confused with the similar Oriental species *brevicosta* WEISE, 1922, differing by well-developed, sharp posthumeral costa on elytron and other structure of aedeagus (wrinkles present, lateral furrows narrow and shallow, not groove-like) *cyanea* (WEBER, 1801).
 –. Smaller species, under 5.0 mm long. Antennomere 3 equal or a somewhat longer than 2 54.
54. Ventral side of aedeagus without oblique wrinkles or with feeble traces of wrinkles only. In aedeagus (fig. 3455) central stripe distinct on apical part only, lateral furrows thin, very weakly bent. On hind half of the organ central and lateral stripes fused into one common, smooth and shining convexity. Reticulation on elytra extremely fine, pronotum smooth. Length 3.9–4.4 mm (= *convexipennis* OGLOBLIN, 1921, *transbaicalica* OGLOBLIN, 1925, *mongolica* KRÁL, 1973). Distributed in Siberia from Saján Mts. to Russian Far East, Mongolia, Transbaicalia and Korea *sajanica* (CSIKI, 1901).
 –. Ventral side of aedeagus with oblique wrinkles laterally 55.
55. Larger. Ventral side of aedeagus without oblique wrinkles. Length 4.0–4.5 mm. Distributed in Japan (Honshu, Shikoku, Kyushu), reported also from Taiwan *japonica* OHNO, 1960.
 –. Smaller. Lateral stripes on ventral side of aedeagus (figs 3456, 3457) with numerous oblique wrinkles on mid and also on anterior part. Aedeagus pale brownish, lateral deepening absent or very weakly marked. Upper side usually deep blue, pronotum sometimes almost black. Puncturation of elytra behind scutellum along suture strong, however the neighbouring fragment of surface behind anterior margin, between humeral callus and scutellum is punctured very finely. Pronotum very weakly punctured, smooth and shining. Length 3.2–4.3 mm. Broadly distributed in Oriental Region from India to Taiwan, also in Japan and Korea *caerulescens* (BALY, 1874).
56. Apex of aedeagus rounded. See *oleracea* (thesis 6).
 –. Apex of aedeagus transversely cut with lamella, triangular, subtriangular or laterally rounded with sharpened very tip 57.
57. On ventral side of aedeagus (figs 3458, 3459) median and lateral stripes are not distinguishable. Along whole ventral side run two elevate, roller-shaped obtuse costae, separated by a large median furrow. Median furrow in apical part usually broadened, very finely sculptured, often silky. Apex of aedeagus forms a triangle of about 90°.

Oblique wrinkles barely perceptible, lateral deepenings very weakly marked. Length 3.5–4.0 mm. Broadly distributed in E China, Japan, Korea and Ussuria

..... *viridicyanea* (BALY, 1874).

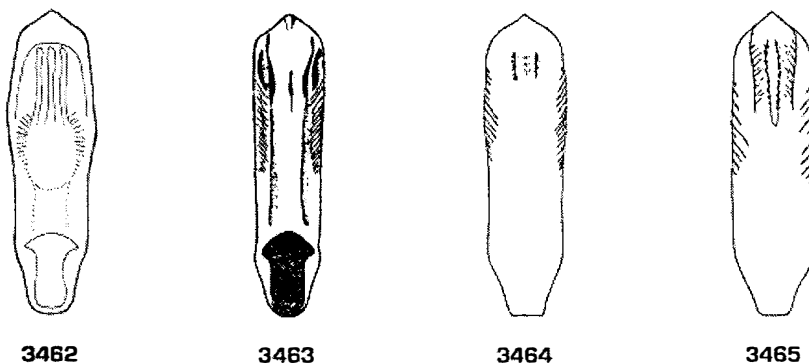
- On ventral side of aedeagus median and lateral stripes are distinguishable 58.
- 58. Apical part of ventral side of aedeagus trisulcate: median furrow and lateral furrows approximately equal long and deeply incised
- Apical part of ventral side of aedeagus not trisulcate, median furrow, if present, distinctly shallower than lateral furrows



Figs 3455-3461. Aedeagus in ventral and lateral view (3455 after MEDVEDEV 1982, remaining orig.): 3455 – *Altica sajanica*; 3456, 3457 – *A. caerulescens*; 3458, 3459 – *A. viridicyanea*; 3460, 3461 – *A. circaeae*.

- 59. Smaller. Three apical furrows slightly divergent, aedeagus (figs 3460, 3461) not broadened in midlength of tubular part. Lateral deepenings shallow but distinct, oblique wrinkles weakly developed, situated rather transversely. Pronotum extremely finely, but not densely punctured its surface extremely finely reticulated, not entirely smooth. Length 3.0–4.0 mm. Described from Japan, distributed also in Korea
- *circaeae* OHNO, 1960.
- Larger. Three apical furrows run parallel to each other. Tubular part in midlength slightly broadened. Length 4.0–4.5 mm. Described from N China (Kansu)
- *kozlovi* (OGLOBLIN, 1921).
- 60. Structure of aedeagus and external characters of body as in *carduorum* (thesis 23). On ventral side of aedeagus (figs 3416, 3417) both lateral ridges long, sharp, reaching almost the basis, in apical part strongly diverging. Length 3.2–4.3 mm. Distributed in China, Korea, Russian Far East and Japan. Intentionally introduced to N America. Probably an E Palaearctic race or sister-species of *carduorum*, living also on *Cirsium* (although differing by DNA-structure)
- *cirsicola* OHNO, 1960.
- In apical part of ventral side of aedeagus the lateral furrows parallel, often somewhat curved or slightly, but never strongly, diverging
- 61.
- 61. Sculpture of ventral side of aedeagus well developed on whole surface
- 62.
- Sculpture of ventral side of aedeagus in basal half often shallow or weak. Lateral furrows present on anterior half only
- 63.

62. On ventral side of aedeagus lateral furrows long, reaching to or almost to base. The zone of oblique wrinkles also long, reaching from lateral deepening almost to base. Central stripe at least in its mid part convex, often forming here a convex edge. Antennomere 3 almost as long as 4, at least in male. Length about 4.0 mm. Distributed in E Siberia, Korea and NE China ***ampelophaga koreana*** (OGLOBLIN, 1925).
- . On ventral side of aedeagus (fig. 3463) lateral furrows long, but not reaching to base. The zone of oblique wrinkles shorter, reaching from lateral deepening to 2/3 length of tubular part. Length 3.9–4.2 mm. Described from E Siberia ***ivlievi*** MEDVEDEV, 1968.



Figs 3462-3465. Aedeagus in ventral and lateral view (3462 after OGLOBLIN 1921; 3463 after MEDVEDEV 1968; remaining after OHNO 1960): 3462 – *Altica kozlovi*; 3463 – *A. ivlievi*; 3464 – *A. kurosawai*; 3465 – *A. fragariae*.

63. Pronotum longer, about 1.3 × broader than long. Aedeagus in (fig. 3464) lateral view strongly bent dorsally, lateral furrows narrow and short. Length 3.1–3.7 mm. Known from Honshu only ***kurosawai*** OHNO, 1960.
- . Pronotum short, about 1.7 × broader than long. Aedeagus (fig. 3465) in lateral view weakly bent dorsally, lateral furrows broad, as broad as lateral stripes in apical part. Length 3.5–4.0 mm (= *sanguisorbae* OHNO, 1960). Distributed in Japan (Honshu, Shikoku, Kyushu) and in E China. Perhaps here also insufficiently studied species described from Honshu *fukutai* NAKANE, 1963, with almost entirely black colouring of upper side ***fragariae*** OHNO, 1960.

Genus *Anthobiodes* WEISE, 1887

A small Mediterranean genus, comprising three species.

Key to species

1. General view as in plate LXXXVII, **phot. 776**. Species from Iberian Peninsula. Upper side pitchy-black, legs and antennomeres 2–4 pale testaceous, hind femora brown. Length 1.8–2.5 mm. Distributed in southern Spain **heydeni** (ALLARD, 1870).
- . Species from Asia Minor and Near East **2**.
2. Body pale testaceous, abdomen and apical half of antennae darkened. Length 1.6–1.9 mm (= *simoni* WEISE, 1887). Known from Israel only
..... **angustus** (ALLARD, 1876).
- . Body black, legs and 5–6 basal antennomeres yellowish, hind femora pale testaceous. Length 1.9–2.1 mm. Known from southern Anatolia only
..... **turcicus** (MEDVEDEV, 1975).

Genus *Aphthona* CHEVROLAT, 1837

Literature: HEIKERTINGER 1944, KONSTANTINOV 1998.

Key to auxiliary groups

1. Upper side pale or moderately darkened, unicolorous or with darkened suture **2**.
- . Upper side dark (dark brown, pitchy, black or black with metallic shine) **3**.
2. Upper side brown, from light brown to chestnut auxiliary **group A** (p. 743).
- . Upper side pale, yellowish strow to pale ochra, unicolorous or with limited darkenings on head or/and along sutural stripe) auxiliary **group B** (p. 744).
3. Upper side without metallic reflex, pitchy or pure black auxiliary **group C** (p. 750).
- . Upper side with metallic reflex or shine **4**.
4. Humeral calli at least distinct, sometimes protruding ... auxiliary **group D** (p. 754).
- . Humeral calli absent or weakly developed auxiliary **group E** (p. 764).

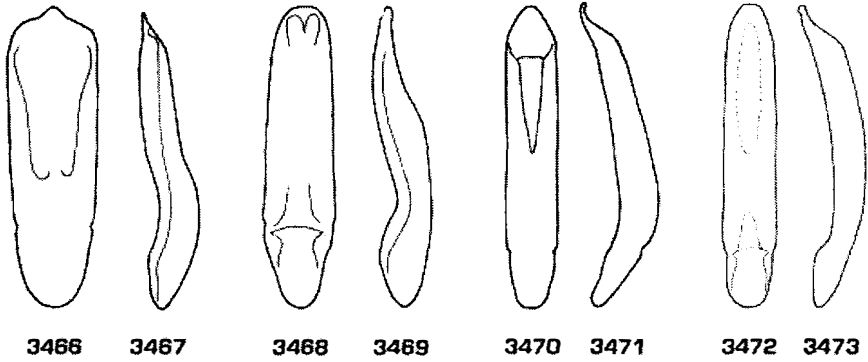
Auxiliary group **A**

Upper side brown, from light brown to chestnut.

Key to species

1. Length of body over 2.4 mm, upper side uniformly coloured **2**.
- . Length of body under 2.0 mm. Upper side brown, apical half or at least apical part of elytra considerably paler. General view as in plate LXXXVII, **phot. 783**. Aedeagus as in figs **3466, 3467**. Endemic to Corsica **wagneri** HEIKERTINGER, 1909.
2. Upper side light brown to dark chestnut, underside darker, usually dark brown or pitchy **3**.
- . Upper side rusty-brown with distinct greenish metallic reflex. Aedeagus as in figs **3468, 3469**. Length about 2.2–2.4 mm. Described from Spain (Catalonia)
..... **spanoli** KRÁL, 1965.

- 3. Aedeagus as in figs **3470**, **3471**, furrow on its underside entire. Wrinkles on vertex poorly defined. Length 2.4–3.4 mm (= *brunneomicans* HEIKERTINGER, 1930). Lives on *Euphorbia esula* L. Distributed from southern Poland to Mongolia. In Europe known from Slovakia, Poland, Ukraine and southern Russia **beckeri** JACOBSON, 1897.
- . Aedeagus as in figs **3472**, **3473**, furrow on its underside interrupted behind middle. Wrinkles on vertex more distinct. Length 3.2–3.6 mm. Lives on *Euphorbia esula* L. Described from E China (Shantung), possibly an E Palaearctic race of *beckeri* (thesis 3) **chinchihii** CHEN, 1939.



Figs 3466–3473. Aedeagus in ventral or dorsal and in lateral view (3466, 3467 after KONSTANTINOV 1998 modif.; 3468, 3469 after GRUEV and TOMOV 1986; 3470, 3471 after WARCHALOWSKI 1995; 3472, 3473 after KONSTANTINOV and LINGAFELTER 2002): 3466, 3467 – *Apthona wagneri*; 3468, 3469 – *A. espanoli*; 3470, 3471 – *A. beckeri*; 3472, 3473 – *A. chinchihii*.

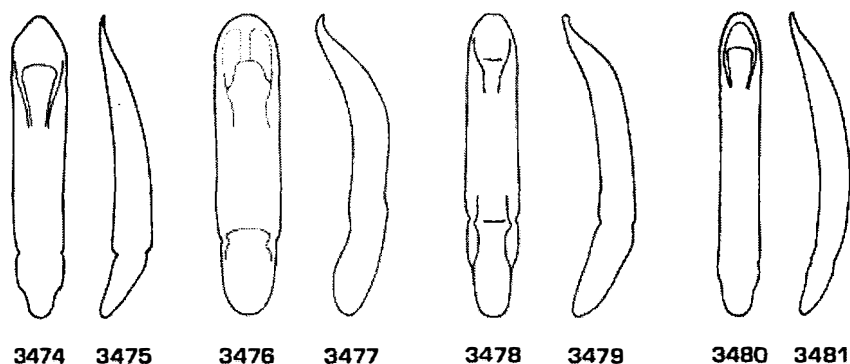
Auxiliary group B

Upper side generally pale.

Key to species

- 1. Body on average larger (2.5–4.0 mm), convex, legs rather robust. Frontal calli distinctly separated from frons by deep furrows **2.**
- . Body on average smaller (1.5–2.7 mm), legs more slender **8.**
- 2. Scutellum pale **3.**
- . Scutellum, labrum and usually also abdominal sternites blackish. Aedeagus as in figs **3474**, **3475**. Length 2.9–3.5 mm (= *nigroscutellata* REITTER, 1904). Remaining characters as in *cyparissiae* (thesis 10). Distributed mostly in south-eastern Europe from northern Italy, eastern Austria, Slovakia and central Poland to Crete, Cyprus, Israel and Caucasian countries **nigriscutis** FOUDRAS, 1861.
- 3. Apex of aedeagus distinctly incised. Two species very similar to each other **7.**
- . Apex of aedeagus not incised **4.**

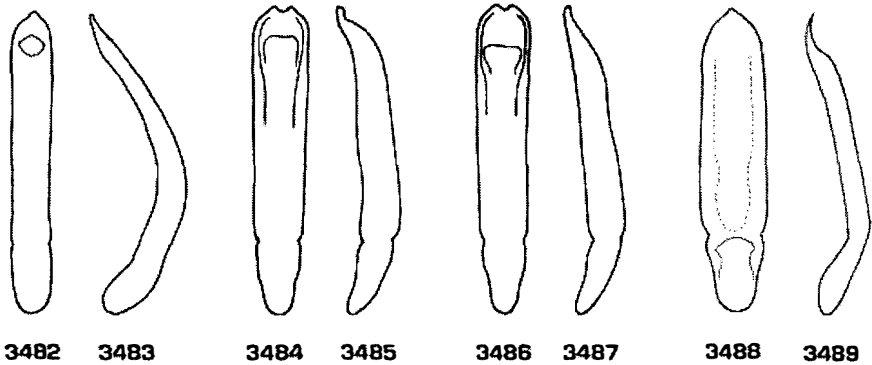
4. Species from Iran. Externally not differing from *cyparissiae*, except for antennomere 2 being much shorter than 3. Aedeagus as in figs **3476, 3477** ***alexander*** BERTI et RAPILLY, 1973.
- Species from other regions **5.**
5. Species from Far East. Externally similar to *flava* (antithesis 7). Aedeagus (figs **3478, 3479**) also as in *flava*, but it apex not incised and ventral furrow narrower and shorter. Length 3.0–3.7 mm. Described from Korea ***famula*** WARCHAŁOWSKI, 1973.
- Species from W Europe and Canary Islands **6.**
6. Body outline more oval (as in *cyparissiae*, thesis 10), elytra between scutellum and humeral callus not swollen. Aedeagus as in figs **3480, 3481**. Length 2.4–3.2 mm. Distributed in north-western Africa, Iberian Peninsula, central and southern France, Sardinia, Corsica, central and northern part of Italy to Slovenia ***illigeri*** BEDEL, 1898.
- Body outline more parallel, elytra between scutellum and humeral callus slightly swollen. Aedeagus as in figs **3482, 3483**. Length 2.3–2.6 mm (= *heringi* HEIKERTINGER, 1944). Endemic to Canary Islands ***crassipes*** (WOLLASTON, 1860).



Figs 3474-3481. Aedeagus in ventral or dorsal and in lateral view (3476, 3477 after BERTI and RAPILLY 1973; 3478, 3479 after WARCHAŁOWSKI 1973, remaining after WARCHAŁOWSKI 1995): 3474, 3475 – *Aphthona nigri-scutis*; 3476, 3477 – *A. alexander*; 3478, 3479 – *A. famula*; 3480, 3481 – *A. illigeri*.

7. Apical part of aedeagus slightly bent ventrally. Body uniformly pale, straw yellow to dark yellow amber, labrum and abdominal sternites usually slightly darkened. Aedeagus as in figs **3484, 3485**. Length 3.0–3.8 mm. Variations: antennae and underside darkened, brownish (ab. *obscuricornis* RÜSCHKAMP, 1929), antennae, underside and a narrow sutural stripe brown (ab. *suturalis* DELAHON, 1922). Lives on various *Euphorbia* L.-species. Distributed in southern and central part of Europe (except Sardinia, southern Italy and Greece) from Portugal to Ural basin. Here also *A. crassicornis* LOPATIN, 1990 described from Eastern Anatolia (male unknown). The characters that provides the basis to distinguish this species (structural details of

- tignum and spermatheca) are not sufficient to separate it from other species of the *cyparissiae* group *cyparissiae* (KOCH, 1803.
- Apical part of aedeagus not bent ventrally, its ventral side in lateral view almost straight. Aedeagus as in figs **3486, 3487**. Length 2.8–3.9 mm. Distributed in central and northern Italy, Romania, S Ukraine, Danube basin, Croatia, Serbia and Bulgaria *flava* GUILLEBEAU, 1895.
 - 8. Sutural stripe (brown, pitchy or blackish) present **9**.
 - Elytra unicolorous, pale, without any sutural stripe **15**.
 - 9. Head distinctly darker than pronotum, brown or blackish **10**.
 - Head pale, yellowish or ochra **11**.

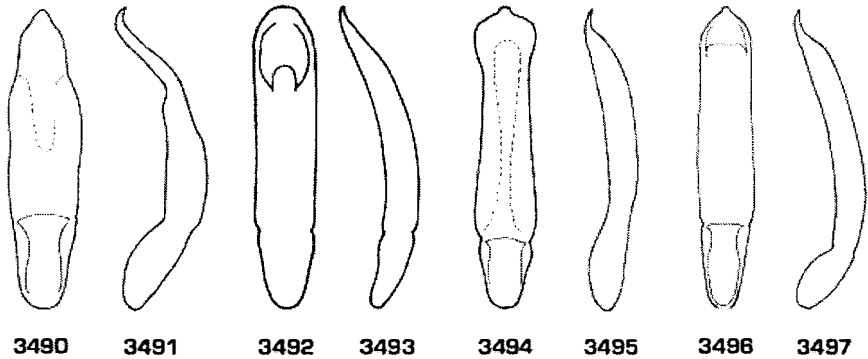


Figs 3482-3489. Aedeagus in ventral or dorsal and in lateral view (3482, 3483, 3488, 3489 after KONSTANTINOV 1998 modif., remaining after WARCHALOWSKI 1995): 3482, 3483 – *Apthona crassipes*; 3484, 3485 – *A. cyparissiae*; 3486, 3487 – *A. flava*; 3488, 3489 – *A. wittmeri*.

- 10. Blackish sutural stripe vestigial. Head usually brownish or brown, pronotum and elytra pale yellowish straw, rarely with a darker, shortened, sutural stripe. Externally very similar to *nigriceps*, but generally paler. Lives on *Geranium* L. and *Erodium* L.-species (*Geraniaceae*). Aedeagus as in figs **3518, 3519**. Length 1.5–1.8 mm. Distributed in central Europe (Austria, Germany, Poland, Hungary), reported also from Istria, Crimea, southern Russia and Caucasian countries *pallida* (BACH, 1856).
- Blackish sutural stripe present, distinct at least in mid part of suture. Head dark brown or blackish. Pronotum and elytra pale yellow, head always considerably darker, in mature insects blackish, in immature rusty-brown. Darkened are meso- and metasternum, abdomen and usually often also more or less shortened sutural stripe. Legs normally entirely pale, hind femora rarely darkened. In male first tarsomere of fore tarsi not widened, but elongate. Lives on *Geranium* L. Aedeagus as in figs **3520, 3521**. Length 1.6–1.9 mm (= *sicula* FOU DRAS, 1860, *decorata* KUTSCHERA, 1861). Widely distributed in African and European part of Mediterranean area, Balkan Peninsula, Crimea, Israel, Syria, Asia Minor and Caucasian countries *nigriceps* (REDTENBACHER, 1842).

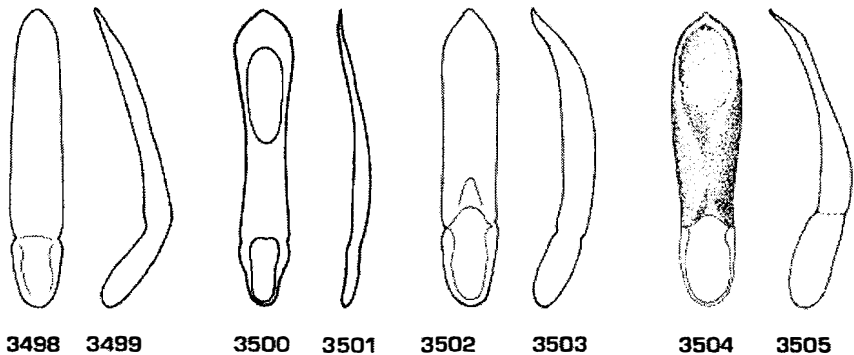
11. Underside entirely pale, at most metaepisterna slightly darkened, brownish. Aedeagus as in figs **3524, 3525**. Length 2.5–2.7 mm (= *svorovi* OGLOBLIN, 1917, *sutranigra* CHEN, 1939, *yusai* OHNO, 1962). Variation: sutural stripe strongly developed, blackish, hind wings reduced (ab. *tibetana* HEIKERTINGER, 1911 from Tibet, perhaps a local race). Distributed in E Asia from Tibet to Japan, a single report from Tadzhikistan was later not confirmed ***interstitialis*** WEISE, 1887.
 - On underside at least metasternum darkened **12**.
12. Metasternum and abdomen darkened, brown **13**.
 - Abdomen pale, meso- and metasternum darkened only. Pronotum very coarsely punctured. Body coloured as in *interstitialis* (thesis 11). Male unknown. Length about 2.3 mm. Described from N China ***piciventris*** CHEN, 1939.
13. Apex of aedeagus with button-shaped process. Furrows above frontal calli fine and shallow. Larger. Furrows above frontal calli fine and shallow. Upper side yellow, blackish sutural stripe shortened anteriorly, labrum, underside and apical part of hind femora more or less darkened. Aedeagus as in figs **3516, 3517**. General view as in plate LXXXVII, **phot. 780**. Length 1.9–2.4 mm (= *sternalis* MULSANT et REY, 1874). Variation: sutural stripe very pale or absent (ab. *praeclara* WEISE, 1906). Distributed in a great part of Europe from Pyrenees and Great Britain to Finland and central Russia, Asia Minor, Caucassian countries, central Asia, Mongolia and Transbaicalia. Here perhaps also *A. jalalabadensis* MADAR et MADAR, 1969, differing by disappearance of lateral frontal furrows, insufficiently described from Afghanistan, based on 3 females only ***lutescens*** (GYLLENHAL, 1813).
 - Apex of aedeagus without button-like process **14**.
14. Apex of aedeagus (figs **3508, 3509**) in dorsal view rather obtusely rounded, in lateral view bent down, almost crooked. Length 1.6–2.2 mm (= *finitima* OGLOBLIN, 1927). Here rather rare dark forms of *abdominalis* (antithesis 28).
 - Aedeagus as in figs **3522, 3523**. Length 1.6–2.0 mm. In female tignum without distinct branches. Distributed in Near East from Cyprus and Israel to Iraq and in Caucassian countries (= *suturella* WEISE, 1888). Distributed in Israel, Syria, Asia Minor and Caucassian countries ***maculata*** ALLARD, 1876.
15. Apical part of hind femora black, the blackened area contrasts with pale remaining part of femur. Puncturation of upper side extremely fine, sometimes barely perceptible. Frontal calli narrow and oblong. Aedeagus as in figs **3496, 3497**. Length 1.7–2.3 mm. In Europe known from southern Spain, Balearic Islands and Greece, moreover distributed in Asia Minor, Iran and in a great part of Africa from coasts of Mediterranean Sea to Kongo ***fuentei*** REITTER, 1901.
 - Apical part of hind femora pale or insignificantly darkened, the darkening does not contrast with remaining part of femur **16**.
16. Head brown **17**.
 - Head pale **18**.
17. Head usually brownish or brown, scutellum pale, pronotum and elytra pale yellowish straw. Externally very similar to *nigriceps*, but generally paler. Here pale forms of *pallida* (thesis 10) without dark sutural stripe.
 - Head and scutellum dark brown. Length 1.5–1.9 mm. Aedeagus as in figs **3488, 3489**. Insufficiently studied species (female unknown), described from Yemen ***wittmeri*** DOGUET, 1979.

18. Body larger (2.0–2.7 mm), entirely pale, yellowish testaceous. Humeral calli well-developed, protruding. In male first tarsomere of fore tarsi feebly or barely widened **19.**
- . Body smaller, on average under 2.0 mm, in exceptionally large females to 2.2–2.3 mm **21.**



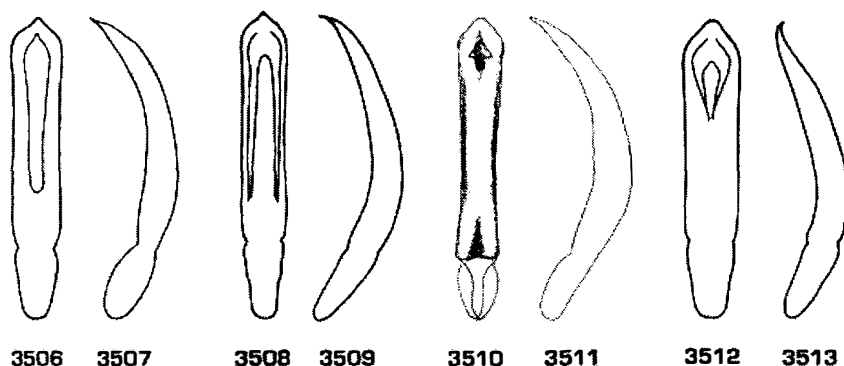
Figs 3490-3497. Aedeagus in ventral or dorsal and in lateral view (3492, 3493 after WARCHAŁOWSKI 1995, remaining after KONSTANTINOV 1998 modif.): 3490, 3491 – *Aphthona jordanica*; 3492, 3493 – *A. kuntzei*; 3494, 3495 – *A. maghrebina*; 3496, 3497 – *A. fuentei*.

19. Aedeagus (figs **3490**, **3491**) of unusual shape, slightly narrowed behind its apical part and broadened in the midpart. Body entirely yellowish. In male first tarsomere of fore tarsi much broader than in female. Length 2.0–2.1 mm. Distributed in Israel and Jordan ***jordanica*** MOHR, 1962.
- . Aedeagus not narrowed behind its apical part **20.**



Figs 3498-3505. Aedeagus in ventral or dorsal and in lateral view (3500, 3501 after WARCHAŁOWSKI 1995; 3504, 3505 after FRITZLAR 2001; remaining after KONSTANTINOV 1998 modif.): 3498, 3499 – *Aphthona kurosawai*; 3500, 3501 – *A. variolosa*; 3502, 3503 – *A. flaviceps*; 3504, 3505 – *A. warchalowskii*.

20. Aedeagus (figs **3492**, **3493**) without apical lamella. Length 2.0–2.1 mm. Distributed in Balkan Peninsula, Crete, Cyprus, Asia Minor and Israel, reported also from Don basin *kuntzei* ROUBAL, 1931.
- Apex of aedeagus with button-shaped process. Here *lutescens* ab. *praeclara* (thesis 13).
21. Apex of aedeagus (figs **3494**, **3495**) broadened, rounded, with distinct lamella. In dorsal view aedeagus behind apical part gently narrowed, in lateral view very weakly curved, its apex slightly bent up. Length 2.1 mm. Described from Morocco *maghrebina* BERGEAL et DOGUET, 1989.
- Aedeagus differently shaped **22**.
22. In male first tarsomere of fore legs much wider than in female. Aedeagus as in figs **3516**, **3517**. Forms of *lutescens* (thesis 13) with pale head.
- In male first tarsomere of fore legs moderately or feebly widened. Aedeagus behind apical lamella never incised **23**.
23. Furrows above frontal calli deeply and sharply incised. Four species very similar to each other, distinguishable principally only by shape of aedeagus **24**.
- Furrows above frontal calli well-developed, but not deep **27**.
24. Species from Japan. Aedeagus as in figs **3498**, **3499**. Length 1.9–2.4 mm *kurosawai* OHNO, 1962.
- W Palaearctic species **25**.



Figs 3506–3513. Aedeagus in ventral or dorsal and in lateral view (3506, 3507, 3510, 3511 after KONSTANTINOV 1998 modif., remaining after WARCHAŁOWSKI 1995): 3506, 3507 – *Aphthona signatifrons*; 3508, 3509 – *A. abdominalis*; 3510, 3511 – *A. mohri*; 3512, 3513 – *A. franzi*.

25. Apex of aedeagus (figs **3500**, **3501**) broadly rounded with short and broad lamella, tubular part in dorsal view somewhat, gently narrowed. External characters as in *flaviceps* (thesis 26). Length 2.0–2.2 mm. Distributed in southern France, Alsace, orthern Italy, Sicily, Sardinia, Iberian Peninsula and Morocco *variolosa* FOUDRAS, 1860.
- Apex of aedeagus narrowed or somewhat sharpened, with small lamella **26**.

26. Aedeagus (figs **3502**, **3503**) narrower, its very tip in lateral view distinctly bent up, mouth parts and labrum in mature specimens darkened. Body entirely pale, underside sometimes slightly darkened, pale brownish. In male first tarsomere of fore tarsi not widened. General view as in plate LXXXVII, **phot. 778**. Length 1.7–2.3 mm (= *straminea* Foudras, 1860). Distributed in Mediterranean area, Crimea, Asia Minor, Caucasian countries and in Central Asia ***flaviceps*** ALLARD, 1859.
- . Aedeagus (figs **3504**, **3505**) broader, its very tip in lateral view distinctly bent up, in mature specimens mouth parts and labrum darkened. Remaining characters as in *flaviceps* (thesis 26). Length 2.0–2.4 mm. Distributed in S Anatolia ***warchalowskii*** FRITZLAR, 2001.
27. Metatibiae nearly straight. Aedeagus with distinct lamella, deep, narrow impression and narrow membranous window apically. Length 2.0 mm. Distributed in Morocco and Algeria. See *maghrebina*, thesis 21.
- . Metatibiae slightly but distinctly curved **28**.
28. Aedeagus as in figs **3506**, **3507**. Length 2.0–2.2 mm. Described from Cape Verde. Distributed also in Morocco and reported from Saudi Arabia ***signatifrons*** (WOLLASTON, 1867).
- . Aedeagus differently shaped **29**.
29. Aedeagus as in figs **3510**, **3511**. Length 1.9–2.3 mm. Distributed in Iran and Turkmenistan ***mohri*** (WARCHALOWSKI, 1973).
- . Aedeagus differently shaped **30**.
30. Furrows above frontal calli deeply and sharply incised. Externally very similar to *flaviceps* (thesis 26). Aedeagus as in figs **3508**, **3509**. Length 1.6–2.2 mm (= *finitima* OGLOBLIN, 1927). Distributed in Europe and W Asia, from France to Kazakhstan ***abdominalis*** (DUFTSCHMID, 1825).
- . Furrows above frontal calli fine and shallow **31**.
31. Hind wings and humeral calli present. Upper side and legs pale, underside brown, head sometimes slightly darkened, antennomeres 8–11 dark brown. In male first tarsomere of fore tarsi feebly but distinctly widened. Aedeagus as in figs **2355**, **2356**, distal part of ductus spermathecae very long. Length 1.8–2.0 mm. Distributed in Danube basin, Romania, Bulgaria, Asia Minor, northern Syria, southern Ukraine and southern Russia ***franzi*** HEIKERTINGER, 1944.
- . Furrows above frontal calli fine and shallow. Generally fairly darker than *franzi* (thesis 18). Aedeagus as in figs **2357**, **2358**, very similar to aedeagus of *franzi*, distal part of ductus spermathecae not particularly long. Length 1.6–2.0 mm. Lives on *Linum flavum* L. Distributed in Danube basin, Istria and in southern Poland ***placida*** (KUTSCHERA, 1864).

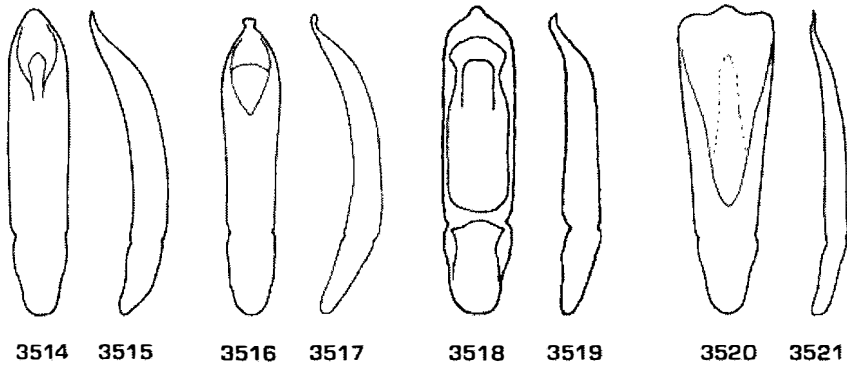
Auxiliary group C

Upper side without metallic reflex, pitchy or pure black.

Key to species

1. Humeral calli well-developed, often protruding **2**.
- . Humeral calli feebly developed or absent **7**.

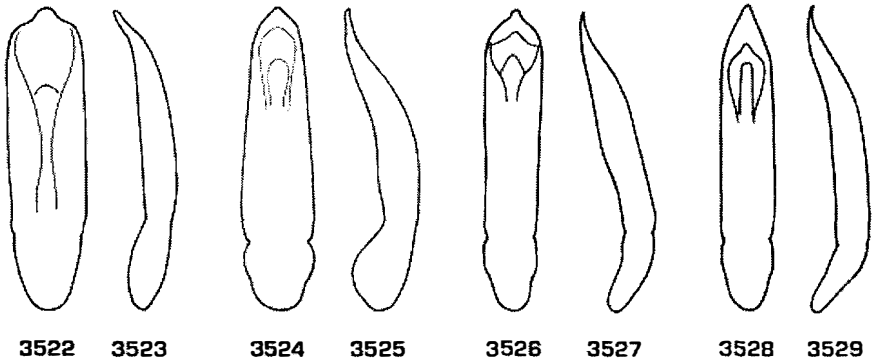
- 2. In entirely mature specimens legs black or blackish, at most paler only in vicinity of joints 3.
- At least fore and mid tibiae entirely pale 4



Figs 3514-3521. Aedeagus in ventral or dorsal and in lateral view (after WARCHAŁOWSKI 1995): 3514, 3515–*Aphthona placida*; 3516, 3517 – *A. lutescens*; 3518, 3519 – *A. pallida*; 3520, 3521 – *A. nigriceps*.

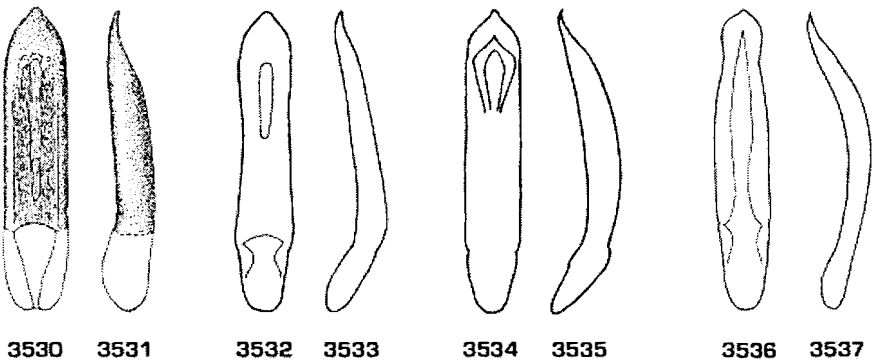
- 3. Body length 2.7 mm. Insufficiently studied species described from Korea. Male unknown **coreana** HEIKERTINGER, 1944.
- Body length under 2.4 mm. Body outline rather stout. Upper side black rarely with extremely feeble blue or blue-violaceous metallic reflex. Aedeagus as in figs **3526**, **3527**. Length 1.9–2.3 mm (= *sublaevis* BOHEMAN, 1851, *ciscaucasica* MEDVEDEV, 1962, *tbilisiensis* KRÁL, 1969). Variations: feeble metallic reflex on upper side green (ab. *discolor* WEISE, 1889), elytra particularly strongly punctured (ab. *sculptipennis* OGOBLIN, 1927). Distributed in almost all Europe (except The British Isles and Scandinavia), Caucasian countries and S Siberia, eastwards to Altai **violacea** (KOCH, 1803).
- 4. Apex of aedeagus (figs **3528**, **3529**) in dorsal view broadly rounded with lamella. Hind femora light brown. Length 2.0–2.2 mm. Distributed in Corsica and Sardinia, reported also, perhaps erroneously, from N Africa **perrisi** ALLARD, 1869.
- Apex of aedeagus obtusely triangular 5.
- 5. Ventral side of aedeagus (figs **3530**, **3531**) along the relatively broad median impression densely covered by fine wrinkles. Upper side pure black without metallic reflex, antennae and legs entirely pale yellow. Length 2.2–2.5 mm. Described from SW Turkey **alanyensis** FRITZLAR, 2004.
- Ventral side of aedeagus without wrinkles 6.
- 6. African species. Hind femora yellow. Aedeagus as in figs **3532**, **3533**. Length 1.8–2.1 mm **vaulozeri** PIC, 1910.
- Species rather widely distributed in W and Central Europe, reported also from N Africa. Upper side often very weakly bicolorous: pronotum with feeble bluish reflex, elytra pure black. Hind femora light brown. Aedeagus as in figs **3534**, **3535**. Length

- 1.9–2.0 mm. Distributed as above. Here perhaps the insufficiently described *koche-ri* KRÁL, 1969 from Morocco ***atrocaerulea*** (STEPHENS, 1831).
7. Humeral calli absent 8.
- . Humeral calli feebly developed, but perceptible 37.



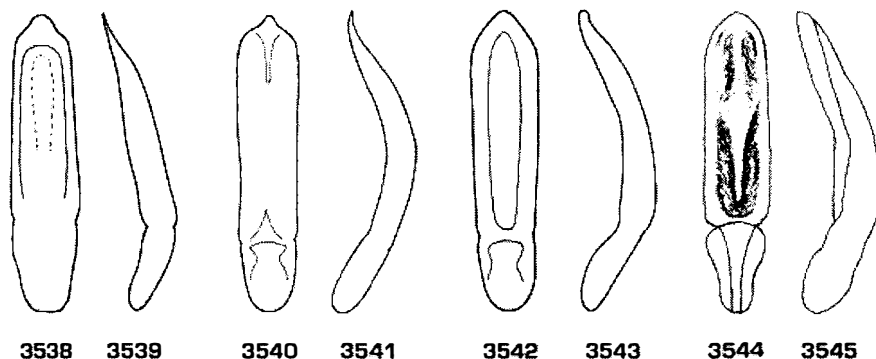
Figs 3522-3529. Aedeagus in ventral or dorsal and in lateral view (3522-3525 after KONSTANTINOV 1998 modif., 3526-3529 after WARCHAŁOWSKI 1995): 3522, 3523 – *Aphthona maculata*; 3524, 3525 – *A. interstitialis*; 3526, 3527 – *A. violacea*; 3528, 3529 – *A. perrisi*.

8. Length over 2.3 mm. European species. Elytra oval, laterally convex, maximum width in middle. Length about 2.0 mm. Poorly studied species (male unknown), distributed in Albania and Croatia ***biokovensis*** PENECKE, 1907.
- . Length under 2.0 mm 9.



Figs 3530-3537. Aedeagus in ventral or dorsal and in lateral view (3530, 3531 after FRITZLAR 2004; 3532, 3533 after KONSTANTINOV 1998 modif.; remaining after WARCHAŁOWSKI 1995): 3530, 3531 – *Aphthona albanensis*; 3532, 3533 – *A. vaulogeri*; 3534, 3535 – *A. atrocaerulea*; 3536, 3537 – *A. microcephala*.

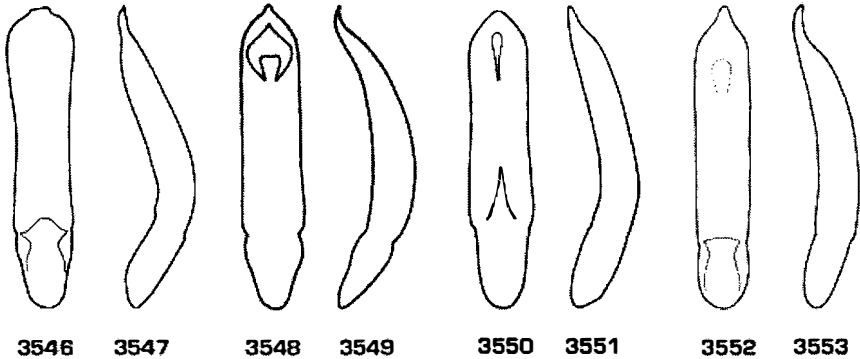
9. E Mediterranean species. Small, upper side piceous, sometimes pronotum lighter. Body particularly convex, broadly oval. Aedeagus as in figs 3536, 3537. Length 1.5–1.7 mm. Described from Israel *microcephala* WEISE, 1888.
 – W Mediterranean species 10.
10. Larger. Hind femora light brown. Aedeagus (figs 3538, 3539) in dorsal view very broad, its apex with short and broad lamella. Length 1.8–2.0 mm. Distributed in Iberian Peninsula, S France, Sicily, Sardinia and Balearic Islands, reported also from Algeria *punctiventris* MULSANT et REY, 1873.
 – Smaller. Hind femora red-brown. Aedeagus (figs 3540, 3541) moderately broad, its apex with little lamella. Length 1.6–1.8 mm. Distributed in Morocco and Algeria
 *subovata* ALLARD, 1859.



Figs 3538–3545. Aedeagus in ventral or dorsal and in lateral view (3544, 3545 after KONSTANTINOV 1998 modif., remaining after WARCHALOWSKI 1995): 3538, 3539 – *Aphthona punctiventris*; 3540, 3541 – *A. subovata*; 3542, 3543 – *A. beauprei*; 3544, 3545 – *A. maldesi*.

11. Length about or under 1.5 mm. Body piceous or dark brown, pronotum usually lighter than elytra, reddish brown 12.
 – Length over 1.8 mm 13.
12. Apex of aedeagus obtuse (figs 3542, 3543). Length 1.2–1.5 mm. Known from Algeria only *beauprei* PIC, 1915.
 – Apex of aedeagus forms a pointed arch (figs 3544, 3545). Length about 1.5 mm. Distributed in Spain *maldesi* DOGUET et PETITPIERRE, 1986.
13. Antennae entirely pale. Metafemur and upper side dark brown. Apex of aedeagus (figs 3546, 3547) with short and broad lamella. Length 2.2–2.4 mm. Distributed in Caucasian countries *testaceicornis* WEISE, 1894.
 – Antennae in apical part darkened 14.
14. Length under 2.2 mm. Body black, legs and antennae yellow except metafemora and last 6 antennomeres light brown. Apex of aedeagus (figs 3548, 3549) with distinct lamella. Length 1.8–2.0 mm. Distributed in Mediterranean area from Morocco, Iberian Peninsula and France to Tunisia, Italy, Dalmatia and Greece
 *carbonaria* ROSENHAUER, 1856.
 – Length over 2.2 mm 15.

15. Legs and antennae yellow except hind femora and 7 last antennomeres light brown. Apex of aedeagus (figs **3550**, **3551**) obtusely triangular. Length 2.2–2.5 mm. Distributed in Ukraine and southern part of European Russia *sarmatica* OGLOBLIN, 1928.
- . Legs entirely yellow. On pronotum, parallel to lateral margin run a shallow and very narrow, furrow-like impression, sometimes strongly shortened (character unique in Palaearctic *Aphthona*). Punctures on anterior part of elytra arranged in more or less regular longitudinal rows. Aedeagus as in figs **3552**, **3553**. Length 2.2–2.5 mm, exceptionally in large females to 2.6 mm (*semistriata* BIONDI, 1992, *mongolica* MEDVEDEV et VORONOVA, 1976, *seriata* CHEN, 1939). Distributed in N Kazakhstan, Mongolia, E Siberia and N China *tolli* OGLOBLIN, 1926.



Figs 3546–3553. Aedeagus in ventral or dorsal and in lateral view (3547, 3548 after WARCHALOWSKI 1995, remaining after KONSTANTINOV 1998 modif.): 3546, 3547 – *Aphthona testaceicornis*; 3548, 3549 – *A. carbonaria*; 3550, 3551 – *A. sarmatica*; 3552, 3553 – *A. tolli*.

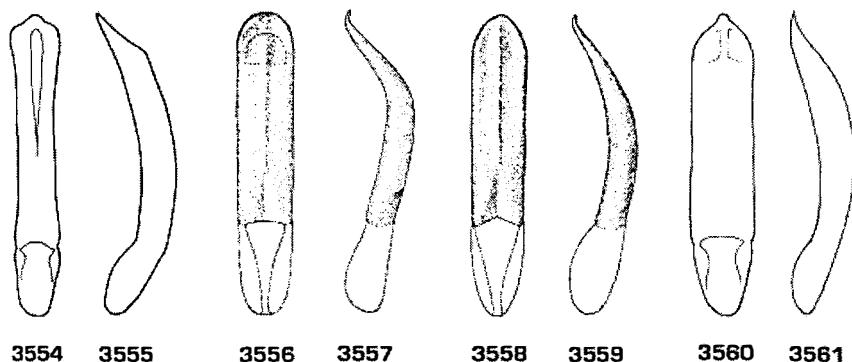
Auxiliary group **D**

Upper side with metallic reflex, humeral calli distinct.

Key to species

1. All legs dark, brown or blackish **2.**
- . In legs at least all tibiae pale, hind femora often darkened **4.**
2. Length of body under 2.2 mm. Apical part of aedeagus (figs **3554**, **3555**) slightly broadened, obtusely rounded, with distinct short lamella. On ventral side median furrow distinct, narrow, deep, in apical part broader, in hind part sometimes almost disappearing. Length 1.8–2.2 mm (= *moreli* PIC, 1910, *operosa* PIC, 1919). Distributed in Iberian Peninsula, Morocco, Algeria and Tunisia *poupillieri* ALLARD, 1860.
- . Length of body on average 2.5–2.6 mm, more rarely (in males) 2.1–2.4 mm. Apical part of aedeagus without lamella **3.**

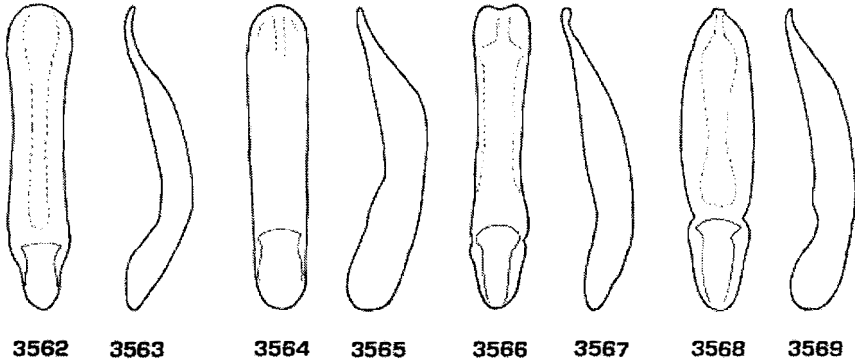
- 3. Aedeagus (figs **3556, 3557**) in lateral view more strongly (about 45°) bent, in dorsal view its apex almost regularly rounded, semicircular. Length 2.1–2.7 mm (male) to 2.2–2.9 mm (female). Described from SW Turkey **bergeali** FRITZLAR, 2001.
- Aedeagus (figs **3558, 3559**) in lateral view less strongly (about 30°) bent, in dorsal view its apex narrower, somewhat ellipsoid. Length 2.3–2.5 mm (male) to 2.5–2.7 mm (female). Described from SW Turkey **bergealoides** FRITZLAR, 2004.
- 4. Metallic reflex on upper side blue **10**.
- Metallic reflex on upper side green, greenish or bronzy **5**.
- 5. Upper side black with green metallic shine, ventral side almost pure blakish or pitchy **6**.
- Upper side with bronzy reflex or ventral side also metallic green **8**.



Figs 3554–3561. Aedeagus in ventral or dorsal and in lateral view (3554, 3555 after KONSTANTINOV 1998 modif.; 3560, 3561 orig., remaining after FRITZLAR 2004): 3554, 3555 – *Aphthona poupillieri*; 3556, 3557 – *A. bergeali*; 3558, 3559 – *A. bergealoides*; 3560, 3561 – *A. promissa*.

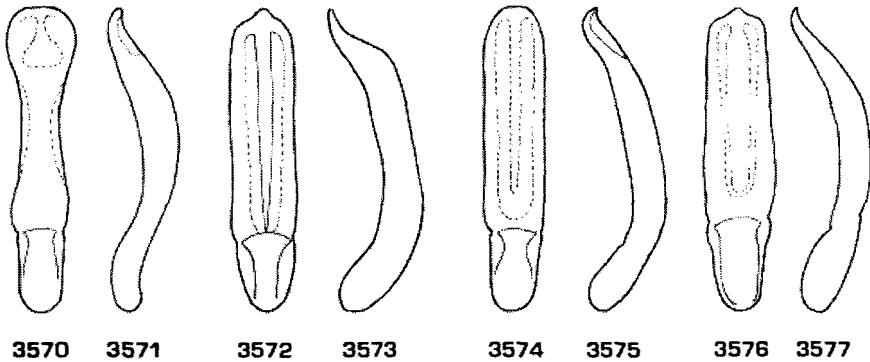
- 6. Apex of aedeagus (figs **3560, 3561**) in dorsal view with distinct lamella. Length 2.0–2.1 mm. In female antennomere 2 shorter than 3. Distributed in Tadzhikistan and Afghanistan **promissa** OGOBLIN, 1926.
- Apex of aedeagus in dorsal view regularly rounded **7**.
- 7. Ventral side of aedeagus with long median impression reaching almost to base. Mid- and hind tibiae entirely pale, yellow or orange yellow. Aedeagus as in figs **3562, 3563**. Length 1.7–2.1 mm. Known from Afghanistan only **reinecki** LOPATIN, 1963.
- Ventral side of aedeagus (figs **3564, 3565**) with two small and shallow impressions near apex, separated by a feeble ridge. Externally similar to *promissa* (thesis 6), but in female antennomere 2 almost as long as 3. Length 1.8–1.9 mm. Distributed in Tadzhikistan and Afghanistan **hissarica** LOPATIN, 1975.
- 8. Upper side bronzy with coopery shine. Frons and vertex very convex, orbital furrow strong, supracallinal furow very shallow. Central part of pronotum impunctate. Aedeagus as in figs **3566, 3567**. Length 1.9–2.3 mm. Described from N China (Inner Mongolia) **chalchica** MEDVEDEV, 1980.
- Upper- and ventral side, head and hind femora metallic green **9**.

9. Apex of aedeagus (figs 3568, 3569) broadly emarginate. Length 1.75 mm. Described from Tibet *chayuana* CHEN et al., 1976.
 –. Apex of aedeagus (figs 3570, 3571) without emargination. Length 1.7–2.1 mm. Very similar to *chayuana*, which was originally described as subspecies of *splendida*. Described from N China (Kansu), but distributed mainly in SW China (Sichuan and neighbouring provinces) *splendida* WEISE, 1889.



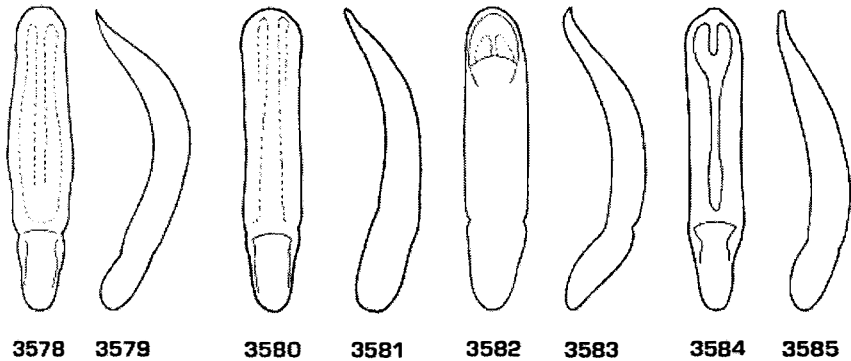
Figs 3562-3569. Aedeagus in ventral or dorsal and in lateral view (after KONSTANTINOV 1998 modif.): 3562, 3563 – *Aphthona reinecki*; 3564, 3565 – *A. hissarica*; 3566, 3567 – *A. chalchica*; 3568, 3569 – *A. chayuana*.

10. Larger species, length of body more than 2.5 mm 11.
 –. Smaller species, length of body under 2.5 mm 21.



Figs 3570-3577. Aedeagus in ventral or dorsal and in lateral view (after KONSTANTINOV 1998 modif.): 3570, 3571 – *Aphthona splendida*; 3572, 3573 – *A. chekanovskii*; 3574, 3575 – *A. trivialis*; 3576, 3577 – *A. hauseri*.

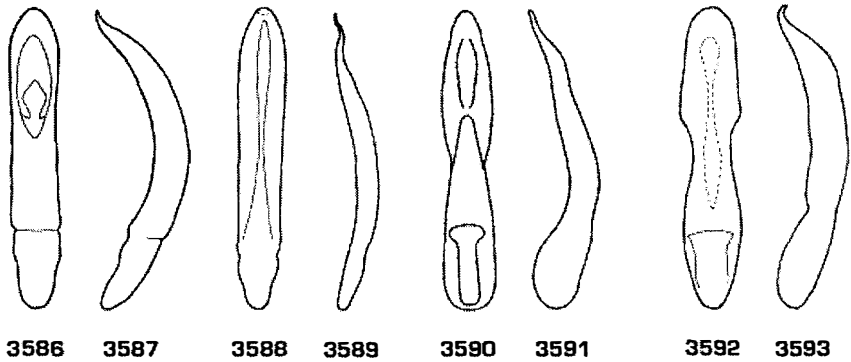
11. Metatibial spur nearly as long as claw tarsomere, apical margin of elytron concave before apex. Upper side metallic blue. Metafemora and 6 apical antennomeres dark brown, remaining parts of legs and antennae yellow. Length about 2.7 mm. Insufficiently studied species (male unknown). Distributed in China (Hopei) ***silinica*** CHEN, 1939.
- Different combination of external characters not as above **12.**
12. On ventral side of aedeagus run two long impressions separated by median ridge **13.**
- Ventral side of aedeagus differently shaped **18.**
13. Impressions on ventral side of aedeagus deep, furrow-like **14.**
- Impressions on ventral side of aedeagus distinct, but not furrow-like **15.**
14. Apex of aedeagus (figs **3572**, **3573**) with lamella, in general outline triangular, basal part of ventral side with shallow impression. Length 2.5–2.7 mm. Externally very similar to *hammarstroemi* (antithesis 39), differing by larger size of the body and the shape of aedeagus. Described from E Siberia (Yakutia) ***chekanovskii*** KONSTANTINOV, 1998.
- Apex of aedeagus (figs **3574**, **3575**) obtusely rounded. Length 2.6–2.8 mm (= *merkli* GRUEV, 1994). Externally similar to *chekanovskii* (thesis 14). In female an unique character: apex of tignum with three (not as usually two) branches. Distributed in Russian Far East and Korea ***trivialis*** WEISE, 1887.



Figs 3578-3585. Aedeagus in ventral or dorsal and in lateral view (3584, 3585 after WARCHAŁOWSKI 1995, remaining after KONSTANTINOV 1998 modif.): 3578, 3579 – *Apthona przhevalskii*; 3580, 3581 – *A. chrysomelina*; 3582, 3583 – *A. jacobsoni*; 3584, 3585 – *A. czwalinae*.

15. Anterolateral callosities of pronotum unusually short, claw tarsomeres nearly 3 × longer than tarsomere 3, claws unusually long. Aedeagus as in figs **3576**, **3577**. Length 3.1–3.4 mm (= *claripes* RAPILLY, 1978). Distributed in Turkmenistan, Iran and Afghanistan ***hauseri*** HEIKERTINGER, 1911.
- Anterolateral callosities of pronotum and claws of normal length. Two species with rather similar aedeagus shape **16.**

16. Length of body over 3.6 mm. In female branches of tignum not conspicuously broad **17.**
- . Length of body 3.2–3.3 mm. Aedeagus as in figs **3578, 3579**. Apex of in female tignum with unusual broad branches. Described from Kazakhstan (Talas Alatau Mts.) **przhevalskii** KONSTANTINOV, 1998.
17. Externally similar to *jacobsoni*, but much larger (the largest known palaearctic *Aphthona*-species). Length 3.6–4.4 mm. Aedeagus as in figs **3580, 3581**. Described from Usbekistan **chrysomelina** HEIKERTINGER, 1944.
- . Externally similar to *przhevalskii* (antithesis 16), differing by details of female genitalia (branches of tignum broadened basally only). Length 3.6–3.8 mm. Male unknown. Described from Kazakhstan, its relation to *przhevalskii* and *chrysomelina* needs still further studies **lopatini** KONSTANTINOV, 1998.
18. Frontal tubercles limited behind by fine and shallow, almost straight furrows **20.**
- . Frontal tubercles limited behind by deeply incised furrows. Upper side black with feeble blue or green reflex, metafemora brown **19.**

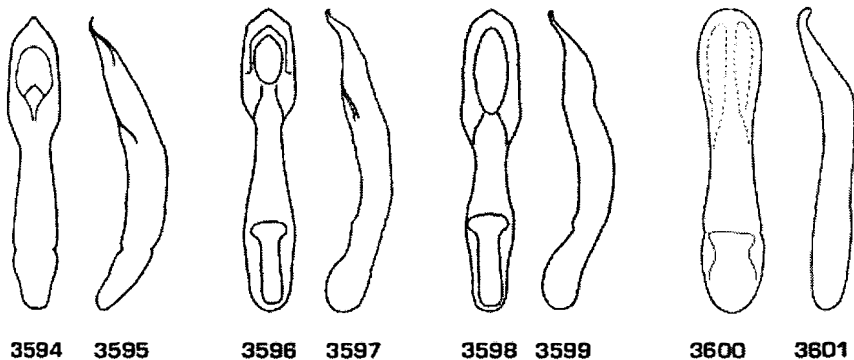


Figs 3586-3593. Aedeagus in ventral or dorsal and in lateral view (3586-3589 after WARCHAŁOWSKI 1995, remaining after KONSTANTINOV 1998 modif.): 3586, 3587 – *Aphthona nonstriata*; 3588, 3589 – *A. rhodien-sis*; 3590, 3591 – *A. glebi*; 3592, 3593 – *A. wiseana*.

19. Impression on ventral side of aedeagus (figs **3582, 3583**) long, deep and broad, covered by very fine rugosities. Externally very similar to *czwalinae* (antithesis 19), differing by shape of aedeagus and also by distribution area. Length 2.7–3.4 mm. Distributed in Transcaspia, Afghanistan and Iran **jacobsoni** OGLOBLIN, 1926.
- . Impression on ventral side of aedeagus narrow, in hind part shortened, not covered by rugosities. Aedeagus as in figs **3584, 3585**. Length 2.8–3.0 mm (= *coerulescens* WEISE, 1889). Distributed in Central Europe (Danube basin, Poland), Ukraine, S Russia, Siberia and Mongolia **czwalinae** WEISE, 1888.
20. Upper side dark metallic blue. Frontal calli large, flat, approximately triangular. Apical part of aedeagus (figs **3586, 3587**) in dorsal view rounded, in lateral view slightly bent dorsally. General view as in plate LXXXVII, **phot. 777**. Length 2.6–2.8 mm (= *coerulea* GEOFFROY 1785, *pseudoacori* MARSHAM, 1802, *plenifrons* WOLLASTON, 1864,

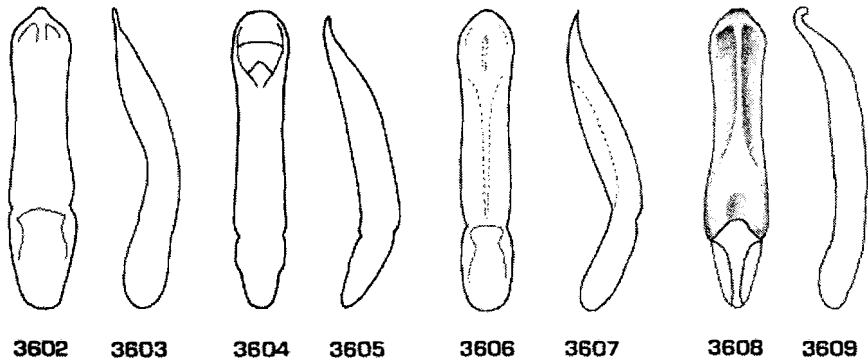
thoracica OGLOBLIN, 1917). Variations: hind wings partly reduced (ab. *asthmatica* WEISE, 1888), legs darkened (ab. *picipes* GABRIEL, 1918), metallic reflex of upper side aeneous (ab. *aenescens* WEISE, 1888). Lives on *Iris pseudoacorus* L. Distributed in Europe (in N approximately to 62°), from Ireland and Pyrenees to Turkey, Caucasian countries, Iran and N Kazakhstan, reported also from Canary Islands

- **nonstriata** (GOEZE, 1777).
 - Upper side black with feeble bluish reflex. Apical part of aedeagus (figs 3588, 3589) in lateral view vavy curved. Length 2.5–2.8 mm. Described from Rhodos, known also from Asian Turkey **rhodiensis** HEIKERTINGER, 1944.
 21. Aedeagus spoon-shaped (tubular part of aedeagus in its basal half distinctly narrower than its apical half). Here five species, externally very similar to each other, but distinguishable by shape of aedeagus (*gracilis*-group), before 2006 treated as one species, *A. gracilis* FALD. **22**.
 - Tubular part of aedeagus not narrower basally than in apical half **26**.
 22. Apical half of aedeagus (figs 3590, 3591) in dorsal view lanceolate, its apex in lateral view slightly bent vantrally. Length 1.9–2.3 mm. Described from Usbekistan, reported also from N Iran (Tehran) **glebi** KONSTANTINOV, 2006.
 - Apical half of aedeagus with parallel- or slightly converging sides **23**.
 23. Ventral side of aedeagus (figs 3592, 3593) with a long and deep furrow. Length 2.2–2.4 mm. Described from Turkmenistan, very common in Iran
 **weiseana** KONSTANTINOV, 1998.
 - Furrow on ventral side of aedeagus absent or vestigial **24**.
 24. Sides of broadened apical half of aedeagus (figs 3594, 3595) parallel-sided, in lateral view ventral side of aedeagus straight. Length 2.2–2.4 mm. Variation: hind femora entirely yellowish (ab. *flavofemorata* HEIKERTINGER, 1911). Distributed in Caucasian countries, reported also from E Kazakhstan. Other reports (Turkey, Rumunia, Israel) need confirmation after control of determining **gracilis** FALDERMANN, 1837.
 - Sides of broadened apical half of aedeagus slightly converging, ventral side of aedeagus in lateral view convex **25**.



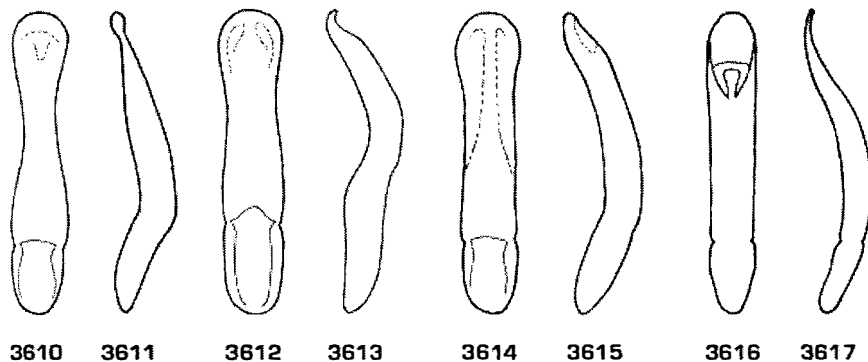
Figs 3594-3601. Aedeagus in ventral or dorsal and in lateral view (3594, 3595 after WARCHALOWSKI 1995, remaining after KONSTANTINOV 1998 modif.): 3594, 3595 – *Aphthona gracilis*; 3596, 3597 – *A. olegi*; 3598, 3599 – *A. taniae*; 3600, 3601 – *A. strigosa*.

- 25. Widened apical part of aedeagus (figs **3596, 3597**) as long as the narrow basal part. Length 2.3–2.5 mm. Described from Azerbaidzhan **olegi** KONSTANTINOV, 2006.
- . Widened apical part of aedeagus (figs **3598, 3599**) distinctly longer than the narrow basal part. Length 1.7–2.4 mm. Relatively broadly distributed in Transcaspiya, from Afghanistan and Uzbekistan to E Kazakhstan **taniae** KONSTANTINOV, 2006.
- 26. On ventral side of aedeagus two impressions situated laterally and separated by median ridge. These impressions can be shorter or longer (species belonging to *hammarstroemi*-group sensu KONSTANTINOV 1998) **27**.
- . On ventral side of aedeagus no two impressions and median ridge **40**.
- 27. Upper side silky, green, extremely rugose, dull. Legs yellow with brown hind femora, antennae pale, antennomeres 6–11 brownish. Length 2.1–2.3 mm (= *wallacei* BALY, 1877, *glabrata* JACOBY, 1896). General view as in plate LXXXVII, **phot. 782**. Aedeagus as in figs **3600, 3601**. Very characteristic species, broadly distributed in S China, Indochina and Japan **strigosa** BALY, 1874.
- . Upper side more or less shining, never extremely rugose **28**.
- 28. Apical half of ventral side of aedeagus in lateral view convex **29**.
- . Apical half of ventral side of aedeagus in lateral view concave or rarely straight **30**.
- 29. Apex of aedeagus (figs **3602, 3603**) subtriangular. Second tarsomere of hind tarsi longer than third. Length 2.3–2.5 mm. Externally very similar to *venustula* (antithesis 29), but on average larger. Distributed in Iberian Peninsula; reported also from England, however it is arousing doubts **melancholica** WEISE, 1882.
- . Apex of aedeagus (figs **3604, 3605**) obtuse. Second tarsomere of hind tarsi as long as third. Length 1.7–2.3 mm (= *attica* WEISE, 1890). Leaves on different *Euphorbia*-species. Broadly distributed in Europe (in N approximately to 54°), Asia Minor, Caucasian countries and Near East **venustula** KUTSCHERA, 1861.
- 30. Nasal ridge broad. See *nonstriata*, thesis 20.
- . Nasal ridge moderately broad or narrow. Supracallinal furrow usually well developed **31**.



Figs 3602-3609. Aedeagus in ventral or dorsal and in lateral view (3604, 3605 after WARCHALOWSKI 1995, remaining after KONSTANTINOV 1998 modif.): 3602, 3603 – *Aphthona melancholica*; 3604, 3605 – *A. venustula*; 3606, 3607 – *A. perminuta*; 3608, 3609 – *A. maebarai*.

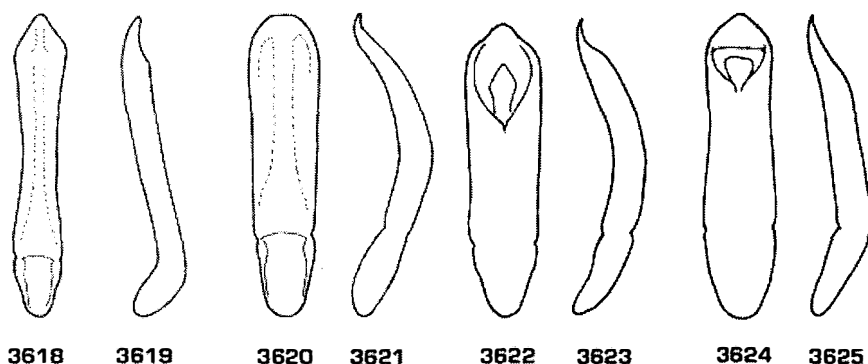
31. Mid- and hind femora dark brown **32.**
 -. Mid- and hind femora pale, yellow or orange yellow **35.**
 32. Mid and hind tibiae pale only in middle. Basal antennomeres including the first, yellowish. Median ridge on ventral side of aedeagus (figs **3606**, **3607**) sharp. Length 1.8–2.0 mm. Distributed in Japan (Hokkaido, Honshu, Shikoku, Kyushu) and Sakhalin **perminuta** BALY, 1861.
 -. Mid- and hind tibiae entirely yellowish. Median ridge on ventral side of aedeagus feebly distinguished, merging with the convexity of the organ **33.**
 33. Frontal calli triangular, situated almost vertically. Antennae rather robust, preapical antennomeres at most 2 × longer than broad. Aedeagus as in figs **3608**, **3609**. Length 2.0–3.0 mm (= *nigrita* OHNO, 1961 nec MOTSCHULSKY 1866, *picea* NAKANE et KIMOTO, 1961). Distributed in Japan (Kuyshu, Ryu-Kyu) and Taiwan, recently ranked rather in the genus *Trachyapthona* (see) **maebarai** (OHNO, 1961).
 -. Frontal calli suboval **34.**
 34. Tubular part of aedeagus (figs **3610**, **3611**) in lateral view straight. Punctures on pronotum not finer than on elytra. Length 1.8–2.0 mm. Distributed in Russian Far East and in Korea **modesta** WEISE, 1887.
 -. Tubular part of aedeagus (figs **3612**, **3613**) in lateral view curved. Punctures on pronotum finer than on elytra. Length 2.0–2.3 mm. Distributed in China, actually rather not belonging to Palearctic fauna **gressiti** KONSTANTINOV, 1998.
 35. Furrow separating frontal calli from vertex feebly developed, thin and shallow **36.**
 **36.**
 -. Furrow separating frontal calli from vertex well developed **37.**



Figs 3610–3617. Aedeagus in ventral or dorsal and in lateral view (3616, 3617 after WARCHAŁOWSKI 1995, remaining after KONSTANTINOV 1998 modif.): 3610, 3611 – *Apthona modesta*; 3612, 3613 – *A. gressiti*; 3614, 3615 – *A. semiviridis*; 3616, 3617 – *A. bonvouloirei*.

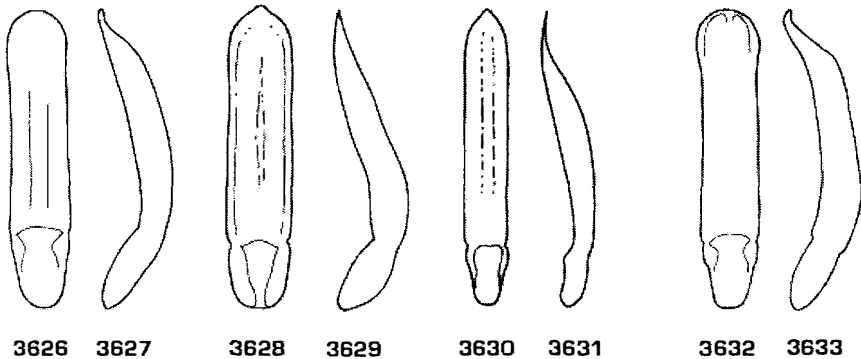
36. E Palearctic species. Anterolateral callosity of pronotum well developed, concave, forming a sharp denticle in the middle. Apex of aedeagus (figs **3614**, **3615**) broadened, its outline almost semicircular. Length 1.8–2.0 mm. Distributed in Sakhalin and in Japan **semiviridis** JACOBY, 1885.

- E Mediterranean species. Anterolateral callosity of pronotum straight. Apex of aedeagus (figs **3616**, **3617**) not broadened, obtusely roundish. Length 1.9–2.4 mm (= *tauricola* PIC, 1910). Distributed in E Mediterranean area from Italy and Bulgaria to Egypt, Israel and N Iran, in Taurus Mts (Turkey) relatively common. Subspecies *sicelidis* WEISE, 1882 from Sicily (male unknown), characterized by reduced hind wings, treated mostly as subspecies of *bonvouloiri*, is recently considered by some authors as distinct species based on (in my opinion not very convincing) differences in female genitalia ***bonvouloiri*** ALLARD, 1860.
- 37. Anterior border of frons (immediatly over clypeus) strongly thickened, particularly in the middle. Upper side merallic blue with feeble brass reflex. Male genitalia unknown. Length about 1.6 mm. Described from China ***potanini*** KONSTANTINOV, 1998.
- Anterior border of frons not distinctly thickened **38**.
- 38. Anterolateral callosity of pronotum poorly developed, thin and short, with obtuse denticle. Upper side metallic blue with feeble bronzy reflex. Aedeagus as in figs **3618**, **3619**. Female unknown. Described based on one male only from China (Shensi) ***gruevi*** KONSTANTINOV, 1998.
- Anterolateral callosity of pronotum normal, denticle usually sharp **39**.
- 39. Base of vertex covered by coarse, irregular wrinkles. Basal part of hind femora yellow. Length 2.4 mm. Male unknown. Poorly studied species, described from Transcaspia (Talas Alatau Mountains) based on one female only ***gracilipes*** OGLUBLIN, 1926.
- Base of vertex without wrinkles or at most covered by wrinkles fine and shallow. Hind femora entirely dark. Externally similar to *jacobsoni* (thesis 19), but distinctly smaller. Aedeagus as in figs **3620**, **3621**. Length 2.2–2.5 mm (= *issykensis* OGLUBLIN, 1917, *fisheri* PIC, 1910). Distributed from Kazakhstan and W Siberia to Baikal region ***hammarstroemi*** JACOBSON 1901.
- 40. Metallic reflex of upper side bluish **41**.
- Metallic reflex of uppers side brassy **42**.



Figs 3618–3625. Aedeagus in ventral or dorsal and in lateral view (3618–3621 after KONSTANTINOV 1998 modif., remaining after WARCHALOWSKI 1995): 3618, 3619 – *Aphthona gruevi*; 3620, 3621 – *A. hammarstroemi*; 3622, 3623 – *A. euphorbiae*; 3624, 3625 – *A. pygmaea*.

41. Furrows above frontal calli feebly perceptible. Metallic reflex of upper side very weak or almost absent. Aedeagus as in figs **3622**, **3623**. Lives on *Linaceae*. Length 1.5–2.2 mm (= *hilaris* STEPHENS, 1831, *punctigera* MULSANT et REY, 1874, *subaptera* MULSANT et REY, 1874, *atratura* ALLARD, 1859). Variation: metallic reflex of upper side distinct, bluish (ab. *cyanescens* WEISE, 1888). Western-palaeartic species, distributed from Morocco, Portugal and Ireland to western Siberia, Near East, Asia Minor and Caucasian countries ***euphorbiae*** (SCHRANK, 1781).
- . Furrows above frontal calli fine, but distinct. Metallic reflex of upper side sometimes fairly weak, but always perceptible. Apical part of aedeagus (figs **3624**, **3625**) in lateral view only indistinctly bent dorsally. Length 1.7–2.0 mm (= *fulvipes* SAHLBERG, 1913, *substriata* MEDVEDEV, 1962). Forms 3 subspecies: upper side distinctly punctate, outline of body oblong oval (nominotypical subspecies from central and south-eastern parts of Europe, also from Asia Minor), on average somewhat larger, broader, stronger rounded laterally, finely punctate and usually pure black (subsp. *nigella* KUTSCHERA, 1861, from Italy and vicinity of Adriatic Sea). Puncturation of upper side particularly fine, sometimes almost disappearing (*orientalis*, MULSANT et REY, 1874, from Egypt and Near East). Distributed in eastern France, southern and central parts of Germany and Poland, in Ukraine and Caucasian countries, Italy, Austria, Danube basin, Balkan Peninsula, Asia Minor, Near East, Egypt and Libya ***pygmaea*** (KUTSCHERA, 1861).



Figs 3626–3633. Aedeagus in ventral or dorsal and in lateral view (3628–3629 after WARCHALOWSKI 1995; 3630, 3631 after HEIKERTINGER 1944; remaining after KONSTANTINOV 1998 modif.): 3626, 3627 – *Aphthona lubischevi*; 3628, 3629 – *A. occitana*; 3630, 3631 – *A. syriaca*; 3632, 3633 – *A. reitteri*.

42. Hind femora relative pale, light brown. Apex of aedeagus (figs **3626**, **3627**) in dorsal view evenly rounded, semicircular. Length 2.0–2.2 mm. Described from Crimea ***lubischevi*** KONSTANTINOV, 1998.
- . Hind femora dark brown **43**.
43. Furrows above frontal calli feebly perceptible. Metallic reflex of upper side very weak or absent. Here some forms of *euphorbiae* (thesis 41).
- . Furrows above frontal calli well-developed **44**.

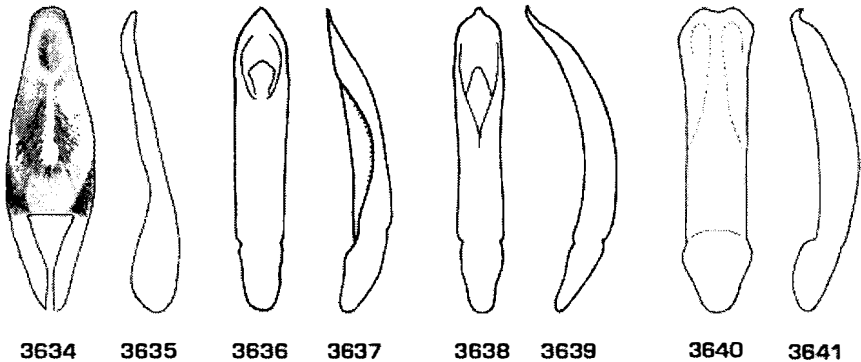
44. Species W Europe. Fore and mid femora in the middle slightly darkened, tibiae and tarsi entirely yellow. Apical part of aedeagus (figs **3628**, **3629**) straight, its very tip bent dorsally. Length 1.8–2.2 mm. Distributed in Iberian Peninsula and S France ...
 **occitana** DOGUET, 1988.
- . Species from Near East and Asia Minor. All legs except hind femora dark yellow or light brownish. Whole apical part of aedeagus (figs **3630**, **3631**) slightly bent dorsally. Length about 2.2 mm. Distributed in Iraq, Syria and Asian Turkey
 **syriaca** HEIKERTINGER, 1944.

Auxiliary group E

Humeral calli absent or weakly developed.

Key to species

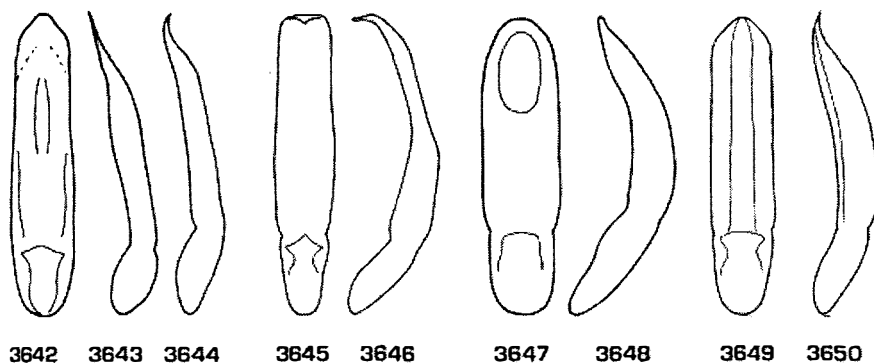
1. Length of body about or over 2.5 mm **2**.
 –. Length of body under 2.5 mm **6**.
2. Humeral calli absent entirely. All legs dark, only articulations lighter. Aedeagus as in figs **3632**, **3633**. Length 2.6–2.8 mm (= *georgica* OGLUBLIN, 1926). Distributed in Caucasian area (S Russia, Armenia, Georgia **reitteri** ALLARD, 1884.
 –. Humeral calli strongly reduced, but perceptible **3**.



Figs 3634-3641. Aedeagus in ventral or dorsal and in lateral view (3636-3637 after WARCHAŁOWSKI 1995; 3638, 3639 orig.; remaining after KONSTANTINOV 1998 modif.): 3634, 3635 – *Aphthona chinensis*; 3636, 3637 – *A. semicyanea*; 3638, 3639 – *A. lacertosa*; 3640, 3641 – *A. kaszabi*.

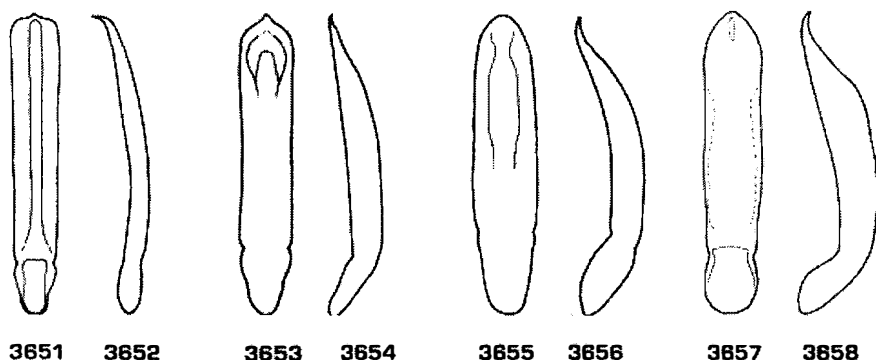
3. Smaller. Elytra deep blue. Pronotum very weakly punctured. Elytra widest at middle. Aedeagus (figs **3634**, **3635**) with rounded apex, broad at base, evenly narrowed anteriorly. Length about 2.5 mm (= *hananoi* CHŪJŌ). Distributed in NE Chin and N Korea **chinensis** BALY, 1877.
 –. Larger, body length over 2.6 mm **4**.

4. Upper side with distinct blue or greenish-blue, feeble, sometimes almost disappearing reflex **5**.
- Upper side with black-green metallic reflex. Legs entirely pale. Punctuation on pronotum fine, elytra stronger, densely and deeply punctate. Frontal calli very distinctly separated from frons by deep furrows. Aedeagus as in figs **3638, 3639**. General view as in plate LXXXVII, **phot. 779**. Length 2.6–3.8 mm (= *divaricata* REDTENBACHER, 1849). Distributed in south-eastern Poland, Danube basin, Balkan Peninsula, Romania, Ukraine, Crimea, Don basin and Asia Minor. Introduced to N America *lacertosa* (ROSENHAUER, 1847).
5. Frontal calli narrow, situated horizontally. Body rather stout, usually fairly oval. In male all legs thicker than in female. Often confused with *nonstriata* (thesis 20). Lives on *Iridaceae*. Aedeagus as in figs **3636, 3637**. Length 2.8–3.8 mm (= *picipes* WEISE, 1892, *phrygia* WEISE, 1901, *melanopeza* JACOBSON, 1901). In typical form legs pale, hind femora pitchy or dark brown, hind wings and humeral calli well-developed. Very variable: legs except for knees entirely dark brown (ab. *viridula* ALLARD, 1866), legs, including hind femora, entirely pale (ab. *punctatissima* WEISE, 1888), upper side pure black, legs entirely pale (ab. *tenebrosa* OGOBLIN, 1927, considered also as subspecies), hind wings and humeral calli reduced, upper side pure black, legs entirely pale (ab. *atra* CSIKI, 1901). In discussed area one subspecies are described: length under 3.0 mm, upper side stroger shining, legs dark (subsp. *grossa* IABLOKOFF-KHNZORIAN, 1959, from Caucasus); further two subspecies described from central Asia and E Siberia *semicyanea* ALLARD, 1859.
- Frontal calli not narrow, nearly trapezoidal. Upper side with light metallic blue shine. Punctuation on pronotum coarse, poorly defined, forming longitudinal wrinkles at base. Externally very similar to *lacertosa*, differing by shape of spermatheca. Length 2.6–3.8 mm (female). Insufficiently studied species (male unknown) described from S Russia north of Caucasus *russica* KONSTANTINOV, 2001.
6. Humeral calli absent entirely **7**.
- Humeral calli strongly reduced, but perceptible **11**.



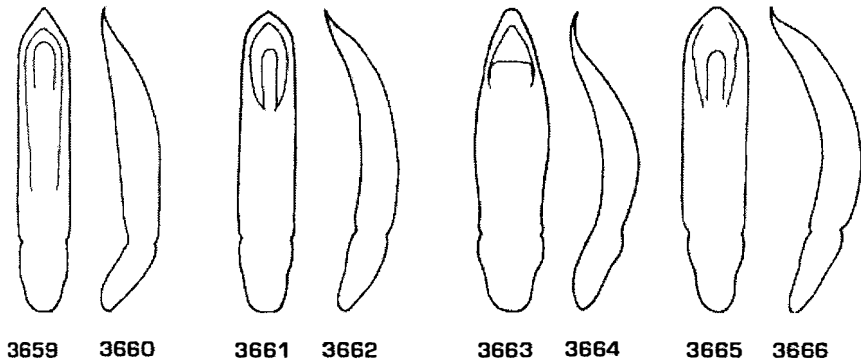
Figs 3642-3650. Aedeagus in ventral or dorsal and in lateral view (3642 after DOGUET 1988, remaining after KONSTANTINOV 1998 modif.): 3642-3644 - *Aphthona delicatula*; 3645, 3646 - *A. alcina*; 3647, 3648 - *A. constantini*; 3649, 3650 - *A. juliana*.

7. Elytra shortened, pygidium exposed character unique among Palaearctic *Apthona*. Apex of aedeagus (figs **3640**, **3641**) in dorsal view shallowly emarginate. Length 1.9–2.1 mm (= *amygdali* MEDVEDEV, 1974). Distributed in Mongolia ***kaszabi*** KRÁL, 1967.
- . Elytra not shortened, apex of aedeagus not emarginate **8.**
8. Upper side brown with strong greenish or bronzy metallic gloss (here *espanoli*, antithesis 2).
- . Metallic reflex of upperside not very strong **9.**
9. Length under 1.9 mm. Forms two subspecies: apex of aedeagus in lateral view straight (figs **3642**, **3643**) (nominotypical subsp., distributed in France and Alps area), apex of aedeagus in lateral view bent dorsally as in fig. **3644** (subsp. *graeca* DOGUET, 1988 occurring in Greece, perhaps a distinct species) ***delicatula*** FOUDRAS, 1860.
- . Length over 1.9 mm **10.**
10. Apex of aedeagus (figs **3645**, **3646**) with a small lamella. Length about 2.0 mm. Distributed in Sardinia and Corsica ***alcina*** LEONARDI, 1975.
- . Apex of aedeagus (figs **3647**, **3648**) obtuse. Furrows behind frontal calli feebly developed, thin and shallow. Length 2.2–2.3 mm. Distributed in Spain ***constantini*** DOGUET et PETITPIERRE, 1986.
11. Fore and mid femora darkened basally **12.**
- . Fore and mid femora entirely pale **18.**
12. Length about 1.5 mm. Upper side black or piceous, pronotum sometimes brown. Underside, hind femora and last 5 antennomeres brown. Humeral callus poorly developed. Aedeagus as in figs **3544**, **3545**. Here *C. maldesi*, described from S Spain. See auxiliary group C (antithesis 12).
- . Length over 1.9 mm **13.**
13. Hind femora redlatively pale, light brown. Upper side black with rather strong bronzy sheen. Furrows behind frontal calli feebly developed. Aedeagus as in figs **3649**, **3650**. Length 2.0–2.0 mm. Distributed in E Alps ***juliana*** SPRINGER, 1953.
- . Hind femora dark brown or blackish **14.**



Figs 3651–3658. Aedeagus in ventral or dorsal and in lateral view (3653, 3654 after WARCHAŁOWSKI 1995, remaining after KONSTANTINOV 1998 modif.): 3649, 3650 – *Apthona juliana*; 3651, 3652 – *A. sardea*; 3653, 3654 – *A. depressa*; 3655, 3656 – *A. rugipennis*; 3657, 3658 – *A. jacuta*.

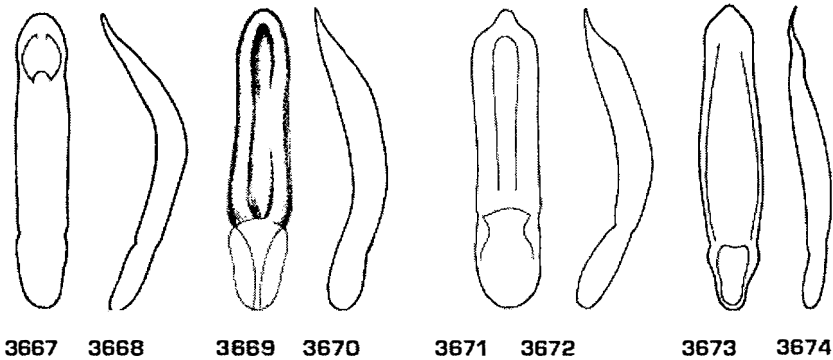
14. W Mediterranean species. Upper side black with feeble bluish reflex. Two mutually similar W Mediterranean species. Their identification requires comparison with a series of correctly determined specimen **15**.
 - Species from Central and E Europe or from Asia. Upper side black with feeble brassy or bronzy reflex **16**.
15. Species endemic to Sardinia. Aedeagus as in figs **3651, 3652**. Length 2.0–2.5 mm
 **sardea** ALLARD, 1866.
 - Species distributed in NW Africa, Iberian Peninsula and S France. Aedeagus as in figs **3653, 3654**. Length 2.0–2.3 mm (= *aenea* ALLARD, 1866, *subimpresca* MULSANT et REY, 1873, *ouarsenisiensis* PIC, 1910, *subparallela* NORMAND, 1937, *diminuta* ABEILLE, 1909, *biskrensis* PIC, 1910) **depressa** ALLARD, 1859.



Figs 3659–3666. Aedeagus in ventral or dorsal and in lateral view (3659, 3660 after KONSTANTINOV 1998 modif., remaining after WARCHAŁOWSKI 1995): 3659, 3660 – *Apthona parnassicola*; 3661, 3662 – *A. stussineri*; 3663, 3664 – *A. erichsoni*; 3665, 3666 – *A. atrovirens*.

16. Apex of aedeagus obtuse, without lamella **17**.
 - Apex of aedeagus with lamella **19**.
17. Metallic reflex of upper side brassy. Aedeagus as in figs **3655, 3656**. Length 2.2–2.3 mm (= *orientalis* MEDVEDEV 1962, *praenuntiata* KRÁL, 1964, *viridis* IABLOKOFF-KHNZORIAN, 1964). Distributed in Central Asia and in Caucasian countries
 **rugipennis** OGLOBLIN, 1926.
 - Metallic reflex of upper side bluish. Length 2.2–2.4 mm. Aedeagus as in figs **3657, 3658**. Distributed in Mongolia and E Siberia **jakuta** OGLOBLIN, 1926.
18. Apical part of aedeagus (figs **3659, 3660**) in lateral view strongly bent. Length 2.3–2.5 mm (= *gruszkorum* WARCHAŁOWSKI, 1974). Distributed in N Greece and S Bulgaria **parnassicola** HEIKERTINGER, 1944.
 - Apical part of aedeagus (figs **3661, 3662**) in lateral view feebly bent. Length 2.3–2.5 mm (= *pyrenaica* HEIKERTINGER, 1944). Distributed in European mountains from Pyrenees to S Carpathians **stussineri** WEISE, 1888.
19. Hind femora pale, dark yellow to light brownish. Humeral calli distinct, but weakly developed, outline of body rather stout, elytra in both sexes widened posteriad. Me-

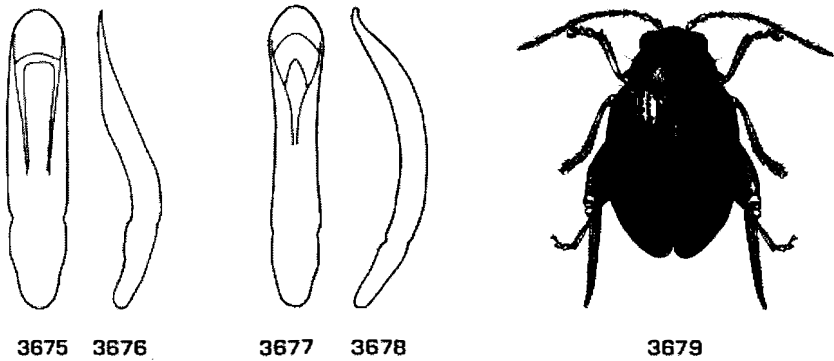
- tallic reflex of upper side in European populations distinct, in Siberian and Korean populations weak or absent. Aedeagus as in figs **3663**, **3664**. Length 2.0–2.4 mm (= *nigratarsis* MOTSCHOUJSKY, 1845, *curvifrons* BACH, 1859). Distributed in northern part of Europe (northern Germany, northern Poland, Belarus, northern Russia) and northern Siberia to Kamchatka ***erichsoni*** (ZETTERSTEDT, 1838).
- . Hind femora dark brown or blackish **20**.
20. Metallic reflex on upper side feeble, bronzy or greenish, sometimes almost absent **21**.
- . Metallic reflex on upper side distinct **24**.
21. Length of body over 1.8 mm **22**.
- . Small species, body length on average 1.6 mm. Aedeagus as in figs **3665**, **3666**. Body oval, upper side black with feeble greenish metallic reflex. Length 1.3–1.8 mm (= *tantilla* FOU DRAS, 1860). Variation: metallic reflex bronzy (ab. *aeneipennis* WEISE, 1892). Distributed from Ireland to Black Sea. Known from Great Britain, France, Germany, northern Italy, Austria, southern Poland, Danube basin, Bulgaria, Romania and Ukraine ***atrovirens*** (FÖRSTER, 1849).



Figs 3667-3674. Aedeagus in ventral or dorsal and in lateral view (3667, 3668 after WARCHAŁOWSKI 1995, remaining after KONSTANTINOV 1998 modif.): 3667, 3668 – *Apthona ovata*; 3669, 3670 – *A. aeneomicans*; 3671, 3672 – *A. konstantinovi*; 3673, 3674 – *A. valachica*.

22. Antennomere 3 longer than 2. Metallic reflex of upper side usually cupreous or bronzy. Very similar to *euphorbiae* (thesis 50), but humeral calli not strongly protruding. Aedeagus as in figs **3669**, **3670**. Length 1.6–2.0 mm (= *metallica* WEISE, 1893). Variations: yellow parts darker, antennomeres 5–11 darkened (typical form), yellow parts paler, only antennomeres 7–11 darkened (ab. *pieninensis* HEIKERTINGER, 1944). Distribution area requires verification. Known mostly from southern France, southern Germany and Austria, reported also from Carpathians, Crete, Italy and southern Ukraine ***aeneomicans*** ALLARD, 1875.
- . Antennomere 3 as long as 2 or slightly shorter **23**.
23. Hind femora entirely black or pitchy, fore and mid femora usually pale, sometimes slightly darkened at basis. Body outline broadly oval. Upper side in fully sclerified

- specimens with fairly weak but perceptible bluish-violaceous metallic reflex, in un- completely sclerified pure black or pitchy. General view as in plate LXXXVII, **phot. 781**. Aedeagus as in figs **3667, 3668**. Length 1.7–2.0 mm. Distributed from central France to Ukraine and Caspian Sea, in N Africa, Italy, Balkan Peninsula, Crete, Cy- prus, Asia Minor, Caucasian countries and Near East **ovata** FOU DRAS, 1861.
- Fore and mid femora dark brown to black. Aedeagus hardly differing from *ovata* (thesis 23); possibly an Iberian race of *ovata*. Described from Spain **sandrae** BASELGA et NOVOA, 2002.
24. Metallic reflex on upper side blue or bluish, but not strong **25**.
- Metallic reflex of upper side strong **26**.
25. Apex of aedeagus (figs **3671, 3672**) with large and distinct lamella. Fifth an- tennomere nearly as long as sixth and slightly longer than fourth. Insufficiently studied species, female unknown. Distributed in Black Sea area (Crimea, Cauca- sus, Turkey). Length 1.91–2.0 mm **konstantinovi** LOPATIN, 1998.
- Apex of aedeagus (figs **3673, 3674**) with very short and broad lamella. Length 2.0–2.3 mm. Described from S Romania **valachica** HEIKERTINGER, 1944.



Figs 3675-3679. 3675-3678 – aedeagus in ventral or dorsal and in lateral view (after WARCHALOWSKI 1995): 3675, 3676 – *Aphthona herbigrada*; 3677, 3678 – *A. albertinae*; 3679 (after KONSTANTINOV and VANDEN- BERG 1996) – *Aphthonoides beccarii*, general view.

26. Ground colour of upper side piceous or blackish with strong metallic luster. Humeral calli feebly developed, but always present. Aedeagus as in figs **3675, 3676**. Length 1.7–2.2 mm (= *campanulae* REDTENBACHER, 1842, *fossulata* ALLARD, 1859). Variations: body relatively short, convex, oval (ab. *gibbula* WEISE, 1891), pronotum almost impunctate (ab. *laevicollis* MULSANT et REY, 1874), pronotum bronzy, elytra cupreous (ab. *dimidiata* MULSANT et REY, 1874). Distributed in northern Africa and in a great part of Europe from Portugal and Great Britain to western Ukraine, Romania and Black Sea. Reported also from Algeria **herbigrada** (CURTIS, 1837).
- Metallic sheen on upper side strong, blue with greenish-cupreous reflex. Antennomere 3 distinctly longer than 2. Apical part of antennae slightly darkened, legs except hind femopra and antennae yellow. Elytra laterally rounded, their greatest width in mid-length, humeral calli very feebly developed. In male first tarsomere of fore tarsi

barely widened. Aedeagus as in figs **3677**, **3678**. Length 1.8–2.5 mm (= *allardi* BRISOUT, 1866). Distributed in Iberian Peninsula and in southern France
 ***albertinae*** ALLARD, 1866.

Genus ***Aphthonaltica*** HEIKERTINGER, 1924

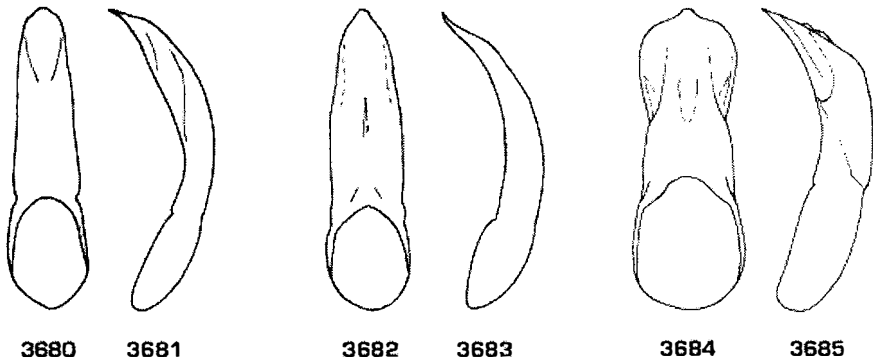
One species only. Upper side blue, legs black, tarsi red-brown. Length 2.0–3.0 mm. Endemic to Japan ***angustata*** (BALY, 1874).

Genus ***Aphthonoides*** JACOBY, 1885

Very characteristic by extremely long posttarsal part of tibia (fig. **3679**), a few times longer than pretarsal part and at least two times longer than tibia. Genus *Aphthonoides* contains over 30 species distributed in Oriental Region from Nepal to Philippines and Sunda Archipelago. In discussed area one species only. Body brownish to piceous. Length 1.5–1.8 mm. Distributed in S China, Japan (Kyushu) and Taiwan
 ***beccarii*** JACOBY, 1885.

Genus ***Aphthonomorpha*** CHEN, 1934

To the genus *Aphthonomorpha* belong two species. In discussed area occurs one species only. First abdominal sternite between hind coxae with a pair of short, longitudinal carinae. Elytra black, head and pronotum red or red-brown. General view as in plate LXXXVIII, **phot. 784**. Length 2.2–2.5 mm. Distributed in S China, Indochina and Japan (Shikoku, Kyushu) ***collaris*** (BALY, 1877).



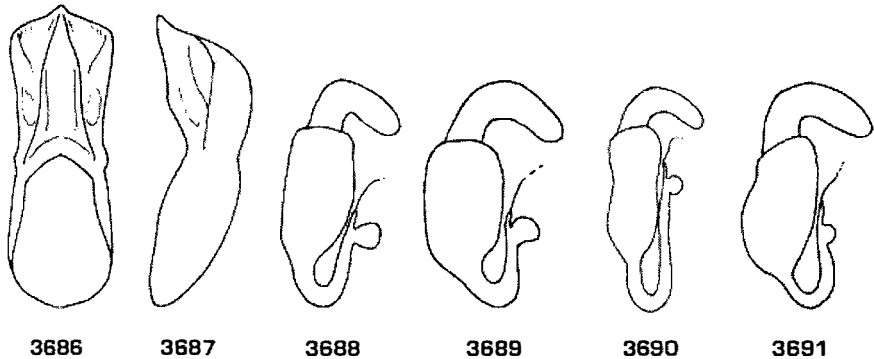
Figs 3680–3685. Aedeagus in ventral and lateral view (after DOGUET 1994): 3680, 3681 – *Apteropeda ovulum*; 3682, 3683 – *A. orbiculata*; 3684, 3685 – *A. globosa*.

Genus ***Apteropeda*** CHEVROLAT, 1937

To the genus *Apteropeda* belong four species distributed in Europe and in Mediterranean area.

Key to species

1. Pronotum very densely punctate, ground colour of its surface covered by very fine rugosities. Upper side black with bronzy reflex. Antennae and legs rusty-red, hind femora usually darkened. In male first tarsomere of fore tarsi distinctly widened. Aedeagus as in figs **3680**, **3681**, spermatheca as in fig. **3688**. Length 2.5–3.0 mm. Distributed in Tunisia, Algeria, Morocco, Iberian Peninsula and southern France ...
..... **ovulum** (ILLIGER, 1807).
- . Pronotum normally punctate, ground colour of its surface smooth **2**.
2. Antennomeres 4 and 5 of approximately equal length. Upper side with distinct metallic sheen, usually greenish or bluish, more rarely cupreous. Legs rusty-red, fore and mid femora more or less darkened, hind femora blackish with metallic reflex. In male first tarsomere of fore tarsi distinctly widened. Aedeagus as in figs **3682**, **3683**, spermatheca as in fig. **3689**. Length 2.2–2.8 mm (= *graminis* KOCH, 1803, *hederae* ILLIGER, 1807, *ciliata* OLIVIER, 1808). Variations: metallic sheen of upper side greenish (typical form), cupreous or bronzy (ab. *aurichalcea* WEISE, 1893), or blue (ab. *coerulans* WEISE, 1893). Distributed in the British Isles, N Spain, France, Netherlands, Denmark, Germany, Italy, Sicily, Balkans, basin of Danube, Poland, Romania and W Ukraine **orbiculata** (MARSHAM, 1802).
- . Antennomere 5 distinctly, more than 1.5 × longer than 4. Upper side black with bronzy reflex **3**.



Figs 3686–3691. Aedeagus in ventral and lateral view, spermatheca (after DOGUET 1994): 3686, 3687 – *Apteropeda splendidula*; 3688 – *A. ovulum*; 3689 – *A. orbiculata*; 3690 – *A. globosa*; 3691 – *A. splendida*.

3. Frons strongly punctate, frontal furrows distinctly incised. In male hind tibia angulate. Coloured as *orbiculata*, but metallic sheen of upper side and hind femora more feeble. In male first tarsomere of fore tarsi rather weakly widened, hind tarsi on inner margin with protruding angle. Aedeagus as in figs **3684**, **3685**, spermatheca as in fig. **3690**. General view as in plate LXXXVIII, **phot. 785**. Length 2.5–3.2 mm (= *conglomerata* ILLIGER, 1807, *globus* DUFTSCHMID, 1825, *nigroaenea* WEIDENBACH,

- 1859, *majuscula* FOU DRAS, 1860). Distributed in the British Isles, N Spain, France, Belgium, Netherlands, Danmark, Germany, Austria, N Italy, Czechia, Poland and W Ukraine **globosa** (ILLIGER, 1794).
- . Frons finely punctate, frontal furrows shallow. In male hind tibia not angulate, first tarsomere of fore tarsi strongly widened. Remaining characters as in *globosa* (thesis 3). Length 2.5–3.2 mm. Aedeagus as in figs **3686**, **3687**, spermatheca as in fig. **3691**. Distributed in France, Switzerland, Austria, S Germany, S Poland, Czechia, Slovakia and Romania, reported also from Belgium, Netherlands and Denmark
..... **splendida** ALLARD, 1860.

Genus **Argopistes** MOTSCHULSKY, 1860

Sphaerophyma BALY, 1878

The genus *Argopistes* contains almost 40 species distributed mainly in Palaetropical superregion, neotropical species (two) are probably not congeneric. In discussed area five species occur.

Key to species

1. Upper side entirely black, basal antennomeres, apices of femora and tarsi brownish **2**.
- . Body not entirely black above **3**.
2. Larger. Primary punctures on pronotum fine, much smaller than diameter of interstices. Length about 3.0 mm. Distributed in Japan (Kyushu)
..... **unicolor** JACOBY, 1885.
- . Smaller. Primary punctures on pronotum strong and densely scattered, their diameter approximately as large as breadth of interstices. Length 2.1–2.4 mm. Described from Russian Far East **udege** KONSTANTINOV, 1994.
3. Body length not exceeding 2.7 mm. Basal half of antennae pale. Upper side and legs black, apices of femora and tarsi pale, on each elytron before middle a reddish patch, sometimes expanded on almost entire surface of elytron. Length 2.2–2.5 mm. Distributed in E China Korea and Japan (Honshu, Kyushu) **tsekooni** CHEN, 1934.
- . Length of body over 3.0 mm **4**.
4. Elytral punctures much finer than punctures of pronotum. Interocular space very narrow. Colouration of body similar as in *tsekooni* (thesis 3), but frons, antennae almost entirely and tibiae pale. General view as in plate LXXXVIII, **phot. 786**. Length 3.2–4.0 mm (= *coccinelloides* BALY, 1874 nec SUFFRIAN, 1868). Distributed in Indochina, Taiwan, S China and Japan (Honshu, Shikoku, Kyushu)
..... **coccinelliformis** CSIKI, 1940.
- . Elytral punctures almost as strong as on pronotum. Forms a few colour variations: upper side coloured similar as in *tsekooni* (thesis 3) (typical form), upper side reddish brown pronotum with two black markings, each elytron with two basal and one apical marking (unnamed), as in preceding, but anterior marking on elytra expanded on humeri, basal border and anterior part of suture (unnamed), black pattern forms several small patches scattered on surface of elytra and pronotum (ab. *unde-*

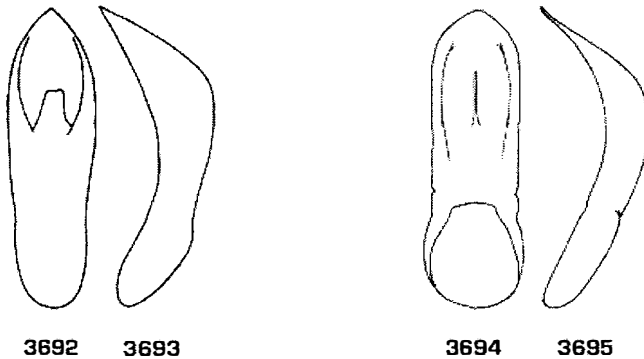
cimmaculatus JACOBY, 1885). Length 3.2–3.8 mm. Distributed in E China, Russian Far East, Korea and Japan (Hokkaido, Honshu, Shikoku, Kyushu)
 *biplagiatus* MOTSCHULSKY, 1860.

Genus *Argopus* FISCHER VON WALDHEIM, 1824

Dicherosis FOU DRAS, 1861

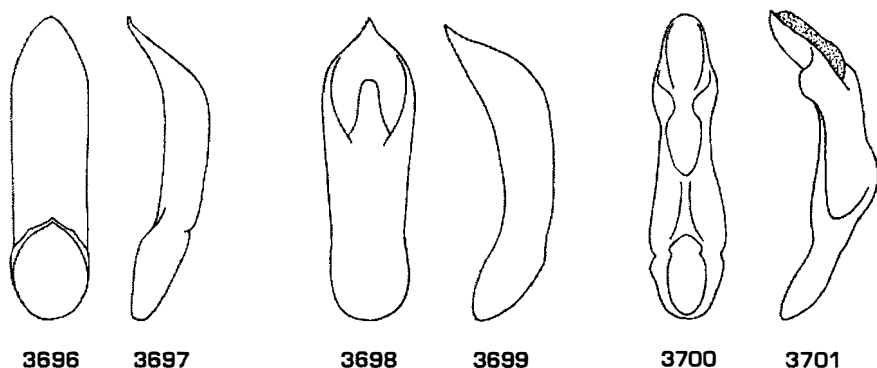
Key to species

1. Whole body uniformly brick red, often antennae partly black only **2.**
- At least legs partly blackish or black **7.**
2. W Palaerctic species **3.**
- E Palaearctic species **5.**
3. Punctures of elytra double (fine and stronger punctures mixed) **4.**
- Punctures of elytra very fine, almost uniform. Anterior angles of pronotum more distinctly protruding. Aedeagus as in figs **3694, 3695**. Distributed in Tunisia, Algeria, Morocco, Iberian Peninsula and S France, reported also from Greece (N Sporades) ...
 ***brevis*** ALLARD, 1859.
4. Elytra largest in the midlength. Anterior angles of pronotum weakly protruding. General view as in plate LXXXVIII, **phot. 787**. Apex of aedeagus (figs **3692, 3693**) slightly sharpened. Length 3.7–5.2 mm (= *hemisphaericus* DUFTSCHMID, 1825). Distributed in SE and E Europe from Italy and Austria to Greece, Romania, SE Poland, Ukraine and central Russia ***ahrensii*** (GERMAR, 1817).
- Elytra largest in hind part. Colouration and puncturation of body as in *ahrensii*, apex of aedeagus narrowed but not sharpened, rather obtusely rounded. Length 4.7–4.8 mm. Described from Iran ***clematidis*** RAPILLY, 1978.
5. Emargination of anterior margin of clypeus subquadrate in both sexes (in female less distinctly). Length 4.2–5.0 mm. Distributed in Korea and Japan (Honshu, Shikoku, Kyushu) ***balji*** HAROLD, 1878.
- Emargination of anterior margin of clypeus triangular **6.**



Figs 3692–3695. Aedeagus in ventral or dorsal and in lateral view (3692, 3693 after WARCHALOWSKI 1978; 3694, 3695 after DOGUET 1994): 3692, 3693 – *Argopus ahrensii*; 3694, 3695 – *A. brevis*.

6. Body length under 3.8 mm. Emargination of anterior margin of clypeus very small. Underside sometimes darkened. Length 3.2–3.8 mm (= *orientalis* BALY, 1874, *unicolor* JACOBY, 1885 nec MOTSCHULSKY, 1860, *japonicus* CHEN, 1936, *univestis* HEIKERTINGER, 1940, *amagianus* OHNO, 1967). Forms two subspecies: puncturation on elytra random (nominotypical subspecies; puncturation on elytra partly arranged in semiregular longitudinal rows (subsp. *substriatus* WEISE, 1887 = *riedeli* WARCHAŁOWSKI 1969). Distributed in Japan (Hokkaido, Honshu, Shikoku, Kyushu and in Sachalin, the subspecies *substriatus* in Russian Far East and in North Korea ***punctipennis*** (MOTSCHULSKY, 1866).
- . Body length over 4.0 mm. Body uniformly reddish except for black antennomeres 5–11. Length 4.2–5.0 mm. Distributed in E Siberia, Korea and Japan (Hokkaido, Honshu, Shikoku, Kyushu) ***unicolor*** MOTSCHULSKY, 1860.
7. W Palaearctic species 8.
- . E Palaearctic species 9.
8. Underside black. Antennomeres 4–11 and whole legs black, sometimes apical part of femora and tibiae dark reddish. Aedeagus as in figs 3696, 3697. Length 3.6–5.1 mm (= *discolor* BIELZ, 1852, *punctatus* SCHAUFUSS, 1874). Distributed in Balkans, basin of Danube, Romania, Ukraine and Caucasian countries ***bicolor*** FISCHER, 1824.
- . Underside and femora pale rusty-red. Antennomeres 4–11, tibiae and tarsi (in paler specimens tarsi only) pitchy or black. Aedeagus as in figs 3698, 3699. Length 3.8–4.8 mm. Distributed from Hungary and NE Poland to E Siberia and Taiwan ***nigritarsis*** (GEBLER, 1823).
9. Upper side entirely black. Anterior margin of clypeus widely, triangularly notched. Puncturation of pronotum distinct, but not densely scattered. Length 4.0–4.2 mm. Endemic to Japan (Honshu) ***nigripennis*** JACOBY, 1885.
- . Upper side entirely red or fulvous 10.
10. Legs entirely or almost entirely black 11.
- . Femora red, tibiae and tarsi black 12.



Figs 3696-3699. Aedeagus in ventral or dorsal and in lateral view (3696, 3697 after GRUEV and TOMOV 1986; 3698, 3699 after WARCHAŁOWSKI 1978): 3696, 3697 – *Argopus bicolor*; 3698, 3699 – *A. nigritarsis*; 3700, 3701 – *Arrhenocoela lineata*.

11. Upper side pale fulvous, legs black, antennae black except for three basal antennomeres. Triangular excision on anterior margin of clypeus small. General view as in plate LXXXVIII, **phot. 788**. Length 4.2 mm (*hasegawai* OHNO, 1967). Endemic to Japan (Honshu) **clarki** JACOBY, 1885.
- Upper side reddish, triangular excision on anterior margin of clypeus large. Puncturation of pronotum double, consisting of strong, relatively sparse punctures and very fine punctulation of interstrices. Length about 4.5 mm. Distributed in China (Kansu, Sichuan) **nigripes** WEISE, 1889.
12. Excision on anterior margin of clypeus moderately large, rounded or subquadrate. Length about 4.5 mm. In opinion of some authors perhaps a colour form (with partly blackened legs) of *balyi* (thesis 4). Described from Korea. Here perhaps also *intermedius* WEISE, 1887, described from Wladivostok based on one specimen only **koreanus** CHŪJŌ, 1941.
- Excision on anterior margin of clypeus large and deep, triangular **13**.
13. On average larger, pronotum uniformly, relatively densely punctured. Length 4.2–5.0 mm (= *nigritarsis* MOTSCHULSKY, 1860, nec GEBLER, 1823). Distributed in Japan (Honshu, Shikoku, Kyushu) **clypeatus** BALY, 1874.
- On average smaller, pronotum differently, rather not uniformly punctured. See *nigritarsis*, antithesis 7.

Genus ***Arrhenocoela*** FOU DRAS, 1859

One species only. Very characteristic. General view as in plate LXXXVIII, **phot. 789**. Upper side pale rusty-yellow, with dark stripes on intervals 3, 5 and 7. Humeral calli and hind wings well-developed. In male first tarsomere of fore and mid tarsi very strongly widened. Aedeagus as in figs **3700, 3701**. Length 4.0–5.0 mm (= *geminata* FABRICIUS, 1801). Variation: dark stripes absent (ab. *concolor* VITALE, 1920). Lives on *Erica arborea* L. and *E. scoparia* L. (*Ericaceae*). Distributed in Iberian Peninsula, southern France, Italy, Croatia, Albania, Greece and N Africa from Morocco to Tunisia **lineata** (ROSSI, 1790).

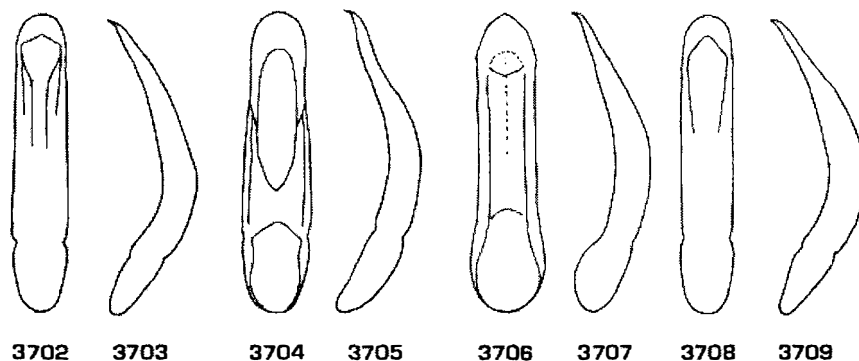
Genus ***Batophila*** FOU DRAS 1859

Literature: HEIKERTINGER, 1948.

Key to species

1. W Palaearctic species **2**.
- E Palaearctic species **8**.
2. Pronotum in general outline narrower, its lateral sides weakly, but distinctly converging posteriorly **3**.
- Pronotum in general outline broader, its lateral sides more evenly rounded **6**.
3. Upper side almost pure black. Metallic reflex, if present, extremely feeble. Aedeagus as in figs **3702, 3703**. Length 1.2–2.0 mm. Distributed in SE Europe from Hungary and SE Poland to Ukraine, Asia Minor and Iran **fallax** WEISE, 1888.
- Upper side with distinct, sometimes rather strong, bronzy (more rarely bluish) metallic reflex **4**.

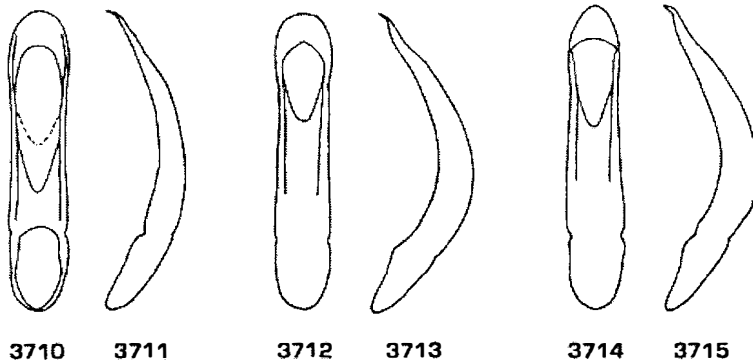
4. On average smaller (under 1.8 mm). Aedeagus as in figs **3704**, **3705**. Length 1.0–1.8 mm (= *bertolinii* GREDLER, 1866, *brunnicornis* STEPHENS, 1831, *thymi* ABEILLE, 1907). Distributed in great part of Mediterranean area from Morocco and Spain to Greece ***aerata*** (MARSHAM, 1802).
- . On average larger (over 1.8 mm) 5.



Figs 3702–3709. Aedeagus in ventral and lateral view (3704, 3705 after DOGUET 1994; 3706, 3707 after DÖBERL 1994; remaining after WARCHAŁOWSKI 1998): 3702, 3703 – *Batophila fallax*; 3704, 3705 – *B. aerata*; 3706, 3707 – *B. dogueti*; 3708, 3709 – *B. olexai*.

5. Upper side with rather strong, light bronzy metallic sheen. Aedeagus as in figs **3706**, **3707**, ductus spermathecae with a loop. Length 1.65–1.95 mm (male) to 2.0–2.2 mm (female). Distributed in Caucasian countries and in northern Iran ***dogueti*** DÖBERL, 1994.
- . Upper side with distinct, but moderately strong metallic reflex. Aedeagus as in figs **3708**, **3709**, ductus spermathecae simple. Length 1.8–2.0 mm (male) to 1.9–2.4 mm (female). Distributed in Asia Minor and Caucasian countries ***olexai*** KRÁL, 1964.
6. Smaller, body length usually about 1.4 mm. Externally very similar to *aerata* (thesis 4). Legs usually partly darkened, femora brown, metallic reflex on upper side violaceous or bluish. Aedeagus as in figs **3710**, **3711**. Length about 1.5 mm. Distributed in Pyrenees ***pyrenaea*** ALLARD, 1866.
- . Larger, body length usually about 2.0 mm, males sometimes smaller. Here belong two species, distinguishable only by shape of aedeagus 7.
7. Aedeagus as in figs **3712**, **3713**. Externally similar to *rubi* (antithesis 7). Length 1.6–2.0 mm. Distributed in Romania and Bulgaria ***moesica*** HEIKERTINGER, 1948.
- . Aedeagus as in figs **3714**, **3715**. General view as in plate LXXXVIII, **phot. 790**. Length 1.6–2.0 mm (= *striatula* MARSHAM, 1802). Distributed in Europe from France, the British Isles and Norway to E Ukraine. Reported also from Caucasus ... ***rubi*** (PAYKULL, 1799).
8. Short scutellar row of elytral punctures distinct 9.
- . Short scutellar row of elytral punctures absent. Puncturation of pronotum strong, dense, interstices distinctly reticulated, Upper side blackish, sometimes with weak

- aeneous, greenish or bluish reflex. Length 1.6–2.0 mm (= *yangweii* CHEN, 1933, *kamikochiana* NAKANE, 1958, *omogo* NAKANE, 1958, *yakuensis* NAKANE, 1958). Distributed in great part of China, Russian Far East, Korea, Japan (Hokkaido, Honshu, Kyushu, Shikoku) and Taiwan ***acutangula*** HEIKERTINGER, 1921.
9. Elytra as broad as prothorax at base. Short scutellar row of punctures contains 5 or 6 punctures **10.**
- . Elytra broader than pronotum at base. Short scutellar row of punctures contains 3 punctures only. Length 1.7 mm. Described from N China (Kansu, Shansi) ***sinensis*** CHEN, 1939.



Figs 3710–3715. Aedeagus in ventral and lateral view (3710, 3711 after DOGUET 1994; remaining after WARCZAŁOWSKI 1998): 3710, 3711 – *Batophila pyrenaica*; 3712, 3713 – *B. moesica*; 3714, 3715 – *B. rubi*.

10. Intervals between longitudinal rows of punctures on elytra weakly convex, not costate. Length 1.5–1.8 mm. Described from N China (Kansu, Hopei) ***subplana*** CHEN, 1939.
- . Intervals between longitudinal rows of punctures on elytra distinctly costate **11.**
11. In scutellar row 5–6 punctures. Legs brownish red. Antennae reddish brown, antennomeres 10 and 11 darkened. Length 1.8 mm. Described from N China (Kansu) ***subcostata*** CHEN, 1939.
- . In scutellar row 3–4 punctures. Legs yellowish brown to reddish brown. Antennae brownish, antennomere 11 blackish. Length 1.5–1.8 mm. Described from N China (Hopei) ***costipennis*** WANG, 1997.

Genus *Blepharida* CHEVROLAT, 1836

Eutheca BALY, 1878, nec KIESENWETTER, 1877

To the genus *Blepharida* belong about 60 species distributed mainly in New World and Palaetropical superregion. In Palaearctical region one species only. Body (fig. 3716) entirely reddish fulvous, puncturation of elytra blackish, lateral margins of pronotum

sometimes darkened or blackish. Body large, subparallel, lateral margins of pronotum and elytra flattened. Length 7.2–9.0 mm (= *arabica* MEDVEDEV, 1996). Distributed in Egypt, Israel and Saudi Arabia *sacra* (WEISE, 1897).

Genus *Chaetocnema* STEPHENS, 1831

Literature: HEIKERTINGER 1951.

A large genus, comprising about 300 species distributed worldwide. In discussed area about 70 species.

Key to subgenera

1. Nasal ridge absent or very broad and flat, punctate. Puncturation of frons and vertex sparse, clustered near eyes. Primary punctures of elytra arranged in regular rows *Chaetocnema* s. str. (p. 778).
- . Nasal ridge not flattened, smooth. Puncturation of frons and vertex uniformly scattered, usually dense. Primary punctures of elytra often confused, particularly near scutellum *Tlanoma* (p. 789).

Subgenus *Chaetocnema* s. str.

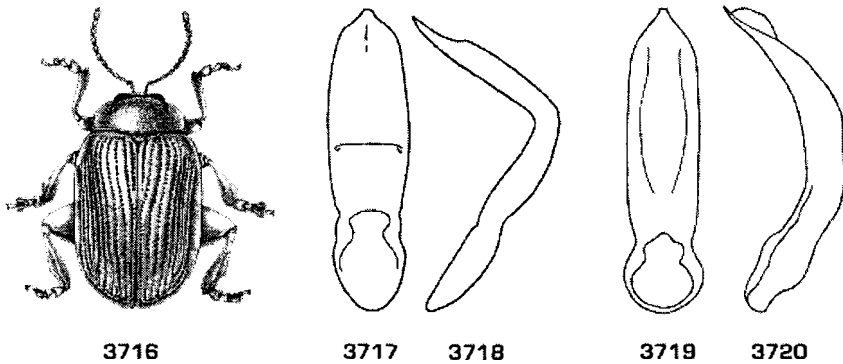
Plectroscelis CHEVROLAT, 1836, *Udorpes* MOTSCHULSKY, 1845, *Ydorpes* MOTSCHULSKY, 1845, *Hydropus* MOTSCHULSKY, 1860, *Exorhina* WEISE, 1886, *Carcharodis* WEISE, 1910.

Key to species

1. W Palaearctic species 2.
- . E Palaearctic species 36.
2. Species from tropical Africa, distributed from W Africa to Yemen. Upper side dark brown with cupreous or bronzy reflex. Head and pronotum matt, finely and rather loosely punctured. Intervals of elytral puncture rows equally broad, shining. Length 2.2–2.5 mm (= *ljuba* BECHYNÉ, 1955). Variation: metallic shine of upper side vivid, greenish (ab. *szumowskii* BECHYNÉ, 1955). Distributed as above *segueia* BECHYNÉ, 1955.
- . Species from other areas 3.
3. Primary punctures of elytra, also near scutellum, arranged in entirely regular rows (sometimes very slightly confused in *balanomorph*a, thesis 11), only shortened scutellar row sometimes with a 2–4 additional punctures. Elytra insignificantly broader than pronotum 4.
- . Primary punctures of elytra confused at least near scutellum 14.
4. Femora and tibiae dark, brown to black. Body outline slender 5.
- . At least tibiae pale, body outline rather stout 10.
5. Pronotum narrowed posteriad as strongly as anteriad, forming a distinct incision between hind angles and humeri. Elytra with weak violaceous or greenish metallic reflex. Humeral callus and hind wings absent. In male first tarsomere of fore tarsi not widened. General view as in plate LXXXIX, **phot. 797**. Aedeagus as in figs 3717,

3718. Length 1.8–2.4 mm (male) to 2.0–2.7 mm (female). Variation: upper side as in description (typical form), upper side uniformly bronzy (ab. *aenescens* WEISE, 1886). Distributed in Mediterranean area, Asia Minor and in southern part of Europe, northwards to Germany, Poland and Ukraine ***procerula*** (ROSENHAUER, 1856).

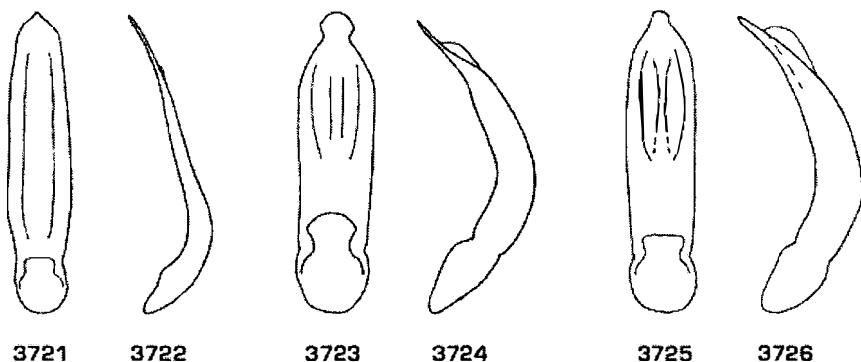
- Pronotum more feebly narrowed posteriad, does not form an incision between hind angles and humeri **6.**
- 6. Elytra almost pure black **9.**
- Elytra with distinct metallic reflex, humeral callus present **7.**
- 7. Metallic reflex of elytra bronzy, upper side unicolorous, humeral callus small, but distinct. Externally similar to *angustula* (antithesis 10), sexual characters unknown. Length 1.5–1.7 mm. Poorly studied species, described from Algeria ***polita*** (ABEILLE, 1907).
- Metallic reflex of elytra blue or green **8.**



Figs 3716-3720. General view, aedeagus in ventral and lateral view (3716 after KONSTANTINOV and VANDENBERG 1996; 3717, 3718 after WARCHALOWSKI 1998; 3719, 3720 after LOPATIN 1977): 3716 – *Blepharida sacra*; 3717, 3718 – *Chaetocnema (Chaetocnema) procerula*; 3719, 3720 – *C. (C.) psylloides*.

- 8. Upper side bicolorous, pronotum more coppery or bronzy. rarely upper side almost unicolorous black with weak bluish-violaceous reflex. Head and pronotum strongly and deeply punctured. On elytra in scutellar area a few additional punctures, remaining part of surface with regular rows. Humeral callus well-developed. Length 2.2–2.8. In western part of distributional area forms a subspecies (subsp. *ljudmilae* LOPATIN, 1961), with less differentiated colouration of upper side. Distributed from E Kazakhstan and Mongolia to basin of Amur ***splendens*** (MOTSCHULSKY, 1845).
- Upper side unicolorous. Humeral callus feebly developed, but distinct. Elytra distinctly broader than pronotum. Head finely reticulated, finely and densely punctured. Upper side with green-bluish reflex, rather feebly shining. Similar to *splendens ljudmilae* (thesis 8), but differs by much finer puncturation of head. Aedeagus as in figs **3719, 3720**. Length 2.0–2.5 mm. Broadly distributed in all Transcaspia, Iran, Iraq, Afghanistan and NW Pakistan ***psylloides*** PIC, 1909.

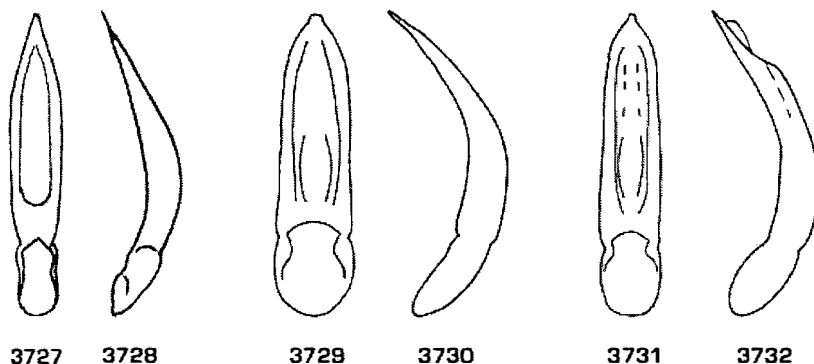
9. Humeral callus and hind wings absent. Punctuation of elytra relatively strong, intervals at most $2 \times$ broader than puncture rows. In male first tarsomere of fore tarsi not widened. General view as in plate LXXXIX, **phot. 793**. Aedeagus as in figs **3721, 3722**. Very similar to *procerula* (thesis 3), on average slightly smaller. Length 1.6–2.0 mm (male) to 1.8–2.2 mm (female) (= *tarda* BACH, 1859). Distributed mostly in central and eastern part of Europe, from Austria and central Germany to Serbia, Bulgaria and southern Russia. Reported also from Switzerland, Caucasian countries and Kazakhstan ***compressa*** (LETZNER, 1847).
- . Humeral callus distinct. Punctuation of elytra fine, intervals at least $5 \times$ broader than puncture rows. Described from Tian-Shan mountains, based on one specimen (sex not determined) only ***sonkulica*** PALIY, 1968.
10. In male first tarsomere of fore tarsi strongly widened, heart-shaped **11**.
- . In male first tarsomere of fore tarsi weakly widened. On aedeagus apical lamella large, narrowed basally. Punctuation of elytra entirely regular. Body oval, short, rather broad, convex. Tibiae, tarsi and basal 7–8 antennomeres reddish yellow. Frons between antennae covered by hairs. Humeral calli feebly developed. Aedeagus as in figs **3723, 3724**. In male first tarsomere of fore tarsi distinctly widened. Length 1.6–2.2 mm. Variations: lateral intervals more convex than usually, metallic reflex of upper side bronzy (ab. *aeneicolor* PIC, 1915), upper side almost matt, metallic reflex greenish-blue or leady (ab. *alpicola* WEISE, 1886). Distributed in Pyrenees, Massif Central, Vosges, Jura and Alps ***angustula*** (ROSENHAUER, 1847).



Figs 3721–3726. Aedeagus in ventral and lateral view (after DOGUET 1994): 3721, 3722 – *Chaetocnema (Chaetocnema) compressa*; 3723, 3724 – *Chaetocnema (Chaetocnema) angustula*; 3725, 3726 – *C. (C.) balanomorpha*.

11. On aedeagus (figs **3725, 3726**) apical lamella not narrowed basally. Punctuation of elytra near scutellum somewhat confused. Upper side and hind femora black with bronzy or bluish metallic reflex, tibiae and tarsi rust-yellow. Pronotum strongly transverse. Elytra ovale, covexe, intervals shining, laterally somewhat convex. Length 1.8–2.2 mm. Distributed in Pyrenees ***balanomorpha*** (BOIELDIEU, 1859).

- Apex of aedeagus (figs **3727, 3728**) without lamella, long triangular, sharpened
..... **12.**
- 12. Colouration of upper side dark greenish black with very weak bronzy hue. Length 1.9–2.2 mm. Described from Afghanistan ***afghana*** GRUEV, 1988.
- Colouration of upper side bronzy. Aedeagus shaped similarly as in *afghana*. Puncturation of pronotum and elytra variable, puncturation of head fine and rather sparse. Length 2.0–2.5 mm. Perhaps conspecific with *afghana* (thesis 12), described also from Afghanistan ***klapperichi*** LOPATIN, 1963.
- 13. Underside laterally covered by dense hairs. Labrum reddish margined, very broad. Upper side with distinct metallic sheen, head and pronotum bronzy or greenish, elytra blue or blue-black. Aedeagus as in figs **3729, 3730**. Length 2.2–2.8 mm (= *meridionalis* FOU DRAS, 1860, *jurassica* PIC, 1915). Variations: upper side bicolorous as in description (typical form), upper side uniformly bronzy, cupreous-greenish or black-blue (ab. *unicolor* WEISE, 1888), upper side uniformly blue (ab. *insolita* FOU DRAS, 1860), legs entirely or partly reddish (ab. *rufofemorata* PIC, 1915). Distributed from Algeria, northern Spain and France to Mongolia and Tibet
..... ***obesa*** (BOIELDIEU, 1859).
- Underside laterally covered by sparse hairs. Labrum not particularly broad **14.**
- 14. Pronotum very deeply and densely punctate, points almost contiguous, surface sheen brocade-like **15.**
- Puncturation of pronotum not particularly deep and dense **24.**
- 15. Metallic sheen of upper side blue, more rarely violaceous or greenish-blue, very rarely bronzy **16.**
- Metallic sheen of upper side green or bronzy **18.**

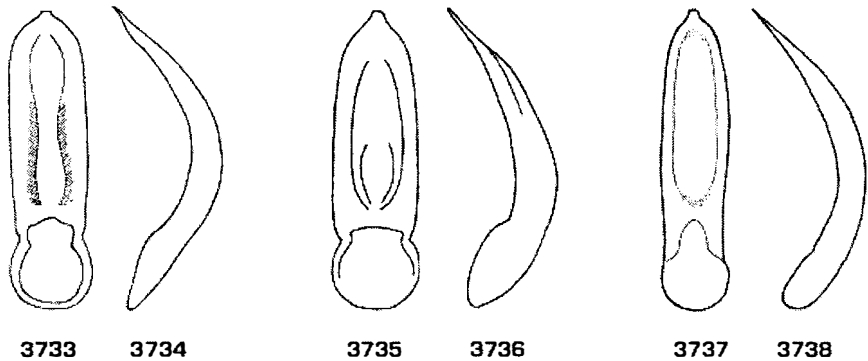


Figs 3727-3732. Aedeagus in ventral and lateral view (3727, 3728 after GRUEV 1988, remaining after DOGNET 1994): 3727, 3728 – *Chaetocnema (Chaetocnema) afghana*; 3729, 3730 – *C. (C.) obesa*; 3731, 3732 – *C. (C.) sahlbergi*.

- 16. Underside and femora black, tibiae and tarsi rusty-red, usually partly darkened. In male first tarsomere of fore and mid tarsi elongate and widened. Aedeagus as in figs **3731, 3732**. Length 1.8–2.3 mm. Variations: upper side black-green (ab. *fairmairei*

BOIELDIEU, 1852), upper side dark bronzy (ab. *similis* EVERTS, 1920), upper side blue-black or violaceous, strongly shining, punctures of elytra arranged in almost regular rows (ab. *cyanescens* WEISE, 1886), upper side blue, legs relatively pale (ab. *arisi* PIC, 1915), rows on elytra entirely regular (ab. *insolita* FOUDRAS, 1860). Transpalaeartic species, distributed from Ireland and France to Beringia, Kamchatka and Japan, but the eastern part of the area, eastwards of Mongolia, is probably inhabited by (?subsp.) *ingenua* BALY, 1876 only. *C. arisi* PIC, 1915 described from Kazakhstan (antithesis 16, is often considered as variety of *sahlbergi*

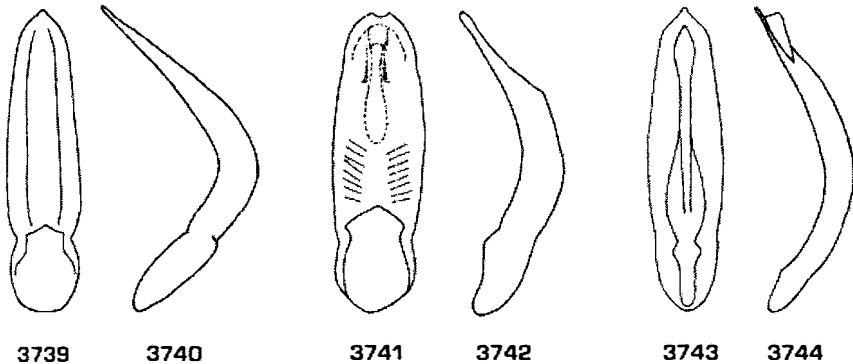
- ***sahlbergi*** (GYLLENHAL, 1827).
- Legs reddish, only hind femora dark. Punctuation of elytra very regular, on scutellar area very weakly confused. Upper side stronger shining than in *sahlbergi* (thesis 16). Length not given, probably similar as in *sahlbergi*. Described from Aulie-Ata (= Dzhambul) in S Kazakhstan ***arisi*** PIC, 1915.
- 17. Punctuation of elytra in anterior half always more or less confused. Fore and mid femora reddish with very weak metallic reflex. Upper side pale bronzy, feebly shining **21**.
- Punctuation of elytra, except near scutellum, very regular **19**.



Figs 3733-3738. Aedeagus in ventral and lateral view (3733, 3734 after LOPATIN 1977; 3735, 3736 after DOGUET 1994; 3737, 3738 after KRÁL 1969): 3733, 3734 - *Chaetocnema (Chaetocnema) medvedevi*; 3735, 3736 - *C. (C.) aerosa*; 3737, 3738 - *C. (C.) gottwaldi*.

- 18. Legs very robust, thicker than in neighbouring species. Pronotum transversely oval, feebly narrowed anteriad. Antennae sharply bicolorous: antennomeres 1-6 pale, 7-11 black. On clypeus two large setae. Aedeagus as in figs **3733, 3734**. Length 2.0-2.4 mm. Described from Tian-Shan mountains (Terskiy Alatau and neighbouring valley) ***medvedevi*** PALY, 1968.
- Legs not particularly robust or slender. Fore and mid femora with distinct metallic reflex. Upper side strongly shining. Humeral callus and hind wings well-developed. In male first tarsomere of fore and mid tarsi elongate and widened **20**.
- 19. Smaller, pronotum strongly punctured. Aedeagus as figs **3735, 3736**. Length 1.6-2.0 mm. Variation: On pronotum runs a median longitudinal impunctate stripe

- (ab. *laevilinea* SAHLBERG, 1903), humeral callus rather weakly developed, median longitudinal impunctate stripe on pronotum present, body outline stouter (ab. *latipennis* PIC, 1911, described from Egypt, by some authors considered as distinct species). Distributed in a great part of Europe from England and Spain to Russia, in Asia Minor and in Caucasian countries ***aerosa*** (LETZNER, 1846).
- Considerably larger, pronotum finely punctured. Aedeagus as in figs **3737**, **3738**. Length 2.6–2.8 mm. Remaining characters as in *aerosa* (thesis 19). Described from W Kazakhstan ***gottwaldi*** KRÁL, 1969.
 - 20. First antennomere entirely pale **11**.
 - First antennomere dorsally darkened. Externally similar to *hortensis* (antithesis 23), usually somewhat larger and more robust. Aedeagus (figs **3739**, **3740**) narrowed towards apex, in lateral view strongly bent. Distributed in south-eastern Europe from Croatia to southern Ukraine and southern Russia, in Asia Minor, Caucasian countries, Central Asia, Iran and Afghanistan ***montenegrina*** HEIKERTINGER, 1912.
 - 21. Tarsi very slender, remaining characters as in *hortensis* (thesis 12). Distributed in Cape Verde Islands, Canary Islands and in Algeria ***tarsalis*** WOLLASTON, 1860.
 - Tarsi normal, not conspicuously slender **23**.
 - 22. Apex of aedeagus gently sharpened, with lamella **24**.
 - Apex of aedeagus (figs **3741**, **3742**) shallowly incised. Upper side strongly metallic green or bronze. Length 2.0–2.5 mm. Distributed in almost all tropical Africa, Sudan, Israel, Saudi Arabia and Yemen ***wollastoni*** BALY, 1877.

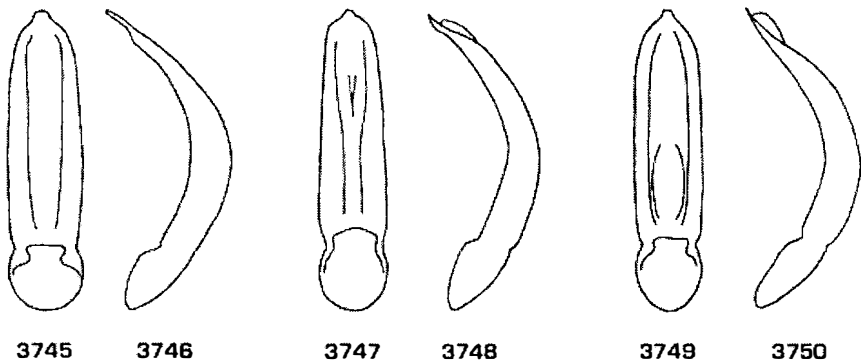


Figs 3739–3744. Aedeagus in ventral and lateral view (3739, 3740 after GRUEV and TOMOV 1986; 3741, 3742 after FURTH 1985; 3743, 3744 after LOPATIN 1990): 3739, 3740 – *Chaetocnema (Chaetocnema) montenegrina*; 3741, 3742 – *C. (C.) wollastoni*; 3743, 3744 – *C. (C.) oblonga*.

- 23. Body elongate, almost parallel. Aedeagus as in figs **3743**, **3744**. Remaining external characters as in *hortensis* (antithesis 23). Length 2.1–2.7 mm. Described from S Iran (Fars) ***oblonga*** LOPATIN, 1990.
- Body not elongate, lateral sides gently rounded. Upper side bronzy or bronzy-cupreous metallic sheen, underside black with bronzy metallic reflex. Fore and mid femora brown, tibiae and tarsi yellowish red, antennae rusty-red with darkened api-

cal antennomeres. Punctuation of pronotum very strong. Punctuation of elytra also strong, intervals smooth and shining. In male first tarsomere of fore and mid tarsi elongate and widened. Aedeagus as in figs 3745, 3746. General view as in plate LXIX, phot. 795. Length 1.6–2.2 (male) to 1.8–2.4 mm (female) (= *aridella* PAYKULL, 1799, *scabricollis* ALLARD, 1860). Variation: legs pale, hind femora brown (ab. *brenskiei* PIC, 1910, distributed in ?Greece, Iran and Afghanistan, probably a geographic race, by some authors considered also as a distinct species (without specifying differential characters). Lives on different grass, pest of cereals. A palaeartic species widely distributed from Azores and England to Far East, reported also from Sudan and Chad *hortensis* (GEOFFROY, 1785).

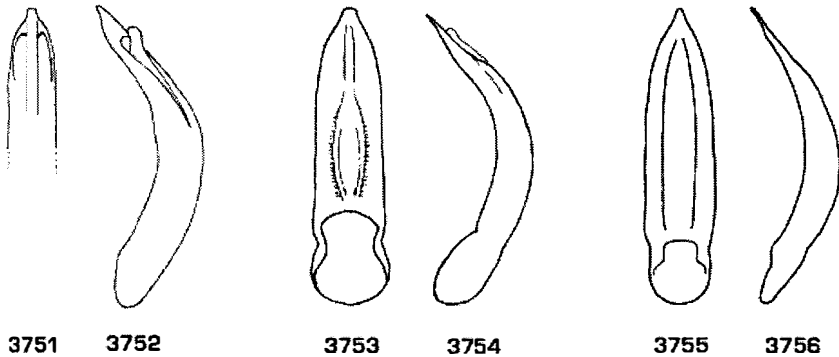
- 24. Punctuation on dorsal part of elytra very fine and dense, laterally points are considerably larger. Upper side usually blue-black, rather weakly shining. Humeral calli and hind wings well-developed. Aedeagus as in figs 3747, 3748. General view as in plate LXXXIX, phot. 795. Length 2.2–2.5 mm. Distributed in Mediterranean area, Balkans, Asia Minor, Caucasian countries and in southern part of Central Europe (basin of Danube) to SE France *arenacea* (ALLARD, 1860).
- Punctuation of elytra not differentiated as above, in dorsal part not particularly fine 25.
- 25. Fore and mid femora reddish or darkened only at basis, basal part of antennae entirely pale 26.
- Fore and mid femora blackish, in fully sclerotized specimens with metallic reflex 29.



Figs 3745-3750. Aedeagus in ventral and lateral view (after DOGUET 1994): 3745, 3746 – *Chaetocnema* (*Chaetocnema*) *hortensis*; 3747, 3748 – *C. (C.) arenacea*; 3749, 3750 – *C. (C.) mannerheimi*.

- 26. Metallic reflex of upper side blue 27.
- Metallic reflex of upper side greenish or bronzy 31.
- 27. Larger. Body outline more stout, humeral calli more protruding 28.
- Smaller (under 2.2 mm). Body outline more slender, humeral calli feebly protruding. Metallic reflex of upper side rather weak 18.

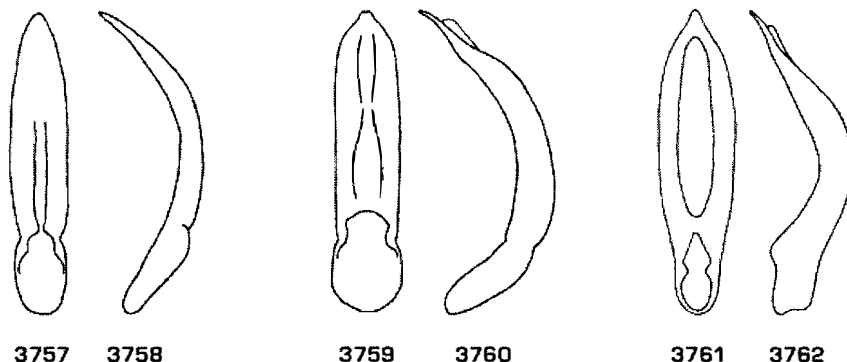
28. Legs and antennae dark, brown or blackish. Metallic reflex of upper side rather vivid. Tarsi, knees and underside of a few basal antennomeres reddish or dark yellow amber. Puncturation of pronotum very fine. Puncture rows on elytra often tend to become double. Aedeagus as in figs 3749, 3750. Length 2.2–2.5 mm (male) to 2.4–2.8 mm (female). Distributed in a great part of Europe from Pyrenees and Netherlands to Greece, Finland, Turkey and Caucasian countries, eastwards to Kirghizstan, Mongolia and Buriatia **mannerheimi** (GYLLENHAL, 1827).
- . Legs and antennae generally much paler, only hind femora distinctly darkened, brown. Puncturation of pronotum on basal part rather strong, puncturation of elytra in scutellar region broadly confused. Aedeagus as in figs 3751, 3752. Externally similar to *aridula* (antithesis 34), but differs by antennae more slender, colouration never bronzy, first antennomere uniformly pale. Length 2.2–2.3 mm. Distributed in Iran **nocticolor** RAPILLY, 1978.
29. In male first tarsomere of fore tarsi not broader than the third tarsomere. Externally very similar to *mannerheimi* (thesis 17), but smaller. Aedeagus (fig. 3753, 3754) sharpened apically. Length 1.8–2.2 mm (= *punctatula* MULSANT et REY, 1874, *christinae*, HEIKERTINGER, 1909). Variations: upper side blue-black (typical form), upper side leady with feeble greenish reflex (ab. *christinae* HEIKERTINGER, 1909). Distributed mostly in central and eastern part of Europe from France and England to Ukraine and Caucasian countries, reported also from Denmark, southern Sweden and Finland **subcoerulea** (KUTSCHERA, 1864).
- . In male first tarsomere of fore tarsi distinctly broader than the third tarsomere. Two species very similar to *subcoerulea* (thesis 29) **30.**



Figs 3751-3756. Aedeagus in ventral and lateral view (3751, 3752 after RAPILLY 1978; 3753, 3754 after DOGUET 1994; 3755, 3756 after HEIKERTINGER 1951): 3751, 3752 – *Chaetocnema (Chaetocnema) nocticolor*; 3753, 3754 – *C. (C.) subcoerulea*; 3755, 3756 – *C. (C.) leonhardi*.

30. Aedeagus as in (figs 3755, 3756) sharpened apically. Length 1.8–2.2 mm. Poorly studied species, described from Byelasnica Mts. in Bosnia **leonhardi** HEIKERTINGER, 1951.
- . Aedeagus (figs 3757, 3758) not sharpened apically. Length 1.9–2.2 mm. Described from Vitosha Mts. in Bulgaria **imitatrix** GRUEV, 1990.

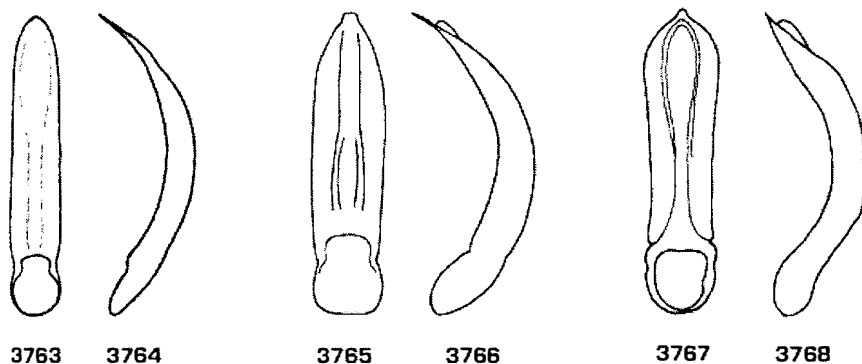
31. Punctuation of elytra very strong, contrasting with much finer punctuation of pronotum. In male first tarsomere of fore and mid tarsi very strongly widened **32**.
- . Punctuation of elytra stronger than, but not conspicuously contrasting with punctuation of pronotum **33**.
32. Aedeagus as in figs **3759**, **3760**. Length 2.0–2.5 mm. Distributed in a great part of Europe from Balears, France and England to Greece, Ukraine and Karelia, in Asia Minor, Caucasian countries and northern Iran **confusa** (BOHEMAN, 1851).
- . Aedeagus as in figs **3761**, **3762**. Upper side hell bronzy-golden, pale parts of antennae and legs orange yellow. Length about 2.6 mm. Described based on one male only from SE Iran (Beludzhistan) **jelineki** LOPATIN, 1990.



Figs 3757-3762. Aedeagus in ventral and lateral view (3757, 3758 after GRUEV 1990; 3759, 3760 after DOGUET 1994; 3761, 3762 after LOPATIN 1990): 3757, 3758 – *Chaetocnema (Chaetocnema) imitatrix*; 3759, 3760 – *C. (C.) confusa*; 3761, 3762 – *C. (C.) jelineki*.

33. First antennomere with a black spot on dorsal side or at least darkened dorsally **34**.
- . First antennomere uniformly reddish, rarely with a pale brownish spot on dorsal side **35**.
34. Outline of body more slender, humeral calli indistinct. Aedeagus as in figs **3763**, **3764**. Length 1.8–2.2 mm. Distributed in Spain, Balears, Morocco and Algeria **paganettii** HEIKERTINGER, 1923.
- . Outline of body less slender, humeral calli distinct. Aedeagus as in figs **3765**, **3766**. Length 2.0–2.5 mm (male) to 2.3–2.7 mm (female). Distributed in Europe, Mediterranean area, Asia Minor, Caucasian countries, Central Asia and in almost whole Siberia **aridula** FOU DRAS, 1860.
35. On average larger. Aedeagus (figs **3767**, **3768**) with small lamella. Externally similar to *aridula* (antithesis 34), but general outline of body more stout and upper side more shining. Length 1.9–2.0 mm. Described from Afghanistan **kabakovi** LOPATIN, 1995.
- . Smaller (male under 2.0 mm, female under 2.2 mm). Body outline shorter, humeral calli distinct. Aedeagus (figs **3769**, **3770**) with broad lamella. Length 1.6–1.9 (male)

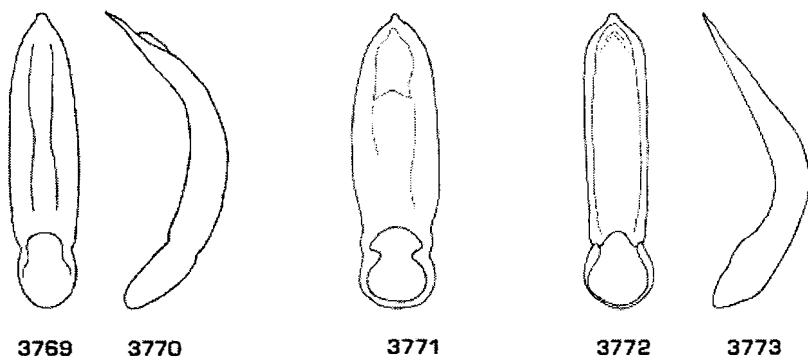
- to 1.8–2.0 mm (female). Distributed from NE Spain, France and England to Ukraine, southern Russia and Caucasian countries, known also from Algeria and Tunisia ...
 **arida** Foudras, 1860.
36. Primary punctures on elytra entirely arranged in regular rows, at most punctures of short scutellar row partly doubled **37**.
 -. Primary punctures in anterior half (not only scutellar row) more or less confused ...
 **41**.
37. Primary puncturation of elytra almost entirely regular, a few additional punctures on scutellar area only **38**.
 -. Confusion of primary elytral punctures in anterior half of elytra more distinct, the punctures not particularly strong **40**.
38. On pronotum before scutellum an impunctate median area situated on basal half, reaching to 1/3 length of pronotum. Humeral calli indistinct. Punctures on elytra not particularly strong. Uppert side shining bronzy. Length 2.6–2.8 mm. Distributed in NE China and Russian Far East **ogloblini** PALIJ, 1970.
 -. On pronotum no impunctate area **39**.



Figs 3763-3768. Aedeagus in ventral and lateral view (3763, 3764 after HEIKERTINGER 1951; 3765, 3766 after DOGUET 1994; 3767, 3768 after LOPATIN 1995): 3763, 3764 – *Chaetocnema (Chaetocnema) paganetti*; 3765, 3766 – *C. (C.) aridula*; 3767, 3768 – *C. (C.) kabakovi*.

39. Humeral calli distinct. Punctures of elytra very strong, intervals shining, upper side with greenish reflex. See *cylindrica* (thesis 41).
 -. Humeral calli absent. Upper side bluish-black. Femora blackish, tibiae and rarsi pitchy or dark brown. Externally somewhat similar to *procerula* (thesis 5), but somewhat shorter. Length about 2.2 mm. Described from Russian Far East, reported also from NE China **ussuriensis** HEIKERTINGER, 1951.
40. On average smaller. Upper side black with aeneous reflex. Femora usually dark. Pronotum finely and shallowly, but distinctly reticulated, intervals of elytral punctures usually shining, rarely very weakly reticulated. Aedeagus as in fig. 3771. Length 1.6–2.0 mm (*aurifrons* JACOBY, 1885, *japonica* JACOBY, 1885). Variation: legs entirely reddish (ab. *fulvipes* JACOBY, 1885). Distributed in N China, Mongolia, Korea and

- Japan (Hokkaido, Honshu, Shikoku, Kyushu). Reported also from Afghanistan and Pakistan, perhaps erroneously, because this species is often confused with *concinnicollis* (antithesis 40) ***ingenua*** (BALY, 1876).
- On average larger. Upper side with cupreous shine. Pronotum smooth or indistinctly reticulated, intervals of elytral punctures in well-sclerotified specimens always smooth, strongly shining. Length 1.8–2.4 mm, after some authors to 2.8 mm (= *philoxena* BALY, 1876, *kaibarensis* MADAR, 1960). Distributed in China, Japan (Hokkaido, Honshu, Shikoku, Kyushu), Taiwan and N Indochina. Reports from Korea and N China concern probably *ingenua* (thesis 40) ***concinnicollis*** (BALY, 1874).
 - 41. Body subcylindrical. Pronotum strongly and densely punctured, elytra very strongly punctured, shining, with greenish hue. Legs dark red, hind femora with black dorsal stripe, all tibiae with apical half black or black with greenish reflex. Length 2.5–2.8 mm. Distributed in E China, Korea and Japan (Honshu, Kyushu) ***cylindrica*** (BALY, 1874).
 - Body oval, elytra not particularly strongly punctured **42.**
 - 42. Larger. Metallic reflex on elytra bluish or greenish-blue **43.**
 - Smaller. Metallic reflex on elytra aeneous or cupreous, more rarely greenish-aeneous **44.**
 - 43. Legs pale, hind femora darkened only. Upper side dark bluish black. Prothorax densely and moderately finely punctured, interstices smaller than diameter of punctures. Length about 2.4 mm. Described from China (Hupeh, Sichuan) ***modesta*** GRESSIT et KIMOTO, 1963.
 - Femora dark, tibiae and tarsi reddish. In male fore legs with moderately broadened first tarsomere, abdominal sternites 2–4 densely reticulated laterally. Aedeagus as in figs **3772**, **3773**. Length 2.5–3.0 mm (= *grandis*, PIC, 1909). Distributed in Transcaспia and NW China, Reported also from E Siberia ***sinuata*** WEISE, 1889.
 - 44. Head and pronotum moderately strongly punctured **45.**
 - Head and pronotum rather strongly punctured. Upper side, particularly pronotum distinctly reticulated, in male first tarsomere somewhat less broadened. Length 1.5–2.3 mm. E Palearctic populations of *hortensis*, antithesis 23.



Figs 3769–3773. Aedeagus in ventral and lateral view (3769, 3770 after DOGUET 1994; 3771, 3772 after MEDVEDEV 1992; 3773, 3774 after LOPATIN 1977): 3769, 3770 – *Chaetocnema (Chaetocnema) arida*; 3771 – *C. (C.) ingenua*; 3772, 3773 – *C. (C.) sinuata*.

45. Pronotum transversely oval, feebly narrowed anteriorly. Antennae sharply bicolorous: antennomeres 1–6 pale, 7–11 black. On clypeus two large setae. Length 2.0–2.4 mm. Species from Tian-Shan. See *medvedevi* (thesis 18).
- . Pronotum distinctly narrowed anteriorly. Antennae and legs not sharply bicolorous, on clypeus no two large setae. Upper side feebly reticulated, elytra usually shining, reticulation of pronotum shallow and not always distinct. In male first tarsomere strongly broadened, almost as broad as long. Length 2.2–2.5 mm. Distributed in N China from Sinkiang to Heilungkiang, Mongolei, Russian Far East and Korea
 *costulata* (MOTSCHULSKY, 1860).

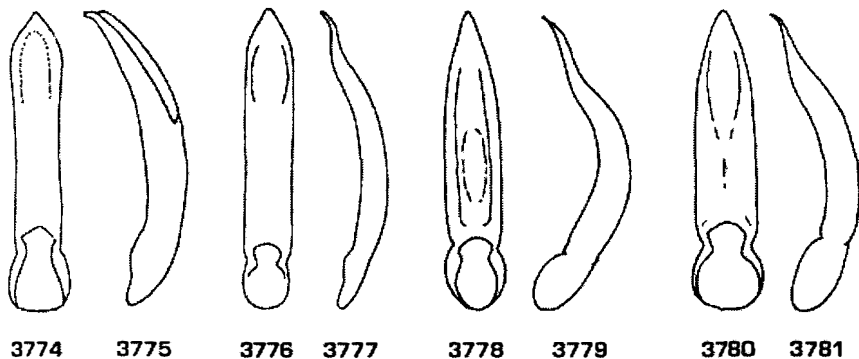
Subgenus *Tlanoma* MOTSCHULSKY, 1845

Brinckaltica BECHYNÉ, 1959

The doubtful species *turhala* ILYRIBOZ, 1934 from N Turkey and the African species *pulla* CHAPUIS, 1879 reported also from Yemen, not included in the key.

Key to species

1. W Palaearctic species **2.**
 –. E Palaearctic species **24.**
2. Body very small, length under 1.5 mm **3.**
 –. Body length over 1.5 mm **4.**
3. Along basal margin of pronotum runs a row of punctures. E Palaearctic species reported also from Afghanistan. See *nigrica* (thesis 24).
 –. Along basal margin of pronotum no any row of punctures. Humeral calli absent. Apex of elytra shortly, transversely or obliquely cut, pygidium partly free. In male elytra in hind part finely and sparsely, but distinctly covered by hairs. Length on average 1.3 (1.125–1.375) mm. Endemic to W Tian-Shan ***shabalini*** PALIY, 1968.

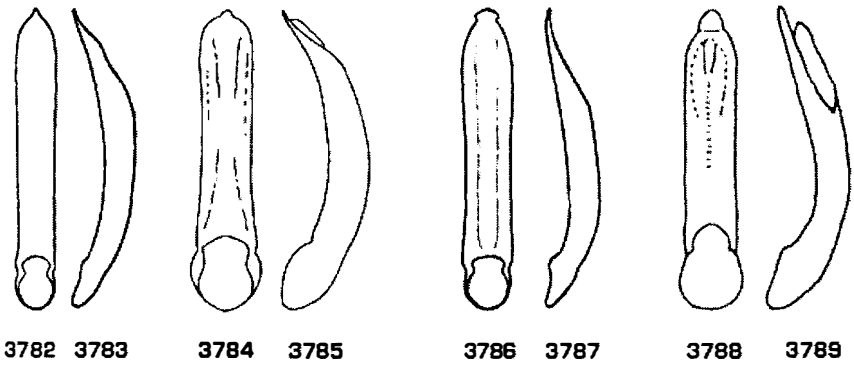


Figs 3774-3781. Aedeagus in ventral and lateral view (3774-3777 after FURTH 1985, remaining after DOGUET 1994): 3774, 3775 – *Chaetocnema (Tlanoma) bilunulata*; 3776, 3777 – *C. (T.) orientalis*; 3778, 3779 – *C. (T.) depressa*; 3780, 3781 – *C. (T.) conducta*.

4. Elytra partly pale, yellow, usually with black sutural and marginal stripe 5.
- . Elytra entirely black, usually with metallic reflex 9.
5. Elytra black with yellowish apex. Remaining external characters as in *tibialis* (thesis 18), aedeagus as in figs 3774, 3775 consequently similar as in *tibialis* (thesis 18, figs 3798, 3799). Length 1.6–2.0 mm (= *vincenti* REITTER, 1906, *diluta* LABOISSIÈRE, 1942) ***bilunulata*** DEMAISON, 1902.
- . Ground colour of elytra yellow 6.
6. On elytra dark colour blurred, forming a cross-like pattern (broad sutural and another broad transverse stripe). Aedeagus and spermatheca not studied. Length 1.8–2.5 mm. Distributed in southern Ukraine, Crimea, S Russia, Caucasian countries, Central Asia and Mongolia ***nebulosa*** WEISE, 1886.
- . On elytra black pattern sharp, a broad, transverse stripe not appearing 7.
7. Black pattern of elytra well-developed, sutural stripe triangularly widened anteriorly. Head and pronotum very finely punctate. Aedeagus as in figs 3776, 3777. Length 1.6–2.0 mm. Distributed in Balkans, Hungary, Romania, Asia Minor, Caucasian countries, Near East and Turkmenistan ***orientalis*** (BAUDUER, 1874).
- . Black pattern on elytra not particularly well-developed 8.
8. Frons punctate on whole surface. Body slightly flattened, black marginal stripe on basis of elytra usually disappears. Aedeagus as in figs 3778, 3779. Length 1.5–2.0 mm. Variations: upper side shining, head and pronotum bronzy, elytra black, sometimes with a weak bluish reflex (ab. *chrysicollis* FOU DRAS, 1860), as *chrysicollis*, but head and pronotum matt, elytra almost pure black (ab. *gibbifrons* PIC, 1909). Distributed in Iberian Peninsula, France, Belgium, Italy, Croatia, Algeria and Tunisia. Both variations with black elytra known from Tunisia and Algeria only ***depressa*** (BOIELDIEU, 1859).
- . Frond in central part impunctate. Body convex. Sutural stripe usually shortened behind, black marginal stripe on basis of elytra usually well-developed, encroaching on humeral calli. General view as in plate LXXXIX, **phot. 794**. Aedeagus as in figs 3780, 3781. Length 1.6–2.0 mm (= *fou drasi* BAUDUER, 1874, *ahngeri* JACOBSON, 1901). Distributed in southern part of Europe, northwards to France, Slovakia and Ukraine, in almost whole Africa, Asia Minor, Caucasian countries, Near East and Central Asia ***conducta*** (MOTSCHULSKY, 1838).
9. Head and pronotum very broad, pronotum feebly narrowed anteriorly. Body length usually over 3.0 mm 10.
- . Head and pronotum of normal breadth, pronotum distinctly narrowed anteriorly. Body length under 3.0 mm 15.
10. Pronotum trapezoidal, its lateral sides straight, at anterior seta not protruding. Legs except hind femora pale, fore and mid femora sometimes basally darkened. Aedeagus as in figs 3782, 3783. Length 3.0–4.0 mm (= *tarda* MOTSCHULSKY, 1845, *persica* BALY, 1877, *impunctifrons* PIC, 1909, *villiersi* BECHYNÉ, 1955). Distributed in Caucasian countries, Turkmenistan, Iraq, Iran and North-West China ***schlaeflii*** (STIERLIN, 1866).
- . Lateral sides sometimes feebly, but always distinctly rounded, at anterior seta obliquely protruding 11.
11. Puncturation of pronotum uniform. Secondary puncturation on elytral intervals very distinct, their ground strongly shining. Anterior angles of pronotum strongly protruding. Upper side usually blue-black. Legs and antennae pitchy with paler joints.

