

**A REVISION OF THE *CHOLEVA AGILIS* SPECIES GROUP
(COLEOPTERA, LEIODIDAE, CHOLEVINAE)**

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A REVISION OF THE *CHOLEVA AGILIS* SPECIES GROUP
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Abstract

The *Choleva agilis* species group is revised and currently contains 8 valid species (with *C. (C.) lederiana* Reitter, 1902 polymorphic). The following 3 taxa are described: *Choleva (Choleva) lederiana foeldalatti*, ssp. nov. (Hungary, Bakony mountains, cavernicolous), *Choleva (Choleva) lederiana pilisensis*, ssp. nov. (Hungary, Pilis mountains, cavernicolous) and *Choleva (Choleva) schuelkei*, sp. nov. (China, Shaanxi prov.). *C. (C.) cavazzutii* Giachino, 1990 is treated as a junior synonym of *C. (C.) agilis* (Illiger, 1798); *C. (C.) septentrionis* Jeannel, 1923 is treated as a junior synonym of *C. (C.) lederiana lederiana* Reitter, 1902. A new status is proposed for *C. (C.) l. lederiana* Reitter, 1902, *C. (C.) l. holsatica* Benick & Ihssen in Benick, 1937 and *C. (C.) lederiana sokolowskii* Ipsen & Tolasch, 1997. *C. (C.) hirtula* Reitter, 1885 is treated as a valid species (removed from synonymy with *C. (C.) cribrata* Saulcy, 1864). *C. (C.) barnevillei* Tournier, 1872 is excluded from *C. agilis* species group and transferred to the *C. reitteri* Petri, 1915 species group. *C. (C.) bosnica* Ganglbauer, 1899 is excluded from *C. agilis* species group and transferred to the *C. dorsigera* Marseul, 1864 species group. Lectotype and paralectotype(s) are designated for *Ptomaphagus agilis* Illiger, 1798, *Choleva agilis clermonti* van der Wiel, 1931, *C. aquilonia* var. *brevicollis* Krogerus, 1926, *C. cribrata* Saulcy, 1864, *C. emgei* Reitter, 1885 and *C. lederiana* Reitter, 1902. All species are redescribed, keyed, important taxonomic characters are figured, and a hypothesis for the phylogeny of species within the *C. agilis* species group is presented. Distribution of all taxa is given and plotted on maps. The possibility of hybrid zone between *C. (C.) agilis* and *C. (C.) lederiana* is discussed.

Keywords: Taxonomy, Coleoptera, Leiodidae, Cholevinae, *Choleva agilis* species group, Phylogeny, Distribution, Palearctic region.

Introduction

The genus *Choleva* Latreille, 1796 belongs in the subtribe Cholevina Kirby, 1837 (sensu Newton & Thayer 1992). At present, it contains about 60 species distributed mainly throughout Europe, Turkey and Transcaucasia; several species are also known from northern Africa, Middle East, Middle Asia and northern India. Traditionally, the genus is divided into two subgenera - the subgenus *Cholevopsis* Jeannel, 1922 and the nominotypical one (Jeannel 1936). Just recently, a third subgenus *Protocatops* Perreau, 1996 was erected for two species from Nepal and northern Vietnam (Perreau 1996).

The species of *Choleva* are general scavengers, usually restricted to burrows and nests of mammals (Jeannel 1936; Balazuc et al. 1946; Strejček 1971, Růžička & Vávra 1993). Only a few species are myrmecophilous (Jeannel 1936; Coiffait 1959). Additionally, specimens of many species of *Choleva* are regularly collected in subterranean habitats as rock debris (Růžička et al. 1989; Molenda 1989; Růžička & Zacharda 1994; Růžička & Vonička 1999; J. Růžička, unpubl. data), caves (Jeannel 1923a, 1936; Schweiger 1950; Coiffait 1959; Deleurance 1959; Hubart 1973; Hippe et al. 1985; Růžička & Vávra 1993; Beron 1994) and the superficial underground compartment (Kroker 1983). The species of the *Choleva agilis* species group have been reported from burrows and nests, rock debris, and caves (Jeannel 1936; Benick 1937; Szymczakowski 1957; Růžička 1998, 1999; Růžička & Vonička 1999).

In this paper, a revision of the *Choleva agilis* species group is presented, based on more than 3300 specimens from 111 institutions and private collections. The paper is finished almost exactly 200 years after Illiger's description of the first species of this species group.

Historical Review

The genus *Choleva* was divided into eleven species groups by Jeannel (1923a). In that paper, the *Choleva agilis* species group was established as the fourth group for the following species: *C. emgei*, *C. cribrata*, *C. agilis*, *C. bedeli*, *C. ja-lensis*, *C. septentrionis*, *C. lateritia*, *C. matthiesseni*, *C. sibirica*, *C. bosnica* and *C. barnevillei*.

The first named species in this group was *Choleva agilis*, described from eastern Prussia as *Ptomaphagus agilis* by Illiger (1798). Later, Latreille (1807) described *C. testacea* from southern France. The latter name was treated as a junior synonym of *C. agilis* by Spence (1815). Stephens (1829) used Spence's unpublished name *C. gomphosata* in his list of British beetles, but without any formal description or indication. Subsequently, Stephens (1830) described *C. gausapata* from southern England.

Saulcy (1864) published a description of *C. cribrata*, based on several specimens from Jerusalem. Tourmier (1872) described *C. barnevillei*, based on one pair from Algeria. Reitter (1885) keyed all known species from Europe and described two species: *C. emgei*, based on several specimens from Greece: Attique, and

C. hirtula, based on a single female from Lebanon. The same author described later *C. anceyi* from Algeria, based on a single male specimen (Reitter 1887) and *C. adusta* from northern Turkey (Amasia), based on a single female (Reitter 1896). Ganglbauer (1899) described *C. bosnica*, based on a single female from Bosnia. In the same paper, he also mentioned (probably for the first time) *C. gausapata* Stephens, 1830 as a junior synonym of *C. agilis* (Illiger, 1798). Reitter (1902) described *C. lederiana*, based on several specimens from the central Altai mountains. The same author described *C. matthiesseni* based on a single male specimen from the Tian Shan mountains, Kultscha (Reitter 1914). Peyerimhoff (1917) treated *C. anceyi* Reitter, 1887 as a junior synonym of *C. barnevillei* Tournier, 1872.

Jeannel (1923a) created the *Choleva agilis* species group; keyed all known species; described *C. septentrionis*, based on a single female from northern Norway; *C. bedeli*, based on a single male from western Anatolia; and *C. jailensis*, based on two females from Crimea. Furthermore, he proposed the following taxonomic changes: treated *C. hirtula* Reitter, 1885 as a junior synonym of *C. cribrata* Saulcy, 1864; *C. adusta* Reitter, 1896 and *C. lederiana* Reitter, 1902 as junior synonyms of *C. agilis* (Illiger, 1798); proposed the new name *C. sibirica* for *C. pallida* Poppius, 1903, not Ménétries, 1832; and treated *C. gomphosata* Stephens, 1829 as "nom. fals." (i.e., nomen nudum).

Krogerus (1926a) described *C. aquilonia* from two specimens from the Torhola cave, southern Finland, and *C. aquilonia* var. *brevicollis* based on two female specimens from the Fischer Peninsula, northern Karelia. Further, van der Wiel (1931) gave a key to the species of *Choleva* from the Netherlands, treated *C. aquilonia* only as a subspecies of *C. agilis* and described *C. agilis clermonti* from the Pyrenees, based on 5 specimens.

Jeannel (1936) in his revision of Catopidae keyed and reviewed all species of *Choleva* known at this time. In the same paper, he clarified the nomenclatorial problems concerning *C. pallida* Poppius, 1903 (originally included in the *Choleva agilis* species group by Jeannel 1923a): the replacement name *C. sibirica* Jeannel, 1923 was considered to be unnecessary, because *Choleva pallida* Poppius, 1903 is not the younger homonym of *Catops pallidus* Ménétries, 1832. Furthermore, *C. pallida* Poppius, 1903 was transferred to the newly described genus *Cryocatops* Jeannel, 1936. Lastly, another species included by Jeannel (1923a) in the same species group, *C. lateritia* Ménétries, 1849, was placed here as species incertae sedis from the proposed groups and it was suggested that it probably belonged to *Cholevinus* Reitter, 1901.

Later, Benick & Ihssen in Benick (1937) described *C. holsatica* from the Segeberger Höhle cave in northern Germany, based on more than 1200 specimens. Szymczakowski (1957) described another cavedwelling taxon of this group from central Europe, *C. aquilonia gracilenta*, based on more than 80 specimens from two closely situated (and probably interconnected) caves from the Sokole Góry mountains in south-western Poland. In the same paper, *C. holsatica* was treated as *C. septentrionis holsatica*, although without any formal change of its status. Already in 1961, Szymczakowski, in his key to Polish species of Catopidae, treated *C. aquilonia* Krogerus, 1926 as a junior synonym of *C. lederiana* Reitter, 1902

and cited his taxon as *C. lederiana gracilentia*; both changes again without an explicit formal arrangement (Szymczakowski 1961). The same status for both of the last-mentioned taxa is later repeated by Szymczakowski (1971a, b). Yablokov-Khinzoryan (1967) briefly described the female genitalia of *C. matthiesseni*. Recently, Giachino (1990) described *C. cavazzutii* from several localities in Turkey, based on 6 specimens. Finally, Schilthuizen (1990) presented a redescription of *C. agilis*, *C. lederiana* and *C. septentrionis*, treated *C. jailensis* Jeannel, 1923 and *C. agilis clermonti* van der Wiel, 1931 as junior synonyms of *C. agilis* and *C. lederiana* var. *brevicollis* Krogerus, 1926 as a junior synonym of *C. lederiana* Reitter, 1902. Furthermore, he newly combined the Polish cave-dwelling taxon as *C. septentrionis gracilentia*, and designated a lectotype for *C. jailensis* Jeannel, 1923, a lectotype and paralectotype for *C. aquilonia* Krogerus, 1926, and a lectotype and paralectotypes for *C. holsatica* Benick & Ihssen in Benick, 1937.

Recently, Ipsen & Tolasch (1997) described *C. septentrionis sokolowskii* from the Hohlsteinhöhle cave in Teutoburger Wald, Nordrhein-Westfalen, Germany.

Material and Methods

Material for this study came from the following museums and private collections (acronyms according to Arnett et al. 1993): AOLC – A. Olexa collection, Praha; AWEC – A. Weigel collection, Pöbneck; BISL – Biološki inštitut Jovana Hadžija, Znanstvenoraziskovalni center Slovenske akademije znanosti in umetnosti, Ljubljana (B. Drovenik); BMNH – The Natural History Museum, London (M.J.D. Brendell); BMUK – Bolton Museum, Bolton (E.G. Hancock); BSAC – B. Sagvolden collection, Rollag; CUMZ – University Museum of Zoology, Cambridge (W.A. Forster); DEIC – Deutsches Entomologisches Institut, Eberswalde-Finow (L. Zerche); GYUC – G. I. Yuferev collection, Shmelevo; HFRC – H. Franz collection, Mödling; HMUG – Hunterian Museum, University of Glasgow, Glasgow (Margaret Reilly); HNHM – Természettudományi Múzeum, Budapest (O. Merkl); IJEC – I. Jeniš collection, Náklo; ISNB – Institut royal des sciences naturelles de Belgique, Bruxelles (G. Coulon); JBOC – J. Boháč collection, České Budějovice; JBRC – J. Brestovanský collection, Neratovice; JBOC – J. Brokeš collection, Litomyšl; JCOC – J. Cooter collection, Hereford; JFRC – J. Frank collection, Korb; JHAC – J. Habarta collection, Velká nad Veličkou; JJAC – J. Janák collection, Ústí nad Labem; JKAC – J. Kaláb collection, Jinačovice; JNEC – J. Nežerka collection, Třinec; JPRC – J. Prouza collection, Hradec Králové; JRUC – J. Růžička collection, Praha; JSIC – J. Siitonen collection, Vantaa; JTUC – J. Turna collection, Kostelec na Hané; JVAC – J. Vávra collection, Ostrava; KMVC – Muzeum východních Čech, Hradec Králové (M. Mikát); KORC – K. Orszulik collection, Frýdek-Místek; KREC – K. Resl collection, Šumice; LDAC – L. Daněk collection, Nymburk; LERC – L. Ernest collection, Nymburk; LHUC – L. Hubička collection, Praha; LKLC – L. Klíma collection, Ostrava; LKOC – L. Koloničný collection, Ostrava; LMEC – L. Mencl collection, Týnec nad Labem; LSLC – L. Šulák collection, Ostrava; MFIC – M. Fiala collection, Bousov; MHNG – Muséum d'Histoire naturelle, Genève (I. Löbl, G. Cuccodoro); MHRC –

M. Hruška collection, Ždár nad Sázavou; MKUC – M. Kuboň collection, Ostrava; MMBC – Moravské zemské muzeum, Brno (P. Lauterer, J. Kolibáč); MMUE – Manchester Museum, Manchester (C. Johnson); MNHN – Muséum national d'Histoire naturelle, Paris (Nicole Berti); MNMS – Museo Nacional de Ciencias Naturales, Madrid (Carolina Martín); MPEC – M. Perreau collection, Paris; MSCC – M. Schülke collection, Berlin; MSNC – M. Snížek collection, České Budějovice; MSNM – Museo Civico di Storia Naturale, Milano (C. Leonardi, M. Pavesi); MSNV – Museo Civico di Storia Naturale, Verona (Roberta Salmaso); MZHF – Zoologiska museet, Helsingfors (O. Biström); MZLS – Musée de Zoologie, Lausanne (C. Hofmann); MZLU – Zoologiska Institutionen, Lund (R. Danielsson); NHMB – Naturhistorisches Museum, Basel (M. Brancucci); NHMW – Naturhistorisches Museum, Wien (H. Schönmann); NHRS – Naturhistoriska Riksmuseet, Stockholm (P. Lindskog); NMPC – Národní muzeum, Praha (S. Bílý, J. Jelínek); NMPG – Museum der Natur, Gotha (information according to A. Weigel); OHAC – O. Hanssen collection, Trondheim; OLML – Oberösterreichisches Landesmuseum, Linz (F. Gusenleitner); OMCL – Okresní muzeum, Česká Lípa (M. Honců); OMOC – Ostravské muzeum, Ostrava (J. Vávra); OXUM – Hope Entomological Collections, University Museum, Oxford (C. O'Toole); PBOC – P. Boža collection, Ostrava; PCEC – P. Čechovský collection, Brno; PKRC – P. Krásenský collection, Chomutov; PMOC – P. Moravec collection, Litoměřice; RFOC – R. Fornůsek collection, Olomouc; RMUC – R. Molenda collection, Jena; RROC – R. Rous collection, Praha; RSHC – R. Schuh collection, Katzelsdorf; RSME – Royal Scottish Museum, Edinburgh (A. E. Whittington); RUDC – R. Udržal collection, Pardubice; SLNC – S. Lundberg collection, Luleå; SMFD – Forschungsinstitut Senckenberg, Frankfurt am Main (Andrea Vesmanis, D. Kovac); SMNO – Staatliches Museum für Naturkunde, Oldenburg (M. Nordmann); SMNS – Staatliches Museum für Naturkunde, Stuttgart (W. Schawaller); SMTD – Staatliches Museum für Tierkunde, Dresden (O. Jäger); SNMC – Slovenské národné múzeum, Bratislava (I. Okáli, V. Janský); SZOC – S. Zoia collection, Milano; TCLC – T. Clayhills collection, Pargas; TILC – T. Ilvesalo collection, Turku; TKOC – T. Kopecký collection, Hradec Králové; TLAC – T. Lackner collection, Košice; TSIC – T. Sitek collection, Ostrava; TTOC – T. Tolasch collection, Hamburg; VKAC – V. Karas collection, Veselí nad Lužnicí; VMUO – Vlastivědné muzeum, Olomouc (Milada Bocáková); VSKC – V. Skoupý collection, Kamenné Žehrovice; VTYC – V. Týr collection, Žihle; VVRC – V. Vrabec collection, Kolín; VVYC – V. Vyhánek collection, Olomouc; ZMAC – Z. Malinka collection, Opava; ZMAN – Instituut voor Taxonomische Zoölogie, Amsterdam (B. Brugge); ZMAS – Zoological Museum, Academy of Sciences, St. Petersburg (M. G. Volkovitsh); ZMHB – Zoologisches Museum der Humboldt-Universität, Berlin (F. Hiecke, M. Uhlig); ZMSL – Zoologisches Museum, Lübeck; ZMUB – Zoologisk Museum, Bergen (Lita Greve Jensen); ZMUC – Zoological Museum, København (M. Hansen); ZMUN – Zoologisk Museum, Oslo (K. Sund, J. E. Raastad); ZSMC – Zoologische Staatssammlung, München (M. Baehr);

Specimens of the newly described taxa are provided with one red printed label: "HOLOTYPUS, ALLOTYPUS [or] PARATYPUS, ♂ [or] ♀, [Name of a ta-

xon], sp. nov. [or], ssp. nov., J. Růžička & J. Vávra det. 1998". In cases of a lectotype and paralectotype designation, each specimen bears a red printed label "LECTOTYPUS [or] PARALECTOTYPUS, ♂ [or] ♀, [Name of a taxon], Jan Růžička & Jiří Vávra des. 1998". Exact label data are cited only for type material, using the following set of abbreviations: MS – manuscript, HT – holotype, AT – allotype, PT – paratype(s), LT – lectotype, PLT – paralectotype(s). Authors' remarks and addenda are found in square brackets; [p] – the preceding data within a quotation are printed; [h] – the same but hand-written, [*] – according to personal communication by O. Merkl (HNHM), the labels with red margin were not written by E. Reitter or R. Jeannel but later by a curator of the Budapest museum (Z. Kaszab or V. Székessy); [illeg.] – following the illegible data. Separate lines are indicated by "//", separate labels by "/". The lectotype and paralectotypes are designated in order to preserve stability of nomenclature in this group, according to the Article 74.7.3 of the Code (ICZN 1999).

Following abbreviations are used throughout the text: coll. – collection of (not collector!), env. – environs, mt. – mountain, mts – mountains, nr. – near, prov. – province, vill. – village.

All material studied was determined and/or reviewed by J. Růžička or J. Vávra. Only type material is treated below under each species. For detailed list of all other material examined in the present paper see the Appendix.

Genitalia and abdominal segments in selected specimens were mounted in DMHF (Dimethyl Hydantoin Formaldehyde) resin (a water soluble medium) on small pieces of cover glass according to Bameul (1990). Important specimens (primary types etc.) with genitalia mounted in this manner are marked by [GD] in the text below.

The terminology concerning the shape of the basal margin of ventrite VIII in females, the so called spiculum ventrale, is used according to Perreau (1989).

All ratios given in descriptions were calculated from measurements made using an ocular micrometer. Only if a population sample from a particular locality was measured are arithmetic means of these ratios (together with sample size) given.

The cladistic analysis method applied here is discussed in Forey et al. (1992). The data matrix was analysed using the implicit enumeration option (ie*) of the program Hennig86 version 1.5 (Farris 1988). The consensus tree was obtained using the procedure nelsen (Farris 1988). The distribution of characters was studied with Tree Gardener version 2.2 (Courrol Ramos 1997).

Distribution maps were prepared using Map Maker (an integrated Web interface to the Generic Mapping Tools package version 3.0, publicly accessible on <http://lorenz.mur.csu.edu.au/cgi-bin/gis/Map>). Only data based on material studied by the authors are plotted for each species.

Collecting Techniques

Adults of the *Choleva agilis* species group can be collected (together with their larvae) by breaking out the ceilings of underground tunnels of small mam-

mals especially in the spring and autumnal months when the ground is wet (Palmqvist 1948; Strejček 1971; Fjellberg 1972). Collecting in the winter nests of *Talpa europaea* should be also effective (e. g., Balazuc et al. 1946; Osella & Zanetti 1974), or searching in burrows of mammals (e. g., *Oryctolagus cuniculus*, *Vulpes vulpes* or *Meles meles* – Frankenberger 1910; Balazuc et al. 1946; J. Růžička & J. Vávra, unpubl. data).

Large samples can be also taken using pitfall traps (baited with fish meat and/or ripened cheese and with ethylene or propylene glycol as preservative). In northern Europe and/or in mountainous regions, trapping in open landscapes should be effective (Biström & Väisänen 1988; J. Růžička, unpubl. data), otherwise good results can be obtained in caves (including their entrances) (Biström & Hippa 1987; J. Růžička & J. Vávra, unpubl. data) and in rock debris (Růžička 1999; Růžička & Vonička 1999; J. Růžička, unpubl. data). In the latter habitat, the best results are usually achieved at the bottom margin of taluses, covered by a rich carpet of moss, usually with very cold and wet microclimatic conditions. The best results are gained in debris consisting from small stones or gravel. Traps should be placed in the depth about 20-60 cm from the surface level. However, members of this species group can be also successfully collected by placing similar traps in accumulations of stones artificially made by farmers at field edges. Again, the last example is probably closely connected with the rich abundance of small mammals (as rodents and shrews) and their runways and nests in such habitats.

Diagnostic Characters

The following characters were found to be important in distinguishing at least some of the species; this set is used in the differential descriptions below. Some details are added concerning suitable techniques for observing some characters.

General characters.

Total length of body. This should only be considered as approximate, and influenced by the mounting style of the specimen measured, namely by the more or less extended or retracted head.

Relative robustness of body. Reflected by proportions of pronotum (maximum width to midline length; in dorsal view) and elytra (midline length, measured from caudal tip of scutellum to elytral apex, to maximum width; in dorsal view).

Microsculpture. Usually, microsculpture of head and pronotum distinct; in *C. emgei* and *C. lederiana pilisensis*, ssp. nov. microsculpture subobsolete. Pronotum with distinct microsculpture in most species, smooth in *C. cribrata* and *C. hirtula*.

Punctuation of pronotum. Usually, punctures small and fine, but in two species (*C. cribrata*, *C. hirtula*) with distinct, coarse punctuation.

Shape of pronotum. Usually, pronotum transversely-oval in most species of the *C. agilis* species group; however, generally stout in comparison with other *Choleva* species. In some cave-dwelling subspecies of *C. lederiana*, lateral margin of pronotum is more parallel posteriorly (Figs. 175-177); and pronotum is more dorso-ventrally flattened, namely postero-laterally.

Setation. Pronotum and elytra with short, recumbent setae; in *C. cribrata* and *C. hirtula* setae long and erect.

Elongation of appendages. More expressed in some cave-dwelling taxa (Fig. 2), see Szymczakowski (1957), Růžička (1998).

Male sexual characters.

Protarsomere. Different level of dilation present, relatively elongate in some cave-dwelling taxa (*C. lederiana gracilentia*, *C. l. sokolowskii*, *C. l. foeldalatti*, ssp. nov.).

Mesotibia. Straight or slightly bent, oval in cross-section in some species (Fig. 251), but distinctly modified, more or less curved in several species (Figs. 9-13). The extent of modification varies between individual populations, namely in *C. l. lederiana* (Figs. 10-12) and is best visible in ventro-lateral view.

Metacoxa. Short in the majority of species; attenuate posteriorly only in *C. bedeli* (Fig. 77).

Metatrochanter. Apex usually regularly rounded; pointed only in *C. bedeli* and *C. emgei* (Figs. 77, 99). An important character is the presence of a tooth, situated postero-basally to postero-apically. However, as noted already by Schilthuizen (1990), the size and shape of the tooth varies significantly (confirmed in *C. agilis* (Figs. 35-39) and within subspecies of *C. lederiana*) and is a weak character for species identification. A ventral view of the metatrochanter is advised; routine use of laterally incised mounting labels facilitates the ventral view of metacoxae and metatrochanters of glued specimens.

Abdomen. Medial impressions on ventrites IV to VI present in *C. agilis* and *C. lederiana*, ranging from weak to considerably distinctly expressed (Figs. 129, 183, 197, 232, 239). For correct examination, oblique illumination is necessary.

Aedeagus. The dorsal and lateral view of the apical portion of penis provides the most constant characters for male identification in most species (Figs. 82, 83, 95, 96, 105, 106, 247, 248, 257, 258). However, considerable variation was observed in individual populations and/or subspecies of *C. lederiana* (Figs. 15-18, 115-120, 122, 123, 125-128, 179, 180, 194, 195, 207, 208, 220, 221, 235, 236), and in peripheral populations of *C. agilis* (Figs. 19, 20, 23-27, 29-34). Elongation of aedeagus seems to be correlated with general body elongation of cave-dwelling taxa. Relative length of paramere (compared with the length of penis) should be important in some taxa; distinctly elongate in *C. bedeli* (Fig. 74) and shortened in *C. lederiana pilisensis*, ssp. nov. (Fig. 221). Subapical constriction of paramere was found to be considerably variable and of limited value for identification. Modification of apex of paramere (distinctly flattened dorso-ventrally and dilated laterally) was found in *C. matthiesseni* (Fig. 248).

Female sexual characters.

Apex of elytron. Regularly rounded in females of most species (Figs. 3, 40-42, 130, 141-145, 185-187), but sometimes truncate (Figs. 135, 223, 224, 245, 249), attenuate (Figs. 109, 131, 139, 211-213) and/or with slender terminal tip (Figs. 86, 87, 110, 136-138, 250). More attenuate in some cave-dwelling forms. Moreover, medial margin subapically sinuous in *C. lederiana gracilentia* and *C. l. holsatica* (Figs. 199, 211-213). It is usually most distinctive with examination in dorso-apical view.

Spiculum ventrale. Laterally dilated in some species (*C. bedeli*, *C. emgei*, *C. matthiesseni*, sometimes also in *C. cribrata*; Figs. 81, 90, 102, 256); or rounded, truncate to emarginate anteriorly in most species (Figs. 63-72, 89, 112, 162-168, 190, 191, 202, 203, 216, 217, 230, 231, 243). The level of truncation or emargination considerably varies also within population samples, and is a character not reliable for exact identification. Minimally, temporary glycerine mounts of ventrite VIII are necessary; in dry condition, collapsed membranes usually prevent exact examination of shape.

Tergum IX. Antero-medial margin entire (as in Fig. 100) or distinctly sinuate in some species (Figs. 46, 146, 147); tergum IX distinctly elongate in *C. cribrata* and *C. hirtula* (Figs. 91, 113).

Tergum X. Shape considerably constant in some species (Figs. 79, 91-93, 100, 113, 254), but variable and thus of limited taxonomical importance in others, namely in some subspecies of *C. lederiana* (Figs. 146-148, 151-154, 157-161, 204-206, 218, 219) and in peripheral populations of *C. agilis* (Figs. 51-59). Posterior margin setose in some species, or bare in others. Examination under light microscope (in temporary glycerine mounts or in permanent mount in DMHF [see above]) is necessary for confirmation of the presence of two minute setae in *C. agilis* and *C. lederiana* (as in Fig. 46).

Stylus. Generally of limited taxonomical importance. Mostly short and wide, more elongate only in *C. emgei* (Fig. 101). Presence of 2-5 (usually 3 or 4) subapical setae inapplicable in species identification, sometimes varies between left and right stylus of the same specimen (observed in *C. cribrata*, *C. lederiana* and *C. agilis*). Examination under light microscope is necessary. Sometimes, setae can easily be broken off during dissection, especially in old specimens.

Systematics

Choleva agilis species group

Jeannel (1923a, 1936) characterized the *C. agilis* species group by the following set of characters: internal sac of aedeagus with three longitudinal rows of small spines, combined with a single, ventro-apical tooth, which is short and crenate distally (Jeannel 1923a: fig. 4). Male metatrochanter pointed. Female tergum X oblong or subtriangular. Pronotum widest posteriorly.

In fact, none of these characters can be considered as a synapomorphy for all species currently included to the *C. agilis* species group. The structure of the in-

ternal sac of the aedeagus was examined by Jeannel (1923a) only for the single species of this group, *C. agilis* (Jeannel 1923a: fig. 4). The states of the male metatrochanter, female tergum X or shape of pronotum considerably varies within the group (see descriptions of individual species below). However, most of the species of the *C. agilis* species group can be characterized by a more robust and compact habitus, compared with other species of *Choleva*.

Two subgroups seem to exist within the *C. agilis* species group (for more detailed discussion, see the phylogenetic analysis below). We suggest that the first subgroup (consisting from *C. emgei*, *C. bedeli* and *C. matthiesseni*) can be characterized by the laterally dilated spiculum ventrale on female ventrite VIII. The second subgroup (containing the rest of the species) can be characterized by the presence of a tooth on male metatrochanter.

However, a modern study of phylogeny of *Choleva* (never undertaken after Jeannel's 1923a and 1936 revisions) is badly needed. Prior to such a study, we are tentatively preserving the *C. agilis* species group in the concept of Jeannel (1936). In this paper, only two species are excluded, *C. barnevillei* and *C. bosnica*, erroneously placed in this group by Jeannel (1923a) and clearly belonging in other groups (for more detailed discussion, see below under the section on species presently excluded from the *C. agilis* species group). As pointed already by Schilthuizen (1990), Jeannel's general classification has never been contradicted since his revision (Jeannel 1936); and this is not the intention of the present paper.

Key for the species of the *Choleva agilis* species group

Total body length and distribution of species is treated only under males. Female of *C. schuelkei*, sp. nov. is unknown.

- 1a Pronotum with coarse punctation, smooth. Male metatrochanter with postero-apical tooth (Figs. 84, 107). Female tergum IX with apex almost reaching the tip of tergum X (Figs. 91, 113) 2
- 1b Pronotum with fine punctation, with distinct microsculpture. Male metatrochanter without tooth or with postero-basal or posterior (*C. schuelkei*, sp. nov.) tooth (Figs. 35-39, 121, 260). Female tergum IX with apex never reaching the tip of tergum X (as in Figs. 46, 79, 100) 3
- 2a Apex of aedeagus stout, short (Figs. 82, 83). Male metatrochanter oblong, with robust postero-apical tooth (Fig. 84). Apex of female elytron with a minute, but distinct tooth (Figs. 86, 87). Female tergum X rounded apically (Figs. 91-93). Body length 4.2-4.5 mm. Lebanon, Jordan, Israel
.....*C. cribrata* Saulcy
- 2b Apex of aedeagus slender, elongate (Figs. 105, 106). Male metatrochanter almost quadrate, pointed to elongate postero-apical tooth (Fig. 107). Apex of female elytron with a large tooth (Fig. 109, 110). Female tergum X subtruncate apically (Fig. 113). Body length 4.3-5.0 mm. Lebanon. *C. hirtula* Reitter

- 3a Protarsus expanded. Males..... 4
- 3b Protarsus simple. Females..... 14
- 4a Metatrochanter without tooth (Figs. 77, 99, 255). Mesotibia not curved (as in Fig. 251)..... 5
- 4b Metatrochanter with a tooth (as in Figs. 35-39, 121, 260). Mesotibia curved (Figs. 9-13)..... 7
- 5a Metacoxa posteriorly attenuate to a slender process (Fig. 77). Paramere distinctly longer than penis (Fig. 74). Body length 4.2-5.1 mm. Greece (Crete, Rhodes), Cyprus, Turkey. *C. bedeli* Jeannel
- 5b Metacoxa not posteriorly attenuate. Paramere only slightly longer than penis (Figs. 96, 248)..... 6
- 6a Metatrochanter pointed apically (Fig. 99). Aedeagus with subapical lateral constriction in dorsal view (Fig. 96). Paramere with slender apex in dorsal view (Fig. 96). Body length 4.2-4.5 mm. Albania, Greece (incl. Crete) *C. emgei* Reitter
- 6b Metatrochanter rounded apically (Fig. 255). Aedeagus gradually narrowing to apex in dorsal view (Fig. 248). Paramere widened and flattened apically in dorsal view (Fig. 248). Body length 4.5-5.4 mm. Kazakhstan, Kyrgyzstan, China: Xinjiang autonomous region *C. matthiesseni* Reitter
- 7a Metatrochanter with a posterior, robust tooth (Fig. 260). Aedeagus with considerably slender apex in dorsal view (Fig. 258). Body length 4.95 mm. China: Shaanxi province. *C. schuelkei*, sp. nov.
- 7b Metatrochanter with a postero-basal tooth. Tooth smaller, or large and hooked (Figs. 35-39, 121, 182, 196, 209, 222, 238). Aedeagus with wider apex in dorsal view (as in Figs. 20, 22, 34, 116, 180, 195, 208, 221, 236). Europe to Central Asia..... 8
- 8a Apex of aedeagus short in dorsal view (Figs. 20, 22, 25, 27, 30, 32, 34), slightly undulous ventrally to nearly straight in lateral view (Figs. 14, 19, 21, 24, 26, 29, 31, 33). Body length 3.9-5.5 mm. Great Britain, southern Scandinavia, continental Europe to Crimea, Asia Minor and Caucasus..... *C. agilis* (Illiger)
- 8b Apex of aedeagus attenuate in dorsal view (Figs. 116, 118, 120, 123, 126, 128, 180, 195, 208, 221, 236), slightly to heavily undulous ventrally in lateral view (Figs. 15-18, 115, 117, 119, 122, 125, 127, 179, 194, 207, 220, 235). Body length 4.3-6.0 mm. Ireland, Great Britain, Scandinavia, Ural mountains and Altai mountains, isolated populations in Central Europe..... *C. lederiana* Reitter; 9
- 9a Head lustrous, with subobsolete microsculpture. Paramere shorter than or as long as apex of penis (Fig. 221). Body length 4.8-5.6 mm. Hungary: Pilis mountains; cavernicolous..... *C. l. pilisensis*, ssp. nov.
- 9b Head opaque, with distinct microsculpture. Paramere longer than or at least as long as apex of penis (Figs. 116, 180, 195, 208, 236)..... 10

- 10a Pronotum postero-laterally sinuous in dorsal view (Figs. 175). Mesotibia only considerably slightly curved (Fig. 198). Aedeagus abruptly narrowed between median and apical portion in dorsal view (Fig. 195). Body slender, length 4.4-5.1 mm. Poland: Sokole Góry mountains, Góry Świętokrzyski mountains; cavernicolous..... *C. l. gracilentata* Szymczakowski
- 10b Pronotum parallel or postero-laterally rounded in dorsal view (Figs. 169-174, 176-178, 241). Mesotibia more distinctly curved (Figs. 10-13, 181, 227, 237). Aedeagus usually regularly tapering between median and apical portion in dorsal view (Figs. 116, 118, 120, 123, 126, 128, 180, 208, 221, 236). 11
- 11a Apex of elytron subtruncate (Figs. 210, 244). Body more elongate, elytra 1.57-1.82 (means 1.69 and 1.70) times as long as wide. 12
- 11b Apex of elytron rounded (Figs. 184, 288-290). Mesotibia more or less distinctly curved (Figs. 10-12, 181). Body more robust, elytra 1.40-1.80 (means ranging from 1.50-1.55 in different populations) times as long as wide. 13
- 12a Apex of aedeagus heavily undulous in lateral view (Figs. 18, 207). Mesotibia distinctly curved (Fig. 13). Protarsomere moderately expanded, 4.00-5.14 (mean 4.68) times as long as wide. Body length 4.5-5.7 mm. Germany: Segeberg; cavernicolous..... *C. l. holsatica* Benick & Ihssen in Benick
- 12b Apex of aedeagus less distinctly undulous in lateral view (Fig. 235). Mesotibia finely curved (Fig. 237). Protarsomere weakly expanded, 4.88-5.50 (mean 5.29) times as long as wide. Body length 5.1-5.6 mm. Germany: Teutoburger Wald; cavernicolous..... *C. l. sokolowskii* Ipsen & Tolasch
- 13a Pronotum subtrapezoidal in dorsal view (Fig. 177). Ventriles IV-VII with distinct medial depression (Fig. 183). Body length 4.3-5.2 mm. Hungary: Bakony mts; cavernicolous *C. l. foeldalatti*, ssp. nov.
- 13b Pronotum with more rounded posterior angle (Figs. 169-174). Ventriles IV-VII with less distinct medial depression to subobsolete depression (Fig. 129). Body length 4.7-6.0 mm. Ireland, Great Britain, Scandinavia, Ural mountains, Altai mountains; isolated populations in Switzerland, Germany, Poland, Czech Republic and Slovakia *C. l. lederiana* Reitter
- 14a Ventrile VIII with spiculum ventrale laterally dilated in dorsal view (Figs. 81, 102, 256). Tergum IX entire, never sinuate antero-medially (Figs. 79, 100, 254). Posterior margin of tergum X with numerous setae (Figs. 79, 100, 254) 15
- 14b Ventrile VIII with spiculum ventrale not laterally dilated; rounded, subquadrate or quadrate in dorsal view (Figs. 63-72, 162-168, 190, 191, 202, 203, 216, 217, 230, 231, 243). Tergum IX sinuate antero-medially (as in Figs. 46, 146, 147). Posterior margin of tergum X bare or with a pair of considerably minute setae (as in Figs. 46-52). 17
- 15a Tergum X considerably narrowed anteriorly, rounded posteriorly (Fig. 79). Spiculum ventrale remarkably wide in dorsal view (Fig. 81). *C. bedeli* Jeannel
- 15b Tergum X oval, not narrowed anteriorly (Figs. 100, 254). Spiculum ventrale more slender (Figs. 102, 256) 16

- 16a Tergum IX simple (Fig. 100). Tergum X weakly sclerotized anteriorly (Fig. 100). Spiculum ventrale subtruncate anteriorly in dorsal view (Fig. 102). Stylus elongate (Fig. 101). *C. emgei* Reitter
- 16b Tergum IX expanded laterally (Fig. 254). Tergum X uniformly sclerotized (Fig. 254). Spiculum ventrale regularly rounded in dorsal view (Fig. 256). Stylus short and wide (Fig. 252). *C. matthiesseni* Reitter
- 17a Tergum X with weakly rounded to subtruncate posterior margin; usually widest subposteriorly in dorsal view (Figs. 46-52, 54-59). Spiculum ventrale with rounded to truncate anterior margin in dorsal view (Figs. 63-72). Elytron with rounded apex (Figs. 40-42, 44, 45), very exceptionally angulate or even slightly attenuate apex (Fig. 43) *C. agilis* (Illiger)
- 17b Tergum X with weakly rounded to angular posterior margin; ovoid, hexagonal to suboblong in dorsal view (Figs. 146-148, 151-154, 157-161, 192, 193, 204-206, 218, 219, 233, 234, 246). Spiculum ventrale with subtruncate, truncate to emarginate anterior margin in dorsal view (Figs. 162-168, 190, 191, 202, 203, 216, 217, 230, 231, 243). Elytron with rounded, right-angled to attenuate apex (Figs. 130-145, 185-187, 211-213, 223, 224, 226, 245). *C. lederiana* Reitter; 18
- 18a Apex of elytron not attenuated to terminal tip in dorso-apical view (Figs. 130, 132-135, 140-145, 185-187, 223, 224, 226, 245). 19
- 18b Apex of elytron attenuated to terminal tip in dorso-apical view (Figs. 4, 131, 136-139, 211-213). 22
- 19a Tergum X suboblong in dorsal view (Fig. 192, 193).
..... *C. l. foeldalatti*, ssp. nov.
- 19b Tergum X oval, elongate or hexagonal in dorsal view (Figs. 146-148, 151-154, 157-161, 233, 234, 246). 20
- 20a Apex of elytron rounded or subtruncate in dorso-apical view (Figs. 130, 132-135, 140-145). Tergum X considerably variable; oval, elongate to hexagonal in dorsal view (Figs. 146-148, 151-154, 157-161).
..... *C. l. lederiana* Reitter
- 20b Apex of elytron distinctly truncate in dorso-apical view (Figs. 223, 224, 226, 245). 21
- 21a Head lustrous, with subobsolete microsculpture. Tergum X distinctly hexagonal in dorsal view (Figs. 233, 234). *C. l. pilisensis*, ssp. nov.
- 21b Head opaque, with distinct microsculpture. Tergum X less hexagonal, with anterior margin distinctly wider in dorsal view (Fig. 246).
..... *C. l. sokolowskii* Ipsen & Tolasch
- 22a Apex of elytron broadly attenuate; medial margin sinuous subapically (Figs. 4, 211-213). 23
- 22b Apex of elytron with slender terminal tip; medial margin straight subapically (Figs. 136-139). *C. l. lederiana* Reitter
- 23a Elytral apex less attenuate, subrectangular. Eye larger, 1.15-1.55 times as wide as distance between posterior margin of antennal insertion and anterior margin of eye. Body smaller, length 4.4-5.2 mm.
..... *C. l. gracilentata* Szymczakowski

- 23b Elytral apex more attenuate, acuminate (Figs. 4, 211-213). Eye smaller, 0.90-1.20 times as wide as distance between posterior margin of antennal insertion and anterior margin of eye. Body larger, length 4.5-5.7 mm.
 *C. l. holsatica* Benick & Ihssen in Benick

1. *Choleva (Choleva) agilis* (Illiger, 1798) (Figs. 1, 3, 5, 6, 9, 14, 19-72, 280-282, 299)

Ptomaphagus agilis Illiger, 1798: 88 (type locality: Königsberg [now Russia: Kaliningrad]).

Choleva testacea Latreille, 1807: 28 (type locality: Gallia Australi).

Choleva gomphosata Stephens, 1829: 74, nomen nudum.

Choleva gausapata Stephens, 1830: 14 (type locality: "found near London; in Devonshire, and, I believe, in Yorkshire and Norfolk").

Choleva adusta Reitter, 1896: 227 (type locality: Amasia [northern Turkey]).

Choleva jailensis Jeannel, 1923a: 68, Figs. 32, 85 (type locality: monts Jaïla [Crimea]).

Choleva agilitis [sic!] ssp. *Clermonti* van der Wiel, 1931: 203, Figs. 44-48 (type locality: Pyreneën, Samatan, Gers).

Choleva (Choleva) cavazzutii Giachino, 1990: 204, Figs. 3-7 (type locality: Turchia, vil. Samsun, dintorni di Kavak), **syn. nov.**

Type material examined. LT ♂ of *Ptomaphagus agilis* (ZMHB, here designated), labelled: "7403 [p] // ver... [illeg.] / Königsberg (Pr.) / Kugelann ... [illeg.] // agilis Ill. [h] / Typus [p] / 1798 [h] [orange label] // agilis Ill. / Ptomaph. ag. Pr / Choleva a. Spence / Catops fuscus Gyll. / Chol. testacea Latr. [h] // Zool. Mus. / Berlin [p] // Umpräpariert [p] / VII.1940. [h] / K. Sokolowski - Hbg [p] // Choleva agilis / (Illiger) det. / Schilthuizen 1987 [p] / LECTOTYPE / Schilthuizen / 1987 [h, white label, Schilthuizen's MS]"; PLT ♂ of *Ptomaphagus agilis* (ZMHB), labelled: "7403 [h] // ver... [illeg.] / Königsberg (Pr.) / Kugelann ... [illeg.] [h] // Para- [h] / Typus [p] / Ill. 1798 [h] [orange label] // Umpräpariert [p] / VII.1940. [h] / K. Sokolowski - Hbg [p] // agilis. Ill. [h] / det. K. Sokolowski [p] // Zool. Mus. / Berlin [p] // Choleva agilis / (Illiger) det. / Schilthuizen 1987 [p]".

HT ♀ of *Choleva adusta* (HNHM) [GD], labelled: "Amasia. [p] // coll. Reitter [p] // Monotypus 1896 / Choleva ♀ / adusta / Reitter [h] [*] // Ch. adusta / m. 1896 [h, Reitter's MS] // Choleva / agilis (Illiger, 1798) / J. Růžička & J. Vávra det. 1998".

LT ♀ of *Choleva jailensis* (MNHN), labelled: "Jaïla-Gebirge / Krim, Moczarski [p] // TYPE [p] // MUSÉUM PARIS / Coll. JEANNEL, 1931 [p] // Breit // jailensis m. [h, Jeannel's MS] / R. Jeannel det. [p] // Choleva agilis (Illiger) / Schilthuizen det. 1987 [p] // Choleva (Choleva) agilis (Illiger) / J. Růžička det. 1991 [p]".

LT ♂ of *Choleva agilis clermonti* (ZMAN, here designated), labelled: "COTYPE: [p] 1930. / Choleva agilis Ill. / subsp. ♂ / Clermonti v.d.W. [h, v. der Wiel's MS] // agilis subs. nov. [h, Jeannel's MS] / R. Jeannel det. [p] // Coll. / van der Wiel [p] // ♂ [p] // Samatan / Gers [prov.] / J. Clermont [leg.] [p] // Collectio / P. v. d. Wiel / Aeq. 1962 [p] // Choleva agilis forma / clermonti vd Wiel / stat. nov. / Schilthuizen vid. 1983 [h, red label, Schilthuizen's MS]"; PLT ♂ (ZMAN), labelled: ditto, but "subsp. nov. [h, Jeannel's MS] // ... // CHOLEVA AGILIS (Ill.) / Forma typica. / Schilthuizen det. '83 [h, white label, Schilthuizen's MS]"; PLT ♀ (ZMAN) [GD], labelled: "TYPE: 1930. / Choleva agilis Ill. / sub. sp. ♀ / Clermonti v.d.W. // agilis subsp. n. [h, Jeannel's MS] / R. Jeannel det. [p] // Coll. / van der Wiel [p] // ♀ [p] // Samatan / Gers [prov.] / J. Clermont [leg.] [p] // Collectio / P. v. d. Wiel / Aeq. 1962 [p] // CHOLEVA AGILIS (Ill.) / forma typica. Schilt- / huizen det. 1983 [h]"; PLT ♂ (MNHN), labelled: Samatan / Gers [prov.] / J. Clermont [leg.] [p] // ♂ [p] // Coll. / van der Wiel [p] // Cotype [red label] // Museum Paris / Coll. R. Jeannel 1931 [p] // COTYPE: [p] 1930. / Choleva agilis / subsp. / Clermonti v.d.W. ♂ [h, v. der Wiel's MS].

PT ♂ and PT ♀ of *Choleva cavazzutii* (both MHNG), labelled: "TURQUIE ISPARTA [p] / 10 km N. Isparta / 1000 m. 6.V.[19]75 [h] / BESUCHET LÖBL [leg.] [p] // PARATYPUS [p] ♂ [or] ♀ / Choleva / cavazzutii / n. sp. [h, Giachino's MS] / P.M. Giachino det. 1989 [p, red label]".

Taxonomic and nomenclatorial remarks. The lectotype label is present on one of the syntypes of *Ptomaphagus agilis*. However, no lectotype designation was published by Schilthuizen in his 1990 paper or later and the lectotype and paralectotype are thus designated here.

Two specimens (1 ♂ and 1 ♀) from ZMHB, reported by Schilthuizen (1990) also as types of *C. agilis*, labelled: "49 [p, green label] // 7403 [h] // 1. [or 2.] Original zu / *agilis* Sturm / (Berlin, Schüppel) [h] // Paratypus [p, red label] // Umpräpariert [p] VII.1940. [h] / K. Sokolowski - Hbg. [p] // *agilis* Ill. [h] / det. K. Sokolowski [p] // Zool. Mus. / Berlin [p] // *Choleva agilis* / (Illiger) det. / Schilthuizen 1987 [p]" belongs not to the type series; these specimens were probably those mentioned by Erichson (1837).

Stephens (1829) used Spence's unpublished name in his list of British beetles, providing no formal description nor indication. Consequently, under Article 12 (ICZN 1999), *C. gomphosata* Stephens, 1829 is considered here as a nomen nudum.

Giachino (1990) described *C. cavazzutii*, based on several specimens from Turkey. However, the differences found by him (bicoloured elytral pattern; different shape of aedeagus, male metatrochanter and female tergum X) in *C. cavazzutii* (Giachino 1990: 204-207, Figs. 3-7) coincides with the continual clinal variability of these characters within *C. agilis* (see geographical variability section below). Consequently, *C. cavazzutii* Giachino, 1990 is treated here as a junior synonym of *C. agilis* (Illiger, 1798).

One female (coll. G. Frey, MHMB) was examined, bearing labels: "Iaila-Gebirge / Krim, Moczarski [p] // TYPE [p, red characters] // Typ [p, red label] // *jailensis* m. [h, Jeannel's MS] / R. Jeannel det. [p] // ex. Orig. Samlg. / J. Breit Wien [p] // Paratype / 1956 det. Kamp". Jeannel (1923a) described *C. jailensis*, based on two female specimen. However, specimen from MHMB was not labelled as paralectotype by Schilthuizen (1990).