General view as in plate LXXXIX, **phot. 796**. Aedeagus as in figs **3784, 3785**. Length 2.6–4.0 mm. Variations: legs paler, tibiae and tarsi reddish, upper side moderately strongly shining (ab. *flavotibialis* HEIKERTINGER, 1951), as *flavotibialis*, but upper side bronzy-green, relatively strongly shining (ab. *perrisi* BAUDUER, 1874, sometimes considered as distinct species). Distributed in southern part of Europe northwards to southern France, Austria, Slovakia and southern Russia, in Asia Minor, Caucasian countries, Near East, Iran, Kazakhstan, China and Japan. In eastern part of the area forms a distinct race (subsp. *mandschurica* HEIKERTINGER, 1851) **major** (JACQUELIN DUVAL, 1852).

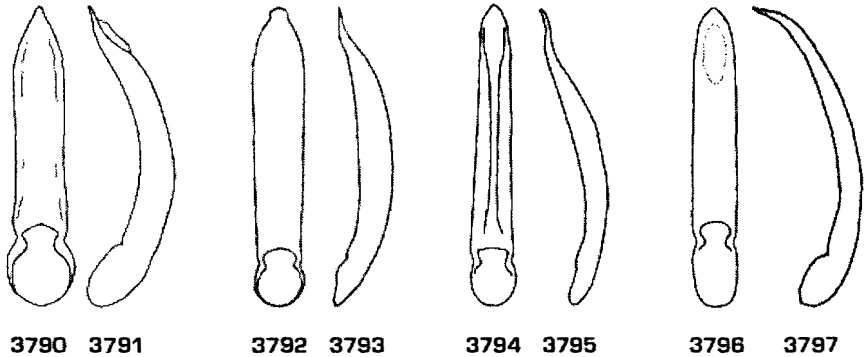
- Puncturation of pronotum double. Anterior angles of pronotum feebly protruding. Upper side green with golden reflex or more rarely blue **12**.
- 12. Little impressions at basal margin of pronotum distinctly, sharply incised **13**.
- Impressions at basal margin of pronotum shallow, barely visible **14**.



Figs 3782-3789. Aedeagus in ventral and lateral view (3784, 3785 after DOGUET 1994; 3788, 3789 after FURTH 1985; remaining after HEIKERTINGER 1951): 3782, 3783 – *Chaetocnema (Tlanoma) schlaeflii*; 3784, 3785 – *C. (T.) major*; 3786, 3787 – *C. (T.) punctifrons*; 3788, 3789 – *C. (T.) coyei*.

- 13. External characters as in *chlorophana* (thesis 14). Upper side and hind femora usually light metallic green. Underside, apical half of antennae and remaining femora pitchy black, tibiae, tarsi and basal half of antennae reddish yellow. Vertex in most part punctate. General view as in plate LXXXIX, **phot. 798**. Aedeagus as in figs **3786, 3787**. Length 2.8–3.6 mm. Variations: upper side golden (unnamed), upper side blue (ab. *gratiosa* NORMAND, 1937). Distributed in southern Italy, Sicily, Algeria and Tunisia **punctifrons** (ABEILLE, 1907).
- Externally similar to *chlorophana* (thesis 14), but basis of pronotum without impressions. Pronotum almost trapezoidal, its lateral sides at fore seta without protruding angle. Aedeagus as in figs **3788, 3789**. Length 2.5–3.5 mm. Variations: fore and mid tibia darkened (ab. *delagrangei* PIC, 1900), upper side bronzy (ab. *metallica* WEISE, 1886). Distributed in Balkans, southern Russia, Cyprus, Asia Minor, Caucasian countries and Near East **coyei** (ALLARD, 1863).

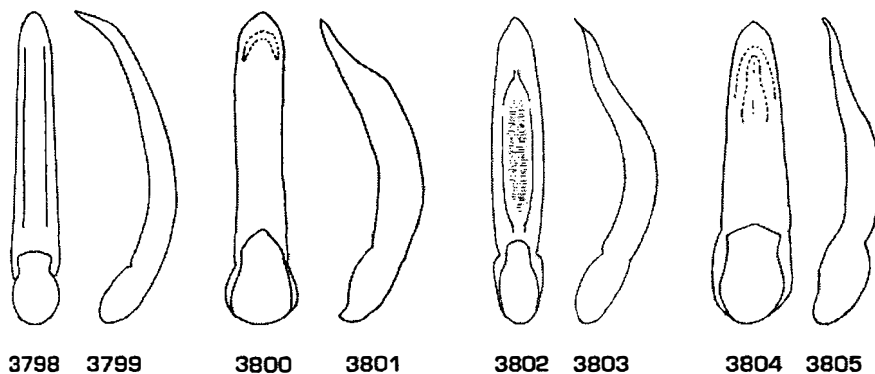
14. Smaller. On frons points not numerous. Punctuation of pronotum always double. Upper side usually bluish-green or green, more rarely violaceous, golden or bronzy. Legs and antennae pitchy, joints in basal half of antennae and in legs reddish. General view as in plate LXXXVIII, **phot. 792**. Aedeagus as in figs **3790**, **3791**. Length 2.5–3.5 mm (= *dentipes* OLIVIER, 1808, *kolbei* WEISE, 1886, *syriaca* DEMAISON, 1896). Variations: upper side uniformly coloured, greenish or bronzy-green (typical form), bronzy or golden (ab. *laeta* WEISE, 1886), blue or violaceous (ab. *amoena* WEISE, 1886), upper side bicolorous, head and pronotum cupreous, elytra dark green or bluish-green (ab. *bicolora* ROUBAL, 1948), head cupreous, pronotum golden-green, elytra bluish-green (ab. *pueli* CAILLOL, 1914). Forms two races: colouring of upper side less vivid, legs almost always darkened (nominotypical subspecies inhabiting the part of area belonging to European Province), colouring of upper side vivid, usually light green, tibiae reddish (subsp. *pelagica* CAILLOL, 1914, inhabiting Mediterranean area). Distributed in southern part of Europe northwards to France, Bavaria, Slovakia and Ukraine, in N Africa, Asia Minor, Caucasian countries and Near East. Distributed in Mediterranean area and in southern part of Europe, northwards to Belgium, basin of Danube and Ukraine, in Asia Minor, Caucasian countries and Near East
 **chlorophana** (DUFTSCHMID, 1825).
- . Larger, externally similar to *chlorophana* (thesis 14). Aedeagus as in figs **3792**, **3793**. Length 3.5–4.5 mm (= *sycophanta* ABEILLE, 1896). Distributed in Morocco, Algeria and Tunisia **kerimi** (FAIRMAIRE, 1875).



Figs 3790-3797. Aedeagus in ventral and lateral view (3790, 3791 after DOGUET 1994; 3796, 3797 after WARCHALOWSKI 1973; remaining after HEIKERTINGER 1951): 3790, 3791 – *Chaetocnema (Tlanoma) chlorophana*; 3792, 3793 – *C. (T.) kerimi*; 3794, 3795 – *C. (T.) scheffleri*; 3796, 3797 – *C. (T.) breviscula*.

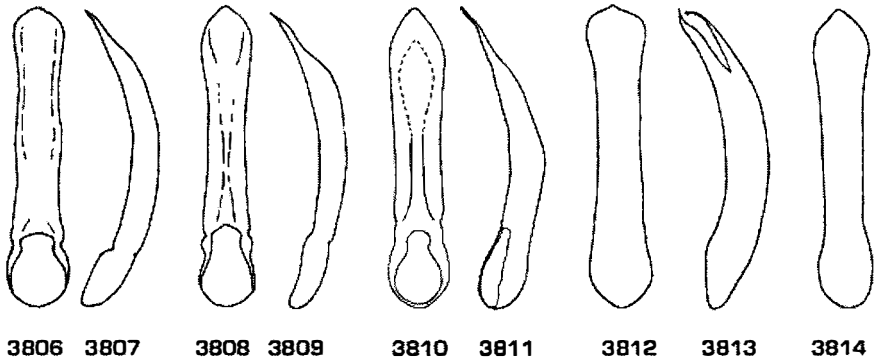
15. Basal margin of pronotum without marginal ridge and impressions 16.
 –. Basal margin of pronotum with fine, but distinct marginal ridge and with two short impressions 19.
 16. Pronotum very long, trapezoidal. Remaining external characters as in *tibialis* (thesis 18). Aedeagus as in figs **3269**, **3270**. Length 1.6–2.2 mm (= *longula* WEISE, 1890,

- tunisea* Pic, 1909). Distributed in southern part of Europe northwards to Germany, Slovakia and Ukraine, in Algeria, Tunisia, Asia Minor, Caucasian countries and Near East ***scheffleri*** (KUTSCHERA, 18643).
- Pronotum short and broad. Sculpture of elytral intervals net- or scale-like. Frons punctate on whole breadth. Body convex, rather regularly oval **17**.
 - 17. On each side of frons, near eye, 6–10 moderately strong or strong points **18**.
 - On each side of frons, near eye, 3–5 rather fine points. Aedeagus as in figs **3796**, **3797**. Length 1.5–2.0 mm. Distributed from Eastern Europa (Balkans, Hungary) to Korea ***breviuscula*** (FALDERMANN, 1837).
 - 18. Apical 4 or 5 antennomeres darkened. Usually more than 8 points near each eye. Body outline oval, widest in midlength. Upper side black with weak bronzy metallic reflex. Femora and apical half of antennae black, tibiae and tarsi pale brownish, partly darkened. Pronotum convex, short, strongly and densely punctate. Primary punctures of elytra strong and deep, intervals shining, covered by very fine and dense secondary puncturation. Humeral calli shining, smooth and protruding, hind wings well-developed. Aedeagus as in figs **3798**, **3799**. Length 1.6–2.2 mm (= *pumila* ALLARD, 1859, *caesaraugustana* FUENTE, 1909, *obscuripes* PIC, 1909). Distributed in a great part of Europe northwards to Germany, Poland and (?)Finland, in N Africa, Asia Minor, Caucasian countries, Syria, Central Asia and W Siberia to Mongolia ***tibialis*** (ILLIGER, 1807).
 - Antennae entirely pale or only antennomeres 10 and 11 partly darkened. Usually 5–6 points near each eye. Aedeagus as in figs **3800**, **3801**. Length 1.6–2.2 mm. Distributed in southern part of Mediterranean area (Morocco, Algeria, Tunisia, Near East), often considered as subspecies of *tibialis* (thesis 18) ***delarouzei*** (BRISOUT, 1884).
 - 19. Frons punctate on whole breadth **20**.
 - Puncturation of frons concentrated near eyes. Fore and mid femora blackish **22**.



Figs 3798–3805. Aedeagus in ventral and lateral view (3798, 3799, 3802, 3803 after DOGUET 1994, remaining after FURTH 1985): 3798, 3799 – *Chaetocnema (Tlanoma) tibialis*; 3800, 3801 – *C. (T.) delarouzei*; 3802, 3803 – *C. (T.) semicoerulea*; 3804, 3805 – *C. (T.) batophiloides*.

20. Larger, body length over 2.0 mm. Upper side black, usually metallic reflex on head and pronotum dark bronzy, on elytra black-blue. In male first tarsomere of fore and mid tarsi very strongly widened. Impressions at basal margin of pronotum distinct. Fore and mid legs entirely reddish. Aedeagus as in figs **3802, 3803**. Length 2.3–2.9 mm (= *saltitans* STEPHENS, 1831, *meridionalis* ALLARD, 1859). Variations: metallic reflex on elytra bronzy or cupreous (ab. *saliceti* WEISE, 1886), fore femora blackish, tarsi darkened (ab. *femoralis* WEISE, 1886), pronotum coloured normally, elytra reddish brown (ab. *semirufescens* PIC, 1909). Transpalearctic species, distributed from France to Far East, but unknown from N Africa. In eastern part of area forms a distinct race (subsp. *transbaicalica* HEIKERTINGER, 1951, perhaps a distinct species)
 **semicoerulea** (KOCH, 1803).
- . Smaller, body length at most 2.0 mm **21**.
21. Very small. Nasal ridge entirely flattened. Aedeagus as in figs **3804, 3805**. Length 1.0–1.5 mm. Distributed in N Africa (Algeria, Sudan) and in Near East
 **batophiloides** ABEILLE, 1909.
- . Larger, body length over 1.7 mm. Nasal ridge sharp, convex. Distributed in N Africa. Here forms of *C. depressa* (thesis 8) with uniformly black elytra.



Figs 3806–3814. Aedeagus in ventral and lateral view (3806–3809 after DOGUET 1994; 3810, 3811 after LOPATIN 1977; remaining after KIMOTO and TAKIZAWA 1994): 3806, 3807 – *Chaetocnema (Tlanoma) picipes*; 3808, 3809 – *C. (T.) concinna*; 3810, 3811 – *C. (T.) heptapotamica*; 3812, 3813 – *C. (T.) bicolorata*; 3814 – *C. (T.) granulosa*.

22. Last antennomere spindle-shaped. Upper side black with very feeble bronzy reflex ...
 **23**.
- . Last antennomere flattened (in male more distinctly). Remaining external characters as in *concinna* (thesis 19). Apex of aedeagus (figs **3806, 3807**) shorter rounded. Vasculum of spermatheca slender. Length 1.8–2.2 mm (= *laevicollis* THOMSON, 1866, *heikertingeri* LYUBISHCHEV, 1963). Distributed almost as videly as *concinna* (thesis 19), but unknown in N Africa and Near East **picipes** STEPHENS, 1831.
23. In male first tarsomere of fore and mid tarsi very strongly widened and somewhat asymmetrical. Apex of aedeagus (figs **3808, 3809**) forms a pointed arc. Vasculum of

- spermatheca thick. Length 1.8–2.4 mm (= *dentipes* KOCH, 1803, *lewisii* CHŪJŌ, 1942). Variation: pronotum blue-black, very smooth, finely and sparsely punctate, metallic reflex of elytra bronzy (ab. *nitidicollis* JACOBSON, 1902). Very common panpalaeartic species, pest of cereals, introduced also to Canada ***concinna*** (MARSHAM, 1802).
- . In male first tarsomere of fore and mid tarsi not widened. Apex of aedeagus (figs **3810**, **3811**) triangular with rounded apex. Remaining external characters as in *concinna* (thesis 23). Length 1.8–2.3 mm. Distributed in S Kazakhstan and Kirghyzstan ***heptapotamica*** LYUBISHCHEV, 1963.
24. Body length under 1.5 mm. Along basal margin of pronotum runs a row of punctures. Head impunctate, covered by very fine reticulation. Puncturation of pronotum, except for the marginal row, sparse, very fine and shallow, sometimes almost disappearing. Puncturation of elytra strong, very regular, in scutellar row 6–7 punctures. Body black, legs and antennae pale, fore and mid femora basally and hind femora entirely darkened, brownish. Length 1.3–1.4 mm (*basalis* BALY, 1877, *gestroi* JACOBY, 1889, *geniculata* JACOBY, 1896, *parvula* BALY, 1877). Broadly distributed in Oriental region from Pakistan to S China, Indochina, Ryukyu and Taiwan. Reported also from Afghanistan and New Caledonia ***nigrica*** MOTSCHULSKY, 1858.
- . Body length over 1.8 mm **25**.
25. Along basal margin of pronotum runs a row of deep punctures. Pronotum distinctly and densely punctured. Upper side shining black. Antenna in basal part and femora pitchy, remaining part of antennae, tibiae and tarsi reddish brown. Length about 2.0 mm. Described from Japan (Kyushu) ***kanmiyai*** KIMOTO, 1974.
- . On pronotum no punctures arranged in transverse row along hind margin **26**.
26. Upper side bicolorous: head, pronotum and scutellum aeneous or cupreous, elytra black with bluish reflex **27**.
- . Upper side uniformly coloured **28**.
27. Smaller. Elytral epipleura glabrous, smooth, slightly convex. On interstices of elytra heart-shaped punctures shallow. Tibiae and tarsi reddish-brown, fore and mid femora darkened, hind femora blackish. Aedeagus as in figs **3812**, **3813**. Length 1.8–2.0 mm. Distributed in Korea and Japan (Honshu) ***bicolorata*** KIMOTO, 1971.
- . Larger. Elytral epipleura covered by sparse hairs. On interstices of elytra heart-shaped punctures strongly impressed. Legs pitchy, tarsi and apices of tibiae reddish-brown. Length 2.2–2.5 mm (= *septentrionalis* KIMOTO, 1963). Distributed in Korea and Japan (Hokkaido, Honshu) ***koreana*** CHŪJŌ, 1942.
28. Secondary punctures on elytral interstices heart-shaped. Upper side bluish-black. Tibiae and tarsi reddish-brown, fore and mid femora darkened, hind femora blackish. Aedeagus as in fig. **3814**. Length 1.8–2.0 mm. Perhaps conspecific with *bicolorata* (thesis 27). Distributed in Japan (Hokkaido, Kyushu, Shikoku, Ryukyus), Korea and Taiwan ***granulosa*** (BALY, 1874).
- . Secondary punctures on elytral interstices not heart-shaped, roundish **29**.
29. Body length under 2.5 mm **30**.
- . Body length over 3.0 mm. Upper side bluish black, legs very dark, bluish black, with fore and mid tibiae brown or pitchy. Length about 3.2 mm. Distributed in NE China and in Japan (Honshu) ***mandchurica*** HEIKERTINGER, 1951.
30. Upper side cupreous. Body rather slender, lateral sides of pronotum almost straight. Legs reddish brown with blackish or piceous femora. Length 1.8–2.0 mm (= *discreta* BALY, 1876, *granulifrons* BALY, 1876, *chalceola* JACOBY, 1885, *kanika* MAULIK, 1926).

Broadly distributed in SE Asia from Nepal and Tibet to Central and E China, Japan and Taiwan. In SW part of this area forms one subspecies (subsp. *yunnanica* HEIKERTINGER, 1951) differing from nominoitypical subspecies by greenish colouration of upper side and pitchy black legs ***puncticollis*** MOTSCHULSKY, 1858.

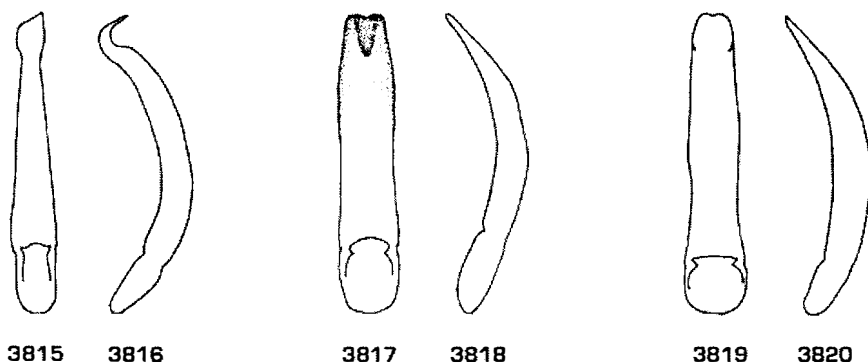
- Upper side black with aeneous reflex **31**.
- 31. Last antennomere spindle-shaped. Upper side black with very feeble bronzy reflex. In male first tarsomere of fore and mid tarsi very strongly widened and somewhat asymmetrical. Apex of aedeagus (figs **3808**, **3809**) forms a pointed arc. Length 1.9–2.3 mm. See *concinna* (thesis 23).
- Last antennomere flattened (in male more distinctly). Remaining external characters as in *concinna* (thesis 23), but apex of aedeagus shorter rounded. Length 1.9–2.3 mm (= *laevicollis* THOMSON, 1866, *heikertingeri* LYUBISHCHEV, 1963). Distributed almost as widely as *concinna* (thesis 23). See *picipes* (antithesis 22).

Genus *Crepidodera* CHEVROLAT, 1837

Literature: KONSTANTINOV 1996.

Key to species

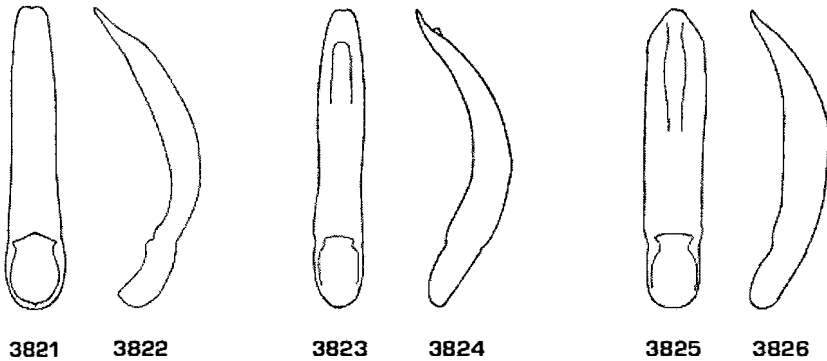
- 1. W Palaearctic species **2**.
- E Palaearctic species **12**.



Figs 3815–3820. Aedeagus in dorsal, ventral and lateral view (after KONSTANTINOV 1996): 3815, 3816 – *Crepidodera nitidula*; 3817, 3818 – *C. gemmata*; 3819, 3820 – *C. lamina*.

- 2. Apical angles of elytra with small tooth. Punctural rows on elytra partly confused, secondary punctures on intervals relatively strong. Aedeagus as in figs **3815**, **3816**. Length 3.0–4.0 mm. Distributed from the British Isles to Mid Siberia and Sayan Mts ***nitidula*** (LINNAEUS, 1758).
- Apical angles of elytra without tooth. Primary punctures on elytra arranged in regular rows **3**.

- 3. Antennae entirely yellow except 3 apical antennomeres brown 4
- Antennomeres 3-6 brown, 3 apical antennomeres dark brown or blackish 7.
- 4. Frons densely covered by transverse wrinkles. Anterior angles of pronotum rounded. Punctures on pronotum rather strong, subequal in size. Upper side greenish bronze, cupreous or golden. Aedeagus as in figs **3817, 3818**. Length 2.0-2.7 mm. Distributed in Morocco, Algeria and Tunisia ***gemmata*** (ABEILLE, 1895).
- Frons without wrinkles. Anterior angles of pronotum sharp. Sexual dimorphism in structure of head and legs very feeble 5.
- 5. Puncturation of pronotum very fine, frons smooth. Upper side mostly unicolorous, greenish or golden-greenish. Legs pale, hind femora brown or blackish. Sexual dimorphism in structure of legs very feeble. Aedeagus as in figs **3819, 3820**. General view as in plate XC, **phot. 803**. Length 2.6-3.8 mm (= *metallica* DUFTSCHMID, 1825). Variations: upper side green, vivid, with feeble golden sheen (typical form); upper side uniformly blue or blue with greenish-blue pronotum (ab. *sapphirina* WEISE, 1886); upper side dark brassy with greenish reflex (ab. *aeruginosa* WEISE, 1886); uperside cupreous or fire-red (ab. *cuprea* WEISE, 1886). Distributed in Europe from N Spain, France and Belgium to Asia Minor, S Russia and Caucasian countries ***lamina*** (BEDEL 1901).
- Puncturation of pronotum strong or moderately strong 6.

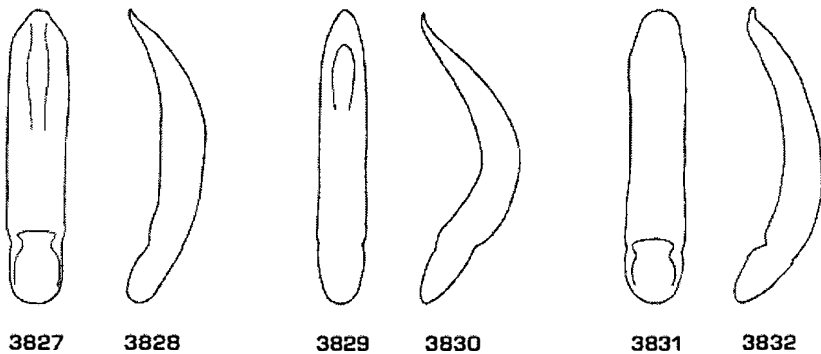


Figs 3821-3826. Aedeagus in dorsal, ventral and lateral view (3821, 3822 after DOGUET 1976; 3823, 3824 after WARCHAŁOWSKI 1998; 3825, 3826 after KONSTANTINOV 1996): 3821, 3822 - *Crepidodera wittmeri*; 3823, 3824 - *C. aurea*; 3825, 3826 - *C. plutus*.

- 6. Puncturation of pronotum moderately strong, frons smooth, impunctate. Hind femora and basal part of remaining femora black. Aedeagus as in figs **3821, 3822**. Length 2.8-3.2 mm. Described from Iran ***wittmeri*** (Doguet, 1976).
- Puncturation of pronotum strong, frons often dull. Legs entirely pale. Upper side usually unicolorous, with strong metallic gloss, green or golden-green, more rarely blue or purplish. General view as in plate LXXXIX, **phot. 800**. Aedeagus as in figs **3823, 3824**. Length 2.8-4.0 mm (= *cyanea* MARSHAM, 1802, *metallica* DUFTSCHMID, 1825, *gaudens* STEPHENS, 1831, *pulchella* STEPHENS, 1835 nec 1832, *syriaca* PIC, 1918).

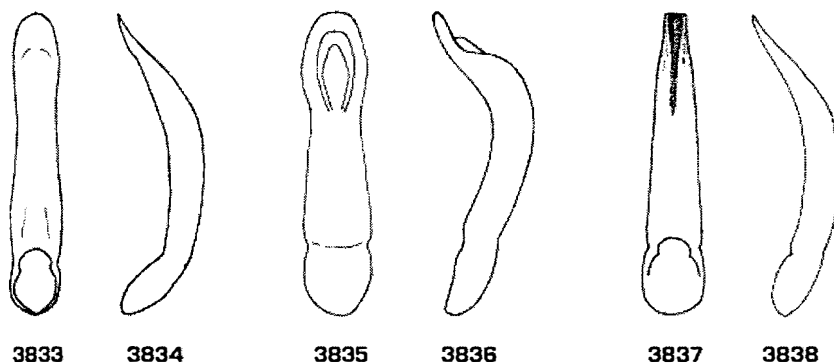
Variations: upper side bronzy-green or golden-reddish (typical form), upper side blue (ab. *cyanea* MARSHAM, 1802), upper side green (ab. *laeta* WEISE, 1886), upper side with purplish-violaceous sheen (ab. *purpurascens* PIC, 1918). Distributed in Europe, Asia Minor and W Asia, from Iberian Peninsula and the British Isles to E Kazakhstan, reported also from Transbaikalia and Russian Far East

- ***aurea*** (GEOFFROY, 1785).
7. Four basal antennomeres pale, remaining black, light and black zones sharply limited. Upper side normally bicolorous, with strong metallic gloss. Head and pronotum green with golden or cupreous reflex, elytra blue, more rarely upper side unicolorous, green or blue. Apex of aedeagus (figs **3825, 3826**) triangular. Aedeagus as in. Length 2.5–3.7 mm (= *chloris* FOU DRAS, 1860). Variations: upper side light bluish, pronotum with bronzy reflex (ab. *foudrasi* WEISE, 1886), fourth antennomere and legs darkened (ab. *melanocera* EVERTS, 1919), punctures on pronotum particularly strong and sparse (ab. *punctatithorax* PIC, 1918). Transpalaeartic species, distributed from Spain and The British Isles to Japan
- ***plutus*** (LATREILLE, 1804).
- . Antennae gradually darkened, without sharp limited zones 8.
8. Upper side bicolorous: head and pronotum golden green or red-cupreous, elytra green, blue or violaceous 9.
- . Upper side unicolorous, sometimes pronotum differs from elytra in feeble bronzy reflex. Usually green or golden-green, more rarely blue or purplish, always with strong metallic gloss. Antennae usually entirely pale, sometimes apical part feebly darkened. Aedeagus as in figs **3827, 3828**. General view as in plate LXXXIX, **phot. 801**. Length 2.4–3.2 mm (= *hebxines* LINNAEUS, 1758, *?violaceopunctata* DEGEER, 1775, *?viridiaurata* DEGEER, 1775, *?viridicoerulea* DEGEER, 1775, *caerulescens* GMELIN, 1790, *cyanopicta* GMELIN, 1790, *smaragdina* FOU DRAS, 1860, *libanicola* PIC, 1918, *lapponica* HEIKERTINGER, 1950). Variations: antennae and legs darkened (ab. *pici-cornis* WEISE, 1886), upper side blue, pronotum sometimes greenish-blue (ab. *jucunda* WEISE, 1886), upper side violaceous or purplish (unnamed), upper side entirely golden-red (unnamed). Distributed from Spain and the British Isles to Mongolia and basin of Amur. Reported also, perhaps erroneously, from Japan, Sakhalin and N Africa
- ***fulvicornis*** (FABRICIUS, 1792).



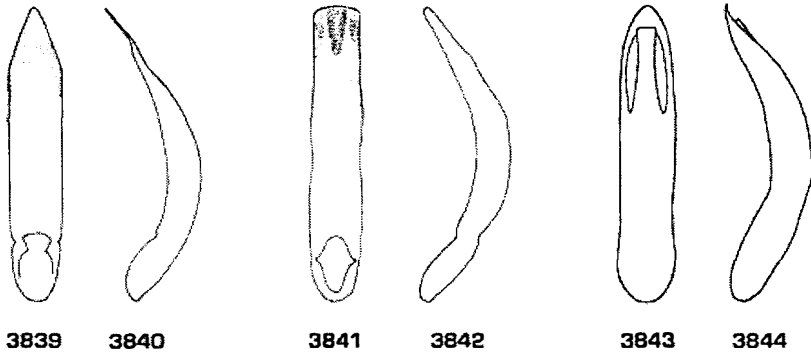
Figs 3827–3832. Aedeagus in dorsal, ventral and lateral view (after KONSTANTINOV 1996): 3827, 3828 – *Crepidodera fulvicornis*; 3829, 3830 – *C. nigricoxis*; 3831, 3832 – *C. aurata*.

9. Hind femora black. Apex of aedeagus broadly rounded. Upper side bicolorous, with strong, beautiful metallic gloss **11.**
 - Hind femora light brown **10.**
10. Apex of aedeagus (figs **3829, 3830**) rather shortly narrowed. Vasculum spermathecae elongated, not subglobulose. Length 2.5–3.2 mm. Distributed in SE Europe from Austria and Romania to Greece and in Caucasian countries **nigricoxis** ALLARD, 1878.
 - Apex of aedeagus gradually narrowed. Vasculum spermathecae subglobulose. External characters as in *nigricoxis* (thesis 10). Perhaps a race of *nigricoxis*. Originally described as variation of *aurata* (thesis 11), recently considered as distinct species, but the relation *nigricoxis/peloponnesiaca* needs further studies **peloponnesiaca** (HEIKERTINGER, 1910).
11. Larger. Punctuation of pronotum strong and deep. General view as in plate LXXX-IX, **phot. 799**. Length 2.5–3.6 mm (= *chrysicollis* SCOPOLI, 1763, *delta* PAYKULL, 1799, *versicolor* KUTSCHERA, 1860). Variations: upper side almost black (ab. *nigra* KLENKA, 1914), elytra blue, pronotum greenish-blue (ab. *subunicolor* PIC, 1918), upper side almost unicolorous, green or bronzy (ab. *pulchella* STEPHENS, 1832). Distributed in Europe and Asia from Spain and Ireland to Beringia, reported also from Morocco ... **aurata** (MARSHAM, 1802).
 - Smaller. Punctuation of pronotum less strong, but deep and more dense than in *aurata* (thesis 11). Aedeagus as in figs **3833, 3834**. Length almost always under 2.5 mm (*formosa* GUILLEBEAU, 1897, *fulvipennis* PIC, 1918). Considered often as conspecific with *aurata*. Distributed in France, Iberian Peninsula and Morocco **aureola** (FOUDRAS, 1860).
12. Length of body about 4.0 mm. Antennae except for two darker basal antennomeres entirely reddish brown. Upper side metallic green with weak bluish tinge (= *viridis* GRESSIT et KIMOTO, 1963 nec BRYANT, 1951). Described from China (Hopei) **hupehensis** DÖBERL, 2001.
 - Length of body under 3.8 mm **13.**



Figs 3833–3838. Aedeagus in dorsal, ventral and lateral view (3833, 3834 after DOGUET 1994, remaining after KONSTANTINOV 1996): 3833, 3834 – *Crepidodera aureola*; 3835, 3836 – *C. picipes*; 3837, 3838 – *C. ussuriensis*.

13. Two basal antennomeres darkened 14.
 - Two basal antennomeres pale 15.
 14. Legs dark, dark brown, pitchy or black. Body broad. Upper side metallic blue with greenish reflex. Antennae except for antennomeres 2 and 3 black. Aedeagus as in figs **3835, 3836**. Length 2.5–3.2 mm (= *mroczkowskii* WARCHAŁOWSKI, 1969). Distributed in great part of Central and N China, E Siberia, Russian Far East and Korea *picipes* (WEISE, 1887).
 - Fore and mid tibiae partly pale. Body relatively narrow and elongate. Upper side blue with weak greenish reflex. Aedeagus as in figs **3837, 3838**. Length 2.2–2.6 mm. Described from Russian Far East *ussuriensis* KONSTANTINOV, 1996.
 15. Antennae pale yellow, last three antennomeres slightly darkened. Here E Palaearctic forms of *fulvicornis* (antithesis 8) and *aurea* (antithesis 6).
 - Three apical antennomeres dark brown or blackish 16.
 16. Yellow and blackish parts of antennae rather sharply limited. Antennomere 5 bicolorous, at base yellow, at apex blackish 17.
 - Yellow and blackish parts of antennae rather gradually limited. Antennomere 5 entirely yellow or only slightly darkened on apex 18.
 17. All femora darkened at least in middle, pronotal furrows (long transverse furrow and two short longitudinal furrows) deep, with sharp margins. Upper side metallic green with weak bronzy reflex. Pronotal puncturation sparse and fine. Aedeagus as in figs **3839, 3840**. Length 1.9–2.1 mm. Described from Sakhalin *sahalinensis* KONSTANTINOV, 1996.
 - All femora yellow, pronotal furrows deep, but their margins obtuse. See *plutus* (thesis 7).



Figs 3839–3844. Aedeagus in dorsal, ventral and lateral view (3839, 3840 after KIMOTO and TAKIZAWA 1994; remaining after KONSTANTINOV 1996): 3839, 3840 – *Crepidodera sahalinensis*; 3841, 3842 – *C. obscuripes*; 3843, 3844 – *C. japonica*.

18. Upper side bicolorous. E Palaearctic forms of *aurata*. See thesis 11).
 - Upper side unicolorous 19.
 19. Fore and mid femora pale. E Palaearctic forms of *fulvicornis*. See antithesis 8.
 - At least mid femora brown or black 20.

20. Upper side blue or dark green. Body broad. Hind 1/3 of lateral side of pronotum rounded. In the middle of frons is situated a densely punctured impression. Aedeagus as in figs **3841**, **3842**. Length 2.6–3.7 mm. Distributed in Mongolia, E Siberia, Russian Far East and Korea **obscuripes** HEIKERTINGER, 1912.
- Upper side light green or bronzy. Body more slender. Antennae distinctly darker in distal half. All femora dark, usually blackish, in many cases also mid and hind tibiae darkened. General view as in plate XC, **phot. 802**. Length 2.5–3.5 mm. Externally similar to *plutus* (thesi 7), but differs by shape of aedeagus (figs **3843**, **3844**) and not sharply limited colour zones in antennae **japonica** BALY, 1877.

Genus ***Crepidoderoides*** CHŪJŌ, 1942

Small genus, comprising two Asiatic species. Generally similar to *Asiorestia*, but distinguished by smaller pronotum, very weakly thickened hind femora, elongate frontal tubercles and bifid claws. In my opinion may belong to *Galerucinae*. In discussed area one species.

Body pale yellowish brown, upper side shining, but without any metallic shine, antennae except for 2–3 basal antennomeres dark brown, apices of femora, tibiae in apical part and tarsi more or less darkened. Antennae relatively short, reaching to 1/2 length of elytra. Pronotum much narrower than elytra, 1.2–1.3 × broader than long, broadest in anterior 1/3, lateral sides in anterior half rounded, in posterior half almost straight. Elytra subparallel, very slightly broadened posteriorly, broadest in 2/3–3/4 of their length. Elytral surface finely, regularly punctured, intervals extremely finely and shallowly reticulated. Length 4.2–4.3 mm. Described from Korea **choi** CHŪJŌ, 1942.

Genus ***Dentisterna*** MEDVEDEV, 1994

Horia CHŪJŌ, 1937, nec TONNOIR 1930 (*Diptera*)

A small genus containing several species; of these one species occurs in the discussed area. Body reddish brown two or three apical antennomeres, metasternum, hind femora, hind tibia except for basal part and lateral borders of elytra piceous or blackish. Pronotum slightly narrowed anteriorly, process of mesosternum almost parallel. Length 2.0–2.5 mm. Known from Japan (Honshu, Shikoku) only **esakii** CHŪJŌ et OHNO, 1961.

Genus ***Derocrepis*** WEISE, 1886

Literature: HEIKERTINGER 1925, GRUEV 1974.

Key to subgenera

1. Pronotum not elongate, distinctly broader than long. Body outline not particularly slender. Hind wings present. First row of elytral punctures (at suture) in hind part deeply incised. Upper side always without hairs ***Derocrepis*** s. str. (p. 805).

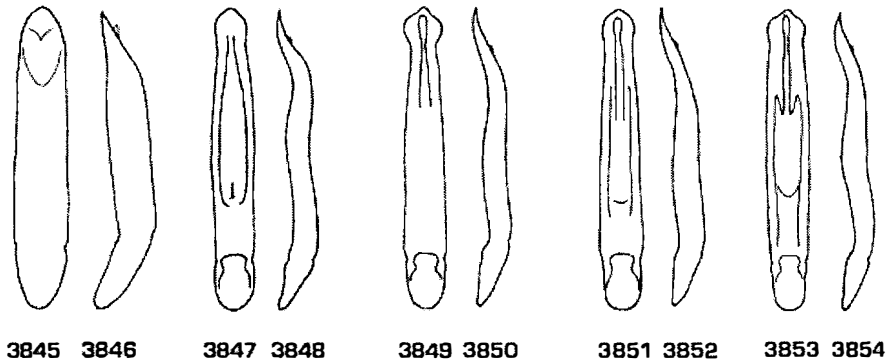
- Pronotum elongate, almost as long as broad. Body outline slender. Hind wings absent. First row of elytral punctures (at suture) in hind part not incised. Upper side (at least apical part of elytra) covered by hairs ***Aeschrocnemis*** (p. 802).

Subgenus ***Aeschrocnemis*** WEISE, 1888

Subgenus *Aeschrocnemis* is often considered as distinct genus. It contains 11 species distributed in mountain of SE Europe, Asia Minor and Caucasian countries.

Key to species

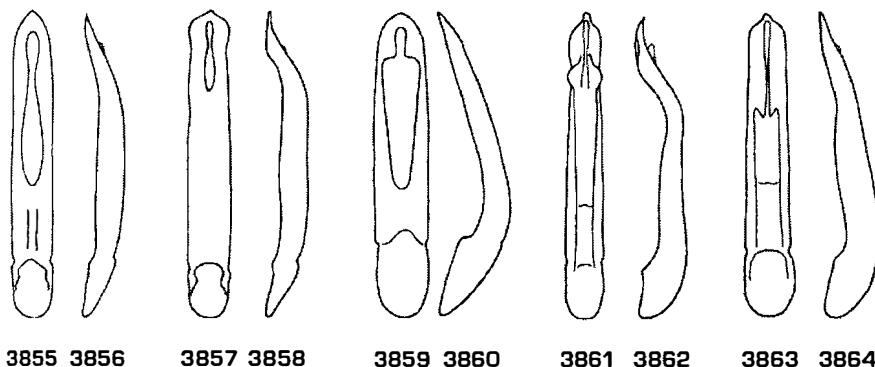
1. Elytra covered by hairs 2.
- Elytra bare 3.
2. Elytra very strongly punctate, rather scarcely pilose. Aedeagus not studied. Length about 3.0 mm. Described from N Syria ***delagrangi*** PIC, 1903.
- Elytra finely punctate, relatively densely pilose. Aedeagus as in figs **3845, 3846**, on underside runs on whole length a deep furrow, narrowed in apical part. Length about 2.5 mm. Described from Azerbaidzhan, known also from Georgia (Central-Caucasus) ***pubipennis*** REITTER, 1892.
3. Impressions on hind part of pronotum very shallow, almost disappearing 14.
- Impressions on hind part of pronotum well-developed; transverse furrow more shallow, longitudinal furrows usually sharply incised 4.



Figs 3845-3854. Aedeagus in dorsal, ventral and lateral view (3845, 3846 orig., remaining after HEIKERTINGER 1925): 3845, 3846 - *Derocrepis (Aeschrocnemis) pubipennis*; 3847, 3848 - *D. (A.) serbica*; 3849, 3850 - *D. (A.) merditensis*; 3851, 3852 - *D. (A.) jailensis*; 3853, 3854 - *D. (A.) laterufa*.

4. General view as in plate XC, **phot. 805**. Aedeagus (figs **3847, 3848**) in lateral view weakly but distinctly wavy. Length 2.4-3.3 mm (*strangulata* ALLARD, 1860, *bicolor* WEISE, 1886). Distributed in Balkan Peninsula, Asia Minor and Caucasian countries ***serbica*** (KUTSCHERA, 1860).

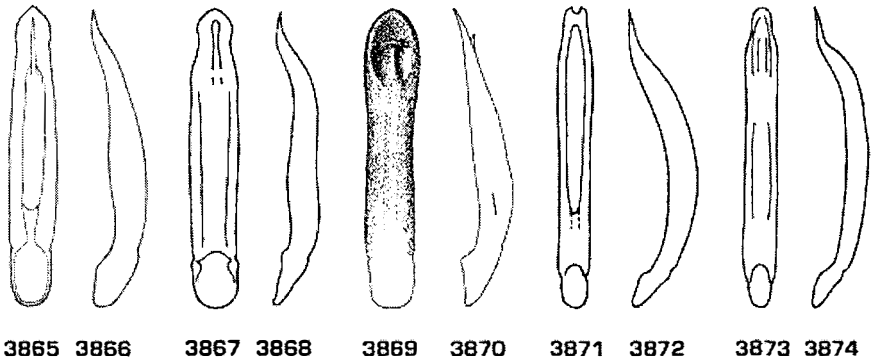
- Aedeagus in lateral view gently bent, straight or indistinctly wavy 5.
- 5. External characters as in forms of *serbica* (thesis 4) with red coloured pronotum. Aedeagus (figs **3849**, **3850**) distinctly constricted before apex. General colouring lighter as in *serbica*, in females pronotum orange-red, the species tends to rufinismus. Length over 3.0 mm. Known from Albania only *merditensis* (HEIKERTINGER, 1922).
- Not as above 6.
- 6. Pronotum in females always black 7.
- Pronotum black in melanotic specimens only 8.
- 7. Larger. Lateral sides of pronotum only weakly rounded. Aedeagus (figs **3851**, **3852**) in general outline, also in lateral view, similar as in *serbica*. Length 2.2–2.4 mm. Distributed in Crimea *jailensis* (HEIKERTINGER, 1922).
- Smaller. Lateral sides of pronotum rather strongly rounded. Rows of punctures on elytra deep, furrow-shaped, intervals convex, smooth. Aedeagus as in figs **3853**, **3854**. Length 2.1–2.8 mm. Distributed in Caucasian countries (Georgia) *laterufa* (PIC, 1909).
- 8. Elytra in male black with green or blue reflex. Pronotum moderately strongly punctured, elytral rows not furrow-shaped, intervals distinctly, moderately strongly punctured. Length 2.2–2.8 mm. Aedeagus as in figs **3855**, **3856**. Distributed in N Caucasus *ossetica* (HEIKERTINGER, 1922).
- Not as above 9.



Figs 3855–3864. Aedeagus in dorsal, ventral and lateral view (3855–3858 after HEIKERTINGER 1925; 3859, 3860 after GRUEV 1995; remaining after GRUEV 1974): 3855, 3856 – *Derocrepis (Aeschrocnemis) ossetica*; 3857, 3858 – *D. (A.) peloponnesiaca*; 3859, 3860 – *D. (A.) anatolica*; 3861, 3862 – *D. (A.) rhodopensis*; 3863, 3864 – *D. (A.) rhilensis*.

- 9. Pronotum finely punctured, primary punctures on elytra moderately strong. On elytra intervals smooth, impunctate. Male unknown. Length (female) over 3.0 mm. Distributed in W and S Caucasus *caucasica* (WEISE, 1886).
- Not as above 10.

10. At anterior seta on pronotum a small, sharp angle, similar as in *graeca* (thesis 14). Punctuation of pronotum strong or moderately strong, lateral sides weakly rounded. Aedeagus as in figs **3857, 3858**. Length 1.9–2.5 mm. Distributed in Greece *peloponnesiaca* (HEIKERTINGER, 1922).
 – Pronotum without sharp tooth in anterior angle **11**.
11. Pronotum strongly and densely punctured, punctuation of elytral intervals also distinct. Aedeagus as in figs **3859, 3860**. Distributed in Anatolia *anatolica* (HEIKERTINGER, 1922).
 – Pronotum not strongly and densely punctured. Three species from Bulgaria and Serbia **12**.
12. Aedeagus (figs **3861, 3862**) with broadening on ventral side before apex. Length 2.5–3.4 mm. Described from Rhodope Mts. in Bulgaria *rhodopensis* (GRUEV, 1974).
 – On ventral side of aedeagus no broadening **13**.



Figs 3865–3874. Aedeagus in dorsal, ventral and lateral view (3865, 3866 after GRUEV 1979; 3869, 3870 after WARCHAŁOWSKI 1998; 3871, 3872 after DOGUET 1994; remaining after HEIKERTINGER 1925): 3865, 3866 – *Derocrepis (Aeschrocnemis) slavica*; 3867, 3868 – *D. (A.) graeca*; 3869, 3870 – *D. (A.) whiteheadi*; 3871, 3872 – *D. (Derocrepis) sodalis*; 3873, 3874 – *D. (D.) rufipes*.

13. Aedeagus as in figs **3863, 3864**. Pronotum with rounded lateral sides, in female yellowish. Length 2.3–2.9 mm. Described from Rhila Mts in Bulgaria *rhilensis* (GRUEV, 1974).
 – Aedeagus as in figs **3865, 3866**. External characters as in allied species, particularly similar to *serbica* s. str. (thesis 4) and *jailensis* (thesi 7). Length 2.3–2.8 mm, distributed in W Bulgaria and Serbia (Kosovo) *slavica* GRUEV, 1979.
14. Aedeagus (fig. **3867, 3868**) before apex narrowed, in lateral view gently sinuate. Length 2.5–2.9 mm (= *obscurithorax* PIC, 1909). Distributed in Peloponnes and Ionian Islands *graeca* (ALLARD, 1884).
 – Aedeagus (figs **3869, 3870**) before apex widened, in lateral view straight. Length 2.6–2.8 mm. Described from Lycia (Turkey) *whiteheadi* WARCHAŁOWSKI, 1998.

Subgenus *Derocrepis* WEISE, 1886

Derocrepisomus PIC, 1911

Key to species

1. Apex of aedeagus (figs **3871**, **3872**) deeply incised. Length 3.3–4.2 mm (= *scutellaris* PIC, 1910). Distributed in Alps and Apennines **sodalis** (KUTSCHERA, 1860).
- . Apex of aedeagus not incised. General view as in plate XC, **phot. 804**. Aedeagus as in figs **3873**, **3874**. Length 2.9–3.6 mm (= *ruficornis* FABRICIUS, 1792, *latithorax* PIC, 1911). Distributed in Europe and Asia from Spain, the British Isles and S Sweden to Mid Siberia and Sayan Mts **rufipes** (LINNAEUS, 1758).

Genus *Dibolia* LATREILLE, 1829

Literature: MOHR 1981.

Key to subgenera

1. Underside of first tarsomere of hind tarsi covered by setae on almost whole length (= *Petalopus* MOTSCHULSKY, 1845) **Dibolia** s. str. (p. 805).
- . Underside of first tarsomere of hind tarsi covered by setae in apical part only, basal part on at least 1/3 length bare and usually more slende (= *Pseudodibolia* IABLOKOFF-KHNZORIAN, 1968) **Eudibolia** (p. 814).

Subgenus *Dibolia* s. str.

Key to species

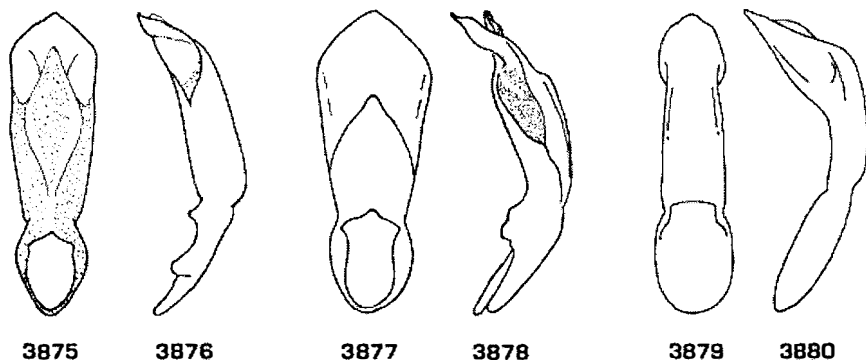
1. W Palaearctic species **2**.
- . E Palaearctic species **32**.
2. Claw tarsomere in fore and usually also in hind legs long, 3 × or more longer than short tarsomere 3 **3**.
- . Claw tarsomere normal, tarsomere 3 not shortened **5**.
3. Upper side in both sexes silky, dark green, sometimes with bluish reflex, very finely punctured, puncturation partly somewhat indistinct. Elytra without any trace of humeral callus. General view as in plate XC, **phot. 808**. Aedeagus as in figs **3875**, **3876**. In spermatheca pump (collum+pileum) very small. Length 3.1–3.3 mm (= *turkmenica* IABLOKOV-KHNZORIAN, 1978). One subspecies (subsp. *corpulenta* MOHR, 1981) was described based on one male only. It is larger (3.4 mm) and differs from the nominotypical subspecies by somewhat more distinct puncturation of upper side; perhaps an individual or local variation. Distributed in Kirgisia and Turkmenistan **tshatcalica** PALIY, 1968.
- . Upper side at least in male not silky, distinctly punctured, interstices shining **4**.
4. In male first tarsomere of fore legs weakly widened. Upper side in both sexes shining, metallic blue with greenish reflex, covered by strong and deep punctures, on elytra somewhat more densely scattered than on pronotum. Antennomeres 1–6 and legs except for hind femora orange. Humeral calli distinct. Aedeagus as in figs **3877**,

3878. Length about 3.5 mm. Described from Tadzhikistan

..... *mesasiatica* LOPATIN, 1965.

- In male first tarsomere of fore legs distinctly, moderately strong widened. Upper side in female silky, in male shining, metallic bronzy. In well-sclerotified specimens all femora blackish, remaining parts of legs yellowish-brown. In immature speimens hind femora black, fore and mid femora darkened. Length about 3.2 mm. Described from N Iran based on 6 specimens, but all males are immatur. Aedeagus not studied

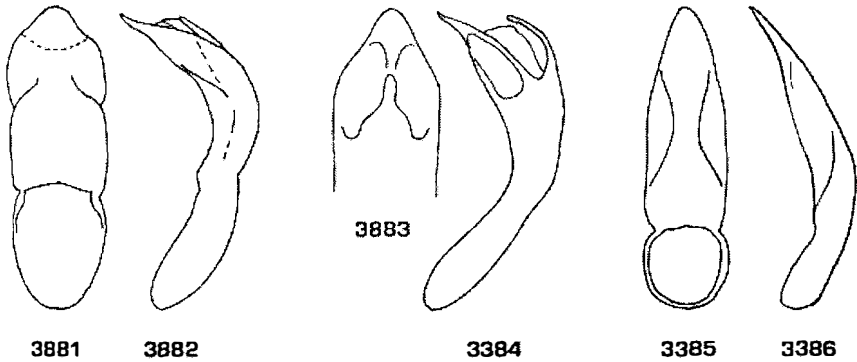
..... *iranica* MOHR, 1981.



Figs 3875-3880. Aedeagus in ventral and lateral view (3879, 3880 after DOGUET 1994, remaining after LOPATIN 1977): 3875, 3876 - *Dibolia (Dibolia) tshatkalica*; 3877, 3878 - *D. (D.) mesasiatica*; 3879, 3880 - *D. (D.) pelleti*.

- 5. Fore and mid legs entirely pale, hind femora usually coloured similarly to fore legs ... 6.
- Fore and mid legs usually with darkened femora 7.
- 6. Species from W Europe and N Africa Body very broad and convex, lateral sides of elytra rounded. Upper side with green or cupreous metallic sheen, sometimes pronotum cupreous and elytra blue-violaceous. Legs reddish yellow, hind femora darker, with metallic reflex. In male first tarsomere of fore tarsi feebly broadened. Aedeagus as in figs **3879**, **3880**, spermatheca not studied. Length 2.6-2.8 mm (= *vaulogeri* PIC, 1909, *dimidiata* FUENTE, 1910, *ifranensis* HOFFMANN, 1953). Distributed in NW Africa, Iberian Peninsula and S France *pelleti* ALLARD, 1860.
- 7. Antennal furrow absent or very short, without sharp ridge on upper margin 26.
- Antennal furrow long, usually with sharp ridge on upper margin 8.
- 8. Frontal pores joined by a straight, sharp furrow. Frontal calli separated by median longitudinal furrow. Body usually slender 9.
- Frontal pores free or joined by a indistinct, bent line. Frontal calli separated by a pit or by an indistinct line. Body more broadly rounded 11.
- 9. On average larger, spindle-shaped In male first tarsomere of fore tarsi very strongly widened. Aedeagus as in figs **3881**, **3882**, spermatheca as in fig. **3893**. Length 2.6-3.1 mm (= *eryngii* BACH, 1859, *oranensis* PIC, 1909). Distributed in Europe in the

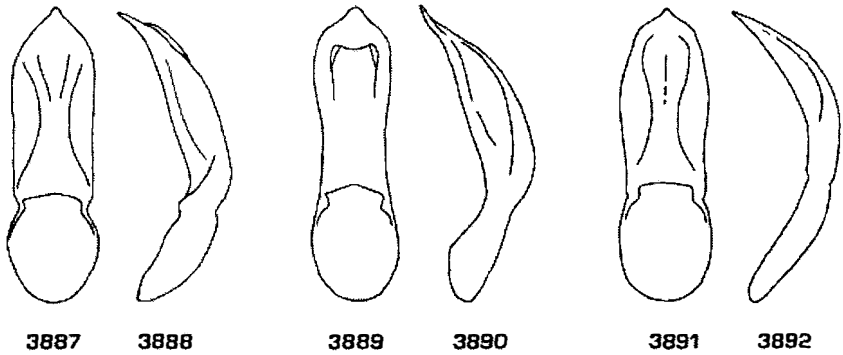
- north reaching to Netherlands, Germany and Poland as well as in N Africa (Morocco, Algeria, Tunisia) **timida** (ILLIGER, 1807).
- On average smaller. In male first tarsomere of fore tarsi moderately or weakly widened **10**.



Figs 3881-3886. Aedeagus in ventral and lateral view (3883, 3884 after MOHR 1981, remaining after DOGUET 1994): 3881, 3882 - *Dibolia (Dibolia) timida*; 3883, 3884 - *D. (D.) phoenicia*; 3885, 3886 - *D. (D.) djelfana*.

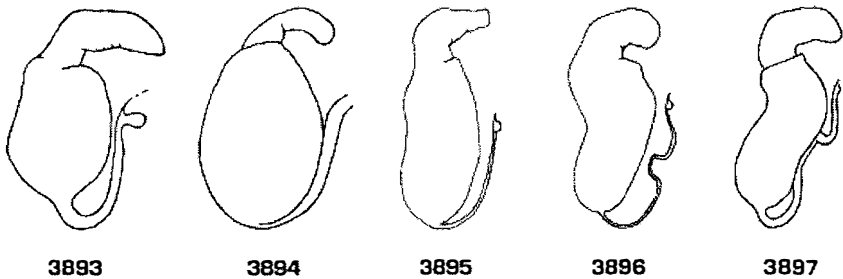
10. Elytra randomly punctate. Upper side strongly shining, cupreous or black-blue. Tibiae and tarsi brownish-yellow, all femora pitchy brown. Frons strongly, coarsely punctate. Aedeagus as in figs **3883**, **3884**, spermatheca as in fig. **3894**. Length 2.2-2.5 mm (= *orientalis* WEISE, 1893, *cyanescens* WEISE, 1893). Distributed in Asia Minor, Caucasian countries and Near East, reported also from Hungary and Balkans **phoenicia** ALLARD, 1866.
- Elytral puncturation arranged in semiregular rows. Upper side black, shining. Hind wings and humeral calli present. Punctures of upper side everywhere uniform. Aedeagus as in figs **3885**, **3886**, spermatheca as in fig. **3895**. Length 2.2-2.8 mm. Distributed in Morocco, Algeria and Tunisia **djelfana** DOGUET, 1975.
11. Upper side black, at least with feeble greenish, bluish or violaceous metallic reflex ...
..... **12**.
- Metallic sheen of upper side strong, vivid **16**.
12. Species from N Africa **13**.
- Species from Europe and Asia **14**.
13. Frontal pores joined by sharp, thin, straight furrow. (See *djelfana*, antithesis 10).
- Frontal pores free. Aedeagus as in figs **3887**, **3888**, spermatheca as in fig. **3896**. Length about 2.0 mm. Distributed in Algeria, Tunisia and Sicily
..... **maura** ALLARD, 1860.
14. Humeral calli absent. Aedeagus as in figs **3889**, **3890**, spermatheca as in fig. **3897**. Length 2.5-2.9 mm. Distributed in Alps and Apennine **alpestris** MOHR, 1981.
- Humeral calli sometimes small, but always distinct. In male first tarsomere of fore tarsi very feebly broadened **15**.

15. All tibiae pale, reddish yellow. Antennae also pale, apical 3–4 antennomeres slightly darkened. Upper side pure black. Aedeagus as in figs **3891**, **3892**, spermatheca as in fig. **3898**. Length 2.6–3.5 mm (= *buglossi* Foudras, 1860, *foudrasi* Mulsant et Rey, 1874). Lives on *Betonica officinalis* L. (*Lamiaceae*). Distributed in Europe from Spain and Belgium to Ukraine, reported also from Armenia *foersteri* BACH, 1859.
- . Fore and mit tibia as well as antennomeres 6–11 strongly darkened. Aedeagus as in figs **3903**, **3904**, spermatheca as in fig. **3899**. Length 2.6–2.9 mm (= *laevicollis* Foudras, 1860, *marrubii* Hering, 1924). Lives on various *Lamiaceae*, mostly on *Ballota nigra* L. Distributed from Pyrenees and Belgium to Asia Minor, Caucasian countries, Kazakhstan and Mongolia *depressiuscula* Letzner, 1846.



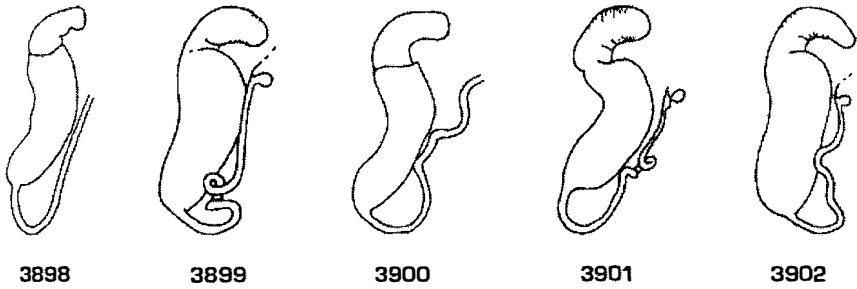
Figs 3887–3892. Aedeagus in ventral and lateral view (3889, 3890 after Mohr 1981, remaining after Doguet 1994): 3887, 3888 – *Dibolia (Dibolia) maura*; 3889, 3890 – *D. (D.) alpestris*; 3891, 3892 – *D. (D.) foersteri*.

16. Tibiae and tarsi pale, at most hind tibiae slightly darkened **22**
- . Tibiae and tarsi brownish, usually with paler joints **30**.



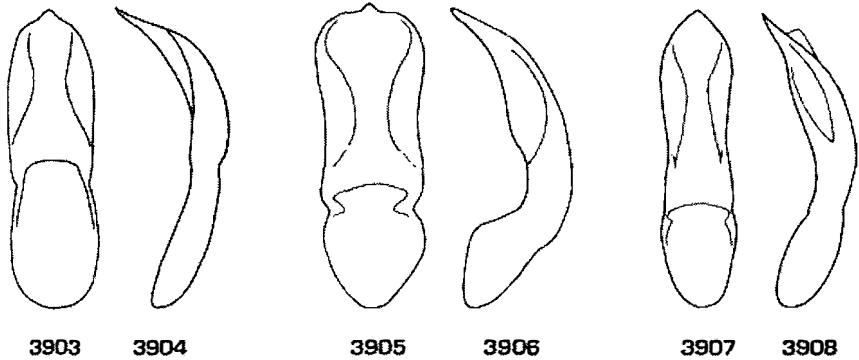
Figs 3893–3897. Spermatheca (3894 and 3897 after Mohr 1981, remaining after Doguet 1994): 3893 – *Dibolia (Dibolia) timida*; 3894 – *D. (D.) phoenicia*; 3895 – *D. (D.) djelfana*; 3896 – *D. (D.) maura*; 3897 – *D. (D.) alpestris*.

17. Species from Caucasian countries **23.**
 -. Species from Europe and N Africa **26.**



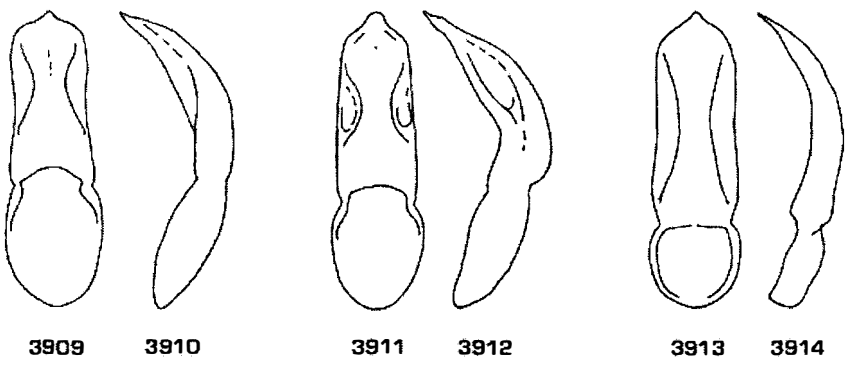
Figs 3898-3902. Spermatheca (3898 and 3901 after MOHR 1981, remaining after DOGUET 1994): 3898 – *Dibolia (Dibolia) foersteri*; 3899 – *D. (D.) depressiuscula*; 3900 – *D. (D.) weisei*; 3901 – *D. (D.) kralii*; 3902 – *D. (D.) cynoglossi*.

18. On average larger, body length 2.8–3.5 mm. Aedeagus (figs **3905, 3906**) short and broad, its apex almost transversely cut, with little tooth-like lamella. Spermatheca as in fig. **3900**. Described from Georgia ***weisei*** MOHR, 1981.
 -. On average smaller, body length 2.5–3.0 mm. Apex of aedeagus forms a pointed arc **24.**
19. Elytra longer, pronotum barely narrower than basis of elytra **25.**
 -. Elytra shorter and broader, pronotum distinctly narrower than basis of elytra. Wingless. Externally similar to *alpestris* (thesis 14), body strongly convex. Aedeagus as in figs **3907, 3908**, spermatheca as in fig. **3901**. Length 2.5–2.8 mm. Distributed in Transcaucasus (NW Iran, Azerbaijan) and NW Turkey ***kralii*** MOHR, 1981.



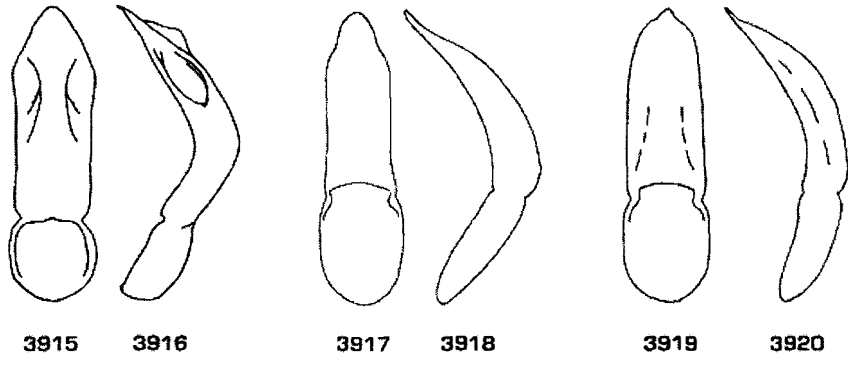
Figs 3903-3908. Aedeagus in ventral and lateral view (3905, 3906, 3909, 3910 after MOHR 1981, remaining after DOGUET 1994): 3903, 3904 – *Dibolia (Dibolia) depressiuscula*; 3905, 3906 – *D. (D.) weisei*; 3907, 3908 – *D. (D.) kralii*.

20. Pronotum shining. See *cynoglossi* (thesis 22).
 -. Pronotum silky. See *rugulosa* (thesis 23).
 21. Length 2.5–3.0 mm 22
 -. Length 2.2–2.5 mm 24



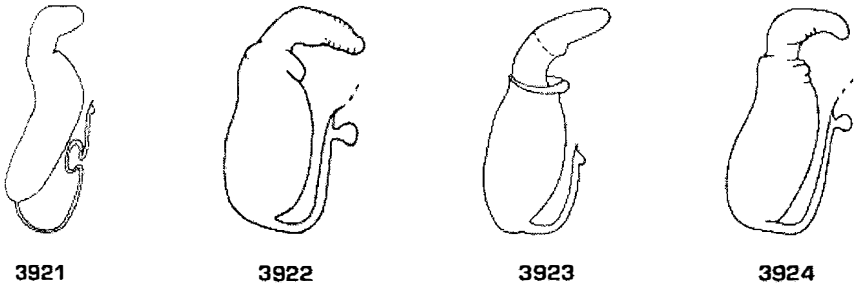
Figs 3909-3914. Aedeagus in ventral and lateral view (3909, 3910 after DOGUET 1975, remaining after DOGUET 1994): 3909, 3910 – *Dibolia (Dibolia) cynoglossi*; 3911, 3912 – *D. (D.) rugulosa*; 3913, 3914 – *D. (D.) peyerimhoffi*.

22. Pronotum strongly punctate, shining. Upper side black with moderately strong, greenish-cupreous metallic sheen. All femora black, hind tibiae darkened, remaining parts of legs reddish yellow. Aedeagus as in figs **3909**, **3910**, spermatheca as in fig **3902**. Length 2.5–3.0 mm (= *paludina* FOU DRAS, 1860). Lives on various *Lamiaceae*. Distributed in Europe from Spain and the British Isles to Ukraine, reported also from Armenia ***cynoglossi* KOCH, 1803.**
 -. Pronotum finely punctate **23**



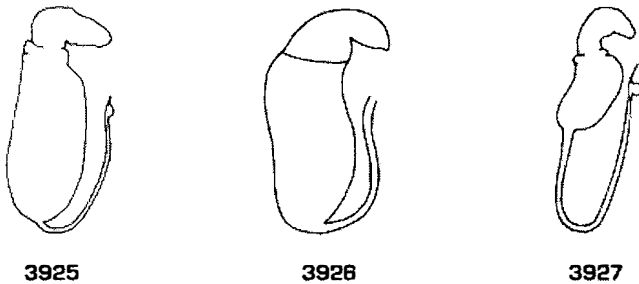
Figs 3915-3920. Aedeagus in ventral and lateral view (3915, 3916 after DOGUET 1975, remaining after DOGUET 1994): 3915, 3916 – *Dibolia (Dibolia) chevrolati*; 3917, 3918 – *D. (D.) occultans*; 3919, 3920 – *D. (D.) cryptocephala*.

23. Pronotum and elytra silky. Body colouring as in *cynoglossi* (thesis 22). Aedeagus as in figs 3911, 3912. Length 2.4–3.3 mm. Distributed from France and Belgium to Russia, Ukraine and Caucasian countries ***rugulosa*** REDTENBACHER, 1849.
- Pronotum not silky. See *pelleti* (antithesis 6).



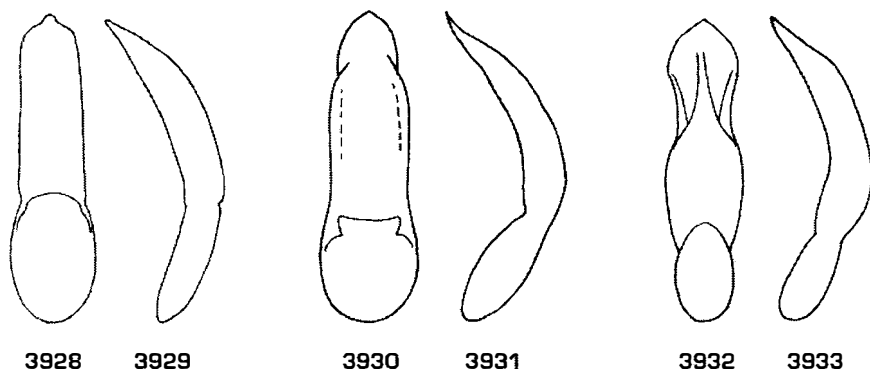
Figs 3921-3924. Spermatheca (after DOGUET 1994): 3921 – *Dibolia (Dibolia) peyerimhoffi*; 3922 – *D. (D.) occultans*; 3923 – *D. (D.) obtusa*; 3924 – *D. (D.) cryptocephala*.

24. Species from N Africa. Body convex, elytra subparallel. Upper side with bronzy-green sheen, primary punctures on elytra arranged in distinct rows. All femora pitchy, hind tibiae brownish, remaining parts of legs reddish-yellow. Aedeagus as in figs 3913, 3914, spermatheca as in fig. 3921. Length 2.2–2.5 mm. Distributed in Algeria and Morocco ***peyerimhoffi*** DOGUET, 1975.
- Species from SE Europe and E Mediterranean area. See *phoenicia*, thesis 10.
25. On upper side metallic reflex or sheen very distinct, sometimes strong. Frontal pores situated close by eye. Elytra silky, very finely punctate. Aedeagus as in figs 3915, 3916. Length 2.4–2.5 mm. Distributed in Mediterranean area from Algeria and Spain to Greece, Israel and Syria ***chevrolati*** ALLARD, 1861.
- Metallic reflex of upper side absent or weak, usually greenish-blue. Distance between eye margin and frontal pores equal to their diameter. See *alpestris* (thesis 14).



Figs 3925-3927. Spermatheca (after DOGUET 1994): 3925 – *Dibolia (Dibolia) numidica*; 3926 – *D. (D.) tyrrhenica*; 3927 – *D. (D.) weyreti*.

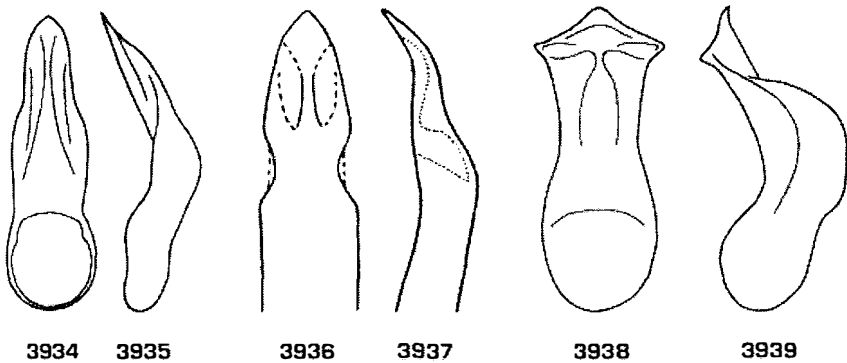
26. First antennomere at least basally darkened, legs almost black 27.
 – First antennomere and tarsi pale 28.
27. Punctuation on pronotum stronger. Body slender. Aedeagus as in figs **3917**, **3918**, spermatheca as in fig. **3922**. Length 2.3–2.8 mm (= *menthae* HERING, 1924). Distributed in Europe except the British Isles, in north reaching to S Sweden and Latvia. Known also from Morocco, Algeria, Caucasian countries, moreover reported from Canary Islands **occultans** (KOCH, 1803).
 – Punctuation on pronotum finer. Spermatheca as in fig. **3923**. Length less than 2.5 mm. Poorly studied species known from Fuerteventura (Canary Islands) only **obtusa** WOLLASTON, 1864.
28. Humeral calli absent. General view as in plate XC, **phot. 806**. Aedeagus as in figs **3919**, **3920**, spermatheca as in fig. **3924**. Length 1.9–2.6 mm. Distributed in a great part of Central and S Europe approximately to 53° N, Caucasian countries, Turkmenistan and Kazakhstan **cryptocephala** (KOCH, 1803).
 – Humeral calli distinct 29.
29. Length over 2.5 mm. Similar to *cryptocephala* (thesis 28), but on average larger, stronger punctate, humeral calli present. Aedeagus (figs **3928**, **3929**) not very characteristic, in dorsal view parallel, apically rounded, with lamella; in lateral view almost straight. Spermatheca as in fig. **3927**. Length 2.5–2.8 mm. Known from S France only **veyreti** DOGUET, 1975.
 – Length under 2.4 mm 30.



Figs 3928–3933. Aedeagus in ventral and lateral view (3928, 3929 after DOGUET 1994, remaining after MOHR 1981): 3928, 3929 – *Dibolia (Dibolia) veyreti*; 3930, 3931 – *D. (D.) numidica*; 3932, 3933 – *D. (D.) tyrrenica*.

30. Upper side usually bicolorous: pronotum black with bronzy reflex, elytra dark blue-violetaceous. Punctures of elytra weak, arranged in semiregular rows. Aedeagus as in figs **3930**, **3931**, spermatheca as in fig. **3925**. Length 2.0–2.4 mm. Distributed in Algeria and Tunisia **numidica** DOGUET, 1972.
 – Upper side unicolorous, black with weak bronzy reflex 31.

31. Upper side moderately strongly or finely punctate. Frontal tubercles smooth, distinctly limited. Aedeagus as in figs 3932, 3933, spermatheca as in fig. 3926. Length about 2.4 mm. Distributed in Toscana, Sicily and Malta **tyrrhenica** MOHR, 1981.
- Upper side strongly or very strongly punctate, punctures arranged in semiregular rows. Aedeagus as in figs 3934, 3935, female unknown. Length about 2.3 mm. Known from Spain only **dogueti** MOHR, 1981.
32. Antennae entirely pale. Upper side steel blue. Pronotum finely and closely punctate, the punctures distinctly larger at the sides than in the middle. Elytra narrower at base than pronotum, humeral calli indistinct. Primary puncturation of elytra arranged in longitudinal rows, all the rows more or less doubled. Aedeagus not studied. Length 3.2 mm. Described from N China (Inner Mongolia) based on one specimen (sex not determined) only **ordosana** CHEN, 1939.
- Antennomeres 1-4 or 2-4 reddish, 5-11 piceous or blackish **33**.
33. Primary puncturation of elytra very fine. Upper side greenish-blue, on pronotum with weak aeneous reflex. Legs dark, hind femora black with merallic reflex, remaining parts of legs pitchy, apices of tibiae and tarsi rufo-piceous. Vertex wrinkled and finely punctate; frontal tubercles strongly convex. Pronotum finely wrinkled, finely punctured on the disc, more strongly at sides. Elytra very closely reticulated, primary punctures extremely fine, at the sides almost disappearing, near suture arranged in irregular doubled rows. Aedeagus not studied. Length 2.8 mm. Described from China (Shansi), based on one specimen (sex not determined) only **sinensis** CHEN, 1939.
- Primary puncturation of elytra moderately strong **34**.



Figs 3934-3939. Aedeagus in ventral and lateral view (3936, 3937 after MEDVEDEV 1980, remaining after MOHR 1981): 3934, 3935 - *Dibolia (Dibolia) dogueti*; 3936, 3937 - *D. (D.) zaitzevi*; 3938, 3939 - *D. (Eudibolia) zangezurica*.

34. Upper side black with bluish reflex **35**.
- Upper side black with greenish, aeneous or coppery reflex **36**.
35. Fore and mid legs entirely red-brownish, Hind femora pitchy, hind tibia darkened. Puncturation of elytra relatively strong in anterior part, being gradually finer posteriorly. Length 2.8 mm. Insufficiently studied species, described from Japan (Hokkaido)

- based on one specimen (sex not determined) only. Compared with *foersteri* (thesis 15), differing by narrower frontal ridge and by fore legs entirely red
 **japonica** CHEN, 1933.
- . In well-sclerotified specimens all legs darkened, grey-brownish with reddish joints and tarsi. Puncturation of elytra random, only in scutellar area with traces of longitudinal rows. Aedeagus as in figs **3936, 3937**. Described from Mongolia
 **zaitzevi** MEDVEDEV, 1980.
36. First antennomere black. Its apex, antennomeres 2–4, fore and mid coxae, fore and mid tibiae with tarsi reddish. Hind tibiae and all claw tarsomeres darkened. Upper side blackish green with aeneous reflex. Primary puncturation of elytra slightly stronger than on pronotum, rather dense, indistinctly alineated. Aedeagus not studied. Length 2.9 mm. Distributed in Mongolia **potanini** WEISE, 1889.
- . Antennomeres 1–4 entirely reddish. Upper side blackish green with aeneous reflex. Tibiae and tarsi yellowish-red, fore femora pitchy, mid and hind femora coloured as upper side. Primary puncturation of elytra somewhat finer than on pronotum, arranged in regular rows, secondary puncturation of intervals also arranged in single rows running along the middle of interval. Aedeagus not studied. Length 2.8–3.3 mm. Distributed in China (Kirin, ?Sichuan) **velox** WEISE, 1889.

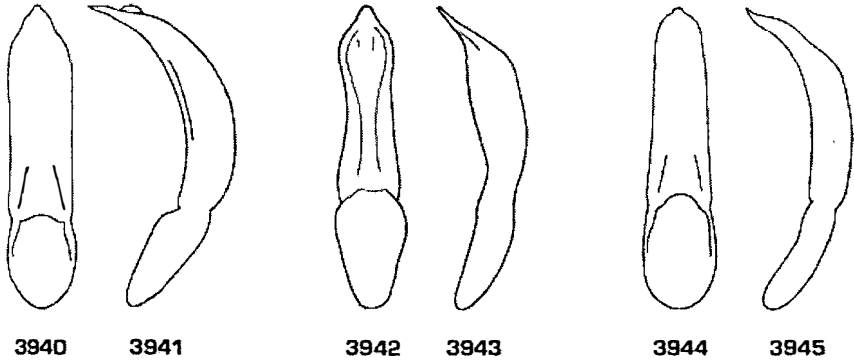
Subgenus **Eudibolia** IABLOKOFF-KHNZORIAN, 1968

Pseudodibolia IABLOKOFF-KHNZORIAN, 1968

Key to species

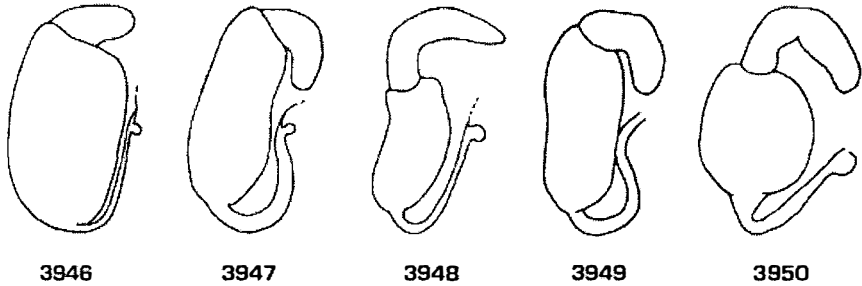
1. Apical part of aedeagus very characteristic, (figs **3938, 3939**) laterally tooth-like widened. General outline of body not oval, but rather broadly parallel. Spermatheca not studied. Length 3.3–3.7 mm. Distributed in Asia Minor, Caucasian countries and Iran **zangezurica** IABLOKOFF-KHNZORIAN, 1968.
2. Elytra densely covered by fine rugosities, silky shining, covered by fine puncturation tending to form semiregular rows. In male first tarsomere of fore tarsi very strongly widened. Upper side with bronzy or bronze-green metallic reflex, upper side black. General view as in plate XC, **phot. 807**. Aedeagus as in figs **3940, 3941**, spermatheca as in fig. **3947**. Length 3.1–3.7 mm (= *metallica* MOTSCHULSKY, 1845, *punctillata* FOUDRAS, 1860, *ciliciensis* HEIKERTINGER, 1911). Variation: primary sculpture of elytra coarse (ab. *ciliciensis* HEIKERTINGER, 1911; predominates in E Turkey and Caucasian countries, sometimes ranked as subspecies). Lives on *Salvia*, in Central Europe usually on *S. pratensis* L. Distributed from N Italy, Central Germany and Belgium to S Russia, Turkey, Caucasian countries, Tukmenistan and Kazakhstan
 **schillingii** (LETZNER, 1847).
- . Ground of elytra not rugose, puncturation usually somewhat stronger, except *russica* (antithesis 8) without traces of regular rows 3.
3. On elytra interstices smooth, at most with not numerous, indistinct, very small points 4.
- . On elytra interstices covered by distinct punctulation or by very fine scratches. Metallic reflex on pronotum and elytra different 9.

4. Length of body under 2.8 mm 7.
 -. Length of body over 3.0 mm 5.



Figs 3940-3945. Aedeagus in ventral and lateral view (3942, 3943 after MOHR 1981, remaining after DOGUET 1994): 3940, 3941 – *Dibolia (Eudibolia) schillingi*; 3942, 3943 – *D. (E.) magnifica*; 3944, 3945 – *D. (E.) femoralis*.

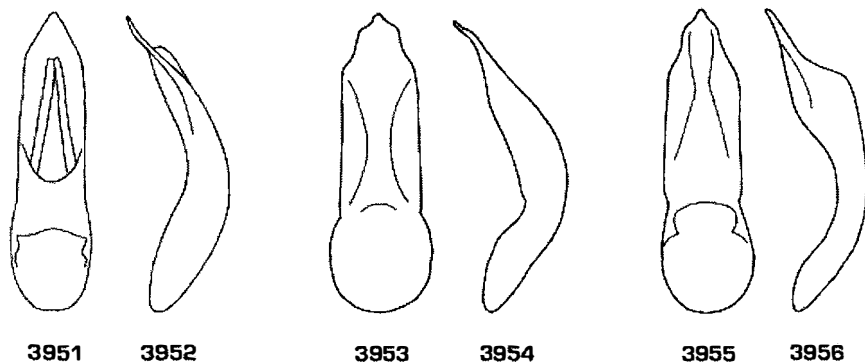
5. Lateral sides of elytra parallel. See *zangezurica* (thesis 1).
 -. Lateral sides of elytra rounded. Two externally very similar species, distinguishable by shape of aedeagus 6.



Figs 3946-3950. Spermatheca (3948 after MOHR 1981, remaining after DOGUET 1994): 3946 – *Dibolia (Eudibolia) pelleti*; 3947 – *D. (E.) schillingi*; 3948 – *D. (E.) femoralis*; 3949 – *D. (E.) rufofemorata*; 3950 – *D. (E.) carpathica*.

6. Canarian endemite. In male first tarsomere of fore tarsi very weakly widened. Aedeagus as in figs **3942**, **3943**, spermatheca not studied. Length about 3.5 mm. Known from Gran Canaria only ***magnifica*** LINDBERG, 1951.

- Not from Canary Islands. In male first tarsomere of fore tarsi very strongly widened, heart-shaped. Metallic sheen of upper side very distinct. Frons, particularly at eyes distinctly punctate, frontal calli large, flat, smooth, almost fused. Legs except hind femora reddish yellow. Aedeagus as in figs **3944**, **3945**, spermatheca as in fig. **3948**. Length 2.8–4.0 mm (= *aerata* DALMAN, 1823, *aurichalcea* FOERSTER, 1849, *theresae* PIC, 1909). In Iberian Peninsula and NW Africa occurs a race with red abdomen (subsp. *erythrogaster* ALLARD, 1861). Lives on *Salvia pratensis* L. Distributed in NW Africa, Europe north to Germany, Poland and Ukraine, in S Russia and Asia Minor **femoralis** REDTENBACHER, 1849.
- 7. Species from N Africa, upper side with strong cupreous sheen (see *pelleti*, antitthesis 6).
- Species from Europe and Asia, upper side differently coloured 8.
- 8. Elytra short oval, strongly and densely punctate. Legs pale with dark hind femora, length about 2.7 mm. Species from SE Europe and W Asia. Upper side shining, strongly punctate, often bicolorous (pronotum with bronzy, elytra with greenish-blue metallic sheen). In male first tarsomere of fore tarsi distinctly broadened. Aedeagus as in figs **3951**, **3952**, spermatheca as in fig. **3950**. Length 2.3–3.3 mm (= *transcaucasica* IABLOKOFF-KHNZORIAN, 1968). Distributed in Balkans, Hungary, Romania, southern Russia, Asia Minor, Caucasian countries, Kazakhstan and Near East **carpathica** WEISE, 1893.
- Elytra longer, very finely punctate, puncturation forms semiregular, longitudinal rows. Elytra broadest in 1/4 of length. Upper side dark blue. Male unknown, spermatheca not studied. Length about 2.8 mm. Distributed in Byelorussia, Ukraine and European Russia, reported also from Croatia **russica** WEISE, 1893.



Figs 3951-3956. Aedeagus in ventral and lateral view (after MOHR 1981): 3951, 3952 – *Dibolia* (*Eudibolia*) *carpathica*; 3953, 3954 – *D. (E.) rufofemorata*; 3955, 3956 – *D. (E.) tricolor*.

- 9. Pronotum black, elytra black-blue. Body relatively slender, lateral sides of elytra feebly rounded. Legs, including hind femora reddish yellow, sometimes all femora and mid part of tibiae darkened, brownish yellow. Frontal calli almost entirely flattened, barely perceptible. In male first tarsomere in fore and mid tarsi strongly broadened.

- Aedeagus as in figs **3953**, **3954**, spermatheca as in fig. **3949**. Length about 3.4 mm (= *notatipes* PIC, 1903, *marginicollis* ABEILLE, 1907). Distributed in Cyprus, Asia Minor and Near East ***rufofemorata*** REITTER, 1896.
- . Pronotum bronzy, elytra bluish or violaceous. Legs yellow, hind femora reddish yellow with darkened apical 1/3. In male first tarsomere strongly broadened in fore tarsi only. Aedeagus as in figs **3955**, **3956**, spermatheca not studied. Length 3.0–3.4 mm. Distributed in Asia Minor and Caucasian countries ***tricolor*** REITTER, 1898.

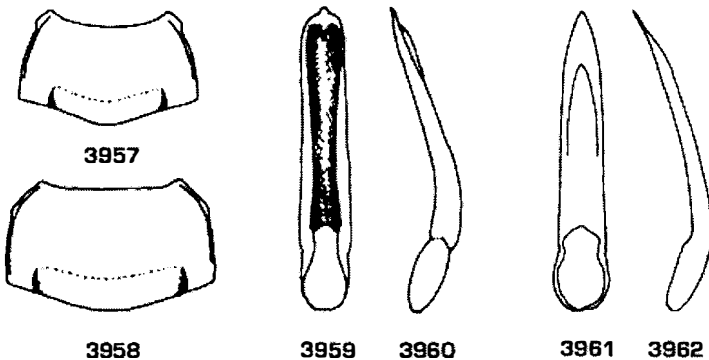
Genus ***Epitrix*** Foudras, 1861

Literature: DÖBERL 2000.

Epitrix auctorum

Key to species

1. W Palaearctic species **2**.
- . E Palaearctic species. Pronotum strongly and densely punctured, but punctures finer than on elytra. Transverse furrow on pronotum very shallow. Head and pronotum reddish brown, antennae and legs pale. Spermatheca as in fig. **3976**. Length 1.6–1.9 mm (= *wuorentausi* HEIKERTINGER, 1950). Distributed in Central and NE China and in E Siberia ***setosella*** (FAIRMAIRE, 1888).
2. Upper side at least partly pale coloured, yellow or brown **3**.
- . Upper side black, often with metallic reflex **6**.

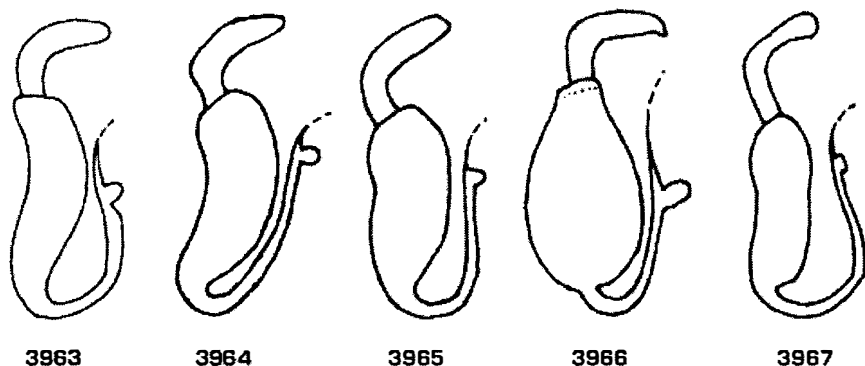


Figs 3957-3962. Pronotum, aedeagus in ventral and lateral view (3961, 3962 after DOGUET 1994, remaining after DÖBERL 2000): 3957 – *Epitrix atropae*; 3958 – *E. pubescens*; 3959, 3960 – *E. setosella*; 3961, 3962 – *E. atropae*.

3. Pronotum black. Elytra black almost always with dark yellowish apex. Legs and antennae pale, hind femora slightly but distinctly darkened. Thickening of anterior angles of pronotum (fig. **3957**) short, transverse impression very shallow, longitudinal impressions very short. Aedeagus as in figs **3961**, **3962**, spermatheca as in

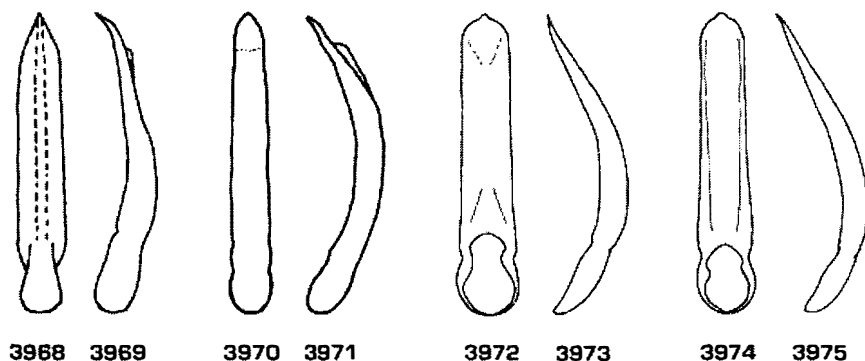
fig. 3964. General view as in plate XC, **phot. 809**. Length 1.5–2.0 mm. Variations: elytra entirely black (ab. *nigritula* WEISE, 1886), elytra entirely pale with traces of darker pattern (unnamed), elytra black with pale humeral and apical spots (ab. *quadrimaculata* WEISE, 1886). Distributed in Europe approximately to 54° N, in S to Algeria, Turkey and Caucasian countries

- Pronotum yellowish or brown 4.



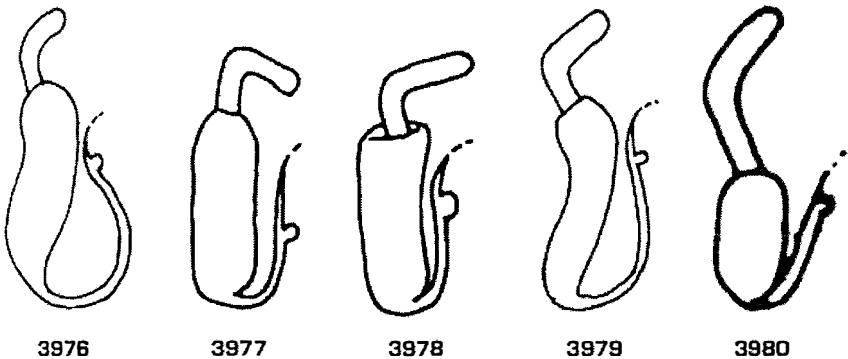
Figs 3963-3967. Spermatheca (after DÖBERL 2000): 3963 – *Epitrix setosella*; 3964 – *E. atropae*; 3965 – *E. allardi*; 3966 – *E. hirtipennis*; 3967 – *E. pubescens*.

- 4. Thickenings at anterior angles of pronotum long (fig. 3958). Here an aberration of *pubescens* (thesis 6).
- Thickenings at anterior angles of pronotum short (fig. 3957) 5.



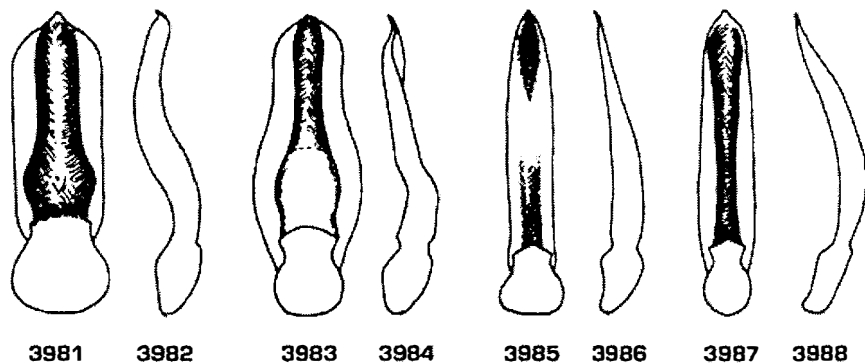
Figs 3968-3975. Aedeagus in ventral and lateral view (3972-3975 after DOGUET 1994, remaining after DÖBERL 2000): 3968, 3969 – *Epitrix allardi*; 3970, 3971 – *E. hirtipennis*; 3972, 3973 – *E. pubescens*; 3974, 3975 – *E. intermedia*.

5. Scutellar rows of points reaching behind midlength of suture. Head and pronotum reddish brown, elytra pale with darkened suture and usually with a darker, blurred transverse stripe. On pronotum impressions almost disappearing. Aedeagus as in figs **3968**, **3969**, spermatheca as in fig. **3965**. Length about 1.8 mm. Endemic to Canary Islands **allardi** (WOLLASTON, 1860).
- Scutellar rows of points not reaching to midlength of elytra. Upper side pale, elytra with darkened suture and with a darker, blurred transverse stripe. Aedeagus as in figs **3970**, **3971**, spermatheca as in fig. **3966**. Length 1.6–2.0 mm. American species, pest of tobacco cultures, introduced to Greece, Italy and Asia Minor **hirtipennis** (MELSHEIMER, 1847).
6. Thickenings at anterior angles of pronotum long (fig. **3958**), at anterior seta usually without a protruding, tooth-like angle. Upper side normally pure black, antennae and legs pale, hind femora darkened. Aedeagus as in figs **3972**, **3973**, spermatheca as in fig. **3967**. Length 1.5–2.0 mm (= *lencorana* PIC, 1903, *suturalis* BEDEL, 1897). Variation: upper side reddish brown, with darkened suture and lateral sides of elytra (ab. *ferruginea* WEISE, 1886). Broadly distributed in Europe and Mediterranean area (except for African part) from Azores, the British Isles and Sweden to W Siberia. Here perhaps *ogloblini* KHNZORIAN, 1960, a doubtful species described from Armenia based on one specimen (sex unknown) only **pubescens** (KOCH, 1803).
- Thickenings at anterior angles of pronotum short (fig. **3957**) 7.
7. Scutellar row short. Pronotum strongly and densely punctate, its ground reticulated. Thickenings of anterior angles of pronotum with a little, sharp tooth. Aedeagus as in figs **3974**, **3975**. Length 1.7–2.1 mm. Distributed in European part of Mediterranean area, Balkans, Asia Minor and Caucasian countries **intermedia** FOUDRAS, 1860.
- Scutellar row long. Here several species distinguishable by shape of aedeagus, having following common characters: length usually under 2.0 mm, primary punctures of upper side distinct and sharply impressed, in male first tarsomere of anterior legs weakly or at most moderately widened **8**.
8. Males **9**.
- Females **17**.



Figs 3976-3980. Spermatheca (after DÖBERL 2000): 3976 – *Epitrix setosella*; 3977 – *E. dieckmanni*; 3978 – *E. priesneri*; 3979 – *E. warchalowskii*; 3980 – *E. muehlei*.

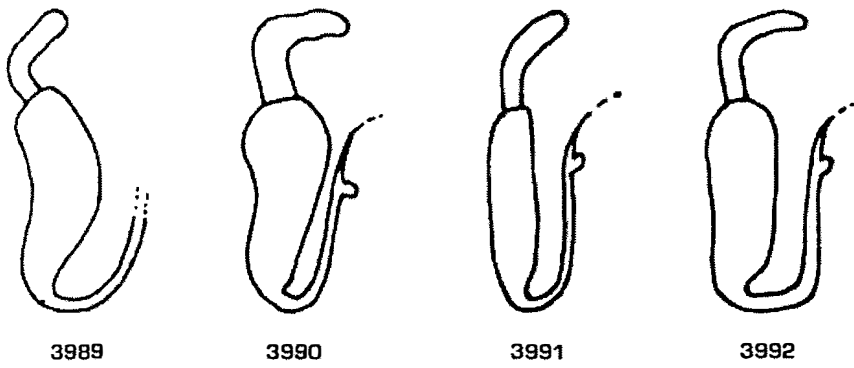
9. Aedeagus short and broad, in dorsal view at most 3 × longer than broad 10.
 – Aedeagus slender, at least 4 × longer than broad 11.
10. Body black, antennae, tibiae and tarsi pale, apex of last antennomere and all femora black. Last abdominal sternite with a great, shallow impression. Aedeagus as in figs **3981**, **3982**, spermatheca as in fig. **3977**. Length 1.4–1.8 mm (= *palijsi* GRUEV, 1975). Distributed in Near East, Saudi Arabia, Iran and Turkmenia *dieckmanni* MOHR, 1968.
- Coloration of body as in *dieckmanni* (thesis 10). Aedeagus as in figs **3983**, **3984**, spermatheca as in fig. **3978**. Length 1.4–1.6 mm. Distributed in Egypt, Yemen, Oman, Saudi Arabia and Iran *priesneri* HEIKERTINGER, 1950.



Figs 3981-3988. Aedeagus in ventral and lateral view (after DÖBERL 2000): 3981, 3982 – *Epitrix dieckmanni*; 3983, 3984 – *E. priesneri*; 3985, 3986 – *E. warchalowskii*; 3987, 3988 – *E. muehle*.

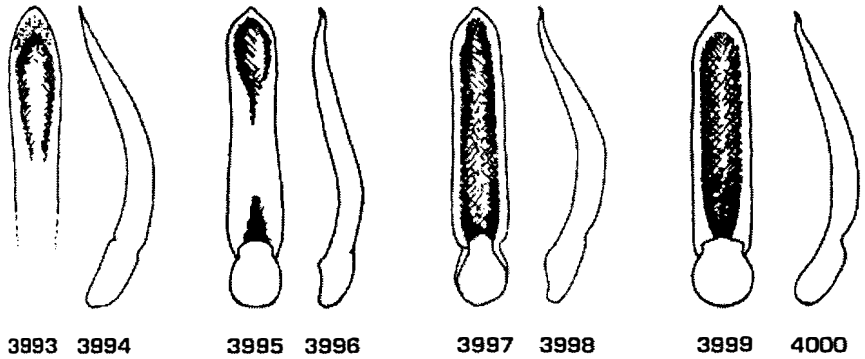
11. Apex of aedeagus sharp. Here black forms of *atropae* (thesis 3).
 – Apex of aedeagus rounded, often with a little lamella 12.
12. Aedeagus (figs **3985**, **3986**) in lateral view almost straight, spermatheca as in fig. **3979**. Antennae and legs pale, all femora more or less darkened. Length 1.5–1.8 mm. Distributed in Iran and Tadzhikistan *warchalowskii* MOHR, 1968.
- Aedeagus in lateral view distinctly bent 13.
13. In lateral view apical part of aedeagus uniformly feebly bent up 14.
 – In lateral view very tip of aedeagus shortly bent down 15.
14. On under side of aedeagus (figs **3987**, **3988**) the median concavity runs on whole length. Spermatheca (fig. **3980**) with very short vasculum. Transverse furrow on pronotum very weak. Length 1.6–1.9 mm. Distributed in Arabian Peninsula *muehle* DÖBERL, 2000.
- On under side of aedeagus (figs **3993**, **3994**), spermatheca as in fig. **3989**, the median concavity present in apical part only. Transverse furrow on pronotum distinct. Length about 1.5 mm. Distributed in Iran, Turkmenistan and Uzbekistan *ermischi* MOHR, 1968.
15. Aedeagus in dorsal view subparallel, on underside the median concavity runs on whole length 16.

- Aedeagus in dorsal view slightly narrowed in the middle of tubular part, on underside the median concavity, somewhat spoon-shaped, is present only in apical part and near base. Length 1.6–2.0 mm. Broadly distributed from Egypt and Turkey to Mongolia and N China **abeillei** (BAUDUER, 1874).



Figs 3989-3992. Spermatheca (after DÖBERL 2000): 3989 – *Epitrix ermischii*; 3990 – *E. abeillei*; 3991 – *E. krali*; 3992 – *E. caucasica*.

- 16. Frontal furrows form a right angle. Aedeagus as in figs 3997, 3998, spermatheca as in fig. 3991. Length 1.3–1.6 mm. Described from Tadzhikistan **krali** DÖBERL, 2000.
- Frontal furrows situated arcuately. Aedeagus as in figs 3999, 4000, Length 1.3–1.6 mm. Distributed from Turkey, S Russia and Transcaspia to W Himalaya **caucasica** (HEIKERTINGER, 1950).



Figs 3993-4000. Aedeagus in ventral and lateral view (after DÖBERL 2000): 3993, 3994 – *Epitrix ermischii*; 3995, 3996 – *E. abeillei*; 3997, 3998 – *E. krali*; 3999, 4000 – *E. caucasica*.

- 17. Last abdominal sternite with a little, ovale impression (*priesneri*, antithesis 10).
- . Last abdominal sternite without impression 18.
- 18. Spermatheca conspicuously small, its vasculum only about 60 µm long (*muehlei*, thesis 14).
- . Spermatheca of normal size, its vasculum much more longer than 60 µm 19.
- 19. In lateral view dorsal side of spermatheca straight 20.
- . In lateral view dorsal side of spermatheca concave 22.
- 20. Vasculum slender, about 3.5 × longer than thick (*krali*, thesis 16).
- . Vasculum more stout, about 2.5 × longer than thick 21.
- 21. Proximal part of ductus spermathecae (fig. 3992) somewhat angulately bent (*caucasica*, antithesis 16).
- . Proximal part of ductus spermathecae (fig. 3977) roundish bent (*dieckmanni*, thesis 10).
- 22. Proximal part of ductus spermathecae narrowly bent 24.
- . Proximal part of ductus spermathecae more broadly bent 23.
- 23. Upper side with feeble metallic reflex. Spermatheca as in fig. 3990 (*abeillei*, antithesis 15).
- . Upper side without any metallic reflex. Spermatheca as in fig. 3964 (*atropae*, thesis 3).
- 24. Spermatheca as in fig. 3979 (*warchalowskii*, thesis 12).
- . Spermatheca as in fig. 3989 (*ermischi*, antithesis 14).

Genus *Hemipyxis* DEJEAN, 1836

Literature: DÖBERL 2007.

Sebaethe BALY, 1864, *Epiotis* SOLSKY, 1872

The large genus *Hemipyxis* contains about 170 species distributed in Palaetropical superregion. It encoaches partly on E Palearctic subregion, from which six species are known.

Key to species

- 1. Pronotum and elytra uniformly dark, more or less similarly coloured. Body black, elytra with metallic, bluish, greenish or violaceous reflex 2
- . Pronotum and elytra differently coloured or upper side with pattern 5
- 2. Abdomen yellowish. Legs yellowish brown, apices of femora deep black. Length 4.8–5.8 mm. Distributed in Taiwan, reported also, perhaps erroneously, from Korea *flavipes* KIMOTO, 1978.
- . Abdomen black or pitchy 3
- 3. Pronotum with indefinite impressions. Vertex rugose, finely punctate. Frontal calli smooth. Elytra dark blue, somewhat silky, anterior angles of pronotum with weak denticles. General view as in plate XCI, phot. 812. Length 4.4–5.4 mm. Distributed in Japan and in Russian Far East *plagioderoides* (MOTSCHULSKY).
- . Pronotum without any impressions 4
- 4. Antennomere 4 more than 3 × longer than antennomere 2. Pronotum densely and strongly punctured, interspaces smooth and shining. Anterior angles of pronotum

- without denticles, rounded. Length 4.0–5.2 mm. Distributed in China from Sichuan to Heilungkiang, E Siberia, Russian Far East and Korea. Often confused with *plagioderoides* (thesis 3) **amurensis** (WEISE, 1887).
- . Antennomere 4 shorter as in *amurensis*. Mouth parts, antennae and legs dunkel. Basal antennomeres, tibiae and tarsi often somewhat lighter. Length 4.4–5.7 mm. Distributed in China from Xizang, Sichuan and Yunnan to Shansi and Heilungkiang **yunnanica** (CHEN, 1933).
5. Body black, two or three basal antennomeres paler, elytra reddish brown. Vertex distinctly punctured. General view as in plate XCI, **phot. 811**. Length 3.5–5.0 mm. Distributed in S China and Japan (Hokkaido, Honshu, Shikoku, Kyushu) **flavipennis** (BALY, 1874).
- . Body and legs yellowish orange or ochraceous. Antennae except for basal antennomeres and elytra except for rather broad lateral margins black. General view as in plate XC, **phot. 810**. Length 3.5–5.8 mm (= *flavolimbata* JACOBY, 1896). Forms two subspecies: colouration as above (nominotypical subspecies); colouration as above, but along suture runs additionally a broad, yellowish stripe (subsp. *okinawana* NAKANE et KIMOTO, 1961 from Ryukyu Isl., not in discussed area) **cinctipennis** (WEISE, 1890).

Genus *Hermaeophaga* FOUDRAS, 1861

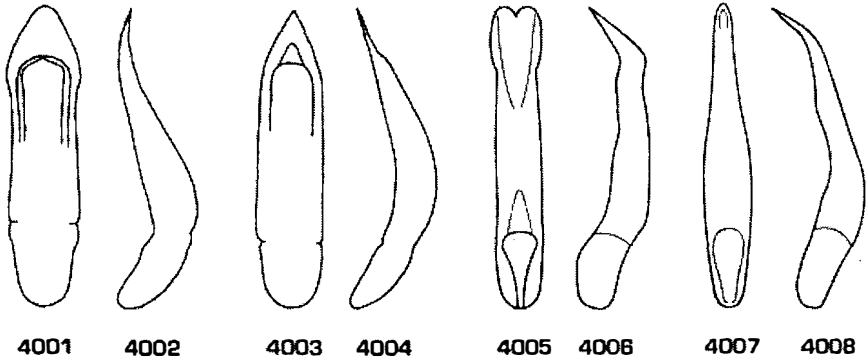
Linozosta ALLARD, 1860, *Orthocrepis* WEISE, 1888

Genus *Hermaeophaga* comprises almost 20 species. It is often divided into two subgenera *Orthocrepis* and *Hermaeophaga*, but this division is questionable. Here no a key to subgenera, therefore for each species its subgeneric membership is marked separately.

Key to species

1. Body length under 2.0 mm. Upper side shining black, antennae blackish with four basal antennomeres testaceous. Legs yellowish brown with hind femora piceous or black. Distributed in Japan (Tsushima, Honshu, Shikoku, Kyushu) (*Orthocrepis*) **adamsii** (BALY, 1874).
- . Body length over 2.3 mm **2**.
2. Upper side pale, yellowish to pale rusty-brown. Body suboval, subparallel, slightly flattened. General view as in plate XCI, **phot. 814**. Nasal ridge absent, frontal calli feebly perceptible. Length 2.7–3.5 mm (= *suturalis* BRANCSIK, 1899, *banakoensis* BECHYNÉ, 1955). Distributed in Africa northwards of Chad and Sudan, in Mediterranean area, Saudi Arabia and Cenral Asia. Here probably *H. unicolor* (JACOBY, 1886) described from Arabian Peninsula, after descriptions not differing from *ruficollis* (*Orthocrepis*) **ruficollis** (LUCAS, 1849).
- . Upper side black with feeble bluish metallic reflex **3**.
3. Humeral calli absent, body relatively broad and convex General view as in plate XCI, **phot. 813**. Frons and vertex smooth and strongly shining, with a few strong points between eyes. Aedeagus as in figs **4001, 4002**. Length 2.5–3.2 mm. Distributed in Europe north of Pyrenees, Central Italy and Dinaric Alps alike in Ukraine and Asia Minor (*Hermaeophaga* s. str.) **mercurialis** (FABRICIUS, 1792).
- . Humeral calli present. Body more oblong, slightly flattened **3**.

3. W Palaearctic species. Antennae bicolorous, in basal part reddish, in apical part black. Upper side shining, ground of elytra not distinctly reticulated. Frons and vertex smooth and strongly shining, with a few strong points near eyes. Aedeagus as in figs **4003**, **4004**. Length 2.3–3.2 mm. Distributed in Morocco and SW Europe to Netherlands, SW Germany and Slovenia
 (*Hermaeophaga* s. str.) ***cicatrix*** (ILLIGER, 1807).
- . E Palaearctic species. Antennae entirely black, elytra finely reticulated, less shining than pronotum. Remaining external characters as in *cicatrix* (thesis 3). Length about 2.5 mm. Described from Transbaicalia
 (*Orthocrepsis*) ***nigricornis*** (OGLOBLIN, 1921).



Figs 4001-4008. Aedeagus in dorsal or ventral and in lateral view (4001-4004 after WARCHALOWSKI 1998, remaining after MADAR and MADAR 1968): 4001, 4002 – *Hermaeophaga mercurialis*; 4003, 4004 – *H. cicatrix*; 4005, 4006 – *Heyrovskyia paivana*; 4007, 4008 – *H. occidentalis*.

Genus ***Heyrovskyia*** MADAR et MADAR, 1968

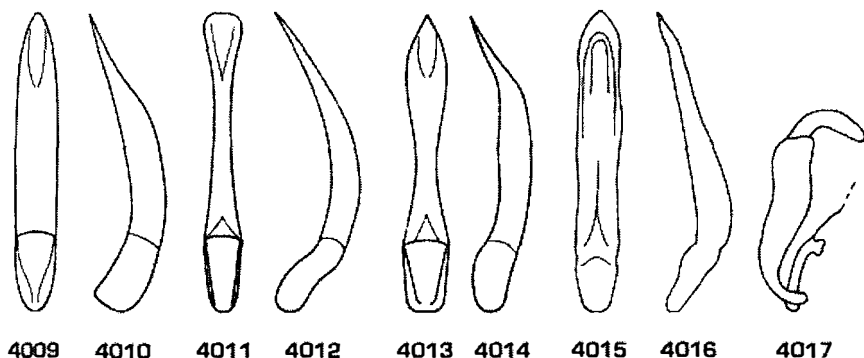
Literature: MADAR and MADAR 1968.

This group of species is often included into genus *Aphthona* or considered as its subgenus. Here belong 9 species distributed in Canary Islands and in Morocco.

Key to species:

1. At least hind femora pitchy or black, partly with metallic reflex 2.
- . Legs entirely yellow or reddish 7.
2. Legs entirely dark, only joints of fore and mid legs brownish. Aedeagus similar as in *wollastoni* (antithesis 8). Length 2.5–3.2 mm. Distributed in La Palma (Canary Islands) ***tristis*** (LINDBERG, 1950).
- . Only hind femora or/and basis of fore and mid femora dark 3.
3. Hind femora and basis of fore and mid femora dark 4.
- . Fore and mid legs entirely pale, hind femora on upper side blackish with bluish reflex. Humeral calli strongly protruding. Aedeagus not studied. Length 3.0–3.2 mm. Described from Morocco ***cylindrica*** (HOFFMANN, 1953).

4. Apex of aedeagus (figs **4005, 4006**) incised. Upper side dark bluish, dark greenish-blue ora (rarely) greenish-bronzy. Metallic reflex distinct in females only, in males very weak. Length about 3.1 mm. Known from Tenerife (Canary Islands) only *paivana* (WOLLASTON, 1860).
- Apex of aedeagus not incised, apically rounded or subtriangular **5.**
5. Apex of aedeagus in dorsal view strongly narrowed, apically rounded, somewhat tongue-shaped. External characters as in *paivana* (thesis 4). Aedeagus as in figs **4007, 4008**. Length 2.3–3.0 mm. Known from La Palma and Hierro (Canary Islands) *occidentalis* (LINDBERG, 1950).
- Apex of aedeagus not narrowed **6.**
6. Aedeagus apically rounded-narrowed (figs **4009, 4010**). Externally very similar to *paivana* (thesis 4). Length 2.1–2.9 mm. Known from Gran Canaria (Canary Islands) only *convexior* (LINDBERG, 1950).
- Aedeagus apically subtriangular, broadest in apical part, gradually narrowed towards base. Upper side lead-green. General view as in plate XCI, **phot. 815**. Length 2.4–2.9 mm. Described from Gomera (Canary Islands) *gomerensis* GRUEV et PETITPIERRE, 1979.



Figs 4009-4017. Aedeagus in dorsal or ventral and in lateral view, spermatheca (4009-4014 after MADAR and MADAR 1968, remaining after GRUEV and TOMOV 1986): 4009, 4010 – *Heyrovskia convexior*; 4011, 4012 – *H. moralesi*; 4013, 4014 – *H. wollastoni*; 4015-4017 – *Hippuriphila modeeri*.

7. Frontal calli roundish. Aedeagus (figs **4011, 4012**) broadened apically. Upper side greenish or golden, strongly shining. Relatively small, length of body 1.7–2.4 mm. Distributed in Tenerife (Canary Islands) *moralesi* (MADAR et MADAR, 1965).
- Frontal calli pointed **8.**
8. Aedeagus almost parallel, apex broadly rounded. Length 2.0–2.5 mm. Distributed in Morocco *wachnitzae* MADAR et MADAR, 1968.
- Apex of aedeagus forms a pointed arc. Relatively large, upper side with greenish-bronzy sheen. Pronotum not distinctly finer rugose than elytra. Aedeagus as in figs **4013, 4014**. Length 2.6–3.0 mm (= *atrovirescens* LINDBERG, 1950). Distributed in Tenerife *wollastoni* (LINDBERG, 1950).

Genus *Hippuriphila* FOUDRAS, 1861

Parachalcoides CHŪJŌ, 1959, *Pseudocrepidosoma* MEDVEDEV, 1966

A small genus, containing two species only.

Key to species

1. Vertex rather sparsely, finely or moderately strongly punctured. Upper side black, shining, usually with metallic reflex. Hind part of elytra reddish, sometimes reddish colour is expanded or reduced, but very rarely entirely disappearing. General view as in plate XCI, **phot. 816**. Upper side black with feeble, bronzy metallic reflex. Apical part of elytra yellowish red. Basal part of antennae and legs except hind femora rust-reddish. On elytra puncture rows anteriorly strong, apically fine and partly confused. In male first tarsomere of fore tarsi weakly widened. Aedeagus as in figs **4015**, **4016**, spermatheca as in fig. **4017**. Length 2.0–2.5 mm, rarely (males) 1.8 mm only (= *chryso-pygis* BECK, 1817, *mancula* LÉCONTE, 1861). Variations: elytra reddish with blackish sutural stripe (ab. *prescutellaris* Pic, 1909), reddish apical area of elytra reduced to two spots (ab. *bimaculata* WEISE, 1886), upper side, except pale apex of elytra steel bluish (ab. *chalybaea* WEISE, 1886), sides of pronotum and elytra with a violaceous stripe (ab. *violaceovittata* CSIKI, 1953). Forms with very fine and sparse puncturation of pronotum and with strongly reduced red pattern on elytra are considered by some authors as a distinct (northern) subspecies (*laevicollis* HELLÉN, 1933). Holarctic species distributed in western, central and northern part of Europa, Siberia, Mongolia, Kamchatka, Alaska and Canada, reported also from Spain and Turkey. Form *laevicollis* inhabits the subpolar area of Europe and Siberia, northwards of 65°N *modeeri* (LINNAEUS, 1761).
- Head strongly, densely and deeply punctured. Upper side black, strongly shining, with cupreous, aeneous or greenish reflex. Elytra unicolorous, without red apical part. Legs reddish brown, hind femora not always darkened. Length 1.8–2.2 mm (*ohnoi* MEDVEDEV, 1966). Distributed in Japan (Hokkaido, Honshu), reported also from Russian Far East *babai* CHŪJŌ, 1959.

Genus *Hyphasis* HAROLD, 1877

Hyphasoma JACOBY, 1903

Genus *Hyphasis* contains about 50 species distributed in Oriental region (two species from Madagascar probably not here). In discussed area one species, occurring in Japan only. Body feebly convex, general outline remains *Hemipyxis* (p. 822). Entirely testaceous except for apical 6 or 7 antennomeres being blackish. Pronotum very short and broad, about 2.6 × broader than long, finely or very finely, but always distinctly punctate. Elytra with narrowly flattened margins, their punctures random, moderately fine or moderately strong, densely scattered, interstices as broad as diameter of punctures. General view as in plate XCI, **phot. 817**. Length 2.3–3.2 mm. Distributed in N Indochina, S China and Japan (Kyushu) *inconstans* JACOBY, 1885.

Genus *Ivalia* JACOBY, 1887

Amphimeloides Jacoby, 1887, *Taizonia* Chen, 1934, *Schereria* Medvedev, 1984

The genus *Ivalia* includes almost 20 species distributed in Oriental region; of these one species occurs in the discussed area. Body oval, convex. Head brownish-yellow. Pronotum testaceous with two small blackish spots at base. Elytra slightly paler than pronotum, on each elytron three roundish blackish spots (2, 1). Under side and legs reddish brown. Pronotum 2.5 × broader than long, its puncturation extremely fine or almost disappearing. Elytra with weakly developed humeral callus, their puncturation random, tending to form longitudinal rows or stripes. Length about 2.5 mm. Distributed in Japan (Honshu, Kyushu) ***bistrispunctata*** (CHEN, 1933).

Genus *Lanka* MAULIK, 1926

To the genus *Lanka* belong four species, distributed in Sri Lanka, Burma, Taiwan, Ryukyu Islands and Japan; in discussed area one species only. General outline of body remains *Aphthona*, but usually more convex. Humeral calli distinct. Frontal calli separated by nasal ridge. Puncturation of upper side fine or very fine. Body reddish brown, head, antennomeres 5–11 or 6–11 and legs piceous. Length 2.5–3.0 mm. Known from Japan (Honshu, Kyushu) only ***magnoliae*** (CHŪJŌ et OHNO, 1961).

Genus *Lipromela* CHEN, 1933

Genus *Lipromela* contains four species; in discussed area one species. General outline remains a small *Lema*. Body pale, yellowish or yellowish-testaceous, upper side shining. Apical part of femora at least in hind legs darkened or blackish, two or three apical antennomeres piceous. Underside usually darkened. Pronotum much narrower than elytra, hind angles straight, slightly protruding. Head smooth, pronotum very weakly and sparsely punctate, almost smooth. Elytra with well-developed humeral calli, strongly punctured, punctures arranged in very regular rows. Intervals convex, in hind part and laterally almost costiform, smooth. In male antennae distinctly longer, first metatarsus broader. General view as in plate XCI, **phot. 819**. Length 2.3–2.4 mm (= *costata* CHEN, 1933). Distributed in Japan (Honshu, Kyushu, Shikoku) ***minutissima*** (PIC, 1923).

Genus *Lipromima* HEIKERTINGER, 1924

Genus *Lipromima* contains three species, distributed in Sikkim, S China (Yunnan) and Japan. In discussed area one species. General outline of body remains *Lipromela minutissima* (p. 827), differing by somewhat broader and strong punctured pronotum as well as the presence of hairs on elytra. Body pale yellow, underside and hind femora darkened. On each elytron a round brown spot behind midlength, sometimes also a similarly coloured spot on humeral callus. Pronotum very strongly, deeply and densely

punctured, interstices smooth. On elytra punctures as strong as on pronotum, arranged in regular rows, intervals convex, semicostiform. Along each interval runs a row of thin, suberect, relatively long (60–80 μ) hairs. General view as in plate XCII, **phot. 820**. Length 2.0–2.4 mm (= *fulvipes* CHŪJŌ, 1935, *bicolor* CHŪJŌ, 1935, *quadrimaculata* CHŪJŌ, 1956). Distributed in Japan (Honshu, Kyushu, Shikoku) and Korea *minuta* (JACOBY, 1885).

Genus *Liprus* MOTSCHULSKY, 1860

Crepidomorpha FLEISCHER, 1916

Genus *Liprus* comprises six species; in discussed area one species. Body elongate, parallel, slightly flattened. In lighter coloured specimens underside, vertex, pronotum, scutellum, elytra and sometimes last antennomeres reddish, remaining parts of body, legs and antennae black. in dark coloured head entirely, scutellum, meso- and metasternum, sometimes also abdomen black. In melanotic specimens body entirely or almost entirely blackened. Pronotum shining, almost smooth, elytra with regular rows of punctures. General view as in plate XCI, **phot. 818**. Length 4.5–5.2 mm (= *carinulatus* FLEISCHER, 1916, *japanensis* SCHÖNFELDT, 1887, *japonicus* JACOBY, 1885, *rufotestacus* MOTSCHULSKY, 1866). Distributed in China, Japan, Taiwan and Korea *punctatostratus* MOTSCHULSKY, 1860.

Genus *Longitarsus* LATREILLE, 1829

Literature: OHNO 1968, WARCHALOWSKI 1996, KONSTANTINOV 2005.

Thyamis STEPHENS, 1831, *Teinodactyla* CHEVOLAT, 1836, *Inopelonia* BROUN, 1893

Key to subgenera

1. Upper side usually pale (yellow to dark brown), only in a few species black or black with metallic sheen. Elytra hairless, uniformly convex, on apex commonly (rarely separately) rounded, their apical margin neither transversely nor obliquely cut, in consequence lateroapical margin forms neither angle nor a stronger rounding. Hind wings mostly normally developed, sometimes reduced. Parameres always normal developed, Y-shaped *Longitarsus* s. str. (p. 829).
- . Upper side black (in immature specimens dark brown), rarely dark brown or pichy black, often with metallic reflex, in three species (*lederi*, *nemethi* and *pubescens*) elytra covered by hairs. One species only (*nemethi*) is brown, with strong cupreous gloss. Elytra with sloping lateral borders, often gaping. Their apical margin usually obliquely cut (figs 4541–4544 and 4613–4616), in consequence it forms a stronger rounding or a lateroapical angle. Hind wings strongly reduced or absent, humeral callus absent or barely perceptible. Parameres often shortened, in extreme cases form a small stick hidden in the phallobasis *Testergus* (p. 893).

Subgenus *Longitarsus* s. str.

Key to auxiliary groups

1. E Palaearctic species auxiliary **group A** (p. 830).
- W Palaearctic species **2**.
2. On frons lateral furrows absent or at least very shallow, frontal tubercles oblong, linear, distinctly separate from frons by frontal furrows auxiliary **group B** (p. 835).
- On frons lateral furrows deeply incised or at least distinctly deepened. Frontal tubercles indistinctly separate from frons. In a few species frontal furrows and tubercles distinct, but strongly shortened by lateral furrows **3**.
3. Spur (spine on apex of hind tibiae) long, as long as breadth of apex of tibia auxiliary **group C** (p. 844).
- Spur (spine on apex of hind tibiae) short, distinctly shorter than breadth of apex of tibia **4**.
4. Head and elytra black, pronotum yellow auxiliary **group D** (p. 849).
- Upper side differently coloured **5**.
5. Pronotum relatively long, 1.3–1.5 × broader than long. In fore legs first tarsomere, particularly in male, longer than in another *Longitarsus*-species. Aedeagus lancet-like, in lateral view somewhat S-shaped, its apical part slightly bent dorsally, ventral gutter narrowed at middle. Several species living on *Boraginaceae* (*exoletus*-group) auxiliary **group E** (p. 850).
- Pronotum at least 1.5 × broader than long. In fore legs first tarsomere not distinctly elongate, aedeagus not simultaneously lancet-like and in lateral view S-shaped **6**.
6. Elytra uniformly black or black with metallic reflex auxiliary **group F** (p. 852).
- Elytra differently coloured **7**.
7. Pronotum short and broad. Head brown or blackish, always considerably darker than pronotum. Underside entirely or in greatest part dark, brown or blackish. Elytra and usually also pronotum pale, sometimes with blurred, brownish sutural stripe. Head and pronotum feebly shining, distinctly and deeply reticulate. Antennae short, their length amounts to about 2/3 body length (*pratensis*-group) auxiliary **group G** (p. 859).
- Another combination of characters **8**.
8. Elytra bicolorous (mainly pale with dark sutural stripe, but also different combinations of dark or pale pattern) auxiliary **group H** (p. 862).
- Elytra uniformly coloured **9**.
9. Upper side darker (ochraceous, pale brownish, rusty-brown, chest-brown to almost pitchy) auxiliary **group I** (p. 873).
- Upper side pale yellowish (whitish yellow, yellow straw, pale testaceous) auxiliary **group J** (p. 882).

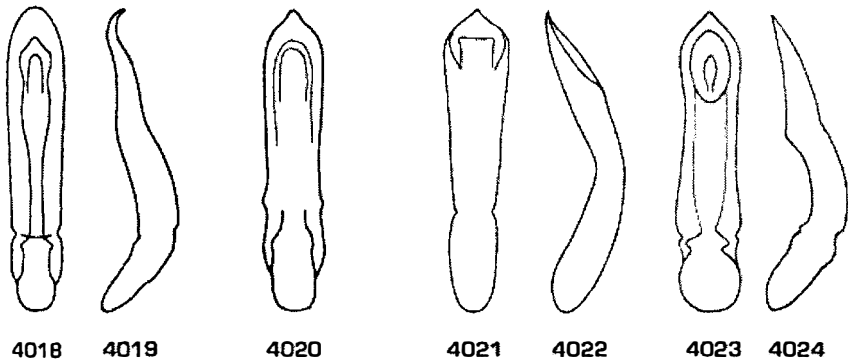
Auxiliary group A

E Palaearctic species. *L. stragulatoides* GRUEV, 1990, described from Nepal and reported (perhaps erroneously) from Korea not included in the key.

Key to species

1. Frontal tubercles oblong, linear, distinctly separate from frons by well-developed frontal furrows, lateral furrows absent or at least thin and shallow 2
- . Frontal tubercles often distinct and convex, but indistinctly separate from frons, lateral furrows deeply incised or at least distinctly deepened. In a few species frontal tubercles separate from frons by (shortened) frontal furrows, but strongly shortened by lateral furrows 6
2. Vertex smooth and shining. Primary puncturation of elytra fine or moderately strong, shallow 3
- . Vertex distinctly reticulated or finely rugulose. Primary puncturation of elytra strong and dense 5
3. Pronotum slightly broader than long, its lateral margins rounded on midlength and strongly narrowed posteriad. Primary puncturation of elytra very dense, tending to form irregular longitudinal rows. Upper side rusty-brown, elytral suture not darkened. Aedeagus not studied. Length about 2.0 mm. Described from China (S Kansu), belonging probably to *lycopi-bertii* group **sinensis** CHEN, 1934
- . Not as above 4
4. Pronotum subquadrate, finely punctured, its lateral sides almost straight. Body uniformly coloured, yellowish to pale brown. In darker coloured specimens antennae paler than remaining parts of body. Aedeagus as in figs **4018**, **4019**. Length 1.5–1.8 mm. Known from Japan only. Reports from Indochina are based on misidentified specimens **quadraticollis** JACOBY, 1885
- . Pronotum transverse, moderately strongly or strongly punctate. Upper side pale rusty-brownish. Aedeagus as in fig. **4020**. Extremely similar to *callidus* (auxiliary group B, antithesis 23), differing by less obtuse very tip of aedeagus and by different area of distribution. Distributed in NE China and in Korea **aphthonoides** WEISE, 1887
5. Nasal ridge flattened. Underside dark brown, upper side yellowish brown with darkened elytral suture, without any other dark pattern. Antennae in apical half blackish, legs entirely yellowish brown. Male unknown. Length 1.5–1.6 mm. Distributed in Japan (Hokkaido, Honshu) only **suzukii** OHNO, 1968
- . Nasal ridge sharp. Colouration of upper side variable. More common are pale forms, uniformly yellowish-brownish, often with indistinct darker spot in the middle of each elytron. Typical form is brownish or pale rusty-brownish with a roundish blackish spot in the middle of each elytra, often also with small dark spot behind scutellum. Sometimes mentioned median spots expanded towards suture and fused into transverse stripe. Relatively rare dark forms have body blackish, elytra reddish brown with apical half of suture, transverse band at middle and basal part of elytra blackish. In darker forms hind femora entirely or apically piceous. General view as in plate XCII, **phot. 824**. Aedeagus as in figs **4021**, **4022**. Length 1.7–2.0 mm (= *lewisiel-*

- lus* CHŪJŌ, 1937, *ligustrivorus* CHŪJŌ, 1958). Broadly distributed in China, Japan and Taiwan, reaching also to Micronesia ***bimaculatus*** (BALY, 1874).
6. Upper side black or bluish black, at most hind part of elytra dark reddish 7.
 -. Upper side piceous (sometimes with distinct metallic reflex), brown, reddish or yellowish **10**.
7. Upper side pure black, somewhat matt, humeral calli weak. Under side dark brown. Insufficiently studied species, male unknown. Length 1.5–1.8 mm. Described from Japan (Honshu, Kyushu) only ***yoshiakii*** OHNO, 1968.
 -. Upper side with at least perceptible bluish reflex **8**.
8. Elytra black with weak bluish reflex and with apical 1/3 reddish. Length 1.9–2.2 mm. See *holsaticus* (auxiliary group H, thesis 8).
 -. Upper side black with distinct bluish shine. Humeral callus well-developed, strongly protruding **9**.

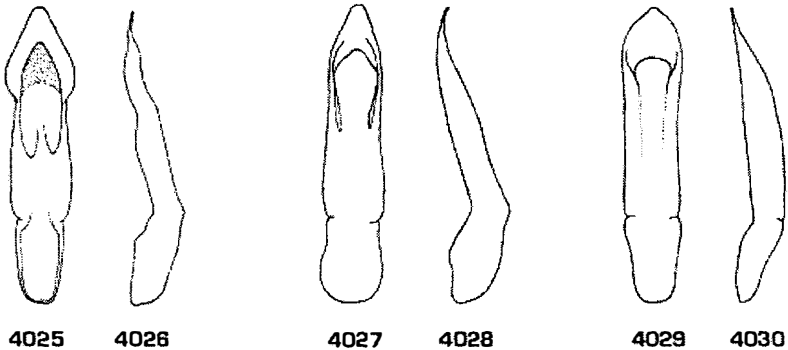


Figs 4018-4024. Aedeagus in dorsal or ventral and in lateral view (4018, 4019 after OHNO 1968; 4020 after MEDVEDEV 1992; 4021, 4022 after GRESSIT and KIMOTO 1963; 4023, 4024 after WARCHALOWSKI 1970): 4018, 4019 - *Longitarsus (Longitarsus) quadraticollis*; 4020 - *L. (L.) aphthonoides*; 4021, 4022 - *L. (L.) bimaculatus*; 4023-4024 - *L. (L.) godmani*.

9. Metallic shine on upper side usually very distinct. Legs reddish brown, hind femora blackish. Length 1.8–1.9 mm (= *kimotoi* OHNO, 1968). Distributed in Japan (Honshu, Shikoku, Kyushu), Ryukyu Is. and Taiwan ***morissonus*** CHŪJŌ, 1937.
 -. Metallic shine on upper side differently manifested, relatively strong, weak or disappearing. Legs dark brown to blackish. Antennae dark brown or blackish, unicolorous. Aedeagus as in figs **4023, 4024**. Length 2.0–2.3 mm (male) to 2.2–2.6 mm (female) (= *daovantieni* WARCHALOWSKI, 1966). Variation: metallic reflex on upper side disappearing, pronotum and elytra pitchy (ab. *subniger* CHEN, 1939). Distributed in Indochina, S China and reported from Korea ***godmani*** (BALY, 1876).
10. Upper side deeply rusty-reddish, with distinct cupreous or aeneous shine. Antenna short, 1/2 × as long as the body. Elytra somewhat darkened, its puncturation strong and very deep, arranged in irregular longitudinal rows. After original description

similar to *luridus* (auxiliary group I, thesis 27), but differing by metallic reflex of upper side and by distinct frontal calli and belonging probably to *lycoperi-bertii* group. Length 2.0 mm. Described from N China based on a single specimen (sex and defined locality not given) only, perhaps conspecific with *sinensis* (thesis 3)

- ***brevicornis*** CHEN, 1939.
- Upper side without metallic reflex, antennae longer than 1/2 length of body 11.
- 11. Upper side piceous or dark reddish brown. General outline of body strongly narrowed anteriorly and posteriorly. Upper side strongly punctured. Elytra very convex. Aedeagus not studied. Length 1.7–1.9 mm. Described from N China (Ningsia, Kansu, Shansi) ***fuscus***, CHEN, 1939.
- Another combination of characters 12.
- 12. Very small species, body length under 1.6 mm. Basal half of hind femora darkened 13.
- Larger species, body length over 1.6 mm 14.
- 13. Frontal calli (weakly distinct) separated by over point of nasal ridge. Body dark brown, upper side pitchy, antennae yellowish brown darkened apically, legs yellowish brown. Aedeagus as in figs 4025, 4026. Length 1.4–1.5 mm. Distributed in Japan (Honshu, Shikoku and a few smaller islands) ***komyiai*** OHNO, 1968.
- Frontal calli (weakly distinct) not separated by over point of nasal ridge. Body much paler, yellowish brown, head darker, reddish brown. Aedeagus as in figs 4027, 4028. Length 1.3–1.5 mm (= *menthae* CHÛJÔ, 1938, nec BEDEL 1898). KNOWN from Japan (Hokkaido) only ***nipponensis*** CSIKI, 1940.

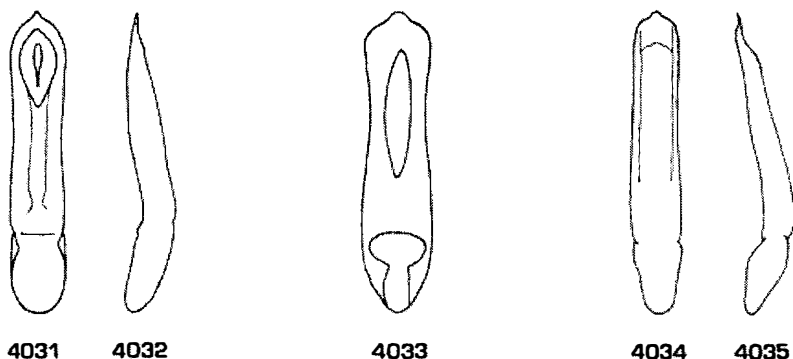


Figs 4025-4030. Aedeagus in dorsal or ventral and in lateral view (after OHNO 1968): 4025, 4026 – *Longitarsus (Longitarsus) komyiai*; 4027, 4028 – *L. (L.) nipponensis*; 4029, 4030 – *L. (L.) cervinus*.

- 14. Antennae robust, shorter, not reaching apex of elytra. Elytra with or without dark sutural stripe 15.
- Antennae slender, as long or longer than body length. Elytra without dark sutural stripe 22.
- 15. Large species, length of body over 3.0 mm. On hind tibia spur long, longer than breadth of apical part of tibia. Upper side testaceous, head usually much darker,

antennae brown with pale 3 or 4 antennomeres, apical half of hind tibiae blackish. Length 3.0–3.6 mm. Unnamed local form of *nitidus* (thesis 23), known from Japan (Honshu).

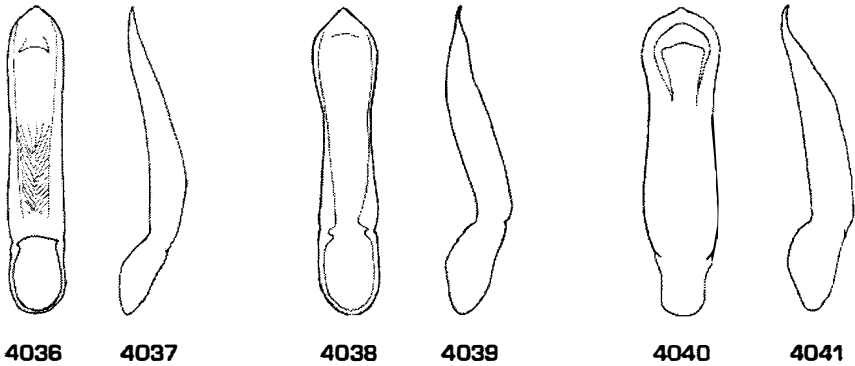
- Smaller species, length of body under 2.5 mm **16.**
- 16. Elytra uniformly reddish brown or chestnut, without dark sutural stripe, often sutural margin very narrowly darkened only **17.**
- Elytra with dark sutural stripe **18.**
- 17. Pronotum 1.3 × broader than long, finely and rather sparsely punctate. Aedeagus as in figs **4029, 4030**. Length about 2.2 mm (= *inconspicuus* BALY, 1874, nec WOLLASTON, 1860). Distributed in Japan (Kyushu, Tsushima) and Korea **cervinus** (BALY, 1875).
- Pronotum more than 1.5 × broader than long. Upper side of pronotum and elytra similarly, moderately strong, densely punctured, interstices distinctly reticulated. Length 1.7–2.3 mm. See *lewisii* (auxiliary group I, thesis 7).
- 18. Blackish sutural stripe uniformly broad on whole length. Upper side pale reddish brown, colour of pronotum usually more saturated. Length 2.2–2.5 mm. See *suturalis* (auxiliary group H, thesis 16).
- Blackish sutural stripe widest at middle, narrowed anteriorly and posteriorly **19.**
- 19. Pronotum smooth, finely and sparsely punctured. Blackish parts of upper side (sutural stripe, in dark specimens pronotum) with bronzy metallic reflex. See *scutellaris* (auxiliary group G, thesis 6).
- Pronotum distinctly reticulated **20.**



Figs 4031-4035. Aedeagus in dorsal or ventral and in lateral view (4031, 4032 after WARCHAŁOWSKI 1970; 4033 after MEDVEDEV 1982; 4034, 4035 after OHNO 1968): 4031, 4032 – *Longitarsus (Longitarsus) dorsopictus*; 4033 – *L. (L.) tournefortiae*; 4034, 4035 – *L. (L.) nitidus*.

- 20. Punctuation on pronotum not or only slightly finer than on elytra. Humeral calli small, but well perceptible. Sutural stripe distinctly narrowed posteriorly and anteriorly. In fresh specimens on apex of each elytron a long, erect seta (it breaks off very easily). Length 1.8–2.2 mm. See *longiseta* (auxiliary group H, thesis 23).
- Punctuation on pronotum distinctly finer than on elytra **21.**

21. Humeral calli absent entirely. On hind tibia spur short, considerably shorter than breadth of tibia apex. Sutural stripe only slightly narrowed posteriad and anteriad. On apex of elytra no long seta. Length 1.8–2.2 mm. Aedeagus as in figs **4231**, **4232**. Distributed in N and E China (Kwangsi, Yunnan, Beijing), Japan (Honshu) and Korea **dorsopictus** CHEN, 1939.
- . Humeral calli not strong, but distinct. On hind tibia spur long, almost as long as breadth of tibia apex. Blackish sutural stripe broad, shortened anteriorly and posteriorly. Aedeagus as in fig. **4033**. Length 2.1–2.3 mm (male) to 2.4–2.6 mm (female). Lives on *Argusia (Tournefortia) sibirica* L. Described from Mongolia **tournefortiae** MEDVEDEV et VORONOVA, 1979.
22. Humeral callus absent, body entirely pale coloured, yellowish, hind femora in apical half dark or blackish **23**.
- . Humeral callus present **25**.
23. Larger species, body length over 2.8 mm. Antennomere 3 distinctly longer than 2. Body entirely pale. Elytra elongate, Punctuation of pronotum and elytra similar, moderately strong, rather densely scattered. In male fore tarsi not broadened, on analsternite deep, oval, shining groove. Aedeagus as in figs **4034**, **4035**. Distributed in N China, Korea and Japan (Honshu, Kyushu, Shikoku) **nitidus** JACOBY, 1885.
- . Smaller species, body length under 2.5 mm **24**.
24. Upper side finely or very finely punctured. Antennae as long as body. Prothorax somewhat broader than long, its lateral sides subparallel. Hind wings absent, elytra oval, pygidium partly free. Length 2.5 mm (= *horni* CHEN, 1934, nec JACOBY, 1897). An insufficiently studied and rather unclear species. Described from Taiwan, reported also from S China and S Korea **walterrhorni** CSIKI, 1939.
- . Upper side moderately finely punctured, on elytra stronger. Externally similar and similarly coloured as *lewisii* (auxiliary group I, thesis 7), but slightly larger, wingless, elytra without humeral calli, pronotum more finely punctured, and antennae shorter. Aedeagus not studied. Length 2.0–2.5 mm. Described from N China (Kansu), belonging probably to *pratensis*-group **sjoestedti** CHEN, 1934.



Figs 4036–4041. Aedeagus in dorsal or ventral and in lateral view (after OHNO 1968): 4036, 4037 – *Longitarsus (Longitarsus) adamsii*; 4038, 4039 – *L. (L.) boraginicolus*; 4040, 4041 – *L. (L.) scutellariae*.

25. Humeral callus weakly developed. Body rather uniformly coloured, reddish brown to piceous. Pronotum 1.5 × broader than long, lateral sides almost straight, surface subremotely punctate. Primary puncturation of elytra strong and dense, here and there arranged in indistinct rows. Aedeagus as in figs **4036, 4037**. Length 2.1–3.0 mm. Described from Japan (Hokkaido, Honshu) **adamsii** (BALY, 1874).
- . Humeral callus well-developed, usually distinctly protruding **26**.
26. Upper side dark coloured, dark brown or blackish brown **27**.
- . Upper side yellowish to reddish brown **28**.
27. On pronotum and elytra interstices of punctures somewhat granulated, weakly shining. Antennomeres 2 and 3 subequal. Body and upper side blackish brown, legs except for hind femora reddish brown. Aedeagus as in figs **4038, 4039**. Length 1.6–2.0 mm. Described from Japan (Honshu, Kyushu, Shikoku) **boraginicolus** OHNO, 1968.
- . On pronotum and elytra interstices of punctures smooth and shining. Antennomere 2 slightly longer than 3. Body entirely reddish brown, lateral margins of pronotum, scutellum, narrow margin of elytral suture, sternum and anterior margin of all abdominal sternites darkened. Aedeagus as in figs **4040, 4041**. Length 2.0–2.2 mm. Described from Japan (Hokkaido, Honshu) **scutellariae** OHNO, 1968.
28. Antennomeres 5–11 or 6–11 distinctly darkened, brown. Body generally yellowish. Aedeagus in dorsal view similar as in *lewisii* (auxiliary group I, thesis 7), but in lateral view its apex bent slightly down. Length 2.5–3.5 mm (= *scrophularia* OHNO, 1968). Described from Japan (Hokkaido, Honshu) **okushiriensis** GRUEV, 1995.
- . Antennae entirely yellowish, usually antennomere 11 partly darkened only **29**.
29. Antennomere 5 longer than 4. Elytral epipleura convex. Length 1.9–2.5 mm. See *succineus* (auxiliary group J, antithesis 31).
- . Antennomere 5 subequal to 4. Elytral epipleura not convex **30**.
30. Pronotum broadest in midlength, distinctly punctured, primary punctures on elytra relatively strong, their interstices smooth **31**.
- . Pronotum broadest before midlength, on central part almost impunctate. Antennomere 2 distinctly shorter than 3. Apical part of aedeagus (figs **4042, 4043**) distinctly widened **nitidiamiculus** KIMOTO, 1965.
31. Larger. Length 2.0–2.5 mm (= *chujoi* OHNO, 1968, nec CSIKI, 1939). Perhaps conspecific with *rubiginosus* (auxiliary group J, thesis 17). Distributed in Japan (Honshu) **ohnoi** GRUEV, 1995.
- . Smaller. Apex of aedeagus in dorsal view roundish narrowed, with lamella, approximately as in *minimus* (fig. **4245**), tubular part in lateral view straight, apex barely bent dorsally. Length 1.65 mm. Described from N China (Heilungkiang) based on one male only **shuteae** GRUEV, 1981.

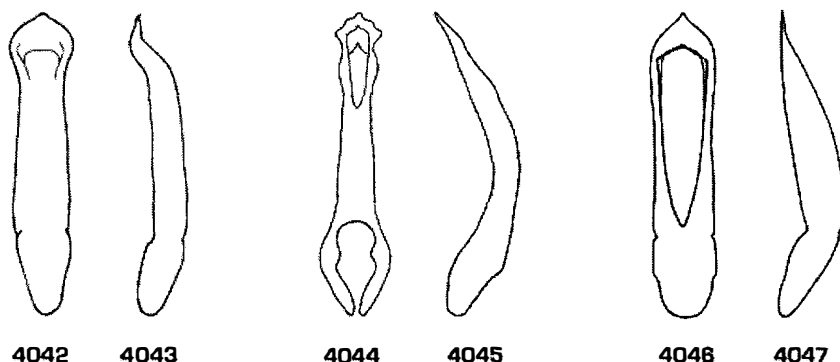
Auxiliary group B

Frontal calli linear, distinctly separated, lateral furrows weakly developed or absent.

Key to species

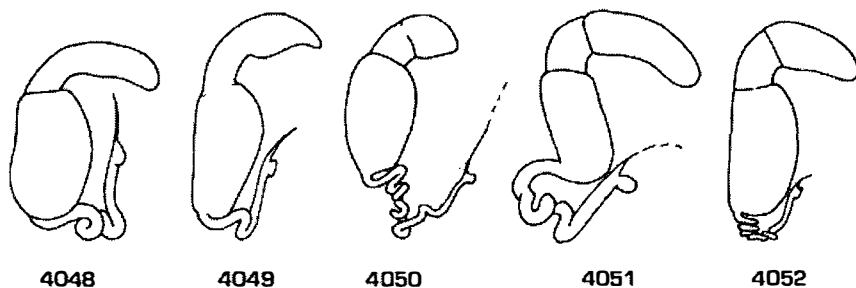
1. Upper side conspicuously bicolorous: pronotum reddish yellow, elytra metallic bluish-green. Length 2.2 mm. Aedeagus (figs **4044, 4045**) of unusual shape. De-

- scribed from Yemen, perhaps not congeneric with remaining *Longitarsus*
 **awadi** LOPATIN, 2001.
- Upper side never conspicuously bicolorous 2.
 - 2. Upper side black (often with feeble metallic reflex), pitchy or chestnut 3.
 - At least elytra pale, yellowish to pale brownish, sometimes with a dark sutural stripe
 15.



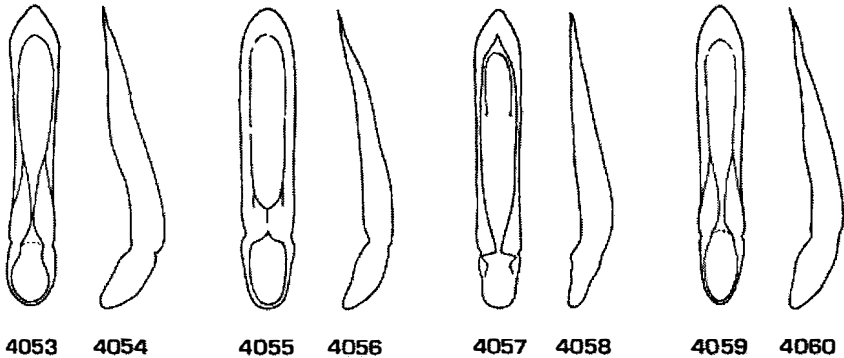
Figs 4042-4047. Aedeagus in dorsal or ventral and in lateral view (4042, 4043 after OHNO 1968; 4044, 4045 after LOPATIN 2001; 4046, 4047 after WARCHAŁOWSKI 1996): 4042, 4043 – *Longitarsus (Longitarsus) nitidiamiculus*; 4044, 4045 – *L. (L.) awadi*; 4046, 4047 – *L. (L.) alferii*.

- 3. Metanotum between hind coxae feebly emarginate. Length 1.7 mm. Spermatheca as in fig. 2507, male unknown. Described from Spain based on one female only
 **andalusicus** GRUEV, 1973.
- Metanotum between hind coxae deeply emarginate 16.



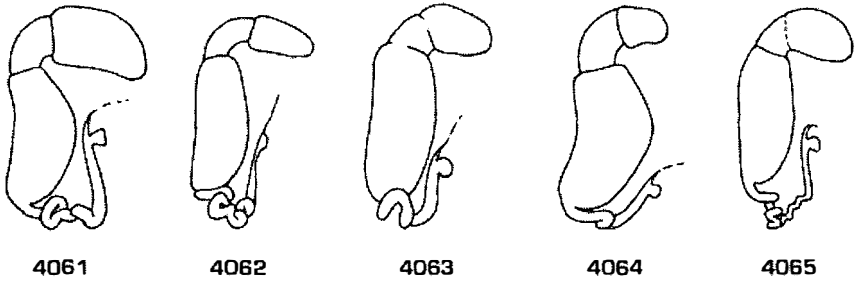
Figs 4048-4052. Spermatheca (4048 after GRUEV 1973; 4049 after WARCHAŁOWSKI 1996; 4050 after DOGUET 1997; 4051 after DÖBERL 1994; 4052 after GRUEV 1987): 4048 – *Longitarsus (Longitarsus) andalusicus*; 4049 – *L. (L.) alferii*; 4050 – *L. (L.) girardi*, 4051 – *L. (L.) obliteratus*; 4052 – *L. (L.) trepidus*.

4. Aedeagus in its mid part narrowed, apical part rounded with a distinct, small, sharp tooth in the middle. Spur relatively short. Aedeagus as in figs **4046**, **4047**, spermatheca as in fig. **4049**. Length 1.6–1.8 mm (= *klapperichi* MOHR, 1962). Forms 3 subspecies: body dark brown, more oblong, on frons lateral furrows distinct. Punctuation of upper side fine (nominotypical subspecies from eastern Mediterran area), body somewhat stouter, usually black, punctuation of upper side stronger (subsp. *furthi* GRUEV, 1982 from European part of Mediterranean area), hind wings reduced, body dark chesnut (subsp. *antinea* PEYERIMHOFF, 1929 from mountains Hoggar in Algeria). Distributed in almost whole Mediterran area **alfierii** PIC, 1923.
- Aedeagus lanceolate, in its midlength very feebly narrowed or not narrowed at all. Spur usually long. The *obliteratus*-group **5**.
5. Upper side reddish chesnut, pronotum usually a little paler than elytra. Spur long. Aedeagus as in figs **4053**, **4054**. Spermatheca as in fig. **4050**. Length 1.3–1.5 mm. Described and known from Algeria only **girardi** DOGUET, 1987.
- Upper side dark pitchy brown or black, often with a feeble metallic reflex **6**.
6. Humeral calli present. Gutter on the underside of aedeagus narrowed in basal part. Ductus spermathecae turned backward. In male anal sternite with large, roundish, very shallow impression. Aedeagus not studied. Length 1.6–2.1 mm. Reported from Turkey, Syria and Israel **meridionalis** WEISE, 1888.
- Humeral calli absent **7**.
7. Gutter on the underside of aedeagus (figs **4055**, **4056**) parallel. Spermatheca as in fig. **4051**, ductus spermathecae turned backward. Length 1.4–1.9 mm (= *consociatus* FORSTER, 1849). Distributed in a great part of Europe and in north-western Africa. Lives on various *Lamiaceae* **obliteratus** (ROSENHAUER, 1847).
- Ductus spermathecae turned forward **8**.
8. Aedeagus slender, its apex lancet-like sharpened (figs **4057**, **4059**, **4066**) **9**.
- Aedeagus less slender, its apex broadly lancet-like or obtusely triangular (figs **4068**, **4070**) **11**.



Figs 4053-4060. Aedeagus in dorsal or ventral and in lateral view (4053, 4054 after DOGUET 1987; 4057, 4058 after WARCHAŁOWSKI 1996; remaining after DOGUET and GRUEV 1988): 4053, 4054 – *Longitarsus* (*Longitarsus*) *girardi*; 4055, 4056 – *L. (L.) obliteratus*; 4057, 4058 – *L. (L.) trepidus*, 4059, 4060 – *L. (L.) salviae*.

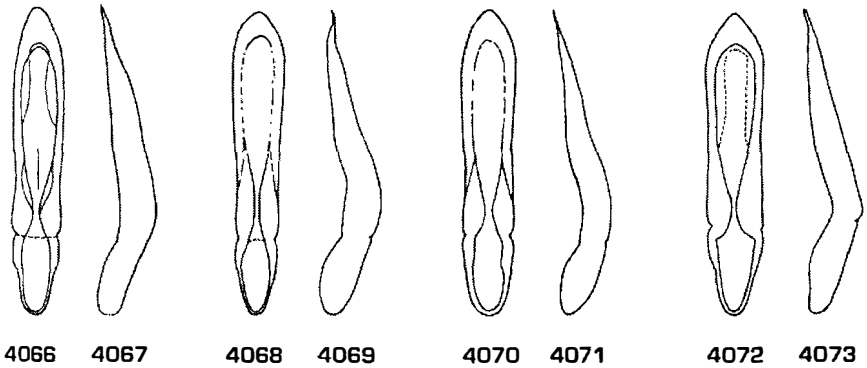
9. Upper side black mit feeble metallic reflex. Basal part of antennae, tarsi and tibiae pale, usually dark yellow or amber, contrasting with black body 10.
- . Body entirely rather uniformly dark chesnut. Legs and antennae paler, but not contrasting with remaining body colour. Aedeagus as in figs 4057, 4058, spermatheca as in fig. 4052. Length 1.7–2.0 mm. Distributed in Iran, Afghanistan and Asia Minor *trepidus* WARCHAŁOWSKI, 1973.



Figs 4061-4065. Spermatheca (4061 after DÖBERL 1994; 4062 after GRUEV 1982; 4065 after FURTH 1979; remaining after DOGUET and GRUEV 1988): 4061 – *Longitarsus (Longitarsus) salviae*; 4062 – *L. (L.) eminus*; 4063 – *L. (L.) bergeali*, 4064 – *L. (L.) obliteratoides*; 4065 – *L. (L.) eminatus*.

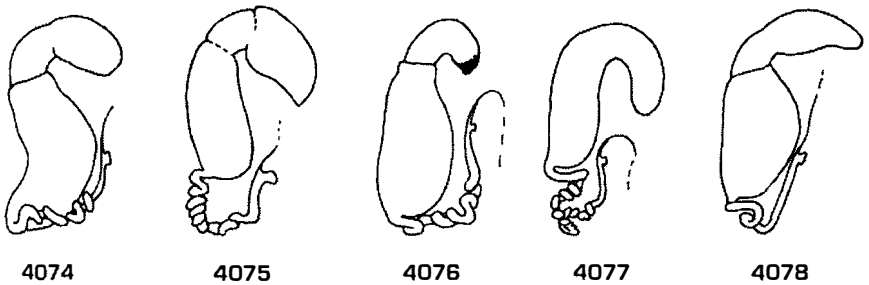
10. Length on average smaller, in male about 1.7–1.9 mm, in female 1.9–2.0 mm. On last abdominal sternite in male a great, shallow impression. Aedeagus as in figs 4059, 4060, spermatheca as in fig. 4061. Distributed in southern Europe and in southern part of Central Europe from France to Greece, Slovakia and Ukraine *salviae* GRUEV, 1975.
- . Length on average larger, in male 1.8–2.0 mm, in female 1.9–2.0 mm. Last abdominal sternite in male without impression, sometimes with two feeble convexities. General view as in plate XCII, phot. 827. Aedeagus as in figs 4066, 4067, spermatheca as in fig. 4062. Distributed in Iran, Afghanistan, Caucasian countries, Asia Minor and Israel *eminus* WARCHAŁOWSKI, 1967.
11. Apex of aedeagus (figs 4068, 4069) obtusely lanceolate. In male first tarsomere of fore legs distinctly widened. Spermatheca (fig. 4063) forms one loop only. Length 1.7–2.0 mm. Described from France *bergeali* DOGUET et GRUEV, 1988.
- . Apex of aedeagus forms an obtuse angle. In male first tarsomere of fore legs not or indistinctly widened 12.
12. Ductus spermathecae forms one or, rarely, two loops. Aedeagus as in figs 4070, 4071, spermatheca as in fig. 4064. Length 1.6–2.0 mm. Distributed in western part of Mediterranean area, reported also from Germany, Greece and Cyprus *obliteratoides*, GRUEV, 1973.
- . Ductus spermathecae forms a few loops. Aedeagus as in figs 4072, 4073, spermatheca as in fig. 4065. Length 1.6–1.9 mm. Distributed in Lebanon and Israel *eminatus* FURTH, 1979.
13. Body larger, almost always exceeding 2.3 mm, greater females can reach 3.3 mm. Colouration of body rather uniform, dark yellow to pale rusty-reddish. Spur long.

- Aedeagus as in figs **4079, 4080**, spermatheca as in fig. **4074**. Distributed in southern East Europe (Hungary, Balkan Peninsula), Caucasian countries, Asia Minor, Central Asia and Near East **bertii** LEONARDI, 1973.
- Body smaller, never exceeding 2.4 mm **14**.



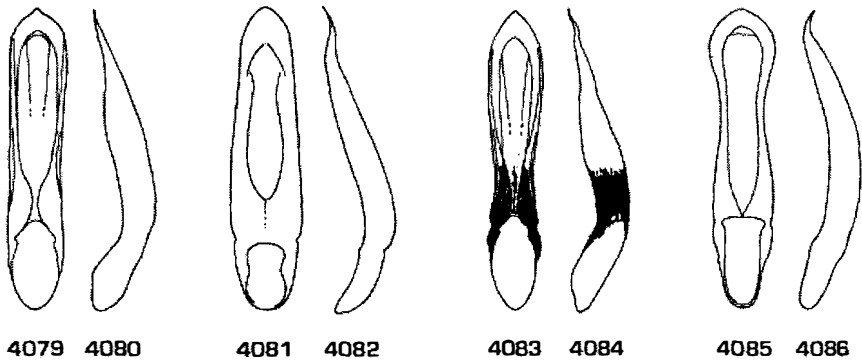
Figs 4066-4073. Aedeagus in dorsal or ventral and in lateral view (4066, 4067 after WARCHALOWSKI 1996; 4072, 4073 after FURTH 1979; remaining after DOGUET and GRUEV 1988): 4053, 4054 - *Longitarsus (Longitarsus) eminus*; 4055, 4056 - *L. (L.) bergeali*; 4057, 4058 - *L. (L.) oblitteratoides*, 4059, 4060 - *L. (L.) eminatus*.

14. Larger species, length of male 1.8–2.0 mm, of female 1.9–2.4 mm **15**.
- Small species, length of male 1.3–1.7 mm, of female 1.6–1.9 mm. Except the characteristic *L. tarraconensis* (thesis 19), determining of species belonging here (to thesis 28 inclusive) require examination of aedeagus and spermatheca. External characters given in the key below concern typical forms only **18**.



Figs 4074-4078. Spermatheca (4075 after DOGUET 1988; 4077 after LEONARDI 1972; 4078 after LEONARDI 1979; remaining after LEONARDI 1973): 4074 - *Longitarsus (Longitarsus) bertii*; 4075 - *L. (L.) frontosus*; 4076 - *L. (L.) ferrugineus*, 4077 - *L. (L.) substriatus*; 4078 - *L. (L.) tarraconensis*.

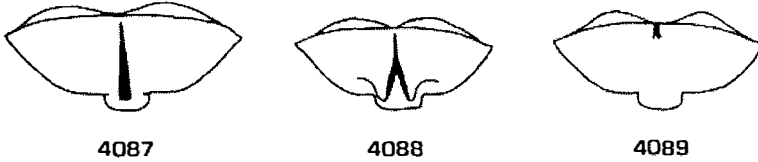
15. Body entirely very pale, upper side straw-coloured, underside yellowish amber. Aedeagus as in figs **4081**, **4082**, spermatheca as in fig. **4075**. Length 1.8–2.0 mm. Distributed in Tunisia and Algeria, reported also from Italy **frontosus** NORMAND, 1947.
- . At least underside partly brown or blackish **16**.
16. Frontal tubercles forms almost a straight line. Elytra pale yellow, suture sometimes brownish. Labrum and abdominal sternites pitchy or black. Aedeagus as in figs **4083**, **4084**, spermatheca as in fig. **4076**. Length 1.8–2.0 mm (male) to 2.0–2.4 mm (female) (= *waterhousei* KUTSCHERA, 1864, *menthae* BEDEL, 1898, *menthaphagus* GENTNER, 1926, *dlabolai* KRÁL). Aedeagus and apex of spermatheca characteristically blackened. Distributed in northwestern Africa and in Europa from central Spain and England to Italia, Hungary, southern Sweden and western Russia, introduced also to N America with mint cultures **ferrugineus** (FOUDRAS, 1860).
- . Frontal tubercles forms an obtuse angle **17**.



Figs 4079-4086. Aedeagus in ventral and lateral view (4081, 4082 after DOGUET 1988, remaining after LEONARDI 1973): 4079, 4080 – *Longitarsus (Longitarsus) bertii*; 4081, 4082 – *L. (L.) frontosus*; 4083, 4084 – *L. (L.) ferrugineus*, 4085, 4086 – *L. (L.) substriatus*.

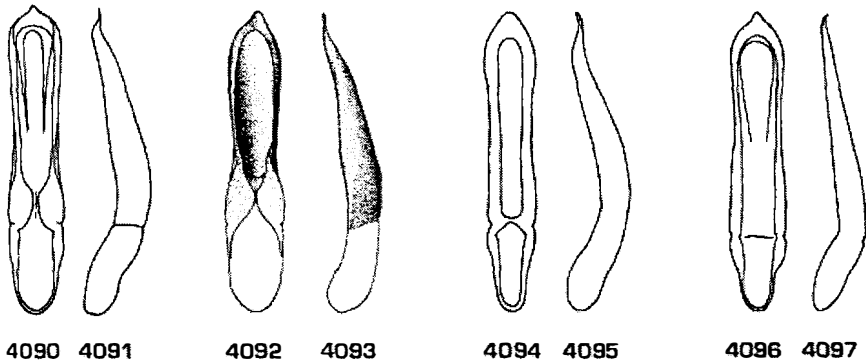
17. Apex of aedeagus in lateral view bent up. Pronotum short and broad, elytra broad, elytral puncturation tending to form semiregular longitudinal rows. Humeral calli well-developed. Head and underside pitchy or black. Aedeagus as in figs **4085**, **4086**, spermatheca as in fig. **4077**. Length 1.8–2.0 mm. Distributed in Italy, Austria, Slovakia and Balkan Peninsula, reported also from France **substriatus** KUTSCHERA, 1863.
- . Apex of aedeagus in lateral view bent down. Externally very similar to *ferrugineus* (thesis 16). Length about 2.5 mm. Described from Georgia. By some authors considered as conspecific with *ferrugineus* (thesis 16) but biogeographical reasons speak against it **dlabolai** KRÁL, 1964.
18. Hind femora uniformly coloured, mostly pale. In darker specimens hind femora can be darkened, but without forming differently coloured zones **19**.
- . Hind femora darkened apically **26**.

19. Head in relation to pronotum surprisingly large. Body entirely very pale coloured. Pronotum, elytra and legs straw-coloured, head yellow amber. Aedeagus as in figs **4090**, **4091**, spermatheca as in fig. **4078**. Length 1.6–2.3 mm. Distributed in southern Spain *tarraconensis* LEONARDI, 1979.
- . Head in relation to pronotum not surprisingly large **20**.



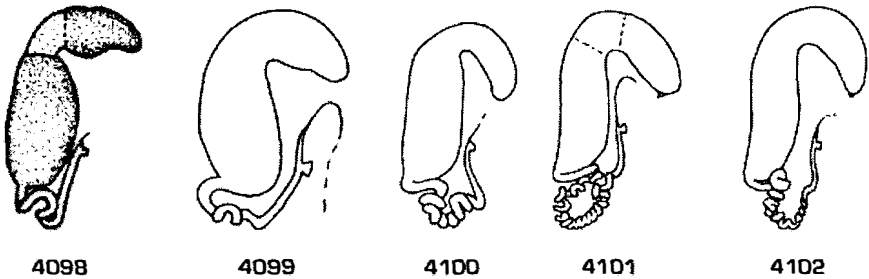
Figs 4087-4089. Anal sternite in male (after LEONARDI 1973): 4087 – *Longitarsus (Longitarsus) substriatus*; 4088 – *L. (L.) juncicola*; 4089 – *L. (L.) lycopi*.

20. External characters, except for breadth of head, as in *tarraconensis* (thesis 19); colouration of body slightly darker, pronotum somewhat less transverse. In aedeagus (figs **4092**, **4093**) operculum very long and narrow, ductus spermasthcae set from bottom of vasculum (fig. **4098**). Described from SW Turkey *angelikae* FRITZLAR, 2001.
- . Not as above **21**.



Figs 4090-4097. Aedeagus in ventral and lateral view (4090, 4091 after LEONARDI 1973; 4092, 4093 after FRITZLAR 2001; 4094, 4095 after DÖBERL 1994; 4096, 4097 after LEONARDI 1975): 4090, 4091– *Longitarsus (Longitarsus) tarraconensis*; 4092, 4093 – *L. (L.) angelikae*; 4094, 4095 – *L. (L.) nanus*, 4096, 4097 – *L. (L.) callidus*.

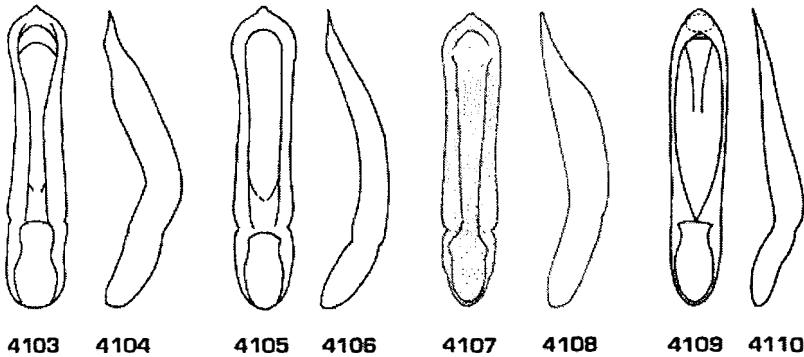
21. Pronotum very short, densely and deeply reticulate, almost matt. Body outline, particularly in male, slender. Aedeagus as in figs **4094**, **4095**, spermatheca as in fig **4099**. Length 1.4–1.7 mm (= *vitreus* KUTSCHERA, 1863, *brevicollis* KUTSCHERA, 1863). Ductus spermathecae turned backward. Distribution area (southern Europe), because of very frequent confusions with *callidus* (auxiliary group B, antithesis 23) and *celticus* (thesis 151), still requires a revision **nanus** (FOUDRAS, 1860).
- . Pronotum longer, reticulation of upper side shallow, body outline not particularly slender. Ductus spermathecae turned ventrally **22**.
22. Apex of aedeagus with a little but distinct tooth or lamella. Spermatheca without distinct limits between vasculum, collum and cornu (pileum) **23**.
- . Apex of aedeagus without distinct tooth or lamella. Cornu well separated from collum **24**.
23. Apical lamella of aedeagus bent ventrally (fig. **4117**), spermatheca as in fig. **4113**, ductus spermathecae forms 6–7 loops. Distribution area (western Europe), because of confusions with similar species, still requires a revision *tantulus* (FOUDRAS, 1860, recently ranked as conspecific with *ordinatus*, see thesis 28).
- . Apical lamella of aedeagus (figs **4096**, **4097**) bent dorsally, spermatheca as in fig. **4100**. Length 1.6–1.8 mm. Ductus spermathecae forms one, more rarely two loops. From very similar *helvolus* (thesis 25) differs by distinctly reticulated frons. Distributed in Tunisia, southern Europe (France, Italy), Central Europe (Austria, Hungary, Poland), Asia Minor and Iran **callidus** WARCHAŁOWSKI, 1967.



Figs 4098–4102. Spermatheca (4098 after FRITZLAR 2001; 4099 after LEONARDI 1975; 4100 after LEONARDI 1972; remaining after DOGUET 1994): 4098 – *Longitarsus (Longitarsus) angelikae*; 4099 – *L. (L.) nanus*; 4100 – *L. (L.) callidus*, 4101 – *L. (L.) membranaceus*; 4102 – *L. (L.) helvolus*.

24. Gutter on the ventral side of aedeagus in the middle narrowed. Aedeagus as in figs **4103**, **4104**, spermatheca as in fig. **4101**. Length 1.6–1.9 mm (= *teucarii* ALLARD, 1860). Lives on *Teucrium scorodonia* L. (*Lamiaceae*). Frequently confused with *helvolus* (thesis 25), distributed as *helvolus* and also more eastwards (Danube basin, Balkan Peninsula) **membranaceus** (FOUDRAS, 1860).
- . Gutter on the ventral side of aedeagus parallel or almost parallel **25**.
25. Aedeagus as in figs **4105**, **4106**, its operculum broad. Spermatheca as in fig. **4102**. Frons shining, covered by very indistinct transverse wrinkles or (in immature specimens) by extremely shallow and indistinct reticulation. Lives on *Teucrium chamae-*

- dryis* L. (*Lamiaceae*). Known from France, Italy, Austria and Germany
 *helvolus* KUTSCHERA, 1863
- Aedeagus as in figs **4107**, **4108**, its operculum narrow. Externally very similar to *helvolus* (thesis 25), or *membranaceus* (thesis 24), but colouration of body somewhat more rusty-yellow, aedeagus in lateral view straight and anal sternite in male with very distinct oval dimple. Length 1.8–2.2 mm. Described from NE Iran
 *reconditus* WARCHAŁOWSKI, 1967.
26. Colouring of body paler. Last abdominal sternite in male with a deep, well-limited pit. Spermatheca as in fig. **4111**. Length 1.8–2.0 mm. Distributed in Israel and Jordan *aramaicus* LEONARDI, 1979.
- Body in normally coloured specimens partly dark brown or blackish, at least on underside. Last abdominal sternite in male without impressions or with a little pit on median lamella only **27**.
27. Upper side rather uniformly pale, in darker specimens with a tendency to darkening



Figs 4103–4110. Aedeagus in ventral and lateral view (4107, 4108 after WARCHAŁOWSKI 1967; 4109, 4110 after LEONARDI 1973; remaining after DOGUET 1994): 4103, 4104 – *Longitarsus (Longitarsus) membranaceus*; 4105, 4106 – *L. (L.) helvolus*; 4107, 4108 – *L. (L.) reconditus*, 4109, 4110 – *L. (L.) juncicola*.

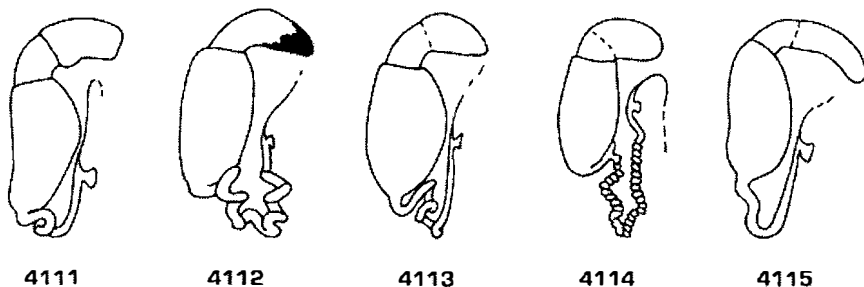
- of pronotum and to form a blurred, dark sutural stripe. Underside-rusty-brown, apex of abdomen very pale, straw-yellowish. Aedeagus as in figs **4109**, **4110**, spermatheca as in fig. **4112**. Length 1.6–2.0 mm (= *fulviventris* WEISE, 1993). Pileum of spermatheca darkened on apex. Distributed in mediterranean part of Europe
 *juncicola* (FOUDRAS, 1860).
- Upper side pale or slightly darkened, but without tendency to darkening of pronotum or to form a dark sutural stripe. Pileum of spermatheca not darkened on apex **28**.
28. On average larger. Aedeagus as in figs **4116**, **4117**, spermatheca as in fig. **4113**. Ductus spermathecae forms a few loops. Length 1.7–2.0 mm (= *tantulus* FOUDRAS, 1860, *brunniceps* ALLARD, 1860). Known from Iberian Peninsula, France and Italy
 *ordinatus* (FOUDRAS, 1860).
- On average smaller. Aedeagus as in figs **4118**, **4119**, spermatheca as in fig. **4114**. Ductus spermathecae forms numerous (over 20) loops. Length 1.5–1.9 mm (= *limnophilus* ABEILLE, 1907, *seriatus* KUTSCHERA, 1863) *lycopi* (FOUDRAS, 1860).

Auxiliary group C

Spur on apex of hind tibiae long.

Key to species

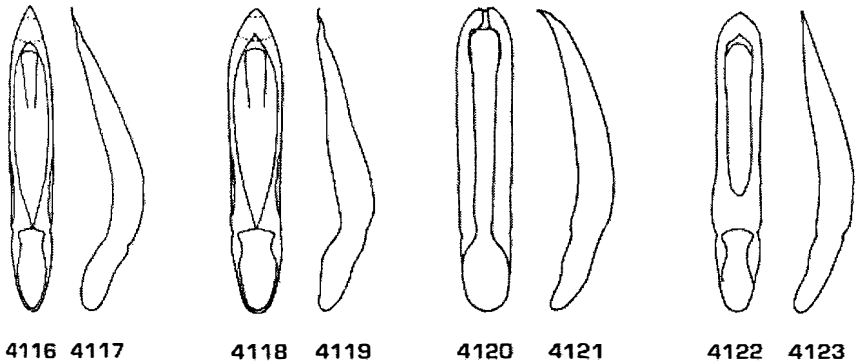
- 1. Upper side black or black with metallic reflex 2.
- . Upper side not black 7.
- 2. Larger species, body length over 2.5 mm 3.
- . Smaller species, body length under 2.5 mm 6.



Figs 4111–4115. Spermatheca (4111 after LEONARDI 1979; 4114 after LEONARDI 1972; remaining after LEONARDI 1973): 4111 – *Longitarsus (Longitarsus) aramaicus*; 4112 – *L. (L.) juncicola*; 4113 – *L. (L.) ordinatus*, 4114 – *L. (L.) lycopi*; 4115 – *L. (L.) echii*.

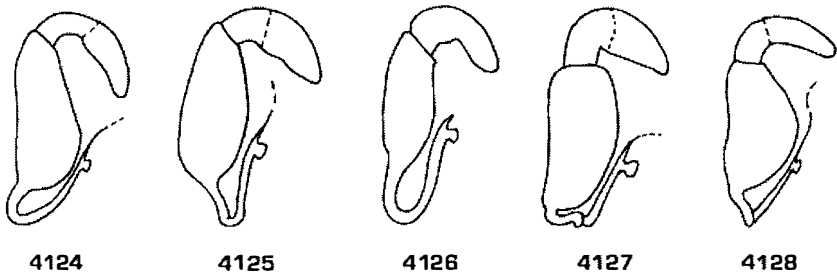
- 3. Frons strongly punctate, consequently lateral furrows are somewhat blurred. Metasternum laterally densely and strongly punctate. Very tip of aedeagus (figs 4120, 4121) shallowly but distinctly incised. Spermatheca as in fig. 4115. Length 2.6–4.0 mm (= *tibialis* DUFTSCHMID, 1825 nec OLIVIER 1808, *excurvus* WOLLASTON, 1857, *flavipes* ALLARD, 1860 = *kulikowskii* JACOBSON, 1895). Variations: metallic reflex of upper side rather feeble, greenish blue (typical form), metallic reflex of upper side strong, green, golden or bronzy (ab. *tibialis* DUFTSCHMID, 1825), metallic reflex of upper side dark blue or violaceous (ab. *coerulescens* WEISE, 1888), upper side pure black (ab. *nigrescens* WEISE, 1888), upper side brown, metallic sheen strong, bronzy or golden (ab. *peregrinus* WEISE, 1888). Distributed in Canary Islands, in whole Mediterranean area and in Europe from Belgium to eastern Ukraine, also in Iran and Afghanistan ***echii*** (KOCH, 1803).
- . Lateral furrows on frons sharp and distinct. Metasternum laterally very sparsely punctate. Aedeagus on apex not incised 4.
- 4. Body larger (2.8–3.5 mm). Metallic reflex of upper side usually blue. First anten-
nomeron almost always pale. Aedeagus as in figs 4122, 4123. Spermatheca as in fig
4124. Variation: metallic sheen of upper side vivid green (ab. *amoenus* WEISE, 1888).
Distributed in S Europe from E Pyrenees and Sicily to N Italy, Austria and S Ukraine,
in Asia Minor, Near East, Caucasian countries, Iran and Transcaspia. From Germany
and Poland old reports only, reports from Transcaspia at least partly concern *fallax*
(thesis 5) ***linnaei*** (DUFTSCHMID, 1825).

- Body smaller (1.9–3.2 mm). Metallic reflex of upper side usually dark bronzy. First antennomeron at least basally darkened 5.



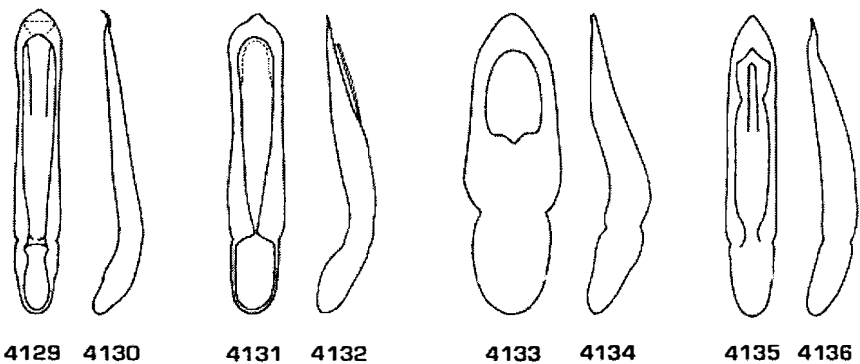
Figs 4116-4123. Aedeagus in ventral and lateral view (4116, 4119 after LEONARDI 1973, remaining after WARCHALOWSKI 1996): 4116, 4117 – *Longitarsus (Longitarsus) ordinatus*; 4118, 4119 – *L. (L.) lycopi*; 4120, 4121 – *L. (L.) echii*, 4122, 4123 – *L. (L.) linnaei*.

- 5. Upper side with distinct, dark bronzy, metallic reflex. Aedeagus as in figs **4129**, **4130**, its apex bent ventrally. Spermatheca as in fig. **4125**, ductus spermathecae simple, without loops. Length 2.5–3.4 mm (= *dimidiatus* ALLARD, 1866 nec STEPHENS, *scrutator* WEISE, 1890, *nitens* IABLOKOFF-KHNZORIAN, 1968, *cynoglossi* PALIY, 1970 nec MARSHAM, 1802). Distributed in Central Asia, Caucasian countries, Asia Minor, Near East and in European part of Mediterranean area from Corsica to Asia Minor ***fallax*** WEISE, 1888.
- Upper side black without metallic reflex. Body elongate-oval, humeral calli very weak or almost absent. Aedeagus as in figs **4131**, **4132**, spermatheca as in fig. **4126**. Length 2.0–2.9 mm. Described from Israel ***nigrilividus*** FURTH, 1979.



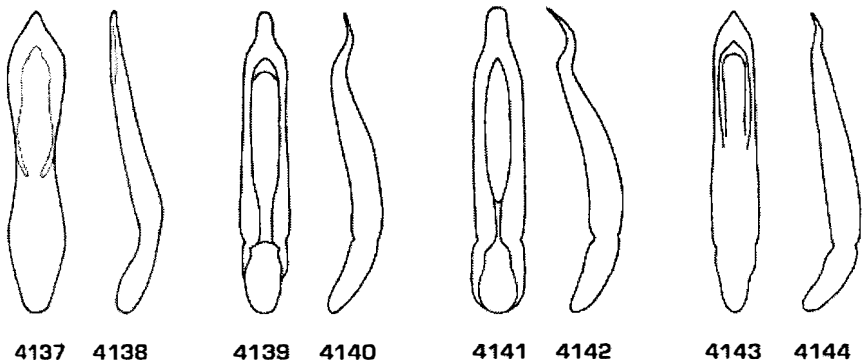
Figs 4124-4128. Spermatheca (4126, 4128 after FURTH 1979, remaining after LEONARDI 1973): 4124 – *Longitarsus (Longitarsus) linnaei*; 4125 – *L. (L.) fallax*; 4126 – *L. (L.) nigrilividus*, 4127 – *L. (L.) nigerrimus*; 4128 – *L. (L.) ballotae*.

6. Body short and broad. Humeral calli well-developed, usually strongly protruding. Upper side strongly punctate. Body black, legs piceous. Spur very long. Aedeagus as in figs **4133**, **4134**, spermatheca as in fig. **4127**. Living on *Lentibulariaceae* on peat bogs. Distributed in Alps, Carpathians, N Europe and subpolar area, reported also from Russian Far East **nigerrimus** (GYLLENHAL, 1827).
- . Body elongate-oval, humeral calli very weak or almost absent. Species from Near East. Rare small specimens of *nigrilividus* (antithesis 5).
7. Body length under 2.2 mm. Upper side pale. Aedeagus as in figs **4135**, **4136**, spermatheca as in fig. **4128**. Length 1.9–2.2 mm (= *canescens* FOUDRAS, 1860). Variations: head blackish, elytral sutura darkened (unnamed), head, elytral sutura and elytral lateral borders darkened (ab. *septorum* BUYSSON, 1908), legs and basal antennomeres pale, remaining parts of body blackish or pitchy (ab. *caligans* KRÁL). Lives on *Ballota nigra* L. and *Marrubium vulgare* L. (*Lamiaceae*). Distributed in Mediterranean area, Asia Minor, Central Asia and in a great part of Central Europe, from south-eastern England to eastern Ukraine **ballotae** (MARSHAM, 1802).
- . Body length over 2.2 mm **8**.
8. Length 2.5–3.2 mm **9**.
- . Length of body on average larger, hind legs not particularly long and robust. Apex of aedeagus not tongue-shaped **11**.
9. Hind legs long and robust. Apex of aedeagus tongue-shaped, in lateral view characteristically bent (figs **4131**, **4132**) **10**.
- . Hind legs not particularly long and robust. Body rusty-yellowish, upper side unicolorous, slightly flattened. Legs dark yellowish, hind femora slightly darker, meso- and metanotum pitchy. Spur long and bent as in *ballotae* (thesis 7). Punctuation of pronotum finely but distinctly and rather densely punctured, punctures on elytra slightly stronger. Aedeagus as in figs **4137**, **4138**. Remains *ballotae*, but larger, upper side unicolorous and shape of aedeagus different. Length about 2.6 mm. Described from NW Kazakhstan **salaris** LOPATIN et KULENOVA, 1985.



Figs 4129-4136. Aedeagus in ventral or dorsal and in lateral view (4129, 4130 after LEONARDI 1973; 4131, 4132 after FURTH 1979; remaining after WARCHAŁOWSKI 1996): 4129, 4130 – *Longitarsus (Longitarsus) falax*; 4131, 4132 – *L. (L.) nigrilividus*; 4133, 4134 – *L. (L.) nigerrimus*, 4135, 4136 – *L. (L.) ballotae*.

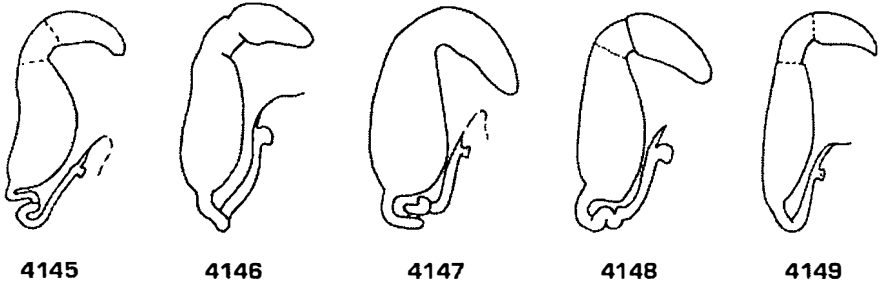
10. Length 2.3–3.2 mm, usually 2.5–2.8 mm. Hind wings normal developed, more rarely shortened. General view as in plate XCIII, **phot. 831**. Aedeagus as in figs **4139**, **4140**, spermatheca as in fig. **4145** (= *marginatus* GEOFFROY, 1785, *lateralis* ILLIGER, 1807, *saltatrix* WOLLASTON, 1854, *longipes* BACH, 1859, *trilineolatus* FOU DRAS, 1860). Ductus spermathecae forms at least one whole loop. Colouration of body variable, often with dark sutural stripe or/and with dark pattern on pronotum and borders of elytra. Variations: upper side uniformly pale, head, underside and hind femora (unnamed), elytra pale with blackish sutural stripe (ab. *domesticus* WEISE, 1893), elytra pale, laterally blackened, with dark sutural stripe (typical form), colouring as in ab. *domesticus*, humeral calli strongly projecting (ab. *patruelis* ALLARD, 1866), upper side very dark, entirely brown or blackish (ab. *unionis* SAHLBERG, 1913). Occurs as three subspecies: external characters as above (nominotypical subspecies, distributed in the most part of area), reticulatuion of elytra particularly deep and distinct (subsp. *rudipennis* ALLARD, 1866 endemic to Corsica), body great, very pale (subsp. *secutorius* PEYERIMHOFF, 1912 from northern Africa). In Asiatic part of area predominates the form devoid of dark pattern on the upper side. Widely distributed western-palaeartic species ***nigrofasciatus*** (GOEZE, 1777).
- Body smaller and more slender, length on average 2.3 mm. Hind wings considerably reduced or absent. Upper side pale brownish, often with blurred darker pattern as in *nigrofasciatus* (thesis 53). Aedeagus as in figs **4141**, **4142**, spermatheca as in fig. **4146**. Ductus spermathecae forms a half-loop or a bent only. Distributed in southern Italy, Corsica and Sardinia ***nebulosus*** (ALLARD, 1866).



Figs 4137-4144. Aedeagus in ventral or dorsal and in lateral view (4137, 4138 after LOPATIN and KULENOVA 1985; 4141, 4142 after DOGURT 1989; remaining after WARCHALOWSKI 1996): 4137, 4138 – *Longitarsus (Longitarsus) salarius*; 4139, 4140 – *L. (L.) nigrofasciatus*; 4141, 4142 – *L. (L.) nebulosus*, 4143, 4144 – *L. (L.) foudrasi*.

11. Large species. Upper side brownish, head and very broad sutural stripe black. Length 3.6 mm. An insufficiently studied, doubtful species from Madeira described based on one specimen (sex not determined) only ***fractus*** WOLLASTON, 1857.
- Not as above **12**.

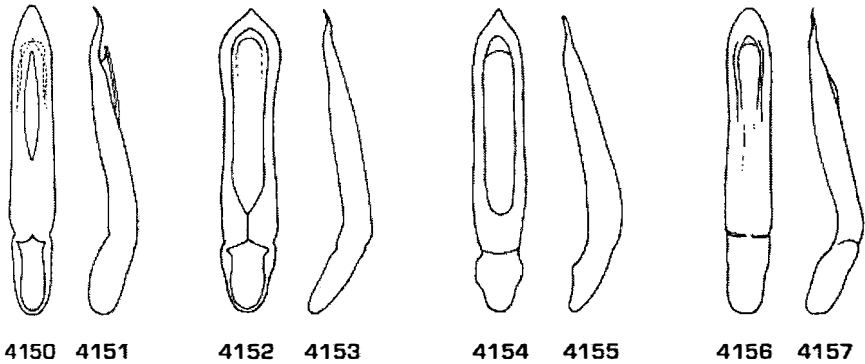
12. Body outline more slender. Primary elytral punctures only along suture distinct, on remaining part of surface perceptible only thanks to a certain transparency of elytra. Surface of elytra covered by extremely fine and shallow, leather-like reticulation. Apex of aedeagus forms a rather sharp angle (45–50°), its very tip rounded. Ductus spermathecae forms 2 loops. Here two species distinguishable only by shape of aedeagus 13.
- . Body outline more oval. Primary elytral punctures often fine or shallow, but perceptible not only thanks to a certain transparency of elytra. Apex of aedeagus forms a more obtuse angle (more than 60°) 14.



Figs 4145-4149. Spermatheca (4145 after LEONARDI 1972; 4146, after DOGUET 1989; 4148 after FURTH 1879; 4149 after GRUEV 1987; remaining after LEONARDI 1972): 4145 – *Longitarsus (Longitarsus) nigrofasciatus*; 4146 – *L. (L.) nebulosus*; 4147 – *L. (L.) foudrasi*, 4148 – *L. (L.) hermonensis*; 4149 – *L. (L.) picicollis*.

13. In male first tarsomere of fore legs feebly widened. Aedeagus as in figs **4143**, **4144**, spermatheca as in fig. **4147**. Length 2.8–3.1 mm. Ductus spermathecae thin, sinistrally coiled. Distributed in south-eastern part of Europe (Italy, Austria, southern Germany, Danube basin, Balkan Peninsula) and Asia minor. Reported also from Spain, Madeira and Morocco. Probably a eumediterranean species *foudrasi* WEISE, 1893.
- . In male first tarsomere of fore legs moderately widened. Aedeagus as in figs **4150**, **4151**, spermatheca as in fig. **4148**. Length 2.4–2.8 mm. Ductus spermathecae thick, dextrally coiled. Described from Israel *hermonensis* FURTH, 1979.
14. Pronotum entirely black or pitchy, in paler specimens chesnut with a great, blurred, blackish spot in the middle. Elytra dark yellow to reddish brown with rather narrow black sutural stripe, laterally never blackened. Aedeagus as in figs **4152**, **4153**, spermatheca as in fig. **4149**. General view as in plate XCIII, phot. **832**. Length 2.9–4.2 mm. Distributed in eastern part of Balkan Peninsula, Crimea, Asia Minor, Caucasian countries, Iran and Central Asia *picicollis* WEISE, 1900.
- . Pronotum entirely pale; sometimes (in rare melanotic aberrations of *tabidus*, antithesis 16) with a blurred, blackish spot in the middle, but in that case lateral borders of elytra are partly black 15.
15. Apex of aedeagus without a tooth or lamella (figs **4156**, **4157**) 16.

- Apex of aedeagus with a little tooth (figs **4154**, **4155**), spermatheca as in fig. **4158**. Length 3.5–4.0 mm (= *gracilicornis* MULSANT et REY, 1874, *caninae* BUYSSON, 1908). Lives on *Scrophularia canina* L. Distributed in western part of Mediterranean area **australis** (MULSANT et REY, 1874).



Figs 4150-4157. Aedeagus in ventral or dorsal and in lateral view (4150, 4151 after FURTH 1979; 4152, 4153 after WARCHAŁOWSKI 1996; 4154, 4155 after DÖBERL 1994; 4156, 4157 after LEONARDI 1979): 4150, 4151 – *Longitarsus (Longitarsus) hermonensis*; 4152, 4153 – *L. (L.) picicollis*; 4154, 4155 – *L. (L.) australis*, 4156, 4157 – *L. (L.) baeticus*.

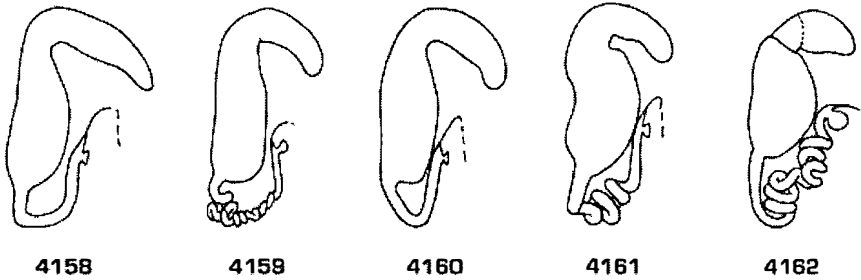
- 16. Aedeagus as in figs **4156**, **4157**, spermatheca as in fig. **4159**, ductus spermathecae with 7–12 loops. Length 2.8–3.6 mm. Distributed in Spain and Morocco **baeticus** LEONARDI, 1979.
- Aedeagus as in figs **4163**, **4164**, spermatheca as in fig. **4160**. Ductus spermathecae without loops. General view as in plate XCIII, phot. **835**. Length 3.0–3.6 mm (male) to 3.3–4.1 mm (female) (= *verbasci* PANZER, 1794, *jaceae* PANZER, 1809). Variations: upper side entirely pale (typical form), upper side pale, on elytra a blackish sutural stripe (ab. *borealis* ZETTERSTEDT, 1828), as *borealis* but pronotum darkened (ab. *thapsi* MARSHAM, 1802), on lateral border of elytron an elongate, blackish stripe (ab. *si-symbrii* FABRICIUS, 1792), body pale, labrum and apices of hind femora darkened (ab. *vulgaris* WEISE, 1893), body very pale, upper side straw-coloured, a little transparent (ab. *elongatus* WEISE, 1893). Here most probably also (?subsp.) *corpulentus* WEISE, 1887, described from Transcaspia and (?subsp.) *L. grandis* RAPILLY, 1978 from Iran, both differing from *tabidus* by rather no intrinsic details. Distributed in western part of Palaearctic Region from Morocco to Mongolia **tabidus** (FABRICIUS, 1775).

Auxiliary group **D**

Pronotum yellow, elytra black.

Here one species only. Colouration of upper side unusual in the genus *Longitarsus*: underside, head and elytra black, pronotum yellow. Hind femora black, hind tibia dark

brown, remaining parts of legs yellow, antennomeres 5–11 and tarsomeres 3 and 4 darkened. Aedeagus as in figs **4165**, **4166**. Length about 2.8 mm. Described from Morocco, based on one male only *gloriae* DOGUET et BERGEAL, 2002.



Figs 4158-4162. Spermatheca (4159, 4161 after FURTH 1879, remaining after LEONARDI 1972): 4158 – *Longitarsus (Longitarsus) australis*; 4159 – *L. (L.) baeticus*; 4160 – *L. (L.) tabidus*, 4161 – *L. (L.) pulmonariae*, 4162 – *L. (L.) nimrodi*.

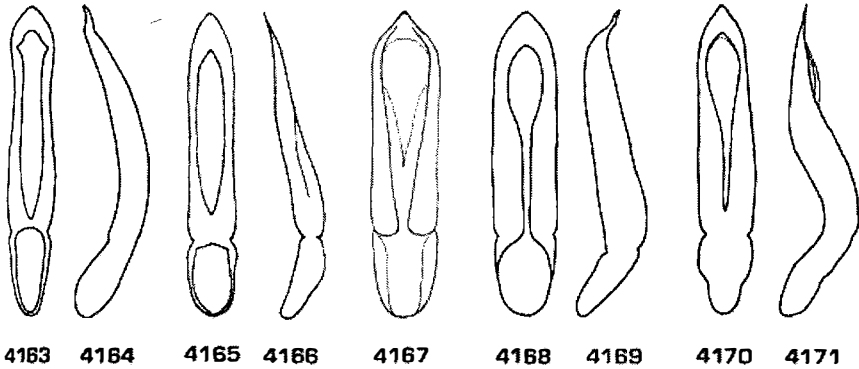
Auxiliary group E

exoletus group

Key to species

1. In fore legs first tarsomere, particularly in male, longer than in another *Longitarsus*-species. Aedeagus lancet-like, in lateral view somewhat S-shaped, its apical part slightly bent dorsally, ventral gutter narrowed at middle. Several species living on *Boraginaceae* (*exoletus*-group) **2**.
- . In fore legs first tarsomer not elongated. Body elongate, strongly convex, black with bronzy reflex. Legs and antennae pale yellow except for chestnut metafemora and apices of antennae slightly darkened. Aedeagus as in fig. **4167**. Length 1.8–2.0 mm. Described from Hoggar mountains (S Algeria, Sahara) *hoggarensis* COBOS, 1958.
2. Upper side pale, head and margins of elytral suture dark yellow amber. Here 4 species determinable by external characters only in case of well-sclerified specimens. Pale specimens distinguishable only by shape of aedeagus and/or spermatheca **3**.
- . At least pronotum and a part of elytra black or dark brown **6**.
3. Antennae pale rusty-yellow, their apical parts slightly darkened, brownish. Hind femora without black spot at apex **4**.
- . Apical 5–6 antennomeres black or blackish. At apex of hind femora a black spot, sometimes spreading on whole apical half of femur **5**.
4. Elytral puncturation not particularly fine. Apical part of hind femora darkened. Aedeagus as in figs **4168**, **4169**, spermatheca as in fig. **4161**. Ductus spermathecae forms 3–5 loops. Length 2.4–3.0 mm. Distributed in Danube basin, southern and eastern Germany, Balkan Peninsula, in basin of Black Sea and in Caucasian countries *pulmonariae* WEISE, 1893.

- Elytral puncturation very fine. Hind femora uniformly pale. Aedeagus as in figs **4170**, **4171**, spermatheca as in fig. **4162**. Ductus spermathecae forms 7–8 loops. Known hitherto from Israel and N Italy **nimrodi** FURTH, 1979.

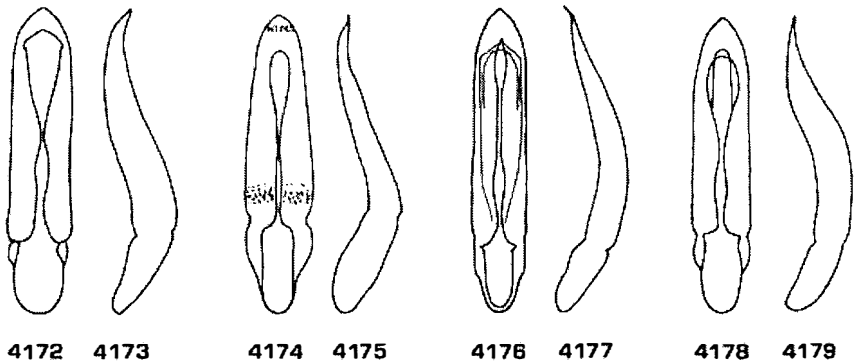


Figs 4163-4171. Aedeagus in ventral or dorsal and in lateral view (4163, 4164 after DÖBERL 1994; 4165, 4166 after DOGUET and BERGÉAL 2002; 4167 after COBOS 1958; 4168, 4169 after WARCHAŁOWSKI 1996; 4170, 4171 after FURTH 1979): 4163, 4164 – *Longitarsus (Longitarsus) tabidus*; 4165, 4166 – *L. (L.) gloriae*; 4167 – *L. (L.) hoggarensis*, 4168, 4169 – *L. (L.) pulmonariae*; 4170, 4171 – *L. (L.) nimrodi*.

- 5. Larger. General view as in plate XCII, **phot. 828**. Aedeagus as in figs **4172**, **4173**, spermatheca as in fig. **4180**. Length 2.6–3.1 mm (= *exoletus* LINNAEUS, 1761, *femorialis* MARSHAM, 1802, *boppardiensis* BACH, 1856, *livens* MULSANT et REY, 1874 nec LECONTE, 1858, *lividus* FAUVEL, 1888). Variations: hind wings reduced, humeral calli feebly developed (ab. *arctulus* WEISE, 1893). Forms 3 subspecies: coloured as above (nominotypical subspecies from northern part of area), upper side dark yellow to pale rusty-reddish, underside pale, apices of hind femora brown (subsp. *rufulus* FOU DRAS, 1860 from mediterranean part of Europe), larger (3.0–3.8 mm), colouring of body very pale (subsp. *megaloleucus* ALLARD, 1860 from northern Africa). Distributed in Western Palaearctis from Morocco to Afghanistan **exoletus** (LINNAEUS, 1758).
- Smaller. Labrum and mandibulae always blackened. Aedeagus as in figs **4174**, **4175**, spermatheca as in fig. **4181**. Length 2.2–2.8 mm (= *nervosus* WOLLASTON, 1854, *pectoralis* FOU DRAS, 1860). Distributed in Mediterranean area from Canary Islands to Creta and Cyrenaica **cerinthes** SCHRANK, 1798.
- 6. Elytra brick red with a broad sutural stripe and usually with darnened margins in hind part. General view as in plate XCIII, **phot. 834**. Aedeagus as in figs **4176**, **4177**, spermatheca as in fig. **4182**. Length 2.6–3.6 mm. Distributed in north-western Africa, reported also from southern Portugal **sencieri** (ALLARD, 1860).
- Elytra black or black with pale spots 7.
- 7. On each elytron two yellowish spots. Aedeagus as in figs **4178**, **4179**, spermatheca as in fig. **4182**. Length 2.0–2.7 mm (= *quadripustulatus* FABRICIUS, 1775, *quadripunctatus* GEOFFROY, 1785, *quatuorpustulatus* OLIVIER 178, *quadrinotatus* GMELIN, 1790, *cy-noglossi* MARSHAM, 1802, *quadrimaculatus* KOCH, 1803, *quadripunctulatus* STEPHENS,

1839). Variations: legs pale (typical form), on each elytron one pale spot only (ab. *binotatus* WEISE, 1888), on each elytron both spots fused (ab. *vittatus* WEISE, 1888), elytra uniformly black (ab. *immaculatus* WEISE, 1888). Distributed in central, southern and eastern Europe from France and southern England to eastern Ukraine as well as from northern Italy to Asia Minor and Caucasian countries

- *quadriguttatus* (PONTOPPIDAN, 1763).
 - Upper side uniformly black. Antennae entirely pale, at most apical antennomeres indistinctly darkened. Aedeagus as in figs **4185**, **4186**, spermatheca as in fig. **4184**. Length 2.4–3.3 mm (= *hubenthalii* WANKA, 1917). Distributed in Danube basin between Alps and western Carpathians
- *pallidicornis* KUTSCHERA, 1863.



Figs 4172-4179. Aedeagus in ventral or dorsal and in lateral view (4174, 4175 after DÖBERL 1994, remaining after WARCHAŁOWSKI 1996): 4172, 4173 – *Longitarsus (Longitarsus) exsoletus*; 4174, 4175 – *L. (L.) cerinthus*; 4176, 4177 – *L. (L.) sencieri*, 4178, 4179 – *L. (L.) quadriguttatus*.

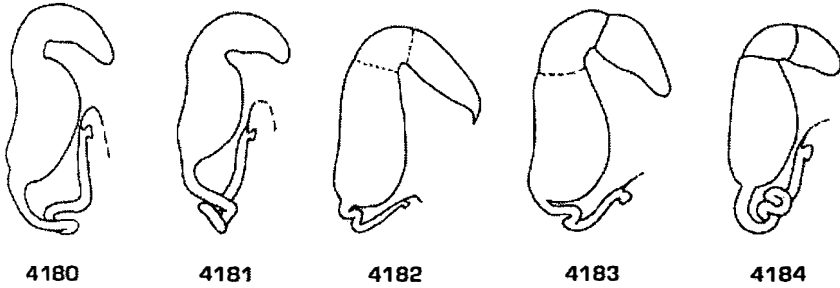
Auxiliary group F

Elytra uniformly black or black with metallic reflex.

Key to species

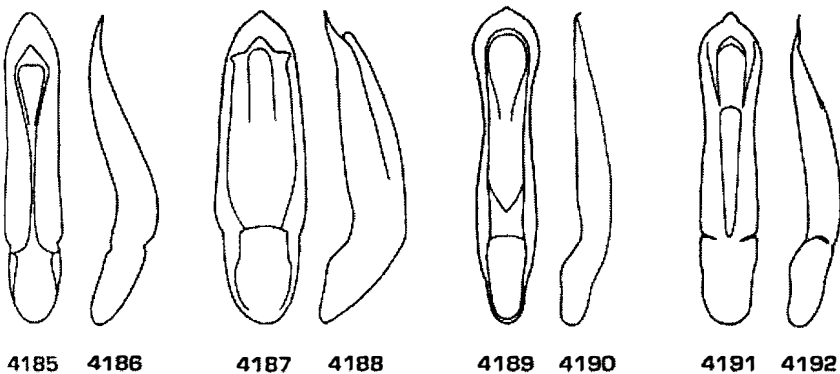
1. Upper side bicolorous: elytra black, pronotum yellow orange. Elytra very broad and convex. Aedeagus as in figs **4187**, **4188**, spermatheca as in fig. **4193**. Length 2.6–3.1 mm. Endemic to Madeira *cinerariae* WOLLASTON, 1854.
- Upper side unicolorous, black or black with metallic reflex 2.
2. Humeri rounded, humeral calli indistinct or absent 3.
- Humeral calli well-developed 8.
3. Pronotum short and broad, its surface reticulate and finely punctate. Elytra shining, almost without reticulation, deeply and purely punctate. There exist a distinct contrast between matt surface of pronotum and strongly shining surface of elytra 4.
- Pronotum not particularly short, about 1.3–1.5 × broader than long 5.

4. Species from central- and eastern part of Europa. Aedeagus as in figs **4189**, **4190**, spermatheca as in fig. **4194**. Length 1.7–2.0 mm (= *pannonicus* KASZAB, 1962). Known from basin of Caspian Sea, Danube basin and northern Germany *tristis* WEISE, 1888.
- Species from Israel. Here the darkest specimens of *debernardii* (auxiliary group I, thesis 20).



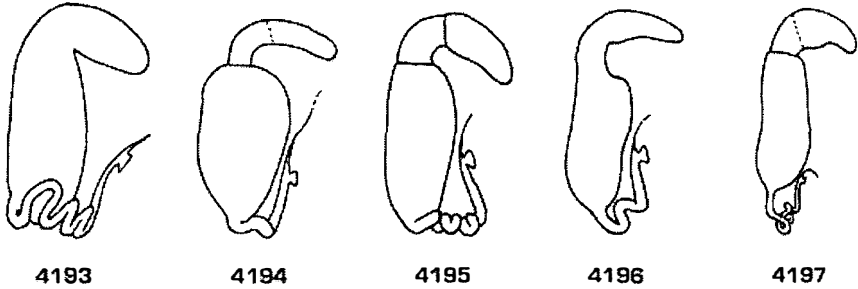
Figs 4180-4184. Spermatheca (4180, 4181 after LEONARDI 1972; 4182 after GRUEV 1987; 4183, 4184 after DÖBERL 1994): 4180 – *Longitarsus (Longitarsus) exsoletus*; 4181 – *L. (L.) cerinthes*; 4182 – *L. (L.) sencieri*, 4183 – *L. (L.) quadriguttatus*; 4184 – *L. (L.) pallidicornis*.

5. Reticulation of pronotum and elytra deep and distinct, upper side silky or matt. Body slightly flattened. Body pitchy brown to black, elytra often lightened in humeral and in apical area. Aedeagus as in figs **4191**, **4192**, spermatheca as in fig. **4195**. Length 1.4–1.8 mm. Distributed in Ukraine, Balkan Peninsula and in Danube basin *medvedevi* SHAPIRO, 1956.
- Reticulation of pronotum and particularly of elytra very shallow, indistinct, upper side shining. Length of body 1.5–2.0 mm **6**.



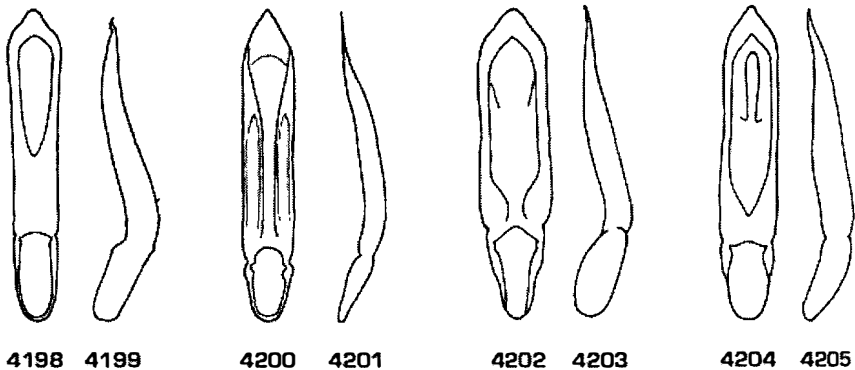
Figs 4185-4192. Aedeagus in ventral or dorsal and in lateral view (4189, 4190 after LEONARDI 1973; 4191, 4192 after DOGUET 1990; remaining after WARCHALOWSKI 1996): 4185, 4186 – *Longitarsus (Longitarsus) pallidicornis*; 4187, 4188 – *L. (L.) cinerariae*; 4189, 4190 – *L. (L.) tristis*, 4191, 4192 – *L. (L.) medvedevi*.

6. Body convex, oval 7.
 - Body feebly convex (here also the darkest forms of *springeri*, see auxiliary group I, thesis 30). Aedeagus as in figs **4198**, **4199**, spermatheca as in fig. **4196**. Length 1.4–1.9 mm. Distributed in Danube basin, northern Italy, Austria and southern Germany. Reported also from France, England, Sweden, Finland, Mongolia etc., but all the reports require verification ***absynthii*** KUTSCHERA, 1862.



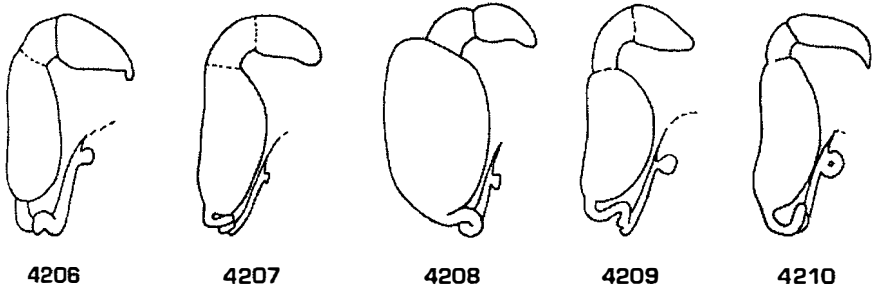
Figs 4193-4197. Spermatheca (4193 after BIONDI 1990; 4194 after LEONARDI 1973; 4195 after LEONARDI and DOGUET 1990; 4196 after LEONARDI 1975; 4197 after GRUEV 1987): 4193 – *Longitarsus (Longitarsus) cinerariae*; 4194 – *L. (L.) tristis*; 4195 – *L. (L.) medvedevi*, 4196 – *L. (L.) absynthii*; 4197 – *L. (L.) jailensis*.

7. Species from the basin of Black Sea. Aedeagus as in figs **4200**, **4201**, spermatheca as in fig. **4197**. Length 1.7–2.0 mm. Known from Crimea and Balkan Peninsula ***jailensis*** HEIKERTINGER, 1913.
 - Species from the Danube basin and eastern Mediterranean. Apex of elytra as in fig. **4543**. Here *pinguis* (see subgenus *Testergus*, antithesis 30).



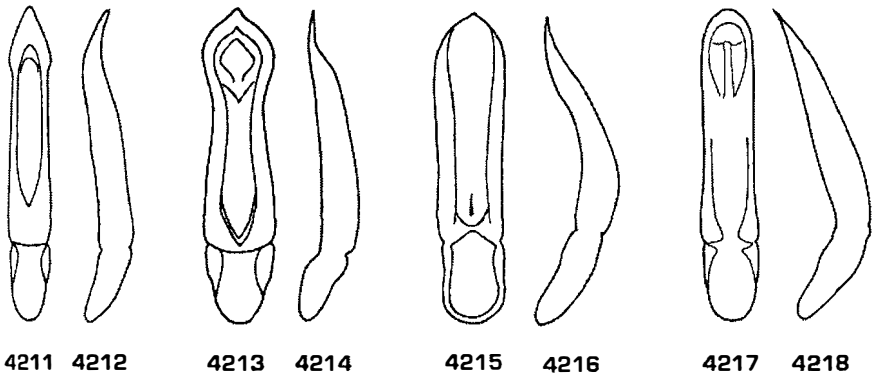
Figs 4198-4205. Aedeagus in ventral or dorsal and in lateral view (4200, 4201 after HEIKERTINGER 1913; 4204, 4205 after WARCHALOWSKI 1996; remaining after DÖBERL 1994): 4198, 4199 – *Longitarsus (Longitarsus) absynthii*; 4200, 4201 – *L. (L.) jailensis*; 4202, 4203 – *L. (L.) plantagomaritimus*, 4204, 4205 – *L. (L.) niger*.

8. All legs darkened, black, pitchy or dark brown. Here the darkest forms of *plantagomaritimus* (thesis 9).
 -. At least fore and mid tibiae as well as tarsi pale 9.



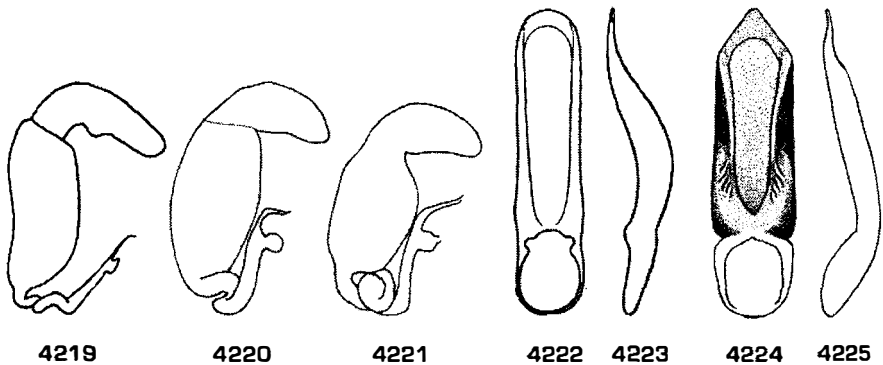
Figs 4206-4210. Spermatheca (4206 after DÖBERL 1994; 4210 after GRUEV and ARNOLD 1989; remaining after GRUEV 1987): 4206 - *Longitarsus (Longitarsus) plantagomaritimus*; 4207 - *L. (L.) niger*; 4208 - *L. (L.) rectilineatus*, 4209 - *L. (L.) parvulus*; 4210 - *L. (L.) behnei*.

9. Hind tibiae black or dark brown. Aedeagus as in figs **4202**, **4203**, spermatheca as in fig. **4206**. Length 2.4–2.7 mm. Distributed around the North Sea (the British Isles, northern Germany, Netherlands). Often confused with dark forms of *melanocephalus* (auxiliary group H, antithesis 22) numerous European records require verification ***plantagomaritimus*** DOLLMANN, 1912.
 -. Hind tibiae pale, insignificantly or not at all darker than the remaining tibiae **10**.



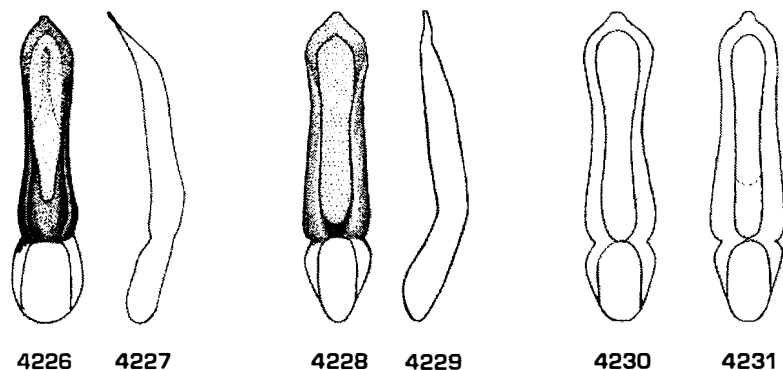
Figs 4211-4218. Aedeagus in ventral or dorsal and in lateral view (4215, 4216 after GRUEV and ARNOLD 1989, remaining after WARCHAŁOWSKI 1996): 4211, 4212 - *Longitarsus (Longitarsus) rectilineatus*; 4213, 4214 - *L. (L.) parvulus*; 4215, 4216 - *L. (L.) behnei*, 4217, 4218 - *L. (L.) aeneus*.

10. Length of body 1.9–2.6 mm (male) to 2.3–3.0 mm (female). Upper side pure black, without metallic reflex. Apical part of elytra slightly narrowed and elongate (as in *melanocephalus*, (auxiliary group H, antithesis 22) and *plantagomaritimus*, thesis 9). Aedeagus as in figs **4204**, **4205**, spermatheca as in fig. **4207** (= *elongatus* BACH, 1859). Variation: upper side dark brown (ab. *peregii* KASZAB, 1962). Distributed in a great part of Europe (northern Spain, France, southern Scandinavia, Baltic countries, central Europe, Italy, Balkans, western Turkey) **niger** (KOCH, 1803).
- . Body shorter (rarely to 2.3 mm). Apical part of elytra not elongate, evenly rounded **11**.
11. Puncturation of elytra with a distinct tendency to form parallel longitudinal rows. Length of body 1.7–2.3 mm. Black, a few basal antennomeres and legs except hind femora yellowish. Humeral calli usually protruding. Aedeagus as in figs **4211**, **4212**, spermatheca as in fig. **4208** (= *spilotus* WEISE, 1900). Variation: hind wings reduced, humeral calli not protruding (ab. *kaufmanni* KASZAB, 1962). Distributed in Mediterranean area from Algeria and southern France to Israel, in Danube basin, in Caucasian countries and in central Asia **rectilineatus** (FOUDRAS, 1860).
- . Elytra randomly punctate **12**.
12. Pronotum and elytra reticulate, silky or almost matt (see also Transcaspiian species *tishechkini*, thesis 17). Puncturation of upper side very fine and shallow. Aedeagus as in figs **4213**, **4214**, spermatheca as in fig. **4209**. Length 1.2–1.8 mm (= *pumilus* LILIGER, 1807, *maderensis* ALLARD, 1863). Variation: hind wings reduced, humeral calli absent, upper side usually dark brown (ab. *concinus* WEISE, 1888). Lives on *Linaceae*. Widely distributed from Cape Verde Islands and Madeira to eastern Siberia **parvulus** (PAYKULL, 1799).
- . Ground of upper side indistinctly reticulated or smooth, shining **13**.
13. Species from W Europe and W Mediterranean area **14**.
- . Asiatic species (*asperifoliarum*-group) **16**.



Figs 4219–4225. Spermatheca, aedeagus in ventral and lateral view (4222, 4223 after HEIKERTINGER 1914; 4219, 4221 after WARCHALOWSKI 1996; remaining after KONSTANTINOV 2000): 4219 – *Longitarsus (Longitarsus) aeneus*; 4220 – *L. (L.) asperifoliarum*; 4221 – *L. (L.) violentus*, 4222, 4223 – *L. (L.) weisei*; 4224, 4225 – *L. (L.) hissaricus*.

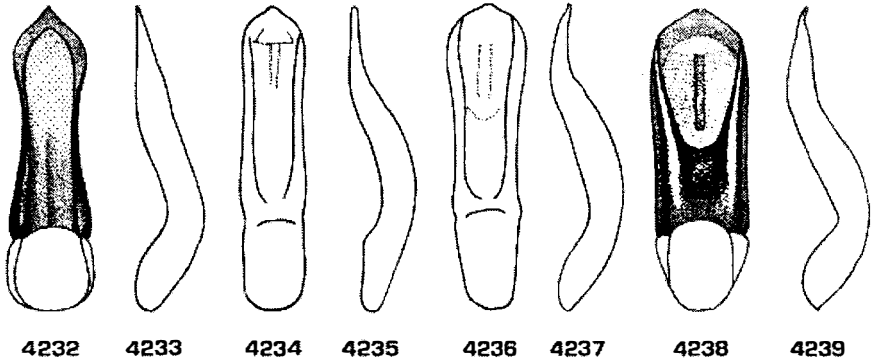
14. Species described from Bulgaria. Aedeagus as in figs **4215**, **4216**, spermatheca as in fig. **4210**. Length 1.7–2.0 mm. Often ranked in subgenus *Testergus*, but the presence of humeral calli and absence of lateroapical angle of elytra indicates its membership of the nominotypical subgenus. Known from Bulgaria only Primary punctures of pronotum **behnei** GRUEV et ARNOLD, 1989.
- . Species from other areas. Aedeagus differently shaped **15**.
15. Tubular part of aedeagus in lateral view straight. General view as in plate XCII, **phot. 821**. Aedeagus as in figs **4217**, **4218**, spermatheca as in fig. **4219**. Length 1.9–2.3 mm. Variation: hind wings reduced, humeral calli feebly protruding (ab. *involucer* WEISE, 1888). Distributed in western part of Mediterranean area (Canary Islands, north-western Africa, Iberian Peninsula, France, Italy) **aeneus** KUTSCHERA, 1862.
- . Tubular part of aedeagus (figs **4222**, **4223**) in lateral view somewhat S-shaped bent. Very unclear species described from France, known only from dessin of aedeagus and insufficient descriptions, later constantly confused with different black species from Europe and the Mediterranean area (*aeneus*, *fuscoaeneus*, *violentus*, *asperifoliarum*, probably also *tristis* and *pinguis*). Also unclear is its ?subspecies *maassi* HUBENTHAL, 1898 described from Germany **weisei** GUILLEBEAU, 1895.
16. Apical part of aedeagus triangular with obtuse apex, without lamella (figs **4224**, **4225**). Apical margin of elytra more broadly rounded than in other species of *asperifoliarum*-group. Length 1.9–2.0 mm. Described from Tadzhikistan **hissaricus** LOPATIN, 2000.
- . Apex of aedeagus with lamella, apical part not triangular **17**.



Figs 4226-4231. Aedeagus in ventral and lateral view (after KONSTANTINOV 2000): 4226, 4227 – *Longitarsus (Longitarsus) tishechkini*; 4228-4231 – *L. (L.) asperifoliarum*.

17. Pronotum strongly reticulated, matt. Remaining external characters as in *asperifoliarum* (thesis 18). Apex of aedeagus (figs **4226**, **4227**) in lateral view bent down. Length 1.65–1.8 mm. Described from Kazakhstan based in two specimens only **tishechkini** KONSTANTINOV, 2000.
- . Pronotum shallowly reticulated, shining **18**.

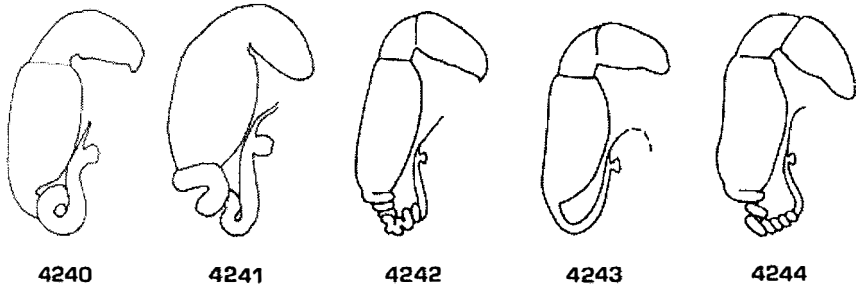
18. Base of first antennomere darker than its apex 19.
 - Base of first antennomere as dark as its apex. Tubular part of aedeagus in lateral view straight 67. Aedeagus somewhat variable (figs 4228–4231), its apex rounded with lamella. Metallic shine of upper side usually weak, sometimes absent. Spermatheca as in fig. 4220. Length 1.6–2.1 mm. The variation with reduced hind wings (ab. *defectus* JACOBSON, 1893) probably concern *marguzoricus* (thesis 21). Distributed in Transcaspia and N Iran *asperifoliarum* WEISE, 1887.



Figs 4232-4239. Aedeagus in ventral or dorsal and in lateral view (4234, 4235 after WARCHALOWSKI 1996, remaining after KONSTANTINOV 2000): 4232, 4233 – *Longitarsus (Longitarsus) afghanicus*; 4234, 4235 – *L. (L.) violentus*; 4236, 4237 – *L. (L.) marguzoricus*, 4238, 4239 – *L. (L.) violentoides*.

19. Tibiae pale, yellow. Lateral margin of pronotum without denticle before middle. Puncturation of pronotum very fine. Aedeagus (figs 4232, 4233) broader and shorter than in *asperifoliarum*, its tubular part in dorsal view distinctly narrowed in the middle. Length 1.75 mm. Until recently considered as a form of *asperifoliarum*. Described from Afghanistan *afghanicus* LOPATIN, 1963.
 - Tibiae darker, brownish or rusty-reddish. Lateral margin of pronotum with denticle before middle 20.
 20. Penultimate abdominal tergite of female at fore margin of pygidium densely covered laterally by extremely short hairs (microtrichia). Tubular part of aedeagus (figs 4234, 4235) more slender and more feebly S-shaped. Spermatheca as in fig. 4221. Length 1.6–1.9 mm. Broadly distributed from W Kazakhstan and Iran to Mongolia, N China and Russian Far East *violentus* WEISE, 1893.
 - Penultimate abdominal tergite of female at fore margin of pygidium not covered laterally by microtrichia, at most with microscopic punctulation. Tubular part of aedeagus more robust and more strongly S-shaped 21.
 21. Penultimate abdominal tergite of female at fore margin of pygidium with a few deep setiferous pores. Apex of aedeagus (figs 4236, 4237) with distinct lamella, spermatheca as in fig. 4240. Externally similar to *violentus* (thesis 20). Length 1.9–2.2 mm. Described from Tadjikistan *marguzoricus* KONSTANTINOV, 2000.

- Penultimate abdominal tergite of female at fore margin of pygidium without deep setiferous pores. Aedeagus (figs **4238**, **4239**) without lamella, distinctly S-shaped in lateral view. Spermatheca as in fig. **4241**. Length about 1.6 mm. Described from Georgia **violentoides** KONSTANTINOV, 2000.



Figs 4240-4244. Spermatheca (4240, 4241 after KONSTANTINOV 2000; 4243 after LEONARDI 1972; remaining after LEONARDI and DOGUET 1990): 4240 – *Longitarsus (Longitarsus) marguzoricus*; 4241 – *L. (L.) violentoides*; 4242 – *L. (L.) minimus*, 4243 – *L. (L.) pratensis*; 4244 – *L. (L.) reichei*.

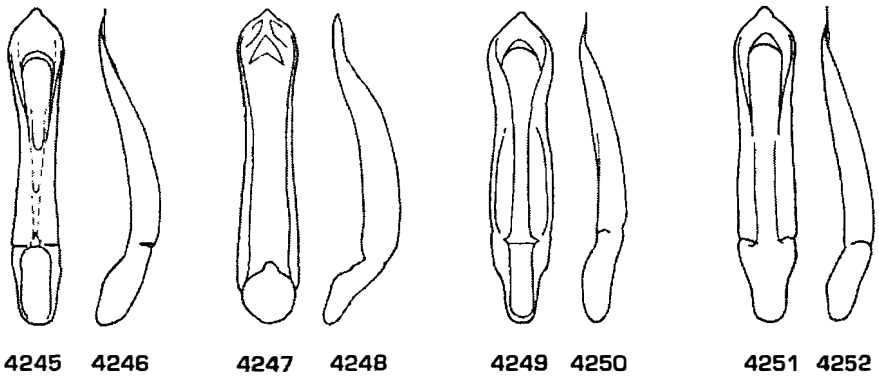
Auxiliary group G

pratensis-group

Key to species

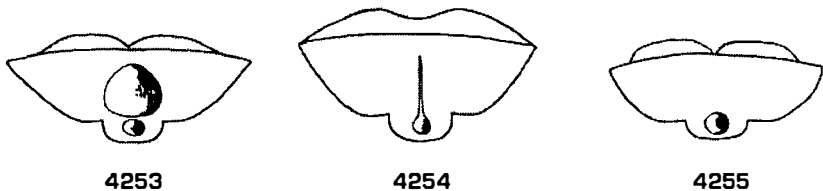
1. Humeral calli almost always absent. Elytra entirely or in greatest part brownish yellow. Aedeagus as in figs **4245**, **4246**, spermatheca as in fig. **4242**. Colouration of body and sculpture of upper side as in *pratensis* (thesis 4). Length 1.4–1.8 mm. Lives on *Plantago media* L. Distribution area unclear as a result of confusing the species with *pratensis* (thesis 4). Distributed in south-eastern part of Europe (part of Italy, Balkan Peninsula, Danube basin, southern Poland, Romania, southern part of Ukraine and Caucasian countries) **minimus** KUTSCHERA, 1863.
- Humeral calli projecting or at least distinctly developed, except in almost black forms of *medvedevi* (auxiliary group F, thesis 5) and in not in central or south-eastern Europa occurring species. Aedeagus broader **2**
2. Anterior angles of pronotum dentiform, protruding, lateral sides almost straight, subparallel. Head, apical half of antennae, underside and hind femora pitchy black, pronotum and elytra rusty-yellowish, suture very narrowly slightly darkened. Aedeagus as in figs **4247**, **4248**. Length 1.8–2.0 mm (male) to 2.8 mm (female). Described from Kazakhstan, reported also from Afghanistan **acuticollis** LOPATIN, 1976.
- Anterior angles of pronotum not protruding, dentiform **3**
3. Aedeagus relatively long, lamina ventralis membranaceous, tucked lateral borders broad. Last abdominal sternite in female with a distinct pit, except species with more than 3 loops on ductus spermathecae **4**

- Aedeagus short, lamina ventralis in hind part sclerified, tucked borders narrow. Last abdominal sternite in female as a rule without impressions. Ductus spermathecae forms at most 3 loops 8.



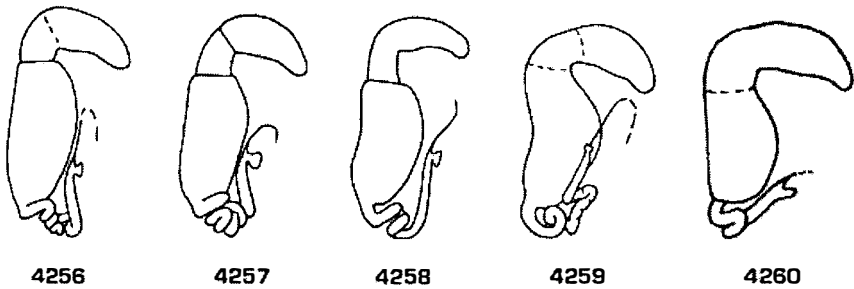
Figs 4245-4252. Aedeagus in ventral or dorsal and in lateral view (4247, 4248 after WARCHAŁOWSKI 1996; remaining after LEONARDI and DOGUET 1990): 4245, 4246 – *Longitarsus (Longitarsus) minimus*; 4247, 4248 – *L. (L.) acuticollis*; 4249, 4250 – *L. (L.) pratensis*, 4251, 4252 – *L. (L.) reichei*.

- 4. Aedeagus (figs **4249**, **4250**) shorter, tucked lateral borders with distinct, fine ribs. Spermatheca as in fig. **4243**, ductus spermathecae without loops. General view as in plate XCIII, **phot. 833**. Length 1.4–2.0 mm (= *pusillus* GYLLENHAL, 1813, *funereus* MULSANT et REY, 1874, *medicaginis* ALLARD, 1860, *obsoletus* MULSANT et REY, 1874). Variation: pronotum very dark, pitchy or black (ab. *collaris* STEPHENS, 1831). Distributed in most part of Europe, Asia Minor and central Asia. Distribution area unclear as a result of confusing the species with *reichei* (thesis 5) and *minimus* (thesis 1)
..... ***pratensis*** (PANZER, 1784).
- Aedeagus longer, tucked lateral borders without ribs. Ductus spermathecae forms 4–10 loops 5.



Figs 4253-4255. Anal sternite in male (after LEONARDI 1973): 4253 – *Longitarsus (Longitarsus) reichei*; 4254 – *L. (L.) scutellaris*; 4255 – *L. (L.) fulgens*.

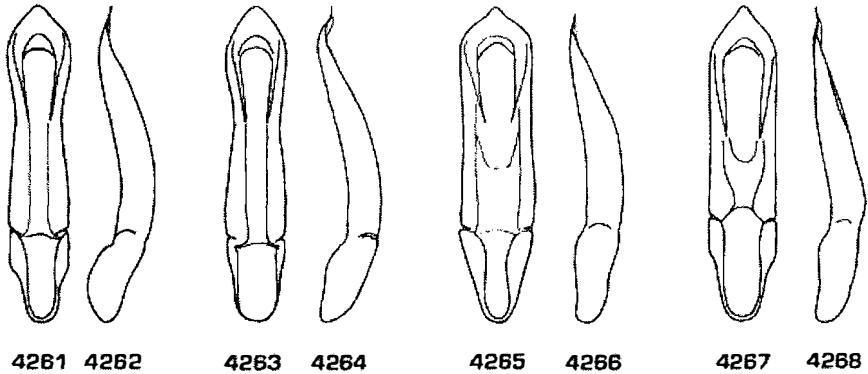
5. Lateral margins of aedeagus (figs **4251**, **4252**) approximately parallel apex of aedeagus with distinct lamella or tooth. Last abdominal sternite in male with a deep, oval pit, in female with two very distinct impressions. spermatheca as in fig. **4244**. Length 1.3–1.9 mm. Variation: melanotic form; pronotum and blurred (sometimes very broad) sutural stripe dark brown or blackish (ab. *fuscus* KUTSCHERA, 1864). Occurs in western and central Europe, distribution area unclear as a result of confusing the species with *minimus* (thesis 1) and *pratensis* (thesis 4) **reichei** (ALLARD, 1860).
- . Aedeagus formed differently. Last abdominal sternite in male without pit or with non-oval impression, in female evenly convex or with traces of impressions only **6**.



Figs 4256–4260. Spermatheca (4260, 4241 after DÖBERL 2002, remaining after LEONARDI and DOGUET 1990): 4256 – *Longitarsus (Longitarsus) scutellaris*; 4257 – *L. (L.) lewisii*; 4258 – *L. (L.) bytinskii*, 4259 – *L. (L.) pardoii*; 4260 – *L. (L.) heinigi*.

6. In male first tarsomere of fore legs strongly widened. Apex of aedeagus feebly bent, without lamella in the middle. Aedeagus as in fig. **4261**, **4262**, spermatheca as in fig. **4256**. Length 1.5–1.9 (male) to 1.7–2.0 mm (female). Occurs in southern and south-eastern Europe, distribution area unclear as a result of confusing the species with *lewisii* (auxiliary group I, thesis 7) **scutellaris** (MULSANT et REY, 1874).
- . In male first tarsomere of fore legs moderately widened. Apex of aedeagus distinctly dorsally bent or/and with a lamella in the middle **7**.
7. Upper side, except head, pale. Aedeagus as in figs **4263**, **4264**, spermatheca as in fig. **4256**. Ductus spermathecae forms on average 4–6 loops. Length 1.7–2.3 mm (= *stramineus* WEISE, 1887, *borodinensis* CHŪJŌ, 1940). Transpalaeartic species, distributed from France to Japan **lewisii** (BALY, 1874).
- . Upper side brown or blackish with blurred lightnings. Forms of *medvedevi* (auxiliary group F, thesis 5).
8. Aedeagus as in figs **4265**, **4266**, its apex rather broadly rounded, with lamella, on underside without ribs, spermatheca as in fig. **4258**. Ductus spermathecae without loops. Colouring of body as in *pratensis* (thesis 4), but generally darker. Described from Israel **bytinskii** FURTH, 1979.
- . Apex of aedeagus not shortly, but semicircularly rounded, or almost subtriangular, with lamella **9**.

9. Elytra oval, without any trace of humeral callus. Aedeagus as in figs **4267**, **4268**, ductus spermathecae (fig. **4259**) usually forms one whole loop. Colouring of body as in *pratensis* (thesis 4), in melanotic aberrations much darker. Length 2.3–2.5 mm. Distributed in Morocco (Atlas), Andalusia and in Pyrenees ***pardoii*** DOGUET, 1974.
- . Humeral calli present **10.**



Figs 4261-4268. Aedeagus in ventral and lateral view (after LEONARDI and DOGUET 1990): 4261, 4262 – *Longitarsus (Longitarsus) scutellaris*; 4263, 4264 – *L. (L.) lewisii*; 4265, 4266 – *L. (L.) bytinskii*, 4267, 4268 – *L. (L.) pardoii*.

10. Pronotum longer, about 1.3 × broader than long. Underside of aedeagus (figs **4269**, **4270**) in basal part with transverse ribs, spermatheca as in fig. **4260**. Length about 2.3 mm. Distributed in Transcaspia ***heinigi*** DÖBERL, 2002.
- . Pronotum shorter, about 1.5 × broader than long. Underside of aedeagus (figs **4271**, **4272**) in basal part without transverse ribs, spermatheca as in fig. **4277**. Length 2.3–2.6 mm. Broadly distributed in N Iran, Transcaspia, Afghanistan, and Mongolia ***desertorum*** HEIKERTINGER, 1913.

Auxiliary group **H**

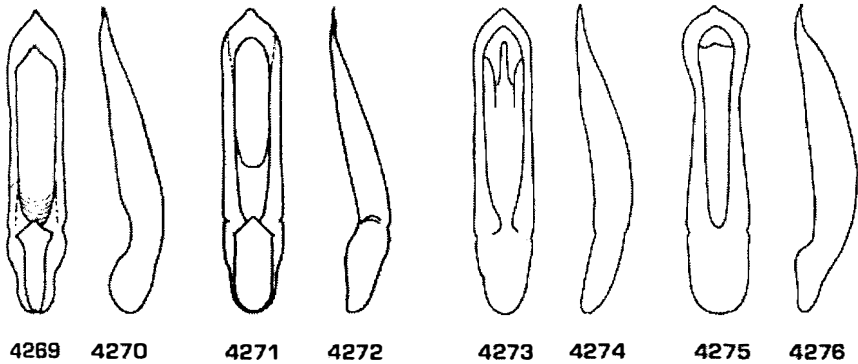
Elytra bicolorous, mainly pale with dark sutural stripe.

Key to species

1. Elytra bicolorous: a very broad, apically shortened sutural stripe black, lateral borders and apex yellowish brown **2.**
- . Elytra differently coloured **4.**
2. Pronotum entirely yellowish, in darker variations with blurred, pale brownish spots or entirely pale brown (here also *stragulatus pallidicollis*, see thesis 3). Legs usually almost entirely black. Aedeagus as in figs **4273**, **4274**, spermathecae as in fig. **4278**. Length 1.9–2.6 mm. Lives on some *Senecio* species (*Asteraceae*). Distrib-

uted in western Europe (England, France, N Italy, Iberian Peninsula, north-western Africa and Canary Island **dorsalis** (FABRICIUS, 1781).

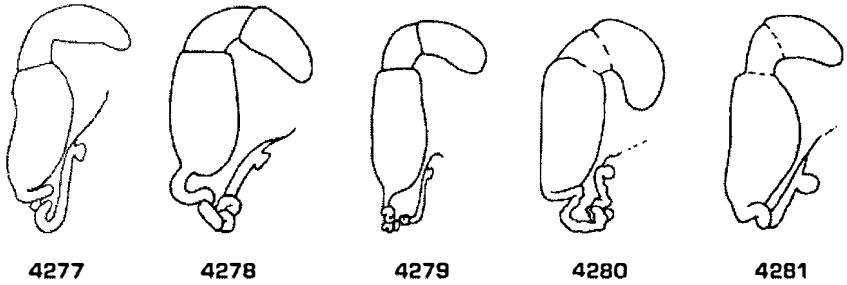
- Pronotum normally black or black with yellowish borders **3**.



Figs 4269-4276. Aedeagus in ventral or dorsal and in lateral view (4273, 4274 after WARCHAŁOWSKI 1996; 4275, 4276 after DÖBERL 1994; remaining after DÖBERL 2002): 4269, 4270 – *Longitarsus (Longitarsus) heinigi*; 4271, 4272 – *L. (L.) desertorum*; 4273, 4274 – *L. (L.) dorsalis*, 4275, 4276 – *L. (L.) stragulatus*.

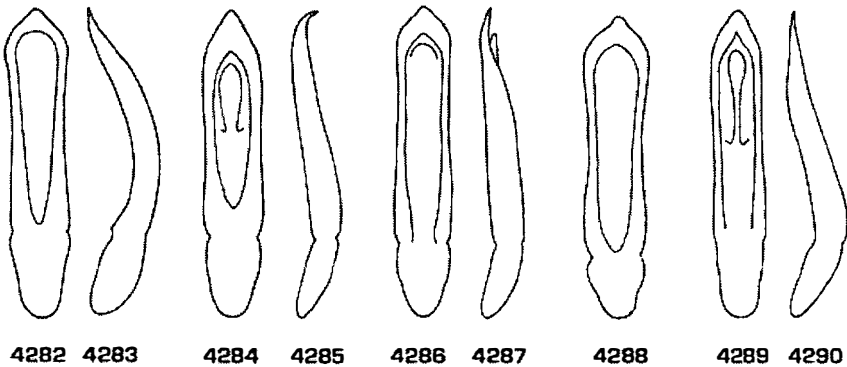
- 3. Puncturation of elytra fine and shallow, randomly scattered. The broad sutural stripe basally parallel or somewhat narrowed. Pronotum entirely black. General view as in plate XCIII, **phot. 836**. Aedeagus as in figs **4275, 4276**, spermatheca as in fig. **4279**. Length 2.0–2.6 mm. Variation: pale lateral border of elytron divided into two (basal and apical) spots (ab. *sellatus* WEISE, 1893). Forms 3 geographical races: pronotum entirely or partly pale (subsp. *pallidicollis* WOLLASTON, 1865 from Canary Islands), pronotum black, hind wings absent (subsp. *punicus* PEYERIMHOFF, 1916 from Algerian Sahara-Atlas), pronotum black, hind wings present (nominotypical subspecies from remaining parts of distribution area). Distributed in Mediterranean area from Canary Islands to Israel and Jordan **stragulatus** (FOUDRAS, 1860).
- Puncturation of elytra rather strong and deep, with a tendency to form irregular longitudinal rows. The broad sutural stripe in its middle slightly widened, sometimes even reaching to lateral margin. Pronotum usually entirely black, its lateral borders sometimes brownish or pale. Aedeagus as in figs **4282, 4283**, spermatheca as in fig. **4280**. Length 1.8–2.2 mm. Distributed in north-western Africa **palliatus** PEYERIMHOFF, 1939.
- 4. Elytra black or pitchy brown with yellowish or reddish pattern **5**.
- Elytra pale with black or blackish pattern (usually sutural stripe only) **10**.
- 5. Elytra black or pitchy brown, each elytron with two pale reddish spot **6**.
- Elytra differently coloured **7**.
- 6. Ground colour of elytra black, spots sharply contrasting on the black ground. See *quadriguttatus* (auxiliary group E, thesis 3).
- Ground colour of elytra brown or pitchy brown, pale spots strongly blurred. See *audiisoi* (auxiliary group E, thesis 6).

7. Upper side black with feeble lead reflex, each elytron with an apical spot 9.
 - Upper side black, at apex of each elytron a great, reddish spot, sometimes occupying whole hind half of elytron 8.



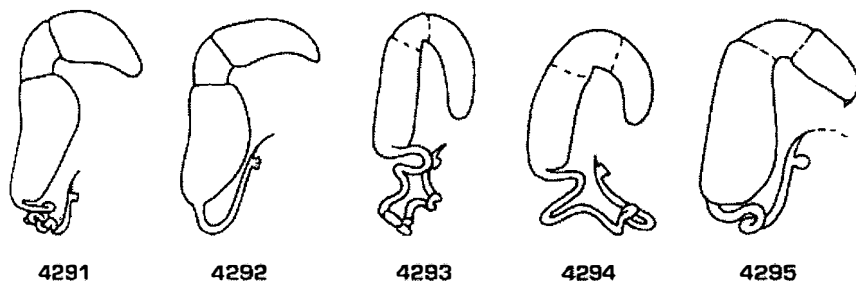
Figs 4277-4281. Spermatheca (4277 after DÖBERL 2002; 4281 after DÖBERL 1994; remaining after DOGUET 1994): 4277 - *Longitarsus (Longitarsus) desertorum*; 4278 - *L. (L.) dorsalis*; 4279 - *L. (L.) stragulatus*, 4280 - *L. (L.) palliatus*; 4281 - *L. (L.) holsaticus*.

8. Aedeagus as in figs 4284, 4285, spermatheca as in fig. 4281. Humeral calli distinct, elytra not oval. Length 1.8-2.4 mm (= *haemorrhoidalis* JACOBY, 1885). Variations: all legs dark (unnamed), reddish spot occupying about 1/3 of elytral surface (typical form), reddish spot strongly reduced (ab. *pulicarius* LINNAEUS, 1767), reddish spot expanded on the whole or almost whole surface of elytra (ab. *discoideus* WEISE, 1888). A transpalaeartic species, very widely distributed from Ireland to Japan ***holsaticus*** (LINNAEUS, 1758).
 - Humeral calli weak. Length of female about 2.3 mm. Insufficiently studied species from Spain, possibly conspecific with *holsaticus* ***bedelii*** (UHAGON, 1887).



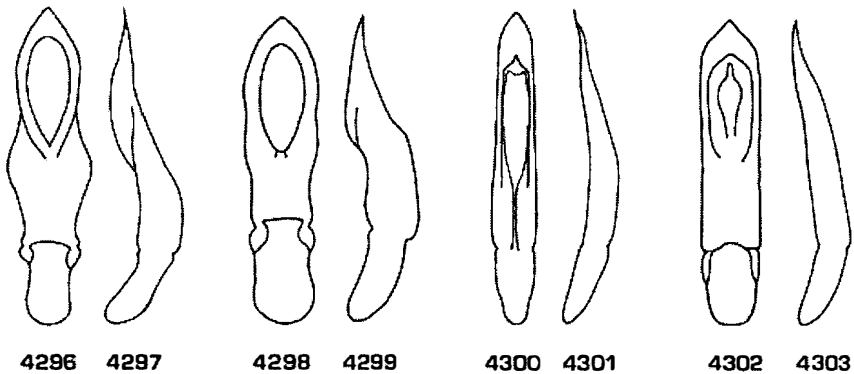
Figs 4282-4290. Aedeagus in dorsal or ventral and in lateral view (4282, 4283 after DOGUET 1987; 4286, 4287 after MOHR 1972; 4288 after BIONDI 1986; remaining after WARCHALOWSKI 1996): 4282, 4283 - *Longitarsus (Longitarsus) palliatus*; 4284, 4285 - *L. (L.) holsaticus*; 4286, 4287 - *L. (L.) apicalis*; 4288 - *L. (L.) danieli*; 4289, 4290 - *L. (L.) lateripunctatus*.

9. Length of body 2.6–3.1 mm. General view as in plate XCII, **phot. 822**. Aedeagus as in figs **4286**, **4287**, spermatheca as in fig. **4291**. Variations: hind wings reduced (typical form), hind wings well-developed (ab. *borealis* KOLBE, 1920), on humeral callus a little, supplementary pale spot (ab. *quadrifaculatus* WEISE, 1888). Distributed in northern and central Europe **apicalis** (BECK, 1817).
- Length of body about 2.0 mm. Aedeagus as in fig. **4288**, female unknown. Described from Spain **danieli** MOHR, 1962.
10. Black pattern of elytra consist of common sutural stripe and of a median spot on each elytron **11**.
- Black pattern of elytra consist of common sutural stripe only **13**.
11. Sculpture of elytra consist of puncturation and reticulation only. Aedeagus as in figs **4289**, **4290**, spermatheca as in fig. **4292**. Length 1.7–2.3 mm (= *signatus* REICHE et SAULCY, 1858, *biguttatus* FOU DRAS, 1860). Occurs as two geographical forms (in opinion of some authors subspecies): sutural stripe almost parallel, hind wings well-developed (nominotypical form from western part of Mediterranean area), sutural stripe widened before middle, hind wings usually reduced (subsp. *personatus* WEISE, 1893 from the remaining part of distribution area). Lives on *Boraginaceae*. Distributed in Mediterranean area and in southern part of central Europe **lateripunctatus** ROSENHAUER, 1856.
- On elytra, apart from puncturation and reticulation, 7 longitudinal costae. Two endemic species from Canary Islands **12**.
12. Humeral callus blackish. Aedeagus as in figs **4296**, **4297**, spermatheca as in fig. **4293**. Length 3.2–3.9 mm (= *masoni* WOLLASTON, 1857). Forms two subspecies: costae on elytra elevate, dark pattern black (nominotypical subspecies from Madeira), costae rather flattened, dark pattern brown or brownish (subsp. *persimilis* WOLLASTON, 1860 from Gran Canaria, Hierro, La Palma and Tenerife, considered often as distinct species). Lives on some *Echium*-species (*Boraginaceae*) **isoplexidis** WOLLASTON, 1854.
- Humeral callus pale. Length 2.0–2.4 mm. Aedeagus as in figs **4298**, **4299**, spermatheca as in fig. **4294**. Known from Fuerteventura (Canary Islands) only. Lives on *Echium handiense* SVENT (*Boraginaceae*) **jandiensis** BIONDI, 1986.



Figs 4291–4295. Spermatheca (2491, 2492 after GRUEV 1997; 4293, 4294 after BIONDI 1986; 4295 after DOGUET 1994): 4291 – *Longitarsus (Longitarsus) apicalis*; 4292 – *L. (L.) lateripunctatus*; 4293 – *L. (L.) isoplexidis*, 4294 – *L. (L.) jandiensis*; 4295 – *L. (L.) nigrocellus*.

13. Dark sutural stripe in hind part widened, sometimes occupying the whole hind half of elytra (if widened in mid part, see *ratshensis*, antithesis 27). Aedeagus as in figs **4300**, **4301**, spermatheca as in fig. **4295**. Length 1.8–2.6 mm (= *subterlucens* FOU DRAS, 1860). Forms two subspecies: on average slightly larger, elytra distinctly broader than pronotum, humeral calli distinct (nominotypical subspecies from Europe), on average smaller, elytra barely broader than pronotum, humeral calli absent (subsp. *atriplaga* HEIKERTINGER, 1913 from northern Africa). Lives on *Convolvulaceae*. Distributed in western part of Mediterranean area, from Morocco and Portugal to Sardinia and Piemonte **nigrocillus** (MOTSCHULSKY, 1849).
- Dark sutural stripe in its hind part not or very feebly widened 14.
14. Pronotum either considerably darker (brown or black) or at least distinctly differently coloured than elytra (dark rust-red or reddish brown) 15.
- Colouring of pronotum as in elytra or slightly darker 21.
15. Pronotum dark chesnut, pitchy or black 16.
- Pronotum rust-reddish or reddish brown, sometimes with a feeble metallic reflex ...
..... 18.

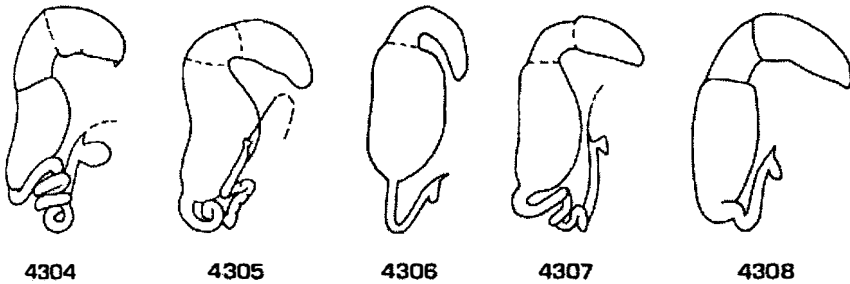


Figs 4296-4303. Aedeagus in dorsal or ventral and in lateral view (4296-4299 after BIONDI 1986, 4300-4303 after WARCHAŁOWSKI 1996): 4296, 4297 – *Longitarsus (Longitarsus) isoplexidis*; 4298, 4299 – *L. (L.) jandiensis*; 4300, 4301 – *L. (L.) nigrocillus*; 4302, 4303 – *L. (L.) suturellus*.

16. Pronotum black 17.
- Pronotum rust-reddish to pitchy, without metallic reflex. Sculpture of its surface feebly developed, puncturation fine, reticulation very shallow. Apex of elytra not darkened, hind tibiae not bent. Head, apical half of antennae, hind femora, sutural stripe and usually pronotum pitchy, remaining parts of body rust-reddish. Aedeagus as in figs **4302**, **4303**, spermatheca as in fig. **4304**. Length 1.8–2.8 mm (= *fuscicollis* STEPHENS, 1831, *thoracicus* ALLARD, 1860, *senecionis* MOTSCHOUJSKY, 1851). Variations: hind wings reduced, lateral borders of elytra not darkened (typical form), hind wings and humeral calli well-developed, colouration of body as in typical form (ab. *testis* KOLBE, 1920), hind wings and humeral calli well-developed, head and pronotum black, sutural stripe broad, sharply contrasting with pale nut-brown ground colour

of elytra (ab. *paludosus* WEISE, 1893), hind wings and humeral calli well-developed, body shorter (to 2.2 mm), sutural stripe narrow or shortened, legs and antennae relatively pale coloured (ab. *macer* WEISE, 1893), hind wings reduced, humeral calli rounded, lateral borders of elytra blackened (ab. *limbalis* KOLBE, 1920), other combinations of characters unnamed. Lives on *Asteraceae*, mostly on *Senecio* L. and *Petasites* MILL. Transpalaeartic species, distributed from Ireland to Japan

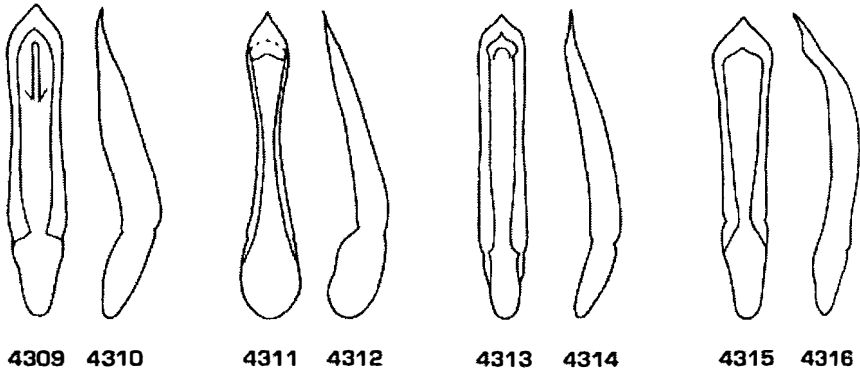
- ***suturellus*** (DUFTSCHMID, 1825).
17. Pronotum black, often with metallic reflex. Reticulation and puncturation of its surface at least in hind part well-developed and deep. Apex of elytra darkened, brownish. Hind tibiae bent externally. Aedeagus as in figs **4309**, **4310**, spermatheca as in fig. **4305**. Length 1.5–2.0 mm (= *circumscriptus* BACH, 1959). Variations: hind wings reduced, humeri rounded (ab. *auctumnalis* WEISE, 1893), melanotic form; ground colour of elytra brown (ab. *obscurus* DONISTHORPE, 1929). Lives on *Boraginaceae*. Distributed in Europe from The British Isles to southern Russia and Caucasian countries
- ***nasturtii*** (FABRICIUS, 1792).
- Pronotum black, without metallic reflex, finely punctate. Sutural stripe broad, pitchy-black, not reaching to apex. Humeral calli distinct. Legs yellow, hind femora (except for their base) black. Sexual characters not studied. Description of external characters corresponds, to some extent, to paler forms of *suturatus* (antithesis 26). Length 2.5 mm (male) to 3.0 mm (female). Described from Afghanistan
- ***melanoxanthus*** LOPATIN, 1963.



Figs 4304-4308. Spermatheca (4304 after DOGUET 1994, 4305 after LEONARDI 1972; 4306 after BIONDI in litt.; 4307 after DÖBERL 1994; 4308 after BIONDI 1984): 4304 - *Longitarsus (Longitarsus) suturellus*; 4305 - *L. (L.) nasturtii*; 4306 - *L. (L.) brevipennis*, 4307 - *L. (L.) atricillus*; 4308 - *L. (L.) idilphilus*.

18. Aedeagus as in figs **4311**, **4312**, spermatheca as in fig. **4306**. Head rusty-reddish, pronotum and elytra pale yellowish, sutural margins narrowly blackened, underside and hind femora brown. Length 2.2 mm. Endemic to Canary Islands
- ***brevipennis*** WOLLASTON, 1860.
- Shape of aedeagus and distribution not as above
19. Length of body over 2.5 mm. Aedeagus as in figs **4313**, **4314**, spermatheca as in fig. **4307**. Head rusty-brownish to chesnut, ground colour of elytra pale yellowish brown. Pronotum coloured as ground colour of elytra or darker, sometimes brown or pitchy, but never as dark as head. Underside and hind femora dark brown. Remai-

- ning parts of legs and basal half of antennae dark yellow amber. Length 2.5–2.8 mm. Variation: melanotic form; pronotum black with feeble metallic reflex, sutural- and lateral margins of elytra blackened (ab. *similis* WEISE, 1893). Distributed in most part of Europe, in north-western Africa and in Asia Minor ***atricillus*** (LINNAEUS, 1761).
- . Length of body not exceeding 2.5 mm **20.**
20. Hind wings reduced, humeral calli absent. Colouration of upper side as in *atricillus* (thesis 116). Aedeagus as in figs **4315**, **4316**, spermatheca as in fig. **4308**. Ductus spermathecae forms at most one loop. Length 1.8–2.3 mm. Known from Morocco only ***idilphilus*** BIONDI, 1984.
- . Hind wings well-developed, humeral calli distinct. Colouration of upper side as in *atricillus* (thesis 116), in dark specimens with perceptible metallic reflex. Aedeagus as in figs **4317**, **4318**, spermatheca as in fig. **4325**. Ductus spermathecae forms numerous loops. Length 2.0–2.5 mm (= *suturalis* auctorum, *rubenticollis* ALLARD, 1860, *cribripennis* ABEILLE, 1909). Variation: pronotum almost black or black (ab. *nigricollis* FOU DRAS, 1860). Lives on *Borraginaceae*. Distributed in Mediterranean area, southern part of Europe, reported also from Afghanistan ***aeneicollis*** (FALDERMANN, 1837).
21. Apical part of elytra slightly elongate and relatively strongly punctate **22**
- . Apical part of elytra rounded and finely punctate **23**

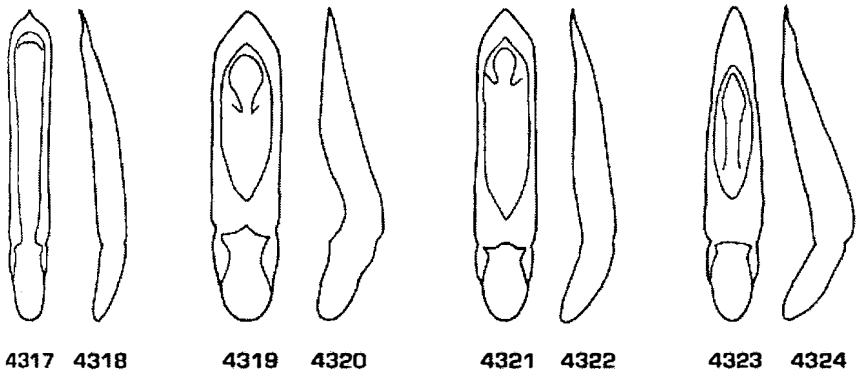


Figs 4309–4316. Aedeagus in dorsal or ventral and in lateral view (4311, 4312 after BIONDI 1991; 4315, 4316 after BIONDI 1984; remaining after WARCHALOWSKI 1996): 4309, 4310 – *Longitarsus (Longitarsus) nasturtii*; 4311, 4312 – *L. (L.) brevipennis*; 4313, 4314 – *L. (L.) atricillus*; 4315, 4316 – *L. (L.) idilphilus*.

22. Smaller. Aedeagus as in figs **4319**, **4320**, spermatheca as in fig. **4326**. Pronotum, ground colour of elytra, 3 or 4 basal antennomeres, fore and mid legs pale, yellow or pale testaceous. Head, apical part of antennae, scutellum, sutural stripe, underside and apical part of hind femora pitchy or black, in Mediterranean populations head often paler, sometimes as pale as pronotum. Darkest specimens coloured almost as *nasturtii* (thesis 17), but always without metallic reflex. Hind tibiae partly (basally) or entirely dark, often blackish. First tarsomere of fore tarsi in male strongly widened. Length 1.7–2.4 mm (= *atriceps* auctorum). Lives on *Lamiaceae*, in central

Europe mostly on *Galeobdolon luteum* Huds. Transpalaeartic species, distributed from Ireland to Korea ***kutscherae*** (RYE, 1872).

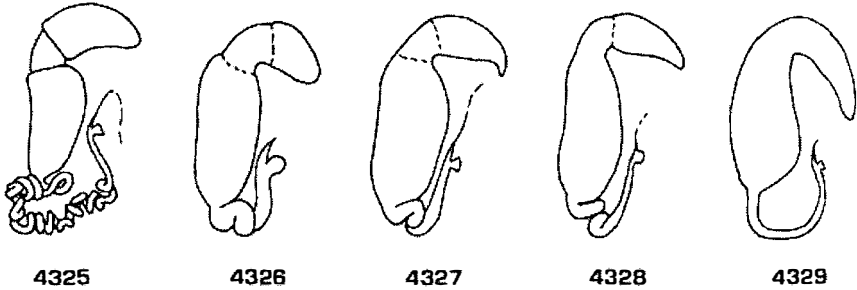
- Larger. Head usually brown chesnut, often as pale as pronotum, or sometimes vice versa, much darker, pitchy black. Remaining parts of body coloured as in *kutscherae* (thesis 119). Aedeagus as in figs **4321**, **4322**, spermatheca as in fig. **4327**. Length 2.3–3.1 mm (= *atricapillus* DUFTSCHMID, 1825, *piciceps* STEPHENS, 1831, *crassicornis* FOU DRAS, 1860). Forms two subspecies: in male first tarsomere of fore tarsi strongly widened (nominotypical subspecies), first tarsomere moderately widened (subsp. *paludivagus* PEYERIMHOFF, 1915). Distributed from Ireland and western coasts of Europe to Mongolia; African part of area inhabited by subsp. *paludivagus* ***melanocephalus*** (DE GEER, 1775).



Figs 4317-4324. Aedeagus in dorsal or ventral and in lateral view (after WARCHALOWSKI 1996): 4317, 4318 - *Longitarsus (Longitarsus) aeneicollis*; 4319, 4320 - *L. (L.) kutscherae*; 4321, 4322 - *L. (L.) melanocephalus*; 4323, 4324 - *L. (L.) longiseta*.

23. Pronotum deeply reticulate and strongly, densely punctate. Black sutural stripe usually anteriorly and posteriorly shortened. On sutural angle of each elytron a very long, erect seta. Upper side ochraceous or pale reddish yellow to pale nut-brown, head darker, reddish brown. Apical part of antennae and of hind femora, metasternum, abdomen and sutural stripe black or pitchy. Aedeagus as in figs **4323**, **4324**, spermatheca as in fig. **4328**. Length 1.6–2.0 mm (= *kwangsiensis* CHEN, 1939, *clarus* ALLEN, 1967). Variation: hind wings reduced, humeral calli indistinct (ab. *obsoletus* KOLBE, 1920). Transpalaeartic species, distributed from Ireland to Japan ***longiseta*** WEISE, 1889.
- Sculpture of pronotum more feebly developed **24.**
24. Puncturation of pronotum very fine, sometimes almost disappearing Ssutural stripe narrow, anteriorly or on both sides shortened, in darker specimens posteriorly broad, anteriorly suddenly narrowed **25.**
- Puncturation of pronotum fine but distinct, sutural stripe neither shortened, nor suddenly narrowed **28.**

25. Sutural stripe posteriorly broad, anteriorly suddenly narrowed. Melanotic forms of *gracilis* (auxiliary group J, thesis 18).
 - Sutural stripe on both sides shortened 26.

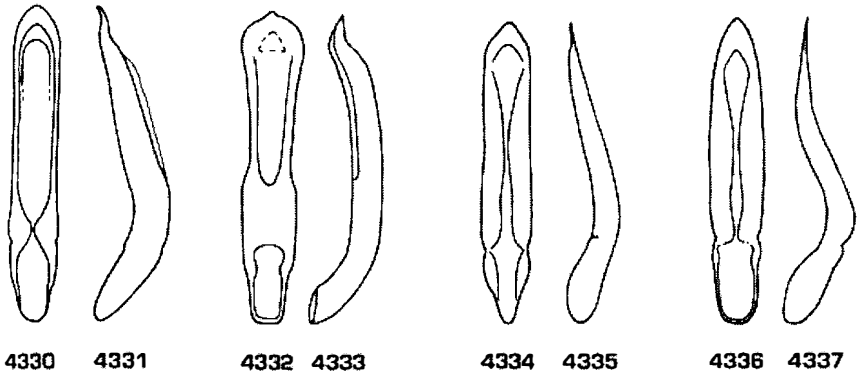


Figs 4325-4329. Spermatheca (4326 after DÖBERL 1994; 4328 after GRUEV 1987; 4329 after WARCHALOWSKI 1996; remaining after LEONARDI 1972): 4325 - *Longitarsus (Longitarsus) aeneicollis*; 4326 - *L. (L.) kutscherae*; 4327 - *L. (L.) melanocephalus*, 4328 - *L. (L.) longisetata*; 4329 - *L. (L.) suturatus*.

26. Pronotum great, long, slightly widened anteriorly. Body convex, dark yellow or pale rust-red, upper side matt, legs and antennae relatively robust. Two species from Caucasian countries 27.
 - Pronotum not great, body not convex. Body usually rather full of contrast. Pronotum, elytra, fore and mid legs pale yellow, underside, hind tibia and at least apex of hind femora black or pitchy. Sutural stripe and a stripe on lateral border of each elytron (sometimes absent) blackish. Aedeagus as in figs 4330, 4331, spermatheca as in fig. 4329. Length 2.8-3.2 mm. Distributed in northern Spain, southern France and in Italy **suturatus** (FOUDRAS, 1860).
 27. Sutural stripe narrow. Body yellowish brown. Head, pronotum and underside a little darker. Spur very short. Aedeagus as in figs 4332, 4333. Length 2.0-2.3 mm. Described from Abkhaziya (Georgia). Probably conspecific with *ledouxii* (auxiliary group I, thesis 14) or, possibly, with *ratshensis* (antithesis 27) **abchasicus** KONSTANTINOV, 1986.
 - Sutural stripe very broad, it forms an oval spot occupying great part of elytra. In male first tarsomere of fore legs strongly widened. Aedeagus and spermatheca not studied. Length 2.0 mm. Perhaps a dark form of *ledouxii* (auxiliary group I, thesis 14) Described from Georgia **ratshensis** KHNZORIAN, 1962.
 28. Sutural stripe narrow, sometimes only marginal ridge blackened. Length 1.7-2.0 mm 29.
 - Sutural stripe broader, fairly blurred, sometimes rather pale, brownish red 30.
 29. Hind wings usually well-developed, humeral calli protruding. Body short and stout. Pronotum and ground colour of elytra pale ochraceous, head dark brown or black. Basal half of antennae and all tibiae pale ochraceous. Aedeagus as in figs 4334, 4335, spermatheca as in fig. 4338. Length 1.7-2.0 mm (male) to 1.9-2.4 mm (female) (= *viduus* ALLARD, 1866, *papaveris* ALLARD, 1866, *liliputanus* ALLARD, 1866). The species has been only recently separated from *monticola* and in consequence their

distribution ranges are still not defined. The common area of both species occupies a great part of Europe and central Asia, from Belgium and southern France to Afghanistan *curtus* (ALLARD, 1860).

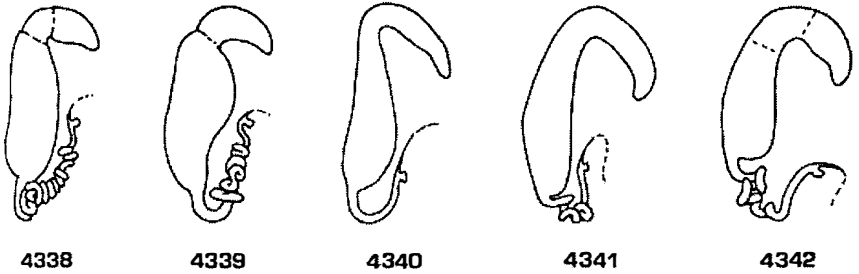
- Hind wings reduced, humeral calli rounded. Colouration of body as in *curtus* (thesis 29). Aedeagus as in figs **4336**, **4337**, spermatheca as in fig. **4338**. Length 1.8–2.2 mm. Distribution: see comments to *curtus* (thesis 29)
 *monticola* KUTSCHERA, 1863.



Figs 4330-4337. Aedeagus in dorsal or ventral and in lateral view (4330, 4331 after WARCHALOWSKI 1996; 4332, 4333 after KONJSTANTINOV 1986; remaining after DÖBERL 1994): 4330, 4331 – *Longitarsus (Longitarsus) suturatus*; 4332, 4333 – *L. (L.) abchasicus*; 4334, 4335 – *L. (L.) curtus*; 4336, 4337 – *L. (L.) monticola*.

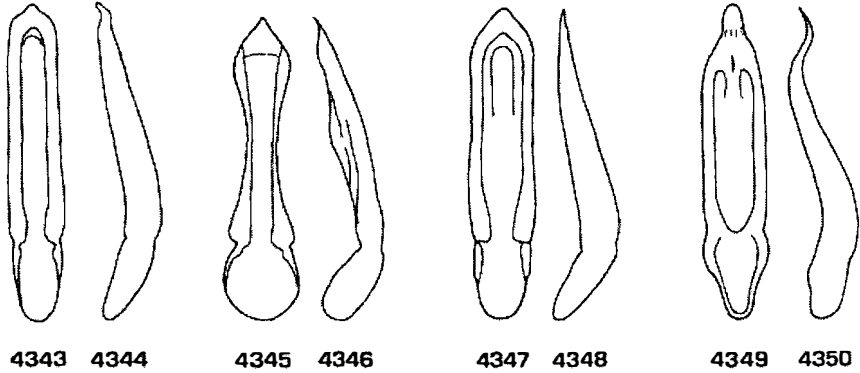
- 30. Puncturation of elytra strong and deep. Underside considerably darker than upper side. A narrow dark sutural stripe distinct. Aedeagus as in figs **4343**, **4344**, spermatheca as in fig. **4340**. Length 2.5–3.0 mm. Known from Hungaria, Bulgaria and Croatia *scrobipennis* HEIKERTINGER, 1913.

- Puncturation of elytra not particularly strong and deep **31**.



Figs 4338-4342. Spermatheca (4338, 4339 after DÖBERL 1994; 4340 after GRUEV 1987; remaining after LEONARDI 1972): 4338 – *Longitarsus (Longitarsus) curtus*; 4339 – *L. (L.) monticola*; 4340 – *L. (L.) scrobipennis*, 4341 – *L. (L.) ganglbaueri*; 4342 – *L. (L.) brisouti*.

31. Sutural stripe brown, anteriorly and posteriorly narrowed. Elytra yellowish, head and pronotum rusty-yellowish. Underside dark brown, prosternum paler. Legs yellow, hind femora rusty-brownish. At each eye two large points. Aedeagus as in figs **4345**, **4346**. Length 2.0–2.2 mm (male) to 2.7–2.9 mm (female). Described from Saudi Arabia ***mirei*** DOGUET, 1979.
- . Sutural stripe blackish, not narrowed anteriorly and posteriorly **32**.



Figs 4343-4350. Aedeagus in dorsal or ventral and in lateral view (4349, 4350 after DÖBERL 1994, remaining after WARCHALOWSKI 1996): 4343, 4344 – *Longitarsus (Longitarsus) scrobipennis*; 4345, 4346 – *L. (L.) mirei*; 4347, 4348 – *L. (L.) ganglbaueri*; 4349, 4350 – *L. (L.) brisouti*.

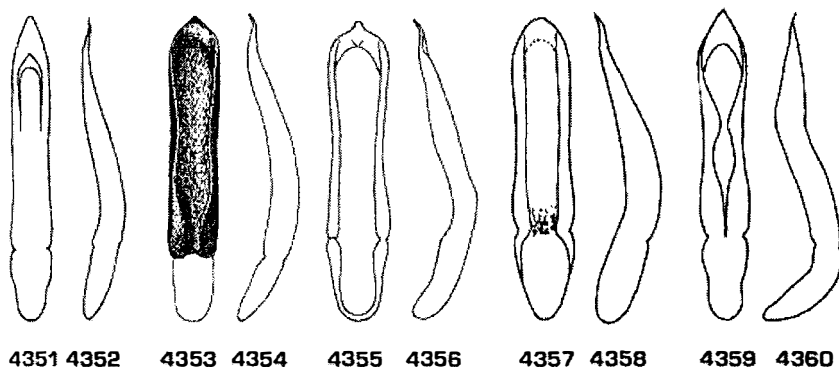
32. In male first tarsomere of fore legs feebly widened. Head chesnut or blackish, pronotum and ground colour of elytra pale yellowish, sutural stripe narrow, brown to blackish. Pronotum long (as in *exsoletus*-group, see thesis 6). Punctuation of elytra very fine and dense, sometimes feebly perceptible. Aedeagus as in figs **4347**, **4348**, spermatheca as in fig. **4341**. Length 2.2–2.6 mm (male) to 2.4–2.9 mm (female) (= *senecionis* BRISOUT, 1873, nec MOTCHOULSKY, 1851). Subspecies *balachovskiyi* HOFMANN, 1950 (darker, with distinctly punctate pronotum) described from Morocco, belongs probably not here. Distributed from atlantic coasts of Europe to Mongolia ***ganglbaueri*** HEIKERTINGER, 1912.
- . In male first tarsomere of fore legs rather strongly widened. Colouration of body and sculpture of its upperside as in *ganglbaueri* (thesis 32). Aedeagus as in figs **4349**, **4350**, spermatheca as in fig. **4342**. Length 2.2–2.7 mm (male) to 2.5–2.9 mm (female). Distributed in Mediterranean area from southern Spain to Greece and Turkey, Balkan Peninsula and a separate area in northern France, Belgium and western Germany ***brisouti*** HEIKERTINGER, 1912.

Auxiliary group I

Upper side brownish to chestnut.

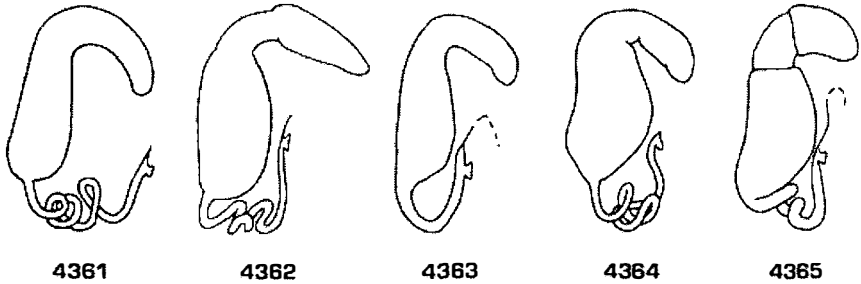
Key to species

1. Relatively large species, length over 3.0 mm **2.**
- Smaller species, length of body under 3.0 mm **3.**
2. Upper side red or brown-red. Punctuation of elytra very distinct, deep, partly arranged in irregular longitudinal rows. Humeral calli weak or indistinct. Aedeagus (figs **4351**, **4352**) slender, similarly shaped as in *exoletus*-group. Length 3.0–3.5 mm. Distributed in W African part of Mediterranean area and in W Europe: Iberian Peninsula, France, Italy, the Netherlands and the British Isles. Reported also from Yemen, what sounds incredibly ***rutilus*** (ILLIGER, 1807).
- Externally similar to *tabidus* (auxiliary group C, antithesis 16), but differing by short spur and another structure of aedeagus and spermatheca. Aedeagus as in figs **4353**, **4354**, spermatheca as in fig. **4362**. Described from Morocco ***kippenbergi*** WARCHAŁOWSKI, 1998.
3. Somewhat larger species, body length over 2.5 mm **4.**
- Smaller species, body length under 2.5 mm **7.**
4. Punctuation of elytra fine and shallow. Length 2.7–2.9 mm. Aedeagus as in figs **4355**, **4356**. Described from Kirghyzstan ***khnzoriani*** PALY, 1970.
- Punctuation of elytra moderately strong **5.**
5. Body rather uniformly pale coloured. Underside not very darker than upper side, suture usually pale, only in darker coloured specimens with anteriorly shortened brownish sutural stripe. Aedeagus as in figs **4357**, **4358**, spermatheca as in fig. **4363**. Length 2.5–3.0 mm. Distributed in Great Britain, France, Belgium, Netherlands alike western and northern part of Germany ***agilis*** (RYE, 1868).



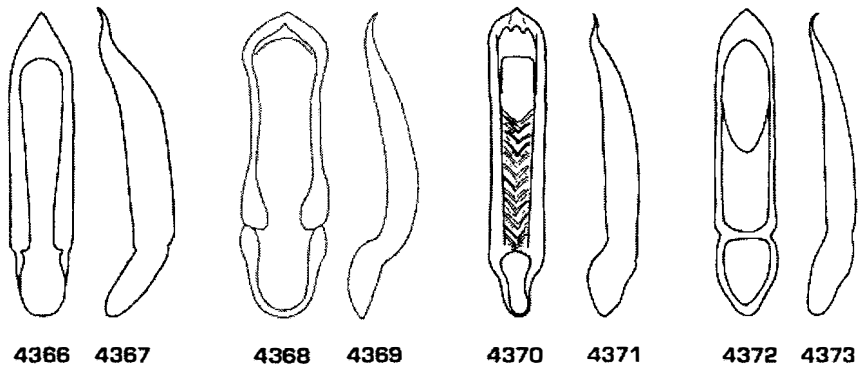
Figs 4351-4360. Aedeagus in dorsal or ventral and in lateral view (4355, 4356 after LOPATIN 1977; 4357, 4358 after DÖBERL 1994; 4359, 4360 after KONSTANTINOV 1998; remaining after WARCHAŁOWSKI 1996): 4351, 4352 - *Longitarsus (Longitarsus) rutilus*; 4353, 4354 - *L. (L.) kippenbergi*; 4355, 4356 - *L. (L.) khnzo-riani*; 4357, 4358 - *L. (L.) agilis*; 4359, 4360 - *L. (L.) audisioi*.

6. Elytra with a blackish, broad, blurred, median transverse stripe. Hind wings reduced, humeral calli absent. General view as in plate XCII, **phot. 823**. Aedeagus as in figs **4359, 4360**, spermatheca as in fig. **4364**. Length 2.0–2.5 mm. Distributed in north-eastern Turkey **audisioi** BIONDI, 1992.
- . Elytra without dark transverse stripe 7.



Figs 4361-4365. Spermatheca (4361 after SHUTE 1976; 4362 after WARCHAŁOWSKI 1998; 4363 after DÖBERL 1994; 4364 after BIONDI 1986; 4365 after LEONARDI 1972): 4361 – *Longitarsus (Longitarsus) rutilus*; 4362 – *L. (L.) kippenbergi*; 4363 – *L. (L.) agilis*, 4364 – *L. (L.) audisioi*; 4365 – *L. (L.) brunneus*.

7. Medium-sized species, length of body 1.6–2.4 mm, usually 1.7–1.9 mm 8.
- . Very small species, length of body 1.0–1.5 mm, usually 1.2–1.3 mm 31.

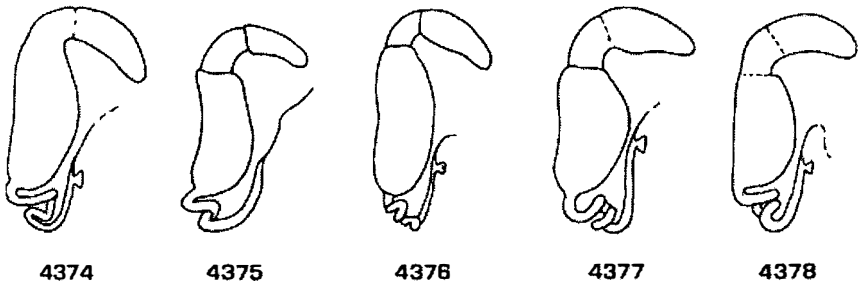


Figs 4366-4373. Aedeagus in dorsal or ventral and in lateral view (4370, 4371 after MOHR 1974; 4372, 4373 after GRUEV 1975; remaining after WARCHAŁOWSKI 1996): 4366, 4367 – *Longitarsus (Longitarsus) brunneus*; 4368, 4369 – *L. (L.) silbursaicus*; 4370, 4371 – *L. (L.) ibericus*; 4372, 4373 – *L. (L.) croaticus*.

8. On apical margin of each elytron a row of setae; first seta as long as half of hind metatarsus. Upper side uniformly dark rusty-brown or chesnut, legs and antennae yellow amber, hind femora and underside dark brown. Surface of pronotum and elytra dis-

tinctly reticulate. Hind wings usually reduced, humeral calli feebly developed. General view as in plate XCII, **phot. 825**. Aedeagus as in figs **4366, 4367**, spermatheca as in fig. **4365**. Length 1.8–2.3 mm (male) to 2.0–2.9 mm (female) (= *castaneus* DUFTSCHMIDT, 1825). Variability: a melanotic form, body pitchy, pronotum and apical part of elytra sometimes slightly paler (ab. *picinus* WEISE, 1888), Punctuation on pronotum very shallow and fine (ab. *laevicollis* WEISE, 1888), hind wings normally developed, humeral calli projecting (ab. *robustus* WEISE, 1888). Lives on *Thalictrum* L.-species (*Ranunculaceae*). Distributed in a great part of Europe from France, England and Norway to Italy, Greece and central Russia. Reported also from Caucasian countries **brunneus** (DUFTSCHMIDT, 1825).

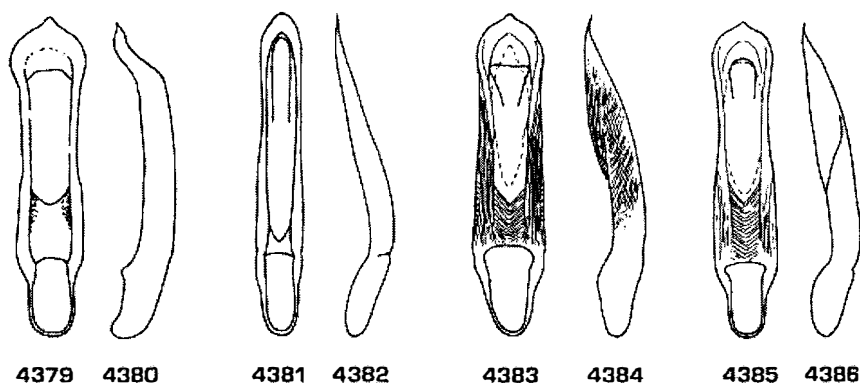
- Setae on apex of elytra of equal length **9**.
- 9. Punctuation of elytra relatively very regular, arranged in longitudinal rows, intervals not broader than diameter of punctures. Humeral calli well-developed, protruding. Aedeagus as in figs **4368, 4369**. Length about 2.5 mm (= *seriepunctatus* LOPATIN, 1966 nec ROUBAL, 1943). Described from Tadzhikistan **silburzaicus** LOPATIN, 1966.
- Punctuation of elytra random or at most here and there arranged in indistinct longitudinal rows **10**.
- 10. Body short oval, strongly convex, greatest body width before mid-length **11**.
- Body not particularly convex, greatest body width in mid-length **17**.
- 11. In male first tarsomere of fore legs relatively short and barely widened, last abdominal sternite with a deep pit, median furrow feebly impressed **12**.
- In male first tarsomere of fore legs distinctly widened. Median furrow on last abdominal sternite well-developed **13**.



Figs 4374-4378. Spermatheca (4374 after LEONARDI and MOHR 1974; 4375 after GRUEV 1975; 4376 after DOGUET 1979; remaining after LEONARDI 1975): 4374 - *Longitarsus (Longitarsus) ibericus*; 4375 - *L. (L.) croaticus*; 4376 - *L. (L.) ledouxi*, 4377 - *L. (L.) peyerimhoffi*; 4378 - *L. (L.) rubellus*.

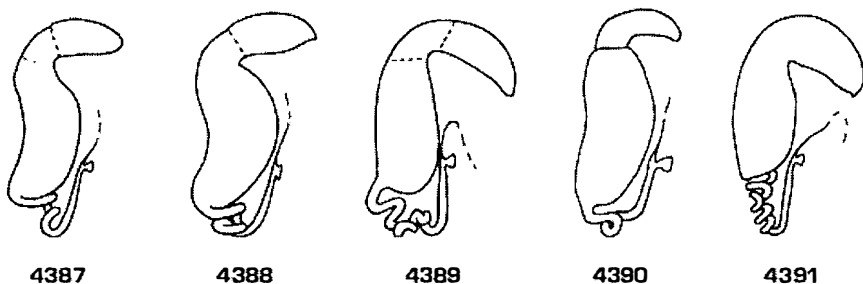
- 12. Species from northern Spain. Aedeagus as in figs **4370, 4371**, spermatheca as in fig. **4374**. Length 1.7–1.9 mm. Known from northern Spain only **ibericus** LEONARDI et MOHR, 1974.
- Species from Croatia. Aedeagus as in figs **4372, 4373**, spermatheca as in fig. **4375**. Length 1.8–2.0 mm. Known from Croatia only **croaticus** GRUEV, 1975.

13. Fine grooving on ventral side of aedeagus either absent or limited to lamina ventralis only 14
 - Fine grooving on ventral side of aedeagus always present, covering not only lamina ventralis, but also lateral sides (figs 4383, 4385) 15.



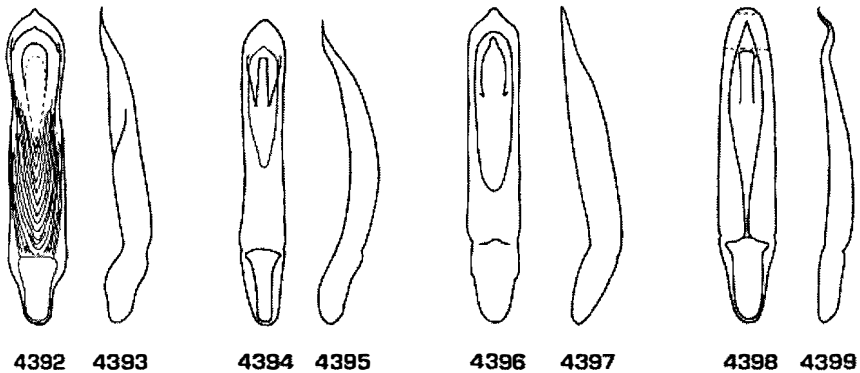
Figs 4379-4386. Aedeagus in dorsal or ventral and in lateral view (4379, 4380 after DÖBERL 1979; 4381, 4382 after LEONARDI 1975; remaining after LEONARDI and MOHR 1974): 4379, 4380 - *Longitarsus (Longitarsus) ledouxi*; 4381, 4382 - *L. (L.) peyerimhoffi*; 4383, 4384 - *L. (L.) rubellus*; 4385, 4386 - *L. (L.) gruevi*.

14. Aedeagus as in figs 4379, 4380. Length 2.0-2.3 mm. Described based on two specimens only, probably conspecific with *abchasicus* KONSTANTINOV, 1986 or with *ratshensis* KHNZORIAN, 1962 (auxiliary group H, antithesis 27). Distributed in Caucasian countries *ledouxi* DOGUET, 1979.
 - Aedeagus as in figs 4381, 4382, spermatheca as in fig. 4377. Length 2.3-2.6 mm. Distributed in Morocco *peyerimhoffi* (ABEILLE, 1909).



Figs 4387-4391. Spermatheca (4387, 4388 after LEONARDI and MOHR, 1974; 4390 after LEONARDI 1979; remaining after LEONARDI 1972): 4387 - *Longitarsus (Longitarsus) gruevi*; 4388 - *L. (L.) refugiensis*; 4389 - *L. (L.) languidus*, 4390 - *L. (L.) debernardii*; 4391 - *L. (L.) vilis*.

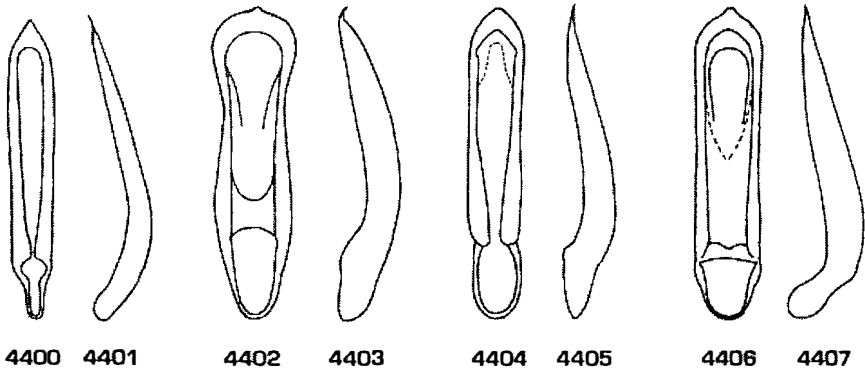
15. In male first tarsomere of fore legs very strongly widened. Aedeagus as in figs **4383**, **4384**, spermatheca as in fig. **4378**. Operculum strongly narrowed backwards, its anterior margin transversely cut. Length 2.0–2.5 mm (= *gravidulus* KUTSCHERA, 1863). Distributed in Alps, Dinaric Alps and Carpatians **rubellus** (FOUDRAS, 1860).
- In male first tarsomere of fore legs moderately strongly widened. Operculum feebly narrowed backwards, its anterior margin gently rounded (figs **4385**, **4392**) **16**.
16. Last abdominal sternite in male with a longitudinal impression and with a little pit on the apical lamella. Aedeagus as in figs **4385**, **4386**, spermatheca as in fig. **4387**. Length 1.8–2.2 mm. Distributed in western Alps and in Liguria **gruevi** LEONARDI et MOHR, 1974.
- Last abdominal sternite in male with a longitudinal impression only, the little pit on the apical lamella indistinct. Aedeagus as in figs **4392**, **4393**, spermatheca as in fig. **4388**. Distributed in Piemonte and in Bergamasker Alps **refugiensis** LEONARDI et MOHR, 1974.
17. Pronotum and elytra extremely finely, randomly punctate. Humeral calli indistinct or absent. Body oblong, slightly flattened. In male first tarsomere of fore legs very strongly widened. Aedeagus as in figs **4394**, **4395**, spermatheca as in fig. **4389**. Leaves on *Senecio jacobaea* L. Distributed in Danube basin, Croatia and Podolia, known also from Turingia **languidus** KUTSCHERA, 1863.
- Upper side moderately strongly or strongly punctate **18**.



Figs 4392–4399. Aedeagus in dorsal or ventral and in lateral view (4392, 4393 after LEONARDI and MOHR 1974; 4394, 4395 after WARCHALOWSKI 1996; 4396, 4397 after LEONARDI 1975; 4398, 4399 after LEONARDI 1972): 4392, 4393 – *Longitarsus (Longitarsus) refugiensis*; 4394, 4395 – *L. (L.) languidus*; 4396, 4397 – *L. (L.) debernardii*; 4398, 4399 – *L. (L.) vilis*.

18. Pronotum short and broad, almost 2 × broader than long **19**.
- Pronotum not particularly short and broad **21**.
19. Pronotum very coarsely punctate. Here the darkest specimens of *tunetanus* (auxiliary group J, thesis 3).
- Pronotum not coarsely punctate **20**.

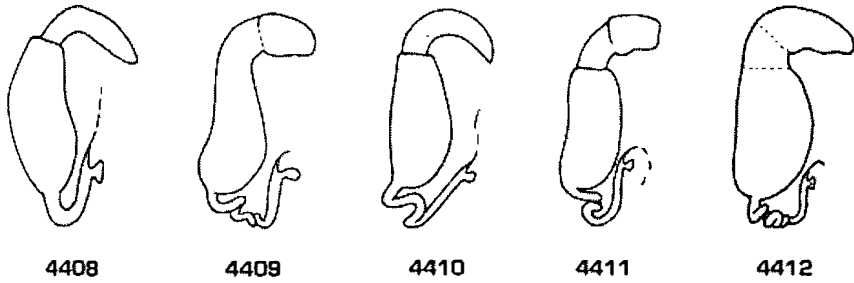
20. Aedeagus as in figs **4396**, **4397**, spermatheca as in fig. **4390**. Ductus spermathecae forms one loop only. Length 1.6–1.8 mm. Described from Israel *debernardii* LEONARDI, 1979.
- . Aedeagus as in figs **4398**, **4399**, spermatheca as in fig. **4391**. Ductus spermathecae forms a few loops. Length 1.4–1.7 mm. Distributed in Canary Islands and in north-western Africa *vilis* WOLLASTON, 1864.



Figs 4400-4407. Aedeagus in dorsal or ventral and in lateral view (4400, 4401 after KONSTANTINOV 1992; 4405, 4406 after FURTH 1979; remaining after LEONARDI 1973): 4400, 4401 – *Longitarsus (Longitarsus) tienshanicus*; 4402, 4403 – *L. (L.) fulgens*; 4404, 4405 – *L. (L.) allotrophus*; 4406, 4407 – *L. (L.) zangherii*.

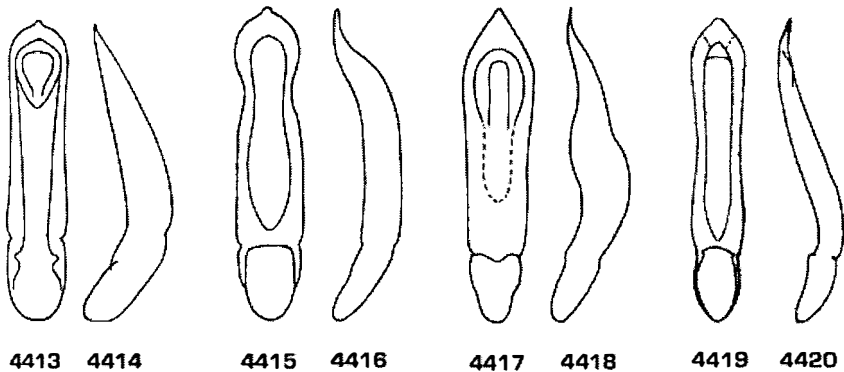
21. Pronotum subquadrate, not very broader than long. Body dark brown with perceptible metallic reflex. Antennomeres 1–4 and legs, except for brown apical part of hind femora, yellow. Aedeagus (figs **4400**, **4401**) in dorsal view parallel, its apex triangular, tubular part in lateral view straight. Length about 1.6 mm. Described from Tien Shan *tienshanicus* KONSTANTINOV, 1992.
- . Pronotum not subquadrate, distinctly broader than long **22**.
22. Ground of elytra without reticulation, smooth and shiny. Humeral calli large, projecting. Pronotum and anterior part of elytra often somewhat lightened. Aedeagus as in figs **4402**, **4403**, spermatheca as in fig. **4408**. Length 1.8–2.4 mm. Distributed in Europa from central France and Netherlands to Bulgaria and eastern Ukraine *fulgens* (FOUDRAS, 1860).
- . Ground of elytra reticulate, humeral calli rather feebly developed or absent **23**.
23. In male first tarsomere of fore legs strongly widened **24**.
- . In male first tarsomere of fore legs feebly or barely widened **28**.
24. In male last abdominal sternit without any impression. Aedeagus as in figs **4404**, **4405**, spermatheca as in fig. **4409**. Length 1.5–2.0 mm. Very similar to *minusculus* (antithesis 89), but on average larger. Known from Israel and Jordan *allotrophus* FURTH, 1979.
- . In male last abdominal sternit with a median groove **25**.

25. Pronotum neither lighter than elytra, nor widened anteriorly **26.**
 -. Pronotum widened anteriorly and usually distinctly lighter than elytra. Aedeagus as in
 figs **4407**, **4408**, spermatheca as in fig. **4410**. Length 2.2–2.3 mm. Distributed in
 Apennines **zangherii** WARCHAŁOWSKI, 1968.



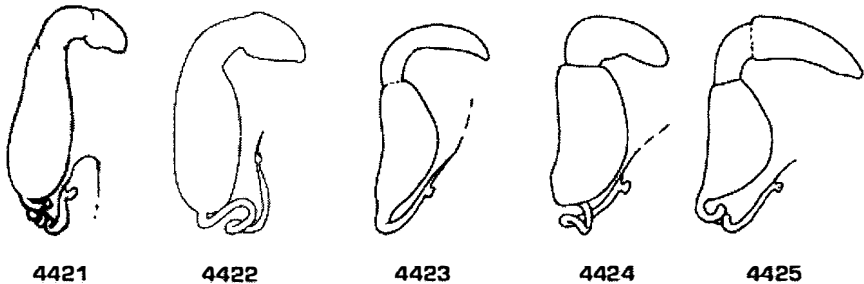
Figs 4408–4412. Spermatheca (4409 after FURTH 1979; 4411 after LEONARDI 1972; 4412 after GRUEV 1987; remaining after LEONARDI 1973): 4408 – *Longitarsus (Longitarsus) fulgens*; 4409 – *L. (L.) allotrophus*; 4410 – *L. (L.) zangherii*, 4411 – *L. (L.) luridus*; 4412 – *L. (L.) inconspiquus*.

26. Elytra grown together, hind wings and humeral calli absent, body oval. Colouration of
 body rather uniform, dark brown to pitchy brown, legs and antennae reddish brown,
 apical part of antennae somewhat darker. Aedeagus as in figs **4413**, **4414**. Length
 1.9 mm. Distributed in Afghanistan and Kazakhstan
 **murteus** WARCHAŁOWSKI, 1972.
 -. Elytra not grown together, humeral calli perceptible **27.**



Figs 4413–4420. Aedeagus in dorsal or ventral and in lateral view (4413, 4414 after WARCHAŁOWSKI 1972; 4419, 4420 after DOGUET and BERGÉAL 2002; remaining after WARCHAŁOWSKI 1996): 4413, 4414 – *Longitarsus (Longitarsus) murteus*; 4415, 4416 – *L. (L.) luridus*; 4417, 4418 – *L. (L.) inconspiquus*; 4419, 4420 – *L. (L.) barbarae*.

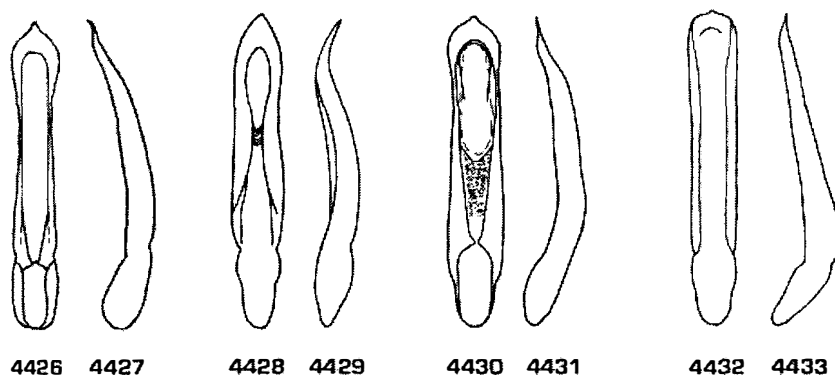
27. Common transpalaeartic species. Colouring of body variable, pale yellowish brown, rusty-brown, chesnut to pitchy. Hind wings usually shortened, rarely absent. Aedeagus as in figs 4415, 4416, spermatheca as in fig. 4411. Length 1.5–2.3 mm (= *castaneus* DUFTSCHMID, 1825, *fuscescens* STEPHENS, 1831, ?*submaculatus* Kutschera, 1863, *fuscus* KUTSCHERA, 1864, *syriacus* ALLARD, 1866, *amurensis* WEISE, 1887). Variations: upper side almost entirely pitchy black (ab. *nigricans* WEISE, 1888), hind wings well-developed, humeral calli projecting (ab. *cognatus* WEISE, 1888), upper side dark brown, each elytron with two (humeral and apical) blurred, sometimes indistinct, pale spots (ab. *quadrisignatus* DUFTSCHMID, 1825). Forms 3 subspecies: very dark form living on *Clematis* L. (subsp. *conspiciabilis* FALDERMANN, 1837 from Balkan Peninsula and southern Carpathians), relatively dark form, on average smaller, hind wings entirely absent, in male first tarsomere of fore legs barely broadened, observed on *Dipsaceae*, perhaps a distinct species (subsp. *mauritanicus* PEYERIMHOFF, 1915, described from northern Algeria) and the nominotypical subspecies distributed from Morocco and Ireland to Kamchatka and Ussuria ***luridus*** (SCOPOLI, 1763).
- . Endemic to Canary Islands. Aedeagus as in figs 4417, 4418, spermatheca as in fig. 4412. Length 1.6–2.0 mm. Known from Tenerife only ***inconspicuus*** WOLLASTON, 1860.
28. In male first tarsomere of fore legs slightly broader than in female. External characters similar as in *allotrophus* (thesis 24). Aedeagus as in figs 4419, 4420, spermatheca as in fig. 4421. Described from Greece (Peloponnes) and SW Turkey ***barbarae*** DOGUET et BERGEAL, 2002.
- . In male first tarsomere of fore legs not broadened or barely broader than in female. General view and external characters as in *luridus* (auxiliary group I, thesis 27). Aedeagus as in figs 4426, 4427. Species described from Morocco, possibly conspecific with *luridus* subsp. *mauritanicus* (thesis 27) ***atlanticus*** DÖBERL, 2002.



Figs 4421–4425. Spermatheca (4421 after DOGUET and BERGEAL 2002; 4422 after WARCHALOWSKI 1998; 4423 after LEONARDI and MOHR 1974; 4424 after LEONARDI 1973; 4425 after GRUEV 1987): 4421 – *Longitarsus* (*Longitarsus*) *barbarae*; 4422 – *L. (L.) latens*; 4423 – *L. (L.) ventricosus*, 4424 – *L. (L.) minusculus*, 4425 – *L. (L.) kleiniiiperda*.

29. In male first tarsomere of fore legs neither longer nor broader than in female. Body less convex as in *luridus* (thesis 27) or *atlanticus* (antithesis 28). On each lateral margin of pronotum, besides anterior and posterior seta, 5 rather long setae. Aede-

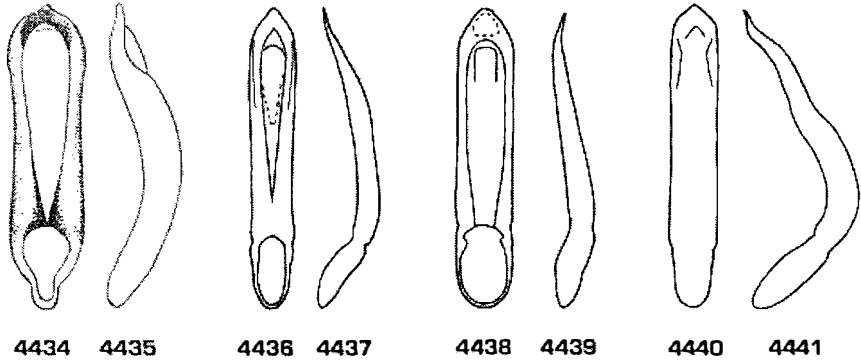
- agus as in figs **4428**, **4429**. Length 2.3–2.5 mm (= *seticollis* MOHR, 1962). Distributed in Spain ***ferruginipennis*** FUENTE, 1910.
- . In male first tarsomere of fore legs more or less elongate, 2–2.7 × longer than broad **30**.



Figs 4426–4433. Aedeagus in dorsal or ventral and in lateral view (4426, 4427 after DÖBERL 2002; 4428, 4429 after MOHR 1962; 4430, 4431 after LEONARDI 1975; 4432, 4433 after WARCHAŁOWSKI 1998): 4426, 4427 – *Longitarsus (Longitarsus) atlanticus*; 4428, 4429 – *L. (L.) ferruginipennis*; 4430, 4431 – *L. (L.) springeri*; 4432, 4433 – *L. (L.) latens*.

30. Length of body over 2.3 mm. Upper side pitchy to blackish, pronotum sometimes paler than elytra. Aedeagus as in figs **4430**, **4431**, spermatheca not studied. Described from Apennins ***springeri*** LEONARDI, 1975.
- . Length of body 1.9–2.0 mm. Body outline fairly slender, oblong oval, upper side uniformly reddish brown. Aedeagus as in figs **4432**, **4433**, spermatheca as in fig. **4422**. Occurs in north-eastern Turkey ***latens*** WARCHAŁOWSKI, 1998.
31. Species from Transcaspiia. Body dark brown with perceptible metallic reflex. Antennomeres 1–4 and legs except for brown metafemora yellow. Body very convex, elytra oval without humeral calli. Puncturation on elytra form indistinct longitudinal rows. In male first tarsomere of fore legs weakly broadened. Length 1.3–1.4 mm. Described from Kazakhstan (W Tien-Shan) ***finitimus*** KONSTANTINOV, 1992.
- . Species from Europe and Mediterranean area **32**.
32. Body very convex, oval. Pronotum shiny, reticulation of its surface indistinct or absent. General view as in plate XCIII, **phot. 837**. Aedeagus as in figs **4436**, **4437**, spermatheca as in fig. **4423**. Length 1.3–1.7 mm (= *gibbosus* FOUDRAS, 1860, *subrotundus* ALLARD, 1860). Distributed in France and northern Spain ***ventricosus*** (FOUDRAS, 1860).
- . Body feebly convex, not oval. Pronotum matt or silky, reticulation of its surface dense and distinct. Aedeagus as in figs **4438**, **4439**, spermatheca as in fig. **4424**. Length 1.3–1.8 mm. W Mediterranean populations differing mainly by ?shape of spermatheca was separated as distinct species *anacardius* ALLARD, 1866, in my opinion unjustly.

The name *anacardius* is treated here as a normal synonym of *minusculus*. Distributed in Mediterranean area and in southern part of Europe to Erzgebirge, Sudetes and Carpathians ***minusculus*** (FOUDRAS, 1860).



Figs 4434-4441. Aedeagus in dorsal or ventral and in lateral view (4434, 4435 after KONSTANTINOV 1992; 4436, 4437 after LEONARDI and MOHR 1974; 4438, 4439 after LEONARDI 1973; 4440, 4441 after WARCHALOWSKI 1996): 4434, 4435 – *Longitarsus (Longitarsus) finitimus*; 4436, 4437 – *L. (L.) ventricosus*; 4438, 4439 – *L. (L.) minusculus*; 4440, 4441 – *L. (L.) kleiniiperda*.

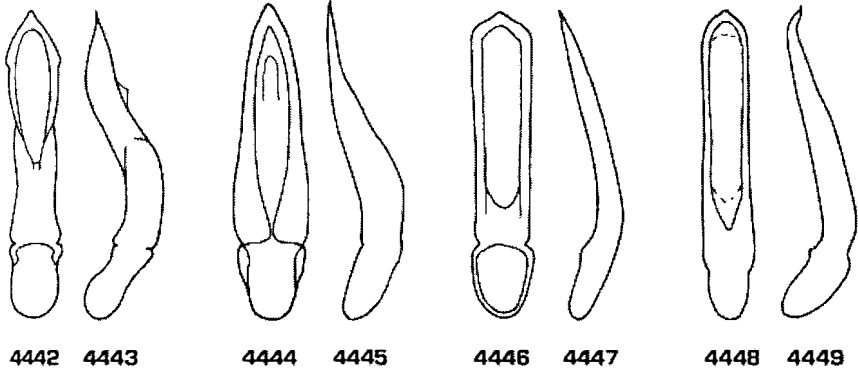
Auxiliary group J

Upper side pale yellowish to pale testaceous.

Key to species

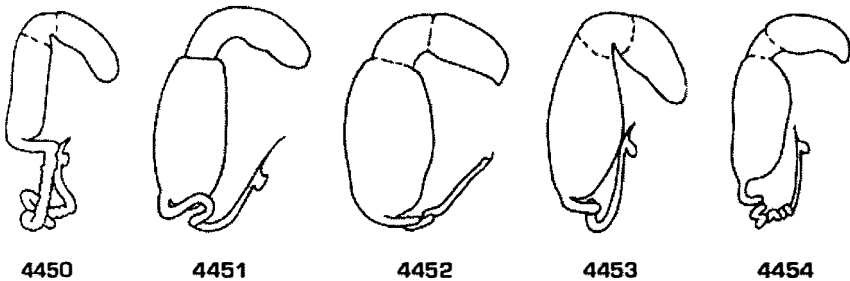
1. External border of fore tibia, in female distinctly and in male very strongly, flattened and widened. Body almost entirely pale-straw yellowish. Aedeagus as in figs 4440, 4441, spermatheca as in fig. 4425. Length 3.0–3.5 mm. Lives on cultivable *Senecio kleinia* L. (*Asteraceae*). Endemic to Canary Islands ***kleiniiperda*** WOLLASTON, 1860.
- . Fore tibia formed normally 2
2. On each elytron 7 elevated costae, perceptible at least in side light. Upper side pale testaceous or yellowish, sutural stripe and a roundish spot on each elytron blackish. Aedeagus as in figs 4442, 4443, spermatheca as in fig. 4450. Length 2.4–2.9 mm (= *stenocyphon* WOLLASTON, 1867, *?laxicornis* WOLLASTON, 1867). Forms two subspecies (in opinion of some authors different species): on each elytron black spot (nominotypical subspecies from Tenerife, La Palma and Hierro), elytra unicolorous pale (subsp. *gomerensis* BIONDI, 1986 from Gomera). Lives on *Ceballosia fruticosa* L. (*Boraginaceae*). Distributed in Cape Verde and Canary Islands ***messerschmidtiae*** WOLLASTON, 1860.
- . Elytra without costae 3

3. Upper side reticulate and particularly coarsely punctate. Head, pronotum, hind femora and a few apical antennomeres dark yellow amber or pale reddish brown, remaining parts of legs yellow, elytra pale testaceous. Aedeagus as in figs **4444**, **4445**, spermatheca as in fig. **4451**. Length 1.7–2.3 mm (= *perforatus* PEYERIMHOFF, 1925, nec HORN, 1889). Distributed in north-western Africa and in southern Spain **tunetanus** CSIKI, 1941.
- Upper side not particularly strongly punctate **4**.



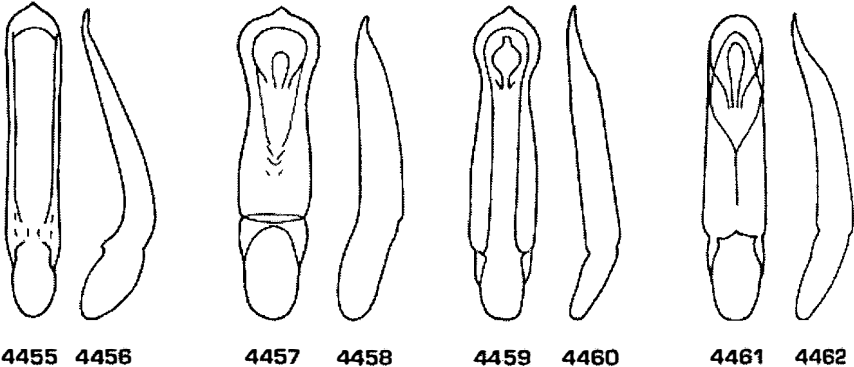
Figs 4442-4449. Aedeagus in dorsal or ventral and in lateral view (4444, 4445 after WARCHAŁOWSKI 1996; 4446, 4447 after DOGUET 1973; remaining after BIONDI 1986): 4442, 4443 – *Longitarsus (Longitarsus) messerschmidiae*; 4444, 4445 – *L. (L.) tunetanus*; 4446, 4447 – *L. (L.) leonardii*; 4448, 4449 – *L. (L.) laureolae*.

4. Frontal tubercles, although broad and shortened by lateral furrows, distinctly separated from frons by thin frontal furrows **5**.
- Frontal tubercles not separated by frontal furrows **7**.



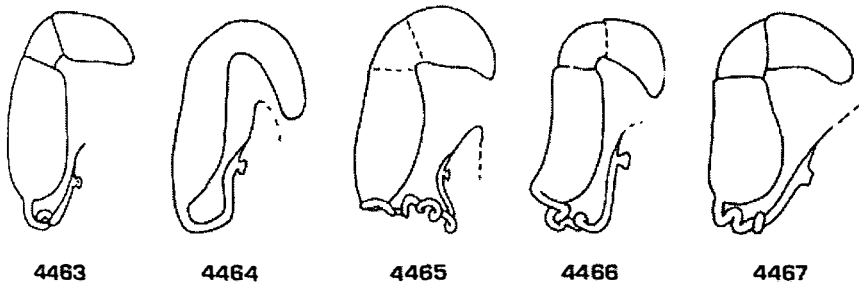
Figs 4450-4454. Spermatheca (4450 after BIONDI 1986; 4451 after WARCHAŁOWSKI 1996; 4452 after DOGUET 1973; 3353 after BIONDI 1988; 4454 after GRUEV 1987): 4450 – *Longitarsus (Longitarsus) messerschmidiae*; 4451 – *L. (L.) tunetanus*; 4452 – *L. (L.) leonardii*, 4453 – *L. (L.) laureolae*; 4454 – *L. (L.) candidulus*.

- 5. Underside, except prosternum, black. Elytra oval, last apical part of antennae and apex of hind femora darkened. Aedeagus as in figs **4446**, **4447**, spermatheca as in fig. **4452**. Ductus spermathecae forms two loops. Length 1.9–2.3 mm. Distributed in Pyrenees and in northern Spain **leonardii** DOGUET, 1973.
- . Underside pale or brownish. Mediterranean species 6.
- 6. Underside pale. Body rather stout, broad and convex. Pronotum very broad, 2 × broader than long. Upper side very pale, za życia whitish, after drying pale straw yellow 3 or 4 apical antennomeres darker, sometimes brown 8.
- . Underside brownish or brown. Body not stout, pronotum about 1.5 × broader than long. Aedeagus as in figs **4448**, **4449**, spermatheca as in fig. **4453**. Length about 2.0 mm. Known from Sicily and southern Italy only **laureolae** BIONDI, 1988.
- 7. Smaller. Body short oval, strongly convex. Pronotum about 1.8 × broader than long. Usually wingless, with rounded humeral calli. Upper side very shallowly punctate. Aedeagus as in figs **4455**, **4456**, spermatheca as in fig. **4454**. Length 1.8–2.4 mm. (= *latifrons* ALLARD, 1860, *breviusculus* MULSANT et REY, 1876). Variation: hind wings developed, humeral calli distinct (ab. *thymelearum* PEYERIMHOFF, 1911). Distributed in western part of Mediterranean area, from Morocco and southern France to Cyrenaica and Montenegro. Very similar, but differing by tubular part of aedeagus narrowed in its midpart and by distribution in more arid areas (subsaharian zone of Algeria) is *arnoldi* BERGEAL et DOGUET, 1991 **candidulus** (FOUDRAS, 1860).
- . Larger. Aedeagus as in figs **4457**, **4458**, spermatheca as in fig. **4463**. Length 2.3–2.9 mm. Distributed in southern part of Mediterranean area from Morocco to Israel **albus** (ALLARD, 1866).
- 8. Body entirely pale, usually straw yellow; apex of femora and a few last antennomeres black (in feebly pigmented and faded specimens brown, but always contrasting with remaining parts of body). Humeral calli protruding. Two externally similar species 9.
- . Colouration of body does not form distinct contrasts 10.



Figs 4455–4462. Aedeagus in dorsal or ventral and in lateral view (4455, 4456 after BIONDI 1988; remaining after WARCHAŁOWSKI 1996): 4455, 4456 – *Longitarsus (Longitarsus) candidulus*; 4457, 4458 – *L. (L.) albus*; 4459, 4460 – *L. (L.) ochroleucus*; 4461, 4462 – *L. (L.) codinai*.

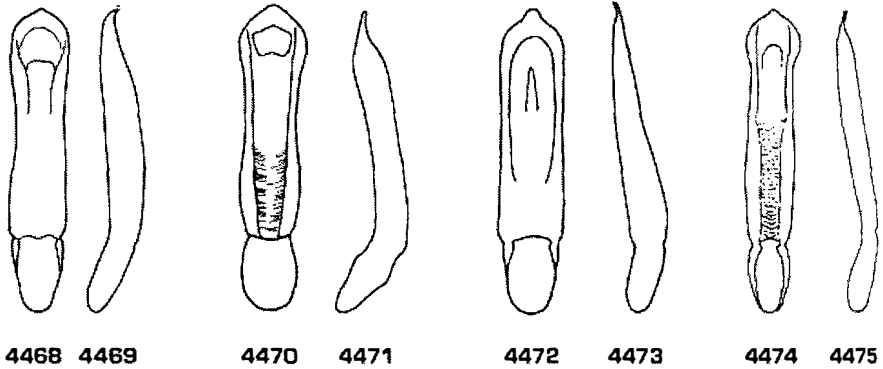
9. Punctures of elytra very fine and shallow, entirely randomly scattered. In male first tarsomere of fore legs feebly widened. Aedeagus as in figs **4459**, **4460**, spermatheca as in fig. **4464**. Length 2.0–2.8 mm (= *albellus* DUMÉRIL, 1816, *cognatus* WOLLASTON, 1860). Variation: head and underside pitchy (ab. *subniger* ROUBAL, 1943). In Madeira forms a subspecies (subsp. *lindbergi* MADAR, 1963) characterized by broad, dark sutural stripe and at first glance very similar to *ganglbaueri* or *brisouti* (auxiliary group H, thesis and antithesis 32). Distributed from Canary Islands and Ireland to Caspian Sea ***ochroleucus*** (MARSHAM, 1802).
- Punctures of elytra fine but relatively deep, form here and there short, semiregular rows. In male first tarsomere of fore legs elongate and strongly widened. Aedeagus as in figs **4461**, **4462**, spermatheca as in fig. **4465**. Length 2.2–3.1 mm. Distributed in western part of Mediterranean area from Madeira, Morocco and southern France to Dalmatia ***codinai*** MADAR et MADAR, 1965.



Figs 4463–4467. Spermatheca (4463 after GRUEV 1987; 4467 after SHUTE 1976; remaining after LEONARDI 1972): 4463 – *Longitarsus (Longitarsus) albus*; 4464 – *L. (L.) ochroleucus*; 4465 – *L. (L.) codinhai*, 4466 – *L. (L.) longipennis*; 4467 – *L. (L.) flavicornis*.

10. Elytra very long, their apices separately rounded. Upper side uniformly pale, sutural margin narrowly darkened. Underside of abdomen and hind femora in great part black. Aedeagus as in figs **4468**, **4469**, spermatheca as in fig. **4466**. Length 2.2–2.9 mm. Variation: head pitchy, pronotum distinctly darker than elytra (unnamed). Distributed from western and southern Italy to Asia Minor, Caucasian countries and Central Asia, in Central Europa known from Austria, Germany, Czech Republic and Poland ***longipennis*** KUTSCHERA, 1863).
- Elytra not very long, their apices usually commonly rounded **11**.
11. In hind legs first and second tarsomere evenly widened to apex. Humeral callus projecting. Length usually about 3.0 mm **12**.
- First and second tarsomere of hind legs slender **14**.
12. Upper side usually yellow ochre to reddish yellow. Aedeagus as in figs **4470**, **4471**, spermatheca as in fig. **4467**. Length 2.6–3.4 mm (= *citrinus* FUENTE, 1910). Variation: upper side rusty-reddish to brick-red (ab. *rufescens* FOWLER, 1890). Distributed in Morocco, Algeria, Iberian Peninsula, France, Belgium, Great Britain and Ireland ***flavicornis*** (STEPHENS, 1831).
- Upper side usually pale yellow, from straw yellow to pale testaceous **13**.

13. Smaller General view as in plate XCIII, **phot. 829**. Aedeagus as in figs **4472, 4473**, spermatheca as in fig. **4476**. Length 2.4–3.4 mm. Lives on *Senecio jacobaeae* L. (*Asteraceae*). Distributed from the British Isles, central France and Sicily to Byelorussia, Crimea and Caucasian countries, reported also from Transcaspiya and Siberia ***jacobaeae*** (WATERHOUSE, 1861).
- . Larger. All external characters as in *jacobaeae* (thesis 13). Genital parts not studied. Length 3.6–3.8 mm (= *weisei* JACOBSON, 1901, nec GUILLEBEAU, 1895). A doubtful species, possibly conspecific with *jacobaeae*. Described from Kazakhstan ***sahlbergi*** PIC, 1907.

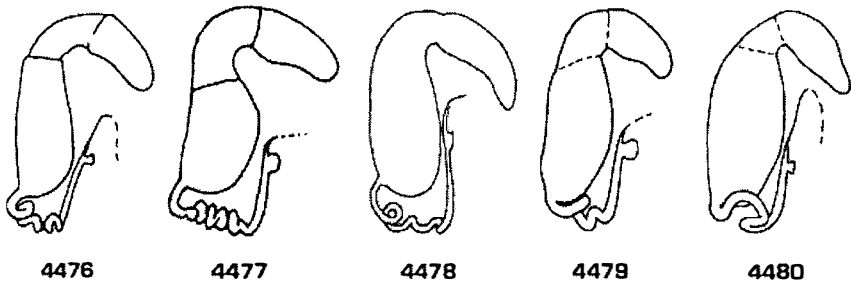


Figs 4468-4475. Aedeagus in dorsal or ventral and in lateral view (4470, 4471 after DÖBERL 1994; 4474, 4475 after DÖBERL 2004; remaining after WARCHAŁOWSKI 1996): 4468, 4469 – *Longitarsus (Longitarsus) longipennis*; 4470, 4471 – *L. (L.) flavicornis*; 4472, 4473 – *L. (L.) jacobaeae*; 4474, 4475 – *L. (L.) cizeki*

14. All external characters as in *jacobaeae* (thesis 13), from *jacobaeae* differing only by slender tarsomeres in hind legs (in *jacobaeae* broadened and pale apical part of antennae 15.
- . Not as above 16.
15. Median furrow, running along under side of aedeagus (figs **4474, 4475**) reaches basal part. Apical part in dorsal view but distinctly broadened. Pileum of spermatheca (fig. **4477**) on average shorter. Described from Slovakia ***cizeki*** DÖBERL, 2004.
- . Median furrow, running along under side of aedeagus (figs **4481, 4482**) shortened before basal part. Apical part in dorsal view distinctly but weakly broadened. Pileum of spermatheca (fig. **4478**) on average longer. Described from NE Turkey ***kopdagiensis*** GRUEV et ASLAN, 1998.
16. Two or three inner setae on apex of each elytron externally bent and considerably longer than the remaining setae. Colouration of body usually pale rust-reddish. Length 2.2–3.0 mm 17.
- . All setae on apex of elytra relatively short 18.
17. Upper side strong and densely punctate, surface of pronotum slightly uneven. Humeral calli usually indistinct. Aedeagus as in figs **4483, 4484**, spermatheca as in fig.

4479. Length 2.2–2.7 mm. Variations: humeral calli projecting (ab. *profugus* WEISE, 1893), body rather dark, brown or dark brown (ab. *fumigatus* WEISE, 1893). Even in darkest specimens legs (except hind femora) and antennae entirely pale. Transpalearctic species, distributed from Pyrenees and the British Isles to basin of Amur
 ***rubiginosus*** (FOUDRAS, 1860).

- Upper side finely and shallowly punctate, surface of pronotum even. Body uniformly yellow amber or pale rusty-brownish. On apex of each elytron a long seta. Similar to *succineus* (auxiliary group J, antithesis 31), but on average larger; moreover in *succineus* no a particularly long seta on apex of elytron. Aedeagus as in figs 4485, 4486, spermatheca as in fig. 4479. Length 2.4–3.0 mm. Distributed in Iberian Peninsula, France, western Germany, all Italy, Corsica, Sardinia, Sicily, Greece and Creta, reported also from Cyprus. From Morocco and Algeria is described a stronger punctured form, ab. *algiricus* HEIKERTINGER, 1913, cosidered sometimes as a subspecies
 ***aeruginosus*** (FOUDRAS, 1860).

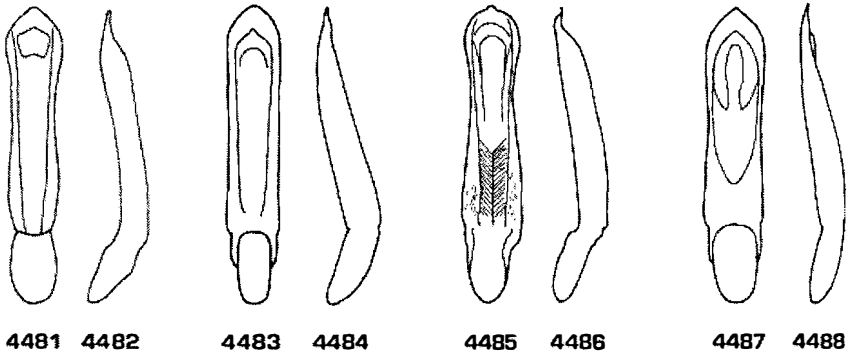


Figs 4476–4480. Spermatheca (4477 after DÖBERL 2004; 4478, 4479 after DÖBERL 1994; remaining after LEONARDI 1972): 4476 – *Longitarsus (Longitarsus) jacobaeae*; 4477 – *L. (L.) cizeki*; 4478 – *L. (L.) kopdagensis*, 4479 – *L. (L.) rubiginosus*; 4480 – *L. (L.) aeruginosus*.

- 18. Apical half of antenna considerably darker than the basal half, usually black. Uppe-side very pale, in living insects whitish, in dried specimens pale yellow. Head and hind femora dark yellow amber. Brown or black are: labrum (partly or entirely), metanotum, abdomen (ventrally and dorsally), often also two last tarsomeres. Puncturation of elytra extremely fine and shallow. Aedeagus as in figs 4487, 4488, spermatheca as in fig. 4489. Length 1.7–2.3 mm. Variations: colouration of body as above (typical form), head and pronotum blackish, sutural stripe distinct, underside blackish or black (ab. *nigrithorax* HEIKERTINGER, 1912), head dark, sutural stripe broad, in anterior part suddenly narrowed (ab. *poweri* ALLARD, 1866). Lives on *Tussilago farfara* L. and different *Petasites* L.-species (*Asteraceae*). Distributed in northern Africa, European part of Mediterranean area and in Europe from France and the British Isles to southern Sweden, Ukraine and Asia Minor ***gracilis*** KUTSCHERA, 1864.
- Apical half of antennae usually darker, but not contrasting with the basal part 19.
- 19. Antennae very long (even in female longer than body), slender, entirely pale. Antennomeres 4–8 thin and long, about 5 × longer than thick. Body usually very pale,

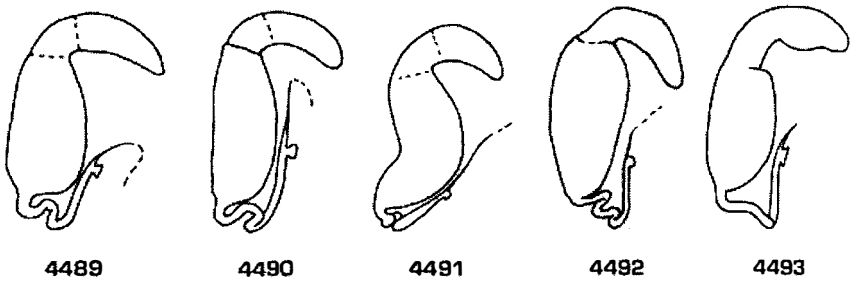
yellowish straw, a little transparent. Sclerotisation feeble, in females elytra widened posteriad, often gaping. Hind wings usually reduced, humeral calli indistinct. In male first anterior tarsomere elongate and slightly widened, not broader than apex of corresponding tibia. Aedeagus as in figs 4494, 4495, spermatheca as in fig. 4490. Length 2.0–2.9 mm. Variation: humeral calli protruding (ab. *luctator* WEISE, 1893). Lives on *Asteraceae*. Distributed in central Europe and in northern France. Reported also from Croatia and eastern Ukraine *symphyti* HEIKERTINGER, 1912.

–. Antennae only in male of *succineus* (auxiliary group J, antithesis 31) and *buettikeri* (antithesis 22) longer than body, not particularly slender, antennomeres 4–8 at most 4 × longer than thick 20.



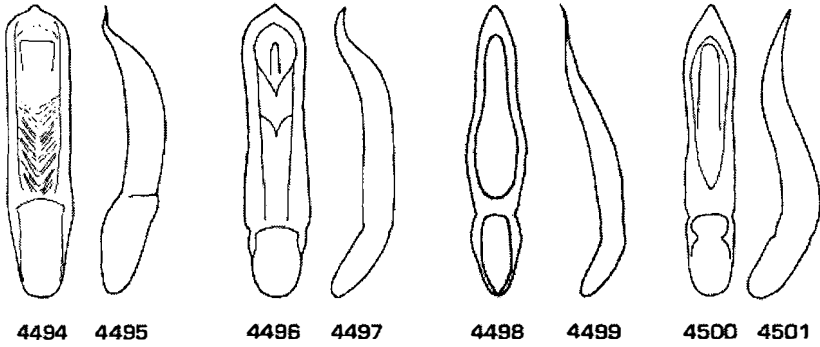
Figs 4481-4488. Aedeagus in dorsal or ventral and in lateral view (4481, 4482 after GRUEV and ASAN 1998; 4485, 4486 after LEONARDI 1976; remaining after WARCHALOWSKI 1996): 4481, 4482 – *Longitarsus (Longitarsus) kopdagiensis*; 4483, 4484 – *L. (L.) rubiginosus*; 4485, 4486 – *L. (L.) aeruginosus*; 4487, 4488 – *L. (L.) gracilis*.

20. Humeral calli well-developed, projecting 21.
 –. Humeral calli feebly developed, indistinct or absent 28.



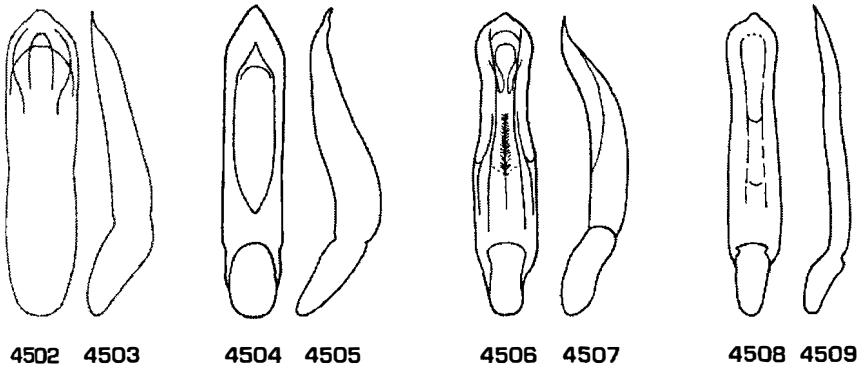
Figs 4489-4493. Spermatheca (4492 after DOGUET 1984; 4493 after WARCHALOWSKI 1996; remaining after LEONARDI 1972): 4489 – *Longitarsus (Longitarsus) gracilis*; 4490 – *L. (L.) symphyti*; 4491 – *L. (L.) pelucidus*, 4492 – *L. (L.) buettikeri*; 4493 – *L. (L.) karlheini*.