Diagnosis. *Choleva agilis* is very similar to *C. lederiana*, it can be distinguished in the male by the short apex of aedeagus, slightly undulous ventrally to nearly straight in lateral view; in the female, by the tergum X with weakly rounded to subtruncate posterior margin and rounded to truncate anterior margin of spiculum ventrale.

Description. Body length 3.9-5.5 mm. Body robust (Figs. 280, 281), brown to brown-black, sometimes pronotum or elytron darker medially and/or humerus red-brown. Antennae, legs and mouthparts red-brown. Body covered with dense, short, recumbent setation. (Measurements below refer to population of *C. agilis* from Bohemia: Raná hill). Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna short to medium (Figs. 1, 28), 1.85-2.20 (mean 1.98 in 53 spec.) times as long as pronotal length. Eye large (Figs. 5, 6), 1.00-1.50 (mean 1.21 in 56 spec.) times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.34-1.54 (mean 1.44 in 56 specimens) times as wide as long, transversely oval in shape. Surface regularly convex; with fine punctation and distinct microsculpture. Elytra 1.35-1.62 (mean

1.49 in 56 spec.) times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Ventrites V, VI and VII with medial depression ventrally. Protarsomere moderately expanded, 4.46-5.45 (mean 4.83 in 25 specimens) times as long as wide. Mesotibia bent and moderately to distinctly curved (Fig. 9). Metatrochanter short and rounded, postero-basal tooth developed (Figs. 35-39). Aedeagus with short, rounded apex in dorsal view (Figs. 20, 22, 23, 25, 32); nearly straight to slightly undulous in lateral view (Figs. 14, 19, 21, 24). Paramere only slightly longer than penis.

Female. Elytron with rounded apex (Figs. 40-42), only exceptionally angulate or attenuate to small terminal tip (Fig. 43; see note under the geographic variability section below). Ventrite VIII rounded posteriorly, with spiculum ventrale rounded or subquadrate (Figs. 63-69). Tergum IX sinuate antero-medially, apex not reaching the tip of tergum X (Fig. 46). Tergum X oval; with weakly rounded to subtruncate posterior margin; posterior margin bare or with a single pair of setae (Figs. 46-52, 54-56). Stylus with 3-5 subapical setae (Figs. 60-62).

Geographic variability. This species is one of the most variable within the *C. agilis* species group. Slight variation in the shape of aedeagus (Figs. 19-22), shape of female spiculum ventrale (Figs. 63, 64, 68), shape of female tergum X and presence/absence of a pair of minute setae on its posterior margin (Figs. 46-50) and number of setae on female stylus (Figs. 61, 62) are present commonly within the entire range of the species. However, some marginal populations seem to express more distinct differences as follows:

Specimens from south-western France were described by van der Wiel (1931) as *C. a. ssp. clermonti*, based mainly on considerably broad shape of tooth on male metatrochanter. As already mentioned by Schilthuizen (1990), this character is expressed only in two males from the type series (Fig. 39), the third male from the same locality has the tooth on metatrochanter in normal condition. Shape of aedeagus (character also mentioned as important by van der Wiel 1931) is in the fact not distinctly different from other specimens of *C. agilis* (Fig. 23). However, differences of some female characters (not mentioned by van der Wiel 1931 nor by Schilthuizen 1990) are considerably remarkable: distinctly elongate shape of tergum X (Fig. 53) and truncate spiculum ventrale (Fig. 69). A study of more material from this region is necessary. We consider these differences only as infra-specific variability within *C. agilis* (following Schilthuizen 1990). Other specimens from the area of Bordeaux were studied, having considerably more elongated apex of aedeagus; they are listed under *C. cf. agilis* in the Appendix.

Specimens from northern Italy differ in the following features: aedeagus has a more slender apex (as on Fig. 30), but is only weakly sinuate in lateral view. Another constant difference was found in the shape of female tergum X, which is elongated and subangulate posteriorly (as on Figs. 57, 58). These specimens were treated as *C. cf. agilis* in the Appendix.

Several cave samples from north-eastern Italy have the apex of female elytron distinctly angulate or attenuate to a small terminal tip (Fig. 43). This may be related to the isolation of local populations in these habitats, epigeal samples from the same

region have the apex of female elytron simply rounded. Also other characters are not distinctly different from typical *C. agilis*, including the shape of female tergum X and the shape of tip of male aedeagus (which is slightly narrower in dorsal view, but only slightly undulous in lateral view). These specimens were treated as *C. cf. agilis* in the Appendix.

Specimens from western part of the Balkan Peninsula, mostly from caves, have a considerably narrow, triangular female tergum X, usually bearing a pair of posterior setae (Fig. 51). A similar pattern can be found in specimens from Turkey, mostly exhibiting a subtriangular shape (Figs. 54-56). Further, males usually have a considerably flat, widely rounded aedeagus (Figs. 31, 32). A similar shape of the aedeagus (Figs. 24, 25), and considerably truncate shape of female tergum X (Fig. 52) is also found in specimens from Crimea. However, these modifications were not observed in specimens from cave samples from Bulgaria. Generally, it can be hypothesized that both the flattening and widening of the aedeagus and the change of shape of female tergum X exhibit clinal variability in the south-eastern margin of the range.

Considerably different are specimens from Transcaucasia (Fig. 282); however, only a limited sample is available from Armenia and Georgia, including old, not precisely labelled specimens from "Caucasus" (see the Appendix). The aedeagus is considerably stout, flat, sinuous laterally (Figs. 26, 27). Female tergum X has antero-lateral margin widely connected with both lateral parts of tergum IX (Fig. 59). Modification of this character in specimens studied is quite unusual within the whole genus *Choleva*. The female stylus is different, with 5 subapical setae (Fig. 60). The spiculum ventrale is considerably narrow, truncate to submarginate (Figs. 70-72). These specimens may form a distinct, unnamed species; provisionally they were treated as *C. cf. agilis* in the Appendix.

Another region with constantly different specimens was detected in northern Europe. All samples from Great Britain, and some specimens from Belgium, Denmark and southern Sweden (the Bohuslän, Västergötland, Halland, Småland, Öland, Blekinge and Skåne provinces – see map, Fig. 299) show considerable differences: the aedeagus has a more slender apex (Figs. 30, 34), and is distinctly more sinuate in lateral view (Figs. 29, 33). The constriction is more developed in specimens from Great Britain (Fig. 34), and elongation of the aedeagus is more developed in specimens from southern Sweden (Fig. 30). Another constant difference was found in the shape of female tergum X, which is more elongated and sometimes subangulate posteriorly (Figs. 57, 58). Tergum X is narrower anteriorly in specimens from Great Britain (Fig. 57), and wider anteriorly in specimens from southern Sweden (Fig. 58). All these specimens were listed as *C. cf. agilis* in the Appendix. A similar kind of modification of the aedeagus was also found in a specimen from northern Poland, and also in the lectotype and paralectotype of *C. agilis* from Königsberg (now Kaliningrad in Russia; Figs. 19, 20).

In southern Sweden, both an elongation of the aedeagus and shape of female tergum X resemble those of *C. lederiana lederiana* in central and southern Scandinavia. Schilthuizen (1990: 136-138, map in fig. 83) mentioned the morphological evidence for possible hybrid zones between *C. agilis* and *C. lederiana lederiana* (or, *C. septentrionis septentrionis* sensu Schilthuizen 1990) situated in Great Britain, southern Sweden and maybe also in north-western Russia. Further study,

based on more abundant population samples from the target region, is necessary to support these preliminary evidences.

Immature stages. The larva and pupa was described by Casale (1975).

Biology. Regularly reported from nests of *Talpa europea* (Balazuc et al. 1946; Casale 1972; Osella & Zanetti 1974; Vailati 1986; Ehlert et al. 1997); also found in tunnels of *Oryctolagus* (Frankenberger 1910). Reported also from caves (Coiffait 1955; Beron 1972; Paoletti 1978; Vailati 1986; Beron 1994; Růžicka 1995). Casale (1972) observed aggregation of pupal chambers in laboratory. Mechanisms of synchronisation of adult reproduction were studied by Ehlert et al. (1997).

Distribution (Fig. 299). Armenia (first record); Austria (Reitter 1899 [as *C. emgei*]; Jeannel 1923a, 1936; Schweiger 1950; Horion 1951); Belgium (Hubart 1973); Bosnia (Jeannel 1923a, 1936; Szymczakowski 1965); Bulgaria (Jeannel 1936; Beron 1994; Růžicka 1995); Croatia (Jeannel 1923a, 1936; Szymczakowski 1965 [Dalmatia]); Czech Republic (Reitter 1870; Strejček 1971; Majer 1980; Táborský 1980; Růžicka & Vávra 1993, Vávra 1995); Denmark (Holstebro 1910; Hansen 1996); Sweden (Schilthuizen 1990); France (Jeannel 1923a, 1936; Balazuc et al. 1946), incl. Corsica (Beron 1972); Georgia (first record); Germany (Jeannel 1936; Sokolowski 1942; Wörndle 1950; Borchert 1951; Horion 1951; Kroker 1976; Wagner 1993; Kleeberg 1995; Hartmann et al. 1996; Stegner 1996); Great Britain (Fowler 1889; Fowler & Donisthorpe 1913; Jeannel 1923a, 1936; Schilthuizen 1990); Greece (Coiffait 1955); Hungary (Jeannel 1923a; Ádám, 1984); Ireland (Schilthuizen 1990; Anderson et al. 1997); Italy (only northern part) (Jeannel 1923a, b; Luigioni 1929; Osella & Zanetti 1974; Paoletti 1978; Vailati 1986); Macedonia (first record); the Netherlands (Everts 1898); Poland (Szymczakowski 1959; Burakowski et al. 1978); Romania (Jeannel 1923a), Russia (Schilthuizen 1990); Serbia (Szymczakowski 1965); Slovakia (Roubal 1930; Růžicka & Vávra 1993); Slovenia (first record); Sweden (only southern part); Switzerland (Heer 1841); Turkey (Jeannel 1923a, 1936; Giachino 1990 [as *C. cavazzutii*]; Vávra 1998 [as *C. cavazzutii*]); Ukraine: Crimea (Jeannel 1936 [as *C. jailensis*]).

Distributional remarks. The specimens of *C. agilis*, reported from Finland by Ilvesalo (1980), actually belong to *C. angustata* (Fabricius, 1781) (3 ♀ examined from TILC). The specimen of *C. agilis*, reported from Albania by Jeannel (1936), actually belongs to *C. emgei* (as already noted by Szymczakowski 1965; 1 ♀ examined from MNHN).

2. *Choleva (Choleva) bedeli* Jeannel, 1923 (Figs. 73-81, 284, 301)

Choleva Bedeli Jeannel, 1923a: 67, Figs. 90-93 (type locality: Anatolie, Brousse).

Type material examined. HT ♂ (HNHM), labelled: "Brussa / Pável [leg.] [p] // coll. Reitter [p] // Monotypus [p] 1923 / Choleva ♂ / Bedeli Jeannel [h] [*] // Bedeli m. [h, Jeannel's MS] / R. JEANNEL det. [p] // TYPE [p, red characters]".

Diagnosis. *C. bedeli* is a relatively small and robust species with short appendages; it can be easily distinguished from related *C. matthiesseni* and *C. emgei* in the male by the posteriorly attenuate metacoxa and paramere distinctly longer than penis; in the female the by anteriorly narrowed tergum X and remarkably wide spiculum ventrale.

Description. Body length 4.2-5.1 mm. Body stout and robust (Fig. 284), brown to brown-black. Antennae, legs and mouthparts red-brown. Body covered with dense, short, recumbent setation. Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna robust, short (Fig. 78), 1.91-1.95 times as long as pronotal length. Eye large, 1.42-1.47 times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.41-1.54 times as wide as long, transversely oval in shape, widest at two thirds of its length. Surface regularly convex, with fine punctation and distinct microsculpture. Elytra 1.31-1.71 times as long as wide. Surface with distinct microsculpture.

Male. Ventrites IV to VII regularly convex ventrally. Mesotibia almost straight, not curved. Metacoxa attenuate posteriorly to a slender apex (Fig. 77). Metatrochanter short and rounded, prolonged to a short apical point, postero-basal tooth not developed (Fig. 77). Aedeagus with short, rounded apex in dorsal view (Fig. 74); almost straight in lateral view (Fig. 73). Paramere distinctly longer than penis.

Female. Elytron with regularly rounded apex (Figs. 75, 76). Metacoxa not attenuate posteriorly. Ventrite VIII with spiculum ventrale quadrate, considerably wide, laterally dilated (Fig. 81). Tergum IX entire, apex not reaching the tip of tergum X (Fig. 79). Tergum X oval with basal constriction; posterior margin setose (Fig. 79). Stylus with 3 subapical setae (Fig. 80).

Geographic variability. None observed.

Immature stages. Unknown.

Biology. Reported from carrion and from rotten leaves of *Platanus* (Henrot 1964).

Distribution (Fig. 301). Cyprus (Jeannel 1936; Henrot 1964); Greece: Crete (Vávra 1998), Rhodes (first report); Turkey (Jeannel 1936; Coiffait 1956; Vávra 1998).

3. *Choleva (Choleva) cribrata* Saulcy, 1864

(Figs. 82-94, 286, 301)

Choleva cribrata Saulcy, 1864: 427 (type locality: Jérusalem).

Type material examined. LT ♂ (MNHN, here designated), labelled: "Jérusalem [h, Saulcy's MS] // [schematic fig. of metatrochanter] // TYPE [p, red label] // MUSÉUM PARIS / Coll. F.C. de SAULCY / Coll. A. ARGOD, 1931 [p] // cribrata / Jerusalem [h]". PLT 3 ♂ and 4 ♀, labelled as follows: 1 ♂ - ditto as LT; 2 ♂ and 2 ♀ - "Jerusalem [h] // TYPE [p, red characters on white label] // MUSÉUM PARIS / Coll. F.C. de SAULCY / Coll. A. ARGOD, 1931 [p]"; 2 ♀ - ditto, except for additional label "Collect. de Saulcy".

Note. LT is glued on the same card together with one ♂ PLT; the rest of PLT is glued as doublets (2 ♂, 2 ♂ and 2 ♀) on three, separately pinned cards.

Diagnosis. *Choleva cribrata* and related *C. hirtula* are characterized by smooth pronotum with coarse punctation, long and erect setation of pronotum and elytra, and elongate female tergum IX; from the latter it can be distinguished in the male by the stout apex of aedeagus and oblong metatrochanter; in the female by the minute tooth on apex of elytron and apically rounded tergum X.

Description. Body length 4.2-4.5 mm. Body robust (Fig. 286), red-brown. Body covered with dense, long, erect setation. Head surface finely and considerably sparsely punctate, smooth. Antenna of medium length (Fig. 88), 2.00-2.10 times as long as pronotal length. Eye considerably large, 1.60-1.78 times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.35-1.46 times as wide as long, transversely oval, widest behind the middle. Surface regularly convex; smooth, with coarse punctation (smaller and sparse anteriorly and medially, larger and considerably dense latero-posteriorly). Elytra 1.35-1.49 times as long as wide. Surface almost smooth, with subobsolete microsculpture. Metacoxa not attenuate posteriorly.

Male. Ventrites IV to VII regularly convex ventrally. Mesotibia almost straight, not curved. Metatrochanter oblong, with short, robust, postero-apical tooth (Fig. 84). Aedeagus with short, truncate apex in dorsal view (Fig. 83); nearly straight in lateral view (Fig. 82). Paramere only slightly longer than penis.

Female. Apex of elytron angulate or attenuate to small, slender terminal tip (Figs. 86, 87). Ventrite VIII posteriorly prolonged, spiculum ventrale truncate to slightly laterally dilated (Figs. 89, 90). Tergum IX entire, apex reaching almost the tip of tergum X (Fig. 91). Tergum X elongate, rounded apically; posterior margin setose (Figs. 91-93). Stylus with 4-5 subapical setae (incl. 1 or 2 minute) (Fig. 94).

Geographic variability. Minute differences were observed in the shape of female spiculum ventrale and tergum X (Figs. 89, 92) in a single specimen studied from Lebanon: Jezzine. Further material is needed for correct evaluation; the differences found can be caused only by individual variation.

Immature stages. Unknown.

Biology. Reported from crypts (Saulcy 1864) and caves, taken on bat guano at cave entrances (Coiffait 1956).

Distribution (Fig. 301). Israel (Jeannel 1923a, 1936; Coiffait 1956, 1959), Jordan (first record), Lebanon (Coiffait 1956, 1959).

Distributional remarks. Most specimens of *C. cribrata*, reported from Lebanon by Jeannel (1923a, 1936) and Coiffait (1956, 1959), actually belong to *C. hirtula* (several specimens examined from MNHN and MHNG, see the Appendix).

4. *Choleva (Choleva) emgei* Reitter, 1885 (Figs. 95-104, 285, 301)

Choleva Emgei Reitter, 1885: 43 (type locality: Attica, Athen).

Type material examined. LT ♂ (HNHM, here designated), labelled: "Attica / Reitter [p] // Athen / Emge [leg.] [h] // coll. Reitter [p] // Holotypus [p] 1884 / Choleva (s. str.) / Emgei Reitter [h] [*]"; PLT 1 ♂ and 1 ♀ (HNHM), labelled ditto, except "Paratype [p] ... [*]"; PLT ♂ (MNHN), labelled: "Attica / Reitter // 114 // Type [red label] // Museum Paris / (Coll. E. Reitter) / A. Grouvelle 1913 [p] // Emgei / Reitter"; PLT 1 ♂ and 1 ♀ (MNHN), labelled: "Attica / Reitter // Type // Museum Paris / (Coll. E. Reitter) / A. Grouvelle 1913 [p]"; PLT 1 ♀ (MNHN), labelled: "Attica / Reitter // Cotypus / Choleva emgei Reitt. // Museum Paris / Coll. E. Reitter 1885 [p]".

Diagnosis. *Choleva emgei* is a small and robust species with short appendages; it can be easily distinguished from related *C. bedeli* and *C. matthiesseni* by its smooth head with subobsolete microsculpture; in the male, by the subapical lateral constriction of penis and short, slender paramere; in the female, by only a weakly sclerotized anterior portion of tergum X and anteriorly subtruncate spiculum ventrale.

Description. Body length 4.2-4.5 mm. Body robust (Fig. 285), brown with darker head and pronotum. Antennae, legs and mouthparts red-brown. Body covered with considerably dense, short, recumbent setation. Head surface finely and sparsely punctate, smooth with considerably fine, subobsolete microsculpture. Antenna robust, short (Figs. 103, 104), 1.78-1.90 times as long as pronotal length. Eye large, 1.25-1.56 times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.38-1.45 times as wide as long, transversely oval, widest behind the middle. Surface regularly convex, with fine punctation and distinct microsculpture. Elytra 1.38-1.55 times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Ventrites IV to VII regularly convex ventrally. Mesotibia almost straight, not curved. Metatrochanter short, widely pointed apically, postero-basal tooth not developed (Fig. 99). Aedeagus with short, rounded apex, laterally constricted subapically in dorsal view (Fig. 96); straight in lateral view (Fig. 95). Paramere only slightly longer than penis.

Female. Elytron with rounded apex (Figs. 97, 98). Ventrite VIII with spiculum ventrale quadrate and slightly dilated laterally (Fig. 102). Tergum IX entire, apex not reaching the tip of tergum X (Fig. 100). Tergum X oval, anterior portion

only weakly sclerotized; regularly widened posteriorly; posterior margin setose (Fig. 100). Stylus more elongate, with 4 subapical setae (Fig. 101).

Geographic variability. None observed.

Immature stages. Unknown.

Biology. Unknown.

Distribution (Fig. 301). Albania (Jeannel 1936 [as *C. agilis*]; Szymczakowski 1965); Croatia? (not verified by material studied, reported only by Novak 1952), Greece (Jeannel 1923a, 1936; Henrot 1967), incl. Crete (Jeannel 1923a, 1936). Reported also from "Dalmatia" (Szymczakowski 1965) and Turkey (Jakobson 1910); both records without detailed data.

Distributional remarks. The specimen of *C. emgei*, reported from Austria by Reitter (1899) and repeated by Szymczakowski (1971a) and others, actually belongs to *C. agilis* (1 ♀ examined in coll. G. Frey, MHMB). The record of *C. emgei* from "Čibača" nr. Dubrovnik, given by Novak (1952), may in fact refer to small specimen(s) of *C. agilis*, known from Dalmatia (see geographic variability section under *C. agilis*).

5. *Choleva (Choleva) hirtula* Reitter, 1885, spec. resurr. (Figs. 105-114, 287, 301)

Choleva hirtula Reitter, 1885: 41 (type locality: Libanon).

Type material examined. HT ♀ (MNHN) [GD], labelled: "B. M. [h] // hirtula m. / Syr. Be... [partially illeg., h] // 103 [p] // TYPE [p, red label] // MUSÉUM PARIS / Coll. E. REITTER, 1885 // Choleva / hirtula [h]".

Taxonomic and nomenclatorial remarks. The species was reported (without any formal discussion) as the junior synonym of *C. cribrata* Saulcy, 1864 by Jeannel (1923a). However, both male and female sexual characters differ in *C. cribrata* and *C. hirtula* (see key above for details); *C. hirtula* is here removed from synonymy with *C. cribrata* and treated as a valid species.

Diagnosis. *Choleva hirtula* and related *C. cribrata* are characterized by a smooth pronotum with coarse punctation, long and erect setation of pronotum and elytra, and elongate female tergum IX; from the latter it can be distinguished in the male by the elongate apex of aedeagus and quadrate metatrochanter; in the female by the large tooth on apex of elytron and apically subtruncate tergum X.

Description. Body length 4.3-5.0 mm. Body robust, elongate (Fig. 287), red-brown to brown. Body covered with dense, long, erect setation. Head surface finely and sparsely punctate, smooth. Antenna of medium length (Fig. 111), 1.80-2.04 times as long as pronotal length. Eye large, 1.36-1.70 times as wide as the

distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.37-1.40 times as wide as long, distinctly more slender than elytra; subrectangular in shape, widest behind the middle. Surface regularly convex; smooth, with coarse punctation (smaller and sparse anteriorly and medially, larger and considerably dense, almost touching together latero-posteriorly). Elytra 1.46-1.56 times as long as wide, robust. Surface almost smooth, with subobsolete microsculpture. Metacoxa not attenuate posteriorly.

Male. Ventrites IV to VII regularly convex ventrally. Mesotibia almost straight, not curved. Metatrochanter almost quadrate, robust, pointed to elongate postero-apical tooth (Fig. 107). Aedeagus with elongate, subtruncate apex, constricted subapically in dorsal view (Fig. 106); nearly straight in lateral view (Fig. 105). Paramere distinctly longer than penis (Fig. 106).

Female. Elytron with apex attenuate to slender terminal tip (Figs. 109, 110). Ventrite VIII posteriorly prolonged, spiculum ventrale truncate to slightly laterally dilated (Fig. 112). Tergum IX entire, apex reaching almost the tip of tergum X (Fig. 113). Tergum X elongate; posterior margin subtruncate and setose (Fig. 113). Stylus with 3-4 (incl. 1 minute) subapical setae (Fig. 114).

Geographic variability. None observed.

Immature stages. Unknown.

Biology. Reported from deep parts of caves by Coiffait (1956).

Distribution (Fig. 301). Lebanon (Jeannel 1923a, 1936; Coiffait 1956, 1959 [all as *C. cribrata*]).

6. *Choleva (Choleva) lederiana* Reitter, 1902

This is a polymorphic species; only some isolated populations from Central European caves are treated here as distinct taxa (at the level of subspecies, see below). Differences in body proportions are partially overlapping, differing namely between cave populations (Růžička 1998). Populations with more continuous morphological variability are included within the widely distributed nominotypical subspecies. For exact determination, larger population samples (containing both males and females) are necessary; single, aberrant specimens can be sometimes only tentatively identified.

Diagnosis. *C. lederiana* is very similar to *C. agilis*, from which it can be distinguished in the male by the attenuate apex of aedeagus, slightly to heavily undulous ventrally in lateral view, in the female by tergum X ovoid, hexagonal to suboblong, with weakly rounded to angular posterior margin, and truncate to emarginate anterior margin of spiculum ventrale.

7. *Choleva (Choleva) lederiana lederiana* Reitter, 1902, stat. nov.

(Figs. 10-12, 15-17, 115-174, 288-290, 300)

Choleva Lederiana Reitter, 1902: 177 (type locality: centralen Altai).

Choleva septentrionis Jeannel, 1923a: 68 (type locality: Norvège: Tromsø), syn. nov.

Choleva aquilonia Krogerus, 1926a: 5 (type locality: Lojo [Finland]).

Choleva aquilonia var. *brevicollis* Krogerus, 1926a: 6 (type locality: Fischerhalbinsel [Karelia]).

Type material examined. LT ♂ of *C. lederiana* (HNHM, here designated), labelled: "Altai / centr. Leder [leg.] [h, Reitter's MS] // Ch. Lederiana / m. n. sp. 1901 [h, Reitter's MS] // coll. Reitter [p] // Holotypus [p] 1901 / Choleva / Lederiana / Reitter [h] [*] // Choleva lederiana / Reitter det. / Schilthuizen 1987 [p]"; PLT 1 ♂ and 1 ♀ [GD] (both HNHM), labelled: "Altai / centr. Leder [leg.] [h, Reitter's MS] // coll. Reitter [p] // Paratypus [p] 1901 / Choleva / Lederiana / Reitter [h] [*] // Choleva lederiana / Reitter det. / Schilthuizen 1987 [p]"; PLT 1 ♀ (MNHN), labelled: "Altai / centr. Leder [leg.] [h, Reitter's MS] // Type // Museum Paris / Coll. R. Jeannel 1931 [p] // Typus 1901 / Choleva Lederiana Reitt. [label with red margin]".

HT ♀ of *C. septentrionis* (HNHM), labelled: "Norvegia / Herman Otto [leg.] [h] // Tromsø [h] // 1888.VI.23 [h] // Holotypus [p] 1923 / Choleva / septentrionis / Jeannel [h] [*] // septentrionis m. [h, Jeannel's MS] / R. JEANNEL det. [p] // TYPE [p, red characters] // Choleva septentrionis / Jeannel det. / Schilthuizen 1987 [p]".

LT ♂ of *C. aquilonia* (MZHF), labelled: "Lojo [p] // Krogerus [leg.] [p] // Choleva / aquilonia Krog. ♂ [h, Krogerus's MS] / Krogerus det. [p] // Mus. Zool. H:fors / Spec. typ. No. [p] 1599 / Choleva ♂ / aquilonia Krog [h] // Mus. Zool. Helsinki / Loan No. [p] / C 7828 [h, yellow label] // Zool. Mus. Helsinki / Loan No. / C-87 230 [p, yellow label] // Choleva [p] / lederiana Rtt. [h] / det.M.Schilthuizen 1987 [p] // Lectotype / Schilthuizen / des. 1987 [h, Schilthuizen's MS] // Mus. Zool. Helsinki / Loan Nr. / C98-163 [p, yellow label]"; PLT 1 ♀ (MZHF), labelled: "Lojo [p] // Krogerus [leg.][p] // 637 [p] // Choleva / aquilonia Krog. ♀ [h, Krogerus's MS] / Krogerus det. [p] // Mus. Zool. H:fors / Spec. typ. No. [p] 4560 / Choleva ♀ / aquilonia Krog. [h] // Mus. Zool. Helsinki / Loan No. [p] / C 7827 [h, yellow label] // Zool. Mus. Helsinki / Loan No. / C-87 229 [p, yellow label] // Choleva [p] / lederiana Rtt. [h] / det.M.Schilthuizen 1987 [p] // Paralectotype / Schilthuizen / des. 1987 [h, Schilthuizen's MS] // Mus. Zool. Helsinki / Loan Nr. / C98-164 [p, yellow label]".

LT ♀ of *C. aquilonia* var. *brevicollis* (MZHF, here designated), labelled: "Penins. Pisc. [p] // Envald [leg.][p] // 252 [p, yellow label] // Choleva / aquilonia Krog. / v. brevicollis Krog. ♀ [h, Krogerus's MS] / Krogerus det. [p] // Choleva / agilis Illig. [h] // Mus. Zool. H:fors / Spec. typ. No. [p] 1561 / Ch. aquil. ab. / brevicollis Krog. [h] // Mus. Zool. Helsinki / Loan No. [p] / C 7879 [h, yellow label] // Zool. Mus. Helsinki / Loan No. / C-87 246 [p, yellow label] // Choleva [p] / lederiana Rtt. [h] / det. M.Schilthuizen 1987 [p] // Mus. Zool. Helsinki / Loan Nr. / C98-165 [p, yellow label]"; PLT 1 ♀ (MZHF, head, pronotum and all legs missing), labelled: "Enwald [leg.][p] // Penins. Pisc. [p] // 271 [p] // Mus. Hels. / N:o [p] 2910 [h, yellow label] // brevicollis [h, Krogerus's MS] // Mus. Zool. Helsinki / Loan No. [p] / C 7880 [h, yellow label] // Zool. Mus. Helsinki / Loan No. / C-87 243 [p, yellow label] // Choleva / lederiana Rtt. [h] / det.M.Schilthuizen 1987 [p] // Mus. Zool. Helsinki / Loan Nr. / C98-166 [p, yellow label]".

Taxonomic and nomenclatural remarks. Reitter's paper is widely treated in literature as published in 1901. Also, the first page (p. 177) of the paper has this year in the heading. However, on the journal cover as well as in the contents of the volume 45, the date of publication of the "Heft 2" is clearly indicated as January, 1902. Thus, according to Article 21 of the Code (ICZN 1999), the year 1902 is the year of description of *C. lederiana*.

Choleva septentrionis Jeannel, 1923 was described from northern Norway, based on a single female. The differences from *C. lederiana lederiana* (presence of a slender apical tip on female elytron, hexagonal shape of female tergum X)

found by Jeannel (1923a, 1936) and later by further authors (summarized in Schilthuisen 1990), in fact coincides with the variability of these characters within *C. lederiana lederiana* (see the geographic variability section below). Moreover, Schilthuisen (1990) was unable to separate males of these two taxa. Consequently, *C. septentrionis* Jeannel, 1923 is treated here as a junior synonym of *C. lederiana lederiana* Reitter, 1902.

As a consequence of the above mentioned synonymy, a new status is treated here for *C. lederiana* sensu Schilthuisen (1990). This taxon is considered here as a nominotypical subspecies of presently polytypic *C. lederiana* Reitter, 1902.

Diagnosis. *Choleva lederiana lederiana* is a widely distributed, nominotypical subspecies with wide habitat preferences (see below). Individual populations are very variable; generally, this subspecies can be weakly characterized by the following combination of characters: body robust to moderately elongate; in the male, apex of elytron regularly rounded; in the female, apex of elytron rounded or attenuate to a slender terminal tip, never subrectangular. Male and female genitalia very variable.

Description. Body length 4.7-6.0 mm. Body robust to elongate (Figs. 288-290), brown. Antennae, legs and mouthparts red-brown. Body covered with dense, short, recumbent setation. Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna medium to elongate (Fig. 124), 1.74-2.26 times as long as pronotal length. Eye large or slightly reduced, 0.88-1.25 times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.29-1.61 times as wide as long, transversely oval to subtrapezoidal in shape. Lateral margin parallel or rounded posteriorly in dorsal view (Figs. 169-174). Surface regularly convex; with fine punctation and distinct microsculpture. Elytra 1.40-1.66 times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Apex of elytron regularly rounded. Ventrites IV to VII with medial depression or almost regularly convex ventrally (Fig. 129). Protarsomere moderately expanded, 4.00-5.60 times as long as wide. Mesotibia bent and moderately to finely curved (Figs. 10-12). Metatrochanter short and rounded, postero-basal tooth developed (Fig. 121). Aedeagus with moderately to considerably elongate, attenuate apex, more or less regularly tapering between median and apical portion in dorsal view (Figs. 116, 118, 120, 123, 126, 128); slightly to distinctly undulous in lateral view (Figs. 15-17, 115, 117, 119, 122, 125, 127). Paramere only slightly lateral view (Figs. 15-17, 115, 117, 119, 122, 125, 127). Paramere only slightly longer than penis.

Female. Elytron with rounded, perpendicular apex or with apex attenuate to slender terminal tip; medial margin straight subapically (Figs. 130-145). Ventrite VIII rounded posteriorly, with spiculum ventrale subquadrate to quadrate (Figs. 162-168). Tergum IX sinuate antero-medially, apex not reaching the tip of tergum X (Figs. 146, 147). Tergum X elongate, oval or hexagonal in shape; posterior margin with a single pair of setae or bare (Figs. 146-148, 151-154, 157-161). Stylus with 3-4 subapical setae (Figs. 149, 150, 155, 156).

Table 1. Variability of selected proportions in three population samples of *C. lederiana lederiana* Reitter; given in the form mean (minimum - maximum).

character / locality	Finland: Lohja, Torhola cave (n = 52 spec.)	Bohemia: Krkonoše mts, alpine zone (n = 46 spec.)	Bohemia: České středohoří mts, Boreč hill, rock debris (n = 74 spec.)
antennal length / pronotal length ratio	1.90 (1.77 - 2.14)	1.95 (1.84 - 2.12)	2.00 (1.74 - 2.26)
eye width / distance between antennal insertion and margin of eye ratio	1.17 (1.04 - 1.25)	1.08 (0.93 - 1.17)	1.03 (0.88 - 1.17)
pronotal width / length ratio	1.42 (1.33 - 1.53)	1.44 (1.38 - 1.49)	1.43 (1.29 - 1.61)
elytral length / width ratio	1.50 (1.42 - 1.59)	1.54 (1.46 - 1.66)	1.53 (1.40 - 1.64)

Geographic variability. Together with *C. agilis*, these taxa reveal the most distinctive variability within the *C. agilis* species group. Considerable variability was observed, namely in the following characters: shape of aedeagus – elongation of apex (Figs. 116, 118, 120, 123, 126, 128) and level of sinuosity in lateral view (Figs. 115, 117, 119, 122, 125, 127); modification of female apex of elytron (Figs. 130-145); shape of female spiculum ventrale (Figs. 162-168); shape of tergum X (Figs. 146-148, 151-154, 157-161); and number of subapical setae on female stylus (Figs. 149, 150, 155, 156). Also the proportions of body parts varies considerably in populations living under different conditions (Table 1).

In northern Europe, some of these characters appear to exhibit clinal variability from a south-eastern to a north-western direction. The apex of female elytron is rounded in southern Finland, more or less angulate in northern Finland and central Sweden (Figs. 132, 141), to distinctly pointed in northern Norway and Great Britain (Fig. 131). Similarly, the female tergum is suboblong in southern Finland (Schilthuizen 1990: fig. 33), more angulate posteriorly in northern Finland and central Sweden (Schilthuizen 1990: Figs. 34, 37), to more or less distinctly pentagonal in northern Norway and Great Britain (Fig. 157). The spiculum ventrale also varies from narrower and/or subtruncate forms in south-eastern parts (Fig. 168) to stout, wide and distinctly truncate shape in north-western parts (Fig. 163). However, there are many exceptions and transitions that complicated these morphological patterns (Fig. 160; Schilthuizen, 1990: Figs. 38-40). Absence of a distinct morphological separation between both extreme forms of the apex of elytron, tergum X, and spiculum ventrale in females is the main argument for treating *C. septentrionis* as a junior synonym of *C. lederiana lederiana*, together with virtually no constant differences found in the aedeagus. Only very limited material from Karelia, Ural mountains and Altai mountains have been examined: virtually nothing is known about the geographic variability of *C. l. lederiana* from this large territory.

The situation is even more complex in central Europe, where a mosaic of isolated populations of *C. l. lederiana* in Switzerland, Germany, Poland, the Czech Republic and Slovakia indicate no clear cline or separation in any of the characters mentioned above. For instance, the female elytron is clearly pointed in a

single population from Studenec mount (Fig. 139), but always rounded in populations from Klíč and Kamenec mountains (Fig. 140); these localities are less than 20 km apart. Similarly, more or less pointed elytra are found in populations in the alpine zone of Krkonoše mountains (Figs. 135-137), while always rounded elytra occurred in population from Jizerské hory mountains, Bukovec mount (Fig. 144), about 15 km apart by "beeline". However, local populations differ slightly in shape of apex of aedeagus, more or less elongate and sinuous (Figs. 16, 17, 117-120, 122, 123, 125, 126); male mesotibia are more or less curved (Figs. 10, 11); female tergum X is considerably variable in shape (Figs. 147, 148, 151-154, 158); and female spiculum ventrale is more or less truncate (Figs. 164, 165, 167). Further study can be undertaken to elucidate the factors, forming the morphological differences between central European populations of *C. lederiana lederiana*.

Immature stages. The larva and pupa was described by Krogerus (1927).

Biology. The ecological study of Biström & Hippa (1987) in a cave habitat (Torhola cave; the type locality of *C. aquilonia*) shows a microhabitat preference within the cave, with a maximum of adult activity in the autumnal months. In Scandinavia, it is known also from trapping in open landscape in June-September (Biström & Väisänen 1988); sieved from "foerna" on slopes with rich vegetation; in the tunnels of small rodents at Veivann (Norway) (both Fjellberg 1972 as *C. septentrionis*) and known also in rodent tunnels from southern Sweden (Palmqvist 1948). In Central Europe, the species has been collected by pitfall traps in rock debris in mountains as well as in cold inversion places in lower altitudes (Molenda et al. 1997; Růžička 1999, 2000b; Růžička & Vonička 1999; J. Růžička unpublished data). An ecological study by Růžička (1999) in rock debris habitat (Boreč hill, altitude 350 m, northern Bohemia) shows peaks of adult activity in April-May and October-November, with teneral adults present from July to November. A similar pattern was also observed by Růžička & Vonička (1999) in rock debris in mountains (Bukovec mount, altitude 900-950 m, Jizerské hory mountains, northern Bohemia).

Distribution (Fig. 300). Czech Republic (Zwick 1982; Růžička 1992 [as *C. lederiana gracilentia*]; Růžička & Zacharda 1994 [as *C. septentrionis*]; Růžička 1999, 2000b; Růžička & Vonička 1999); Finland (Krogerus 1926a, b; Jeannel 1936 [both as *C. aquilonia*]; Biström & Hippa 1987; Biström & Väisänen 1988; Schilthuizen 1990; Silfverberg 1992); Germany (first record); Great Britain (Schilthuizen 1990 [as *C. septentrionis*]); Ireland (Schilthuizen 1990 [as *C. septentrionis*]); Mongolia? (not verified by material studied, only literature data – Szymczakowski 1971b), Norway (Strand 1946; Fjellberg 1972; Refseth 1980, 1987 [all as *C. septentrionis*]; Silfverberg 1992 [as *C. lederiana* and *C. septentrionis*]); Poland (first record); Russia: Karelia (Krogerus 1926a; Jeannel 1936 [both as *C. aquilonia*]; Silfverberg 1992; Schilthuizen 1990), Cis-Volga Uplands and Ural mountains (Yuferev & Kozminykh 1997 [partially as *C. agilis*]); Slovakia (Růžička 2000a); Sweden (Palmqvist 1948, Lundberg 1974; Hippa et al. 1985 [as

"*C. agilis/septentrionis*"; Lundberg 1986 [as *C. lederiana* and *C. septentrionis*]; Schilthuizen 1990; Silfverberg 1992 [as *C. lederiana* and *C. septentrionis*]).

Distributional remarks. The records of *C. agilis* (J. Boháč det.) reported from rock debris by Růžička et al. (1989) in northern Bohemia and those of Molenda et al. (1997) from south-western Germany all belong to this subspecies (J. Růžička rev., see the Appendix).

8. *Choleva (Choleva) lederiana foeldalatti*, ssp. nov. (Figs. 177, 179-193, 294, 300)

Type material. HT ♂ (HNHM), AT ♀ (HNHM), PT 31 ♂, 27 ♀ [2 ♀ GD] (HNHM, ZMHB, JRUC, JVAC), labelled: "Hungaria, Bakony Mts., / Penzesgyör env., TILOS- / ERDEI BARLANG [cave], / 5.iv.-2.viii.1991, Roman / Mlejnek lgt., traps"; PT 50 ♂, 47 ♀ (HNHM, OMOG, MNHN, NMPC, BMNH, MNHG, MZHF, PMOC, JJAC, JRUC, JVAC), labelled: ditto, but "9.v.-14.vii.1993, J.Růžička lgt., baited pitfall trap [p]"; PT 2 ♂, 2 ♀ (JRUC, JVAC), labelled: ditto, but "9.v.1993 [p] // individually collected / in cave on stones and soil [p]".

Etymology. The name of the new subspecies is derived from the Hungarian word *foeldalatti*, meaning subterranean, and refers to its subterranean way of life.

Diagnosis. *Choleva lederiana foeldalatti*, ssp. nov. is a cavernicolous subspecies, known only from north-western Hungary; it can be distinguished from other subspecies of *C. lederiana* by the following characters in combination: robust body with subtrapezoidal pronotum; in the male, by the slender protarsomere and finely curved mesotibia; in the female, by the suboblong tergum X.

Description. Body length 4.3-5.2 mm. Body robust (Fig. 294), red-brown. Antennae, legs and mouthparts flavous-brown. Body covered with dense, short, recumbent setation. Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna elongate (Fig. 188), 2.05-2.37 (mean 2.21 in 52 spec.) times as long as pronotal length. Eye larger, 1.08-1.41 (mean 1.21 in 59 spec.) times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.40-1.54 (mean 1.45 in 59 spec.) times as wide as long, subtrapezoidal in shape. Lateral margin parallel or rounded posteriorly in dorsal view (Fig. 177). Surface regularly convex; with fine punctation and distinct microsculpture. Elytra 1.37-1.82 (mean 1.53 in 59 spec.) times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Apex of elytron regularly rounded (Fig. 184). Ventrites IV to VII with distinct medial depression ventrally (Fig. 183). Protarsomere moderately expanded to slender, 4.67-5.83 (mean 5.45 in 32 specimens) times as long as wide. Mesotibia bent and finely curved (Fig. 181). Metatrochanter short and rounded, postero-basal tooth developed (Fig. 182). Aedeagus with elongate, attenuate apex, regularly tapering between median and apical portion in dorsal view (Fig. 180); undulous ventrally in lateral view (Fig. 179). Paramere only slightly longer than penis.

Female. Elytron with rounded, not attenuate apex; medial margin straight subapically (Figs. 185-187). Ventricle VIII almost regularly rounded posteriorly; with spiculum ventrale subquadrate (Figs. 190, 191). Tergum IX sinuate anteromedially, apex not reaching the tip of tergum X (Fig. 193). Tergum X suboblong; posterior margin with a single pair of setae or bare (Figs. 192, 193). Stylus with 2-4 subapical setae (Fig. 189).

Geographic variability. None observed.

Immature stages. Unknown.

Field notes. The Tilos-erdei-barlang cave is a closed cave, situated in a limestone massive, fully covered by a deciduous forest; in a small lateral valley of the Gerence brook, about 800 m south-east of the Pénzesgyőr village; with the entrance in the altitude of ca. 390 m. The cave is listed under No. 30 in Esterhás (1984), UTM code YN 13 [A2] according to Tóth (1987).

Biology. The subspecies is known to occur only in the cave at the type locality, where specimens were collected both individually and pit-fall baited, more abundantly near the fissures in the sides of the cave, indicating that the population lives inside the limestone rock massive. Possible microhabitat preference was observed (between May 9 and July 14, 1993, 16 ♂ and 17 ♀ were baited in 4 traps in the shallow parts of the cave, versus 34 ♂ and 30 ♀ in 3 traps in the deeper parts of the cave; J. Růžička, unpubl. data). No specimens of this taxon were found in the abundant samples of Cholevinae in two traps, placed during the same time externally near to side of the rock massive, close to the cave entrance.

Distribution (Fig. 300). Hungary: Bakony mountains, Tilos-erdei-barlang cave. Possible occurrence in other numerous limestone caves, abundant in the Bakony mountains (for information on caves, see Esterhás 1984).

9. *Choleva (Choleva) lederiana gracilenta* Szymczakowski, 1957

(Figs. 175, 194-206, 295, 300)

Choleva aquilonia gracilenta Szymczakowski, 1957: 65, plate X, Figs. 1, 2, 4-8; plate XII, Figs. 1, 2 (type locality: grotte "Pod Sokolą Górą", dans le district de Częstochowa [Poland]).

Type material examined. PT ♀ (JRUC), labelled: "Polonia mer. / Sokole Góry (in cav.) / distr. Częstochowa / leg. Szymczakowski [p] / 15/X.1954 [h] // PARATYPUS / Choleva aquilonia gracilenta Szymcz. [h] / det. Szymczakowski 1955 [p, red-bordered]"; PT ♀ (JRUC), labelled: "Polonia centr. / distr. Częstochowa / cav. „pod Sokolą Górą“ / leg. W. Szymczakowski / 15/X.1954 [h] // PARATYPUS [red underlined] / Choleva aquilonia / ssp. gracilenta Szymcz. / det. Szymczakowski 1955 [h]".

Diagnosis. *Choleva lederiana gracilenta* is a cavernicolous subspecies, known from south-eastern Poland; it can be distinguished from other subspecies of *C. lederiana* by the following characters in combination: the small and gracile

body and subtrapezoidal, flattened, postero-laterally sinuous pronotum; in the male, by the considerably weakly curved mesotibia and abruptly narrowed apex of aedeagus; in the female, by the subrectangular, moderately attenuate elytral apex.

Description. Body length 4.4-5.2 mm. Body considerably gracile, elongate (Fig. 295), brown. Antennae, legs and mouthparts red-brown. Body covered with dense, short, recumbent setation. Head surface finely and sparsely punctate, with considerably fine, distinct microsculpture. Antenna medium to elongate (Fig. 200), 1.95-2.23 (mean 2.11 in 51 spec.) times as long as pronotal length. Eye slightly or not reduced, 1.09-1.56 (mean 1.26 in 54 spec.) times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.15-1.49 (mean 1.38 in 54 spec.) times as wide as long, subtrapezoidal in shape. Lateral margin sinuous posteriorly in dorsal view (Fig. 175). Surface weakly convex, distinctly flattened postero-laterally; with fine punctation and distinct microsculpture. Elytra 1.59-1.95 (mean 1.73 in 54 spec.) times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Apex of elytron subtruncate (Fig. 198). Ventrites VI and VII with weak medial depression ventrally (Fig. 197). Protarsomere considerably slender, 5.00-6.80 (mean 5.78 in 28 specimens) times as long as wide. Mesotibia slightly bent and considerably finely curved (Fig. 198). Metatrochanter short and rounded, postero-basal tooth developed (Fig. 196). Aedeagus with elongate, attenuate apex; abruptly narrowed between median and apical portion in dorsal view (Fig. 195); undulous ventrally in lateral view (Fig. 194). Paramere only slightly longer than penis.

Female. Elytron with apex broadly attenuate, subrectangular; medial margin sinuous subapically. Ventrite VIII slightly excised postero-medially; spiculum ventrale quadrate (Figs. 202, 203). Tergum IX sinuate antero-medially, apex not reaching the tip of tergum X (Fig. 206). Tergum X oval to subhexagonal in shape; posterior margin with a single pair of setae or bare (Figs. 204-206). Stylus with 3-4 subapical setae (Fig. 201).

Geographic variability. None observed.

Immature stages. Unknown.

Field notes. Detailed description of the caves in the Sokole Góry mountains can be found in Maslankiewicz (1937) and Kowalski (1951). The Lagowska cave (about 125 km distant from Sokole Góry mountains) is described by Kowalski (1954).

Biology. Cavernicolous species. Szymczakowski (1957) observed microhabitat preference in the population from the Pod Sokolą Górą cave; specimens were more abundant in the cave interior, whereas specimens of sympatric *Catops tristis infernus* Szymczakowski, 1957 seem to prefer entrance zone of the cave. Similar pattern was observed during our trapping effort in the same cave in 1993 (J. Růžička & J. Vávra, unpubl. data). No specimens of this taxon were found in

the abundant samples of Cholevinae in the two traps, placed outside the cave entrance in 1993 (J. Růžička & J. Vávra, unpubl. data). Further, no specimens of *C. l. gracilentia* were found during spring 1999 by pitfall trapping in Olsztyńska cave on closely situated Pustelnica mount (at distance ca. 2-3 km from the type locality, in the same mountain ridge – J. Růžička & J. Vávra, unpubl. data).