21. Antennae relatively short, distinctly shorter than body, not exceeding 2/3 of elytra **25.**
 - Antenna about as long as body **23.**



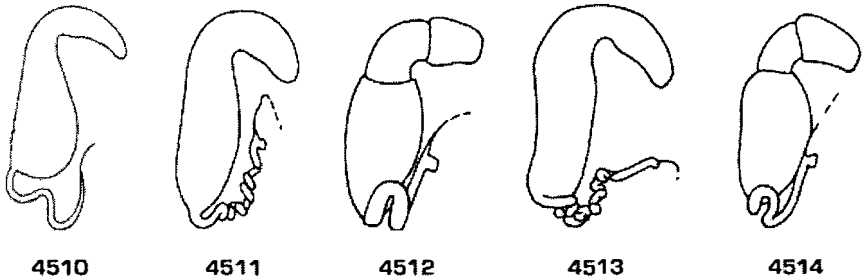
Figs 4494-4501. Aedeagus in dorsal or ventral and in lateral view (4494, 4495 after LEONARDI 1976; 4498, 4499 after DOGUET 1984; remaining after WARCHALOWSKI 1996): 4494, 4495 - *Longitarsus (Longitarsus) symphyti*; 4496, 4497 - *L. (L.) pellucidus*; 4498, 4499 - *L. (L.) buettikeri*; 4500, 4501 - *L. (L.) karlheini*.

22. On pronotum three blurred darker spots, more or less visible, but always present. Externally similar to *pellucidus* (thesis 23), but aedeagus in lateral view rather uniformly, arcuate curved. Length 2.0-2.4 mm. Described from Saudi Arabia **arabicus** DOGUET, 1979.
 - Pronotum without darker spots **23.**



Figs 4502-4509. Aedeagus in dorsal or ventral and in lateral view (4502, 4503 after ASLAN and WARCHALOWSKI 2005; 4504, 4505 after WARCHALOWSKI 1996; 4506, 4507 after GRUEV and PETITPIERRE 1979; 4508, 4509 after DÖBERL 1987): 4502, 4503 - *Longitarsus (Longitarsus) ozbeki*; 4504, 4505 - *L. (L.) albineus*; 4506, 4507 - *L. (L.) nubigena*; 4508, 4509 - *L. (L.) fowleri*.

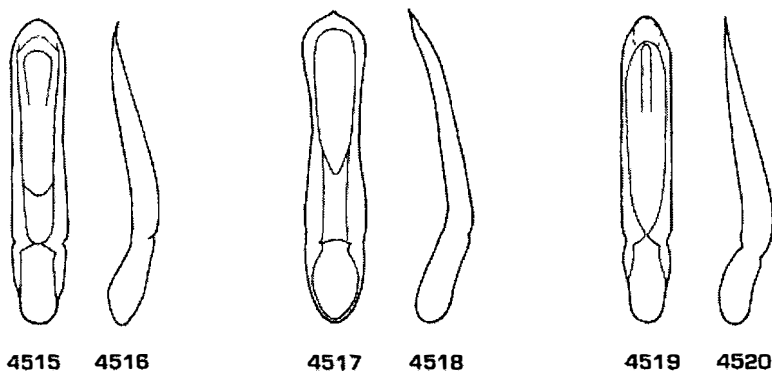
23. Body entirely pale, straw yellowish to pale testaceous. Head, underside and hind femora yellow amber, rarely pale brownish. Upper side finely but distinctly and usually rather deeply punctate. In male first tarsomere in fore legs strongly widened. Aedeagus as in figs **4496**, **4497**, spermatheca as in fig. **4491**. Length 2.0–2.4 mm in male to 2.3–2.6 mm in female (= *testaceus* ALLARD, 1860, *paleaceus* MULSANT et REY, 1874, *ionius* MOHR, 1962). Variation: underside brown to pitchy (ab. *nigriventris* WEISE, 1893). Distributed in western Palaearctis from Madeira, Morocco, Iberian Peninsula and the British Isles to Mongolia ***pellucidus*** (FOUDRAS, 1860).
- . Body pale testaceous, antennae slightly darkened apically, head and apices of hind femora reddish-brown **24.**



Figs 4510–4514. Spermatheca (4510 after ASLAN and WARCHAŁOWSKI 2005; 4511 after LEONARDI 1972; 4512 after DÖBERL 1994; 4513 after GRUEV 1977; remaining after DÖBERL 1994): 4510 – *Longitarsus (Longitarsus) ozbeki*; 4511 – *L. (L.) albineus*; 4512 – *L. (L.) fowleri*, 4513 – *L. (L.) solaris*; 4514 – *L. (L.) strigicollis*.

24. Tubular part of aedeagus (figs **4498**, **4499**) distinctly broader in basal half than in apical half, on underside not rugose. Spermatheca as in fig. **4492**. Length 2.0–2.3 mm. Described from Saudi Arabia ***buettikeri*** DOGUET, 1984.
- . Tubular part of aedeagus narrowed behind apical part, on underside distinctly, obliquely rugose. Length 2.0–2.6 mm. Distributed in Transcaspia ***hoberlandti*** LOPATIN, 1990.
25. Antennae in apical part distinctly darkened. Upper side very pale, yellowish straw, silky or almost matt, reticulation always present **26.**
- . Antenna in apical part not distinctly darkened. Body entirely pale yellow amber. Spur on hind tibia relatively long. Aedeagus as in figs **4500**, **4501**, in lateral view distinctly S-shaped, spermatheca as in fig. **4493**. Length 1.9–2.2 mm. Known from Asia Minor, Crimea, Iran and Israel ***karlheinzi*** WARCHAŁOWSKI, 1972.
26. Outline of pronotum longer, in dorsal view at most 1.35 × broader than long; puncturation of elytra very fine and shallow; colouration of claws and tarsomeres 3–4 pale, at most slightly darkened. Metanotum always entirely pale. Central lobe of anal sternite in male with small roundish hollow; apex of aedeagus (figs **4502**, **4503**) with slightly marked lamella, apical borders form an angle of more than 90°. Tubular part in lateral view straight. Insertion of ductus spermathecae (fig. **4510**) inclined to dorsal side of vasculum; number of loops 1–2. Length 1.9–2.2 (male) to 2.4–2.6 mm (female). Described from NE Turkey ***ozbeki*** ASLAN et WARCHAŁOWSKI, 2005.

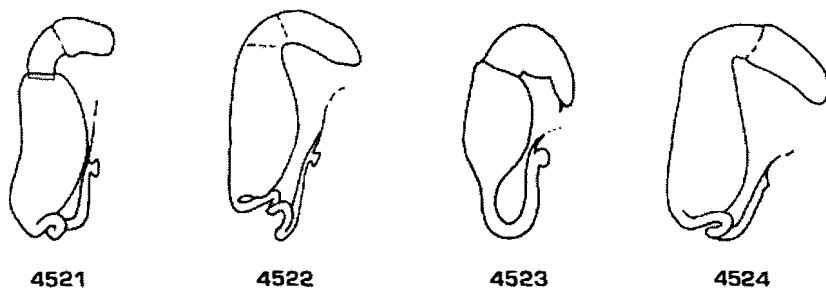
- Outline of pronotum shorter, in dorsal view about 1.5–1.55 × broader than long. Central lobe of anal sternite in male with longitudinal impression. Apex of aedeagus without lamella **27.**
- 27. Reticulation of upper side well-developed, puncturation dense, very fine and shallow. Labrum, palpi and mandibulae usually darkened. On metanotum two blackish spots, showing in living insects through elytra, in dried specimens visible after moistening of elytra with any solvent. Apex of aedeagus (figs **4504**, **4505**) triangular, its anterior angle obtuse. Spermatheca as in fig. **4511**. Length 1.9–2.4 mm. Distributed in Mediterranean area, Asia Minor and Central Asia **albineus** (FOUDRAS, 1860).
- Reticulation of upper side distinct, but shallow. Externally similar to *albineus* (thesis 25), apex of aedeagus with gently rounded sides, anterior angle sharp, about 60°. Described from NE Turkey **artvinus** GRUEV et ASLAN, 1998.



Figs 4515-4520. Aedeagus ventral and lateral view (4515, 4516 after GRUEV 1977; 4517, 4518 after LEONARDI 1973; 4519, 4520 after DÖBERL 1994): 4515, 4516 – *Longitarsus (Longitarsus) solaris*; 4517, 4518 – *L. (L.) strigicollis*; 4519, 4520 – *L. (L.) celticus*.

- 28. Antennae relatively short, distinctly shorter than body, antennomeres 8–10 twice to 2.5 × longer than thick. Four very similar species determinable only by shape of aedeagus or/and spermatheca **29.**
- Antennae about as long as body. Antennomeres 8–10 longer (3–4 × longer than thick). Further four very similar species determinable only by shape of aedeagus or/and spermatheca **32.**
- 29. Species endemic to Canary Islands. Length of body about 1.7 mm. Aedeagus as in figs **4506**, **4507**. Lateral sides of pronotum almost straight. Entirely yellowish amber, head, hind femora and margins of elytral sutura brownish. Similar to *pellucidus*, but more slender and stronger punctate. Distributed in Tenerife, Gomera and Madeira ...
..... **nubigena** WOLLASTON, 1854.
- Not Canarian endemite **30.**
- 30. In male first tarsomere of fore legs at least slightly but distinctly elongate and apically widened. External characters as in *strigicollis*. Aedeagus as in figs **4508**, **4509**, spermatheca as in fig. **4512**. Length 1.8–2.2 mm. Known from Great Britain only
..... **fowleri** ALLEN, 1967.
- In male first tarsomere of fore legs neither elongate nor widened **31.**

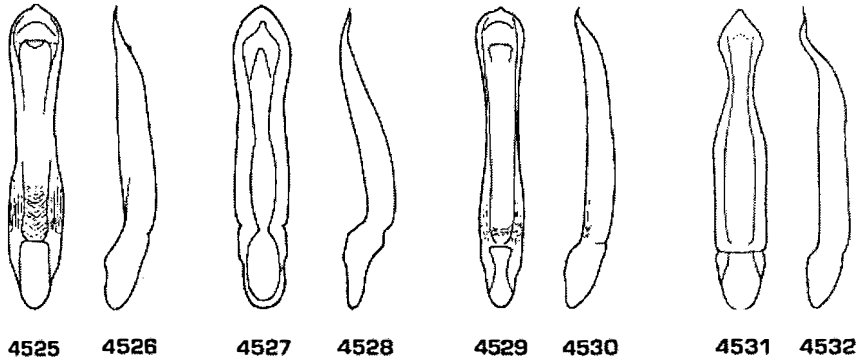
31. Aedeagus as in figs **4515**, **4516**, spermatheca as in fig. **4513**. Length 1.7–2.2 mm. Species from Balkan Peninsula. External characters as in *strigicollis* (antithesis 149). Distributed in Bulgaria and Greece **solaris** GRUEV, 1977.
- . Aedeagus as in figs **4517**, **4518**, spermatheca as in fig. **4514**. Body outline oval, elytra distinctly broader than pronotum. Upper side straw yellowish to pale testaceous, silky or almost matt, deeply reticulate. Underside yellowish to reddish brown. Length 1.8–2.2 mm (= *exiguus* BEDEL, 1898, *bombycinus* MOHR, 1962). Distributed in Canary Islands, northern Africa, Mediterranean part of Europa, Danube basin and in Balkan Peninsula **strigicollis** WOLLASTON, 1864.
32. In male first tarsomere of fore tarsi very slightly elongate and barely widened **33**.
- . In male first tarsomere of fore tarsi distinctly elongate and widened **34**.



Figs 4521–4524. Spermatheca (4521 after LEONARDI 1975; 4522 after LEONARDI 1972; 4523 after BASTAZO and VELA 1985; 4524 after LEONARDI 1976): 4521 – *Longitarsus (Longitarsus) celticus*; 4522 – *L. (L.) succineus*; 4523 – *L. (L.) caroli*, 4524 – *L. (L.) noricus*.

33. Aedeagus as in figs **4519**, **4520**, spermatheca as in fig. **4521**, cornu obtusely truncate. Length 1.6–2.0 mm. Geographical distribution requires a revision. Known from Morocco, Andalusia, France, Central Europe, Balkan Peninsula and Ukraine **celticus** LEONARDI, 1975.
- . Aedeagus as in figs **4525**, **4526**, spermatheca as in fig. **4522**. Entirely pale yellow straw, underside and margins of elytral suture slightly darker, yellow amber. Punctuation of upper side extremely fine and shallow, usually almost disappearing, reticulation mostly well-developed, shallow but distinct. Normally wingless, humeral calli indistinct, sometimes mesopterous with distinct humeral calli (ab. *perfectus* WEISE, 1893). Length 1.8–2.7 mm (= *amiculus* BALY, 1874). Lives on *Asteraceae*. Distributed in Europe and Asia from Iberian Peninsula and The British Isles to Japan alike in northern part of Oriental Region (Nepal, southern China, Vietnam), where it forms a subspecies with darkened hind femora, subsp. *illicitus* WARCHAŁOWSKI, 1970 **succineus** (FOUDRAS, 1860).
34. In male first tarsomere of fore tarsi slightly elongate and widened. Aedeagus as in figs **4527**, **4528**, spermatheca as in fig. **4523**. Length 1.7–2.4 mm. Perhaps conspecific with *ferruginipennis* (thesis 87). Known from western Andalusia **caroli** BASTAZO et GARCIA RASO, 1985.
- . In male first tarsomere of fore tarsi strongly elongate and widened **35**.

35. Smaller. Aedeagus as in figs **4529**, **4530**, spermatheca as in fig. **4524**. Length 1.7–2.5 mm. The species has been only recently separated from *succineus* (auxiliary group J, antithesis 31) and in consequence their distribution ranges are still not defined. Known hitherto from central Europe (northern Italy, Germany, Poland), Danube basin and Balkan Peninsula; reported also from Caucasian countries **noricus** LEONARDI, 1976.
- Larger. Length 2.75 mm. Aedeagus as in figs **4531**, **4532**. Described based on a single male from Afghanistan (Kabul) **beroni**, GRUEV, 1988.



Figs 4525-4532. Aedeagus in ventral and lateral view (4527, 4516 after BASTAZO and VELA 1985; 4531, 4532 after GRUEV 1988; remaining after LEONARDI 1976): 4525, 4526 – *Longitarsus (Longitarsus) succineus*; 4527, 4528 – *L. (L.) caroli*; 4529, 4530 – *L. (L.) noricus*, 4531, 4532 – *L. (L.) beroni*.

Subgenus *Testergus* WEISE, 1893

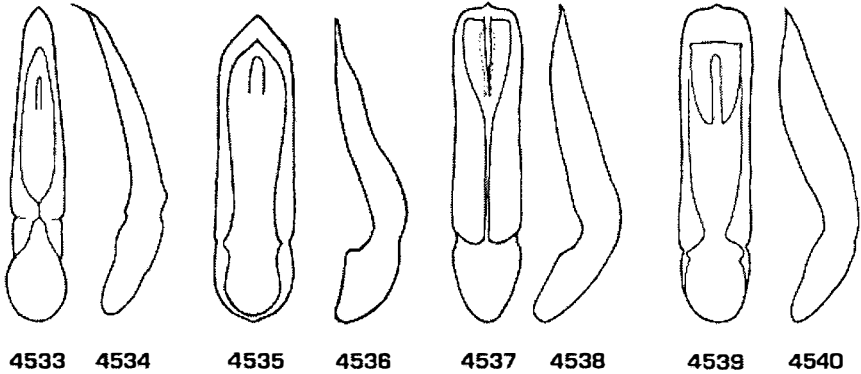
Truncatus PALY, 1970

Insufficiently described species *Longitarsus (Testergus) mohri* LOPATIN, 1963 (sexual characters unknown) from Afghanistan not included in the key.

Key to species

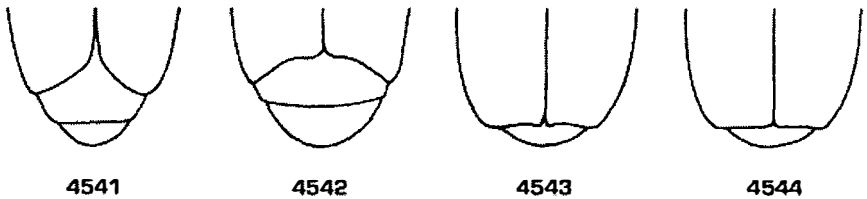
1. Upper side conspicuously deeply and coarsely punctured, almost foveolate, interstices glassy with strong cupreous sheen. Elytra sparsely covered by long hairs. Spur long. Apex of elytra as in fig. **4541**. General view as in plate XCIII, **phot. 830**. Aedeagus as in figs **4533**, **4534**. Length 1.8–2.0 mm. Distributed in Morocco **nemethi** HOFFMANN, 1953.
- Upper side not particularly coarsely punctate, interstices never glassy **2.**
2. Lateroapical margin of elytra forms an almost right or sharp angle **3.**
- Lateroapical margin of elytra margin broadly rounded or forms an obtuse angle ...
..... **15.**

3. Upper side brown, body oval. Length 1.5–1.8 mm. Apical margin of elytra cut almost transversely weakly oblique. Aedeagus as in figs **4535**, **4536**. Distributed in S Kazakhstan **ellipticus** REITTER, 1909.
- . Upper side black or black with metallic reflex 4



Figs 4533-4540. Aedeagus in ventral and lateral view (4535, 4536 after LOPATIN 1977, remaining after WARCHAŁOWSKI 1996): 4533, 4534 – *Longitarsus (Testergus) nemethi*; 4535, 4536 – *L. (T.) ellipticus*; 4537, 4538 – *L. (T.) pubescens*, 4539, 4540 – *L. (T.) lederi*.

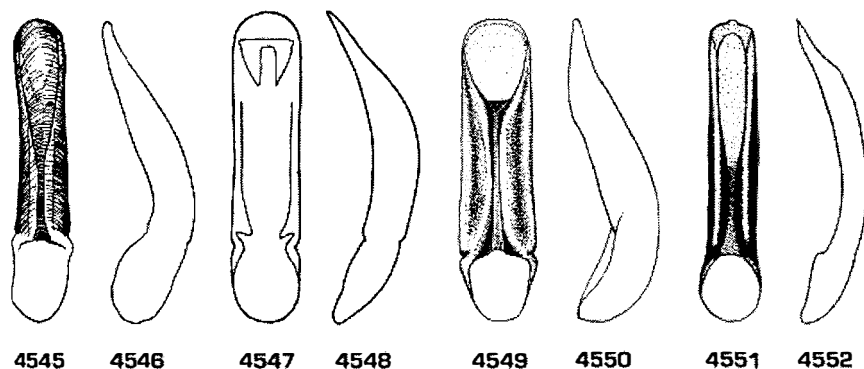
4. Elytra at least partly covered by hairs 5.
- . Elytra hairless 6.



Figs 4541-4544. Apical margin of elytra (after WARCHAŁOWSKI 1996): 4541 – *Longitarsus (Testergus) nemethi*; 4542 – *L. (T.) emarginatus*; 4543 – *L. (T.) pubescens*, 4544 – *L. (T.) lederi*.

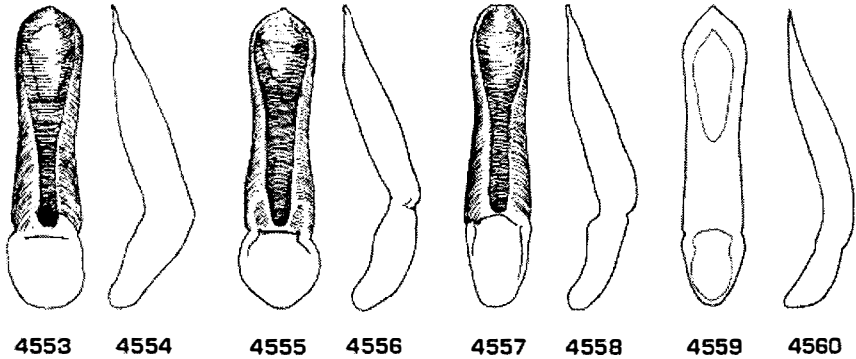
5. Upper side covered with moderately long, semiadpressed hairs. Apical part of elytra as in fig. **4543**. Rather stout, broadly oval. Upper side dark brown or pitchy black with very feeble metallic reflex. Antennae and legs uniformly dark yellow amber. Aedeagus as in fig. 2909, 2910. Length 1.8–2.2 mm. Distributed in Caucasian countries **pubescens** WEISE, 1890.
- . Upper side with sparse hairs in apical part of elytra. Sutural angle right, apical margin of elytra transversely cut (fig. **4544**). Body rather stout, oval, convex, in apical

- part of elytra with sparse, fairly long hairs. Upper side black with very feeble, not always present, metallic reflex, distinctly reticulate and finely, randomly punctate. Antennae and legs uniformly pale rust-brownish. Aedeagus as in figs **4539**, **4540**, spermatheca as in fig. **4561**. Length 1.6–1.9 mm. Distributed in Caucasian countries **lederi** WEISE, 1889.
6. Upper side with feeble but distinctly perceptible metallic reflex **7**.
 - Upper side without metallic reflex **13**.
7. Species on upper side with unusual reddish-bronzy metallic shine and also of unusual small body. Apex of aedeagus in dorsal view regularly rounded, without lamella. Aedeagus as in figs **4547**, **4548**. Length about 2.2 mm. Described from Tadzhikistan **sengloki** KONSTANTINOV, 2004.
 - Metallic shine not reddish-bronzy, aedeagus in dorsal view never regularly rounded **8**.
8. Apical margin of elytra commonly emarginate (fig. **4542**) **9**.
 - Apical margin of elytra obliquely cut **10**.
9. Species from Near East. Body rather slender, upper side black with strong bronzy metallic sheen. Antennae and legs pale reddish brown, hind femora and apex of antennae barely darkened. General view as in plate XCII, **phot. 826**. Aedeagus as in figs **4547**, **4548**, spermatheca as in fig. **4562**. Length 1.8–2.0 mm. Known from Israel and Transjordan **emarginatus** WEISE, 1890.
 - Species from Transcaspia. Apex of aedeagus (figs **4557**, **4558**) broadly and shortly rounded, without lamella. Length 1.4–2.0 mm (= *nurataicus* PALIY, 1970, *zeravshanicus* PALIY, 1970). Broadly distributed in Transcaspia and Afghanistan **tmetopterus** JACOBSON, 1893.
10. Apical margin of elytra not ciliate. Apex of aedeagus (figs **4551**, **4552**) obtusely rounded with a small lamella. Length 1.2–1.5 mm (= *philippi* KONSTANTINOV, 1992, nec CSIKI, 1940). Described from W Tian-Shan mountains **josphi** KONSTANTINOV, 1994.
 - Apical margin of elytra ciliate **11**.



Figs 4545-4552. Aedeagus in ventral and lateral view (4547, 4548 after WARCHALOWSKI 1996; 4545, 4546 after KONSTANTINOV 2005; remaining after KONSTANTINOV 1992): 4545, 4546 – *Longitarsus (Testergus) sengloki*; 4547, 4548 – *L. (T.) emarginatus*; 4549, 4550 – *L. (T.) tmetopterus*, 4551, 4552 – *L. (T.) josphi*.

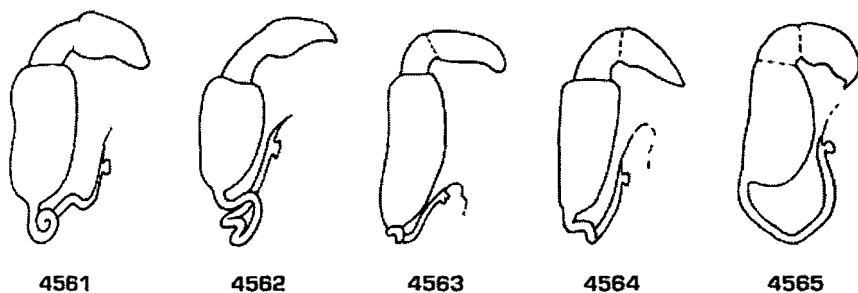
11. Apex of aedeagus sharpened, triangular without distinct lamella. Length 1.5–1.6 mm. Aedeagus as in figs **4566**, **4567**. Described from W Tian-Shan mountains **radiatus** KONSTANTINOV, 1992
- Apex of aedeagus (figs **4553**, **4554**) obtusely rounded with small lamella **12**.
12. Spermateca not very characteristic. Aedeagus as in figs **4553**, **4554**. Puncturation of pronotum much finer than on elytra. Length 1.4–2.0 mm. Described from Kazakhstan **danilevskyi** KONSTANTINOV, 2005.
- Spermatheca very characteristic, its pump (collum + pileum) gradually narrowed on whole length. Length 1.3–3.0 mm. Described from Tadzhikistan **igori** KONSTANTINOV, 2005.



Figs 4553-4560. Aedeagus in ventral and lateral view (4559, 4560 after LOPATIN 1977; remaining after KONSTANTINOV 2005): 4553, 4554 – *Longitarsus (Testergus) danilevskyi*; 4555, 4556 – *L. (T.) emarginatus*; 4557, 4558 – *L. (T.) tmetopterus*, 4559, 4560 – *L. (T.) maracandicus*.

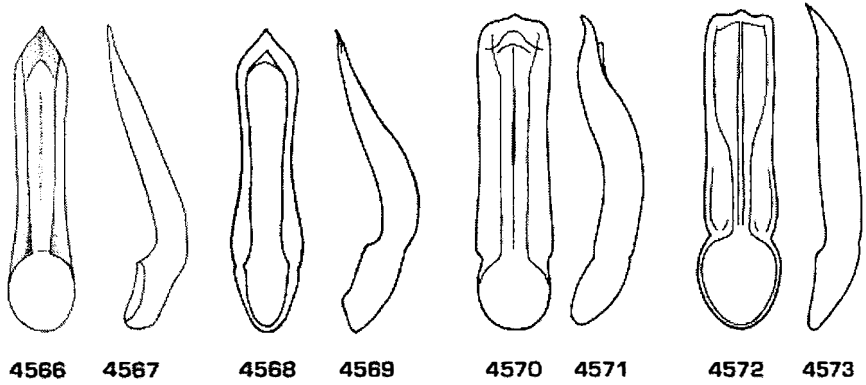
13. Apex of aedeagus without lamella, its very tip obtusely cut. Reflex on upper side greenish. Apex of tignum strongly widened. Length 1.3–2.2 mm. Described from Kirghyzstan **nadiae** KONSTANTINOV, 2005
- Apex of aedeagus not regularly or obtusely rounded, always with sometimes small but always distinct lamella, apex of tignum not strongly widened **14**.
14. Sutural angle right, apical margin of elytra transversely cut. Here specimens of *lederi* (antithesis 5) without perceptible (or rubbed off) hairs on elytra.
- Sutural angle obtuse, apical margin of elytra obtusely cut. Aedeagus as in figs **4568**, **4569**. Length 2.0–2.5 mm. Distributed in Transcaspia **imitator** LOPATIN, 1967.
15. Upper side dark brown, pronotum somewhat paler, rusty-brown. Aedeagus as in figs **4559**, **4560**. Length 1.3–1.8 mm. Distributed in S Kazakhstan and in Usbekistan **maracandicus** LOPATIN, 1966.
- Upper side pure black or black with metallic reflex **16**.
16. Upper side with rather feeble but distinct metallic reflex **17**.
- Upper side pure black or with barely perceptible metallic reflex **19**.
17. Anal sternite in male without impression. Humeral calli not protruding, but present. Species from Bulgaria. See *behnei* (*Longitarsus* s. str., auxiliary group F, thesis 14).

- Anal sternite with impression. Humeral calli indistinct or absent **18.**
18. In male first tarsomere of fore tarsi strongly widened. Apex of elytra as in fig. **4574.** Aedeagus as in figs **2913, 2914,** spermatheca as in fig. **2922.** Length 1.2–1.5 mm. In male median furrow on last abdominal sternite absent. Forms 4 subspecies: on average smaller, metallic reflex of upper side very feeble, sometimes absent, in male hind femora bulged in the middle, diameter of the pit on last abdominal sternite about 10 × smaller than the length of sternite (subsp. *polonicus* WARCHAŁOWSKI, 1967, distributed north of Carpathians), on average larger, metallic reflex of upper side always distinct, in populations from Asia Minor even fairly strong; in male hind femora bulged in the middle, diameter of the pit on last abdominal sternite about 4 × smaller than length of sternite (nominotypical subspecies from remaining European localities, Asia Minor and Israel), length of body and metallic reflex of upper side intermediate between nominotypical subspecies and subsp. *polonicus*, in male hind femora not bulged (subsp. *persicus* WARCHAŁOWSKI, 1967 from Central Asia), as nominotypical subspecies, but pronotum and spur longer, aedeagus shorter (subsp. *lopattini* IABLOKOFF-KHNZORIAN, 1959 from Caucasian countries, considered also as simple synonym). Distributed in central and southern France, Austria, southern Germany, southern Poland, Danube basin, Ukraine, Balkan Peninsula, Asia Minor, Cyprus, Israel, Caucasian countries and Central Asia ***fuscoaeneus*** REDTENBACHER, 1849.
- In male first tarsomere of fore tarsi moderately widened. In male median furrow on abdominal sternite present. Aedeagus as in figs **2915, 2916,** spermatheca as in fig. **2923.** Length 2.0–2.4 mm. Forms 3 subspecies: in male median furrow on last abdominal sternite deep and long, encroaching on anterior margin (nominotypical subspecies from Balkan Peninsula and Aegean Islands, = *cuprinus* KUTSCHERA, 1862), in male median furrow on last abdominal sternite shorter, not encroaching on anterior margin, metallic sheen of upper side stronger (subsp. *metallescens* FOU DRAS, 1860, from remaining localities of European part of Mediterranean area), pronotum strongly punctate, in male median furrow on last abdominal sternite short and shallow (subsp. *multipunctatus* ALLARD, 1866, from African part of Mediterranean area). Distributed in Mediterranean area from Morocco and Portugal to western coasts of Asia Minor ***corynthius*** (REICHE et SAULCY, 1858).



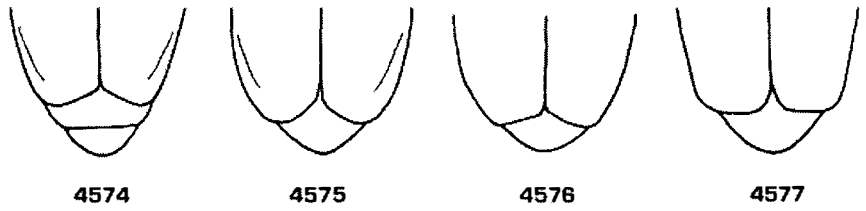
Figs 4561-4565. Spermatheca (4561, 4562 after WARCHAŁOWSKI 1996; 4564 after LEONARDI 1975; 4562 after LEONARDI 1972; remaining after DÖBERL 1994): 4561 – *Longitarsus (Testergus) lederi*; 4562 – *L. (T.) emarginatus*; 4563 – *L. (T.) fuscoaeneus*, 4564 – *L. (T.) corynthius*; 4565 – *L. (T.) anchusae*.

- 19. Spur as long as apical breadth of hind tibia 20.
- . Spur considerably shorter than apical breadth of hind tibia 24.



Figs 4566-4573. Aedeagus in ventral and lateral view (4566, 4567 after KONSTANTINOV 1992; 4568, 4569 after LOPATIN 1977; remaining after WARCHAŁOWSKI 1996): 4566, 4567 – *Longitarsus (Testergus) radiatus*; 4568, 4569 – *L. (T.) imitator*; 4570, 4571 – *L. (T.) fuscoaeneus*, 4572, 4573 – *L. (T.) corynthius*.

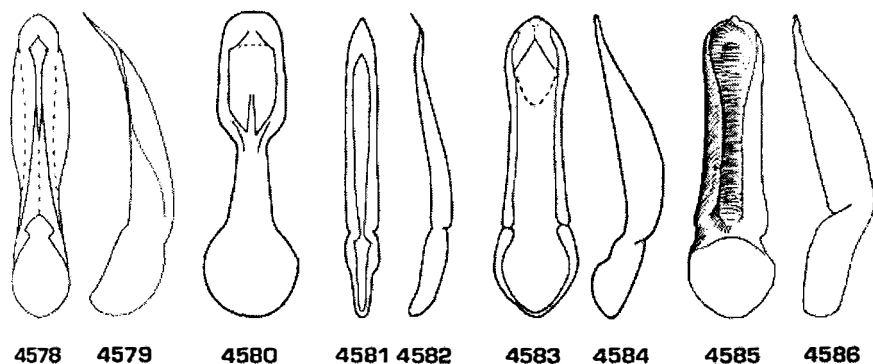
- 20. Spur robust, somewhat spoon-shaped. Last abdominal sternite with small and relatively deep median groove. Tubular part of aedeagus in the middle broadened. Length about 2.0 mm. Described from Asia Minor **aubozaorum** BIONDI, 1997.
- . Spur normal, slender 21.



Figs 4574-4577. Apical margin of elytra (after WARCHAŁOWSKI 1996): 4541 – *Longitarsus (Testergus) fusco-aeneus*; 4542 – *L. (T.) anchusae*; 4543 – *L. (T.) pinguis*, 4544 – *L. (T.) bonnairei*.

- 21. Species from Asia Minor and Caucasian countries 22.
- . Species from Transcaspia 23.
- 22. Aedeagus curiously formed, spatula-shaped (fig. 4580). Body black, a few basal antennomeres and legs (except hind femora) pale reddish brown. Legs and antennae relatively short and robust. Length 2.2 mm. Described from Azerbaïdzan, based on one male only. Female unknown **brachypterus** WEISE, 1890.

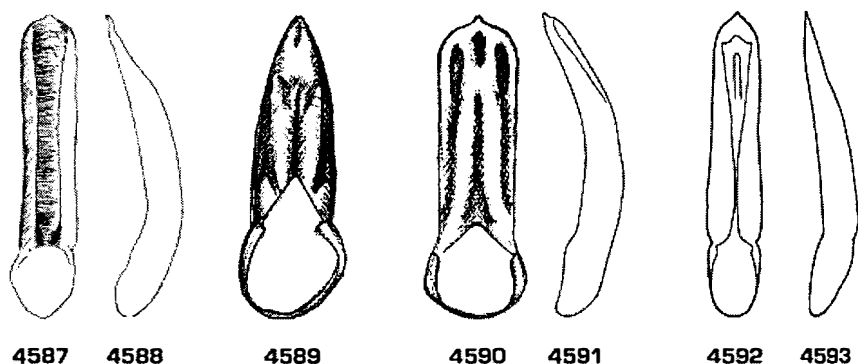
- Aedeagus not spatula-shaped. In male first tarsomere of fore tarsi moderately widened. Last abdominal sternite without any pit or hollow. Aedeagus (figs **4581**, **4582**) slender, il dorsal view parallel. Length 1.7–2.3 mm. Occurs in Asia Minor, known from vicinity of Ankara only. Female not described
..... **angorensis** GRUEV and KASAP, 1985.
- 23. The straight part of apical margin of elytra long. Aedeagus as in figs **4583**, **4584**. Length 1.3–1.6 mm. Distributed in Kirghyzstan, Tadzhi-kistan, Uzbekistan and vicinity of Aral Sea **primaeveris** LOPATIN, 1967.
- The straight part of apical margin of elytra short. Aedeagus similar as in *primaeveris* (thesis 23). Length 1.6–1.8 mm. Distributed in Kirghyzstan and S Kazakhstan. Perhaps conspecific with *primaeveris* **tshikatunovi** LOPATIN, 1966.



Figs 4578-4586. Aedeagus in ventral and lateral view (4578, 4579 after BIONDI 1997; 4580 after MOHR in litteris; 4581, 4582 after GRUEV and KASAP 1985; 4583, 4584 after LOPATIN 1977; 4585, 4586 after KONSTANTINOV 2005): 4578, 4579 – *Longitarsus (Testergus) aubozaorum*; 4580 – *L. (T.) brachypterus*; 4581, 4582 – *L. (T.) angorensis*, 4583, 4584 – *L. (T.) primaeveris*; 4585, 4586 – *L. (T.) sogdianus*.

- 24. Species known from Transcaspia only **25.**
- Species known known also or exclusively from other areas. Determination after external characters uncertain, examining of aedeagus is necessary. Information about area of appearance can be also helpful **28.**
- 25. Elytra moderately shortened, on upper side pygidium visible only **26.**
- Elytra more shortened, in dorsal view pygidium and the penultimate tergite are visible **27.**
- 26. On ventral side of tubular part of aedeagus (figs **4585**, **4586**) the median furrow narrowed postapically. Length 1.6–2.0 mm. Described from Tadzhi-kistan
..... **sogdianus** LOPATIN, 1956.
- On ventral side of tubular part of aedeagus (figs **4587**, **4588**) the median furrow almost parallel. Dorsum dark brown. Length about 1.6 mm. Described from Tadzhi-kistan **borisi** KONSTANTINOV, 2005.
- 27. Anal sternite in male with longitudinal impression. Aedeagus as in fig. **4589**. Length about 2.0 mm. Described from Tadzhi-kistan **excispennis** LOPATIN, 1967.

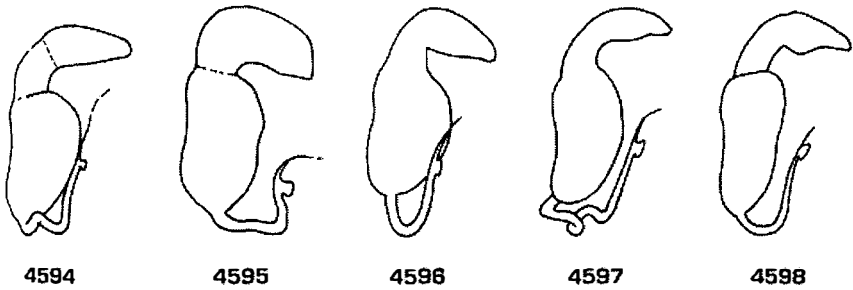
- . Anal sternite in male with a broad impression. Aedeagus as in figs **4590**, **4591**. Length about 2.0 mm. Described from Turkmenistan ***turcomanorum*** LOPATIN, 1967.
- 28. Hind tibiae rather strongly bent outwards. Apical margin of elytra as in fig. **4574**. Aedeagus as in figs **4570**, **4571**, or **4572**, **4573**, spermatheca as in figs **4563** or **4564**. Black forms of *fuscoaeneus* (thesis 18) and *corynthius* (antithesis 18).
 - . Hind tibia almost straight **29**.
 - 29. Widely distributed species, known also from central Europe **30**.
 - . Species distributed in Mediterranean area, Asia Minor, Near East and Caucasian countries only **31**.



Figs 4587-4593. Aedeagus in ventral and lateral view (4592, 4593 after WARCHAŁOWSKI 1996, remaining after KONSTANTINOV 2005): 4587, 4588 - *Longitarsus (Testergus) borisi*; 4589 - *L. (T.) excisipennis*; 4590, 4591 - *L. (T.) turcomanorum*, 4592, 4593 - *L. (T.) anchusae*.

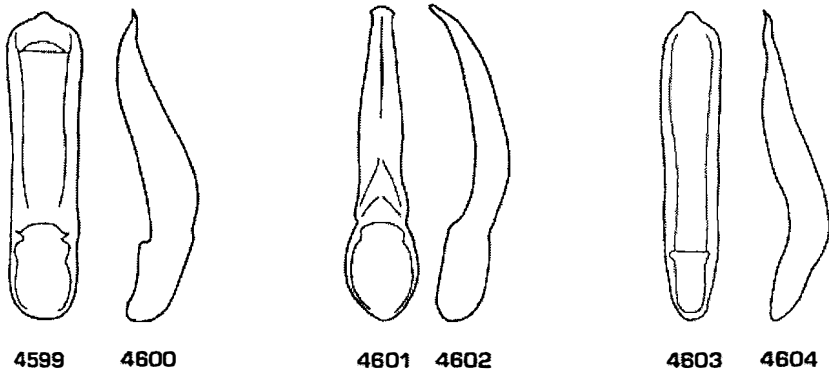
- 30. Species distributed between the British Isles and Central Asia, common in great part of Europe. Pure black, hind femora pitchy, basal 4-5 antennomeres and remaining parts of legs dark yellow amber. Fore and mid femora usually more or less darkened. Pronotum finely and shallowly punctate, surface deeply reticulate. Elytral punctures stronger, interstices shallowly reticulate. In male first tarsomere of fore tarsi strongly widened. Apical margin of elytra as in fig. **4575**. Aedeagus as in figs **4592**, **4593**, spermatheca as in fig. **4565**. Length 1.6-2.6 mm (= *gagathinus* DUFTSCHMID, 1825, *convexus* STEPHENS, 1835). Variation: hind wings developed, humeral calli distinct, smooth (ab. *punctatissimus* FOUDRAS, 1860) Forms 2 subspecies: body stouter, legs pale yellow, hind femora only apically darkened (subsp. *anatolicus* WEISE, 1900, from Asia Minor), body rather slender, colouration of body as above (nominotypical subspecies from remaining part of area). Distributed from Pyrenees and Ireland to Afghanistan, in south-eastern Europa, Asia Minor, Israel, Caucasian countries and in Transcaspia ***anchusae*** (PAYKULL, 1799).
- . Species distributed mostly in south-eastern Europe (northern Italy, Danube basin, Balkan Peninsula, Ukraine, but also in basin of Black Sea, Asia Minor, Caucasian

countries nad Near East. In Europa often confused with *tristis* (*Longitarsus* s. str., auxiliary group F, thesis 4) and *weisei* (*Longitarsus* s. str., auxiliary group F, antithesis 14). Body oval, fairly stout, upper side pure black. Legs and antennae brownish yellow, hindf femora brown to pitchy. Sculpture of upper side as in *anchusae* (thesis 30). In male first tarsomere of fore tarsi barely widened. Apex of elytra as in fig. 4576. Aedeagus as in figs 4599, 4600, spermatheca as in fig. 4594. Length 1.8–2.5 mm (= *alpigradus* KHNZORIAN, 1962, described from Armenia). Distributed as above ***pinguis* WEISE, 1888.**



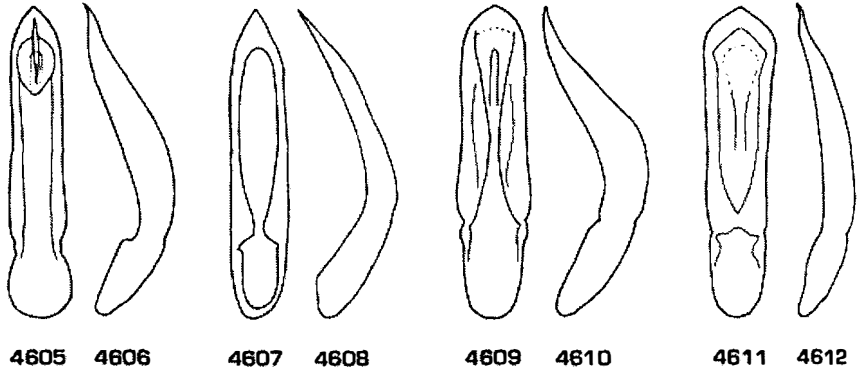
Figs 4594-4598. Spermatheca (4594 after LEONARDI 1972; 4595 after DOGUET 1986; remaining after WARCHALOWSKI 1996): 4594 – *Longitarsus (Testerges) pinguis*; 4595 – *L. (T.) bonnairei*; 4596 – *L. (T.) bremondi*, 4597 – *L. (T.) onosmae*; 4598 – *L. (T.) scaphidioides*.

- 31. West-Mediterranean species 32.
- East-Mediterranean species 37.



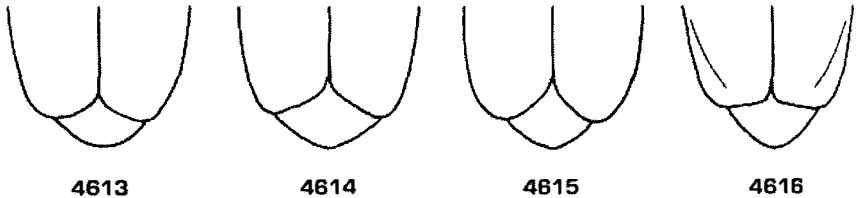
Figs 4599-4604. Aedeagus in ventral and lateral view (4599, 4600 after DÖBERL 1994; 4601, 4602 after DOGUET 1986; 4603, 4604 after BASTAZO 1997): 4599, 4600 – *Longitarsus (Testerges) pinguis*; 4601, 4602 – *L. (T.) bonnairei*; 4603, 4604 – *L. (T.) velai*.

32. Species from Sardinia and Corsica. Very small, oblong-oval. Body black, shining, 3 basal antennomeres reddish yellow, legs yellow, hind femora brown, remaining femora and tibiae sometimes more or less darkened. Pronotum finely and fairly densely punctate, elytra stronger and more deeply punctate. In male first tarsomere of fore tarsi distinctly, moderately strongly widened. Apex of elytra as in fig. 4577. Aedeagus as in figs 4601, 4602, spermatheca as in fig. 4595. Length 1.3–1.7 mm. Endemic to Sardinia and Corsica **bonnairei** (ALLARD, 1866).
- . Species from Iberian Peninsula, northern Africa or also from Sicily 33



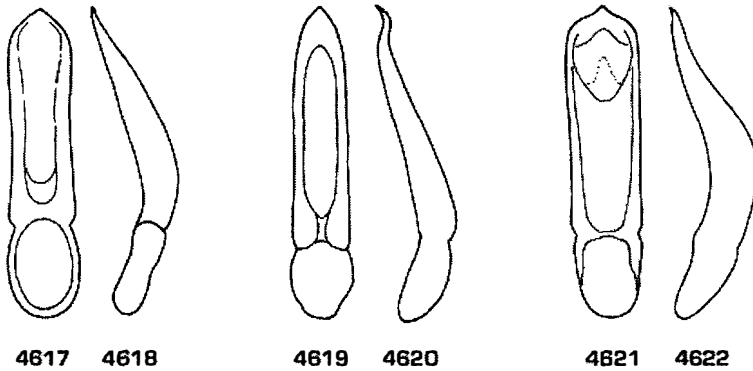
Figs 4605-4612. Aedeagus in ventral and lateral view (4607, 4608 after BASTAZO 1997, remaining after WARCHAŁOWSKI 1996): 4605, 4606 – *Longitarsus (Testergus) bremondi*; 4607, 608 – *L. (T.) petitpierrei*; 4609, 4610 – *L. (T.) onosmae*, 4611, 4612 – *L. (T.) scaphidioides*.

33. Apical part of elytra narrowed, their greatest breadth in basal part, outline of body as in *pinguis* (antithesis 12). Aedeagus as in fig. 4603, 4604. Length 1.5–1.9 mm. Described from south-western Spain **velai** BASTAZO, 1997).
- . Apical part of elytra not distinctly narrowed 34



Figs 4613-4616. Apical margin of elytra (after WARCHAŁOWSKI 1996): 4613 – *Longitarsus (Testergus) bremondi*; 4614 – *L. (T.) onosmae*; 4615 – *L. (T.) scaphidioides*, 4616 – *L. (T.) truncatellus*.

34. Apical margin of elytra as in fig. **4613**. Aedeagus as in figs **4605**, **4606**, spermatheca as in fig. **4596**. Pure black, shining. Antennae and legs (except pitchy hind femora) yellow amber, antennae sometimes slightly darkened. Punctuation of upper side very fine, reticulation very shallow. In male tarsomeres 1–3 of fore tarsi distinctly widened, but not elongate, last abdominal sternite with a transverse impression. Length 1.7–2.4 mm. Lives on *Boraginaceae*. Known from Morocco only **bremondi** PEYERIMHOFF, 1939.
- Another combination of characters **35**.
35. Apical part of aedeagus (fig. **4607**, **4608**) gradually narrowed, its apex forms a sharpened angle. In male first tarsomere of fore tarsi distinctly widened, as broad as third tarsomere. Length 1.15–1.45 mm. Described from south-western Spain **petitpierrei** BASTAZO, 1997.
- Apical part of aedeagus rounded, apex forms an obtuse angle. In male first tarsomere of fore tarsi feebly widened, narrower than third tarsomere **36**.



Figs 4617-4622. Aedeagus in ventral and lateral view (4617, 4618 after GRUEV 1973; 4619, 4620 after MOHR in litteris; 4621, 4622 after WARCHAŁOWSKI 1996): 4617, 4618 – *Longitarsus (Testergus) bulgaricus*; 4619, 4620 – *L. (T) iconiensis*; 4621, 4622 – *Longitarsus (Testergus) truncatellus*.

36. Apical margin of elytra as in fig. **4614**. Oval, shining, pure black or with barely perceptible metallic reflex. Antennae and legs relatively dark, brownish to brown, hind femora pitchy. Punctuation of pronotum extremely fine, often almost disappearing. Punctuation of elytra barely stronger. In male first tarsomere of fore tarsi very feebly widened. Aedeagus as in figs **4609**, **4610**, **43**, spermatheca as in fig. **4597**. Length 1.4–2.0 mm (= *onosmatis* PEYERIMHOFF, 1915). Lives on *Onosma echioides* WETTST. (*Boraginaceae*). Distributed in Morocco and Algeria **onosmae** (PEYERIMHOFF, 1912).
- Apical margin of elytra as in fig. **4613**. Similar to *onosmae* (thesis 18), but stronger punctate. Aedeagus as in fig. 2944, 2945, spermatheca as in fig. **4598**. Length 1.3–2.0 mm (= *vaulozeri* PIC, 1911). Distributed in Algeria, Tunisia and Sicily **saphidioides** ABEILLE, 1896.

37. Species from Bulgaria and southern Romania. Externally similar to *pinguis* (antithesis 11). Aedeagus as in fig. **4617, 4618**. Length 1.8–2.2 mm. Lives on *Echium* L. (*Boraginaceae*). Distributed as above ***bulgaricus*** GRUEV, 1973.
 –. Species differently distributed **38**.
38. Apical margin of elytra as in *bonnairei* (fig. **4577**). Body slender, basal part of elytra distinctly narrower than pronotum. Pronotum great, almost square. Pure black, hind femora pitchy brown, antennomeres 3–5 and remaining part of legs yellow amber. Upper side distinctly reticulate and strongly, rather shallowly punctate. Length 2.0–2.2 mm. Aedeagus as in figs **4619, 4620**, female unknown. Described from Konya in Asia Mino ***iconiensis*** WEISE, 1900.
 –. Apical margin of elytra as in fig. **4616**. Body oval, convex. Pure black, antennae and legs yellow amber, hind femora slightly darkened. Upper side shallowly reticulate and finely, uniformly punctate. Aedeagus as in fig. **4621, 4622**. Length 1.4–1.8 mm. Known from Greece and Israel only ***truncatellus*** WEISE, 1890.

Genus ***Luperomorpha*** WEISE, 1887

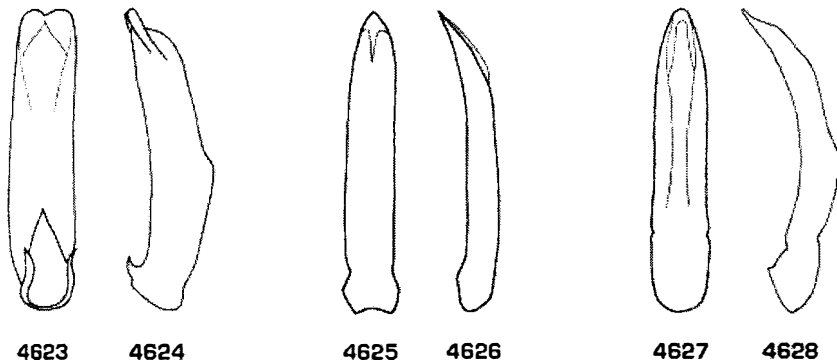
Luperocnemus Fairmaire, 1888, *Pushtunaltica* Lopatin, 1962

Genus *Luperomorpha* contains about 30 species distributed mostly in Palaetropical superregion, particularly in Oriental region. In discussed area 11 species.

Key to species

1. Species from Arabian Peninsula. Head, pronotum, underside and legs entirely pale, yellowish. Elytra black, scutellum and antennomeres 5–11 brown. Length 3.0 mm. Aedeagus not very characteristic, in dorsal view parallel, its apex triangular with narrowly rounded tip, in lateral view straight. Described from Saudi Arabia based on one male only ***arabica*** DOGUET, 1979.
 –. Species from other areas, differently coloured **2**
2. Surface of pronotum smooth and shining **3**
 –. Surface of pronotum more or less reticulated **7**
3. Third antennomere slightly longer than 2. Head, antennomeres 1–6, pronotum and legs (darkened apices of tarsi excluding) orange yellow. Aedeagus very characteristic, in lateral view strongly bent, its apex in dorsal view truncate and broadly, shallowly emarginate. Length 3.0 mm (male) and 4.2 mm (female). Described from Afghanistan based on one pair only ***klapperichi*** (LOPATIN, 1962).
 –. Third antennomere usually shorter than 2, aedeagus differently shaped **4**
4. Third antennomere conspicuously small, much smaller than any other **6**
 –. Third antennomere often smaller as remaining antennomeres, but not conspicuously small **5**
5. Upper side black. Antennae in basal half pale yellowish, in apical half gradually darkened, at apex brownish. Pronotum deeply and distinctly, somewhat irregular punctured, its lateral margins uneven, somewhat almost serrate. Legs pale, femora except for their apices and bases blackened. General view as in plate XCIV, **phot. 839**. Aedeagus as in figs **4623, 4624**. Length 2.0–3.0 mm. Distributed in Japan (Hokkaido, Honshu, Kyushu, Shikoku) and Taiwan ***tenebrosa*** (JACOBY, 1885).

- Pronotum reddish, elytra black. Antennomeres 2 and 3 subequal. In male first tarsomere of fore legs distinctly broadened. Aedeagus as in figs **4625**, **4626**. Length about 4.0 mm (= *similis* CHŪJŌ, 1938). Broadly distributed in China and Korea, recently introduced to Europa ***xanthodera*** (FAIRMAIRE, 1888).
- 6. Body bicolorous. Upper- and underside, including legs and antennae, entirely or almost entirely black, pronotum reddish yellow. Third antennomere conspicuously small, much smaller than any other. Aedeagus as in figs **4627**, **4628**. Length 3.2–3.8 mm (= *nigra* CHEN, 1933 *japonica* CHUJO et OHNO, 1965). Variation: pronotum pitchy black (ab. *nigra* CHEN, 1933). Distributed in Japan (Hokkaido, Honshu, Kyushu), S China and Taiwan ***collaris*** (BALY, 1874).
- Upper side entirely black, remaining characters as in thesis 6. Rare variation of *collaris*, see thesis 6.

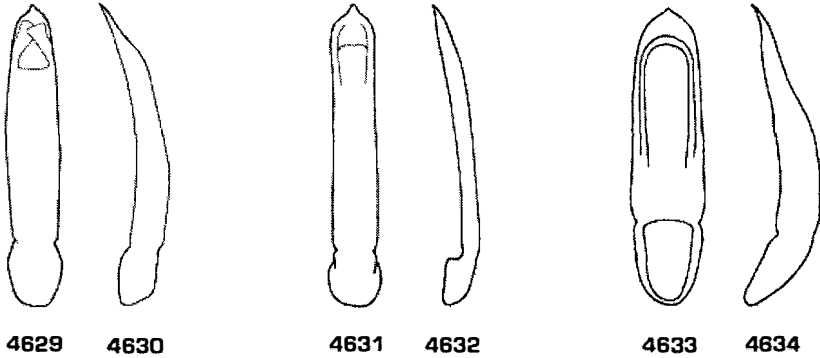


Figs 4623–4628. Aedeagus in ventral and lateral view (after CHŪJŌ and OHNO 1965): 4623, 4624 – *Lupeo-morpha tenebrosa*; 4625, 4626 – *L. xanthodera*; 4627, 4628 – *L. tokejii*.

- 7. Elytra bluish. Head, basal part of antennae and legs (hind femora excepted) reddish brown. Puncturation of upper side fine. General view as in plate XCV, **phot. 849**. Length 2.8–3.5 mm. Distributed in S China, Taiwan and Ryukyu. Reported also from N China (Shensi), but rather not belonging to Palearctic fauna ***nobilis*** WEISE, 1889.
- Elytra not bluish **8**.
- 8. On elytra interspaces of primary punctures smooth and shining, without any reticulation or granulation. General colouration yellowish brown or reddish brown, antennomeres 4–11 or 5–11 piceous, on elytra narrow sutural stripe blackish. Length 2.8–3.0 mm (= *irisaе* KIMOTO, 1966). Distributed in Japan (Honshu, Kyushu, Shikoku) ... ***tokejii*** CHUJO et OHNO, 1965.
- On elytra interspaces of primary punctures more or less granulated or reticulated **9**.
- 9. Upper side unicolorous, black. Legs at least partly darkened, usually only knees, basal and apical part of femora and tarsomeres partly lighter. Antennomere 4 as long as antennomeres 2+3 together. Aedeagus (figs **4629**, **4630**) subparallel, its apex sharpe-

ned. Length 2.5–3.5 mm (= *trivialis* WEISE, 1887). Distributed in Japan (Hokkaido, Honshu, Kyushu, Shikoku), N China (Shensi) and Korea. Here probably also *josifovi* GRUEV, 1994 described from Korea (no significant differential characters)

- *funesta* (BALY, 1874).
 –. On upper side at least lateral and basal borders of pronotum rusty-brownish 10.
 10. Elytra entirely black 11.
 –. Elytra dark yellowish or pale rusty-brown with blackish sutural stripe. Head black, legs pale except for blackish or pitchy hind femora. General view as in plate XCIV, **phot. 838**. Length 3.5–4.1 mm. Distributed in N China, Mongolia and Russian Far East *suturalis* CHEN, 1938.



Figs 4629–4634. Aedeagus in ventral and lateral view (4643, 4644 after WARCHAŁOWSKI 1998, remaining after CHŪJŌ and OHNO, 1965): 4629, 4630 – *Luperomorpha funesta*; 4631, 4632 – *L. pryeri*; 4633, 4634 – *Lythraria salicariae*.

11. Upper side almost unicolorous, black, with narrow, blurred, lateral and basal borders of pronotum rusty-brownish. Here melanotic specimens of *suturalis* (thesis 10).
 –. Upper side bicolorous: head, pronotum, scutellum and legs entirely reddish, elytra and underside (except for prosternum) black or blackish. Aedeagus as in figs 4631, 4632. Length 2.2–3.0 mm. Variation (unnamed): abdominal sternites reddish. Distributed in Japan (Kyushu, Shikoku), reported also from N China *pryeri* (BALY, 1874).

Genus *Lythraria* BEDEL, 1897

Genus *Lythraria* contains one species only.

Upper side yellow, reddish yellow or dark ochraceous, metasternum and ventral side of abdomen dark brown or black. General view as in plate XCIV, **phot. 840**. Aedeagus as in figs 4633, 4634. Length 1.9–2.2 mm (male) to 2.0–2 mm (female) (= *striatella* LILIGER, 1807, *nitidicollis* MOTSCHULSKY, 1860, *pivicollis* WEISE, 1886, *unicolor* REITTER, 1906,

komiyamai OHNO, 1960). Variations: body (underside also) uniformly rusty-brown (ab. *unicolor* REITTER, 1906 head and pronotum pitchy, elytra brownish (ab. *picicollis* WEISE, 1886). Lives on *Lysimachia* L. (*Primulaceae*). Transpalaeartic species, distributed from Pyrenees, England and Norway to Korea, from African part of Mediterranean area not reported ***salicariae*** (PAYKULL, 1800).

Genus ***Manobia*** JACOBY, 1885

To the genus *Manobia* belong about 50 species distributed mainly in Oriental region, of these two occur in the discussed area.

Key to species

1. Upper side and underside entirely shining black. Pronotum not narrowed posteriorly. Length 1.2–1.5 mm. Distributed in Japan (Kyushu, Shikoku, Ryukyu), Korea and Taiwan, reported also (erroneously?) from Nepal ***parvula*** (BALY, 1874).
- . Upper side reddish or yellowish brown, underside piceous. Pronotum narrowed posteriorly. Length about 1.5 mm. Distributed in Japan (Kyushu, Ryukyu) and Taiwan ***lewisii*** JACOBY, 1885.

Genus ***Manobidia*** CHEN, 1934

The genus *Manobidia* includes 11 species distributed in Oriental region. In discussed area two species.

Key to species

1. Body entirely yellowish brown, elytra and legs slightly paler. Length 1.5 mm (= *fulva* CHŪJŌ, 1957). Distributed in S China, Japan (Kyushu, Ryukyu) and Taiwan ***simplicithorax*** CHEN, 1934.
- . Body including hind femora black, antennomeres 1–5 and legs yellowish or reddish brown. Length 1.5–2.0 mm. Distributed in S China, Japan (Shikoku, Kyushu) and Taiwan ***nipponica*** CHŪJŌ, 1959.

Genus ***Mantura*** STEPHENS, 1831

Literature: HEIKERTINGER 1951.

Balanomorpha CHEVROLAT, 1836, *Cardiapus* CURTIS, 1833

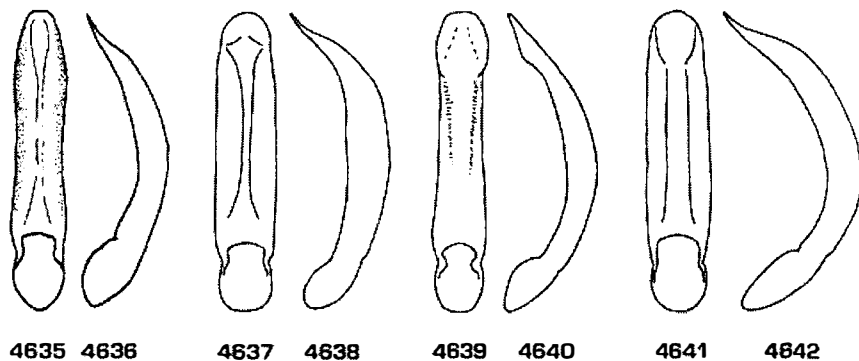
Key to subgenera

1. Longitudinal furrows at basis of pronotum distinct, deeply incised ***Mantura*** s. str. (p. 908)
- . Longitudinal furrows at basis of pronotum vestigial, sometimes absent ***Stenomantura*** HEIKERTINGER, 1909 (p. 910).

Subgenus *Mantura* s. str.

Key to species

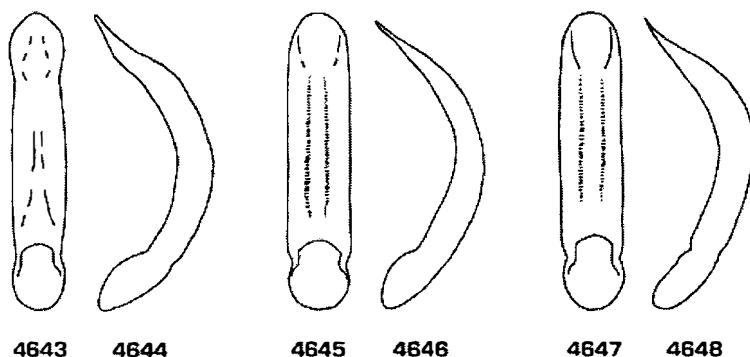
- 1. W Palaearctic species 2.
- E Palaearctic species 12.
- 2. Upper side pale with feeble metallic reflex 3.
- Upper side entirely or at least head, pronotum and anterior part of elytra black (sometimes dark brown) usually with feeble greenish-blue reflex 4.
- 3. Body entirely uniformly reddish yellow. Pronotum relatively large and long, as broad as elytra. Aedeagus not studied. Length 2.2 mm. Described based on one specimen from Israel only *judaea* HEIKERTINGER, 1951.
- Pronotum brownish red, elytra pale testaceous. Pronotum relatively small, narrower than elytra. Aedeagus as in figs 4635, 4636. Length 1.5–2.0 mm. Distributed in N Africa, Iberian Peninsula, France, Italy and Greece *lutea* (ALLARD, 1859).



Figs 4635–4642. Aedeagus in ventral and lateral view (after DOGUET, 1994): 4635, 4636 – *Mantura lutea*; 4637, 4638 – *M. matthewsi*; 4639, 4640 – *M. chrysanthemi*; 4641, 4642 – *M. rustica*.

- 4. Anterior half of submarginal interval with 10–15 strong, irregularly scattered punctures. Pronotum slightly elongate anteriorly, covering hind part of head. Upper side greenish black or blue black, femora blackish with bronzy reflex, tibiae pale rusty-red, tarsi somewhat darker, antennomeres 2–4 or 2–5 yellowish. On pronotum longitudinal furrows reaching to 1/3 length of pronotum. Humeral calli protruding, smooth, hind wings well-developed. In male first tarsomere of fore tarsi strongly widened, but not elongate. Aedeagus as in figs 4637, 4638. Length 1.9–2.5 mm. Variations: upper side uniformly black with metallic reflex (typical form), head and pronotum dark blue, elytra greenish, bronzy or cupreous (ab. *bicolor* WEISE, 1886), head and pronotum greenish, bronzy or cupreous, elytra dark blue (ab. *aeraria* FOU DRAS, 1860). Lives on various species of *Helianthemum* L. (*Cistaceae*). Distributed from England and Spain to Ukraine and Caucasian countries *matthewsii* (CURTIS, 1833).
- Anterior half of submarginal interval without punctures or rarely with 1–2 points only. Pronotum not elongate anteriorly 5

5. Upper side dark brown with bronzy reflex, hind part of elytra often lightened, reddish. Legs rust-reddish or dark amber, hind femora and apical part of antennae darkened. General view as in plate XCIV, **phot. 841**. Pronotum short, very convex, widest in its midlength, covered by strong puncturation and fine rugosities. Humeral calli protruding, smooth, hind wings well-developed. Aedeagus as in figs **4639, 4640**. Length 2.0–2.5 mm (= *reclairei* EVERTS, 1921). Forms two subspecies: colouration of body as in description (nominotypical subspecies); body entirely brown, without metallic reflex (subsp. *diluta* ABEILLE, 1895 inhabiting N Africa and Sardinia). Lives on various species of *Rumex* L. (*Polygonaceae*), mostly on *R. acetosa* L. and *R. acetosella* L. Nominotypical subspecies distributed in Italy, Sicily, Iberian Peninsula, France, the British Isles, Central and N Europe ***chrysanthemi*** (KOCH, 1803).
- Upper side or at least head, pronotum and anterior part of elytra blue black or greenish black **6**.
6. Elytra bicolorous, in anterior part blue black, in hind part (sometimes almost entirely) dark red. In male first tarsomere of fore and mid tarsi strongly widened. Aedeagus as in figs **4641, 4642**. Length 2.2–2.9 mm (= *semiaenea* FABRICIUS, 1792). Variations: elytra blue black with red apical part (typical form), elytra greenish blue or bronzy-green with red apical part (unnamed), elytra rusty-red with blurred, blackish sutural stripe (ab. *suturalis* WEISE, 1886). Widely distributed in almost whole Europe, Asia Minor eastwards reaching to Mongolia and China ***rustica*** (LINNAEUS, 1767).
- Elytra unicolorous, blue, greenish or almost pure black **7**.
7. N African species. Pronotum formed as in *matthewsii* (thesis 4) **8**.
- European and Asiatic species. Pronotum formed normally **9**.
8. Upper side with strong metallic sheen, usually unicolorous. Similar to *matthewsii* (thesis 4), but without punctures on submarginal interval. Sexual characters not studied. Length 2.2–2.5 mm. Distributed in Tunisia and Algeria, probably conspecific with *nitens* (antithesis 8) ***henoni*** PIC, 1909.
- Upper side strongly shining, usually bicolorous. Sexual characters not studied. Length about 2.0 mm. Insufficiently known species, perhaps conspecific with *henoni* (thesis 7). Distributed in Morocco and Algeria ***nitens*** (ALLARD, 1866).



Figs 4643-4648. Aedeagus in ventral and lateral view (after DOGUET, 1994): 4643, 4644 – *Mantura obtusata*; 4645, 4646 – *Mantura obtusata* f. *ambigua*; 4647, 4648 – *M. horioni*.

9. European species 10.
- . Transcaspiian species. Except for elytral colouration, all characters as in *rustica* (thesis 6). Punctures on elytra moderately strong, puncture rows before apex finer and shallow. Length 2.9–3.2 mm. Distributed in Kirghyzstan and Tadzhikistan *mesasiatica* LOPATIN, 1965.
10. Transverse frontal furrow very deep. Lateral sides of pronotum rounded. Upper side blue black, metallic reflex rather feeble. Legs and antennae pale, only hind femora and apical part of antennae usually darkened. Aedeagus as in figs 4643, 4644. Length 2.0–2.5 mm (= *pallidicornis* WALTZ, 1839, *subobtusata* JANSSON, 1943, *concoloripennis* ROUBAL, 1922). Distributed in W, S and Central Europe, from Pyrenees and Norway to Romania, Ukraine and Caucasian countries *obtusata* (GYLLENHAL, 1813).
- . Transverse frontal furrow moderately deep. Lateral sides of pronotum in basal half subparallel 11.
11. Upper side dark blue with feeble metallic reflex. Pronotum matt. Intervals of elytra flat. Here a form of *obtusata* (thesis 10) more frequently occurring in north part of distribution area (N and NW Europe from northern part of France and Germany to Fennoscandia and Baltic countries), known as *M. ambigua* (KUTSCHERA, 1862). Aedeagus (figs 4645, 4646) usually slightly different than in *obtusata*.
- . Upper side with distinct metallic sheen, usually bronzy-green, more rarely blue black. Intervals of elytra slightly convex. Remaining external characters as in *ambigua* (thesis 11). In male first tarsomere of fore and mid tarsi very strongly widened. Aedeagus as in fig. 4647, 4648. Length 2.3–2.8 mm. Distributed in E France and W Germany *horioni* HEIKERTINGER, 1940.
12. Length of body over 2.5 mm. Pronotum dark green. Elytra reddish brown with metallic reflex, sometimes almost entirely metallic green or bluish. Pronotum distinctly punctate and finely granulate. Very similar to *rustica* (thesis 6), but stronger punctured, puncture rows on elytra in whole length well-developed. Length 2.5–3.0 mm. Distributed in Japan (Hokkaido, Honshu, Shikoku, Kyushu) and Korea *clavareau* HEIKERTINGER, 1912.
- . Length of about 2.0 mm 13.
13. Lateral margin of pronotum in basal half straight in fore half roundish narrowed. Legs reddish brown with femora (particularly hind femora) much darker. Length about 2.0 mm. Known from Hokkaido only *japonica* JACOBY, 1885.
- . Lateral margin of pronotum rounded on whole length. Legs entirely reddish brown. Length about 2.0 mm. Known from Hokkaido only *fulvipes* JACOBY, 1885.

Subgenus *Stenomantura* HEIKERTINGER, 1909

Key to species

1. Upper side with strong bronzy sheen, unicolorous. Aedeagus as in *matthewsii* (figs 4637, 4638). Length 1.8–2.0 mm. Distributed in Italy and Balkans *cylindrica* MILLER, 1880.
- . Upper side with feeble bronzy or cupreous reflex, on each elytron a longitudinal yellowish stripe. Aedeagus not studied. Length 2.0–2.2 mm (= *limbata* ALLARD, 1876, *burlinii* CODINA PADILLA, 1961). Distributed in N Africa from Morocco to Egypt and in Near East *suturata* FAIRMAIRE, 1873.

Genus *Minota* KUTSCHERA, 1859

Literature: BIONDI 1986.

Hypnophila FOU DRAS, 1860

Genus *Minota* contains 10 species distributed in Europe and Asia. Seven species occur in discussed area, 5 remaining three species in Oriental part of Asia.

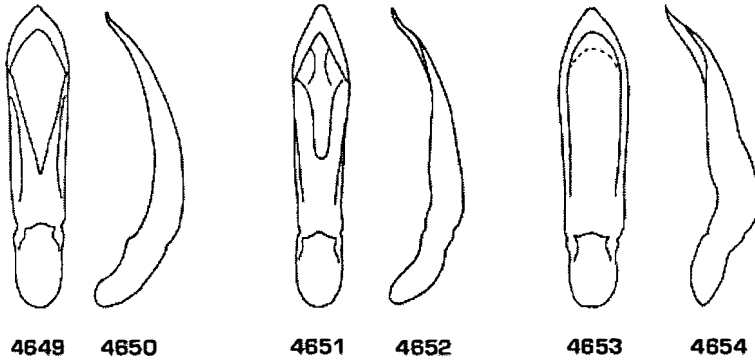
Key to subgenera

- 1. The short longitudinal impressions at basis of pronotum present *Minota* s. str. (p. 911).
- . Longitudinal impressions at basis of pronotum absent *Cardax* (p. 913).

Subgenus *Minota* s. str.

Key to species

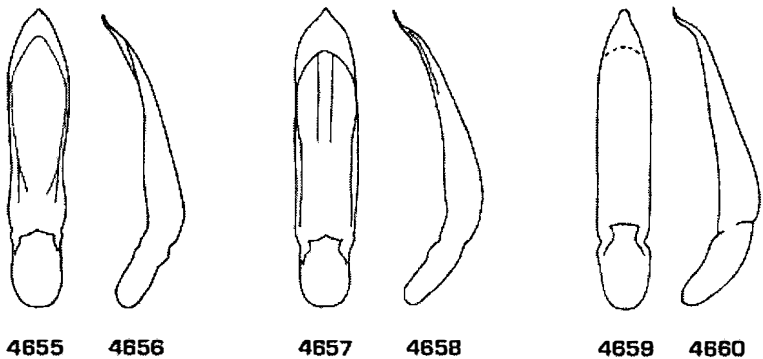
- 1. E Palaearctic species. Body roundish oval, strongly convex, black with bluish reflex. Antennae and legs reddish brown, hind femora piceous. Length 2.0–2.5 mm (= *japonica* CHŪJŌ, 1951. Distributed in Japan (Honshu, Shikoku, Kyushu) *nigropicea* (BALY, 1874).
- . European species **2.**



Figs 4649-4654. Aedeagus in ventral and lateral view (after BIONDI 1986): 4649, 4650 – *Minota (Minota) halmae*; 4651, 4652 – *M. (M.) carpathica*; 4653, 4654 – *M. (M.) obesa*.

- 2. Impressions at basis of pronotum shorter. Ratio of their length to the length of pronotum less than 1:4.6 **3.**
- . Impressions at basis of pronotum shorter. Ratio of their length to the length of pronotum greater than 1:4.6 **5.**

3. General outline of body oval. Pronotum very convex, strongly narrowed anteriorly and relatively shorter (breadth/length over 1.68). Punctuation of pronotum usually finer. General view as in plate XCIV, **phot. 842**. Aedeagus as in figs **4649, 4650**. Length 2.3–2.8 mm. Similar to *obesa*, but on average slightly larger and more robust. Distributed in Eastern Alps, Bosnia-Herzegovina, Slovenia, N Italy, Romania, Czech Republic and Slovakia ***halmae*** (APFELBECK, 1996).
- . General outline of body more slender. Pronotum less convex, not strongly narrowed anteriorly and relatively longer (breadth/length under 1.68). Punctuation of pronotum usually stronger **4**.
4. Aedeagus as in figs **4651, 4652**, Antennomere 5 more than 1.5 × longer than the 6. Punctuation of pronotum moderately deep. Distributed in Eastern Alps, Sudetes and Carpathians ***carpathica*** HEIKERTINGER, 1911.
- . Aedeagus as in figs **4653, 4654**. Antennomere 5 at most 1.5 × longer than the 6. Punctuation of pronotum shallower. Distributed in Central and Eastern Alps, S Germany, Sudetes, reported also from Netherlands, Belgium and Carpathians ***obesa*** (WALTL, 1839).



Figs 4655-4660. Aedeagus in ventral and lateral view (4659, 4660 after GRUEV, 1985, remaining after BIONDI 1986): 4655, 4656 – *Minota (Minota) alpina*; 4657, 4658 – *M. (M.) impuncticollis*; 4659, 4660 – *M. (Cardax) stussineri*.

5. Punctuation of elytra finer and more dense. Elytra dark brown, lightened in apical part, sometimes with very feeble greenish reflex. Aedeagus as in figs **4655, 4656**. Distributed in Eastern Alps and N Italy ***alpina*** BIONDI, 1986.
- . Punctuation of elytra stronger and less dense. Elytra black, usually with distinct greenish metallic reflex. Aedeagus as in figs **4657, 4658**. Length 2.0–2.5 mm (= *ovoides* ALLARD, 1859, *nivalis* APFELBECK, 1906, *minima* HEIKERTINGER, 1912). Distributed disjunctly in Dinaric Alps, Pyrenees, Massif Central as well as in West and Liguric Alps ***impuncticollis*** (ALLARD, 1860).

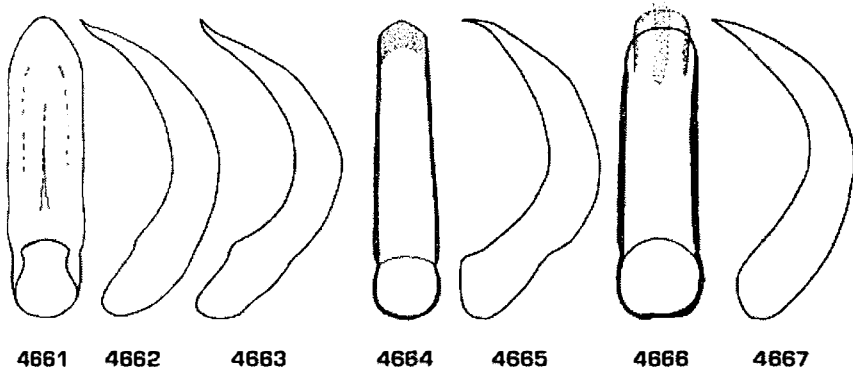
Subgenus *Cardax* WEISE, 1893

One species only. Length about 1.8 mm. Elytra black, strongly shining, pronotum dark reddish brown. Pronotum distinctly punctate in basal half, in anterior half almost impunctate. Aedeagus as in figs 4659, 4660. Distributed in Dinaric Alps from Istria to Montenegro. Very rare and poorly studied *stussineri* (WEISE, 1893).

Genus *Mniophila* STEPHENS, 1831

Key to species

1. Aedeagus in lateral view strongly bent (fig. 4663). Elytra randomly punctate. Metallic reflex of upper side indistinct or absent. General view as in plate XCIV, phot. 843. Length 1.0–1.6 mm. Distributed in Bosnia and Montenegro *bosnica* APFELBECK, 1914.
- Aedeagus (figs 4661, 4662) in lateral view moderately bent 2.



Figs 4661-4667. Aedeagus in ventral or dorsal and in lateral view (4661-4663 after WARCHAŁOWSKI 2000, remaining after GILLERFORS 1986): 4661, 4662 – *Mniophila muscorum*; 4663 – *M. bosnica*; 4664, 4665 – *Mniophilosoma laeve*; 4666, 4667 – *M. obscurum*.

2. Externally similar to *bosnica* (thesis 1). Length 1.0–1.6 mm. Forms local variations, considered also as subspecies: primary punctures on elytra arranged in longitudinal rows (nominotypical subspecies), primary punctures subseriate (ab. *wroblewskii* WANKOWICZ, 1881), primary punctures random as in *bosnica* (subsp. *turcica* MEDVEDEV, 1970). Distributed in Europe from Pyrenees, Ireland and S Sweden to Ukraine, reported also from Caucasian countries, subsp. *turcica* described from NE Turkey *muscorum* (KOCH, 1803).

Genus *Mniophilosoma* WOLLASTON, 1854

The genus *Mniophilosoma* is externally very similar to *Mniophila* (p. 913). Hind femora very feebly swollen, for this reason *Mniophilosoma* is sometimes placed in the subfamily *Galerucinae*.

Key to species

- 1. Aedeagus as in figs **4664**, **4665**. Endemic to Madeira *laeve* WOLLASTON, 1854.
- . Aedeagus as in figs **4666**, **4667**. Endemic to Azores
 *obscurum* GILLERFORS, 1986.

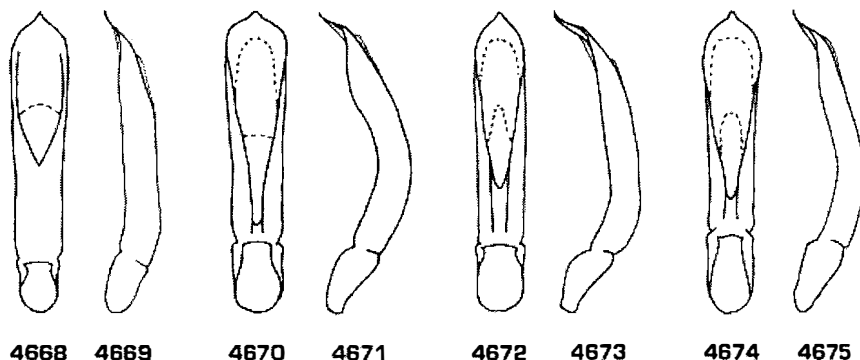
Genus *Neocrepidodera* HEIKERTINGER, 1911

Asiorestia JACOBSON, 1925, *Orestioides* HATCH, 1935

The genus *Neocrepidodera* contains about 100 species distributed in Holarctic and Palaetropical superregions; in discussed area 42 species.

Key to species

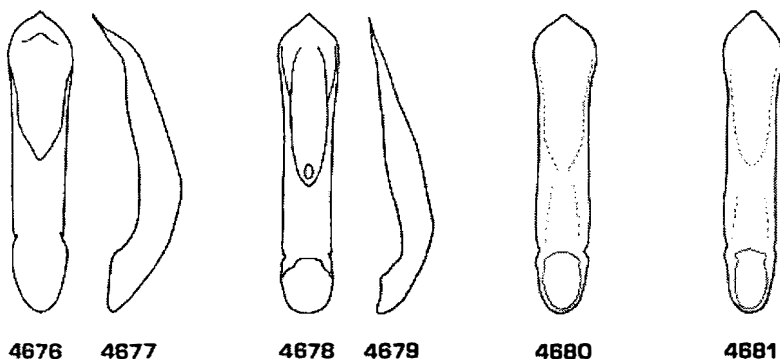
- 1. W Palaeaectic species 2.
- . E Palaeaectic species 35.



Figs 4668-4675. Aedeagus in ventral and lateral view (after BIONDI 1994): 4668, 4669 – *Neocrepidodera puncticollis*; 4670, 4671 – *N. obirensis*; 4672, 4673 – *N. springeri*; 4674, 4675 – *N. adelinae*.

- 2. Upper side entirely pale, yellowish, amber, testaceous or brown, without metallic reflex 3.
- . Elytra pitchy, black or black with metallic reflex 17.
- 3. Pronotum strongly punctate. Upper side relatively dark, brown to pitchy. Aedeagus as in figs **4668**, **4669**. Length about 3.0 mm (= *picea* PETRI, 1907, *marani* ROUBAL,

- 1939). Poorly studied species, distributed in Carpathians
 **puncticollis** (REITTER, 1880).
- Pronotum finely or very finely punctate. Upper side paler, only in melanotic specimens dark brown **4.**
 - 4. Antennomere 3 not longer than 2. Length of body not exceeding 2.8 mm **5.**
 - Antennomere 3 distinctly longer than 2. Length of body usually over 3.0 mm **7.**
 - 5. Elytra almost always darker than head and pronotum. Similar to *ferruginea* (thesis 8), but differs from it in the absence of humeral calli. Upper side dark ochraceous or pale brown. Aedeagus as in figs **4670, 4671**. Length 2.2–2.5 mm. Variations: upper side coloured uniformly (typical form), elytra darkened, sometimes pitchy (unnamed). Distributed in Austrian Alps (Karawanken)
 **obirensis** (GANGLBAUER, 1897).
 - Upper side coloured uniformly. Here belong two species, distinguishable only by shape of aedeagus **6.**
 - 6. Aedeagus as in figs **4672, 4673**. Body outline and sculpture of upper side as in *cyanipennis* (antithesis 33). Body uniformly reddish-brown. Length 2.8–3.2 mm. Distributed in Bosnia, Serbia, Montenegro and Albania
 **springeri** (HEIKERTINGER, 1923).
 - Aedeagus as in figs **4674, 4675**. Externally similar to *springeri* (thesis 6). General view as in plate XCIV, phot. **844**. Length 2.5–2.7 mm. Distributed in western part of Italian Alps **adelinae** (BINAGHI, 1947).

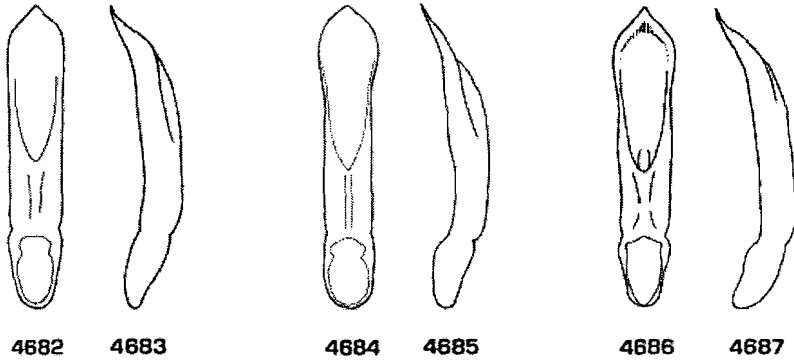


Figs 4676-4681. Aedeagus in ventral and lateral view (4676-4679 after BIONDI 1994, remaining after BASELGA 2005): 4676, 4677 – *Neocrepidodera ferruginea*; 4678, 4679 – *N. crassicornis*; 4680 – *N. hispanica*; 4681 – *N. carolinae*.

- 7. Primary punctures of elytra strong, arranged in regular rows. Body length under 4.0 mm. Here belongs four species difficult to distinguish based on external characters **8.**
- Rows of primary punctures on elytra, at least in anterior part near scutellum, confused or double. Here belong three species, difficult to distinguish based on external characters **14.**

8. Anterior angles of pronotum, particularly in males, more protruding, usually with an emargination behind. Very tip of aedeagus distinctly bent ventrally. Body coloured uniformly, pale rusty-yellow or pale reddish brown. Pronotum before hind angles not sinuate. In male first tarsomere in fore and mid legs very strongly widened. General view as in plate XCV, **phot. 847**. Aedeagus as in figs **4676, 4677**. Length 2.6–3.6 mm (*flava* LINNAEUS, 1761, *exoleta* LINNAEUS, 1761, *similis* STEPHENS, 1831). Variation: melanotic form, almost entirely black (ab. *melanaria* EVERTS, 1919). Lives on *Carduus* L. and *Cirsium* MILL. (*Asteraceae*). Distributed in almost whole Europe, Asia Minor, Caucasian countries and Iran, reported also from Azores ***ferruginea*** (SCOPOLI, 1763).
- Anterior angles of pronotum weakly protruding, emargination absent or indistinct. Very tip of aedeagus very feebly bent or straight 9.
9. Pronotum particularly finely and shallowly punctate. Here three W Mediterranean species very similar to each other 10.
- Pronotum distinctly and rather deeply punctate. Pronotum narrowed posteriad 12.
10. Primary punctures on elytra fine and shallow. Aedeagus as in figs **4678, 4679**. Length 2.6–3.6 mm. Forms one subspecies: body more slender, elytra stronger punctate, colouration of body on average somewhat darker. Distributed in Spain, France, northern Italy, basin of Danube, Romania, Bulgaria, Crimea and Caucasian countries ***crassicornis*** (FALDERMANN, 1837).
- Primary punctures on elytra strong and deeply impressed 11.
11. Thickening of anterior angle of pronotum poorly developed. On elytra basal part of row 6 not deeper as in neighbouring rows. Apex of aedeagus (fig. **4680**) with marked lamella. Length 3.0–4.1 mm. Distributed in north part of Iberian Peninsula and in S France. By some authors considered as subspecies of *crassicornis* ***hispanica*** DANIEL, 1904.
- Thickening of anterior angle of pronotum well developed, more produced anteriorly. On elytra basal part of row 6 distinctly deeper as in neighbouring rows. Apex of aedeagus (fig. **4681**) without lamella, slightly obtuse, almost triangular. Length 3.3–4.2 mm. Species described from Morocco (High and perhaps also Mid Atlas) ***carolinae*** BASELGA et NOVOA, 2005.
12. Pronotum finely or moderately strongly punctate, usually more convex than in *ferruginea* (thesis 8). Rows of punctures on elytra reach to apical part. Two species very similar to each other, difficult to determine also by shape of aedeagus, distinguishable rather by comparison of series and differing by distributional areas 13.
- Pronotum strongly punctate. Rows of punctures on elytra reach to 2/3 or 3/4 of their length. Aedeagus as in figs **4682, 4683**. Length 2.6–3.5 mm (= *mitsuhashii* MATSUMURA 1911). A Siberian species, reaching westwards to Scandinavia, reported also from Danmark and northern Germany ***interpunctata*** (MOTSCHOULSKY, 1859).
13. Asiatic species. Longitudinal impressions on pronotum limiting the transverse antebasal furrow shorter, usually reaching 1/4 of the length of pronotum. Puncture rows on elytra in apical part very fine and shallow. Aedeagus as in figs **4684, 4685**. Length 2.6–3.5 mm. Distributed from E Kazakhstan to Japan ***sublaevis*** (MOTSCHOULSKY, 1859).
- European species. Longitudinal impressions on pronotum limiting the transverse antebasal furrow somewhat longer, usually reaching 1/3 of the length of pronotum.

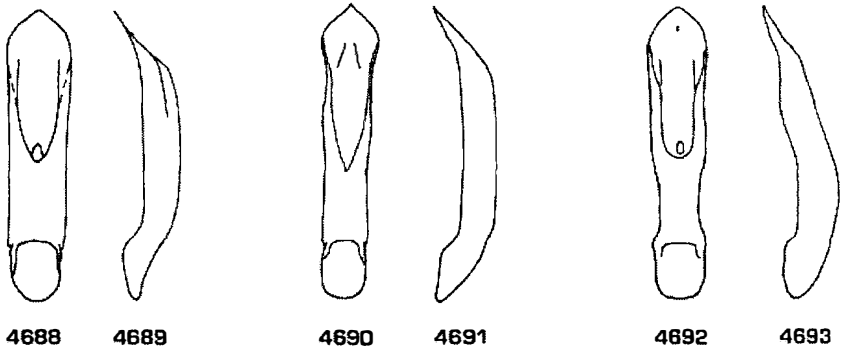
Puncture rows on elytra in apical part also very fine and shallow, but usually slightly more distinct than in *sublaevis* (thesis 13). Aedeagus as in figs **4686**, **4687**. Length 2.6–3.5 mm. Distributed in northern part of Central Europe and in Scandinavia as well as in European mountains from Pyrenees, Carpathians, Bulgaria and Caucasian countries. Possibly a western race of (transpalaeartic?) *sublaevis*
 ***motschulskii*** (KONSTANTINOV, 1991).



Figs 4682-4687. Aedeagus in ventral and lateral view (4686, 4687 after BIONDI 1994, remaining after BASELGA 2006): 4682, 4683 – *Neocrepidodera interpunctata*; 4684, 4685 – *N. crassicornis*; 4686, 4687 – *N. motschulskyi*.

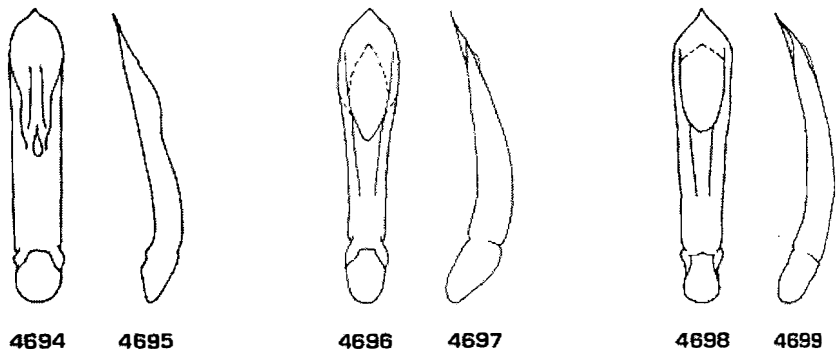
- 14. Puncturation of pronotum very sparse and shallow, its surface almost smooth ... **15**.
- Puncturation of pronotum not dense, but distinct and rather deep **16**.
- 15. On average smaller (3.6–4.0 mm) aedeagus broader (figs **4688**, **4689**), from *impressa* subsp. *peregrina* (antithesis 15) barely distinguishable, but by some authors considered as distinct species. Described from MOROCCO ***bolognai*** (BIONDI, 1982).
- On average larger. Upper side pale ochraceous to pale rust-reddish, rarely darker, almost chestnut. Aedeagus as in figs **4690**, **4691**. Length 3.7–4.6 mm (male) to 4.3–4.8 mm (female) (= *rufa* KÜSTER, 1848, *punctulata* ALLARD, 1859, *laevigata* FOU DRAS, 1860). Forms three subspecies: thickening at anterior angle of pronotum forms a little, sharp tooth (nominotypical subspecies), thickening at anterior angle of pronotum gently rounded (subsp. *obtusangula* DANIEL, 1904), elytral punctures stronger confused, in female distinctly finer than in male, aedeagus apically slightly broader (subsp. *peregrina* HAROLD, 1875). Distributed in Mediterranean area, Asia Minor and Balkans. Nominotypical subspecies inhabits southern and eastern part of Iberian Peninsula, southern France, Corsica, Sardinia, Sicily and whole Italy. Subsp. *obtusangula* is distributed in Balkans, Asia Minor, Crete and Cyprus, subsp. *peregrina* in Morocco, Algeria and Tunisia ***impressa*** (FABRICIUS, 1801).
- 16. Pronotum rather distinctly narrowed posteriad, its fore angles feebly protruding, emargination located behind them shallow. Upper side pale ochraceous to pale rusty-brownish. Aedeagus as in figs **4692**, **4693**. Length 3.6–3.8 mm. Distributed in Alps and Apennins, known also from isolated sites in Austria, Switzerland, Slovakia, Poland, Denmark and Sweden ***brevicollis*** (DANIEL, 1904).

-. Pronotum rather feebly narrowed posteriad, anterior angles strongly protruding, emargination located behind them distinct. Rows of punctures on anterior part of elytra partly confuse, in male almost always, in female often. Aedeagus as in figs **4694, 4695**. Length 3.8–4.6 (male) to 4.1–4.9 (female) (= *marginicollis* KÜSTER, 1848, ?*scutellaris* OLIVIER, 1808). Variations: body uniformly pale rust-yellow or rust reddish, sometimes apical part of antennae, head and pronotum brownish (typical form), head and peronotum blackish, elytra brown (ab. *melancholica* DANIEL, 1904), very rare melanotic form, upper side black or blackish, tarsi pale brownish (ab. *nigra* SCHILSKY, 1908). Widely distributed in Europe from Portugal and Ireland to Caspian Sea, in Asia Minor, Near East, Caucasian countries, Iran and Afghanistan
 ***transversa*** (MARSHAM, 1802).



Figs 4688-4693. Aedeagus in ventral and lateral view (4692, 4693 after BIONDI 1993, remaining after BIONDI 1982): 4688, 4689 – *Neocrepidodera bolognai*; 4690, 4691 – *N. impressa*; 4692, 4693 – *N. brevicollis*.

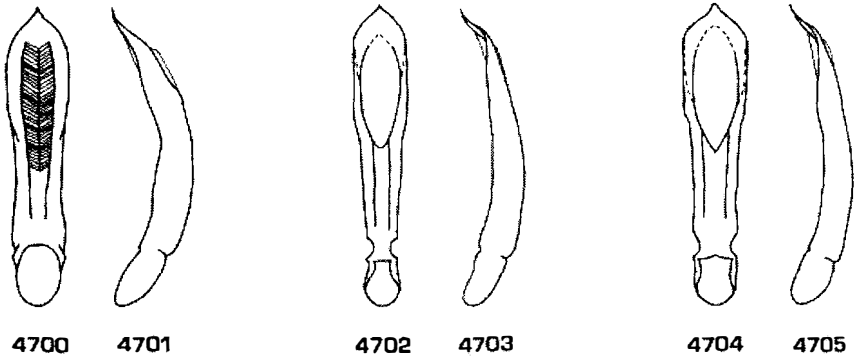
17. Pronotum pale 18.
 -. Pronotum black or black with metallic sheen 31.



Figs 4694-4699. Aedeagus in ventral and lateral view (4696, 4697 after BIONDI 1998, remaining after BIONDI 1993): 4694, 4695 – *Neocrepidodera transversa*; 4696, 4697 – *N. femorata*; 4698, 4699 – *N. basalis*.

18. All femora black or at least distinctly darkened. Here belong 7 species difficult to distinguish based on external characters **19.**
- At least fore and mid femora pale or darkened in basal part only **25.**
19. Larger (2.9–3.8 mm). Length of elytra in male always exceeds 2.3 mm, in female 2.35 mm. Hind wings normally developed or somewhat shortened, reaching about to end of elytra **20.**
- Smaller (2.6–2.9 mm). Length of elytra in male never reaches 2.5 mm, in female 2.6 mm. Hind wings absent or strongly shortened, reaching at most to 3/4 of elytra, (except males of *melanostoma*, antithesis 24, where hind wings may be normally developed) **24.**
20. Tibiae, tarsi and antennae (sometimes except 2 apical antennomeres) usually entirely pale. Elytra usually black with blue metallic reflex. General view as in plate XCIV, **phot. 846**. Aedeagus as in figs **4696, 4697**. Length 3.4–3.7 mm (= *femoralis* DUFTSCHMID, 1825). Variations: elytra pure black (ab. *kossmanni* GERHARDT, 1904), elytra black with bronzy metallic reflex (ab. *aeneipennis* WEISE, 1886), knees and apical part of tibiae darkened (ab. *infuscipes* FOU DRAS, 1860). Boreo-alpine species. Inhabits alpine and subalpine sites in central and southern Europe (Alps, Carpathians, Dinaric Alps) as well as the northern part of Scandinavia ***femorata*** (GYLLENHAL, 1813).
- Tibiae, tarsi and antennae at least partly and apical 4–5 antennomeres always darkened **21.**
21. On pronotum space between longitudinal impressions black or blackish. Length 3.1–3.5 mm (male) to 3.4–3.6 mm (female). Remaining part of pronotum orange to rusty-red, elytra black with feeble, bluish or greenish metallic reflex. All femora black or at least distinctly darkened, tibiae pale, 4 or 5 apical antennomeres black. In male first tarsomere of fore legs strongly widened. Aedeagus as in figs **4698, 4699**. Distributed in western part of Alps ***basalis*** (DANIEL, 1900).
- Pronotum uniformly pale **22.**
22. Underside of aedeagus covered by oblique rugosities. Pronotum yellowish red (in subsp. *melanothorax* pure black, without metallic reflex), elytra black with almost always vivid, blue or green metallic sheen. All femora blackish, mid and hind tibiae more or less darkened. Anterior angles of pronotum form a little tooth with a small sinuosity behind. Humeral callus always well-developed, hind wings not shortened. In male first tarsomere of fore legs very strongly widened. Aedeagus as in figs **4700, 4701**. Length 3.4–3.0 mm (male) to 4.1–4.4 mm (female). Variations: metallic sheen of elytra blue (typical form), bronzy (ab. *superba* WEISE, 1886), or violaceous (ab. *moesta* WEISE, 1886), mid and hind tibiae not darkened (ab. *diversipes* PIC, 1905). Forms two subspecies: pronotum black (subsp. *melanothorax* Biondi, 1982, occurring in Apennines), pronotum red (nominotypical subspecies distributed in Alps and Dinaric Alps) ***peirolerii*** (KUTSCHERA, 1860).
- Underside of aedeagus without oblique rugosities. Anterior angles of pronotum does not form a tooth. Metallic reflex on elytra weaker, usually bluish **23.**
23. Species from Balkans. Aedeagus (figs **4702, 4703**) more feebly widened apically. Elytra black with bluish metallic sheen. Pronotum reddish yellow to pale brick red. All femora blackish or at least distinctly darkened, apical 4 or 5 antennomeres black. Length 2.9–3.8 mm. Known from Albania and Macedonia ***albanica*** (MOHR, 1965).

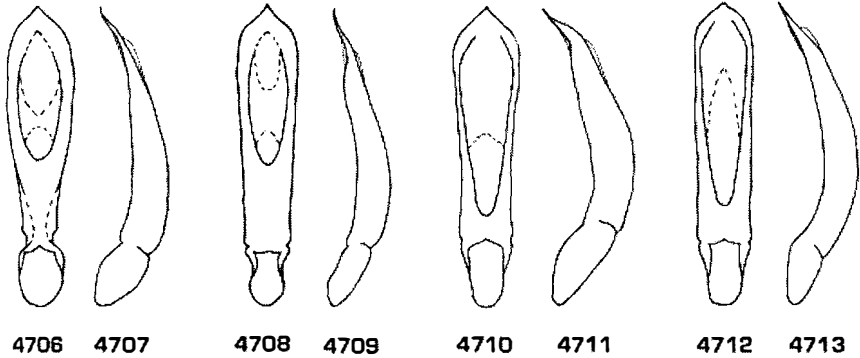
- . Species from Pyrenees. Aedeagus (figs 4704, 4705) slightly stronger widened apically. Externally very similar to *albanica* (thesis 23). Length 3.0–3.8 mm. Distributed in Pyrenees and Cantabrian Mts **melanopus** (KUTSCHERA, 1860).
- 24. Pronotum laterally rounded and distinctly sinuate before hind angles. Nasal ridge and vertex always reddish. Head, pronotum, antennae, tibiae and tarsi brown-red, scutellum and elytra black, usually without metallic reflex, mouth parts brownish, femora blackish. Aedeagus as in figs 4706, 4707. Length 2.3–3.3 mm. Distributed in Italian and French Western Alps **ligurica** (DANIEL, 1904).
- . Pronotum laterally very weakly rounded and sinuate. Nasal ridge and vertex sometimes blackish. Elytra black with distinct metallic reflex, more rarely pure black. Aedeagus as in figs 4708, 4709. Length 2.7–2.9 mm (= *theresae* PIC, 1903). Species tending to melanism. Variations: fore and mid femora reddish (typical form), all femora black (unnamed), femora black, pronotum brown (unnamed), nasal ridge and vertex blackish (ab. *frigida* WEISE, 1886). Distributed in Cantabrian Mts., Vosges, Alps, northern Apennines, Dinaric Alps and Carpathians **melanostoma** (REDTENBACHER, 1849).



Figs 4700-4705. Aedeagus in ventral and lateral view (4700, 4701 after BIONDI 1993; 4702, 4703 after BIONDI 1982; 4704, 4705 after DOGUET 1994): 4700, 4701 – *Neocrepidodera peirolerii*; 4702, 4703 – *N. albanica*; 4704, 4705 – *N. melanopus*.

- 25. Labial palpi pale 26.
- . Labial palpi pitchy or black 30.
- 26. Hind wings reaching to apex of elytra 27.
- . Hind wings almost entirely reduced. Spermatheca small, ductus spermathecae without loop 29.
- 27. Pronotum very finely punctate. Hind femora distinctly darkened or blackish. Body outline stout. Elytra usually pure black. In male first tarsomere of fore legs very strongly widened. Aedeagus as in figs 4710, 4711. Length 3.3–3.5 mm. Variation: puncturation of elytra finer than in typical form, intervals almost flat, finely rugose (ab. *opaca* PETRI, 1912). Distributed in western Alps, Apennines, Dinaric Alps, mountains of Bulgaria and Carpathians **corpulenta** (KUTSCHERA, 1860).

- Pronotum distinctly and relatively deeply punctate. Hind femora usually pale. Body outline more slender. Colouring of body as in *norica* (thesis 29) **28**.
- 28. Pronotum moderately strongly punctate. On underside of aedeagus (figs **4712**, **4713**) longitudinal impression broadened anteriorly. Length 2.9–3.8 mm. Variation: elytra brown-red (ab. *rufoconcolor* DANIEL, 1904). Distributed in western Alps ***rhaetica*** (KUTSCHERA, 1860).
- Pronotum stronger punctate. On underside of aedeagus (figs **4714**, **4715**) longitudinal impression parallel. Length 3.2–4.3 mm. Distributed in western Alps ***spectabilis*** (DANIEL, 1904).

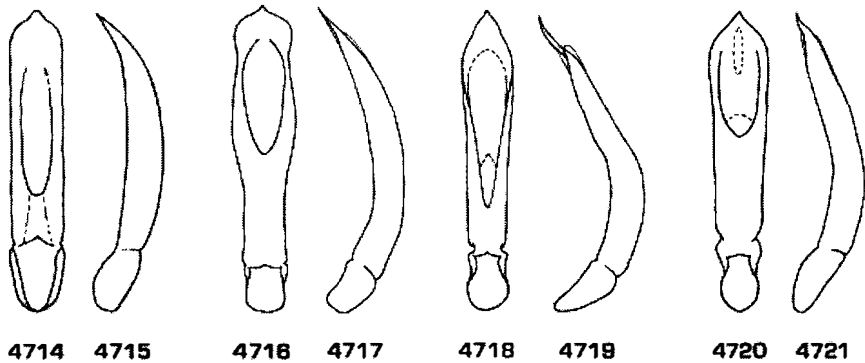


Figs 4706-4713. Aedeagus in ventral and lateral view (after BIONDI 1993): 4706, 4707 – *Neocrepidodera ligurica*; 4708, 4709 – *N. melanostoma*; 4710, 4711 – *N. corpulenta*; 4712, 4713 – *N. rhaetica*.

- 29. On average larger, usually over 3.0 mm. Pronotum very convex, before hind angles slightly but distinctly sinuate, its puncturation very fine, almost disappearing. Labrum pitchy or black. Aedeagus as in figs **4716**, **4717**. Length 2.4–3.5 mm (= *globipennis* DANIEL, 1900). Distributed in eastern part of Alps and in northern part of Dinaric Alps ***norica*** (WEISE, 1890).
- On average smaller, always under 3.0 mm. Pronotum not very convex, before hind angles not sinuate, its puncturation fine, but always distinct. Labrum red. Aedeagus as in figs **4718**, **4719**. Length 2.2–2.9 mm. Variation: a rufinotic form, elytra red or red-brown, (ab. *rufipennis* DANIEL, 1904). Distributed in eastern and southern Carpathians ***transsilvanica*** (FUSS, 1864).
- 30. On average larger, always over 3.0 mm. Pronotum distinctly punctate, elytra usually with greenish metallic reflex. Externally very similar to *melanostoma* (antithesis 24) and *rhaetica* (thesis 28). In male first tarsomere of fore legs strongly widened. Aedeagus as in figs **4720**, **4721**. Length 3.2–3.7 mm (male) to 3.6–3.9 mm (female). Variation: primary punctures of elytra finer, less regular, disappearing in apical part (ab. *interstitialis* DANIEL, 1904). Distributed in W Alps ... ***nobilis*** (DANIEL, 1904).
- On average smaller, always under 3.0 mm. Pronotum finely and sparsely punctate, sometimes almost smooth. Metallic reflex on elytra usually bluish, rarely greenish.

Nasal ridge and vertex sometimes blackish, pronotum often more or less darkened. In male first tarsomere of fore legs very strongly widened. Here forms of *melanostoma* (antithesis 24) with feebly darkened femora.

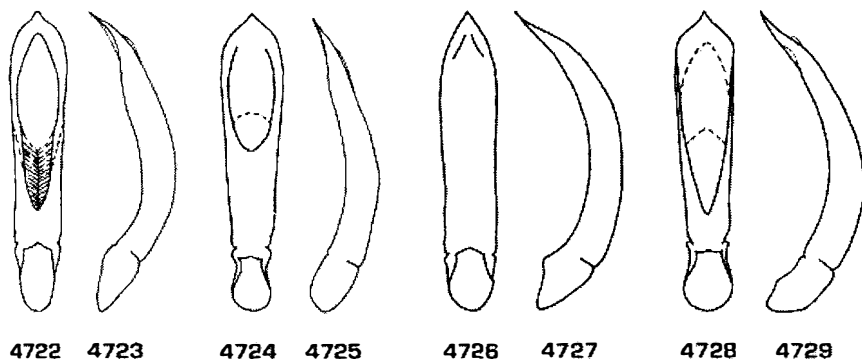
31. Underside of aedeagus covered by oblique rugosities. Anterior angles of pronotum forms a distinct, little tooth and a sinuosity behind. Here *peirolerii* subsp. *melanothorax* BIONDI, 1982 (thesis 22) from central Apennines.
- . Underside of aedeagus without oblique rugosities or (in *cyanescens*, thesis 29) in basal part only. Anterior angles of pronotum without tooth 32.



Figs 4714-4721. Aedeagus in ventral and lateral view (4714, 4715 after DÖBERL 1995, remaining after BIONDI 1993): 4714, 4715 – *Neocrepidodera spectabilis*; 4716, 4717 – *N. norica*; 4718, 4719 – *N. transsilvanica*; 4720, 4721 – *N. nobilis*.

32. Larger (usually over 3.0 mm). Transverse impression on pronotum deep. Primary punctures on elytra strong and dense 33.
- . Smaller (usually under 3.0 mm). Transverse impression on pronotum shallow. Elytra finely and less densely punctate 34.
33. Antennae and tibiae uniformly coloured, brownish. Pronotum usually black-blue, rarely pure black. General view as in plate XCIV, **phot. 845**. Aedeagus as in figs **4722, 4723**. Length 2.6–3.4 mm (male) to 3.2–3.8 mm (female) (= *alpicola* SCHMIDT, 1850). Variations: legs very dark, often entirely blackish (ab. *tatrica* REITTER, 1914), pronotum finer punctate than in other forms (ab. *sabauda* PIC, 1904), elytra more elongate, pronotum very broad (ab. *subelongata* PIC, 1910, a doubtful form, perhaps a monstrosity). Forms three subspecies: characters as in description (nominotypical subspecies distributed in Carpathians as well as in eastern and central part of Alps), body outline more slender, humeral callus protruding, (subsp. *concolor* DANIEL, 1900 from southern part of W Alps), blue metallic sheen on pronotum strong, legs almost entirely black. Punctuation of elytra shallow, in hind half distinctly finer (subsp. *coeruleicollis* PIC, 1901 from northern part of W Alps). Distributed in Alps and Carpathian ***cyanescens*** (DUFTSCHMID, 1825).
- . Antennae and tibiae partly blackened. Pronotum pure black or pitchy, sometimes with feeble greenish metallic reflex; elytra black-blue, their punctuation disap-

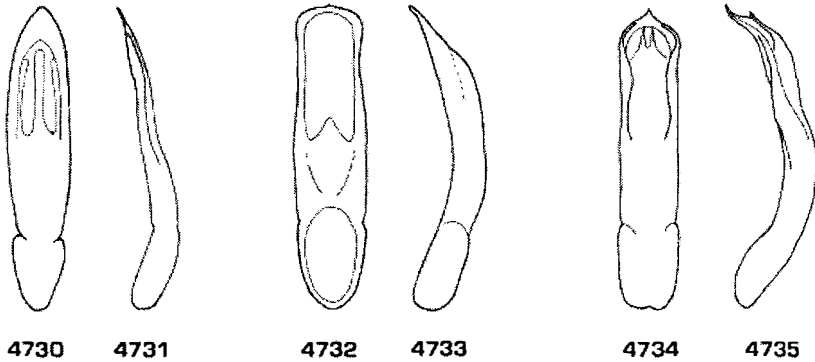
- pears in apical part. In male first tarsomere of fore legs strongly widened. Aedeagus as in figs **4724**, **4725**. Length 2.9–3.4 mm (male) to 3.2–3.6 mm (female). Variations: pronotum brown or dark red (*ab.inconcolor* PIC, 1905), upper side rusty-red to pitchy, pronotum sometimes considerably darker than elytra (a rufinotic form, unnamed). Distributed in Alps only ***cyanipennis*** (KUTSCHERA, 1860).
34. Upper side black blue, shining, entirely hairless. Basis of antennae partly reddish. Puncturation of pronotum extremely fine. In male first tarsomere of fore tarsi very weakly widened. General view as in plate XCV, **phot. 848**. Aedeagus as in figs **4726**, **4727**. Length 2.0–2.4 mm (male) to 2.2–2.5 mm (female) (= *ovulum* DUFTSCHMID, 1825, *impressa* WALTZ, 1839). Distributed mostly in Central Europa and in Fennoscandia, also partly in eastern Europa, from Switzerland to Ukraine and from Bulgaria to Finland and Karelia ***nigritula*** (GYLLENHAL, 1813).
- Upper side black with greenish metallic reflex, covered by very short and thin hairs. Antennae entirely black. Impression on pronotum in its mid part very shallow. Aedeagus as in figs **4728**, **4729**. Length 2.8–3.0 mm. Distributed in East Alps ***simplicipes*** (KUTSCHERA, 1860).



Figs 4722-4729. Aedeagus in ventral and lateral view (4722, 4723 after BIONDI 1993; 4728, 4729 after BIONDI 1982; remaining after WARCHAŁOWSKI 1998): 4722, 4723 – *Neocrepidodera cyanescens*; 4724, 4725 – *N. cyanipennis*; 4726, 4727 – *N. nigritula*; 4728, 4729 – *N. simplicipes*.

35. Frontal tubercles subtriangular, their tips inserted between eyes. Primary punctures on elytra shallow (subgenus *Neocrepidodera* HEIKERTINGER, 1911) **36**.
- Frontal tubercles oval. Primary punctures on elytra almost always deeply impressed (subgenus *Asiolestia* JACOBSON, 1925) **37**.
36. Smaller. Primary punctures on elytra arranged in very regular rows. On pronotum ante-basal transverse furrow deeply impressed, anterior angles thickened. Body reddish brown. Aedeagus as in figs **4730**, **4731**. Length 2.0–2.2 mm. Distributed in Japan (Honshu, Kyushu, Shikoku) ***recticollis*** (JACOBY, 1885).
- Larger. Primary punctures on elytra arranged in somewhat irregular rows. Body pale brownish. Aedeagus as in figs **4732**, **4733**, Length 2.5–3.0 mm. Distributed in Russian Far East, N China and Japan (Hokkaido) ***sibirica*** (PIC, 1909).

37. Upper side entirely dark brown to black 38.
 - Upper side not entirely pitchy or black 39.

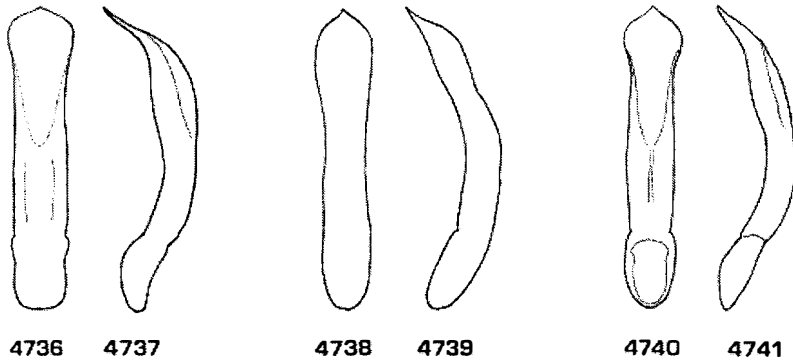


Figs 4730-4735. Aedeagus in ventral and lateral view (4732, 4733 after BASELGA 2006, remaining after TAKIZAWA 2002): 4730, 4731 – *Neocrepidodera recticollis*; 4732, 4733 – *N. sibirica*; 4734, 4735 – *N. satoi*.

38. Length over 4.0 mm. Body incl. legs black, tarsi and antennomeres 1–4 brownish. Upper side shining. Aedeagus as in figs **4734**, **4735**. Length 4.0–5.0 mm. Distributed in Japan (Honshu) **satoi** TAKIZAWA, 2002.
 - Length under 3.0 mm. Upper side brownish-pitchy or brownish-black, legs and antennae yellowish-testaceous. Head impunctate. Aedeagus not studied. Length 2.3–3.0 mm. Described from E Siberia **kozhanthikovi** (JACOBSON, 1925).
39. Humeral callus feebly developed, hind wings reduced. Body dark reddish brown to pitchy, apex and lateral borders of elytra usually somewhat lightened. Antennae and legs brownish red. Anterior angles of pronotum oblique and obtuse, hind angles subrectangular. Puncture rows on elytra rather fine, intervals sparsely and minutely punctulate. Aedeagus as in figs **4738**, **4739**. Length 3.0–3.5 mm. Described from Japan (Honshu) **komatsui** NAKANE, 1963.
 - Humeral callus well-developed **40**.
40. Body large, length over 4.5 mm. Pale reddish brown, antennomeres 4–11 or 5–11 pitchy black. Apices of femora, tibiae and tarsi strongly darkened, usually blackish. General view as in plate XCV, **phot. 850**. Aedeagus as in figs **4740**, **4741**. Length 4.5–5.5 mm (= *lewisi* JACOBY, 1885). Distributed in Central and NE China, E Siberia, Ussuria, Korea and Japan (Hokkaido, Honshu, Kyushu, Shikoku) **obscuritarsis** (MOTSCHULSKY, 1859).
 - Body smaller, length under 4.0 mm **41**.
41. Primary punctures on elytra arranged in somewhat irregular rows **42**.
 - Primary punctures on elytra arranged in regular rows, at least on anterior 3/4 of length **44**.
42. Larger. Disc of pronotum closely, deeply and strongly or moderately strongly punctured. On elytra rows of punctures strongly confused. Body uniformly pale rusty-yellowish. Length 3.7–4.1 mm (= *mitsuhashii* MATSUMURA, 1911). Subnorthern trans-pala-

earctic species, distributed from N Germany and Denmark, N Poland, Byelorussia and N Russia to Russian Far East, Korea and Japan (Hokkaido). See *interpunctata* (antithesis 12).

- Smaller (2.6–3.5 mm). Asiatic species **43.**

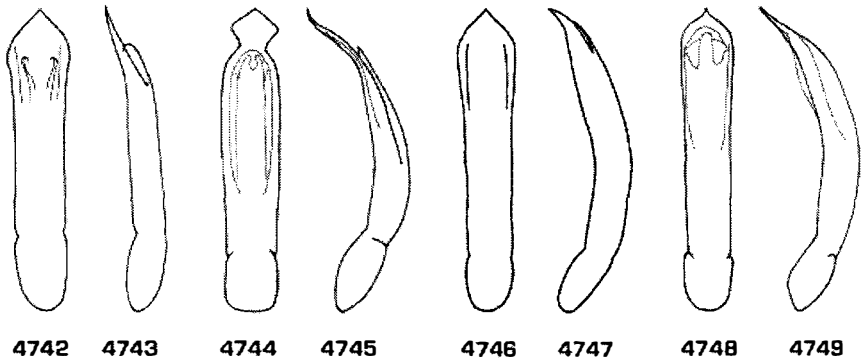


Figs 4736-4741. Aedeagus in ventral and lateral view (4738, 4739 after KIMOTO and TAKIZAWA, remaining after BASELGA 2006): 4736, 4737 – *Neocrepidodera konstantinovi*; 4738, 4739 – *N. komatsui*; 4740, 4741 – *N. obscuritarsis*.

- 43. Pronotum on central part very sparsely and indistinctly punctate, at first sight entirely smooth and shining. Puncture rows on elytra in apical part very fine and shallow. Aedeagus as in figs **4684, 4685**. Length 2.6–3.5 mm. Distributed from E Kazakhstan to Japan. See *sublaevis* (thesis 13).
- Disc of pronotum moderately finely and often sparsely, but distinctly punctured. Body uniformly pale rusty-yellowish. Aedeagus as in figs **4742, 4743**. Length 2.8–3.2 mm. Distributed in Central and E China and in Japan (Honshu, Kyushu, Shikoku). Here probably also *resina* GRESSIT et KIMOTO, 1963 (no significant differences) described from S China and reported also (erroneously?) from Korea ***laevicollis*** (JACOBY, 1885).
- 44. Aedeagus (figs **4744, 4745**) very characteristic, strongly constricted in apical part. Body on average larger, somewhat flattened, light reddish brown. On elytra puncture rows regular, intervals smooth and shining. In male first tarsomere of all legs strongly dilated. Length 3.0–4.2 mm. Described from Japan (Honshu) ***ohkawai*** TAKIZAWA, 2002.
- Aedeagus without constriction in apical part. Body on average smaller **45.**
- 45. Whole apical part of aedeagus (figs **4736, 4737**) in lateral view distinctly inclined. Anteroapical callosity of pronotum distinctly asymmetrical, rounded anteriorly and angulose posteriorly. Length 3.3–3.7 mm. Described from Ussuria and NE China (Heilungkiang) ***konstantinovi*** BASELGA, 2006.
- In apical part of aedeagus (figs **4746, 4748**) in lateral view only apex shortly inclined **46.**
- 46. Body broader, more oval. Generally similar to *sublaevis* (thesis 13), but body larger, broader, laterally more rounded and apex of aedeagus (figs **4746, 4747**) less sub-

triangular. From *laevicollis* differs by more oval outline of body and very regular puncture rows on elytra. Length 3.3–4.0 mm. Described from Japan (Honshu)

- ***gruevi*** (KIMOTO, 1983).
 –. Body more slender, subparallel. Similar to *laevicollis* (antithesis 43), by some authors considered as conspecific, but differs by very regular puncture rows on elytra. Aedeagus as in figs 4748, 4749. Length 2.8–3.2 mm. Distributed in Japan (Honshu). Reports from other parts of Japan and from S China concern probably *laevicollis* (antithesis 43)
- ***acuminata*** (JACOBY, 1885).



Figs 4742-4749. Aedeagus in ventral and lateral view (4742, 4743, 4746, 4747 after KIMOTO and TAKIZAWA 1994, remaining after TAKIZAWA 2002): 4742, 4743 – *Neocrepidodera laevicollis*; 4744, 4745 – *N. ohkawai*; 4746, 4747 – *N. gruevi*; 4748, 4749 – *N. acuminata*.

Genus *Nonarthra* BALY, 1862

Enneamera GEMMINGER et HAROLD, 1874

Genus *Nonarthra* comprises about 40 species, distributed mainly in Oriental region. In discussed area three species.

Key to species

1. Legs black, at most knees lightened
- . Legs pale yellowish, hind femora blackish. Upper side deep black-blue, pronotum often with purplish hue. General view as in plate XCV, **phot. 852**. Length 3.0–3.8 mm. Distributed in Japan (Hokkaido, Honshu, Kyushu, Shikoku, Ryukyu)
- ***tibialis*** JACOBY, 1885.
2. Length over 3.5 mm. Upper side deep blue, underside black except 4 last abdominal sternites. General view as in plate XCV, **phot. 851**. Length 3.5–4.5 mm (*fulva* BALY, 1874, *nigricollis* WEISE, 1889). Distributed in Central and S China, Japan (Hokkaido, Honshu, Kyushu, Shikoku), Taiwan, Korea and Russian Far East
- ***cyanea*** BALY, 1874

- Length under 3.5 mm. Upper side deep blue, pronotum often with purplish or violaceous hue, underside black, last abdominal sternite reddish brown, anterior angles of pronotum also sometimes dark reddish brown. Length about 3.0 mm. Distributed in S China, Taiwan and Korea *coreana* CHŪJŌ, 1935.

Genus *Novofoudrasia* JACOBSON, 1901

Foudrasia WEISE, 1900, nec DES GOZIS, 1881, *Griua* MAULIK, 1926

Genus *Novofoudrasia* contains four species, distributed in Asia. In discussed area one species from Transcaspia.

Elytra bluish-green. Head, meso- and metasternum, legs and antennae (except for apices of antennomeres 2 and 3) black, with slight metallis reflex. Pronotum rusty-red with dark semilunar spot before scutellum, abdomen rusty-red. Primary puncturation of elytra relatively strong, arranged in somewhat irregular, here and there doubled longitudinal rows. Length 4.0–5.0 mm. Distributed in SE Transcaspia (Kazakhstan, Usbekistan, Tadzhikistan), Afghanistan and Nepal *rufiventris* WEISE, 1900.

Genus *Ochrosis* FOUDRAS, 1859

One species only. Upper side pale, yellowish brown or testaceous, elytra usually a little paler. Meso- ad metasternum as well as ventral side of abdomen blackish. Legs and antennae usually entirely pale, in melanotic forms never darker than upper side. Primary punctures of elytra arranged in regular longitudinal rows, in anterior part strong, near apex almost disappearing. Humeral callus distinct, hind wings well-developed. In male first tarsomere of fore tarsi very weakly widened. Aedeagus as in figs 4750, 4751. Length 2.0–2.3 mm (male) to 2.0–2.5 mm (female) (= *abdominalis* KÜSTER, 1848, *pisana* ALLARD, 1861, *corsica* ALLARD, 1866). Variations: colouration of body as above (typical form), upper- and underside pale (ab. *krueperi* WEISE, 1886), vertex and pronotum distinctly darkened, elytra pale (ab. *obscuricollis* HEIKERTINGER, 1911), body red-brown, sculpture of upper side shallow (ab. *rubicunda* PERRIS, 1864), body red-brown, sculpture of upper side normal (ab. *lubrica* WOLLASTON, 1864), upper side brown (ab. *nigriventris* BACH, 1856), upper side pitchy or pure black (ab. *corcyrea* PIC, 1909), upper side black with feeble bluish metallic reflex (= ab. *viridana* REITTER, 1906). Distributed in all Mediterranean area, Canary Islands, Cape Verde Islands, Madeira, Asia Minor, Caucasian countries and in Europe northwards reaching to England, Netherlands, Low Silesia and Ukraine *ventralis* (ILLIGER, 1807).

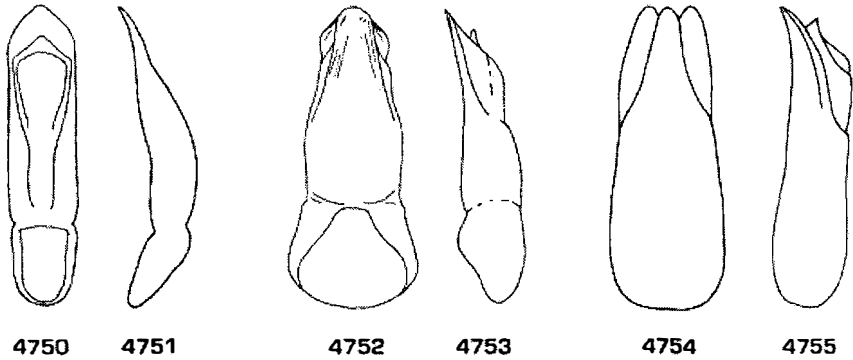
Genus *Oedionychis* LATREILLE, 1829

Lithonoma CHEVROLAT, 1836, *Pedema* DEJEAN, 1836 *Chloephaga* WEISE, 1899

The genus *Oedionychis* comprises three species distributed in Iberian Peninsula and NW Africa.

Key to species

1. Upper side dark green-blue or blue with yellowish pattern as in plate XCV, **phot. 853**. Aedeagus as in figs **4752, 4753**. Length 4.2–6.5 mm (= *marginella* FABRICIUS, 1801, *marginula* ILLIGER, 1803). Variations: on elytra only marginal stripe present, all central spots absent (ab. *dorsalis* WEISE, 1886), on elytra central spots enlarged, partly fused (ab. *lusitanicus* WEISE, 1886). Distributed in SW France and in Iberian Peninsula ***cincta*** (FABRICIUS, 1781).
- . Upper side differently coloured **2**



Figs 4750–4755. Aedeagus in ventral and lateral view (4750, 4751 after WARCHAŁOWSKI 1998; 4752, 4753 after DOGUET 1994; 4754, 4755 after WARCHAŁOWSKI 2003): 4750, 4751 – *Ochrosia ventralis*; 4752, 4753 – *Oedionychus cinctus*; 4754, 4755 – *O. limbatus*.

2. Upper side unicolorous, dark blue, on each elytron three longitudinal ridges. Length about 5.0 mm. Described from Morocco ***favieri*** (FAIRMAIRE, 1874).
- . Upper side with yellow pattern. Pronotum coloured as in *cinctus* (thesis 1), on each elytron besides lateral yellow margins an yellow longitudinal median stripe. Aedeagus as in figs **4754, 4755**. General view as in plate XCV, **phot. 854**. Length 4.2–6.8 mm (= *excellens* ILLIGER, 1804, *andalusica* ROSENHAUER, 1856, *africana* CLARK, 1860). Variations: on elytra median stripe shortened (ab. *schrammi* KOCHER, 1958); median stripe reduced to two spots before midlength of elytra (ab. *cruciata* KOCHER, 1958); all sides of pronotum yellow (ab. *heikertingeri* CSIKI, 1940, described from Atlas Mts and considered sometimes as distinct subspecies). Distributed in S Spain, Morocco and Algeria ***limbata*** (FABRICIUS, 1798).

Genus ***Ogloblinia*** CSIKI, 1939

Ochrosoma OGLOBLIN, 1930 nec HERRICH-SCHÄFFER, 1854, *Sphaeraltica* OHNO, 1961, *Philaphthona* MEDVEDEV, 1994

Genus *Ogloblinia* comprises three E Asiatic species, of these two occur in the discussed area.

Key to species

1. Larger. Frontal tubercles weakly convex, separated from vertex by an indistinctly furrow. Upper side bluish black. Legs and antennae reddish brown, hind femora blackish. Length 2.0–2.5 mm. Distributed in Japan (Honshu, Kyushu, Shikoku)
..... **berberii** (OHNO, 1961).
- Smaller. Frontal tubercles convex, separated from vertex by an indistinct furrow. Body dark reddish brown, legs yellowish brown, hind femora dark brown. Length 1.5–2.0 mm. Distributed in Japan (Honshu, Kyushu, Shikoku, Ryukyu)
..... **flavicornis** (BALY, 1874).

Genus **Ophrida** CHAPUIS, 1875

Blepharoides JACOBY, 1893

To the genus *Ophrida* belong about 12 species distributed mainly in Palaeotropical superregion. In Palaearctic region one species only. Body large, subparallel, sculpture of pronotum characteristic. General view as in plate XCV, **phot. 855**. Colouration of body variable, usually entirely reddish fulvous, with antennomeres 5–11 black and numerous, fused, darker spots on elytra. In colouration stable characters are dark antennomeres 5–11 and pale yellowish tarsi. Tibiae and hind femora often darkened or black. Sometimes puncturation on upper side brown or blackish. Length 8.0–10.0 mm (= *rufoflava* FAIRMAIRE, 1889). Distributed in almost whole China, in Nepal and in Korea
..... **spectabilis** (BALY, 1862).

Genus **Orestia** GERMAR, 1845

Literature: HEIKERTINGER 1950.

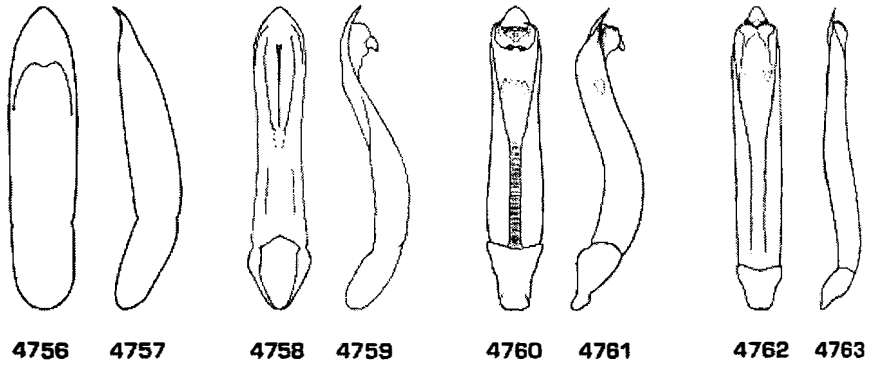
Pyladia Weise, 1886

Genus *Orestia* contains 25 mostly alpine species known from Europe and the Mediterranean area as well as one species detected recently in Nepal.

Key to species

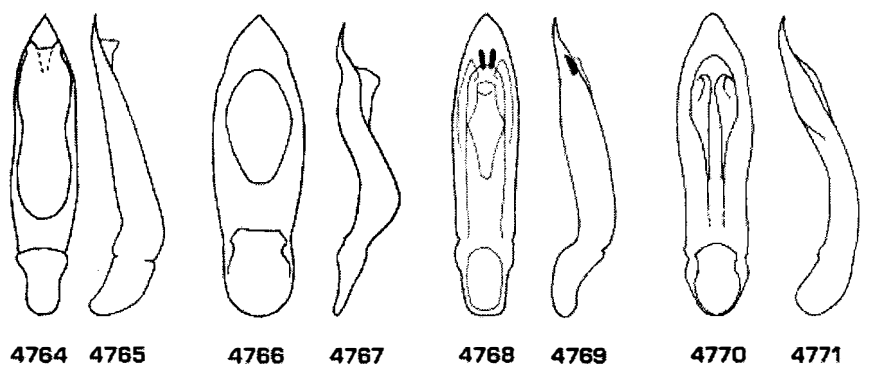
1. Body outline slender, oblong, with parallel sides of elytra **2**.
- Body outline more or less oval **8**.
2. Body bicolorous: pronotum rust-red, elytra black (in immature specimens red-brown) usually with feeble metallic reflex. Aedeagus as in figs **4756**, **4757**. Length 2.2–2.5 mm (= *semijanithina* REITTER, 1909). Distributed in Italy, Sicily and Croatia
..... **kraatzi** ALLARD, 1861.
- Upper side unicolorous **3**.
3. Upper side black, body parallel. Two insufficiently studied, iberomauritanian species, perhaps conspecific (races) **4**.
- Upper side reddish brown, rust-reddish or dark yellow **5**.
4. Species from Iberian Peninsula and E Pyrenees. Male unknown. Length 2.2–2.4 mm (= *parallela* REITTER, 1909, *subparallela* PIC, 1909). Distributed as above
..... **sierrana** HEYDEN, 1882.

- Species from Algeria and Tunisia. Aedeagus known only from verbal description, in dorsal view parallel with tongue-like apex. Length about 2.0 mm (= *pommereau* PERRIS, 1869). Distributed in Morocco, Algeria and Tunisia ***maura*** (LUCAS, 1849).
- 5. Pronotum almost square. Aedeagus as in figs 4758, 4759. Described from Corsica based on one specimen only ***coiffaiti*** DOGUET, 1990.
- Pronotum transverse 6.



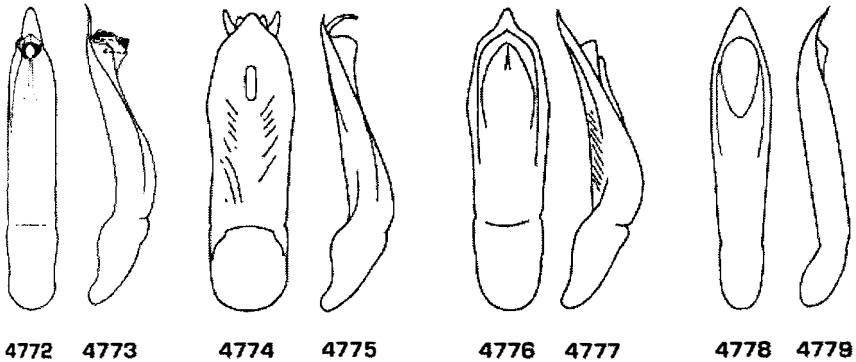
Figs 4756-4763. Aedeagus in ventral or dorsal and in lateral view (4756, 4757 after WARCHAŁOWSKI 2003; 4758, 4759 after DOGUET 1994; 4760, 4761 after WARCHAŁOWSKI 1998; 4762, 4763 after LEONARDI 1977): 4756, 4757 – *Orestia kraatzi*; 4758, 4759 – *O. coiffaiti*; 4760, 4761 – *O. oselliana*; 4762, 4763 – *O. delagranei*.

- 6. Species from northern Turkey. Aedeagus as in figs 4760, 4761. Length 2.4–2.6 mm ***oselliana*** LEONARDI, 1977.
- Species from Near East 7.



Figs 4764-4771. Aedeagus in ventral or dorsal and in lateral view (4768, 4769 after KAPP 2006; 4769, 4770 after DOGUET 1994, 2003; remaining after BIONDI 1992): 4764, 4765 – *Orestia carloebli*; 4774, 4775 – *O. apennina*; 4776, 4777 – *O. brandstetteri*; 4778, 4779 – *O. pandellei*.

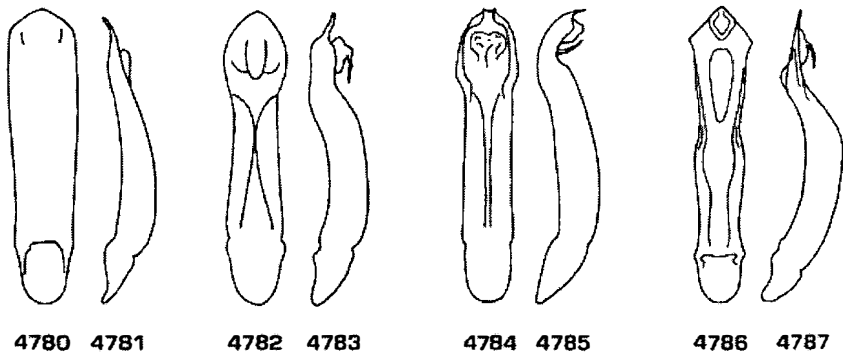
- 7. Pronotum widest in hind part. Aedeagus as in figs **4762, 4763**. Length about 2.5 mm. Described from Akbes in Syria **delagrangei** PIC, 1909.
- Pronotum widest in anterior part. General view as in plate XCVI, **phot. 860**. Aedeagus shaped similarly as in *aubei* (thesis 27), but in lateral view straight. Length about 2.5 mm. Known from Syria and Jordania **parallela** ALLARD, 1876.
- 8. Thickening of anterior angles of pronotum forms a little tooth **9**.
- Thickening of anterior angles of pronotum gently rounded **12**.
- 9. Transverse groove on pronotum absent. Here *calabra corcyrea* (antithesis 20).
- Transverse groove on pronotum present at least in form of a concavity **10**.
- 10. Hind wings partly or entirely reduced, humeral calli absent. Apex of aedeagus shortly triangular, in lateral view slightly bent up. Length 1.6–2.0 mm. Distributed in southern Carpathians and southern Dinaric Alps **paveli** FRIVALDSZKY, 1877.
- Hind wings normally developed, humeral calli small and not protruding, but present **11**.
- 11. Species from western part of Mediterranean area (Iberian Peninsula, Corsica, Morocco, Algeria, Tunisia). On average larger. Aedeagus in ventral view similarly shaped as in *carpathica* (thesis 26), in lateral view straight, apex very gently bent up. Length 2.0–2.5 mm (= *andalusica* ALLARD, 1869). Length 2.0–2.5 mm **punctipennis** (LUCAS, 1849).
- Species from Near East (Israel, Lebanon, Syria). On average smaller. Aedeagus similarly shaped as in *paveli* (thesis 10). Length 1.9–2.3 (= *brevis* PIC, 1909) **bruleriei** ALLARD, 1876.
- 12. Transverse furrow on pronotum absent or present in form of a gentle convexity **13**.
- Transverse furrow on pronotum distinctly impressed, sometimes arched **20**.



Figs 4772-4779. Aedeagus in ventral or dorsal and in lateral view (4778, 4779 after WARCHALOWSKI 2003, remaining after LEONARDI 1974): 4772, 4773 – *Orestia carnica*; 4774, 4775 – *O. heikertingeri*; 4776, 4777 – *O. elektra*; 4778, 4779 – *O. lepriuri*.

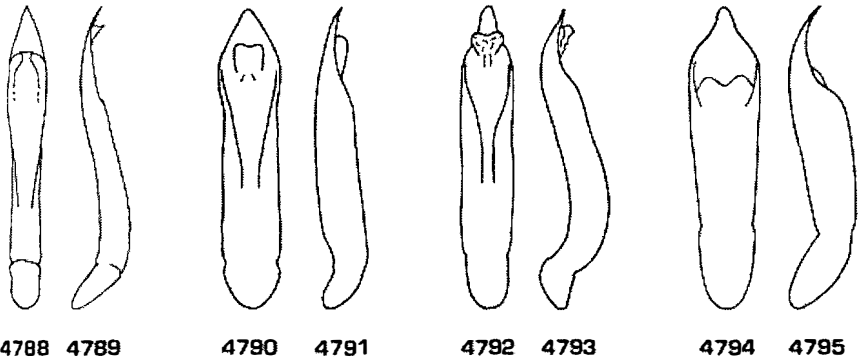
- 13. Transverse furrow on pronotum absent **14**.
- Transverse furrow on pronotum formed as a gentle convexity **19**.

14. Apex of aedeagus forms a more or less distinct, broad lamella 15
 - Apex of aedeagus sharpened, without lamella (fig. 4764, 4765). Body reddish brown. Pronotum trapezoidal, length of basal impressions about 1/3 length of pronotum. Length about 2.3 mm. Described from Asia Minor *loebli* BIONDI, 1992
15. Whole apical part of aedeagus (figs 4766, 4767) bent dorsally. Length 1.8–2.5. Distributed in Italy (Apennines) *apennina* WEISE, 1886.
 - In aedeagus at most only its very tip bent 16
16. Apex of aedeagus sharpened. Externally similar to *loebli* (thesis 14), also by trapezoidal pronotum and general form of aedeagus (figs 4768, 4769). Slightly smaller, length 1.7–2.0 mm. Described from Italy (Abruzzo) *brandstetteri* KAPP, 2006.
 - Apex of aedeagus not sharpened 17
17. Sides of the apical part of aedeagus not sinuate (as in *apennina*, figs 4770, 4771). Length 1.6–2.0 mm. Distributed in Pyrenees *pandellei* ALLARD, 1863.
 - Sides of the apical part of aedeagus sinuate 18
18. Length of aedeagus (figs 4772, 4773) more than 1.0 mm. Length 2.0–2.3 mm. Distributed in N Italy *carnica* LEONARDI, 1974.
 - Length of aedeagus under 1.0 mm 19
19. Aedeagus (figs 4774, 4775) short and broad, sides of its apical part not sinuate. Length 2.0–2.3 mm. Described from Lombardia *heikertingeri* LEONARDI, 1974.
 - Aedeagus (figs 4776, 4777) somewhat more slender, sides of its apical part sinuate. Length 1.7–2.2 mm. Forms two subspecies differing in shape of aedeagus: apex of aedeagus more elongate as in fig. 4776 (nominotypical subspecies) and shorter (ssp. *brunnea* HALBHERR, 1898), both distributed in Italian Alps *elektra* GREDLER, 1868.
20. Upper side bicolorous: pronotum yellowish red or brownish red, elytra blue black (in immature specimens red-brown with feeble metallic reflex). Aedeagus as in figs 4778, 4779. General view as in plate XCVI, phot. 859. Length 2.6–2.9 mm. Distributed in Algeria *leprieuri* ALLARD, 1859.
 - Upper side unicolorous. Aedeagus as in figs 4780, 4781. Length 1.9–2.2 mm. Forms two subspecies: thickenings at anterior angle of pronotum gently rounded (nominotypical subspecies from Calabria) or forming a little tooth (subsp. *corcyrea* HEIKERTINGER, 1924 from Kerkira) *calabra* HEIKERTINGER, 1909.



Figs 4780–4787. Aedeagus in ventral or dorsal and in lateral view (4782, 4783 after WARCHALOWSKI, 1998, remaining after HEIKERTINGER, 1950): 4780, 4781 – *Orestia calabra*; 4782, 4783 – *O. carniolica*; 4784, 4785 – *O. alpina*; 4786, 4787 – *O. bulgarica*.

21. Body length over 3.2 mm. Aedeagus as in figs **4782, 4783**. Poorly studied species from Julic Alps ***carniolica*** WEISE, 1886.
 -. Body length under 3.0 mm **22**.
22. Pronotum widest in the middle or before middle of its length **23**.
 -. Pronotum widest in basal part **25**.
23. Apex of aedeagus (figs **4784, 4785**) with a broad lamella. Length 2.0–3.0 mm (= *hampei* MILLER, 1868, *bosnica* APFELBECK, 1906, *curtula* APFELBECK, 1906, *chionophila* APFELBECK, 1916, *hungarica* HEIKERTINGER, 1910). Distributed in E Alps, S Carpathians and in the mountains of Balkan Peninsula ***alpina*** (GERMAR, 1824).
 -. Apex of aedeagus sharpened, without lamella **24**.
24. Body length over 2.5 mm. Externally similar to *alpina*, general view as in plate XCVI, **phot. 857**. Aedeagus as in figs **4786, 4787**. Length 2.5–2.8 mm. Distributed in Stara Planina, Vitosha and Rila Mts ***bulgarica*** HEIKERTINGER, 1910.
 -. Body length under 2.4 mm. Aedeagus as in figs **4788, 4789**. Length 2.0–2.3 mm (= *merkli* Weise, 1886). Described from Asia Minor ... ***olympica*** FRIVALDSZKY, 1884.
25. Transverse groove on pronotum distinctly impressed **26**.
 -. Transverse groove on pronotum shallow, formed as a concavity of surface. Transverse groove on pronotum visible as a feeble concavity of surface only. Apex of aedeagus (figs **4780, 4781**) obtuse, bent ventrally. Length 1.8–2.2 mm Two subspecies were described: anterior angles of pronotum gently rounded (nominotypical subspecies), general outline somewhat more slender, anterior angles of pronotum with a small tooth (subsp. *corcyrea* HEIKERTINGER, 1924). Distributed in S Italy (subsp. *calabra* s. str.) and in Kerkira (subsp. *corcyrea*)
 ***calabra*** HEIKERTINGER, 1909.



Figs 4788-4795. Aedeagus in dorsal and lateral view (4788, 4789 after BIONDI 1992; 4794, 4795 after WARCHALOWSKI 2003; remaining after WARCHALOWSKI 1998): 4788, 4789 – *Orestia olympica*; 4790, 4791 – *O. carpathica*; 4792, 4793 – *O. aubei*; 4794, 4795 – *O. caucasica*.

26. Transverse groove on pronotum distinctly bent **27**.
 -. Transverse groove on pronotum straight or almost straight. Aedeagus as in figs **4790, 4791**. Length 2.2–2.5 mm. Distributed in Carpathians and in S Poland
 ***carpathica*** REITTER, 1880.

27. General view as in plate XCVI, **phot. 856**. Aedeagus as in figs **4792, 4793**. Length 1.7–2.5 mm (= *arcuata* MILLER, 1868). Distributed in Carpathians and in mountains of Balkan Peninsula **aubei** ALLARD, 1859.
- . Externally similar to *aubei* (thesis 27), but on average larger. General view as in plate XCVI, **phot. 858**. Aedeagus as in figs **4794, 4795**. Length 2.4–3.1 mm (= *pseudo-aubei* PIC, 1910). Distributed in Caucasian countries **caucasica** REITTER, 1879.

Genus ***Orthaltica*** CROTCH, 1873

Leptotrix HORN, 1889, *Livolia* JACOBY, 1903, *Leptotrichaltica* HEIKERTINGER, 1925, *Micrepitrix* LABOISSIERE, 1933, *Serraticollis* WHITE, 1942

Genus *Orthaltica* contains almost 30 species distributed in Palaetropical superregion, mostly in Oriental region. In discussed area one species only.

Body entirely dark fulvous, upper side strongly shining. Frontal tubercles distinct, roundish triangular, vertex smooth, without any microsculpture or puncturation, only with a row of 4 saetiferous punctures. Primary punctures of elytra arranged in regular rows reaching to apex and covered by sparse, short, erect hairs. Length 1.9 mm. Described from Saudi Arabia **arabica** MEDVEDEV, 1997.

Genus ***Parargopus*** CHEN, 1939

One species only. Abdomen piceous or blackish, remaining parts of body brownish-red. Apical antennomeres slightly darker than the basal ones. Vertex impunctate, interantennal space finely punctate. Antennae extending to the middle of elytra, apical antennomeres elongate, not thickened. Primary punctures of elytra somewhat stronger than on pronotum, at the sides arranged in longitudinal rows. Length 4.8 mm. Described from NE China (Hebei) based on one specimen (sex not determined) only **sphaerodermoides** CHEN, 1939.

Genus ***Parazipangia*** OHNO, 1965

One species only. Pitchy black, six basal antennomeres and legs except for the blackish hind femora, reddish brown. Length 3.2 mm. Described from Oki Islands (Japan), based on one male specimen only **okiana** OHNO, 1965.

Genus ***Pentamesa*** HAROLD, 1876

To the genus *Pentamesa* belong almost 30 species distributed in Asia only. From discussed area are known three species.

Key to species

1. Body rusty-yellow, on each elytron six black spots (2, 2, 2). Length 3.5–4.7 mm. Distributed in E Siberia, Russian Far East and Mongolia. Here probably also *sophiae* AN, 1998 (no significant differences) described from Korea ***duodecimpunctata*** (MOTSCHULSKY, 1860).
- Body rusty-yellow, on each elytron 4 or 5 spots (2, 2, 1 or 1, 2, 1). Length about 5.5 mm. Forms two subspecies: On each elytron 5 black spots, fore tibiae strongly, peculiarly broadened, general view as in plate XCVI, **phot. 862**. described from S Tadjikistan (nominotypical subspecies); on each elytron four black spots, fore tibiae moderately strongly broadened, described from E Uzbekistan (subsp. *arnoldi* LOPATIN, 1996) ***kondarensis*** LOPATIN, 1956.

Genus *Philopona* WEISE, 1903

The genus *Philopona* comprises over 40 species distributed on Eastern hemisphere. In discussed area one species only.

Pronotum with broadly flattened lateral sides, elytra with oblique impression behind humeral calli. Body testaceous to rusty-brownish. On pronotum median spot, on each elytron a longitudinal stipe blackish. General view as in plate XCVI, **phot. 863**. Length 3.6–4.4 mm (*japonica* BALY, 1874, *signata* DUVTIER, 1892). Variation: very dark melanotic specimens (ab. *nigra* CHŪJŌ, 1951). Distributed broadly in China, E Siberia, Russian Far East, Korea and Japan (Hokkaido, Honshu, Kyushu, Shikoku) ***vibex*** (ERICHSON, 1834).

Genus *Phygasia* DEJEAN, 1836

Aldrisma FAIRMAIRE, 1888, *Scallodera* HAROLD, 1877

To the genus *Phygasia* belong more than 30 species distributed in Eastern hemisphere. In discussed area five species.

Key to species

1. Species from E Palaearctic region. Head, pronotum, sternum, legs and antennae dark, brown, grey-brown, pitchy or black. Elytra and abdomen much paler, rusty-yellowish to reddish brown and chestnut. General view as in plate XCVI, **phot. 864**. Length 4.0–6.0 mm (= *externecostata* FAIRMAIRE, 1888). Distributed in eastern part of China from Yunnan to Kirin, Russian Far East, Korea and Japan (Honshu, Kyushu, Shikoku) ***fulvipennis*** BALY, 1874.
- Species from other areas **2**.
2. Species from NW Africa **3**.
- Species from Arabian Peninsula **4**.
3. Body generally rusty-testaceous. Pronotum about 2 × broader than long. Length about 4.0 mm. Described from S Algeria (Hoggar) ***cobosi*** MADAR ET MADAR, 1965.

- Similar to *cobosi* (thesis 3), but larger. Pronotum less than 2 × broader than long. Length over 5.0 mm. Described from S Algeria (Oued Ahetes, NW of Hoggar) *heikertingeri* PEYERIMHOFF, 1929.
- 4. Body generally yellowish-testaceous. Antennomere 3 distinctly longer than 4. Epipleura flat. Length 4.5–5.0 mm. African species, reported also from Oman *africana* CHAPUIS, 1879.
- Body generally yellowish-testaceous. Antennomere 3 subequal to 4. Epipleura concave. Length about 5.0 mm. African species, reported also from Yemen *sulphuripennis* JACOBY, 1899.

Genus *Phyllotreta* CHEVROLAT, 1836

Literature: HEIKERTINGER 1941.

Orchestris KIRBY, 1837, *Tanygaster* BLATCHLEY, 1921

Key to auxiliary groups

- 1. E Palaearctic species auxiliary **group A** (p. 936).
- W Palaearctic species **2**.
- 2. Upper side with yellow or reddish pattern, sometimes elytra entirely or almost entirely yellow auxiliary **group B** (p. 939).
- Upper side uniformly black or black with metallic reflex **3**.
- 3. Central part of frons punctured auxiliary **group C** (p. 953).
- Central part of frons impunctate auxiliary **group D** (p. 965).

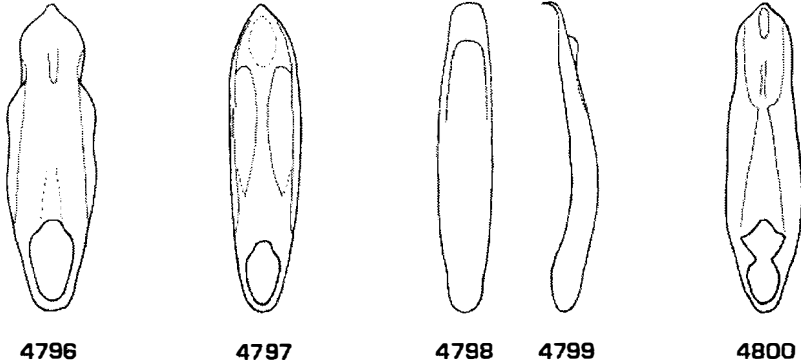
Auxiliary group A

East-Palaearctic species.

Key to species

- 1. Upper side entirely black **2**.
- Upper side with pale pattern **6**.
- 2. Aedeagus (fig. 4796) constricted behind apex, apical part rounded with distinct lamella. Externally similar to *praticola* (auxiliary group D, thesis 11). Length 2.0 mm. Described from Mongolia based on one male only *ubsumurica* MEDVEDEV, 1980.
- Aedeagus differently shaped **3**.
- 3. Aedeagus (fig. 4797) on underside with strong ridge, on dorsal side without wrinkles. Nasal ridge relatively broad and flat. Length 1.7–2.0 mm. Distributed in Mongolia, Transbaicalia, NE China and Russian Far East *misella* JACOBSON, 1901.
- Aedeagus differently shaped **4**.
- 4. Legs black, at most knees and tarsi brown. Antennomere 1 blackish at least on dorsal side. Here *atra* (auxiliary group C, thesis 24), a W Palaearctic species, reaching also to Mongolia and NW China.
- Legs reddish brown, femora blackish **5**.

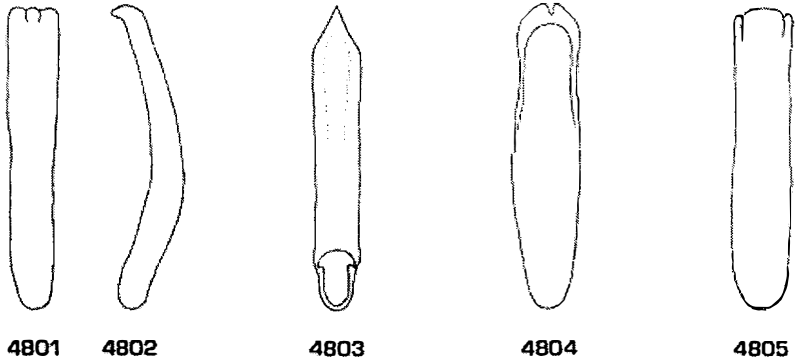
5. Apex of aedeagus (figs **4798**, **4799**) in dorsal view obtuse, in lateral view strongly curved ventrally. Antennomeres 1–3 reddish. Length 2.0–2.2 mm. Distributed in Russian Far East and Japan (Hokkaido) **ezoensis** KIMOTO, 1993.
- Apex of aedeagus (fig. **4800**) in dorsal view triangularly sharpened, tubular part broad, slightly narrowed before midlength; in lateral view apex very gently bent ventrally. Wingless, humeral calli absent. Length about 2.0 mm (= *brachyptera* MEDVEDEV, 1977). Described from Mongolia **tomboi** LOPATIN, 1967.



Figs 4796–4800. Aedeagus in ventral or dorsal and in lateral view (4798, 4799 after KIMOTO and TAKIZAWA 1994, remaining after MEDVEDEV 1982, 1950): 4796 – *Phyllotreta absunurica*; 4797 – *P. misella*; 4798, 4799 – *P. ezoensis*; 4800 – *P. tomboi*.

6. Ground of upper side bronzy or bronzy-green, on each elytron two rusty-grey spots: in apical part and at base between scutellum and humeral callus. Basal spot sometimes strongly reduced. Aedeagus as in *pallidipennis* (auxiliary group B, thesis 57). Length 1.8–2.2 mm. Described from Mongolia **mongolica** MEDVEDEV, 1980.
- On each elytron one pale stripe 7.
7. Yellowish stripes on elytra not sharply limited. Elytra largely yellowish testaceous, lateral, apical and sutural margins narrowly darkened. Legs entirely pale, antennae black with three basal antennomeres reddish. Head, pronotum, scutellum and underside black. Aedeagus as in figs **4801**, **4802**, Resembles European *armoraciae* (auxiliary group B, thesis 31), but much smaller. Length about 2.0 mm. Described from Japan (Hokkaido) **brevistriata** KIMOTO, 1966.
- Yellowish stripes on elytra clearly limited 8.
8. Yellowish stripe of elytron rather narrow and generally straight 9.
- Yellowish stripe of elytron curved or laterally sinuate 14.
9. Apex of aedeagus incised 12.
- Apex of aedeagus not incised 10.
10. Black sutural stripe gradually narrowed anteriorly and posteriorly, yellow stripe shallowly sinuate on outer margin 11.
- Black sutural stripe rather abruptly narrowed anteriorly and/or posteriorly 13.

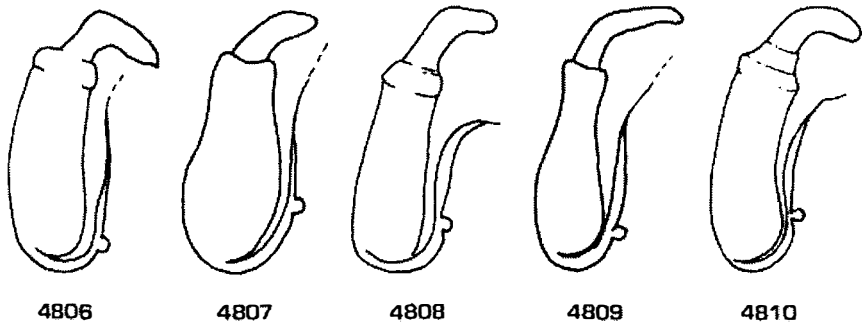
11. Larger. Puncturation of pronotum strong and deep, upper side weakly shining. Aedeagus not studied. Length about 2.7 mm. Described from Sakhalin based on one female only **sachalinensis** MEDVEDEV, 1973.
- . Smaller. Aedeagus (fig. **4803**) almost arrow-like sharpened. Length 2.0–2.2 mm. Distributed in Mongolia, Transbaicalia, Russian Far East, Korea and E China from Shantung to Heilungkiang **humilis** WEISE, 1887.



Figs 4801-4805. Aedeagus in ventral or dorsal and in lateral view (4803 after MEDVEDEV 1982, remaining after KIMOTO and TAKIZAWA 1994): 4801, 4802 – *Phyllotreta brevistriata*; 4803 – *P. humilis*; 4804 – *P. rectilineata*; 4805 – *P. shirahatai*.

12. Larger. Legs relatively dark, tibiae and tarsi brown. Antennomeres 1–3 pale, sometimes darkened. Head densely and often somewhat coarsely punctured. Antennomere 5 in male not thickened. Aedeagus as in fig. **4804**. Length 2.2–2.6 mm (= *chinensis* HEIKERTINGER, 1941). Distributed in Indochina, great part of China, Japan (Kyushu) and Korea **rectilineata** CHEN, 1939.
- . Smaller. Yellowish stripe on elytra in hind part interrupted, forming two longitudinal spots. (fore spot longer). Length 1.9 to 2.1 mm. Aedeagus as in fig. **4805**. By some authors considered as race or form of *rectilineata* (thesis 12). Described from Japan (Honshu) **shirahatai** MADAR, 1959.
13. Black sutural stripe narrowed anteriorly and posteriorly, yellow stripe shallowly sinuate on outer margin. Here two E Palearctic races of *erysimi*, *e. baicalica* HEIKERTINGER, 1941 and *kutscheraei* HEIKERTINGER, 1941. See auxiliary group (auxiliary group B, thesis 52).
- . Black sutural stripe narrowed anteriorly, yellow stripe deeply sinuate on outer margin. Here E Palearctic populations of *striolata*, see auxiliary group B, thesis 25.
14. Yellowish stripe wavy. Circumpolar species, see *zimmermanni* (auxiliary group B, thesis 21), distributed also in E Siberia and Russian Far East.
- . Yellowish stripe not wavy, but on outer margin deeply sinuate. On elytra punctures arranged in confused longitudinal rows. Two very similar to each other, possibly conspecific, insufficiently studied species (aedeagi unknown) **15**.
15. Legs entirely pale except for slightly darkened apices of hind femora. Black sutural stripe broad, parallel, in apical part strongly, abruptly narrowed. Aedeagus not studied. Length 2.0 mm. Described from Japan (Honshu) **chujoe** MADAR, 1959.

- Legs pale except blackish hind femora and partly darkened remaining femora. External characters and pattern on elytra as in *chujoe* (thesis 15). Aedeagus not studied. Length 2.3–2.5 mm. Described from Russian Far East, reported also from Korea *koltzei* WEISE, 1887.



Figs 4806–4810. Spermatheca (4806 after WARCHALOWSKI 1995; 4807 after DOGUET 1984; remaining after DOGUET 1994): 4806 – *Phyllotreta rugifrons*; 4807 – *P. basalis*; 4808 – *P. exclamatoris*; 4809 – *P. tetrastigma*; 4810 – *P. ochripes*.

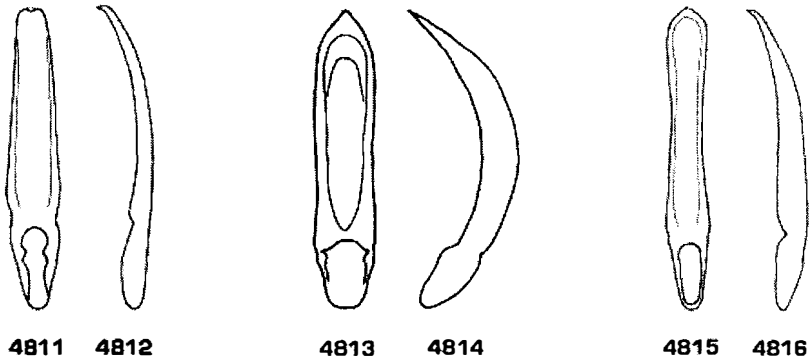
Auxiliary group B

Upper side with yellowish or reddish pattern.

Key to species

1. Body very large (3.0–4.0 mm). Anterior part of head vertically deflexed. Upper side dark green. Anterior part of head, fore legs and hind tibiae yellowish. African species, reported also from Yemen. After some authors belonging to another genus (*Trachyaphthona*, p. 1023).
 - Not as above, body smaller **2.**
2. Elytral epipleura and lateral margins of elytra pale. Body entirely pale brown, head slightly and frons distinctly darker. Anterior border of pronotum and broad, weakly delimited transverse band on elytra as well as humeral calli somewhat darker brownish. Elytra shortened, pygidium free. Aedeagus as in figs **4811**, **4812**. Length 1.5–1.8 mm. General aspect and body size intermediate between *ustulata* (thesis 4) and *parfentjevi* (antithesis 13). Described from Uzbekistan *mollis* KONSTANTINOV, 1992.
 - Elytral epipleura and at least marginal ridge of elytra black **3.**
3. Elytra yellowish with black sutural stripe, on each elytron two black spots (humeral and postmedian). Frontal calli flat and feebly limited. General view as in plate XCVII, **phot. 871**. Aedeagus as in figs **4813**, **4814**, spermatheca as in fig. **4806**. Length 1.6–2.0 mm (= *bimaculata* ALLARD, 1859, *biguttata* FOU DRAS, 1859). Distributed in Mediterranean area from Morocco and Portugal to Syria and Israel *rugifrons* KÜSTER, 1849.

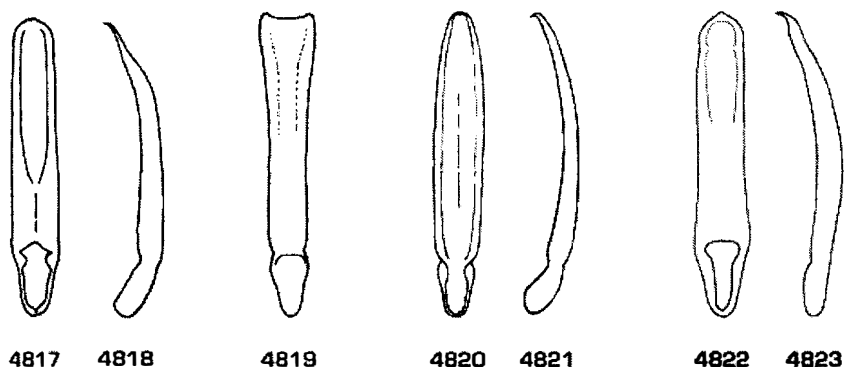
- Elytra pale, pale with dark sutural stripe or pale with darker sutural stripe and blurred transverse stripe, but without black spots 4
- 4. Length under 1.5 mm. Elytra yellowish, sutural stripe pale brownish, narrow. Aedeagus as in figs **4815**, **4816**. Forms one subspecies: body larger (1.5–2.0 mm) and slightly more elongate; on elytra brownish somewhat blurred pattern consisting of shortened sutural stripe, transverse median band and darkenings of apical border (subsp. *iraqensis* GRUEV, 1998, possibly a distinct species). Nominotypical subspecies distributed in Kazakhstan, Uzbekistan and Tadzhikistan, subsp. *iraqensis* known from Iraq only ***ustulata*** LOPATIN, 1961.
- Length over 1.5 mm, usually 1.8–2.0 mm. Here also some forms of *lativittata* (thesis 50) and *pallidipennis* (antithesis 57) as well as *ustulata iraqensis* (thesis 4).



Figs 4811–4816. Aedeagus in dorsal and lateral view (4813, 4814 after WARCHAŁOWSKI, 1995; remaining after KONSTANTINOV 1992): 4811, 4812 – *Phyllotreta flavoguttata*; 4813, 4814 – *P. exclamatoris*; 4815, 4816 – *P. tetrastigma*.

- 5. Elytra dark, each with 1 or 2 pale spots 6.
- Elytra dark, each with a longitudinal pale stripe **21**.
- 6. On each elytron one spot only, situated on anterior part 7.
- On each elytron 2 pale spots 9.
- 7. Body very small, rather narrow, subparallel, flattened. Upper side black with feeble bronzy reflex, pale spot short and broad. Underside black. Tarsi, tibiae and apical part of femora pale. Aedeagus as in figs **4817**, **4818**, spermatheca as in fig. **4807**. Length about 1.5 mm. Halophil. Distributed in northern Algeria ***basalis*** BRISOUT, 1884.
- Body larger, rather oval, convex. Pronotum pure black. Elytral spot oblong 8.
- 8. Species described from Spain, in many details resembling to *flavoguttata* (antithesis 15). Aedeagus not studied. Elytral spot fairly long (about 1/3 length of elytra). Length 1.6–2.0 mm ***hispanica*** PIC, 1903.
- Species known from Croatia, Slovakia and southern Poland. Elytral spot shorter (about 1/5 length of elytra). Aedeagus as in fig. **4819**. Antennae as in figs **4832**, **4833**. Length 1.8–2.0 mm. Variation: pale spot absent, elytra unicolorous (ab. *extincta* ROUBAL, 1922) ***hochetlingeri*** FLEISCHER, 1917.

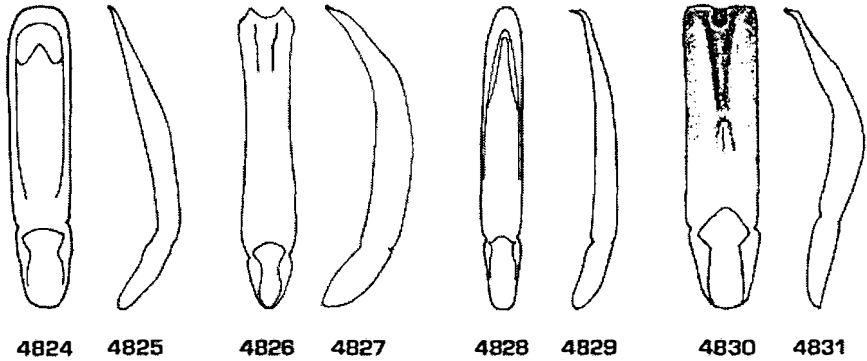
9. Head and pronotum with distinct metallic reflex **10.**
 -. Head and pronotum without metallic reflex, pure black **13.**



Figs 4817-4823. Aedeagus in dorsal and lateral view (4819 after HEIKERTINGER 1941; 4822, 4823 after KONSTANTINOV 1992; remaining after DOGUET 1984): 4817, 4818 – *Phyllotreta basal*s; 4819 – *P. hochetlingeri*; 4820, 4821 – *P. buettikeri*; 4822, 4823 – *P. parfentjevi*.

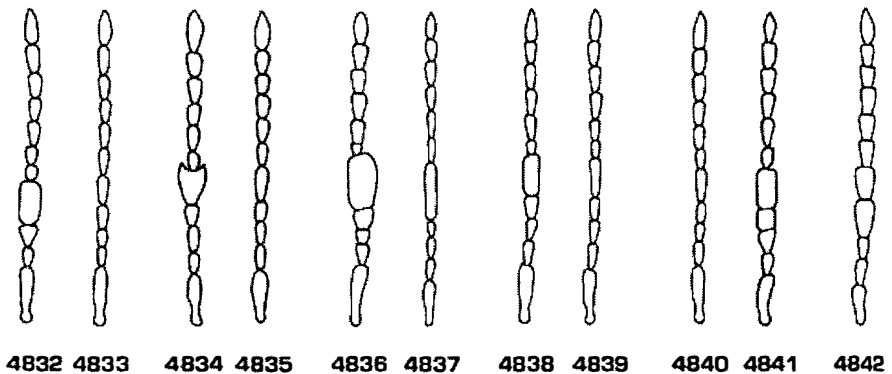
10. Body length over 2.5 mm. Antennomeres 4 and 5 in male thickened, in both sexes of equal length. Here *nemorum* ab. *kuennemanni* (thesis 46).
 -. Body length under 2.5 mm. In both sexes antennomere 5 distinctly or considerably longer than 4 **11.**
11. Hind tarsi very slender, as long as corresponding tibia. Ground colour of upper side reddish brown, on pronotum greenish metallic reflex, on each elytron two great, pale, blurred spot. Underside of thorax yellow, abdomen black. Aedeagus as in figs **4820**, **4821**. Length 1.5 mm. Described from Saudi Arabia based on 2 male specimens, reported also from Algerian Sahara ***buettikeri*** DOGUET, 1979.
 -. Hind tarsi normal, underside of thorax dark **12.**
12. In male antennomere 5 about 2 × longer than 4, not or feebly thickened. Pronotum sometimes pitchy or dark red with greenish metallic reflex. Here some forms of *lativittata* (thesis 50).
 -. In male antennomere 5 about 3 × longer than 4, distinctly thickened. Pronotum never pitchy or dark red. Here some forms of *variipennis* (thesis 56).
13. Yellowish spots on elytra distinctly limited **14.**
 -. On each elytron two yellowish spots, indistinctly separated by blurred transverse stripe in midlength. Elytra shortened, pygidium free. Aedeagus as in figs **4822**, **4823**. Length 2.0–2.2 mm. Described from Kazakhstan
 ***parfentjevi*** SHAPIRO, 1958.
14. Anterior spot, usually heart-shaped, approaching to lateral margin of elytron. Some forms of *ochripes* (thesis 24).
 -. Anterior spot separated from lateral margin of elytron by a rather broad black area ...
 **15.**
15. On elytron hind spot oblong, situated obliquely **16.**

- . On elytron hind spot oval or triangularly oval. Head and pronotum pure black, legs pale with darkened femora or entirely dark. In male antennomere 4 feebly and antennomere 5 more strongly thickened. General view as in plate XCVII, **phot. 866**. Aedeagus (figs **4824**, **4825**) short and broad. Length 1.8–2.2 mm. Distributed in Greece and Aegean Islands, reported also from Israel
*flavoguttata* KUTSCHERA, 1860.



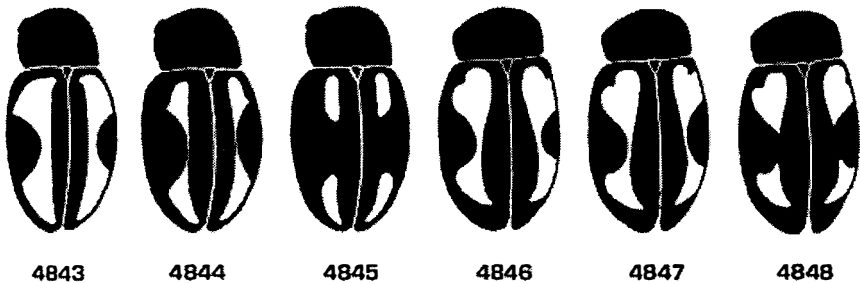
Figs 4824-4831. Aedeagus in dorsal and lateral view (4830, 4831 after KONSTANTINOV 1992, remaining after WARCHAŁOWSKI 1995): 4824, 4825 – *Phyllotreta flavoguttata*; 4826, 4827 – *P. exclamationis*; 4828, 4829 – *P. tetrastigma*; 4830, 4831 – *P. pseudoexclamationis*.

16. On elytron anterior spot obliquely heart-shaped. Here forms of *striolata* (thesis 25).
 -. On elytron anterior spot not heart-shaped 17.



Figs 4832-4842. Antennae of male and female (after WARCHAŁOWSKI 1995): 4832, 4833 – *Phyllotreta hochetlingeri*; 4834, 4835 – *P. exclamstionis*; 4836, 4837 – *P. zimmermanni*; 4838, 4839 – *P. ochripes*; 4840, 4841 – *P. striolata*; 4842 – *P. vilis*.

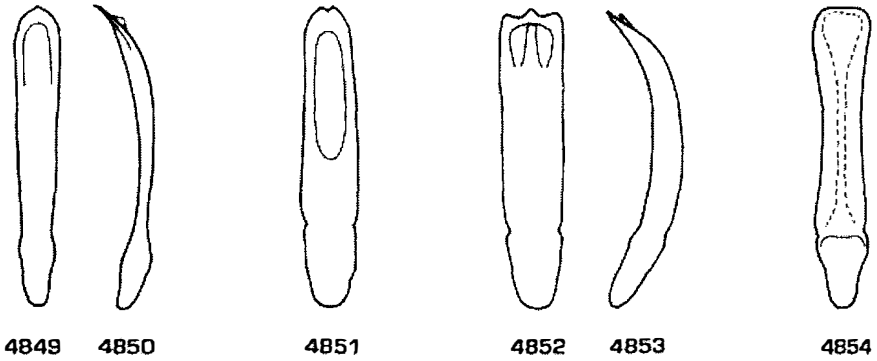
17. In male antennomere 5 strongly thickened, 2 × longer than antennomere 4, usually entirely dark, body length always under 2.0 mm. Body oval, convex, upper side finely punctate. Puncturation of elytra dense, in particular at basis. Upper side black, on each elytron two oblong spots. Aedeagus as in figs **4826**, **4827**, spermatheca as in fig. **4808**, antennae as in figs **4834**, **4835**. Length 1.5–1.9 mm (= *brassicae* OLIVIER, 1789, *quadripustulata* PAYKULL, 1799). Variations: on each elytron both spots fused forming a longitudinal stripe (ab. *vibex* WEISE, 1888). Other variations as in figs **4843–4845**. Transpalaeartic species, distributed from Pyrenees and Ireland to Amur basin ***exclamationis*** (THUNBERG, 1784).
- . In male antennomere 5 not longer or thicker as antennomere 4 **18**.
18. Body length 2.5–3.2 mm. Inner margin of anterior spot run obliquely to suture. Antennomeres 1–3 usually pale. Ground colour of upper side pure black, surface strongly shining. Legs entirely dark or tibiae in basal half yellowish General view as in plate XCVIII, **phot. 874**. Aedeagus as in figs **4828**, **4829**, spermatheca as in fig. **4809**. Variations: spots on elytra separate (typical form = ab. *fenestrata* BEDEL, 1900, fig. **4848**), on each elytron both spots fused forming a longitudinal stripe (ab. *vittipennis* HEIKERTINGER, 1941, figs **4846**, **4847**). Distributed in almost whole Europe and in western and central part of Siberia ***tetrastigma*** (COMOLLI, 1837).
- . Body length 1.7–2.4 mm **19**.
19. Externally, in all details except shape of antennae in male, similar to *exclamationis* thesis 17), but apical margin of aedeagus shallowly rather feebly emarginate and the 5th antennomere in male not thickened. Aedeagus as in figs **4830**, **4831**. Described from Georgia based on one male specimen only ***pseudoexclamationis*** KONSTANTINOV, 1992.
- . Notas above **20**.



Figs 4843-4848. Variations (after WARCHALOWSKI, 1995): 4843-4845 – *P. exclamationis*; 4846-4848 – *P. tetrastigma*.

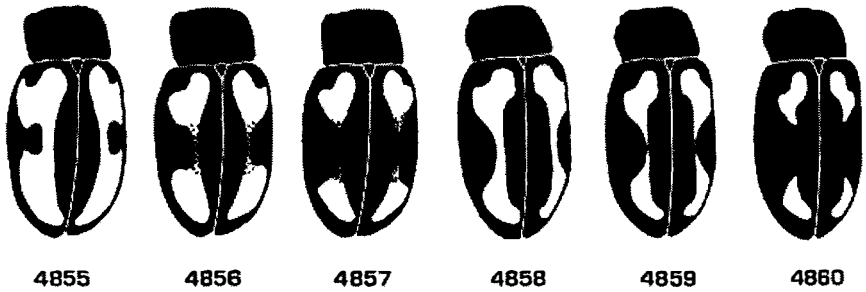
20. Inner margin of anterior spot run almost parallel to suture. Antennomeres 1–3 usually darkened. Here colour forms of *flexuosa* (thesis 28).
- . Inner margin of anterior spot run obliquely to suture. Antennomeres 1–3 pale. Aedeagus as in figs **4849**, **4850**. Length 1.7–2.3 mm. Variation: on each elytron hind spot disappears (ab. *monostigma* KHNZORIAN, 1968). Perhaps a form of *flexuosa* (thesis 28) ***maculosa*** KHNZORIAN, 1968.

21. Black sutural stripe in the middle distinctly narrowed. General view as in plate XCVIII, **phot. 877**. In male antennomere 5 strongly widened and elongate, as long as antennomere 1 (fig. 4836, 4837). Length 2.3–2.8 mm. Circumpolar species, distributed in Fennoscandia, Siberia and Canada; from Eastern Alps over 2000 m known as subspecies *ziegleri* LOHSE, 1980, considered also as distinct species
 *zimmermanni* CROTCH, 1873.
 -. Black sutural stripe in the middle never narrowed 22.



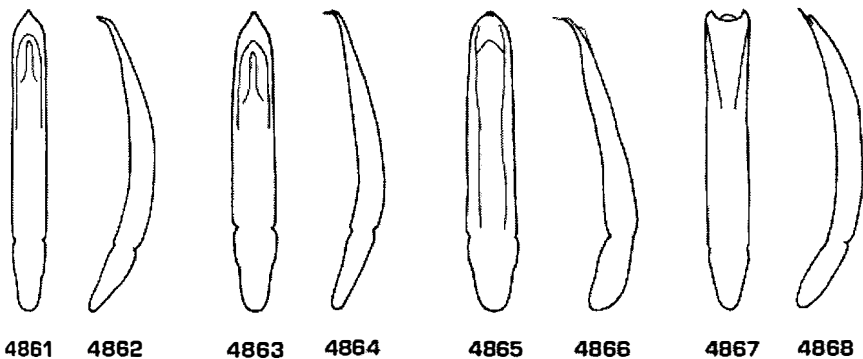
Figs 4849-4854. Aedeagus in dorsal and lateral view (4849, 4850 after IABLOKOFF-KHNZORIAN 1968; 4854 after HEIKERTINGER 1944; remaining after WARCHALOWSKI, 1995): 4849, 4850 - *Phyllotreta maculosa*; 4851 - *P. zimmermanni*; 4852, 4853 - *P. ochripes*; 4854 - *P. reitteri*.

22. External margin of pale stripe distinctly or deeply sinuate 23.
 -. External margin of pale stripe at most feebly sinuate 30.
 23. Legs except hind femora and 3 basal antennomeres entirely pale, tarsi sometimes slightly darkened 25.
 -. Fore and mid legs at least partly darkened 53.



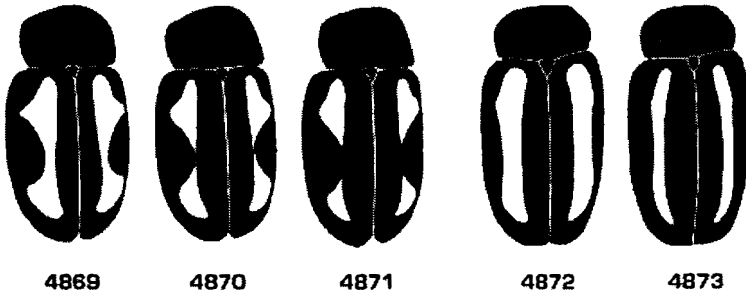
Figs 4855-4860. Variations (after WARCHALOWSKI 1995): 4843-4845 - *P. ochripes*; 4846-4848 - *P. striolata*.

24. Antennomere 5 in female distinctly longer than 4, in male thickened and flattened, strongly longer than 4. Head and pronotum black, without metallic reflex. General view as in plate XCVII, **phot. 867**. Aedeagus as in figs **4852, 4853**, spermatheca as in fig. **4810**, antennae as in figs **4838, 4839**. Length 2.0–2.5 mm (= *excisa* REDTENBACHER, 1849, *caucasica* HAROLD, 1875). Variations (figs **4855–4857**): on each elytron pale stripe divided into 2 spots (ab. *cruciata* WEISE, 1888), pale stripes strongly reduced, elytra almost entirely black with brownish traces of pale pattern (ab. *kerkhoveni* EVERTS, 1919), pale stripes feebly narrowed in their midlength (ab. *burdigalensis* PIC, 1909). Distributed in almost whole Europe, Asia Minor, Caucasian countries, Iran and Siberia to Russian Far East ***ochripes*** (CURTIS, 1837).
- Antennomere 5 in both sexes approximately as long as antennomere 4. Head and pronotum black with distinct greenish-blue metallic reflex. Aedeagus (fig. **2126**) on apex transversely cut with rounded angles, in midlength narrowed. Centralasiatic species, reported also from Crimea ***reitteri*** HEIKERTINGER, 1911.
25. Black sutural stripe anteriorly and posteriorly suddenly narrowed. Ground colour of upper side black. Basal part of antennae, knees and tarsi yellowish or pale brownish. Hind wings and humeral calli well-developed. In male antennomeres 4 and (particularly) 5 thickened (figs **4840, 4841**). Aedeagus as in figs **4861, 4862**, spermatheca as in fig. **4874**. Length 1.8–2.0 mm (= *vittata* auctorum). Variations (figs **4846–4848**): pale stripes very broad (ab. *monticola* WEISE, 1888), on each elytron pale stripe divided into 2 spots (ab. *discedens* WEISE, 1888). Known pest of cultivated *Brassicaceae*. Distributed in almost whole Palaearctic Region from Portugal and the British Isles to Japan incl. Ryukyu, in Indomalayan subcontinent and Sumatra, introduced in S Africa and N America ***striolata*** (FABRICIUS, 1803).
- Black sutural stripe gradually or only apically narrowed **26**.
26. On elytra black marginal stripe in hind half suddenly narrowed. Length 1.8–2.0 mm. Male unknown. Insufficiently examined species, described based on two female only. Recorded in north-western Spain, possibly conspecific with *parallela* (thesis 35) ***asturica*** HEIKERTINGER, 1941.
- Black marginal stripe of elytra not suddenly narrowed **27**.



Figs 4861-4868. Aedeagus in dorsal and lateral view (after WARCHAŁOWSKI 1995): 4861, 4862 – *Phyllotreta striolata*; 4863, 4864 – *P. flexuosa*; 4865, 4866 – *P. dilatata*; 4867, 4868 – *P. armoraciae*.

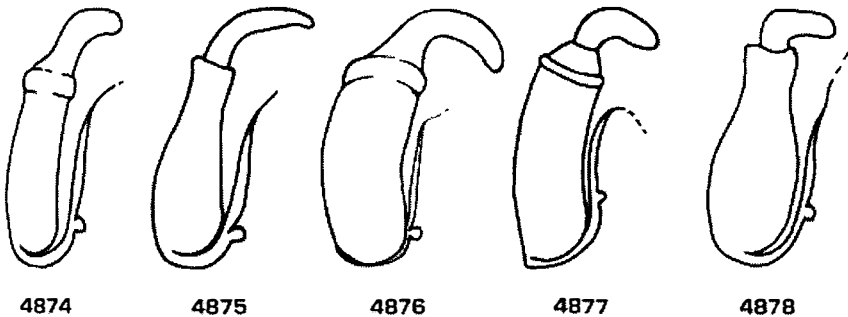
27. Length of body under 1.8 mm. Here *exclamationis* ab. *vibex* (thesis 17).
 –. Length of body over 2.0 mm 28.
28. Sutural stripe in anterior half parallel or almost parallel. Externally similar to *tetrastigma* (thesis 15) and *dilatata*, but smaller. Aedeagus as in figs 4863, 4864, spermatheca as in *dilatata* (thesis 26). Length 2.0–2.3 mm (male) to 2.0–2.5 mm (female) (= *fallax* ALLARD, 1860). Variations (figs 4869–4871): on each elytron one pale longitudinal stripe (typical form), on each elytron two pale spots (ab. *fenestrata* WEISE, 1888). Transpalaeartic species, distributed from Ireland and France to Pacific coast of Eastern Siberia *flexuosa* (ILLIGER, 1794).
 –. Sutural stripe in anterior half distinctly narrowed 29.
29. Humeral callus surrounded posteriorly by pale elytral stripe. Very similar to *tetrastigma* (thesis 15), but on average smaller, pronotum narrower, basal antennomeres darkened. Aedeagus as in figs 4865, 4866, spermatheca as in fig. 4875. Length 2.7–3.1 mm. Distributed in western and central part of Europe, Ukraine and Asiatic Russia *dilatata* THOMSON, 1866.
 –. Humeral callus not surrounded by pale elytral stripe. Here *tetrastigma* ab. *vittipennis* (thesis 18).
30. Humeral callus entirely or almost entirely pale 31.
 –. Humeral callus at least partly covered by black colour 33.
31. Body length over 2.5 mm. Ground colour of elytra (black) largely reduced to narrow marginal and sutural stripe. General view as in plate XCVII, **phot. 865**. Pronotum usually pure black, sometimes with very feeble bronzy reflex. Tarsi, tibiae and apex of fore and mid femora pale. Aedeagus as in figs 4867, 4868, spermatheca as in fig. 4876. Length 2.6–3.5 mm. Distributed from E France and S Sweden to E Siberia, introduced also to N America *armoraciae* (KOCH, 1803).
 –. Body length under 2.3 mm 32.



Figs 4869-4873. Variations (after WARCHAŁOWSKI 1995): 4869- 4871 – *P. flexuosa*; 4872, 4873 – *P. vilis*.

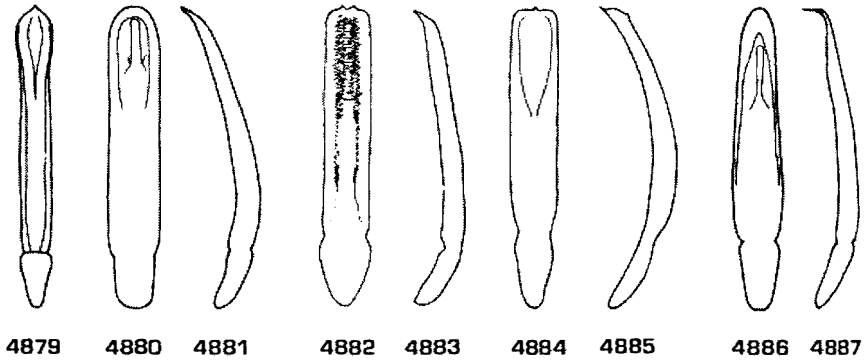
32. Body length normally over 2.0 mm. General view as in plate XCVII, **phot. 872**. Apical margin of elytra narrowly darkened. Head and pronotum black with greenish metallic reflex. Black sutural stripe broader than in *armoraciae*, apically and behind scutellum narrowed. Aedeagus as in fig. 4879, spermatheca as in fig. 4876. Length 2.0–2.3 mm. Distributed in Asia Minor, southern Russia, Caucasian countries and Iran *sisymbrii* WEISE, 1888.

- . Body length normally under 2.0 mm. Apical margin of elytra broadly darkened. Aedeagus differently shaped. Here some forms of *variipennis* (thesis 56) and *pallidipennis* (antithesis 57).
- 33. Black marginal stripe of elytra at humeral callus very narrow, black colour reaching almost to lateral margin of elytron **34.**
- . Black marginal stripe of elytra at humeral callus at least as broad as the breadth of first antennomere **40.**
- 34. Head and pronotum pure black. Western Mediterranean species **35.**
- . Head and pronotum black with greenish or bronzy metallic reflex **36.**
- 35. Black marginal stripe of elytron not broadened in its midlength. Ground colour of upper side black. General view as in plate XCVII, **phot. 869**. Basal part of antennae, tibiae (usually darkened in mid part) and tarsi yellowish. Elytral stripe very pale. Hind wings and tarsi yellowish. Elytral stripe very pale. Hind wings and humeral calli well-developed. Aedeagus as in figs **4880**, **4881**, spermatheca as in fig. **4877**. Length 1.8–2.3 mm (= *humeralis* FOU DRAS, 1860). Distributed in France (incl. Corsica), Italy (incl. Sardinia and Sicily), Iberian Peninsula and in NW Africa ***parallela*** (BOIELDIEU, 1859).
- . Black marginal stripe of elytron broadened in its midlength, back there suddenly narrowed. See *asturica* (thesis 26).
- 36. Black sutural stripe broadest in hind part **37.**
- . Black sutural stripe in its mid part approximately parallel or present only in basal part. Pale stripes very broad, covering greatest part of elytra **38.**
- 37. Dark parts of upper side usually pitchy or brown, often dark red, yellowish pattern rather feebly contrasting on dark ground and tending to form twogreat, separate spots on each elytron. Aedeagus parallel, its very tip bent dorsally. See *lativittata* (thesis 50).
- . Dark parts of upper side black, contrasting on dark ground. Aedeagus parallel, its very tip bent ventrally. See *variipennis* (thesis 56).
- 38. Sutural stripe entire, reaching to apical part of elytron. See *sisymbrii* (thesis 32).
- . Sutural stripe usually shortened, in anterior part blackish, back there much paler and broader. See *pallidipennis* (antithesis 57).



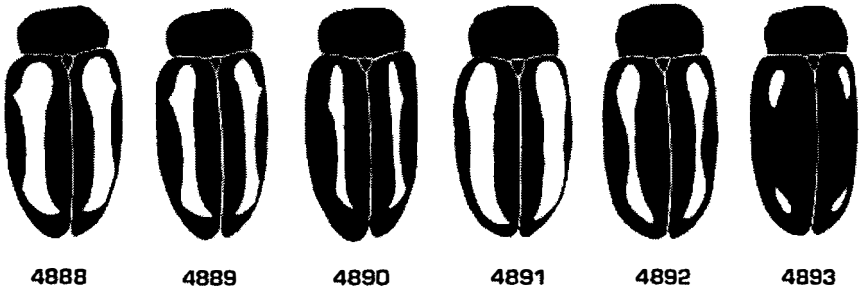
Figs 4874-4878. Spermatheca (4877 after WARCHAŁOWSKI 1995; 4878 after DOGUET 1984; remaining after DOGUET 1994) 4874 - *Phyllotreta striolata*; 4875 - *P. dilatata*; 4876 - *P. armoraciae*; 4877 - *P. parallela*; 4878 - *P. djurdjurenensis*.

- 39. Pale stripe at humeral callus broadly rounded or very slightly sinuate 40.
- . Pale stripe at humeral callus deeply sinuate or angularly incised 51.
- 40. Head and pronotum pure black 41.
- . Head and pronotum black with (usually rather feeble) metallic reflex 46.



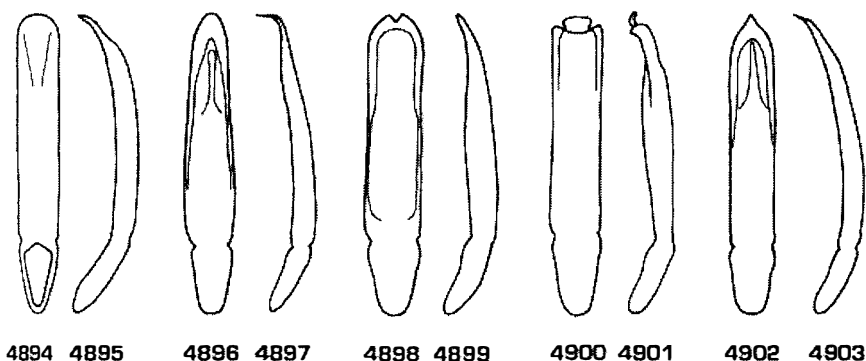
Figs 4879-4887. Aedeagus in dorsal and lateral view (4882, 4883 after DOGUET 1979; 4884, 4885 after DOGUET 1984; remaining after WARCHALOWSKI 1995): 4879 – *Phyllotreta sisymbrii*; 4880, 4881 – *P. paralela*; 4882, 4883 – *P. coiffaiti*; 4884, 4885 – *P. djurdjurenensis*; 4886, 4887 – *P. vilis*.

- 41. Elytra finely, densely and randomly punctate 45.
- . Elytra strongly punctate, here and there tending to form longitudinal rows. Tibiae pale, their apical part usually darkened, sometimes pitchy 42.
- 42. In male antennomere 5 strongly widened and elongate. Colouration of body as in *vilis* (thesis 41). Aedeagus as in figs **4882**, **4883**. Female unknown. Length 1.8 mm. Described from Lebanon, based on one male specimen only *coiffaiti* DOGUET, 1979.
- . In male antennomere 5 not strongly widened and elongate, not or barely greater than antennomere 4 or 6 43.



Figs 4888-4893. Variations (after WARCHALOWSKI 1995): 4888-4890 – *P. undulata*; 4891-4893 – *P. nemorum*.

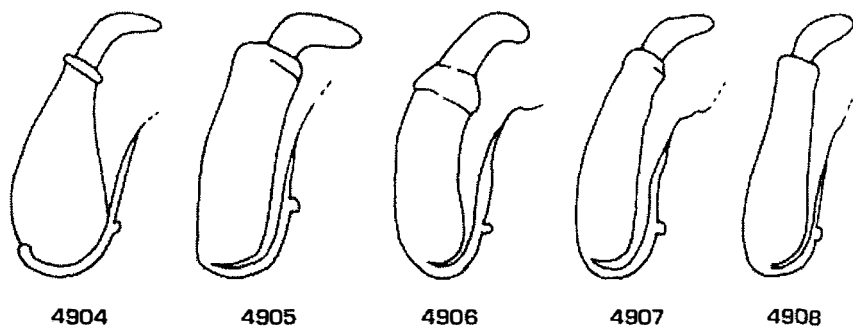
43. Apical part of aedeagus transversely cut with rounded angles and with a little tooth in the middle (figs **4884**, **4885**), spermatheca as in fig. **4878**. Externally similar to *undulata* (thesis 45). Legs blackish with paler knees and tarsi. Length 2.0–2.5 mm. Probably endemic to Djurdjura Mts. in Algeria ***djurdjurensis*** DOGUET, 1977.
- Apical part of aedeagus not transversely cut, rounded, narrowed or sharpened **44.**
44. Tibiae pale or feebly darkened apically. In male antennomeres 4 and 5 slightly but distinctly thickened (fig. **4842**). Aedeagus as in figs **4886**, **4887**. Length 1.6–2.2 mm. Variations: yellowish stripe on elytra not very narrow (typical form, fig. **4872**), yellowish stripe on elytra very narrow (ab. *seidlitzii* WEISE, 1888, fig. **4873**). Distributed in southern Italy, Balkan Peninsula and Asia Minor ***vilis*** WEISE, 1888.
- Externally similar to *vilis* (thesis 41), but apex of aedeagus (figs **4894**, **4895**) very broadly, evenly rounded. Length 1.9–2.0 mm. Distributed in Greece and southern Bulgaria ***pontoaegica*** GRUEV, 1982.



Figs 4894-4903. Aedeagus in dorsal and lateral view (4894, 4895 after GRUEV and TOMOV 1986, remaining after WARCHAŁOWSKI 1995): 4894, 4895 – *Phyllotreta pontoaegica*; 4896, 4897 – *P. undulata*; 4898, 4899 – *P. christinae*; 4900, 4901 – *P. nemorum*; 4902, 4903.

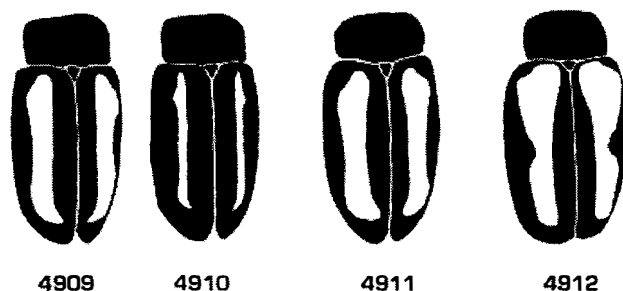
45. Punctuation of frons forms a transversal stripe of stronger points. General view as in plate XCVIII, **phot. 875**. Black sutural stripe on elytra in typical form basally and apically narrowed. Apex of aedeagus (figs **4896**, **4897**) not incised, spermatheca as in fig. **4904**. Length 1.8–2.5 mm (= *australis* BLACKBURN, 1890, *blackburni* BRYANT, 1925). Usual variations as in figs **4888–4890**. Further variations: yellow stripe very narrow, almost straight (ab. *bilineata* WEISE, 1888, fig. **4890**), melanotic form; upper side uniformly black (ab. *nigroconcolor* DÖBERL, 1994) or with a trace of pale pattern in apical part only (ab. *evanescens* DÖBERL, 1994). Known pest of cultivated *Brassicaceae*. Distributed in Palaearctic area, introduced also to America and Australian region ***undulata*** (KUTSCHERA, 1860).
- Punctuation of frons randomly scattered. Black sutural stripe on elytra parallel. Apex of aedeagus (figs **4898**, **4899**) incised. Spermatheca as in fig. **4905**. Distribu-

ted in southern parts of France, Germany and Poland, in northern Italy, Switzerland, Austria, Danube basin, Balkan Peninsula and Romania
 **christinae** HEIKERTINGER, 1941.



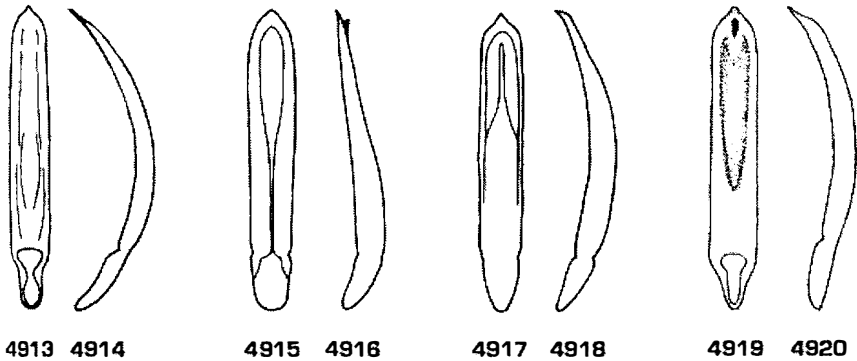
Figs 4904-4908. Spermatheca (4904-4907 after DOGUET 1994; 4908 after DOGUET 1984): 4904 - *Phyllotreta undulata*; 4905 - *P. christinae*; 4906 - *P. nemorum*; 4907 - *P. vittula*, 4908 - *P. tunisea*.

46. Body length over 2.5 mm. Grund colour of upper side (black) with very feeble metallic, usually blue-greenish reflex. Antennomeres 1-3 pale, first antennomere often dorsally darkened. Tibiae uniformly coloured, usually pale yellow amber, sometimes brownish, rarely brown. Puncturation of upper side strong and deep. In male first tarsomere of all tarsi and antennomeres 4+5 distinctly widened. Aedeagus as in figs 4900, 4901, spermatheca as in fig. 4906. Length 2.6-3.1 mm. Variations: pale stripes moderately broad (typical form), pale stripes on elytra very narrow (ab. *theresae* PIC, 1909), pale stripes on elytra strongly reduced, interrupted, each transformed into 2 little spots (ab. *kuennemanni* REITTER, 1905). Known pest of cultivated *Brassicaceae*. Transpalaeartic species, distributed from Ireland and Spain to Korea. introduced also to Australia **nemorum** (LINNAEUS, 1758).
- . Body length under 2.5 mm 47.



Figs 4909-4912. Elytral pattern (after WARCHALOWSKI 1995): 4909, 4910 - *Phyllotreta vittula*; 4911 - *P. erysimi*; 4912 - *P. variipennis*.

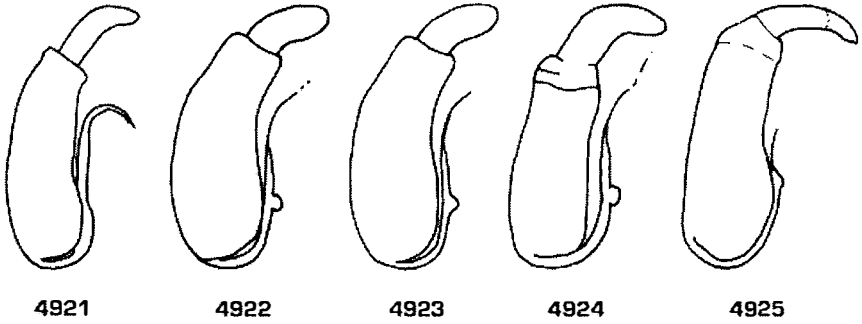
47. Metallic reflex on pronotum barely perceptible. Go to thesis 51.
- Metallic reflex on pronotum feeble but distinct **48.**
48. Black sutural stripe in basal and mid part parallel, in apical part narrowed (figs **4909, 4010**). Length usually under 1.8 mm **49.**
- Black sutural stripe broadest in or behind its midlength **50.**
49. Antennomeres 1-4 usually entirely pale, sometimes first antennomere darkened only. Spermatheca as in fig. **4907**. Legs and antennae formed similarly in both sexes. Length 1.5-1.8 mm (= *rivularis* MOTSCHOUJSKY, 1849, *exigua* HEIKERTINGER, 1911) distributed from Spain and Ireland to Korea, introduced also to USA **vittula** (REDTENBACHER, 1849).
- Antennomeres 1-4 pale, first antennomere dorsally with blurred blackish spot. Aedeagus as in figs **4913, 4914**, spermatheca as in fig. **4908**. Distributed in Tunisia and Algeria. Replaces European-asiatic species *vittula* (thesis 46) in African part of Mediterranean area **tunisea** PIC, 1909.



Figs 4913-4920. Aedeagus in ventral or dorsal and in lateral view (4913, 4914 after DOGUET 1984; 4919, 4920 after KONSTANTINOV 1992; remaining after WARCHALOWSKI 1995): 4913, 4914 - *Phyllotreta tunisea*; 4915, 4916 - *P. lativittata*; 4917, 4918 - *P. erysimi*; 4919, 4920 - *P. tekensis*.

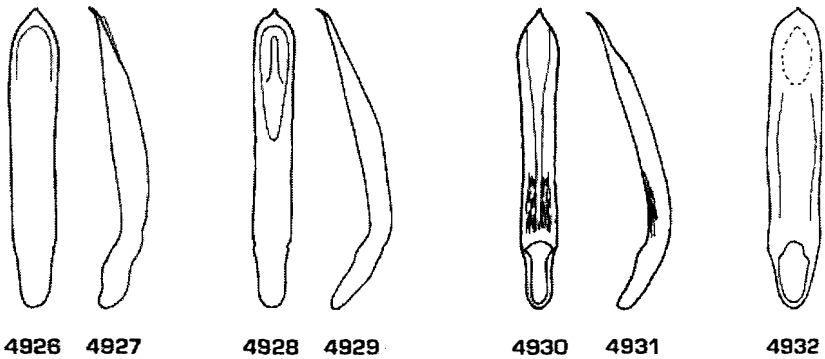
50. Dark parts of upper side usually pitchy or brown, often dark red, yellowish pattern rather feebly contrasting on dark ground and tending to form two great, separate spots on each elytron. Antennae in male as in fig. **4941**. Aedeagus as in figs **4915, 4916**, its very tip bent dorsally. Length 1.8-2.4 mm (= *lativitta* GEMMINGER et HAROLD, 1876, *iris* REITTER, 1891, *rubrithorax* PIC 1900). Variations: pronotum pitchy, pale stripe entire (typical form = ab. *vittipennis* HEIKERTINGER, 1941), pronotum pitchy, pale stripe divided into 2 spots (ab. *guttata* WEISE, 1888 = *bisbinotata* PIC, 1909, *maculipennis* HEIKERTINGER, 1941), pronotum red, pale stripe entire (ab. *orientalis* BALY, 1877, *ininterrupta* PIC, 1909), pronotum red, pale stripe divided into 2 spots (ab. *ruficollis* WEISE, 1888). Distributed in southern Italy, Greece, Asia Minor, Near East, Iran, Afghanistan and Central Asia **lativittata** KUTSCHERA, 1860.
- Dark parts of upper side black, yellowish pattern contrasting on dark ground. Antennae in both sexes shaped similarly **51.**

51. Length 1.8–2.4 mm. Pale elytral stripes usually not very broad (fig. 4911) 52.
 –. Aedeagus as in figs 4926, 4927, spermatheca as in fig. 4921. Length 1.7–2.2 mm.
 Pale elytral stripes very broad. Length 1.7–2.2 mm. Described from Israel
 **cleomica** FURTH, 1979.



Figs 4921–4925. Spermatheca (4921 after FURTH 1979; 4922 and 4924 after WARCHAŁOWSKI 1995; 4923 after DOGUET 1984; 4925 after BIONDI 1994): 4921 – *Phyllotreta cleomica*; 4922 – *P. variipennis*; 4923 – *P. variipennis* var. *aegyptiaca*; 4924 – *P. consobrina*, 4925 – *P. gloriae*.

52. Yellowish stripe not distinctly narrowed in the middle. Aedeagus as in figs 4917, 4918. Forms 5 subspecies (see auxiliary group A, thesis 13). Distributed in Greece, in countries located around the Black Sea, Asia Minor, Near East, Central Asia, Mongolia and Siberia to Pacific coast **erysimi** WEISE, 1900.
 –. Yellowish stripe strongly narrowed in the middle. Aedeagus as in figs 4919, 4920. Described from Turkmenistan **erysimi tekensis** KONSTANTINOV, 1992.



Figs 4926–4932. Aedeagus in dorsal or ventral and in lateral view (4926, 4927 after FURTH 1979; 4928, 4929 after WARCHAŁOWSKI 1995; 4930, 4931 after DOGUET 1984; 4932 after LOPATIN 1977): 4926, 4927 – *Phyllotreta cleomica*; 4928, 4929 – *P. variipennis*; 4930, 4931 – *P. variipennis aegyptiaca*; 4932 – *P. pallidipennis*.

53. Length usually under 1.8 mm. Black sutural stripe in basal and mid part parallel, in apical part narrowed. See *vittula* (thesis 49).
 – Length usually over 1.8 mm. Black sutural stripe in basal part narrowed **54.**
54. Mid part of sutural stripe not parallel, but lanceolate **55.**
 – Mid part of sutural stripe parallel **57.**
55. Sutural stripe broadest in hind part. See *lativittata* (thesis 50).
 – Sutural stripe broadest in mid part or parallel **56.**
56. Smaller. In male antennomere 5 distinctly thickened, about 3 × longer than 4. Pronotum never pitchy or dark red. Elytral pattern as in fig. **4912**. Dark parts of upper side black, contrasting on dark ground. Aedeagus (figs **4928**, **4929**) parallel, its very tip bent ventrally, spermatheca as in fig. **4922**. Length 1.6–2.0 mm (= *varians* FOU DRAS, 1859). Variation: one subspecies was described – externally similar to typical form of *lativittata* (thesis 50), but spermatheca somewhat different (fig. **4923**), hind femora partly black and sutural stripe relatively narrow (subsp. *aegyptiaca* PIC, 1915 from Egypt). Distributed in Cape Verde Islands, Canary Islands, Algeria, Iberian Peninsula, France, Switzerland, Italy, Balkan Peninsula, Asia Minor, Israel and Iran. Subspecies *aegyptiaca* differing also by aedeagus shape (figs **4930**, **4931**) is almost surely a distinct species **variipennis** (BOIELDIEU, 1859).
 – Larger. In male antennomere 5 as long as in *variipennis* (thesis 56), but not distinctly thickened. Humeral callus always pale. Aedeagus as in *variipennis*. Length 2.0–2.2 mm. Described from Turkmenistan. Perhaps an eastern race of *variipennis* **buhseae** IABLOKOFF-KHNZORIAN, 1978.
57. In general view darker. Dark marginal stripe of elytra always well developed, pitchy or black, in the mid part broadened. See *erysimi* (thesis 52).
 – In general view lighter. Marginal stripe of elytra pale brownish, often disappearing. Sutural stripe usually shortened, only in anterior part blackish, back there much paler and broad. General view as in plate XCVII, **phot. 868**. Length 1.5–2.0 mm (= *turcmenica* WEISE, 1900, *schreineri* JACOBSON, 1915). Variation: dark marginal stripe of elytra absent, their surface almost entirely pale with brown basal darkening and shortened sutural stripe (ab. *dilutipennis* REITTER, 1891). Aedeagus as in fig. **4932**. Distributed in eastern Ukraine, southern part of European Russia, Turkey, Caucasian countries, Central Asia, Mongolia and western China **pallidipennis** REITTER, 1891.

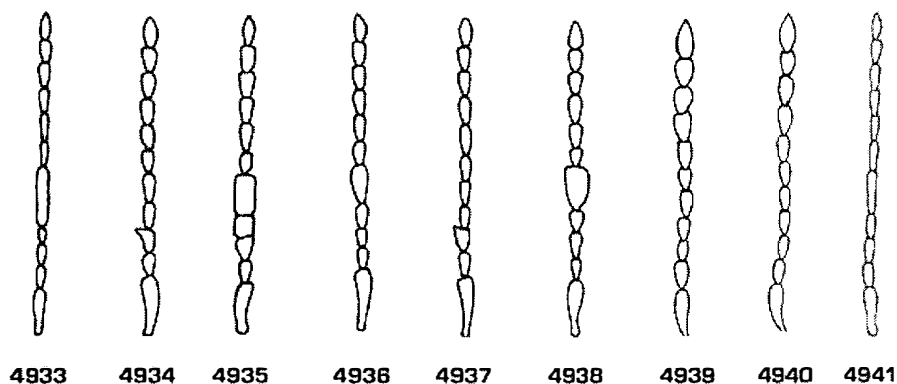
Auxiliary group C

Upper side unicolorous black or metallic, central part of frons punctured.

Key to species

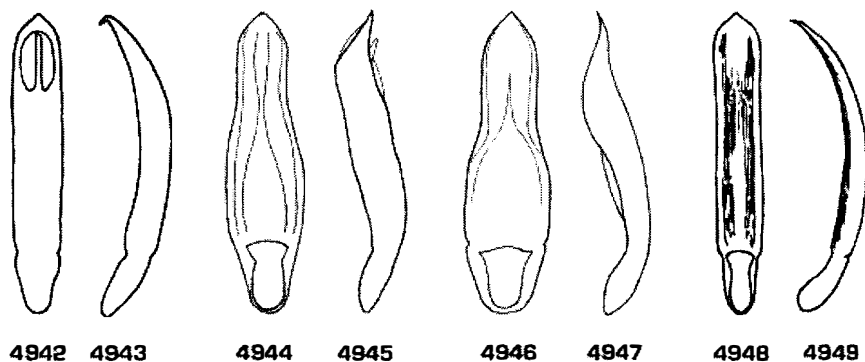
1. Species from Arabian Peninsula **2.**
- Species from other areas **3.**
2. Upper side dark brown with slight metallic reflex. Yellowish stripe on elytra very broad, covering whole surface of elytra except for dark narrow sutural and lateral atriipes. Antennae yellowish, at apex darkened, legs yellowish with dark hind femora. Length 2.0 mm. Feebly studied African species, reported also from Yemen **tenuimarginata** JACOBY, 1898.

- Body black except for antennomeres 2-3 and knees, being brown. Length 1.9-2.1 mm (= *usambarica* WEISE, 1903). African species reported also from Arabian Peninsula ***mashoana*** JACOBY, 1897.
- 3. Upper side pure black without distinct metallic reflex 4.
- Upper side black with distinct metallic reflex or shine 49.



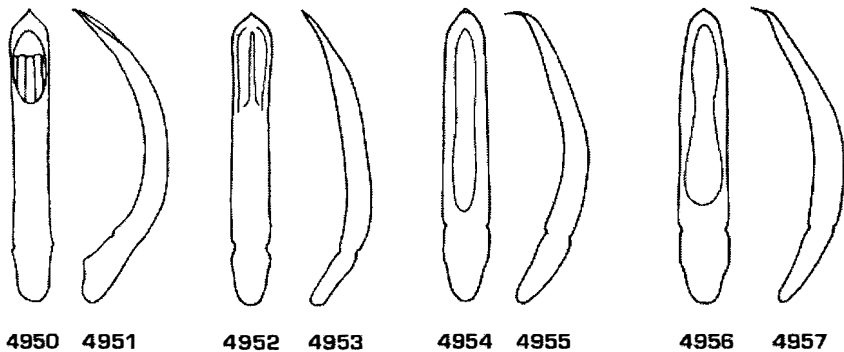
Figs 4933-4941. Antennae (4940 of female, remaining of male, after WARCHAŁOWSKI 1995): 4933 - *Phyllotreta variipennis*, 4934 - *P. wiseana*; 4935 - *P. consobrina*; 4936 - *P. fallaciosa*; 4937 - *P. foudrasi*; 4938 - *P. crassicornis*; 4939, 4940 - *P. balcanica*; 4941 - *P. latevittata*.

- 4. Antennae entirely black 5.
- Antennae partly red 12.
- 5. In male antennomere 5 not broader than antennomere 1 6.
- In male antennomere 5 much broader than antennomere 1 9.



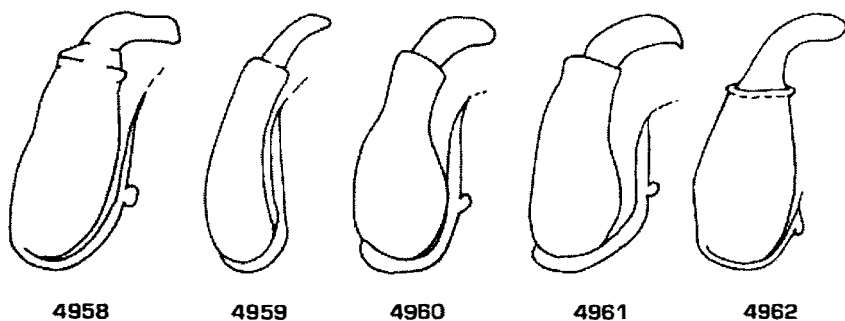
Figs 4942-4949. Aedeagus in dorsal or ventral and in lateral view (4944-4949 after KONSTANTINOV and LOPATIN 1992, remaining after WARCHAŁOWSKI 1995): 4942, 4943 - *Phyllotreta wiseana*; 4944, 4945 - *P. lubischevi*; 4946, 4947 - *P. annae*; 4948, 4949 - *P. consobrina*.

6. In male antennomere 3 with a tooth-like process (fig. 4934). Upper side pure black. Species distributed in southern Russia, southern Ukraine, Caucasian countries, Iran and Central Asia. Aedeagus as in figs 4942, 4943. Length 1.5–1.8 mm (= *weisei* LOPATIN, 1960) *weiseana* JACOBSON, 1901.
- In male antennomere 3 without tooth-like process 7.
7. In male antennomere 5 elongate and thickened. Here some forms of *fallaciosa* (anthesis 11) with entirely black antennae.
- In male antennomere 5 not modified. Two species externally similar to *weiseana* (thesis 6) 8.
8. Whole body, legs and antennae entirely black without metallic reflex. Frons with sparse deep punctures near eyes, vertex smooth and shining. Apex of elytron rounded. Aedeagus as in figs 4944, 4945. Length about 2.0 mm. Described from Kirghyzstan *lubischevi* LOPATIN, 1992.
- Body black with weak metallic reflex. Frons broadly distinctly punctate. Antennomeres 2 and 3, apices of tibiae and raesi light brown. Apex of elytron with acute sutural angles. Aedeagus as in figs 4946, 4947. Length about 2.1 mm. Described from Kazakhstan *annae* KONSTANTINOV, 1992.
9. In male antennomeres 4 and 5 grown together into one cylindrical formation (fig. 4935). Upper side black, usually with rather distinct bluish or greenish reflex. Aedeagus as in figs 4948, 4949, spermatheca as in fig. 4924. Length 1.8–2.4 mm (= *dispar* NEWMAN, 1846, *hintoni* DONISTHORPE, 1944). Species distributed in W Europa and in western part of Mediterranean area, from Cape Verde Islands, Madeira and Great Britain to Tunisia, northern Italy and Croatia *consobrina* (CURTIS, 1837).
- In male antennomeres 4 and 5 not grown together 10.
10. In male antennomere 5 strongly widened and flattened, suboval. General view as in plate XCVII, phot. 873. Antennomere 1 as long as antennomeres 2+3+4 together. Upper side black. Hind wings and humeral calli well-developed. Upper side black. Aedeagus not studied. Length about 2.0 mm. Distributed in Egypt and Near East
..... *springeri* WITTMER, 1936.
- In male antennomere 5 thickened in apical part, but not particularly wide and flat
..... 11.



Figs 4950-4957. Aedeagus in dorsal or ventral and in lateral view (4950, 4951 after BIONDI 1994, remaining after WARCHALOWSKI 1995): 4950, 4951 - *Phyllotreta gloriae*; 4952, 4953 - *P. fallaciosa*; 4954, 4955 - *P. diademata*; 4956, 4957 - *P. astrachanica*.

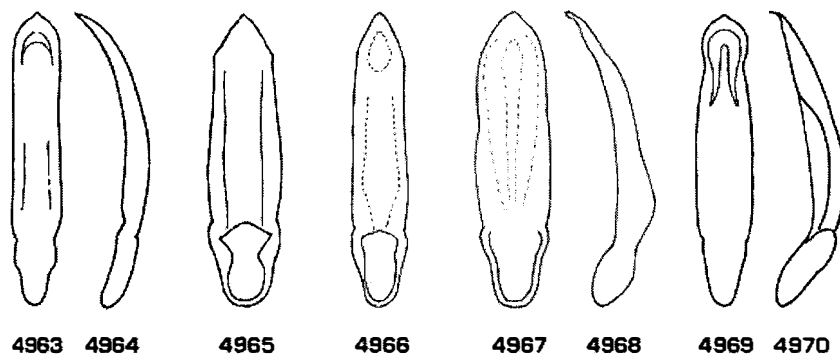
11. In male antennomere 5 rather robust, approximately elongate-triangular, broadest at apex. Upper side black with feeble greenish reflex on pronotum and bluish on elytra. Hind wings and humeral calli well-developed. Pronotum long, about 1.5 × broader than long. Aedeagus as in figs **4950**, **4951**, on ventral side without longitudinal sculpture, spermatheca as in fig. **4925**. Length 2.0–2.2 mm. Known from Andalusia only, probably endemic to southern Spain **gloriae** BIONDI, 1994.
- . In male antennomere 5 gradually thickened toward apex (fig. **4936**). Pronotum much broader than long. Upper side black, antennomeres 2 and 3 sometimes dark reddish. In male first tarsomere of fore legs broad, heart-shaped. Aedeagus as in figs **4952**, **4953**, spermatheca as in fig. **4958**. Distributed in almost whole Mediterranean area, recorded also from Near East and Iran ... **fallaciosa** HEIKERTINGER, 1941.



Figs 4958–4962. Spermatheca (4958 after DOGUET, 1984, 4959–4961 after DÖBERL 1994; 4962 after BIONDI 1991): 4958 – *Phyllotreta fallaciosa*; 4959 – *P. diademata*; 4960 – *P. astrachanica*; 4961 – *P. punctulata*, 4962 – *P. subatra*.

12. Antennomeres 2 and 3 reddish only **13**.
- . At least antennomeres 1–4 reddish **29**.
13. In male antennae without widenings **14**.
- . In male one or two antennomeres (usually antennomere 4 or/and 5) distinctly widened or thickened (rather feebly in *gallica*, thesis 48 and *dacica*, antithesis 48) **27**.
14. Strong punctures on frons form a transversal stripe between eyes, vertex much finer punctate **15**.
- . Strong punctures on frons scattered broader, not forming a transversal stripe **16**.
15. Aedeagus as in figs **4954**, **4955**, spermatheca as in fig. **4959**. Length 1.7–2.2 mm. Distributed in Europe (except mid and northern Fennoscandia), Asia Minor and Central Asia, reported also from India **diademata** FOUDRAS, 1860.
- . Aedeagus as in figs **4956**, **4957**, spermatheca as in fig. **4960**. Length 1.8–2.4 mm. Distributed in southern, central and eastern parts of Europe from Spain to Bashkiria, in Asia Minor and in countries located around the Caspian Sea **astrachanica** LOPATIN, 1977.
16. Upper side finely or at most moderately strongly, densely punctate **17**.
- . Upper side strongly punctate. A few species similar to *atra* (auxiliary group C, thesis 24), distinguishable only by shape of aedeagus, or/and spermatheca **20**.

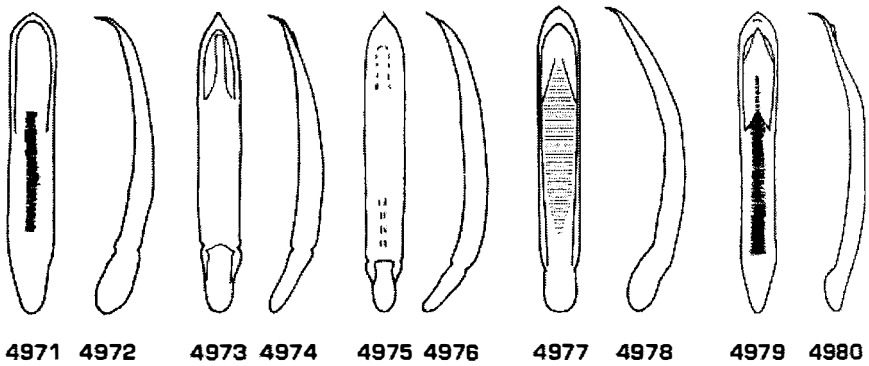
17. Hind tibiae, particularly in male, distinctly bent **18.**
 -. Hind tibiae not distinctly bent. Upper side black with very feeble bluish reflex. Antennomeres 2 and 3 (sometimes 1-4 or 1-6), tarsi, tibiae and apices of fore and mid femora pale. In male antennomere 5 feebly differs from 4 or 6. Aedeagus as in figs **4963**, **4964**, spermatheca as in fig. **4961**. Length 1.6-2.0 mm (= *aerea* ALLARD, 1859). Variation: upper side with distinct bronzy reflex (ab. *aenescens* HEIKERTINGER, 1941). Distributed in southern and central part of Europe, Ukraine, Morocco, Asia Minor, Israel and Caucasian countries, introduced also to USA
 **punctulata** (MARSHAM, 1802).



Figs 4963-4970. Aedeagus in dorsal or ventral and in lateral view (4963, 4964 after DOGUET 1984; 4967, 4968 after LOPATIN and KULENOVA 1985; 4969 after WARCHALOWSKI 1995; remaining after LOPATIN 1977): 4963, 4964 - *Phyllotreta punctulata*; 4965 - *P. gurskii*; 4966 - *P. paradoxa*; 4967, 4968 - *P. konevi*; 4969, 4970 - *P. austriaca*.

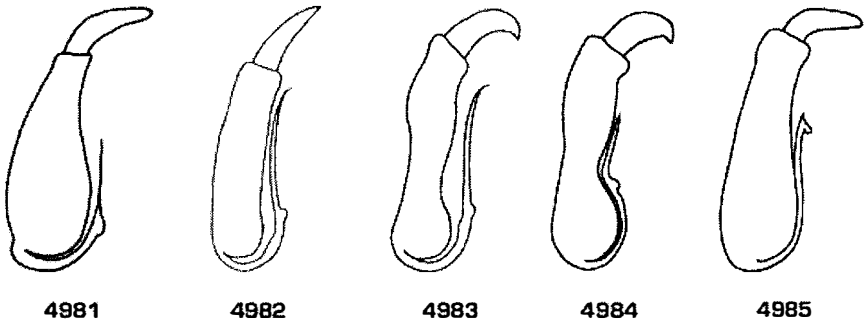
18. Frons behind frontal calli strongly punctate. Legs and antennae black, only antennomeres 2-3 reddish. Aedeagus as in fig. **4965**. Length 2.0-2.6 mm. Described from Tadjikistan ***gurskii*** LOPATIN, 1966.
 -. Frons behind frontal calli distinctly but finely punctate **19.**
 19. Larger. Tibiae and tarsi as well as 3-4 basal antennomeres reddish. Upper side with weak bronzy reflex. Aedeagus as in fig. **4966**. Length 1.8-1.9 mm. Described from Tadjikistan ***paradoxa*** LOPATIN, 1966.
 -. Smaller. Externally similar to *paradoxa* (thesis 19). Aedeagus as in figs **4967**, **4968**. Length 1.4-1.7 mm. Described from Kazakhstan (at Aral Sea)
 ***konevi*** LOPATIN, 1985.
 20. Aedeagus (figs **4969**, **4970**) narrowed before apex. Length 1.5-2.2 mm. In E Palaearctic forms a winged subspecies, ssp. *aligera* HEIKERTINGER, 1911. Distributed from Central Europe (Austria, Czechia) to Korea ***austriaca*** HEIKERTINGER, 1909.
 -. Aedeagus not narrowed before apex (*atra* group). Here a few species (perhaps forms only), externally not distinguishable, differing by small variations in the structure of aedeagus and spermatheca, which depend sometimes on technical preparing of material or on drawing manner, partly also belonging to geographical variability **21.**
 21. Two species described from Atlantic Islands **22.**
 -. Species from other areas **23.**

22. Aedeagus as in figs **4971**, **4972**, spermatheca as in fig. **4962**. Species described from Cape Verde Islands **subatra** WOLLASTON, 1867.
 - . Aedeagus as in figs **4973**, **4974**, spermatheca as in fig. **4981**. Species described from Canary Islands **gillerforsi** BIONDI, 1991.



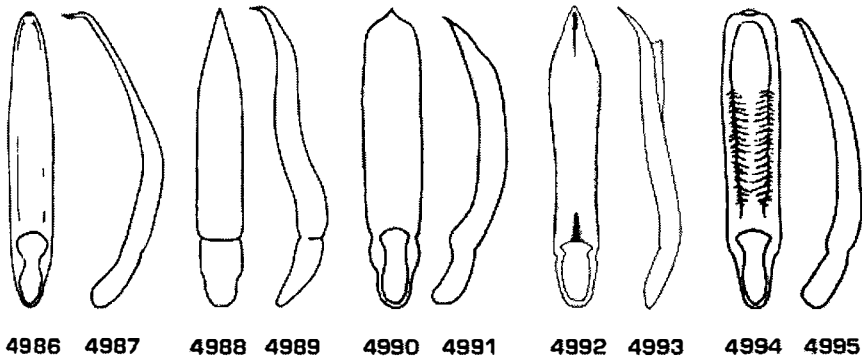
Figs 4971-4980. Aedeagus in dorsal or ventral and in lateral view (4971, 4972 after BIONDI 1991; 4973, 4974 after BIONDI 1995; 4975, 4976 after WARCHAŁOWSKI 1995; 4977, 4978 after ČÍZEK 2003; 4979, 4980 after BIONDI 1992): 4971, 4972 - *Phyllotreta subatra*; 4973, 4974 - *P. gillerforsi*; 4975, 4976 - *P. atra*; 4977, 4978 - *P. fornuseki*; 4979, 4980 - *P. bolognai*.

23. Apex od aedeagus triangularly narrowed or very gently rounded laterally. Sexual dimorphism feebly pronounced. Upper side pure black, rarely on head and pronotum with very feeble bronzy reflex. **24**.
 - . Structure of aedeagus and spermatheca not as above **25**.



Figs 4981-4985. Spermatheca (4981 after BIONDI 1995; 4984 after ČÍZEK 2003; 4985 after BIONDI 1992; remaining after WARCHAŁOWSKI 1994): 4981 - *Phyllotreta gillerforsi*; 4982 - *P. atra*; 4983 - *P. lorestanica*; 4984 - *P. fornuseki*, 4985 - *P. bolognai*.

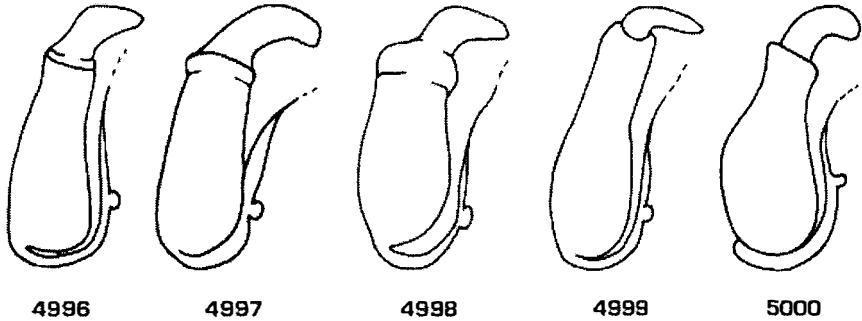
4. Reticulation of pronotum ground stronger. Aedeagus as in figs **4975**, **4976**. In spermatheca (fig. **4982**) pump (= collum + pileum) distinctly bent, vasculum in lateral view constricted. Length 1.8–2.4 mm (= *aethiopissa* SCHRANK, 1789, *aterrima* SCHRANK, 1798, *punctata* MARSHAM, 1802, *scheuchi* HEIKERTINGER, 1941, *?bolognai* BIONDI, 1992, see thesis 15). Variation (very rare): antennae entirely black (ab. *erdoesi* CSIKI, 1953). Distributed in almost whole Europe (very common, known pest of cultivated *Brassicaceae*) and in western part of Asia to Mongolia, reported also from Morocco **atra** (FABRICIUS, 1775).
5. Reticulation of pronotum ground distinctly more weak. Aedeagus as in *atra* (thesis 24). In spermatheca (fig. **4983**) pump (= collum + pileum) weakly bent or almost straight, vasculum in lateral view not constricted, almost cylindrical. Length 1.8–2.3 mm. Described from W Iran **lorestanica** WARCHALOWSKI, 1973.



Figs 4986-4995. Aedeagus in dorsal or ventral and in lateral view (4986, 4987 after WARCHALOWSKI 1995; 4988, 4989 after DOGUET 1994; 4992, 4993 after KONSTANTINOV and LOPATIN 1992; remaining after DOGUET 1984): 4986, 4987 – *Phyllotreta foudrasi*; 4988, 4989 – *P. temperei*; 4990, 4991 – *P. crassicornis*; 4992, 4993 – *P. araxicola*; 4994, 4995 – *P. hemipoda*.

25. Aedeagus as in figs **4977**, **4978**, spermatheca as in fig. **4984**. Length 1.6–2.3 mm. Described from Moravia **fornuseki** CIŽEK, 2003.
- . Structure of aedeagus and spermatheca not as above **26**.
26. Aedeagus as in figs **4979**, **4980**, spermatheca as in fig. **4985**. General length of body not given. Described from NE Turkey **bolognai** BIONDI, 1992.
- . Structure of aedeagus and spermatheca not as above **27**.
27. In male antennomere 3 externally with a little tooth-like process. Upper side always pure black. Aedeagus as in figs **4986**, **4987**, spermatheca as in fig. **4996**. Length 1.6–1.9 mm. Distributed in north-western Africa, Iberian Peninsula, Balearic Islands, France and north-western Italy **foudrasi** BRISOUT, 1873.
- . In male antennomere 3 without tooth-like process **28**.
28. In male antennae (figs **4832**, **4833**) and aedeagus (fig. **4819**) very characteristic. Upper side black, strongly punctures of elytra tending to form longitudinal, irregular rows. Here pure black aberration of *hochetlingeri* (group A, antithesis 6).
- . Aedeagus differently shaped, in male antennomere 5 very feebly thickened. In male antennomeres 4 and 5 distinctly widened. Externally similar to *atra* (thesis 24).

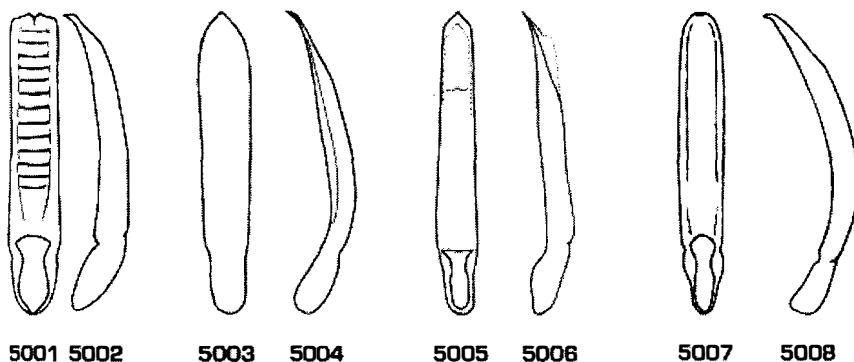
- Aedeagus as in figs **4988**, **4989**, spermatheca as in fig. **4997**. Length 1.6–1.9 mm. Occurs in Pyrenees **temperei** DOGUET, 1974.
29. Legs and antennae entirely pale, at most antennomeres 8–11 or 9–11 slightly darkened. Aedeagus approximately as in *rufitarsis* (group C, thesis 12). Insufficiently known species, described from Caucasus, reported also from Turkey and Mesopotamia **caucasicola** HEIKERTINGER, 1941.
- . At least femora and 3–4 apical antennomeres dark, brown or blackish **30**.



Figs 4996–5000. Spermatheca (4996, 4999 after DOGUET 1984, remaining after DOGUET 1994): 4996 – *Phyllotreta foudrasi*; 4997 – *P. temperei*; 4998 – *P. crassicornis*; 4999 – *P. hemipoda*, 5000 – *P. acute-carinata*.

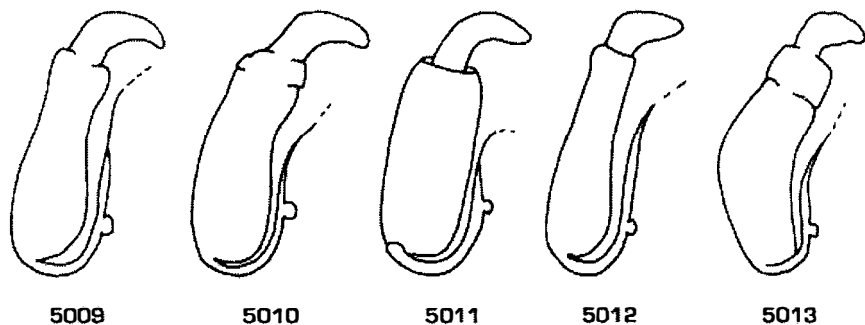
30. Upper side rather finely punctate. See *punctulata* (antithesis 17).
- . Upper side strongly punctate **31**.
31. Antennomeres 1–6 or 1–7 pale, yellowish or reddish **32**.
- . Antennomeres 1–4 reddish **34**.
32. Antennomere 5 about 3 × longer than 4, in male strongly broadened (fig. **2207**). Apex of aedeagus (figs **4990**, **4991**) broadly rounded, with a little tooth-like lamella in the middle of apical margin, spermatheca as in fig. **4998**. Length 1.3–1.7 mm. West-Mediterranean species, distributed in southern France, Iberian Peninsula, NW Africa and Sicily **crassicornis** ALLARD, 1866.
- . Antennomere 5 at most 1.5 × longer than 4 **33**.
33. Antennomere 5 about 1.5 × longer than 4, antennomeres 2, 4 and 6 subequal. Upper side pure black. Antennomeres 1–6, apices of fore and mid femora, tibiae and tarsi pale, apical tarsomeres blackened. Aedeagus as in figs **4992**, **4993**. Described from Transcaucasia **araxicola** KHNZORIAN, 1968.
- . Antennomere 5 insignificantly longer than 4. Upper side black, sometimes with very feeble bluish reflex, densely and moderately strongly punctate. Antennomeres 1–6 or 1–7, tibiae and tarsi pale reddish. Aedeagus as in figs **4994**, **4995**, spermatheca as in fig. **2250**. Distributed in Portugal, Morocco, Algeria and Tunisia **hemipoda** ABEILLE, 1909.
34. In both sexes antennomere 5 much (1.5–2.0 ×) longer than 4 **35**.
- . In both sexes antennomere 5 insignificantly longer than 4 **40**.

35. In male antennomere 5 strongly thickened, cylindrical, almost $2 \times$ longer than 21. Upper side black with very feeble bronzy reflex. Length 2.2–2.7 mm. Distributed in NW Spain *iberica* HEIKERTINGER, 1911.
 -. In male antennomere 5 not distinctly thickened **36**.
36. Nasal ridge very narrow and sharp. Externally similar to *balcanica* (thesis 47). Upper side black with barely perceptible bronzy reflex. In female antennomeres 2, 3 and 4 subequal, antennomere 6 somewhat longer. In male tarsomere 3 of fore tarsi heart-shaped widened. Aedeagus as in figs **5001**, **5002**, spermatheca as in fig. **5000**. Distributed in south-eastern Europe from Austria to Greece and Ukraine, in Asia Minor and in Afghanistan *acutecarinata* HEIKERTINGER, 1941.
 -. Nasal ridge not particularly narrow and sharp **37**.
37. Smaller (length 1.5–1.7 mm) **38**.
 -. Larger (length 1.7–2.0). Aedeagus as in figs **5021**, **5022**. Distributed in Balkan Peninsula, Romania and western Ukraine. See *dacica* (antithesis 48).
38. Tibiae entirely reddish or only in apical part pale **39**.
 -. Tibiae and tarsi entirely pale, yellowish. In male antennomeres 4–6 subequal. In male antennomeres 4–6 subequal. Aedeagus as in figs **5003**, **5004**, on ventral side with longitudinal rugosities. Female unknown. Species described from Algeria, based on two males only *rapillyi* DOGUET, 1984.
39. Tibiae only in apical part pale, reddish. In male antennomere 5 distinctly longer than 4 or 6. Aedeagus very characteristic, as in fig. **5020**, on ventral side with transverse rugosities, spermatheca as in fig. **5012**. See *gallica* (thesis 48).
 -. All tibiae and tarsomeres 1–2 reddish, tarsomeres 3–4 dark brown. In male antennomere 5 distinctly ($1.7\text{--}1.9\times$) longer than 4 or 6. Aedeagus (figs **5005**, **5006**) on ventral side without transverse rugosities, on dorsal side with dense and fine transverse wrinkles. Described from SW Turkey *ispartaensis* GÖK, 2005.
40. In male antennomere 3 externally with a little tooth-like process. Some forms (mostly immature specimens) of *foudrasi* (thesis 16).
 -. In male antennomere 3 without a tooth-like process **41**.



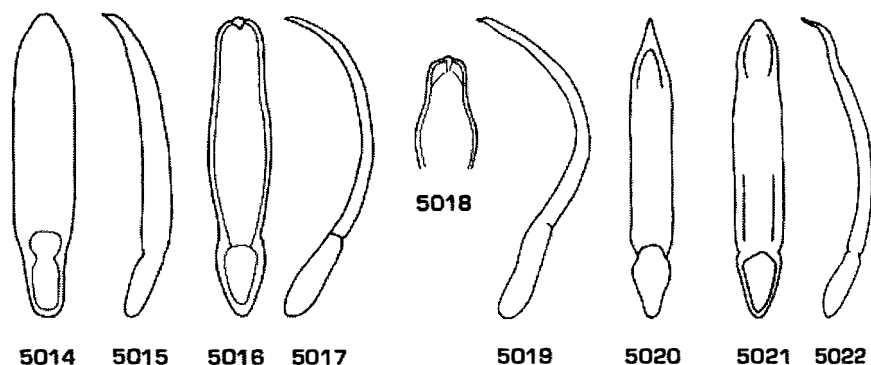
Figs 5001-5008. Aedeagus in dorsal or ventral and in lateral view (5001, 5002 after DÖBERL 1994; 5005, 5006 after GÖK 2005; remaining after DOGUET 1984): 5001, 5002 – *Phyllostreta acutecarinata*; 5003, 5004 – *P. rapillyi*; 5005, 5006 – *P. ispartaensis*; 5007, 5008 – *P. cruralis*.

41. Pronotum trapezoidal, distinctly broader than long 42.
 - Pronotum almost square. Body oblong, parallel, slender, flattened. Humeral calli absent. Upper side pure black, sometimes with traces of a very feeble metallic reflex. In male antennomeres 4 and 5 subequal, very slightly thickened, slightly cylindrical. Aedeagus as in figs 5007, 5008, spermatheca as in fig. 5010. Length 1.5–1.7 mm. A Mediterranean species, known from Spain, Algeria, Tunisia and Israel ***cruralis*** ABEILLE, 1895.



Figs 5009-5013. Spermatheca (5011 after DÖBERL 1994; 5012 after DOGUET 1994; 5013 after DOGUET 1986; remaining after DOGUET 1984): 5009 – *Phyllotreta rapillyi*; 5010 – *P. cruralis*; 5011 – *P. balcanica*; 5012 – *P. gallica*; 5013 – *P. nigripes*.

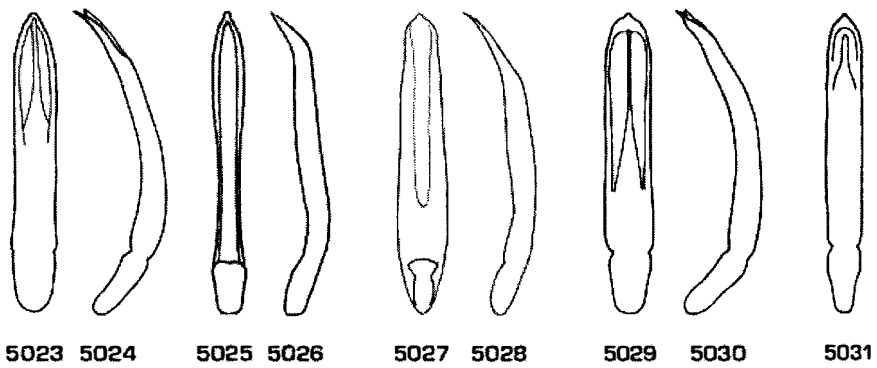
42. Elytra narrowed posteriad, broadest in anterior 1/3 of their length. Length 2.0–2.3 mm. Insufficiently studied species, male unknown. Described from Morocco ***panousei*** HOFFMANN, 1953.
 - Elytra not distinctly narrowed posteriad, broadest in their mid part 43.



Figs 5014-5022. Aedeagus in ventral or dorsal and in lateral view (5014, 5015 after KONSTANTINOV 1991; 5016, 5017, 5020 after DÖBERL 1994; remaining after GRUEV and TOMOV, 1986): 5014, 5015 – *Phyllotreta lopatini*; 5016, 5017 – *P. balcanica*; 5018, 5019 – *P. bulgarica*; 5020 – *P. gallica*; 5021, 5022 – *P. dacica*.

43. Nasal ridge narrow and elevate. Here forms of *atra* (thesis 24) with reddish 4 basal antennomeres.
- Nasal ridge very broad and flat **44**.
44. Puncturation of pronotum much stronger than on head. Here the black form of *undulata* (ab. *nigroconcolor*, thesis 45).
- Puncturation of pronotum not stronger than on head **45**.
45. Frons densely punctate. Antennae suddenly darkened from antennomere 5. Aedeagus as in figs **5014**, **5015**. Length about 1.8 mm. Described from Azerbaijan *lopatini* KONSTANTINOV, 1992.
- Frons loosely punctate. Antennae in mid part (antennomeres 4–6) gradually darkened **46**.
46. In both sexes antennomere 5 less than $1.5 \times$ longer than 4, in male very feebly thickened **47**.
- In both sexes antennomere 5 more than $1.5 \times$ longer than 4 **48**.
47. Humeral calli well-developed. Aedeagus as in figs **5016**, **5017**, spermatheca as in fig. **5011**. Length 1.5–2.0 mm (= *anatolica* PIC, 1910, *adanensis* PIC, 1919). Distributed in southern and south-eastern part of Europe from France to Hungary, Greece and southern Russia, in Asia Minor, Caucasian countries and Central Asia *balcanica* HEIKERTINGER, 1909.
- Humeral calli reduced. Aedeagus as in figs **5018**, **5019**. Length 1.8–2.3 mm. Described from Bulgaria, reported also from Greece and Israel *bulgarica* GRUEV, 1977.
48. Smaller. In male antennae with widened antennomere 5. Apex of aedeagus very long-sharpened (fig. **5020**), spermatheca as in fig. **5012**. Length 1.5–1.7 mm. West-European species. Distributed in Spain, France and Switzerland *gallica* BRISOUT, 1891.
- Larger. Aedeagus (figs **5021**, **5022**) parallel, its apex triangular (about 60°). Length 1.7–2.0 mm. East-European species. Distributed in Balkan Peninsula, Romania, western Ukraine, Asia Minor and Caucasian countries *dacica* HEIKERTINGER, 1941.
49. Antennae entirely black, sometimes joints between antennomeres 1/2, 2/3 and 3/4 slightly lighter, reddish **50**.
- At least antennomeres 2 and 3 distinctly lighter than remaining parts of antennae **52**.
50. Upper side very densely and finely punctate, silky blue or greenish-blue. Usually hind wings and humeral calli well-developed. Here two species distinguishable only by shape of eedeagus **51**.
- Upper side rather strongly and not very densely punctate, metallic reflex very feeble. Here some forms of *consobrina* (thesis 5) and *fallaciosa* (antithesis 11).
51. Aedeagus as in figs **5023**, **5024**, spermatheca as in fig. **5013**. Length 1.9–2.4 mm (= *lens* THUNBERG, 1784, *lepidii* KOCH, 1803, *nigroaenea* ROGER, 1856, *talassicola* HEIKERTINGER, 1944). Variation: metallic sheen on pronotum golden-bronzy, on elytra green (ab. *arabidis* HOFFMANN, 1953), in some African populations hind wings and humeral calli absent (ab. *impennis* PEYERIMHOFF, 1919). Known pest of cultivated *Brassicaceae*. Distributed in whole Mediterranean area, almost whole Europe, Asia Minor, Caucasian countries and Central Asia *nigripes* (FABRICIUS, 1775).
- Aedeagus as in figs **5025**, **5026**. External characters as in *nigripes* (thesis 51). Described from Afghanistan *stehliki* MADAR et MADAR, 1968.

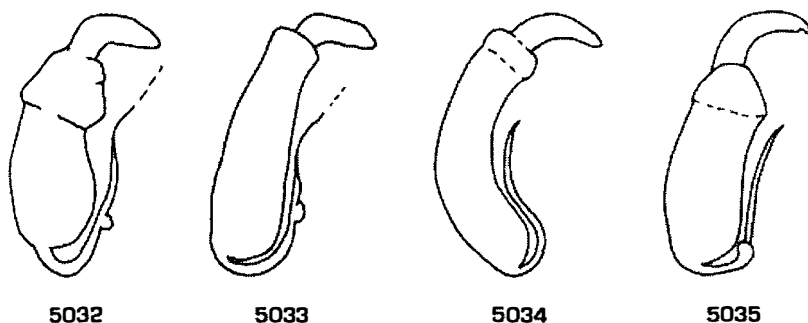
- 52. Hind tibiae strongly curved (fig. 5046). Upper side flattened, bronzy-black with silky sheen. Nasal ridge narrow, frontal tubercles indistinct, frons and vertex densely and coarsely punctate. Elytra subparallel, humeral calli protruding, puncturation dense and strong, indistinctly alineate. Length 2.0 mm. Described from S Ukraine based on one specimen (sex not determined) only. It cannot be excluded that the mentioned curving of hind tibia may turn out to be an anomaly *ogloblini* SHAPIRO, 1960.
- Hind tibiae not curved 53.
- 53. Aedeagus as in figs 5027, 5028. Puncturation of frons sparse. Pronotum about 1.5 × broader than long, finely but beeply punctured, interstices shining. Puncturation of elytra tends to form irregular longitudinal rows. Externally similar to *bartanga* (auxiliary group D, thesis 19), but considerably smaller and differing by presence of frontal puncturation. Length about 1.8 mm. Described from Tadzhikistan
..... *andreevae* LOPATIN, 1992.
- Aedeagus differently sized 54.



Figs 5023-5031. Aedeagus in ventral or dorsal and in lateral view (5025, 5026 after MADAR 1968; 5027, 5028 after LOPATIN and KONSTANTINOV 1992; remaining after WARCHALOWSKI 1995): 5023, 5024 - *Phyllostreta nigripes*; 5025, 5026 - *P. stehliki*; 5027, 5028 - *P. andreevae*; 5029, 5030 - *P. corrugata*; 5031 - *P. cruciferae*.

- 54. Puncturation of frons conspicuously differentiated: anterior part punctate very strongly and deeply, hind part and vertex impunctate. Upper side black with bronzy or cupreous metallic sheen, basal part of antennae (except antennomere 1), tibiae and tarsi yellow amber or reddish. Aedeagus as in figs 5029, 5030, spermatheca as in fig. 5032. Length 2.0-2.5 mm (= *discophora* IABLOKOFF-KHNZORIAN, 1960, *bella* PALIJ, 1970). Distributed in Mediterranean area, Balkan Peninsula, southern Ukraine, Asia Minor, Near East, Caucasian countries and Central Asia
..... *corrugata* REICHE, 1858.
- Puncturation of frons not conspicuously differentiated 55.
- 55. Upper side strongly punctate, metallic reflex bluish or greenish, rarely greenish-bronzy 56.
- Upper side finely punctate, metallic reflex feeble, bronzy or cupreous. Here two species, whose unambiguous identification requires examination of aedeagus 57.

56. Antennomere 1 entirely reddish. Antennomere 5 about 2 × longer than 4. Aedeagus similarly shaped as in *cruciferae* (antithesis 56), on dorsal side with transverse rugosities. Distributed in Asia Minor and Syria ***maculicornis*** PIC, 1906.
- Antennomere 1 with darkened basis, antennomeres 2 and 3 at least on their under-side reddish, very rarely entirely black. Antennomere 5 punctures of elytra tending to form longitudinal rows. Tarsi and antennae in both sexes formed similarly. Aedeagus (fig. 5031) on dorsal side without transverse rugosities, spermatheca as in fig. 2275. Length 1.8–2.2 mm (= *obscura* ILLIGER, 1807, *elongata* STEPHENS, 1834, *poeciloceras* COMOLLI, 1837, *colorea* FOU DRAS, 1860). Variation: antennae entirely black (ab. *nigrobasis* DONISTHORPE, 1941). Distributed in western part of Palaearctic Region from Morocco to Central Asia, reported from Sudan and India, introduced also to N America ***cruciferae*** (GOEZE, 1777).



Figs 5032-5035. Spermatheca (5032 after DOGUET 1986; 5033 after DOGUET 1984; remaining after BIONDI 1992): 5032 – *Phyllotreta corrugata*; 5033 – *P. cruciferae*; 5034 – *P. furthi*; 5035 – *P. procera*.

57. Aedeagus as in figs 4963, 4964, on dorsal side without transversal rugosities. Length on average about 1.8 mm. A rare form of (usually pure black) *punctulata* (antithesis 17).
- Aedeagus as in figs 5036, 5037, on dorsal side covered by transversal rugosities. Length 1.7–2.2 mm. Distributed in Europa from Spain and the British Isles to Ukraine, reported also from Mongolia ***scheuchi*** HEIKERTINGER, 1941.

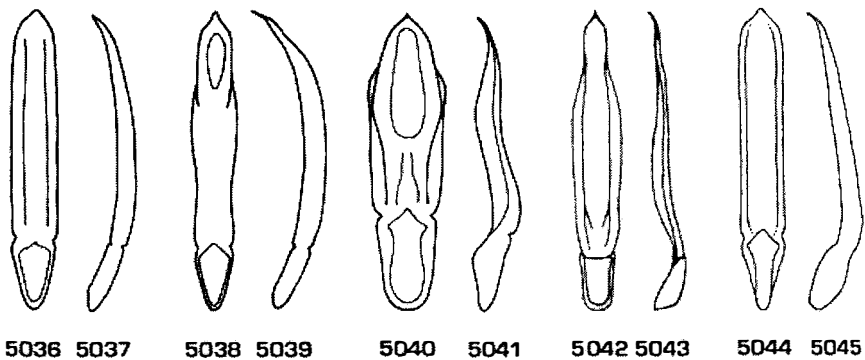
Auxiliary group D

Upper side unicolorous black or metallic, central part of frons impunctate.

Key to species

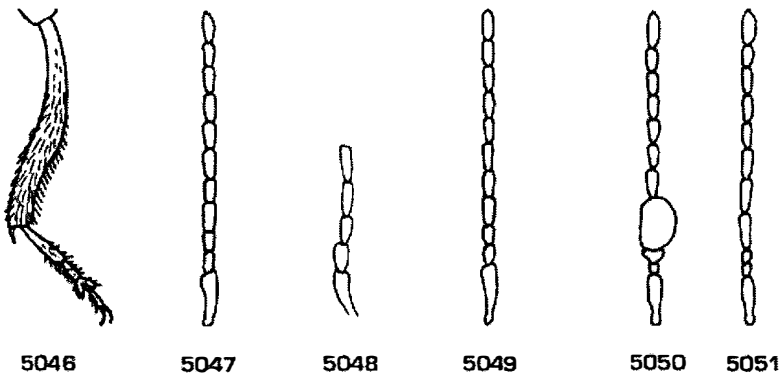
1. Antennae entirely dark, pitchy or black **2**
- At least antennomeres 2 and 3 entirely or partly reddish **13**.

- 2. Metallic reflex of upper side blue or greenish-blue 3
- . Metallic reflex of upper side bronzy or black with violaceous reflex, rarely pure black 6
- 3. Larger. Externally similar to *nigripes* (thesis 39), but on average larger, elytra considerably stronger punctate and frons in mid part impunctate. Sexual dimorphism feebly pronounced. Aedeagus as in figs 5038, 5039. Length 2.4–3.0 mm. Distributed from France, Italy and Austria to Balkan Peninsula, Romania and Crimea *ganglbaueri* HEIKERTINGER, 1909.
- . Smaller. Elytra moderately strongly punctate 4
- 4. Length of body 2.2–2.4 mm. Aedeagus as in figs 5040, 5041. Distributed in Turkey and Iran *egridirensis* GRUEV et KASAP, 1985.
- . Length of body under 2.2 mm 5
- 5. Length of body 2.0–2.2 mm. Antennomeres 2 and 3 equal in length. Apical part of aedeagus (figs 5042, 5043) in dorsal view much narrower than the mid of tubular part. Described from NE Turkey, possibly conspecific with *ganglbaueri* (thesis 3) ... *ozbeki* GRUEV and ASLAN, 1998.
- . Length of body about 1.8 mm. Aedeagus as in figs 5044, 5045, spermatheca as in fig. 5052. Described from Greece (Peloponnes) *zerchei* DÖBERL, 1998.
- 6. Antennomere 5 insignificantly longer than 3. Among antennomeres 3–6 the longest is antennomere 4. In male antennomeres 4 and 5 slightly thickened (fig. 5048). Aedeagus as in figs 5057, 5058, spermatheca as in fig. 5053. Length 2.3–2.6 mm. Distributed in northern Africa from Morocco to Libya and in Sicily. In opinion of some authors may belong here *distincta* MONNOT, 1914 described from France *nitidicollis* WEISE, 1888.
- . Antennomere 5 distinctly longer than 3, antennomeres 4 and 5 shortest, equal in length 7.
- 7. Apex of aedeagus deeply incised 8.
- . Apex of aedeagus not incised 9.



Figs 5036-5045. Aedeagus in ventral or dorsal and in lateral view (5040, 5041 after GRUEV and KASAP 1985; 5042, 5043 GRUEV and ASLAN 1998; 5044, 5045 after DÖBERL 1998; remaining after GRUEV and TOMOV 1986): 5036, 5037 – *Phyllotreta scheuchii*; 5038, 5039 – *P. ganglbaueri*; 5040, 5041 – *P. egridirensis*; 5042, 5043 – *P. ozbeki*; 5044, 5045 – *P. zerchei*.

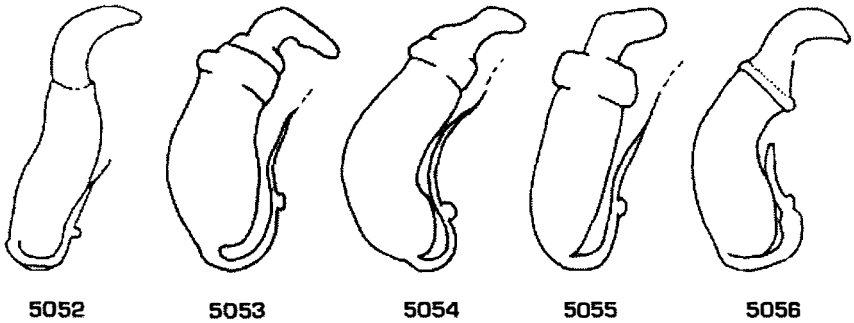
8. Antennomeres 2, 3 and 4 of approximately equal length (fig. 5047). Upper side greenish-bronzy, strongly punctate, ground reticulate. Aedeagus as in figs 5061, 5062, spermatheca as in fig. 5054. Distributed in Morocco, Algeria and Tunisia *furthi* DOGUET, 1984.
- Antennomeres 2–4 more and more long (fig. 2293). Antennomere 1 distinctly longer than 2+3 (fig. 5049). In male antennae slender, antennomere 4 not thicker than 3 or 5. Upper side with distinct bronzy reflex, pronotum and elytra finely punctate and densely reticulate, silky shining. Sexual dimorphism feebly pronounced. Aedeagus as in figs 5061, 5062, spermatheca as in fig. 5055. Length 1.9–2.5 mm. Distributed in Cape Verde Islands, Canary Islands and Madeira, Mediterranean area, in southern part of Central Europe, Balkan Peninsula, Asia Minor, Near East, and in countries located around the Black and Caspian Sea to Central Asia *procera* (REDTENBACHER, 1849).



Figs 5046-5051. (5046 after SHAPIRO 1960; 5048 after DOGUET 1984; remaining after WARCHALOWSKI 1995): 5046 – hind tibia of *Phyllotreta ogloblini*. 5047-5050 – antennae of male, 5051 – antenna of female: 5047 – *P. furthi*; 5048 – *P. nitidicollis*; 5049 – *P. procera*; 5050, 5051 – *P. nodicornis*.

9. Upper side almost pure black, often with feeble bronzy reflex, relatively strongly punctate. Pronotum very weakly narrowed anteriorly 10.
- Upper side with distinct green or bluish-green metallic sheen, rather finely punctate 12.
10. Aedeagus (figs 5063, 5064) very weakly narrowed behind apical part, lamella obtuse. Length 2.3–2.5 mm. Distributed in Transcaspia and Afghanistan *talassicola* HEIKERTINGER, 1944.
- Aedeagus either not or distinctly narrowed behind apical part 11.
11. Antennomere 4 barely longer than 2 or 3. Aedeagus as in figs 5065, 5066. Length 1.8–2.3 mm (= *fuscata* WEISE, 1890). Distributed from Asia Minor and South Volga Valley to Mongolia, western China and India *praticola* WEISE, 1887.
- Antennomere 4 about 1.5 × longer than 2 or 3. Aedeagus as in figs 5067, 5068. Length 1.8–2.3 mm. Distributed in almost whole Transcaspia *banghaasi* HEIKERTINGER, 1941.

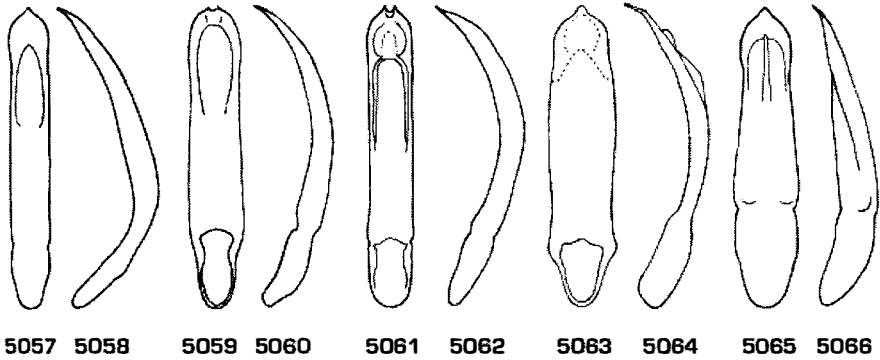
12. Humeral callus feeble, but perceptible, metallic sheen of upper side stronger. Aedeagus as in figs 5069, 5070, spermatheca as in fig. 5056. Length 1.9 mm. Perhaps conspecific with *hebraea* (antithesis 12). Described from Israel ***hermonensis*** FURTH, 1979.
- . Humeral callus absent, metallic sheen of upper side distinct, but not strong. Upper side dark metallic green, weakly shining, distinctly reticulated and very finely rugose. In male anal sternite with deep longitudinal groove. Aedeagus, after original description, as in *hermonensis* (thesis 12). Described from Israel. Length 2.0 mm ***hebraea*** HEIKERTINGER, 1941.



Figs 5052-5056. Spermatheca (5052 after DÖBERL 1988; 5056 after FURTH 1979; remaining after DOGUET 1984): 5052 – *Phyllotreta zerchei*; 5053 – *P. nitidicollis*; 5061, 5054 – *P. furthi*; 5055 – *P. procera*; 5056 – *P. hermonensis*.

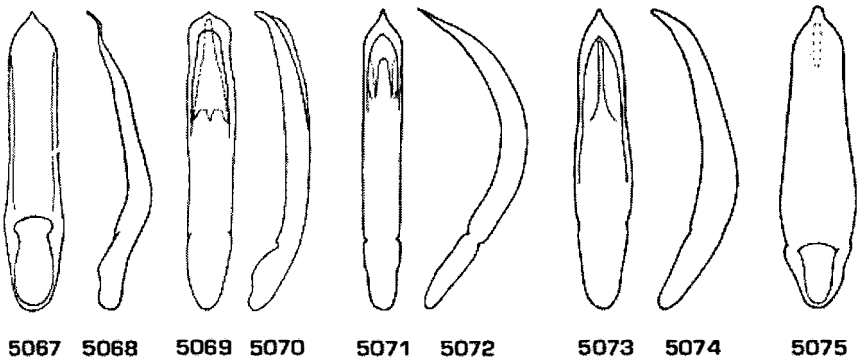
13. Hind tibiae in apical part strongly thickened, with a long apical spine (as long as half of first tarsomere). Aedeagus not studied. Length 1.8–2.0 mm. Species described from Egypt, known also from Israel and Saudi Arabia ***florieni*** PIC, 1910.
- . Hind tibiae formed normally 14.
14. Antennomere 2 very short, not or barely longer than broad. In female antennomere 4 as long as 2+3, in male still longer, very strongly widened and flattened (figs 5050, 5051). Aedeagus as in figs 5071, 5072, spermatheca as in fig. 5092. Length 2.0–2.6 mm (= *antennata* KOCH, 1803, *oncera* MAULIK, 1926). Lives on *Resedaceae*. Distributed in Europe from Ireland and Pyrenees to Asia Minor and Caucasian countries, known also from northern India. Here also two doubtful species: 1) *lacerta* HEIKERTINGER, 1941, from north-western Spain, described based on one female only, 2) *melichari* HEIKERTINGER, 1941, from southern Spain, described based also on one female only ***nodicornis*** (MARSHAM, 1802).
- . Antennomere 2 not very short, distinctly longer than broad 15.
15. Upper side black with violaceous reflex or pure black. General view as in plate XCVII, phot. 870. Legs dark with conspicuously pale reddish tarsi. Pronotum long. Elytra densely punctate, on apex separately rounded, pygidium free. Aedeagus as in figs 5073, 5074, spermatheca as in fig. 5093. Length 2.0–2.4 mm. Distributed in Spain, Sicily, Atlantic Islands, Morocco, Algeria, Tunisia and Near East ***rufitarsis*** ALLARD, 1859.

- Upper side with greenish or bluish reflex, tarsi not conspicuously paler than tibiae ...
..... **16.**
- 16. Upper side vivid pale metallic green, antennomere 2–7 pale. Tarsi and tibiae pale, all femora black-green with metallic shine. Antennomere 3 much shorter than 5. Aedeagus as in fig. 5075. Length 1.8–2.2 mm. Described from Tadzhikistan
..... ***beschkentica* LOPATIN, 1961.**
- Not as above **17.**



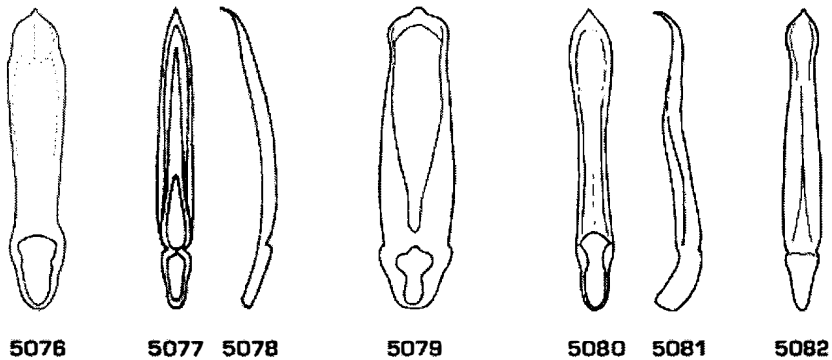
Figs 5057-5066. Aedeagus in ventral or dorsal and in lateral view (5059, 5060 after DOGUET 1984; 5063, 5064 after LOPATIN 1977; remaining after WARCHALOWSKI 1995): 5057, 5058 – *Phyllotreta nitidicollis*; 5059, 5060 – *P. furthi*; 5061, 5062 – *P. procera*; 5063, 5064 – *P. talassicola*; 5065, 5066 – *P. praticola*.

- 17. Similarly coloured as *beschkentica* (thesis 16), metallic shine less vivid. Antennomere 3 slightly shorter than 5 **18.**
- Not as above **19.**



Figs 5067-5075. Aedeagus in ventral or dorsal and in lateral view (5067, 5068, 5075 after LOPATIN 1977; 5069, 5070 after FURTH 1979; remaining after WARCHALOWSKI 1995): 5067, 5068 – *Phyllotreta banghaasi*; 5069, 5070 – *P. hermonensis*; 5071, 5072 – *P. nodicornis*; 5073, 5074 – *P. rufitarsis*; 5075 – *P. beschkentica*.

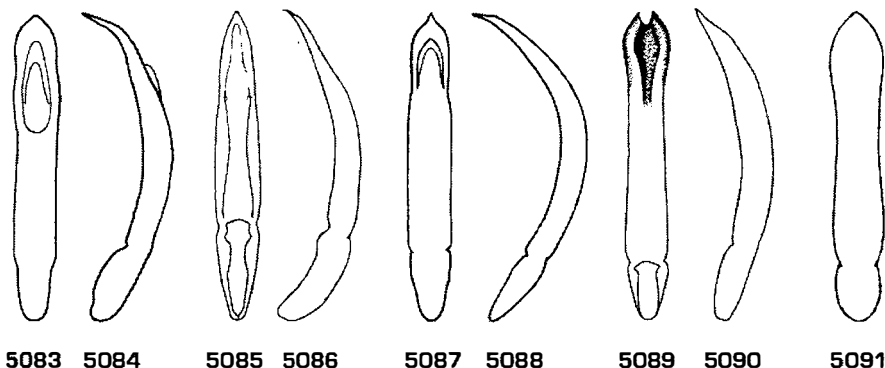
18. Aedeagus as in fig. 5076. Length 2.0–2.6 mm. Distributed in Transcaspia
 *bactriana* HEIKERTINGER, 1941.
- . Aedeagus (figs 5077, 5078) on underside with sclerotized edge depressed basally
 and convex in the apical part. Spermatheca not studied. Length 2.2–2.8 mm. De-
 scribed from NE Turkey *oltuensis* GRUEV et ASLAN, 1998.
19. Aedeagus in lateral view broadened in basal half of tubular part. Upper side dark
 green with metallic shine. First antennomere beneath, 2–4 entirely and antenno-
 mere 5 at base reddish. Tibiae reddish in the middle darkened, tarsi reddish. Prono-
 tum relatively long, 1.3 × broader than long. Aedeagus as in fig. 5079, spermatheca
 not studied. Length about 3.0 mm. Described from Tadzhikistan
 *bartanga* LOPATIN, 1966.
- . Aedeagus not distinctly broadened in basal half of tubular part (if slightly broadened,
 see also *randoniae*, thesis 25) 20.



Figs 5076–5082. Aedeagus in ventral or dorsal and in lateral view (5077, 5078 after GRUEV and ASLAN 1998; 5080, 5081 after DOGUET 1984; 5082 after HEIKERTINGER 1941; remaining after LOPATIN 1977): 5076 – *Phyl-
 lotreta bactriana*; 5077, 5078 – *P. oltuensis*; 5079 – *P. bartanga*; 5080, 5081 – *P. cheiranthi*; 5082 – *P.
 gafsana*.

20. Body length usually under 2.0 mm. Upper side with distinct green metallic sheen.
 Pronotum short (about 1.7 × broader than long). Aedeagus (figs 5080, 5081) in api-
 cal part gently broadened and rather strongly bent ventrally, spermatheca as in fig.
 5094. Length 1.6–2.0 mm (= *farsetiarum* PEYERIMHOFF, 1929). Distributed in Central
 Africa, Sudan, southern Sahara (Hoggar and Tessili Mts.), Oman, Saudi Arabia and
 Yemen, reported also from Cape Verde Islands *cheiranthi* WEISE, 1903.
- . Body length usually over 2.0 mm. Pronotum longer (at most 1.6 × broader than long)
 21.
21. Pronotum slightly but distinctly widened anteriorly 22.
- . Pronotum not widened anteriorly 23.
22. Humeral calli present. Upper side with bronzy-green metallic reflex. Externally simi-
 lar to *procera* (antithesis 7) but antennomeres 2 and 3 entirely, antennomeres 1 and
 4 partly reddish. Length 2.0–2.3 mm. Known from Asia Minor only
 *toelgi* HEIKERTINGER, 1941.

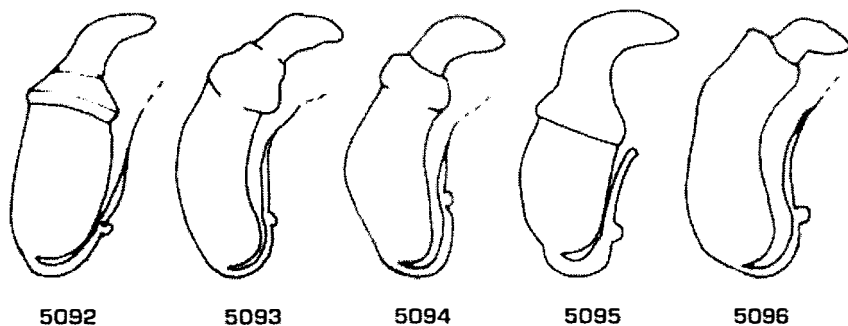
- Humeral calli absent. Body rather slender, flattened, parallel. Upper side black with very distinct green, green-blue or green-bronzy sheen. Antennae black, antennomeres 2 and 3 often brown. General view as in plate XCVIII, **phot. 876**. Aedeagus as in figs **5083, 5084**, spermatheca as in fig. **5095**. Length 1.6–2.0 mm. Known from Israel only **yoffei** FURTH, 1979.



Figs 5083-5091. Aedeagus in ventral or dorsal and in lateral view (5083, 5084 after FURTH 1979; 5087, 5088 after GRUEV and TOMOV 1986; 5089, 5090 after LOPATIN 1990; remaining after DOGUET 1984): 5083, 5084 – *Phyllotreta yoffei*; 5085, 5086 – *P. randoniae*; 5087, 5088 – *P. judaea*; 5089, 5090 – *P. krali*; 5091 – *P. gafsana*.

- 23. Basal margin of pronotum without marginal ridge. Length over 2.2 mm **24**.
- Basal margin of pronotum with a marginal ridge **26**.
- 24. Pronotum relatively long, about 1.5 × broader than long **25**.
- Pronotum broader, about 1.75× broader than long. Upper side reticulate, silky or almost matt, black with bluish or bluish-green metallic reflex, densely and finely or very finely punctate. Aedeagus as in figs **5087, 5088**. Length 2.2–3.2 mm. Species from E Mediterranean area. Distributed in Bulgaria, Turkey, Caucasian countries and N ear East, reported also from Iran **judaea** PIC, 1901.
- 25. Aedeagus (figs **5085, 5086**) lanceolate, its apex sharpened. Body very oblong, flattened. Upper side black with greenish metallic reflex. Antennae and legs dark brown or blackish, tarsi and antennomeres 2–3 dark reddish. Hind wings and humeral calli well-developed. Aedeagus as in spermatheca as in fig. **5096**. Length 2.2–3.4 mm. Distributed in Spain, Morocco and Algeria **randoniae** PEYERIMHOFF, 1920.
- Aedeagus (figs **5089, 5090**) not lanceolate, its apex deeply incised. External characters as in *judaea* (thesis 24). Length 2.3–2.5 mm. Described from S Iran **krali** LOPATIN, 1990.
- 26. Antennae almost entirely pale, tibiae and tarsi pale. Body very slender, flattened, upper side with strong golden-greenish metallic sheen. Yellowish red. Length about 1.8 mm. Distributed in Egypt, Israel, Jordan and Saudi Arabia **peyerimhoffi** HEIKERTINGER, 1941.

- . Antennae and legs considerably darker. Externally similar to *judaea* (antithesis 17) or *hebraea* (antithesis 9). According to some authors the species may turn out to be conspecific with one of the species mentioned. Aedeagus as in fig. 5091. Length 2.0–2.5 mm. Two specimens known only, aedeagus not studied. Described from Tunisia ***gafsana*** NORMAND, 1937.



Figs 5092-5096. Spermatheca (5092 after DOGUET 1994; 1995, 5095 after FURTH 1979; remaining after DOGUET 1984): 5092 – *Phyllotreta nodicornis*; 5093 – *P. rufitarsis*; 5094 – *P. cheiranthi*; 5095 – *P. yoffei*; 5096 – *P. randoniae*.

Genus ***Podagrica*** CHEVOLAT, 1836

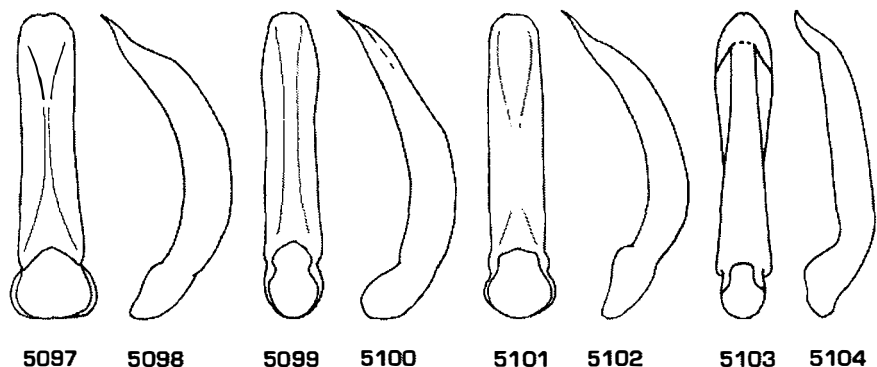
Literature: HEIKERTINGER 1951.

Genus *Podagrica* contains about 30 species distributed in Palaearctic region and Palaetropical superregion. All hitherto known food plants belong to the family *Malvaceae*. In the discussed area 9 species.

Key to species

1. Species from Arabian Peninsula 9.
- . Species from other areas 2.
2. Legs dark, black, pitchy or brown. Pronotum yellowish red, elytra blue black or black with bronzy sheen, mouth parts blackish. Aedeagus as in figs 5097, 5098. Length 3.0–3.5 mm (= *bicolor* GOEZE, 1777, *nitidula* LAICHARTING, 1781). Variations: pronotum black (ab. *foudrasi* WEISE, 1886), elytra bronzy-green, strongly shining (ab. *metallescens* WEISE, 1886). Distributed in W Europe (Iberian Peninsula, Ireland, England, France, W Germany, Switzerland, Corsica) ***fuscipes*** (FABRICIUS, 1775).
- . Legs reddish yellow, femora sometimes darkened 3.
3. Upper side uniformly pale 4.
- . Elytra dark, usually black or blackish with green or bluish metallic reflex 6.
4. Upper side pale straw yellowish. Pronotum rather strongly punctate, longitudinal furrows as long as 1/3 length of pronotum. Apex of aedeagus rounded. Length 3.0–4.0 mm. Distributed in Egypt, Ethiopia, Yemen and Saudi Arabia ***pallidicolor*** PIC, 1909.

- Upper side pale rust-reddish. Pronotum rather finely punctate, longitudinal furrows at most as long as 1/4 length of pronotum 5.
- 5. Elytral puncturation more or less confused, moderately strong. Here rufinotic form *P. malvae semirufa* ab. *concolor* (thesis 6).
- Elytral puncturation not confused, fine. General view as in plate XCVIII, **phot. 879**. Length 3.0–3.5 mm. Occurs in High Atlas (Morocco) *atlantica* HEIKERTINGER, 1951.



Figs 5097-5104. Aedeagus in ventral and lateral view (5103, 5104 after BIONDI 1982, remaining after DOGUET 1994): 5097, 5098 – *Podagriscus fuscipes*; *menetriesii*; 5103, 5104 – *P. audisioi*.

- 6. Primary punctures on anterior half of elytra form regular or almost regular longitudinal rows. Head, pronotum and 4–5 basal antennomeres yellowish red, elytra blue black, mouth parts blackish, legs pale reddish or yellow. Aedeagus as in figs **5099**, **5100**. General view as in plate XCVIII, phot. 880. Length 3.0–3.5 mm (= *cyanella* REICHE et SAULCY, 1858, *intermedia* KUTSCHERA, 1860, *laevis* ABEILLE, 1895, *aenescens* WEISE, 1886). Very variable, about 20 variations are described; the most important variations: body uniformly rust red (ab. *rufa* ALLARD, 1884), pronotum more strongly punctate, legs partly darkened (ab. *saracena* REICHE), upper side entirely reddish, underside and legs darkened (ab. *unicolor* MARSEUL, 1869), elytra black green, head and pronotum pitchy, legs entirely pale (ab. *picicollis* HEIKERTINGER, 1912), body entirely black (ab. *nigerrima* HEIKERTINGER, 1930), body entirely blue-black (ab. *tristricula* ALLARD, 1860). Forms two subspecies: vertex almost always black, pronotum stronger punctate, legs often darkened; inhabit northern, eastern and south-eastern part of area (nominotypical subspecies), head almost always entirely red, pronotum finer punctate; usually elytra blue black, reddish shining trough, legs pale, pronotum finely punctate; inhabits western part of area (subsp. *semirufa* KÜSTER, 1847 = *intermedia* KUTSCHERA, 1860, *italica* ALLARD, 1860, *rufa* ALLARD, 1884, *laevis* ABEILLE, 1895). Distributed in Europe northwards reaching approximately 48–49°N, in N Africa, Asia Minor, Near East, Caucasian countries, Iraq and Iran *malvae* (ILLIGER, 1807).
- Primary punctures on anterior half of elytra strongly confused or random 7.

7. Pronotum strongly punctate. Head and pronotum reddish yellow, elytra black blue, mouth parts blackish. Hind femora almost entirely blackish, fore and mid femora usually brown. In male first tarsomere of all tarsi widened. Aedeagus as in figs **5101**, **5102**. General view as in plate XCVIII, **phot. 881**. Length 3.0–4.5 mm (= *punctato-striata* MOTSCHOUJSKY, 1845, *rudicollis* FOU DRAS, 1860, *robusta* BALLION, 1878, *minor* SAHLBERG, 1913). Variations: legs almost entirely pale (typical form), elytra pure black (ab. *desertorum* BRANCSIK, 1899), hind femora partly blackened, fore and mid femora brown (ab. *discedens* BOIELDIEU, 1859), elytra greenish-bronzy, femora apically darkened (ab. *csepelensis* CSIKI, 1953), a melanotic form: upper side black, legs darkened (ab. *luctuosa* DEMAISON, 1902). Distributed in southern and central part of Europe, in the north reaching central Germany, basin of Danube and Ukraine, in Asia Minor, Caucasian countries, Central Asia and western China **menetriesii** (FALDERMANN, 1837).
- Pronotum finely or very finely punctate **8**.
8. Apex of aedeagus rounded. Colouration of body and sexual dimorphism as in *menetriesii* (thesis 7). General view as in plate XCVIII, **phot. 878**. Apex of aedeagus evenly rounded. Length 3.0–5.3 mm (= *rufipes* LAICARTING, 1781, *fulvipes* FABRICIUS, 1801, *meridionalis* WEISE, 1886). Variation: elytra black with violaceous metallic sheen (unnamed). Forms two subspecies: smaller (3.0–4.6 mm) and more slender, elytra more finely punctate, inhabits northern part of area (England, northern France, Germany, Poland, Ukraine) (nominotypical subspecies); larger (3.8–5.3 mm), broader, elytra more strongly punctate, inhabits remaining part of area (subsp. *chrysolina* WALT, 1835). Distributed in Central Europe (as above), S Europe, Canary Islands, N Africa, Asia Minor and Near East **fuscicornis** (LINNAEUS, 1766).
- Apex of aedeagus (figs **5103**, **5104**), tubular part narrowed in its middle. Puncturation of pronotum very fine, almost invisible. Remaining characters as in *fuscicornis* (thesis 8). Described from Morocco **audisioi** BIONDI, 1982.
9. Pronotum with small impressions at anterior margin behind eyes. Length 3.0–4.0 mm. Distributed in Arabian Peninsula and Egypt **puncticollis** WEISE, 1902.
- Pronotum without small impressions at anterior margin behind eyes. Body pale testaceous **10**.
10. Apex of aedeagus incised. Length 3.0–4.0 mm (= *uniformis* JACOBY, 1899). African species reported also from Yemen **decolorata** DUVIVIER, 1892.
- Apex of aedeagus rounded. See *pallidicolor*, thesis 4.

Genus *Podagricomela* HEIKERTINGER, 1924

The genus *Podagricomela* contains about 20 species distributed in Oriental region; of these two occur also in the discussed area.

Key to species

1. Pronotum and elytra vivid metallic green, head and fore angles of pronotum reddish. Sternum blackish, partly with metallic green shine. Legs and abdomen (except for base of first sternite) reddish yellow. In male last abdominal sternite with shallow impression. Length 3.0–3.5 mm. Broadly distributed in S China, occurs also in the provinces Kansu and Shantung **weisei** HEIKERTINGER, 1924.

- Colouration of body similar as in *weisei*, but underside and femora black. In male last abdominal sternite with large, roundish, very deep impression. Length about 3.0 mm. Distributed in China (Shansi, Kansu) ***flavitibialis*** WANG, 1990.

Genus ***Pseudodera*** BALY, 1861

The genus *Pseudodera* comprises twelve species distributed in SE Asia. In the discussed area one species.

Body brownish red or yellowish brown, sometimes chestnut. Antennae, tibiae and tarsi black, femora partly dark red or also almost black. On each elytron in apical part a large pale oval spot, usually with blackish surrounding. Body large, elongate, somewhat flattened, pronotum relatively long. General view as in plate XCVIII, **phot. 882**. Length 6.2–9.5 mm (= *bimaculata* JACOBY, 1885, *balyi* JACOBY, 1891). In continental Asia broadly distributed from Yunan and Tonkin to Jiangsu, also in Taiwan and Japan (Honshu, Kyushu, Shikoku) ***xanthospila*** BALY, 1861.

Genus ***Pseudoliprus*** CHUJO et KIMOTO, 1960

To the genus *Pseudoliprus* belong 7 species; three of these occur in discussed area.

Key to species

1. Scutellum glabrous. Yellowish to dark brown, elytra brown with sutural margins black or upper side entirely black. Antennae pale yellowish brown, tibiae and tarsi reddish brown, femora blackish. Length 2.5–3.0 mm (= *maebarai* OHNO, 1959). Pale forms described from Honshu as subspecies *flavus* OHNO, 1966. Distributed in Japan (Honshu, Kyushu, Shikoku) and in Korea ***suturalis*** (JACOBY, 1885).
- Scutellum with hair-bearing punctures on posterior half or along posterior margin **2**.
2. Pronotum closely punctate, diameter of punctures impressed on middle always wider than their interstices. Interstices smooth and shining. Forms two subspecies: black or blackish brown, antennae reddish brown with antennomeres 6–11 black, tibiae and tarsi reddish brown, femora blackish (nominotypical subspecies); body entirely yellowish brown (subsp. *watanabei* OHNO, 1960, probably colour variation only). Length 2.2–3.5 mm. Distributed in Honshu (Japan) ***nigritus*** (JACOBY, 1885).
- Pronotum granulate, less closely punctured, punctures diameter of punctures impressed on middle always narrower than their interstices. Forms three colour variations described as subspecies: blackish, antennae, tibiae and tarsi reddish brown, femora usually blackish (nominotypical subspecies), head, pronotum and legs reddish brown, elytra black, abdomen piceous (subsp. *flaviceps* OHNO, 1959), reddish brown, apical antennomeres and abdomen black (subsp. *tosanus* OHNO, 1966). Distributed in Japan (Hokkaido, Honshu, Kyushu, Shikoku), subsp. *tosanus* described from Shikoku ***hirtus*** (BALY, 1874).

Genus *Psylliodes* LATREILLE, 1829

Literature: HEIKERTINGER 1921, 1926, LEONARDI 1975.

Macrocnema STEPHENS, 1831, WEISE, 1888 nec HÜBNER, 1816 (*Lepidoptera*), *Psyllomima* BEDEL, 1898 (nom. nov. pro *Macrocnema* WEISE, 1888)

Key to subgenera

1. Pronotum and elytra covered by hairs *Phyllobactra* (p. 976).
- . Pronotum and elytra entirely bare 2.
2. Pretarsal part of hind tibia at least 1.5 (usually a few) times longer than the posttarsal part *Psylliodes* s. str. (p. 976).
- . Pretarsal part of hind tibia approximately as long as the posttarsal part 3.
3. Upper side bicolorous: pronotum yellowish, elytra black. Hind wings absent, body oval *Eupus* (p. 976).
- . Upper side unicolorous, dark, hind wings present, body outline rather parallel *Semicnema* (p. 1018).

Subgenus *Eupus* WOLLASTON, 1854

One species only. Body outline and colouration very characteristic (plate XCIX, **phot. 889**). Length 2.5–2.8 mm. Endemic to Madeira *tarsata* WOLLASTON, 1854.

Subgenus *Phyllobactra* LOPATIN, 1976

One species only. Body small, somewhat flattened. Upper side brownish-grey. Legs and antennae yellowish-grey, hind femora at apex pitchy. Pronotum covered by sparse, short, semi-adpressed hairs. Hairs on elytra somewhat longer, semiadpressed, arranged in longitudinal rows. Length about 2.0 mm. Described from S Tadjhikistan *pubipennis* LOPATIN, 1958.

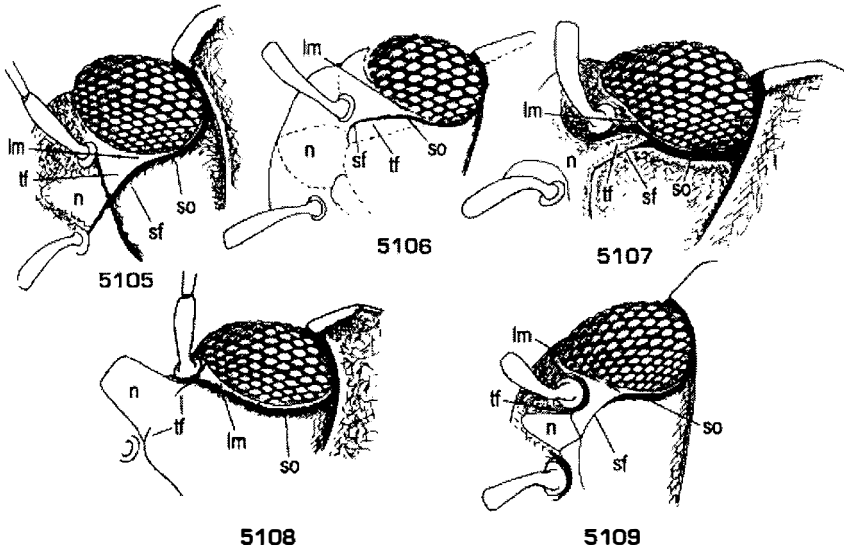
Subgenus *Psylliodes* s. str.

P. rufitarsis GRAËLLS, 1858 from Spain (insufficiently described, typus lost) and *P. nigripes* BOHEMAN, 1853, unclear species described from Sweden not included in the key.

Key to species

1. W Palaearctic species 1.
- . E Palaearctic species 130.
2. Upper side at least partly pale, from pale yellow to brown, chest and or pitchy 2.
- . Upper side or at least pronotum and elytra pure black or black with metallic reflex or sheen 55.
3. Pronotum and elytra differently coloured 4.
- . Pronotum and ground colour of elytra of the same colour (sometimes slightly paler or darker only) 6.

4. Pronotum black or blackish, elytra yellow or pale brownish, upper side with a feeble but perceptible metallic bronzy reflex. Underside black. Frons densely and strongly punctate, ocular furrows well-developed, frontal furrows indistinct. Aedeagus as in figs 5119, 5120, spermatheca as in fig. 5127. Length 2.4–3.0 mm (= *leprieuri* PIC, 1911). Variation: body large (3.0 mm), more slender than in typical form (ab. *aridissima* PEYERIMHOFF, 1941 described from Algerian Sahara). Mediterranean species, distributed from Cape Verde Islands to Near East and Saudi Arabia, in Europe known from France, Iberian Peninsula and Italy *hospes* WOLLASTON, 1854.
- Pronotum pale, elytra metallic blue, black-green or bronzy 5.

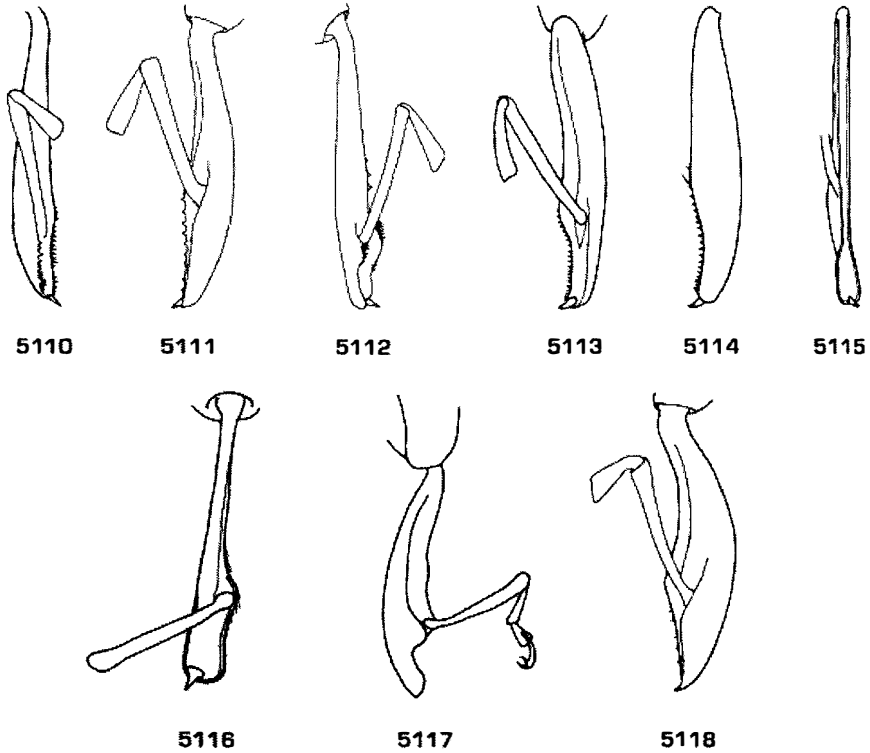


Figs 5105-5109. Frontal and praeocular furrows in *Psylliodes* (after WARCHALOWSKI 2000): 5105 – *P. attenuata*; 5106 – *P. cupreata*; 5107 – *P. instabilis*; 5108 – *P. napi*; 5109 – *P. picina*. Indications: **n** – nasal ridge (nasus); **tf** – frontal calli (tuberculi frontales); **lm** – eye border (limbus marginalis oculi); **so** – ocular furrow (sulcus ocularis); **sf** – frontal furrow (sulcus frontalis).

5. Body length over 3.0 mm, usually 3.5–4.0 mm. Lateral margin of pronotum at fore seta gently protruding. Here *chrysocephala* var. *collaris* (see thesis 55).
- Body length smaller, on average about 3.2 mm. Lateral margin of pronotum at fore seta forms a sharp tooth. Head and pronotum yellow orange, elytra blue with metallic sheen. Prosternum, basal part of antennae, fore and mid legs as well as hind tibiae and tarsi reddish-yellow. Remaining part of sternum and abdomen black. Aedeagus as in fig. 5128, spermatheca as in fig. 3469. General view as in plate XCIX, **phot. 890**. Length 2.9–3.5 mm (= *sophiae* HEIKERTINGER, 1914, nec ILLIGER, 1807, *cyanoptera* REDTENBACHER, 1849, nec ILLIGER, 1807). Variations: colouring of body as above (the commonest ab. *cyanoptera* REDTENBACHER, 1849), head red, pronotum pure black, elytra blue (the rare typical form), hind part of head black, pronotum orange yellow, elytra blue (ab. *nigrivertex* JACOBSON, 1902). Distributed in almost whole Eu-

rope, Asia Minor, Caucasian countries, Near East and Central Asia. Known also from Morocco *tricolor* WEISE, 1888.

- 6. Elytra without dark sutural stripe (sometimes sutural ridge darkened only) 7.
- Elytra with dark (sometimes brownish, but usually blackish) sutural stripe 50.

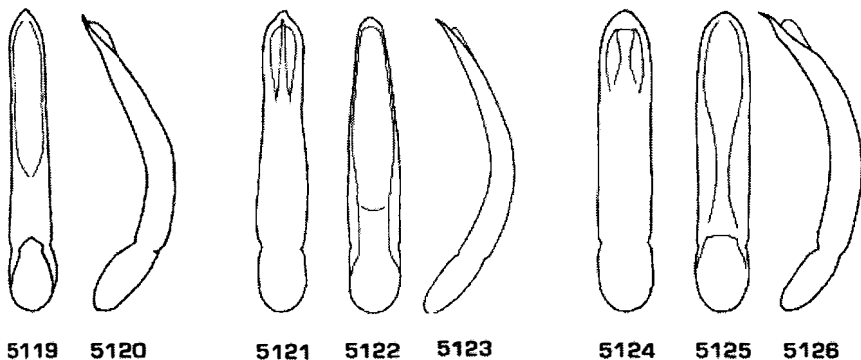


Figs 5110-5118. Hind tibia (5114, 5115 after GRUEV and TOMOV 1986; remaining after WARCHALOWSKI 2000):
 5110 – *Psylliodes (Psylliodes) aerea*; 5111 – *P. (P.) algirica*; 5112 – *P. (P.) cupreata*; 5113 – *P. (P.) gibbosa*;
 5114, 5115 – *P. (P.) magnifica*; 5116 – *P. (P.) marcida*; 5117 – *P. (P.) pallidipennis*; 5118 – *P. (P.) picina*.

- 7. Ventral margin of hind tibia distinctly curved 8.
- Ventral margin of hind tibia straight or feebly curved (figs 5112–5114) 39.
- 8. Inner margin of hind tibia deeply emarginate before apex, forming a tooth-like process (fig. 5117) 9.
- Inner margin of hind tibia at most shallowly emarginate, does not form a tooth-like process 11.
- 9. Frontal calli distinctly limited behind, frontal furrows deeply incised and immediately fused with ocular furrows (see also *maroccana*, thesis 52) 10.
- Frontal calli behind not limited or limited by very shallow and indistinct lines. Upper side brownish or brown, with very feeble metallic reflex. Antennae and legs yellow,

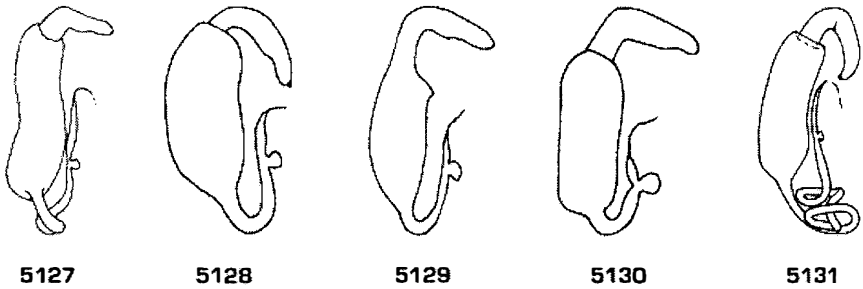
hind femora entirely, fore and mid femora in basal part only darkened. Humeral calli smooth, protruding, hind wings well-developed. Aedeagus as in figs 5124–5126, spermatheca as in fig. 5129. Length 2.0–3.0 mm. Distributed in southern Europe from Spain and France to Greece and in northern Africa from Morocco to Tunisia ...

- *pallidipennis* ROSENHAUER, 1856.
10. Upper side dark yellow, labrum blackish. Frontal calli slender, in the middle not or only weakly narrowed (figs 5105–5107), ocular and frontal furrows fused. Frons strongly punctate, vertex smooth, almost impunctate. Punctuation of pronotum fine and shallow. Humeral calli smooth, protruding, hind wings well-developed. Aedeagus as in figs 5132, 5133, spermatheca as in fig. 5130. Length 2.4–3.2 mm (= *crassicollis* FAIRMAIRE, 1857, *dilatata* FOU DRAS, 1859). Variation: punctuation of pronotum very fine and shallow, in central part barely visible (ab. *impuncticollis* CAILLOL, 1925). Distributed in Mediterranean area from Morocco, Portugal and France to Lebanon and Syria *puncticollis* ROSENHAUER, 1856.
- Upper side red-brown, chest or dark brown, pronotum sometimes darker with a weak bronzy reflex. Frontal calli in the middle strongly narrowed (fig. 5109). Hind wings usually reduced. Aedeagus as in figs 5135, 5136, spermatheca as in fig. 5131. Length 2.2–2.8 mm (= *ventricosa* ROTTENBERG, 1871). Variation: hind wings well-developed (ab. *completa* NORMAND, 1937). Mediterranean species, distributed in S Spain, Malta, Sicily, Sardinia, N Africa, Asia Minor and Near East *inflata* REICHE et SAULCY, 1858.
11. Hind tibiae in lateral view narrower, their ventral margin feebly bent (figs 5112–5114) 12.
- Hind tibiae in lateral view broader, their ventral margin strongly bent (figs 5110, 5111, 5117, 5118) 18.
12. Large species, body length 3.5–4.9 mm. Entirely dark yellow, sometimes sternum and abdomen darkened only. Aedeagus as in figs 5137, 5138. Distributed in basin of Don and in western part of Kazakhstan *rhaica* JACOBSON, 1922.
- Smaller species, body length under 3.5 mm 13.



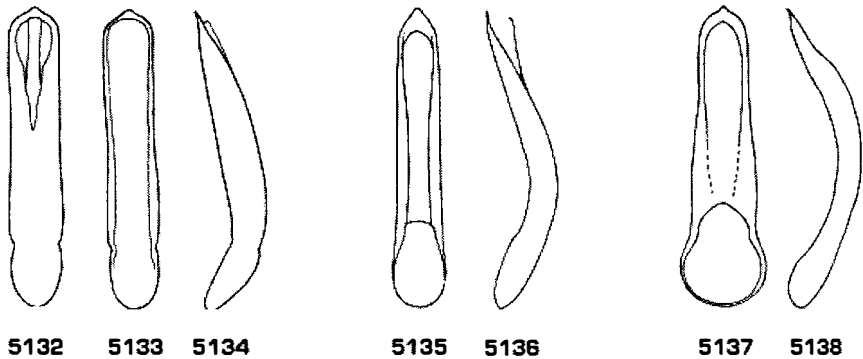
Figs 5119–5126. Aedeagus in ventral or dorsal and in lateral view (5119, 5120 after DOGUET 1994; remaining after WARCHALOWSKI 2000): 5119, 5120 – *Psylliodes (Psylliodes) hos pes*; 5121–5123 – *P. (P.) tricolor*; 5124–5126 – *P. (P.) pallidipennis*.

13. Body broader, lateral sides of elytra distinctly rounded 14
 -. Body more slender, lateral sides of elytra feebly rounded 16.



Figs 5127-5131. Spermatheca (5130 after WARCHALOWSKI 2000; 5131 after LEONARDI 1975; remaining after DOGUET 1994): 5127 – *Psylliodes (Psylliodes) hospes*; 5128 – *P. (P.) tricolor*; 5129 – *P. (P.) pallidipennis*; 5130 – *P. (P.) puncticollis*; 5131 – *P. (P.) inflata*.

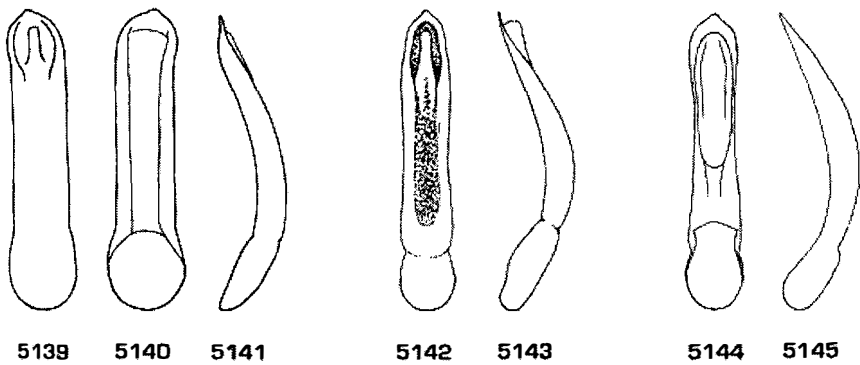
14. Upper side red-brownish. Aedeagus (figs 5139–5141) broad, its apex slightly asymmetrical, almost evenly rounded, apical lamella short and broad. Ductus spermathecae short (fig. 5146). Distributed in Italy and western part of Balkan Peninsula *wachsmanni* CSIKI, 1903.
 -. Upper side fuscous with feeble metallic sheen. Two (three?) species known from Madeira only 15



Figs 5132-5138. Aedeagus in ventral or dorsal and in lateral view (5132-5134 after WARCHALOWSKI 2000; 5135, 5136 after LEONARDI 1975; 5137, 5138 after LOPATIN 1977): 5132-5134 – *Psylliodes (Psylliodes) puncticollis*; 5135, 5136 – *P. (P.) inflata*; 5137, 5138 – *P. (P.) rhaica*.

15. Sides of pronotum regularly arched, rows of elytral punctures fine and weakly impressed Aedeagus as in figs 5142, 5143, symmetrical, spermatheca as in fig. 5147. Length 2.8–3.3 mm. Endemic to Madeira *erberi* DÖBERL, 1995.

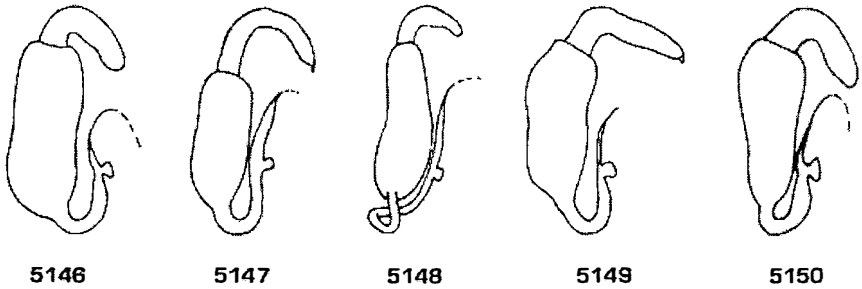
- Sides of pronotum angular, rows of elytral punctures strong. Length about 3.0 mm. Here perhaps also *amplicollis* WOLLASTON, 1865. Endemic to Madeira
..... ***umbratilis*** WOLLASTON, 1854.
- 6. Thickening of anterior angles of pronotum forms an angle behind. Upper side reddish yellow, pronotum usually somewhat darker. Legs yellow, hind femora strongly darkened, on dorsal side usually blackish with feeble metallic reflex. Humeral calli distinct, hind wings well-developed. Apex of aedeagus (figs 5151, 5152) on both sides deeply emarginate, apical lamella protruding; spermatheca as in fig. 5149. Length 3.0–3.5 mm. Distributed in N Morocco, Iberian Peninsula as well as in southern and central France ***laevicollis*** (DUFUR, 1851).
- Thickening of anterior angles of pronotum usually gently rounded, not forming an angle. Apical sides of aedeagus not or only slightly sinuate **17.**



Figs 5139–5145. Aedeagus in ventral or dorsal and in lateral view (5139–5141 after WARCHALOWSKI 2000; 5142, 5143 after DÖBERL 1995; 5144, 5145 after ERBER 1986): 5139–5141 – *Psylliodes (Psylliodes) wachsmanni*; 5142, 5143 – *P. (P.) erberi*; 5144, 5145 – *P. (P.) umbratilis*.

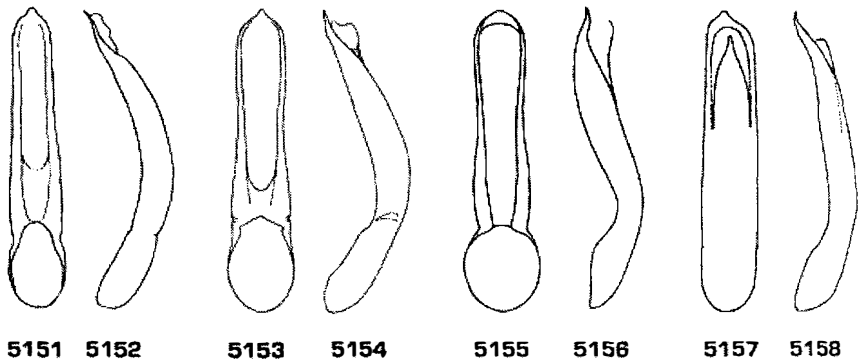
- 17. Body narrower, aedeagus (figs 5153, 5154) apically narrowed, with a distinct, long, tooth-like lamella in the middle of apical margin. Entirely dark yellow. Pretarsal part of hind tibia more than 2 × longer than the posttarsal part. Length 3.0–3.3 mm. Described from Morocco (High Atlas) ***cereola*** PEYERIMHOFF, 1925.
- Body broader, aedeagus apically not narrowed, often slightly widened (figs 5155, 5156). Pretarsal part of hind tibia less than 2 × longer than the posttarsal part fig. 5111. Spermatheca as in fig. 5150. Distributed in Iberian Peninsula, Algeria, Tunisia, southern and central Italy, Sardinia, Sicily and Ionian Islands
..... ***algorica*** ALLARD, 1859.
- 18. Upper side pale, dark yellowish to pale rusty-reddish **19.**
- Upper side darker, red-brown to pitchy **28.**
- 19. Head distinctly darker than pronotum and elytra. Puncturation of frons very fine or almost absent. Here *picus* ab. *melanophthalma* (thesis 32).
- Upper side uniformly pale, usually pale yellowish. Puncturation of frons sparse, but very distinct and usually strong **20.**

20. Frontal calli fused with margin of eye, ocular furrow shortened (fig. 5109) 21.
 -. Frontal calli indistinct, ocular furrow entire (fig. 5108) 27.



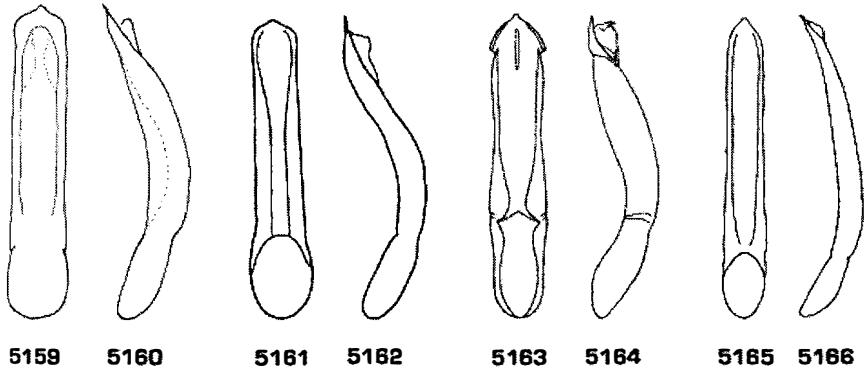
Figs 5146-5150. Spermatheca (5146 after LEONARDI 1972; 5147 after DÖBERL 1995; 5148 after ERBER 1986; 5149 after DOGUET 1994; 5150 after LEONARDI 1970): 5146 - *Psylliodes (Psylliodes) wachsmanni*; 5147 - *P. (P.) erberi*; 5148 - *P. (P.) umbratilis*; 5149 - *P. (P.) laevicollis*; 5150 - *P. (P.) algerica*.

21. Pronotum shining, deeply punctate 22.
 -. Pronotum less shining, often almost matt, its puncturation shallow. Frontal calli well-delimited, separated from frons by distinct furrows 25.
 22. Aedeagus (figs 5157, 5158) distinctly asymmetric. Upperside, underside and femora with weak metallic reflex, fresh reddish, after drying reddish brown, antennae in apical half darkened. Puncturation of pronotum fine and dense. Externally similar to *fiorellae* (antithesis 37) or *obscuraena* (thesis 38), but on average paler and differing by punctured pronotum and asymmetric. Length 2.8-3.3 mm. Described from SW Turkey ***yalvacensis*** GÖK, 2005.
 -. Aedeagus symmetric 23.



Figs 5151-5158. Aedeagus in ventral or dorsal and in lateral view (5153, 5154 after LEONARDI 2007; 5157, 5158 after GÖK 2005; remaining after DOGUET 1994): 5151, 5152 - *Psylliodes (Psylliodes) laevicollis*; 5153, 5154 - *P. (P.) cereola*; 5155, 5156 - *P. (P.) algerica*; 5157, 5158 - *P. (P.) yalvacensis*.

23. Upper side entirely pale rusty-brown or rusty-red, in immature specimens yellow, underside brownish. Two species very similar to each other, differing by not significant external and genital characters only **24.**
- Upper side bicolorous. Head and pronotum rusty-red, elytra dark brown. Aedeagus as in figs **5159**, **5160**, female unknown. Length 2.3–2.9 mm. Described from SW Turkey **diversicolor** NADEIN, 2006.



Figs 5159–5166. Aedeagus in ventral or dorsal and in lateral view (5159, 5160 after NADEIN 2006; 5161, 5162 after LEONARDI 2007; remaining after DOGUET 1994): 5159, 5160 – *Psylliodes (Psylliodes) diversicolor*; 5161, 5162 – *P. (P.) luteola*; 5163, 5164 – *P. (P.) maculatipes*; 5165, 5166 – *P. (P.) ruficolor*.

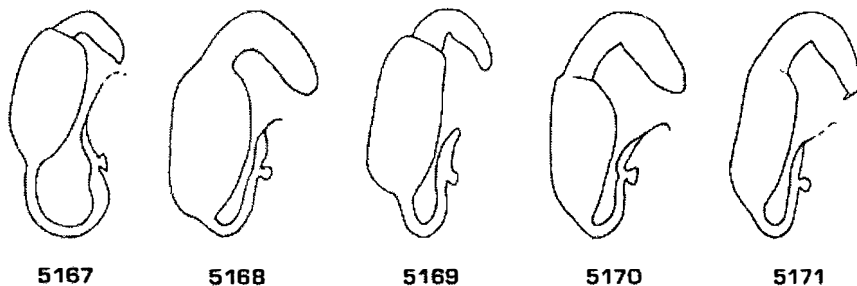
24. Apical part of antennae and hind femora feebly darkened. Frontal calli weakly perceptible, frontal furrows only partly (externally) visible. Humeral calli distinct, hind wings well-developed. Aedeagus as in fig. **5161**, spermatheca as in fig. **5167**. On average smaller, length 2.2–2.8 mm (= *nana* DUFTSCHMID, 1825, *pallida* STEPHENS, 1831, *propinqua* REDTENBACHER, 1849). Variation: pronotum strongly punctate, its surface covered by rugosities (ab. *aberrans* ROUBAL, 1916). Distributed in a great part of Europe, northwards reaching to England, Danmark and Byelorussia, eastwards to Asia Minor, Near East and Caucasian countries. Reported also from Morocco and Algeria **luteola** (MÜLLER, 1776).
- External characters as in *luteolus*. A similar species described from Georgia, after original description differs from *luteola* by weakly significant external characters only. Form of aedeagus and spermatheca also fit within variability spectrum; it is impossible to put this taxon in the key **concolor** NADEIN, 2006.
25. Hind femora pale with a dark spot, remaining characters as in *pallidicolor* (antithesis 26). Insufficiently studied species described from Hoggar Mts, reported also from Egypt and Israel **maculatipes** PIC, 1924.
- Hind femora entirely pale **26.**
26. Species distributed in W Mediterranean area. Aedeagus as in figs **3486**, **3487**. General view as in plate XCIX, **phot. 888**. Length 2.4–3.0 mm. According to published descriptions and illustrations no essential morphological differences between *pal-*

lidicolor (antithesis 26) and *ruficolor*, those are perhaps two races of *pallidicolor*. Distributed in S France, Iberian Peninsula, Morocco and Algeria

.....**ruficolor** DOGUET, 1992.

- Species distributed in E Mediterranean area. See remarks to *ruficolor* (thesis 26). Distributed in Near East, Asia Minor and Balkan Peninsula, reported also from Algeria and Spain

.....**pallidicolor** PIC, 1903.



Figs 5167-5171. Spermatheca (5169 after FURTH 1983; 5170 after LEONARDI and GRUEV 1993; 5171 after LEONARDI 1978; remaining after DOGUET 1994): 5167 - *Psylliodes (Psylliodes) luteola*; 5168 - *P. (P.) ruficolor*; 5169 - *P. (P.) testaceoconcolor*; 5170 - *P. (P.) illyrica*; 5171 - *P. (P.) feroniae*.

- 27. Length of body about 3.0 mm. Aedeagus in dorsal view slightly narrowed toward apex, its apex obtusely triangular. Elytra pale testaceous-yellowish, pronotum pale rusty-reddish, hind part of head brownish, underside (except prosternum) and hind femora brown or dark brown. Remaining characters and external view as in *cuprea* (antithesis 71). Aedeagus as in figs **5174**, **5175**, spermatheca not studied. Length about 3.0 mm. Described from Algeria

.....**heikertingeri** JACOBSON, 1922.

- Length of body about 3.5 mm. Aedeagus in dorsal view parallel, its apex rounded with barely visible apical angle. Body rather uniformly pale testaceous, underside and hind femora usually not or only slightly darkened. Remaining characters and external view as in *cuprea* (antithesis 71). Aedeagus as in figs **5176**, **5177**, spermatheca as in fig. **5169**. Length about 3.0 mm. Distributed in Near East

.....**testaceoconcolor** HEIKERTINGER, 1926.

- 28. Upper side, when dry, often with more or less distinct metallic reflex. Ground of pronotum smooth or covered by barely visible, short and thin rugosities. Frons smooth, without any ground sculpture, impunctate or almost impunctate

..... **29**.

- Upper side, when dry, without any metallic reflex. Frons and ground of pronotum and frons at least partly covered by microsculpture. Frontal Punctuation more distinct

..... **37**.

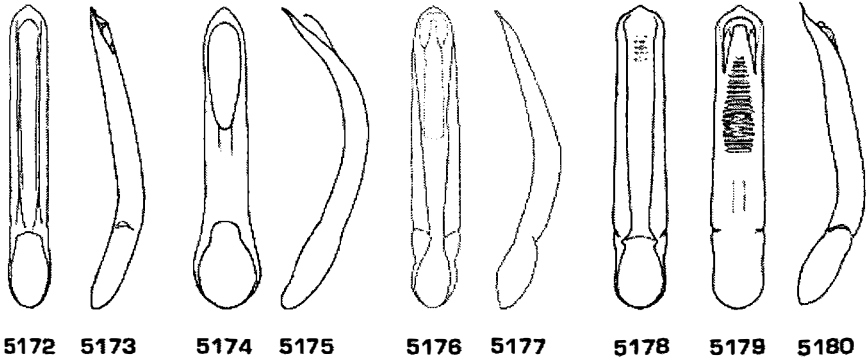
- 29. Transverse rugosities of dorsal surface of aedeagus cover its apical half. Aedeagus as in figs **5178-5180**, spermatheca as in fig. **5170**. In male first tarsomere of fore legs stronger widened. Distributed in Balkans, basin of Danube, Romania and Ukraine

.....**illyrica** LEONARDI et GRUEV, 1993.

- Transverse rugosities of dorsal surface of aedeagus absent or covering its mid part. In male first tarsomere of fore legs less strongly widened

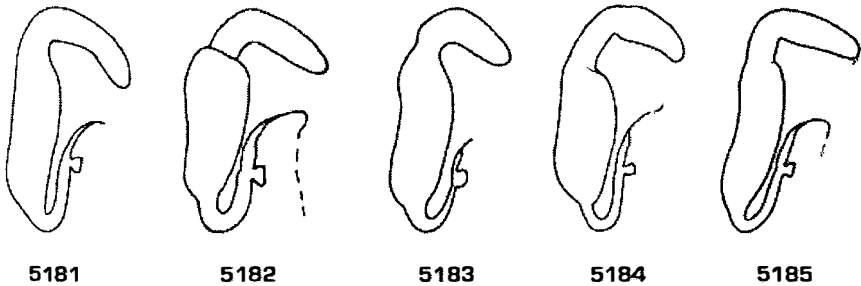
..... **30**.

30. Body very stout. Aedeagus very characteristic (figs 5186–5188), lanceolate, its apex without tooth or lamella. Spermatheca as in fig. 5171. Length 2.0–2.6 mm. Distributed in Apennines *feroniae* LEONARDI, 1978.
 -. Body more slender. Aedeagus not lanceolate, its apex with a small tooth or lamella 31.



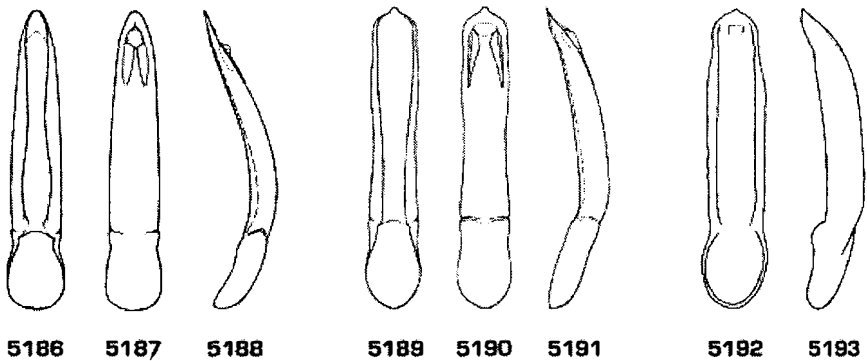
Figs 5172-5180. Aedeagus in ventral or dorsal and in lateral view (5172, 5173 after LEONARDI 2007; 5174, 5175 after LEONARDI 1971; 5176, 5177 after FURTH 1983; 5178-5180 after LEONARDI and GRUEV 1993): 5172, 5173 - *Psylliodes (Psylliodes) pallidicolor*; 5174, 5175 - *P. (P.) heikertingeri*; 5176, 5177 - *Psylliodes (Psylliodes) testaceoconcolor*; 5178-5180 - *P. (P.) illyrica*.

31. Colouring of body from dark yellow to nut-brown and brown. Frontal calli indistinct, frontal furrows only partly (externally) visible. At basal margin of pronotum on each side a small impression or pit. Humeral calli smooth, protruding, hind wings well-developed 32.
 -. Colouring of body generally darker, brown-red to pitchy. At basal margin of pronotum on each side one little impression or pit only 33.



Figs 5181-5185. Spermatheca (5181 after WARCHAŁOWSKI 2000; 5182 after LEONARDI 1970; 5183 after DOGUET 1994; remaining after LEONARDI 1978): 5181 - *Psylliodes (Psylliodes) picina*; 5182 - *P. (P.) rambouseki*; 5183 - *P. (P.) laevifrons*; 5184 - *P. (P.) cretica*; 5185 - *P. (P.) obsкуроaenea*.

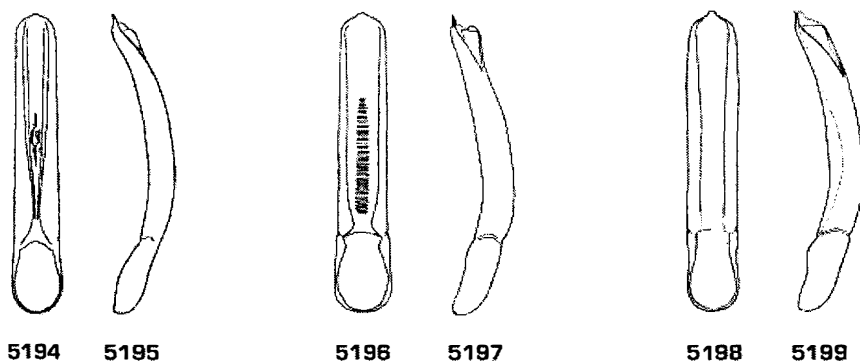
32. Apex of aedeagus (figs **5189–5191**) forms an angle of about 100° , its very tip more or less obtuse. Spermatheca as in fig. **5181**. General view as in plate XCIX, **phot. 886**. Length 2.2–2.8 mm (= *rufilabris* KOCH, 1803, *melanophthalma* DUFTSCHMID, 1825, *apicalis* STEPHENS, 1831, *picea* REDTENBACHER 1849). Variations: pronotum red-brown, elytra dark brown (ab. *rufopicea* LETZNER, 1846), upper side pale reddish, head somewhat darker (ab. *melanophthalma* DUFTSCHMID, 1825, usually immature specimens). Distributed from Pyrenees and Ireland to southern Finland and Black Sea, reported also from Spain *picina* (MARSHAM, 1802).
- . Apex of aedeagus forms an broad angle, remaining characters as in *picinus*, (thesis 27). Aedeagus as in figs **5192, 5193**. Length of male about 2.2 mm, female unknown. Colouring of body dark yellow or brownish-yellow. Female unknown. Known from Lebanon only *libanicola* PIC, 1903.



Figs 5186-5193. Aedeagus in ventral or dorsal and in lateral view (5186-5188 after LEONARDI 1978; 5189-5191 after NADEIN 2007; 5192, 5193 after FURTH 1983): 5186-5188 – *Psylliodes (Psylliodes) feroniae*; 5189-5191 – *P. (P.) picina*; 5192, 5193 – *Psylliodes (Psylliodes) libanicola*.

33. Apex of aedeagus (figs **5194, 5195**) shortly rounded with feeble lamella. Median furrow on under side of aedeagus narrowed in basal 1/3 of tubular part. Upper side usually bicolorous, head and pronotum rusty-brown, elytra darker, pitchy or almost black. Length 2.2–2.8 mm (= *bicolorata* ABEILLE, 1907). Described from Algeria *nigripennis* ALLARD, 1860.
- . Apex of aedeagus (except for *obsкуроaenea*, thesis 38) forms a rounded triangle with lamella **34**.
34. Impressions at basal margin of pronotum barely visible or almost absent **35**.
- . Impressions at basal margin of pronotum strong and distinct, see *obsкуроaenea*, thesis 38.
35. Posttarsal part of hind tibia short, about 1/3 as long as hind metatarsus. Aedeagus not studied, spermatheca as in fig. **5182**. Occurs as two subspecies (?forms): upper side pale red-brown, frontal furrows rather shallow, length 1.1–1.8 mm (nominotypical subspecies), upper side darker, frontal furrows sharply incised, length 1.8–

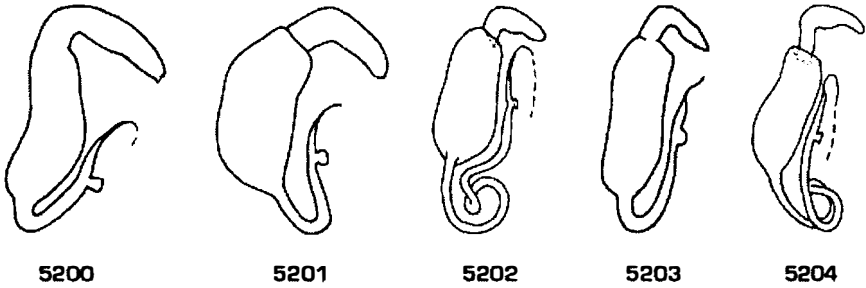
- 2.2 mm (subsp. *forojulensis* HEIKERTINGER, 1926). Both forms distributed in South-East Alps, in Austria, Slovenia and Croatia ***rambouseki*** HEIKERTINGER, 1909.
- Posttarsal part of hind tibia very long, almost as long as hind metatarsus **36**.
36. Antennae in apical part brown, fore and mid legs entirely pale. Upper side dark brown to black, usually pitchy, with weak bluish metallic reflex. Nasal ridge flat and broad, impunctate, tuberculi frontales indistinct. Elytra with humeral callus, hind wings normally developed. Aedeagus as in figs **5196**, **5197**, spermatheca as in fig. **5183**. Distributed in France, Iberian Peninsula and Morocco
 ***laevifrons*** KUTSCHERA, 1864.
- Antennae entirely pale, fore and mid femora darkened. Upper side convex, shining, blackish or dark brown with feeble metallic reflex, pronotum sometimes slightly paler. Frontal calli indistinct, frons and vertex impunctate except a few points near eyes. Humeral calli smooth, protruding, hind wings well-developed. Aedeagus as in figs **5198**, **5199**, spermatheca as in fig. **5184**. Length 1.9–3.0 mm. Perhaps a subspecies of *laevifrons* (thesis 36). Endemic to Creta ***cretica*** WEISE, 1888.



Figs 5194-5199. Aedeagus in ventral or dorsal and in lateral view (5194, 5195 after LEONARDI 2007; 5196, 5197 after LEONARDI 1978; 5198, 5199 after LEONARDI and GRUEV 1993): 5194, 5195 – *Psylliodes (Psylliodes) nigripennis*; 5196, 5197 – *P. (P.) laevifrons*; 5198, 5199 – *Psylliodes (Psylliodes) cretica*.

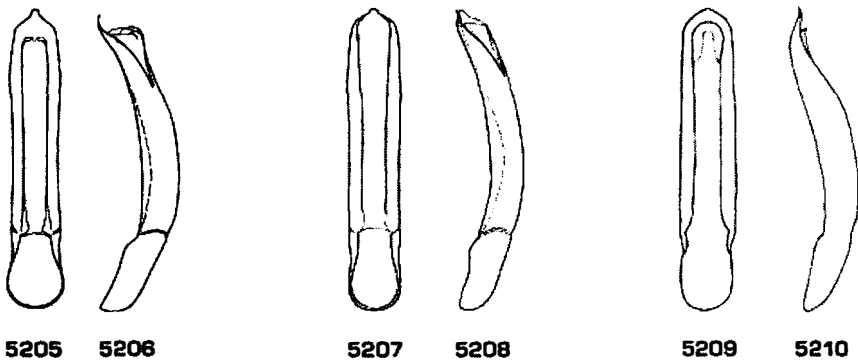
37. Body length on average about 2.7 mm **38**.
- Body length on average about 2.3 mm. Aedeagus as in figs **5205**, **5206**, spermatheca as in fig. **5200**. Described from Liguria ***fiorellae*** LEONARDI, 1978.
38. Aedeagus as in figs **5207**, **5208**, spermatheca as in fig. **5185**. Length about 2.7 mm. Distributed in western part of Mediterranean area (Iberian Peninsula, NW Africa, Italy) ***obsкуроaenea*** ROSENHAUER 1856.
- Aedeagus as in figs **5209**, **5210**. Length 2.4–3.1 (male) to 2.3–3.4 mm (female). Described from SW Turkey ***anatolica*** GÖK et GÜL ÇILBİROĞLU, 2004.
39. Posttarsal part of hind tibiae in dorsal view conspicuously widened (fig. **3450**). Upperside pale yellow or reddish-yellow, head and pronotum sometimes slightly darker. Frontal calli very narrow, feebly limited. Frontal puncturation strong and deep. Humeral calli smooth, protruding, hind wings well-developed. Aedeagus as in figs

- 5211, 5212**, spermatheca as in fig. **5201**. Length 2.6–3.8 mm, usually about 3.4 mm (= *operosa* FOU DRAS, 1860). Distributed in coasts of Baltic Sea, North Sea, Atlantic, Mediterranean Sea and Black Sea ***marcida*** (ILLIGER, 1807).
- . Posttarsal part of hind tibiae in dorsal view not or only weakly widened. Frontal puncturation finer **40**.



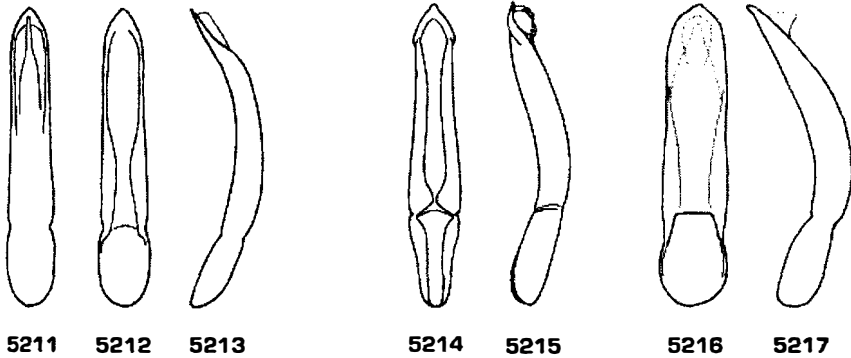
Figs 5200-5204. Spermatheca (5200 after LEONARDI 1978; 5201 after DOGUET 1994; 5203 after DOGUET 1976; remaining after LEONARDI 1970): 5200 – *Psylliodes (Psylliodes) fiorellae*; 5201 – *P. (P.) marcida*; 5202 – *P. (P.) saulcyi*; 5203 – *P. (P.) maroccana*; 5204 – *P. (P.) vehemens*.

- 40**. Length of body over 3.0 mm **41**.
- . Length of body under 3.0 mm **43**.
- 41**. External characters as in *peyerimhoffi* (antithesis 93) except for brownish colouration of upper side. Aedeagus as in figs **5214, 5215**. Often considered as subspecies of *peyerimhoffi*, but strongly differing by shape of aedeagus. Described from Tunisia
..... ***moricanidae*** PEYERIMHOFF, 1925.
- . External characters generally as in *chrysocephalus* (thesis 55) **42**.



Figs 5205-5210. Aedeagus in ventral and lateral view (5209, 5210 after Gök and Gül 2004, remaining after LEONARDI 1978): 5205, 5206 – *Psylliodes (Psylliodes) fiorellae*; 5207, 5208 – *P. (P.) obsкуроaenea*; 5209, 5210 – *P. (P.) anatolica*.

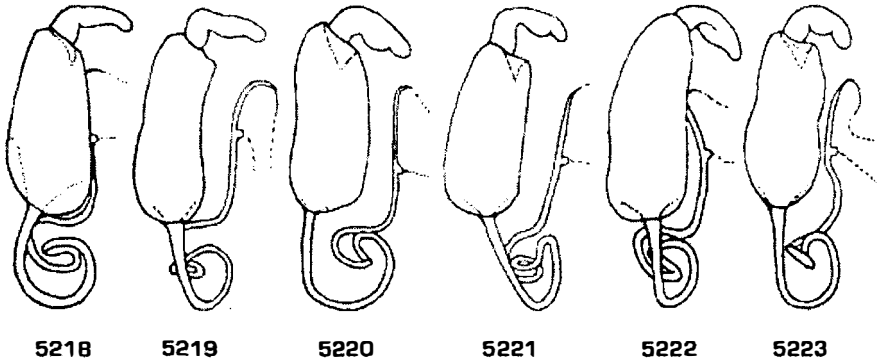
42. Wings absent. Vertex more flattened with stronger punctures, pronotum longer and more flattened. Insufficiently studied species (male unknown), described from Canary Islands, based on one female only; spermatheca similarly shaped as in *chrysocephala* (thesis 55). Possibly a local form of *chrysocephala* ***insularis*** NADEIN, 2006.
- Wings usually present. Vertex more convex and finer punctate, pronotum shorter. Here pale forms of *chrysocephala* (thesis 55).