Distribution (Fig. 300). Poland: Sokole Góry mountains (Szymczakowski 1959; Burakowski et al. 1978), Góry Świętokrzyski mountains (first record). Possible is the occurrence in other limestone caves in south-western Poland (for information on numerous caves in this region, see Kowalski 1951, 1954).

Distributional remarks. The record of *C. agilis* in the Pod Sokola Góra cave, mentioned briefly by Kowalski (1954: 437) is this subspecies.

10. *Choleva (Choleva) lederiana holsatica* Benick & Ihssen in Benick, 1937, stat. nov.
(Figs. 2, 4, 7, 8, 13, 18, 207-219, 293, 300)

Choleva holsatica Benick & Ihssen in Benick, 1937: 154, Figs. 1, 2a, 3c, 4a-d (type locality: Segeberger Höhle [Germany: Holstein]).

Type material examined. LT ♂ (ZMHB), labelled: “Lübeck 16.9.[19]35 / Segeberg. Höhle. [h] // Coll. Dr. Jhssen [p] // ♂ [h] // [red quadrate label] // holsatica [h] // Zool. Mus. / Berlin [p] // Lectotype / M. Schilthuizen / des. 1987 [h, Schilthuizen’s MS] // *Choleva (Choleva) / lederiana holsatica* Benick & Ihssen in Benick, 1937 / J. Růžička & J. Vávra det. 1998”. PLT 2 ♂, 8 ♀ (ZMHB), labelled: ditto, but “*Ch. septentrionis / holsatica* B.I. / Schilthuizen det. ’87 [h, Schilthuizen’s MS]”; PLT 2 ♂, 1 ♀ (ZMHB), labelled: “Segeberger Höhle / b. Lübeck 5.7.[19]35 [h] // [red square label] // Coll Dr Jhssen [p] // Zool. Mus. / Berlin [p] // *Ch. septentrionis / holsatica* B.I. / Schilthuizen det. ’87 [h, Schilthuizen’s MS]”; PLT 2 ♀ (ZMHB), labelled: ditto, but “9.2.[19]35. [h]”; PLT 1 ♀ (ZMHB), labelled: ditto, but “Segeberg / Holst [p] C / 9.2.[19]35 [h]”; PLT 1 ♀ (ZMHB), labelled: ditto, but “Segeberg / Holst [p] / 9.2.[19]35 [h]”.

Taxonomic and nomenclatorial remarks. Only LT bears the lectotype label of Schilthuizen, all PLT were marked only by red square label without any text. All PLT have attached the additional label: “PARALECTOTYPE ♂ [or] ♀ / *Choleva holsatica* / Benick & Ihssen in Benick, 1937 / Schilthuizen des. 1987 / label added by J. Růžička & J. Vávra 1998 [p, red label]”.

This taxon was originally described as *C. holsatica*. Later, Szymczakowski (1957) and subsequent authors referred to the same taxon as *C. septentrionis holsatica*. Because *C. septentrionis* is treated as a junior synonym of *C. l. lederiana* in this paper, the status of this taxon should be changed to *C. lederiana holsatica*.

Diagnosis. *Choleva lederiana holsatica* is a cavernicolous subspecies, known only from northern Germany; it can be distinguished from other subspecies of *C. lederiana* by the following characters in combination: the elongate body; in the male, by the subtruncate elytral apex and heavily undulous apex of aedeagus in lateral view; in the female, by the broadly attenuate, acuminate elytral apex with subapically sinuous medial margin, and weakly truncate ventrite VIII.

Description. Body length 4.5-5.7 mm. Body elongate (Fig. 293), brown. Antennae, legs and mouthparts red-brown. Body covered with dense, short, recumbent setation. Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna medium to elongate (Figs. 2, 214), 1.91-2.27 (mean 2.09 in 45 spec.) times as long as pronotal length. Eye reduced (Figs. 7, 8), 0.88-1.19 (mean 1.04 in 48 spec.) times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.33-1.49 (mean 1.43 in 50 spec.) times as wide as long, transversely oval. Lateral margin parallel or rounded posteriorly in dorsal view. Surface regularly convex; with fine punctation and distinct microsculpture. Elytra 1.55-1.78 (mean 1.68 in 50 spec.) times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Apex of elytron subtruncate (Fig. 210). Ventrites VI and VII or V to VII with weak medial depression ventrally. Protarsomere moderately expanded, 4.00-5.14 (mean 4.68 in 20 specimens) times as long as wide. Mesotibia bent and distinctly curved (Fig. 13). Metatrochanter short and rounded, postero-basal tooth developed (Fig. 209). Aedeagus with elongate, attenuate apex, regularly tapering between median and apical portion in dorsal view (Fig. 208); heavily undulous ventrally in lateral view (Figs. 18, 207). Paramere only slightly longer than penis.

Female. Elytron with apex broadly attenuate, acuminate; medial margin sinuate subapically (Figs. 211-213). Ventrite VIII weakly truncate to slightly excised postero-medially; spiculum ventrale subquadrate to quadrate (Figs. 216, 217). Tergum IX sinuate antero-medially, apex not reaching the tip of tergum X (Fig. 219). Tergum X oval to subhexagonal in shape; posterior margin bare (Figs. 218, 219). Stylus with 3-4 subapical setae (Fig. 215).

Geographic variability. None observed.

Immature stages. The larva and pupa was described by Heun (1955).

Field notes. The cave is briefly described by Ipsen (1996, 1998).

Biology. Cavernicolous species, known to occur only in the spacious cave in gypsum beds in the Bad Segeberg (Benick 1937). Maximum of adult activity was observed in January-March and July-August, with breeding activity mainly in winter months (Heun 1955; Zwick 1966; Ipsen 1996, 1997, 1998).

Distribution (Fig. 300). Germany: Holstein, Segeberger Höhle [cave] (Benick 1937; Horion 1949; Ipsen 1996, 1997, 1998).

11. *Choleva (Choleva) lederiana pilisensis*, ssp. nov. (Figs. 220-234, 292, 300)

Type material. HT ♂ (HNHM), AT ♀ (HNHM), PT 19 ♂, 39 ♀ [1 ♀ GD] (HNHM, OMO, MNHN, NMPC, ZMHB, BMNH, MNHG, MZHF, PMOC, JJAC, JRUC, JVAC), labelled: "Hungaria, Pilis Mts., env. / Klastrompuszta pr. Kestölc, / LEGÉNY + LEÁNY BARLANG / [cave], 12.v.-5.vii.1989, / Roman Mlejnek lgt., traps [p]"; PT 2 ♂, 3 ♀ (HNHM, JRUC), labelled: "Pilis [mts], Ördöglyuk-b.[arlang] / 1954.xii.29 [h] // ♂ [or] ♀ [p] // Coll. / Papp Jenő [p] // *Choleva / agilis* Ill.

[h] / det. Endrödi [p] 1955 [h]"; PT 1 ♂ (HNHM), labelled: "Pilisszentkereszt [vill.] / Szoplaki [hill], Ördöglyuk [pithole][h] // denevér guanóból / Kest. 1960.I.14 [h] // 1960.T.2. / leg. Topál [h]"; PT 22 ♂, 15 ♀ (HNHM, JRUC), labelled: "Pilisszentkereszt [vill.] / 1951. XII. 11. [p] // Szoplaki [hill] Ördöglyuk [pithole] / denevérguánóról [p] // leg. / Topál György [p]"; PT 2 ♂ (HNHM), labelled: "Pilis [mts] Szt Kereszt / barlang [=cave] [h] // agilis Ill. [h, Jeannel's MS] / R. JEANNEL det. [p]".

Etymology. The name of the new subspecies refers to the region of origin – the Pilis mountains in northern Hungary.

Diagnosis. *Choleva lederiana pilisensis*, ssp. nov. is a cavernicolous subspecies, known only from northern Hungary; it can be distinguished from other subspecies of *C. lederiana* by the following characters in combination: the lustrous head, with subobsolete microsculpture, flattened pronotum; in the male, by the paramere shorter or as long as apex of penis; in the female, by the truncate apex of elytron and hexagonal tergum X.

Description. Body length 4.8–5.6 mm. Body elongate (Fig. 292), red-brown with darker head and pronotum. Antennae, legs and mouthparts flavous. Body covered with dense, short, recumbent setation. Head surface finely and sparsely punctate, with fine microsculpture, subobsolete in male. Antenna elongate (Fig. 228), 2.05–2.39 (mean 2.21 in 47 spec.) times as long as pronotal length. Eye reduced, 0.90–1.16 (mean 1.00 in 62 spec.) times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.35–1.49 (mean 1.42 in 62 spec.) times as wide as long, transversely oval in shape. Lateral margin parallel or rounded posteriorly in dorsal view (Fig. 176). Surface slightly convex, distinctly flattened latero-posteriorly; with fine punctation and distinct microsculpture. Elytra 1.54–1.73 (mean 1.64 in 62 spec.) times as long as wide. Surface with distinct micro-sculpture. Metacoxa not attenuate posteriorly.

Male. Apex of elytron oblique (Fig. 225) Ventrites IV to VII or V to VII with medial depression ventrally (Fig. 232). Protarsomere moderately expanded, 3.88–5.00 (mean 4.65 in 21 specimens) times as long as wide. Mesotibia bent and finely curved (Fig. 227). Metatrochanter short and rounded, postero-basal tooth developed (Fig. 222). Aedeagus with elongate, attenuate apex, regularly tapering between median and apical portion in dorsal view (Fig. 221); undulous ventrally in lateral view (Fig. 220). Paramere shorter than or as long as penis (Fig. 221).

Female. Elytron with subtruncate, not attenuate apex; medial margin straight subapically (Figs. 223–226). Ventrite VIII truncate posteriorly; with spiculum ventrale quadrate (Figs. 230, 231). Tergum IX sinuate antero-medially, apex not reaching the tip of tergum X (Fig. 234). Tergum X hexagonal; posterior margin bare (Figs. 233, 234). Stylus with 3–4 subapical setae (Fig. 229).

Geographic variability. None observed.

Immature stages. Unknown.

Field notes. The limestone caves of the Pilis mountains are briefly described by Kordos (1984). The Legény barlang and Leány barlang caves are situated on western slope of the Pilis mount, about 700 m east of the Klastrompuszta village, their entrances are in the altitude of ca. 500 m. Both caves are very closely situated; their underground systems probably communicate together (R. Mlejnek, pers. comm. 1989). The Ördög-lyuk barlang is a pithole situated on eastern slope of the Pilis mount, about 2 km north-west of the Pilisszentkereszt village, with entrance at the altitude ca. 480 m, about 2.5 km distant from the caves mentioned above.

Biology. The subspecies is known to occur only in a few underground caverns. Specimens in the Legény barlang and Leány barlang caves were both collected individually and pit-fall baited in deep parts of caves inside the limestone rock massive.

Distribution (Fig. 300). Hungary: Pilis mountains (Jeannel 1936 [as *C. agilis*]). Possible occurrence in other limestone caves; more than 100 caves are known in the Pilis mountains (Kordos 1984).

Distributional remarks. One of the records of *C. agilis* from Hungary given by Jeannel (1923a) actually belongs to this taxon (see the type material section above).

12. *Choleva (Choleva) lederiana sokolowskii* Ipsen & Tolasch, 1997, stat. nov.
(Figs. 235-246, 296, 300)

Choleva septentrionis sokolowskii Ipsen & Tolasch, 1997: 168, Figs. 1, 2, 4, 6 (type locality: Hohlsteinhöhle bei Horn-Bad Meinberg, Teutoburger Wald [Germany]).

Type material examined. None; only topotypic specimens collected by Anne Ipsen and T. Tolasch were examined (see the Appendix).

Taxonomic and nomenclatural remarks. This taxon was originally described as a subspecies of *C. septentrionis*. Because *C. septentrionis* is treated as a junior synonym of *C. l. lederiana* in this paper, the status of this taxon should be changed to *C. lederiana sokolowskii*.

Diagnosis. *Choleva lederiana sokolowskii* is a cavernicolous subspecies, known only from central Germany; it can be distinguished from other subspecies of *C. lederiana* by the following characters in combination: the elongate body; in the male, by the weakly expanded protarsomere, subtruncate elytral apex and only moderately undulous apex of aedeagus in lateral view; in the female, by the truncate elytral apex and suboblong to oval tergum X.

Description. Body length 5.1-5.6 mm. Body elongate (Fig. 296), brown. Antennae, legs and mouthparts red-brown. Body covered with dense, short, recumbent setation. Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna elongate (Fig. 240), 2.15-2.42 (mean 2.28 in 40 spec.) times as long

as pronotal length. Eye slightly reduced, 0.96-1.28 (mean 1.11 in 40 spec.) times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.34-1.51 (mean 1.42 in 40 spec.) times as wide as long, subtrapezoidal in shape. Lateral margin parallel or rounded posteriorly in dorsal view, posterior margin laterally angulate (Fig. 241). Surface regularly convex; with fine punctation and distinct microsculpture. Elytra 1.57-1.82 (mean 1.69 in 40 spec.) times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Apex of elytron subtruncate (Fig. 244). Ventrite IV ventro-medially flat, ventrites V to VII with medial depression ventrally (Fig. 239). Protarsomere weakly expanded, 4.88-5.50 (mean 5.29 in 20 specimens) times as long as wide. Mesotibia bent and finely curved (Fig. 237). Metatrochanter short and rounded, postero-basal tooth developed (Fig. 238). Aedeagus with elongate, attenuate apex, regularly tapering between median and apical portion in dorsal view (Fig. 236); undulous ventrally in lateral view (Fig. 235). Paramere only slightly longer than penis.

Female. Elytron with truncate apex; medial margin straight subapically (Fig. 245). Ventrite VIII rounded posteriorly; with spiculum ventrale subquadrate (Fig. 243). Tergum IX sinuate antero-medially, apex reaching or not fully reaching the tip of tergum X (Fig. 246). Tergum X suboblong to oval in shape, widest subapically; posterior margin with a single pair of setae (Fig. 246). Stylus with 4 subapical setae (Fig. 242).

Geographic variability. None observed.

Immature stages. Unknown.

Field notes. The cave is described briefly by Ipsen & Tolasch (1997), it is a crack-like (crevice) cave in limestone, with length of ca. 160 m.

Biology. Cavernicolous species, known to occur only in the Hohlsteinhöhle cave in Teutoburger Wald, Germany (Ipsen & Tolasch 1997).

Distribution (Fig. 300). Germany: Nordrhein-Westfalen, Hohlsteinhöhle [cave] (Ipsen & Tolasch 1997; Ipsen 1997, 1998 [as "Hohlsteinform"]).

13. *Choleva (Choleva) matthiesseni* Reitter, 1914 (Figs. 247-256, 291, 302)

Choleva Matthiesseni Reitter, 1914: 263 (type locality: Kultscha [now China: Yining]).

Type material examined. HT ♂ (HNHM), labelled: "Turkestan / Kuldscha / Matthiessen [leg.] [h] // coll. Reitter [p] // Monotypus [p] 1914 / *Choleva* ♂ / Matthiesseni Reitter [h] [*] // *Choleva* / Matthiesseni m / Kultscha. [h, Reitter's MS]".

Diagnosis. *Choleva matthiesseni* is the single known central Asian species of the *C. agilis* species group. It can be easily distinguished from related *C. bedeli* and

C. emgei by the larger body; in the male, by the apically rounded metatrochanter and widened, apically flattened paramere; in the female, by the laterally expanded tergum IX, uniformly sclerotized, elongate-oval tergum X and anteriorly rounded spiculum ventrale.

Description. Body length 4.5-5.4 mm. Body robust (Fig. 291), brown to brown-black. Antennae, legs and mouthparts brown. Body covered with dense, short, recumbent setation. Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna medium to elongate (Fig. 253), 1.97-2.18 times as long as pronotal length. Eye large, 1.33-1.70 times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.43-1.56 times as wide as long, transversely oval, widest behind the middle. Surface regularly convex, with fine punctation and distinct microsculpture. Elytra 1.45-1.66 times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Ventrites IV to VII regularly convex ventrally. Mesotibia almost straight, not curved (Fig. 251). Metatrochanter short with rounded apical point, postero-basal tooth not developed (Fig. 255). Aedeagus with short, rounded, triangular apex in dorsal view (Fig. 248); straight in lateral view (Fig. 247). Paramere only slightly longer than penis, widened and flattened in apical part (Fig. 248).

Female. Apex of elytron angulate or attenuate to small, slender terminal tip (Figs. 249, 250). Ventrite VIII with spiculum ventrale rounded, subtruncate; or laterally dilated (Fig. 256). Tergum IX entire, laterally dilated, apex not reaching the tip of tergum X (Fig. 254). Tergum X elongate oval; posterior margin setose (Fig. 254). Stylus with 2-3 subapical setae (Fig. 252).

Geographic variability. None observed.

Immature stages. Unknown.

Biology. Probably a montane species, collected by pitfall traps in the altitude 2000-3500 m.

Distribution (Fig. 302). China: Xinjiang autonomous region (Reitter 1914 [Kuldscha was the Russian name of the town of Yining]), Kazakhstan (first record), Kyrgyzstan (Yablokov-Khnzoryan 1967).

14. *Choleva (Choleva) schuelkei*, sp. nov. (Figs. 257-260, 263, 283, 302)

Type material. HT ♂ (MSCC), labelled: "China: Shaanxi [prov.], Qin Ling Shan [mts] / 108.47 E, 33.51 N, Mountain W / pass at Autoroute km 70, 47 km / S Xian, 2300-2500 m, sifted / 26.-30.08.1995, leg. M.Schülke [p] // Sammlung / M. Schülke / Berlin [p, green label]".

Etymology. Patronymic, dedicated to Michael Schülke (Berlin), collector of the new species and an excellent student on Staphylinidae.

Taxonomic and nomenclatural remarks. The new species is closely related to polymorphic *C. lederiana* (see discussion below), but is treated here as a different species, based especially on the considerably narrow, gracile apex of aedeagus (Figs. 257, 258) and metatrochanter with robust, obtuse tooth, situated posteriorly (Fig. 260). This combination of characters is absent within subspecies of *C. lederiana*; the aedeagus in *C. lederiana* always has a wider, more robust apex (as in Figs. 20, 22, 34, 116, 180, 195, 208, 221, 236) and the tooth on the metatrochanter is smaller, or large and hooked, but always situated postero-basally (Figs. 35-39, 121, 182, 196, 209, 222, 238).

Diagnosis. *Choleva schuelkei*, sp. nov. is probably a Chinese vicariant to *C. agilis* or *C. lederiana*; it can be easily distinguished in the male, by the absence of medial impressions on ventrites, robust tooth on metatrochanter and considerably slender apex of aedeagus; the female is unknown.

Description. Body length 4.95 mm, maximum body width 1.80 mm. Body elongate (Fig. 283), brown with slightly darker head and pronotum. Antennae, legs and mouthparts red-brown. Body covered with dense, short, recumbent setation. Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna of medium length (Fig. 263), 2.04 times as long as pronotal length. Eye slightly reduced, 0.96 times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.43 times as wide as long, subrectangular in shape, widest behind the middle. Surface regularly convex; with fine punctation and with distinct microsculpture. Elytra 1.61 times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Ventrites IV to VII regularly convex ventrally. Mesotibia slightly bent and moderately curved (Fig. 259). Metatrochanter short and rounded, with obtuse, posterior tooth (Fig. 260). Aedeagus with gracile, elongate, attenuate apex in dorsal view (Fig. 258); bent ventrally in lateral view (Fig. 257). Paramere only considerably slightly longer than penis.

Female. Unknown.

Geographic variability. Unknown.

Immature stages. Unknown.

Biology. The holotype was sifted in a small valley with mixed wood (*Betula*, *Larix*, *Abies* and *Alnus* spp.), at altitude 2300-2500 m, in a dam of a waterless stream. The dam consisted of large and small boulders with large stuffing of moss and many shrubs. Together with this specimen, a rich staphylinid fauna was collected characterized mainly by *Stenus*, *Lobrathium*, *Pseudopsis*, *Tachinus* and *Leptusa* spp. (M. Schülke, pers. comm.).

Distribution (Fig. 302). China: Shaanxi prov.

Species presently excluded from the *Choleva agilis* species group**15. *Choleva (Choleva) barnevillei* Tournier, 1872** (Figs. 261, 262, 264-269)

Choleva Barnevillei Tournier, 1872: 436 (type locality: Algérie, Blidah).

Choleva Anceyi Reitter, 1887: 507 (type locality: Algier, bei Berrouaghia).

Type material examined. HT ♂ of *C. anceyi* (HNHM), labelled: "Berouaghia / Algeria, F. Ancey [leg.] [h] // coll. Reitter [p] // Holotypus 1887 / Choleva / Anceyi / Reitter [*] // Chol. Anceyi / m. Berouaghia / Alg. [h, Reitter's MS]".

Taxonomic and nomenclatural remarks. The species differs considerably from other species of the *C. agilis* species group by the following characters: considerably narrow and elongate antenna (Fig. 264), rounded shape of pronotum, triangular shape of female spiculum ventrale (Fig. 269); and especially by the shape of apical portion of aedeagus (Figs. 265, 266) which considerably resembles those of *C. reitteri* Petri, 1915 (Jeannel 1923a: fig. 151, 152, 155; Vávra 1998: fig. 38). Consequently, *C. barnevillei* is here excluded from *C. agilis* species group and transferred to *C. reitteri* species group.

Description. Body length 4.9 mm. Body elongate, red-brown. Body covered with dense, longer, recumbent setation. Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna medium to elongate (Fig. 264), 2.02-2.24 times as long as pronotal length. Eye large, 1.23 times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.40-1.41 times as wide as long, transversely oval, widest at the middle. Surface regularly convex; with larger, shallow, distinct punctation and distinct microsculpture. Elytra 1.48-1.51 times as long as wide. Surface smooth, with only subobsolete micro-sculpture. Metacoxa not attenuate posteriorly.

Male. Ventrites IV to VII regularly convex ventrally. Mesotibia almost straight, not curved. Metatrochanter elongate and pointed apically, postero-basal tooth not developed (Fig. 261). Aedeagus with elongate, attenuate apex in dorsal view (Fig. 266; resembling that of *C. reitteri* Petri, 1915); slightly undulous in lateral view (Fig. 265). Paramere only slightly longer than penis, flattened apically (Fig. 266).

Female. Elytron with rounded apex (Fig. 267). Ventrite VIII with spiculum ventrale prolonged to triangular apex (Fig. 269). Tergum IX entire, apex not reaching the tip of tergum X (Fig. 262). Tergum X elongate; posterior margin setose (Fig. 262). Stylus with 3 subapical setae (Fig. 268).

Geographic variability. Unknown.

Immature stages. Unknown.

Biology. Unknown.

Distribution. Algeria (Jeannel 1923a, 1936); Morocco (Kocher 1958); Tunisia (Jeannel 1936).

16. *Choleva (Choleva) bosnica* Ganglbauer, 1899 (Figs. 270-276, 278, 297)

Choleva bosnica Ganglbauer, 1899: 118 (type locality: Bosnien).

Type material examined. HT ♀ (NHMW) [GD], labelled: "Bosnia [h] // bosnica / Ganglb. Typ. [h, Ganglbauer's MS] // TYPUS [p, red label]".

Taxonomic and nomenclatural remarks. The species clearly does not belong to the *C. agilis* species group; a number of characters (large and robust body form, robust and distinctly dorso-ventrally flattened antennomeres, erect setation of elytra, attenuate apex of female elytron, general shape of aedeagus and male metatrochanter, presence of lateral lamina on paramere, anteriorly bifurcate and posteriorly suddenly laterally dilated female tergum IX; Figs. 270-272, 274-276) are considerably similar to species of the *C. dorsigera* Marseul, 1864 species group, especially with *C. marseuli* Jeannel, 1923 (Jeannel 1923a: figs. 68-73, 76-78; Szymczakowski 1962: figs. 1-8; Giachino 1990: figs. 1, 2). Consequently, *C. bosnica* is here excluded from the *C. agilis* species group and transferred to the *C. dorsigera* species group.

Description. Body length 6.2-7.4 mm. Body considerably robust (Fig. 297), dark brown. Antennae, legs and mouthparts brown. Body covered with dense, long setation, recumbent on pronotum and erect on elytra. Head surface finely and sparsely punctate, with fine distinct microsculpture. Antenna robust, short, flattened dorso-ventrally (Fig. 274), 1.85-1.89 times as long as pronotal length. Eye large, 0.94-1.23 times as wide as the distance between posterior margin of antennal insertion and anterior margin of eye. Pronotum 1.38-1.57 times as wide as long, transversely oval in shape, widest before base. Surface regularly convex; with obvious punctation and distinct microsculpture. Elytra 1.63-1.73 times as long as wide. Surface with distinct microsculpture. Metacoxa not attenuate posteriorly.

Male. Ventrites IV to VII regularly convex ventrally. Mesotibia regularly bent and not curved. Metatrochanter rounded with truncate apex apically, postero-basal tooth not developed (Fig. 272). Aedeagus elongate, with subtruncate apex in dorsal view (Fig. 271); nearly straight, apex slightly undulous in lateral view (Fig. 270). Paramere only slightly longer than penis, distinctly flattened laterally (Fig. 271).

Female. Elytron with apex attenuate to slender terminal tip (Fig. 275). Ventrite VIII with spiculum ventrale quadrate and considerably robust (Fig. 278). Tergum IX entire, apex reaching to the level of posterior enlargement of tergum X (Fig. 276). Tergum X elongate; anterior margin forked, medial part slender and dilated posteriorly; anterior and medial part only weakly sclerotized; posterior part enlarged, sub-trapezoidal; posterior margin setose (Fig. 276). Stylus with numerous subapical setae (Fig. 273).

Geographic variability. Examined was also a single female (SZOC) [GD], labelled: "Greece, Arkadis, m 1650, Mount W of Alonístena, 3.v.1993, E. Colonnelli [leg.]", which is distinctly smaller, and differs slightly in the shape of ventrite VIII and tergum X (Figs. 277, 279). The specimen is temporarily assigned to *C. bosnica*, further study is needed within the *C. dorsigera* species group.

Immature stages. Unknown.

Biology. Unknown.

Distribution. Albania (first record), Bosnia (Ganglbauer 1899), Greece (first record).

Phylogenetic analysis of the *Choleva agilis* species group

Characters. The following list describes the characters used for the cladistic analysis. Character polarity was established by selecting species of *Choleva* from different species groups as outgroups, used to create a hypothetical outgroup; character states occurring commonly among other *Choleva* species groups were considered plesiotypic.

The character matrix proposed here consists of 16 binary, unweighted characters (four body characters, six male and six female sexual characters). Autapomorphies were excluded, because they are uninformative for phylogenetic analysis (e. i., presence of process on male metacoxa, elongate paramere and anteriorly narrowed female tergum X in *C. bedeli*; broaden and flattened paramere in *C. matthiesseni*; short paramere and subobsolete microsculpture on head in male of *C. lederiana pilisensis*, ssp. nov.). States are coded to reflect hypothesized polarity; the plesiomorphic condition is indicated by 0, apomorphic states is indicated by 1. Unknown states are indicated by a question mark (?). Character distributions for the 13 taxa are summarized in Table 2.

Body characters.

Character 1. Convexity of pronotum: 0 – regularly convex; 1 – distinctly compressed.

Character 2. Punctuation of pronotum: 0 – fine; 1 – coarse.

Character 3. Setation of pronotum and elytra: 0 – short and recumbent; 1 – long and erect.

Character 4. Microsculpture of pronotum: 0 – present; 1 – smooth.

Male characters.

Character 5. Shape of mesotibia: 0 – simple (as in Fig. 251); 1 – curved (as in Figs. 9-13).

Character 6. Shape of metatrochanter: 0 – rounded apically (as in Figs. 35-39, 255); 1 – pointed apically (Figs. 77, 99).

Table 2. Data matrix of sixteen characters for thirteen taxa of the *Choleva agilis* species group. 0 = plesiomorphy, 1 = apomorphy, ? = state unknown. Character description and ordering given in the text.

taxon / character No.	1 111111					
	12345	67890	123456			
OUTGROUP	00000	00000	000000			
<i>C. agilis</i>	00001	01100	010010			
<i>C. bedeli</i>	00000	10000	000001			
<i>C. cribrata</i>	01110	01000	101000			
<i>C. emgei</i>	00000	10000	000001			
<i>C. hirtula</i>	01110	01010	101000			
<i>C. lederiana foeldalatti</i> , ssp. nov.	00001	01111	110010			
<i>C. lederiana gracilentia</i>	10001	01111	110110			
<i>C. lederiana holsatica</i>	00001	01111	110110			
<i>C. lederiana lederiana</i>	00001	01111	?10110			
<i>C. lederiana pilisensis</i> , ssp. nov.	10001	01111	110110			
<i>C. lederiana sokolowskii</i>	00001	01111	010110			
<i>C. matthiesseni</i>	00000	00000	?00001			
<i>C. schuelkei</i> , sp. nov.	00001	01011	??????			

Character 7. Tooth on posterior margin of metatrochanter: 0 – absent (Figs. 77, 99, 255); 1 – present (Figs. 35-39, 84, 107, 209, 260).

Character 8. Medial impressions on ventrites IV to VI: 0 – absent; 1 – present (as in Figs. 129, 183, 197, 232, 239).

Character 9. Apex of aedeagus in dorsal view: 0 – short (as in Figs. 14, 22, 25, 83, 96); 1 – attenuate (as in Figs. 15-18, 106, 116, 118, 128, 180, 236, 258).

Character 10. Apex of aedeagus in lateral view: 0 – straight to slightly undulous (as in Figs. 21, 24, 33, 73, 82, 95, 105); 1 – distinctly undulous (as in Figs. 115, 122, 127, 179, 194, 207, 220, 235, 257).

Female characters.

Character 11. Tooth on apex of elytron: 0 – absent (as in Figs. 40-42); 1 – present (as in Figs. 86, 87, 110, 136-139).

Character 12. Shape of antero-medial part of tergum IX: 0 – entire (as in Figs. 79, 100); 1 – sinuate (as in Fig. 46).

Character 13. Relative length of tergum IX: 0 – not reaching the tip of tergum X (as in Figs. 46, 79); 1 – almost reaching the tip of tergum X (Figs. 91, 113).

Character 14. Shape of posterior margin of tergum X: 0 – truncate to slightly arched (as in Figs. 46-52); 1 – distinctly arched (as in Figs. 146, 147, 152, 158, 218, 219, 233).

Character 15. Setation of posterior margin of tergum X: 0 – numerous (as in Figs. 79, 91-93); 1 – absent or only one pair of minute setae present (as in Figs. 46-52).

Character 16. Shape of spiculum ventrale on ventrite VIII: 0 – not dilated laterally (as in Figs. 63-72); 1 – dilated laterally (Figs. 81, 90, 102, 256).

Phylogenetic analysis. The characters and taxa summarized in Table 2 were analysed using the Hennig86 cladistics program (version 1.5) (Farris 1988). The implicit enumeration option (ie*) resulted in 71 equally parsimonious shortest trees with a length of 21, a consistency index (CI) of 0.76, and a retention index (RI) of 0.90 (sensu Siebert 1992). All the major clades show considerably high congruence over all the trees.

Trees differ in the placement of *C. schuelkei*, sp. nov., and in different topology between individual subspecies of *C. lederiana*. These differences are probably seriously influenced by unknown states of characters 11 to 16 (female sexual characters), because only male of *C. schuelkei*, sp. nov. is presently known. Prior to discovery of female specimens, the position of this species remains preliminary.

The consensus tree (Fig. 298) was obtained using the procedure nelsen (Farris 1988). The differences described above resulted in a polytomy of *C. schuelkei*, sp. nov. with *C. lederiana lederiana*, *C. l. sokolowskii*, *C. l. foeldalatti*, ssp. nov., *C. l. holsatica* and (*C. l. pilisensis*, ssp. nov. + *C. l. gracilentata*).

The analysis failed in finding any apomorphy for the entire *C. agilis* species group (Jeannel 1923a, 1936). According to the hypothesized results (Fig. 298), the group can be divided into two clusters:

The monophyly of the first cluster (containing *C. matthiesseni*, *C. bedeli* and *C. emgei*) is supported weakly by one synapomorphy (character 16, spiculum ventrale on female ventrite VIII dilated laterally), because character is also found in other *Choleva* species placed by Jeannel (1923a) in different species groups (for instance, in *C. angustata* (Fabricius, 1781), *C. jeanneli* Britten, 1922 and *C. sturmi* C. Brisout de Barneville, 1863).

The monophyly of the second cluster, containing the remaining species, is supported by the synapomorphy of character 7 (presence of tooth on male metatrochanter). Again, this state is present in several *Choleva* species from the *C. cistelooides* species group (namely *C. angustata*, *C. glauca* Britten, 1918, *C. fencli* Růžička, 1993 and *C. safranboluensis* Vávra, 1998).

A pair of Near Eastern species (*C. hirtula* and *C. cribrata*) is monophyletic, and is well supported by four synapomorphies (characters 2 to 4; smooth pronotum with coarse punctation, long and erect setation of pronotum and elytra, and character 13, tergum IX almost reaching the tip of tergum X).

Choleva agilis, *C. schuelkei*, sp. nov. and the polymorphic *C. lederiana* are also monophyletic based on sexual characters: character 5 (curved male mesotibia), and probably also by characters 12 and 15 (sinuate antero-medial part of female tergum IX, setation of posterior margin of tergum X absent or reduced to a pair of minute setae; female unknown in *C. schuelkei*, sp. nov.). With the exception of *C. schuelkei*, sp. nov., the remaining taxa can also be described as monophyletic by the apomorphy of character 8 (impressed male ventrites). Further, *C. lederiana* and *C. schuelkei*, sp. nov. share two synapomorphies (character 10, distinctly undulous apex of aedeagus in lateral view, character 9, attenuate apex of aedeagus in dorsal view; this character is also independently developed in *C. hirtula*, see below).

Further, only *C. lederiana pilisensis*, ssp. nov. and *C. l. gracilentata* were subdivided within the large polytomy, based on one synapomorphy (character 1, distinctly compressed pronotum, probably due to adaptation to a subterranean way of life in both taxa).

Discussion

Many species of *Choleva* are widely distributed (Jeannel 1923a, 1936; Horion 1949; Burakowski et al. 1978; Silfverberg 1992), and can be characterized by relatively discrete and constant morphological characters, mainly male and female sexual characters (but see also Szymczakowski (1962, 1970) and Růžička (1993) for comments on *C. elongata* (Paykull, 1798); Jeannel (1936) and Szymczakowski (1976) on *C. sturmi* C. Brisout de Barneville, 1863 and *C. fagniezi* Jeannel, 1922; Szymczakowski (1963) on *C. glauca* Britten, 1918; or Vávra (1998) on *C. mertliki* Vávra, 1998 and *C. reitteri* Petri, 1915). However, continuous characters are present in the *C. agilis* species group, namely in *C. agilis* and *C. lederiana*. As shown above, these morphological characters (apex of aedeagus in dorsal and ventral view; shape of spiculum ventrale on female ventrite VIII; shape of female tergum X in dorsal view; apex of female elytron etc.) show considerable variability in both species.

Variations in these characters are probably influenced by the isolation of individual populations of both species. Such changes can be observed in samples from marginal areas (Great Britain, northern Italy, eastern part of the Mediterranean, Transcaucasia in *C. agilis*; Scandinavia in *C. lederiana*). Most remarkable this effect seem to be in local, mosaic distributional pattern of *C. lederiana* in central Europe (Fig. 300). This variability is not interpreted taxonomically for *C. agilis* in this paper, and only partially for *C. lederiana*. Only distinctive cave populations are formally recognized (and in two cases, also newly named) as subspecies; the rest of these talus- and montane-dwelling central European populations are retained within *C. lederiana lederiana*. The effects of relatively rapid adaptations and/or genetic bottlenecks are usually suggested to play an important role in differentiation of cave-dwelling animals (Caccone 1985; Culver et al. 1990; Howarth 1993). These are presently best interpreted as ecologically and genetically isolated peripheral populations, finding in "southern" cases the humid and lower temperatures that the species found in more northern epigeal habitats.

Another factor that can influence the observed variability are the possible hybrid zones between *C. agilis* and *C. l. lederiana*. The possibility of the existence of such zones was already proposed by Schilthuizen (1990). The potential existence of contact zones between these species should be in the territory of Great Britain, in southern Scandinavia and in north-western Russia. Larger collections are available only from southern Scandinavia (Fig. 299), where possible hybrid forms were found in southern Sweden (the Bohuslän, Västergötland, Halland, Småland, Öland, Blekinge and Skåne provinces). However, differences found in Scandinavian populations of *C. lederiana lederiana* (including also *C. septentrionis septentrionis* Jeannel, 1923 sensu Schilthuizen 1990) seem to be

significantly more gradual than considered by Schilthuizen (1990: 137, fig. 83). Thus, both taxa are treated as synonyms here, and the supposed hybrid zone is considered rather as parallel clinal variability of some female morphological characters (shape of genital segment X, apex of elytron and spiculum ventrale).

Finally, *C. hirtula* and *C. cribrata* clearly differ in some characters (elongation of body, Figs. 286, 287, apex of aedeagus, apex of female elytron). Differences observed in this pair of species could be related to adaptation of *C. hirtula* to a cave environment, similar (and probably convergent) to the changes observed in some subspecies of *C. lederiana*.

Further study is necessary for a better understanding of these problems. Future students are asked both for extensive field collecting of material as well as for application of more advanced taxonomic tools for study of populations to better understand species concepts. The *C. agilis* species group seems to be suitable for such a study. Ipsen (1999, 2000) already made first attempts in this field. Moreover, the surprising discovery of *C. schuelkei*, sp. nov. in central China suggests that there are more taxa in this species group outside Europe.

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Appendix. Material examined (except the type specimens given above).

The following abbreviations are used for Scandinavian provinces: *Finland*: Ab – Regio aboensis, Ka – Karelia australis, KemL., Lk. – Lapponia kemensis, Ok – Ostrobothnia kajanensis; *Norway*: AK – Akershus, B – Buskerud, F – Finnmark; HE – Hedmark, HO – Hordaland, MRi – inner Møre og Romsdal, N – Nordland, NTi – inner Nord-Trøndelag, O – Oppland, STi – inner Sør-Trøndelag, TE – Telemark, TR – Troms; *Sweden*: Ån. – Ångermanland, Bl. – Blekinge, Bo. – Bohuslän, Dr. – Dalarna, Ha. – Halland, Hs. – Hälsingland, Jä. – Jämtland; Lu.Lpm. – Lule Lappmark, Nb. – Norrbotten, Öl. – Öland; Pi.Lpm. – Pite Lappmark, Sk. – Skåne, Sm. – Småland, To.Plm. – Torne Lappmark, Up. – Uppland, Vb. – Västerbotten; Vg. – Västergötland. The abbreviations used before geographical names from Italy (AL, CR, NO, PH, PN, TN, TO, TS, TV, VI) refers to codes of Italian provinces.

1. *Choleva agilis* (Illiger, 1798) (examined 792 specimens)

AUSTRIA: Brucker Heide bei Linal, iv.1923, ex coll. Hlisnikowski, 1 ♂ (NMPC, coll. Hlisnikovský); Burgenland, Edlitz, Bachm.[ann] leg., 1 ♀ (NHMB, coll. G. Frey); Burgenland, Geschriebenstein, H. Franz leg., 1 ♀ (HFRC); Burgenland, Mattersburg, 12.iii.1995, R. Schuh leg., 1 ♀ (RSHC); Eisenerz, 13.vi.1888, Dr. Flach leg., 1 ♀ (DEIC); Hainburg, Mader leg., 1 ♂ (ZMAN); Mistelbach, 22.x.1988, P. Zabransky leg., 1 ♀ (JVAC); Salzburg, Fritsch leg., 1 ♂ (SNMC); Tirolis, Verne, ex coll. Hlisnikowski, 1 ♂ (NMPC, coll. Hlisnikovský); Wechselgebirge mts, L. Mader leg., 1 ♀ (ZMAN); Wien env., Moczarski leg., 1 ♀ (NHMB, coll. G. Frey); Wien env., Mariabrunn [illeg.], Skalitzky leg., 1 ♀ (NHMB, coll. G. Frey); Wien env., G. Strauss leg., 1 ♂ (MNHN); Wien env., Reitter leg., 1 ♀ (HNHM); Wien, Oberperden, 1898, Schuster leg., 1 ♀ (SMFD); Wien, Oberssuden [illeg.], 1898, Schuster leg., 1 ♀ (SMFD); Wien, Oberweidest, Schuster leg., 1 ♂ (SMFD); "Austria", Miller leg., 1 ♀ (ZMAN).

BELGIUM: Adnikerke, 28.vi.1921, ex coll. F. Guillaume, 1 ♀ (ISNB); Anseremme, 5.v.1912, ex coll. A. Koller, 1 ♀ (ISNB); Beauvechain, vi.1942, 1 ♂ (ISNB); Brugge, 17.xi.1907, 1 ♀ (MHNG); Denderleeuw, 11.iv.1875, A. de Borre leg., 1 ♂ (ISNB); Drafhem, 28.iii.1915, 1 ♂ (ISNB); Ghent env., Belzele, iv.1926, 1 ♀ (ISNB); Guigoven, 8.-12.iv.1874, O. de Heusch leg., 1 ♂ (ISNB); Han, 12.v.1947, ex coll. E. Derenne, 1 ♂ (ISNB); Liège env., Plainevaux, 8.x.1952, J. Depré leg., 1 ♂ 2 ♀ (ISNB); Lokeren, ix.1914, L. Frennet leg., 1 ♂ (ISNB); Marilles, 11.xi.1969, J. P. Smekens leg., 1 ♀ (ISNB); Méan, vi.1937, L. Frennet leg., 1 ♀ (ISNB); Namur env., Dave, viii.1909, Vreurich leg., 1 ♀ (ISNB); Pondrôme, 22.vii.1907, 1 ♂ (ISNB); Ridderborn, 13.-20.v.1874, O. de Heusch leg., 1 ♀ (ISNB); Torgny, 9.vii.1958, E. Derenne leg., 1 ♂ (ISNB); Torgny, 6.v.1966, E. Derenne leg., 1 ♀ (ISNB).

CZECH REPUBLIC: *Bohemia*: Běleč nad Orlicí, 1.i.1954, A. Smetana leg., nest of *Talpa*, 1 ♂ (MHNG); Beroun, near Berounka river, 4.xii.1959, Hlisnikowski leg., nest of *Talpa*, 1 ♂ 1 ♀ (NMPC, coll. Hlisnikovský); Brandaís a. E. [=Brandýs nad Labem], Skalitzky leg., 1 ♂ (NHMB, coll. G. Frey); České středohoří mts, Bořeň hill, 360-380 m, 22.x.1995-9.iv.1996, J. Růžička & P. Moravec leg., baited pitfall trap, accumulation of stones on steppe, 1 ♂ (JRUC); České středohoří mts, Radobýl hill, 2.iv.1983, P. Moravec leg., 1 ♀ (PMOC); České středohoří mts, Raná hill, various dates between 19.iii.-17.xi.1992, P. Moravec leg., baited pitfall trap, accumulation of stones on steppe, 13 ♂ 28 ♀ (PMOC); České středohoří mts, Raná hill, various dates between 2.x.-2.xii.1994, J. Růžička leg., baited pitfall trap, accumulation of stones on steppe near field margin, 9 ♂ (JRUC); České středohoří mts, Raná hill, various dates between 30.x.1994-31.v.1995, J. Růžička leg., baited pitfall trap, rock debris on NW slope, 3 ♂ (JRUC); České středohoří mts, Zlatník hill, 2.vi.-4.vii.1994, J. Růžička & P. Moravec leg., baited pitfall trap, rock debris on E slope, 1 ♂ (JRUC); Český Brod, 1 ♀ (NMPC); Český Brod env., Liblice, 19.i.1921, Rambou-

sek leg., 1 ♂ (NMPC); Hluboká nad Vltavou, 28.vii.1976, V. Karas leg., 1 ♂ (VKAC); Hodkovičky, ex coll. Machulka, nest of *Talpa*, 2 ♀ (NMPC); Hostivice, 7.i.1925, ex coll. Machulka, nest of *Talpa*, 1 ♀ (NMPC); Hostouň, 18.vi.1970, Huja leg., 1 ♂ (VSKC); Chrast nr. Chrudím, vii.1990, A. Olexa leg., 1 ♀ (AOLC); Chudenice, 1901, ex coll. Brýdl, 1 ♂ (NMPC); Jestřebí env., 17.v.1981, M. Honců leg., alluvium, 1 ♀ (OMCL); Jilové, 24.x.1941, J. Roubal leg., 1 ♀ (SNMC); Karlštejn, 23.iii.1957, ex coll. J. Volák, 1 ♀ (KMVC); Klet' mt, 18.vii.1987, M. Snížek leg., 1 ♀ (MSNC); Kolovraty, Svoboda leg., 1 ♂ 1 ♀ (NMPC); Kolovraty, ex coll. Machulka, 1 ♀ (NMPC); Korycany, 24.x.1996, J. Brestovanský leg., 1 ♀ (JBRC); Litomyšl, 1.ix.1936, A. Šaur leg., 1 ♀ (JBOC); Nevřeň nr. Plzeň, 17.x.1942, J. Štusák leg., sifted near stream, 1 ♀ (JNEC); Nymburk, x.1973, Gottwald leg., 1 ♀ (NHMB, coll. Gottwald); Nymburk, 5.vi.1997, L. Daněk leg., hollow of *Vulpes vulpes*, pitfall trap, 1 ♂ (LDAC); Nymburk, 22.vi.1997, L. Daněk leg., hollow of *Vulpes vulpes*, 1 ♀ (JRUC); Nymburk env., Babín forest, 28.xi.1996, L. Daněk leg., tunnel of *Mustela*, 1 ♀ (JRUC); Nymburk env., Dvory, 5.vi.1996, L. Daněk leg., 1 ♀ (LDAC); Oseček nr. Poděbrady, 1 ♀ (NMPC); Pardubice env., Nemošice, 1.xi.1993, R. Udržal leg., tunnel of small mammal, meadow near inundated forest, 1 ♂ (RUDC); Písek, 1 ♂ (NMPC); Plzeň, 2 ♀ (AOLC); Plzeň, 26.xi.1941, V. Petr leg., 1 ♀ (JNEC); Plzeň env., Račice, 7.iv.1944, J. Havelka leg., 1 ♂ (LERC); Plzeň, Borský les, 18.vi.1916, ex coll. J. Volák, 1 ♂ (KMVC); Polabí, Poděbrady env., Oškobrň hill, 20.x.1973, L. Mencl leg., carrion, 1 ♂ 1 ♀ (LMEC); Poříčian [=Poříčany], 1 ♀ (NHMW); Prag [=Praha], Skalitzky leg., 2 ♂ 1 ♀ (NHMB, coll. G. Frey); Praha, x.1959, A. Olexa leg., 1 ♂ (AOLC); Praha – Braník, ex coll. Lokay, 1 ♀ (NMPC); Praha – Cibulka, 31.xii.1907, ex coll. J. Roubal, 1 ♀ (SNMC); Praha – Černošice, Všetěčka leg., 1 ♀ (JNEC); Praha – Dejvice, ix.1959, Gottwald leg., 1 ♀ (NHMB, coll. Gottwald); Praha – Dejvice, x.1959, Gottwald leg., 1 ♂ (NHMB, coll. Gottwald); Praha – Hlubočepy, 27.viii.1937, Dr. Všetěčka leg., 1 ♀ (JNEC); Praha – Hvězda, iv.1961, R. Rous leg., 1 ♀ (RROC); Praha – Chuchle, 10.x.1915, ex coll. J. Volák, alluvium, 1 ♀ (KMVC); Praha – Chuchle, 11.i.1920, ex coll. Purkyně, 1 ♀ (NMPC); Praha – Kbely, 21.x.1968, A. Olexa leg., 1 ♂ (AOLC); Praha – Košíře, 6.vii.1919, ex coll. Lokay, 1 ♂ (NMPC); Praha – Košíře, Cibulka, 22.x.1905, Rambousek leg., 1 ♀ (MNHN); Praha – Košíře, Cibulka, 22.xii.1924, Rambousek leg., 1 ♀ (MNHN); Praha – Krč, ex coll. Zeman, 1 ♀ (NMPC); Praha – Lahovice, 11.xii.1974, J. Strejček leg., alluvium of Vltava river, 1 ♀ (JRUC); Praha – Modřany, 1 ♀ (NMPC); Praha – Motol, iv.1964, R. Rous leg., 1 ♀ (LDAC); Praha – Radotín, 1961, R. Rous leg., 2 ♂ 4 ♀ (RROC); Praha – Ruzyně, 8.i.1961, J. Strejček leg., 1 ♂ (JRUC); Praha – Slivenec, 19.x.1989-25.i.1990, L. Hubička leg., 1 ♂ (LHUC); Praha – Stromovka, 6.i.1957, Hlisnikowski leg., nest of *Talpa*, 1 ♂ 1 ♀ (NMPC, coll. Hlisnikovský); Praha – Šárka, 9.v.1896, ex coll. R. Formánek, 1 ♀ (MMBC); Praha – Šárka, xii.1964, R. Rous leg., nest of *Mus*, 1 ♀ (RROC); Praha – Troja, Velká skála, 17.ii.1980, Soustružník leg., 1 ♀ (JRUC); Praha – Troja, Velká skála, 7.ii.1981, Soustružník leg., 1 ♀ (VTYC); Praha – Zbraslav, v.1958, R. Rous leg., 1 ♀ (RROC); Praha, Císařský ostrov, 20.ix.1948, 1 ♂ 1 ♀ (NMPC); Praha, Lumbeho zahrada city park, 26.iv.1940, J. Roubal leg., 1 ♀ (SNMC); Praha, Prokopské údolí valley, 28.iv.1915, ex coll. J. Volák, 1 ♂ (KMVC); Příbram – Skorotín, 27.viii.1928, Hlisnikowski leg., swept on vegetation, at 7 p.m., 2 ♂ (NMPC, coll. Hlisnikovský); Radim env., Stráně u Splavu Nature Reserve, 205-220 m, 22.v.-6.vi.1997, V. Vrabec leg., unbaited pitfall trap, 1 ♀ (VVRC); Rostoky, 24.ix.1939, J. Havelka leg., 1 ♀ (NMPC); Starý Plzenec, 10.xi.1941, V. Petr leg., 1 ♀ (JNEC); Šumava mts, Městiště, 16.xii.1989, J. Růžička leg., tunnel of *Talpa*, 1 ♀ (JRUC); Tuchoměřice, x.1982, D. Král leg., 1 ♂ (JRUC); Veltrusy, R. Rous leg., 1 ♀ (RROC); Žatec env., Vysočany, 24.iv.1969, J. Strejček leg., sand pit, 1 ♀ (JVAC).

Moravia: Brno, vi.1954, Gottwald leg., 1 ♂ (MNHN); Brno, J. Fiala leg., 1 ♂ (MMBC); Břeclav – Ladná, I. Jeniš leg., 1 ♂ (IJEC); Bučovice, J. Volák leg., 1 ♂ (KMVC); Bzenec, 22.vi.1988, J. Habarta leg., 1 ♀ (JHAC); Čejč, 1.v.1980, R. Fornůsek leg., 1 ♂ (RFOC); Čejč, 31.iii.1984, R. Fornůsek leg., 1 ♀ (RFOC); Čejč, 16.v.1992, J. Vávra leg., burrow of *Oryctolagus cuniculus*, 1 ♂ (JVAC); Čejč, 11.vi.1994, V. Vyhňálek leg., trap, 1 ♂ (VVYC); Frýdek, 21.ii.1934, Hlisnikowski leg., meadow, nest of *Talpa*, 1 ♀ (NMPC, coll. Hlisnikovský); Frýdek, 28.xii.1935, Hlisnikowski leg., nest of *Talpa*, 2 ♂ (NMPC, coll. Hlisnikovský); Frýdek, 3.xii.1938, Hlisnikowski leg., nest of *Talpa*, 1 ♀ (NMPC, coll. Hlisnikovský); Grygov, Království, 18.v.-1.vi.1995, M. Bocáková leg., pitfall trap, 1 ♀ (VMUO); Horka nad Moravou, 19.iii.1981, I. Jeniš leg., 2 ♂ 1 ♀ (IJEC); Horní Bludovice, 16.x.1989, T. Sitek leg., 1 ♀ (TSIC); Hostákov, 3.xi.1990, Z. Malinka leg., 1 ♂ (ZMAC); Kam. Elgoth [=Komorní Lhotka], A. Hetschko leg., 1 ♀ (ZMAN); Kobylí, 30.iv.1998, O. Odvárka leg., 1 ♀ (PKRC); Kroměříž, J. Fiala leg., 1 ♂ (MMBC); Lednice,

9.vi.1962, K. Hůrka leg., ruderal, 1 ♂ (JRUC); Moravičany, 22.iii.1981, R. Fornůšek leg., 1 ♀ (RFOC); Moravská Ostrava, 8.iii.1941, Kostelník leg., assoc. with *Talpa*, 1 ♀ (SNMC); Moravský kras carst, Nová amatérská jeskyně cave, Dóm zemních pyramid, 22.i.-25.iv.1992, R. Mlejnek leg., baited pitfall trap, 1 ♀ (JRUC); Olomouc, 23.iii.1996, R. Fornůšek leg., nest of *Talpa*, 1 ♂ (RFOC); Olomouc – Křelov, vi.1995, V. Vyháček leg., garden, 1 ♂ (VVYC); Opava, 31.xii.1990, Z. Malinka leg., tunnel of *Oryctolagus cuniculus*, 1 ♂ (ZMAC); Podyjí National Park, Popice, 9.-12.v.1991, T. Kopecký leg., 1 ♀ (TKOC); Polanka nad Odrou, 21.x.1994, L. Šulák leg., dead spec. in vault, 1 ♀ (LSLC); Pouzdřany, 4.ix.1982, L. Koloničný leg., 1 ♂ (LKOC); Pouzdřany, 16.iii.1991, L. Koloničný leg., 1 ♂ (LKOC); Pouzdřany, 5.iii.1992, P. Čechovský leg., 1 ♀ (PCEC); Pouzdřany, Pouzdřanská step steppe, 12.iii.1991, J. Vávra leg., burrow of *Oryctolagus cuniculus*, 1 ♂ (JVAC); Pouzdřany, Pouzdřanská step steppe, 25.iv.1989, M. Fiala leg., 1 ♂ (MFIC); Prostějov, 23.ii.1930, Hlisnikowski leg., nest of *Talpa*, 1 ♀ (NMPC, coll. Hlisnikovský); Rohatec, 7.vi.1986, I. Jeniš leg., 3 ♂ 4 ♀ (IJEC); Skalice nr. Frýdek, 17.vi.1961, P. Nohel leg., 1 ♂ (SNMC); Strachotín, 1.ix.1981, K. Orszulik leg., 1 ♀ (JVAC); Věstonice, 1932, Dr. Všečka leg., 1 ♂ (JNEC); Žďár nad Sázavou, 26.x.1985, J. Vávra leg., under stone, tunnels of *Microtus*, 1 ♂ (JVAC); Žďár nad Sázavou, 24.xii.1985, M. Hruška leg., 1 ♀ (MHRC); Židlochovice, 6.iv.1995, J. Kaláb leg., 1 ♀ (JKAC); Židlochovice, various data between ix.1960 and i.1971, J. Dezort leg., 7 ♂ 1 ♀ (MMBC).

BOSNIA: Bjelašica planina, ex coll. O. Leonhard, 1 ♀ (DEIC); Ilidža, Wgth. [?] leg., 1 ♀ (NHMB, coll. G. Frey); Resanovci, Ledenica cave, 27.iv.1972, Pretner leg., 1 ♀ (JVAC); Sarajevo, Apfbl.[eck] leg., 1 ♀ (NHMB, coll. G. Frey); Vran planina, 1700 m, 26.vi.1927, Weirather leg., 2 ♂ (MNHN); Zavidovići, 7.xii.1903, Kendi leg., 1 ♂ (HNHM); Žepče, ex coll. J. Breit, 1 ♂ 2 ♀ (NHMB, coll. G. Frey); Žepče, ex coll. Sainte-Claire Deville, 1 ♂ 1 ♀ (MNHN); “Bosnia”, Reitter leg., 1 ♂ (DEIC); “Bosnien”, Reitter, Leder leg., 1 ♂ (HNHM).

BULGARIA: Belogradchik, Neprivetlivata abyss, 6.vi.1973, P. Beron leg., 1 ♂ (MNHN); cave near Cerepis lake, 5.vi.1960, V. Beshkov leg., 15 m from the entrance, 1 ♀ (MNHN); Chamkoriya, Mussala, vi.1936, Dr. Purkyně leg., 1 ♂ (NMPC, coll. Hlisnikovský); Lovech distr., Krushuna, Gr. Popova pestera cave, 6.ix.1925, N. Radev leg., 3 ♂ 2 ♀ (MNHN); Lovech distr., Krushuna, Gr. Popova pestera cave, 6.x.1925, N. Radev leg., 3 ♂ 3 ♀ (MNHN); Lovech distr., Krushuna, Gr. Popskata pestera cave, 6.x.1925, ex coll. H. Coiffait, 5 ♂ 1 ♀ (MNHN); Nesebar, Slanchev bryag, 4.vi.1964, Strejčková leg., sea alluvium, 1 ♂ (JRUC); Nesebar, Slanchev bryag, 4.vi.1964, K. Pospíšil leg., 1 ♂ (NHMB, coll. Gottwald); Rumelia: Balk.[an] mts, Sliven, vi.1908, Rambousek leg., 1 ♂ (DEIC); Sofia, Germ. m.[onastery ?], 2.vi.1908, Rambousek leg., 3 ♀ (MNHN); Vraca distr., Chiren, Popudjincata abyss, 3.x.1969, P. Beron leg., 1 ♂ 1 ♀ (MNHN); Vraca distr., Chiren, Gr. Govedarnika cave, P. Beron leg., 5 ♂ 1 ♀ (MNHN); Vraca distr., V. Chiren, Bulina dupka abyss, 2.x.1968, P. Beron leg., 1 ♂ (MNHN); Vraca distr., Kunovo Buce, 11.x.1968, P. Beron leg., 1 ♂ (MNHN); Vraca planina, Kalnata dupka abyss, 27.ix.1968, P. Beron leg., 1 ♂ 1 ♀ (MNHN).

CROATIA: Dalmatia, Dinar. Alpen, Mte Dinara mts, A. Winkler leg., 1 ♂ (NMPC, coll. Hlisnikovský); Dalmatia, Svilaja planina, Trogrla pecina cave, 500 m, 2 ♀ (MNHN); Kamanje, Ozalj, Spijla Vrlovka cave, 2.i.1938, Pretner leg., 8 ♂ 6 ♀ (BISL); ditto, 8 ♂ 8 ♀ (JVAC); Ludbreg, Apfelbeck leg., 1 ♀ (HNHM); Zagreb, Maksimir, viii.1915, V. Stiller leg., 2 ♀ (HNHM).

DENMARK: Copenhagen env., Ballerup, 14.x.1933, ex coll. Rosenberg, 1 ♀ (ZMUC); Drejø, 15.iv.1939, ex coll. Christiani, 1 ♀ (ZMUC); Hejede Overdrev, 4.v.1974, H. J. Petersen leg., 1 ♂ (ZMUC); Hvidkilde, 18.iv.1935, ex coll. Christiani, 1 ♂ (ZMUC); Jaegerspris, 11.v.1985, P. Neerup Buhl leg., 1 ♂ (ZMUC); Nørreballe, 23.vi.1976, ex coll. F. Bangsholt, 1 ♀ (ZMUC); Nørreballe, 28.viii.1976, ex coll. F. Bangsholt, 1 ♂ (ZMUC); Østjylland, Monsted s.f. Vejle, 18.x.1975, 1 ♂ (ZMUC); Orø Is., 15.v.1936, ex coll. Christiani, 1 ♀ (ZMUC); Seeland Ins., Rude Hegn, 15.vii.1936, ex coll. Rosenberg, 1 ♀ (ZMUC); Slagelse, 19.iii.1982, O. Mehl leg., 1 ♂ (ZMUC).

FRANCE: 2 km SE Cambrai, Niegnies, 1 ♀ (ZMHB); Aisne, 8 km E Soissons, Condé-sur-Aisne, G. de Buffévent leg., 1 ♂ (MNHN); Bac du Port, ex coll. A. Fauvel, 1 ♀ (ISNB); Beauvais, vii.1920, ex coll. A. Méquignon, 1 ♀ (MHNG); Bordeaux, 1935, G. Tempère leg., 1 ♀ (MHNG); Bordeaux, Jou, 20.xi.1910, 2 ♀ (MHNG); Bourdeaux, Bd Daussy, 27.iii.1947, E. Giraud leg., 1 ♀ (MHNG); Cabourg, ex coll. H. Marmottan, 1 ♀ (MNHN); Caen, ex coll. A. Fauvel, 1 ♂ (ISNB); Calvados, ex coll. A. Fauvel, 1 ♀ (ISNB); Calvados, Caen: bac du Port, ex coll. A. Fauvel, 2 ♂ (ISNB); Cassel, ex coll. K. Hänel, 1 ♂ (SMTD); Cussac – Médoc, 11.iii.1928, G. Tempère leg.,

Talpa, 1 ♂ 1 ♀ (MHNG); Cussac, 3 ♀ (MHNG); Desbrochers, P. de Borre leg., 1 ♂ (MHNG); Épinal, Sainte-Claire Deville leg., 1 ♂ (MNHN); Fontainebleau], 1 ♀ (ZMAN); Fontenay, ex coll. L. Bedel, 1 ♂ (MNHN); Gray, viii.1891, ex coll. M. des Gozis, 1 ♀ (ZMAN); Grenoble, ex coll. Abeille de Perrin, 1 ♀ (MNHN); Groveliry, ex coll. C. Faucillon, 1 ♂ (ZMAN); H. Bruyères, 14.iii.1880, ex coll. Sainte-Claire Deville, 1 ♀ (MNHN); Haute-Marne, St.-Dizier, Sainte-Claire Deville leg., 1 ♀ (MNHN); Jura, Dole, Hustache leg., 1 ♀ (MNHN); Juvisy-sur-Orge, xi.1930, ex coll. G. Colas, 1 ♀ (MNHN); La Panne, vii.1929, ex coll. F. Guillaume, 1 ♀ (ISNB); Liense, Cuisy, Sainte-Claire Deville leg., 1 ♀ (MNHN); Lille, Lethierry leg., 1 ♀ (MNMS); Lille, Lethierry leg., 1 ♀ (ZMAN); Livry, 1.vi.1869, ex coll. L. Bedel, 1 ♀ (MNHN); Livry env., canal de l'Ourq, 5.vi.1868, ex coll. L. Bedel, 1 ♂ (MNHN); Loir-et-Cher, Forêt de Freteval, Méquignon leg., 1 ♀ (MHNG); Loir-et-Cher, Vendôme, ex coll. Sainte-Claire Deville, 1 ♀ (MNHN); Loir-et-Cher, Vendôme, ex coll. A. Méquignon, 2 ♀ (MHNG); Louvres, 23.x.1938, F. Pierre leg., 1 ♂ (MHNG); Lyon, Godard leg., 1 ♀ (MNHN); Lyon env., château d'Yvours, Sérullaz leg., 1 ♂ (MNHN); Marville, 11.vi.1910, ex coll. A. Fauvel, 1 ♀ (ISNB); Marville, Caen Cours, Caffarelli, ex coll. A. Fauvel, 1 ♀ (ISNB); Mechl [Alsace], ex coll. J. Bourgeois, 1 ♀ (MNHN); Norrent-Fontès, v.1923, ex coll. C. Faucillon, 1 ♀ (ZMAN); Nyons, ex coll. A. Fauvel, 1 ♂ (ISNB); Oise, Laigneville, iv.1927, ex coll. A. Méquignon, 1 ♂ (MHNG); Pempuyre, 4.vi.1928, G. Tempère leg., 1 ♂ (MHNG); Paris, 1859, ex coll. H. Marmottan, 1 ♀ (MNHN); Paris, Ch. Brisout de Barneville leg., 1 ♀ (MNHN); Paris, ex coll. Sainte-Claire Deville, 1 ♂ (MNHN); Paris, L'île-Saint-Denis, 1862, Léveillé leg., 1 ♀ (MNHN); Pyrén. or., ex coll. J. Clermont, 1 ♀ (ZMAN); Seine-et-Marne, Lésigny, 6.xi.1983, 1 ♂ (MPEC); Serval, Putzeys leg., 1 ♀ (ISNB); St Mtin Lantosq, ex coll. J. Clermont, 1 ♀ (ZMAN); St. Germain, 5.ii.1923, ex coll. J. Clermont, 1 ♀ (ZMAN); Straßburg [=Strasbourg], ex coll. K. Neumann, 1 ♀ (SMFD); Touraine, ex coll. Reitter, 1 ♂ (HNHM); Vallières, Yonne, 31.iii.1976, 1 ♀ (MPEC); Vélizy, v.1904, 1 ♂ 1 ♀ (BMNH); Vosges, ex coll. M. des Gozis, 1 ♂ 1 ♀ (ZMAN); "Frankreich", L. Miller leg., 1 ♀ (ZMAN).

GERMANY: Aachen, Wüsthoff, 28.ii.1928, 1 ♀ (ZMSL); Aachen, Wüsthoff, 5.iii.1928, 1 ♂ (ZMSL); Abterode, 13.vii.1959, A. Kirch leg., 1 ♀ (SMNS); Aldrup, Oldenburg, 19.xi.1959, G. Kerstens leg., 1 ♂ (SMNO); Aldrup, Oldenburg, 18.vi.1960, G. Kerstens leg., 1 ♂ (SMNO); Altenburg, Stadt, 100 m, 31.x.1884, Krause leg., 1 spec. (NMPG); Auerstedt, 7.iv.1901, Dorn leg., 1 ♀ (ZMHB); Baden-Württemberg, Nürtigen/Neckar, 27.v.1988, Chr. Rieger leg., 1 ♀ (JFRC); Berlin, ex coll. Kraatz, 1 ♂ (DEIC); Berlin, Schüppel leg., 1 ♂ 1 ♀ (ZMHB); Berlin - Biesdorf, Trümmerberg, 25.x.1969, F. Hiecke leg., 1 ♂ (ZMHB); Berlin - Malchow, Malchower See, 5.v.1969, F. Hiecke leg., 1 ♀ (ZMHB); Berlin - Marsahn [=Marzahn], Helleradorfer Berg, 4.x.1986, F. Hiecke leg., 1 ♀ (ZMHB); Bonn, vii.1963, ex coll. Schneider, 1 ♂ (DEIC); Bormitzer Sandgr. b. Dobeln, 25.vi.1972, F. Hiecke leg., 1 ♀ (ZMHB); Brieselang bei Nauen, Herm. Müller leg., 1 ♂ (ZMHB); Bufleben, 1.x.1913, Hubenthal leg., 1 spec. (NMPG); Bufleben, 30.x.1927, Hubenthal leg., 1 spec. (NMPG); Dübener Heide, Doberschütz, 3.v.1914, Stockhausen leg., 1 ♂ (ZMHB); Düsseldorf env., Meerbusch, Ermisch leg., 1 ♀ (MZLU); Elsaß, ex coll. K. Neumann, 1 ♂ (SMFD); Emsmündung, Leybucht, 12.xi.1972, W. Schawaller leg., 1 ♀ (SMNS); Erfurt, ex coll. v. Schonfeldt, 1 ♀ (SMFD); Erfurt, Brühler Höhle cave, 150 m, 17.vi.1902, Maass leg., 1 spec. (NMPG); Erfurt, Edelberg, 150 m, 15.i.1888, H. Sparmberg leg., dry meadow, pitfall trap, 1 spec. (AWEC); Erkelenz, 21.x.1928, A. Horion leg., 1 ♀ (ZMHB); Franken [reg.], Lehen, 29.x.1970, 1 ♂ (JFRC); Frankft., Heyden leg., 2 ♂ 1 ♀ (DEIC); Frankfurt M., 4.ii.1913, Sattler leg., 1 ♂ (SMFD); Frankfurt, Stadt, ii.1899, Boeigter leg., 1 ♀ (DEIC); Fulda, Schlereth leg., 1 ♀ (NHMW); Garching bei München, 27.i.1953, K. E. Hüdepohl leg., nest of *Talpa*, 1 ♂ 1 ♀ (ZSMC); Gispersleben, 200 m, 31.iii.1912, Maass leg., 1 spec. (NMPG); Gotha, NW, 300 m, 1.i.1877, Kellner leg., under decomposing leaves, 1 spec. (NMPG); Halle reg., Grimnitz, 27.xii.1988, Schnitter leg., field margin, 1 ♂ (JRUC); Hamburg, 1 ♂ (NHMB, coll. G. Frey); Hamburg, Koltze leg., 1 ♀ (SMFD); Hannover, ex coll. Reitter, 1 ♂ (HNHM); Heidelbg., ex coll. Heyden, 1 ♀ (DEIC); Helmstedt, 20.x.1911, ex coll. Ihssen, 1 ♂ (ZMHB); Hennenwiesen, Naumburg, 29.xii.1924, Maertens leg., 1 ♂ (ZMHB); Hildesheim, ex coll. Carl Bosch, 1 ♂ (SMFD); Hildesheim, 1890, Schroder leg., 1 ♂ (ZMAN); Hochst, 15.iii.1906, 1 ♀ (ZMHB); Hochst, ex coll. C. Stock, 1 ♀ (SMFD); Hochst, x.1899, H. Bücking leg., 1 ♂ (SMFD); Hochst in Oderwald, 17.vi.1890, H. Bücking leg., 1 ♀ (SMFD); Hochst in Oderwald, ex coll. H. Bückling, 1 ♂ (SMFD); Hochst Main, 4.iii.1906, W. Sattler leg., 3 ♀ (SMFD); Holstein, Eutin, 3.v.1911, ex coll. Künnemann, 1 ♂ (DEIC); Holstein, Hohwarth. Ostsw., 12.ii.1910, ex coll. Künnemann, 1 ♀ (DEIC); Holstein, Segeberger Höhle cave,

28.i.1928, Arndt leg., 1 ♂ (DEIC); Holzminden an der Weser, K. Gerhard leg., 1 ♀ (ZMUC); Insel Borkum, Achillelon, 8.vi.1938, F. Struve leg., 1 ♀ (SMTD); Jena, 150 m, 1.i.1980, F. Sander leg., 1 spec. (AWEC); Königsfeld im Schwarzwald, 1913, J. Satter leg., 1 ♂ (SMFD); Krefeld, ex coll. Kraatz, 1 ♂ (DEIC); Leipzig, 22.viii.1913, Stockhausen leg., 1 ♀ (ZMHB); Leipzig, Breitenfeld, 2.xi.1902, Stockhausen leg., 1 ♀ (ZMHB); Leipzig, Hols., 29.x.1909, Linke leg., 1 ♀ (SMTD); Leipzig, Karten... [illeg.], 20.vi.1912, Linke leg., 1 ♀ (SMTD); Leipzig, Liebertwolkwitz, Collmberg, 25.x.1903, Dorn leg., 3 ♀ (ZMHB); Leipzig, Milt[itz], 16.v.1923, A. Reichert leg., 1 ♀ (ZMAN); Leipzig, Molkau, 20.viii.1920, in nest of *Cricetus*, 1 ♂ (SMTD); Leipzig, 4.iv.1937, Dorn leg., 1 ♂ (ZMHB); Leipzig, Probstheida, 12.x.1953, Dieckmann leg., in flight, 1 ♀ (DEIC); Leipzig, Probstheida, 25.v.1956, Dorn leg., 1 ♂ (ZMHB); Leipzig, Probstheida, 9.vii.1956, Dorn leg., 1 ♂ (ZMHB); Leipzig, Probstheida, 1.xi.1956, Dorn leg., 1 ♂ 1 ♀ (ZMHB); Leipzig, Querstr., 24.x.1914, Gohler leg., 1 ♀ (ZMHB); Leipzig, Sellerh., 21.iv.1913, Linke leg., 1 ♀ (SMTD); Leipzig, Sidonienstrasse, 26.x.1928, Dorn leg., on the wall, 1 ♂ (ZMHB); Leipzig, Tau[cha], 8.ix.1907, Linke leg., in nest of *Cricetus*, 2 ♂ (SMTD); Leipzig, Taucha, 17.viii.1933, Linke leg., 1 ♂ (SMTD); Leipzig, Zobig.[ker], 18.vi.1910, ex coll. Ihssen, 1 ♀ (ZMHB); Leipzig, Zobigk.[er], 17.vi.1916, Linke leg., 1 ♀ (SMTD); Leipzig, Zobigker, 15.vi.1907, Dorn leg., on window, 1 ♀ (ZMHB); Leipzig, Zobigker, 27.vi.1912, Linke leg., 1 ♀ (ZMHB); Leipzig, Zobigker, 15.vi.1929, Dorn leg., on window, 1 ♀ (ZMHB); Leipzig, Zobigker, 13.vii.1935, Linke leg., 1 ♂ (SMTD); Lübeck, 7.x.1912, L. Benick leg., 1 ♂ (ZMSL); Lübeck, vi.1913, L. Benick leg., 1 ♂ (ZMSL); Lübeck, vi.1914, L. Benick leg., 1 ♂ (ZMSL); Lübeck, Teufelsinsel, 23.vii.1916, L. Benick leg., 1 ♀ (ZMSL); Magdeburg, 1 ♂ (ZMHB); Mainz, Grossberg, 26.iv.1976, W. Schawaller leg., 1 ♀ (JFRC); Mannheim, 5.ix.1908, Gust. Schaaf leg., 1 ♀ (SMFD); Mark Brandenburg, Umg. Chorin, 10.iv.1932, Herm. Müller leg., 1 ♂ (ZMHB); Maua, Eichberg, 350 m, 28.v.1992, D. Krebs leg., pitfall trap, 1 spec. (AWEC); Meerbusch, 10.vi.1936, K. Ermisch leg., 1 ♂ 1 ♀ (ZMHB); Miltitz bei Leipzig, 1915, A. Reclaire leg., 1 ♀ (ZMAN); Niederbayern, Pfarrkirchen, Stocklein leg., sifted, 1 ♀ (NHMB, coll. G. Frey); Niederbayern, Pfarrkirchen env., 29.vi.1914, Stocklein leg., 1 ♂ (NHMB, coll. G. Frey); Niederbayern, Pfarrkirchen env., 13.vi.1915, Stocklein leg., 2 ♀ (NHMB, coll. G. Frey); Niederbayern, Pfarrkirchen env., 9.x.1915, Stocklein leg., 1 ♂ (NHMB, coll. G. Frey); Niederbayern, Vilshofen env., 9.xi.1919, Stocklein leg., 1 ♀ (NHMB, coll. G. Frey); Nordbaden, Russheim, 16.x.1971, under piece of wood, 1 ♀ (JFRC); Nordbaden, Russheim b.[ei] Karlsruhe, 13.viii.1970, Leist leg., 1 ♂ (JFRC); Nordhausen, 2.xi.1906, A. Petry leg., 1 ♀ (ZMHB); Nordhausen, 22.x.1908, A. Petry leg., 1 ♂ (ZMHB); Öhringen, 25.x.1969, Dynort leg., 1 spec. (JFRC); Ostholstein, Malente, 2.v.1953, 1 ♂ (ZMSL); Paditz/ Altenburg, 150 m, 24.iv.1883, Krause leg., 1 spec. (NMPG); Paditz/Altenburg, 150 m, 26.vi.1885, Krause leg., 1 spec. (NMPG); Paditz/Altenburg, 150 m, 1.vi.1893, Krause leg., 1 spec. (NMPG); Pahnna, 5.iv.1914, Linke leg., 1 ♀ (ZMHB); Sachsen, G. Döbeln, Topelwinkel, 28.v.1936, Pause leg., under stone, 1 ♀ (SMTD); Saxonia [region], ex coll. Märkel, 1 ♀ (SMTD); Selingenstadt, ex coll. K. Neumann, 1 ♂ (SMFD); Schmalfelderhof, 28.i.1912, G. Schaaff leg., 1 ♂ (SMFD); Schonberg, 26.3.1909, L. Benick leg., 1 ♂ (ZMSL); Schonberg, Meckl., 6.-7.iv.1920, L. Benick leg., 1 ♂ (ZMSL); Simselwitz, Döbeln, vii.1953, F. Hiecke leg., 1 ♂ (ZMHB); Slesvig, Husum, ex coll. Schiödte, 1 ♂ (ZMUC); Thale a. Harz, Bode-Tal valley, 12.vii.1955, Dorn leg., 1 ♂ (ZMHB); Thuringia, Schilfa, 1.vi.1926, A. Petry leg., 2 ♀ (ZMHB); Hamburg env., Wilhelmsburg, 26.iii.1963, Scriba leg., 1 ♀ (DEIC); Hamburg env., Wilhelmsburg, ex coll. Koltze, 1 ♀ (DEIC); Waldheim Sa[xonia], 3.x.1929, ex coll. Detzner, 1 ♂ 1 ♀ (SMTD); Waltershausen, 300 m, 1.i.1877, Kellner leg., under decomposing leaves, 1 spec. (NMPG); Westfalen, ex coll. Gabriel, 1 ♀ (SMFD); "Germ.", Staudinger leg., 1 ♂ (ZMAN).

GREECE: Taygetos mts, Purkyně leg., 1 ♀ (MHNG); Thrace, Rentina, 24.iv.1955, H. Coiffait leg., 1 ♀ (MNHN).

HERZEGOVINA: Gacko, Avtovac, 20.vii.1936, Hawelka leg., 1 ♀ (JVAC); Nevesinje, V. Zoufal leg., 1 ♀ (MMBC); Nevesinje, Lorek, ex coll. Schuster, 1 ♀ (SMFD); Velež planina, x.1900, ex coll. O. Leonhard, 1 ♀ (DEIC).

HUNGARY: Bakony mts, Veszprém env., Szentgál vill., Mecsek-hegy, 448 m, Frivaldszky leg., 4 ♀ (HNHM); ditto, 1 ♀ (MNHN); Balatonfelvidék uplands, Kőváágóors, Kornyi-tó lake, 29.iii.1982, Podlussány leg., from burrow of *Citellus citellus*, 1 ♀ (HNHM); Borcs, Ószhely, 19.v.1929, Ruff leg., 1 ♂ (HNHM); Budapest env., Óbudai hgys., Hárvas, iv.1894, ex coll. H. Diener, 1 ♀ (HNHM); Budapest, Kamaraerdő forest, J. Fodor leg., 1 ♀ (HNHM); Harkány fürdő,

V. Stiller leg., 1 ♀ (HNHM); Heves m., Kerecsend, Pácános-berek, 150 m, 13.v.-30.ix.1985, Merkl & Szél leg., *Aceri tatarico-Quercetum*, pitfall trap, 1 ♀ (HNHM); Hortobágy National Park, Balmazújváros, Darassa, 12.-14.vii.1976, Ádám leg., pitfall trap, 1 ♀ (HNHM); Hortobágy Nat. P., Egyek, Ohati erdő, 14.vii.1976, Hámori leg., pitfall trap, 1 ♂ (HNHM); Hortobágy Nat. P., Egyek, Ohati erdő, 25.v.1976, Kaszab leg., pitfall trap, 1 ♀ (HNHM); Hortobágy Nat. P., Egyek, Ohati erdő, 16.-17.vi.1975, Kaszab leg., pitfall trap, 1 ♂ (HNHM); Hortobágy Nat. P., Nagyhegyes, Vajdalahosi erdő, 7.vii.1975, Maróti leg., pitfall trap, 1 ♂ (HNHM); Hortobágy Nat. P., Nagyhegyes, Vajdalahosi erdő, 16.-17.vi.1975, Kaszab leg., pitfall trap, 1 ♂ (HNHM); Hortobágy Nat. P., Püspokladány, Agotapuszta, 4.ix.1974-4.ii.1975, Mahunka leg., pitfall trap, 2 ♂ (HNHM); Hortobágy Nat. P., Püspokladány, Agotapuszta erdő, 25.v.1976, Kaszab leg., pitfall trap, 1 ♂ (HNHM); Hortobágy Nat. P., Újszentmargita, Margitai erdőszél, 4.ix.1974-4.ii.1975, L. & S. Mahunka leg., pitfall trap, 1 ♀ (HNHM); Kaposvár, various dates between vi.1915-28.x.1917, V. Stiller leg., 3 ♂ 3 ♀ (HNHM); Kiskunsági Nat. P., Orgovány, 15.ii.1978-27.iii.1979, Ádám & Hámori leg., saline meadow, pitfall trap, 1 ♂ 1 ♀ (HNHM); Osztopán, V. Stiller leg., 1 ♂ (HNHM); Siófok, Lichtneckert leg., 1 ♂ 2 ♀ (HNHM); Szeged, various dates between 15.x.1920-26.v.1929, V. Stiller leg., 3 ♂ 3 ♀ (HNHM); Szekszárd, 1925, F. Lichteneckert leg., 1 ♀ (SMTD); Szentendre env., Pilis mts, Debogókő, 18.vi.1927, H. Diener leg., 1 ♀ (HNHM); Velencei-hegys., Nadap, Meleg-hegy, 15.x.1951, Kaszab leg., forest margin, sifted, 1 ♂ (HNHM); Vors, Kisbalaton erdő, 16.x.1950, Székessy leg., sifted, 1 ♂ (HNHM).

SUISSE: B. de Jussy, v.1933, S. Pozzi leg., 2 ♂ (MHNG); Basel, 1 ♂ (NHMB); Bollbg, 16.vi. [without year], ex coll. G. Frey, 1 ♂ (MHNG); Dietikon, 14.v.1965, J. Lautner leg., 1 ♀ (NHMB); Genève, 1910, ex coll. Toumayeff, 1 ♂ (MHNG); Genève, Croix-de Rozau, 14.iii.1979, C. Besuchet leg., nest of *Talpa*, 1 ♂ (MHNG); Genève, Choulex, 8.vi.1975, S. Vít leg., 1 ♂ 2 ♀ (MHNG); Genève, Choulex-marais, 8.vi.1974, S. Vít leg., sifted, 1 ♂ (MHNG); Genève, Jussy, 12.vi.1975, S. Vít leg., 1 ♀ (MHNG); Genève, Pont de Sierne, 20.ii.1990, C. Besuchet leg., alluvium of Arve river, 1 ♂ (MHNG); Genève, Vernier, ex coll. Maerky, 1 ♂ (MHNG); Choulex, 25.v.1919, ex coll. J. Simonet, 1 ♀ (MHNG); Lorrach, 9.ii.1980, ex coll. Walter, 1 ♀ (NHMB); Vaud, Buchillon, 30.vi.1951, C. Besuchet leg., under bundles, 1 ♂ (MZLS); Vaud, Denges, v.1952, ex coll. Toumayeff, 1 ♀ (MHNG); Vaud, Eschallens, x.1974, ex coll. Toumayeff, 1 ♂ (MHNG); Vaud, Nyon – Prangins, iv.-vii.1985, M. Hächler leg., light trap, 1 ♂ (MHNG); Vaud, Peney-le-Jorat, 3 ♂ (MHNG); Vaud, Saint-Livres, v.1965, Toumayeff leg., 1 ♀ (MHNG); Vitznau, 3.v.-18.vi.1912, R. E. Turner leg., 1 ♂ (BMNH).

MACEDONIA: Demir Kapija, 23.iv.1955, H. Coiffait leg., 1 ♂ (MNHN).

THE NETHERLANDS: Aalsmeer, i.1916, P. H. v. Doesburg leg., 1 ♂ 2 ♀ (ZMAN); Abesndr – B [illeg.], 11.v.1947, J. L. Post leg., 1 ♀ (ZMAN); Amsterdam, 16.ii.1908, ex coll. W. H. J., 1 ♀ (ZMAN); Amsterdam, 2.iv.1916, 1 ♂ (ZMAN); Amsterdam, 28.xi.1909, ex coll. D. MacGillavry, 1 ♀ (ZMAN); Amsterdam, x.1909, H. J. Klassen leg., 1 ♂ 1 ♀ (ZMAN); Amsterdam – Amstelveen, 24.x.1951, Nonnekens leg., 1 ♂ (ZMAN); Amsterdam – Amstelveen, 28.x.1952, Nonnekens leg., 1 ♀ (ZMAN); Amsterdam – Amstelveen, 19.iii.1954, Nonnekens leg., 1 ♂ (ZMAN); Amsterdam, Aassen, x.1909, 1 ♀ (ZMAN); Amsterdam, Het Bosch forest, 27.iii.1953, Nonnekens leg., 1 ♀ (ZMAN); Amsterdam, Het Bosch forest, 12.vii.1955, Nonnekens leg., 1 ♀ (ZMAN); Amsterdam, West Heistek, 8.xi.1953, 1 ♂ (ZMAN); Amsterdam, West Heistek, 15.xi.1953, ex coll. A. C. Nonnekens, 1 ♀ (ZMAN); Amsterdam, Zaandam, 16.iv.1929, C. Willemse leg., 1 ♀ (ZMAN); Amsterdam, Zeeburg, x.1906, McGillavry leg., 1 ♀ (ZMAN); Amsterdam, Zeeburg, 14.iv.1915, 1 ♀ (ZMAN); Amsterdam, Zeeburg, i.1916, ex coll. A. van Lyuk, 1 ♀ (ZMAN); Assendelft, 23.iv.1952, P. v. d. Wiel leg., 1 ♀ (ZMAN); Castricum, Heistek, 30.v.1954, ex coll. A. C. Nonnekens, 1 ♀ (ZMAN); Den Haag, vi.1875, ex coll. D. MacGillavry, 1 ♀ (ZMAN); Den Haag, ii.1877, ex coll. A. F. A. Leesberg, 1 ♂ (ZMAN); Dirkolnd, iv.1907, McGillavry leg., 1 ♀ (ZMAN); Goeree, en Overflakkee, Middelharnis, 3.vi.1957, P. Vroegindeweyj leg., 1 ♀ (ZMAN); Halfweg, 5.iii.1933, Nonnekens leg., by *Talpa*, 1 ♂ (ZMAN); Heenvliet, 29-30.iii.1904, Koormnad leg., 1 ♂ (ZMAN); Koedijk, 1.-22.x.1983, pitfall trap No. 2, 1 ♀ (ZMAN); Ld., 1 ♀ (ZMAN); Leiden, ix.1912, ex coll. D. MacGillavry, 1 ♂ (ZMAN); Leiden, iv.1912, ex coll. D. MacGillavry, 1 ♀ (ZMAN); Maastricht env., Valkenburg, iv.1907, McGillavry leg., 1 ♀ (ZMAN); Meerssen, 14.iii.1901, 1 ♂ (ZMAN); Miedum, 13.iii.1956, 1 ♂ (ZMAN); N. [illeg.], Lieden, 6.ii.1921, 1 ♀ (ZMAN); Omg Roden, 18.v.1946, V. Nidek leg., 1 ♂ (ZMAN); Omg Roden, 18.vi.1944, V. Nidek leg., 2 ♂ (ZMAN); Ouderkerk aan de Amstel, 14.xii.1940, K. Braurken leg.,

nest of *Talpa*, 1 ♂ (ZMAN); Rhoon, 15.x.1908, ex coll. Schepman, 1 ♀ (ZMAN); Roermond env., Aanspoel, Maas, i.1920, ex coll. M. Weber, 1 ♀ (ZMAN); Rotterdam, xi.1965, Uyttenboogaart leg., 1 ♀ (ZMAN); Schiphol, Heistek, 22.xi.1953, ex coll. A. C. Nonnekens, 2 ♀ (ZMAN); Spaarndam, various dates between 21.v.1921-1.iv.1923, J. Boerse leg., 11 ♂ 6 ♀ (ZMAN); Valkenburg, L.[imborg], vi.1919, McGillavry leg., 1 ♀ (ZMAN); Valkenburg, L.[imborg], 13.vi.1937, A. Reclaire leg., 1 ♂ (ZMAN); W of Amsterdam, Halfweg, 5.iii.1933, Broerse leg., 1 ♀ (ZMAN); Wageningen, 1 ♀ (ZMAN); Zuid Limburg prov., Valek Lucassen mt, 29.v. 1929, 1 ♂ (ZMAN).

POLAND: "Cracovia", S. Stobiecki leg., 1 ♂ (MZLU); Legnitz [=Legnica], ex coll. Letzner, 1 ♀ (DEIC).

ROMANIA: Temešvár [=Timisoara], 1 ♀ (AOLC).

RUSSIA: Kursk env., Centralne chernozemniy reg., Streleckaya steppe, 15.ix.1984, J. Boháč leg., tunnels of small mammals, 1 ♀ (JBOC); Moskovskaya obl., Pushkinskiy rayon, Gorenki, 2.v.1975, S. Kurbatov leg., forest, sifted, 1 ♀ (JRUC).

SERBIA: Belgrad – Topschider, xii.1915, J. Matcha leg., 1 ♀ (AOLC); Ruma, Hensch leg., 2 ♀ (ZMUB).

SLOVAKIA: Banská Bystrica, 18.xi.1925, J. Roubal leg., 1 ♀ (SNMC); Banská Bystrica env., Šalková, xi.1936, J. Roubal leg., 1 ♂ (SNMC); Banská Bystrica, Šáľková-Hálek, 21.xi.1925, J. Roubal leg., 1 ♂ (MHNG); Boľ, Latorica river, 21.xi.1992, V. Vyhálek leg., alluvium, 1 ♀ (VVC); Boľ, Latorica river, 21.xi.1992, R. Kmeco leg., alluvium, 1 ♂ (JVAC); Boľ, Latorica river, 22.xi.1992, L. Koloničný leg., alluvium, 1 ♀ (LKOC); Boľ, Latorica river, 23.xi.1992, L. Klíma leg., alluvium, 1 ♂ (LKLC); Imel – Nesvady, 24.v.1995, P. Boža leg., sweeping on sand dune, 1 ♀ (PBOC); Ipeľ, 2.iv.1924, J. Roubal leg., 1 ♂ (SNMC); Kamenica nad Hronom, 13.v.1992, J. Prouza leg., 1 ♂ (JPRC); Kamenica nad Hronom env., Kováčov hill, 4.vi.1937, Dr. Všetěčka leg., 1 ♀ (JNEC); Kamenín, 6.vi.1986, L. Klíma leg., wet saline meadow, 1 ♂ (LKLC); Kamenín, 2.vi.1988, M. Kuboň leg., 1 ♂ (MKUC); Kamenín, 8.vi.1994, T. Lackner leg., 1 ♂ (TLAC); Kiarov, 22.v.1992, K. Orszulik leg., 1 ♂ (KORC); Kráľovský Chlmec, 5.iv.1986, L. Klíma leg., near field, under stone, 1 ♂ (LKLC); Levice, Lok, 26.iv.1936, J. Roubal leg., 1 ♀ (MHNG); Pavlovce nad Uhom, 4.iii.1989, I. Jeniš leg., 1 ♂ (IJEC); Svätý Jur – Šúr Reserve, 23.v.1949, Depta leg., 1 ♀ (SNMC); Šahy, 28.v.1994, K. Resl leg., 1 ♂ (KREC); Štúrovo, 22-26.v.1990, P. Čechovský leg., 1 ♂ (PCEC); Štúrovo, iv.1990, T. Kopecký leg., 1 ♂ (TKOC); Trenčín, Čepelák leg., 1 ♀ (SNMC); Veľký Diasek env. [=Galanta], J. Laco leg., 1 ♀ (NMPC); Vrbové, Kočí leg., 1 ♀ (NMPC).

SLOVENIA: Illyrien, ex coll. K. Neumann, 1 ♀ (SMFD).

TURKEY: Bolu env., Abant Gölü lake, 22.vi.-8.vii.1993, O. Hovorka leg., 1 ♀ (JRUC); Eskipol, between İspir and Erzurum, 24.vi.1986, T. Deuve, M. Perreau & S. Sade leg., under stone, 2 ♂ (MPEC); Gevaş env., Çadir Dağı mt, 2000-2600 m, 29.vi.1993, M. Kuboň leg., 4 ♂ 4 ♀ (JVAC); ditto, L. Klíma leg., 1 ♀ (JRUC); İcel, Göktepe Dağı mts, Güzeloluk, 21-23.v.1995, J. Mertlik leg., flying near a spring at dusk, 1 ♂ (JVAC); Isparta prov., Bozanonu, 16.v.1954, H. Coiffait leg., 1 ♀ (MNHN); Malatya env., Darende, 1500 m, 10.vi.1999, S. Benedikt leg., 2 ♂ (JRUC); Nevşehir env., Göreme, 29.vi.1993, M. Kuboň leg., 1 ♂ (JVAC); Van Gölü lake env., Muradiye – Şelalesi, 27.vi. 1993, L. Klíma leg., alluvium near brook, 1 ♀ (JRUC); Van Gölü lake env., Muradiye – Şelalesi, 27.vi.1993, L. Klíma leg., alluvium near brook, 1 ♂ 1 ♀ (JVAC); Van Gölü lake env., Muradiye – Şelalesi, 27.vi.1993, M. Kuboň leg., alluvium near brook, 2 ♂ 1 ♀ (JVAC); Van Gölü lake env., Muradiye – Şelalesi, 29.vi.1993, M. Kuboň leg., alluvium near brook, 3 ♂ 4 ♀ (JVAC); Isparta prov., Eğridir Gölü lake, Gelendost, Zindan Magarasi cave, 21.v.1992, S. Zoia leg., 1 ♀ (SZOC).

UKRAINE: Crimea, Ai-Petri plateau, Kaskadnaya cave, 18.vii.1994, R. Varhovitsch leg., singled, 1 ♀ (JRUC); Crimea, Borju-Teshik cave, 21.vi.1992-9.viii.1993, A. G. Koval leg., traps, 1 ♂ (JRUC); Crimea, Borju-Teshik cave, 9.viii.1993-27.viii.1994, A. G. Koval leg., traps, 5 ♂ 12 ♀ (JRUC); Crimea, Borju-Teshik cave, 27.viii.1994, A. G. Koval leg., 1 ♀ (JRUC); Crimea, Villyaburun mt, Villyaburunsкая cave, 900 m, 7.ix.1995-22.vii.1996, A. G. Koval leg., pitfall traps, 3 ♂ 3 ♀ (JRUC); Crimea, Villyaburun mt, Villyaburunsкая cave, 900 m, 16.viii.1992-9.viii.1993, A. G. Koval leg., pitfall traps, 1 ♂ (JRUC); Crimea, Villyaburun mt, Villyaburunsкая cave, 16.viii.1992-9.viii.1993, A. G. Koval leg., traps, 2 ♂ 2 ♀ (JRUC); Crimea, Villyaburun mt, Villyaburunsкая cave, 9.viii.1993-22.v.1994, A. G. Koval leg., traps, 2 ♂ 2 ♀ (JRUC); Iaila-Gebirge mts, Krim, Moczarski leg., 2 ♀ (NHMB, coll. G. Frey).

Choleva cf. agilis (Illiger, 1798) (examined 355 specimens)

ARMENIA: Sevan lake, 17.vi.1979, A. Olexa leg., 4♂ (JVAC); ditto, 1♂ 1♀ (JRUC); Sevan lake, 16.-19.vi.1981, A. Olexa leg., 1♂ 1♀ (JVAC).

BELGIUM: Purnode, vii.1944, L. Frennet leg., 1♂ 1♀ (ISNB); Rebaix, 25.v.1874, 1♀ (ISNB).

CROATIA: Istria, Albona [=Labin], i.1909, 1♂ (MSNM); Istria, Markovac, E. Pretner leg., 1♂ (BISL); Istria, ex coll. G. Paganetti, 1♀ (ZMAN).

DENMARK: Asserbo, 19.vii.1965, ex coll. J. Petersen, 1♀ (ZMUC); Copenhagen – Amager, 15.iv.1979, O. Mehl leg., 1♂ (ZMUC); Copenhagen env., Herlev, 16.iv.1946, ex coll. O. G. K. Kristensen, 1♀ (ZMUC); Copenhagen env., Herlev, 4.v.1949, ex coll. O. G. K. Kristensen, 2♀ (ZMUC); Drejø, 30.x.1936, ex coll. Christiani, 1♀ (ZMUC); Klosterheden, 12.iv.1982, O. Mehl leg., 1♂ (ZMUC); Luknam, 11.iv.1954, ex coll. Hans Gønget, 1♀ (ZMUC); Orlogsvæftet, 5.iv.1922, G. Speich leg., 1♂ (ZMUC); Orø Is., 4.vi.1931, ex coll. Christiani, 1♀ (ZMUC); Seeland Ins., Furesø lake, svarmando, ex coll. J. Breit, 1♀ (NHMB, coll. G. Frey); Seeland Ins., Rude Skov, 15.ix.1907, ex coll. J. Breit, 1♀ (NHMB, coll. G. Frey); Seeland Ins., Rude Skov, 11.x.1908, ex coll. Schaltz, 3♂ (ZMUC); Skagen, 4.vii.1915, ex coll. Schaltz, 1♀ (ZMUC); Stransen, Taasinge, 5.iv.1938, ex coll. Christiani, 1♂ (ZMUC); Varpelev, 30.iii.1995, ex coll. O. M. Hansen, 1♀ (ZMUC).