Figs 5211-5217. Aedeagus indorsal, ventral and lateral view (5211-5213 after WARCHAŁOWSKI 2000; 5214, 5215 after LEONARDI 2007; 5216, 5217 after NADEIN 2007): 5211-5213 – *Psylliodes (Psylliodes) marcida*; 5214, 5215 – *P. (P.) moricandiae*; 5216, 5217 – *P. (P.) aeneola*.

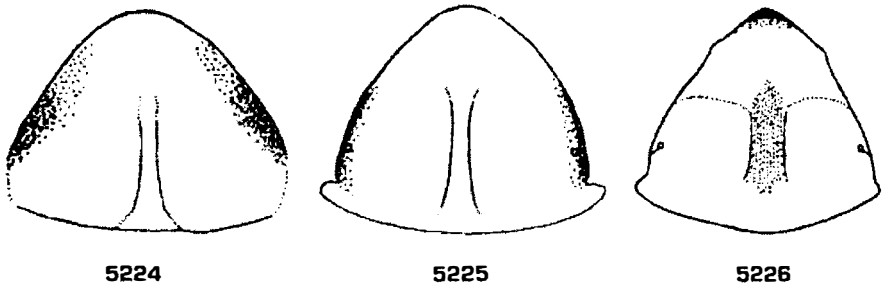
43. Length under 2.0 mm. Body somewhat cylindrical, anteriorly and posteriorly rounded. Upper side as well as fore and mid tibiae pitchy-brown with weak metallic reflex. Legs relatively dark coloured. Hind femora black with metallic reflex, tibiae and tarsi dark rusty-red. Upper side shining. Aedeagus as in figs 5216, 5217. Length 1.8 mm. Described from Kazakhstan ***aeneola*** HEIKERTINGER, 1911.
- Length over 2.0 mm **44.**
44. Aedeagus with two tooth-like broadenings at apex. Body at least on elytra weakly pigmented, pale coloured (*saucyi*-group) **45.**
- Aedeagus without tooth-like broadenings at apex, upper side not very weakly pigmented. Here pale forms of *cuprea* (antithesis 71).
45. Upper side bicolorous. Head and pronotum rusty-brown with weak bluish metallic reflex, elytra rusty-yellow **46.**
- Upper side unicolorous, pale yellowish, or slightly bicolorous (head and pronotum darker, but without bluish reflex) **49.**
46. Intervals of puncture rows an elytra flat. Apex of aedeagus (figs 5230, 5231) with characteristic small lateral process. Pygidium as in fig. 5224. Length 2.0–2.5 mm. Distributed rather broadly in Transcaspia ***dilutella*** HEIKERTINGER, 1911 ... **48.**
- Intervals of puncture rows an elytra convex **47.**
47. Vertex with very coarse and strong punctures, interstices convex, distinctly wrinkled. Species from Mongolia. See *infanda* (thesis 133).

- Vertex covered by fine or moderately strong punctures. Interstices smooth or very finely wrinkled. Apex of aedeagus with characteristic small lateral process as in *dilutella* (thesis 48).



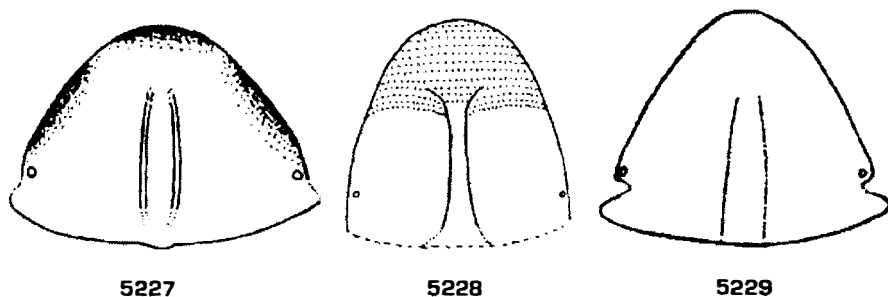
Figs 5218-5223. Spermatheca (5220 after NADEIN 2005, remaining after NADEIN 2007): 5218 - *Psylliodes (Psylliodes) dilutella*; 5219 - *P. (P.) saulcyi*; 5220 - *P. (P.) grigorievi*; 5221 - *P. (P.) infanda*; 5222 - *P. (P.) analogica*; 5223 - *P. (P.) astenica*.

- 48. Teeth at apex of aedeagus shortly rounded. Humeral calli absent or feebly developed, hind wings reduced. Pygidium as in fig. 5225. Aedeagus as in figs 5232, 5233, with characteristic small lateral process as in *dilutella* (thesis 46). Spermatheca as in figs 5202, 5219. Length 2.0-2.5 mm (= *atriplicis* JACOBSON, 1922). Relatively rare, but broadly distributed from Egypt, Near East, Asia Minor and E Ukraine to Iran, Kazakhstan and Mongolia *saulcyi* ALLARD, 1866.
- Teeth at apex of aedeagus longer and sharp. Pygidium of female as in fig. 5227. Aedeagus as in figs 5234, 5235. Length 2.3-2.5 mm. Described from Kirghyzstan *analogica* NADEIN, 2005.



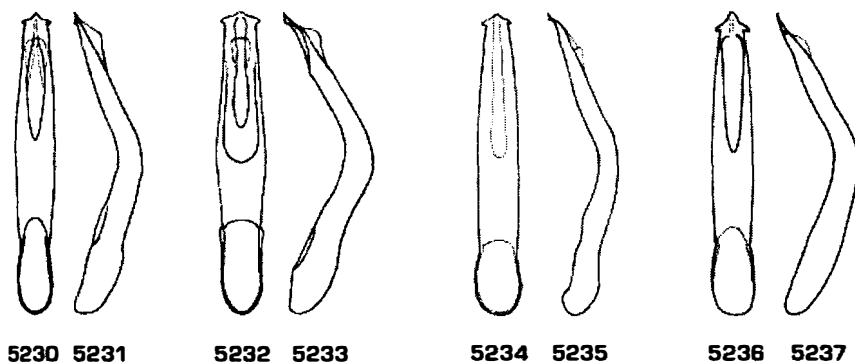
Figs 5224-5226. Pygidium (after NADEIN 2005): 5224 - *Psylliodes (Psylliodes) dilutella*; 5225 - *P. (P.) saulcyi*; 5226 - *P. (P.) infanda*.

49. Upper side unicolorous, pale yellow. On elytra intervals of puncture rows very broad and feebly convex, about 4–6 × broader than puncture rows. Pygidium of female as in fig. 5228. Aedeagus not studied. Length about 2.7 mm. Insufficiently studied species described from Uzbekistan **grigorievi** JACOBSON, 1922.
- Upper side bicolorous. On elytra intervals of puncture rows narrow and strongly convex, about 3 × broader than puncture rows. Aedeagus not studied. Spermatheca as in fig. 5222. In female pygidium as in fig. 5229. Length 2.0–2.1 mm. Described from Tadjhikistan **astenica** NADEIN, 2005.



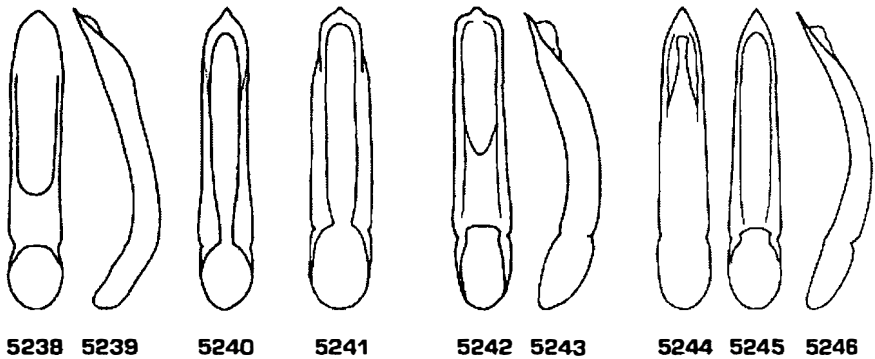
Figs 5227-5229. Pygidium (after NADEIN 2005): 5227 – *Psylliodes (Psylliodes) analogica*; 5228 – *P. (P.) grigorievi*; 5229 – *P. (P.) astenica*.

50. Frontal calli distinct, reaching to margin of eye **51.**
- Frontal calli indistinct or absent, ocular furrow not interrupted **54.**
51. Frons finely punctate. Upper side brownish with a blackish sutural stripe **52.**
- Frons strongly punctate **53.**



Figs 5230-5237. Aedeagus in ventral and lateral view (after NADEIN 2007): 5230, 5231 – *Psylliodes (Psylliodes) dilutella*; 5232, 5233 – *P. (P.) saulcyi*; 5234, 5235 – *P. (P.) infanda*; 5236, 5237 – *P. (P.) analogica*.

52. On average smaller. Body more slender. Hind wings well-developed. Sutural stripe present in hind part only, or entire, but broadened in hind part. Remaining external characters similar as in *pallidipennis* (antithesis 8). Aedeagus as in figs **5238**, **5239**, spermatheca as in fig. **5203**. Length 2.0–3.0 mm. Distributed in Canary Islands, Morocco, Corsica, Sardinia and southern Italy *maroccana* HEIKERTINGER, 1916.
- . On average larger. Body more stout. Hind wings partly reduced. Sutural stripe without broadenings. Remaining external characters as in *maroccana* (thesis 52). Aedeagus not studied. Length 2.7–3.1 mm. Distributed in Canary Islands (Gomera, Tenerife) only *angusticeps* ISRAELSON, 1980.
53. Pronotum broader, narrowed anteriorly. Upper side pale rusty-yellow, usually with blackish pattern: a spot on head, a spot on pronotum before scutellum and shortened sutural stripe. Sutural stripe sometimes strongly widened, reaching to lateral margin of elytra. Hind wings reduced. Aedeagus as in fig. **5240**, spermatheca as in fig. **5204**. Length 2.3–3.0 mm. Forms two subspecies: characters as above (nominotypical subspecies) distributed in Madeira, probably endemic; upper side uniformly pale rusty-yellow, sometimes with a shortened, brownish sutural stripe. Hind wings well-developed (subsp. *normandi* HEIKERTINGER, 1916 = *canarica* JACOBSON, 1922, *stora* UYTENBOOGAART, 1935, distributed in Canary Islands, Algeria, Tunisia and Morocco, reported also from Spain) *vehemens* WOLLASTON, 1854.
- . Pronotum narrower, weakly narrowed anteriorly, almost square. External characters as in *vehemens normandi* (thesis 53). Aedeagus as in fig. **5241**, spermatheca as in fig. **5247**. Length 2.3–3.0 mm. Distributed in Azores *azorica* JACOBSON, 1922.

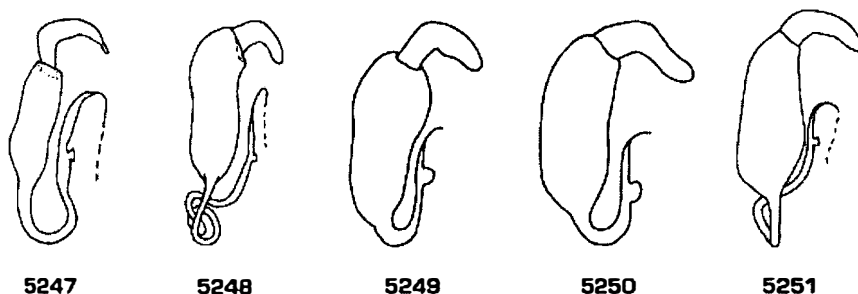


Figs 5238–5246. Aedeagus in ventral or dorsal and in lateral view (5238, 5239 after DOGUET 1976; 5242, 5243 after DOGUET 1994; 5244–5246 after WARCHAŁOWSKI 2000; remaining after LEONARDI 1970): 5238, 5239 – *P. (P.) maroccana*; 5240 – *Psylliodes (Psylliodes) vehemens*; 5241 – *P. (P.) azorica*; 5242, 5243 – *P. (P.) affinis*; 5244–5246 – *P. (P.) circumdata*.

54. Apex of elytra pale. Head and pronotum pale rusty-reddish, elytra testaceous with a narrow blackish sutural stripe, usually anteriorly shortened. Head sometimes very dark, pitchy brown. The most part of hind femora and upper side except pronotum blackish or black. Frons and vertex distinctly reticulate, impunctate, except a few strong points at eyes. Humeral callus smooth, protruding, hind wings well-developed.

loped. Aedeagus as in figs 5242, 5243, spermatheca as in fig. 5248. Length 2.0–2.6 mm. Reported as pest of potatoes (*Solanum tuberosum* L.). Distributed in whole Europe, Asia Minor, Caucasian countries, Near East and Central Asia. Known also from Morocco *affinis* (PAYKULL, 1799).

- Apex of elytra darkened. Upper side coloured as in *affinis* (thesis 38), but the sutural stripe encroaches on apical margin of elytra. Aedeagus as in figs 5244–5246, spermatheca as in fig. 5249. Length 2.0–2.9 mm (= *sicanus* MULSANT et REY, 1874, *integer* WEISE, 1888). Variations: sutural stripe present in hind part of elytra only (ab. *lethierryi* ALLARD, 1860), very pale specimens without blackish pattern on upper side (ab. *festae* DODERO, 1925). Distributed in whole Mediterranean area, northern Africa from Morocco to Libya *circumdata* (REDTENBACHER, 1842).

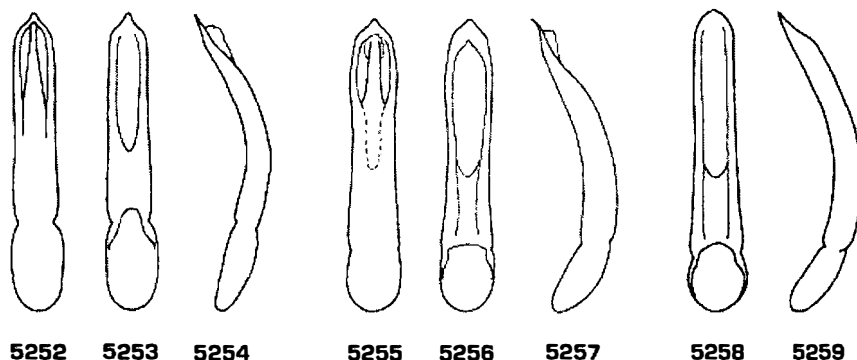


Figs 5247–5251. Spermatheca (5247 after LEONARDI 1970; remaining after DOGUET 1994): 5247 – *Psylliodes* (*Psylliodes*) *azorica*; 5248 – *P. (P.) affinis*; 5249 – *P. (P.) circumdata*; 5250 – *P. (P.) chrysocephala*; 5251 – *P. (P.) dulcamarae*.

- 55. Head, at least anteriorly, reddish. Pronotum, elytra and dorsal part of hind femora usually black-blue. Remaining part of legs reddish-yellow to pale brown, fore and mid femora sometimes darkened. Puncturation of head and pronotum fine and very dense. In male first tarsomere of fore legs very strongly widened. General view as in plate XCIX, phot. 883. Aedeagus as in figs 5252–5254, spermatheca as in fig. 5250. Length 3.4–4.5 mm (= *anglicana* GMELIN, 1790, *nigricollis* MARSHAM, 1802, *cyanoptea* ILLIGER, 1807, *nucea* ILLIGER, 1807, *sophiae* ILLIGER, 1807, *atlanticus* FAUVEL, 1897 and several further synonyms). Variations: length of body under 3.5 mm (ab. *allardi* BACH, 1859), legs strongly darkened (ab. *erythrocephala* LINNAEUS, 1758), only mouth parts red, legs dark (ab. *peregrina* WEISE, 1888), pronotum red, elytra blue (ab. *collaris* WEISE, 1888), pronotum without metallic sheen, black or pitchy (ab. *tristicula* CSIKI, 1953), pronotum black-blue, elytra reddish brown (ab. *anglica* FABRICIUS, 1775), upper side entirely dark brown or pitchy without metallic sheen (ab. *sicardi* WEISE, 1894), upper side dark rusty-red to brown, puncturation of elytra very strong (ab. *catinensis* WEISE, 1888), upper side yellow to testaceous, thickenings of anterior angles of pronotum gently rounded behind (ab. *kunzei* FOU DRAS, 1859), colouring as in *kunzei*, but thickenings of anterior angles of pronotum form a sharp angle (ab. *angulicollis* HEIKERTINGER, 1926). One subspecies was described from Algeria: colouring of body as in ab. *angulicollis*, aedeagus somewhat differently shaped,

perhaps a distinct species (subsp. *inops* PEYERIMHOFF, 1915). Known pest of cultivated *Brassicaceae*. Distributed in whole Mediterranean area, almost whole Europe, Asia Minor and Caucasian countries ***chrysocephala*** (LINNAEUS, 1758).

- Head entirely black or black with metallic reflex 56.
- 56. Punctuation of pronotum double (fine and strong punctures mixed). Hind tibiae relatively short, broad, their ventral margin strongly curved 57.
- Punctuation of pronotum uniform or uneven, but not distinctly double 59.
- 57. Ocular furrows shallow, often indistinct. Upper side black-blue. Legs entirely brown or black, usually with reddish joints, basal 3-4 antennomeres yellow amber. Secondary punctuation of elytra always very distinct. Humeral calli protruding, hind wings well-developed. In male trasi not widened. General view as in plate XCIX, **phot. 884**. Aedeagus as in fig. 5255-5257, spermatheca as in fig. 5251. Length 3.0-4.2 mm, on average about 3.7 mm ***dulcamarae*** (KOCH, 1803).
- Ocular furrows deep, sharply incised. Tibiae, tarsi and 3-4 basal antennomeres yellow amber, tibiae sometimes in mid part darkened. Smaller, length on average about 3.3 mm 58.

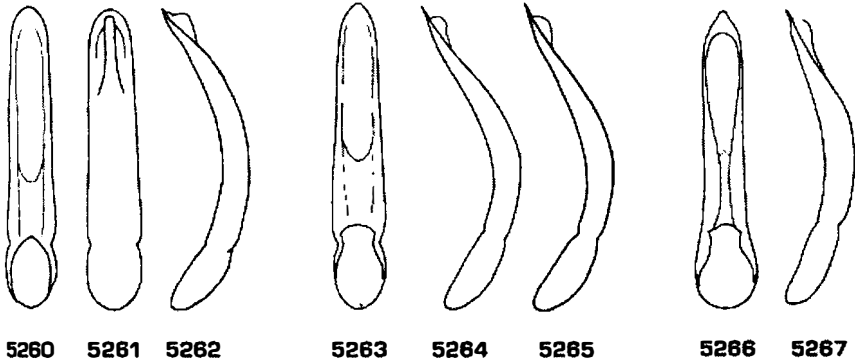


Figs 5252-5259. Aedeagus in ventral or dorsal and in lateral view (5252-5254 after WARCHALOWSKI 2000; remaining after DOGUET 1994): 5252-5254 - *Psylliodes (Psylliodes) chrysocephala*; 5255-5257 - *P. (P.) dulcamarae*; 5258, 5259 - *P. (P.) hyoscyami*.

- 58. Upper side black with bluish-green or black-bronzy reflex. Fore femora pale. Pronotum more weakly narrowed anteriorly. Aedeagus as in figs 5258, 5259, spermatheca as in fig. 5268. Length 2.8-3.8 mm (= *coerulea* PAYKULL, 1799). Variations: metallic reflex of upper side bluish-green or blue (typical form) or cupreous (ab. *cupronitens* FÖRSTER, 1849). Lives on *Hyoscyamus* L. (*Solanaceae*). Transpalearctic species, distributed from the British Isles to Russian Far East and in European part of Mediterranean area ***hyoscyami*** (LINNAEUS, 1758).
- Upper side usually black-blue, more rarely black with greenish or bronzy reflex. Fore and mid femora darkened. Pronotum more distinctly narrowed anteriorly. Aedeagus as in figs 5260-5262, spermatheca as in fig. 5269. Length 2.8-3.8 mm (= *brunnipes* DUFTSCHMIDT, 1825, *unimaculata* STEPHENS, 1831, *allardi* BACH, 1866). Variations:

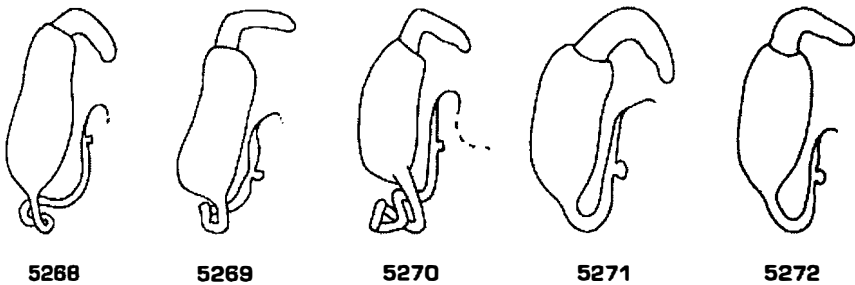
tions: antennae almost entirely pale (ab. *erythroceros* ABELLE, 1895), upper side cupreous-bronzy (ab. *cardui* WEISE, 1888), upper side blue (ab. *cyanescens* NORMAND, 1937). Lives on *Carduus* L. and *Cirsium* MILL. (*Asteraceae*). Transpalaeartic species distributed from Morocco and England to Russian Far East

- **chalconera** (ILLIGER, 1807).
 59. Ocular furrow runs along all inner margin of eye, not narrowed by external end of frontal callus **60**.
 -. Ocular furrow distinctly narrowed, interrupted or bent by external end of frontal callus **77**.



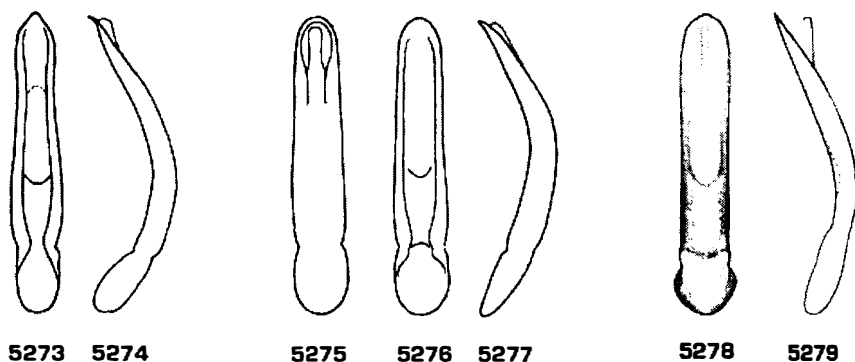
Figs 5260-5267. Aedeagus in ventral and lateral view (5260-5262 after DOGUET 1994; 5263-5265 after WARCHAŁOWSKI 2000; 5266, 5267 after LEONARDI and GRUEV 1993): 5260-5262 – *Psylliodes* (*Psylliodes*) *chalconera*; 5263-5265 – *P. (P.) cupreata*; 5266, 5267 – *P. (P.) crambicola*.

60. Ocular furrow diverge from eye resulting in a triangular area, which may be interpreted as a widening of ocular ridge (fig. **5106**) **61**.
 -. Ocular ridge not widened, ocular furrow run just along margin of eye (fig. **5108**).
 Body (except *vindobonnensis*, thesis 63) larger, at least 2.5 mm **62**.



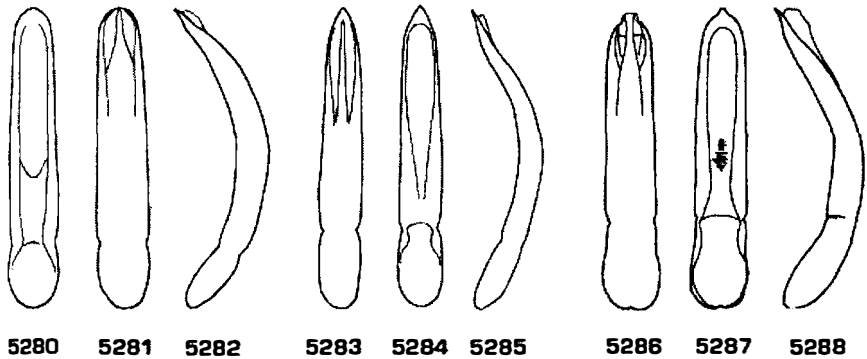
Figs 5268-5272. Spermatheca (after DOGUET 1994): 5268 – *Psylliodes* (*Psylliodes*) *hyoscyami*; 5269 – *P. (P.) chalconera*; 5270 – *P. (P.) cupreata*; 5271 – *P. (P.) vindobonnensis*; 5272 – *P. (P.) napi*.

61. Frontal calli flat, rather broad. Upper side and hind femora shining, black, with feeble but distinct cupreous reflex. Tibiae and tarsi relatively dark, usually rusty-brown, fore and mid femora stronger darkened, dark brown. Punctuation of pronotum strong. Aedeagus as in figs 5263–5265, spermatheca as in fig. 5270. Length 2.2–2.4 mm. Distributed in Europe and Asia, from France to Buriatia, recorded also from Spain *cupreata* (DUFTSCHMID, 1825).
- Frontal calli convex, narrow, their inner apex sharpened. Upper side bronzy black. Punctuation of pronotum shallow, points of different size. Aedeagus and spermatheca not studied. Length 2.3 mm. Described from Armenia *araratica* IABLOKOFF-KHNZORIAN, 1968.
62. Posttarsal part of hind tibia widened almost as in *marcida* (fig. 3450). Upper side black with bluish (more rarely greenish-blue) metallic reflex. Underside and apical part of hind femora brown or pitchy. Ground of pper part of frons and of pronotum reticulate, their punctuation similar, fine and dense. Reticulation of elytra always distinct, their sheen almost silky. Aedeagus as in figs 3563, 3564. Spermatheca not studied. Length 3.3–3.9 mm. Lives on *Crambe maritima* L. (*Brassicaceae*). Distributed on all coasts of Baltic Sea *crambicola* LOHSE, 1953.
- Posttarsal part of hind tibia not widened 63.
63. Length of body not exceeding 2.4 mm (length of elytra under 1.9 mm). Upper side with distinct blue metallic sheen. Punctuation of frons and vertex very shallow, not always perceptible. Punctuation of pronotum also very fine, blurred by microsculpture of ground. Aedeagus as in figs 5273, 5274, spermatheca as in fig. 5271. Length 2.0–2.4 mm. Distributed in Alps, Carpathians, Apennines, Mid and South Germany, southern Poland, Danube basin, Balcans, Ukraine and Asia Minor *vindobonnensis* HEIKERTINGER, 1914.
- Length of body exceeding 2.4 mm (length of elytra over 2.0 mm) 64.
64. Fore and mid femora entirely pale or barely perceptibly darkened 65.
- Fore and mid femora always distinctly darkened 70.
65. Apex of aedeagus obtusely rounded 66.
- Apex of aedeagus sharpened or with a lamella 68.



Figs 5273–5279. Aedeagus in dorsal, ventral and lateral view (5273–5277 after WARCHALOWSKI 2000; 5278, 5279 after NADEIN 2006): 5273, 5274 – *Psylliodes (Psylliodes) vindobonnensis*; 5275–5277 – *P. (P.) latifollis*; 5278, 5279 – *P. (P.) submontana*.

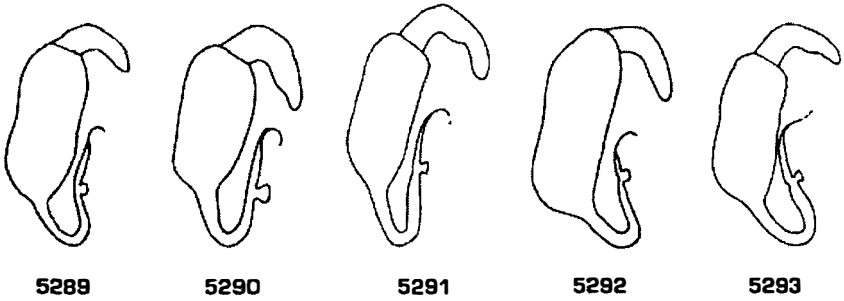
66. Pronotum narrower, thickening at fore seta forms a distinct angle **67**.
 -. Pronotum broader, thickening at fore seta gently rounded. Externally similar to *napi* (antithesis 67) but pronotum broader and hind femora darkened in apical part only. Aedeagus as in figs **5275–5276**, spermatheca as in fig. **5289**. Length 2.8–3.5 mm (= *weberi* LOHSE, 1955). Variation: hind femora entirely pale (ab. *rufofemorata* HEIKERTINGER, 1912). Distributed mostly in W Europe and N Africa, eastwards reaching to eastern Germany, N Italy, Greece and Crete, reported also from Slovakia and Bulgaria ***laticollis*** KUTSCHERA, 1864.



Figs 5280–5288. Aedeagus in dorsal, ventral and lateral view (5280–5285 after WARCHAŁOWSKI 2000; 5286–5288 after LEONARDI and ARNOLD 1995): 5280–5282 – *Psylliodes (Psylliodes) napi*; 5283–5285 – *P. (P.) isatidis*; 5286–5288 – *P. (P.) wrasei*.

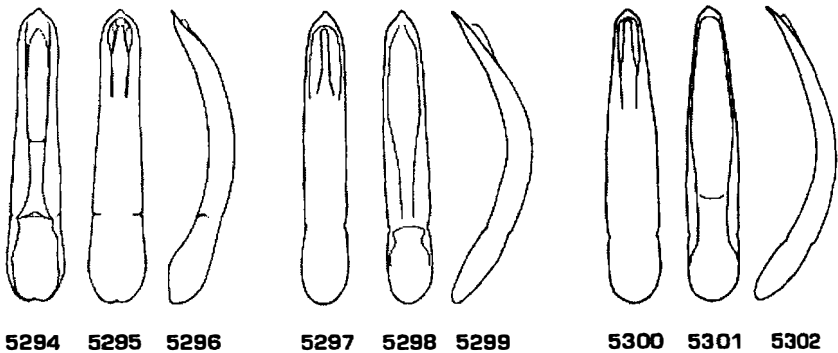
67. Upper side with bronzy shine. All remaining external characters as in *napi* (antithesis 67), also aedeagus shape (figs **5278, 5279**) being similar. In female spermatheca with longer pump (collum+pileum), ductus between vasculum and bulbus much longer as in *napi*. Length. 2.5–2.7 mm. Described from foothills of NW Caucasus ***submontana*** NADEIN, 2006.
 -. Upper side with distinct rather weak blue shine. Underside and hind femora black or pitchy, remaining parts of legs and basal part of antennae yellow or pale amber. Humeral callus not protruding, but distinct, hind wings well-developed. General view as in plate XCIX, **phot. 885**. Aedeagus as in figs **5280–5282**, spermatheca as in fig. **5272**. Length 2.3–3.5 mm (= *rapae* ILLIGER, 1807, *ecalcarata* REDTENBACHER, 1849, *lunariae* JACQUET, 1887). Variations: metallic sheen of upper side greenish or bronzy (unnamed), fore femora partly darkened (unnamed), antennae in apical part feebly darkened (ab. *flavicornis* WEISE, 1883), outline of body slightly broader, antennae strongly darkened apically, puncturation of pronotum relatively sparse (ab. *asturiensis* WEISE, 1888). Lives on *Brassicaceae*, particularly on *Alliaria officinalis* L. Distributed in almost whole Europe, Asia Minor, Caucasian countries and Kazakhstan, eastwards reaching to Yakutia. Its occurrence in North Africa requires confirmation ***napi*** (FABRICIUS, 1792).

68. Aedeagus slender, apically sharpened, without lamella. Very similar to blue forms of *cuprea* (antithesis 71), but pronotum longer and in male first tarsomere of fore legs less strongly widened. Aedeagus as in figs 5283–5285, spermatheca as in fig. 5290. Length 2.8–3.2 mm. Lives on *Isatis tinctoria* L. and *I. canescens* DE CAND. (*Brassicaceae*). Distributed in Central Europe from France to Hungary, in Italy, Balkan Peninsula, southern Ukraine, Asia Minor and Caucasian countries, northwards to Denmark, S Sweden and southern Finland *isatidis* HEIKERTINGER, 1912.
- . Apex of aedeagus with a distinct lamella 69.



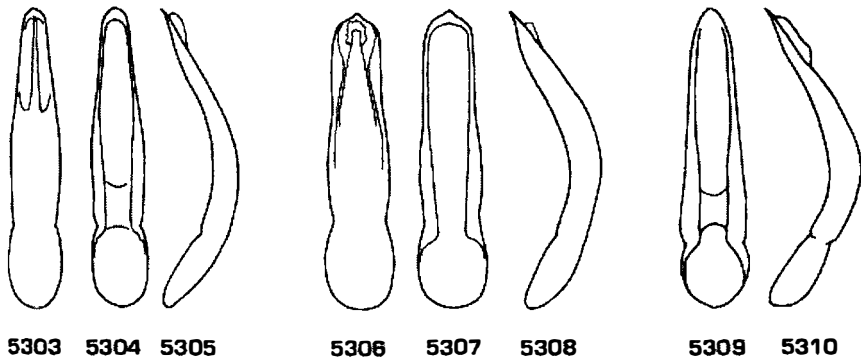
Figs 5289–3593. Spermatheca (5291, 5293 after LEONARDI and ARNOLD 1995; remaining after DOGUET 1994): 5289 – *Psylliodes (Psylliodes) laticollis*; 5290 – *P. (P.) isatidis*; 5291 – *P. (P.) wrasei*; 5292 – *P. (P.) cuprea*; 5293 – *P. (P.) ozisiki*.

69. Body larger (male 3.3–3.5 mm, female 3.5–3.7 mm). In mid part of underside of aedeagus (figs 5286–5288) a short area with transverse rugosities, spermatheca as in fig. 5291. Distributed in Caucasian countries, southern Ukraine, Greece, Macedonia and ?Bulgaria *wrasei* LEONARDI et ARNOLD, 1995.
- . Body smaller (male 2.7–3.2 mm, female 2.9–3.7 mm). Underside of aedeagus without transverse rugosities 70.



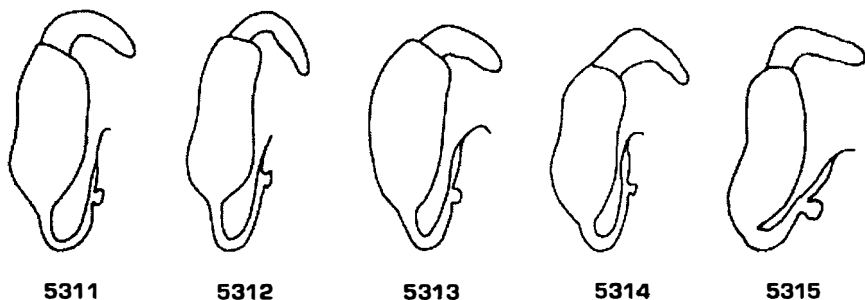
Figs 5294–5302. Aedeagus in dorsal, ventral and lateral view (5294–5296 after LEONARDI and ARNOLD 1995, remaining after WARCHALOWSKI 2000): 5294–5296 – *Psylliodes (Psylliodes) ozisiki*; 5297–5299 – *P. (P.) cuprea*; 5300–5302 – *P. (P.) toelgi*.

70. Upper side with perceptible metallic reflex **71.**
 - Upper side pure black. Aedeagus as in figs **5294–5296**, spermatheca as in fig. **5293**. Length 2.8–3.7 mm. Distributed in Armenia and NE Turkey **ozisiki** LEONARDI et ARNOLD, 1995.
71. Pronotum blackish, elytra dark brown, metallic reflex feeble. Frons and vertex more densely punctured, first tarsomere of fore legs in male not strongly but distinctly enlarged. Length 2.7–3.3 mm. Described from Great Britain, often confused with *hospes* (thesis 4) as well as with colour aberrations or immature specimens of *cuprea* (antithesis 71) and *chrysocephala* (thesis 55). Perhaps not a distinct species **luridipennis** KUTSCHERA 1864.
- Pronotum and elytra in mature specimens unicolorous. Upper side and at least apical part of hind femora black with bronzy (in aberrations blue or greenish) metallic reflex. Underside pitchy, fore and mid femora, all tibiae and tarsi yellow or pale amber. Aedeagus as in figs **5297–5299**, spermatheca as in fig. **5292**. Length 2.7–3.1 mm (male) to 2.9–3.3 mm (female) (= *polita* GRAVENHORST, 1807, *obscura* DUFTSCHMID, 1825, *herbacea* FOUDRAS, 1859, *cypricolor* ALLARD, 1860, *foudrasi* BACH, 1866). Variations: metallic reflex of upper side bronzy (typical form), green or blue (unnamed), Distributed in Europe, N Africa, Asia Minor, Near East, Central Asia and Transbaikalia and Mongolia **cuprea** (KOCH, 1803).
72. Anterior half of the tubular part of aedeagus distinctly narrowed apically **73.**
 - Anterior half of the tubular part of aedeagus not distinctly narrowed apically **75.**
73. Upper side stronger convex, with distinct, metallic, blue sheen. Lateral sides of pronotum sloping, elytral intervals slightly convex. Similar to *milleri* (thesis 74), but pronotum longer, metallic reflex and sculpture of upper side somewhat stronger. Aedeagus as in figs **5300–5302**, spermatheca as in fig. **5311**. Length 2.5–3.4 mm. A mountain European species, distributed in almost all mountains from Spain to Eastern Carpathians **toelgi** HEIKERTINGER, 1914.
- Upper side feebly convex, almost pure black, metallic reflex weak, usually bronzy. Lateral sides of pronotum, particularly in hind part, feebly sloping, elytral intervals flat. Apical part of aedeagus gradually narrowed towards apex **74.**



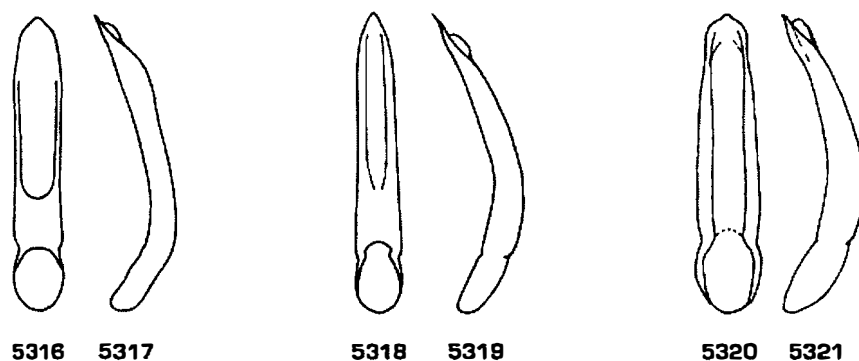
Figs 5303-5310. Aedeagus in dorsal, ventral and lateral view (after WARCHALOWSKI 2000): 5303-5305 - *Psylliodes (Psylliodes) milleri*; 5306-5308 - *P. (P.) thlaspis*; 5309, 5310 - *P. (P.) brisouti*.

74. On average larger. Apex of aedeagus (figs 5303–5305) obtusely triangular, forms a broad angle. Upper side black with weak, bluish or greenish metallic reflex, in subsp. *lindbergi* almost pure black. Puncturation of head and pronotum fine and dense, reticulation of ground feebly developed, often partly imperceptible. Aedeagus as in spermatheca as in fig. 5312. Length 2.4–3.0 mm. Forms two subspecies: metallic reflex of upper side more distinct, bluish or greenish, first tarsomere of fore tarsi in male slightly widened (nominotypical subspecies), metallic reflex of upper side indistinct or absent, first tarsomere of fore tarsi in male very narrow (subsp. *lindbergi* MADAR, 1964). Mediterranean species, distributed from Spain and Morocco to Cyprus. The western part of the area (N Africa, Spain) is inhabited by subsp. *lindbergi*, the eastern part (Italy, Greece, W Turkey, Cyprus) by nominotypical subspecies *milleri* KUTSCHERA, 1864.
- . On average smaller. Apex of aedeagus not triangular, with slightly emarginate sides and a broad lamella (figs 5316, 5317). See *taurica* (antithesis 76).
75. Upper side stronger convex, lateral sides of pronotum rounded. Elytral intervals slightly convex 76.
- . Upper side more feebly convex, lateral sides of pronotum almost straight, its outline approximately trapezoidal. Elytral intervals flat. Externally similar to other species of *napi*-group. Aedeagus as in figs 5306–5308, spermatheca as in fig. 5313. Length 3.0–3.6 mm. Distributed from France and Belgium to northern Italy, Bulgaria, Ukraine and southern Russia. Other reports (Malaga, Sporades, Caucasian countries) require confirmation *thlaspis* FOU DRAS, 1860.
76. Gutter on underside of aedeagus interrupted. Externally similar to *napi* (thesis 50), but fore and mid femora darkened basally and apex of aedeagus not regularly rounded. Aedeagus as in figs 5309, 5310, spermatheca as in fig. 5314. Length 2.5–3.2 mm. Distributed in southern and central part of Europe, from France, Germany and southern Sweden to Poland and Romania *brisouti* BEDEL, 1898.
- . Gutter on underside of aedeagus not interrupted. Externally very similar to *brisouti*, (thesis 58), but upper side more shining. Aedeagus as in figs 5316, 5317, spermatheca not studied. Length 3.0–3.3 mm. Described from S Turkey (Cilician Taurus Mts.). Here also *hermonensis* FURTH, 1983, described from Israel, perhaps conspecific with *taurica* (no significant morphological differences) *tauricus* LEONARDI, 1971.



Figs 5311–5315. Spermatheca (after DOGUET 1994): 5311 – *Psylliodes (Psylliodes) toelgi*; 5312 – *P. (P.) milleri*; 5313 – *P. (P.) thlaspis*; 5314 – *P. (P.) brisouti*; 5315 – *P. (P.) attenuata*.

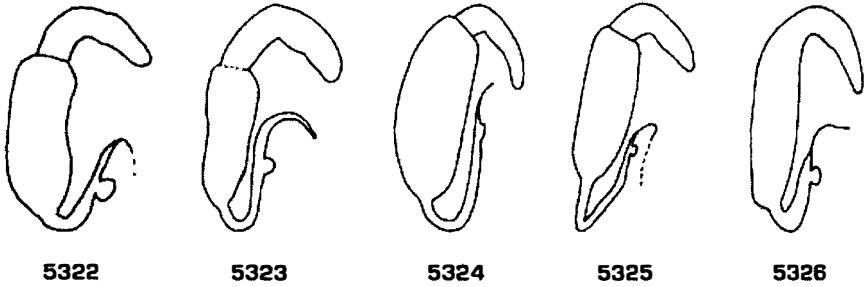
77. Ocular furrows and anterior margins of frontal calli form in the middle of frons a cross (fig. 5105). Upper side black with bronzy, greenish or bluish metallic reflex. Aedeagus as in figs 5318, 5319, spermatheca as in fig. 5315. Length 2.0–2.6 mm (= *vicinus* REDTENBACHER, 1849, *japonica* JACOBY, 1885, *taiwanica* CHŪJŌ, 1935). Variations; upper side entirely dark red-brown (ab. *brunneotestacea* HEIKERTINGER, 1926), metallic reflex of upper side greenish or bronzy (typical form), metallic reflex of upper side blue (ab. *coerulea* KRÁL, 1947), legs and apical part of antennae darkened (ab. *picicornis* STEPHENS, 1831). Known pest of cultivated hop (*Humulus lupulus* L.) and hemp (*Cannabis sativa* L.) Transpalaeartic species, distributed from Ireland and Pyrenees to Japan **attenuata** (KOCH, 1803).
- Ocular furrows and anterior margins of frontal calli do not form a cross in the middle of frons **78.**



Figs 5316–5321. Aedeagus in ventral and lateral view (5316, 5317 after LEONARDI 1971, remaining after DOUGET 1994): 5316, 5317 – *Psylliodes (Psylliodes) taurica*; 5318, 5319 – *P. (P.) attenuata*; 5320, 5321 – *P. (P.) solarii*.

78. Hind tibia in lateral view broader, flattened, its ventral margin strongly curved **79.**
- Hind tibia in lateral view narrower, its ventral margin feebly curved **83.**
79. Upper side pure black, metallic reflex absent or visible only when the surface is moistened. Pronotum smooth, microsculpture of its surface very feebly developed or absent **80.**
- Upper side when dry with perceptible metallic reflex **82.**
80. In male first tarsomere of fore tarsi strongly widened. Transverse rugosities cover the whole anterior half of aedeagus (measured together with phallobasis). Larger, body length reach to 2.9 mm. Here black forms of *illyrica* (thesis 29).
- In male first tarsomere of fore tarsi moderately widened. Aedeagus without transverse rugosities **81.**
81. Body length not exceeding 2.3 mm. External characters and aedeagus similar as in *picina* (figs 5320, 5321), spermatheca as in fig. 5322. Length 2.3–2.6 mm. A poorly studied species, perhaps a form of *picina* (thesis 32). Distributed in western Alps and northern Apennins **solarii** LEONARDI, 1975.

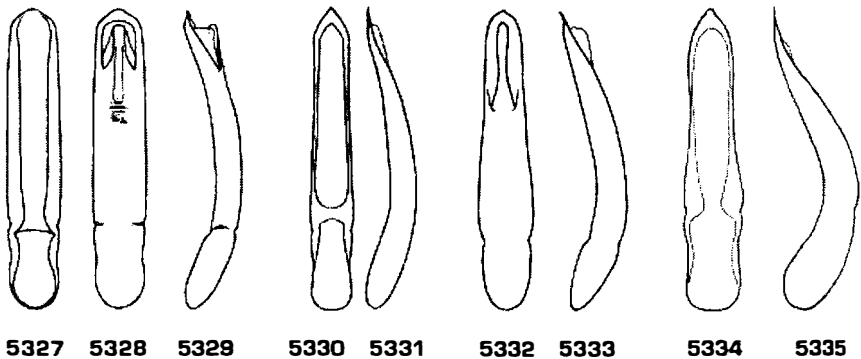
- . Body length 1.85–2.70 mm. Aedeagus similar as in *laevifrons* (figs 5327–5329). Upper side black sometimes with very weak metallic reflex. Frontal tubercles hatchet-shaped (as in *algerica*, fig. 5109). Spermatheca as in fig. 5323. Pronotum subrectangular, lateral margins gradually evenly rounded and constricted anteriorly, antero-lateral angles thickened, but not protruding or angled away from outline of lateral margin. Puncturation of elytra coarse and deep. Described from Israel
 ***drusei*** FURTH, 1983.



Figs 5322–5326. Spermatheca (5322 after DOGUET 1994; 5323 after FURTH 1983; 5324 after WARCHALOWSKI 2003; 5325 after LEONARDI 1970; 5326 after GRUEV and TOMOV 1986): 5322 – *Psylliodes (Psylliodes) solarii*; 5323 – *P. (P.) drusei*; 5324 – *P. (P.) coelestis*; 5325 – *P. (P.) fusiformis*; 5326 – *P. (P.) magnifica*.

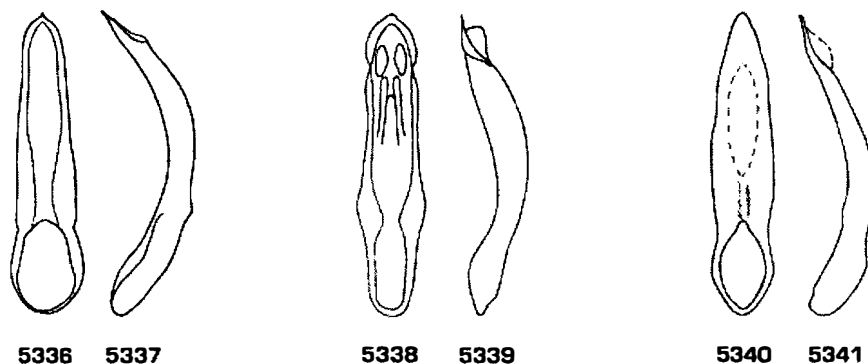
82. Transverse rugosities on dorsal side of aedeagus present, situated in mid part. Here black forms of *cretica* (antithesis 36).

- . Transverse rugosities on dorsal side of aedeagus absent. Here black forms of *laevifrons* (thesis 36).



Figs 5327–5335. Aedeagus in dorsal, ventral and lateral view (5227–5229 after LEONARDI and GRUEV 1993; 5332, 5333 after WARCHALOWSKI 2003; remaining after BIONDI 1997): 5327–5329 – *Psylliodes (Psylliodes) drusei*; 5330, 5331 – *P. (P.) aristus*; 5332, 5333 – *P. (P.) coelestis*; 5334, 5335 – *P. (P.) littoralis*.

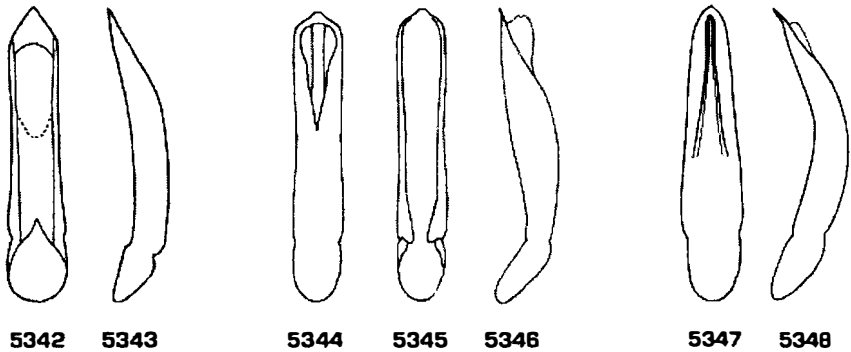
83. Hind wings present, humeral callus more or less distinct, body outline oblong-oval, upper side sometimes slightly flattened **84.**
 -. Hind wings shortened or reduced, humeral callus absent, body outline oval, upper side often very convex **100.**
84. Fore legs pitchy or black **85.**
 -. Legs except hind femora pale, sometimes with darkened fore and mid femora, or entirely pale rusty-red **87.**
85. Legs entirely black or at least pitchy **86.**
 -. Legs blackish, hind tibiae and tarsi red. Frontal calli weakly perceptible. Posttarsal part of hind tibia very short. Aedeagus and spermatheca not studied. Length about 2.2 mm (= *kasyi* LOPATIN, 1967). Distributed in NW Iran, Caucasian countries and E Turkey **aristus** IABLOKOFF-KHNZORIAN, 1962.
86. Species from western part of Mediterranean area. Upper side slightly matt, with deep blue metallic sheen. Aedeagus (figs **5332**, **5333**) without apical lamella, in lateral view feebly bent, spermatheca as in fig. **5324**, its ductus simple. Length 2.0–2.6 mm (= *coerulea* WEISE, 1888, nec PAYKULL, 1799, homon. second.). Distributed in Iberian Peninsula, reported also from MOROCCO **coelestis** WARCHAŁOWSKI, 2000.
 -. Species from eastern part of Mediterranean area. Upper side with greenish-blue reflex. Aedeagus with large apical lamella, in lateral view distinctly bent. Ductus spermathecae twice coiled. Length about 2.5 mm. Described from SW Turkey ...
 **littoralis** BIONDI, 1997.



Figs 5336-5341. Aedeagus in ventral and lateral view (5336, 5337 LOPATIN 1977; 5338, 5339 after LOPATIN 1990; 5340, 5341 after LOPATIN 1997): 5336, 5337 – *Psylliodes (Psylliodes) persica*; 5338, 5339 – *P. (P.) baluchistana*; 5340, 5341 – *P. (P.) konstantinovi*.

87. Large species of body length 2.6–3.6 mm **91.**
 -. Smaller species of body length not reaching 3.0 mm **88.**
88. Ocular furrow entirely intersected by frontal callus **95.**
 -. Ocular furrow not entirely intersected by frontal callus. Upper side black with bronzy shine **89.**

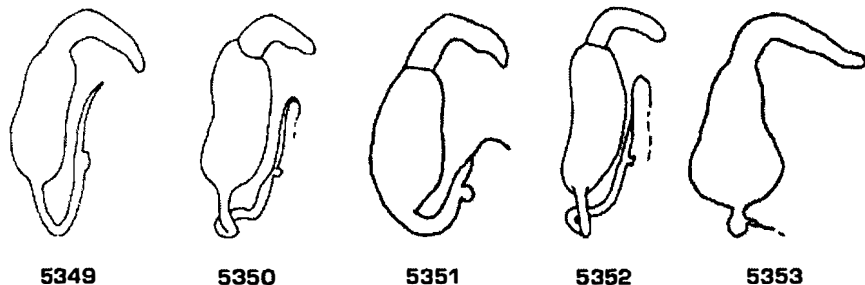
89. Frons deep, strongly punctate. Pronotum almost trapezoidal, hind part of anterolateral thickenings formed as a sharp, protruding angle. Length 2.5–3.0 mm. Apical part of aedeagus not separated from remaining tubular part. Aedeagus as in figs **5336, 5337**. Lives on *Scrophularia*. Distributed in Caucasian countries, Near East, Central Asia, Iran, Afghanistan and Saudi Arabia ***persica*** ALLARD, 1866.
- . Frons finely or moderately strongly punctate **90**.
90. Frons moderately strongly punctate. Apical part of aedeagus (figs **5338, 5339**) separated by distinct constriction. External characters similar as in *persicus* (thesis 89). Length 2.6–3.2 mm. Described from SE Iran ***baluchistana*** LOPATIN, 1990.
- . Frons very finely punctate. Aedeagus as in figs **5340, 5341**, in dorsal view lanceolate, in lateral view apical part gently bent up. Length 3.1 mm. Described from Kirghyzstan, based on one male only ***konstantinovi*** LOPATIN, 1997.
91. Frons and vertex without reticulation, strongly and deeply punctate. Pronotum reticulate, almost trapezoidal, strongly and densely punctate. Elytra shining, without reticulation. Hind wings well-developed, humeral calli small, but distinct. Similar to *fusiformis* (thesis 93), but broader and legs darker coloured. Aedeagus as in figs **5342, 5343**, spermatheca as in fig. **5326**. Length 2.8–3.2 mm. Species known hitherto from Bulgaria and Greece only ***magnifica*** GRUEV, 1975.
- . Punctures on frons moderately strong or fine, reticulation at least perceptible **92**.



Figs 5342–5348. Aedeagus in dorsal or ventral and in lateral view (5342, 5343 after GRUEV and TOMOV 1975; 5344–5346 after WARCHALOWSKI 2000; 5347, 5348 after WARCHALOWSKI 2003): 5342, 5343 – *Psylliodes (Psylliodes) magnifica*; 5344–5346 – *P. (P.) fusiformis*; 5347, 5348 – *P. (P.) valida*.

92. Species from Caucasian countries and NE Turkey **94**.
- . Species from other parts of Mediterranean area **93**.
93. Upper side black with rather feeble, usually bluish metallic reflex. Legs and 3 or 4 basal antennomeres yellow amber, hind femora darkened usually in apical part only. From allied species, where frontal callus encroaches on ocular furrow (*magnifica, persica*, theses **89, 91**) differs in larger dimensions. Aedeagus as in figs **5344–5346**, spermatheca as in fig. **5325**. Length 2.8–3.5 mm (= *luteipes* KÜSTER, 1849). Distributed in W Mediterranean area (southern Spain, Italy, Sardinia, Sicily, N Africa), reported also from countries located around the Adriatic Sea ***fusiformis*** (ILLIGER, 1807).

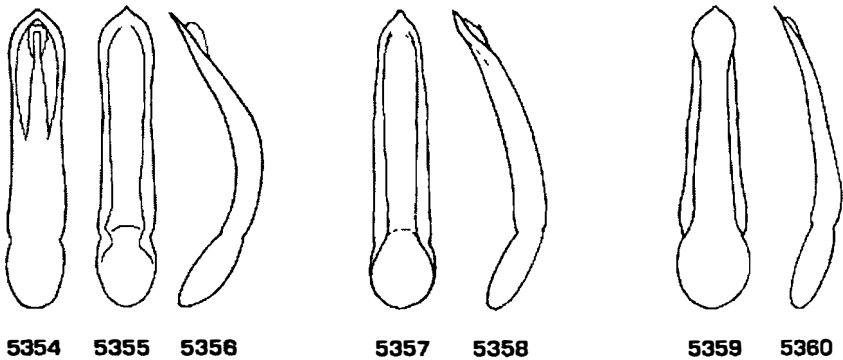
- Upper side dark metallic green, on head and pronotum with barely perceptible cupreous teflex. Frontal calli narrow, very distinct, obliquely situated. Legs uniformly yellowish-red, except for hind femora which are apically darkened. Hind tibiae slender, hind tarsi attached in about 83% of tibia length. Generally similar to *cuprea*, (antithesis 71) but differs by very distinct frontal calli, longer and strongly punctured pronotum as well as finer puncture rows on elytra. Length about 3.2 mm. Aedeagus not described. Distributed in Egypt and Israel; reports from Saudi Arabia are doubtful *peyerimhoffi* HEIKERTINGER, 1916.



Figs 5349--5353. Spermatheca (5349 orig., 5352 after LEONARDI 1970; remaining after DOGUET 1994): 5349 - *Psylliodes (Psylliodes) valida*; 5350 - *P. (P.) instabilis*; 5351 - *P. (P.) petasata*; 5352 - *P. (P.) pyritosa*; 5353 - *P. (P.) pyrenaica*.

- 94. Frons punctate on whole surface. Aedeagus as in figs 5347, 5348, spermatheca as in fig. 5349. Lenth 3.6–4.1 mm. Distributed in Caucasian countries and in NE Turkey *valida* WEISE, 1889.
- Frons on anterior part impunctate. Upper side with bronzy-green sheen, underside and femora black with weak bronzy reflex, tibiae and tarsi rusty-grey, tibiae in mid part often darkened. Aedeagus and spermatheca not described. Length 2.9–3.3 mm. Perhaps conspecific with *valida* (thesis 94). Distributed in Caucasian countries *deplanata* MEDVEDEV, 1962.
- 95. Surface of pronotum deeply and distinctly reticulate 96.
- Surface of pronotum shallowly and rather indistinctly reticulate. Very similar to *pyritosa* (thesis 99) on average finer punctate, slightly broader, metallic reflex of upperside less distinct. Aedeagus as in figs 5354–5356, spermatheca as in fig. 5350. Length 2.0–2.8 mm (= *?laucicollis* ALLARD, 1866). Distributed in whole Mediterranean area, southern part of Europe, Asia Minor, Near East and Caucasian countries. Northwards reaches to northern France, central Germany, Carpathians and southern Ukraine *instabilis* FOU DRAS, 1860.
- 96. Primary punctures of pronotum strong or moderately strong, distinct, not blurred by reticulation of ground 97.
- Primary punctures of pronotum fine, blurred by well-developed microsculpture of its surface. Body short-oval, convex. Upper side black with feeble metallic reflex, weakly shining. Humeral calli absent, hind wings reduced. Aedeagus as in figs 5357, 5358,

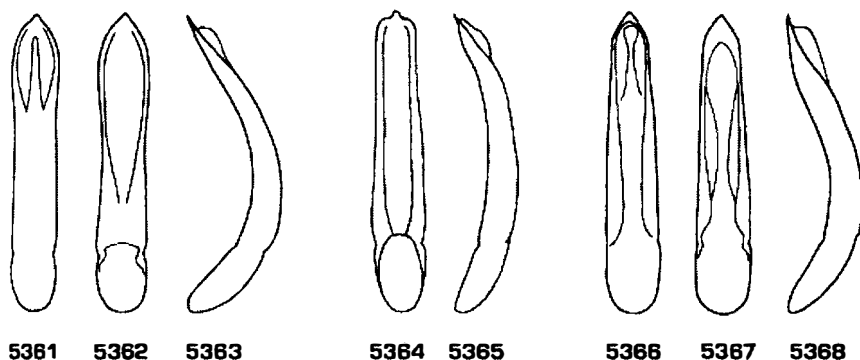
- spermatheca as in fig. 5351. Length 1.8–2.3 mm (= *minima* ALLARD, 1859). Distributed in Pyrenees ***petasata*** FOUDRAS, 1859.
97. Species endemic to Canary Islands. Punctuation of frons and vertex indistinct. Spermatheca small, without any limits between vasculum and pump, ductus spermathecae simple **98.**
- . Species from other areas **99.**
98. Intervals of puncture rows on elytra distinctly punctulate. Labrum larger, subquadrate. Upper side pitchy with distinct greenish reflex. Punctuation of pronotum uniform, moderately strong but distinctly punctured on reticulated ground. Shagreen of vertex well developed, distinctly granular; frontal ridge more prominent; pronotum wider, especially anteriorly and dorsally; hind tibia straight in lateral view; hind tibial apices wider when viewed from above; antennae longer, with segments thinner. Length 2.3–2.7 mm. Known from Gran Canaria and Tenerife
 ***aemulans*** LINDBERG, 1953.
- . Intervals of puncture rows on elytra indistinctly punctulate. Labrum smaller, subtrapezoidal. Upper side reddish-brown without metallic reflex. Shagreen of vertex moderate; frontal ridge almost not elevated; pronotum narrower anteriorly; hind tibia slightly curved in lateral view; hind tibial apices narrow when viewed from above; antennae shorter, with segments thicker. Aedeagus as in figs 5359, 5360. Length about 2.2 mm. Distributed in Canary Islands (Lanzarote, Fuerteventura)
 ***stolida*** WOLLASTON, 1860.



Figs 5354–5360. Aedeagus in dorsal, ventral and lateral view (5359, 5360 after BIONDI 1986, remaining after WARCHAŁOWSKI 2000): 5354–5356 – *Psylliodes (Psylliodes) instabilis*; 5357, 5358 – *P. (P.) petasata*; 5359, 5360 – *P. (P.) stolida*.

99. Pronotum not very deeply, but strongly and somewhat unevenly punctate, which, combined with strongly developed microsculpture, makes its surface appear somewhat wrinkled. Upper side black with weak metallic reflex, shining. Underside, hind femora and apical 6–7 antennomeres brown or pitchy. Punctuation of head usually considerably finer than on pronotum, shallow, reticulation barely perceptible. Punctuation of pronotum dense, fine or moderately strong, shallow, reticulation usually feebly developed. Elytra shining, traces of reticulation not always perceptible.

- Humeral callus well-developed. Aedeagus as in figs **5361–5363**, spermatheca as in fig. **5352**. Length 2.0–3.0 mm. Distributed in eastern Spain, southern France, whole Italy, Sardinia, Sicily and Croatia ***pyritosa*** KUTSCHERA, 1864.
- Pronotum strongly, densely and deeply, uniformly punctate. Humeral callus weakly developed. Here belong forms of *kiesenwetteri* (thesis 106) with shortened hind wings.
100. In natural position head retracted into pronotum and covered by its anterior margin **101**.
- In natural position head well-visible from above **109**.
101. Pronotum deeply and densely punctate. Frons and vertex distinctly punctate, their ground shining, smooth or very finely rugose **102**.
- Pronotum rather shallowly punctate, the punctures blurred by reticulation of ground. Frons and vertex reticulate, shallowly and more or less indistinctly punctate **108**.
102. Body oval, rather stout **103**.
- Body more slender, narrowed posteriad **107**.
103. Puncturation of pronotum fine, its ground finely reticulate. Upper side black with feeble, bronzy or bluish, metallic reflex. Hind femora darkened at least apically, tibiae, tarsi and antennae entirely pale. Humeral calli and hind wings absent. Aedeagus as in figs **5364, 5365**, spermatheca as in fig. **5353**. Length 1.7–2.3 mm. Described from Pyrenees ***pyrenaea*** HEIKERTINGER, 1921.
- Pronotum deeply punctate. Here belong four species, determinable only by shape of aedeagus and/or by rather subtle differences in outline of body **104**.

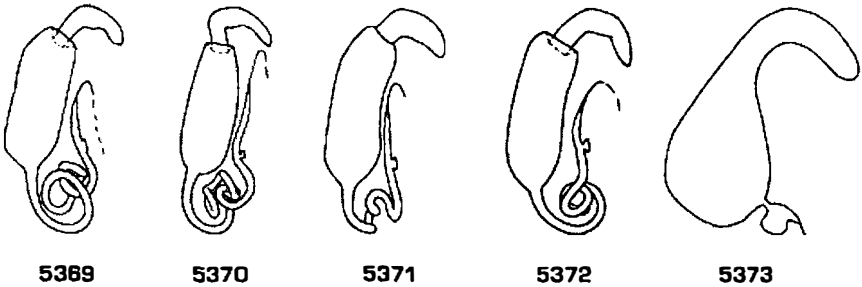


Figs 5361-5368. Aedeagus in dorsal, ventral and lateral view (5364, 5365 after DOGUET 1994, remaining after WARCHAŁOWSKI 2000): 5361-5363 – *Psylliodes (Psylliodes) pyritosa*; 5364 5365 – *P. (P.) pyrenaea*; 5366-5368 – *P. (P.) gibbosa*.

104. Body outline oval, elytra in anterior part widest and the most convex. Frontal calli very narrow, their external end very thin, ocular furrow bent towards center of frons and shortened (as in fig. **5107**). In male fore tarsi not broader than in female. Aedeagus as in figs **5366–5368**, spermatheca as in fig. **5369**. Length 1.9–2.7 mm (= *sicula* STIERLIN, 1867). Variation: a form with rugosely punctate pronotum, prob-

ably immature (ab. *fageli* BECHYNÉ, 1957) was described from Algeria (as a subspecies). Distributed in N Africa, southern France, whole Italy, Corsica, Sardinia Sicily and Croatia. Reports from Israel require confirmation

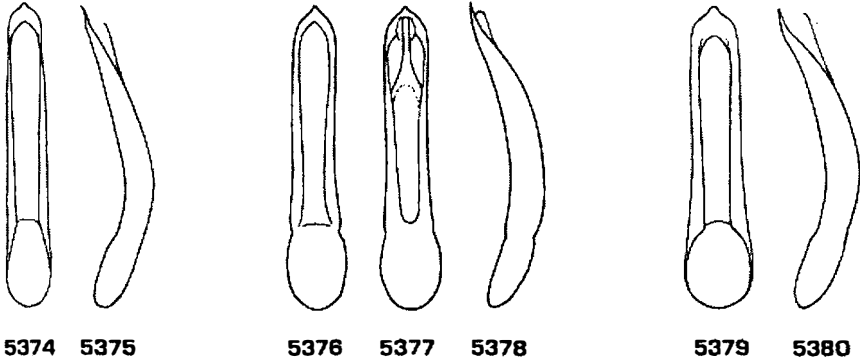
- ***gibbosa*** ALLARD, 1860.
- . Body outline subelliptical, elytra less convex
105. Pronotum feebly shining, always distinctly reticulate. Remaining external characters as in *gibbosa* (thesis 104). Aedeagus as in figs 5374, 5375, spermatheca as in fig. 5370. Length about 2.8 mm. Distributed in Italy and Sicily
- ***ruffoi*** LEONARDI, 1975.
- . Pronotum stronger shining, its reticulation less dense
- 106.



Figs 5369-5373. Spermatheca (5369 after LEONARDI 1973; 5373 after DOGUET 1994; remaining after LEONARDI 1975): 5369 – *Psylliodes (Psylliodes) gibbosa*; 5370 – *P. (P.) ruffoi*; 5371 – *P. (P.) kiesewetteri*; 5372 – *P. (P.) gougeleti*; 5373 – *P. (P.) cucullata*.

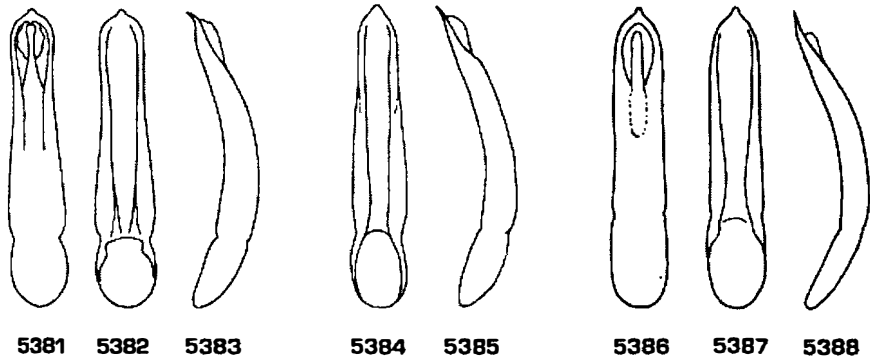
106. Outline of body more oblong. External characters as in *gibbosa* (thesis 81), but differing by outline of body. Fore and mid tibiae sometimes partly darkened. Aedeagus as in figs 5376–5378, spermatheca as in fig. 5371. Length 1.9–2.3 mm (= *latifrons* WEISE, 1888). Distributed in Italy and Balkan Peninsula, recorded also from Austria and Hungary
- ***kiesewetteri*** KUTSCHERA, 1864.
- . Outline of body less oblong. Remaining external characters as in *gibbosa* (thesis 81). Fore and mid tibiae entirely pale. Aedeagus as in figs 5379, 5380, spermatheca as in fig. 5372. Length 1.9–2.7 mm. Distributed in Spain and Morocco
- ***gougeleti*** ALLARD, 1859.
107. Body very distinctly narrowed posteriad, pronotum relatively long. Upper side black with feeble metallic reflex. Puncturation of head very fine and shallow, contrasting with strongly, deep and densely punctate pronotum. Posttarsal part of hind tibia longer than half of pretarsal part. Apex of aedeagus shortly rounded (figs 5381–5383), spermatheca as in fig. 5373. Length 2.0–2.9 mm. In W Palearctic forms two subspecies: apical angle of elytra without emargination (nominotypical subspecies), apical angle of elytra slightly sinuate (subsp. *heydeni* WEISE, 1888). Two further subspecies were described from E Asia. Transpalearctic species, distributed from W Germany to Far East, reported also from England. Subsp. *heydeni* inhabits Pyrenees, Iberian Peninsula and Morocco
- ***cucullata*** (ILLIGER, 1807).

- Body less distinctly narrowed posteriad. Posttarsal part of hind tibia as long as half of pretarsal part. Apex of aedeagus more elongate. Described from Spain, perhaps a distinct species ***cucullata heydeni* WEISE, 1888.**



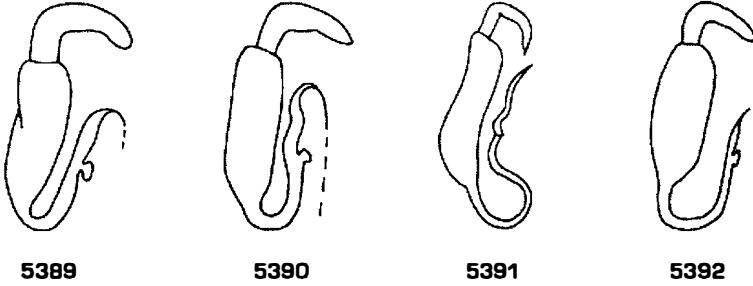
Figs 5374-5380. Aedeagus in dorsal, ventral and lateral view (5376-5378 after WARCHAŁOWSKI 2000, remaining after LEONARDI 1975): 5374, 5375 – *Psylliodes (Psylliodes) ruffoi*; 5376-5378 – *P. (P.) kiesenwetteri*; 5379, 5380 – *P. (P.) gougeleti*.

- 108. Fore and mid femora darkened basally. Frons and vertex reticulate, impunctate (see *petasata*, antithesis 96).
 - Fore and mid femora entirely pale. Frons and vertex reticulate and distinctly punctate. Aedeagus as in figs **5386–5388**, spermatheca as in fig. **5389**. Length 1.9–2.3 mm. Distributed in Monte Rosa (Alps) ***schwarzi* WEISE, 1900.**
- 109. Frontal calli feebly developed, not or only indistinct limited behind **110.**
 - Frontal calli well-developed, limited behind by frontal furrows **115.**



Figs 5381-5388. Aedeagus in dorsal, ventral and lateral view (5384, 5385 after DOGUET 1994, remaining after WARCHAŁOWSKI 2000): 5381-5383 – *Psylliodes (Psylliodes) cucullata*; 5384, 5385 – *P. (P.) cucullata heydeni*; 5386-5388 – *P. (P.) schwarzi*.

110. Head impunctate, covered by fine reticulation only. Posttarsal part of hind tibia not longer than half of corresponding metatarsus. Aedeagus and spermatheca unknown. Externally similar to dark forms of *rambouseki* (thesis 35). Poorly studied species, described from Italian part of Alps **danieli** WEISE, 1900.
 -. Head distinctly punctate 111.



Figs 5389-5392. Spermatheca (5389 after WARCHALOWSKI 2000; 5390 after LEONARDI 1970; 5391 after BIONDI 1987; 5392 after DOGUET 1994): 5389 - *Psylliodes (Psylliodes) schwarzi*; 5390 - *P. (P.) glabra*; 5391 - *P. (P.) laurisilvae*; 5392 - *P. (P.) frivaldszkyi*.

111. Species from Caucasian countries and Central Asia. Upper side with greenish metallic sheen, antennae almost entirely pale. Similar to a greater, wingless *napi* (antithesis 67). Aedeagus and spermatheca unknown. Length 2.6-3.0 mm. Distributed in Caucasian countries and in Turkmenistan **pallidicornis** HEIKERTINGER, 1921.
 -. Not as above 112.
 112. Posttarsal part of hind tibia longer than half of corresponding metatarsus 113.
 -. Posttarsal part of hind tibia shorter than half of corresponding metatarsus 114.

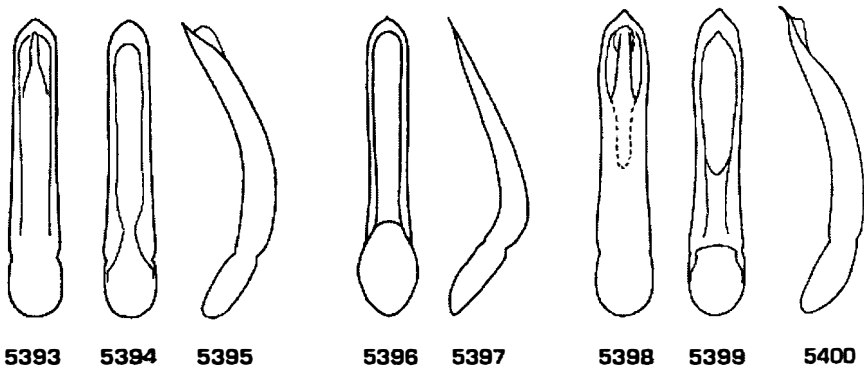
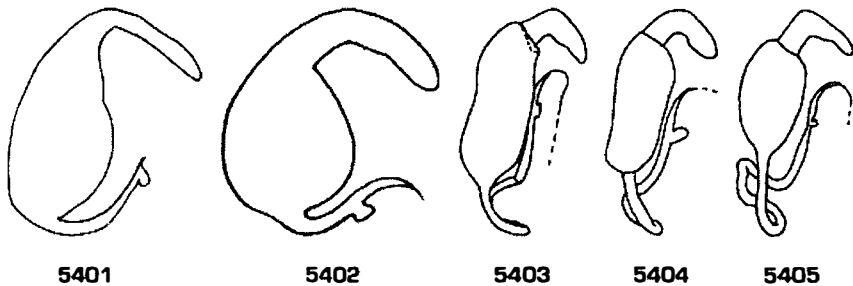


Fig. 5393-5400. Aedeagus in ventral, dorsal and lateral view (5396, 5397 after BIONDI 1987, remaining after WARCHALOWSKI 2000): 5393-5395 - *Psylliodes (Psylliodes) glabera*; 5396-5397 - *P. (P.) laurisilvae*; 5398-5400 - *P. (P.) frivaldszkyi*.

113. Body convex, regularly oval, elytra widest in anterior half. Upper side and hind femora black, without metallic reflex, remaining part of legs and whole antennae pale, usually yellow amber. Aedeagus as in figs **5393–5395**, spermatheca as in fig. **5390**. Length 1.9–2.4 mm (= *alpina* REDTENBACHER, 1849). Distributed in Alps and in northern part of Dinaric Alps ***glabra*** (DUFTSCHMID, 1825).
- Body slightly flattened. Elytra in anterior part strongly punctate. Upper side blackish with metallic reflex, underside dark brown or pitchy. Aedeagus as in figs **5396, 5397**, spermatheca as in fig. **5391**. Length about 2.8 mm. Known from Canary Islands (Tenerife) only ***laurisilvae*** BIONDI, 1987.
114. External intervals of elytra in anterior part shining, without microsculpture. Externally very similar to *glaber* (thesis 113), differs from the mentioned species in shorter posttarsal part of hind tibia. Aedeagus as in figs **5398–5400**, spermatheca as in fig. **5392**. Length 1.8–2.3 mm. Distributed in almost whole Carpathians ***frivaldszkyi*** WEISE, 1888.
- External intervals of elytra in anterior part feebly shining, covered by fine microsculpture. Externally very similar to *glabra* (thesis 113) and *frivaldszkyi* (thesis 114) differs from the mentioned species by in very short posttarsal part of hind tibia. Aedeagus and spermatheca not studied. Length 2.0–2.4 mm. Distributed in Dinaric Alps, Mt. Stara Planina and in southern Carpathians ***sturanyi*** APFELBECK, 1906.



Figs 5401-5405. Spermatheca (5401 after BIONDI 1986; 5402 after WARCHAŁOWSKI 1993; 5403 after LEONARDI 1970; 5404 after DÖBERL 1998; 5405 after DOGUET 1994): 5401 – *Psylliodes (Psylliodes) stolidia*; 5402 – *Psylliodes (Psylliodes) dogueti*; 5403 – *P. (P.) subaenea*; 5404 – *P. (P.) wunderlei*; 5405 – *P. (P.) aerea*.

115. Frontal calli broadly fused with margin of eye **115.**
- Frontal calli not fused with margin of eye **124.**
116. Body oblong, subcylindrical. Posttarsal part of hind tibia 2.5–3.5 × shorter than pretarsal part **117.**
- Body oblong-oval. Posttarsal part of hind tibia very short, 5–6× shorter than pretarsal part. Aedeagus as in figs **5406, 5407**. Head shining, on whole surface very sparsely, but rather strongly and deeply punctate. Length 2.45–2.55 mm. Described from NE Turkey ***dogueti*** WARCHAŁOWSKI, 1993.

117. Head shining, frons finely punctate, vertex sometimes almost impunctate **118.**
 -. Head densely and deeply reticulate, matt. Upper side pitchy black, with more or less distinct bronzy metallic reflex. Pronotum shorter, but also covering hind part of head, fore and mid femora not darkened. Here four species, generally very similar to each other **119.**
118. Posttarsal part of hind tibia about 2–2.5 × shorter than pretarsal part. Hind tibia near midlength on outer edge with a broad tooth. Upper side black with weak bluish or greenish metallic sheen. Pronotum long, covering hind part of head, its anterior angles feebly projecting, fore and mid femora not darkened. Aedeagus as in figs **5408**, **5409**. Length 2.0–2.3 mm (= *caucasica* HEIKERTINGER, 1916, *oreophila* IABLOKOFF-KHNZORIAN, 1957, ?*nivalis* IABLOKOFF-KHNZORIAN, 1962). Distributed in Caucasian countries and in NE Turkey **longicollis** WEISE, 1900.
- . Posttarsal part of hind tibia about 3.0–3.5 × shorter than pretarsal part. Upper side dark brown with bronzy reflex. Pronotum shorter, its anterior angles more distinctly projecting. Hind tibia near midlength on outer edge without tooth. Aedeagus as in figs **5410**, **5411**. Distributed in Ciscaspia and Caucasian countries **rubroaenea** HEIKERTINGER, 1916.
119. Species from W Mediterranean area (Algeria, Morocco) **120.**
 -. Species from E Mediterranean area (Turkey and Near East) **122.**

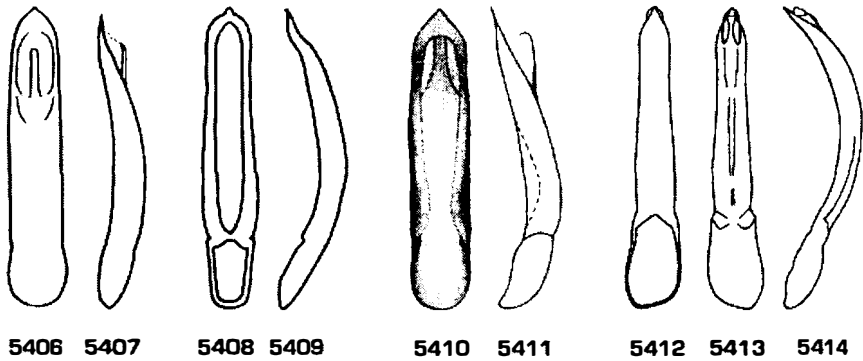


Fig. 5406–5414. Aedeagus in ventral, dorsal and lateral view (5406, 5407 after WARCHALOWSKI 1993; 5408, 5409 after LOPATIN and KONSTANTINOV 1991, 1987; 5410, 5411 after NADEIN 2007; 5412–5414 after LEONARDI 2007, 2000): 5406, 5407 – *Psylliodes (Psylliodes) dogueti*; 5408, 5409 – *P. (P.) longicollis*; 5410, 5411 – *P. (P.) rubroaenea*; 5412–5414 – *P. (P.) metatarsalis*.

120. Length over 2.1 mm. Labrum with 6–8 mostly big setiferous punctures. Aedeagus as in figs **5412–5414**, without ventral furrow and with narrow longitudinal deepening only, apex strongly sharpened. Length 2.1–2.6 mm. Described from Algeria **metatarsalis** LEONARDI, 2007.
- . Length 2.1 mm or less **121.**
121. Slightly larger. Length 2.1 mm. Pronotum much finer punctured than elytra, frontal calli indistinct, remaining characters generally similar as in *belarbi* (antithe-

- sis 121). Here insufficiently studied species (male unknown), described from NW Spain based on two female only *cervinoi* BASELGA et NOVOA, 2003.
- Smaller. Labrum with 4 large setiferous punctures. Aedeagus as in figs 5415–5417, with ventral groove, its apex not sharpened. In female vaginal palpi unusually large. Length 1.5–1.8 mm *belarbii* DÖBERL, 1990.
 - 122. Larger. Pronotum narrowed anteriorly, apex of elytra subtruncate. Upper side dark bronzy. On elytra puncture rows regular, dense and deep. Length about 3.0 mm. Insufficiently studied species from Caucasus *callinota* FALDERMANN, 1837.
 - Smaller. Neither pronotum narrowed anteriorly, nor apex of elytra subtruncate **123.**
 - 123. Elytral apex regularly or almost regularly rounded. Marginal edge of elytra reaches almost their apex. Pygidium with distinct median furrow. Apex of aedeagus (figs 5418–5420) in dorsal view slightly, gradually narrowed, regularly rounded, in lateral view gently bent down; in female vaginal palpi conspicuously small and short. Length 1.7–2.0 mm. Described from SW Turkey *cerenae* GÖK et al., 2003.
 - Elytral apex subtruncate. Marginal edge of elytra reaches at most 5/6 of length of margin (usually less). Median on pygidium indistinct or absent. Aedeagus as in figs 5421, 5422. Length 1.8–2.3 mm (= *nitidula* HEIKERTINGER, 1940). Aedeagus and spermatheca not studied. Distributed in Asia Minor and Near East, from Israel to Syria and Jordan *elliptica* ALLARD, 1861.

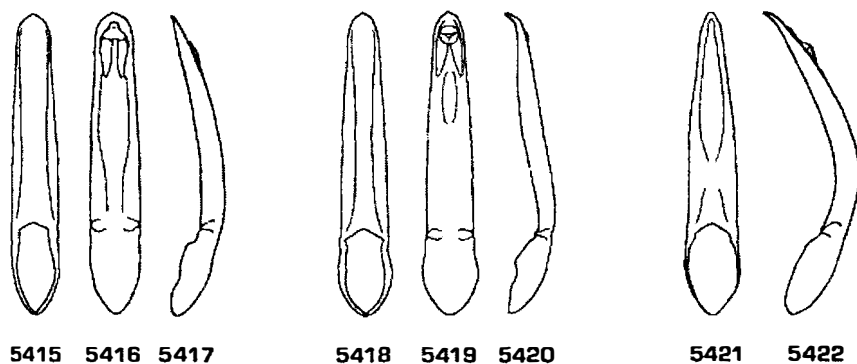


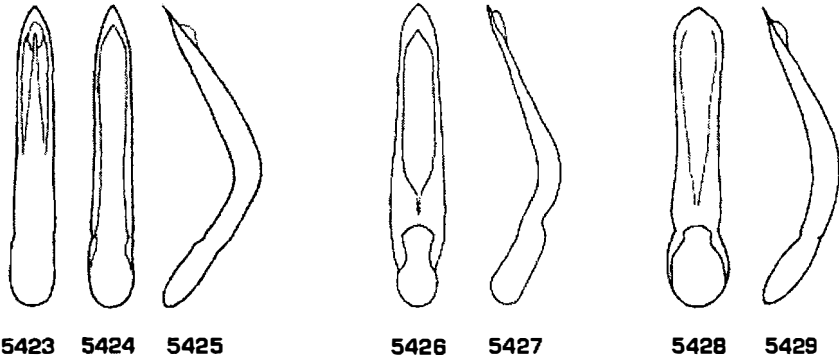
Fig. 5415-5422. Aedeagus in ventral, dorsal and lateral view (5418-5420 after Gök and al. 2003, remaining after NADEIN 2007): 5415-5417 – *Psylliodes (Psylliodes) belarbii*; 5418-5420 – *P. (P.) cerenae*; 5421, 5422 – *P. (P.) elliptica*.

- 124. Antennae entirely pale, in apical part very weakly darkened **125.**
- At least apical half of antennae distinctly darkened, brown **126.**
- 125. Upper side pure black or with feeble metallic, aeneous reflex, covered by fine reticulation, usually semimatt. Fore and mid femora dark, usually pitchy. Pronotum moderately strongly punctate. Humeral calli absent, hind wings reduced. In male first tarsomere in fore legs strongly widened. Aedeagus as in figs 5423–5425, spermatheca as in fig. 5403. Length 2.0–2.7 mm. Forms two subspecies: on ave-

rage larger, tibiae and tarsi reddish yellow (nominotypical subspecies), on average smaller, tibiae and tarsi partly darkened (subsp. *styriaca* HEIKERTINGER, 1921). Distributed in eastern part of Alps and Dinaric Alps, as well as in eastern and southern Carpathians. The subsp. *styriaca* in Styria (Austrian Alps) only

..... ***subaenea*** KUTSCHERA, 1867.

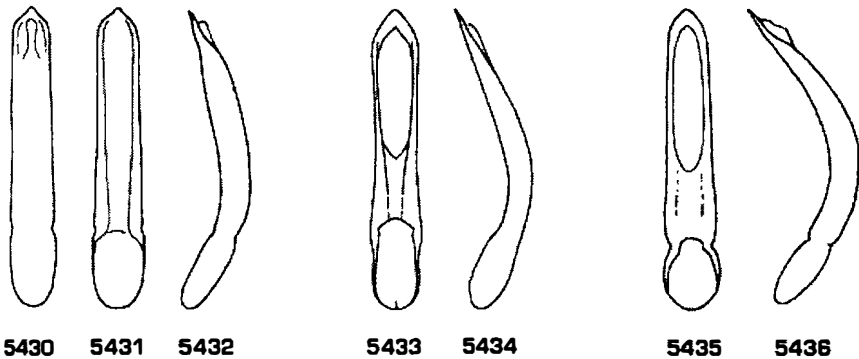
- Upperside black with bluish sheen. Pronotum finely but deeply punctate. Posttarsal part of hind tibia about 6× shorter than pretarsal part. Aedeagus as in figs 5426, 5427, spermatheca as in fig. 5404. Length about 2.3 mm. Described from N Spain (Santander) ***wunderlei*** DÖBERL, 1998.



Figs 5423-5429. Aedeagus in ventral or dorsal and in lateral view (5426, 5427 after DÖBERL 1998, remaining after WARCHAŁOWSKI 2000): 5423-5425 - *Psylliodes (Psylliodes) subaenea*; 5426, 5427 - *P. (P.) wunderlei*; 5428, 5429 - *P. (P.) aerea*.

- 126. Body length not exceeding 2.2 mm. Furrows limiting frontal calli cross in the middle of frons, forming a distinct pit. Head very finely and scarcely punctate, vertex mostly impunctate. Pronotum very finely punctate. Aedeagus as in figs 5428, 5429, spermatheca as in fig. 5405. Length 1.5–2.2 mm. Forms two subspecies: humeral calli distinct, hind wings well-developed (nominotypical subspecies), humeral calli indistinct, hind wings strongly shortened (subsp. *austriaca* HEIKERTINGER, 1911). The nominotypical subspecies inhabits central and northern Italy, Switzerland, western Germany, France, Belgium and Netherlands. *P. a. austriaca* is distributed in basin of Danube, Romania and Carpathians ***aerea*** FOUDRAS, 1860.
- Body length over 2.3 mm. Furrows limiting frontal calli shallow, forming neither a intersection nor a pit 127.
- 127. Legs almost entirely black or blackish 128.
- Tibiae and tarsi partly darkened, usually articulations and tarsi red 129.
- 128. Frontal calli clearly limited from upper part of frons. Body very convex, stout, widest in its midlength. Upper side black with feeble bluish or bronzy metallic reflex. Apical part of antennae, all femora and central part of tibiae strongly darkened, brown or pitchy, remaining parts of legs rusty red. Head very finely punctate, ground deeply reticulate. Pronotum also finely punctate, the punctures blurred by reticulation.

- Elytra slightly more shining, their reticulation shallow. In male first tarsomere of fore tarsi strongly widened. Aedeagus as in figs 5430–5432, spermatheca as in fig. 5437. Length 2.0–2.8 mm (= *ogloblini* JACOBSON, 1922). Distributed in Alps from Alpes Maritimes to Croatia *picipes* REDTERNBACHER, 1849.
- Frontal calli rather weakly limited from upper part of frons. In male first tarsomere of fore tarsi not widened, apex of aedeagus (figs 5433, 5434) without a lamella, spermatheca as in fig. 5438. Distributed in Apennins (Marche, Abruzzo) *springeri* LEONARDI, 1975.
129. Frontal calli well-limited from upper part of frons. Tibiae generally dark, at apex and at knees reddish. Humeral calli absent, hind wings reduced. See *solarii* (thesis 81).
- Frontal calli not or only very weakly limited from upper part of frons. Tibiae usually red, sometimes in central part darkened. Metallic reflex of upper side bronzy. Humeral calli weakly developed, but perceptible. Aedeagus as in figs 5435, 5436, spermatheca as in fig. 5439. Length 2.2–2.6 mm. Distributed in Iberian Peninsula and southern France *hispana* HEIKERTINGER, 1911.



Figs 5430–5436. Aedeagus in ventral or dorsal and in lateral view (5433, 5434 after LEONARDI 1975; 5435, 5436 after DOGUET 1994; remaining after WARCHALOWSKI 2000): 5430–5432 – *Psylliodes (Psylliodes) picipes*; 5433, 5434 – *P. (P.) springeri*; 5435, 5436 – *P. (P.) hispana*.

130. Upper side bicolorous. Head and pronotum reddish brown, elytra blackish with brownish base. Generally similar to *cucullata* (thesis 107). Length 2.5 mm. Described from N China (Kansu) based on one specimen only (sex not determined), reported also from Shensi *obscurofasciata* CHEN, 1933.
- Upper side not bicolorous 131.
131. Vertex impunctate, very finely granulate. Frontal calli short, indistinct. Upper side black with very weak metallic reflex. Elytral epipleura sparsely covered by irregular rugosities. Legs rusty-testaceous. Hind femora darkened, almost black, sometimes rusty-brown, very finely pubescent. Aedeagus as in figs 5440, 5441. Length 2.3–2.6 mm (= *sinensis* CHEN, 1934, *rishiriensis*, CHŪJŌ, 1959 *loochooana* CHŪJŌ, 1961, *formosana* CHŪJŌ, 1963). Distributed in South- Central- and E China, E Sibe-

- ria, Japan (Honshu, Kyushu, Shikoku, Ryukyu) and Korea
 ***angusticollis*** BALY, 1874.
 - Vertex sometimes finely and sparsely, but always distinctly punctured 132.
 132. Ocular furrows and anterior margins of frontal calli form in the middle of frons a cross (fig. 5105). See *attenuata*, thesis 77.
 - Not as above 133.



5437



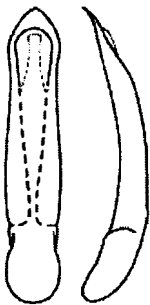
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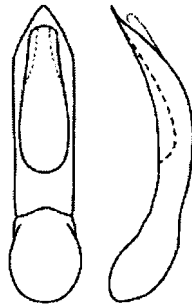
5439

Figs 5437-5439. Spermatheca (5437 after WARCHALOWSKI 2000; 5438 after LEONARDI 1975; 5439 after DOGUET 1994): 5437 - *Psylliodes (Psylliodes) picipes*; 5438 - *Psylliodes (Psylliodes) springeri*; 5439 - *P. (P.) hispana*.

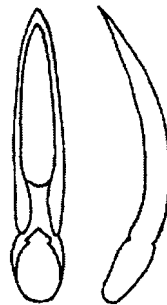
133. Vertex with very coarse and strong punctures, interstices convex, distinctly wrinkled. Frontal tubercles somewhat indistinct, hidden among sculpture of vertex. Head and pronotum very broad. Pygidium in female (fig. 5226) triangular, almost sharpened. Belonging to *saulcyi*-group (theses 46-49). Aedeagus as in figs 5234, 5235, spermatheca as in fig. 5221. Length 2.5-2.7 mm. Described from Mongolia ***infanda*** NADEIN, 2005.
 - Vertex not very coarsely and strongly punctured 134.



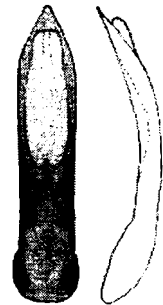
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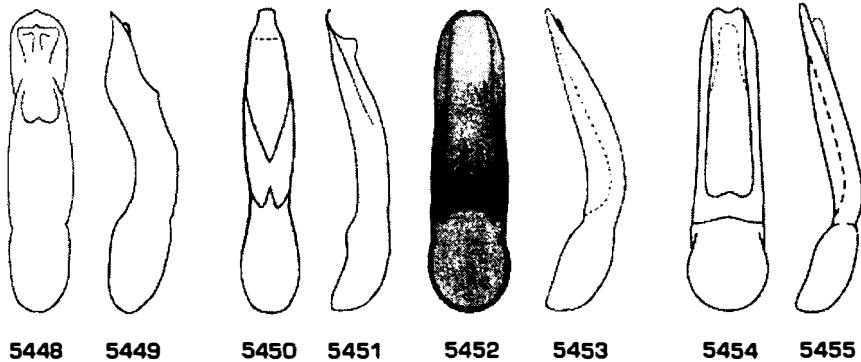
5444 5445



5446 5447

Figs 5440-5447. Aedeagus in ventral or dorsal and in lateral view (after NADEIN 2007): 5440, 5441 - *Psylliodes (Psylliodes) angusticollis*; 5442, 5443 - *P. (P.) punctifrons*; 5444, 5445 - *P. (P.) takizawai*; 5446, 5447 - *P. (P.) laxa*.

134. Elytral epipleura finely granulate and sparsely pubescent. Upper side without distinct reticulation. Body somewhat stout, upper side black with very weak metallic reflex, usually bluish, more rarely greenish or bronzy. Pronotum very uniformly, moderately strongly, sometimes more finely, punctate. Legs pale rusty-testaceous, hind femora pitchy to black. Aedeagus as in figs 5442, 5443. Length 2.6–3.3 mm. Broadly distributed in Indochina, South-Central- and E China, Japan (Hokkaido, Honshu, Kyushu, Shikoku, Ryukyu), Taiwan and Korea *punctifrons* BALY, 1874.
- Elytral epipleura glabrous 135.
135. Upper side reticulate, silky 136.
- Upper side not silky 137.
136. Aedeagus (figs 5444, 5445) lanceolate. Upper side black with bluish reflex, silky, almost mat. Pronotum subrectangular, distinctly broader than head measured together with eyes. Hind wings well-developed, humeral calli distinct, protruding. Female unknown. Length 3.0 mm. Described from N Korea, based on one male only ... *takizawai* GRUEV, 1990.
- Aedeagus parallel, apical part subtriangular, its very tip obtuse. External characters as in *takizawai* (thesis 136). Length 3.0–3.3 mm. Described from Ussuria, based on one male and two females only *laxa* NADEIN, 2006.



Figs 5448-5455. Aedeagus in ventral or dorsal and in lateral view (5448, 5449 after KIMOTO and TAKIZAWA 1984; remaining after NADEIN 2007): 5448, 5449 – *Psylliodes (Psylliodes) chujoe*; 5450, 5451 – *P. (P.) bretteinghami*; 5452, 5453 – *P. (P.) anurensis*; 5454, 5455 – *P. (P.) subrugosa*.

137. Length about 4.5 mm, ground of vertex smooth. Upper side dark blue, on elytra with weak violaceous hue. Legs black, tarsi dark brown. Humeral calli strongly protruding. Aedeagus as in figs 5448, 5449. Described from Japan (Kyushu) based on one male only *chujoe* MADAR, 1960.
- Length under 4.0 mm. Ground of vertex granulate or wrinkled 138.
138. Length under 3.0 mm. In legs at least tibiae pale, yellow to brownish or rusty-red 140.
- Length 3.0 mm or more. Legs dark 139.

139. Length 3.0 mm. Upper side pure blue, without greenish or bronzy hue. Legs pitchy-brown. An Oriental species described from India, distributed in Nepal, Indochina and S China, reported also (? erroneously?) from Korea *plana* MAULIK, 1926.
- . Length over 3.0 mm. Legs black, hind femora with metallic reflex. Upper side blue with slight greenish hue. Sculpture of head variable, vertex mostly wrinkled, sometimes granulate, more rarely smooth. Aedeagus as in figs 5450, 5451. Length 3.0–4.0 mm (= *illigeri* PERROUD, 1864, *difficilis* BALY, 1874, *novaecaledoniae* BALY, 1876, *fulvipes* BRYANT, 1941 nec JACOBY, 1896 = *bryanti* nom. nov. DÖBERL, 2001, *lubricata* BLACKBURN, 1896, *solanae* BROUN, 1910, *sera* JACOBSON, 1922, *vitensis* BRYANT, 1925, *howensis* LEA, 1929, *norfolcensis* LEA, 1929, *gigantea* CHŪJŌ, 1935, *cucurbitae* GRESSITT, 1955). Very broadly distributed in the Oriental Region from Pakistan, India, Nepal, Indochina, S China and Japan to Oceania and N Australia. In discussed area known from Japan (Kyushu) and Korea. Perhaps here also *nitida* MEDVEDEV, 1973 (3.5 mm long, legs black) and *cyanescens* WEISE, 1887 (3.2 mm long, subapterous) both described from Ussuria *brettinghami* BALY, 1862.
140. Aedeagus (figs 5452, 5453) short and broad, its apex incised, punctures in elytral rows more densely arranged. Remaining external characters similar as in *subrugosa* (antithesis 140). Female unknown. Length 2.6 mm. Described from basin of Amur based on one male only *amurensis* NADEIN, 2006.
- . Aedeagus not studied. Femora blackish, tibiae and tarsi reddish. Vertex granulate. Upper side dark blue. Aedeagus as in figs 5454, 5455. Length 2.5–2.8 mm (= *intermedia* JACOBY, 1885, *mitchy* CHŪJŌ, 1951). Distributed in NE China, Russian Far East and Japan (Hokkaido, Honshu, Kyushu, Shikoku, Ryukyu) *subrugosa* JACOBY, 1885.

Subgenus *Semicnema* WEISE, 1888

In discussed area one species only. Upper side rusty-brown to black, always with feeble but distinct metallic reflex. Elytra with well-developed humeral calli, strongly and distinctly punctate. Hind wings well-developed. General view as in plate XCIX, phot. 887. Length 2.8–3.6 mm. Distributed in basin of Danube, Balkan Peninsula, Romania, Ukraine and Southern Russia *reitteri* WEISE, 1888.

Genus *Sangariola* JACOBSON, 1922

Charidea BALY, 1888, *Lophallya* HINCKS, 194, *Allophyla* WEISE, 1889, *Lochmaeina* MEDVEDEV, 1956

The genus *Sangariola* contains three species distributed in E Asia, Japan and Taiwan. In discussed area two species.

Key to species

1. Pronotum with two large, strongly convex swellings occupying most part of disc, separated by a narrow groove. On elytra intervals 4 and 8 strongly convex. Upper

side shining red, antenna, underside and legs black. Length 5.0–6.0 mm (= *aurora* WEISE, 1889, *bicostata* PIC, 1928, *nigrosuturalis* PIC, 1937, *pieli* PIC, 1937, *atriceps* PIC, 1938, *unicoloripennis* CHŪJŌ, 1941). Distributed in SE China from Yuannan to Zhejiang, reported also from Korea ***fortunei*** BALY, 1888.

- Pronotum with a transverse, irregular swelling and a broad groove in hind part. On elytra intervals 4 and 8 at most slightly more convex than the remaining intervals. Coloured as *fortunei* (thesis 1); head (usually) and pronotum (often) darkened. General view as in plate C, **phot. 892**. Length 5.0–6.0 mm (= *multicostata* JACOBY, 1885, *regularis* PIC, 1928, *costata* CHŪJŌ, 1935, *aequicostata* CHŪJŌ, 1938, *rosea* MEDVEDEV, 1956). Distributed in N China, Russian Far East, Korea and Japan (Hokkaido, Honshu, Kyushu, Shikoku), reported also from Taiwan ***punctatostriata*** MOTSCHULSKY, 1860.

Genus *Schenklingia* CSIKI et HEIKERTINGER, 1940

Eucycla BALY, 1876, nec BONAPARTE, 1854 (*Reptilia*)

The genus *Schenklingia* comprises over 20 species distributed in SE Asia and Sunda Archipelago. In discussed area three species.

Key to species

1. Generally reddish brown. Elytron with sutural margin widely blackish. On each elytron two pairs of black spots in anterior half and in midlength. Antennae reddish brown with apical antennomeres darkened. Length 3.0 mm. Described from Japan (Honshu) ***kasuga*** NAKANE, 1963.
- Generally reddish brown, elytron with sutural margin narrowly darkened or without darkening. Pronotum with a pair of small black markings subbasally **2.**
2. On each elytron three pairs of black spots (2, 2, 2). Length 3.0–3.4 mm. Distributed in Japan (Kyushu) and Korea ***duodecimpunctata*** (CHEN, 1934).
3. Elytra with a scutellar, an apico-sutural, a pair of basal and a pair of subapical markings blackish. Length 3.0–3.4 mm. Distributed in Japan (Kyushu, Ryukyu) ***hiranoi*** TAKIZAWA, 1982.

Genus *Sinaltica* CHEN, 1939

Here belongs one species only. Body shining, black, anterior margin of pronotum, suture, lateral margins and apex of elytra somewhat reddish. Legs dark yellow, femora brown to pitchy. Length 1.4–1.7 mm. Distributed in N China (Shaanxi, Kansu) ***exigua*** CHEN, 1939.

Genus *Sphaeroderma* STEPHENS, 1831

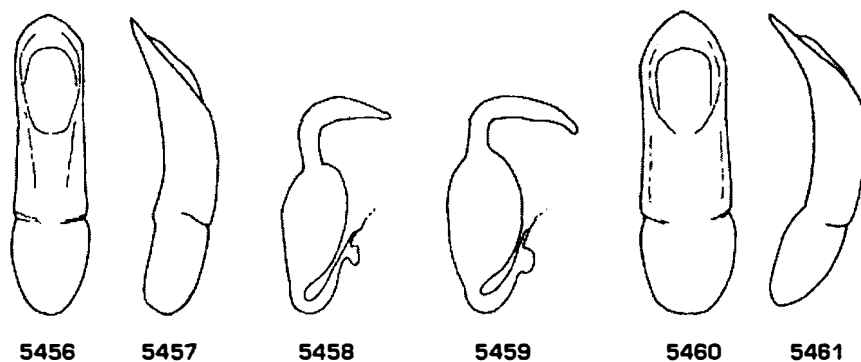
Argosomus Wollaston, 1867, *Musaka* Bechyné, 1958

The genus *Sphaeroderma*, comprising over 165 species, is distributed mainly in Palaeotropical superregion and a few species are also known from Neotropical region. In

the discussed area occur 22 species. *Sphaeroderma aoshimense* NAKANE, 1985, described from Japan (Kyushu) not included in the key.

Key to species

- 1. W Palaearctic species 2.
- E Palaearctic species 3.
- 2. Pronotum less strongly narrowed anteriorly, its lateral sides strongly inclined, anterior angles in dorsal view not visible. Pronotum finely, but deeply punctate. Body short oval, entirely dark orange or pale brick-reddish. Humeral calli present, hind wings well-developed. Aedeagus as in figs 5460, 5461, spermatheca as in fig. 5459. General view as in plate XCIX, phot. 891. Length 2.8–4.0 mm (= *cardui* GYLLENHAL, 1813, *centaureae* STEPHENS, 1831). Variation: a melanotic form, whole body brown or pitchy (ab. *pacoviense* ROUBAL, 1913). Distributed in a great part of Europe from Spain, Ireland and S Norway to Russia and Caucasian countries, as well as in Asia Minor **testaceum** (FABRICIUS, 1775).
- External characters as in *testaceum* (thesis 1). Aedeagus as in figs 5456, 5457, spermatheca as in fig. 5458. Length 2.8–4.0 mm (= *ocularium* ALLARD, 1860, *nitidum* PORTEVIN, 1934). Variation: smaller (to 3.3 mm) and stronger punctate form (ab. *gyllenhali* CAPRA, 1933). Distributed like *testaceum* (except Ireland), and besides in N Africa and Near East **rubidum** (GRAËLLS, 1858).
- 3. Primary punctures on elytra arranged in longitudinal rows 4.
- Primary punctures on elytra random or only partly arranged in longitudinal rows 9.



Figs 5456-5461. Aedeagus in dorsal and lateral view, spermatheca (after DOGUET 1994): 5456-5458-*Sphaeroderma rubidum*; 5459-5461 - *S. testaceum*.

- 4. Elytron without large marking 6.
- Elytron with large marking 5.
- 5. Elytron yellowish brown along basal margin and suture with broad pale yellowish stripe, with oblique dark stripe in scutellar area and with large oval blackish spot at middle. Length 2.7 mm. Described from Japan (Kyushu) **nagaii** NAKANE, 1985.
- Elytra reddish, in apical 1/3 black. See *alternatum* (thesis 17).

6. Body length over 3.0 mm. Generally black, apical area of elytron and 3–4 basal antennomeres yellowish or reddish. Colouration variable, some variations were described as subspecies: last 3–4 abdominal sternites pale (ab. *abdominalis* JACOBY, 1885, = *flaviventre* WEISE, 1916); not only apex, but also lateral margins of elytra pale (ab. *marginalis* CHŪJŌ, 1937); elytra entirely pale (typical form). General view as in plate C, **phot. 895**. Distributed in Japan (Honshu, Shikoku, Kyushu, Tsushima) *nigricolle* JACOBY, 1885.
- . Body length under 3.0 mm 7.
7. Body length 2.2–3.0 mm. Frontal tubercles feebly convex and not distinctly delimited posteriorly. On each elytron 5 or 6 distinct puncture rows, intervals slightly convex. Colouration of upper side variable, usually head and pronotum black, scutellum piceous and elytra reddish. Distributed in SE China from Kwangsi to Kiangsi, reported also from Korea *fraternale* CHEN, 1939.
- . Body length under 2.2 mm 8.
8. Colouration of body blackish brown. Length 2.2 mm. Described from Japan (Honshu) *obscurum* OHNO, 1964.
- . Colouration of body reddish brown, antennomeres 5–11 blackish, tarsi darkened. Length 1.8–2.0 mm. General view as in plate C, **phot. 897**. Distributed in S China from Yunnan to Fukien and in Japan (Honshu, Kyushu) *seriatum* BALY, 1874.
9. Frontal tubercles indistinctly separated from vertex 10.
- . Frontal tubercles distinctly separated from vertex 11.
10. Smaller. Generally black. Head, antennae, legs and pronotum (usually except for basal border) and abdomen yellowish brown; apical part of elytra pale. General view as in plate C, **phot. 893**. Length 2.0–2.3 mm (= *immaculithorax* NAKANE, 1958). Distributed in SE China from Yunnan to Jiangsu, in Korea and Japan (Honshu, Kyushu, Shikoku) *apicale* BALY, 1874.
- . Larger. Generally pitchy black. Three basal antennomeres and apex of antennomere 11 reddish. Apices of femora, tibiae and tarsi reddish brown. Length 3.0 mm. Described from Japan (Kyushu) *morimotoi* CHŪJŌ et OHNO, 1964.
11. Frontal calli separated. Body and legs entirely yellowish or reddish brown, antennomeres 5–11 or 6–11 black. Nasal ridge very broad and flat. Pronotum sparsely and finely punctured. In aedeagus operculum very small, transverse. General view as in plate C, **phot. 896**. Length 2.2–2.8 mm. Distributed in E China, Russian Far East and Japan (Hokkaido, Honshu, Sado, Shikoku, Kyushu, Tsushima) *fuscicorne* BALY, 1865.
- . Combination of characters not as above 12.
12. Frontal tubercles situated almost vertically. Body bluish black, antennomeres 1–3 or 1–4 and fore femur reddish. Length about 2.0 mm. Distributed in E China (Hubei, Fukien), Korea and Japan (Shikoku, Kyushu) *separatum* BALY, 1874.
- . Frontal tubercles situated horizontally (transversely) or obliquely 13.
13. Scutellar area stronger punctured than disc of elytra 14.
- . Scutellar area as strong punctured as disc of elytra 15.
14. Frontal tubercles suboval. Entirely reddish brown. Length 2.3–2.8 mm. Variation: upper side entirely darkened (unnamed) or only elytra dark brown to pitchy (ab. *pi-ceipennis* CHŪJŌ, 1937). Distributed in Japan (Hokkaido, Honshu, Kyushu, Shikoku) *tarsatum* BALY, 1874.

- Frontal tubercles subquadrate. Bluish black, antennomeres 4–11 or 5–11 and legs piceous, apices of femora slightly lightened. Length about 2.2 mm. Distributed in Japan (Honshu, Kyushu) **japanum** BALY, 1874.
- 15. Elytra with black or blackish markings 16.
- Elytra entirely black or reddish brown without pattern, at most apical part differently coloured 19.
- 16. Apical third of elytra and hind legs black, mid tibiae slightly darkened, antennomeres 5–11 black. Remaining parts of body pale, shining brownish red (fore 2/3 of elytra) or yellowish-brown. Length about 3.0 mm 17.
- Not as above 18.
- 17. Primary punctures on elytra arranged in distant, usually fairly regular rows **alternatum** CHEN, 1939.
- Primary punctures on elytra arranged in confused rows. Length about 3.0 mm (= *minutissimum* MEDVEDEV, 1997 nec MEDVEDEV, 1996, *pygmaeum* DÖBERL, 2001). Described from N China (Kansu), reported also from Sichuan. Probably conspecific with *alternatum* (thesis 17) **postfasciatum** CHEN, 1939.
- 18. Elytra brownish red, each elytron with two large spots (postbasal and preapical). Length 3.0–4.0 mm. Distributed in Japan (Kyushu; Ryukyu) **quadrinaculatum** CHŪJŌ, 1935.
- Upper side yellowish brown, each elytron with blackish lateral stripe. Length about 2.5 mm. Described from Japan (Shikoku) **ohkuboi** CHŪJŌ, 1940.
- 19. Legs almost entirely black, antennomeres 5–11 black. Remaining parts of body reddish brown. Length about 2.8 mm (= *nigripes* KIMOTO, 1965, nec CHEN, 1934). Described from Japan (Honshu); reported also (if conspecific?) from Nepal **kuroashi** KIMOTO, 2000.
- Legs not entirely black 20.
- 20. Elytron entirely black, pronotum black or reddish brown 21.
- Upper side entirely reddish or dark yellow 23.
- 21. In male aedeagus without any lateral tuberculation subapically 22.
- In male aedeagus with two lateral tuberculation subapically. Hind femur at least partly dark or piceous. Colouration of upper side variable: pronotum reddish usually with blurred darkening on basal area, elytra black (typical form), upper side entirely reddish (ab. *chujoi* OHNO, 1964), upper side almost entirely black, legs darkened (ab. *atra* JACOBY, 1885). Length 2.3–3.0 mm (= *pseudoplacidum* OHNO, 1964). Distributed in Japan (Hokkaido, Honshu, Kyushu, Shikoku) **placidum** HAROLD, 1877.
- 22. Frontal tubercles widely separated to each other. Head, prothorax and scutellum reddish brown, elytra black. Legs reddish brown, hind femora piceous only. Here colour variation of *unicolor* (thesis 24).
- Frontal tubercles contiguous. Antennomeres 4–11 or 5–11 blackish, elytra black, remaining parts of body reddish brown. Puncture rows on elytra rather equally spaced. Forms two subspecies. External characters as above (nominotypical subspecies); puncture rows somewhat unequally spaced (subsp. *hupehensis* GRESSIT et KIMOTO, described from Hubei, out of here discussed area). General view as in plate C, **phot. 894**. Length about 2.0 mm. Distributed in Russian Far East, Korea and Japan (Hokkaido, Honshu, Kyushu, Shikoku) **balyi** JACOBY, 1885.
- 23. Hind femora at least partly dark brown or piceous. In male aedeagus with two lateral tuberculation subapically. Unnamed colour variation of *placidum* (antithesis 21).

- Legs entirely reddish brown, in male aedeagus with two lateral tuberculation subapically **24**.
- 24. Interantennal space wide. Frontal tubercles widely separated to each other. Reddish brown, antennomeres 5–11 or 6–11 darkened, in some specimens antennae almost entirely pale. General view as in plate C, **phot. 898**. Length 2.4–3.0 mm. Distributed in Russian Far East and Japan (Honshu, Kyushu, Shikoku) **unicolor** KIMOTO, 1965.
- Interantennal space narrower, frontal tubercles contiguous. Reddish brown, antennomeres 5–11 or 6–11 blackish, in some specimens antennae almost entirely pale. Distributed in Japan (Honshu, Kyushu, Shikoku) **akebiae** OHNO, 1964.

Genus *Trachyaphthona* Heikertinger, 1924

Nesohaltica Maulik, 1929

About 25 species are included in the genus *Trachyaphthona* but in some cases their generic membership is uncertain as a result of confusions with *Zipangia* (p. 1023) and *Aphthona* (p. 743). In discussed area three species.

Key to species

1. Transverse antebasal impression on pronotum indistinct. Frontal calli triangular, situated almost vertically. Antennae rather robust, preapical antennomeres at most 2 × longer than broad. Aedeagus as in figs **3608**, **3609**). Length 2.0–3.0 mm (= *maebarai* OHNO, 1961, *picea* NAKANE et KIMOTO, 1961). Distributed in Japan (Kyushu, Ryu-Kyu) and Taiwan, often ranked in the genus *Aphthona* (see) **nigrita** (OHNO, 1961).
- Transverse antebasal impression on pronotum distinct **2**.
2. Anterior corner of frontal tubercle extending toward interantennal space. Body piceous, antennae blackish with some basal antennomeres pale, legs yellowish, hind femora piceous or black. General view as in plate C, **phot. 899**. Length 2.0–3.0 mm. Distributed in E China, Japan (Hokkaido, Honshu, Kyushu, Shikoku) and Taiwan ... **obscura** (JACOBY, 1885).
- Anterior corner of frontal tubercle not extending toward interantennal space. Frons distinctly raised. Upper side distinctly and densely punctured. Body piceous, basal part of antennae, tibiae and tarsi paler. Length 2.0–2.2 mm. Distributed in E China, Japan (Hokkaido, Honshu, Kyushu, Shikoku) and Taiwan **sordida** (BALY, 1874).

Genus *Zipangia* HEIKERTINGER, 1924

To the genus *Zipangia* belong 15 species distributed mainly in Oriental region. In discussed area two species.

Key to species

1. Upper side dark brown or piceous to black. Legs pale with hind femora piceous to black. Length 2.0–3.0 mm. Distributed in E China (Jiangsu), Japan (Honshu,

- Kyushu, Shikoku, Tsushima) and Taiwan. See remark to *Trachyaphtona* (p. 1023)
 **obscura** (JACOBY, 1885).
 --. Body entirely dark yellow or pale ochraceous; antennae and legs reddish brown,
 hind femora blackish. Length 2.0–3.2 mm. Known from Japan (Honshu, Kyushu,
 Shikoku, Yakushima) only **lewisi** (Jacoby, 1885).

Genus *Zipanginia* OHNO, 1962

A small genus comprising 6 species distributed in Japan, Ryukyu Isl. and Taiwan. In
 discussed area 4 species.

Key to species

1. Upper side entirely or at least elytra with bluish metallic shine or reflex **2**.
- . Upper side piceous to black without metallic reflex **3**.
2. Antennomeres 1–4 yellowish brown, dorsal surface of first antennomere darkened.
 Abdominalsternit 5 with two tuberculations. Legs dark piceous, basal half of tibiae
 and tarsi paler. Length 2.0–3.0 mm. Known from Honshu (Japan) only
 **tuberosa** OHNO, 1964.
- . Antennomeres 1–4 entirely yellowish brown. Abdominalsternit 5 without any tuber-
 culations. Legs generally dark brown. Length 2.5–2.8 mm. Known from Shikoku (Ja-
 pan) only **tosana** OHNO, 1964.
3. Upper side strongly punctured. Body dark reddish brown, elytra and abdomen pi-
 ceous. In dark variations pronotum almost as dark as elytra. Antennae and legs
 yellowish brown, apical part of antennae brown, hind femora piceous. Length about
 2.0 mm. Known from Honshu (Japan) only **miyatakei** KIMOTO, 1971.
- . Upper side finely punctured. Body entirely dark brown to pitchy, except for paler an-
 tennomeres 1–4. Vertex smooth. Elytral epipleura on whole length flat. Mesosternal
 process not distinctly narrowed posteriorly. Forms two subspecies. External char-
 acters as above, length 2.0–2.2 mm (nominotypical subspecies); vertex reticulated,
 elytral epipleura in basal half convex, mesosternal process distinctly narrowed pos-
 teriorly. General view as in plate C, **phot. 900**, length about 2.5 mm (subsp. *katoi*
 OHNO, 1962). Distributed in Japan (Honshu, Kyushu, Shikoku), subsp. *katoi* known
 from Honshu only **picipes** (BALY, 1874).

Subfamily *Cassidinae*

Both former subfamilies *Hispinae* and *Cassidinae* are recently united and considered as a single subfamily *Cassidinae*, but their division into tribes within the new subfamily is in general outline conserved with rather small changes only.

Key to tribes

1. Pronotum and elytra without broad marginal expansions, upper side often covered by spines, head always free (tribes belonging to former *Hispinae*) **2**.
- Pronotum and elytra with broad marginal expansions, never covered by spines, head very often entirely hidden under anterior margin of pronotum (tribes belonging to former *Cassidinae*) **5**.
2. Dorsal surface and its margins without distinct spines; form of body generally subcylindrical, oval or wedge-shaped **3**.
- Dorsal surface or/and lateral margins armed with spines; form of body usually somewhat flattened and more or less oblong ***Hispini*** (p. 1057).
3. Elytron lacking a scutellar row of punctures near scutellum. Elytron with pairs of puncture rows divided by prominent costae ***Gonophorini*** (p. 1057).
- Elytron with an extra row of punctures along base of suture near scutellum **4**.
4. Posterior lateral angle of pronotum bearing a fine bristle. Body broadly oblong-oval or broadly subparallel, dorsoventrally compressed. Pronotum transverse ***Callispini*** (p. 1026).
- Lateral angles of pronotum without bristles. Body strongly elongate, 4–7 times longer than broad, subparallel-sided. Dorsal surfaces even and smooth ***Leptispini*** (p. 1063).
5. Head visible from above, not covered by pronotum ***Basiprionotini*** (p. 1026).
- Head not visible from above, covered by pronotum **14**.
6. Tarsal claws with a comb-like structure at base ***Aspidimorphini*** (p. 1025).
- Tarsal claws not pectinate at base ***Cassidini*** (p. 1027).

Tribe *Aspidimorphini*

In the discussed area one genus only.

Genus *Aspidimorpha* HOPE, 1840

One of the largest genera of the subfamily *Cassidinae*, comprising about 160 species distributed in Palaetropical superarea and partly also in Notogea. In the discussed area three species.

Key to species

1. Elytral disc strongly but regularly convex. Body oval, gently and regularly rounded on sides. Pronotum subsemicircular, about twice broader than long. Explanate margin of elytra (not always) with reddish brown juxtahumeral and posterolateral spot.

- Underside pale, sternum sometimes brown. Length 6.8–8.8 mm. Described from Yemen **gruevi** BOROWIEC, 1985.
- . Elytral disc depressed or with obtuse postscutellar tubercle. Postscutellar tubercle present. Species from E Asia **2**
2. Elytral disc depressed. Disc of elytra brown or reddish brown. Length 5.6–7.1 mm. Distributed in Russian Far East, Japan, Korea and N China **transparipennis** (MOTSCHULSKY, 1860).
- . Elytral disc with obtuse postscutellar tubercle. Disc of elytra paler as in *transparipennis*, usually yellow or brownish yellow. General view as in plate 101, **phot. 908**. Length 6.4–8.6 mm. Distributed in Russian Far East, Japan, Korea and China **difformis** (MOTSCHULSKY, 1860).

Tribe *Basiprionotini*

Tribus *Basiprionotini* comprises a few Palaetropical genera. From the discussed area only one representative of the genus *Basiprionota* is known.

Genus *Basiprionota* CHEVROLAT, 1837

To the genus *Basiprionota* belong over 40 species distributed in Oriental region, one of them is known also from N China. Large, upperside pale, head and one lateroapical spot on explanate margin of each elytra black. General view as in fig. **5462**. Length 11.5–13.0 mm. Broadly distributed in China and N Indochina **bisignata** (BOHEMAN, 1862).

Tribe *Callispini*

In the discussed area one genus only.

Genus *Callispa* BALY, 1858

To the genus *Callispa* belong over 70 species, but in the discussed area one species only. Elytra entirely metallic blue-black or purplish-violaceous, more rarely green. Pronotum red or reddish testaceous, underside entirely reddish testaceous. Primary puncturation of elytra arranged in regular rows. Lateral sides of pronotum gently rounded, narrowed anteriorly. General view as in plate CI, **phot. 902**. Length 6.5–7.5 mm. Forms two subspecies: pronotum feebly narrowed anteriorly, its anterior margin not distinctly emarginate (nominotypical subspecies); pronotum distinctly narrowed anteriorly, its anterior margin slightly but distinctly emarginate (subsp. *emarginata* GRESSIT, 1938). Distributed in S China and N Indochina (nominotypical subspecies) and in Hainan Island **fortunii** BALY, 1858.

Tribe *Cassidini*

In the tribe *Cassidini* were described numerous genera or subgenera, but a relatively large number (22) of them were synonymized with the genus *Cassida* LINNAEUS and in present work treated mostly as auxiliary groups. At present in discussed area to the tribus *Cassidini* are ranked 13 genera.

Key to genera

1. Tarsi narrow, on underside without a brush of setae. Claw tarsomere at least twice longer than lobi of tarsomere 3 **2.**
- Tarsi broad, on underside with a brush of setae. Claw tarsomere at most 1.5 times longer than lobi of tarsomere 3 **4.**
2. Elytra with tubercles, costae or folds, pronotal disc with a pair of tubercles. Antennal grooves deep, bordered externally by a sharp carina. Antennomere 3 longer than the 2. Pronotum without basal corners, sides broadly rounded
..... ***Macromonycha*** (p. 1054).
- Elytra without tubercles, costae or folds, at most with low longitudinal elevations, pronotal disc without tubercles. Antennal grooves shallow or absent or shallow, with no external carina **3.**
3. Punctuation of elytra mostly irregular. Pronotum subpentagonal, without basal corners, explanate margin rugose. Antennomere 3 shorter than 2. Base of elytra much wider than pronotum, elytral sides strongly converging posteriad. Body length under 4.5 mm ***Nabathea*** (p. 1054).
- Punctuation of elytra partly regular. Pronotum semicircular, without basal corners, explanate margin punctate. Antennomere 3 longer than 2. Base of elytra slightly wider than pronotum, elytral sides moderately converging posteriad. Body length over 5.5 mm ***Chiridula*** (p. 1052).
4. Elytra with erect setae ***Rhytidocassis*** (p. 1055).
- Elytra bare or with very short pubescence **5.**
5. Last tarsomere elongate, distinctly extending beyond apical margin of third tarsomere. Claws large, simple. Explanate margin of elytra very narrow, near apex linear. Length of body about 4.9 mm. One species known from Arabian Peninsula
..... ***Seminabathea*** (p. 1056).
- Character combination not as above **6.**
6. Body very convex, elytral borders sloping strongly, almost vertically **7.**
- Body flattened or moderately convex, elytral borders mostly broadly flattened, sometimes at most obliquely sloping **8.**
7. Pronotum strongly narrowed anteriorly, almost triangular ... ***Ischyronota*** (p. 1053).
- Pronotum not almost triangular ***Oxylepus*** (p. 1055).
8. On underside of pronotum run two deep longitudinal gutters reaching to hind margin **10.**
- Longitudinal gutter on underside of pronotum shallow, shortened or absent **9.**
9. Apical margin of elytron with a row of fine hairs on underside
..... ***Thlaspidia*** (p. 1056).
- Apical margin of elytron without hairs on underside ***Cassida*** (p. 1028).
10. Gutters on underside of pronotum at their end strongly bent toward side and limited by a high ridge, the gutter can accommodate whole antenna ***Oocassida*** (p. 1054).

- Mentioned gutters not bent and not limited by high ridge, the gutter can accommodate only the basal part of antenna 11.
- 11. Antenna shorter, hardly reaching beyond basal margin of prothorax 12.
- Antennae longer, distinctly (with 2 or 3 last antennomeres) extending beyond basal margin of prothorax ***Glyphocassis*** (p. 1052).
- 12. Sides of pronotum broadly rounded (plate CII, phot. 915)
..... ***Hypocassida*** (p. 1052).
- Hind angles of pronotum distinct, placed basally (plate LVI, phot. 500)
..... ***Pilemostoma*** (p. 1055).

Genus *Cassida* LINNAEUS, 1758

The largest, worldwide distributed genus in the subfamily, in the discussed area comprising over 150 species.

Key to auxiliary groups

1. Claws with an appendix at base, elytron generally seriate-punctate, its explanate margin rather horizontal and distinctly set off from the convex disc. Species from SE Asia auxiliary **group A** (p. 1029).
- Not as above 2.
2. On underside of pronotum longitudinal gutters distinct. Body relatively slender. Lateral borders of elytra rather feebly flattened auxiliary **group B** (p. 1030).
- On underside of pronotum longitudinal gutters indistinct (well perceptible in *Pseudocassida*, (see antithesis 8) or absent. Body oval 3.
3. Margins of elytra bent upwards, forming a deep gutter. Body large, length about 8.0 mm auxiliary **group C** (p. 1031).
- Margins of elytra not bent upwards 4.
4. Claws with tooth-like widening at basis 5.
- Claws simple 7.
5. Punctures on elytra arranged in regular rows auxiliary **group D** (p. 1031).
- Punctures of elytra not arranged in regular rows 65.
6. Length under 5.5 mm. Flattened lateral border of elytra limited by a wavy row of points auxiliary **group E** (p. 1032).
- Length over 7.0 mm. Flattened lateral border of elytra not limited by row of points ...
..... auxiliary **group F** (p. 1033).
7. Claw tarsomere very short, shorter than lobi of tarsomere 3
..... auxiliary **group G** (p. 1033).
- Claw tarsomere normal 8.
8. At anterior margin of pronotum and at lateral margins of elytra pale, great, semitransparent spots. Behind scutellum an elevated callus
..... auxiliary **group H** (p. 1034).
- On upper side no semitransparent spots 9.
9. Lateral borders of elytra gently sloping, not or indistinctly flattened 10.
- Lateral borders of elytra form a broad flattening. On every side of head runs a bulge limiting distinctly perceptible gutters. Hind angles of pronotum placed at the level of elytra basis auxiliary **group I** (p. 1035).

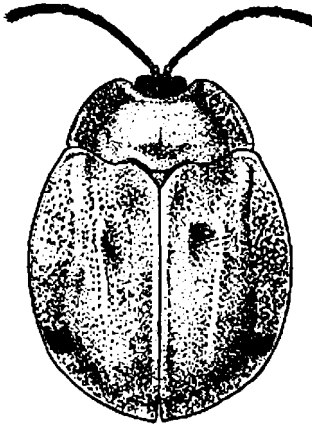
- 10. Elytra evenly convex. Interval 3 with scattered punctures. Mid coxae close, ventral side at least partly black auxiliary **group J** (p. 1036).
 - Elytra less or more tuberculate at summit **11**.
- 11. Elytra with a distinct, great, common tubercle behind scutellum. Interval 3 without punctures. Mid coxae widely separated, ventral surface yellow or green auxiliary **group K** (p. 1038).
 - Elytra without a common tubercle at summit **12**.
- 12. Claw tarsomere relatively long, distinctly projecting from tarsomere 3. Upper side red with black pattern auxiliary **group L** (p. 1039).
 - Claw tarsomeres shorter, not distinctly projecting from tarsomere 3. Upper side differently coloured *Cassida* s. str. auxiliary **group M** (p. 1040).

Auxiliary group A

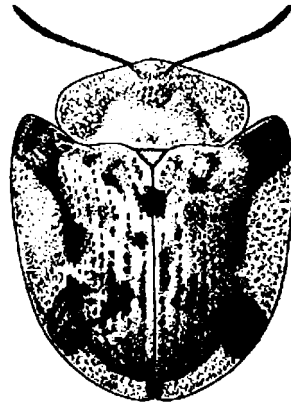
Taiwania SPAETH, 1913

Key to species

- 1. Explanate margin of elytron with a dark humeral area. Elytral disc without distinct black spot on humeral callus. Pronotum almost entirely pale. General view as in fig. **5463**. Length 6.8–8.0 mm. Distributed in Ussuria, NE China and Korea *amurensis* (KRAATZ, 1879).
- Explanate margin of elytron lacking a dark humeral area **2**.



5462



5463

Figs 5462, 5463. General view (after GRESSIT and KIMOTO 1963): 5462 – *Basiprionota bisignata*; 5463 – *Cassida amurensis*.

- 2. Elytra with a raised x-shaped area (often paler than the remaining surface) astride suture at summit **3**.

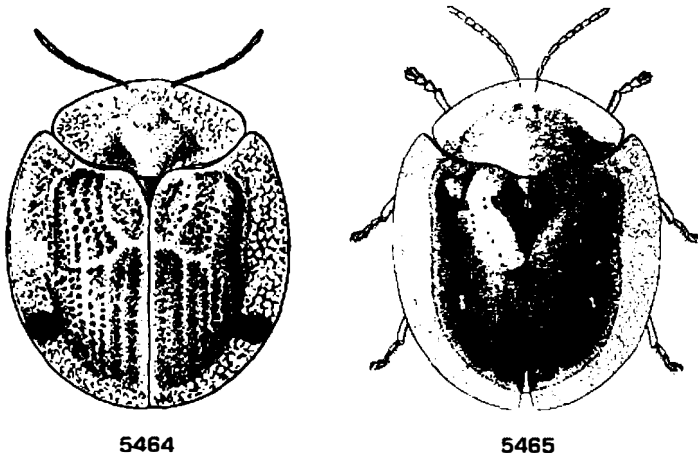
- Elytra lacking a x-shaped raised area astride suture at summit. Upper side with a W-shaped black pattern on elytra, in some specimens entirely pale. General view as in fig. 5465. Length 4.2–5.6 mm (= *trivittata* FABRICIUS, 1801, *u-fuscum* WIEDEMANN 1823, *cuticula* GRESSIT, 1938). Broadly distributed in Oriental area from India, Sri Lanka and S China to Philippine Islands, reported also from Japan (Kyushu) *circumdata* HERBST, 1790.
- 3. Apex of aedeagus strongly, shortly narrowed, its very tip narrowly transversely cut. Explanate margin of elytron barely over 1/2 as wide as disc. Central part of pronotum more convex than its remaining surface. Hind part of explanate elytral margin often with a dark band. General view as in fig. 5464. Length 5.3–6.7 mm. Distributed in Japan(?), S China and Indochina *versicolor* BOHEMAN, 1855.
- Apex of aedeagus not narrowed, broadly, transversely cut. Similar to *versicolor*, but on average smaller and paler, explanate margin of elytra normally without darkenings, sometimes with a dark hind spot (ab. *thais* BOHEMAN, 1862). Distributed in Russian Far East, Korea, China, Japan. Nowadays considered as conspecific with *versicolor* *crucifera* KRAATZ, 1879.

Auxiliary group B

Dolichocassida GÜNTHER, 1958

Key to species

- 1. Body slender, parallel-sided (length/width ratio more than 1.8). Tarsal sole with brush of dense setae only on their apical part. On elytra second interval feebly carinate at the base. Frontoclypeal area lustrous. Length 4.0–5.5 mm. Distributed in N Africa from Morocco to Libya *angusta* MARSEUL, 1876.
- Body not slender (length/width ratio less than 1.8). Tarsal sole with brush of dense setae on whole surface. On elytra intervals flat. Frontoclypeal area matt 2.



Figs 5464, 5465. General view (5464 after GRESSIT and KIMOTO 1963; 5465 after KIMOTO and TAKIZAWA 1994):
5464 – *Cassida versicolor*; 5465 – *C. circumdata*.

2. Body smaller (length under 4.0 mm). Elytra on area of seventh to ninth rows with a shallow depression fairly demarcated from disk by an almost angular flexure. Rows of elytral punctures in apical part confused. Frontoclypeal area deeply punctate. Length 3.7–4.0 mm (= *lusitanica* SASSI, 1993). Known from S Portugal and Pyrenees ***pyrenaea*** WEISE, 1893.
- . Body larger (over 4.0 mm). Elytra without depressed area clearly demarcated from disk. Rows of elytral punctures regular or almost regular on whole length. Frontoclypeal area more shallow punctate. Length 4.0–5.5 mm (= *puncticollis* SUFFRIAN, 1844, *mol-lis* BOHEMAN, 1854, *veselyi* GÜNTHER, 1958). Distributed from Morocco and Portugal to Albania and Crete ***pusilla*** WALTZ, 1839.

Auxiliary group C

Lordiconia REITTER, 1926

One species only. Upper side red-brown, in living insects with feeble golden reflex. Underside black. On elytra rows of punctures partly confused, interstices deeply reticulate, matt. General view as in plate CII, phot. 910. Length 9.0–10.0 mm (= *speciosa* BRAHM, 1790, *austriaca* FABRICIUS, 1792). Variations: upper side in living insects greenish-yellow, after drying yellowish (ab. *graminis* SUFFRIAN, 1844, immature form), upper side with blurred brownish spots (ab. *illyrica* BOHEMAN, 1854, half-mature form), upper side entirely red-brown (typical form, mature insects). Distributed from E France to Kazakhstan, recorded mostly in basin of Danube and in Ukraine ***canaliculata*** LAICHARTING, 1781.

Auxiliary group D

Onychocassis SPAETH, 1926

Key to species

1. Body uniformly pale yellowish, labrum partly brownish only. Length 5.5 mm. Distributed in Iraq, Lebanon and S Turkey ***linnavuorii*** BOROWIEC, 1986.
- . Head, sternum and most part of abdomen black 2.
2. Basal tooth in claws large, lobe-shaped, transparent, semimembraneous. Legs entirely pale. In living insects upper side, except for explanate margins of pronotum and elytra, with vivid metallic gloss (plate CI, phot. 909). Length 5.5–6.0 mm. Distributed in Greece, Asia Minor, Caucasian countries, Iran and Afghanistan ***brevis*** WEISE, 1884.
- . Basal tooth in claws small, rectangular, not membraneous. Femora in basal half black. Length about 4.8 mm. Distributed in Caucasian countries and E Turkey ***bella*** FALDERMANN, 1837.

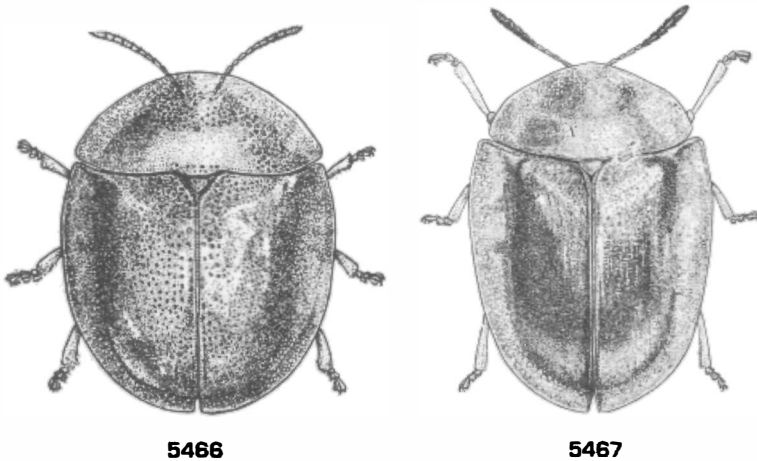
Auxiliary group E

Mionychella SPAETH, 1952

In discussed area two species.

Key to species

1. Central part of of pronotum impunctate, underside yellow. Externally similar to *hemisphaerica* (antithesis 1), but humeral angles more protruding anteriorad, punctuation of upper side distinctly larger. Length 4.0–5.0 mm (= *liquefacta* SPAETH, 1912, *semipallens* SPAETH, 1912, *sincera* SPAETH, 1912, *concolor* SPAETH, 1926). An African species recorded also in Yemen *praetimida* SPAETH, 1912.
- . Central part of of pronotum distinctly punctate, underside partly (at least on sternum) black. Body very broad. General view as in fig. 5466. Upper side matt, in living insects green, in dried specimens yellowish. Underside bicolorous: head, sternum and coxae black, abdomen pale. Elytra randomly punctate. Length 4.0–5.2 mm (= *anglica* CURTIS, 1826, *concinna* STEPHENS, 1832, *rossii* WOLLASTON, 1857, *corii* FAIRMAIRE, 1876). Variations: abdomen, except for borders, black (ab. *heydeni* SPAETH, 1914), upper side pitchy black, lateral borders of elytra brown (ab. *peculiosa* WEISE, 1895). Distributed in Europe northwards to S Norway and in Mediterranean area ...
..... *hemisphaerica* HERBST, 1799.



Figs 5466, 5467. General view (after BROVDY 1983): 5466 – *Cassida hemisphaerica*; 5467 – *C. viridis*.

Auxiliary group F

Odontionycha WEISE, 1891

Key to species

1. Frontoclypeus black. Disc of pronotum not wrinkled. Frontoclypeus usually completely or partly black. Upper side in living insects green, matt, after drying pale yellowish-grey. Underside black except borders of abdomen. Legs pale. General view as in fig. 5467. Elytra randomly punctate. Length 7.2–9.9 mm (= *equestris* FABRICIUS, 1787). Variations: underside pale, head and a longitudinal median stripe on abdomen black (ab. *nigriceps* FAIRMAIRE, 1851), clypeus pale (ab. *flaviceps* MARSEUL, 1876), femora almost entirely blackish (unnamed), upper side very dark, brown (unnamed). Transpalaeartic species distributed from the British Isles to Japan; the ab. *flaviceps* characteristic for populations from Near East **viridis** LINNAEUS, 1758.
- Disc of pronotum more or less wrinkled. Frontoclypeus always yellow to red. Head and pronotum rugosely punctate, elytra strongly raised along the suture **2**.
2. Body oval, elytra not very short. Length 8.5 mm. Described from N China (Kansu) based on one female only **gansuica** CHEN et ZIA, 1964.
- Body shorter oval, elytra very short, about twice as long as pronotum. Length 7.0 mm. Described from N China (Shensi) based on one specimen (sex not determined) only **tsinlinica** CHEN et ZIA, 1964.

Auxiliary group G

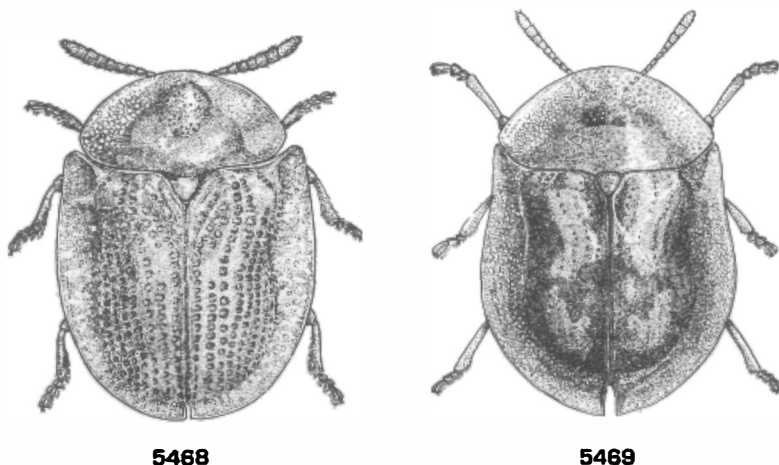
Mionycha WEISE, 1891.

Key to species

1. Postscutellar impressions shallow or absent thus sutural area behind scutellum not or hardly elevated **2**.
- Postscutellar impressions deep thus sutural area behind scutellum appears distinctly elevated. Length 4.0–5.0 mm. Distributed in Ussuria, Korea, NE China and Japan (Honshu) **concha** SOLSKY, 1872
2. On elytra rows of punctures distinct, regular, intervals smooth, barely broader than the rows. General view as in fig. 5468. In dry insects upper side reddish (mature specimens) or yellowish (immature specimens), in living insects upper side with silvery-blue metallic reflex. Lateral sides of pronotum broadly rounded, elytra without distinct impressions. Underside black, legs and margins of abdomen yellow. Length 4.4–5.8 mm (= *lucida* SUFFRIAN, 1844). Variation: femora basally black (ab. *ornata* CREUTZER, 1799). Distributed from W France to N Kazakhstan; reports from E Siberia concern probably *C. concha* (antithesis 2). Deliberately introduced in Canada for biological control of weeds **azurea** FABRICIUS, 1801.
- On elytra rows of punctures fine, intervals reticulate, considerably broader than the rows **3**.
3. Elytra with broad, shallow postscutellar impressions. General view as in fig. 5469. Suture behind scutellum slightly convex. Punctures of elytra not uniform, at suture finer, laterally stronger. Coloured as *azurea* (thesis 2). Length 4.0–5.0 mm (= *hinck-*

si MEDVEDEV, 1957). Variation: underside, except black head, yellowish (ab. *ventralis* WEISE, 1893). Geographical variability: in Asia Minor, Caucasian countries, Iran and partly also in Central Asia occurs a form (?subsp.) with shallower impressions and considerably finer puncturation of elytra (ab. *helva* SPAETH, 1914). Distributed from Sicily, W Italy and Czech Republic to basin of Amur

- *subreticulata* SUFFRIAN, 1844.
- . Elytra without impressions, suture behind scutellum not convex. Puncturation of elytra uniform. General view as in fig. 5470. Upper side yellowish, always without red spots, in living insects green with golden-purplish metallic reflex. Underside, except black head, pale. Length 3.3–4.5 mm (= *superba* GMELIN, 1787, *mutabilis* VILLIERS, 1789, *spergulae* MARSHAM, 1802). Variations: hind margins of abdominal sternites blackish (typical form), hind margins of abdominal sternites blackish in the middle only (ab. *albiventris* SUFFRIAN, 1844), sternum and abdomen entirely pale (ab. *melanocephala* SUFFRIAN, 1844), on elytra along suture and lateral margins blackish stripes (ab. *nigrescens* WEISE, 1893). Distributed from W France and Pyrenees to Caucasian countries, reported also from E Siberia
- *margaritacea* SCHALLER, 1783.



Figs 5468, 5469. General view (after BROVDY 1983): 5468 – *Cassida azurea*; 5469 – *C. subreticulata*.

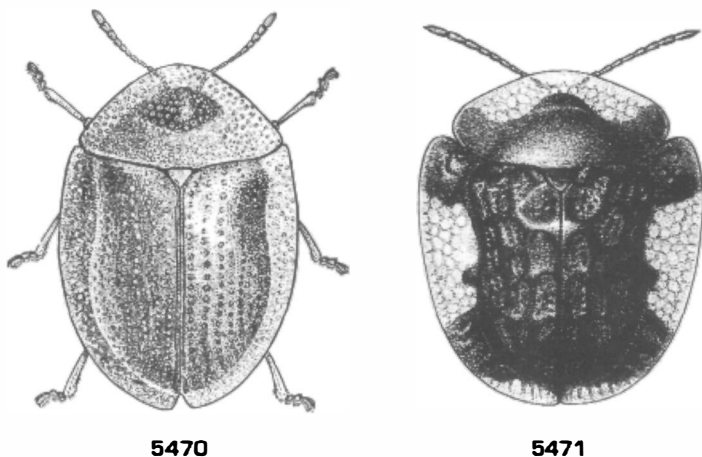
Auxiliary group H

Alledoya HINCKS, 1950.

Key to species

1. E Palearctic species. Elytral sides distinctly converging posterad. Pronotum dark brown to reddish brown. Elytra black or blackish brown. Explanate margin of pronotum and elytra light yellowish brown, the former marked with dark brown at angle and the latter with broad pitchy patches in basal and apical parts. Underside black,

- head and antennae brownish, legs reddish brown, femora basally darkened. General view as in fig. 5471. Length 4.7–6.7 mm. Distributed in Mongolia, Russian Far East, Japan (Honshu, Shikoku, Kyushu) and in almost whole China *vespertina* BOHEMAN, 1862.
- . W Palaearctic species. Elytral sides rounded 2.



Figs 5470, 5471. General view (5470 after BROVDY 1983; 5471 after KIMOTO and TAKIZAWA 1994): 5470 – *Cassida margaritacea*; 5471 – *C. vespertina*.

2. Ground colour of upper side rusty-brown, pale spots do not contrast with it. Humeral angles more sharpened. Length 4.5–5.5 mm. Distributed in S Russia, Caucasian countries and Turkey, reported also from Greece *seraphina* MÉNÉTRIÉS, 1836.
- . Ground colour of upper side black, pale spots strongy contrast with him. Humeral angles more obtuse. General view as in plate CII, phot. 911. Length 5.0–6.0 mm. Distributed in Turkey and Kazakhstan *hablitziae* MOTSCHULSKY, 1838.

Auxiliary group I

Pseudocassida DESBROCHERS DES LOGES, 1891.

One species only. Upper side variously coloured from pale green to yellow and-brick red. On each elytron several little black spots, now partly disappearing, now fused, in rare cases elytra entirely black except lateral borders. General view as in plate CII, phot. 913. Length 6.6–7.9 mm (= *variegata* GEOFFROY, 1785, *varia* LATREILLE, 1804, *subobliterata* PIC, 1902). Variations: upper side uniformly red (ab. *immaculata* DESBROCHERS DES LOGES, 1891), ground colour of elytra green (ab. *maculata* LINNAEUS, 1767, immature form), ground colour of elytra brick red (typical form, mature specimens), elytra black with red borders and often with a few small red spots (ab. *dorsalis* WEISE, 1893). Three subspecies

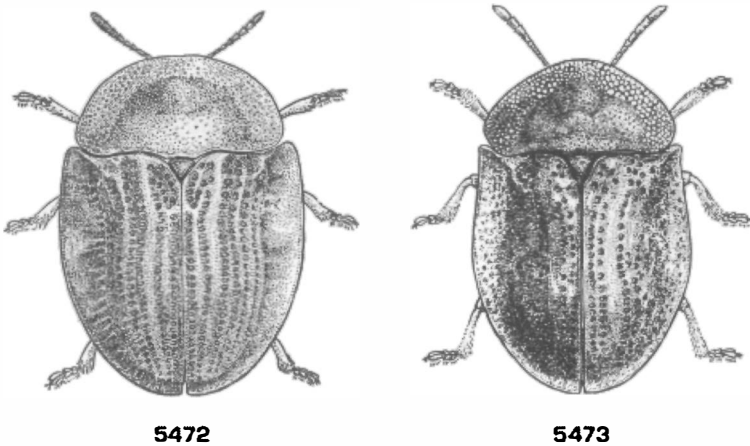
were described: than in description (typical form), body broader, pronotum shorter, its hind angles rather rounded (subsp. *ussuriensis* SPAETH, 1921 from E Palaeartic), body narrower as in typical form, ab. *immaculata* predominate (subsp. *halophila* SPAETH, 1926 from western and southern part of Caspian area). Transpalaeartic species, distributed from the British Isles to Japan *murraea* LINNAEUS, 1767.

Auxiliary group **J**

Cassidulella STRAND, 1928 and *Eremocassis* SPAETH, 1926.

Key to species

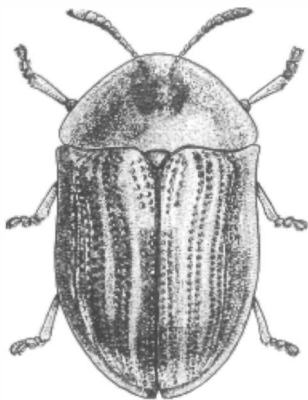
- 1. Punctuation of elytra coarse, rows as wide as intervals. Third interval without additional punctures. Body in frontal view strongly convex, lateral borders of elytra almost vertical (similarly as in genus *Ischyronota*, p. 1053). Upper side greenish (in dry specimens rusty-testaceous), feebly shining or matt. Punctuation of pronotum fine and shallow, often somewhat rugulose or almost disappearing. Basal part of elytra broader than pronotum. Lateral borders of elytra punctate. Length 3.5-4.5 mm (= *transcaspica* SPAETH, 1926, *palyi* MATIS, 1970). Distributed in Transcaspia from Turkmenistan to Tadjikistan *weisei* JACOBSON, 1894.
- Punctuation of elytra fine, rows always narrower than intervals. Third interval often with additional punctures. Body usually less convex, lateral borders obliquely sloping, but not almost vertical 2.



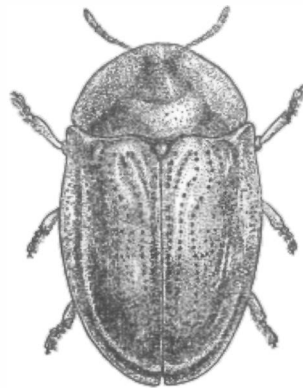
Figs 5472, 5473. General view (after BROVDY 1983): 5472 – *Cassida berolinensis*; 5473 – *C. parvula*.

- 2. Lateral borders of elytra without flattening 3.
- Flattening of elytral borders feeble, but perceptible. Upper side yellowish-grey, unicolorous or with darker spots at suture and in hind part. In living insects humeral

- calli with golden metallis sheen. General view as in fig. 5472. Length 3.4–4.9 mm (= *daurica* BOHEMAN, 1854). Variations: underside entirely pale (ab. *pallidiventris* REITTER, 1912), sternum and abdomen slightly darkened, brownish (typical form), sternum and abdomen blackish (ab. *pectoralis* WEISE, 1889) ***berolinensis*** SUFFRIAN, 1844.
3. Clypeus at least apically rusty-brown 4.
 -. Clypeus black 6.
4. Underside black, except borders of abdomen. Lateral borders of elytra very strongly and deeply punctate. Upper side coloured as in *nobilis* (thesis 7), femora pale, at most basally darkened, pronotum often with three darker stripes. General view as in fig. 5473. Length 4.5–5.0 mm (= *navicula* BOHEMAN, 1854, *comparata* RYBAKOV, 1889). Distributed from Bulgaria, S Russia and Caucasian countries to Mongolia and NW China ***parvula*** BOHEMAN, 1854.
- . Underside entirely reddish yellow 5.
5. Explanate margin of elytra runs almost vertical. Body outline as in *weisei* (thesis 1). Length 5.0–5.5 mm. Known from Algeria and Corsica ***ovalis*** SPAETH, 1914.
- . Explanate margin of elytra more obliquely sloping. Body outline as in *vittata* (anti-thesis 7). Length 5.35 mm (= *persica* MEDVEDEV, 1956 not SPAETH, 1926). Known only from Iran ***persicana*** BOROWIEC, 1999.



5474



5475

Figs 5474, 5475. General view (after BROVDY 1983): 5474 – *Cassida nobilis*; 5475 – *C. vittata*.

6. Disc of pronotum impunctate, at most with fine pricks 6.
 -. Disc of pronotum distinctly punctate. Upper side yellow, on elytra punctures and suture darkened, femora black with pale apical part. Length 4.8–5.2 mm. Distributed in Ussuria, basin of Amur and in China ***velaris*** WEISE, 1896.
7. Femora in basal half blackish, pronotum always without darker stripes. Frontal furrows straight and deep. Upper side in living insects pale green (immature specimens), yellowish or yellowish-grey, with silvery stripe between rows 2 and 3, disappearing

- in dry insets. Often along suture run a reddish-brown stripe. No sexual dimorphism in outline of pronotum. General view as in fig. 5474. Length 4.2–5.7 mm (= *urticae* BRAHM, 1790, *pulchella* PANZER, 1797, *viridula* PAYKULL, 1798, *laevis* HERBST, 1799, *splendidula* MARSHAM, 1802). Variations: reddish-brown sutural stripe reduced to 2 short lines (unnamed), upper side entirely brown chestnut (unnamed), underside entirely black, upper side brown with black stripes at suture. Transpalaeartic species, distributed from Ireland to Japan **nobilis** LINNAEUS, 1758.
- . Femora entirely yellow or only at basis darkened. Frontal furrows fine. Similar to *nobilis* (thesis 7), but after drying more pale coloured, in living insects the silvery stripe broader, reaching to 4. or 5. interval. General view as in fig. 5475. Length about 5.0 mm (= *oblonga* ILLIGER, 1798, *salicorniae* CURTIS, 1826, *atlantica* ESCALERA, 1914). Transpalaeartic species, distributed from Morocco. Portugal and England to Japan **vittata** VILLERS, 1789.

Auxiliary group K

Tylocentra REITTER, 1926.

Key to species

1. W Palaearctic species 2.
- . E Palaearctic species 6.
2. Puncturation of elytra completely regular 3.
- . Puncturation of elytra at least in posterolateral part of disc irregular 4.
3. Body somewhat broader with sides moderately converging posterad, humeri less protruding anterad. Yellow, usually with red spot at the top of disc. Length 4.1–5.2 mm. Reported from Cyprus, Israel, Lebanon and Saudi Arabia **pellegrini** MARSEUL, 1868.
- . Body narrower with sides distinctly converging posterad, humeri distinctly protruding anterad. Upper side matt. Yellowish-brown, on elytra basal triangle and 1–2 inner intervals covered by small red spots. Length about 4.5 mm. Distributed in Iran and Asia Minor **persica** SPAETH, 1926.
4. Body strongly narrowed posterad, general outline subtriangular 5.
- . Body feebly narrowed posterad, lateral sides of elytra very strongly inclined, general shape cylindrical. Uniformly yellowish-grey, sometimes suture on summit reddish. Length 5.0–5.5 mm. Distributed in Kirghyzstan and Kazakhstan **sussamyrica** SPAETH, 1926.
5. Only posterolateral apex of elytral disc with irregular punctation. Coloured similarly as *persica*. Length 4.0–4.5 mm. Distributed in Turkmenistan, Iran, Caucasian countries and Asia Minor. Here perhaps *pellegrini* MARSEUL, 1868, barely differing from *saucia* and possibly conspecific with it **saucia** WEISE, 1889.
- . Whole lateral and apical part of elytral disc with irregular punctation. Body pale yellowish to yellowish-brown, with or without pink spots at apical part of suture and near scutellum. Length 4.5–7.0 mm. Distributed in Transcaspiya **turcmenica** WEISE, 1892.
6. Elytra with a distinct tubercle at summit; basal triangle of elytra distinctly impressed. Intervals wider than puncture rows. Elytral explanate margin feebly or indistinctly

- punctured. Length 4.3–4.8 mm (= *lenis* SPAETH, 1926). Distributed in N China
 ***virguncula*** WEISE, 1889.
- Elytra lacking a distinct tubercle at summit. Basal triangle of elytra not distinctly
 impressed. Punctures of elytra arranged in regular rows, intervals narrower than
 puncture rows. Length 4.5–5.0 mm. Distributed in Mongolia, C and N China
 ***deltoides*** WEISE, 1889.

Auxiliary group L

Literature: BOROWIEC and ŚWIĘTOJAŃSKA 2001.

Lordicassis REITTER, 1926, *undecimnotata* species complex.

Key to species (cited after BOROWIEC and ŚWIĘTOJAŃSKA 2001)

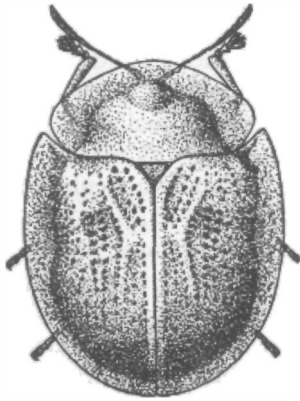
1. Pronotal and elytral disc strongly convex. Pronotum regularly semicircular, with
 maximum width at base, disc always black, usually glabrous to slightly dull, with
 fine and sparse puncturation. Distributed in Transcaucasus and mountains of NW
 Iran ***transcaucasica*** BOROWIEC et ŚWIĘTOJAŃSKA, 2001.
- Pronotal and elytral disc moderately convex. Pronotum usually less regularly semi-
 circular, with maximum width slightly before base and with more or less angulate
 sides, disc from uniformly reddish to black, often dull, microreticulate, its punctura-
 tion coarser and denser. Distributed in Middle Asia and NE Iran **2.**
2. Large and stout species, length usually exceeding 8.0 mm (mean 8.31), L/W ratio be-
 low 1.45 (mean 1.42). Base of elytra usually distinctly wider than pronotum. Anterior
 margin of each elytron almost straight, with very small black teeth. Explanate margin
 of elytra very broad, also in posterior half, in anterior part has tendency to form a
 shallow gutter. Distributed in mountains of E Kazakhstan and Kirghyzstan
 ***moori*** BOHEMAN, 1856.
- Smaller and slimmer species, length usually below 8.0 mm, L/W ratio usually above
 1.45 **3.**
3. Base of each elytron straight, with very small basal teeth. Pronotal disc always with
 black. Medium-sized species, mean length 7.15 mm. Distributed in mountains of
 E Kazakhstan and Kirghyzstan ***tianshanica*** BOROWIEC et ŚWIĘTOJAŃSKA, 2001.
- Base of each elytron shallowly emarginate, with very prominent basal teeth. Coloura-
 tion of pronotal disc varies from uniformly yellowish-red to black **4.**
4. Very small, the smallest species of the group, mean length 6.49 mm. Usually darker
 coloured, pronotal disc often black. Surface of pronotal disc usually distinctly micro-
 reticulate, dull. Sides of elytra behind humeral angle usually shallowly emarginate.
 Only mountains above 1400 m of E Kazakhstan, Kirghyzstan, Tadzikistan and Uz-
 bekistan ***medvedevi*** LOPATIN, 1965.
- Larger species, mean length 7.73 mm. Usually paler coloured, pronotal disc usually
 yellowish-red. Surface of pronotal disc usually indistinctly microreticulate, glabrous.
 Sides of elytra behind humeral angle usually straight, without emargination. Forms
 two aberrations: pronotum uniformly red (ab. *impicticollis* WEISE, 1894), as *impic-
 ticollis*, but elytra particularly strongly punctured (ab. *undecimguttata* REITTER,
 1890, sometimes treated as subspecies appearing only in Turkmenistan). Widely
 distributed in Central Asia, mostly lowland and mid-land species, up to 1200 m
 ***undecimnotata*** GEBLER, 1834.

Auxiliary group **M**

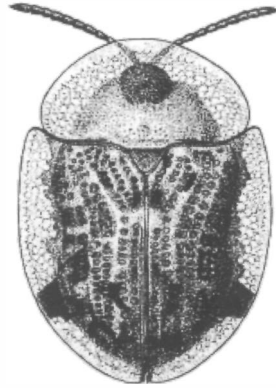
Cassida sensu stricto.

Key to species

1. Primary puncturation of elytra arranged in regular rows, without any punctures between rows 3 and 4 **2.**
- . Elytra not regularly seriate-punctate, at least with some extra punctures between rows 3 and 4 **5.**
2. Sides of pronotum laterally very broadly, regularly rounded. Species from E Asia **3.**
- . Pronotum on both sides laterally rounded and somewhat narrowed posterad **4.**



5476

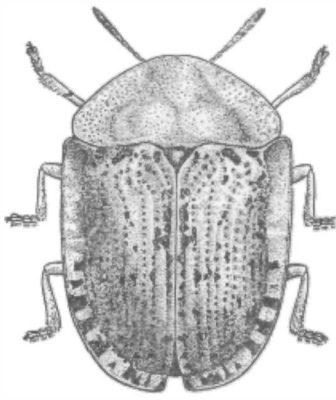


5477

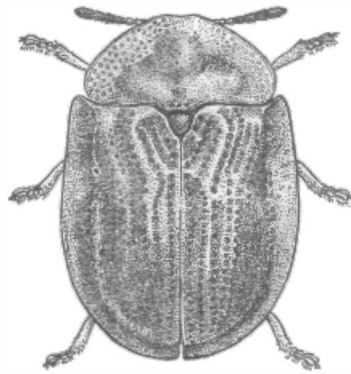
Figs 5476, 5477. General view (5476 after GRESSIT and KIMOTO 1963; 5477 after KIMOTO and TAKIZAWA 1994):
5476 – *Cassida japonica*; 5477 – *C. piperata*.

3. Body more rounded. Explanate margin of elytra lacking black markings. Elytral disc reddish brown, sometimes with numerous dark short longitudinal stripes and dots. General view as in fig. **5476**. Length 4.9–5.8 mm (= *rugifera* KRAATZ, 1879, *annamita* SPAETH, 1914). Distributed in Russian Far East, Korea, Japan (Hokkaido, Honshu, Shikoku, Kyushu), in Indochina and Philippines **japana** BALY, 1874.
- . Body less rounded, explanate margin of elytra with a posterolateral black marking. Elytral disc always partly black at side. Underside entirely black. General view as in fig. **5477**. Length 5.0–5.5 mm (= *labilis* BOHEMAN, 1854, *biguttulata* KRAATZ, 1879, *sparsa* GORHAM, 1885). Distributed in Russian Far East, Korea, Japan and broadly in China **piperata** HOPE, 1842.
4. On elytra middle part of margin of lateral flattenings thickened. Basal margin of elytra notched and blackened. General view as in fig. **5478**. Oval, yellowish brown to rusty-red, matt, on elytra numerous small black spots. Underside black, legs yellow.

- On elytra alternate intervals elevated. Length 6.0–7.0 mm (= *affinis* FABRICIUS, 1775, *tigrina* DEGEER, 1775). Variation: black dots partly confluent, general colouration of upper side very dark (ab. *nigra* HERBST, 1799). Known pest of beet cultures. Trans-palaeartic species distributed from the British Isles to Japan, introduced also in N America ***nebulosa*** LINNAEUS, 1758.
- . On elytra margin of lateral flattenings nowhere thickened. Basal margin of elytra neither notched nor blackened. Clypeus smooth, impunctate. Upper side yellow ochre or yellowish-grey, usually with small, blurred, randomly scattered, brownish (in dark coloured specimens blackish) spots on elytral disc. Pronotum broadest behind its midlength, anteriorly and laterally densely and strongly punctate. General view as in fig. 5479. Length 4.1–5.8 mm (= *obsoleta* ILLIGER, 1798, *exsculpta* CHARPENTIER, 1825, *kusnetzovi* MATIS, 1974). Variations: body generally pale, frons blackish (ab. *pallida* PAYKULL, 1799), body very pale, only sternum partly and abdomen in the middle blackish (ab. *littoralis* WEISE, 1993), on fore part of elytra a great, black spot, reaching to 2/3 of their length (ab. *dorsalis* DESBROCHERS DES LOGES, 1891, = *atrata* GERHARDT, 1891), upper side in great part blackened (ab. *atrodorsalis* SPAETH, 1914). Holarctic species ***flaveola*** THUNBERG, 1794.



5478

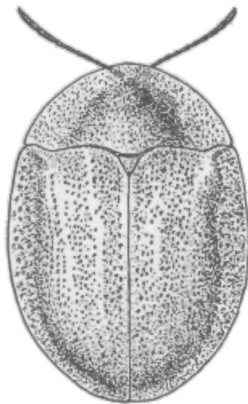


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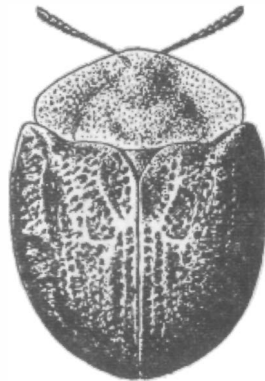
Figs 5478, 5479. General view (after BROVDY 1983): 5478 – *Cassida nebulosa*; 5479 – *C. flaveola*.

5. Species from E Asia. Head coarsely punctured, frons rusty-reddish with deep furrows, pronotum very strongly punctured. Upper side generally bicolorous: pronotum pale rusty-reddish, elytra black, rarely red, but always darker than pronotum. Interval between puncture rows 2 and 3 strongly raised. General view as in fig. 5480. Length 5.6–6.2 mm (= *diabolica* KRAATZ, 1879, *morawitzi* JACOBSON, 1894). Distributed in Mongolia, Russian Far East, Korea and China ***pallidicollis*** BOHEMAN, 1856.
- . Not as above **6.**
6. E Palaeartic species **7.**
- . W Palaeartic species **16.**

- 7. Upper side contrastingly marked with distinct discal longitudinal spots or stripes. Their surface reddish or (in living specimens) green with suture and 3–6 spots on each elytron black. Go to *lineola*, thesis 22.
- . Dorsal surfaces not contrastingly marked 8.
- 8. Legs entirely black. On elytra short bristle-like hairs. Labrum broadly and shallowly emarginate 9.
- . Legs pale, at most femora blackened in basal half 10.
- 9. Frontoclypeal area as broad as long. Explanate margins of elytra subhorizontal. Lateral margins of pronotum broadly rounded. Elytral disc with several irregular subtransverse wrinkles. Upper side largely black or rusty-brown. Length 7.5–8.0 mm. Distributed in Mongolia, Russian Far East, C China, N China and Japan *mongolica* BOHEMAN, 1854.
- . Frontoclypeal area distinctly longer than broad. Colouration of upper side dark reddish brown, underside entirely black. Elytral disc without wrinkles. Antennae blackish with basal five antennomeres reddish. Length 5.5–6.2 mm (= *consociata* BALY, 1874, *russata* FAIRMAIRE, 1887, *laticollis* GRESSIT, 1952, *sikanga* GRESSIT, 1952). Distributed in Mongolia, Russian Far East, broadly in China, Korea, Japan (Hokkaido, Honshu, Shjikoku, Kyushu) and Taiwan *fuscorufa* MOTSCHULSKY, 1866.



5480

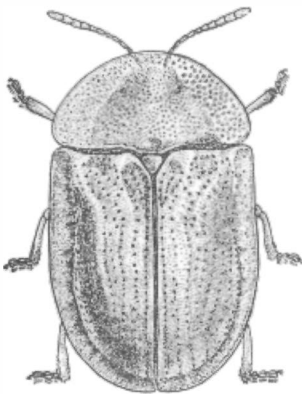


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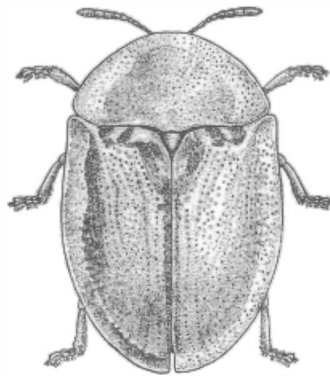
Figs 5480, 5481. General view (after GRESSIT and KIMOTO 1963): 5480 – *Cassida pallidicollis*; 5481 – *C. mandli*.

- 10. On elytra intervals with minute white hairs 11.
- . Elytra bare 13.
- 11. Body outline elongate-oval. Pronotum subsemicircular, closely meeting bases of elytra. Explanate margin of elytron relatively narrow, less as 1/3 as wide as disc. General view as in fig. 5481. Length 6.0–7.0 mm. Distributed in Mongolia, Russian Far East and in China *mandli* SPAETH, 1921.
- . Character combination not as above 12.

12. Body broader, on elytra on anterior part a great, dark, triangular spot, prolonged along suture to apical area. Hairs perceptible, but neither long nor dense. Upper side in living insects green, in dried yellowish-grey to yellowish-brown. Underside black, borders of abdomen pale. Length 5.6–7.0 mm. Go to *vibex* (thesis 31).
- Body moderately slender, otherwise similar to *vibex*, but on average larger, elytral pattern narrower and paler, femora not or feebly darkened. Length 6.5–8.2 mm. Go to *pannonica* (thesis 29).
13. Frontoclypeal area distinctly longer than broad. Upper side pale with darker spot behind scutellum. Go to *rubiginosa* (thesis 40).
- Frontoclypeal area as long as broad **14.**
14. Pronotum as broad or almost as broad as elytra, lateral margins subacute, the angle placed at base. Go to *prasina* (antithesis 53).
- Pronotum much narrower than elytra, its lateral margins rounded near middle **15.**
15. Humeral angle of elytra broadly rounded. Labrum broadly emarginate. Length about 7.0 mm (= *kraatzi* WEISE, 1900, *mandschukuoensis* SPAETH, 1942). Distributed in Mongolia, Russian Far East and N China *spaethi* WEISE, 1900.
- Humeral angle of elytra subacute, slightly produced anteriorly, closely meeting basal margin of pronotum. Go to *stigmatica* (antithesis 45).
16. Frontoclypeus distinctly longer than broad. Pronotum reddish. Go to *panzeri* (thesis 35).
- Frontoclypeus distinctly longer than broad. Pronotum green, in dried insects yellowish **17.**
17. Angles of pronotum broadly rounded. Elytra coarsely punctate with 3 smooth, flattened costae. Upper side in living insects green, basis of elytra and suture, sometimes also their margins dilutely red. Length 6.5–8.0 mm. Go to *sareptana* (thesis 44).
- Angles of pronotum not broadly rounded, rather distinct or more narrowly rounded **18.**



5482



5483

Figs 5482, 5483. General view (after BROVDY 1983): 5482 – *Cassida seladonia*; 5483 – *C. pannonica*.

18. Labrum broadly emarginate. Go to *sanguinosa* (thesis 50).
 –. Labrum deeply and narrowly incised 19.
19. Basal margin of elytra blackened and notched. Upper side in living insects green, in basal part of elytra a large, triangular spot, often divided by interval 2. Length 5.5–7.0 mm. Go to *denticollis* (thesis 52).
 –. Basal margin of elytra without black notches. Spot at basis of elytra large, triangular, usually not divided. Epimeres of mesosternum lightened. Legs entirely yellowish. Length 5.0–5.9 mm. Go to *sanguinolenta* (thesis 53).
20. Clypeus yellow or reddish 21.
 –. Clypeus black 22.
21. Pronotum 1.5 times broader than long, broadest in 2/3 of its length. Elytra strongly convex. Upper side green, basal triangle on elytra and suture reddish. Clypeus broad, square, very finely punctulate. Length 5.5–6.0 mm (= *artemisiae* BRISOUT, 1880). Distributed in Algeria, Spain and SW France ***corallina*** BOHEMAN, 1862.
- . Pronotum almost as long as broad, broadest at basis. Elytra moderately convex. Elytra green, a narrow stripe along basis, suture partly and (in mature specimens) lateral flattening rusty-reddish. Clypeus slightly longer than broad, finely punctulate. Length 4.5–5.0 mm. Distributed in Caucasian countries and Turkey ***reitteri*** WEISE, 1892.

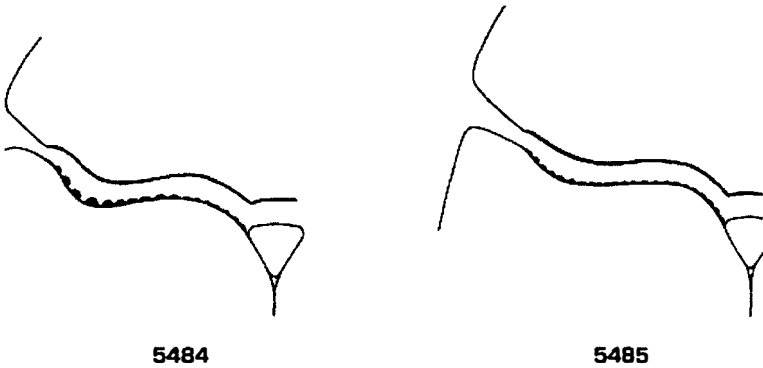


Fig. 5484, 5485. Fore margin of elytron (after BORDY 1996): 3717 – *Cassida humeralis*; 3718 – *C. major*.

22. Elytra at least on humeral calli, but usually also along suture and some intervals with black spots or longitudinal, black stripes. In living insects upper side greenish or rusty-yellowish with silvery or golden metallic reflex, after drying yellowish-grey. General view as in plate CII, phot. 912. Sexual dimorphism in outline of pronotum very distinct. In male pronotum short, broader than elytra, lateral angles shifted anteriorly by 1/4 length of pronotum, in female narrower than elytra, its lateral angles not mowed anteriorly. Length 6.5–7.9 mm (= *signata* HERBST, 1799, *bicostata* FISCHER, 1842, *suturalis* FISCHER, 1842, *nigroguttata* GORHAM, 1885). Variations: underside except head yellow (ab. *russica* HERBST, 1799), ground colour of upper side red brick, legs yellow (ab. *sibirica* GEBLER, 1833), ground colour of upper side red brick, legs

- black (ab. *nigrostrigata* FAIRMAIRE, 1888). Distributed from Central Europe to Japan and Taiwan ***lineola*** CREUTZER, 1799.
1. Elytra without black spot on humeral calli **23.**
2. Legs entirely black. Upper side black, on anterior margin of pronotum two pale fused spots. Length 5.1–7.0 mm. Distributed in SE Europe and Asia Minor from basin of Danube and the Adriatic Sea to Caucasian countries ***atrata*** FABRICIUS, 1787.
3. In legs at most femora partly blackened. Upper side not black **24.**
4. On elytra intervals covered by very short, white hairs **25.**
5. On elytra intervals bare **32.**
6. Pronotum semicircular, with broadly rounded (apparent) lateral angles. Upper side green, scutellum and a spot around scutellum pale red. This spot is usually divided by second yellowish interval. Underside black with yellow borders of abdomen, in immature specimens entirely pale except black head. Legs yellow, hind femora usually darkened. General view as in fig. 5482. Length 5.5–6.9 mm (= *flaginis* PERRIS, 1827, *rotundicollis* BRISOUT, 1860). Distributed in NW Africa and in Europe from Portugal, Belgium and Danmark to Greece and Crimea ***seladonia*** GYLLENHAL, 1827.
7. Pronotum not semicircular, its (apparent) lateral angles not broadly rounded **26.**
8. Basal margin of elytra black, notched. Clypeus 1.5 times longer than broad, labrum very broadly and shallowly emarginate. Upper side in living insects green, after drying yellow to rusty-brown on basal part of elytra and on suture. Flattened borders indistinctly punctate. Two W Mediterranean species, very similar to each other **27.**
9. Basal margin of elytra not distinctly notched, at humeral callus without a distinct emargination. Clypeus shorter **28.**

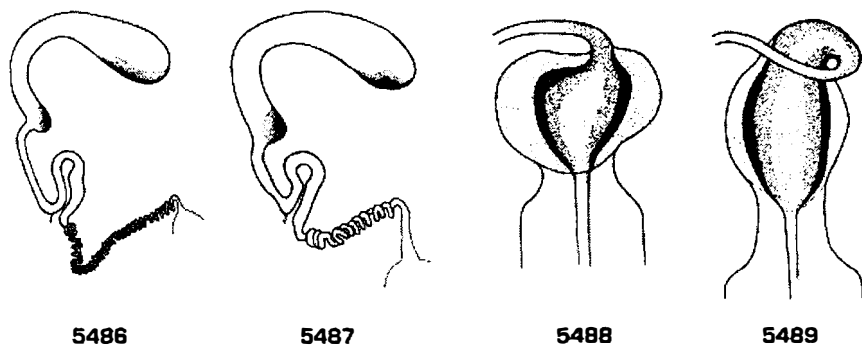
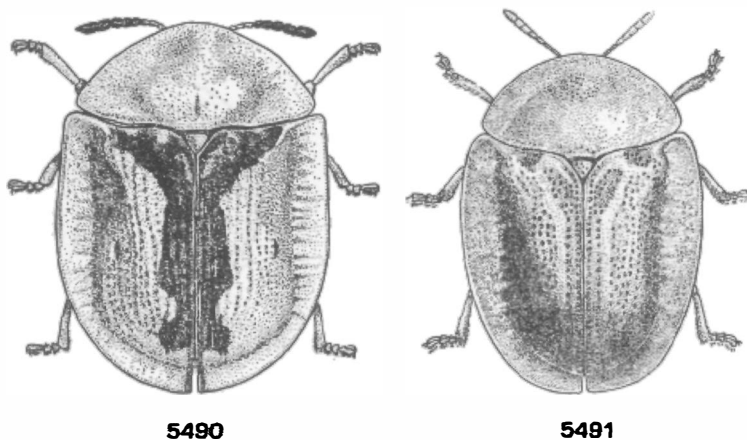


Fig. 5486–5489 (5486, 5487 after BORDY 1996; 5488, 5489 after BORDY 1997). 5486, 5487 – spermatheca: 5486 – *Cassida humeralis*, 5487 – *C. major*; 5488, 5489 – apodeme of vesicula seminalis: 5488 – *C. vibex*; 5489 – *C. bergeali*.

27. On average smaller. Emargination at humerus very deep (fig. 5484), number of black teeth 16–20. Ductus spermathecae (fig. 5486) thinner, coiled more than 20 times. Length 6.1–7.7 mm. Distributed in Spain and S France ***humeralis*** KRAATZ, 1874.

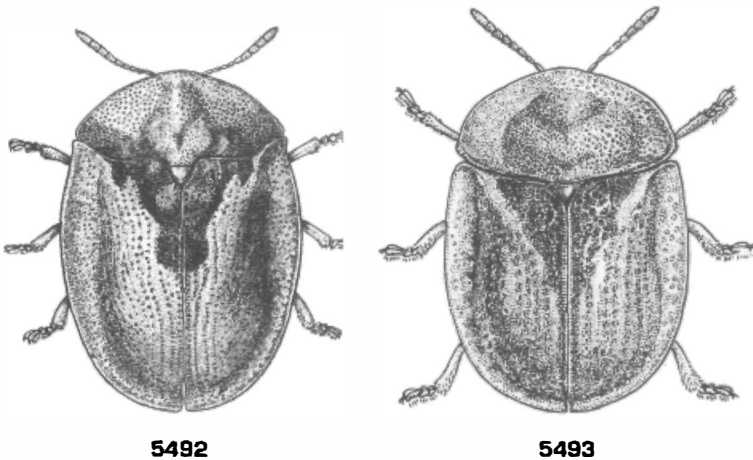
- On average larger. Emargination at humerus more shallow (fig. 5485), number of black teeth 18–26. Ductus spermathecae (fig. 5487) thicker, coiled 9–18 times. Length 6.4–8.5 mm. Distributed in S Spain, N Africa and Sicily *major* KRAATZ, 1874.
- 28. Dark pattern on elytra broad, distinct, sharply limited. Femora in basal half black. Three species unambiguously distinguishable only by shape of genital organs 30.
- Dark pattern on elytra narrower, paler, usually brownish-grey. Femora either entirely pale or darkened at basis only 29.
- 29. Body moderately slender, otherwise similar to *vibex* (thesis 31), but on average larger, elytral pattern narrower and paler, femora not or feebly darkened. General view as in fig. 5483. Length 6.5–8.2 mm. Variation: upper side without dark pattern (ab. *fraudulenta* SPAETH, 1914). Distributed in SE Europe from Thuringia and Albania to S Russia, Asia Minor, Israel, Caucasian countries, N Kazakhstan, Kirgisia and W China *pannonica* SUFFRIAN, 1844.
- Similar to *pannonica* (thesis 29), but body smaller and distinctly more slender, femora darkened in basal part. Length 5.4–6.2 mm. Distributed in S Russia and E Ukraine *elongata* WEISE, 1893.
- 30. On average smaller, elytra unicolorous, covered by relatively long and dense hairs. General view as in fig. 5491. Length 5.7–6.4 mm. Distributed in E Ukraine, Bulgaria and in Caucasian countries *fausti* SPAETH, 1926.
- On average larger, elytra rather sparsely covered by short hairs 31.



Figs 5490, 5491. General view (after BROVDY 1983): 5490 – *Cassida vibex*; 5491 – *C. fausti*.

- 31. Body broader, on elytra on anterior part a great, dark, triangular spot, prolonged along suture to apical area. Hairs perceptible, but neither long nor dense. General view as in fig. 5490. Ductus spermathecae forms at most 10 loops, apodema of vesicula seminalis (fig. 5488) approximately globulous. Upper side in living insects green, in dried yellowish-grey to yellowish-brown. Underside black, borders of ab-

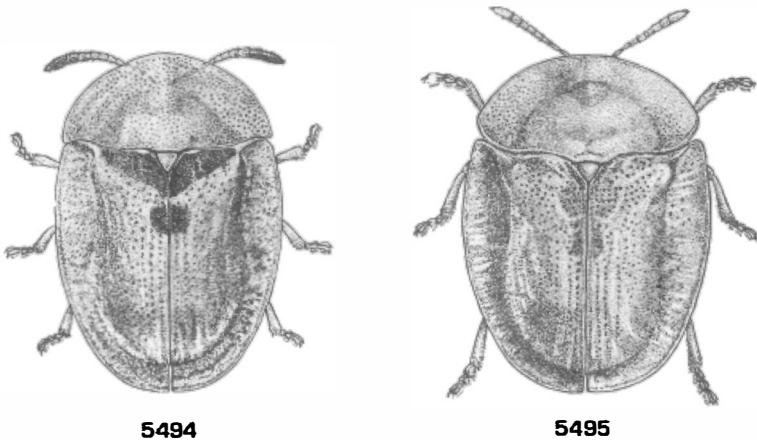
- domen pale. Length 5.6–7.0 mm (= *liriophora* KIRBY, 1797, *dorsalis* HERBST, 1799, *angusticollis* HAGENBACH, 1822). Variations: pronotum, flattened borders of elytra and sutural stripe rusty-red (ab. *discoidea* WEISE, 1893), sutural stripe very broad (ab. *significata* CSIKI, 1953). Transpalaeartic species, distributed from N Spain and Ireland to Japan **vibex** LINNAEUS, 1767.
- Body slightly narrower. Femora in basal 2/3 black. Ductus spermathecae forms 35–50 loops, apodeme of vesicula seminalis (fig. 5489) elongate, distally bent. Remaining characters as in *vibex* (thesis 31). Hitherto known from Central Europe only, from France and Austria to Poland and Slovakia **bergeali** BORDY, 1995.
 - 32. Antennomere 3 about 1.5 times longer than antennomere 2. Process of pronotum impressed down. Clypeus 1.5 times longer than broad. Upper side in living insects green, after drying yellow, very finely punctate. At basis of each elytron 3 small dark hollows. Underside black, legs, trochanteres and antennae pale. Length about 5.0 mm. Distributed in Morocco, Algeria, S France, Sardegna and Italy **hexastigma** SUFFRIAN, 1844.
 - Antennomere 3 about twice longer than antennomere 2. Pronotum entirely flat, its process not impressed down **33**.
 - 33. Clypeus narrow, at least 1.25 times longer than broad **34**.
 - Clypeus broad, approximately square **41**.



Figs 5492, 5493. General view (after BROVDY 1983): 5492 – *Cassida panzeri*; 5493 – *C. ferruginea*.

- 34. Pronotum reddish, along anterior margin usually with pale yellowish border, along basal margin with broad, blood red stripe. Elytra with blood red basal triangle **35**.
- Pronotum uniformly green. Elytra at most with brown spots on basal triangle **36**.
- 35. On average larger. Labrum reticulate, shallowly emarginate. Legs and antennae entirely pale. Underside black, borders of abdomen and sometimes epimeres of meso-

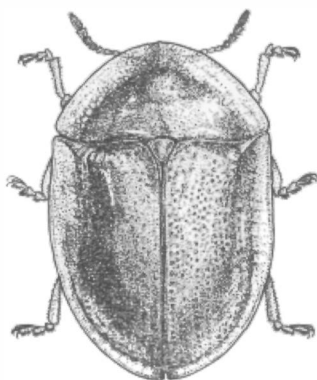
- sternum yellowish. General view as in fig. 5492. Length 6.0–7.0 mm. Widely distributed from central France to Japan **panzeri** WEISE, 1907.
- . On average smaller. Labrum smooth, deeply incised. General view as in fig. 5493. Legs partly black. Length 5.7–6.6 mm (*thoracica* GEOFFROY, 1785, *tincta* WEISE, 1891). Variation: dark area on basal triangle strongly reduced, limited to a spot at scutellum (ab. *scutellaris* DELLA BEFFA, 1909). Distributed from Pyrenees and N France to Mid Siberia **ferruginea** GOEZE, 1777.
36. Clypeus very narrow, twice longer than broad, flattened borders of elytra very broad. Large species, length about 11.0 mm. Distributed in Iberian Peninsula, reported also from Algeria **angustifrons** WEISE, 1891.
- . Clypeus not particularly narrow, usually 1.5 times longer than broad. Length of body under 8.5 mm. Five species externally very similar to each other 37.
37. Clypeus shining, smooth, rather scarcely punctate 38.
- . Clypeus matt, reticulate, more densely punctate 39.
38. Apex of elytra slightly narrowed. Upper side green, after drying yellow, on suture behind scutellum sometimes a small dark dot. Basal half of femora black. Length about 8.5 mm (= *herbaea* LUCAS, 1849, *lata* SUFFRIAN, 1844). Pest of artichoke cultures. Distributed in NW Africa, Iberian Peninsula, Sardinia, Sicily and Italy, reported also, perhaps erroneously, from Hungary, S Russia and Turkey **deflorata** SUFFRIAN, 1844.
- . Apex of elytra broader rounded. Femora usually entirely pale or only basal third black. Length about 6.5 mm (= *incompta* WEISE, 1887). Distributed in Near East (Israel, Iraq), Turkey, Caucasian countries, Iran, Afghanistan and Kazakhstan **palaestina** REICHE, 1858.



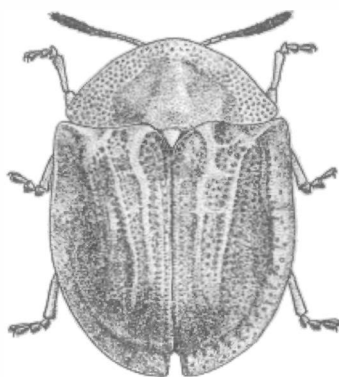
Figs 5494, 5495. General view (after BROVDY 1983): 5494 – *Cassida rubiginosa*; 5495 – *C. sareptana*.

39. Length over 6.5 mm. Upper side in living insects greenish or greenish-grey, at basis of elytra a short and broad, triangular dark stripe, behind scutellum a small, roundish, blackish spot 40.

- Length below 6.3 mm. Similar to *rubiginosa* (thesis 40), but on average smaller, without dark dot behind scutellum. Distributed in Mediterranean area from Algeria and S Italy to Greece, reported also from Turkey and Armenia ***algorica* LUCAS, 1849.**
- 40. External characters as above, dark dot behind scutellum present. General view as in fig. 5494. Length 6.5–7.5 mm (= *melanosceles* SCHRANK, 1798, *similis* MARSHAM, 1802, *singularis* STEPHENS, 1832, *graeca* KRAATZ, 1874). Panpalaeartic species, distributed from Morocco and the British Isles to Japan and Taiwan, introduced also to N America ***rubiginosa* MÜLLER, 1776.**
- All characters as in *rubiginosa* (thesis 40), but colouration of body paler and more uniform, dark dot behind scutellum absent. Alpine species distributed in Pyrenees, Alps and Apennins. Reports from Tatra mts. concern *rubiginosa* (thesis 41) ***alpina* BREMI-WOLF, 1855.**
- 41. Basal margin of elytra near humeri with large tooth-like notches. See *seladonia* (thesis 25).
- Basal margin of elytra near humeri without large tooth-like notches **42.**
- 42. Underside except head entirely yellowish **43.**
- Underside black, at most episterna and borders of abdomen yellowish **45.**
- 43. Angles of pronotum sharp. Body strongly convex. Elytra much stronger punctate than pronotum, with 3 broad longitudinal costae. Length 7.5–8.0 mm. Described from Spain ***hyalina* WEISE, 1891.**
- Angles of pronotum obtuse **44.**



5496

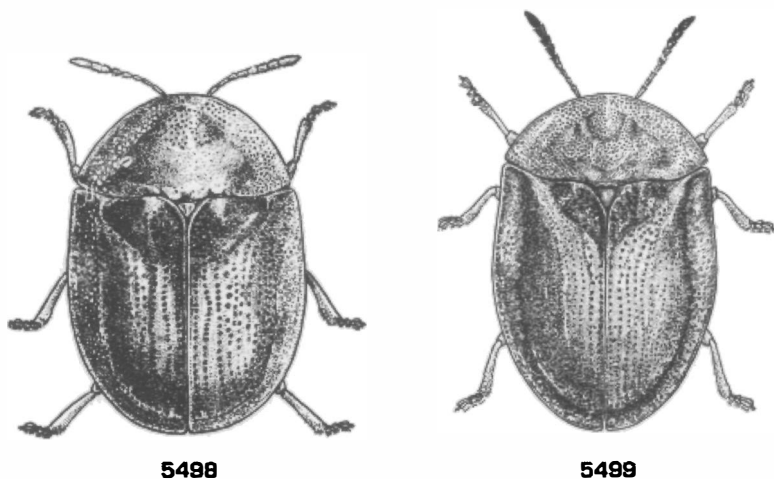


5497

Figs 5496, 5497. General view (after BROVDY 1983): 5496 – *Cassida inquinata*; 5497 – *C. stigmatica*.

- 44. Angles of pronotum broadly rounded. General view as in fig. 5495. Elytra coarsely punctate with 3 smooth, flattened costae. Upper side in living insects green, basis of elytra and suture, sometimes also their margins dilutely red. Length 6.5–8.0 mm. Distributed from S Ukraine and W Kazakhstan to Mongolia ***sareptana* KRAATZ, 1873.**

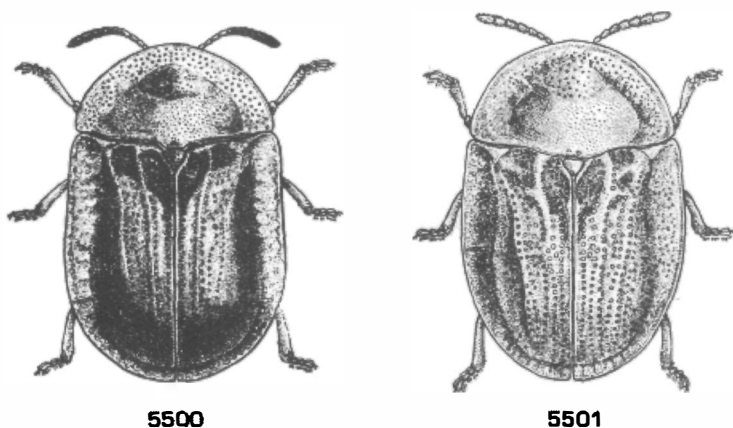
- Angles of pronotum not broadly rounded, rather distinct. Here form *flaviventris* of *sanguinolenta* with pale underside. See thesis 53.
- 45. Strongly flattened, fore and mid coxae yellow. General view as in fig. 5496. Sternum and abdomen with metallic reflex and covered by rather dense hairs. In living insects upper side green, in drying pale yellow. Each elytra at basis with two rose-red spots, on both sides of basal thickening of interval 2. Length 5.5–6.5 mm (= *plana* CHARPENTIER, 1825, *bohemani* BRISOUT, 1860). Variation: spots at basis of elytra pale grey (ab. *depressa* SUFFRIAN, 1844, = *sordida* BRISOUT, 1860). Distributed in Mediterranean area from Morocco to W Turkey (north to S France, Alps, Moravia and Slovakia), in Syria and Caucasian countries; reported also from Turkmenistan *inquinata* BRULLÉ, 1832.
- Body moderately convex; all coxae black, at least fore coxae brownish. Underside without metallic reflex, covered by scarce hairs 46.
- 46. Pronotum distinctly narrower than elytra. General view as in fig. 5497. Upper side in living insects green (after drying yellowish), basal thickening of interval 2 with golden sheen, each elytron with two rose-red spots, on both sides of this thickening. Underside black, coxae and trochanters at least partly blackened, borders of abdomen and legs yellow. Length 5.4–5.9 mm. Distributed from N Spain, W France and Belgium to N China *stigmatica* SUFFRIAN, 1844.
- Pronotum as broad as elytra 47.



Figs 5498, 5499. General view (after BROVDY 1983): 5498 – *Cassida rufovirens*; 5499 – *C. sanguinosa*.

- 47. Labrum broadly and shallowly emarginate 48.
- Labrum deeply and narrowly incised 51.
- 48. Femora to 3/5–3/4 length black. Upper side uniformly green. Length 6.5 mm. Caucasus only *circassica* MEDVEDEV, 1962.
- Femora yellow, or with darker rings, or darkened to half length 49.

49. Body smaller, even in largest females not longer than 6.0 mm. General view as in fig. 5498. In living insects upper side green with pearly sheen. At basis of elytra a large, transverse red spot, reaching to 0.5–0.6 of their length. Length 5.5–6.0 mm (= *rhilensis* WEISE, 1891). Distributed mostly in Central and SE Europe as well as in Asia Minor, from France to Caucasian countries ***rufovirens*** SUFFRIAN, 1844.
- . Body larger, even in smallest males longer than 6.0 mm. Scutellum surrounded by a great, triangular, red spot. Two species externally very similar to each other **50**.
50. Emargination of labrum shallower and broader. General view as in fig. 5499. Basal half of femora often darkened, transition to pale colour sudden. Scutellar spot darker, blood red, usually entire. Length 6.0–7.5 mm (= *languida* CORNELIUS, 1851). Transpalaeartic species, distributed from the British Isles to E Siberia ***sanguinosa*** SUFFRIAN, 1844.
- . Emargination of labrum narrower and deeper. Femora pale, sometimes basal part darkened, then the transition to pale colour gradual. Scutellar spot brownish-red, often divided by interval 2. Length 6.0–7.5 mm. Insufficiently studied species, known from N Spain, France, Austria and Poland ***leucanthemi*** BORDY, 1995.



Figs 5500, 5501. General view (after BORDY 1983): 5500 – *Cassida denticollis*; 5501 – *C. sanguinolenta*.

51. Femora in basal half blackened. Pronotum in living insects green, after drying yellowish. Elytra entirely or only on convex part red or red rose. Underside and basis of femora black. Length 4.5–5.0 mm. Distributed from Austria, Croatia, basin of Danube to Crimea and S Ukraine ***aurora*** WEISE, 1907.
- . Femora yellowish **52**.
52. Elevated part of second interval lower and in scutellar area runs almost stright, post-scutellar impressions hardly marked. Basal margin of elytra slightly deeper notched and with larger black crenulation. General view as in fig. 5500. Upper side in living insects green, in basal part of elytra often a large, triangular spot, usually divided by interval 2. Length 5.5–7.0 mm. Variation: pronotum rusty-brownish or red-brown

- (ab. *fuscicollis* WEISE, 1893). Distributed from the British Isles to Mongolia
 ***denticollis*** SUFFRIAN, 1844.
- . Elevated part of second interval higher and in scutellar area runs in distinct arch, postscutellar impressions deeper. Basal margin of elytra shallowly notched and with smaller black crenulation. Here two very similar species that can be easily distinguished by red spotted forms; uniformly green or yellow specimens need comparison with series of properly identified specimens 53.
53. Red spot at basis of elytra large, triangular, usually not divided. Slightly narrower and more convex. General view as in fig. 5501. Epimeres of mesosternum lightened. Legs entirely yellowish. Yellowish bordering of abdomen broader, usually involves the last abdominal sternite. Length 5.0–5.9 mm (= *cruentata* DONOVAN, 1793). Trans-palaeartic species, distributed from Pyrenees and Ireland to Kamchatka
 ***sanguinolenta*** MÜLLER, 1776.
- . Red pattern at basis of elytra divided into four small spots. Slightly stouter and less convex. Epimeres of mesosternum black. Yellowish bordering of abdomen narrower, usually does not involve the last abdominal sternite. Length 5.0–5.9 mm (= *viridana* HERBST, 1799, *chloris* SUFFRIAN, 1844). Distributed from Pyrenees, England and S Sweden to W China ***prasina*** ILLIGER, 1798.

Genus ***Chiridula*** WEISE, 1889

One species only. Upper side green, pronotum yellowish-green, head black. Clypeus broad, strongly and densely punctate. Length 5.5–6.0 mm (= *fovangula* REITTER, 1901). Distributed in Central Asia and W China, reported also from Armenia
 ***semenowi*** WEISE, 1889.

Genus ***Glyphocassis*** SPAETH, 1914

Genus *Glyphocassis* comprises a few species distributed in E Asia, in discussed area one species only.

Anterior margin of pronotum regularly rounded, arcuate. Pronotum with three large basal markings. General outline of body as in plate CII, **phot. 915**. Length about 4.6 mm (= *reitteri* SPAETH, 1915, *shirahatai* CHŪJŌ, 1949). Forms two subspecies: on explanate margin of elytra juxtahumeral spots present (nominotypical subspecies); on explanate margin of elytra juxtahumeral spot absent (subsp. *gansuica* MEDVEDEV, 1957, described from Kansu). Distributed in Russian Far East, Japan, Korea, Central and N China
 ***spilota*** (GORHAM, 1885).

Genus ***Hypocassida*** WEISE, 1893

In discussed area two species, externally very similar to each other. Body broad, upper side ochraceous or pale rusty-brownish, on elytra usually numerous small blackish spots. Frons and clypeus yellow, borders of abdomen pale, remaining parts of underside black.

Key to species

1. On elytra basal teeth equal in size, body broader. Length 4.6–5.9 mm (= *ferruginea* FABRICIUS, 1781, *fusca* LAICHARTING, 1781, *costata* BOHEMAN, 1856, *cornea* MARSEUL, 1869). Variations: upper side uniformly ochraceous (typical form), elytra with numerous blackish spots (ab. *sobrina* WEISE, 1893), elytra black with pale borders (ab. *marginata* BECHYNÉ, 1944). General view as in plate CII, phot. 916. Transpalaeartic species, distributed from Morocco and the Great Britain to Korea ***subferruginea*** (SCHRANK, 1776).
- On elytra basal teeth inequal (at humerus larger), body more oblong, remaining characters as in *subferruginea*. Variation: dark specimens having dark brown disc of elytra, brown margins and sometimes also partly pronotum (ab. *viturati* PIC, 1905). Distributed in Mediterranean area ***meridionalis*** (SUFFRIAN, 1844).

Genus *Ischyronota* WEISE, 1891

Key to species

1. Species from the southern Mediterranean area. Upper side matt, primary punctures on elytra large, pupillate. General outline of pronotum subpentagonal or subtriangular. Length 4.0–4.5 mm (= *nitidula* DESBROCHERS DES LOGES, 1891). Forms a subspecies: pronotum almost semicircular (subsp. *jordanensis* BOROWIEC, 1986). Distributed from Morocco to Turkey, the subspecies described from Jordan ***brisouti*** (REITTER, 1889).
- Species from Asia west to Roumania. Upper side rather shining, primary punctures not pupillate **2.**
2. Clypeus coarsely, rather densely punctate. Upper side in living insects green sometimes with pale red-rose longitudinal stripes running from humeral calli to apex. Pronotum in dried insects often pure yellow. Length 3.6–5.0 mm (= *gibbula* BOHEMAN, 1854, *jakowleffi* REITTER, 1889, *araxicola* REITTER, 1889). One variation is described: flattening of basal margin of pronotum distinct and complete; body entirely pale (ab. *basimargo* REITTER, 1901). Distributed from Roumania and S Ukraine to Mongolia and N China ***desertorum*** (GEBLER, 1833).
- Clypeus smooth, at most with several fine points **3.**
3. Pronotum long, conically narrowed anteriorly. Body slender, elytra narrowed behind humeri. Puncturation of pronotum strong but shallow. Living insects green, dried oale yellowish. Length 4.0–5.5 mm. Distributed in Iran, Kazakhstan, Tadzhikistan, Mongolia and N China ***conicicollis*** (WEISE, 1890).
- Pronotum short, distinctly broader than long **4.**
4. Outline of elytra inversely trapezoidal. Anterior margin of pronotum narrowly upturned. Body in living insects greenish, in dried insects yellowish, labrum sometimes with dark spot. Anterior and lateral margin of pronotum transparent and distinctly bent up. Length 4.5–5.0 mm (= *nitidula* WEISE, 1890). Distributed in Transkaspiya, Iran and Caucasian countries ***elevata*** (REITTER, 1890).
- Outline of elytra rectangular **5.**
5. Length of body over 5.0 mm. Disc of pronotum minutely punctate, shining, puncturation on steep lateral borders stronger. Elytra moderately strongly punctured, in-

terval 2 slightly convex or only impunctate. Length 5.0–6.0 mm. One subspecies is described: disc of pronotum less shining, somewhat stronger punctate (subsp. *deserticola* REITTER, 1901). Distributed in S Russia and in Kazakhstan, subsp. *deserticola* in W part of distribution area ***spaethi*** REITTER, 1901.

- . Length of body under 5.0 mm. Pronotum as well as elytra distinctly stronger punctured than in *spaethi*. Outline of pronotum broadly triangular, on the front broadly obtuse. Elytra almost twice as long as broad. Length 4.5–5.0 mm. Distributed in Iran, Transcaspia, Mongolia and NW China (Sinkiang) ***schusteri*** SPAETH, 1914.

Genus ***Macromonycha*** SPAETH, 1911

In discussed area two species.

Key to species

1. Elytral wrinkles lower and run more regularly, no distinct tubercles in posterolateral part of disc. Upper side black, semilunar spot on anterior border of pronotum and anterior half of flattened lateral borders of elytra yellowish, sometimes upper side black with small yellowish spots on elytra or almost uniformly yellowish-brown (ab. *suberosa* WEISE, 1889). Body more slender, length/width ratio distinctly more than 1.5. Length 5.0–7.0 mm (= *olivieri* BOHEMAN, 1854). Distributed in Central Asia, Afghanistan, Armenia, Turkey and Israel ***apicalis*** (GEBLER, 1845).
- . Elytral wrinkles higher and run more irregularly, with distinct tubercles in posterolateral part of disc. Upper side uniformly yellowish, only basal margin of pronotum and basal denticles of elytra black. Body stouter, length/width ratio barely 1.5. Length about 5.5 mm. Distributed in Asia Minor ***anatolica*** (WEISE, 1900).

Genus ***Nabathaea*** SPAETH, 1911

One species only. Body green. Pronotum trapezoidal with rounded angles, anterior margin in the middle almost straight. Clypeus broad, about 1.5 times as wide as long. Length 3.4–4.4 mm. Distributed in Egypt and Arabian Peninsula (Aden) ***pygmaea*** SPAETH, 1911.

Genus ***Oocassida*** WEISE, 1897

In discussed area one species only. Upper side red to dark red-brown, interval 2 and anterior half of external interval brighter. Underside black. Length 7.0–7.5 mm (= *biskrensis* DESBROCHERS DES LOGES, 1884). Variation: upper side yellowish brown with blurred longitudinal stripe along suture and along the disc of each elytron, underside reddish brown (ab. *koechlini* MARSEUL, 1867). Distributed in NW Africa (Morocco, Algeria, Tunisia) ***tunisiensis*** (BOHEMAN, 1854).

Genus *Oxylepus* DESBROCHERS DES LOGES, 1884

In discussed area three species.

Key to species

1. Mediterranean species **2**.
- African species occurring also in Arabian Peninsula. Body yellow to yellowish-brown, elytra sometimes with dark pattern. Pronotum reversely trapezoidal. Anterior margin straight, anterior angles obtuse, but well marked. Explanate margin of elytra not separated from disc, finely, sparsely and shallowly punctate, often almost impunctate. Length 3.2–3.9 mm. Distributed in Aden, Oman, Erythrea, Somalia, Djibouti and Tanzania *kossmati* SPAETH, 1901.
2. Elytra rather evenly convex, without impressions or swollen parts. Body uniformly pale yellow. General view as in plate CII, **phot. 917**. Length 3.4–4.8 mm. Distributed in Mediterranean area northwards to S France and Greece *deflexicollis* (BOHEMAN, 1862).
- Elytra with deep, transverse impressions between humeral callus and scutellum and with slightly swollen surface before the impressions. Body uniformly pale yellow. Length 3.3–3.9 mm. Described from Tunisia *boroveci* BOROWIEC, 2001.

Genus *Pilemostoma* DESBROCHERS DES LOGES, 1891

In discussed area one species only. Upper side brick-red or dark ochraceous, on elytra with black spots forming three longitudinal stripes. Underside and legs black, abdomen often with reddish borders. Pronotum semicircular, hind angles sharp. General view as in plate CII, **phot. 918**. Length 4.5–6.0 mm (= *ocellata* HERBST, 1799, *bucharica* SPAETH, 1914). Widely distributed from the British Isles and France to the Baikal Lake *fastuosa* (SCHALLER, 1783).

Genus *Rhytidocassis* SPAETH, 1941

Genus *Rhytidocassis* comprises 7 species, two of them occurring in the discussed area (Iran).

Key to species

1. Larger and stouter, length/with ratio 1.36. On elytra setae longer, well visible. Base of elytra only slightly wider than base of pronotum. Length about 6.0 mm. Described from S Iran *lopatini* BOROWIEC, 2001.
- Smaller and more slender. Length/with ratio about 1.50. Elytral setae shorter, on anterior part hardly visible. Base of elytra somewhat broader than base of pronotum. Length under 5.9 mm. Described from Iran *iranella* LOPATIN, 1984.

Genus *Seminabathea* BOROWIEC, 1994

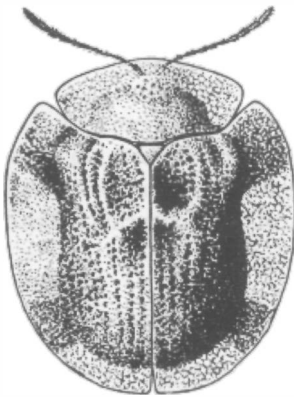
In discussed area one species only. Body uniformly yellow including legs and antennae, only last antennal segments slightly infusate, basal crenulation of elytra black. Each elytron with three longitudinal elevations. Puncturation of elytra dense, interstices narrower than diameter of punctures. Explanate margin strongly deflexed, very narrow. Surface of explanate margin of pronotum and apical part of elytral epipleura with sparse, short, hardly visible setae. Length about 4.9 mm. Distributed in Arabian Peninsula (Yemen, Oman) *arabica* (SPAETH, 1911).

Genus *Thlaspida* WEISE, 1999

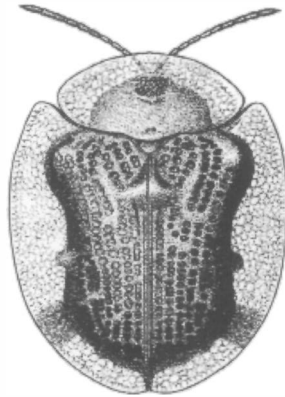
In discussed area two species.

Key to species

1. Explanate margin of elytra marked with dark spots near humeri and posterolaterally. General view as in fig. 5502. Length 7.0–8.0 mm (= *testacea* RYBAKOV, 1884). Russian Far East, NE China, Korea, Japan (Honshu, Hokkaido) *lewisii* (BALY, 1874).
- . Explanate margin of elytra marked with dark posterolateral spots only or without spots. General view as in fig. 5503. Length 8.0–8.5 mm (= *chinensis* SPAETH, 1926, *formosae* SPAETH, 1913, *japonica* SPAETH, 1914, *tristis* WEISE, 1899). One subspecies (from Sichuan, out of discussed area) is described: upper side deep castaneous, dorsal hump very prominent (subsp. *omeia* CHEN et ZIA, 1964). Distributed in Japan, broadly in China and in Oriental region *biramosa* (BOHEMAN, 1855).



5502



5503

Figs 5502, 5503. General view (after KIMOTO and TAKIZAWA 1994; 5503 after GRESSIT and KIMOTO 1963): 5502 – *Thlaspida lewisii*; 5503 – *T. biramosa*.

Tribe *Gonophorini*

In the discussed area one genus only

Genus *Agonita* STRAND, 1942

Agonia WEISE, 1905, nec FOERSTER, 1862 (*Hymenoptera*)

The genus *Agonita* contains about 65 species distributed in Palaeotropical superregion, mainly in Oriental region. In discussed area one species only. Pronotum and scutellum red, elytra black, underside reddish. Punctures between costae 1 and 2 in only 2 rows for entire length. Elytral costae 1 and 2 low, thick and slightly zigzag. Length about 5.0 mm. Distributed in S China, reported also from Shantung province *chinensis* (WEISE, 1922).

Tribe *Hispini*

Key to genera

1. Antennae with 9 antennomeres only, body very broad *Cassidispa* (p. 1058).
- Antennae with 11 antennomeres **2.**
2. Anterior margin of pronotum on each side with a spine or with group of spines ...
..... **3.**
- Anterior margin of pronotum without spines *Dicladispa* (p. 1061).
3. At least antennomere 1 with a long dorsal spine **4.**
- Antenna lacking spines entirely *Dactylispa* (p. 1058).
4. At extremity of each tarsus a single claw *Hispellinus* (p. 1062).
- Tarsal claws paired, sometimes fused or asymmetrical **5.**
5. Tarsal claws fused, of equal width throughout. Antennomere 1 and 2 each with a dorsal spine *Acmenychnus* (p. 1057).
- Tarsal claws not fused **6.**
6. Tarsal claws unequal *Asamangulia* (p. 1058).
- Tarsal claws equal **7.**
7. Antennomeres 1–6 with 1 or more spines **8.**
- Only antennomere 1 with a (somewhat reduced) spine *Rhadinosa* (p. 1062).
7. The longest spine on antennomere 1. Mid tibiae not bent, somewhat angulately dilated *Hispa* (p. 1062).
- The longest spine on antennomere 2. Mid tibiae bent, not dilated
..... *Polyconia* (p. 1062).

Genus *Acmenychnus* WEISE, 1905

A small genus formerly confused with *Monochirus* HEYDEN, 1878, containing a few species very similar to each other, distributed from Asia Minor and Caucasian countries to Mongolia, NW China and Arabian Peninsula. Body entirely black.

Key to species

1. Puncturation of elytra very deep, two or three intervals distinctly elevated, somewhat costiform. General view as in plate CI, phot. 901. Length 5.5–6.5 mm (= *potanini* WEISE, 1890). Distributed in Iran, Transcaspiya, NW China (Sinkiang) and N China ...
..... ***inermis*** (Zoubkoff, 1833).
- . Puncturation of elytra more or less deep, without distinctly elevated intervals. Externally very similar to *inermis* (thesis 1) **2**.
2. On elytra puncturation strong and deep. Length 5.5–6.5 mm. Often considered as conspecific with *inermis* or as western race of them. Distributed in Asia Minor, Caucasian countries and N Iran ***caucasicus*** (Heyden, 1878).
- . On elytra puncturation moderately deep and finer than in previous species, surface more flattened as in previous species. Length 5.5–6.5 mm. Described from Saudi Arabia ***planus*** MAULIK, 1919.

Genus *Asamangulia* MAULIK 1915

To the genus *Asamangulia* belong three SEAsiatic species, of them one is known also from Afghanistan. External body colouration, outline and shape similar as in *Acmenychus*, but teeth on lateral margins of elytra somewhat more robust. Antennae thickest in the antennomeres 2–6, the five apical antennomeres forming a pointed club and covered by reddish-brown pubescence. Length 5.0–6.0 mm (= *cuspidata* MAULIK, 1915, *dreesi* UHMANN, 1954). Distributed in India, Nepal and SE Asia, reported also from Afghanistan ***tuberculosa*** (Motschulsky, 1861).

Genus *Cassidispa* GESTRO, 1899

Several species distributed in Oriental and Aethiopian region. In E Asia five species, two of them in the discussed area.

Key to species

1. Elytra approximately as long as (together) broad. Lateral margin of elytron with 37–39 small teeth. Length about 6.0 mm. Described from vicinity of Vladivostok
..... ***relicta*** MEDVEDEV, 1957.
- . Elytra very broad, but narrower than their common length. Lateral margin of elytron with about 45 small teeth. Length about 6.0 mm. Distributed in China (Hopeh, Shansi, Sichuan) ***mirabilis*** GESTRO, 1899.

Genus *Dactylispa* MAULIK 1915

The large genus containing more than 50% species belonging to the tribe *Hispiini*, distributed in all Palaeotropical superregion and partly also in the Notogea. In discussed area 7 species.

Key to subgenera

1. Lateral margin of elytra not explanate; punctures outside of interval VIII arranged in a single row in the middle, doubled at base and at apex. Lateral spines on pronotum usually 3, rarely 2 ***Dactylispa*** s. str. (p. 1059).
- Lateral margin of elytra more or less explanate; punctures outside of interval VIII arranged in 2 rows in the middle, sometimes tripled at base and at apex. Lateral spines on pronotum usually 3 or 4, sometimes more **2**.
2. Explanate lateral margin of elytra equal or almost equal in width throughout; punctures outside of interval VIII arranged in 2 rows ***Triplispa*** (p. 1060).
- Explanate lateral margin of elytra strongly broadened at base, sometimes also in hind part; punctures outside of interval VIII arranged in 2 rows in the middle, tripled at base and at apex ***Platypriella*** (p. 1059).

Subgenus ***Dactylispa*** s. str.

In discussed area two species.

Key to species

1. Species from E Asia. Body above generally black coloured. Spines on anterior margin of pronotum with three branches. Relatively large species, length 5.0–6.2 mm (= *kaulina* GRESSIT, 1950). Described from Japan (Kyushu), announced also from China ***issiki*** CHŪJŌ, 1938.
- An African species known also from Arabian Peninsula. Sides of elytron not expanded or only slightly expanded anteriorly and posteriorly. Body black, spines of pronotum pitchy. Antennomeres 2–6 strongly flattened, transverse, with acute apical angles. On elytra lateral spines about as long as dorsal ones. Length 3.0–3.8 mm. Broadly distributed in E Africa, reported also from Saudi Arabia and Yemen ***clavata*** WEISE, 1902.

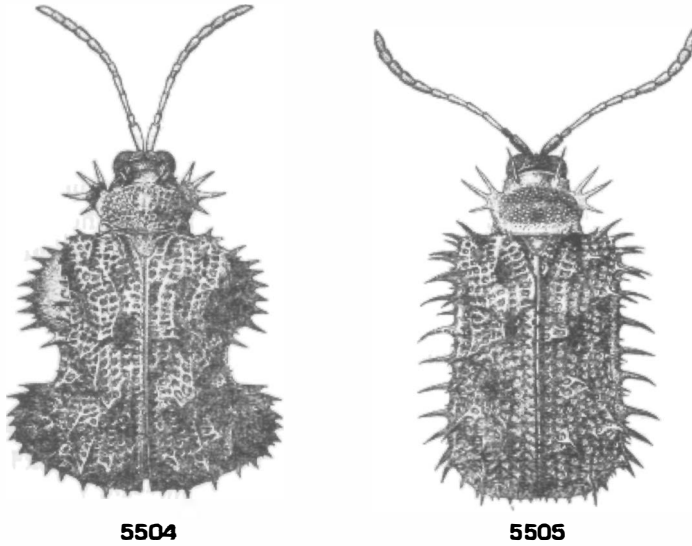
Subgenus ***Platypriella*** CHEN et TAN, 1961

In discussed area two species.

Key to species

1. Sides of elytra very broadly expanded anteriorly and posteriorly. Pronotum with 4 spines at side and a double or triple spine on side of anterior margin, with the 1st spinule small or minute. General view as in fig. 5504. Length 3.6–4.6 mm. Broadly distributed in China, Korea and Ussuria ***excisa*** (KRAATZ, 1879).
- Sides of elytra more strongly broadened basally than apically. General view as in plate CI, phot. 904. Length 4.7–6.0 mm (= *adstricta* WEISE, 1922). Forms two subspecies: humeral spines of elytra shorter than antennomere 2 (nominotypical subsp.); humeral spines of elytra longer than antennomere 2 (subsp. *australis* CHEN et TAN, 1964). Distributed in E China and in Japan. Nominotypical subspecies inhabits the

northern part of distribution Shantung, Japan), subsp. *australis* the remaining part
 *subquadrata* BALY, 1874.



Figs 5504, 5505. General view (after GRESSIT and KIMOTO 1963): 5504 – *Dactylispa excisa*; 5505 – *D. higoniae*.

Subgenus *Triplispa* WEISE, 1897

In discussed area three species.

Key to species

1. On each side of pronotum 5–6 lateral spines, on each humerus 6–8 short and serrate spines. Length 4.4–4.8 mm. Distributed in E China (Heilungkiang, Kiangsu) and in Taiwan *serrulata* CHEN et TAN, 1964.
- . On each side of pronotum 3 lateral spines
2. On lateral margin of elytron 10 or more spines approximately equal in length. Apical spines equal and regular. Humeral ridge strongly elevated, with 5 teeth. Upper side entirely black or partly rusty-testaceous, legs and antennae pale, antennomere 1 darkened. Abdomen black or with pale margins. Very variable species. Length 3.3–5.2 mm (= *japonica* BALY, 1874, *masonii* GESTRO, 1923, *ussurina* UHMANN, 1928, *chujoi* SHIRÔZU, 1957, *flavomarginata* SHIRÔZU, 1957, *taiwana* TAKIZAWA, 1978). Distributed broadly in China, Ussuria, Japan and Taiwan *angulosa* (SOLSKY, 1872).
- . On lateral margin of elytron 10 or less spines unequal in length. Apical spines unequal and very small. Humeral ridge moderately or feebly elevated. General view

as in fig. 5505. Length 3.8–4.5 mm (= *asoka* MAULIK, 1919, *corpulentina* UHMANN, 1927). Forms two subspecies: smooth areas on pronotum not raised (nominotypical subspecies), smooth areas on pronotum raised (subsp. *szechuanensis* CHEN et TAN, 1961). Distributed in Central China, S China, Taiwan and Japan (Honshu, Shikoku, Kyushu), subsp. *szechuanensis* known from Sichuan only *higoniae* (LEWIS, 1896).

Genus *Dicladisa* GESTRO, 1897

To the genus *Dicladisa* in the discussed area belong 6 species.

Key to species

1. Upper side with metallic shine. Pronotum greenish cupreous, elytron greenish blue. Legs dark, black or pitchy. Length about 4.0 mm (= *aenescens* BALY, 1887, *semicyanea* PIC, 1932). In the Oriental part of distribution area forms a few variations ranked usually as subspecies (*boutani* WEISE, 1905 from N Vietnam, *yunnanica* CHEN et SUN, 1962 from S China, *yunusi* ABDULLAH et QUERESHI, 1969 from Pakistan). Pest of rice known usually as *Dicladisa armigera similis* UHMANN, 1927, originally described from Taiwan. Broadly distributed in E Asia and Oriental region from Pakistan and Nepal to China, Japan, Indochina and Indonesia. In the discussed area occurs in N China only ***armigera*** (OLIVIER, 1808).
- Upper side without metallic shine **2.**
2. Spines on upper side blackened or black, at least on their apex **3.**
- Spines on upper side not blackened, but partly infuscate, relatively small. Pronotum covered by dense pubescence. Length about 3.0 mm (= *conradsi* UHMANN, 1936). Described from Syria, reported also from Egypt ***comata*** (WEISE, 1922).
3. Body length over 4.0 mm, vestiture of head and pronotum sparse, surface of disc well visible. Body reddish or pale brown-red, antennae and spines blackish. Length 4.0–5.4 mm (= *algeriana* GUÉRIN-MÉNEVILLE, 1841). General view as in plate CI, phot. 905. An variation (ab. *numidica* GUÉRIN-MÉNEVILLE, 1841) generally paler, spines almost entirely black. Distributed in all Mediterranean area, lives on different *Cistaceae* ***testacea*** (LINNAEUS, 1767).
- Length at most 4.0 mm, vestiture of pronotum or of head and pronotum dense **4.**
4. Body length about 3.3 mm. Generally resembles *testacea* (thesis 3), but smaller and the vestiture of head and pronotum dense; spines of upper side thinner. Described from Iran ***iranica*** LOPATIN, 1984.
- Body length about 4.0 mm. Externally similar to *testacea* (thesis 3) but paler coloured. Spines on upper side of different length, those on lateral margins similar to each other, gradually shorter from humerus to sutural angle (= *pallida* GUÉRIN-MÉNEVILLE, *pavida* WEISE, 1902, *holtzi* UHMANN, 1928). Described from India, known also from Arabian Peninsula and Egypt ***pallescens*** (GUÉRIN-MÉNEVILLE, 1841).

Genus *Hispa* LINNAEUS, 1767

In the discussed area two species. A few further species in Oriental region.

Key to species

1. Last tarsomere relatively short, not longer and only slightly extending behind the distal margin of 3. tarsomere. Body entirely black, claws pale. All tibiae externally with a large tooth-like widening. On pronotum several, on elytra numerous, erect, long spines arranged in longitudinal rows. Length 3.0–4.0 mm. Living on *Poaceae*. Widely distributed in most part of Europe, Mediterranean area, Near East, Caucasian countries and W Asia to Mongolia and N China *atra* LINNAEUS, 1767.
- . Last tarsomere twice as long as the 3. tarsomere. Externally similar to *atra*, but slightly larger and distinctly stronger punctured than *atra*. Length 3.8–4.5 mm. Distributed in Iran *tarsata* ŚWIĘTOJAŃSKA, 2001.

Genus *Hispellinus* WEISE, 1897

Monochirus CHAPUIS, 1875 nec RAFINESQUE, 1814 (*Pisces*)

To the genus *Hispellinus* belong over 15 species distributed in Oriental region and Notogea. In the discussed area two species.

Key to species

1. Pronotal spines situated obliquely. Body entirely black. Pronotum sparsely covered by thin, white hairs; on elytra discal spines short or tuberculiform, marginal spines subequal, about 18–20 in number. Length 3.2–4.9 mm. Distributed in Russian Far East, in a great part of China, in Japan and Taiwan *moerens* (BALY, 1874).
- . Pronotal spines situated almost horizontally. Marginal spines 21–24 in number, remaining characters as in *moerens*. Length 3.5–5.0 mm. Distributed in C and S China, reported also from Shantung *chinensis* GRESSIT, 1950.

Genus *Polyconia* WEISE, 1905

In discussed area one species only. Externally very similar to *Hispa atra*. Body black usually with weak bluish metallic reflex, mid tibia perceptibly curved. Length about 4.0 mm. Distributed in N Africa, S Spain and Sicily *caroli* (LEPRIEUR, 1883).

Genus *Rhadinosa* WEISE, 1905

Genus *Rhadinosa* contains about 10 species distributed in Oriental region. One species occurs also in the discussed area.

Body entirely black, upper side with weak bluish reflex. On lateral margin of each elytron about 22 spines. Length 4.2–4.5 mm. Distributed in almost all central, south and north provinces of China, Russian Far East, Korea and Japan (Honshu, Shikoku, Kyushu)
..... **nigrocycanea** (MOTSCHULSKY, 1861).

Tribus ***Leptispini***

Genus ***Leptispa*** BALY, 1858

Leptomorpha GERMAR, 1842 nec FALDERMANN, 1835 (*Tenebrionidae*), *Parallelispa* FAIRMAIRE, 1876, *Paradownesia* GESTRO, 1899, *Lepthispa* auct.

The genus *Leptispa* includes about 20 species distributed in Palaeotropical superregion, one species occurs in W Mediterranean area. Body without spines. Very characteristic, general view as in plate CI, phot. 907. Length 4.8–6.0 mm. Distributed in S Italy, Sicily, S Spain and NW Africa ***filiformis*** (GERMAR, 1842).

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Explanation of abbreviations:

page nr.: normal types = mention only

bold types = morphological data

* = caption to figure

(ab.) = variation

(bot.) = botanical name

(homon.) = homonym

(incert.) = uncertain

(subg.) = subgenus

(subsp.) = subspecies

(syn.) = synonym

? = rank doubtful

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aethiops, *Chrysolina* (*Sphaeromela*)
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aethiops, *Cryptocephalus* (s. str.)
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aethiops, *Cryptocephalus* (s. str.) *securus*
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aethiops, *Gonioctena* (s. str.) *nivosa* (ab.)
559
aethiops, *Pachybrachis* (s. str.) *tessellatus*
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afghanistanica, *Theone octocostata* (subsp.)
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- analis*, *Gastrophysa* (*Exiguipenna*) 547, **546***
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- anatolica*, *Phyllotreta balcanica* (syn.) 963
- anatolica*, *Psylliodes* (s. str.) **987**, 988*
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- anatolicus*, *Pachybrachis* (s. str.) **331**, 332*
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- anchusae*, *Longitarsus* (*Testergus*)
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257*
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(subsp.) **515**
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angulicollis, *Paridea* (*Paraulaca*) **710**
angulicollis, *Paridea* (*Paraulaca*) **710**
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anoguttatus, *Pachybrachis* (s. str.) 325
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10
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642
anthracinus, *Acolastus* (s. str.) **150***
anthracinus, *Luperus* **695**
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antiatlantica, *Timarcha* (s. str.) *punctella*
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apicalis, *Macromonycha* **1054**
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apiceconjuncta, *Crioceris asparagi* (ab.) 32*
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167*
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Asamangulia **1058**
Asamangulia **1058**
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australis, *Coptocephala unifasciata* (subsp.) **65**
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baeticus, *Cryptocephalus* (s. str.) 252, **254***
baeticus, *Longitarsus* (s. str.) **849***, 850*
baeticus, *Pachnephorus* (s. str.) *brucki* (ab.) 404
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 606
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melanocephala (ab.) 646*, 647
baltica, *Macroplea mutica* (syn.) 20
baluchistana, *Psylliodes* (s. str.) 1003*,
1004

balyi, *Argopus* **773**
balyi, *Basilepta* **414**
balyi, *Liliocercis* (s. str.) **42**
balyi, *Pseudodera xanthospila* (syn.) 975
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chujoi, *Cryptocephalus* (s. str.) *luridipennis*
pallescens (syn.) 309
chujoi, *Cryptocephalus* (s. str.) *multiplex*
(syn.) 307
chujoi, *Gonioctena* (s. str.) *honshuensis*
(subsp.) 552
chujoi, *Longitarsus* (s. str.) *ohnoi* (syn.) 835
chujoi, *Sphaeroderma placidum* (ab.) 1022
chujoi, *Taphinellina* 718*, **719**
chujoi, *Triplispa angulosa* (syn.) 1060
chujoi, *Zeugophora* (s. str.) **26**
Chujoita, *Lilioceris* (subg.) **40**
cicatricosa, *Galeruca* (s. str.) *tanaceti* (syn.)
640
cicatricosus, *Cryptocephalus* (s. str.) **251**
cicatrix, *Hermaeophaga* (s. str.) **824***
Cicuta (bot.) 603
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ciliata, *Apteropeda ovulum* (syn.) 771
ciliciensis, *Altica bicarinata* (syn.) 729
ciliciensis, *Dibolia* (*Eudibolia*) *schillingi*
(ab.) 814
ciliciensis, *Tituboea macropus* (ab.) 131
cilissa, *Chrysolina* (*Chalcoidea*) 435*, **436**
cincta, *Donacia* (*Donaciomima*)
versicolorea (syn.) 12
cincta, *Oedionychis cincta* (syn.) **928***
cincta, *Smaragdina* (s. str.) *limbata* (ab.)
129
cinctella, *Chrysolina* (*Chalcoidea*)
marginata (ab.) 441
cinctipennis, *Chrysolina* (*Chalcoidea*) **444***
cinctipennis, *Hemipyxis* **823**
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cinctus, *Pachybrachis* (s. str.) **352**, 353*
cinerariae, *Longitarsus* (s. str.) **852**, 853*,
854*
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cingulata, *Clytra* (*Ovoclytra*) (homon.) 58
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circassicola, *Chrysolina* (*Colaphoptera*)
abchasicca (syn.) 470
circassicola, *Chrysolina* (*Colaphoptera*)
abchazica (syn.) 489
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(subsp.) 644
circumdata, *Psylliodes* (s. str.) 992*, **993***
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nasturtii (syn.) 867
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cirsicola, *Chlamisus interjectus* (syn.) 372
cirsicola, *Lema* (s. str.) *cyanella* (?subsp) 37
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ciscaucasica, *Aphthona violacea* (syn.) 751
Cistaceae (bot.) 908, 1061
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(syn.) 227
citrinus, *Longitarsus* (s. str.) *flavicornis*
(syn.) 885
cizeki, *Longitarsus* (s. str.) **886***, 887*,
888*
claripes, *Aphthona hauseri* (syn.) 757
clarki, *Argopus* **775**
clarus, *Longitarsus* (s. str.) *longiseta* (syn.)
869
clavaceus, *Cryptocephalus* (*Asionus*)
altaicus (syn.) 198
clavareau, *Donacia* (*Donaciomima*) 11
clavareau, *Mantura* (s. str.) **910**
clavareau, *Smaragdina* (*Monrosia*) **123**
clavata, *Dactylispa* **1059**
clavicornis, *Plagioderma versicolora*
versicolora (ab.) 602
clavipes, *Donaciella* **18**
clematidis, *Argopus* **773**
Clematis (bot.) 880
clementzae, *Crosita* 526
clementzi, *Sternoplatys* **606**
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Clytrella, *Clytraria* (syn.) 57
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 (?subsp) 57
cobosi, *Cryptocephalus* (*Burlinius*)
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cobosi, *Phygasia* **935**
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 (syn.) 772
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codinai, *Longitarsus* (s. str.) 884*, **885***
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coelestis, *Donacia* (*Donaciomima*)
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coerulans, *Apteropeda ovulum* (ab.) 771
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coerulans, *Cryptocephalus* (s. str.) **268**
coerulans, *Donacia* (*Askevoldia*) *reticulata*
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coerulea, *Aphthona nonstriata* (syn.) 758
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coerulea, *Oreina* (s. str.) *basilea* (ab.) 577
coerulea, *Oreomela* (s. str.) **589**
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coerulea, *Plateumaris consimilis* (ab.) 21
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 1001
coerulea, *Psylliodes* (s. str.) *coelestis*
 (homon.) 1003
coerulea, *Psylliodes* (s. str.) *hyoscyami*
 (syn.) 994
coeruleatum, *Colasposoma pretiosum* (ab.)
 409
coeruleicollis, *Neocrepidodera cyanescens*
 (subsp.) 922
coeruleipennis, *Liroetis* **689**
coeruleipes, *Cneorane elegans* (?syn.) 681
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coeruleolineata, *Oreina* (*Chrysochloa*)
cacaliae (ab.) 575
coeruleoviolacea, *Linaeidea aenea* (syn.)
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coeruleovirens, *Chrysomela* (*Strickerus*)
cuprea (ab.) 522
coerulescens, *Aphthona czwalinae* (syn.)
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coerulescens, *Basilepta fulvipes* (syn.) 414
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coerulescens, *Cryptocephalus* (s. str.)
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coerulescens, *Cryptocephalus* (s. str.)
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coerulescens, *Longitarsus* (s. str.) *lycopi*
 (ab.) 844
coerulescens, *Macrocoma henoni*
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coerulescens, *Neophaqedon pyritosus* (ab.)

572
coerulescens, *Sphenoraia* (*Sphenoraoides*)
micans (ab.) 715
coeruleus, *Cryptocephalus* (s. str.) *parvulus*
 (syn.) 255
coeruleus, *Cryptocephalus* (s. str.) *sericeus*
 (ab.) 261
cognata, *Altica helianthemi* (syn.) 731
cognatus, *Cryptocephalus* (*Burlinius*) **215***,
 227
cognatus, *Longitarsus* (s. str.) *luridus* (ab.)
 880
cognatus, *Longitarsus* (s. str.) *ochroleucus*
 (syn.) 885
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Colaspomega, *Colaspidea* (subg.) **526**
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 (syn.) 236
collare, *Exosoma* **685***
collaris, *Aphthonomorpha* **770**
collaris, *Chrysomela* (*Pachylina*) **521***
collaris, *Donacia* (*Donaciomima*) *bicolora*
 (ab.) 16
collaris, *Gonioctena* (s. str.) *viminalis* (syn.)
 557
collaris, *Lilioceris* (s. str.) *merdigera* (ab.)
 43
collaris, *Longitarsus* (s. str.) *pratensis* (ab.)
 860
collaris, *Luperomorpha* **905**
collaris, *Psylliodes* (s. str.) *chrysocephalus*
 (ab.) 993
collaris, *Smaragdina* (*Monrosia*) **120**
collaris, *Spitiella* **716**
collaris, *Xanthonia* **408**
collina, *Chrysolina* (*Ovostoma*) *olivieri*
 (subsp.) 512
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femoralis (ab.) 506
collucens, *Oreina* (*Allorina*) *bidentata*
 (subsp.) 573
colmariensis, *Cryptocephalus* (s. str.)
octopunctatus (syn.) 304
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quatuordecimmaculatus (syn.) 204
colorea, *Phyllotreta cruciferae* (syn.) 965
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comans, *Smaragdina* (s. str.) *viridis*
 (subsp.) 128
comari, *Plateumaris sericea* (syn.) 22
comata, *Dicladispa* **1061**
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cretica (ab.) 461
commutata, *Oreina* (*Protorina*) *plagiata*
 (subsp.) 581
commutatus, *Phaedon* (s. str.) *concinus*
 (syn.) 598
comparata, *Cassida parvula* (syn.) 1037
completa, *Psylliodes* (s. str.) *inflatus* (ab.)
 979
completa, *Sternoplatys* 606
completus, *Cryptocephalus* (s. str.) *cordiger*
 (ab.) 302
compressa, *Chaetocnema* (s. str.) **780***
compressipennis, *Smaragdina* (*Monrosia*)
obscuripes (syn.) 121
compuncta, *Chrysolina* (*Bittotaenia*) **447**
concha, *Cassida* **1033**
concinna, *Chaetocnema* (*Tlanoma*) 794*,
795, 796, 1032
concinna, *Donacia* (*Donaciomima*)
aquatica (ab.) 14
concincolis, *Chaetocnema* (s. str.) **788**
concinripennis, *Lema* (s. str.) **37**
concinus, *Cryptocephalus* (s. str.) *bicolor*
 (syn.) 257
concinus, *Longitarsus* (s. str.) *parvulus*
 (ab.) 856

concinus, *Phaedon* (s. str.) 597*, **598**
concolor, *Arrhenocoela lineata* (ab.) 775
concolor, *Cassida praetimida* (syn.) 1032
concolor, *Chrysolina* (?subg) *bruneli* (ab.)
 436
concolor, *Cryptocephalus* (s. str.) **260***
concolor, *Cystocnemis* **541**
concolor, *Donacia* (*Donaciomima*) *vulgaris*
 (ab.) 13
concolor, *Neocrepidodera cyanescens*
 (subsp.) 922
concolor, *Oomorplus* **373**
concolor, *Podagrica malvae semirufa* (ab.)
 973
concolor, *Psylliodes* (s. str.) 983
concolor, *Smaragdina* (s. str.) 125*, **128**,
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concoloripennis, *Mantura* (s. str.) *obtusata*
 (syn.) 910
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conducta (syn.) 789*, **790**
conducta, *Chrysolina* (*Heliostola*) (ab.) 504
confinis, *Galeruca* (s. str.) *laticollis* (syn.)
 646
confluens, *Cryptocephalus* (s. str.)
pustulipes (syn.) 302
confluens, *Macrolenes dentipes* (ab.) 113
conformis, *Nepalogaleruca* **653**
confossa, *Chrysolina* (*Allochrysolina*) **494**
confucii, *Oomorphoides* **374**
confucius, *Cryptocephalus* (*Asionus*)
lemniscatus (syn.) 178
confusa, *Chaetocnema* (s. str.) **786***
confusa, *Chrysolina* (*Maenadochrysa*)
femoralis (subsp.) 506
confusus, *Cryptocephalus* (*Burlinius*) **217***
confusus, *Cyrtanastes* (*Cyrtanastes*) 530*,
531*
conglomerata, *Apteropeda globosa* (syn.)
 771
conicicollis, *Ischyronota* **1053**
conjuncta, *Coptocephala unifasciata* (ab.)
 70*
conjuncta, *Gonioctena* (s. str.) *decemnotata*
 (ab.) 553*
conjuncta, *Gonioctena* (*Spartomena*)
fornicata (ab.) 563*
conjuncta, *Phyllobrotica frontalis* (syn.)
 712*
connectens, *Chrysolina* (*Bittotaenia*) *salviae*
 (ab.) 455
connexa, *Clytra* (s. str.) *laeviuscula* (ab.) 54
connexa, *Coptocephala rubicunda* (ab.) 67*
connexus, *Cryptocephalus* (*Burlinius*) 224,
 232, 234, 245*, **246**, 247, 250
conradsi, *Dicladispa comata* (syn.) 1061
consimilis, *Chlamisus* **372**
consimilis, *Pagria signata* (syn.) 419
consimilis, *Plateumaris* 19*, **21**, 23*
consobrina, *Altica tamaricis* (syn.) 738
consobrina, *Phyllotreta consobrina* (syn.)
 952*, 954*, **955**
consociata, *Cassida fuscorufa* (syn.) 1042
consociata, *Gallerucida bifasciata* (syn.) 663
consociatus, *Longitarsus* (s. str.) *obliteratus*
 (syn.) 837
consolanus, *Cryptocephalus* (s. str.)
parvulus (syn.) 255
conspiciabilis, *Longitarsus* (s. str.) *luridus*
 (subsp.) 880
constantini, *Altica iberica* (syn.) 737
constantini, *Aphthona* 765*, **766**
constricticollis, *Plateumaris* **23**
constrictus, *Stylosomus* (*Microstilus*) *ericeti*
 (syn.) 365
consularis, *Chrysolina* (*Centoptera*) *bicolor*
 (ab.) 476
contemptus, *Phaedon* (s. str.) *concinus*
 (syn.) 598
convergens, *Oreina* (*Chrysochloa*)
speciosissima (subsp.) 576
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convexicollis, *Pachnephorus* (s. str.)
bistriatus (syn.) 404
convexifrons, *Timarcha* (*Timarchostoma*)
asturiensis (subsp.) 615
convexior, *Heyrovskya* **825***
convexipennis, *Altica ampelophaga* (?syn.)
 736
convexipennis, *Altica sajanica* (syn.) 740
convexissimus, *Cryptocephalus* (s. str.)

janthinus (syn.) 266
convexus, *Longitarsus* (*Testergus*)
anchusae (syn.) 900
Convolvulaceae (bot.) 866
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Coptocephala 47, **60**, 69
coptocephaloides, *Coptocephala* **61**, 62*
Coptomesa, *Gallerucida* (syn.) 662
coquereli, *Pachybrachis* (s. str.) *rugifer*
(?syn.) 335
corallina, *Cassida* **1044**
corallipes, *Timarcha* (s. str.) **623**
corcyrea, *Ochrosis ventralis* (ab.) 927
corcyrea, *Orestia calabra* (subsp.) **933**
corcyria *Chrysolina* (*Hypericia*) **473**
cordatus, *Pachybrachis* (s. str.) **358***
cordiger, *Cryptocephalus* (s. str.) 303 **303***
coreana, *Aphthona* **751**
coreana, *Gonioctena* (s. str.) **560**, 561*
coreana, *Lema* (s. str.) *coreensis* (homon.) 38
coreana, *Lema diversa* (syn.) 38
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(syn.) 118
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(syn.) 126
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opacicollis (?syn.) 493
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olivieri (?syn.) 616
corii, *Cassida hemisphaerica* (syn.) 1032
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corinthius, *Cryptocephalus* (s. str.)
quadriguttatus (?syn.) 273
corinthius, *Pachnephorus* (s. str.) 401, **404**
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cornea, *Entomoscelis* (s. str.) **543**
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1053
cornellii, *Phratora* (*Phratora*) *tibialis* (ab.)
600
corniculata, *Hoplasoma unicolor* (syn.) 687
cornivorax, *Altica ampelophaga* (?syn.) 736
cornivorax, *Altica* 733
cornuta, *Lilioceris* (s. str.) *faldermanni*
(syn.) 43
coronata, *Lema* (s. str.) **38**
coronatus, *Cryptocephalus* (*Asionus*) 202*,
203
corpulenta, *Dibolia* (s. str.) *tshatkalica*
(subsp.) 805
corpulenta, *Neocrepidodera* **920**, 921*
corpulenta, *Timarcha* (s. str.) **624**
corpulentina, *Triplispa higoniae* (syn.) 1061
correspondens, *Cryptocephalus*
(*Heterichnus*) *macroductylus* (syn.) 310
corrugata, *Phyllotreta* **964***
corsica, *Galeruca* (s. str.) 643
corsica, *Ochrosis* (syn.) 927
corsica, *Timarcha* (*Timarchostoma*) *sardea*
(subsp.) **617**
corsicus, *Stylosomus* **368***
corsicus, *Cryptocephalus* (*Burlinius*)
ocellatus (ab.) 239
coruscans, *Cyrtonus elegans* (ab.) 534
corvina, *Chrysolina* (*Colaphodes*)
haemoptea (subsp.) 507
coryletorum, *Altica brevicollis* (ab.) 728
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312, 315, 316*, **317**
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corynthius, *Longitarsus* (*Testergus*) **897***,
898*
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costalis, *Diorhabda elongata* (syn.) 636
costata, *Hypocassida subferruginea* (syn.)
1053
costata, *Lipromela minutissima* (syn.) 827
costata, *Paleosepharia* **707**
costata, *Paridea* (*Paridea*) **709**
costata, *Sangariola punctatostriata* (syn.)
1019
costatus, *Acolastus* (*Anopsilus*) **169**
costatus, *Stylosomus* (*Microsomus*) **363**
costipennis, *Batophila* **777**
costipennis, *Theone silphoides* (subsp.) 660
costulata, *Chaetocnema* (s. str.) **789**
cous, *Calomicrus* **680**
coyei, *Chaetocnema* (*Tlanoma*) **791***
crambicola, *Psylliodes* (s. str.) 995* **996**

crassa, *Altica palustris* (?syn.) 733
crassaticollis, *Timarcha* (s. str.) **624**
crassicollis, *Chrysolina* (*Colaphoptera*) *rufa*
(subsp.) 490
crassicollis, *Psylliodes* (s. str.) *puncticollis*
(syn.) 979
crassicornis, *Apthona* 745
crassicornis, *Geinella* **649**
crassicornis, *Longitarsus* (s. str.)
melanocephalus (syn.) 869
crassicornis, *Neocrepidodera* 915*, **916**, **917***
crassicornis, *Phyllotreta*, 954*, 959*, **960***
crassimana, *Macrolenes dentipes* (syn.) 113
crassimargo, *Chrysolina* (*Colaphoptera*)
purpurascens (subsp.) 488
crassipes *Donacia* (s. str.) 10
crassipes, *Apthona* **745**, 746*
crassipes, *Chrysolina* (*Allochrysolina*)
confossa (?syn.) 494
crassipes, *Coptocephala* **61***, 66*
crassipes, *Donacia* (s. str.) 10
crassipes, *Macrocoma* **390**, 391*
crassus, *Cryptocephalus* (s. str.) **277**, 278*,
288
crassus, *Cryptocephalus* (s. str.)
octoguttatus (syn.) 291
crataegi, *Lochmaea* **651***
crebieri, *Chrysolina* (*Chalcoidea*) *superstes*
(ab.) 444
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101
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Crepidomorpha, *Liprus* (syn.) 828
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642
cretica, *Psylliodes* (s. str.) 985*, **987***, 1002
creticus, *Cryptocephalus* (s. str.) **279***
creticus, *Pachybrachis* (s. str.) **341**, 342*
creticus, *Phortus* (incert.) **405**
cribrata, *Lochmaea caprea* (subsp.) 652
cribratus, *Cryptocephalus* (s. str.) **309***
cribricollis, *Pachybrachis* (s. str.) **329***
cribripennis, *Acolastus* (s. str.) 154, **156**,
158*
cribripennis, *Longitarsus* (s. str.) *aeneicollis*
(syn.) 868
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cribrosa, *Chrysolina* (*Threnosoma*) 512*,
513
Criocerinae 5, **31**
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(syn.) 264
cristula, *Cryptocephalus* (s. str.) **264***
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(ab.) 516
croatica, *Orsodacne cerasi* (ab.) 24
croatica, *Orsodacne humeralis* (ab.) 25
croaticus, *Cryptocephalus* (*Asionus*) *reitteri*
(ab.) 210
croaticus, *Longitarsus* (s. str.) 874*, **875***
crocata, *Paraclytra* 117*, **118**
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236
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787
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250
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(syn.) 860
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1053
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(syn.) 880
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insignis, *Timarcha* (s. str.) **623** 624
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- margaritae*, *Acolastus* (s. str.) **162**, **163***
- margaritae*, *Cryptocephalus* (s. str.) 286
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- marginata*, *Gonioctena* (*Spartoxena*) *aegrota* (syn.) 566
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- marginata*, *Gonioctena* (*Spartoxena*) *leprieuri* (syn.) 565
- marginata*, *Hypocassida subferruginea* (ab.) 1053
- marginata*, *Orsodacne humeralis* (ab.) 24
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- marginella*, *Galerucella nymphaeae* (syn.) 647
- marginella*, *Hydrothassa* (s. str.) **569***
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- marginella*, *Orsodacne humeralis* (syn.) 24
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- marginicollis*, *Prasocuris distincta* (syn.) 604
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- marginula*, *Oedionychis cincta* (syn.) 928
- marguzoricus*, *Longitarsus* (s. str.) **858*** 859*,
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- mimeuri*, *Cryptocephalus* (s. str.) *tristigma* (ab.) 252
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- minor*, *Podagrica* *menetriesii* (syn.) 974
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- minutior*, *Chrysolina* (*Colaphoptera*) *porphyrea* (subsp.) 490
- minutissima* *Smaragdina* (*Nanosmaragdina*) **127**
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mohri, *Longitarsus* (*Testergus*) 893
mohri, *Pachybrachis* (s. str.) *amurensis*
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 ogloblini, *Pachybrachis* (s. str.) *karamani* (?syn.) 355
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459
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(subsp.) 360
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- ruffoi*, *Timarcha* (s. str.) *insularis* (subsp.) 627
- ruficaudis*, *Chrysomela* (*Strickerus*) *cuprea* (syn.) 522
- ruficeps*, *Gastrophysa* (?spec) 545
- ruficollis*, *Arthrotidea* **669**
- ruficollis*, *Basilepta* **414**
- ruficollis*, *Gastrophysa* (s. str.) *polygoni* (ab.) 546
- ruficollis*, *Gonioctena* (s. str.) *nivosa* (ab.) 558
- ruficollis*, *Hermaeophaga* (*Orthocrepis*) **823**
- ruficollis*, *Lilioceric* (s. str.) **41**
- ruficollis*, *Phyllotreta lativittata* (ab.) 951
- ruficolor*, *Psylliodes* (s. str.) 983*, **984***
- ruficornis*, *Cyrtonus* **538**, 539*
- ruficornis*, *Derocrepis* (*Derocrepis*) *rufipes* (syn.) 805
- ruficornis*, *Pachnephorus* (s. str.) **403**
- rufifrons*, *Colaspidea* (*Colaspomega*) **526**
- rufifrons*, *Galeruca* (s. str.) *tanaceti* (ab.) 640
- rufilabris*, *Chrysolina* (*Pezocrosita*) **457***
- rufilabris*, *Cryptocephalus* (s. str.) *biguttulus* (syn.) 266
- rufilabris*, *Psylliodes* (s. str.) *picina* (syn.) 986
- rufilabris*, *Smaragdina* (*Monrosia*) *discolor* (subsp.) **121**, 122
- rufimana*, *Chilotomina erberi* (?syn.) 51
- rufimana*, *Smaragdina* (*Monrosia*) 122*, **123**, 124
- rufimanus*, *Pachybrachis* (s. str.) *sinuatus* (ab.) 351
- rufina*, *Clytra* (*Clytraria*) 55*, **58**
- rufina*, *Farsogaleruca* **637**
- rufipenne*, *Colasposoma pretiosum* (syn.) 409
- rufipennis*, *Neocrepidodera transsilvanica* (ab.) 921
- rufipes*, *Chrysolina* (*Pleurosticha*) *tolli* (homon.) 465
- rufipes*, *Cleoporus variabilis* (syn.) 418
- rufipes*, *Cneorane violaceipennis* (syn.) 681
- rufipes*, *Cryptocephalus* (*Burlinius*) 215, 233*, **235**, 247
- rufipes*, *Derocrepis* (*Derocrepis*) 804*, **805**
- rufipes*, *Gonioctena* (s. str.) *decemnotata* (syn.) 554

- rufipes*, *Gonioctena* (s. str.) *japonica* (hom)
 553
rufipes, *Lilioceris* (s. str.) *merdigera* (ab.) 43
rufipes, *Luperus luperus* (syn.) 696
rufipes, *Oreina* (*Protorina*) *plagiata* (ab.)
 581
rufipes, *Oreomela* (s. str.) **591***
rufipes, *Podagrica fuscicornis* (syn.) 974
rufitarsis, *Psylliodes* (s. str.) 976
rufitarsis, *Paraclatra signata sennariensis*
 (syn.) 118
rufitarsis, *Phyllotreta* 960, **968**, 969*, 972*
rufithorax, *Chloropterus moldaviensis* (ab.)
 418
rufithorax, *Gonioctena* (*Goniomena*)
interposita (ab.) 561
rufithorax, *Pagria signata* (ab.) 419
rufithorax, *Plagioderia versicolor borealis*
 (ab.) 602
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rufoaenea, *Chrysolina* (*Sulcicollis*) 452*,
453
rufoconcolor, *Neocrepidodera rhaetica* (ab.)
rufocuprea, *Chrysolina* (*Colaphoptera*)
purpurascens (subsp.) 488
rufocyanea, *Oulema* **46**
rufofasciatus, *Cryptocephalus* (s. str.) 284*,
286, 296
rufofemorata, *Chaetocnema* (s. str.) *obesa*
 (ab.) 781
rufofemorata, *Chrysolina* (*Maenadochrysa*)
affinis (subsp.) 505
rufofemorata, *Dibolia* (*Eudibolia*) 815*,
 816*, **817**
rufofemorata, *Psylliodes* (s. str.) *laticollis*
 (ab.) 997
rufoflava, *Ophrida spectabilis* (syn.) 929
rufoflavus, *Cryptocephalus* (s. str.) **280***
rufofulva, *Nodina chalcosoma* (ab.) 419
rufohumeralis, *Chrysolina* (*Stichoptera*)
latecincta (syn.) 438
rufolimбата, *Otiocephala opaca* (ab.) 116
rufolimbatatus, *Cryptocephalus* (s. str.)
primarius (syn.) 276
rufolineata, *Chrysolina* (*Chrysomorpha*)
cerealis (subsp.) 495
rufomarginata, *Chrysolina* (*Stichoptera*)
gypsophilae (syn.) 439
rufomarginata, *Labidostomis* (*Chlorostola*)
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rufometallica, *Gallerucida* **664**
rufonotatus, *Stylosomus* (s. str.) *tamarisci*
 (ab.) 369
rufopicea, *Psylliodes* (s. str.) *picina* (ab.)
 986
rufopygus, *Tituboea* **139**, **141***
rufotestacea, *Basilepta fulvipes* (ab.) 414
rufotestacea, *Zeugophora* (s. str.) *turneri*
 (syn.) 26
rufotestacus, *Liplus punctastostriatus*
 (syn.) 828
rufotibialis, *Cryptocephalus* (s. str.)
pustulipes (syn.) 302
rufovariegata, *Donacia* (*Donaciomima*)
intermedia (syn.) 13
rufovirens, *Cassida* 1050*, **1051**
rufula, *Gonioctena* (s. str.) *nivosa* (ab.)
 558
rufulus, *Longitarsus* (s. str.) *exsoletus*
 (subsp.) 851
rufus, *Acolastus* (s. str.) **158**, 160*
rufus, *Cryptocephalus* (s. str.) *tataricus*
 (syn.) 281
rugata, *Lilioceris* (s. str.) **42**
rugaticollis, *Pachnephorus* (s. str.) *villosus*
 (syn.) 403
rugicollis, *Chrysolina* (*Synerga*) *herbacea*
 (ab.) 516
rugicollis, *Cryptocephalus* (s. str.) **255***
rugicollis, *Labidostomis* (s. str.) **90***, 103*,
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rugicollis, *Lachnaia* (s. str.) (incert.) 110
rugicollis, *Lema* (s. str.) *cyanella* (syn.) 37
rugifer, *Pachybrachis* (s. str.) **335**, 336*
rugifera, *Cassida japana* (syn.) 1040
rugifrons, *Lema* (s. str.) **37**
rugifrons, *Luperus xanthopoda* (syn.) 698
rugifrons, *Phyllotreta* **939***
rugiger, *Pachybrachis* (s. str.) 335
rugipennis *Chrysolina* (*Allochrysolina*)
opacicollis (?syn.) 493
rugipennis, *Apthona* 766*, **767**

- rugipennis*, *Macroplea appendiculata* (ab.) 20
- rugipennis*, *Timarcha* (*Timarchostoma*) *hispanica* (subsp.) 617
- rugithorax*, *Stylosomus* (*Microstilus*) **364***
- rugosa*, *Galeruca* (s. str.) *pomona* *cretica* (?syn.) 642
- rugosa*, *Geinella* **650**
- rugosa*, *Timarcha* (s. str.) **625**
- rugosa*, *Tricholochmaea placida* (syn.) 661
- rugosopunctata*, *Chrysolina* (*Colaphodes*) *haemoptea* (ab.) 507
- rugosopunctatum*, *Ambrostoma* **424**
- rugulifrons*, *Cryptocephalus* (s. str.) *modestus* (ab.) 257
- ruguliventris*, *Cryptocephalus* (s. str.) *praticola* (syn.) 263
- rugulosa*, *Chrysolina* (*Euchrysolina*) *graminis* (?subsp) 514
- rugulosa*, *Chrysolina* (*Lithocrosita*) 499*, **500**
- rugulosa*, *Dibolia* (s. str.) 810*, **811**
- rugulosa*, *Theone margelanica* (subsp.) 660
- rugulosa*, *Timarcha* (s. str.) **622**
- rugulosa*, *Tituboea* **137**, 139*
- rugulosa*, *Tituboea* 145*, **146**
- rumicis*, *Entomoscelis* (s. str.) 542*, **543**
- rumicis*, *Gastrophysa* (s. str.) *viridula* (syn.) 546
- rungsi*, *Coptocephala crassipes* (ab.) 64*
- rungsi*, *Timarcha* (s. str.) *scabra* (subsp.) 625
- ruppiae*, *Macroplea mutica* (ab.) 20
- ruralis*, *Cryptocephalus* (s. str.) **272**, 274*
- russata*, *Cassida fusciorufa* (syn.) 1042
- russica*, *Aphthona* **765**
- russica*, *Cassida lineola* (ab.) 1044
- russica*, *Crioceris quatuordecimpunctata* (ab.) (36*
- russica*, *Dibolia* (*Eudibolia*) 814, **816**
- russica*, *Exosoma collare* (ab.) 685
- russica*, *Leptomona* **688**
- rustica*, *Galeruca* (s. str.) *pomona* (syn.) 642
- rustica*, *Mantura* (s. str.) 908*, **909**, 910
- rustica*, *Plateumaris* 19*, **21**, 23*
- rusticus*, *Cryptocephalus* (s. str.) *janthinus* (syn.) 266
- rutilans*, *Chrysolina* (?spec) 425
- rutilus*, *Longitarsus* (s. str.) **873*** 874*,
- rutoga*, *Galeruca* (s. str.) *vittatipennis* (subsp.) 645
- rybakovi*, *Diorhabda* **636**
- saadensis*, *Melitonoma* **114**
- sabauda*, *Neocrepidodera cyanescens* (ab.) 922
- sabaudus*, *Cryptocephalus* (*Protophysus*) *schaefferi* (ab.) 320
- sabulicola*, *Phaedon* (s. str.) *laevigatus* (syn.) 598
- sabulosus*, *Pachnephorus* (s. str.) *tessellatus* (ab.) 403
- sacaram*, *Chrysolina* (*Paradiachalcoidea*) **446**, 447*
- sachalinensis*, *Gonioctena* (s. str.) *honshuensis* (subsp.) 552
- sachalinensis*, *Phyllotreta* **938**
- sachalinensis*, *Plateumaris* **22**
- sacra*, *Blepharida* **778**, 779*
- sacra*, *Entomoscelis* (s. str.) **544**
- sacra*, *Macrocoma* 395*, **396**
- sagamensis*, *Cryptocephalus* (*Burlinius*) **213***
- sagittariae*, *Donacia* (*Donaciomima*) *bicolora* (syn.) 16
- sagittariae*, *Galerucella* 648*
- sagittifolia*, *Sagittaria* (bot.) 12
- Sagra* **7**
- Sagra* s. str. (subg.) **7**
- sagensis*, *Timarcha* (*Timarchostoma*) *fallax* (subsp.) 618
- Sagrinae* **7**
- sahalinensis*, *Crepidodera* **800***
- saharica*, *Macrocoma* 392
- saharica*, *Macrocoma* 391, **392***
- sahlbergi*, *Chaetocnema* (s. str.) *sahlbergi* (ab.) 781*, **782**
- sahlbergi*, *Chrysolina* (*Ovosoma*) 509*, **510**
- sahlbergi*, *Donacia* (*Donaciomima*) *bactriana* (syn.) 17
- sahlbergi*, *Longitarsus* (s. str.) **886**

- sahlbergi*, *Smaragdina* (*Monrosia*) *labilis* (subsp.) 126
- sahlbergi*, *Stylosomus* (*Microsomus*) *weberi* (syn.) 363
- sahlbergiana*, *Chrysolina* (*Pezocrosita*) **443**, 444*
- sahlbergii*, *Macrolea mutica* (syn.) 20
- saintpierrei*, *Cryptocephalus* (*Burlinius*) **228**, 230*
- sajanensis*, *Chrysolina* (*Pleurosticha*) *gebleri* (subsp.) 463
- sajanica*, *Altica* **740**, 741*
- sajanica*, *Chrysolina* (*Pezocrosita*) **483***
- sajoi*, *Cryptocephalus* (*Burlinius*) *connexus* (ab.) 246
- salarius*, *Longitarsus* (s. str.) **846**, 847*
- salfii*, *Pachybrachis* (s. str.) **344**, 345*
- Salicaceae* (bot.) 519, 554, 556
- salicariae*, *Lythraea* 906*, **907**
- salicariae*, *Macrolenes dentipes* (ab.) 113
- saliceti*, *Chaetocnema* (*Tlanoma*) *semicoerulea* (ab.) 794
- saliceti*, *Chrysomela* (*Chrysomela*) **520***
- saliceti*, *Cryptocephalus* (*Burlinius*) **238***
- salicina*, *Smaragdina* (*Monrosia*) **123***
- salicinus*, *Phaedon* (s. str.) **598**
- salicis*, *Chrysomela* (*Pachylina*) *collaris* (ab.) 521
- salicis*, *Cryptocephalus* (s. str.) *trimaculatus* (syn.) 277
- salicis*, *Labidostomis* (s. str.) *cyanicornis* (syn.) 75, 97*
- salicis*, *Plagioderia versicolora versicolora* (syn.) 602
- salicivorax*, *Chrysomela* (*Strickerus*) 523
- salicorniae*, *Cassida vittata* (syn.) 1038
- salisburgensis*, *Cryptocephalus* (s. str.) *laetus* (syn.) 267
- Salix* (bot.) 557, 602, 652
- salsolae*, *Pachybrachis* (s. str.) *kirghizicus* (subsp.) 329
- saltatrix*, *Longitarsus* (s. str.) *nigrofasciatus* (syn.) 847
- saltitans*, *Chaetocnema* (*Tlanoma*) *semicoerulea* (syn.) 794
- salviae*, *Chrysolina* (*Bittotaenia*) **455***
- salviae*, *Longitarsus* (s. str.) 837*, **838**
- samarensis*, *Chrysolina* (*Taeniosticha*) **430**
- samniticus*, *Cryptocephalus* (s. str.) **265***
- sancta*, *Entomoscelis* (s. str.) *suturalis* (ab.) 544
- sandini*, *Altica longicollis* (syn.) 732
- sandrae*, *Aphthona* **769**
- Sangariola* 726, **1018**
- sanguinea*, *Cornus* (bot.) 736
- sanguinea*, *Donacia* (*Donaciomima*) *simplex* (ab.) 14
- sanguinea*, *Lochmaea crataegi* (syn.) 650
- sanguineocincta*, *Chrysolina* (*Chalcoidea*) *marginata* (subsp.) **442***
- sanguinolenta*, *Cassida* 1044, 1051*, **1052**
- sanguinolenta*, *Chrysolina* (*Stichoptera*) 438*, **439**
- sanguinolentus*, *Cryptocephalus* (s. str.) *bipunctatus* (syn.) 276
- sanguinosa*, *Cassida* 1044, 1050*, **1051**
- Sanguisorba* (bot.) 729, 731
- sanguisorbae*, *Altica fragariae* (syn.) 742
- sannio*, *Cryptocephalus* (s. str.) *triangularis* (syn.) 297
- santanderi*, *Cryptocephalus* (s. str.) *pexicollis* (ab.) 268
- santonici*, *Chrysolina* (*Euchrysolina*) *graminis* (subsp.) 514
- saportae*, *Colaspina* **383**
- sapozhnikovi*, *Oreomela* (s. str.) **594***
- sapphirina*, *Crepidodera lamina* (ab.) 797
- saracena*, *Podagrica malvae* (ab.) 973
- sarafschanensis*, *Cryptocephalus* (*Asionus*) **204***, 206
- sarafschanica*, *Atomyria* **381**
- sarbazicus*, *Cryptocephalus* (*Asionus*) 190*, **191**
- sarcandica*, *Chrysolina* (*Pezocrosita*) **486***
- sardea*, *Aphthona* 766*, **767**
- sardea*, *Chrysolina* (*Synerga*) *viridana* (ab.) 515
- sardea*, *Timarcha* (*Timarchostoma*) **617**
- sardoa*, *Galeruca* (s. str.) **641**
- sardoa*, *Labidostomis* (s. str.) *taxicornis* (syn.) 96
- sareptana*, *Cassida* 1048*, **1049**

sareptana, *Labidostomis* (s. str.) *lucida*
axillaris (syn.) 84
sareptana, *Cassida* 1043
sareptanus, *Cryptocephalus* (*Asionus*) **181***
sarhroensis, *Timarcha* (s. str.) *punctella*
(subsp.) 629
sarmatica, *Aphthona* **754***
sarmatica, *Chrysomela* (*Strickerus*) *cuprea*
(ab.) 522
sarroensis, *Chrysolina* (*Chalcoidea*) **444**,
445*
sarroensis, *Macrocoma* *henoni* (ab.) 390
sarvadensis, *Macrocoma* **395***
saryarkensis, *Cryptocephalus* (*Asionus*)
192*
sarydzhasea, *Oreomela* (s. str.) **589**
satanas, *Cryptocephalus* (s. str.) *janthinus*
(ab.) 266
satanas, *Gonioctena* (s. str.) *linnaeana* (ab.)
554
sativa, *Cannabis* (bot.) 1001
sativa, *Medicago* (bot.) 564
satoi, *Neocrepidodera* **924***
saturata, *Lochmaea caprea* (syn.) 652
saucia, *Cassida* **1038**
saucius, *Cryptocephalus* (*Burlinius*) **242***,
243, 250
saudica, *Macrocoma* **396***
saudica, *Monolepta* **701***
saudica, *Smaragdina* (*Monrosia*) **119**, 120*
saudicus, *Mecistes* **400**
saudicus, *Pachybrachis* (s. str.) **347***
saudiensis, *Cryptocephalus* (s. str.) 283*,
284, 293
saulyji, *Psylliodes* (s. str.) 988* **990***, 991*
saurica, *Chrysolina* (*Arctolina*) **470***
sauteri, *Scelodonta* **406**
savonae, *Cryptocephalus* (s. str.)
marginellus (ab.) 271
saxonica, *Chrysolina* (*Taeniosticha*) *reitteri*
(syn.) 430
saxonicus, *Luperus xanthopoda* (?syn.) 698
saxonicus, *Luperus xanthopoda* (syn.) 698
scabra, *Timarcha* (s. str.) **625**
scabricollis, *Chaetocnema* (s. str.) *hortensis*
(syn.) 784
scabripennis, *Timarcha* (s. str.) **623**
scaffaiolus, *Cryptocephalus* (s. str.)
violaceus (subsp.) 260
scaphidioides, *Longitarsus* (*Testergus*) ,
901*, 902*, **903**
scapularis, *Cryptocephalus* (*Burlinius*)
237*, **238**
scapularis, *Labidostomis* (s. str.) *lusitanica*
(syn.) 95
scapularis, *Lilioceris* (s. str.) **41**
scapularis, *Cryptocephalus* (*Heterichnus*)
macroductylus (syn.) 310
scarificollis, *Cryptocephalus* (*Burlinius*)
225, 226*
Scelodonta 377, **406**
Scelolyperus 667, **713**
scenicus, *Cryptocephalus* (s. str.)
decemmaculatus (ab.) 93*
schach, *Chrysolina* (*Chalcoidea*) *analisis*
(syn.) 440
schaeferi, *Cryptocephalus* (*Burlinius*)
saliceti (ab.) 238
schaeferi, *Pachybrachis* (s. str.) *pradensis*
(ab.) 334
schaefferi, *Cryptocephalus* (*Protophysus*)
320*
schatzmayri, *Chrysolina* (*Anopachys*) 500*,
501
scheffleri, *Chaetocnema* (*Tlanoma*) 792*,
793
Schenklingia 723, **1019**
schepmani, *Lilioceris* (s. str.) *lilii* (ab.) 42
scherereri, *Cyrtanastes* (*Cyrtanastes*) 530*,
531
scherereri, *Macrocoma* **398**, 399*
Schereria, *Ivaia* (syn.) 827
scheuchi, *Phyllotreta* **965**, 966*
scheuchi, *Phyllotreta atra* (syn.) 959
schewyrewi, *Chrysolina* (*Sibiriella*) **450**, 519
schillingii, *Dibolia* (*Eudibolia*) **814**, 815*
schioedtei, *Macroplea mutica* (syn.) 20
shipkana, *Oreina* (*Protorina*) *plagiata*
(subsp.) 581
schlaeflii, *Chaetocnema* (*Tlanoma*) **790**,
791*
schlumbergeri, *Pachnephorus* (s. str.)

villosus (syn.) 403
schmidti, *Cryptocephalus* (*Burlinius*)
polymorphus (subsp.) 234, 247
schneideri, *Chrysolina* (*Helioctola*) 503*,
504
schneideri, *Labidostomis* (s. str.) **83***, 84*,
92, 103*, 105
schneideri, *Lilioceris* (s. str.) 42*, **43**
schotti, *Chrysolina* (*Sulcicollis*) *peregrina*
(ab.) 452
schrammi, *Cryptocephalus* (s. str.) *vittatus*
(ab.) 275*
schrammi, *Oedionychis limbata* (ab.) 928
schrammi, *Timarcha* (s. str.) *punctella*
(subsp.) 629
schreineri, *Phyllotreta pallidipennis* (syn.)
953
schummeli, *Oreina* (*Chrysochloa*)
speciosissima (ab.) 576
schusteri, *Crioceris asparagi* (ab.) 32*
schusteri, *Ischyronota* **1054**
schwarzi, *Psylliodes* (s. str.) **1009***, 1010*
scitellata, *Lochmaea caprea* (syn.) 652
scitulus, *Cryptocephalus* (s. str.) **284**
Sclerphaedon 422, **604**
scoparia, *Erica* (bot.) 775
scoparius, *Sarothamnus* (bot.) 564
scopolina s. l. , *Coptocephala* 62, 66*67, 68
scopolina s. str. , *Coptocephala* **69**, 70*
scorodon, *Chrysolina* (*Threnosoma*) *afra*
(?syn.) 511
scorodonia, *Teucrium* (bot.) 842
scripticollis, *Pachybrachis* (s. str.) 336, 337,
338, 339, 340, **342**, 343*, 352
scriptidorsum, *Pachybrachis* (s. str.) **344**,
345*, 350
scriptus, *Pachybrachis* (s. str.) 331, **333***,
334
scrobiculata, *Theone silphoides* (subsp.) 660
scrobipennis, *Longitarsus* (s. str.) **871***, 872*
Scrophularia (bot.) 1004
Scrophulariaceae (bot.) 598604
scrophulariae, *Longitarsus* (s. str.)
okushiriensis (syn.) 835
scrutator, *Longitarsus* (s. str.) *fallax* (syn.)
845
sculpticollis, *Chrysolina* (*Chalcoidea*)
marginata (subsp.) 442
sculptipennis, *Apthona violacea* (ab.) 751
sculptipennis, *Chrysolina* (*Bittotaenia*)
salviae (subsp.) 455
sculptipennis, *Timarcha* (*Timarchostoma*)
strangulata (subsp.) 616
sculpturata, *Chrysolina* (*Arctolina*)
septentrionalis (syn.) 466
scutellariae, *Longitarsus* (s. str.) 834*, **835**
scutellaris, *Aoria* (s. str.) **380**
scutellaris, *Arthrotidea* **669**
scutellaris, *Cassida ferruginea* (ab.) 1048
scutellaris, *Coptocephala scopolina floralis*
(ab.) 68
scutellaris, *Coptocephala scopolina*
scopolina (ab.) 70*
scutellaris, *Cryptocephalus* (*Burlinius*)
saucius (homon.) 242
scutellaris, *Derocrepis* (*Derocrepis*) *sodalis*
(syn.) 805
scutellaris, *Lema* (s. str.) **38**
scutellaris, *Longitarsus* (s. str.) 833, **861***,
862*
scutellaris, *Neocrepidodera transversa*
(?syn.) 918
scutellaris, *Oreomela* (s. str.) **588***
scutellaris, *Smaragdina* (s. str.) **130**
scutellaris, *Zeugophora* (s. str.) **27***
scutellata, *Lochmaea* 651*, **652**
scutellata, *Xanthonia placida hachijoensis*
(ab.) 408
scutellatus, *Cyrtonus* **541**
Sebaethe, *Hemipyxis* (syn.) 822
secsaouia, *Gonioctena* (*Spartoxena*), **566**,
567*
securus, *Cryptocephalus* (s. str.) **272**
secutorius, *Longitarsus* (s. str.)
nigrofasciatus (subsp.) 847
sedakovi, *Galeruca* (s. str.) *daurica* (syn.)
646
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Sphaeraltica, *Ogloblinia* (syn.) 928
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Sphaerophyma, *Argopistes* (syn.) 772
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- spilotus*, *Chlamisus* **371**
- spilotus*, *Longitarsus* (s. str.) *rectilineatus*
(syn.) 856
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- spinosa*, *Donacia* (s. str.) *crassipes* (syn.) 10
- spitameni*, *Acolastus* (s. str.) **151**, 152*
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bilineatus (syn.) 219
- splendens*, *Altica oleracea* (syn.) 729
- splendens*, *Chaetocnema* (s. str.) **779**
- splendens*, *Cryptocephalus* (s. str.) **255***
- splendens*, *Donacia* (*Donaciomima*)
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- splendens*, *Macrocoma* **389***
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- splendida*, *Sagra* (s. str.) *femorata* (syn.) 7
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- springeri*, *Neocrepidodera* 914*, **915**
- springeri*, *Phyllotreta* **955**
- springeri*, *Psylliodes* (s. str.) **1015***, 1016*
- spuria*, *Timarcha* (s. str.) **625**
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- squalida*, *Chrysolina* (*Colaphoptera*) *rufa*
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- squamosus*, *Pachnephorus* (s. str.) **402**, 403
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- stackelbergi*, *Cryptocephalus* (*Asionus*)
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- staneki*, *Chrysolina* (*Hypericia*) *cuprina*
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- staneki*, *Timarcha* (s. str.) **627**
- staphylaea*, *Chrysolina* (s. str.) 428*, **429**
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- stejskali*, *Oreina* (s. str.) *alpestris* (subsp.),
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- Stenoluperus* 668, **716**
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- stichai* *Timarcha* (s. str.) (subsp.) 622
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- stoekleini*, *Chrysolina* (*Colaphoptera*)
purpurascens crassimargo (syn.) 488
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substriatus, *Acolastus* (s. str.) **157**, 160*
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sulcicollis, *Chrysolina* (*Bechynea*) **500**
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287
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(syn.) 868
suturalis, *Luperomorpha* **906**
suturalis, *Mantura* (s. str.) *rustica* (ab.) 909
suturalis, *Medythia* **699**
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747
suturata, *Mantura* (*Stenomantura*) **910**
suturatus, *Longitarsus* (s. str.) 867, **870**, 871*
suturella, *Aphthona maculata* (syn.) 747
suturella, *Gastrophysa* (s. str.)
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suturella, *Prasocuris distincta* (ab.) 604
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sycophanta, *Cyrtonus femoralis* (?syn.) 534
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syriaca, *Chrysolina* (*Hypericia*) *didymata*
(subsp.) 471
syriaca, *Crepidodera aurea* (syn.) 797
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(ab.) 309
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syriacus, *Pachnephorus* (s. str.) **403**
syriacus, *Pachybrachis* (s. str.) *tessellatus*
(ab.) 360
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1061
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szumowskii, *Chaetocnema* (s. str.) *segueia*
(ab.) 778
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851*, 873
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femoralis (subsp.) 506
taimyrensis, *Chrysomela* (*Pachylina*) **520**
taiwana, *Hyperaxis fasciata* (syn.) 386
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taiwana, *Triplispa angulosa* (syn.) 1060
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(syn.) 1001
taiwanus, *Lypesthes fulvus* (syn.) 387
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(syn.) 293
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sarafshanensis (subsp.) 203
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 (subsp.) 625
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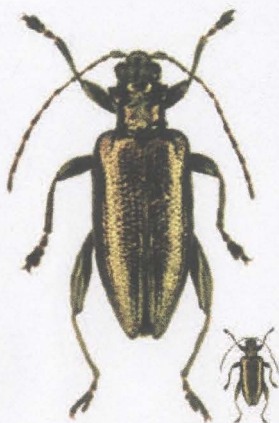
yakushmanus, *Chlamisus* **371**
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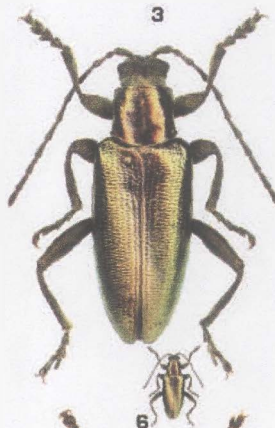
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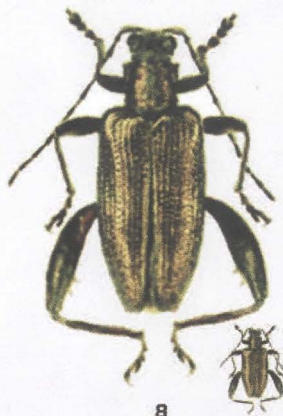
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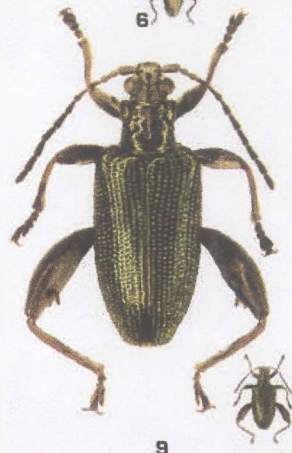
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Phot. 1-9. 1 - *Sagra fulgida*, 2 - *D. (Askevoldia) reticulata*, 3 - *D. Cyphogaster) lenzi*, 4 - *D. (C.) provosti*, 5 - *D. (s. str.) crassipes*, 6 - *D. (Donaciomima) kraatzi*, 7 - *D. (D.) fastuosa*, 8 - *D. (D.) dentata*, 9 - *D. (D.) versicolora*.

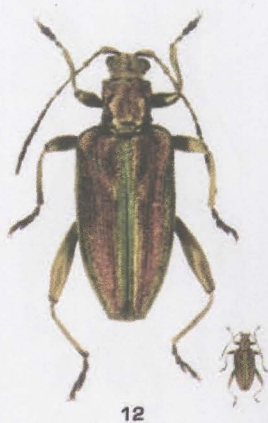
Plate II



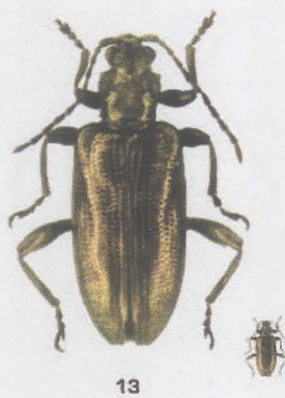
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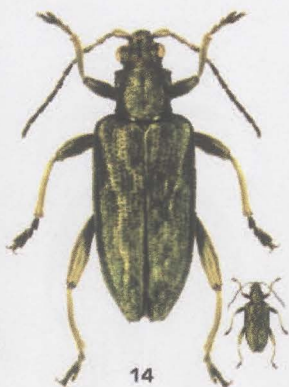
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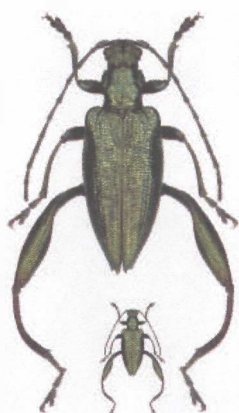
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Phot. 10-18. *Donacia* (*Donaciomima*) *polita*, 11 – *Donacia* (*D.*) *malinovskyi*, 12 – *Donacia* (*D.*) *aquatica*, 13 – *Donacia* (*D.*) *brevicornis*, 14 – *Donacia* (*D.*) *bicolora*, 16 – *Donacia* (*D.*) *sparganii*, 15 – *Donacia* (*D.*) *semicuprea*, 17 – *Plateumaris braccata*, 18 – *P. sericea*.

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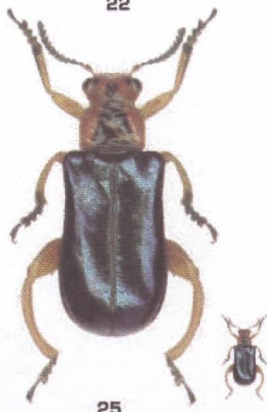
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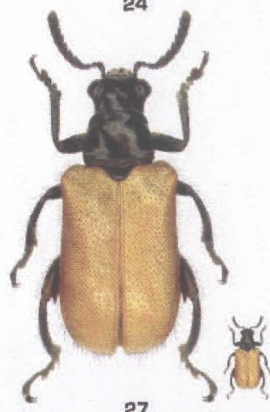
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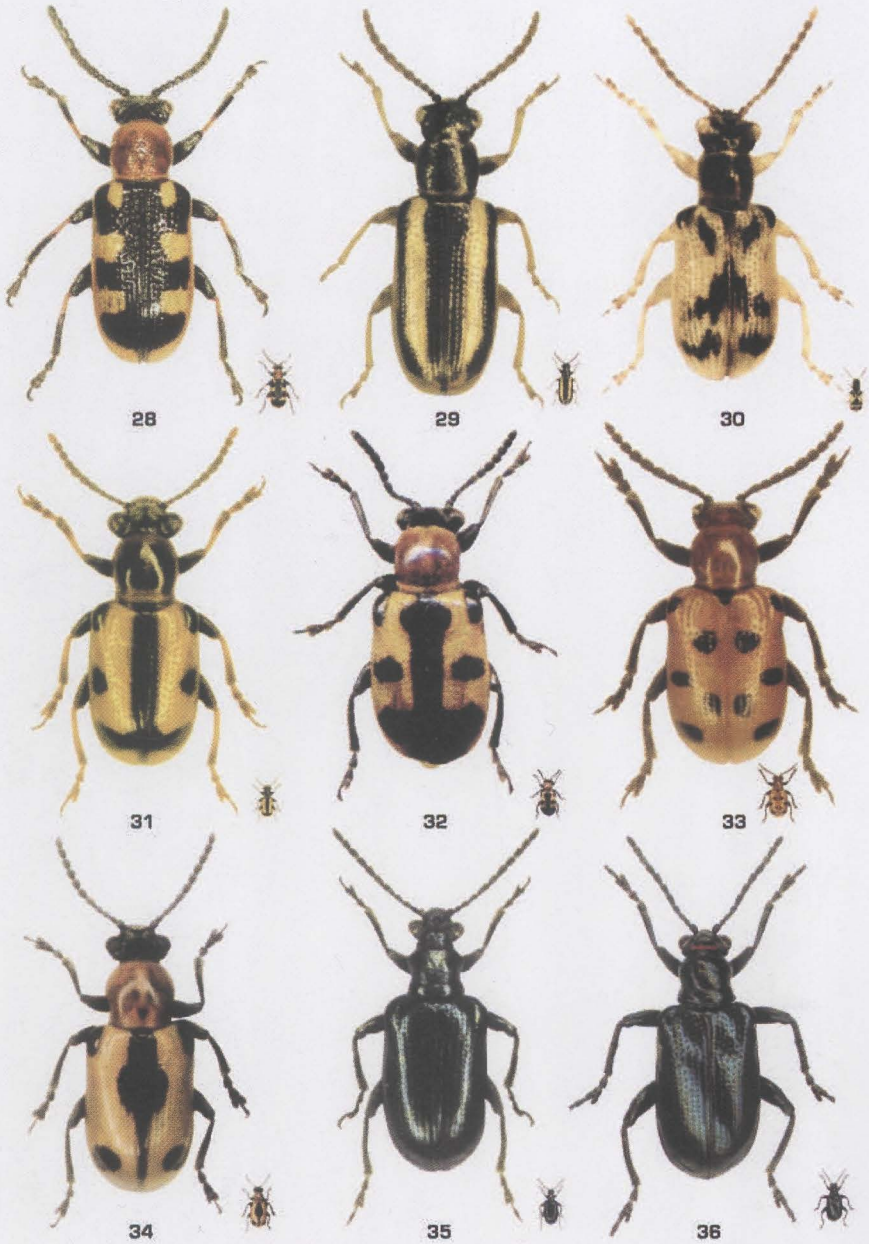
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Phot. 19-27. 19 – *Sominella macrocnemia*, 20 – *Orsodacne cerasi*, 21 – *Zeugophora scutellaris*, 22 – *Z. turneri*, 23 – *Z. (Pedrillia) bicolor*, 24 – *Z. (P.) annulata*, 25 – *Clytraxeloma cyanipennis*, 26 – *Temnaspis nigropunctata*, 27 – *Temnaspis nankinea*.

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Phot. 28-36. 28 - *Crioceris asparagi*, 29 - *C. macilentata*, 30 - *C. nigropicta*, 31 - *C. paracenthesis*, 32 - *C. bicruciatata*, 33 - *C. 12-punctata*, 34 - *C. quinquepunctata*, 35 - *Lema cyanella*, 36 - *L. coronata*.

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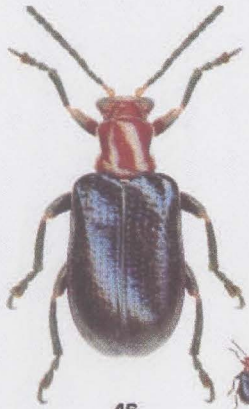
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Phot. 37-45. 37 - *Lema infranigra*, 38 - *L. delicatula*, 39 - *L. scutellaris*, 40 - *L. diversa*, 41 - *L. decempunctata*, 42 - *L. honorata*, 43 - *L. lewisii*, 44 - *Lilioceris faldermanni*, 45 - *L. merdigera*.

Plate VI



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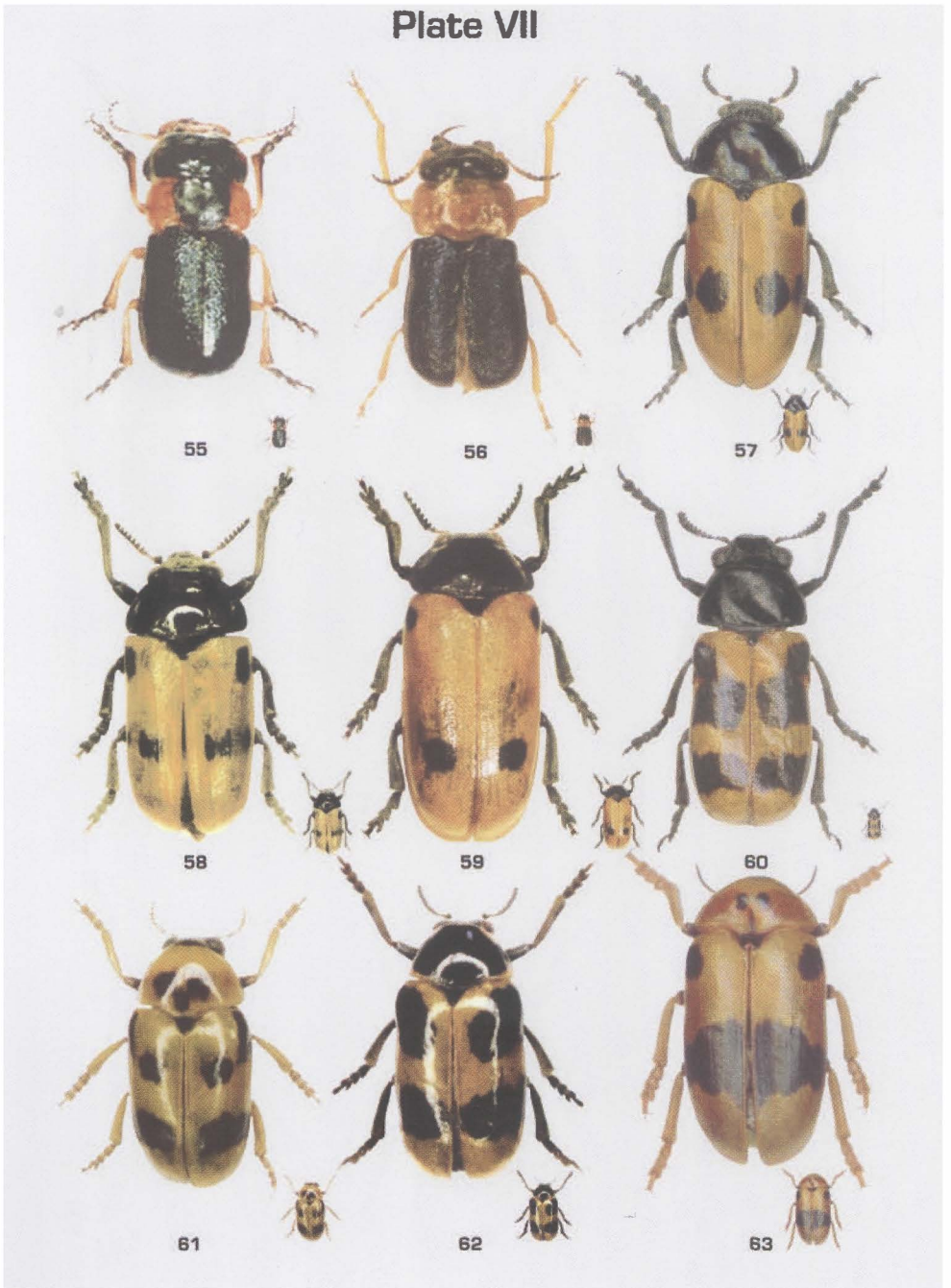
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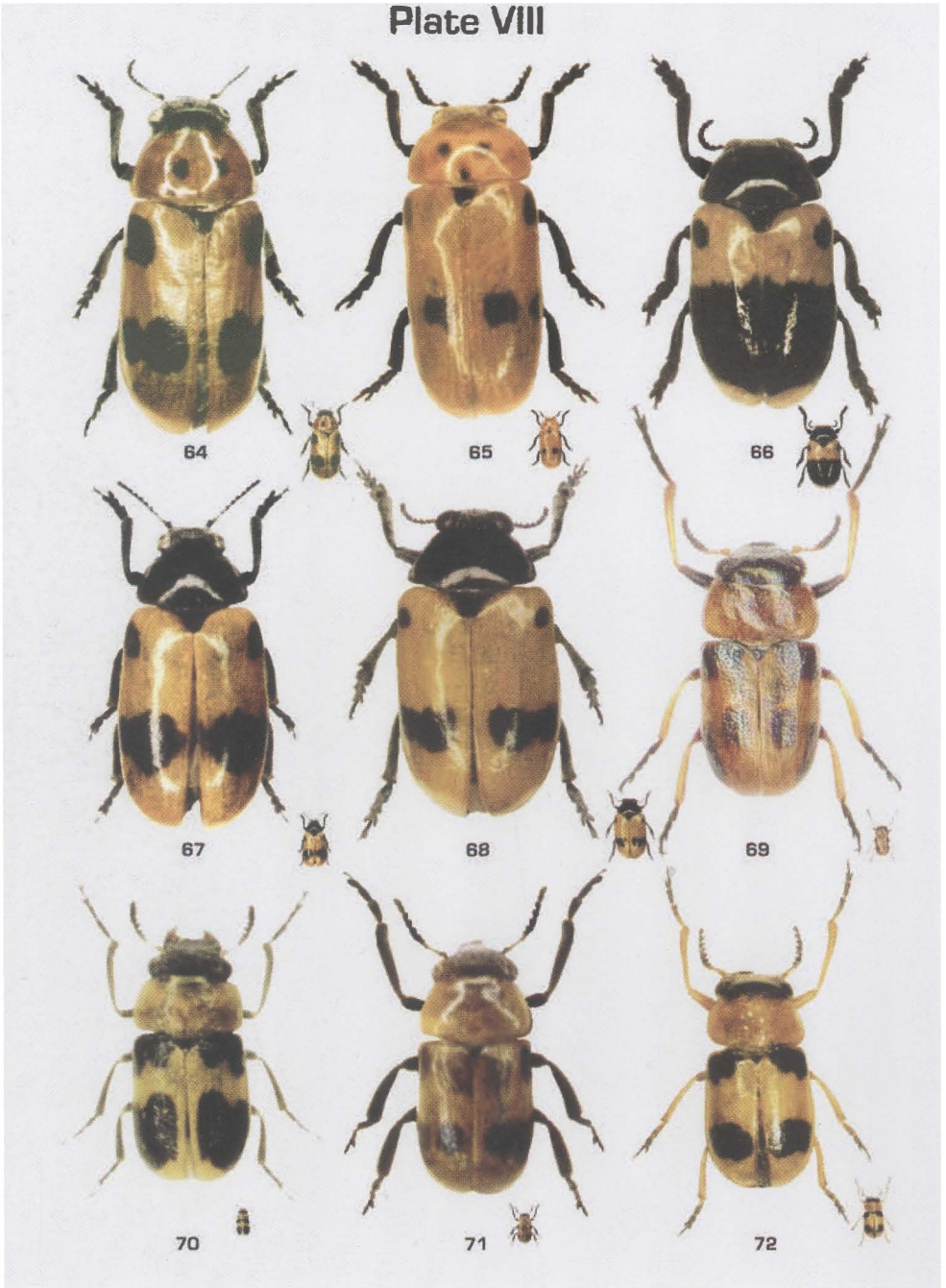
Phot. 46-54. 46 - *Lilioceris ruficollis*, 47 - *L. rugata*, 48 - *L. tibialis*, 49 - *L. merdigera*, 50 - *Oulema tristis*, 51 - *O. atosuturalis*, 52 - *O. gallaeciana*, 53 - *O. hoffmannseggi*, 54 - *O. melanopus*.

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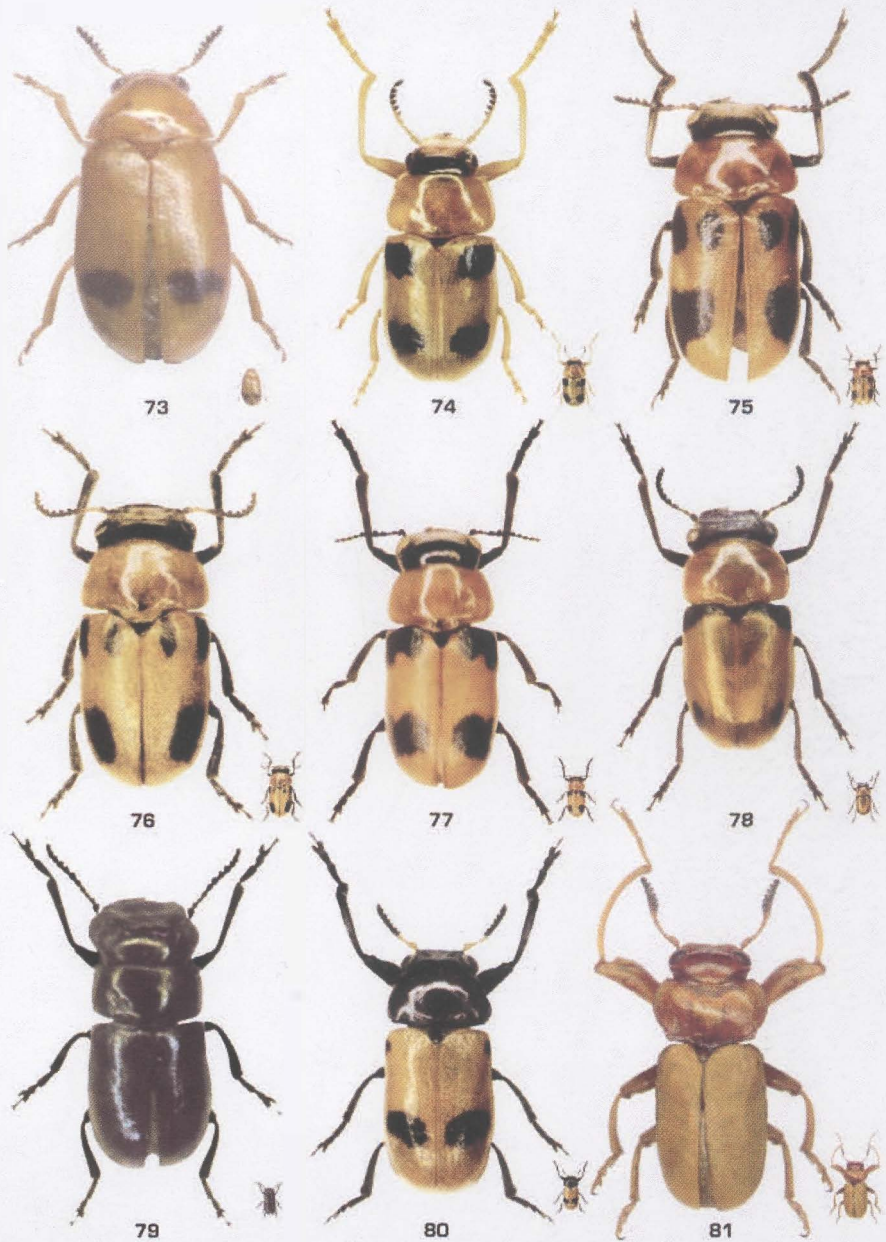
Phot. 55-63. 55 – *Cheilotoma musciformis*, 56 – *C. bergeali*, 57 – *Clytra* (s. str.) *popovi*, 58 – *C.* (s. str.) *aliena*, 59 – *C.* (s. str.) *quadripunctata*, 60 – *C.* (*Clytraria*) *montana*, 61 – *C.* (*C.*) *atraxidis*, 62 – *C.* (*C.*) *atraxidis sierrana*, 63 – *C.* (*C.*) *opaca*.

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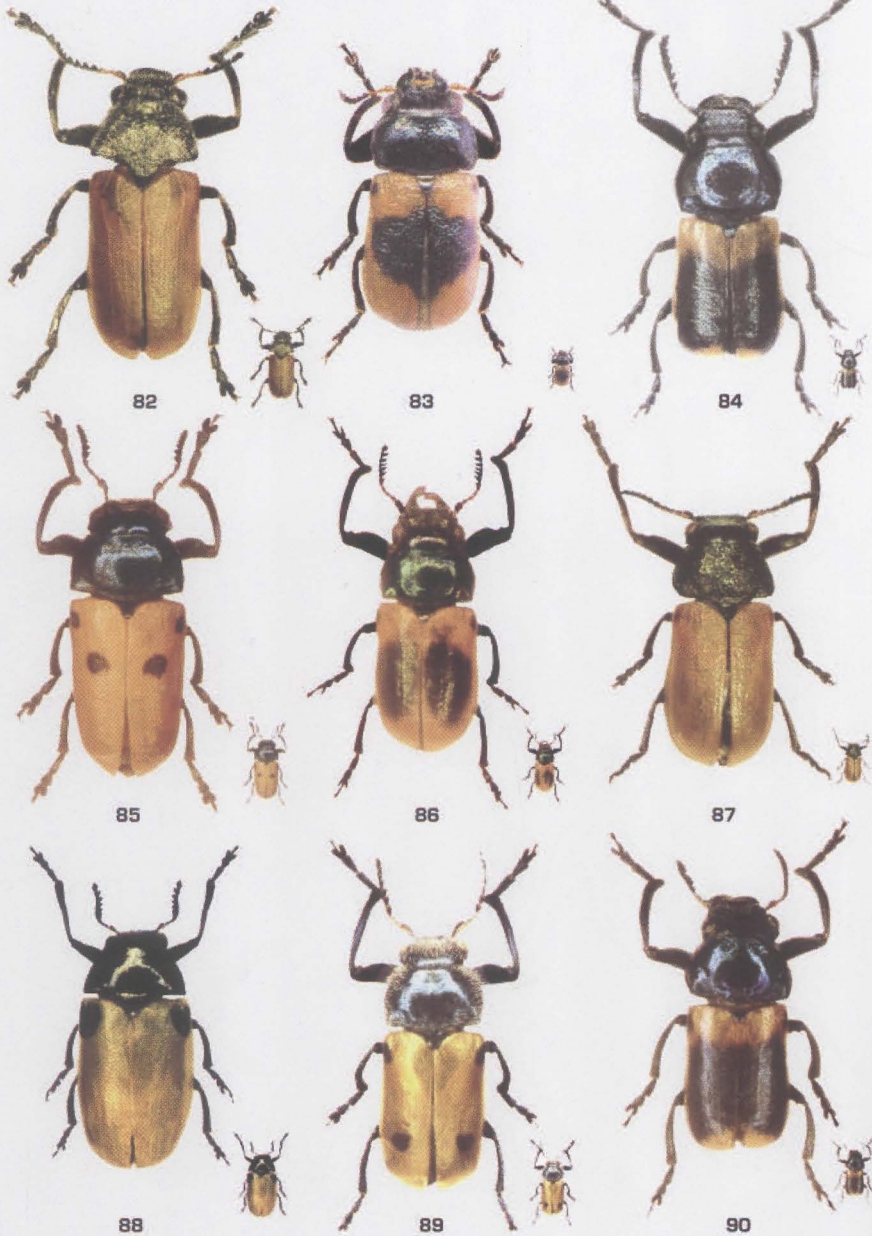
Phot . 64-72. 64 – *Clytra (Clytraria) valeriana*, 65 – *Clytra (C.) novempunctata*, 66 – *Clytra (Ovoclytra) cingulata*, 67 – *Clytra (O.) bodemeyeri*, 68 – *Clytra (O.) nigrocincta*, 69 – *Coptocephala (s. str.) aeneopicta*, 70 – *Coptocephala (s. str.) panousei*, 71 – *Coptocephala (s. str.) crassipes*, 72 – *Coptocephala (s. str.) gebleri*.

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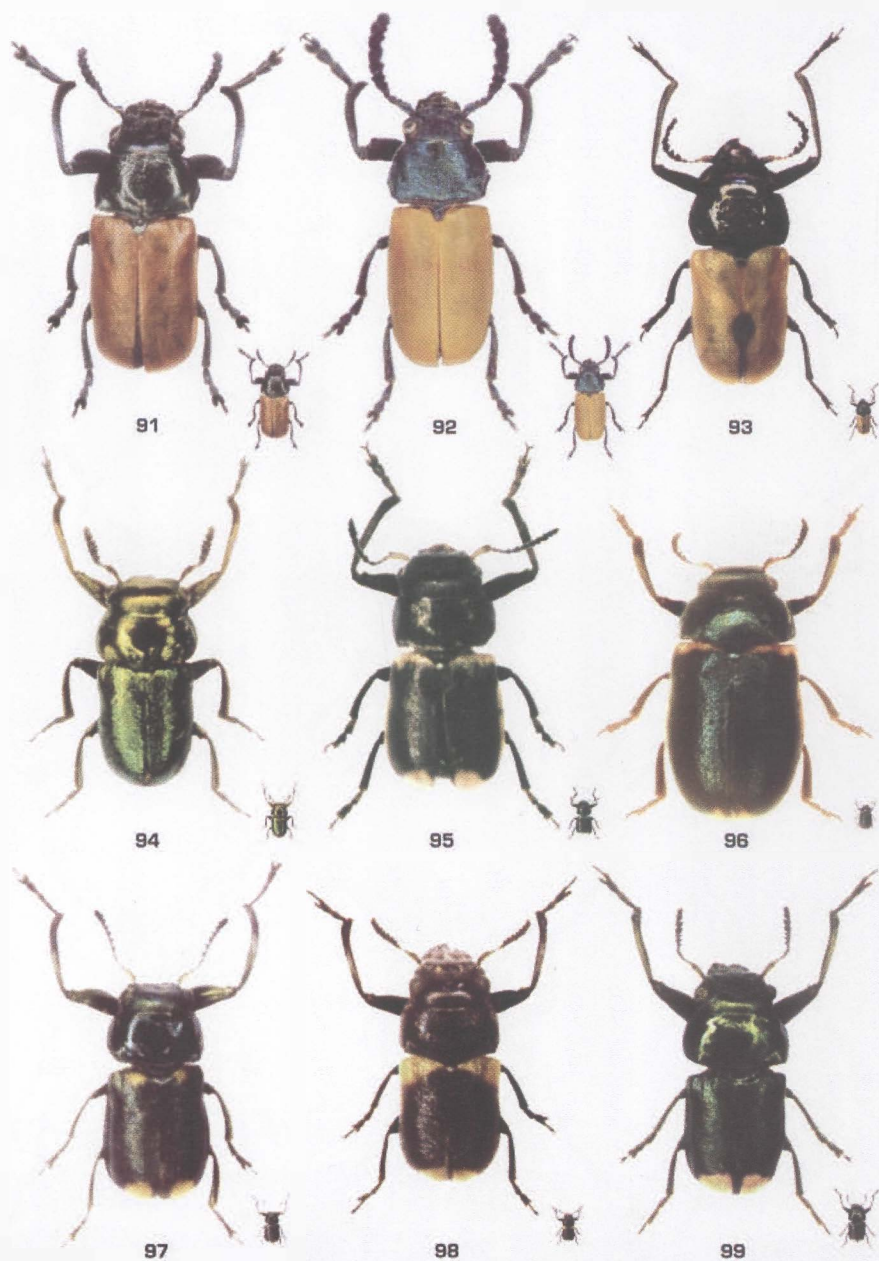
Phot. 73-81. 73 – *Coptocephala* (s. str.) *babylonica*, 74 – *Coptocephala* (s. str.) *kerimii*, 75 – *Coptocephala* (s. str.) *bistrinotata*, 76 – *Coptocephala* (s. str.) *plagiocephala*, 77 – *Coptocephala* (s. str.) *scopolina*, 78 – *Coptocephala* (s. str.) *cynocephala*, 79 – *Coptocephala* (s. str.) *unicolor*, 80 – *Labidostomis* (*Chlorostola*) *andreinii*, 81 – *Labidostomis* (C.) *bolivari*.

Plate X



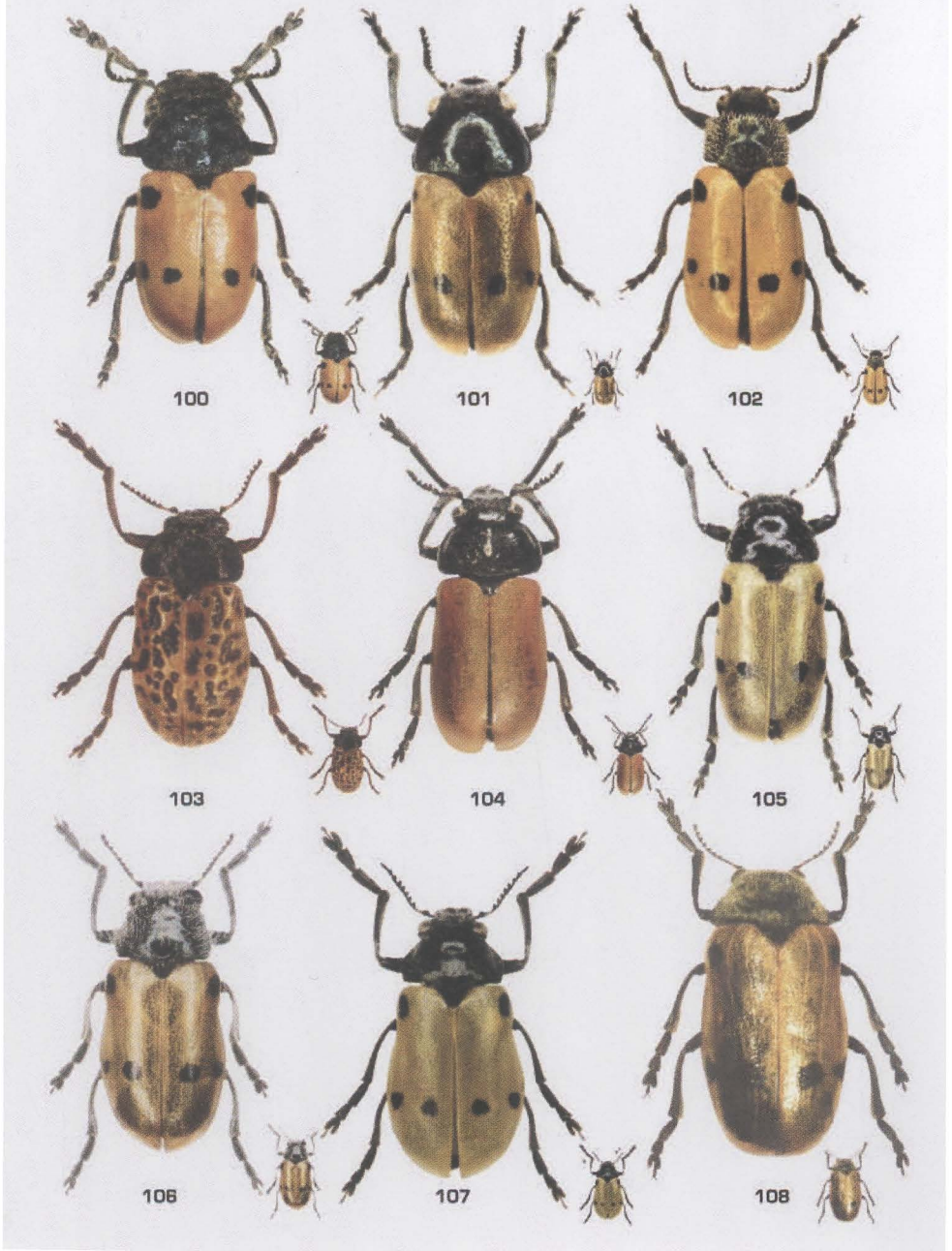
Phot. 82-90. 82 - *Labidostomis* (*Chlorostola*) *centromaculata*, 83 - *L. (C.) embergeri*, 84 - *L. (C.) guerini*, 85 - *L. (C.) hordei*, 86 - *L. (C.) nevadensis*, 87 - *L. (s. str.) kantneri*, 88 - *L. (s. str.) elegans*, 89 - *L. (s. str.) longimana*, 90 - *L. (s. str.) laeta*.

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Phot. 91-99. 91 - *Labidostomis* (s. str.) *mairei*, 92 - *L.* (s. str.) *quadrinotata*, 93 - *L.* (s. str.) *maculipennis*, 94 - *L.* (s. str.) *pallidipennis*, 95 - *L.* (s. str.) *propinqua*, 96 - *L.* (s. str.) *rubripennis*, 97 - *L.* (s. str.) *taxicornis*, 98 - *L.* (s. str.) *testaceipes*, 99 - *L.* (*Wellschmiedia*) *ghilianii*.

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Phot. 100-108. 100 – *Lachnaia (Barathraea) octomaculata*, 101 – *L. (s. str.) puncticollis*, 102 – *L. (s. str.) peyerimhoffi*, 103 – *L. (s. str.) variolosa*, 104 – *L. (s. str.) paradoxa*, 105 – *L. (s. str.) cylindrica*, 106 – *L. (s. str.) hirta*, 107 – *L. (s. str.) caprai*, 108 – *L. (s. str.) sexpunctata*.

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Phot. 109-117. 109 – *Macrolenes dentipes*, 110 – *Otioccephala atlantica*, 111 – *O. forcipifera*, 112 – *O. quadripunctata*, 113 – *O. tripolitana*, 114 – *Otiiothraea ghardaiensis*, 115 – *Otiiothraea avilai*, 116 – *Paraclytra crocata*, 117 – *Physomaragdina nigrifrons*.

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Phot. 118-126. 118 – *Smaragdina (Monrosia) thoracica*, 119 – *S. (M.) peplopteroides*, 120 – *S. (M.) collaris*, 121 – *S. (M.) nipponensis*, 122 – *S. (M.) obscuripes*, 123 – *S. (M.) cobosi*, 124 – *S. (M.) tibialis*, 125 – *S. (M.) semiauranthiaca*, 126 – *S. (M.) ferulae*.

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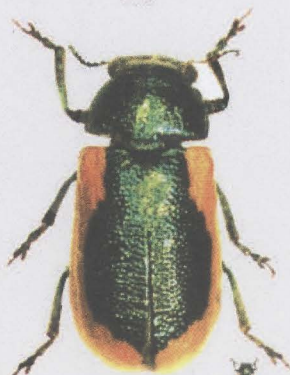
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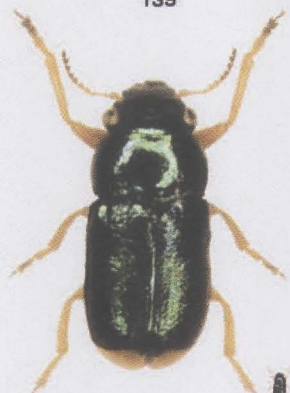
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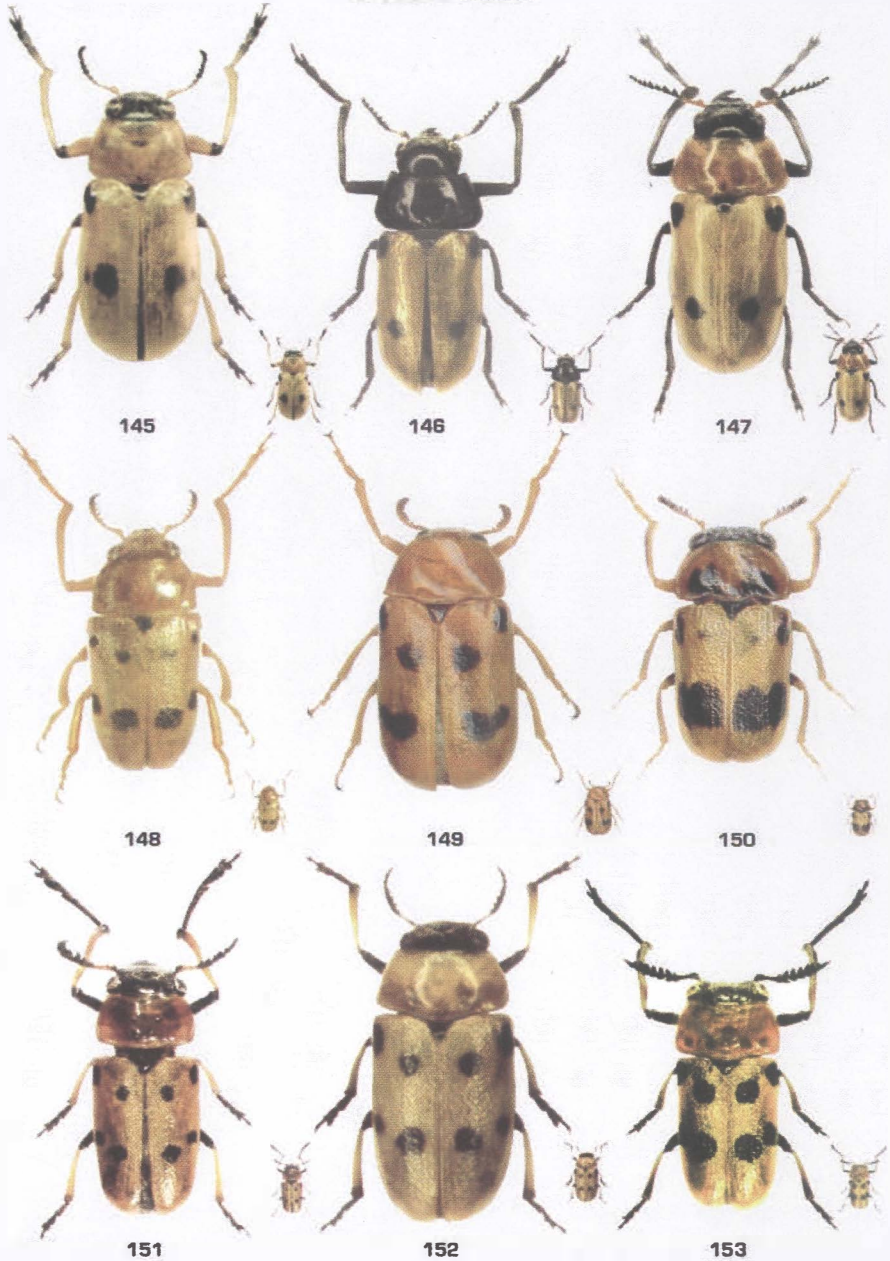
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Phot. 136-144. 136 – *Smaragdina* (*Nanosmaragdina*) *macilenta*, 137 – *S. (N.) djebellina*, 138 – *S. (s. str.) chloris*, 139 – *S. (s. str.) viridana*, 140 – *S. (s. str.) limbata*, 141 – *S. (s. str.) unipunctata*, 142 – *S. (s. str.) gratiosa*, 143 – *S. (s. str.) limbifera*, 144 – *S. (s. str.) scutellaris*.

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Phot. 145-153. 145 - *Tituboea macropus*, 146 - *T. illigeri*, 147 - *T. sexmaculata*, 148 - *T. ogloblini*, 149 - *T. silensis*, 150 - *T. ornaticollis*, 151 - *T. octopunctata* male, 152 - *T. octopunctata* female, 153 - *T. tredecimpunctata*.

Plate XVIII



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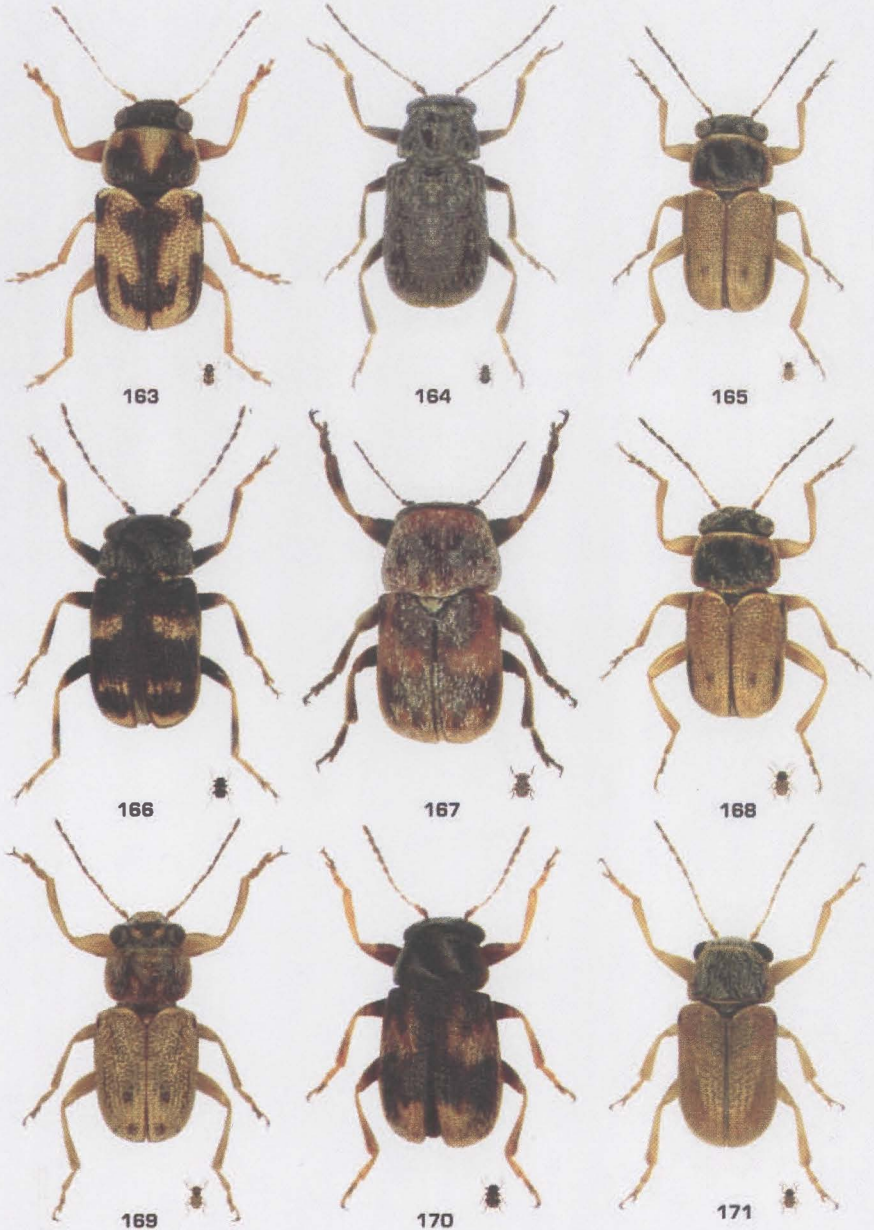


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Phot. 154-162. 154 - *Tituboea olivieri*, 155 - *T. laticollis*, 156 - *T. paykulli*, 157 - *T. biguttata* male, 158 - *T. biguttata* female, 159 - *T. fasciata*, 160 - *T. chobauti*, 161 - *T. reymondi*, 162 - *T. perrisi*.

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Plate XX



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Phot. 172-180 172 – *Acolastus hauseri*, 173 – *A. caroli*, 174 – *A. granulatus*, 175 – *A. denticulatus*, 176 – *A. zarudnyi* female, 177 – *A. zarudnyi* male, 178 – *A. pici*, 179 – *A. lugubris*, 180 – *A. hebraeus*.

Plate XXI



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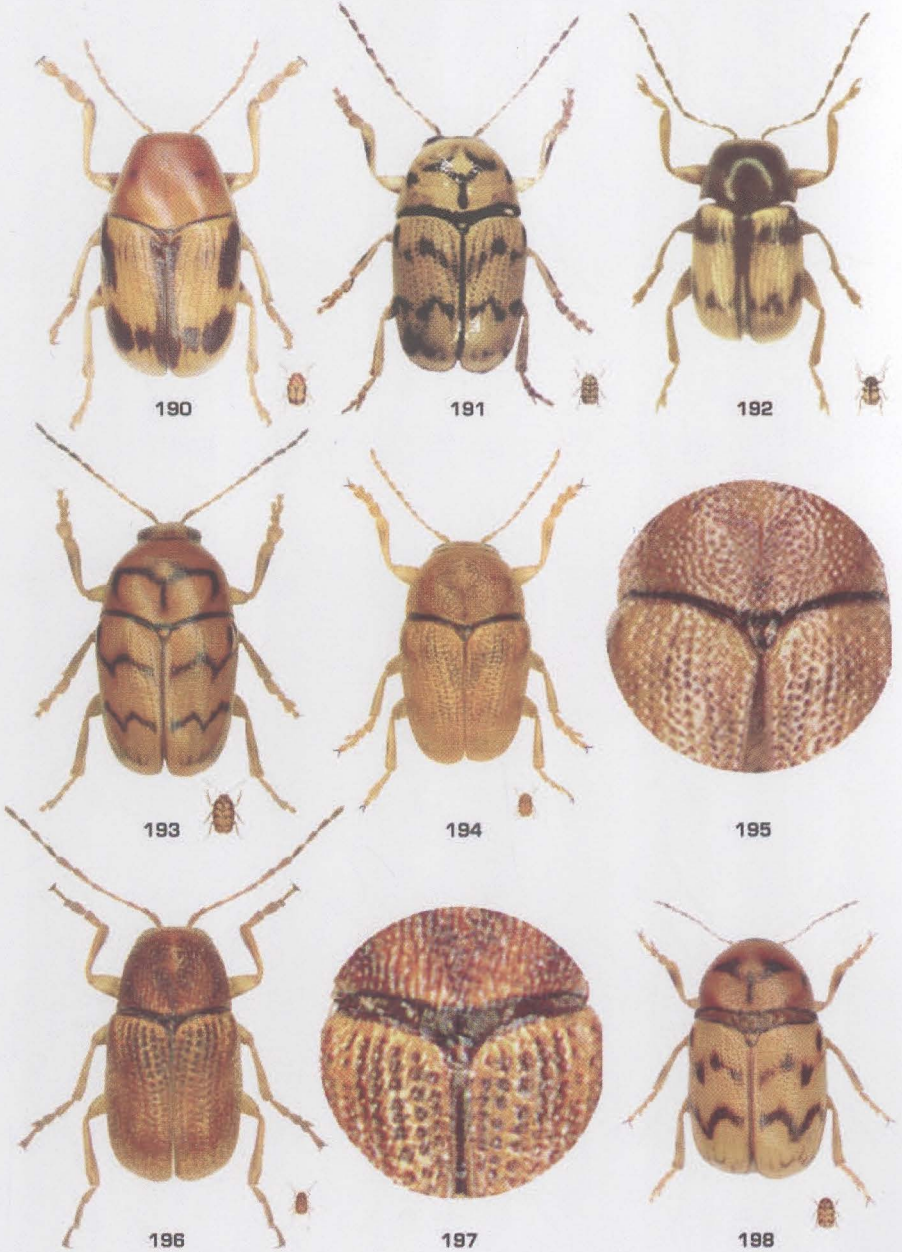
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Phot. 181-189. 181 – *Cryptocephalus (Asionus) apicalis*, 182 – *C. (A.) bivulneratus*, 183 – *C. (A.) cunctatus*, 184 – *C. (A.) dilectus*, 185 – *C. (A.) ergenensis*, 186 – *C. (A.) hirtipennis*, 187 – *C. (A.) lateralis*, 188 – *C. (A.) lemniscatus*, 189 – *C. (A.) sareptanus*.

Plate XXII



Phot. 190-198. 190 – *Cryptocephalus (Asionus) zarudnianus*, 191 – *C. (A.) fulgurans*, 192 – *C. (A.) mariaae*, 193 – *C. (A.) phaleratus*, 194 – *C. (A.) punctatissimus*, 195 – *C. (A.) punctatissimus sculpture*, 196 – *C. (A.) tamaricis*, 197 – *C. (A.) tamaricis sculpture*, 198 – *C. (A.) undulatus*.

Plate XXIII



Phot. 199-207. 199 – *Cryptocephalus (Asionus) augustalisi*, 200 – *C. (A.) koltzei*, 201 – *C. (A.) flexuosus*, 202 – *C. (A.) limbellus*, 203 – *C. (A.) pilosellus*, 204 – *C. (A.) zarudnyi*, 205 – *C. (A.) rubi* female, 206 – *C. (A.) rubi* male, 207 – *C. (A.) rubi* sculpture.

Plate XXIV



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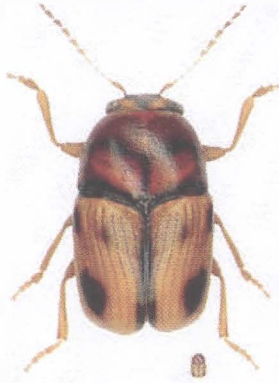


Phot. 208-216. 208 – *Cryptocephalus* (A.) *balaglossoi*, 209 – *C.* (A.) *richteri*, 210 – *C.* (A.) *iskanderi*, 211 – *C.* (A.) *volkovitshi*, 212 – *C.* (A.) *verae*, 213 – *C.* (A.) *globulus*, 214 – *C.* (A.) *curda*, 215 – *C.* (A.) *acupunctatus*, 216 – *C.* (A.) *irenae*.

Plate XXV



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218



219



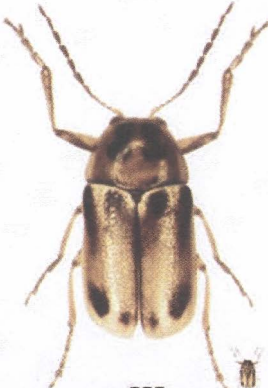
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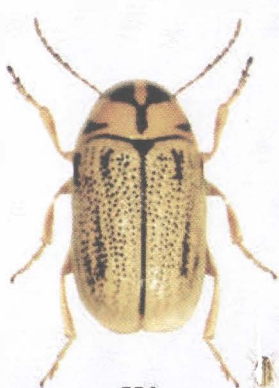
221



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225

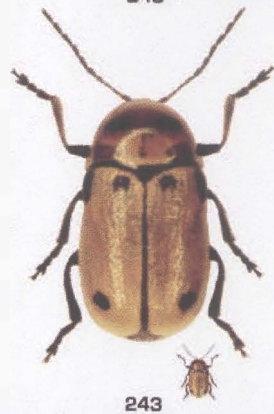
Phot. 217-225. 217 – *Cryptocephalus (Asionus) medvedevi*, 218 – *C. (A.) spurius*, 219 – *C. (A.) altaicus*, 220 – *C. (A.) bohemiensis*, 221 – *C. (A.) floralis*, 222 – *C. (A.) gamma*, 223 – *C. (A.) suffriani*, 224 – *C. (A.) ingamma*, 225 – *C. (A.) crux*.

Plate XXVI



Phot. 226-234. 226 – *Cryptocephalus* (A.) *halophilus*, 227 – *C. (A.) bidentulus*, 228 – *C. (A.) bidentulus*, 229 – *C. (A.) stackelbergi*, 230 – *C. (A.) coronatus*, 231 – *C. (A.) sarafschanensis*, 232 – *C. (A.) impressipygus*, 233 – *C. (A.) tappesi*, 234 – *C. (A.) 14-maculatus*.

Plate XXVII



Phot. 235-243. 235 – *Cryptocephalus (Asionus) flavicollis*, 236 – *C. (A.) arnoldii*, 237 – *C. (A.) stschukini*, 238 – *C. (A.) limoniastri*, 239 – *C. (A.) karakalensis*, 240 – *C. (A.) mnischechi*, 241 – *C. (A.) hamatus*, 242 – *C. (A.) pavlovskii*, 243 – *C. (A.) reitteri*.

Plate XXVIII



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Phot. 244-252. 244 – *Cryptocephalus (Burlinius) crenatus*, 245 – *C. (B.) nitidicollis*, 246 – *C. (B.) exiguus*, 247 – *C. (B.) bilineatus*, 248 – *C. (B.) elegantulus*, 249 – *C. (B.) moroderi*, 250 – *C. (B.) pygmaeus pygmaeus*, 251 – *C. (B.) pygmaeus vittula*, 252 – *C. (B.) fausti*.

Plate XXIX



253



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261

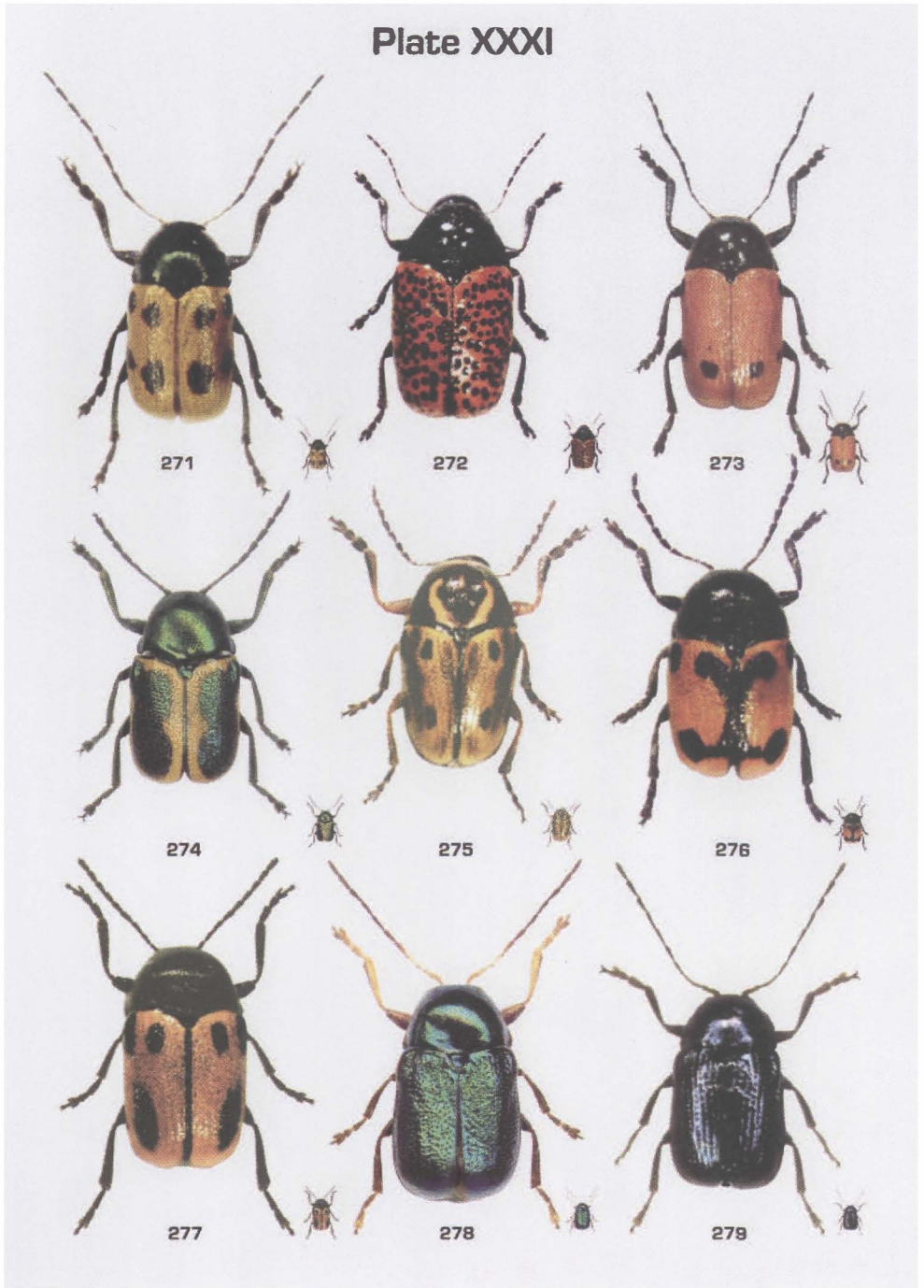
Phot. 253-261. 253 – *Cryptocephalus (Burlinius) tramuntanae*, 254 – *C. (B.) populi*, 255 – *C. (B.) fulvus*, 256 – *C. (B.) rufipes*, 257 – *C. (B.) discicollis*, 258 – *C. (B.) carpathicus*, 259 – *C. (B.) saucius*, 260 – *C. (B.) pallidocinctus*, 261 – *C. (B.) appositus*.