FRANCE: Bordeaux area, Boutaut Alley, 25.ii. [year not given], G. Tempère leg., 2♂ 1♀ (MHNG).

GREAT BRITAIN: Bere Regis, 6.iii.1927, ex coll. P. Harwood, 3♀ (OXUM); Bere Regis, 9.xii.1928, ex coll. P. Harwood, 1♀ (OXUM); Birmingham env., Knowle, ex coll. W. G. Blatch, 1♀ (MMUE); Bishops Startford, 28.x.1911, P. Harwood leg., 1♂ (OXUM); Bishops Startford, 11.ii.1916, ex coll. P. Harwood, 1♂ (OXUM); Bornemouth, Hurn, 27.x.1928, P. Harwood leg., 1♂ 1♀ (OXUM); Bornemouth, Hurn, 27.x.1926, ex coll. P. Harwood, 1♀ (OXUM); Bornemouth, Hurn, 27.x.1928, P. Harwood leg., 1♀ (OXUM); Branton, N. Devon, viii.1913, W. Holland leg., 1♂ (OXUM); Brockenhurst, ex coll. J. W. Allen, 1♀ (CUMZ); Brockenhurst, ex coll. H. E. Cox, 1♀ (OXUM); Campbeltown, J. J. Walker leg., 1♂ (OXUM); Caterham, Surrey, G. C. Champion leg., 1♀ (RSME); Colchester, P. Harwood leg., 1♀ (OXUM); Colchester, P. Harwood leg., 1♂ (OXUM); Croydon, Haystack, viii.1912, ex coll. Fraser, 1♂ (CUMZ); Darenth Wood, Kent, 1♀ (BMNH); Deal, vi.1890, H. Heastler leg., 1♀ (RSME); Dover, B. S. Harwood leg., 2♀ (MNHN); Droylsden, iii.1917, W. Fother leg., 1♀ (MMUE); Eltham env., Lee, J. A. Power leg., 1♀ (BMNH); England, H. L. Andrews leg., 1♂ (BMNH); Epping J., 1.x.1910, ex coll. P. Harwood, 1♂ (OXUM); Glencree, iv.1915, H. Heastler leg., ex coll. A. H. May, 1♀ (RSME); Great Salkeld, 26.iii.1904, H. Britten leg., 1♀ (MMUE); ditto, 1♂ (JRUC); Great Salkeld, 7.xi.1906, H. Britten leg., 1♂ (MMUE); Great Salkeld, 17.iv.1913, H. Britten leg., rabbit hole, 1♂ (MMUE); Highcliff on Sea, 13.iii.1926, P. Harwood leg., 1♂ (OXUM); Highcliffe on Sea, 1.iv.1926, P. Harwood leg., 1♀ (OXUM); Highcliffe, 7.iv.1926, ex coll. P. Harwood, 1♂ (OXUM); Chatham district, J. J. Walker leg., 1♂ 2♀ (OXUM); Isle of Sheppey, J. J. Walker leg., 2♂ 1♀ (OXUM); Isle of Sheppy, 15.v.1872, J. J. Walker leg., 1♀ (BMNH); Isle of Sheppey, 14.ix.1872, J. J. Walker leg., 1♂ (RSME); Isle of Wright, Luccombe, 9.iv.1897, 1♀ (RSME); Ivybridge, 21.iv.1935, P. Harwood leg., 1♂ (OXUM); Kent, Iwade, J. J. Walker leg., 1♂ (OXUM); Lancashire, Brock Vale nr. Garstang, 23.ii.1966, S. Bowstead leg., 1♂ (MMUE); Lewisham, x.1890, 1♂ (HMUG); London – Finchley, 1♀ (RSME); London – Finchley, ex coll. O. E. Janson, 1♂ 1♀ (CUMZ); London – Finchley, ex coll. R. Hislop, 1♂ (RSME); London – Finchley, ex coll. Pelerin, 1♂ (BMUK); London – Finchley, ex coll. O. E. Janson, 1♂ (CUMZ); London – Finchley, ex coll. G. R. Crotch, 1♂ (CUMZ); New Forest, J. K. Taylor leg., 1♂ (MMUE); New Forest, vi.1905, J. J. Walker leg., 1♀ (OXUM); Newbury, 7.iv.1904, G. Harwood leg., 1♂ (MNHN); Newbury, xii.1907, ex coll. P. Harwood, 1♀ (OXUM); NW of London, Harpenden, 16.vi.1926, ex coll. A. Strand, carrion trap, 1♀ (ZMUB); Oxenwood, 12.x.1953, P. Harwood leg., 1♂ (OXUM); Oxford district, J. J. Walker leg., 5♂ 2♀ (OXUM); Oxford env., Tubney, B. S. Harwood leg., 1♂ (MNHN); Oxford, Suny-mead, 20.xi.1921, ex coll. H. Britten, 1♀ (MMUE); Oxford, Wolvercote, 9.v.1908, ex coll. H. Britten, 1♀ (MMUE); Oxfordshire, Yarnton, 25.v.1920, ex coll. H. Britten, 1♀ (JRUC); Reading env., Bradfield, N. H. Joy leg., 1♀ (MNHN); S. W. Yorkshire, Roche Abbey nr. Maltby, 26.x.1965, C. Johnson leg., 1♂ (JRUC); Studland, 1.ii.1931, P. Harwood leg., 1♀ (OXUM); Suf-

folk, Sudbury, B. S. Harwood leg., 1 ♂ (MNHN); Walton, ex coll. W. G. Blatch, 2 ♂ 1 ♀ (MMUE); Whaley Bridge env., Taxal, 20.vii.1966, C. Johnson leg., 1 ♀ (MMUE); Wicken, 10.xi.1912, P. Harwood leg., 1 ♂ 1 ♀ (OXUM); Wimborne Winster, 4.xii.1927, ex coll. P. Harwood, 1 ♀ (OXUM).

GRUZIA: Martkopi [10-15 km ENE of Tbilisi], Leder (Reitter) leg., 1 ♀ (MNHN); Tbilisi env., vi.1975, R. Rous leg., 1 ♀ (JRUC).

ITALY: (AL), Borgoratto, 6.i.1973, Bucciarelli leg., nest of *Talpa*, 1 ♂ (MSNM); (AL), Borgoratto, 20.i.1973, Bucciarelli leg., nest of *Talpa*, 1 ♀ (MSNM); (BZ), Grotta 30 m, Chiusa, 20.x.1929, 1 ♀ (MSNM); (CR), dint. Cremona, greto fiume Po, xi.1991, S. Rancati leg., mixed forest, 1 ♀ (SZOC); (NO), Castelletto sopra Ticino, 28.xi.1973, G. Osella & A. Zanetti leg., nest of *Talpa*, 1 ♂ 4 ♀ (MSNV); (PH), Cordenons, 29.xii.1969, A. Zanetti leg., nest of *Talpa*, 1 ♀ (MSNV); (PN), Pordedone env., Villotta, 19.ii.1973, A. Zanetti leg., nest of *Talpa*, 1 ♀ (MSNV); (PN), Senzena, 26.xii.1974, G. Osella leg., nest of *Talpa*, 1 ♀ (MSNV); (PN), Vercelli, 26.xii.1966, M. Olmi leg., nest of *Talpa*, 1 ♂ (MSNV); (PN), Vigonovo, 5.iii.1974, G. Osella & A. Zanetti leg., nest of *Talpa*, 1 ♀ (MSNV); (TN), Val di Genova, 900 m, 8.vii.1972, Scaglioni leg., 1 ♀ (SZOC); (TO), Bosconero, 31.xii.1973, G. Osella leg., nest of *Talpa*, 1 ♀ (MSNV); (TO), Brandizzo, 26.-28.xii.1973, G. Osella leg., nest of *Talpa*, 2 ♀ (MSNV); (TO), Castellamonte, 28.xii.1973, G. Osella leg., nest of *Talpa*, 2 ♂ 1 ♀ (MSNV); (TO), Ivrea dint., 28.xii.1973, G. Osella leg., nest of *Talpa*, 2 ♂ 2 ♀ (MSNV); (TO), Ivrea, Lessolo, 23.xii.1972, Bucciarelli leg., nest of *Talpa*, 2 ♂ 1 ♀ (MSNM); (TO), Lombardore, 31.xii.1973, G. Osella leg., nest of *Talpa*, 3 ♂ 5 ♀ (MSNV); (TO), Piemonte, Leini, xii.1965, Osella leg., 1 ♂ 1 ♀ (MNHN); (TO), Piemonte, Leini, 26.i.1964, Osella leg., nest of *Talpa*, 1 ♂ (MSNM); (TO), Piemonte, Leini, 250 m, 26.xii.1992, Osella leg., nest of *Talpa europaea*, 1 ♂ (SZOC); (TO), Piemonte, Leini, various dates between 26.i.1964 and 17.iii.1974, G. Osella leg., nest of *Talpa*, 34 ♂ 43 ♀ (MSNV); (TO), Salassa, 28.xii.1973, G. Osella leg., nest of *Talpa*, 4 ♂ 3 ♀ (MSNV); (TO), Settimo Torinese, 30.xii.1973, G. Osella leg., nest of *Talpa*, 1 ♂ (MSNV); (TO), Volpiano, 28.xii.1973, G. Osella leg., nest of *Talpa*, 1 ♀ (MSNV); (TS), Grotta 28, Trieste, x.1931, 2 ♂ 2 ♀ (MSNM); (TS), Grotta 45 m, Basovizza, 20.x.1929, 1 ♀ (MSNM); (TS), Grotta No. 28, S.[an] Gius.[eppe della] Chiusa, Stolfa, 13.xi.1931, 1 ♂ 2 ♀ (MSNM); (TS), Triest env., Kuestenland, iii.1909, Kreckich leg., 1 ♀ (MNHN); (TS), Trieste, Cosina, 1.vi.1924, Schatzmayr leg., 1 ♂ (MSNM); (TV), Montello mts, v.1937, 1 ♀ (MHNG); (TV), Montello mts, v.1937, Burlini leg., 1 ♂ 1 ♀ (SZOC); (TV), Montello mts, v.1937, Burlini leg., 6 ♂ 5 ♀ (MSNV); (TV), Montello mts, Grotta del pettine, 14.x.1956, E. Busulini leg., 1 ♂ (MSNM); (TV), Montello mts, Grotta nuova No. 2, sopra Nervesa, 10.xi.1958, Canzoneri leg., 2 ♀ (MSNM); (TV), Paderno del Grappa, 14.v.1970, G. Gardini leg., 1 ♀ (SZOC); (VI), Cereda, M. Piano, Spluga dela cuate, 24.vii.1958, Bucciarelli leg., 1 ♂ (MSNM); (VI), Malo: S. Tomio, Buso del Becco d'Oro, n. 154, 2.xi.1987, S. Zoia leg., 1 ♂ 2 ♀ (SZOC); (VI), Monte Grappa, Piani di Sologna, 15.vi.1956, E. Busulini leg., 1 ♀ (MSNM); Emilia, Sermide, viii.1889, A. Fiori leg., 1 ♀ (ZMHB); Okol. Trsta [Trieste env.], Sv. Ivan, 29.iv.1908, Gabrščik leg., 1 ♀ (BISL); Rom [=Roma], ex coll. R. Streda, 1 ♀ (HNHM); Trentino [region], ex coll. Brassavola, 1 ♂ 1 ♀ (MSNV).

THE NETHERLANDS: Houthem, 10.v.1939, 1 ♀ (ZMAN).

POLAND: Sorau, Stockmann leg., 1 ♂ (ZMHB).

SWEDEN: Bl.: 14 km WSW Karlshamn, Gammalstorp, Ryedal, 24.vi.1935, H. Lohmander leg., 1 ♂ (NHRS); Bl.: 20 km NW Karlshamn, Morrumsån, 2 km N Hemsjo, 23.x.1988, R. Baranowski leg., 1 ♀ (MZLU); Bo.: Vestruen / Vestinon, 1 ♀ (NHRS); Ha.: Säro, ex coll. C. G. Thomson, 1 ♀ (ZMHB); Ha.: Träslövsläge, 5.xi.1975, A. H. Tornvall leg., 1 ♀ (NHRS); Öl.: Borgholm, 28.vi.1969, R. Baranowski leg., 1 ♀ (MZLU); Sk.: 1 km N Hollviksnäs, Foteviken, 17.v.1986, R. Baranowski leg., 1 ♂ (MZLU); Sk.: 10 km NE Lund, Gårdstånga, Nygård, 15.v.1986, R. Baranowski leg., 1 ♀ (MZLU); Sk.: 10 km SE Helsingborg, Glumslöv, 13.vi.1943, ex coll. S. Palmquist, 1 ♂ (MZLU); Sk.: 5 km NNE Malmö, Alnarp, 28.x.1962, T. Palm leg., 1 ♂ (MZLU); Sk.: 5 km SE Lund, Bjällerup, 7.iv.1977, R. Baranowski leg., 1 ♀ (MZLU); Sk.: 7 km N Kristianstad, Fjälkestad, Roetved, 10.vii.1935, H. Lohmander leg., 1 ♀ (NHRS); Sk.: 7 km NNW Landskrona, Ålabodarna, Sundvik, 5.ii.1974, P. Coderstron leg., 1 ♀ (NHRS); Sk.: 9 km NNW Landskrona, Ålabodarna, 25.v.1952, S. Palmqvist leg., 1 ♀ (MZLU); Sk.: 9 km NNW Landskrona, Ålabodarna, 1.v.1954, S. Palmqvist leg., 1 ♀ (MZLU); Sk.: 9 km NNW Landskrona, Ålabodarna, 24.v.1975, S. Lundberg leg., 1 ♂ (SLNC); Sk.: Arlov, 15.vii.1961, T. Palm leg., 3 ♀ (MZLU); Sk.: Arlov, 18.vii.1961, T. Palm leg., 4 ♂ (MZLU); Sk.: Flälkestad, Araslovsjon lake, NE ände, 7.vi.1935, H.

Lohmander leg., 1 ♂ (NHRS); Sk.: Hälsingborg, Raus Marker 2, 28.iii.1943, S. Palmqvist leg., 1 ♀ (MZLU); Sk.: Hälsingborg, Raus Marker 3, 26.iii.1950, S. Palmqvist leg., 1 ♀ (MZLU); Sk.: Hälsingborg, Raus Marker 3, 10.xi.1946, S. Palmqvist leg., 1 ♀ (MZLU); Sk.: Hälsingborg, Raus Marker 0, 20.x.1959, ex coll. S. Palmqvist, 1 ♂ (MZLU); Sk.: Hälsingborg env., Råådalen river valley, 12.iii.1967, J. E. Nawrin leg., 1 ♀ (MZLU); Sk.: Ignaberga s.n., 24.x.1959, G. Israelson leg., 1 ♀ (SLNC); Sk.: Ignaberga s.n., various data between 23.xi.1958 and 22.v.1961, G. Israelson leg., 2 ♂ 9 ♀ (MZLU); Sk.: Lomma, T. Palm leg., 2 ♂ 3 ♀ (MZLU); Sk.: Lomma, 4.iv.1943, T. Nyholm leg., 1 ♀ (MZLU); Sk.: Lund, 13.iii.1977, R. Baranowski leg., 1 ♂ (MZLU); Sk.: Lund, 28.iii.1977, R. Baranowski leg., 1 ♂ (MZLU); Sk.: Malmö, 20.ii.1976, R. Baranowski leg., 1 ♂ 1 ♀ (MZLU); Sm.: Mockhult, 28.iv.-5.v.1989, R. Baranowski leg., pitfall trap, 1 ♀ (MZLU); Vg.: Borås, 26.x.1972, G. Svensson leg., 1 ♀ (NHRS); Vg.: Lagklarebäck, Molndal, B. Ericson leg., 1 ♂ (NHRS); Vg.: Molndal, Gunnebo, 4.xi.1975, A. H. Tornvall leg., 2 ♂ 3 ♀ (NHRS); Vg.: Seglora, various data between 12.iv. and 24.iv.1963, G. Svensson leg., 5 ♂ 4 ♀ (NHRS).

Not located: "Caucase", ex coll. E. Reitter, 1 ♀ (MNHN); "Kaukas", Leder leg., 1 ♂ (MNHN).

2. *Choleva bedeli* Jeannel, 1923 (examined 37 specimens)

CYPRUS: Evrykhou, 500 m, 19.iv.1963, H. Henrot leg., baited pitfall trap, 1 ♀ (MNHN); Karmi, Fontaine Drakos, 23.iv.1963, H. Henrot leg., 2 ♀ (MNHN); Mt. Olympe, 2000 m, 26.iv.1963, H. Henrot leg., 1 ♂ 1 ♀ (MNHN); Troodhitissa monastery, 1560 m, 24.iv.1963, H. Henrot leg., baited pitfall trap, 1 ♂ (MNHN); Vallée d. Cèdres, 1300 m, 20.iv.1963, H. Henrot leg., 4 ♂ 8 ♀ (MNHN); "Chypre", ex coll. F. C. de Saulcy, 1 ♂ (MNHN).

GREECE: Crete, Lefká Óri mts, Omalós, 27.v.-1.vi.1980, Bílý & Brodský leg., 1 ♂ (JRUC); Crete, Omalós, 22-30.v.1990, I. Jeniš leg., 1 ♂ (JVAC); Crete, Kantanos, 17.iii.1976, F. Meybohm leg., 1 ♂ 1 ♀ (JFRC); Rhodos, Micamare, 6 km S de Rhodes, iv.1966, L. Gaudin leg., 1 ♀ (MNHN); Rhodos, Archangelos, 8.iv.1980, W. Schawaller leg., 2 ♀ (JFRC); Rodi, 25.ii.1931, 2 ♀ (MSNM); Rodi, 18.iv.1932, A. Schatzmayr leg., 1 ♂ (MSNM); Rodi, 1.iii.1931, Torre Tasso leg., 1 ♀ (MSNM); Rhodus, ex coll. Plason, 2 ♀ (NMPC, coll. Hlisenkovský).

TURKEY: Alanya, 15 km W Turkler, field on Kargi D. mt, 5.iv.1996, A. Weigel leg., 1 ♂ (AWEC); Antalya prov., Beşkonak, 3.-15.v.1987, I. Rydh leg., 1 ♀ (JRUC); Konstantinopl, Kadi Ken, ex coll. Hlisenkovski, 1 ♂ (NMPC, coll. Hlisenkovský); Smyrne [=Izmir], 17.xi.1871, ex coll. F. C. de Saulcy, 1 ♀ (MNHN); Uluçinar, 11.-12.iv.1992, O. Hovorka leg., 1 ♂ (JRUC).

3. *Choleva cribrata* Saulcy, 1864 (examined 32 specimens)

ISRAEL: Galilea, Afig env., E of Tiberias lake, Tel Abu Hamsir, 18.iv.1982, H. Mühle leg., 2 ♂ 1 ♀ (JFRC); Jerus. Roth. [illeg.], ex Mus. Monar., coll. Kraatz, 1 ♀ (DEIC); Jerusalem, ex coll. Reitter, 1 ♀ (HNHM); Jerusalem, 6 ♂ 15 ♀ (MNHN); Palaestina, 2 ♀ (ZSMC).

JORDAN: Amman, Transj, 14.iv.1935, W. Wittmer leg., 1 ♀ (SZOC).

LEBANON: Jezzine [=Jazzin], 6.xi.1951, H. Coiffait leg., 1 ♀ (MNHN).

Not located: "Syrie, d'Jerusalem", ex coll. Sédillot, 1 ♀ (MNHN); "Syrien", ex coll. Fischer, 1 ♀ (ZMAN).

4. *Choleva emgei* Reitter, 1884 (examined 18 specimens)

ALBANIA: Argyrocastro [=Gjirokastra], ex coll. R. Jeannel, 1 ♂ (MNHN);

GREECE: Attica, Reitter, Munganast leg., 1 ♂ (OLML); Attica, E. Reitter leg., 1 ♀ (DEIC); Attica, ex coll. E. Reitter, 2 ♂ 2 ♀ (MNHN); Attica, Athens, Hymettus mt, 13.iii.1959, H. Coiffait leg., 1 ♂ (MNHN); Creta or., Assitaes [=Sitia], Holtz leg., 1 ♂ (NHMB, coll. G. Frey); Kefallinia Is., Megalo Vunó mts, 1905, O. Leonhard leg., 2 ♂ (DEIC); Kefallinia Is., Megalo Vunó mts, ex coll. R. Jeannel, 1 ♂ (MNHN); Kephallinia, A. Winkler leg., 1 ♂ (NHMB, coll. G. Frey); Kephallinia, Moc-

zarski leg., 1 ♀ (MNHN); Laconie prov., Sparta, Magoula, 20.iv.1965, H. Henrot leg., tunnels of small mammals, 2 ♀ (MNHN); Peloponisos, 5 km S Monemvasia, 26.iv.1984, G. Christensen leg., 1 ♂ (ZMUC); "Graec.", ex coll. Kraatz, 1 ♀ (DEIC).

5. *Choleva hirtula* Reitter, 1884 (examined 11 specimens)

LEBANON: Akoura, Gr. Ruways cave, 31.viii.1965, ex coll. H. Coiffait, 2 ♂ (MNHN); Beirut, 1878, Appl leg., 2 ♀ (NHMW); Gr. d' Akoura cave, 10.xi. [year not given], H. Coiffait leg., 1 ♂ (MHNG); Gr. d' Akoura cave, 10.xi. [year not given], H. Coiffait leg., 1 ♂ (MNHN); Kartaba, Gr. Al Jawz cave, 1.ix.1965, ex coll. H. Coiffait, 2 ♂ 1 ♀ (MNHN); Kartaba, Gr. Al Jawz cave, 1.ix.1965, ex coll. H. Henrot, 1 ♂ 1 ♀ (MNHN).

7. *Choleva lederiana lederiana* Reitter, 1902 (examined 1691 specimens)

CZECH REPUBLIC: Bohemia: České středohoří mts, Blešenský vrch hill, 420-460 m, 5.iv.-17.v.1994, J. Růžička & P. Moravec leg., baited pitfall trap, rock debris on N slope, 1 ♂ 5 ♀ (JRUC); České středohoří mts, Blešenský vrch hill, 420-460 m, 17.xi.1994-8.iii.1995, J. Růžička & P. Moravec leg., baited pitfall trap, rock debris on N slope, 1 ♀ (JRUC); České středohoří mts, Boreč hill, various data between 14.ix.1969 and 16.vi.1973, M. Honců leg., 1 ♂ 2 ♀ (OMCL); České středohoří mts, Boreč hill, various dates between 22.iv.1993-30.v.1994, J. Růžička & P. Moravec leg., baited pitfall trap, rock debris on NE slope, 140 ♂ 206 ♀ (JRUC); České středohoří mts, Bořeň hill, 400-420 m, 31.v.-2.viii.1994, J. Růžička & P. Moravec leg., baited pitfall trap, rock debris on W slope, 1 ♂ 6 ♀ (JRUC); České středohoří mts, Bořeň hill, 360-380 m, 15.iv.-18.v.1995, J. Růžička & P. Moravec leg., baited pitfall trap, rock debris on NNE slope, 8 ♂ 27 ♀ (JRUC); České středohoří mts, Koštov hill, 17.iv.-18.v.1994, J. Janák leg., baited pitfall trap, rock debris, 2 ♂ 5 ♀ (JJAC); České středohoří mts, Koštov hill, 22.vi.-14.viii.1994, J. Janák leg., baited pitfall trap, rock debris, 1 ♂ (JJAC); České středohoří mts, Milešovka mt, 580-600 m, 15.iv.-18.v.1995, J. Růžička & P. Moravec leg., baited pitfall trap, rock debris on SWW slope, 1 ♂ (JRUC); České středohoří mts, Starý Šachov env., Kamelec hill, various dates between 14.iv.-21.x.1995, J. Růžička & P. Moravec leg., baited pitfall traps, rock debris on NNE slope, 10 ♂ 26 ♀ (JRUC); České středohoří mts, Stvolínky env., Kolný hill, various dates between 10.v.1994-25.x.1995, P. Moravec leg., baited pitfall traps, rock debris, 18 ♂ 41 ♀ (PMOC); České středohoří mts, Sutom hill, 9.iv.-11.v.1994, J. Janák leg., baited pitfall trap, rock debris in forest, 1 ♂ (JJAC); České středohoří mts, Verneřice env., Bobří potok – soutěska valley, various dates between 2.iv.1994-25.x.1995, P. Moravec leg., baited pitfall traps, rock debris, moss cover, 34 ♂ 64 ♀ (PMOC); Český les mts, Čerchov ridge, 850-1000 m, v.-vii.1997, Z. Kejval leg., pitfall traps, rock debris in beech forest with introduced *Abies*, *Picea* and *Acer pseudoplatanus*, 60 ♂ 103 ♀ (JRUC); Jizerské hory mts, Bukovec mt, 900-950 m, 15.viii.-21.x.1997, J. Růžička & P. Vonička leg., baited pitfall traps, rock debris on E slope, covered with deciduous forest, 15 ♂ 6 ♀ (JRUC); Jizerské hory mts, Bukovec mt, 900-950 m, 15.viii.-21.x.1997, J. Růžička & P. Vonička leg., baited pitfall traps, rock debris on E slope, covered with deciduous forest, 3 ♂ 3 ♀ (JVAC); Krkonoše mts, 1 km SW of Vysoké kolo mt, 21.viii.-15.x.1994, J. Růžička & R. Udržal leg., baited pitfall traps, rock debris, 2 ♂ 2 ♀ (JRUC); Krkonoše mts, Labská bouda, ix.1924, Rambousek leg., 1 ♂ 1 ♀ (MNHN); ditto, 2 ♀ (NMPC); Krkonoše mts, Labský důl, 1100-1200 m, 18.vi.-27.viii.1994, J. Janák leg., baited pitfall traps, rock debris, 2 ♂ 5 ♀ (JJAC); Krkonoše mts, Malý Šišák mt, 1380 m, 2.viii.1988-26.viii.1989, V. Růžička leg., unbaited pitfall trap with formaldehyde, 1 ♀ (JRUC); Krkonoše mts, Malý Šišák mt, 1350-1420 m, 4.vi.-20.viii.1994, J. Růžička & R. Udržal leg., baited pitfall trap, rock debris on E slope, 2 ♂ 4 ♀ (JRUC); Krkonoše mts, Malý Šišák mt, 1350-1420 m, 4.vi.-20.viii.1994, J. Růžička & R. Udržal leg., baited pitfall trap, rock debris near top parts, 4 ♀ (JRUC); Krkonoše mts, Malý Šišák mt, 1350-1420 m, 16.x.1993-4.vi.1994, J. Růžička & R. Udržal leg., baited pitfall trap, rock debris on E slope, 1 ♂ 6 ♀ (JRUC); Krkonoše mts, Malý Šišák mt, 1360-1420 m, 20.viii.-16.x.1994, J. Růžička & R. Udržal leg., baited pitfall traps, rock debris on E slope, 9 ♂ 5 ♀ (JRUC); Krkonoše mts, Malý Šišák mt, 1340-1380 m, 20.viii.-16.x.1994, J. Růžička & R. Udržal leg., baited pitfall traps, rock debris on S slope, 2 ♂ 3 ♀ (JRUC); Krkonoše mts, Mužské kameny mt, 1380-1417 m, 21.viii.-15.x.1994, J. Růžička & R. Udržal leg., baited pitfall traps, rock debris on W slope,

1♂ 2♀ (JRUC); Krkonoše mts, Šmielec mt, 1350-1400 m, 18.vi.-27.viii.1994, J. Janák leg., baited pitfall traps, rock debris, 8♂ 12♀ (JJAC); Krkonoše mts, Spindelmühle [=Špindlerův mlýn] [env.], Rodt leg., 1♂ (NMPC); Krkonoše mts, Stříbrný hřbet ridge, 1380-1390 m, 20.viii.-16.x.1994, J. Růžička & R. Udržal leg., baited pitfall traps, rock debris on W slope, 4♂ 3♀ (JRUC); Krkonoše mts, Velká kotelní jáma, 1300 m, 19.vi.-28.viii.1994, J. Janák leg., baited pitfall traps, rock debris, 2♂ (JJAC); Krkonoše mts, Vrbatova bouda cottage, kóta 1411 m, 19.vi.-28.viii.1994, J. Janák leg., baited pitfall traps, rock debris, 4♂ (JJAC); Krkonoše mts, Vysoké kolo mt, 1400-1450 m, 18.vi.-27.viii.1994, J. Janák leg., baited pitfall traps, rock debris, 2♂ 9♀ (JJAC); Krkonoše mts, Vysoké kolo mt, 1400-1500 m, 21.viii.-15.x.1994, J. Růžička & R. Udržal leg., baited pitfall traps, rock debris on E slope, 3♂ 2♀ (JRUC); Krkonoše mts, Vysoké kolo mt, 1480 m, 21.viii.-15.x.1994, J. Růžička & R. Udržal leg., baited pitfall traps, rock debris on S slope, 21♂ 13♀ (JRUC); Riesengeb. [=Krkonoše mts], Umgeb. Elb. Quelle [Labe river source env.], 1300 m, 1.ix.1979, L. Zerche leg., 1♀ (DEIC); Lužické hory mts, Česká Kamenice env., Studenec mt, 10.v.-21.vi.1998, J. Růžička leg., baited pitfall trap, bottom margin of rock debris on S slope, 5♂ 12♀ (JRUC); Lužické hory mts, Nový Bor env., Klíč mt, 5.vii.-21.viii.1997, J. Růžička leg., baited pitfall trap, rock debris on S slope, bottom margin with wet moss cover, 2♂ 4♀ (JRUC); Lužické hory mts, Nový Bor env., Klíč mt, 21.viii.-26.x.1997, J. Růžička leg., baited pitfall trap, rock debris on S slope, bottom margin with wet moss cover, 2♀ (JRUC); Šumava mts., Obří hrad mt, V. Růžička leg., unbaited pitfall traps, rock debris, 1♀ (JBOC).

DENMARK: Copenhagen [=København], ex coll. O. Leonhard, 1♂ (DEIC).

FINLAND: Ab.: Parainen, different data between 13.vi. and 16.x. 1979, T. Clayhills leg., 4♂ 4♀ (TCLC); Ab.: Parainen, Kojkula, different data between 25.ix. and 9.x.1993, T. Clayhills leg., 4♀ (TCLC); Ab.: Parainen, Muttals, 17.x.1993, T. Clayhills leg., 1♀ (TCLC); Ab.: Parainen, Ontala, 25.ix.1993, T. Clayhills leg., 2♂ 1♀ (TCLC); Aitolahhti, vi.1926, Gronblom leg., 1♂ (MZHF); Lojo [=Lohja], Krogerus leg., 1♂ 1♀ (ZMAN); Lojo [=Lohja], Krogerus leg., 1♂ 1♀ (MNHN); Lojo [=Lohja], Krogerus leg., 1♀ (MZHF); Lojo [=Lohja], 18.vi.1931, Krogerus leg., 1♀ (MZHF); Lojo [=Lohja], 28.vi.1931, Krogerus leg., 1♂ (BMNH); Lojo [=Lohja], 28.vi.1931, Krogerus leg., 1♀ (NHMB, coll. G. Frey); Lojo [=Lohja], 8.vi.1932, Krogerus leg., 1♀ (BMNH); Lojo [=Lohja], 9.vii.1932, Krogerus leg., 1♂ (MSNM); Lojo [=Lohja], 9.vii.1932, Krogerus leg., 1♂ (MZHF); Lojo [=Lohja], 9.vii.1932, Krogerus leg., 1♂ (NMPC); Lojo [=Lohja], 10.vii.1930, Krogerus leg., 1♀ (ZMUC); Lojo [=Lohja], 16.viii.1926, 1♂ 1♀ (ZMUC); Lojo [=Lohja], 12.viii.1925, 1♂ 1♀ (ZMUC); Lojo [=Lohja], 9.vi.1930, Håkan Lindb. leg., 1♂ (MZLU); Lojo [=Lohja], 8.vi.1931, Krogerus leg., 1♀ (JVAC); Ab.: Lohja, Torhola cave, 22.viii.-30.x.1985, O. Biström & H. Hippa leg., pitfall trap, 23♂ 23♀ (JRUC); Ab.: Lohja, Torhola cave, 22.viii.-30.x.1985, O. Biström & H. Hippa leg., pitfall trap, 3♂ 3♀ (JVAC); Ab.: Lohja, Torhola cave, 22.viii.-30.x.1985, Biström & Hippa leg., 3♂ (MZHF); Helsinki env., Korso, 17.vi.1978, O. Biström leg., 1♀ (MZHF); Ka: Vehkalahti, 28.iv.1963, L. Tiensuu leg., 1♂ (MZHF); Ka: Vehkalahti, 24.iv.1967, L. Tiensuu leg., 2♀ (MZHF); KemL: Kittilä, Pallasjärvi, Korpi, 17.-28.ix.1994, P. Vikman leg., pitfall trap, 1♂ (JSIC); KemL: Kittilä, Pallasjärvi, Polku, 11.-26.vi.1994, P. Vikman leg., pitfall trap, 2♀ (JSIC); KemL: Kittilä, Pallasjärvi, Tartar, 5.-25.vi.1994, P. Vikman leg., pitfall trap, 1♂ (JSIC); KemL: Kittilä, Pallasjärvi, Vinne, 5.-25.vi.1994, P. Vikman leg., pitfall trap, 1♀ (JSIC); KemL: Kittilä, Pallasjärvi, Vläniitt, 5.-25.vi.1994, P. Vikman leg., pitfall trap, 1♀ (JSIC); KemL: Kolari, Varkaankuru, 19.ix.1989, J. Siitonen leg., 1♀ (JSIC); KemL: Kolari, Ylläs, Varkaankuru, 15.vii.1988, J. Siitonen leg., 1♀ (JSIC); Lk., Pallasj., 2.vi.1953, Wegelius leg., 1♀ (MZHF); N: Espoo, Saukonoro, 10.v.-8.vi.1989, Biström & Vilkamaa leg., pitfall trap, 1♀ (MZHF); Nykarleby, 10.-20.viii.1960, Jungerstan leg., 2♂ (MZLU); Nykarleby, 10.-20.vi.1960, Jungerstan leg., 2♂ 3♀ (MZLU); Nykarleby, Sorkhåll, Tälla nr, 21.-31.v.1960, Jugerstan leg., 4♀ (MZLU); Ok.: Ruhtinassalmi, O. Sorsakoski leg., 1♀ (SMTD); Ok.: Ruhtinassalmi, O. Sorsakoski leg., 1♂ (ZMAN); Ok.: Ruhtinassalmi, O. Sorsakoski leg., 1♂ 1♀ (ZMUB); Ok.: Ruhtinassalmi, O. Sorsakoski leg., 3♂ 1♀ (MSNM); Ok.: Ruhtinassalmi, O. Sorsakoski leg., 1♂ 1♀ (MZHF); Ok.: Suomussalmi, O. Sorsakoski leg., 1♀ (ZMAN); Ok.: Suomussalmi, O. Sorsakoski leg., 1♀ (ZMAN); Ok.: Suomussalmi, Krogerus leg., 1♂ 2♀ (MNHN); Ok.: Suomussalmi, O. Sorsakoski leg., 1♂ (ZMUB); Ok.: Suomussalmi, Sorsakoski leg., 3♂ 2♀ (MZHF); Ok.: Suomussalmi, Ruhtinassalmi, O. Sorsakoski leg., 1♂ (MZHF); Vetil [=Veteli], x.1928, E. Nessling leg., 1♂ (ZMHB); Vetil [=Veteli], 22.vi.1926, E. Nessling leg., 1♂ (ZMUN); Vetil [=Veteli], 1928, E. Nessling leg., 1♀ (NMPC).

GREAT BRITAIN: Derbyshire, E of Buxton, Chee Dale, 12.ix.1982, C. Johnson leg., 1♂ (MMUE); E of Fleetwood, Pilling Moss, ex coll. J. R. Hardy, 1♂ (MMUE); Rothiemurchus, 1965-

1968, W. O. Steel leg., 1 ♀ (MMUE); Ruswarp, 1.iv.1936, J. Readmen leg., 1 ♂ (MMUE); Wales, Agen Allwed Cave nr. Crickhowell, 27.iii.1960, M. D. H. Collins leg., 2500 ft [ca. 762 m] inside cave, 1 ♀ (BMNH); Wales, Caernarfonshire, Snowdon mt, Lliwedd, S slope transect, 22.vii.1965, P. Goodier leg., 1 ♀ (MMUE).

GERMANY: Eifel, Gerolstein env., Hundbachtal valley, iii.-15.viii.1997, R. Molenda leg., pitfall trap, rock debris, 94♂ 229♀ (RMUC); Fichtelgebirge mts, Ochsenkopf mt, ca. 1000 m, 27.vii.1996, C. Müller leg., pitfall trap in the inner layer of boulder talus, 1 ♂ 1 ♀ (RMUC).

SWITZERLAND: Valais, Fluhalp mts, Leukerbad, 1950 m, 9.ix.1988, C. Besuchet leg., under *Alnus*, 1 ♂ (MHNG).

NORWAY: AK: Jessheim, A. Strand leg., 1 ♀ (ZMUB); AK: Drøbak, 20.iv.1895, Warloe leg., 1 ♂ (ZMUN); B: Geilo, A. Strand leg., 1 ♀ (ZMUB); B: Krongsborg, Münster leg., 1 ♀ (ZMUN); Botne, Strand leg., 1 ♀ (ZMHB); F.: Tana hd., mell., Leirpollskogen, 12.-17.vi.1962, G. Israelson leg., 3 ♂ 11 ♀ (MZLU); F.: Vardø, 1 ♂ (ZMUC); Fv Hammerfest: Hammerfest, 7.v.1911, Münster leg., 1 ♂ (ZMUN); Fv Hammerfest: Hammerfest, Storvatn, 7.x.1907, Münster leg., 1 ♂ (ZMUN); HE: Rena, 21.v.1957, A. Strand leg., 1 ♀ (ZMUB); HO Eidfjord: Måbødalen, 490 m, 4.vii.1969, K. E. Jørstad leg., 1 ♀ (ZMUB); HO Kvinnherad: Rosendal env., Lio, 25.v.1968, Feltkurs leg., 1 ♂ (ZMUB); HO Osterøy: Osterøy Is., Haus, 16.vi.1968, A. Fjellberg leg., 1 ♂ (ZMUB); HO: Eidfjord, Halnefjorden, 1240 m, 29.viii.1969, K. E. Jørstad leg., 1 ♂ (ZMUB); HO: Eidfjord, Måbødalen, 580 m, 7.vii.1968, Nielsen leg., 1 ♀ (ZMUB); HO: Veivvatn omr., Ullensvang, 1150 m, 13.vii.1968, A. Fjellberg leg., 1 ♀ (ZMUB); Kristiania [=Oslo], 1922, ex coll. O. Meidell, 1 ♂ (ZMUB); Mortensnes, 1 ♀ (ZMUC); MRi: Rauma, Udvådalen, 860 m, 23.vi.1982, O. Hanssen leg., subalpine birch forest, 1 ♀ (OHAC); MRi Stranda: E of Volda, Geiranger, 9.viii.1987, M. Perreau leg., tunnels of small mammals, 1 ♀ (MPEC); MRi: Sunndal, Hoesanden, 29.vii.-8.ix.1984, O. Hanssen leg., hazel forest, barber trap, 1 ♀ (OHAC); MRi: Sunndal, Oppdølstranda, 5 m, 9.vii.-8.viii.1985, O. Hanssen leg., hazel/birch forest, barber trap, 1 ♂ (OHAC); MRi: Sunndal, Oppdølstranda, 5 m, 1.vi.-13.vii.1986, O. Hanssen leg., hazel/birch forest, barber trap, 1 ♂ 1 ♀ (OHAC); N: Majastua, 23.iv.1934, A. Strand leg., 1 ♂ (ZMUB); N: Saltdal: Storli, vi.1909, Münster leg., 1 ♀ (ZMUB); N: Saltdalen, ex coll. A. Strand, 1 ♂ (ZMUB); N: Melbu, Versterålen Is., vi.1924, Münster leg., 1 ♀ (ZMUN); N: Saltdal, Storli, vi.1909, Münster leg., 1 ♂ 2 ♀ (ZMUN); NSy Meløy: Glomfjord env., Glomen krafts, 3.ix.1965, Johnson leg., 1 ♂ (MMUE); NTi: Lierne, Storbekken, 470 m, 1.vi.-14.vi.1985, O. Hanssen leg., boreal spruce forest, barber trap, 3 ♀ (OHAC); O.: Dovre, 1 ♀ (ZMUN); O.: Otta, Sell., 1912, Münster leg., 1 ♂ (ZMUN); O: Fokstua [=Dovre community], A. Strand leg., 1 ♀ (ZMUB); O: Fokstua, 22.vi.1934, A. Strand leg., 1 ♀ (ZMUB); O: Vaalaasjø, A. Strand leg., 1 ♀ (ZMUB); SFi Styrn: Olden, 10.viii.1987, M. Perreau leg., tunnels of small mammals, 1 ♀ (MPEC); STi: Oppdal, Sliper, 1.vi.-12.vii.1986, O. Hanssen leg., boreal pine forest, barber trap, 1 ♂ (OHAC); TE Rollag: Rollag, 13.v.1989, B. Sagvolden leg., a moss-covered, dead woodpecker, 1 ♂ (BSAC); TE Rollag: Rollag, 20.vi.1989, B. Sagvolden leg., trap, 1 ♀ (BSAC); TE Rollag: Rollag, 13.xi.1989, B. Sagvolden leg., under stone, margin of a potato-field, 1 ♂ (BSAC); TR: Alappen mt, 14.vi.1916, 1 ♀ (ZMUN); TR: Alteidet, viii.1908, Münster leg., 1 ♂ (ZMUN); TR: Bilito, Nordreisa, 28.vi.1950, A. Strand leg., 1 ♂ (ZMUB); TR: Kåfjord, Lyngen, vi.1909, Münster leg., 1 ♂ (ZMUB); TR: Solvang, Malselv, 4.ix.1929, ex coll. A. Strand, 1 ♂ (ZMUB); "Norway", ex coll. C. G. Thomson, 1 ♂ (ZMHB).

POLAND: Karkonosze mts, Maly Szyszak mt, 1340-1380 m, 20.viii.-16.x.1994, J. Růžicka & R. Udržal leg., baited pitfall traps, rock debris on N slope, 16♂ 18♀ (JRUC); Karkonosze mts, Śmielec mt, 1400 m, 21.viii.-15.x.1994, J. Růžicka & R. Udržal leg., baited pitfall traps, rock debris on W slope, 16♂ 13♀ (JRUC).

RUSSIA: Alexandrovsk, Murman, Archang. g. [governorate?], 17.x.1923, Kapustin leg., 1 ♂ (MNHN); Archangelskaya g. [governorate?], Alexandrovsk, ix.1923, Fridolin leg., 1 ♀ (ZMAS); Archangelskaya g. [governorate?], Pulozero [Murmansk prov.], 21.vi.1926, Kapustin leg., 1 ♂ (ZMAS); Kirovskaya obl., Kirov env., 21.ix.-2.x.1994, L. T. Celishcheva leg., pitfall trap, 1 ♂ (GYUC); Kirovskaya obl., Kirov env., 25.-30.v.1994, L. T. Celishcheva leg., pitfall trap, 1 ♀ (GYUC); Kirovskaya obl., Svecha, 16.vii.1994, G. I. Yuferev leg., 1 ♀ (GYUC); Kirovskaya obl., Svecha, 9.ix.1994, G. I. Yuferev leg., 1 ♀ (GYUC); Kol'skiy zaliv bay, Varnichnyi brook, 11.v.1924, Kapustin leg., 1 ♂ 1 ♀ (ZMAS); Yuzhniy Ural, Iremel' mt, 1200 m, 28.v.1985, Vol'schvaig leg., moss turf, 1 ♀ (ZMAS).

SWEDEN: Än.: 5 km S Remmarn, Vändåtberget, 23.ix.1981, 2♂ (SLNC); Än.: 5 km S

Remmarn, Vändåtberget, 3.ix.1981, 1 ♂ (SLNC); Bo.: 10 km SSE Stenungsund, Jörlanda, Linden, 11.x.1943, H. Lohmander leg., 1 ♂ (NHRS); Bo.: Goteborg, Lindroth leg., 1 ♀ (MZLU); Dr.: 1.5 km NW Ludvika, Väsman lake, Iviken, 7.vi.1947, Ottander leg., 1 ♀ (MZLU); Dr.: 50 km W Borlänge, Nås stn., 7.x.1981, B. Ehnström leg., 1 ♂ 1 ♀ (SLNC); Dr.: 50 km W Borlänge, Nås, Ehnström, 13.v.1956, R. Baranowski leg., 1 ♀ (MZLU); Dr.: 8 km SW Mora, Vika, 22.ix.1918, Kiefbeck leg., 1 ♀ (MZLU); Hal. [=Halland prov.], 1 ♀ (ZMHB); Hs.: Loos [=70 km NNE Orsa, Los], 24.v.1922, O. Sjöberg leg., 1 ♀ (NHMW); Hs.: Loos [=70 km NNE Orsa, Los], 1.v.1930, O. Sjöberg leg., 1 ♂ (SNMC); Hs.: Loos [=70 km NNE Orsa, Los], 29.ix.1929, O. Sjöberg leg., 1 ♂ (SNMC); Hs.: Loos [=70 km NNE Orsa, Los], 21.v.1920, O. Sjöberg leg., 1 ♀ (SNMC); Hs.: Loos [=70 km NNE Orsa, Los], 11.v.1922, O. Sjöberg leg., 1 ♂ (SNMC); Hs.: Loos [=70 km NNE Orsa, Los], ix.1920, O. Sjöberg leg., 1 ♀ (SNMC); Hs.: Loos [=70 km NNE Orsa, Los], O. Sjöberg leg., 1 ♂ (NHRS); Jä.: 38 km SW Sollefteå, Fors sn., 15.ix.1947, T. Palm leg., 1 ♀ (MMUE); Jä.: 38 km SW Sollefteå, Fors sn., 23.ix.1944, T. Palm leg., 3 ♂ 3 ♀ (MZLU); Jä.: Åre s:n, Bräcke, 15.-18.vi.1961, G. Israelson leg., 4 ♂ 5 ♀ (MZLU); Lu.Lpm.: Messaure, 22.8.-3.10.1972, K. Müller leg., 1 ♀ (NHMB); Lu.Lpm.: Vuollerim, various dates between 21.v.-11.x.1990, B. Viklund leg., pitfall traps, 2 ♂ 8 ♀ (JRUC); Nb.: 52 km NNW Boden, Blåkolen, 15.vi.1983, S. Lundberg leg., 1 ♀ (SLNC); Nb.: Klöverträsk, 27.ix.1980, S. Lundberg leg., 3 ♀ (SLNC); Nb.: Luleå, Herbon, 15.vi.1969, S. Lundberg leg., 1 spec. (JFRC); Sk.: 12 km NNW Simrishamn, Kivik, Stenshuvud, 11.vi.1949, H. Lohmander leg., 1 ♀ (NHRS); Sk.: Tykarpsgrötan cave, 8.vii.1975-11.iv.1976, Hippa, Koponen & Mannila leg., 6 ♂ 9 ♀ (MZHF); Sm.: 20 km SE Ljungby, Mockeln lake, Älmtåsa, 20.ix.1988, R. Baranowski leg., 1 ♀ (MZLU); Sm.: Ökna, Torpa, 23.vi.1945, H. Lohmander leg., 1 ♀ (NHRS); Sm.: Växjö, 15.iv.1924, ex coll. L. Brundin, 1 ♂ (MZLU); To.Lpm.: Abisko, 25.v.1971, S. Lundberg leg., 1 ♀ (JFRC); To.Lpm.: Abisko, 22.v.1971, S. Lundberg leg., 1 ♂ (NHMB); To.Lpm.: Abisko, 11.vi.1981, S. Lundberg leg., subalpine birch forest, 2 ♀ (OHAC); To.Lpm.: Abisko, 29.viii.1968, S. Lundberg leg., 1 ♂ (ZMHB); To.Lpm.: Abisko, 1.vii.1976, 1 ♀ (MZLU); To.Lpm.: Abisko, 21.vi.-2.vii.1948, T. Palm leg., 1 ♀ (MZLU); To.Lpm.: Abisko, 27.vii.1959, T. Palm leg., 1 ♀ (MZLU); To.Lpm.: Abisko, 22.v.1971, S. Lundberg leg., 3 ♂ (SLNC); To.Lpm.: Abisko, 29.viii.1968, S. Lundberg leg., 1 ♂ (SLNC); To.Lpm.: Kiruna, 28.v.1968, S. Lundberg leg., 2 ♀ (SLNC); Up.: Uppsala, 24.x.1992, Lindelow leg., 1 ♂ (SLNC); Up.: Uppsala, 22.viii.1992, Lindelow leg., 1 ♀ (SLNC); Vb.: Stava Träsk, vi.1931, ex coll. H. Persson, 1 ♀ (MZLU); Vg.: 10 km NNW Borås, Gingri, various data between 4.v. and 26.x.1967, G. Svensson leg., 2 ♂ 2 ♀ (NHRS); Vg.: 10 km SSE Alingsås, Hemsjo, V. Bodarne, H. Arvall leg., 1 ♀ (NHRS); Vg.: 8 km E Vänersborg, Halleberg mt, southern slope, 15.v.1948, H. Lohmander leg., 1 ♀ (NHRS); Vg.: Alingsås, 23.v.1965, G. Svensson leg., 1 ♀ (NHRS); Vg.: Fristad, 4.iii.1964, G. Svensson leg., 1 ♀ (NHRS); Vg.: Kärråkra, 5 om Knockahemmet, 27.v.1968, H.W. Waldén leg., 1 ♀ (NHRS); Vg.: Kolingared, W om Sore, 12.x.1967, H.W. Waldén leg., 1 ♀ (NHRS); Vg.: Magra, Upplö, 12.x.1943, H. Lohmander leg., 1 ♂ (NHRS); Vg.: Seglora, 21.iv.1963, G. Svensson leg., 1 ♂ (NHRS); Vg.: Trollhättan env., Vassända - Nagtun, 16.x.1943, G. Svensson leg., 1 ♀ (NHRS); "Schweden", ex coll. Petz, 1 ♀ (OLML).