Plate XXX



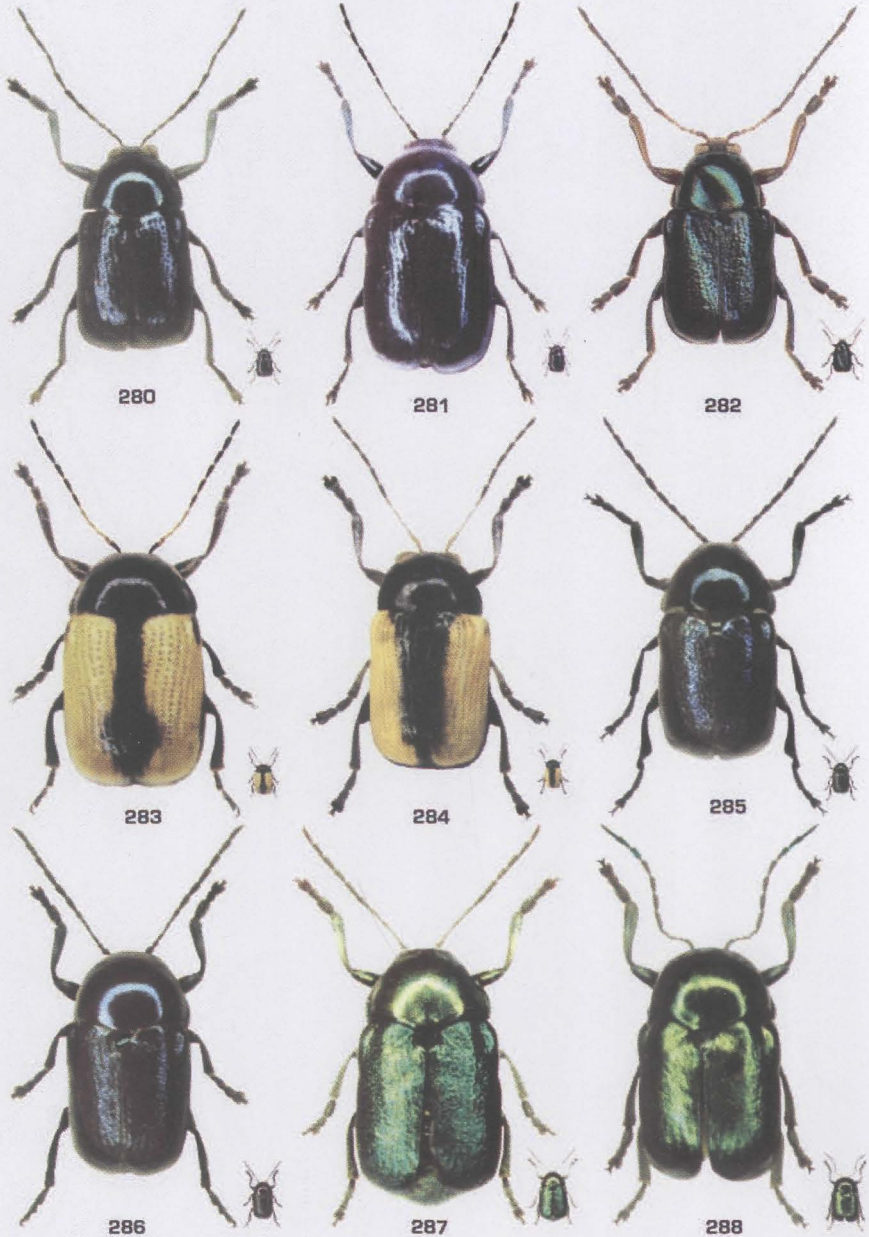
Phot. 262-270. 262 – *Cryptocephalus (Burlinius) chrysopus*, 263 – *C. (B.) katanus*, 264 – *C. (B.) polymorphus*, 265 – *C. (B.) connexus*, 266 – *C. (B.) jocularius*, 267 – *C. (B.) invisus*, 268 – *C. (B.) blanduloides*, 269 – *C. (B.) equiseti*, 270 – *C. (B.) pulchellus*.

Plate XXXI



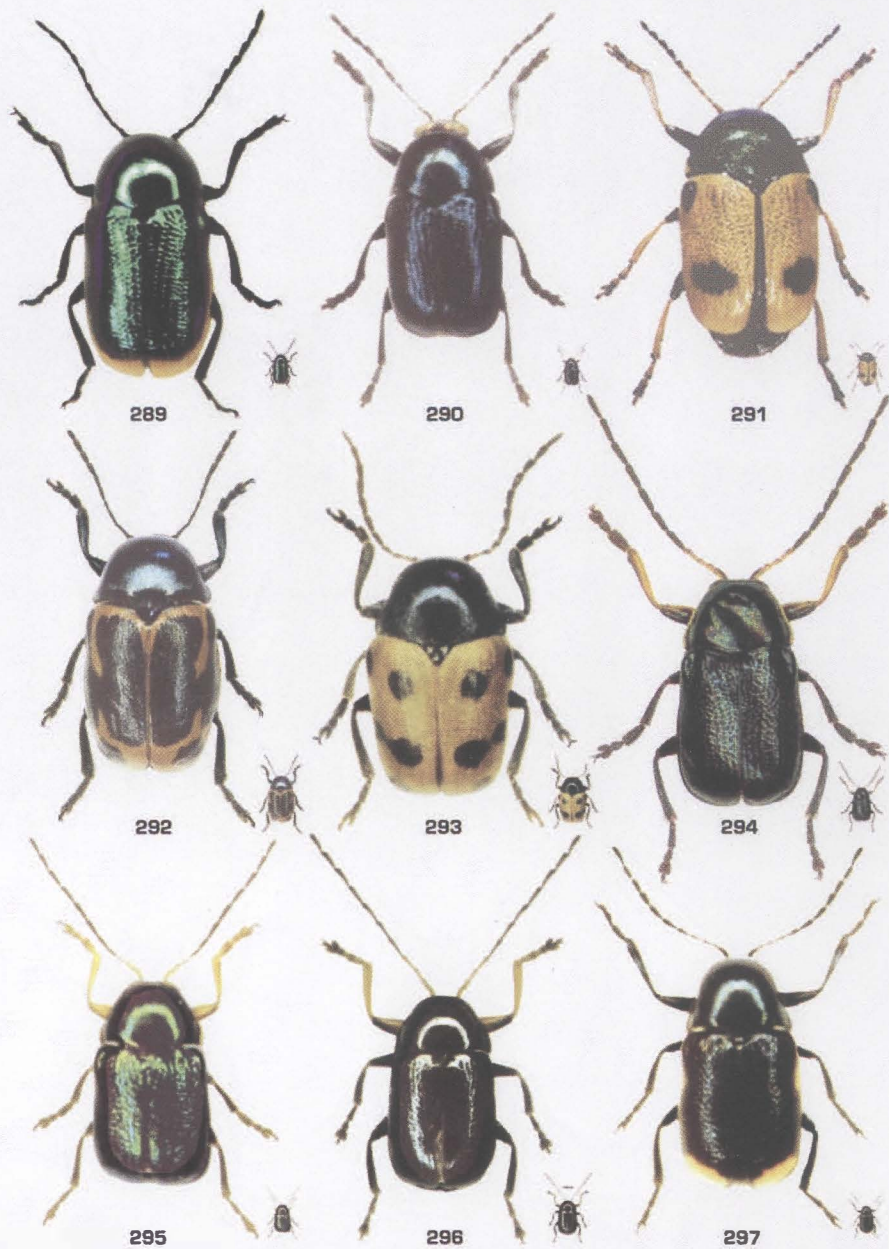
Phot. 271-279. 271 - *Cryptocephalus* (s. str.) *etruscus*, 272 - *C.* (s. str.) *cicatricosus*, 273 - *C.* (s. str.) *obliteratifer*, 274 - *C.* (s. str.) *regalis*, 275 - *C.* (s. str.) *muellerianus*, 276 - *C.* (s. str.) *baeticus*, 277 - *C.* (s. str.) *rugicollis*, 278 - *C.* (s. str.) *splendens*, 279 - *C.* (s. str.) *parvulus*.

Plate XXXII



Phot.280-288. 280 – *Cryptocephalus* (s. str.) *pelleti*, 281 – *C.* (s. str.) *androgyne*, 282 – *C.* (s. str.) *hyacinthinus*, 283 – *C.* (s. str.) *marginatus*, 284 – *C.* (s. str.) *bicolor*, 285 – *C.* (s. str.) *tibialis*, 286 – *C.* (s. str.) *violaceus*, 288 – *C.* (s. str.) *sericeus*, 288 – *C.* (s. str.) *globoicollis*.

Plate XXXIII



Phot. 289-297. 289 - *Cryptocephalus* (s. str.) *ramburii*, 290 - *C.* (s. str.) *janthinus*, 291 - *C.* (s. str.) *laetus*, 292 - *C.* (s. str.) *perrisi*, 293 - *C.* (s. str.) *pexicollis*, 294 - *C.* (s. str.) *coerulans*, 295 - *C.* (s. str.) *nitidulus*, 296 - *C.* (s. str.) *nitidus*, 297 - *C.* (s. str.) *tetraspilus*.

Plate XXXIV



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Phot. 298-306. 298 - *Cryptocephalus* (s. str.) *ochroloma*, 299 - *C.* (s. str.) *biguttulus*, 300 - *C.* (s. str.) *eous*, 301 - *C.* (s. str.) *kulibini*, 302 - *C.* (s. str.) *marginellus*, 303 - *C.* (s. str.) *iguttatus*, 304 - *C.* (s. str.) *sexpustulatus*, 305 - *C.* (s. str.) *vittatus*, 306 - *C.* (s. str.) *bipunctatus*.

Plate XXXV



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Phot. 307-315. 307 – *Cryptocephalus* (s. str.) *trimaculatus*, 308 – *C.* (s. str.) *imperialis*, 309 – *C.* (s. str.) *crassus*, 310 – *C.* (s. str.) *vouauxi*, 311 – *C.* (s. str.) *octacosmus*, 312 – *C.* (s. str.) *perelegans*, 313 – *C.* (s. str.) *tataricus* 1, 314 – *C.* (s. str.) *tataricus* 2, 315 – *C.* (s. str.) *elatus*.

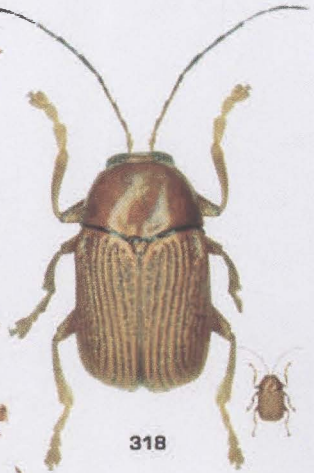
Plate XXXVI



316



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Phot. 316-324. 316 – *Cryptocephalus* (s. str.) *pominatorum*, 317 – *C.* (s. str.) *xanthus*, 318 – *C.* (s. str.) *bodungeni*, 319 – *C.* (s. str.) *scitulus*, 320 – *C.* (s. str.) *mayeti*, 321 – *C.* (s. str.) *rufofasciatus*, 322 – *C.* (s. str.) *semiargenteus*, 323 – *C.* (s. str.) *yemenicus*, 324 – *C.* (s. str.) *sulphureus*.

Plate XXXVII



325



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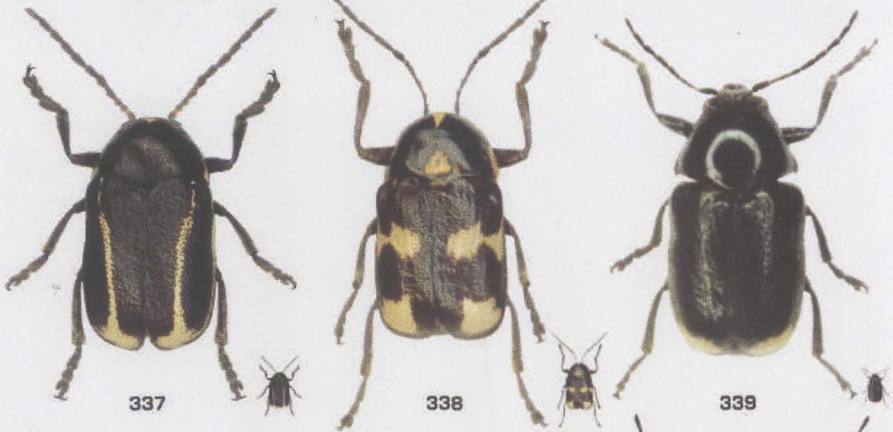
332



333

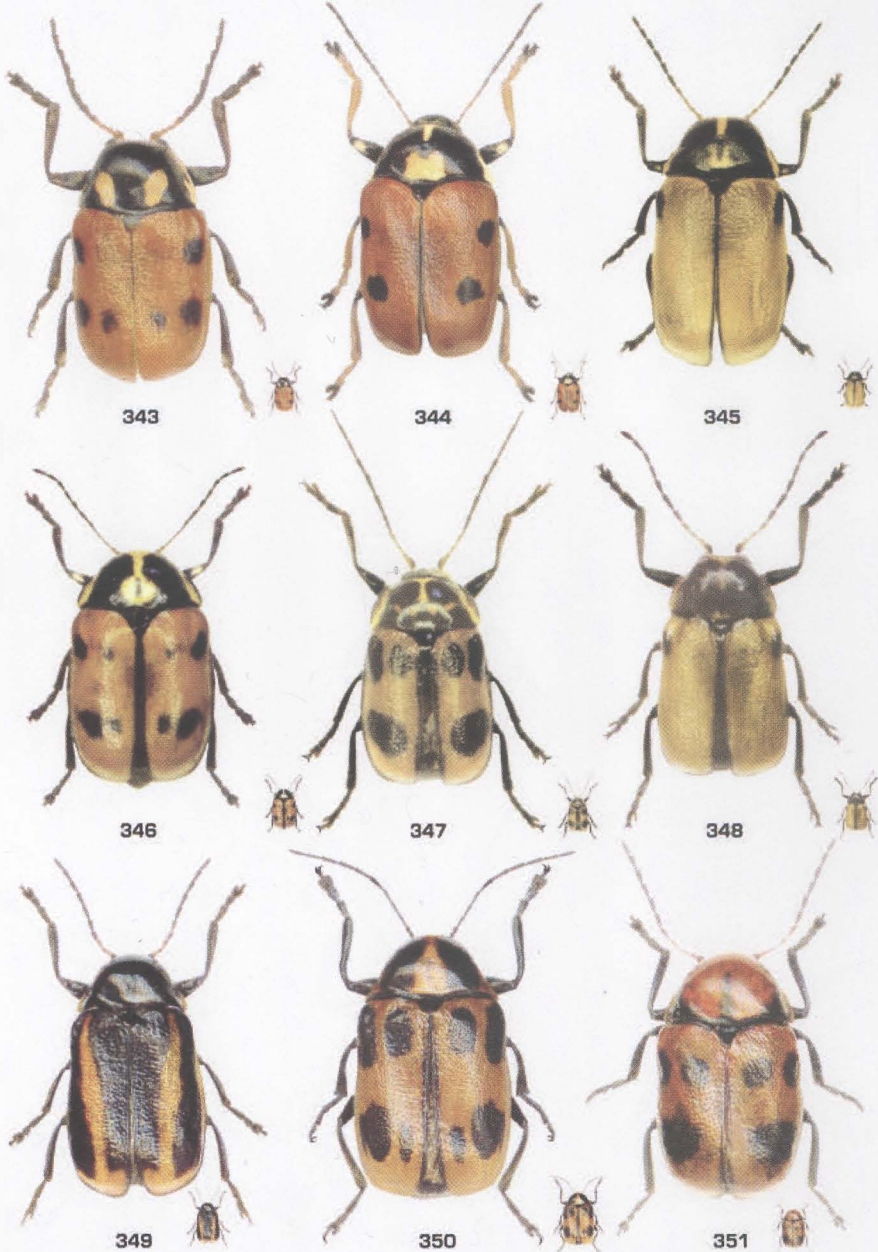
Phot. 325-333. 325 - *Cryptocephalus* (s. str.) *lineellus*, 326 - *C.* (s. str.) *celtibericus*, 327 - *C.* (s. str.) *spilothorax*, 328 - *C.* (s. str.) *moraei*, 329 - *C.* (s. str.) *octoguttatus*, 330 - *C.* (s. str.) *espanoli*, 331 - *C.* (s. str.) *decemmaculatus*, 332 - *C.* (s. str.) *frenatus*, 333 - *C.* (s. str.) *curtissimus*.

Plate XXXVIII



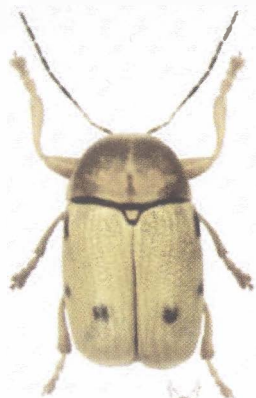
Phot. 334-342. 334 – *Cryptocephalus* (s. str.) *trifasciatus*, 335 – *Cryptocephalus* (s. str.) *triangularis*, 336 – *Cryptocephalus* (s. str.) *tetradecaspilotus*, 337 – *Cryptocephalus* (s. str.) *albolineatus*, 338 – *Cryptocephalus* (s. str.) *mannerheimii*, 339 – *Cryptocephalus* (s. str.) *quadripustulatus*, 340 – *Cryptocephalus* (s. str.) *atrifrons*, 341 – *Cryptocephalus* (s. str.) *peyronei*, 342 – *Cryptocephalus* (s. str.) *flavipes*.

Plate XXXIX

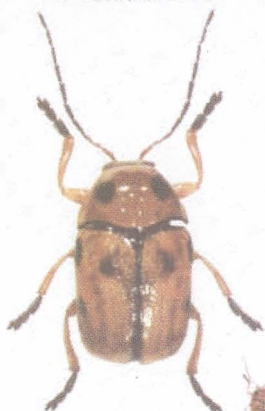


Phot. 343-351. 343 – *Cryptocephalus* (s. str.) *pustulipes*, 344 – *Cryptocephalus* (s. str.) *cordiger*, 345 – *Cryptocephalus* (s. str.) *variegatus*, 346 – *Cryptocephalus* (s. str.) *octopunctatus*, 347 – *Cryptocephalus* (s. str.) *sexpunctatus*, 348 – *Cryptocephalus* (s. str.) *distinguendus*, 349 – *Cryptocephalus* (s. str.) *kru-tovskyyi*, 350 – *Cryptocephalus* (s. str.) *peliopterus*, 351 – *Cryptocephalus* (s. str.) *mutiplex*.

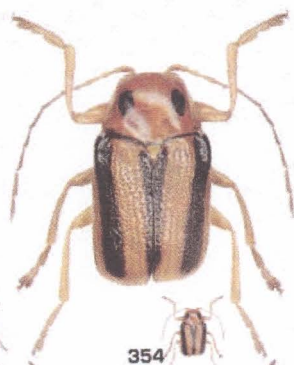
Plate XL



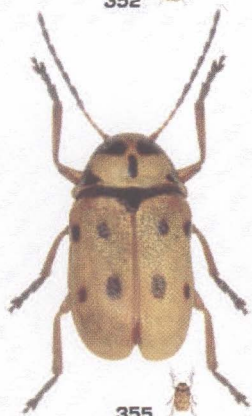
352



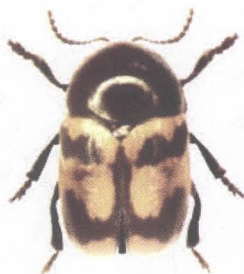
353



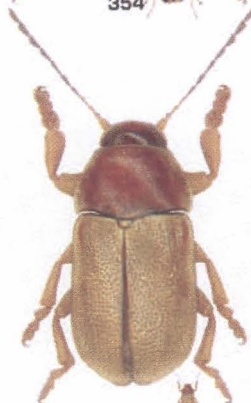
354



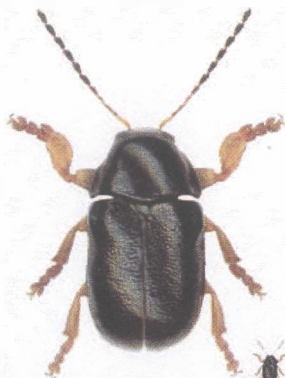
355



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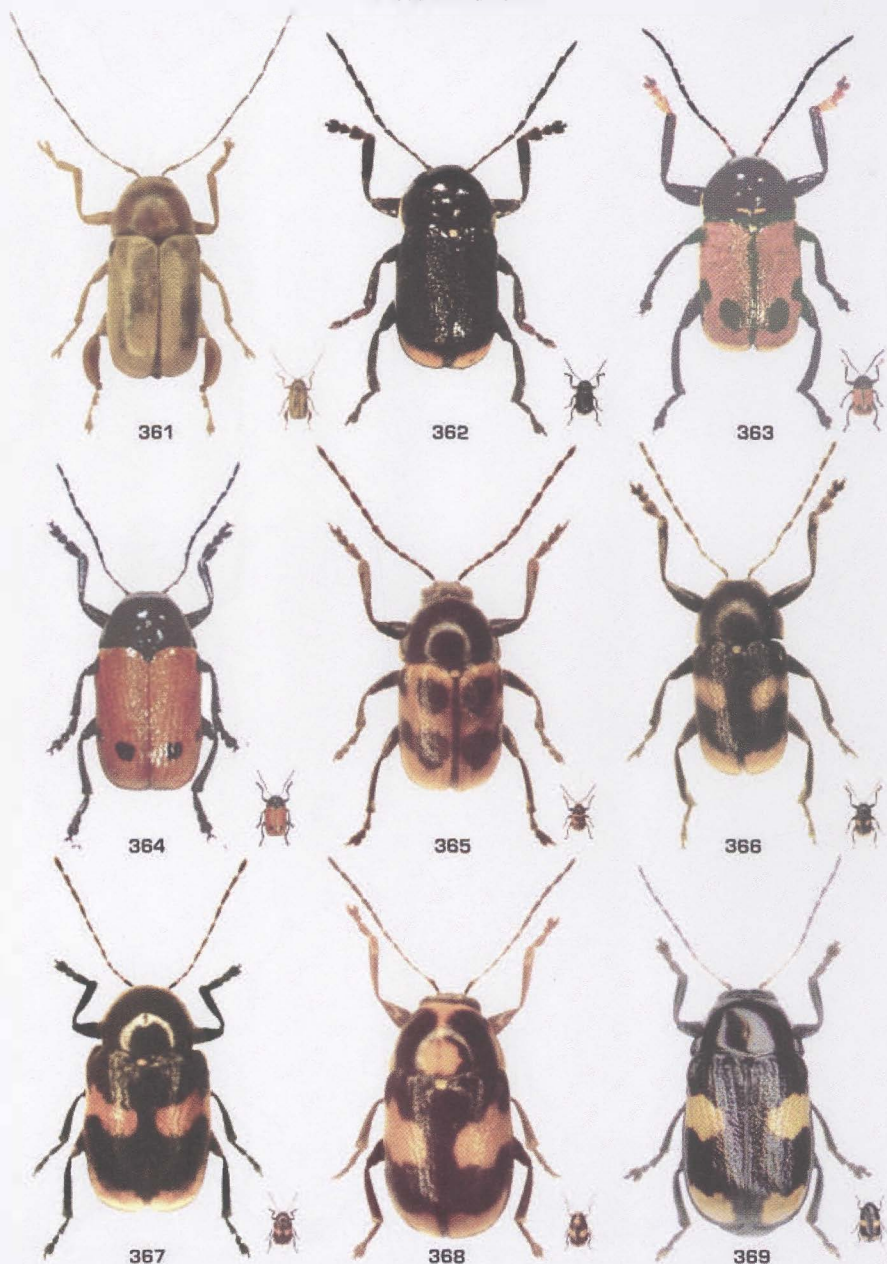


360



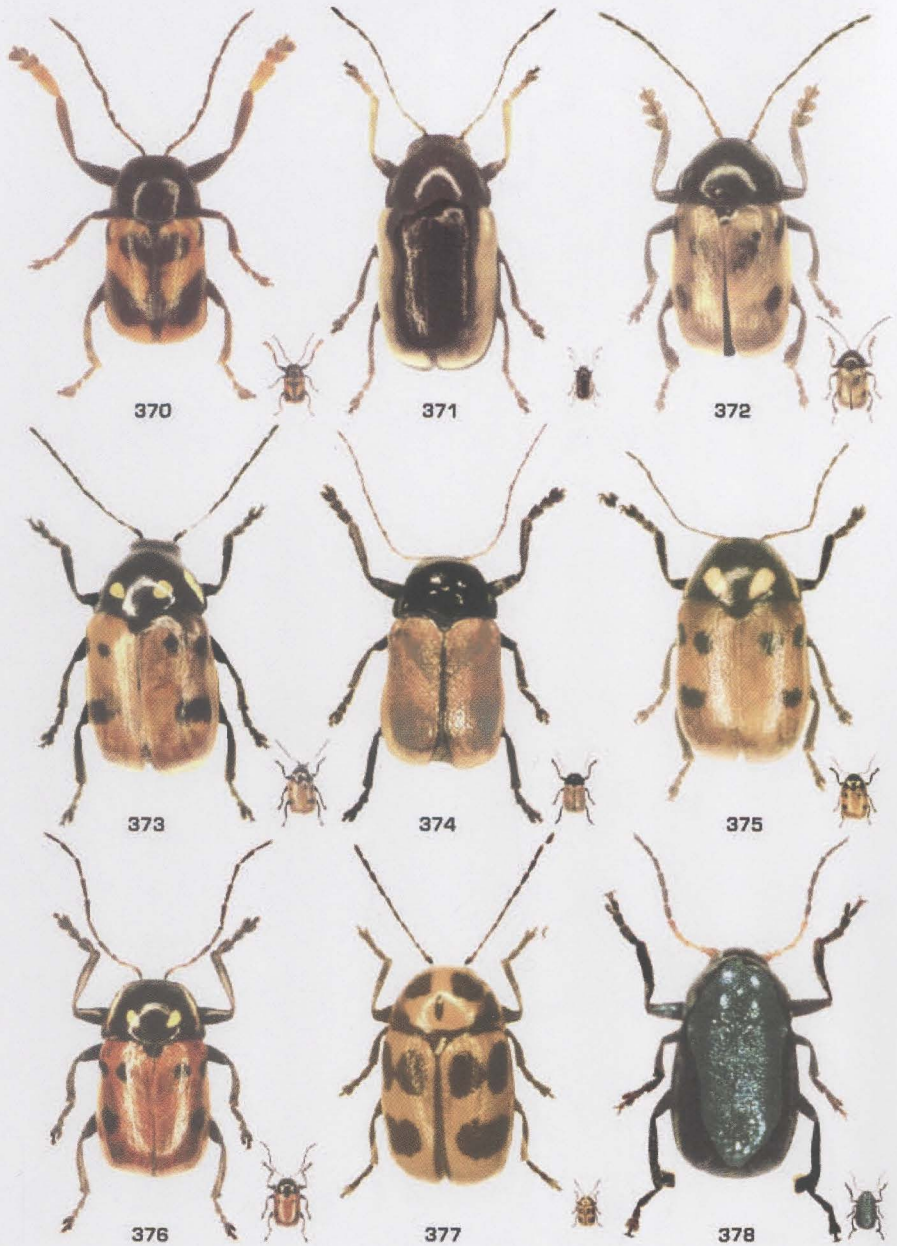
Phot. 352-360. 352 – *Cryptocephalus* (s. str.) *octomaculatus*, 353 – *C.* (s. str.) *cynarae*, 354 – *C.* (s. str.) *oxysternus*, 355 – *C.* (s. str.) *luridipennis*, 356 – *C.* (*Cerodens*) *emiliae*, 357 – *C.* (*Disopus*) *pini*, 358 – *C.* (*Disopus*) *difformis*, 359 – *C.* (*Heterichnus*) *macrodactylus*, 360 – *C.* (*Heterichnus*) *siedei*.

Plate XLI



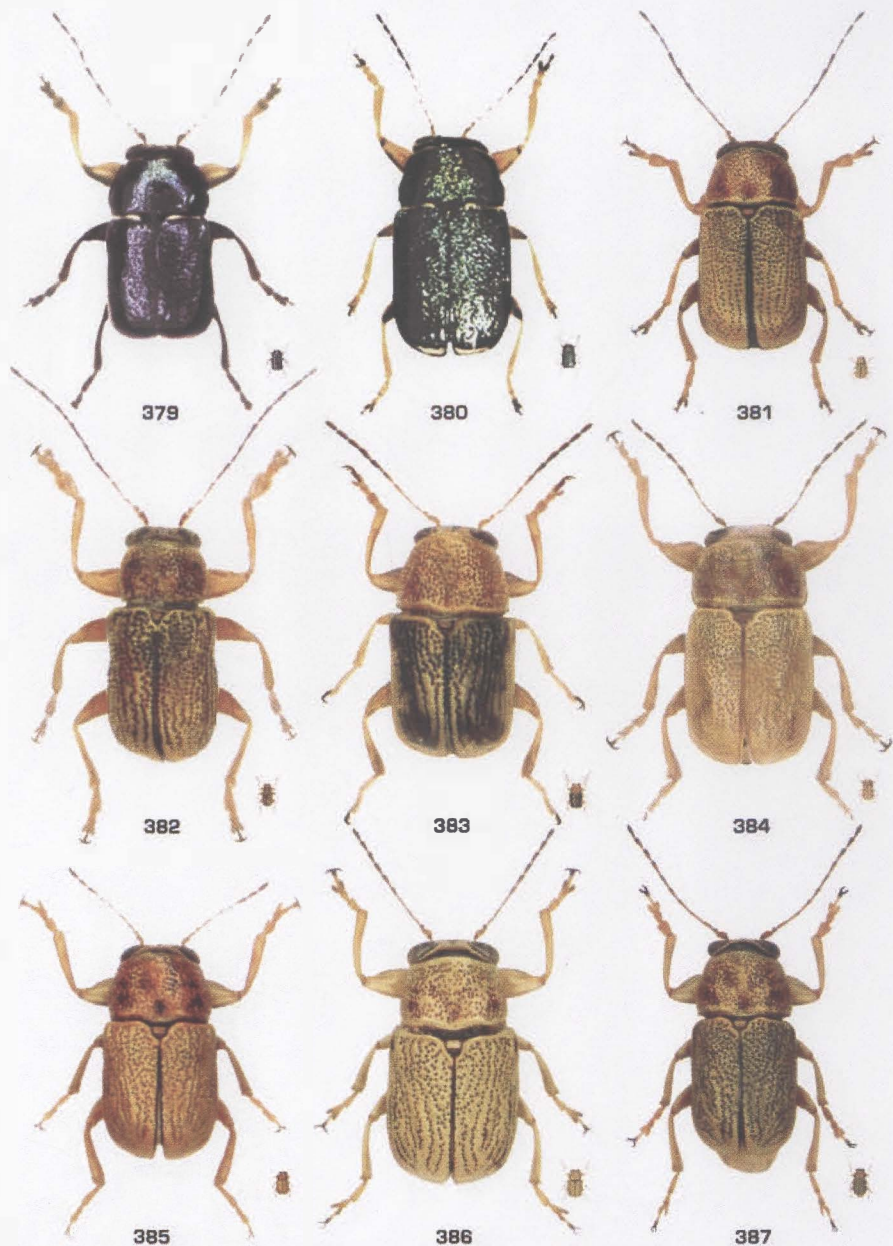
Phot. 361-369. 361 – *Cryptocephalus (Heterichnus) podager*, 362 – *C. (H.) pseudolusitanicus*, 363 – *C. (H.) lividimanus*, 364 – *C. (H.) lusitanicus*, 365 – *C. (H.) quadripunctatus*, 366 – *C. (H.) excisus*, 367 – *C. (H.) carinthiacus*, 368 – *C. (H.) floribundus*, 369 – *C. (H.) nobilis*.

Plate XLII



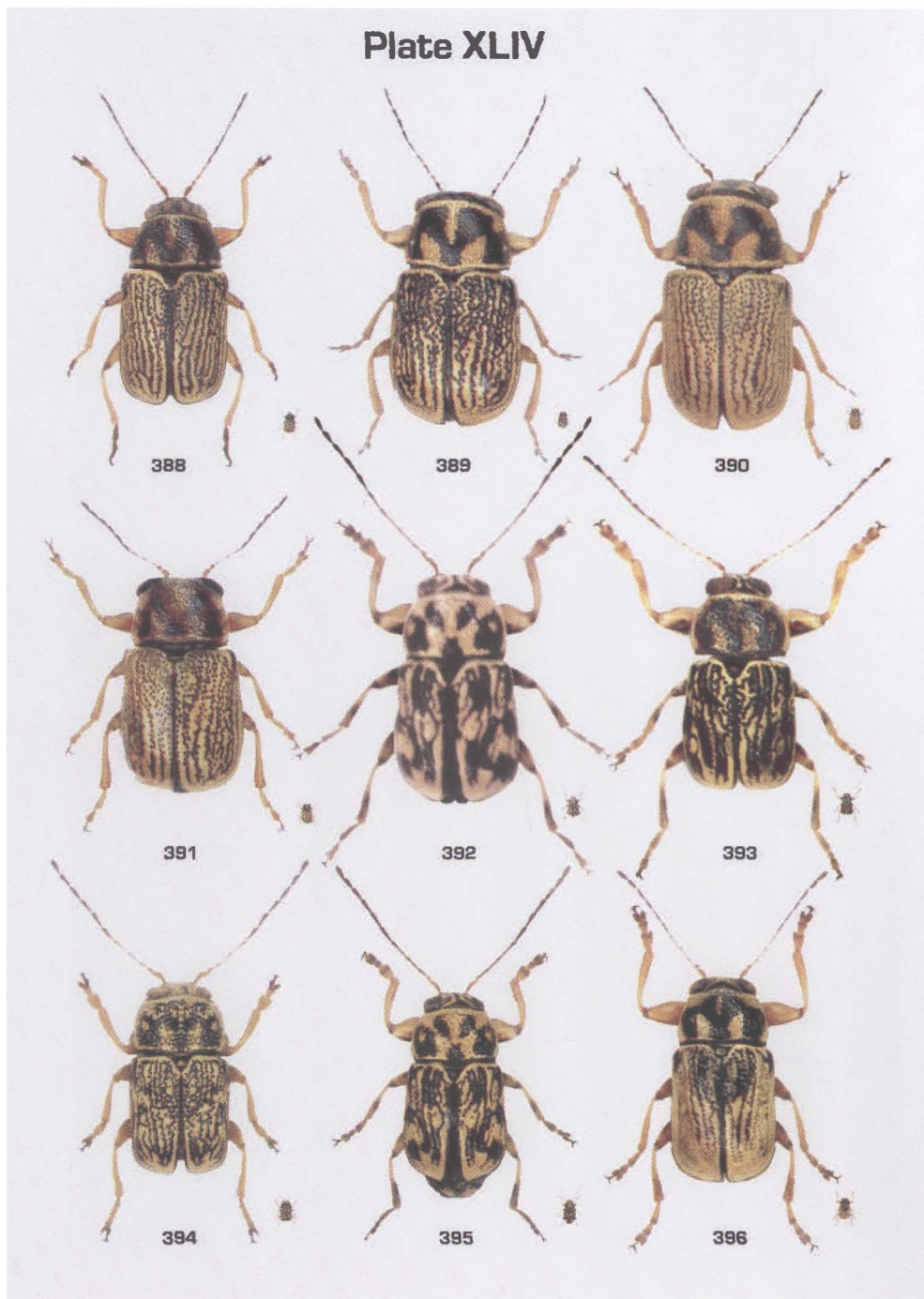
Phot. 370-378. 370 - *Cryptoceryle* (*H.*) *tarsalis*, 371 - *C. (H.) stragula*, 372 - *C. (H.) loreyi*, 373 - *C. (H.) informis*, 374 - *C. (H.) coryli*, 375 - *C. (H.) tricolor*, 377 - *C. (H.) prusias*, 377 - *C. (Lamellosus) laevicollis*, 378 - *C. (Protophysus) schaefferi*.

Plate XLIII



Phot. 379-387. 379 - *Pachybrachis (Chloropachys) azureus*, 380 - *P. (C.) elegans*, 381 - *P. (s. str.) anoguttatus*, 382 - *P. (s. str.) testaceus*, 383 - *P. (s. str.) glycirrhizae*, 384 - *P. (s. str.) vermicularis*, 385 - *P. (s. str.) curtipennis*, 386 - *P. (s. str.) nigropunctatus*, 387 - *P. (s. str.) pistor*.

Plate XLIV



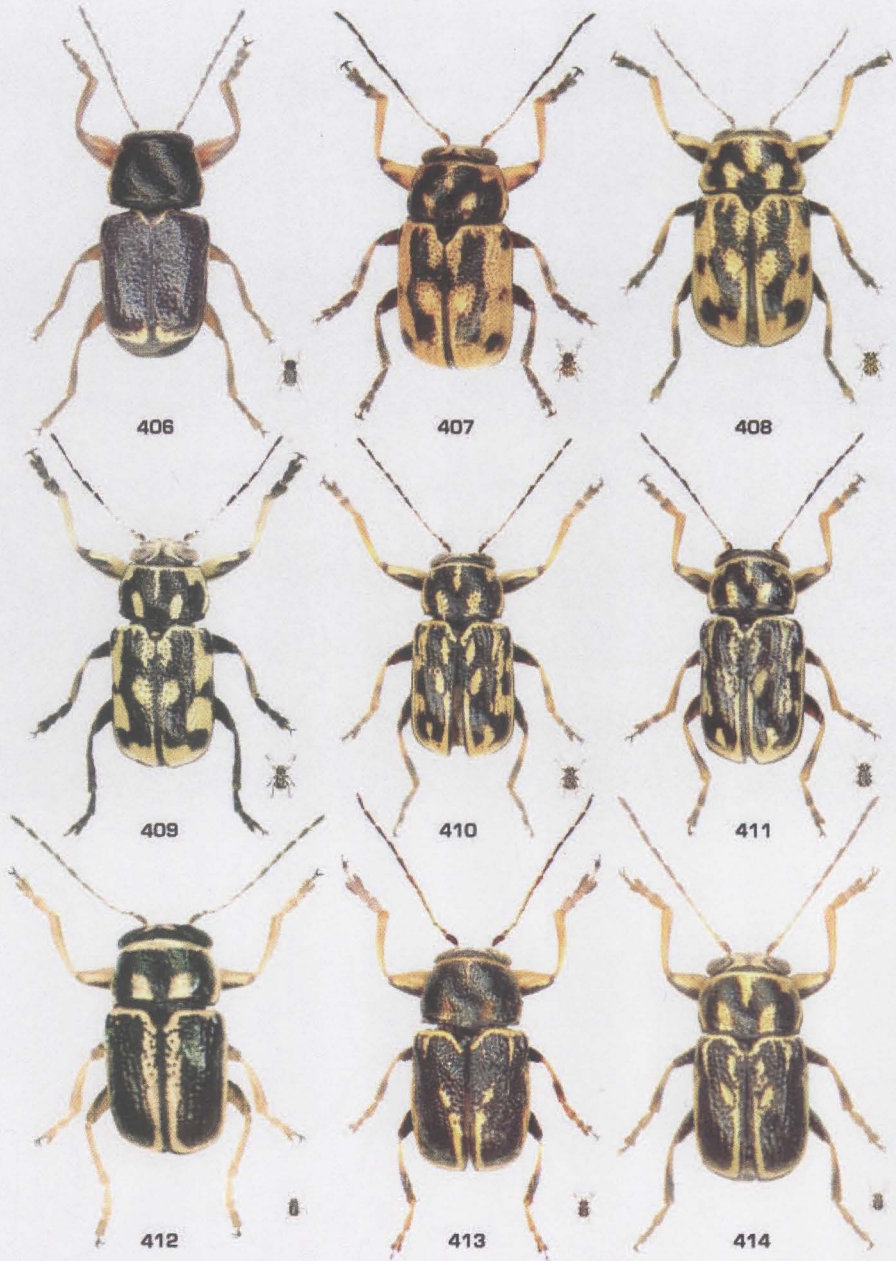
Phot. 388-396. 388 - *Pachybrachis (s. str.) lineolatus*, 389 - *P. (s. str.) pradensis*, 390 - *P. (s. str.) simius*, 391 - *P. (s. str.) mongolensis*, 392 - *P. (s. str.) excisus*, 393 - *P. (s. str.) flexuosus*, 394 - *P. (s. str.) jordanicus*, 395 - *P. (s. str.) creticus*, 396 - *P. (s. str.) pallidulus*.

Plate XLV



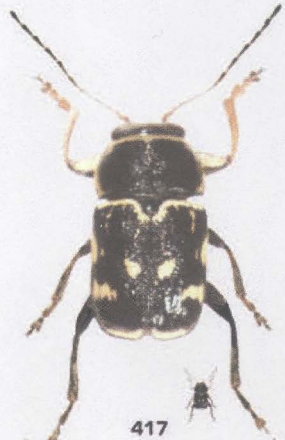
Phot. 397-407. 397 - *Pachybrachis* (s. str.) *scripticollis*, 398 - *P.* (s. str.) *catalonicus*, 399 - *P.* (s. str.) *albicans*, 400 - *P.* (s. str.) *pteromelas*, 401 - *P.* (s. str.) *hieroglyphicus*, 402 - *P.* (s. str.) *kraatzi*, 403 - *P.* (s. str.) *jacobsoni*, 404 - *P.* (s. str.) *eruditus*, 405 - *P.* (s. str.) *lopatini*.

Plate XLVI



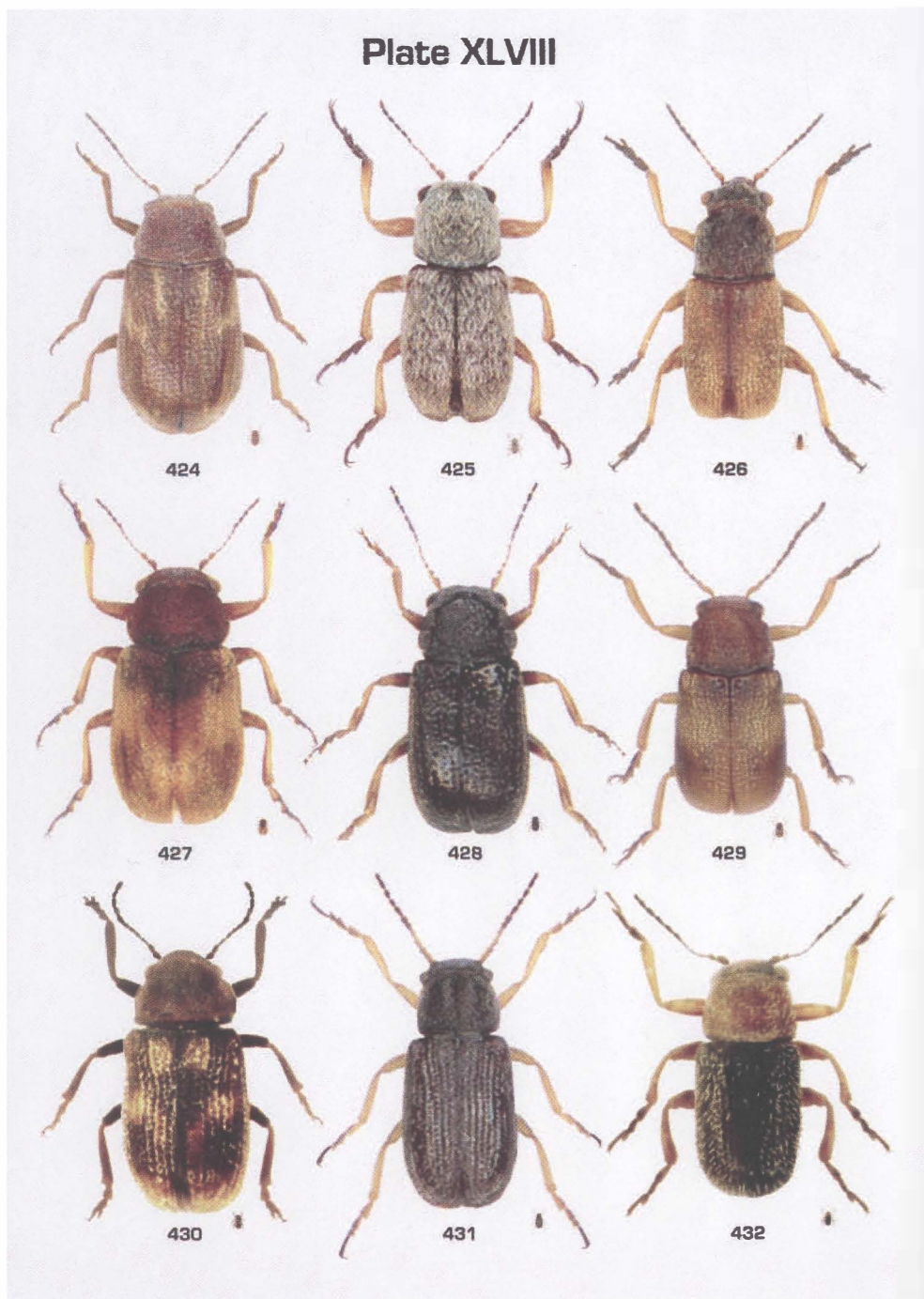
Phot. 406-414. 406 - *Pachybrachis* (s. str.) *terminalis*, 407 - *P.* (s. str.) *bodemeyeri*, 408 - *P.* (s. str.) *sinuatus*, 409 - *P.* (s. str.) *velarum*, 410 - *P.* (s. str.) *hippophaes*, 411 - *P.* (s. str.) *alpinus*, 412 - *P.* (s. str.) *cinctus*, 413 - *P.* (s. str.) *danieli*, 414 - *P.* (s. str.) *fimbriolatus*.

Plate XLVII



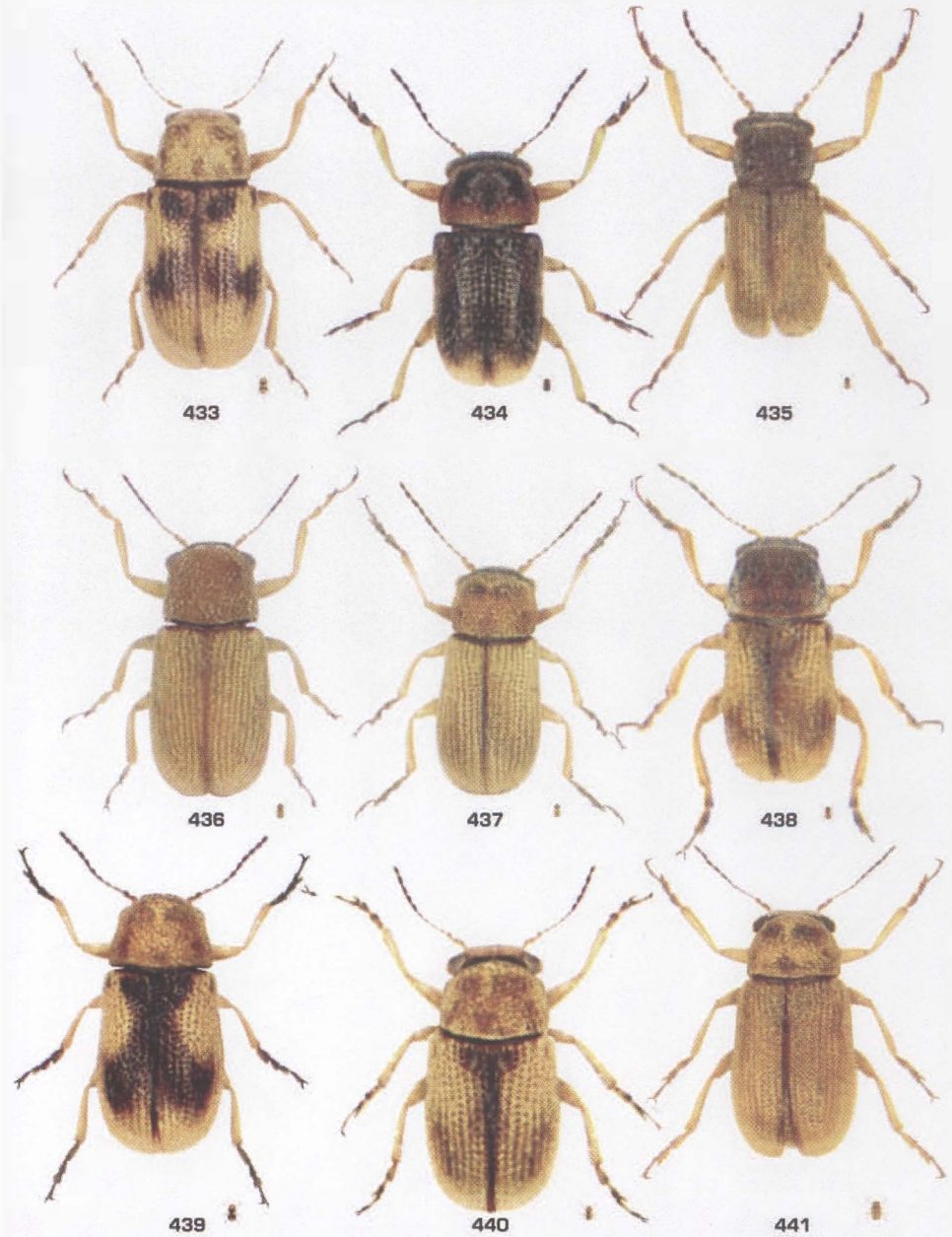
Phot. 415-423. 415 – *Pachybrachis* (s. str.) *merkensis*, 416 – *P.* (s. str.) *atraphaxidis*, 417 – *P.* (s. str.) *mardinensis*, 418 – *P.* (s. str.) *limbatus*, 419 – *P.* (s. str.) *tessellatus*, 420 – *P.* (s. str.) *exclusus*, 421 – *P.* (s. str.) *fulvipes*, 422 – *P.* (s. str.) *tuvensis*, 423 – *P.* (s. str.) *sericans*.

Plate XLVIII



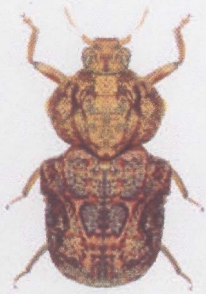
Phot. 424-432. 424 - *Stylosomus (Microsomus) costatus*, 425 - *S. (Microsomus) major*, 426 - *S. (Microsomus) cylindricus*, 427 - *S. (Microsomus) weberi*, 428 - *S. (Microstilus) ater*, 429 - *S. (Microstilus) tadzhicus*, 430 - *S. (Microstilus) ericeti*, 431 - *S. (Microstilus) submetallicus*, 432 - *S. (Microstilus) bipartitus*.

Plate XLIX



Phot. 433-441. 433 - *Stylosomus* (s. str.) *biskrensis*, 434 - *S.* (s. str.) *arnoldi*, 435 - *S.* (s. str.) *macer*,
436 - *S.* (s. str.) *nigrifrons*, 437 - *S.* (s. str.) *flavus*, 438 - *S.* (s. str.) *corsicus*, 439 - *S.* (s. str.) *x-signum*,
440 - *S.* (s. str.) *tamarisci*, 441 - *S.* (s. str.) *fausti*.

Plate L



442



443



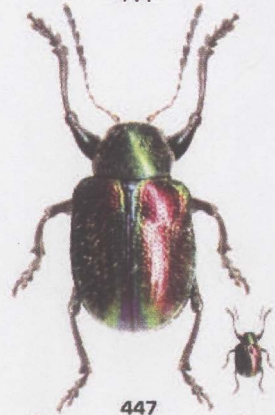
444



445



446



447



448



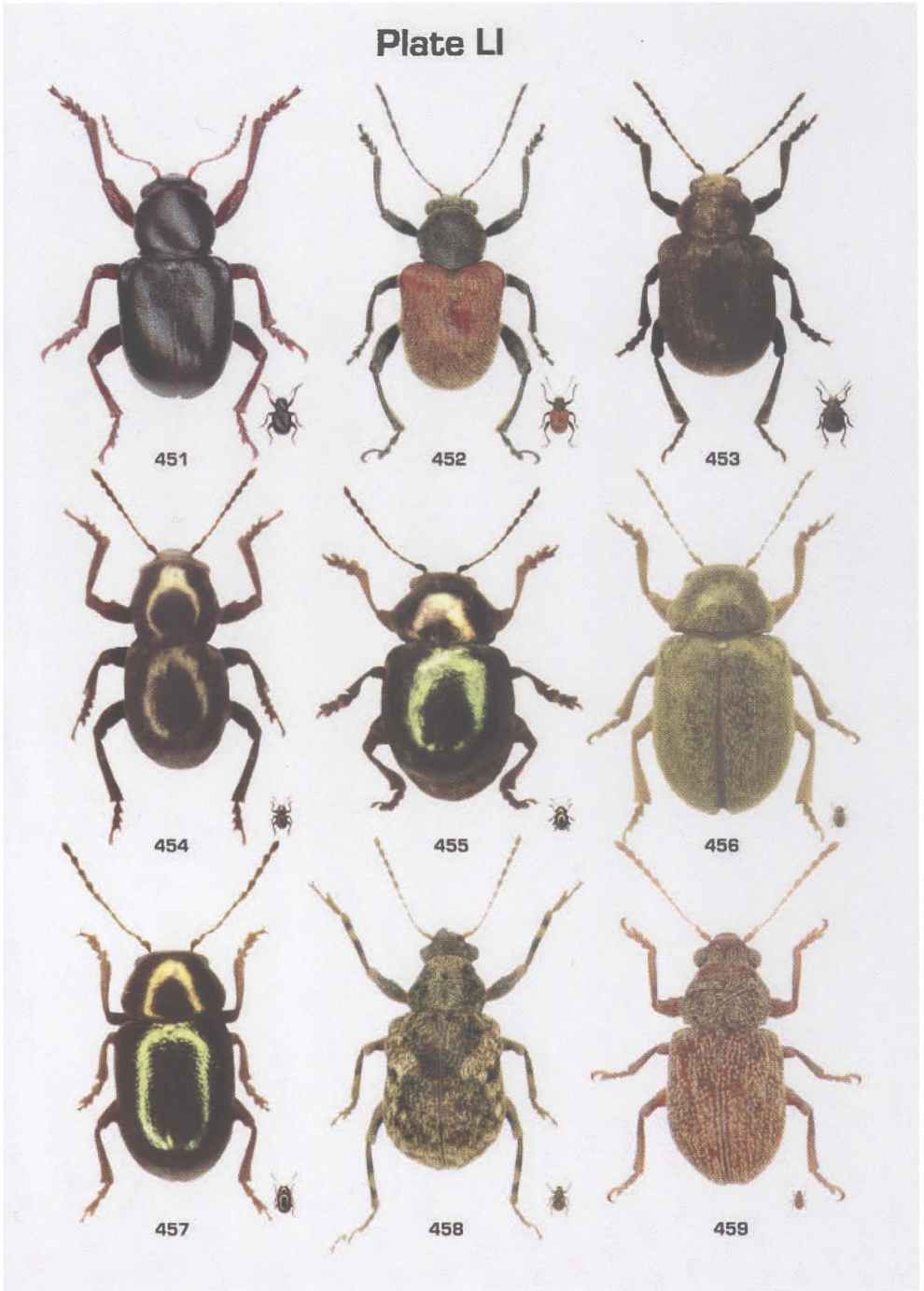
449



450

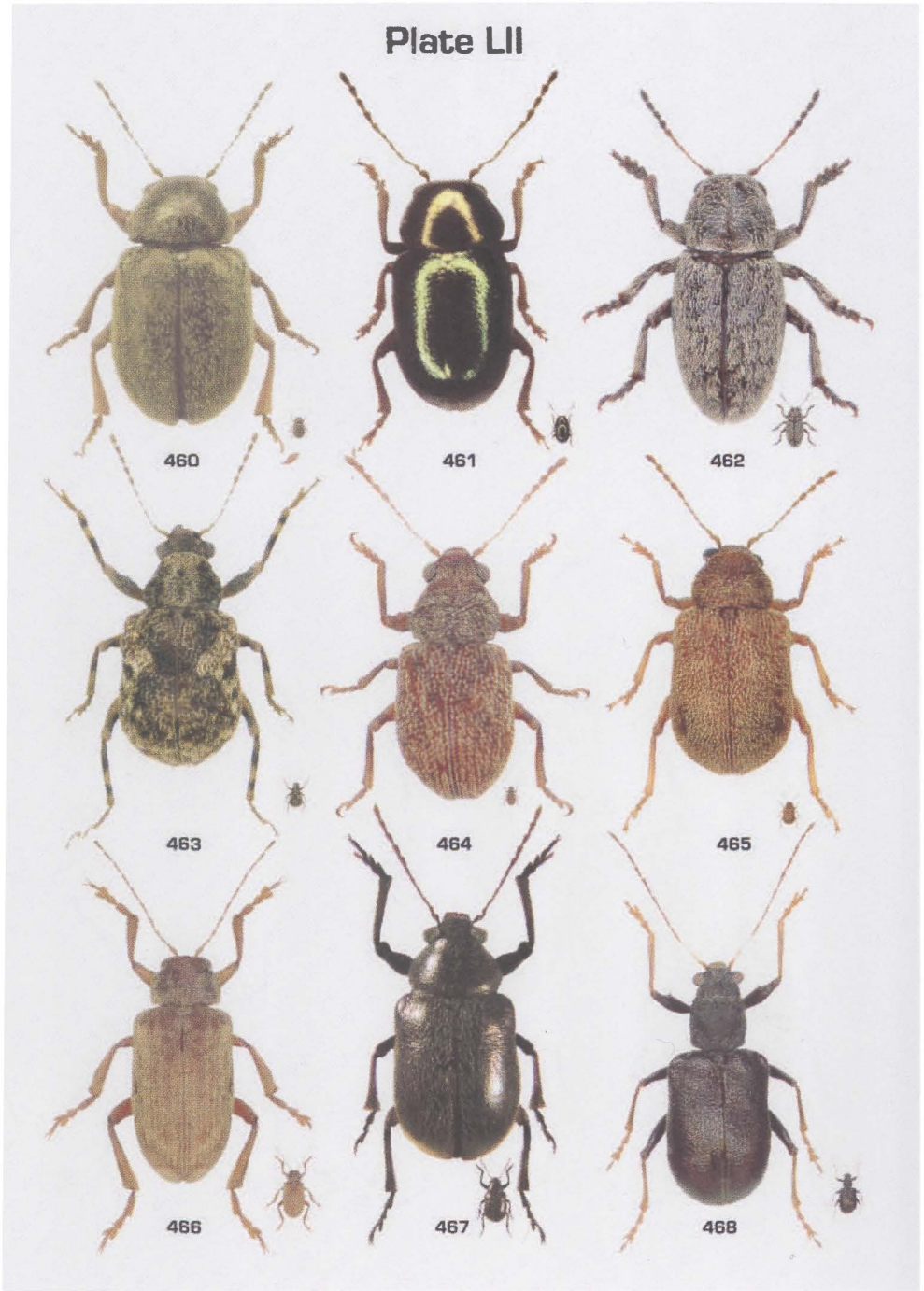
Phot. 442-450. 442 - *Chlamisus japonicus*, 443 - *C. pubiceps*, 444 - *Oomorplus concolor*, 445 - *Syneta adamsi*, 446 - *S. betulae*, 447 - *Acrothinius gaschkevitschii*, 448 - *Adoxinia spinipes*, 449 - *Andosia reitteri*, 450 - *Andosiomorpha argentata*.

Plate LI



Phot. 451-459. 451 – *Anidania luctuosa*, 452 – *Aoria scutellaris*, 453 – *Bromius obscurus*, 454 – *Aphile-
nia hauseri*, 455 – *A. ornata*, 456 – *Atomyria sarafschanica*, 457 – *Callipta oberthuri*, 458 – *C. fausti*,
459 – *Colaspidea grossa*.

Plate LII



Phot. 460-468. 460 – *Colaspina saportae*, 461 – *Colaspinella grandis*, 462 – *Damasus albicans*, 463 – *Demotinafasciculata*, 464 – *D. elegans*, 465 – *D. squamosa*, 466 – *Dermestops ahngerii*, 467 – *Iranomolpus tenebrosus*, 468 – *Lypsthes ater*.

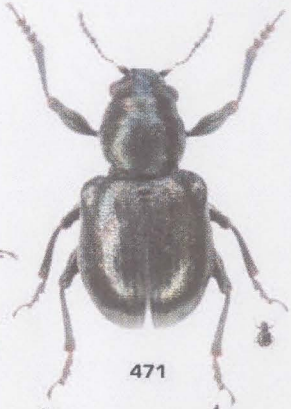
Plate LIII



469



470



471



472



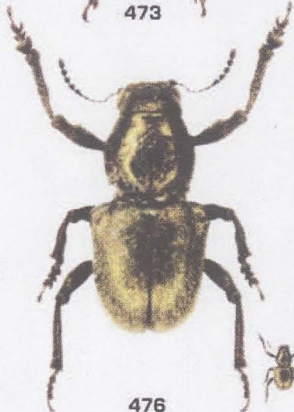
473



474



475



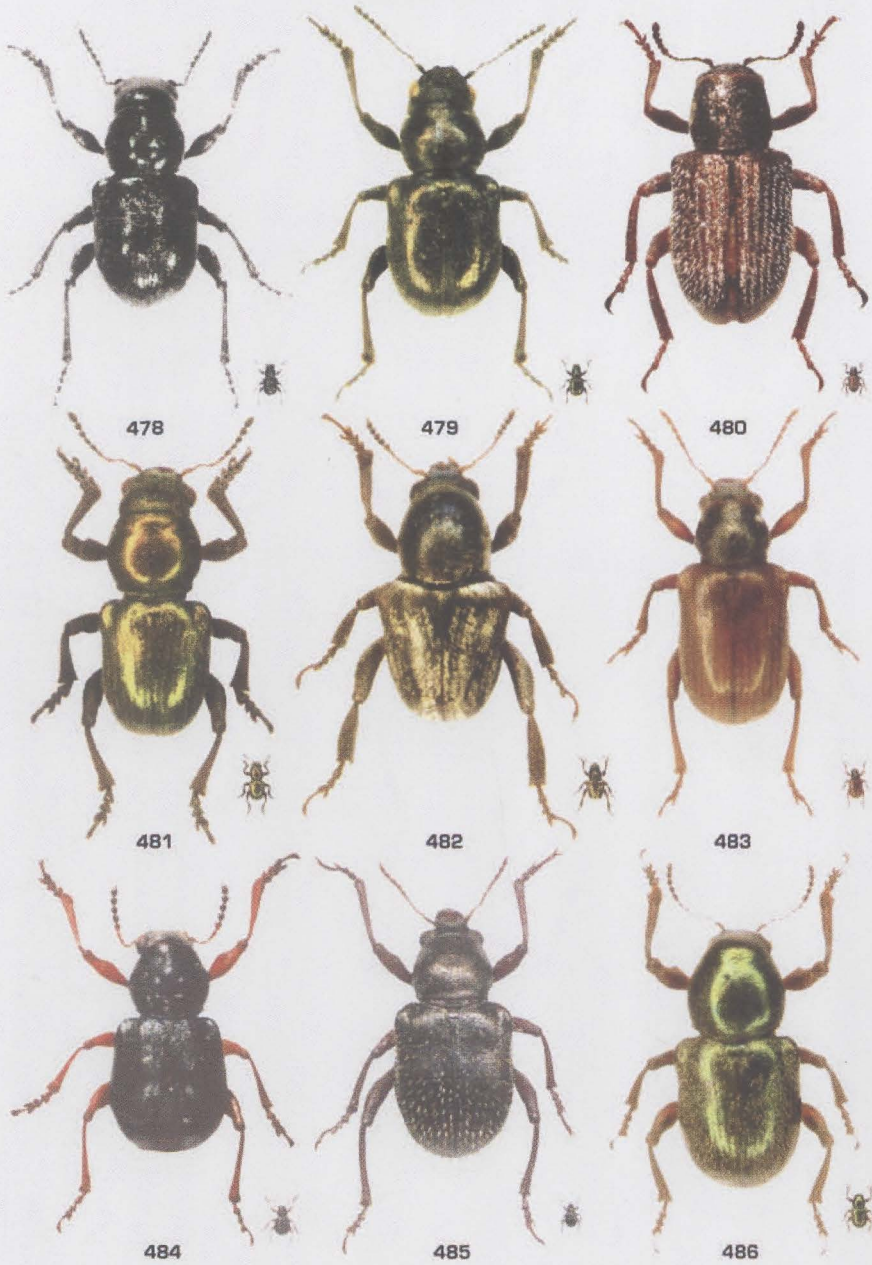
476



477

Phot. 469-477. 469 - *Lypesthes fulvus*, 470 - *L. japonicus*, 471 - *Macrocoma obscuripes*, 472 - *M. latifrons*, 473 - *M. cylindrica*, 474 - *M. crassipes*, 475 - *M. djurdjurenensis*, 476 - *M. henoni*, 477 - *M. saharica*.

Plate LIV



Phot. 478-486. 478 – *Macrocoma heydeni*, 479 – *M. bolivari*, 480 – *M. seriesericans*, 481 – *M. setosa*, 482 – *M. lefevrei*, 483 – *M. hormuziaca*, 484 – *M. korbi*, 485 – *M. sarvadensis*, 486 – *M. brunnipipes*.

Plate LV



Phot. 487-495. 487 – *Macrocoma delagrangei*, 488 – *M. rubripes*, 489 – *Malegia colchica*, 490 – *M. turkestanica*, 491 – *Pachnephoptrus weisei*, 492 – *Pachnephorus robustus*, 493 – *P. pilosus*, 494 – *P. brunneus*, 495 – *P. lewisii*.

Plate LVI



496



497



498



499



500



501



502



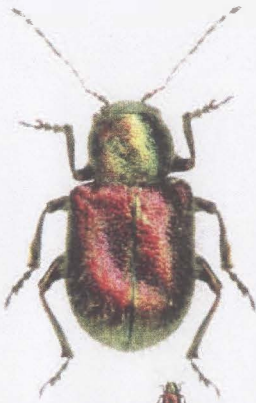
503



504

Phot. 496-504. 496 - *Pachnephorus villosus*, 497 - *P. hispidulus*, 498 - *P. cylindricus*, 499 - *Parnops glasunovi*, 500 - *Rhodopaea angelovi*, 501 - *Scelodonta lewisii*, 502 - *Trichochrysea sinensis*, 503 - *T. amygdali*, 504 - *T. arnoldii*.

Plate LVII



505



506



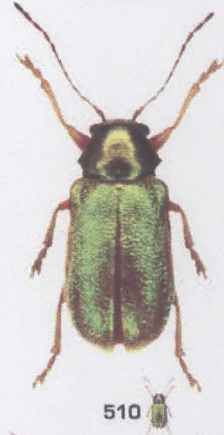
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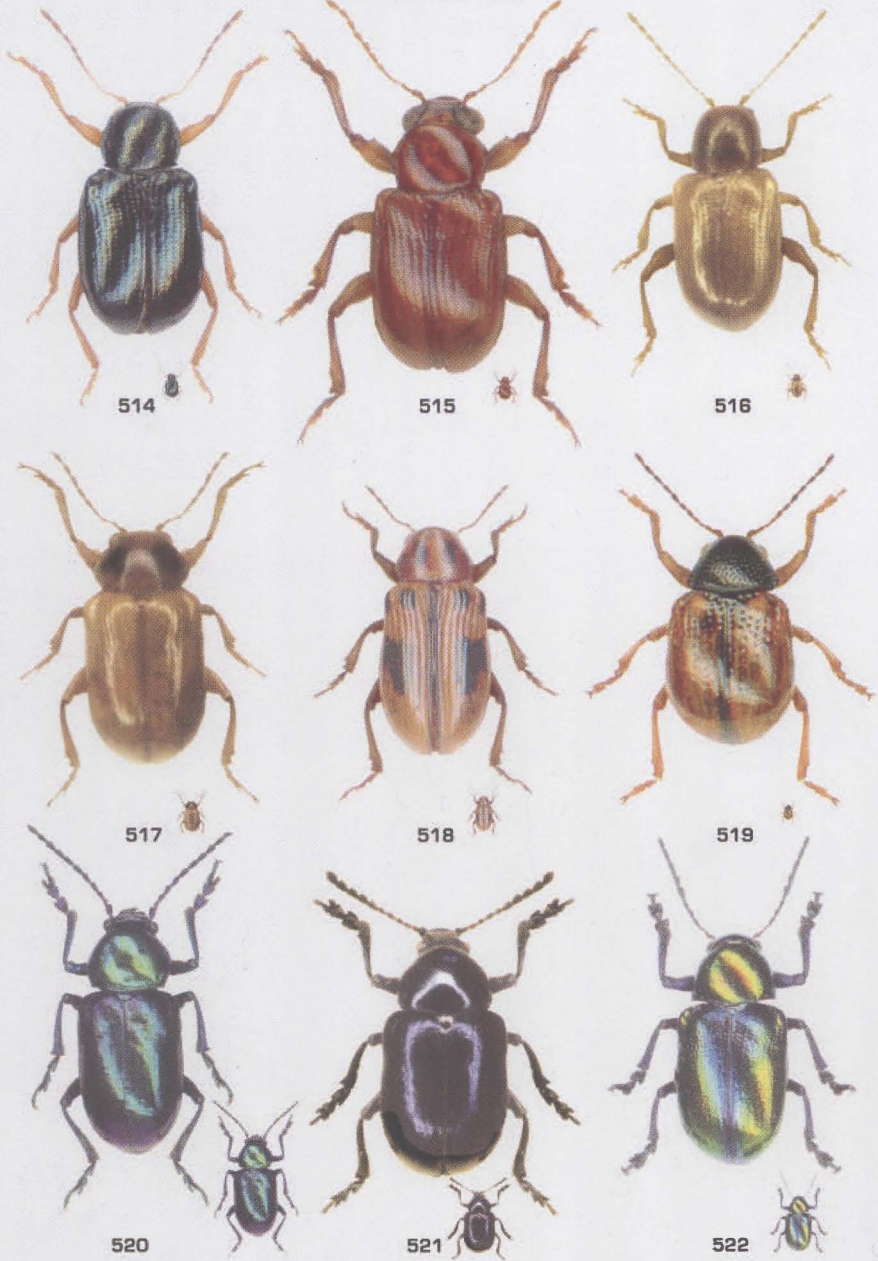
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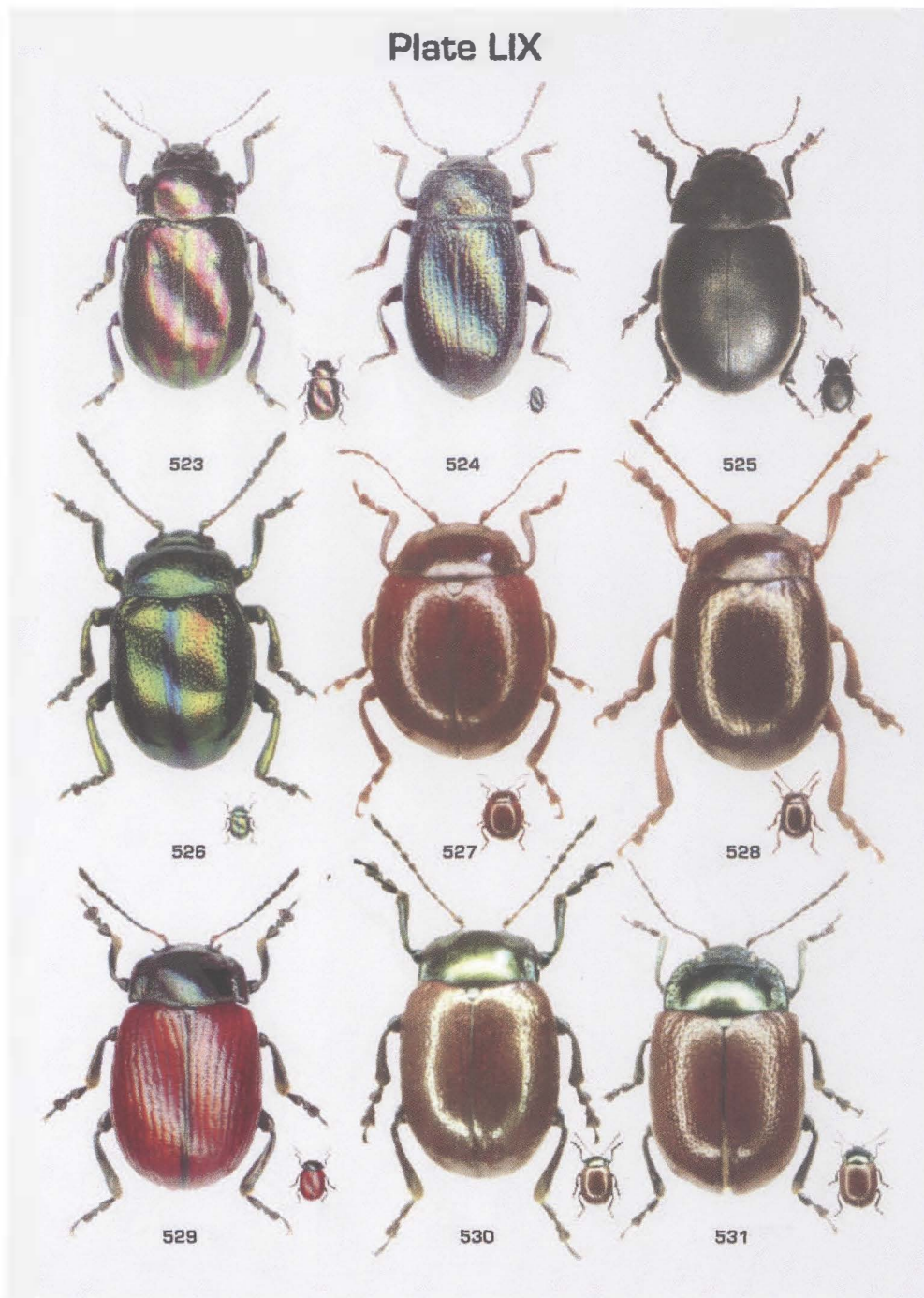
Phot. 505-513. 505 – *Trichochrysea occidentalis*, 506 – *Trichotheca variabilis*, 507 – *Xanthonia placida*, 508 – *Colasposoma dauricum*, 509 – *Abiromorphus anceyi*, 510 – *Pales ulema*, 511 – *Basilepta palidula*, 512 – *B. fulvipes*, 513 – *B. balyi*.

Plate LVIII



Phot. 514-522. 514 – *Bedelia viridicoerulea*, 515 – *B. kokanica*, 516 – *B. angustata*, 517 – *Chloropterus stigmaticollis*, 518 – *C. ornatus*, 519 – *Pagriia signata*, 520 – *Chrysochares asiaticus*, 521 – *Eumolpus asclepiadeus*, 522 – *Platycorynus parryi*.

Plate LIX



Phot. 523-531. 523 – *Ambrostoma quadriimpressum*, 524 – *Apterocuris sibirica*, 525 – *Cecchiniola platyscelidina*, 526 – *Chrysolina fastuosa*, 527 – *C. blanchei*, 528 – *C. staphylaea*, 529 – *C. tianshanica*, 530 – *C. polita*, 531 – *C. grossa*.

Plate LX



Phot. 532-540. 532 – *Chrysolina numida*, 533 – *C. mactata*, 534 – *C. limbata*, 535 – *C. gypsophila*, 536 – *C. marginata*, 537 – *C. tuvensis*, 538 – *C. sahlbergiana*, 539 – *C. dohrni*, 540 – *C. badakshanica*.

Plate LXI



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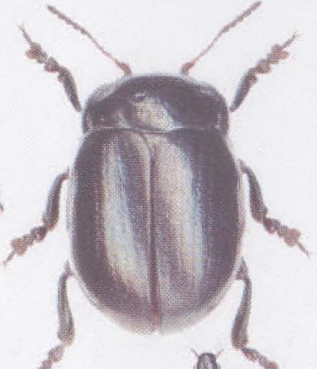
546



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Phot. 541-549. 541 - *Chrysolina fragariae*, 542 - *C. oricalcia*, 543 - *C. convexicollis*, 544 - *C. cyaneovinosa*, 545 - *C. discriminata*, 546 - *C. ordinata*, 547 - *C. tibialis*, 548 - *C. undulata*, 549 - *C. yupeiyouae*.

Plate LXII



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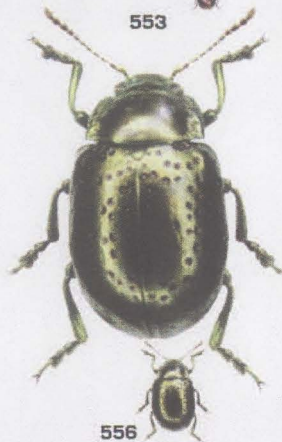
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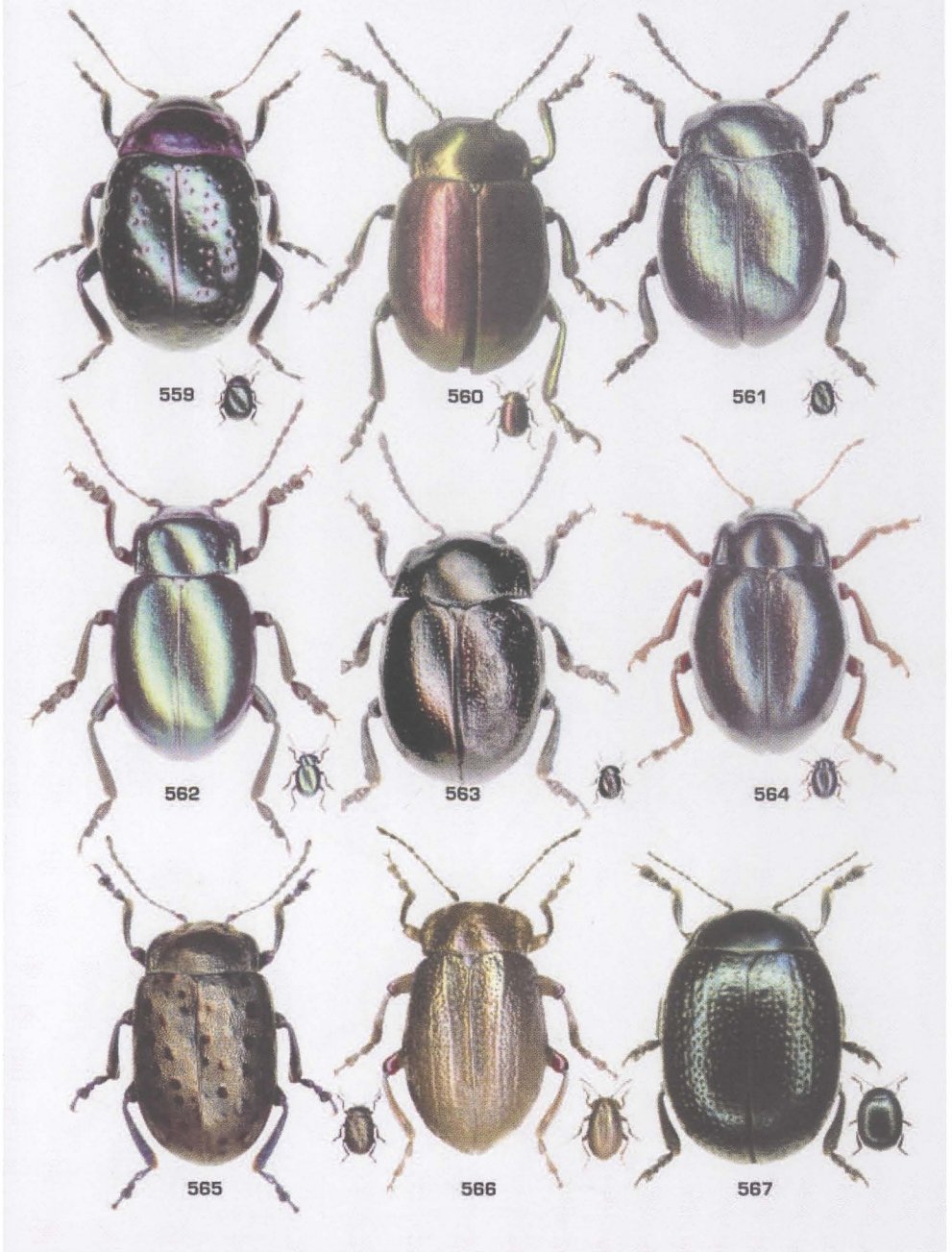
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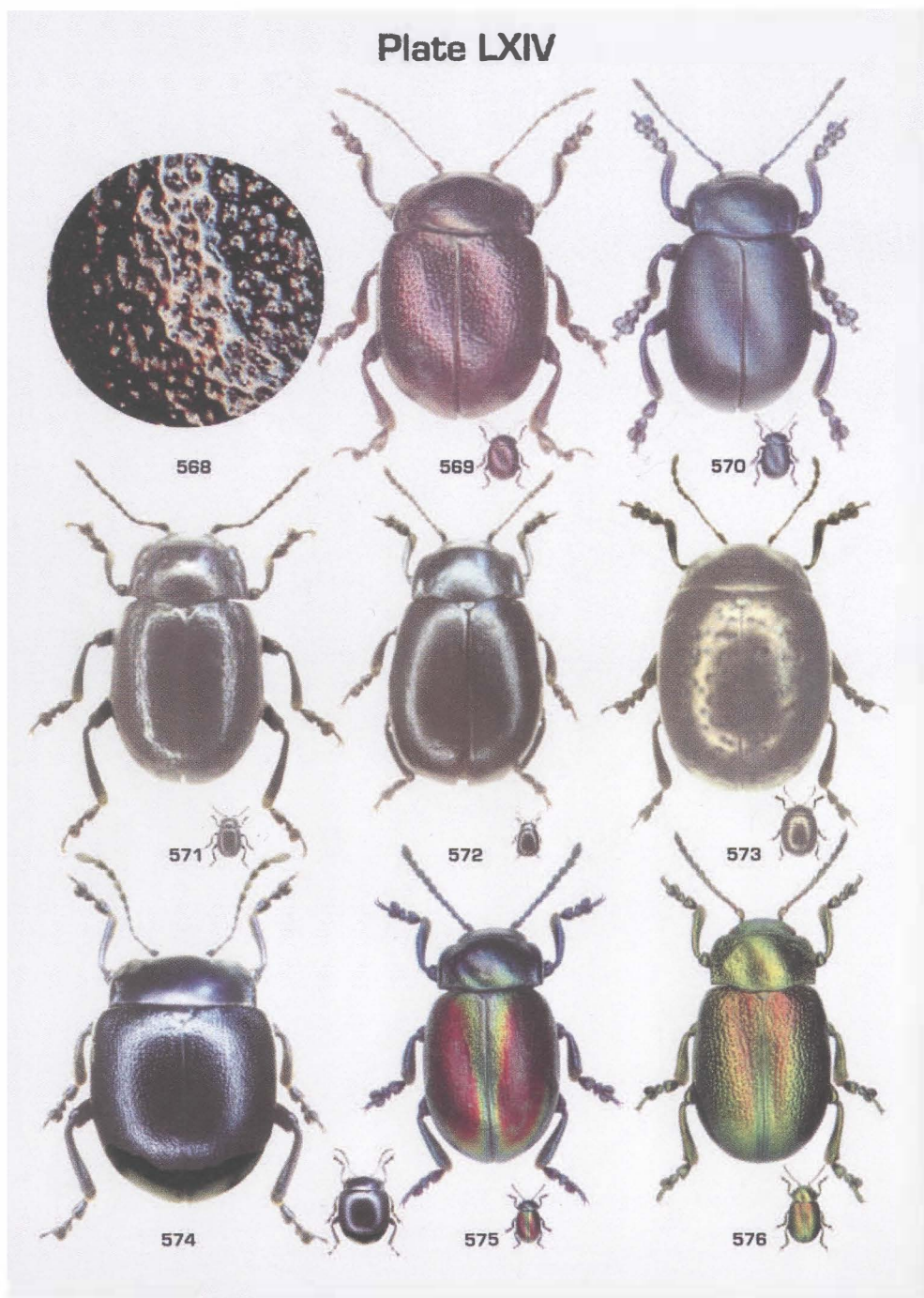
Phot. 550-558. 550 - *Chrysolina bungei*, 551 - *C. magniceps*, 552 - *C. hyperici*, 553 - *C. brunsvicensis*, 554 - *C. cuprina*, 555 - *C. americana*, 556 - *C. bicolor*, 557 - *C. helenae*, 558 - *C. immarginata*.

Plate LXIII



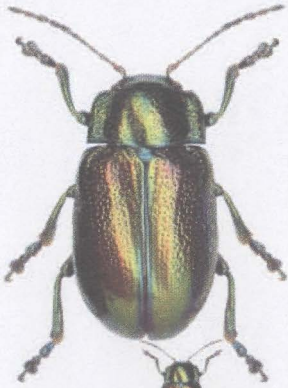
Phot. 559-567. 559 – *Chrysolina perforata*, 560 – *C. sogdiorum*, 561 – *C. obovata*, 562 – *C. tshatkalica*, 563 – *C. oschanini*, 564 – *C. warchalowskii*, 565 – *C. exanthematica*, 566 – *C. angusticollis*, 567 – *C. vernalis*.

Plate LXIV



Phot. 568-576. 568 - *Chrysolina opacicollis*, 569 - *C. pedestris*, 570 - *C. nikolskyi*, 571 - *C. schneideri*, 572 - *C. lichenis*, 573 - *C. sahlbergiana*, 574 - *C. olivieri*, 575 - *C. spectabilis*, 576 - *C. graminis*.

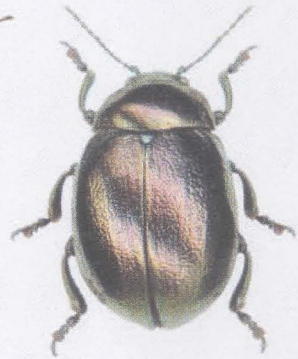
Plate LXV



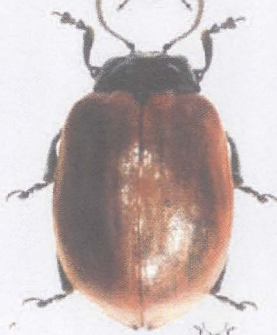
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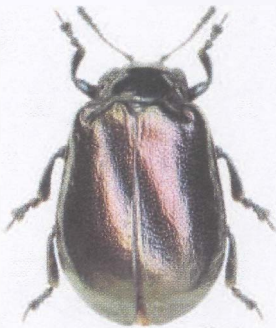
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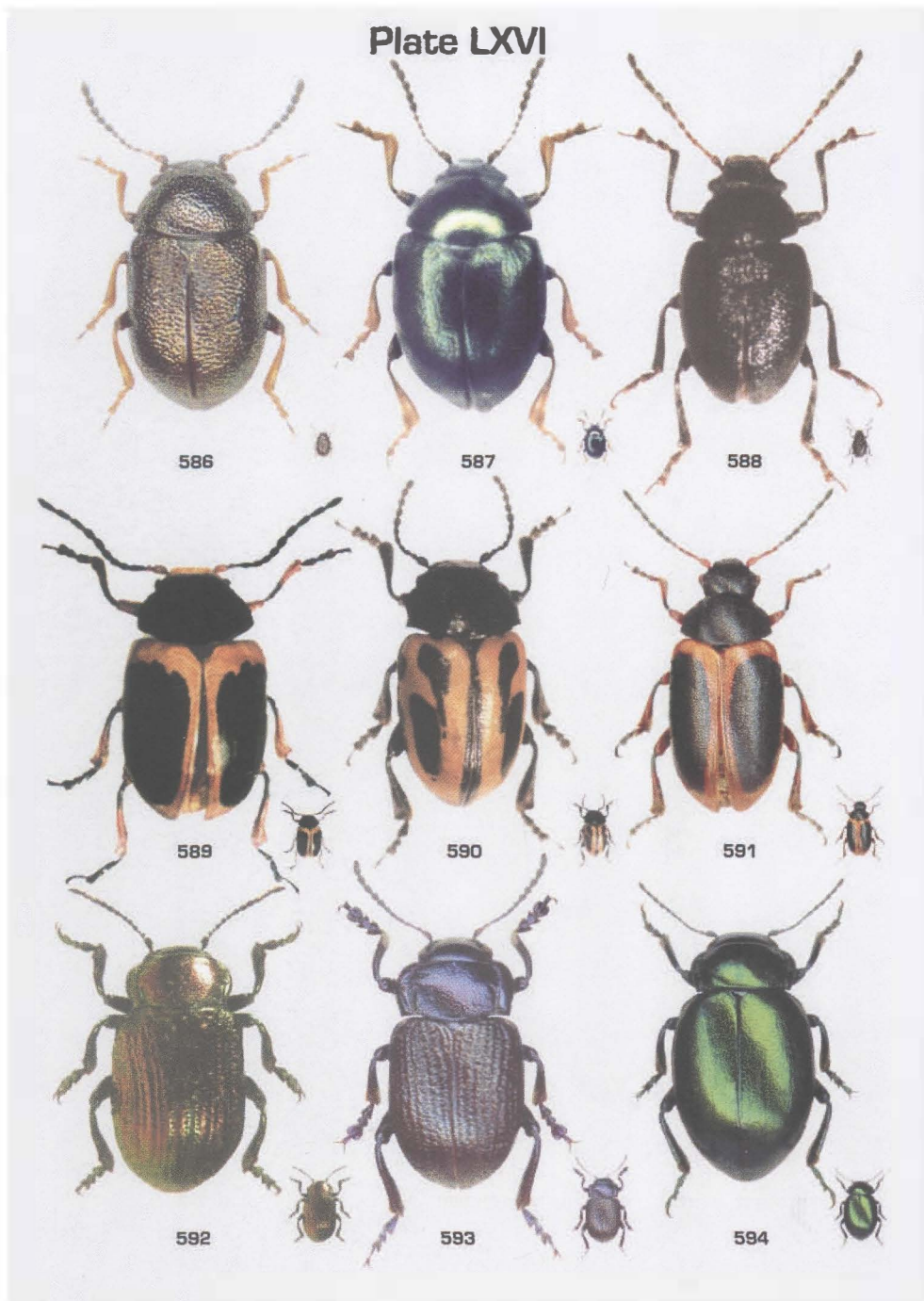
584



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Phot. 577-585. 577 - *Chrysolina virgata*, 578 - *C. herbacea*, 579 - *C. varians*, 580 - *Chrysolina populi*, 581 - *C. blaisdelli*, 582 - *C. collaris*, 583 - *C. cuprea*, 584 - *C. lapponica*, 585 - *C. vigintipunctata*.

Plate LXVI



Phot. 586-594. 586 – *Colaphus joliveti*, 587 – *C. sophiae*, 588 – *Colaspidema atrum*, 589 – *C. ruffrons*, 590 – *C. signatipenne*, 591 – *C. dufouri*, 592 – *Crosita clementzae*, 593 – *C. kovalevskyi matronula*, 594 – *C. urumchiana*.

Plate LXVII



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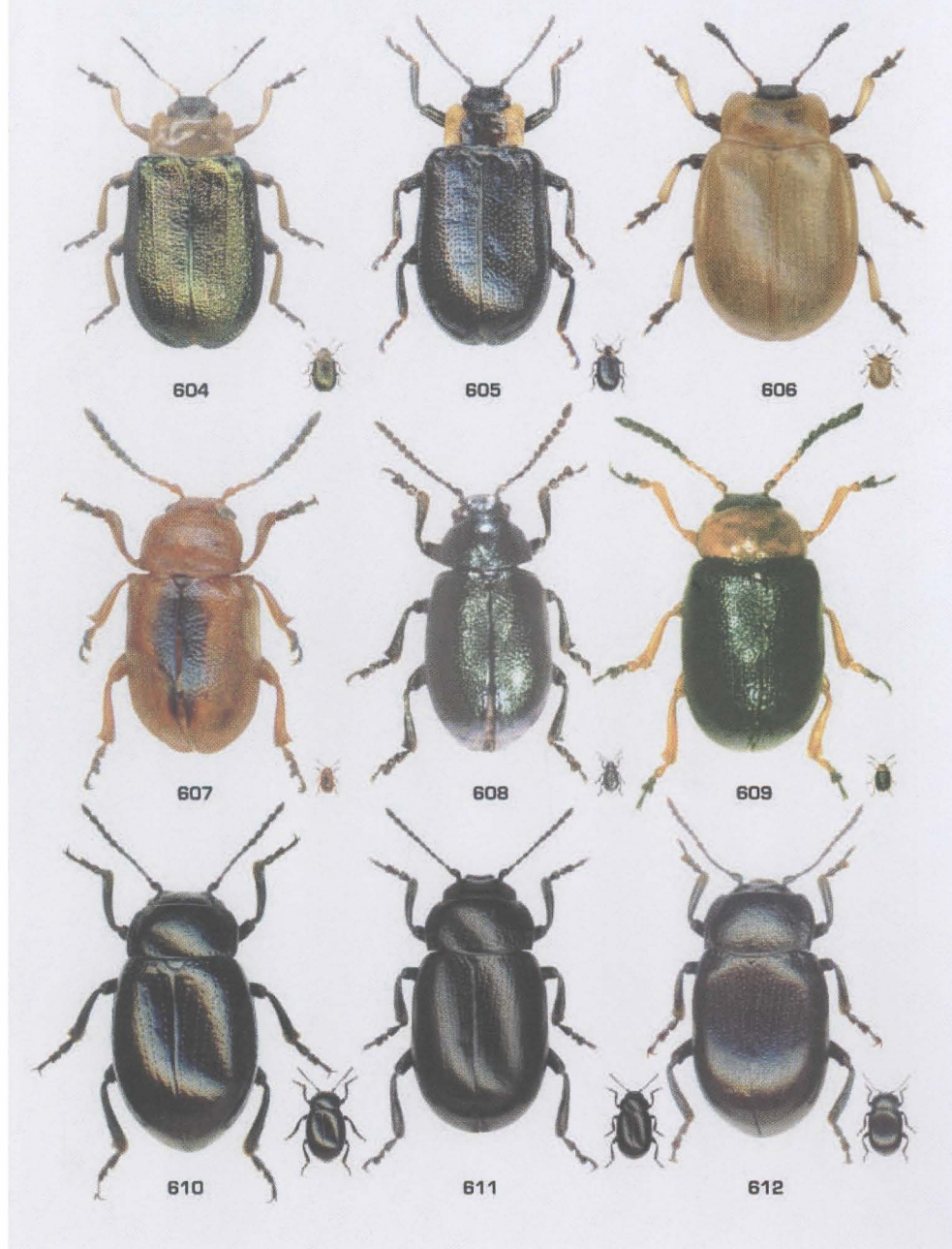
602



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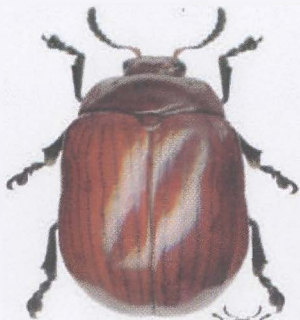
Phot. 595-603. 595 – *Crosita altaica*, 596 – *C. afghanica*, 597 – *C. pigra*, 598 – *Cyrtonus elegans*, 599 – *C. montanus*, 600 – *Entomoscelis rumicis*, 601 – *E. adonidis*, 602 – *E. suturalis*, 603 – *E. orientalis*.

Plate LXVIII



Phot. 604-612. 604 – *Gastrolina peltoidea*, 605 – *G. depressa*, 606 – *Gastrolinoides japonicus*, 607 – *Gastrophysa mannerheimi*, 608 – *G. viridula*, 609 – *G. polygoni*, 610 – *Gnathomela meridionalis*, 611 – *G. praestans*, 612 – *G. laevigata*.

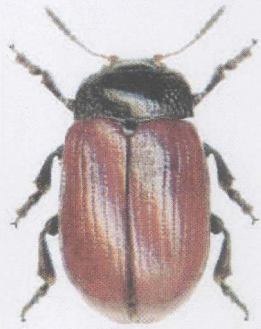
Plate LXIX



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Phot. 613-621. 613 – *Gonioctena (Brachyphytodecta) lesnei*, 614 – *G. (B.) rubripennis*, 615 – *G. (s. str.) sibirica*, 616 – *G. (s. str.) viminalis*, 617 – *G. (s. str.) decaspilota*, 618 – *G. (s. str.) pallida*, 619 – *G. (s. str.) quinquepunctata*, 620 – *G. (Platyphytocecta) flexuosa*, 621 – *G. (Spartomena) fornicata*.

Plate LXX



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Phot. 622-630. 622 – *Goniocтена (Spartoxena) procax*, 623 – *G. (S.) leprieuri*, 624 – *G. (S.) aegrota*, 625 – *G. (S.) gobanzi*, 626 – *G. (S.) secsaouia*, 627 – *Humba cyanicollis*, 628 – *Hydrothassa hannoveriana*, 629 – *H. marginella*, 630 – *Leptinotarsa decemlineata*.

Plate LXXI



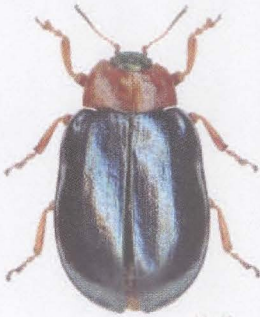
631



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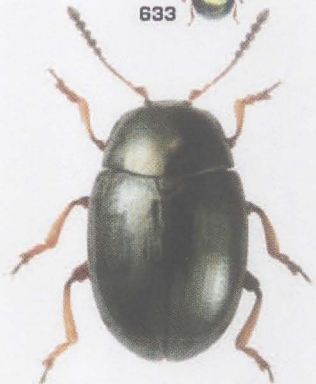
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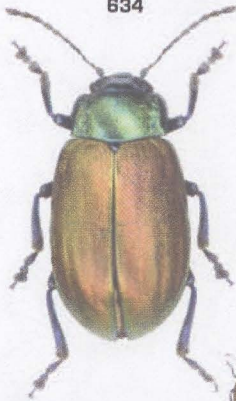
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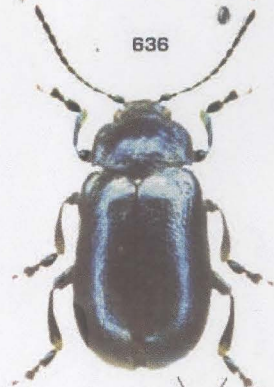
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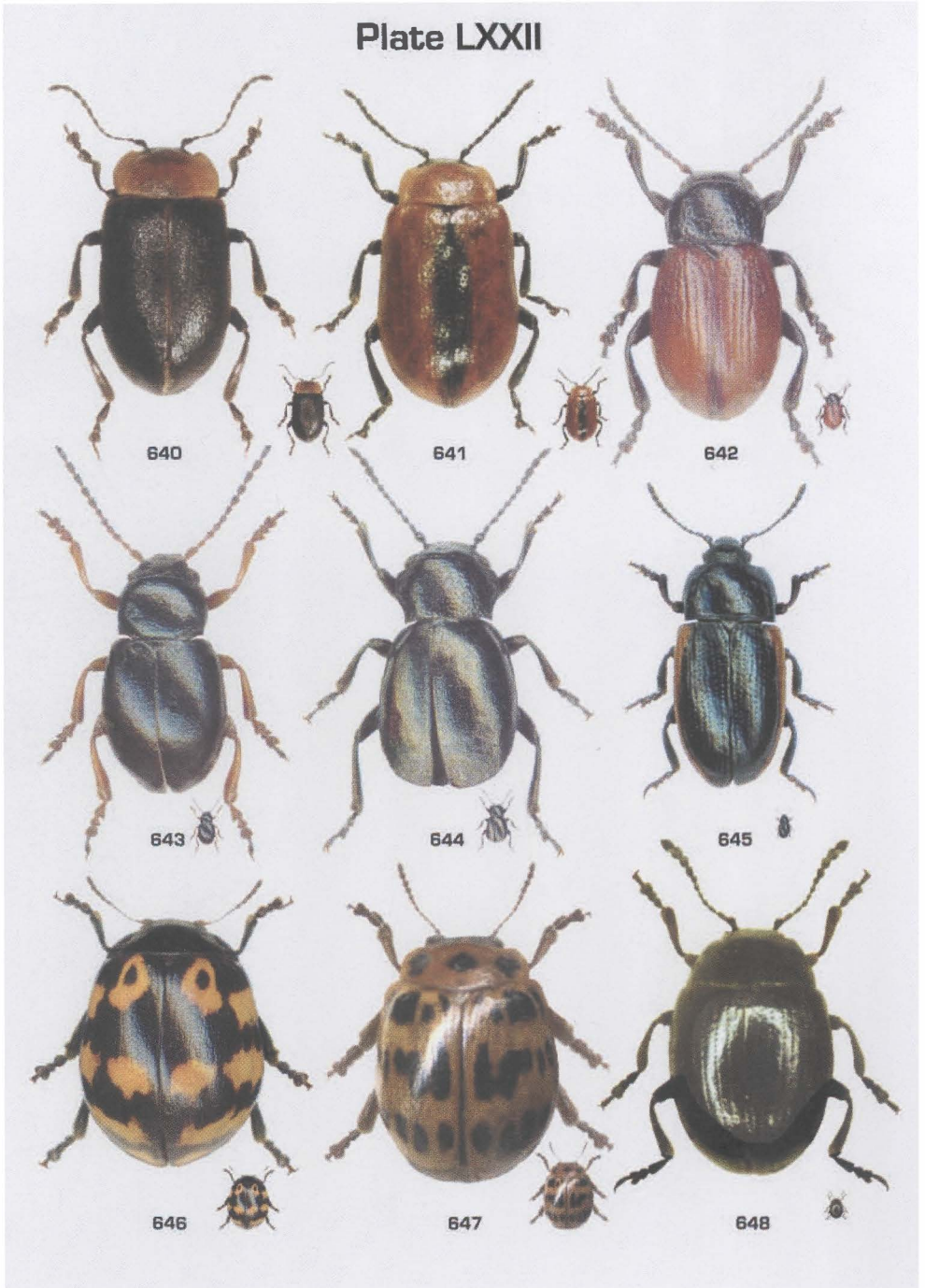


639



631 - *Linaeidea aenea* (f. typ.), 632 - *L. aenea* (race), 633 - *L. aeneipennis*, 634 - *L. adamsi*, 635 - *Machomena lineata*, 636 - *Neophaedon poneli*, 637 - *Oreina basilea*, 638 - *O. speciosa*, 639 - *O. cacaliae*.

Plate LXXII



Phot. 640-648. 640 – *Oreina ludovicæ*, 641 – *O. plagiata*, 642 – *Oreomela suvorovi*, 643 – *O. fuscipes*, 644 – *O. medvedevi*, 645 – *Oreothassa martjanovi*, 646 – *Paropsides nigrofasciatus*, 647 – *P. soriculatus*, 648 – *Phola octodecimguttata*.

Plate LXXIII



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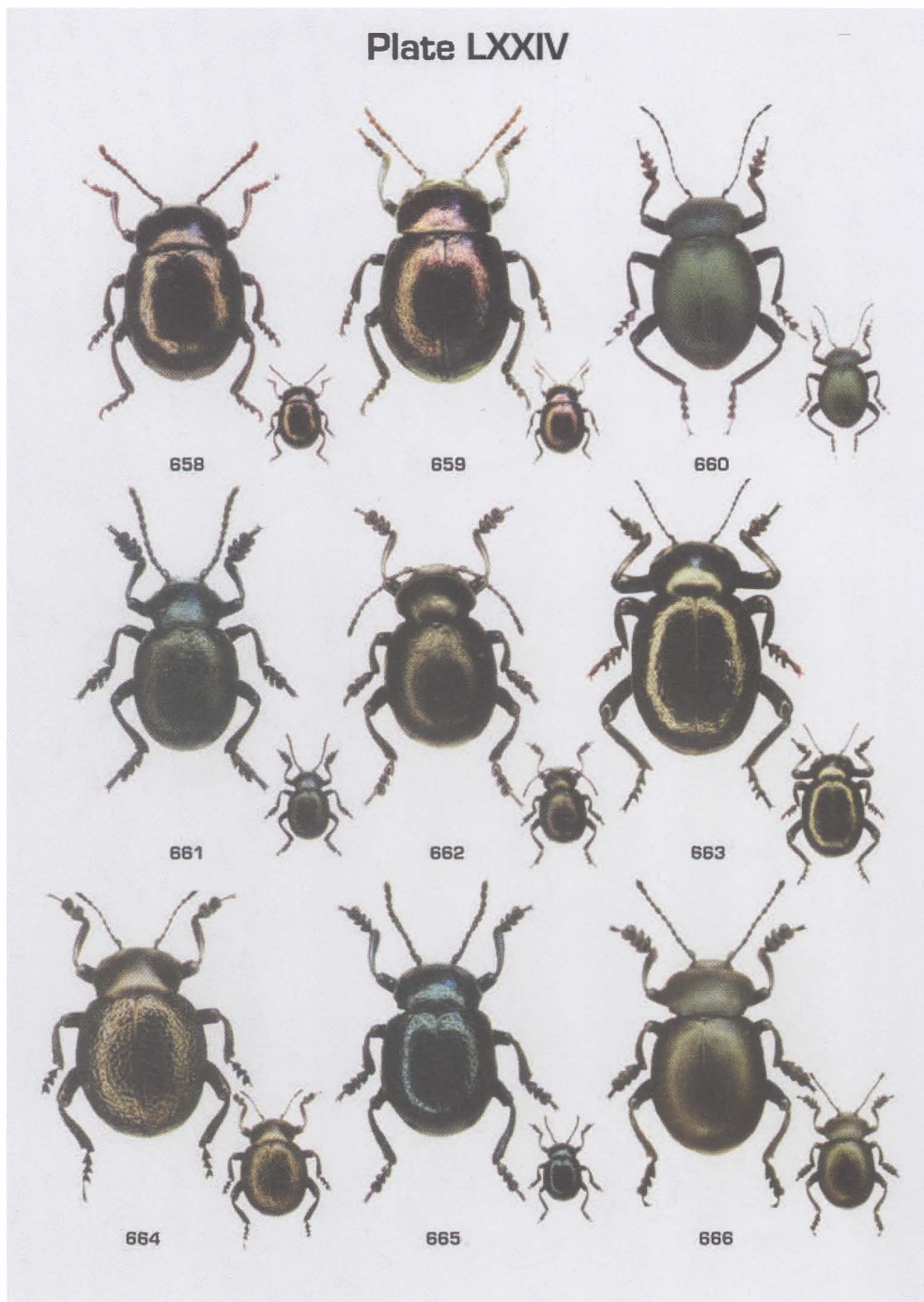
656



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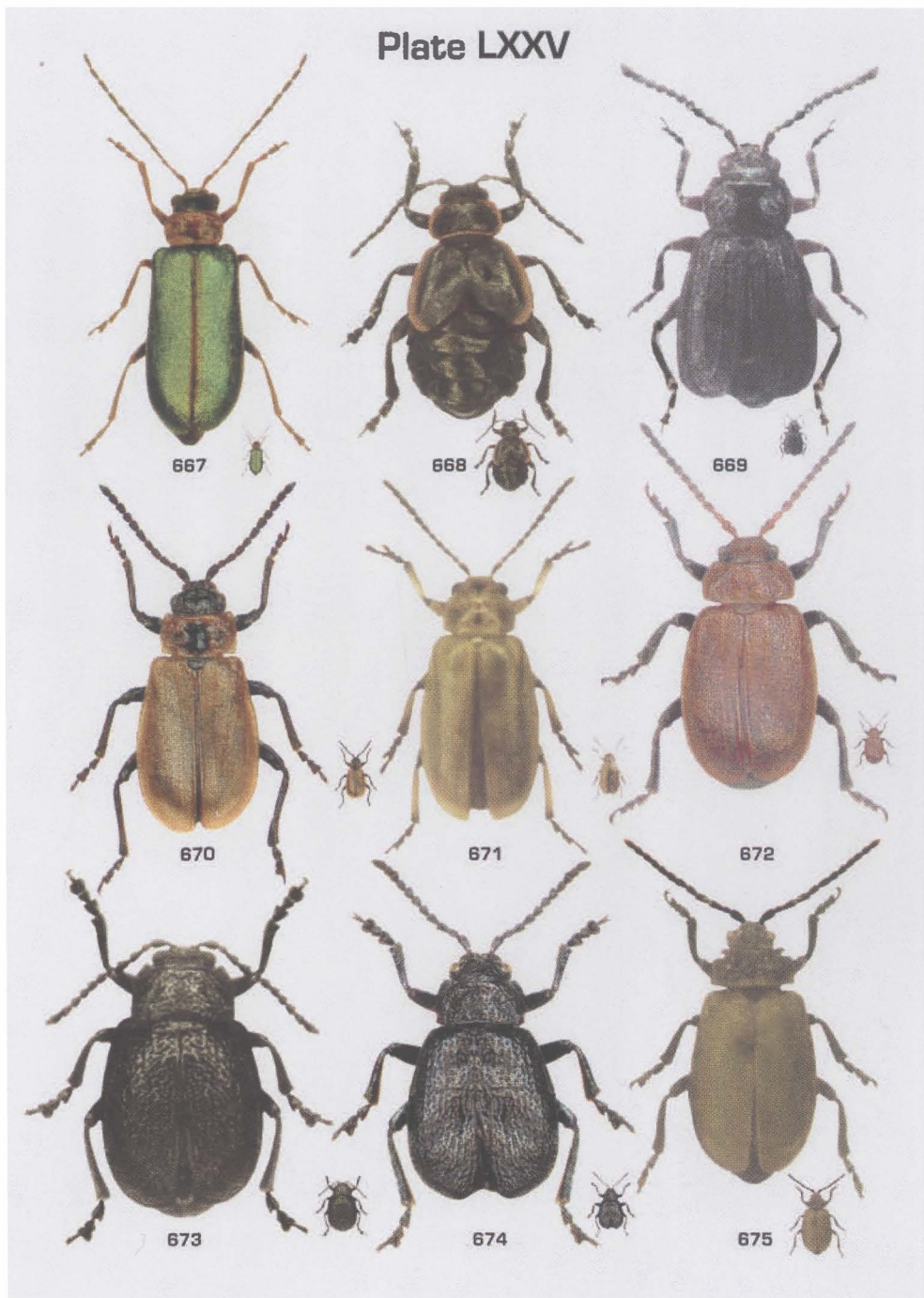
Phot. 649-657. 649 – *Phaedon cochleariae*, 650 – *Phratora tibialis*, 651 – *Plagioder a versicolora*, 652 – *Prasocuris distincta*, 653 – *P. phellandrii*, 654 – *Sclerphaedon carpathicus*, 655 – *Timarchida deubeli*, 656 – *Xenomela kraatzii*, 657 – *X. minckwitzae*.

Plate LXXIV



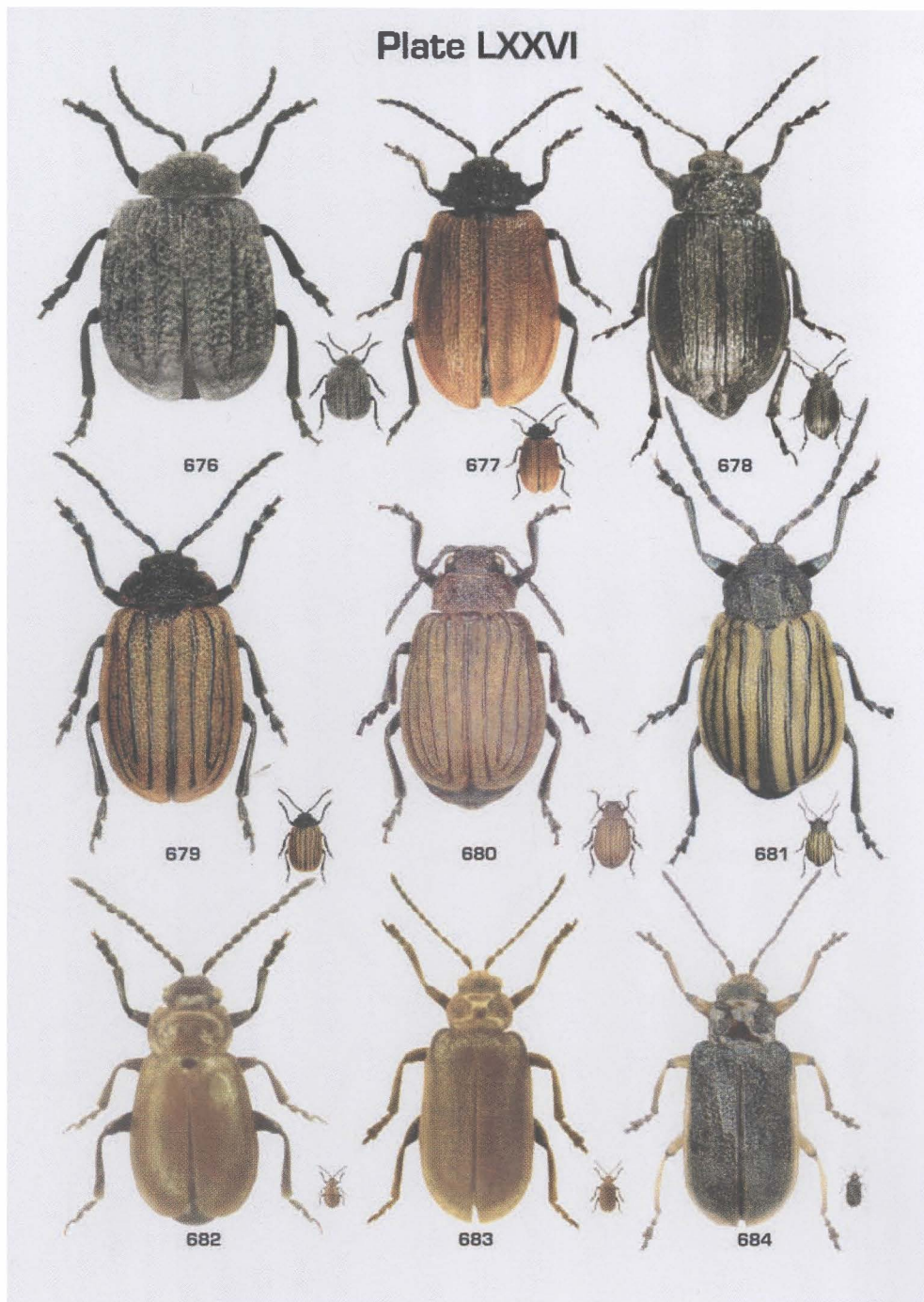
Phot. 658-666. 658 - *Timarcha (Metallotimarcha) metallica*, 659 - *T. (M.) hummeli*, 660 - *T. (Timarchostoma) balearica*, 661 - *T. (T.) insparsa*, 662 - *T. (T.) parvicollis*, 663 - *T. (s. str.) rugulosa*, 664 - *T. (s. str.) rugosa*, 665 - *T. (s. str.) tenebricosa*, 666 - *T. (s. str.) latipes*.

Plate LXXV



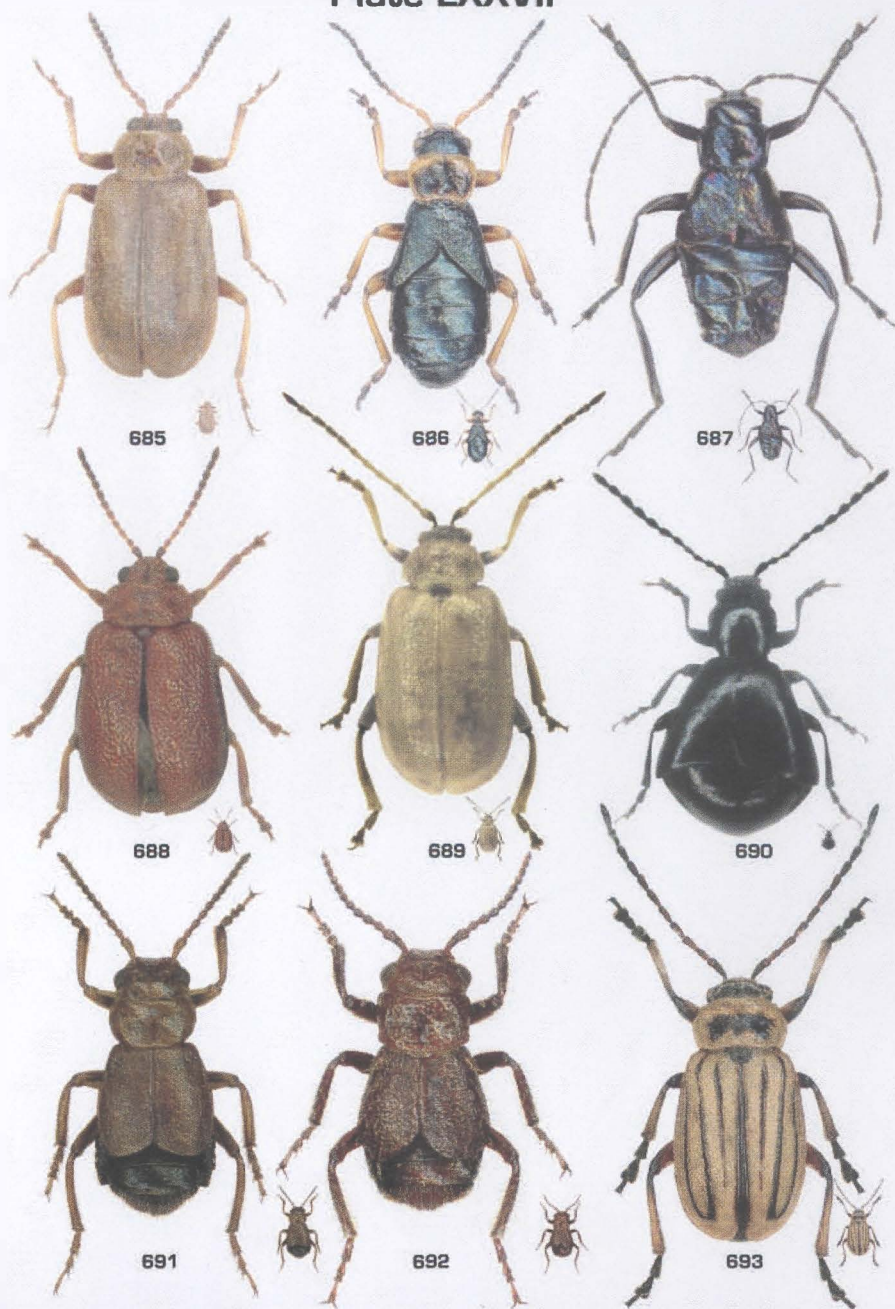
Phot. 667-675. 667 - *Apophyllia viridipennis*, 668 - *Arima marginata*, 669 - *Belarima violacea*, 670 - *Diorhabda rickmersi*, 671 - *Diorhabda elongata*, 672 - *Galeruca rufa*, 673 - *G. monticola*, 674 - *Galeruca canigouensis*, 675 - *G. haagi*.

Plate LXXVI



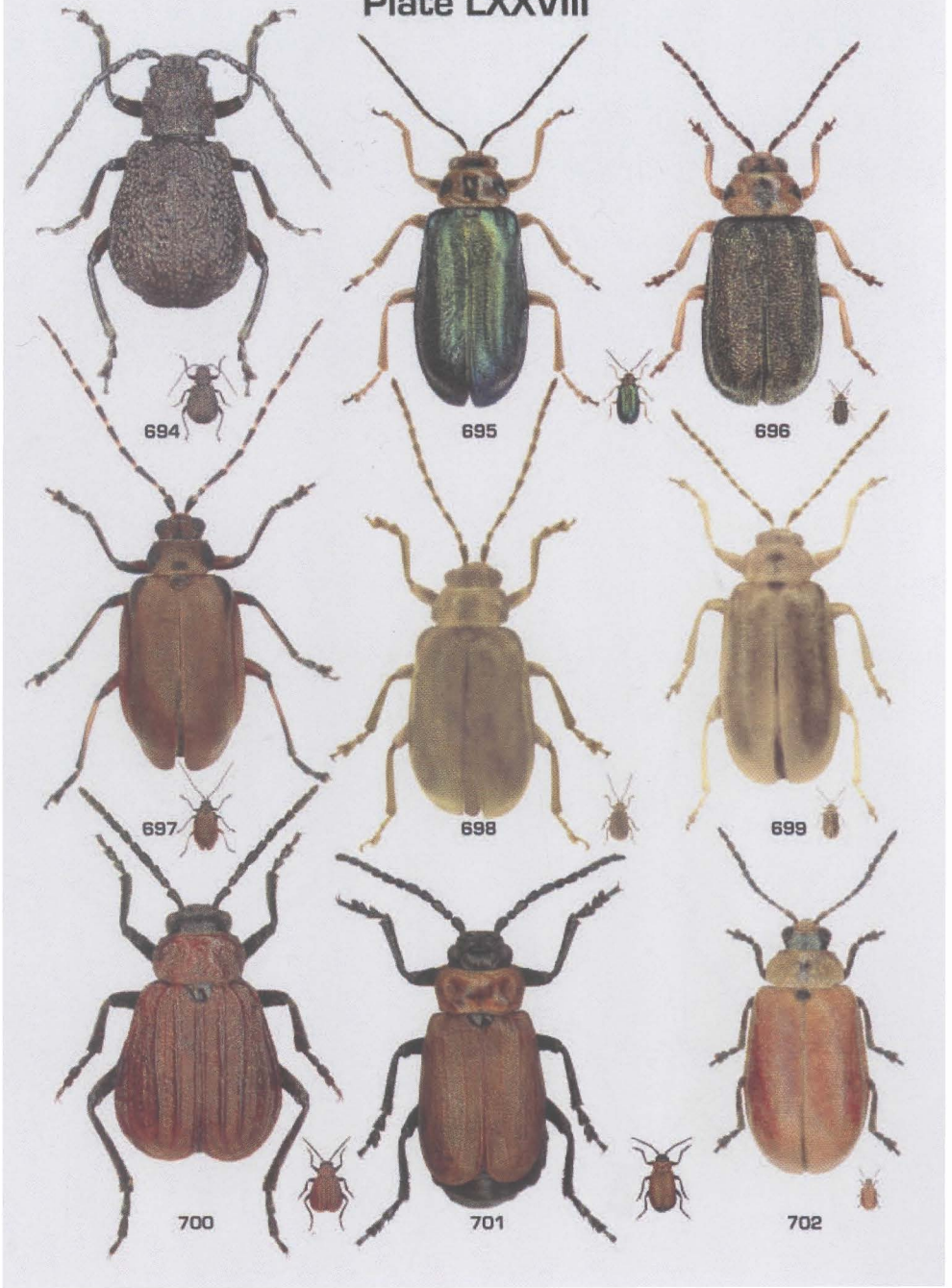
Phot. 676-684. 676 – *Galeruca sardoa*, 677 – *G. spectabilis*, 678 – *G. barbara*, 679 – *G. reichardti*, 680 – *G. planiuscula*, 681 – *G. nigrolineata*, 682 – *G. melanocephala*, 683 – *Galerucella nymphaeae*, 684 – *G. nipponensis*.

Plate LXXVII



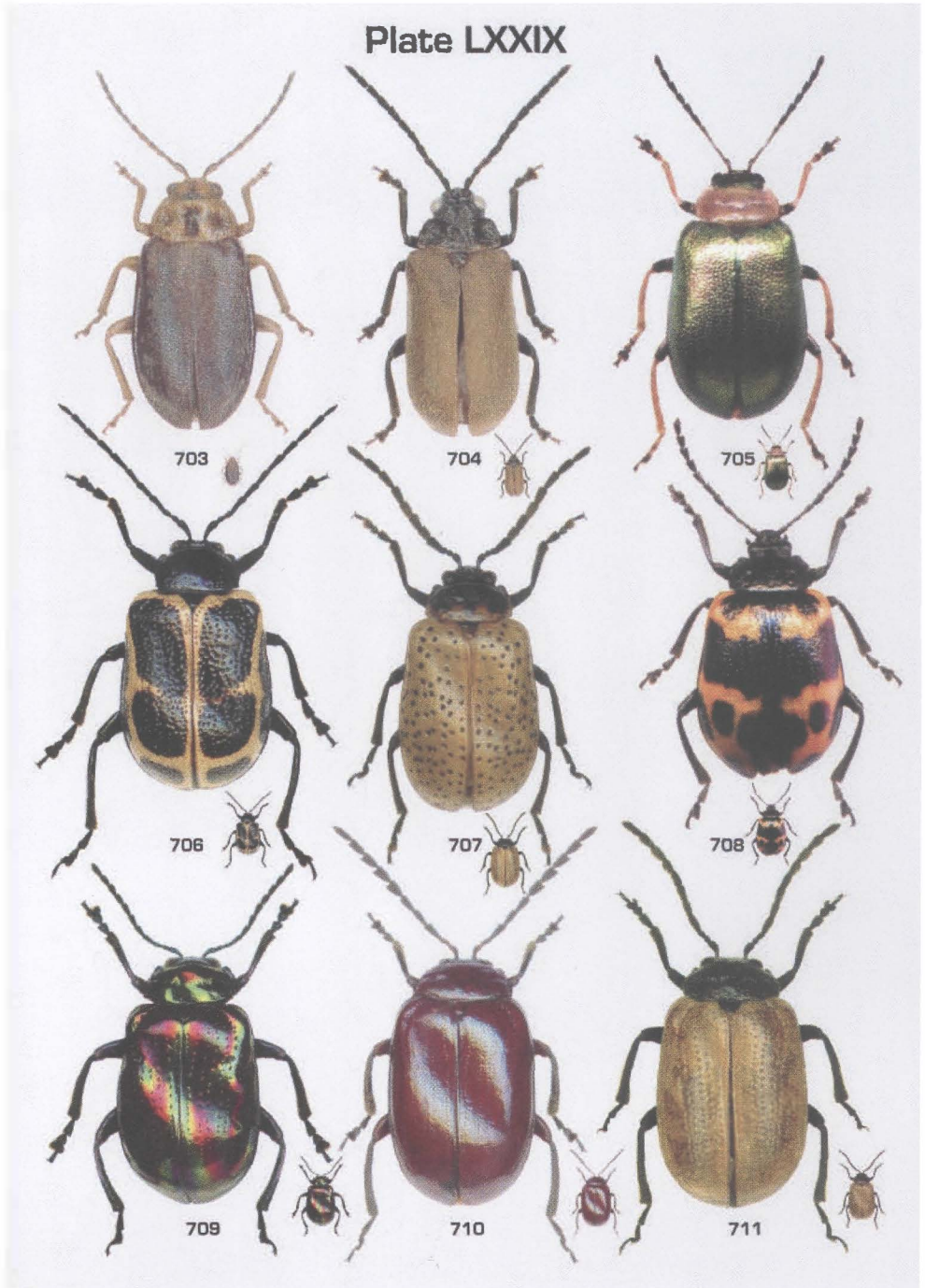
Phot. 685-693. 685 – *Radymna persica*, 686 – *Geinella nila*, 687 – *G. trapezicollis*, 688 – *Lochmaea crataegi*, 689 – *L. caprea*, 690 – *Marseulia dilativentris*, 691 – *Nyctiphantus custos*, 692 – *N. hirtus*, 693 – *Pallasiola absinthii*.

Plate LXXVIII



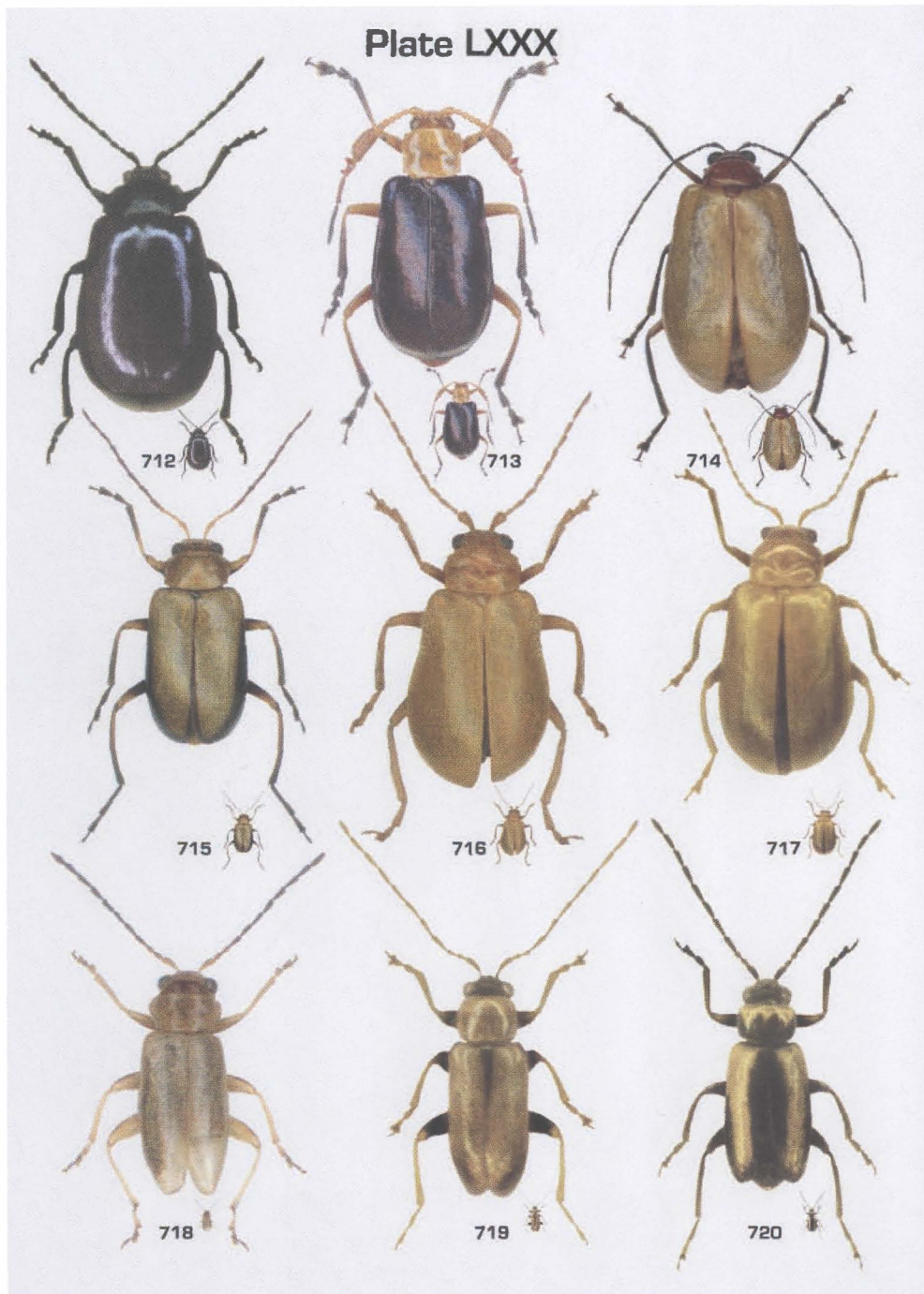
Phot. 694-702. 694 – *Pseudadimonia variolosa*, 695 – *Pyrrhalta aenescens*, 696 – *P. orientalis*, 697 – *P. esakii*, 698 – *P. viburni*, 699 – *P. lineola*, 700 – *Theone octocostata*, 701 – *T. silphoides*, 702 – *Tricholochmaea semifulva*.

Plate LXXIX



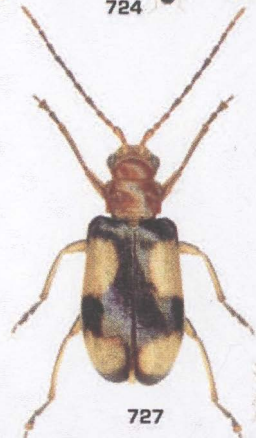
Phot. 703-711. 703 - *Xanthogaleruca subcoerulescens*, 704 - *X. seminigra*, 705 - *Agelasa nigriceps*, 706 - *Gallerucida gansuica*, 707 - *G. nigrofoveolata*, 708 - *G. bifasciata*, 709 - *G. gloriosa*, 710 - *G. aeneomicans*, 711 - *G. flavipoennis*.

Plate LXXX



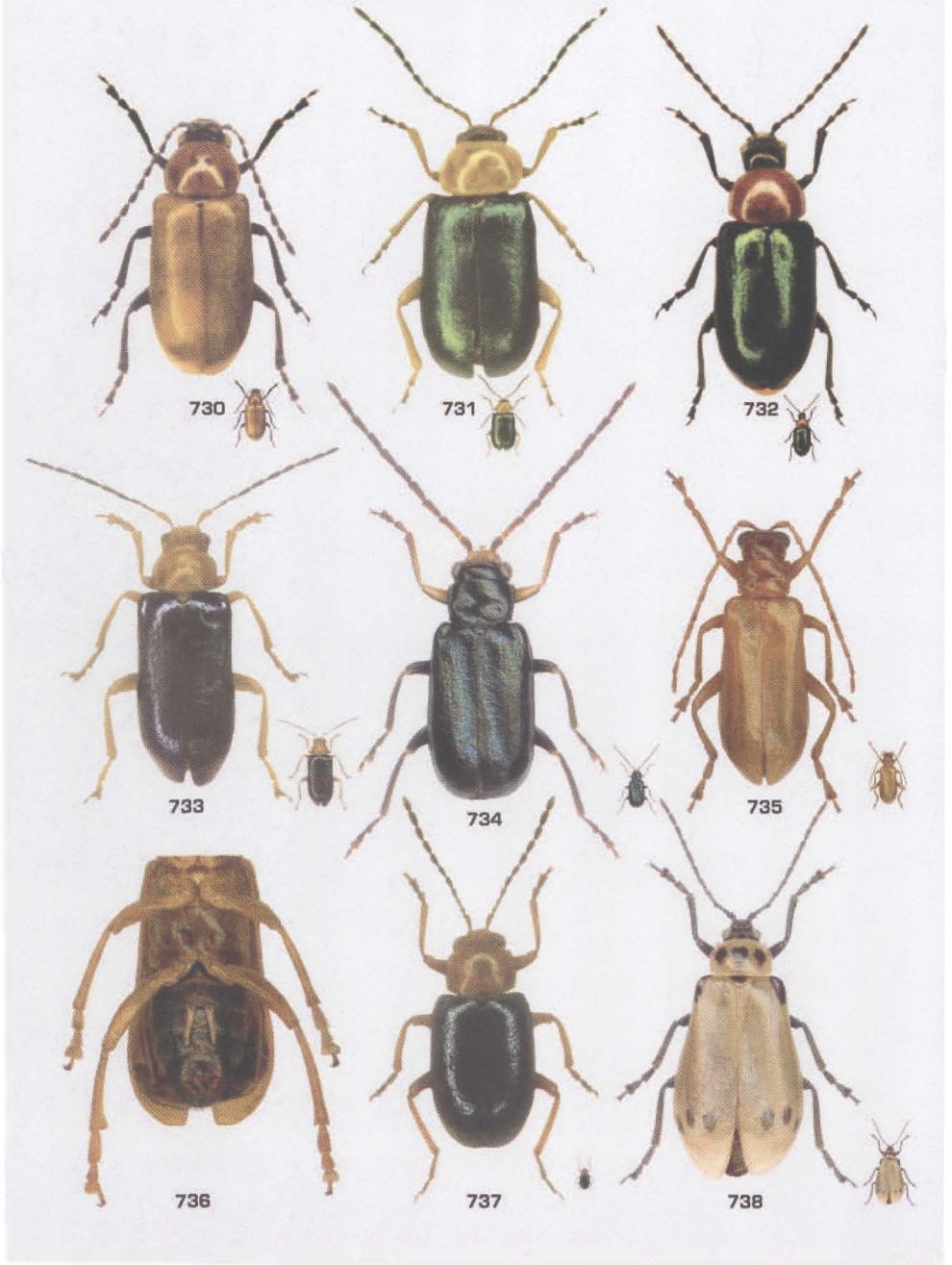
Phot. 712-720. 712 – *Agelasticva alni*, 713 – *Agetocera hopei*, 714 – *Arthrotidea ruficollis*, 715 – *Atrachya menetriesii*, 716 – *Aulacophora indica*, 717 – *A. foveicollis*, 718 – *Calomicrus mercurini*, 719 – *C. apicalis*, 720 – *C. circumfusus*.

Plate LXXXI



Phot. 721-729. 721 – *Calomicrus suturalis*, 722 – *C. kasikoporanus*, 723 – *Capula metallica*, 724 – *Clerotilia flavomarginata*, 725 – *Cneorane violaceipennis*, 726 – *Doryscus varians*, 727 – *Euliroetis ornata*, 728 – *E. suturalis*, 729 – *Euluperus major*.

Plate LXXXII



Phot. 730-738. 730 - *Exosoma lusitanicum*, 731 - *E. flavipes*, 732 - *E. collare*, 733 - *Falsoexosoma cyanipenne*, 734 - *Fleutiauxia armata*, 735 - *Hoplasoma unicolor*, 736 - *H. unicolor* (spód), 737 - *Lepitomona erythrocephala*, 738 - *Liroetis octopunctata*.

Plate LXXXIII



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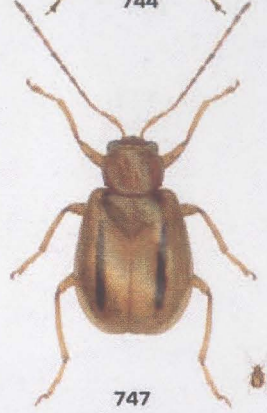
744



745



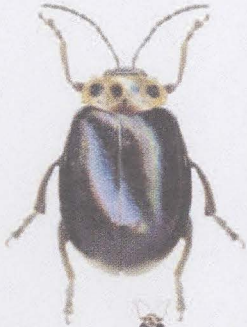
746



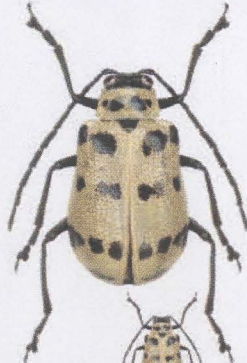
747

Phot. 739-747. 739 - *Luperus perucidus*, 740 - *L. acutipennis*, 741 - *L. viridipennis*, 742 - *L. flavipes*, 743 - *L. moorii*, 744 - *L. longicornis*, 745 - *L. similis*, 746 - *Medythia suturalis*, 747 - *M. nigrolineata*.

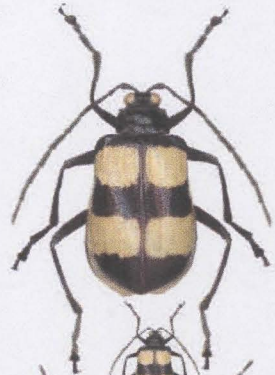
Plate LXXXIV



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Phot. 748-756. 748 – *Morphosphaera japonica*, 749 – *Meristata quadrifasciata*, 750 – *M. sexmaculata*, 751 – *Monolepta anatolica*, 752 – *M. pallidula*, 753 – *M. dichroa*, 754 – *M. quadriguttata*, 755 – *M. signata*, 756 – *M. hieroglyphica*.

Plate LXXXV



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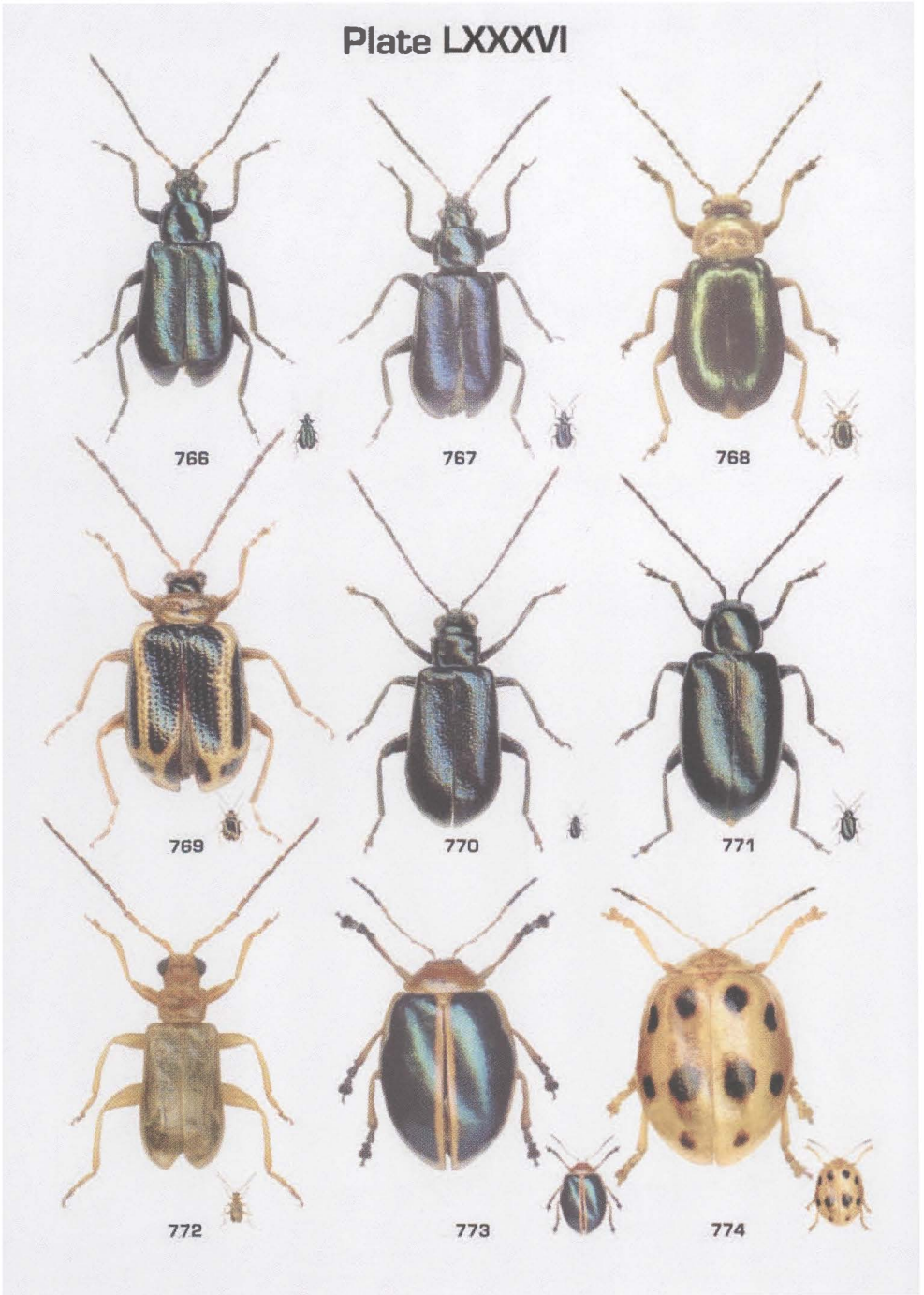


765



Phot. 757-765. 757 - *Paragetocera flavipes*, 758 - *P. angulicollis*, 759 - *P. quadriplagiata*, 760 - *P. avicauda*, 761 - *Phyllobrotica signata*, 762 - *P. binotata*, 763 - *P. elegans*, 764 - *P. quadrimaculata*, 765 - *P. frontalis*.

Plate LXXXVI



Phot. 766-774. 766 – *Scelolyperus sericeus*, 767 – *S. altaicus*, 768 – *Sermylassa halensis*, 769 – *Sphe-noraia picta*, 770 – *Stenoluperus nipponensis*, 771 – *Taphinellina flaviventris*, 772 – *Trichomimastra mauliki*, 773 – *Oides bowringii*, 774 – *O. decempunctatus*.

Plate LXXXVII



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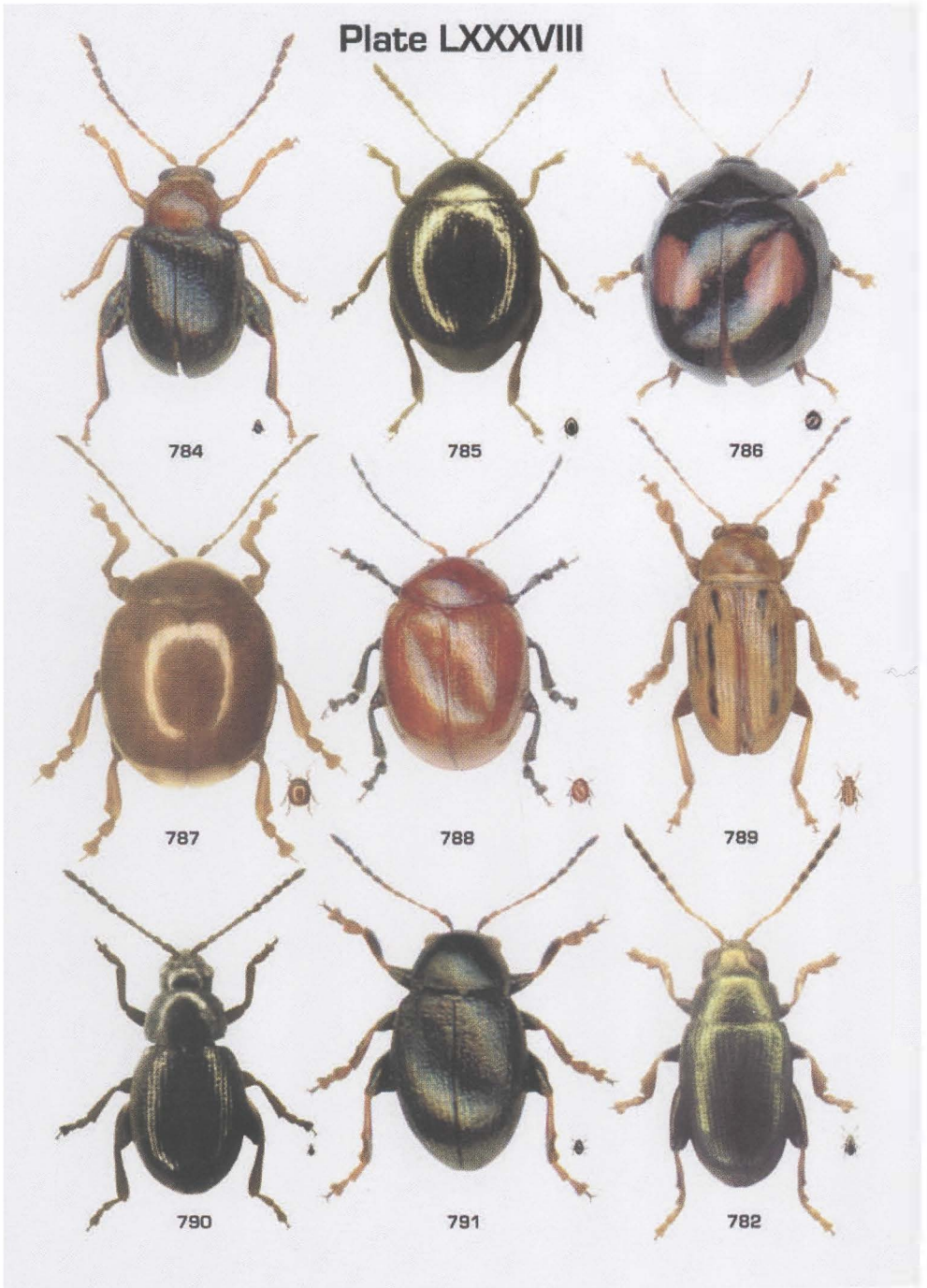
782



783

Phot. 775-783. 775 - *Altica oleracea*, 776 - *Anthobiodes heydeni*, 777 - *Aphthona nonstriata*, 778 - *A. flaviceps*, 779 - *A. lacertosa*, 780 - *A. lutescens*, 781 - *A. ovata*, 782 - *A. strigosa*, 783 - *A. wagneri*.

Plate LXXXVIII



Phot. 784-792. 784 - *Aphthonomorpha collaris*, 785 - *Apteropeda globosa* 786 - *Argopistes coccinelliformis*, 787 - *Argopus ahrensi*, 788 - A. 789 - *Arrhenocoela lineata* 790 - *Batophila rubi*, 791 - *Chaetocnema arenacea* 792 - *C. chlorophana*.

Plate LXXXIX



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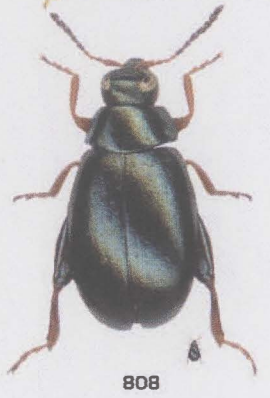
800



801

Phot. 793-801. 793 – *Chaetocnema compressa*, 794 – *C. conducta*, 795 – *C. hortensis*, 796 – *C. major* 797 – *C. procerula*, 798 – *C. punctifrons* 799 – *Crepidodera aurata*, 800 – *C. aurea*, 801 – *C. fulvicornis*.

Plate XC



Phot. 802-810. 802 – *Crepidodera japonica*, 803 – *C. lamina*, 804 – *Derocrepis rufipes*, 805 – *D. serbica*, 806 – *D. cryptocephala*, 807 – *D. schillingi*, 808 – *D. tshatkalica*, 809 – *Eptrix atropae*, 810 – *Hemipyxis cinctipennis*.

Plate XCI



811



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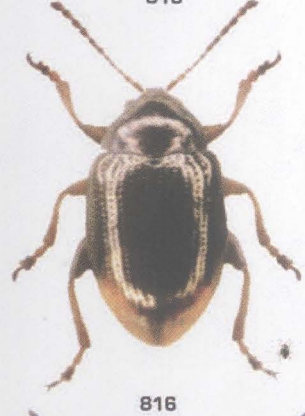
813



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Phot. 811-819. 811 – *Hemipyxis flavipennis*, 812 – *H. plagioderoides*, 813 – *Hermaeophaga mercurialis*, 814 – *H. ruficollis*, 815 – *Heyrovskya gomerensis*, 816 – *Hippuriphila modeeri*, 817 – *Hyphasis inconstans*, 818 – *Liprus punctatostriatus*, 819 – *Lipromela minutissima*.

Plate XCII



820



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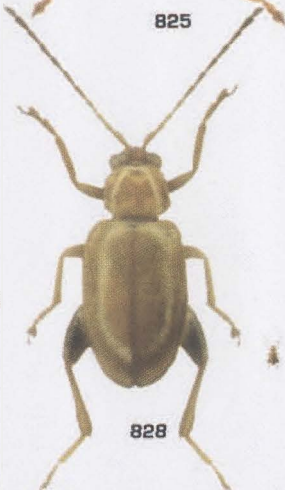
825



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Phot. 820-828. 820 - *Lipromima minuta*, 821 - *Longitarsus aeneus*, 822 - *L. apicalis*, 823 - *L. audisioi*, 824 - *L. bimaculatus* 825 - *L. brunneus*, 826 - *L. emarginatus*, 827 - *L. eminus*, 828 - *L. exsoletus*.

Plate XCIII



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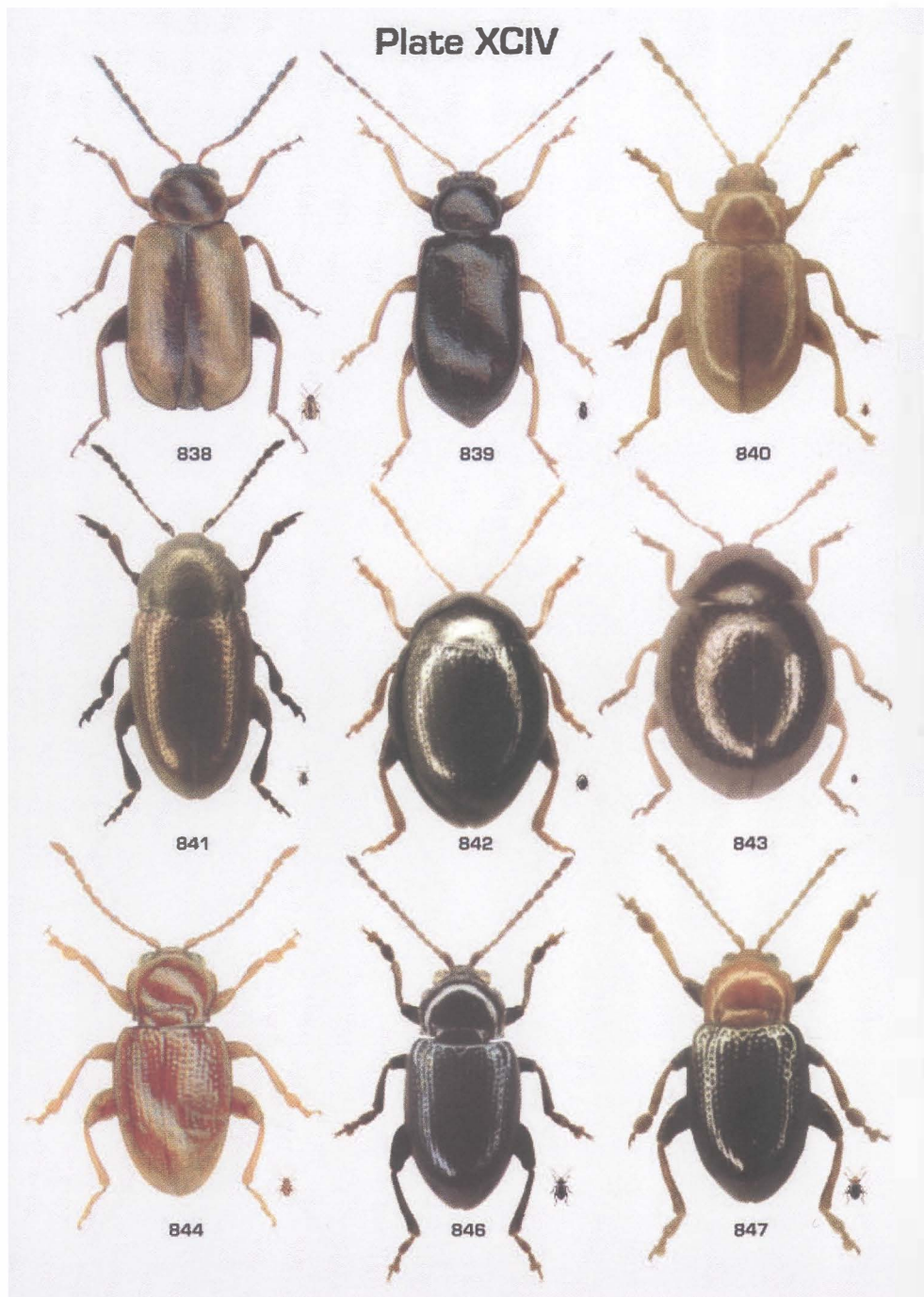
836



837

Phot. 829-837. 829 – *Longitarsus jacobaeae*, 830 – *L. nemethi* 831 – *L. nigrofasciatus*, 832 – *L. picicollis* 833 – *L. pratensis*, 834 – *L. sencieri*, 835 – *L. tabidus*, 836 – *L. stragulatus*, 837 – *L. ventricosus*.

Plate XCIV



Phot. 838-846. 838 – *Luperomorpha suturalis*, 839 – *L. tenebrosa*, 840 – *Lythraria salicariae*, 841 – *Mantura chrysanthemii*, 842 – *Minota halmæ*, 843 – *Mniophila muscorum*, 844 – *Neocrepidodera adelinae* 845 – *N. cyanescens*, 846 – *N. femorata*.

Plate XCV



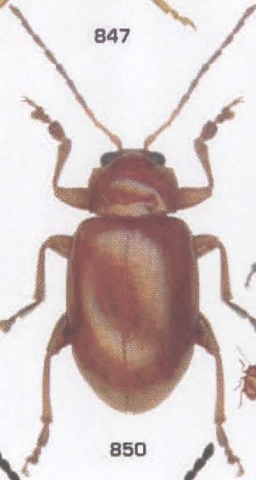
847



848



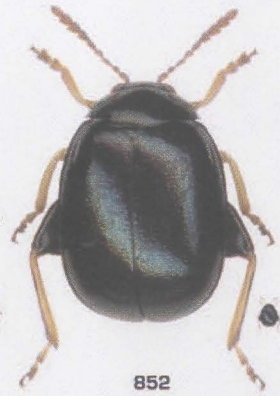
849



850



851



852



853



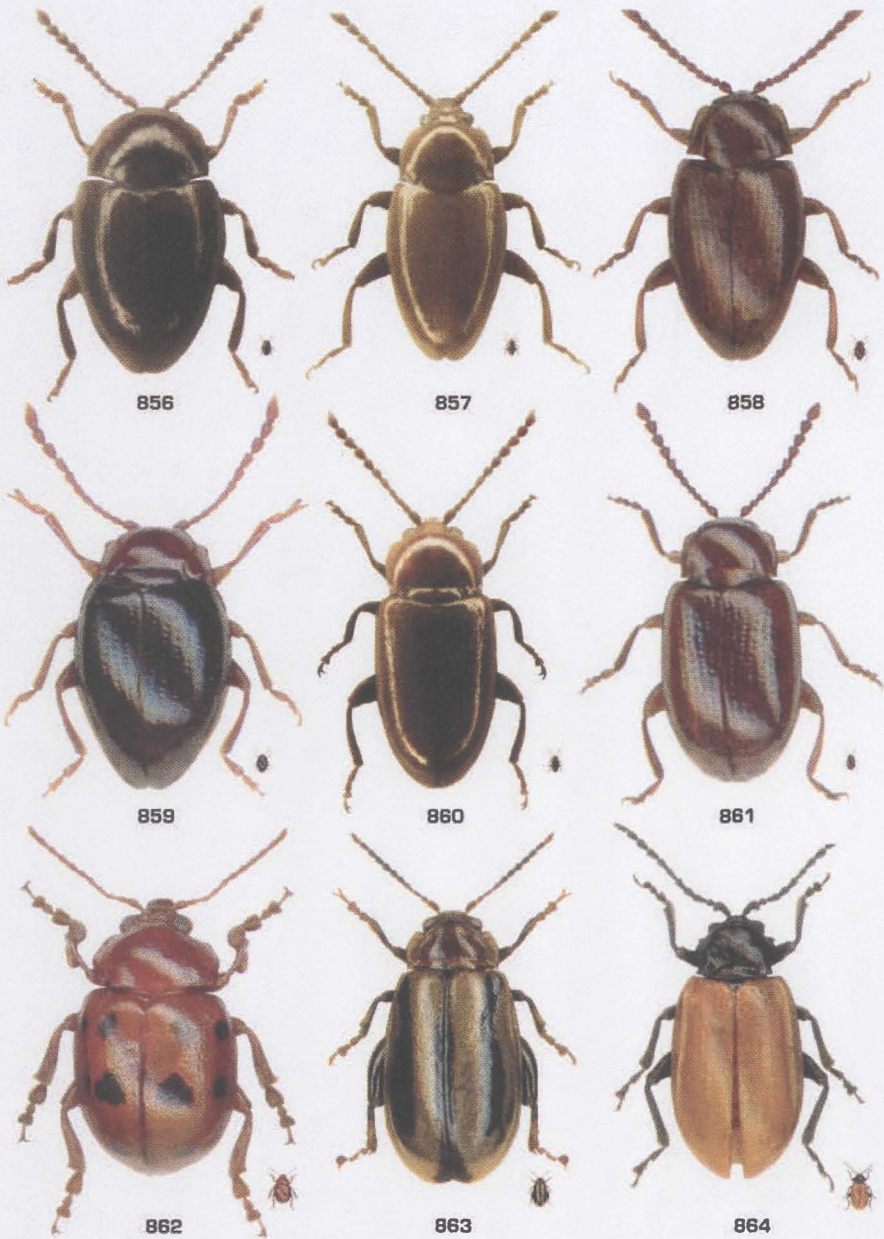
854



855

Phot. 847-855. 847 – *Neocrepidodera ferruginea*, 848 – *N. nigrifulva*, 849 – *N. nobilis*, 850 – *N. obscuritarsis*, 851 – *Nonarthra cyanea*, 852 – *N. tibialis*, 853 – *Oedionychis cincta*, 854 – *O. limbata*, 855 – *Ophrida spectabilis*.

Plate XCVI



Phot. 856-864. 856 - *Orestia arcuata*, 857 - *O. bulgarica*, 858 - *O. caucasica*, 859 - *O. leprieuri*, 860 - *O. parallela*, 861 - *O. punctipennis*, 862 - *Pentamesa kondarensis*, 863 - *Philopona vibex*, 864 - *Phygasia fulvipennis*.

Plate XCVII



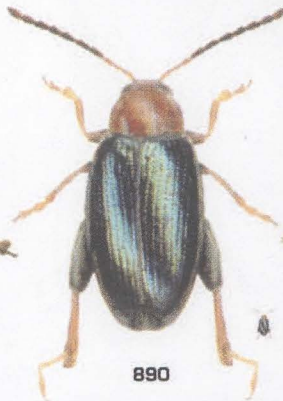
Phot. 865-873. 865 - *Phyllotreta armoraciae*, 866 - *P. flavoguttata*, 867 - *P. ochripes*, 868 - *P. pallidipennis*, 869 - *P. parallela*, 870 - *P. rufitarsis*, 871 - *P. rugifrons*, 872 - *P. sisymbrii*, 873 - *P. springeri*.

Plate XCVIII



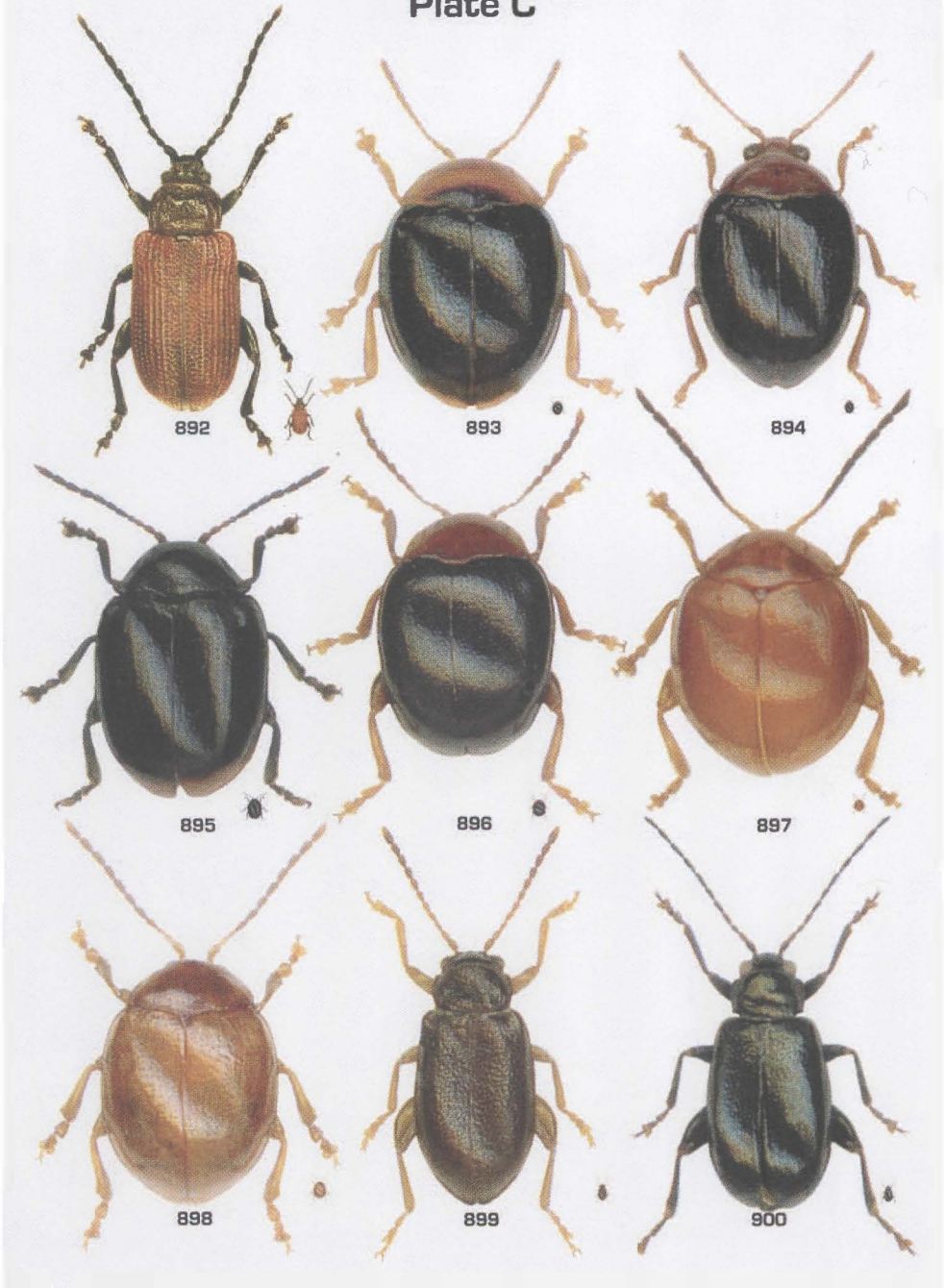
Phot. 874-882. 874 - *Phyllotreta tetrastigma*, 875 - *P. undulata*, 876 - *P. yoffei*, 877 - *P. zimmermanni*, 878 - *Podagrica fuscicornis*, 879 - *P. atlantica*, 880 - *P. malvae*, 881 - *P. menetriesi*, 882 - *Pseudodera xanthospila*.

Plate XCIX



Phot. 883-891. 883 – *Psylliodes chrysocephalus*, 884 – *P. dulcamarae*, 885 – *P. napi*, 886 – *P. picina*, 887 – *P. reitteri*, 888 – *P. ruficolor*, 889 – *P. tarsata*, 890 – *P. tricolor*, 891 – *Sphaeroderma testaceum*.

Plate C



Phot. 892-900. 892 – *Sangariola punctatostriata*, 893 – *Sphaeroderma apicale*, 894 – *S. balyi*, 895 – *S. nigricolle*, 896 – *S. fuscicorne*, 897 – *S. seriatum*, 898 – *S. separatum*, nowy, trzeba zrobić, 899 – *Zi-pangia obscura*, 900 – *Z. picipes*.

Plate CI



901



902



903



904



905



906



907



908



909

Phot. 901-909. 901 – *Acmenychus inermis*, 902 – *Callispa fortunii*, 903 – *Dactylispa angulosa*, 904 – *D. subquadrata*, 905 – *Dicladispa testacea*, 906 – *Hispa atra*, 907 – *Leptispa filiformis*, 908 – *Aspidimorpha transparipennis*, 909 – *Cassida brevis*.

Plate CII



910



911



912



913



914



915



916



917



918



Phot. 910-918. 910 – *Cassida canaliculata*, 911 – *C. hablitziae*, 912 – *C. lineola*, 913 – *C. murraea*, 914 – *C. undecimnotata* 916 – *Glyphocassis spilota*, 915 – *Hypocassida subferruginea*, 917 – *Oxylepus deflexicollis*, 918 – *Pileostoma fastuosa*.