SLOVAKIA: Cerová vrchovina Protected Landscape Area, Pohanský hrad mt, Střpová jaskyňa pseudokarst cave, 20.iv.-20.v. 1998, R. Mlejnek leg., baited pitfall traps, 10 ♂ 10 ♀ (JRUC).

9. *Choleva lederiana gracilentia* Szymczakowski, 1957 (examined 67 specimens)

POLAND: Częstochowa distr., Sokole Góry mts, in cav., 12.xi.1958, W. Szymczakowski leg., 1 ♀ (MSNM); Częstochowa, Sokole Góry mts, Studnisko cave, 9.ix.1961, A. Skalski leg., 2 ♂ 1 ♀ (BMNH); Częstochowa distr., Sokole Góry mts, Pod Sokolą Górą cave, 24.x.-12.xi.1958, W. Szymczakowski leg., 1 ♂ 1 ♀ (MNHN); Częstochowa distr., Sokole Góry mts, Pod Sokolą Górą cave, 20.iii.-13.v.1993, J. Růžička, T. Sitek & J. Vávra leg., baited pitfall traps, 6 ♂ 3 ♀ (JRUC); ditto, 2 ♂ 3 ♀ (JVAC); Częstochowa distr., Sokole Góry mts, Pod Sokolą Górą cave, 20.iii.1993, J. Růžička, T. Sitek & J. Vávra leg., individually collected in cave on stones and soil, 5 ♂ 8 ♀ (JRUC); ditto, 5 ♂ 4 ♀ (JVAC); ditto, 11 ♂ 6 ♀ (TSIC); Częstochowa distr., Sokole Góry mts, Pod Sokolą Górą cave, 13.v.1993, J. Růžička, T. Sitek & J. Vávra leg., individually collected in cave on stones and soil, 2 ♂ 2 ♀ (JRUC); Góry Świętokrzyski mts, Łagów nr. Kielce, Łagowska cave, 12.viii.-17.x.1982, A. Skalski leg., Barber traps, 3 ♂ 1 ♀ (JRUC).

10. *Choleva lederiana holsatica* Benick & Ihssen in Benick, 1937 (examined 82 specimens)

GERMANY: Bad Segeberg, 9.ii.1935, 1 ♂ 1 ♀ (NHMW); Bad Segeberg, 27.viii.1935, ex coll. K. Hänel, 1 ♀ (SMTD); Bad Segeberg, 16.xi.1935, ex coll. K. Hänel, 1 ♂ (SMTD); Gr. de Segeberg, vi.1965, P. Zwick leg., 1 ♂ 2 ♀ (MNHN); Höhle i. Kalkberg v. Segeberg, 8.vi.1928, Mohr leg., 1 ♂ (ZMHB); Höhle i. Kalkberg v. Segeberg, 8.vi.1928, ex coll. Hlisnikowski, 1 ♀ (NMPC); Höhle in Bad Segeberg, 8.-22.ii.1963, P. Zwick leg., 10 ♂ 11 ♀ (ZMHB); Kalkberg in Segeberg, 1.vi.1935, 1 ♂ 2 ♀ (SMNS); Kalkberg in Segeberg-Holst., 1.vi.1935, 1 ♂ (ZMHB); Kalkberg, Segeberg, 1.vi.1935, 2 ♀ (JFRC); Segeb. Höhle, 10.ii.1935, E. Mohr leg., 1 ♂ (ZMSL); Segeberg, 9.ii.1935, 1 ♂ (SNMC); Segeberg, 16.xi.1935, 1 ♀ (SNMC); Segeberg, 16.xi.1935, ex coll. V. Hansen, 1 ♂ 3 ♀ (ZMUC); Segeberg, Höhle, Kapelle, 6.iv.1935, L. Benick & E. Mohr leg., 1 ♀ (JRUC); Segeberg, Holst, 9.ii.1935, 3 ♂ (ZMSL); Segeberg, Holst, 9.ii.1935, 1 ♀ (ZMSL); Segeberg, Holst, Kapelle, 27.v.1935, 1 ♂ (ZMSL); Segeberg, Holst, Kapelle, 1.vi.1935, E. Mohr leg., 6 ♂ 5 ♀ (ZMSL); Segeberg, Holst, Kapelle, 1.vi.1935, 1 ♂ (ZMSL); Segeberg, Holst, Kapelle, 27.vii.1935, 3 ♀ (ZMSL); Segeberg, Holst, Kapelle, 17.vii.1935, 1 ♀ (JRUC); Segeberg, Holst., 9.ii.1935, 1 ♂ 3 ♀ (ZMHB); Segeberg, Holste[in], 4.ii.1935, 1 ♂ 1 ♀ (MNHN); Segeberger Höhle, 27.vii.1935, 1 ♂ 3 ♀ (SMNS); Segeberger Höhle, 15.-22.ii.1952, ex coll. R. Papperitz, pitfall trap No. 7, 1 ♂ (SMNS); Segeberger Höhle, 25.ii.1952, ex coll. R. Papperitz, pitfall trap No. 9, 1 ♀ (SMNS); Segeberger Höhle, 28.i.1928, Arndt leg., 1 ♂ 1 ♀ (ZMHB); Segeberger Höhle, 24.viii.1935, 2 ♂ 2 ♀ (ZMSL); Segeberger-Höhle, 7.ix.1927, Arndt leg., 1 ♂ (ZMHB); Segeb. Hohl., 10.v.1935, Dr. Freidrich leg., 1 ♀ (ZMSL).

12. *Choleva lederiana sokolowskii* Ipsen & Tolasch, 1997 (examined 47 specimens)

GERMANY: Teutoburger-Wald, HohlsteinHöhle cave, 10.iv.-19.v.1956, 1 ♂ (ZSMC); Teutoburger Wald, HohlsteinHöhle cave nr. Horn-Bad Meinberg, 7.ii.1996, A. Ipsen leg., 1 ♂ 5 ♀ (JRUC); Teutoburger Wald, HohlsteinHöhle cave, 20.iii.1999, T. Tolasch leg., 14 ♂ 14 ♀ (TTOC); ditto, 3 ♂ 3 ♀ (JRUC); ditto, 3 ♂ 3 ♀ (JVAC).

13. *Choleva matthiesseni* Reitter, 1914 (examined 48 specimens)

CHINA: Xinjiang autonomous region: E Tian Shan mts, road Bayanbulak – Narat, pass 30 km ESE of Narat, 2900 m, 13.-14.vii.1993, J. Kaláb leg., 1 ♀ (SZOC); N slope of Tian Shan mts, road Kuqa – Bayanbulak, 50 km SW of Bayanbulak, 2800 m, 10.vii.1993, J. Turna leg., 1 ♂ (JRUC); N slope of Tian Shan mts, road Kuqa – Bayanbulak, 50 km SW of Bayanbulak, 2800 m, 11.-13.v.1993, J. Turna leg., 1 ♂ (JTUC); N slope of Tian Shan mts, road Kuqa – Bayanbulak, 50 km SW of Bayanbulak, 10.vii.1993, J. Turna leg., 1 ♂ (JRUC); SW Borohoro Shan mts, 40 km ENE of Qinghuihezi, 2000-3000 m, 24.-26.vii.1993, J. Kaláb leg., 1 ♀ (SZOC); Tian Shan mts, road Bayanbulak – Narat, 30 km ESE of Narat, pass, 2800 m, 13.-14.vii.1993, J. Turna leg., 1 ♂ (JTUC); Tian Shan mts, road Bayanbulak – Narat, 30 km ESE of Narat, pass, 2800 m, 13.-14.vii.1993, J. Turna leg., 1 ♂ (JVAC).

KAZAKHSTAN: Alma Ata [=Almaty] env., Kungey Alatau mts, 2500-3500 m, vi.1990, J. Kolibáč leg., 1 ♂ 2 ♀ (NHMB); Almaty env., Big Lake reg., 2800 m, 2.-15.vii.1996, Putschkov leg., 3 ♂ 2 ♀ (JRUC); Almaty env., Medeo, 27.-31.v.1991, R. Dunda leg., 1 ♀ (JRUC); Almaty env., Tshimbulak, 18.vi.1992, S. Murzin leg., 2 ♂ 1 ♀ (JRUC); Almaty, Alma-Atinka river, 2700 m, 23.vi.1983, K. Rébl leg., 1 ♂ (JVAC); Okresnosti [=env. of] Vrnago, Ushchel'e Kargalinskoe, 4.vi.1907, B. Nedzeczyi leg., 1 ♂ (MNHN); Tekes V., Narynkol, 8.-12.vi.1992, S. Kasantsev leg., 1 ♀ (NHMB); V'rnago env., Kargalinka rift, 4.vi.1907, B. Nedzeczyi leg., 1 ♀ (ZMAS); Zailiysky Ala-tau mts, Kargalinka rift, 2200 m, 1.-7.vi.1907, A. Jakobson leg., 1 ♂ (ZMAS); Zailiysky mts, Gorelnik env., 2600 m, 13.vi.1992, S. Murzin leg., 2 ♂ 1 ♀ (JVAC); Zailiysky mts, Gorelnik env., 2600 m, 23.vi.1992, S. Murzin leg., 1 ♂ (JVAC); Zailiysky mts, Gorelnik river, 3000 m, 2.vi.1993, S. Murzin leg., 3 ♂ 6 ♀ (JVAC); Zailiysky mts, Gorelnik river, 3000 m, 10.vi.1993, S. Murzin leg.,

3 ♂ (JVAC).

KYRGHYZSTAN: Kirgizskiy mt, Kegeti river, 3200 m, 27.vii.1995, A. G. Koval leg., 1 ♂ 2 ♀ (JRUC); Tian Shan mts, E of Naryn, Dolon Pass, 2500-3200 m, 23.-25.vii.1991, J. Turna leg., 1 ♂ 2 ♀ (JRUC); Tian Shan mts, Terskey Alatau, Barskoon vill., 2000 m, 25.v.1997, A. Klimenko leg., 1 ♀ (JCOC); Tian Shan mts, Terskey Alatau ridge, 30 km SW of Przhevalsk, Jeti Oguz [=Dzhety-oguz], 3500 m, 28.vi.1989, P. Čechovský leg., 1 ♀ (JRUC).

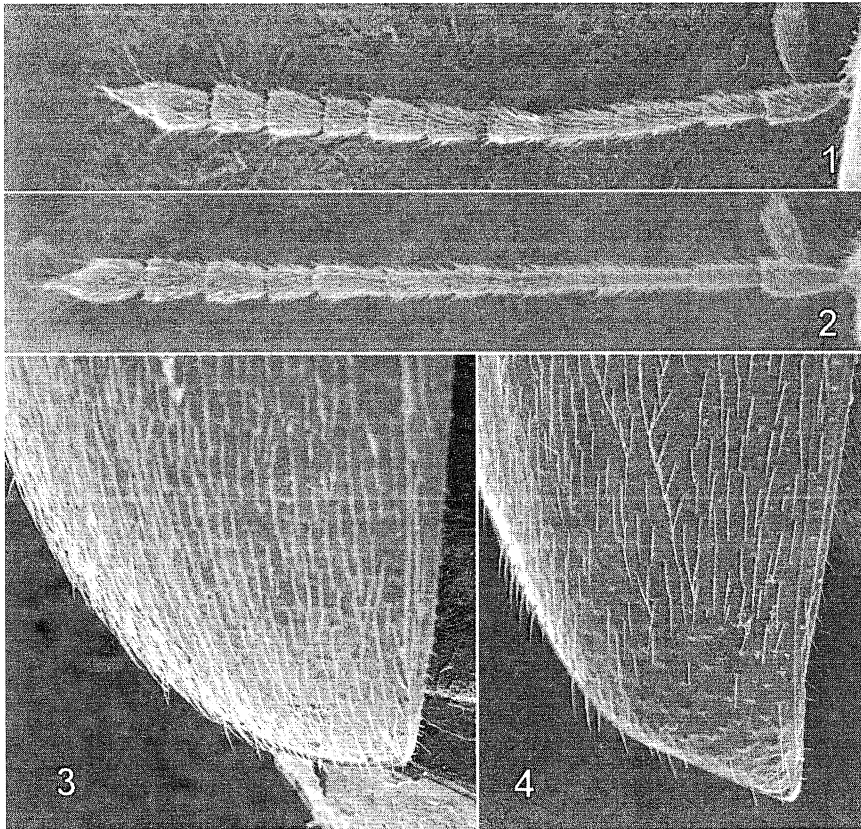
15. *Choleva barnevillei* Tournier, 1872 (examined 7 specimens)

ALGERIA: Région du mont Ouarsenis, De Vauloger leg., 1 ♀ (MNHN); Teniet-el-Had, forêt de cèdres, ex coll. L. Bedel, 1 ♂ (MNHN); Tenit-el-Had, L. Bedel leg., 2 ♂ 3 ♀ (MNHN).

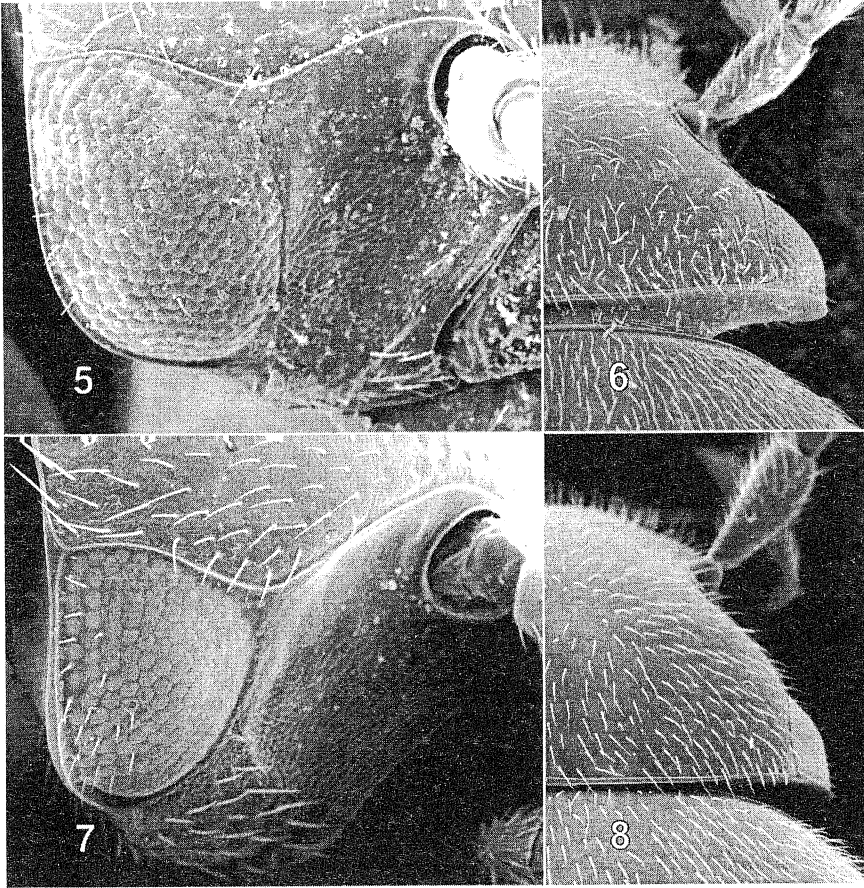
16. *Choleva bosnica* Ganglbauer, 1899 (examined 2 specimens)

ALBANIA: Mali i Shënjit [=Mal i Shëngjinit], Strupi leg., 1 ♂ (NMPC, coll. Hlisnikovský).

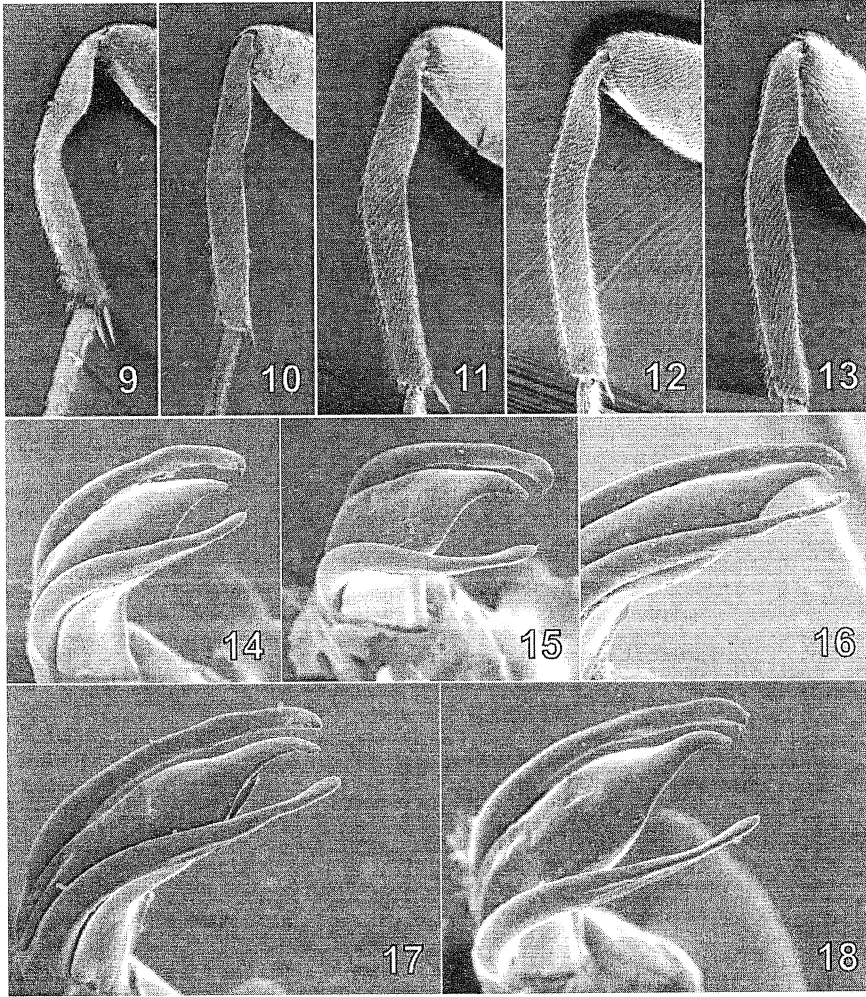
GREECE: Paramithiás mts, Paramithia env., 800-1000 m, 19.v.1997, S. Benedikt leg., 1 ♂ (JRUC).



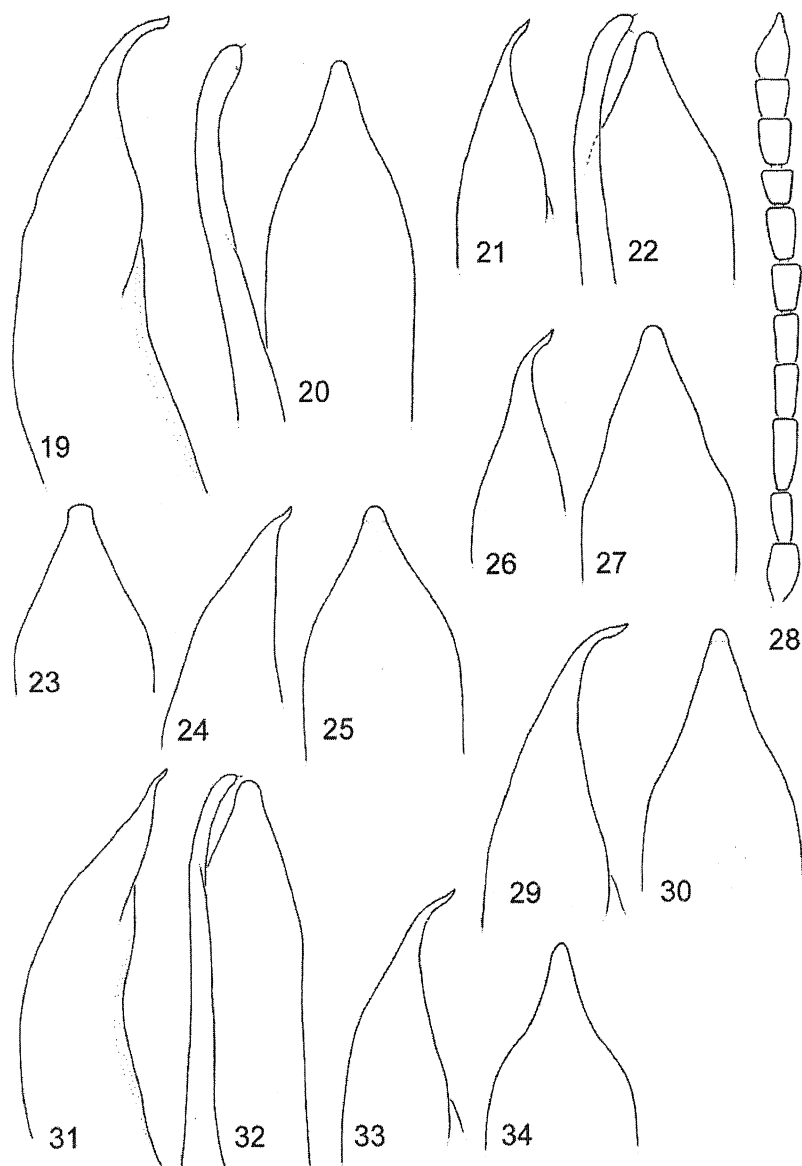
Figs 1-4. 1, 3 - *Choleva agilis* (Illiger) (Bohemia: Praha-Ruzyně); 2, 4 - *C. lederiana holsatica* (Benick & Ihssen in Benick). 1, 2 - antenna dorsally; 3, 4 - apex of female left elytron dorso-apically.



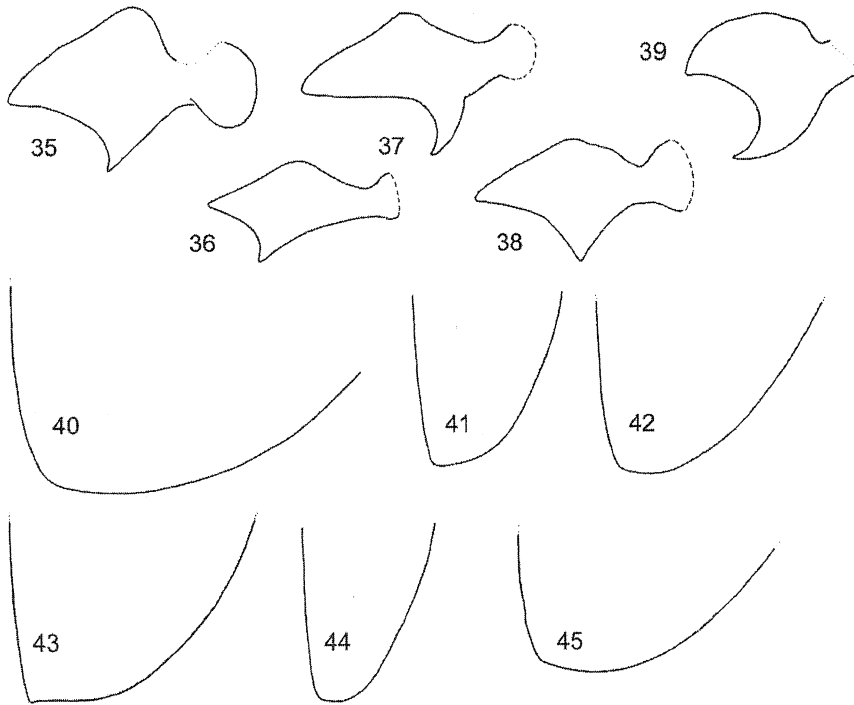
Figs 5-8. 5, 6 - *Choleva agilis* (Illiger) (Bohemia: Praha-Ruzyně); 7, 8 - *C. lederiana holsatica* (Benick & Ihssen in Benick). 5, 7 - head laterally; 6, 8 - head dorsally.



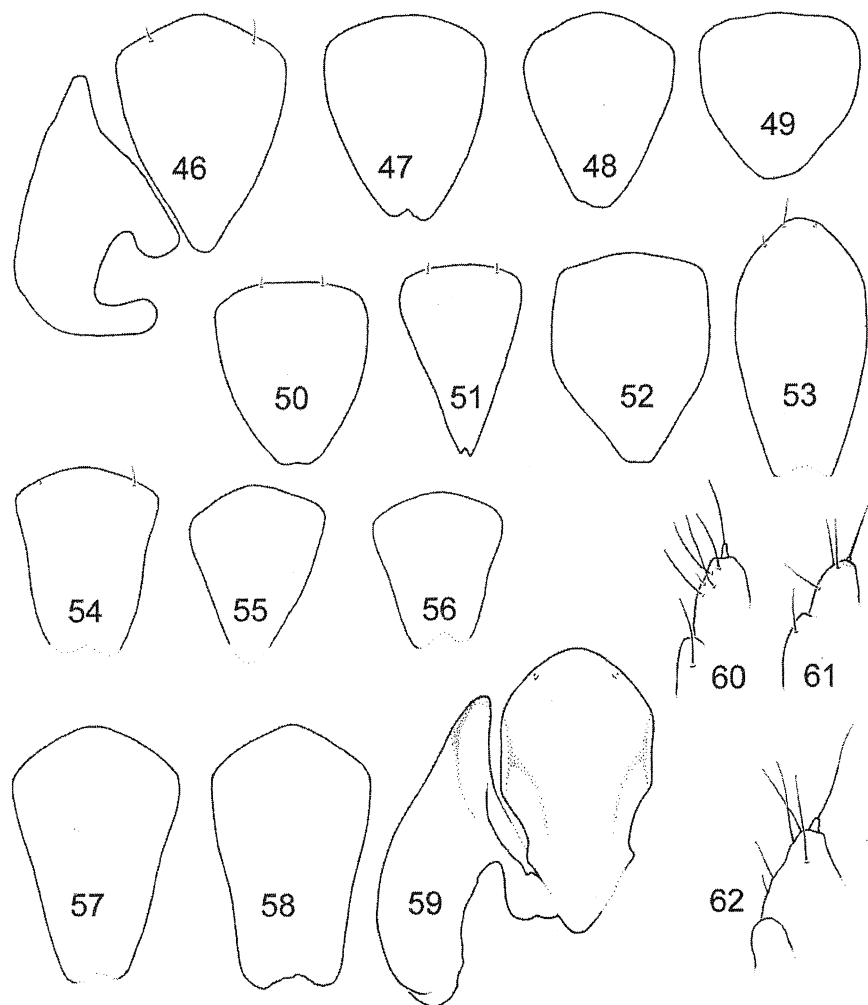
Figs 9-18. 9-13 - male right mesotibia antero-laterally; 14-18 - aedeagus in oblique view. 9, 14 - *Choleva agilis* (Illiger) (Bohemia: Praha-Ruzyně); 10, 16 - *C. lederiana lederiana* Reitter (Bohemia: Krkonoše mts); 11, 17 - *C. l. lederiana* Reitter (Bohemia: Boreč hill); 12, 15 - *C. l. lederiana* Reitter (Finland: Torhola cave); 13, 18 - *C. l. holsatica* (Benick & Ihssen in Benick).



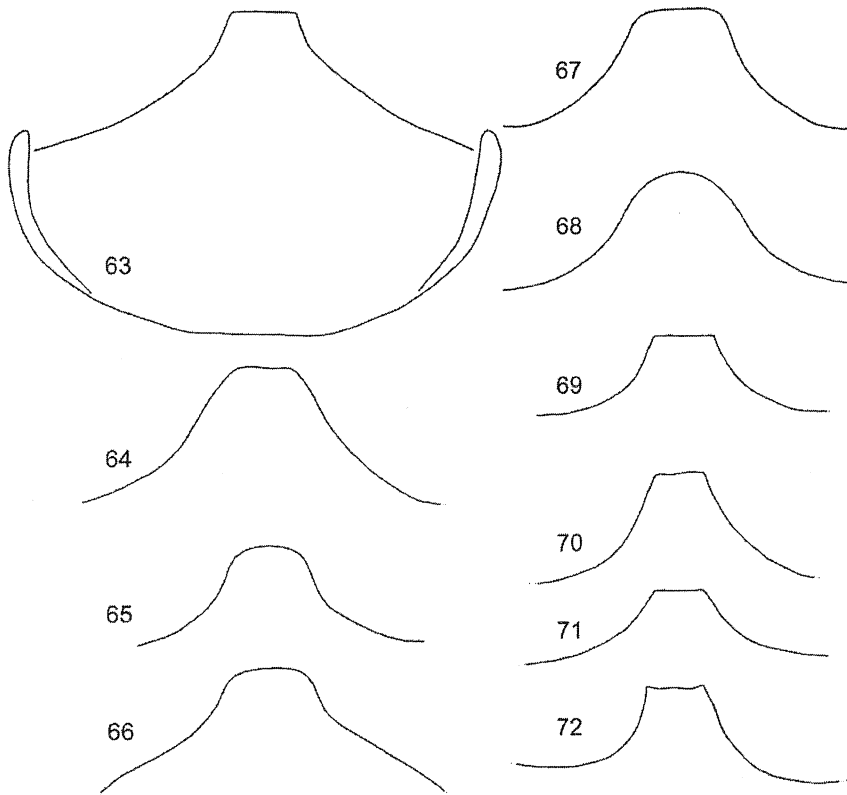
Figs 19-34. 19, 21, 24, 26, 29, 31, 33 - aedeagus laterally; 20, 22, 23, 25, 27, 30, 32, 34 - aedeagus dorsally; 28 - antenna dorsally. 19, 20, 28 - *Choleva agilis* (Illiger) (LT); 21, 22 - *C. agilis* (Moravia: Čejč); 23 - *C. agilis* (LT of *C. agilis clermonti* van der Wiel); 24, 25 - *C. agilis* (Crimea: Boin-Teshik cave); 26, 27 - *C. cf. agilis* (Armenia: Sevan lake); 29, 30 - *C. cf. agilis* (Sweden: Ignaberga); 31 - *C. agilis* (Turkey: Gevas); 32 - *C. agilis* (Turkey: Muradiye-Şelalesi); 33, 34 - *C. agilis* (Great Britain: Finchley).



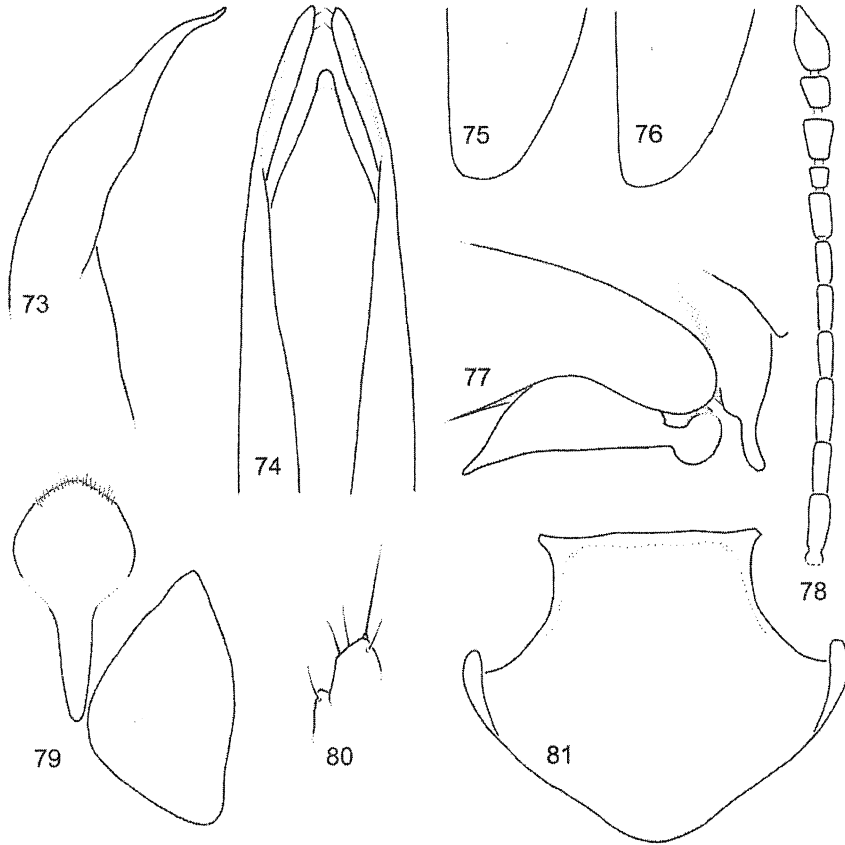
Figs 35-45. 35-39 - male metatrochanter ventrally; 40-45 - apex of female right elytron dorso-apically. 35 - *Choleva agilis* (Illiger) (LT); 36 - *C. agilis* (Turkey: Muradiye-Şelalesi); 37 - *C. agilis* (Crimea: Villyaburuns kaya cave); 38 - *C. cf. agilis* (Armenia: Sevan lake); 39 - *C. agilis* (LT of *C. agilis clermonti* van der Wiel); 40 - *C. agilis* (Austria: Mistelbach); 41 - *C. agilis* (Bohemia: Raná hill); 42 - *C. agilis* (PT of *C. cavazzutii* Giachino); 43 - *C. agilis* (Italia: Trieste, Grotto 28); 44 - *C. cf. agilis* (Armenia: Sevan lake); 45 - *C. cf. agilis* (Sweden: Ignabergera).



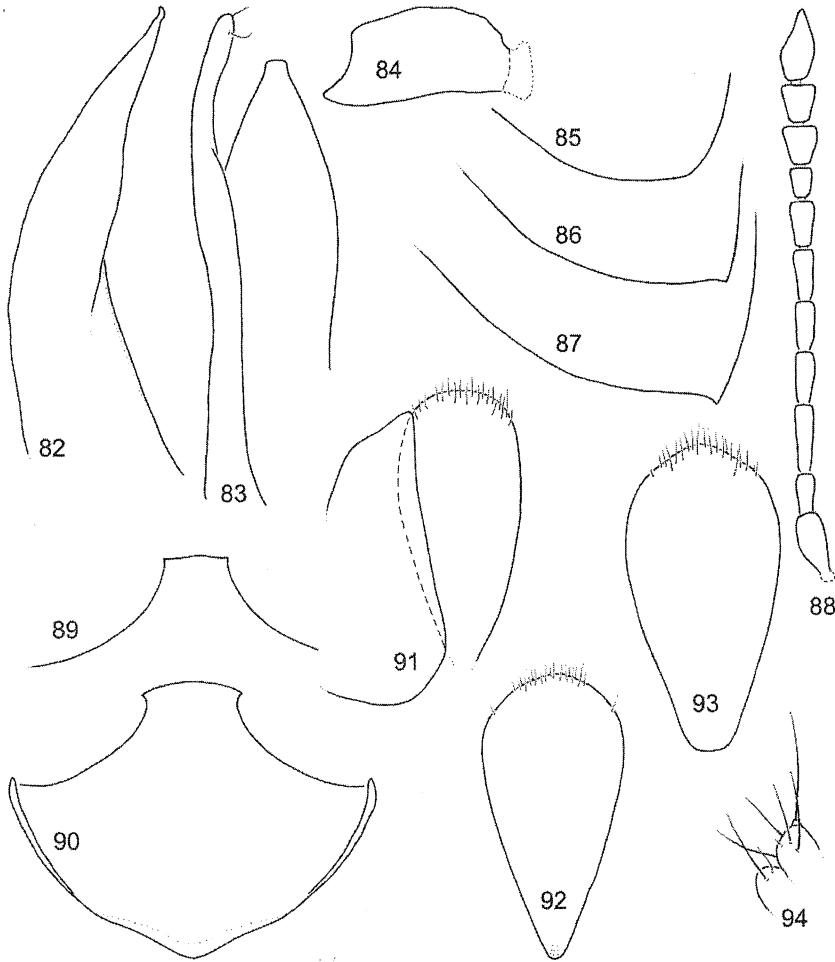
Figs 46-62. 46 - female tergum IX and X dorsally; 47-59 - female tergum X dorsally; 60-62 - female coxite and stylus dorsally. 46, 62 - *Choleva agilis* (Illiger) (Austria: Mistelbach); 47, 48, 61 - *C. agilis* (Bohemia: Raná hill); 49 - *C. agilis* (Moravia: Židlochovice); 50 - *C. agilis* (Hungaria: Mecsek-hegy [hill]); 51 - *C. agilis* (Croatia: Trogrla pecina [cave]); 52 - *C. agilis* (Crimea: Villy-aburunskaya cave); 53 - *C. agilis* (PLT of *C. agilis clermonti* van der Wiel); 54 - *C. agilis* (Turkey: Muradiye-Şelalesi); 55 - *C. agilis* (HT of *C. adusta* Reitter); 56 - *C. agilis* (PT of *C. cavazzutii* Giachino); 57 - *C. cf. agilis* (Great Britain: Finchley); 58 - *C. cf. agilis* (Sweden: Ignaberga); 59, 60 - *C. cf. agilis* (Armenia: Sevan).



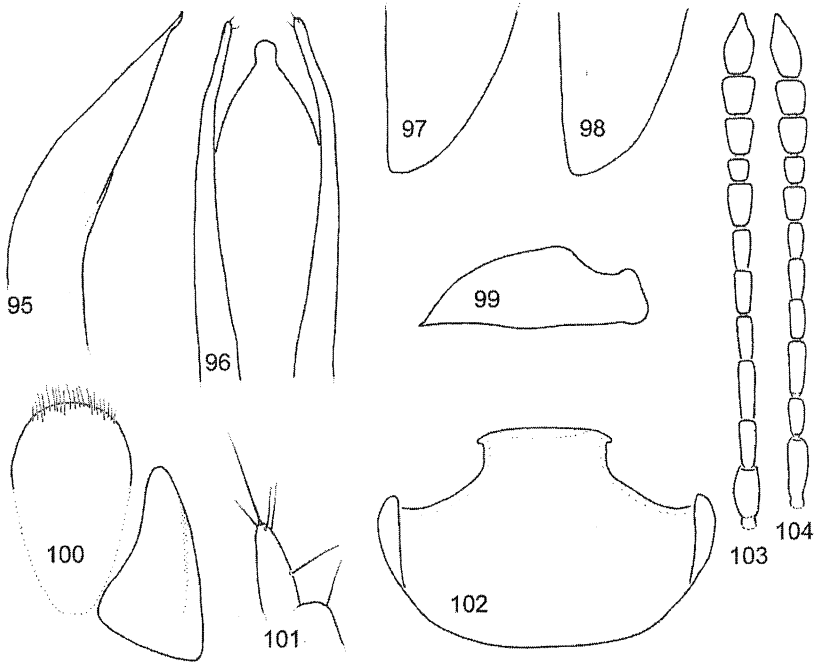
Figs 63-72. 63 - female ventrite VIII with spiculum ventrale dorsally; 64-72 - spiculum ventrale dorsally. 63 - *Choleva agilis* (Austria: Mistelbach); 64 - *C. agilis* (Bohemia: Raná hill); 65 - *C. agilis* (PT of *C. cavazzutii* Giachino); 66 - *C. agilis* (HT of *C. adusta* Reitter); 67 - *C. agilis* (Croatia: Trogrla pecina [cave]); 68 - *C. agilis* (Moravia: Židlochovice); 69 - *C. agilis* (PLT of *C. agilis clermonti* van der Wiel); 70 - *C. cf. agilis* (Georgia: Tbilisi env.); 71, 72 - *C. cf. agilis* (Armenia: Sevan lake).



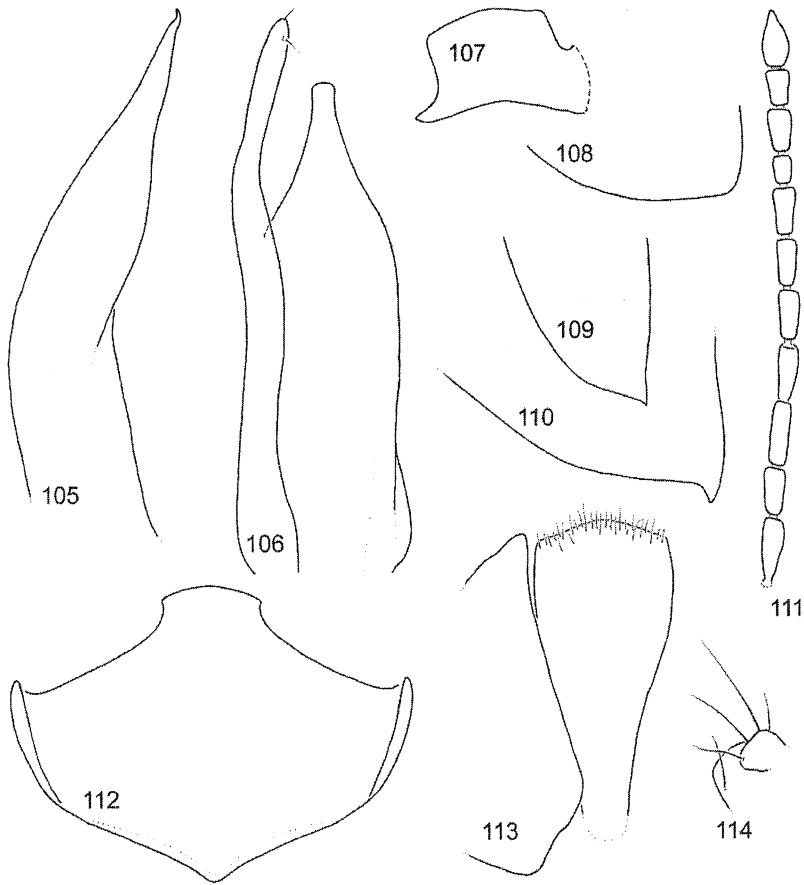
Figs 73-81. 73, 74, 77 - *Choleva bedeli* Jeannel (HT); 75, 78-81 - *C. bedeli* (Cyprus: Vallée d. Cèdres); 76 - *C. bedeli* (Rhodes: Micamare). 73 - aedeagus laterally; 74 - aedeagus dorsally; 75, 76 - apex of female right elytron dorso-apically; 77 - metacoxa, metatrochanter and proximal part of metafemur ventrally; 78 - antenna dorsally; 79 - female tergum IX and X dorsally; 80 - female coxite and stylus dorsally; 81 - female ventrite VIII with spiculum ventrale dorsally.



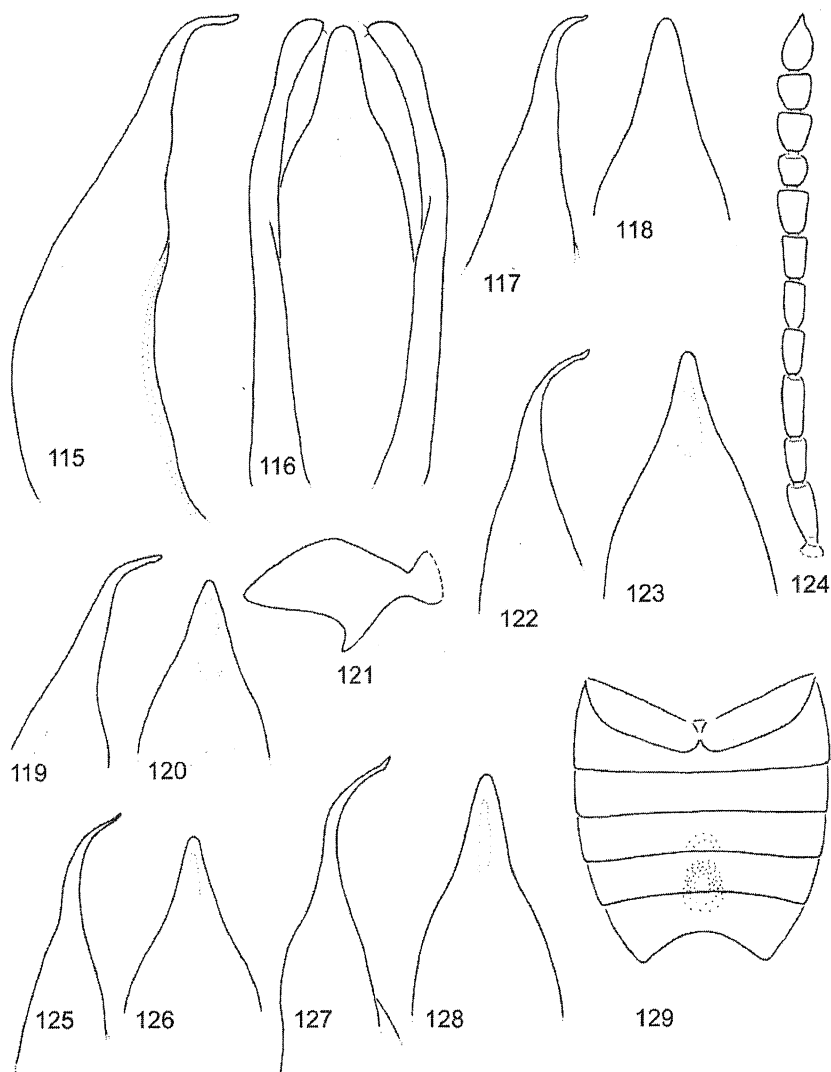
Figs 82-94. 82-85, 88 - *Choleva cribrata* Saulcy (PLT male); 86 - *C. cribrata* (Israel: Jerusalem); 87, 90, 91, 94 - *C. cribrata* (PLT female); 89, 92 - *C. cribrata* (Lebanon: Jezzine); 93 - *C. cribrata* ("Syrie, d'Jeru."). 82 - aedeagus laterally; 83 - aedeagus dorsally; 84 - male metatrochanter ventrally; 85 - apex of male elytron dorso-apically; 86, 87 - apex of female elytron dorso-apically; 88 - antenna dorsally; 89 - female spiculum ventrale dorsally; 90 - female ventrite VIII with spiculum ventrale dorsally; 91 - female tergum IX and X dorsally; 92, 93 - female tergum X dorsally; 94 - female coxite and stylus dorsally.



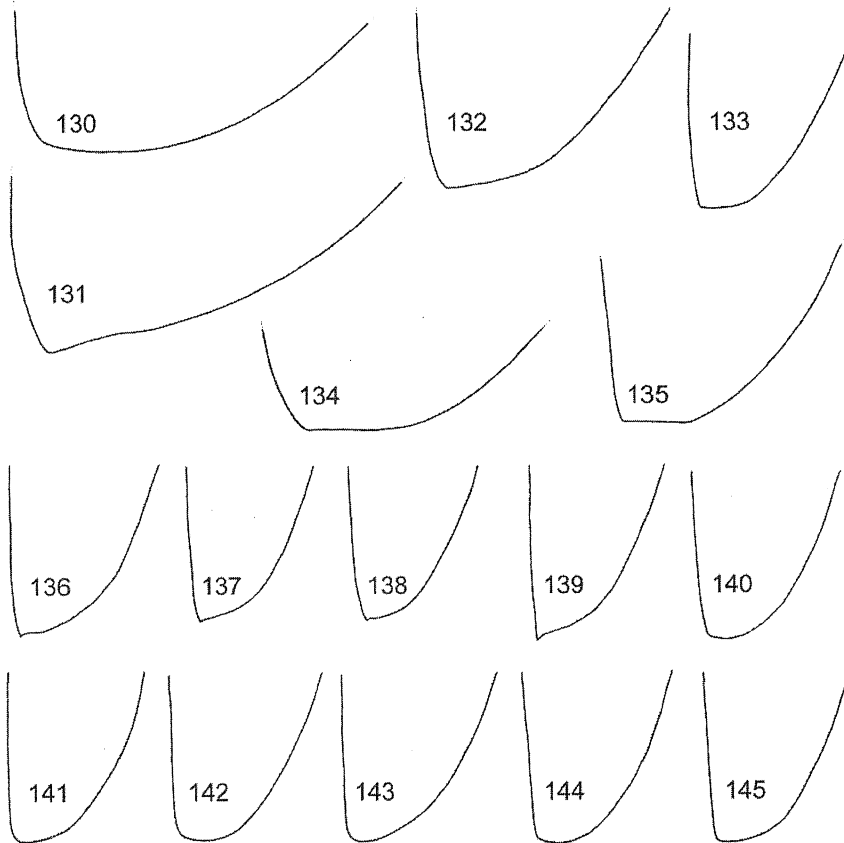
Figs 95-104. 95, 96, 99, 103 - *Choleva emgei* Reitter (Greece: 5 km S Montemvasia); 97, 101, 102 - *C. emgei* (PLT); 98, 100, 104 - *C. emgei* (Turkey: Magoula). 95 - aedeagus dorsally; 96 - aedeagus dorsally; 97, 98 - apex of female elytron dorsally; 99 - male metatrochanter ventrally; 100 - female tergum IX and X dorsally; 101 - female coxite and stylus dorsally; 102 - female ventrite VIII with spiculum ventrale dorsally; 103, 104 - antenna dorsally.



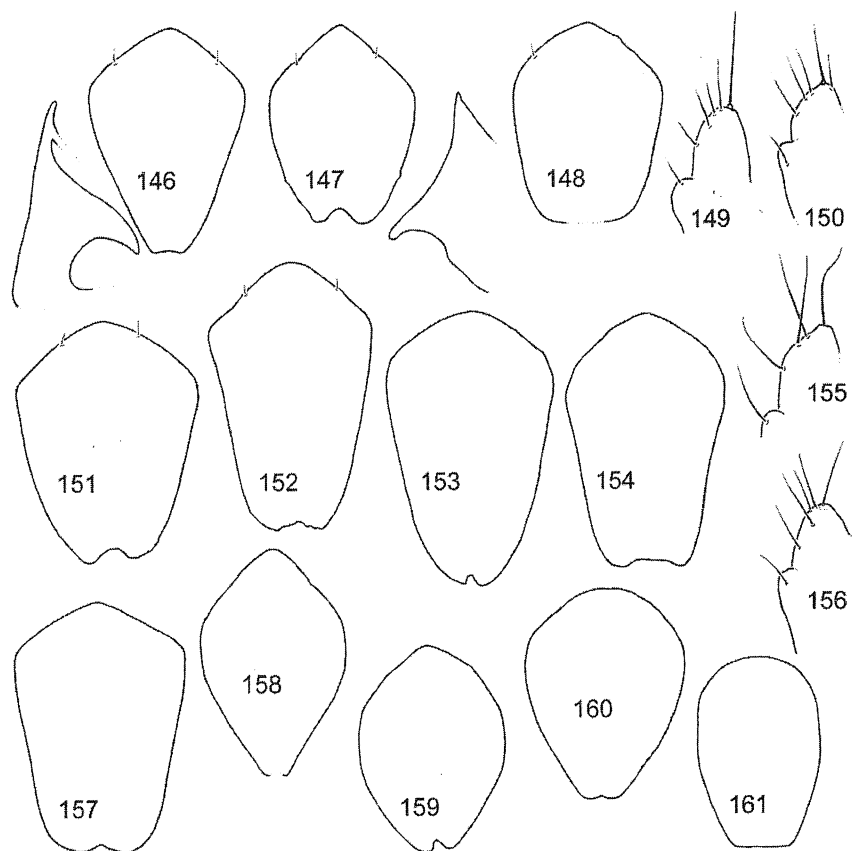
Figs 105-114. 105-108, 111 - *Choleva hirtula* Reitter (Lebanon: Gr. d'Akoura); 109 - *C. hirtula* (Lebanon: Kartaba); 110, 112-114 - *C. hirtula* (HT). 105 - aedeagus laterally; 106 - aedeagus dorsally; 107 - male metatrochanter ventrally; 108 - apex of male elytron dorso-apically; 109, 110 - apex of female elytron dorso-apically; 111 - antenna dorsally; 112 - female ventrite VIII with spiculum ventrale dorsally; 113 - female tergum IX and X dorsally; 114 - female coxite and stylus dorsally.



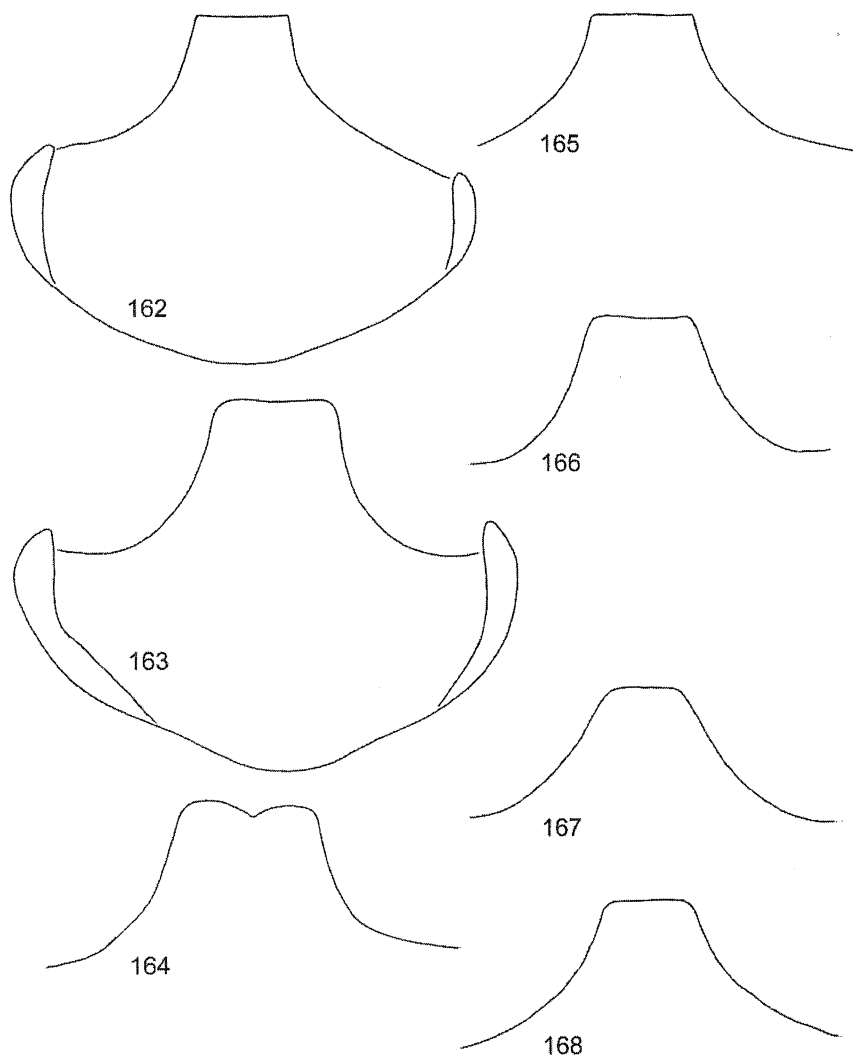
Figs 115-129. 115, 116, 121, 124, 129 - *Choleva lederiana lederiana* Reitter (LT); 117, 118 - *C. l. lederiana* (Germany: Hundsbachtal); 119, 120 - *C. l. lederiana* (Bohemia: Vysoké kolo mt); 122, 123 - *C. l. lederiana* (Bohemia: Čerchov ridge); 125, 126 - *C. l. lederiana* (Bohemia, Bukovec mt); 127, 128 - *C. l. lederiana* (Bohemia, Boreč hill). 115, 117, 119, 122, 125, 127 - aedeagus laterally; 116, 118, 120, 123, 126, 128 - aedeagus dorsally; 121 - male metatrochanter ventrally; 124 - antenna dorsally; 129 - male abdomen ventrally.



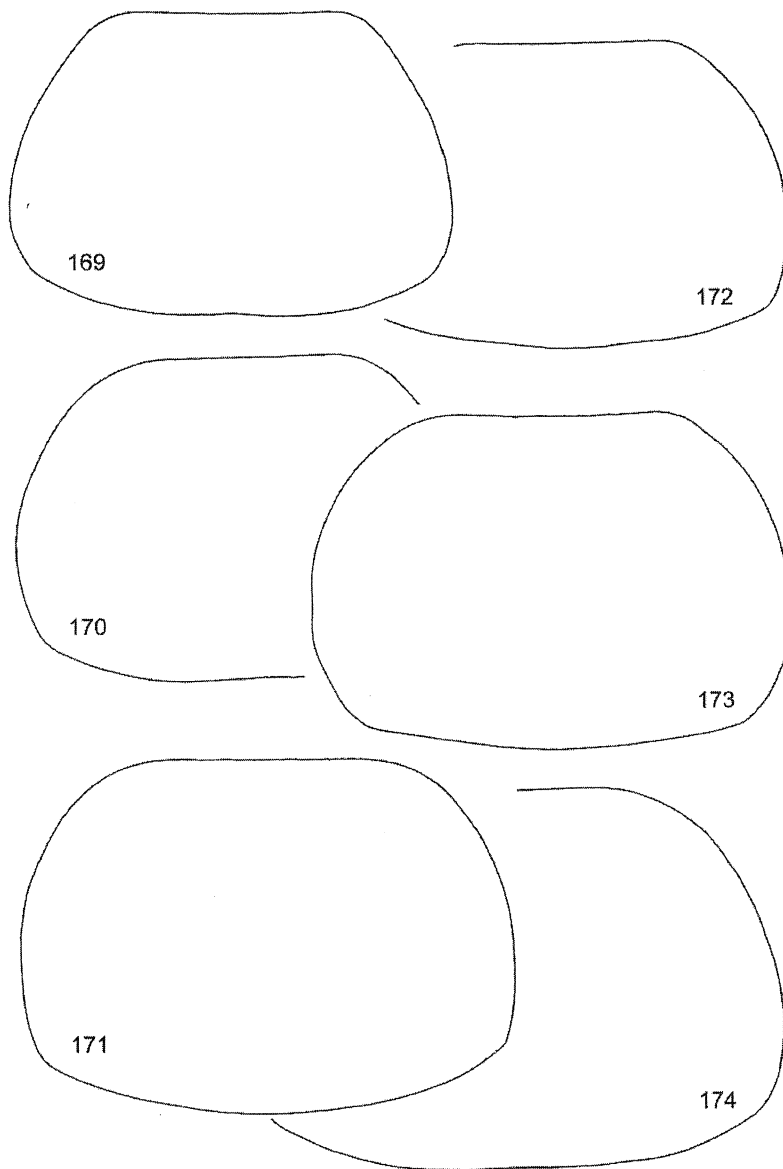
Figs 130-145. Apex of female elytron dorso-apically. 130 - *Choleva lederiana lederiana* Reitter (PLT); 131 - *C. l. lederiana* (HT of *C. septentrionis* Jeannel); 132 - *C. l. lederiana* (Finland: Pallasjarvi); 133 - *C. l. lederiana* (Bohemia: Čerchov ridge); 134 - *C. l. lederiana* (Great Britain: Brackenhurst); 135, 137 - *C. l. lederiana* (Bohemia: Malý Šišák mt); 136 - *C. l. lederiana* (Bohemia: Labská bouda); 138 - *C. l. lederiana* (Germany: Hundsbachtal); 139 - *C. l. lederiana* (Bohemia: Studenec mt); 140 - *C. l. lederiana* (Bohemia: Klíč mt); 141 - *C. l. lederiana* (Sweden: Vuollerim); 142, 143 - *C. l. lederiana* (Bohemia: Boreč hill); 144 - *C. l. lederiana* (Bohemia: Bukovec mt.); 145 - *C. l. lederiana* (Germany: Ochsenkopf).



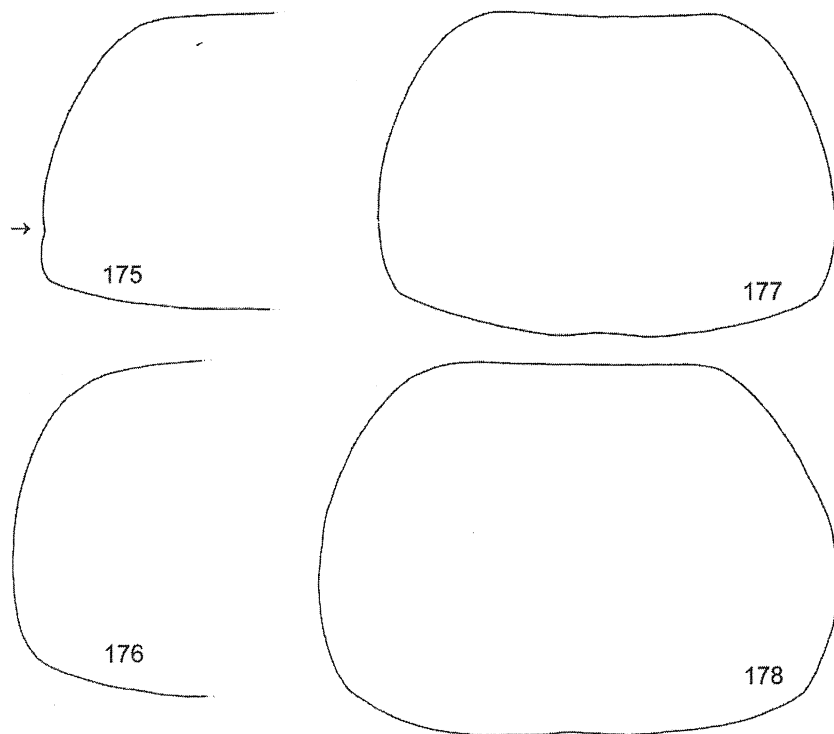
Figs 146-161. 146, 147 - female tergum IX and X dorsally; 148, 151-154, 157-161 - female tergum X dorsally; 149, 150, 155, 156 - female coxite and stylus dorsally. 146 - *Choleva lederiana lederiana* (PLT); 147-149 - *C. l. lederiana* (Germany: Hundsbachtal); 150, 160 - *C. l. lederiana* (Sweden: Blåkolen); 151 - *C. l. lederiana* (Bohemia: Čerchov ridge); 152, 153 - *C. l. lederiana* (Bohemia: Bukovec mt); 154, 156 - *C. l. lederiana* (Bohemia: Boreč hill); 155 - *C. l. lederiana* (Bohemia: Malý Šišák mt); 157 - *C. l. lederiana* (Great Britain: Brackenhurst); 158 - *C. l. lederiana* (Bohemia: Labská/bouda); 159 - *C. l. lederiana* (Norway: Saitdal); 161 - *C. l. lederiana* (Finland: Pallasjarvi).



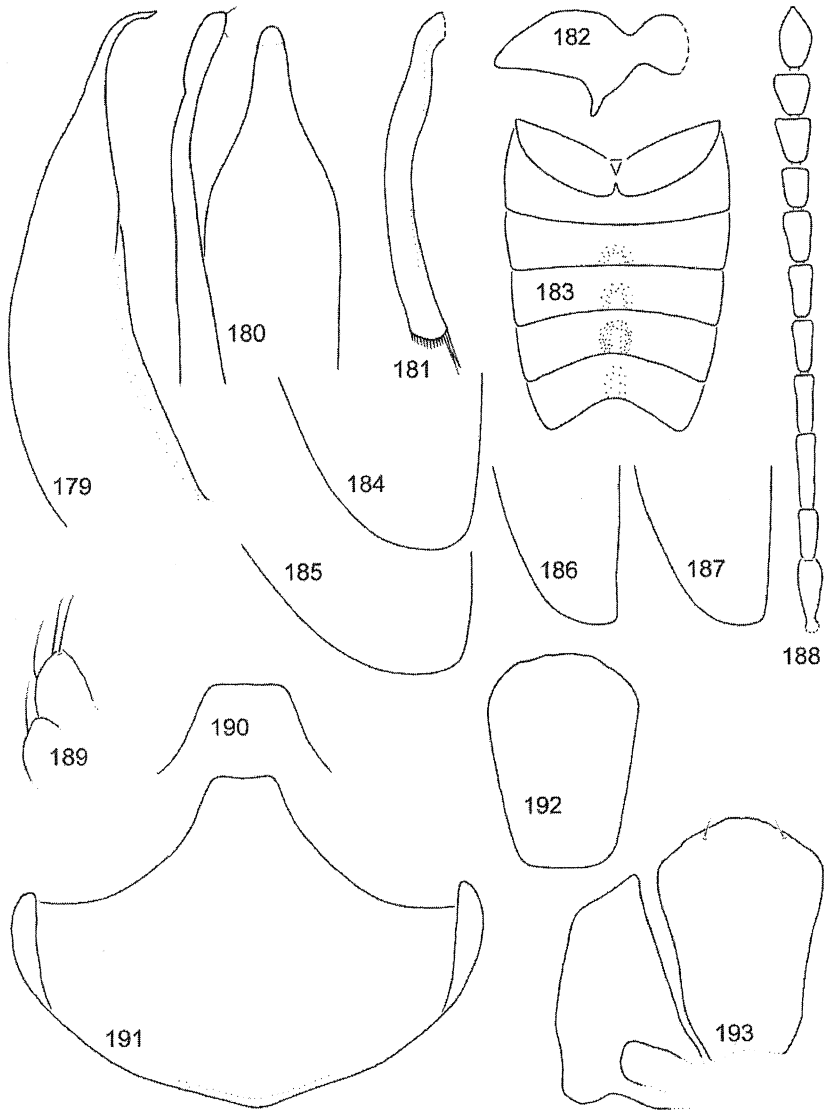
Figs 162-168. 162,163 - female ventrite VIII with spiculum ventrale dorsally; 164-168 - female spiculum ventrale dorsally. 162 - *Choleva lederiana lederiana* Reitter (PLT); 163 - *C. l. lederiana* (HT of *C. septentrionis* Jeannel); 164 - *C. l. lederiana* (Bohemia: Čerchov ridge); 165 - *C. l. lederiana* (Germany: Hundsbachtal); 166 - *C. l. lederiana* (Norway: Saitdal); 167 - *C. l. lederiana* (Bohemia: Boreč hill); 168 - *C. l. lederiana* (Sweden: Blåkolen).



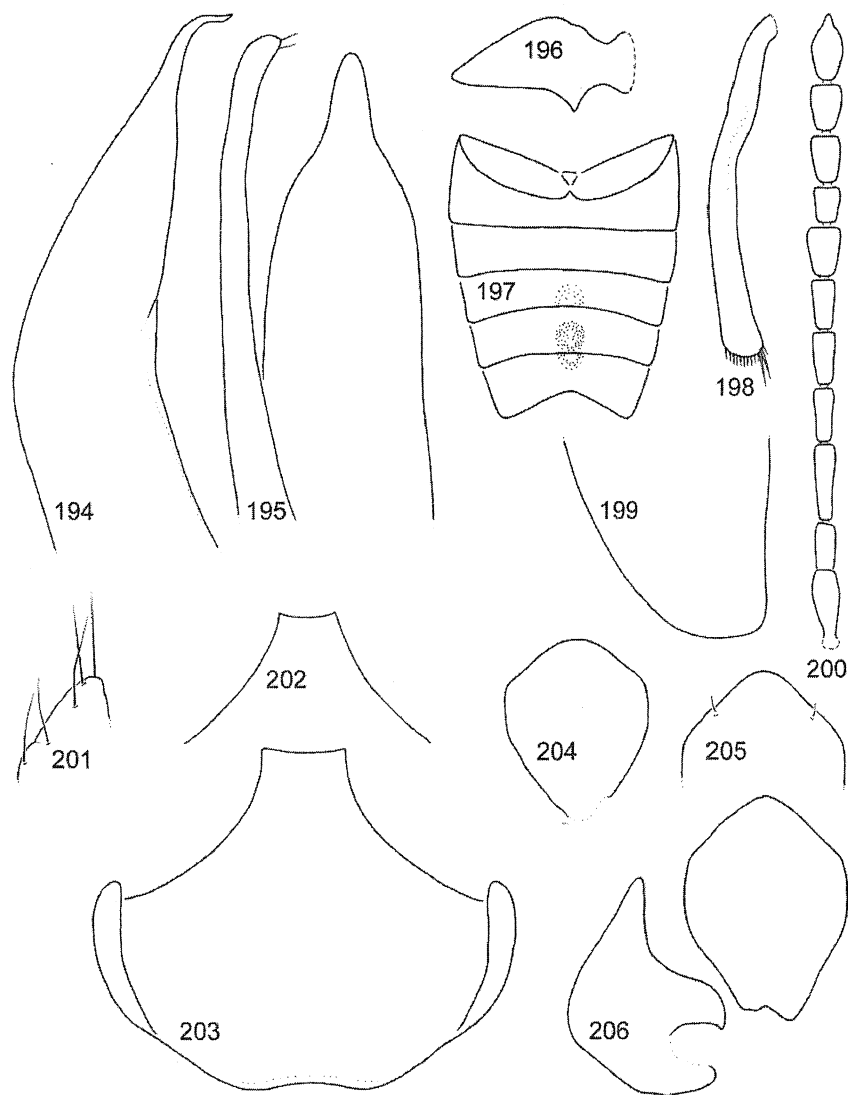
Figs 169-174. Pronotum dorsally. 169 - *Choleva lederiana lederiana* Reitter (LT); 170 - *C. l. lederiana* (Bohemia: Boreč hill); 171 - *C. l. lederiana* (Bohemia: Čerchov ridge); 172 - *C. l. lederiana* (Norway: Alteidet); 173 - *C. l. lederiana* (Finland: Torhola cave); 174 - *C. l. lederiana* (Bohemia: Milešovka mt).



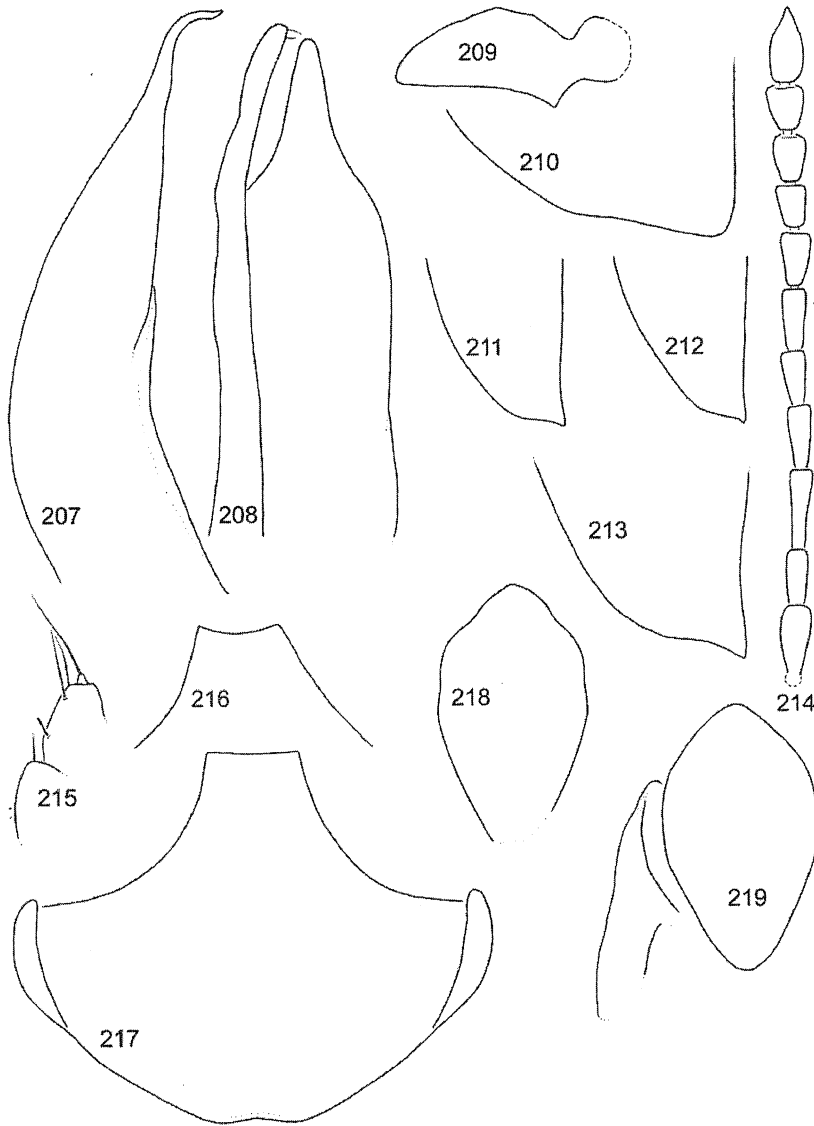
Figs 175-178. Pronotum dorsally. 175 - *Choleva lederiana gracilentia* Szymczakowski (Poland: Pod Sokolą Górą cave); 176 - *C. l. pilisensis*, ssp. nov. (PT); 177 - *C. l. foeldalatti*, ssp. nov. (PT); 178 - *C. l. holsatica* Benick & Ihssen in Benick (Germany: Segeberger Hohle).



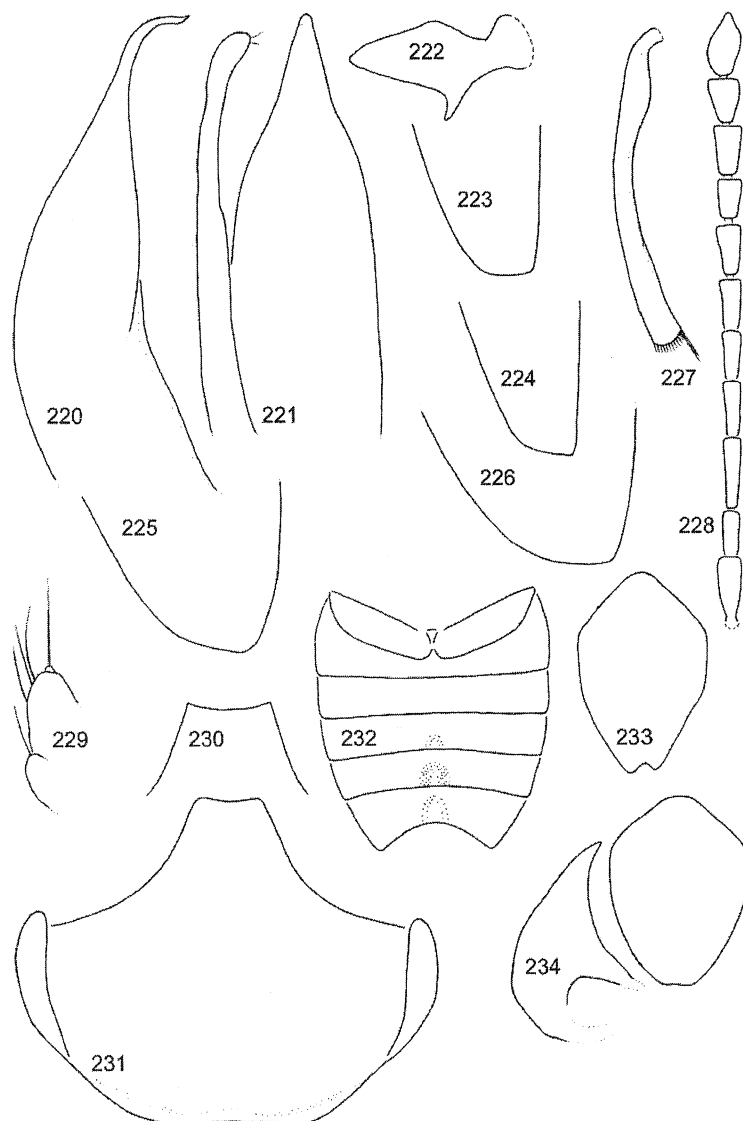
Figs 179-193. 179-184, 188 - *Choleva lederiana foeldalatti*, ssp. nov. (PT male); 185-187, 189-193 - *C. l. foeldalatti*, ssp. nov. (PT females). 179 - aedeagus laterally; 180 - aedeagus dorsally; 181 - male mesotibia laterally; 182 - male metatrochanter ventrally; 183 - male abdomen ventrally; 184 - apex of male elytron dorso-apically; 185-187 - apex of female elytron dorso-apically; 188 - antenna dorsally; 189 - female coxite and stylus dorsally; 190 - female spiculum ventrale dorsally; 191 - female ventrite VIII with spiculum ventrale dorsally; 192 - female tergum X dorsally; 193 - female tergum IX and X dorsally.



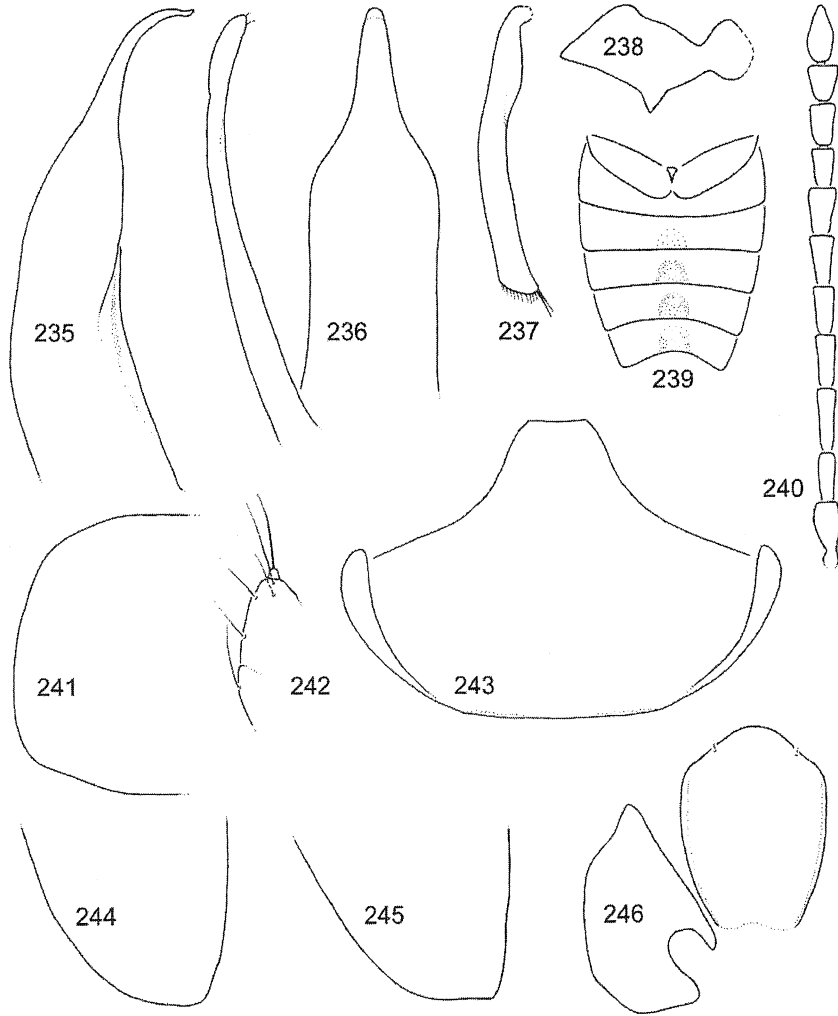
Figs 194-206. *Choleva lederiana gracilentia* Szymczakowski (Poland: Pod Sokolą Górą cave). 194 - aedeagus laterally; 195 - aedeagus dorsally; 196 - male metatrochanter ventrally; 197 - male abdomen ventrally; 198 - male mesotibia laterally; 199 - apex of male elytron dorso-apically; 200 - antenna dorsally; 201 - female coxite and stylus dorsally; 202 - female spiculum ventrale dorsally; 203 - female ventrite VIII with spiculum ventrale dorsally; 204, 205 - female tergum X dorsally; 206 - female tergum IX and X dorsally.



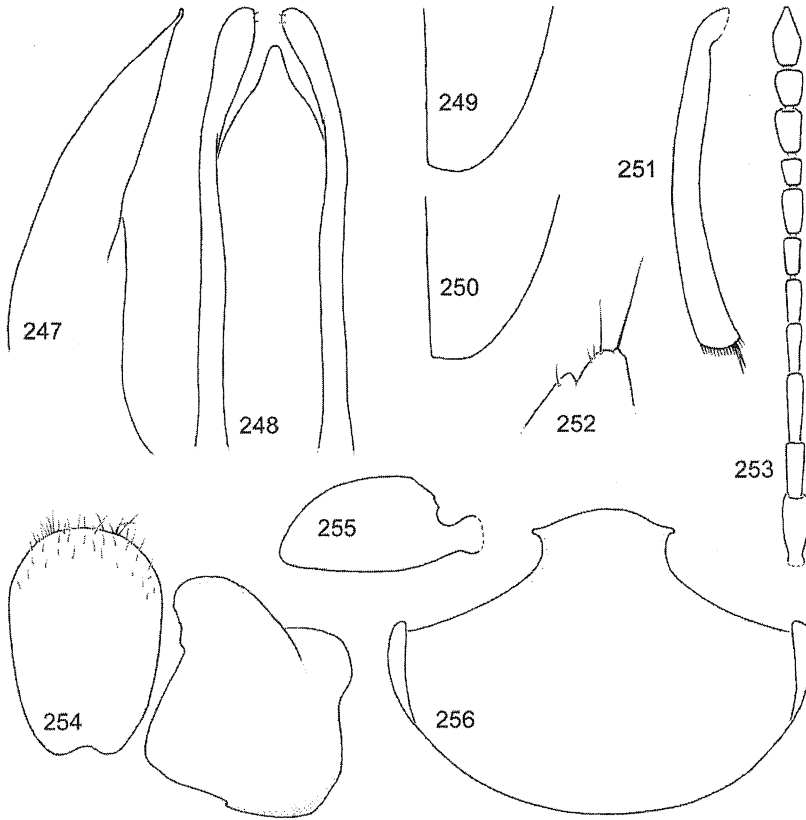
Figs 207-219. 207-210, 214 - *Choleva lederiana holsatica* Benick & Ihssen in Benick (LT); 211, 212, 216, 218 - *C. l. holsatica* (Germany: Segeberger Hohle); 213, 215, 217, 219 - *C. l. holsatica* (PLT). 207 - aedeagus laterally; 208 - aedeagus dorsally; 209 - male metatrochanter ventrally; 210 - apex of male elytron dorso-apically; 211-213 - apex of female elytron dorso-apically; 214 - antenna dorsally; 215 - female coxite and stylus dorsally; 216 - female spiculum ventrale dorsally; 217 - female ventrite VIII with spiculum ventrale dorsally; 218 - female tergum X dorsally; 219 - female tergum IX and X dorsally.



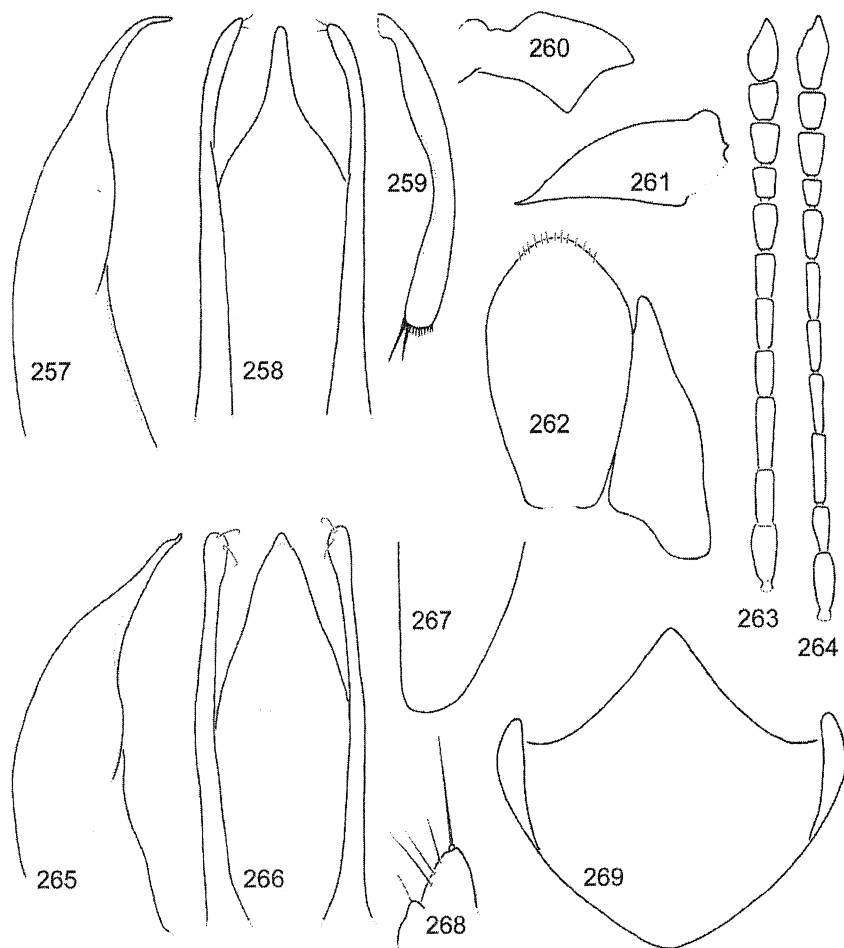
Figs 220-234. 220-222, 225, 227, 228, 232 - *Choleva lederiana pilisensis*, ssp. nov. (PT male); 223, 224, 226, 229-231, 233, 234 - *C. l. pilisensis*, ssp. nov. (PT females). 220 - aedeagus laterally; 221 - aedeagus dorsally; 222 - male metatrochanter ventrally; 223, 224, 226 - apex of female elytron dorso-apically; 225 - apex of male elytron dorso-apically; 227 - male mesotibia laterally; 228 - antenna dorsally; 229 - female coxite and stylus dorsally; 230 - female spiculum ventrale dorsally; 231 - female ventrite VIII with spiculum ventrale dorsally; 232 - male abdomen ventrally; 233 - female tergum X dorsally; 234 - female tergum IX and X dorsally.



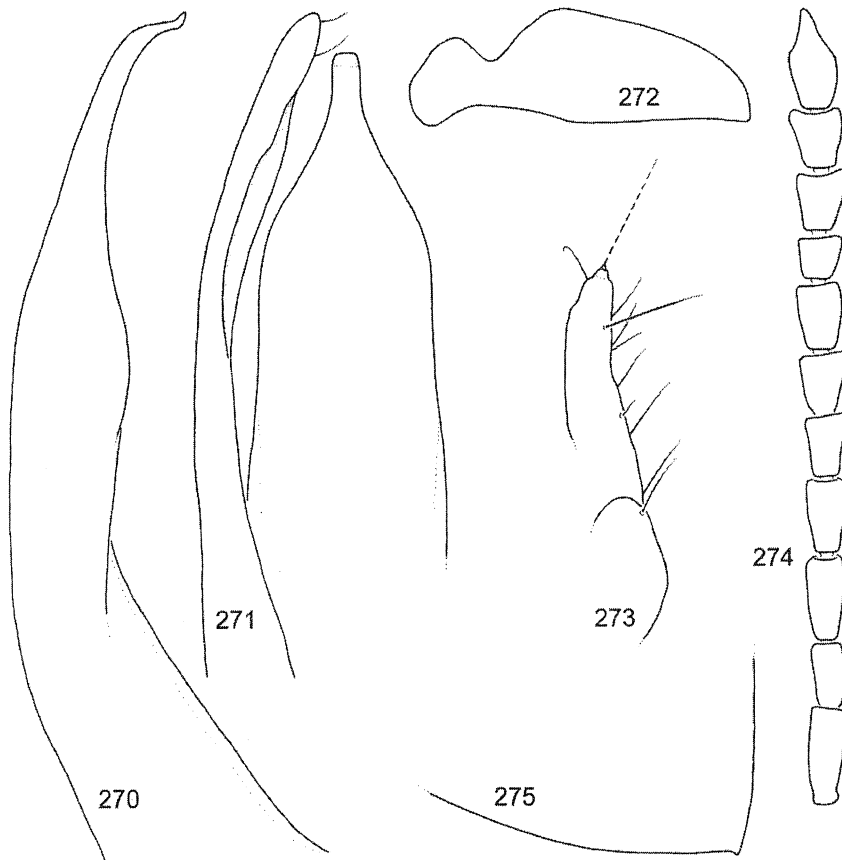
Figs 235-246. *Choleva lederiana sokolowskii* Ipsen & Tolasch (Germany: Hohlstein cave). 235 - aedeagus laterally; 236 - aedeagus dorsally; 237 - male mesotibia laterally; 238 - male metatrochanter ventrally; 239 - male abdomen ventrally; 240 - antenna dorsally; 241 - male pronotum dorsally; 242 - female stylus and stylus dorsally; 243 - female ventrite VIII with spiculum ventrale dorsally; 244 - apex of male elytron dorso-apically; 245 - apex of female elytron dorso-apically; 246 - 234 - female tergum IX and X dorsally.



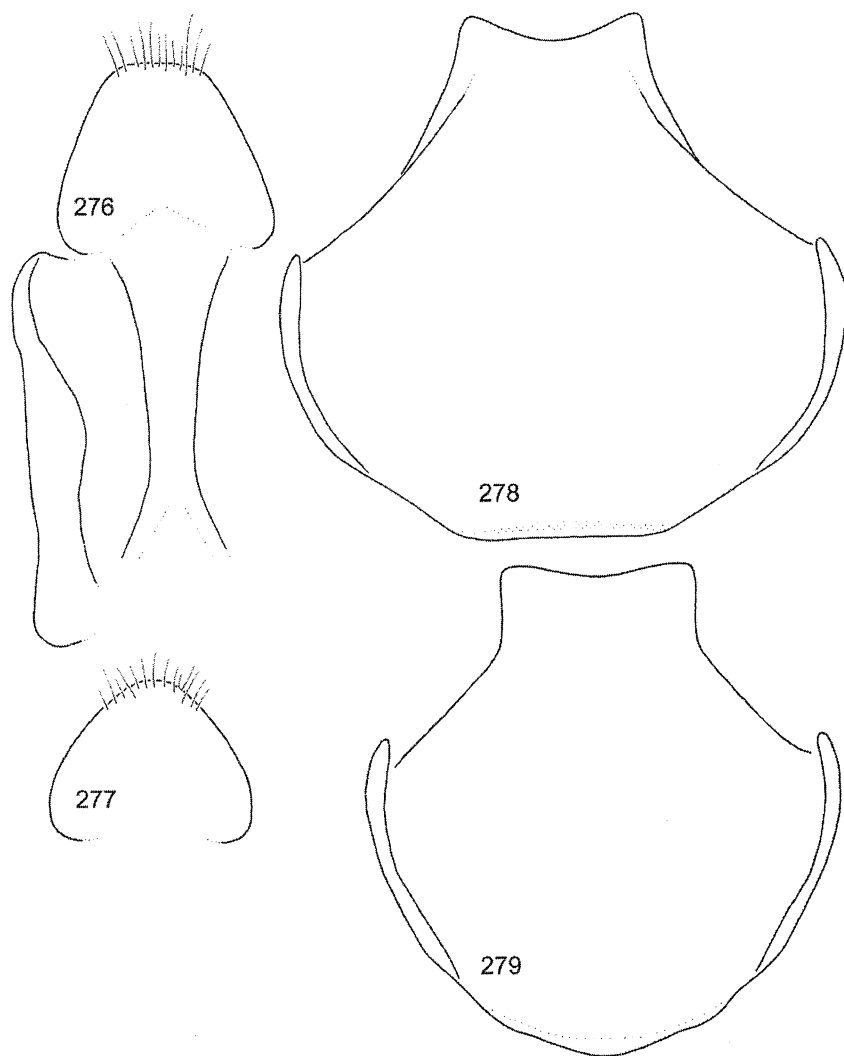
Figs 247-256. 247, 248, 255 - *Choleva matthiesseni* Reitter (HT); 249 - *C. matthiesseni* (Kyrgyzstan: Dolon Pass); 250, 251, 253 - *C. matthiesseni* (Kazakhstan: Gorelnik); 252 - *C. matthiesseni* (Kyrgyzstan: Jeti Oguz); 254-256 - *C. matthiesseni* (Kyrgyzstan: Kegeti river). 247 - aedeagus laterally; 248 - aedeagus dorsally; 249, 250 - apex of female elytron dorso-apically; 251 - male mesotibia laterally; 252 - female coxite and stylus dorsally; 253 - antenna dorsally; 254 - female tergum IX and X dorsally; 255 - male metatrochanter ventrally; 256 - female ventrite VIII with spiculum ventrale dorsally.



Figs 257-269. 257-260, 263 - *Choleva schuelkei*, sp. nov. (HT); 261, 262, 264-269 - *Choleva barnevillei* Tournier (Algeria: Teniet-el-Had). 257, 265 - aedeagus laterally; 258, 266 - aedeagus dorsally; 259 - male mesotibia laterally; 260, 261 - male metatrochanter ventrally; 262 - female tergum IX and X dorsally; 263, 264 - antenna dorsally; 267 - female apex of elytron dorso-apically; 268 - female coxite and stylus dorsally; 269 - female ventrite VIII with spiculum ventrale dorsally.



Figs 270-275. 270-272, 274 - *Choleva bosnica* Ganglbauer (Greece: Paramithia env.); 273, 275 - *C. bosnica* (HT). 270 - aedeagus laterally; 271 - aedeagus dorsally; 272 - male metatrochanter ventrally; 273 - female coxite and stylus dorsally; 274 - antenna dorsally; 275 - female apex of elytron dorso-apically.



Figs 276-279. 276, 278 - *Choleva bosnica* Ganglbauer (HT); 277, 279 - *C. cf. bosnica* (Greece: Mount W of Alonistena). 276 - female tergum IX and X dorsally; 277 - posterior part of female tergum X dorsally; 278, 279 - female ventrite VIII with spiculum ventrale dorsally.

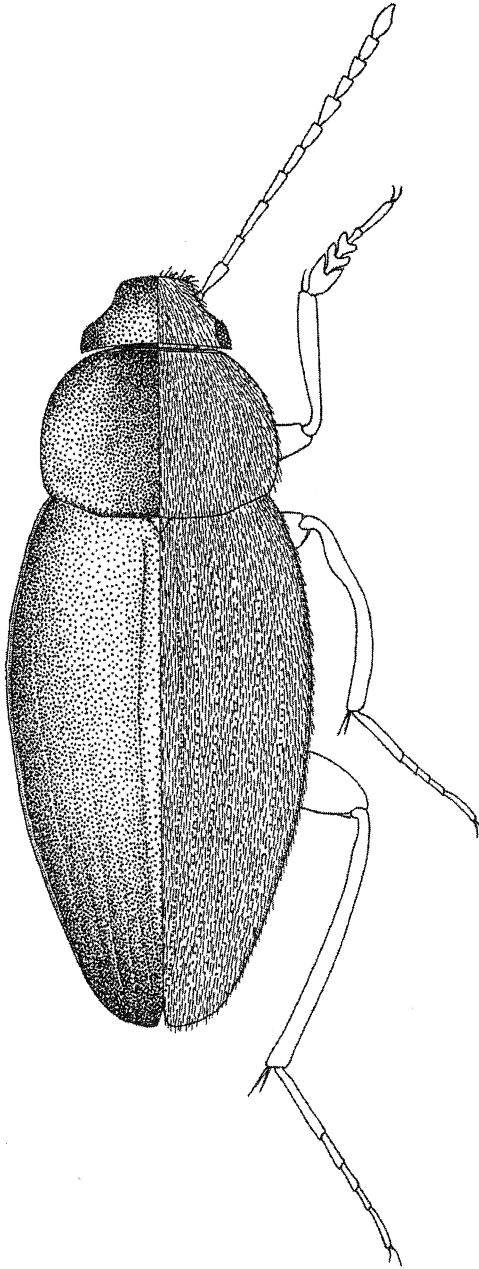


Fig. 280. Male habitus dorsally, *Choleva agilis* (Illiger) (Moravia: Pouzdrfany). Body length 4.9 mm.

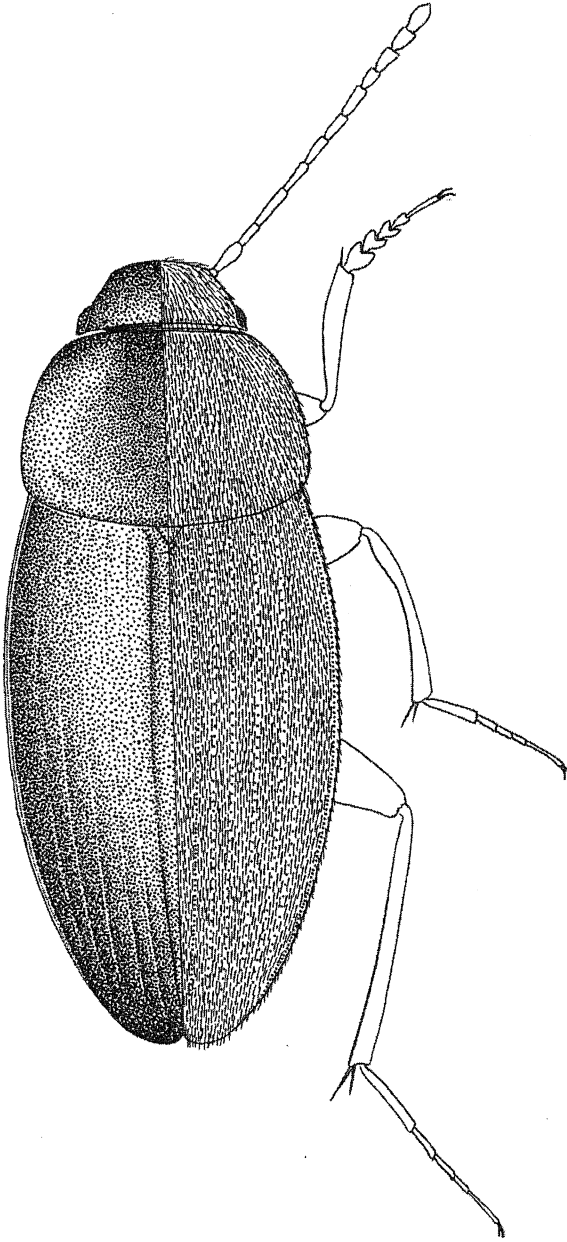


Fig. 281. Male habitus dorsally, *Choleva agilis* (Illiger) (Turkey: Gevas). Body length 4.6 mm.

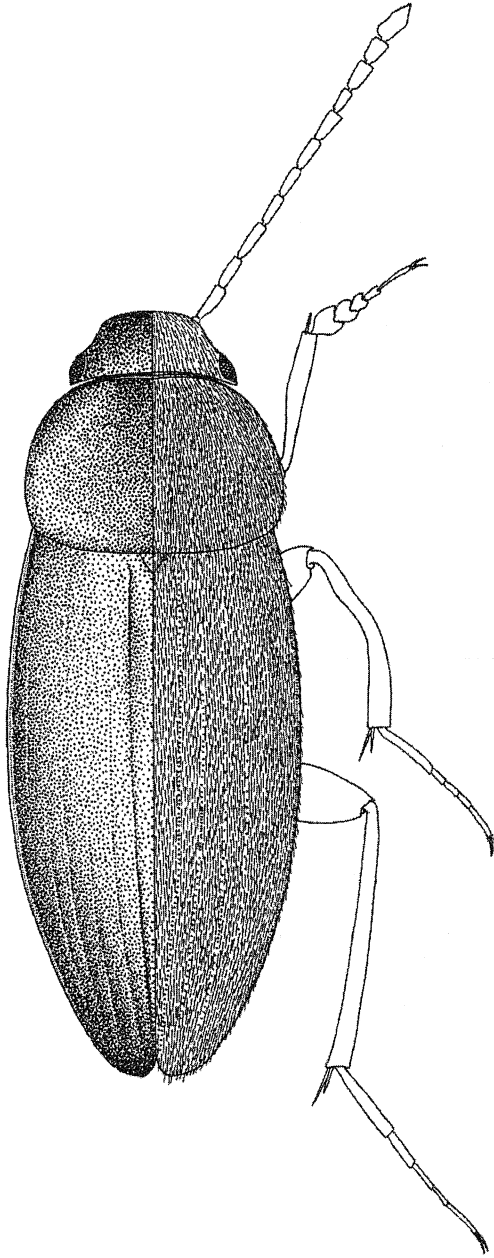


Fig. 282. Male habitus dorsally, *Choleva* cf. *agilis* (Illiger) (Armenia: Sevan lake). Body length 4.7 mm.

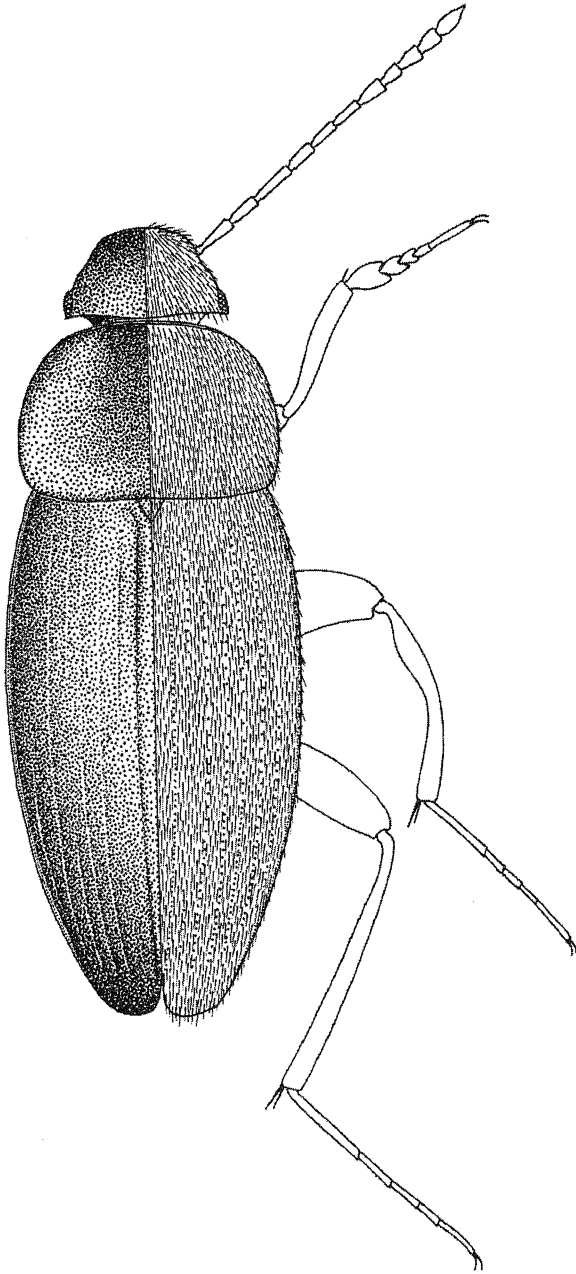


Fig. 283. Male habitus dorsally, *Choleva schuelkei*, sp. nov. (holotype). Body length 5.0 mm.

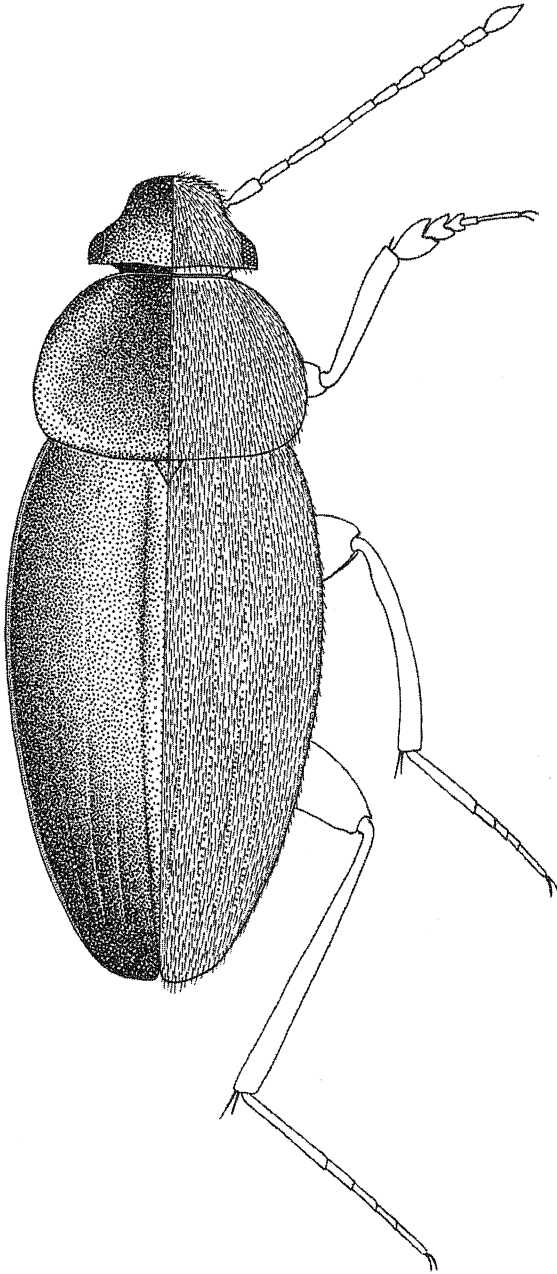


Fig. 284. Male habitus dorsally, *Choleva bedeli* Jeannel (Greece: Lefka Ora). Body length 5.0 mm.

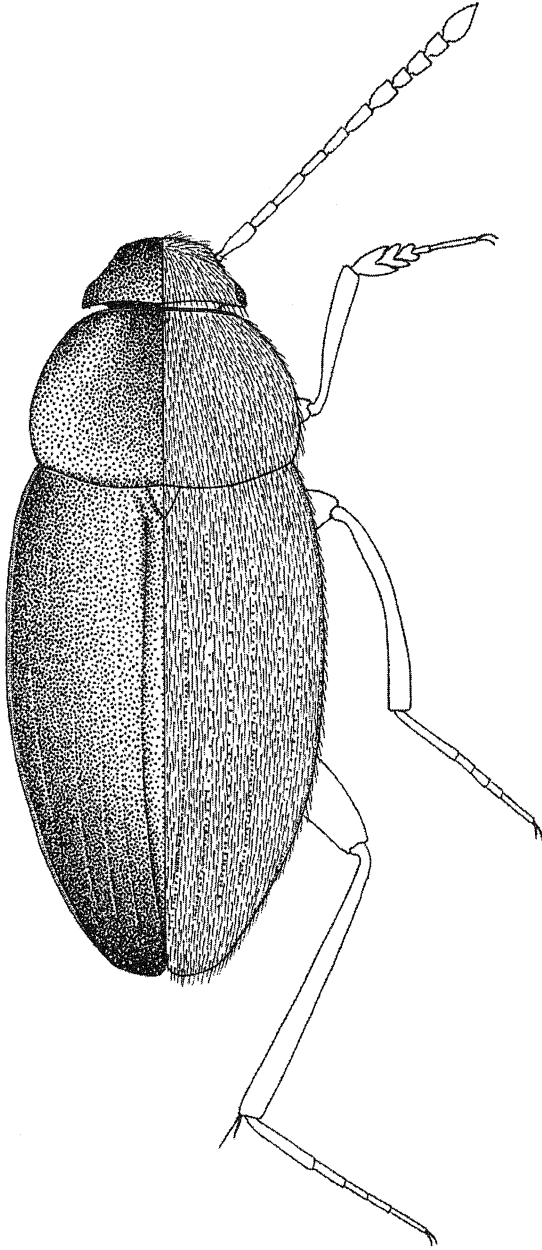


Fig. 285. Male habitus dorsally, *Choleva emgei* Reitter (lectotype). Body length 3.9 mm.

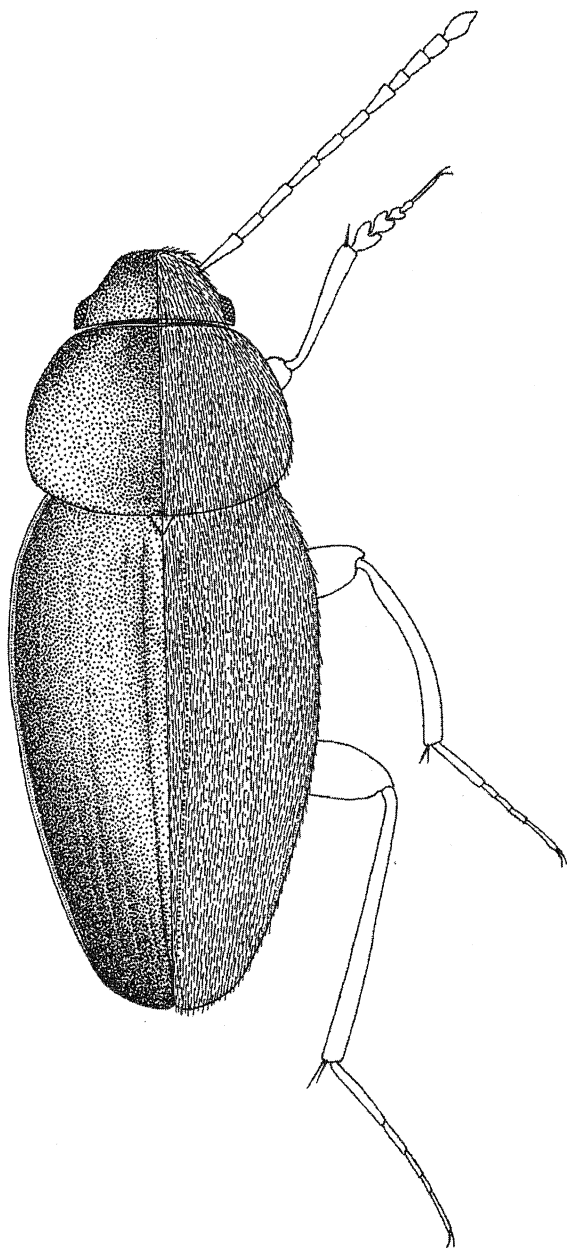


Fig. 286. Male habitus dorsally, *Choleva cribrata* Saulcy (lectotype). Body length 4.3 mm.

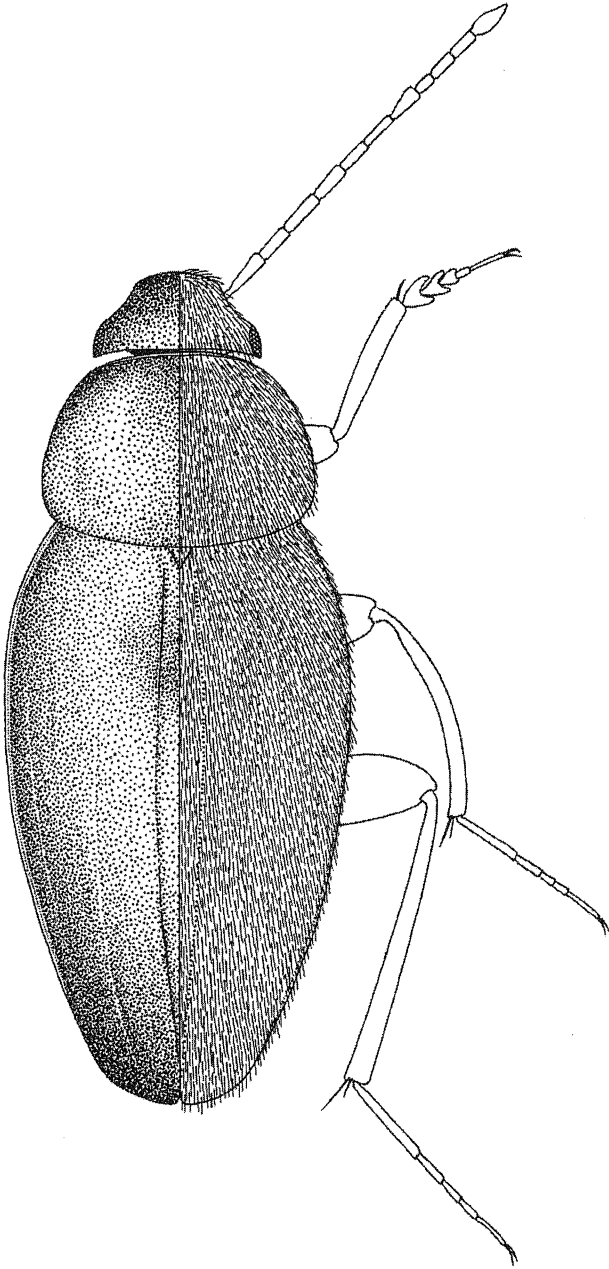


Fig. 287. Male habitus dorsally, *Choleva hirtula* Reitter (Lebanon: Gr. d'Akoura cave). Body length 4.8 mm.

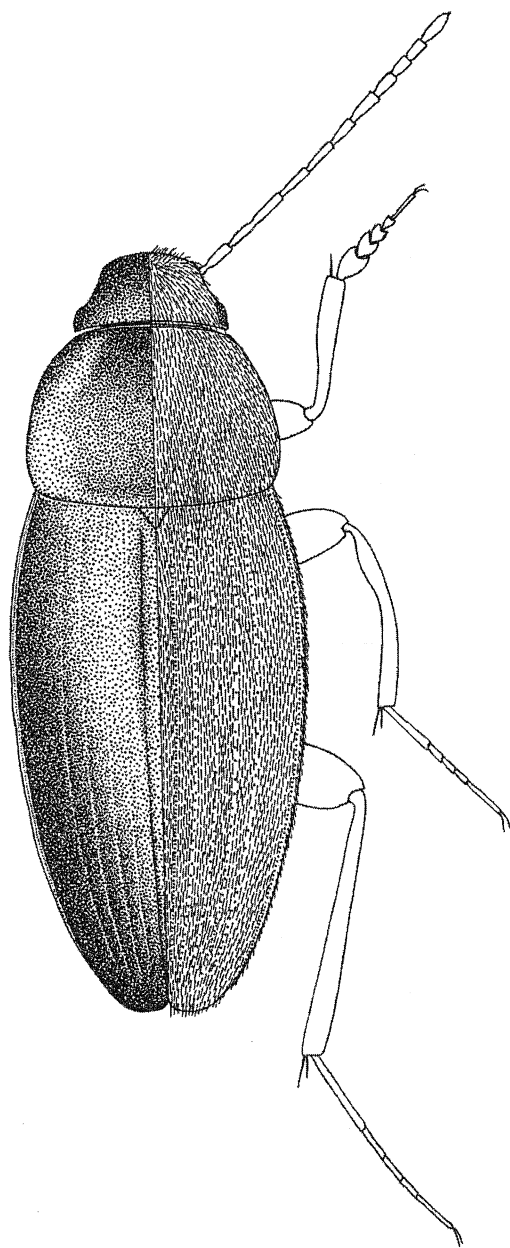


Fig. 288. Male habitus dorsally, *Choleva lederiana lederiana* Reitter (Finland: Torhola cave).
Body length 5.4 mm.

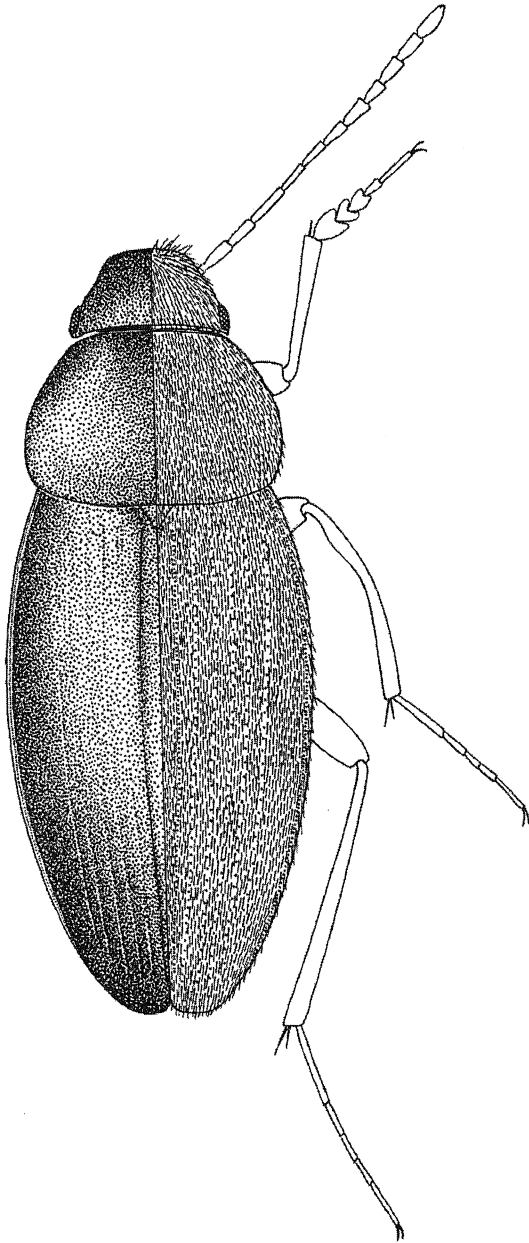


Fig 289. Male habitus dorsally, *Choleva lederiana lederiana* Reitter (Bohemia: Krkonoše mts, Šmielec mt). Body length 4.9 mm.

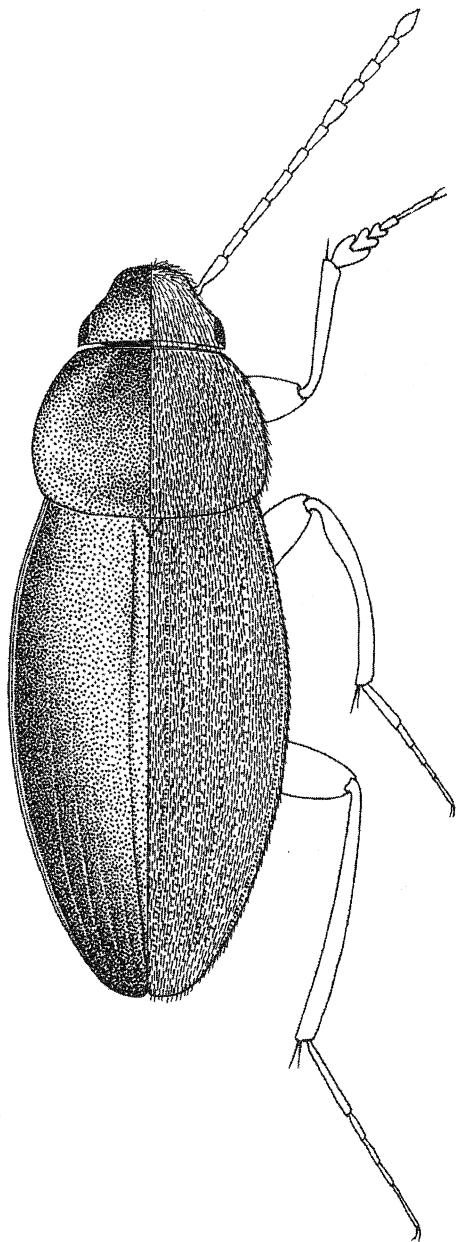


Fig. 290. Male habitus dorsally, *Choleva lederiana lederiana* Reitter (Bohemia: České středohoří mts, Boreč hill). Body length 5.3 mm.

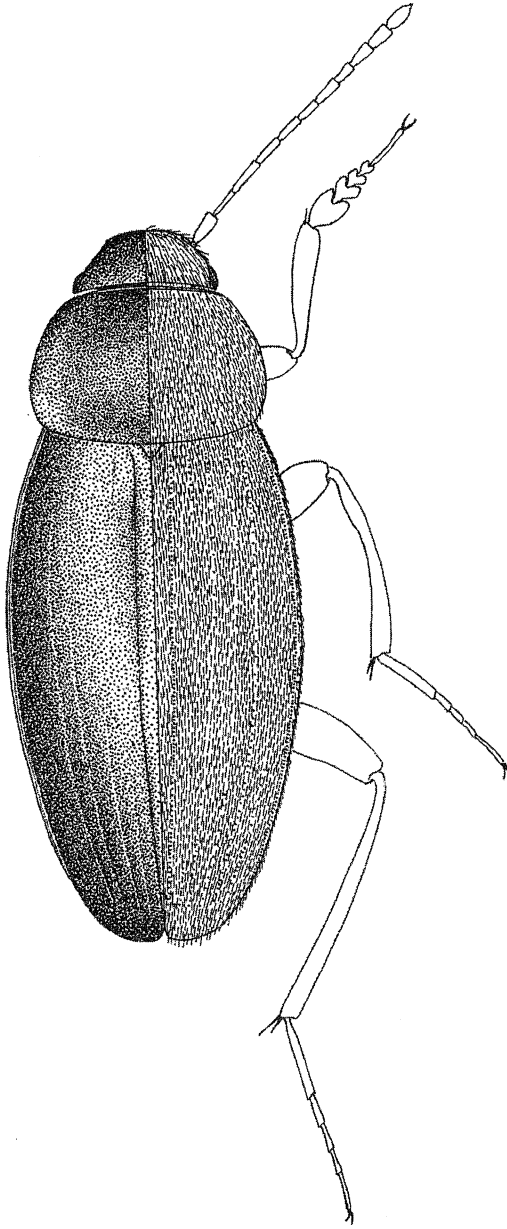


Fig. 291. Male habitus dorsally, *Choleva matthiesseni* Reitter (Kazakhstan: Gorelnik env.). Body length 5.3 mm.

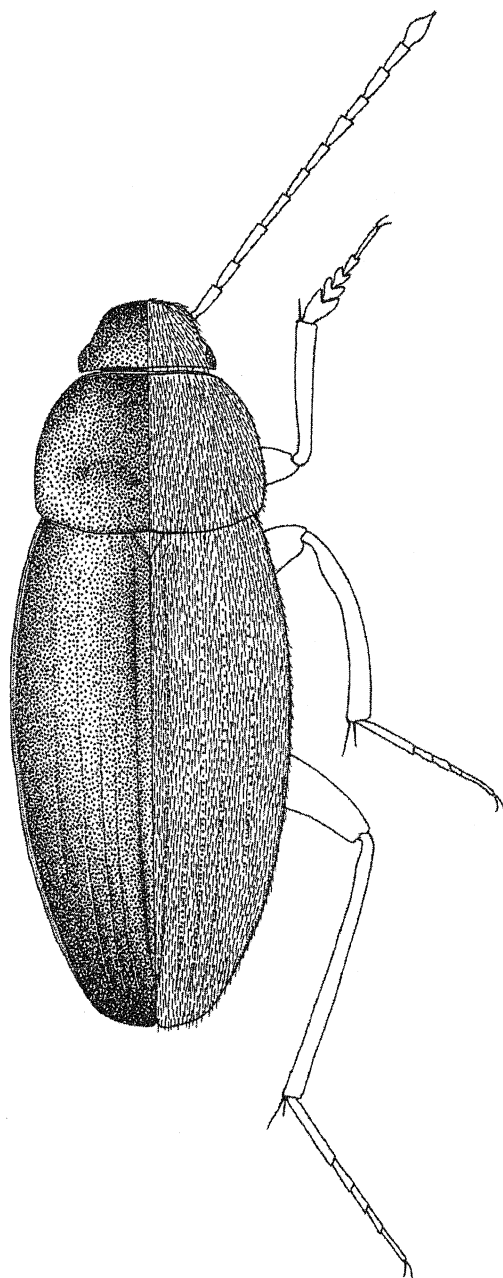


Fig. 292. Male habitus dorsally, *Choleva lederiana pilisensis*, ssp. nov. (paratype). Body length 5.1 mm.

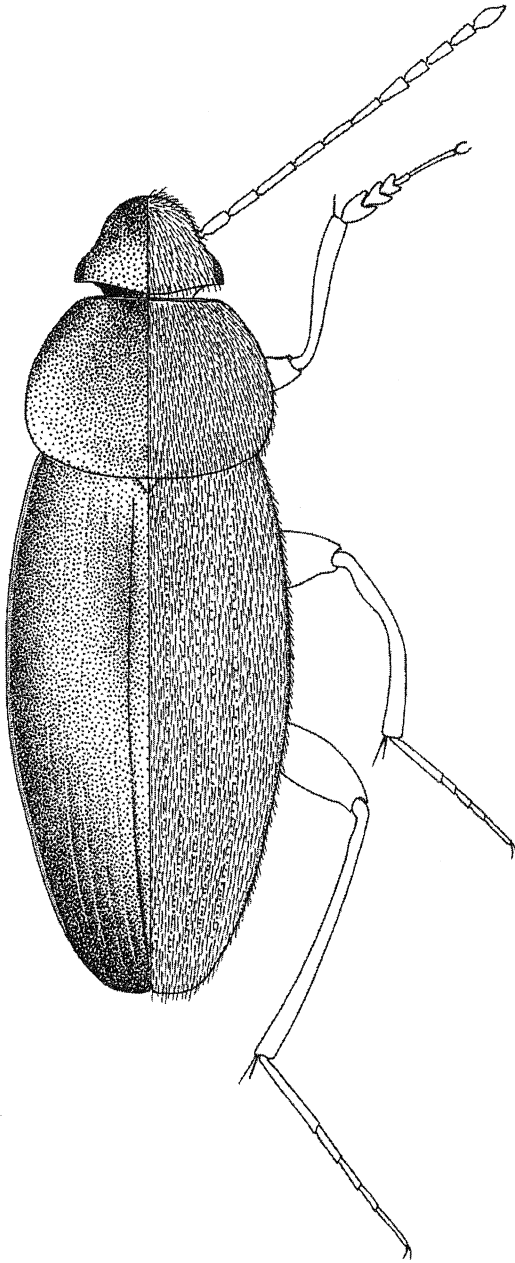


Fig. 293. Male habitus dorsally, *Choleva lederiana holsatica* Benick & Ihssen in Benick (paralectotype). Body length 5.8 mm.

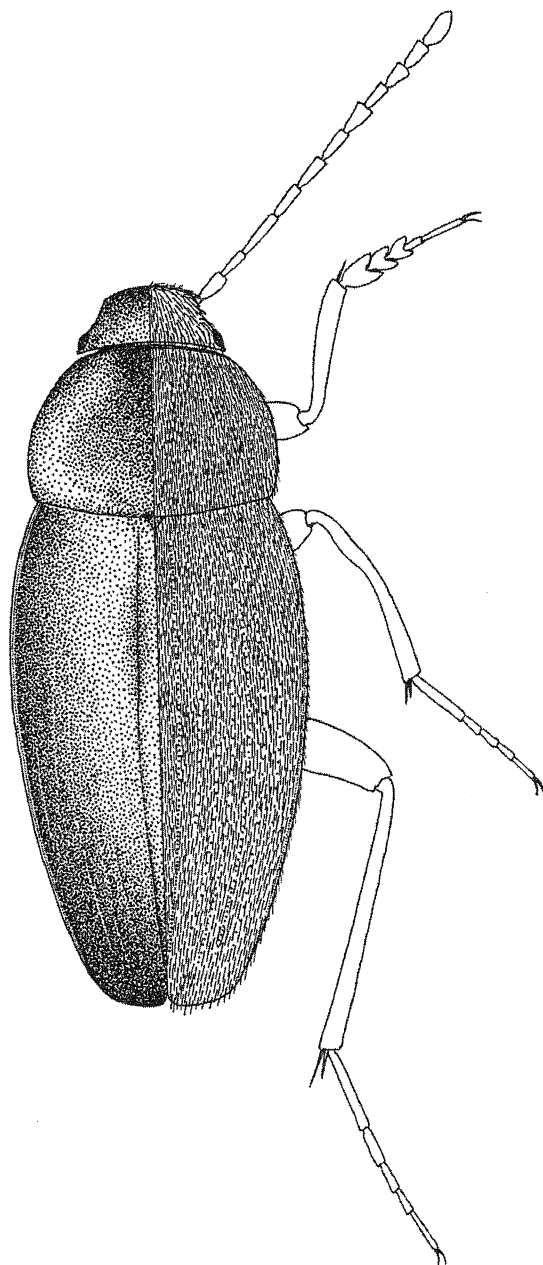


Fig. 294. Male habitus dorsally, *Choleva lederiana foeldalatti* spp. n. (paratype). Body length 4.7 mm.

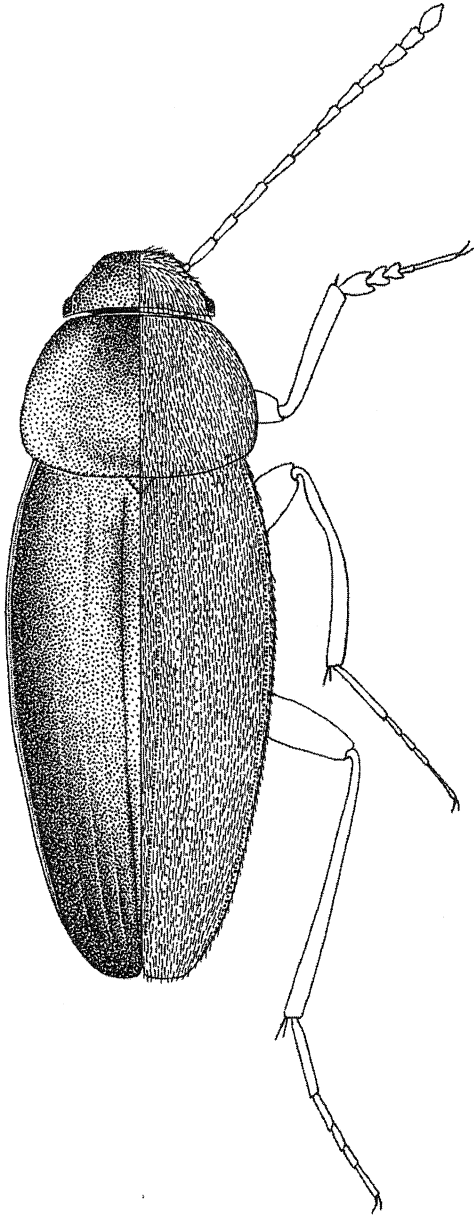


Fig. 295. Male habitus dorsally, *Choleva lederiana gracilentata* Szymczakowski (Poland: Pod Sokolą Górą cave). Body length 4.5 mm.

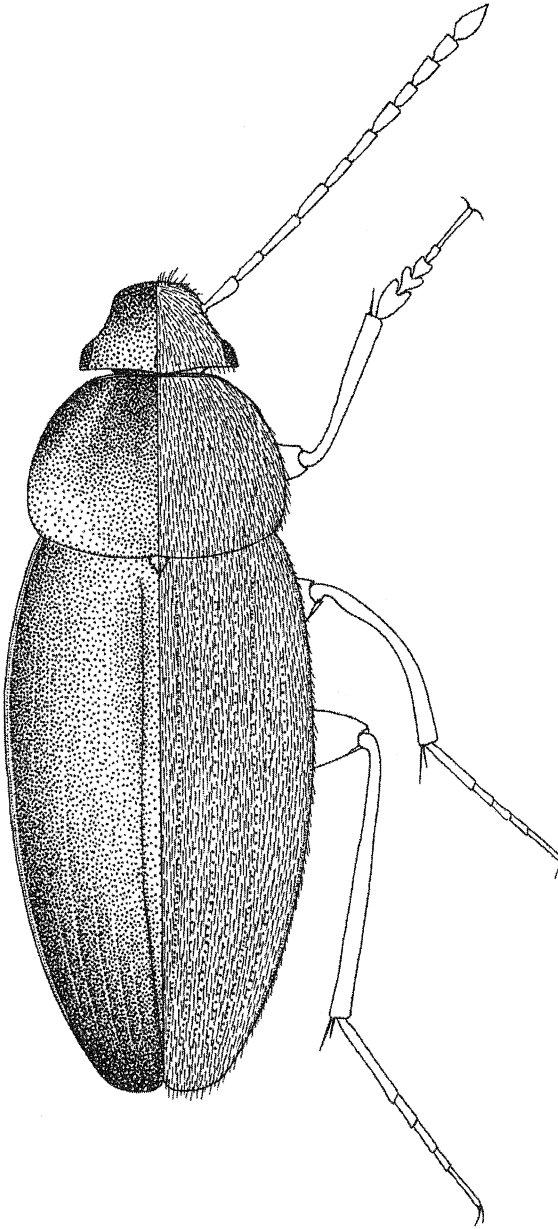


Fig. 296. Male habitus dorsally, *Choleva lederiana sokolowskii* Ipsen & Tolasch (Germany: Hohlsteinhöhle cave). Body length 5.5 mm.

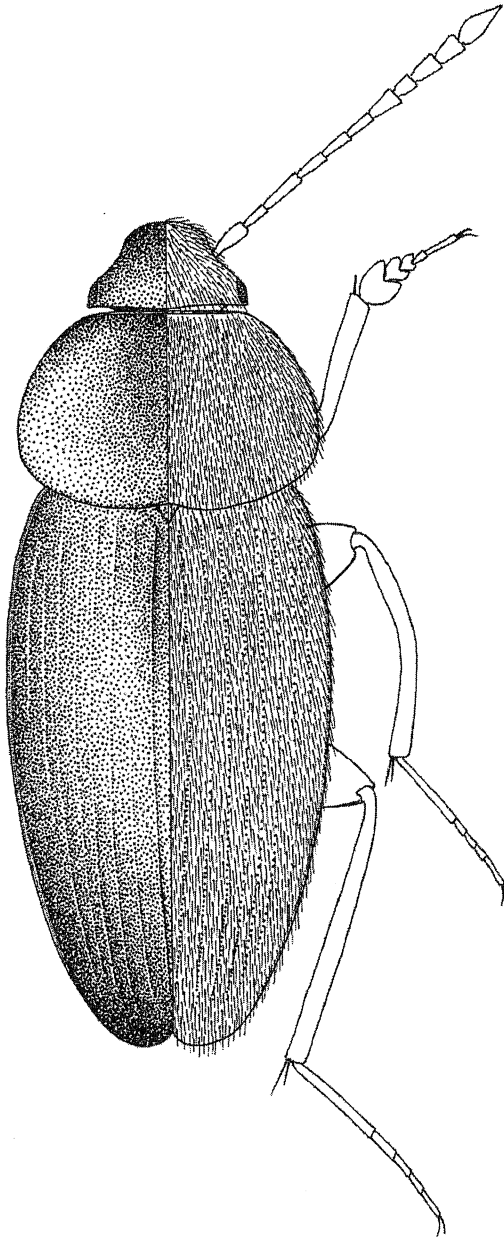


Fig. 297. Male habitus dorsally, *Choleva bosnica* Ganglbauer (Albania: Mali i Shenjit). Body length 6.3 mm.

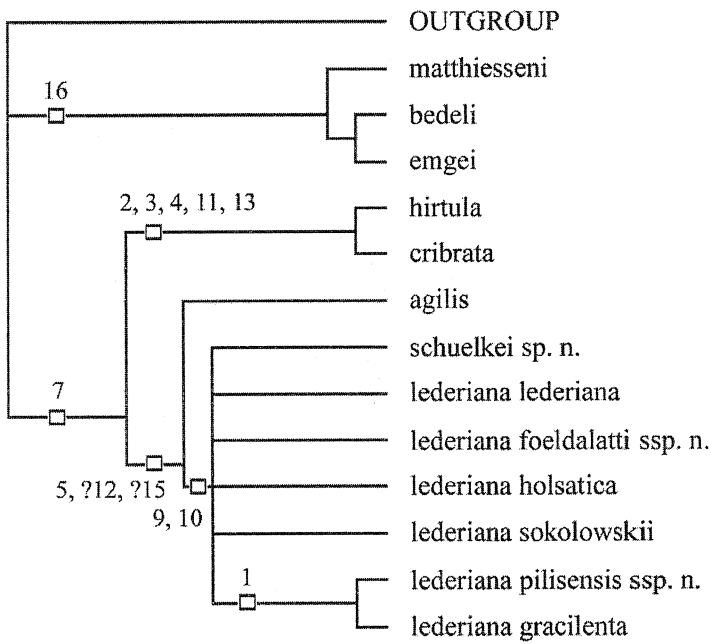


Fig. 298. Hypothesized cladistic relationships among the *Choleva agilis* species group. Consensus tree (71 retained equally shortest trees, length of 21, CI 0.76, RI 0.90). Numbers below or above bars correspond to characters in apomorphic condition as described in text.

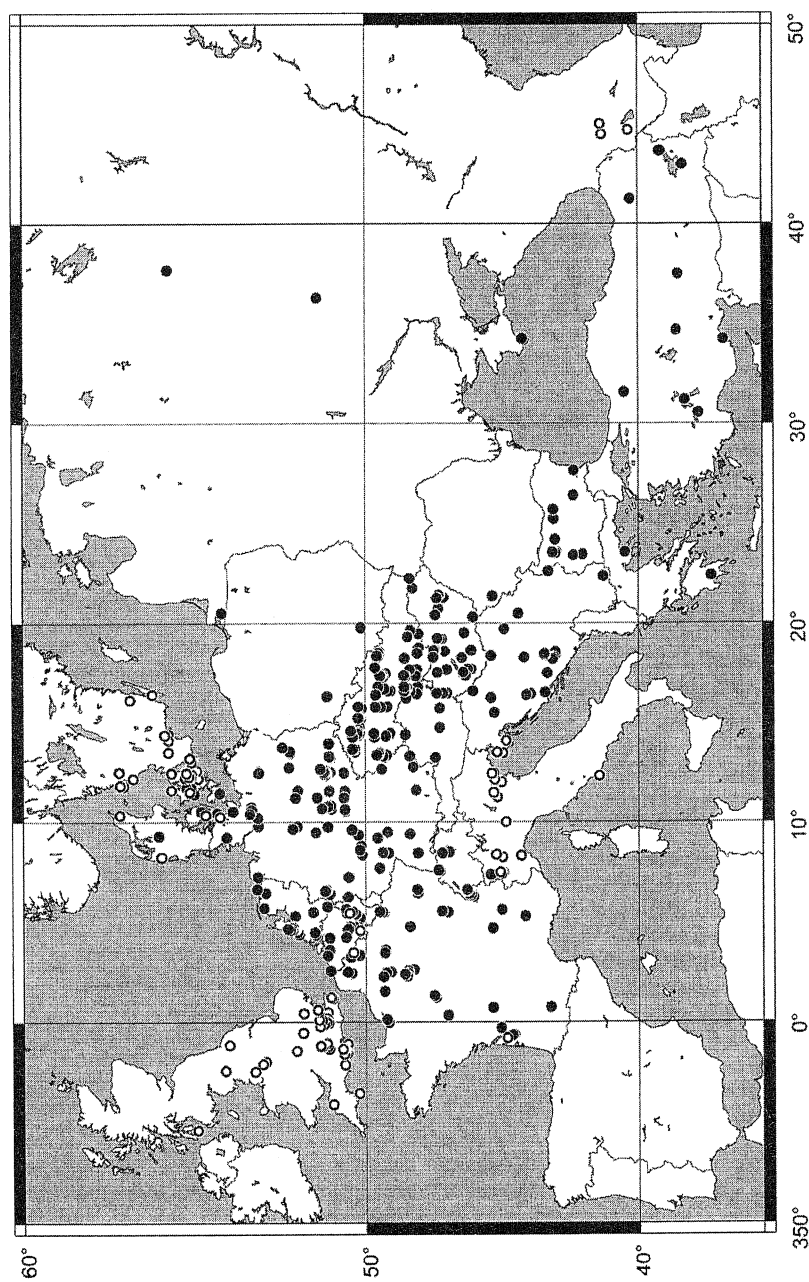


Fig. 299. Distribution of *Choleva agilis* (Illiger) throughout Europe. Filled circles - *C. agilis*, empty circles - *C. cf. agilis*. For explanation, see text.

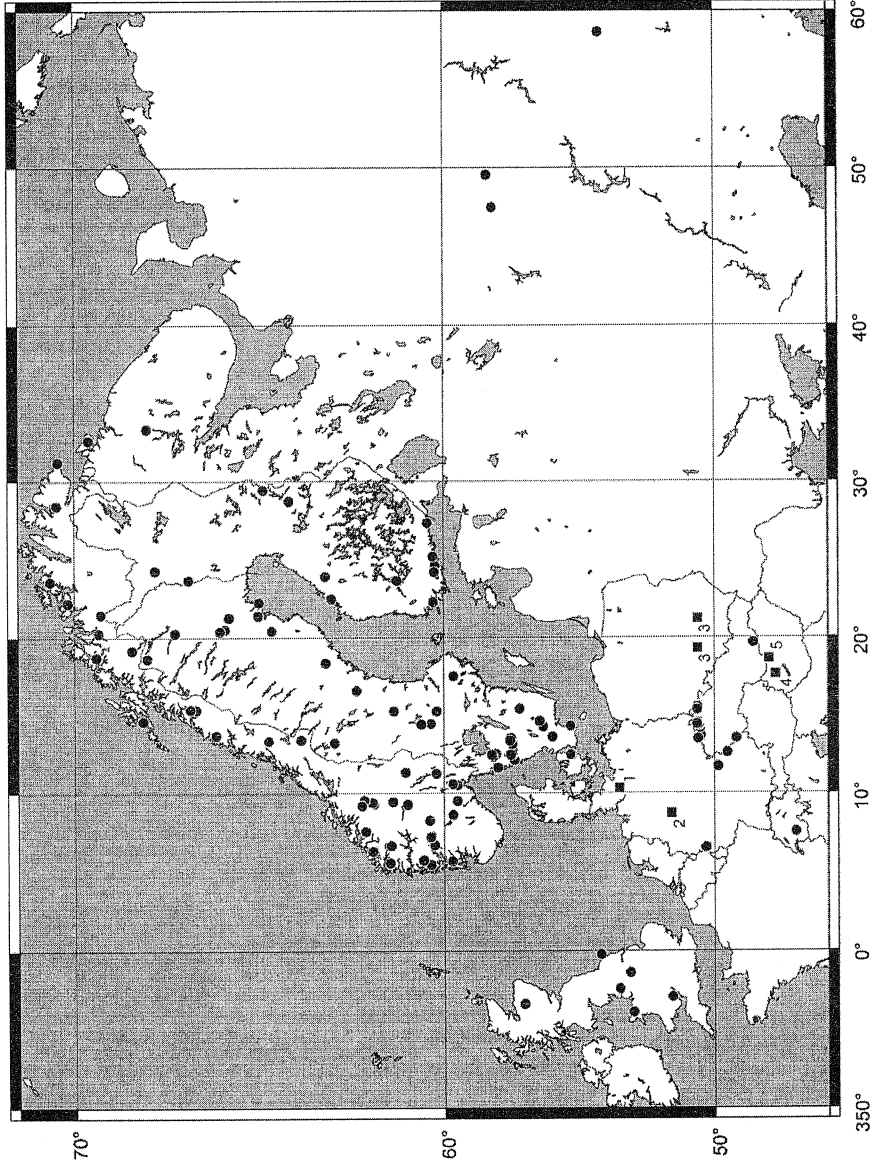


Fig. 300. Distribution of *Choleva lederiana* Reitter throughout Europe. Filled circles - *C. lederiana lederiana*, filled squares - cave subspecies in Central Europe: 1 - *C. l. holsatica* Benick & Ihssen in Benick; 2 - *C. l. sokolowskii* Ipsen & Tolasch; 3 - *C. l. gracilentata* Szymczakowski, 4 - *C. l. foeldalatti*, ssp. nov.; 5 - *C. l. pilisensis* spp. n.

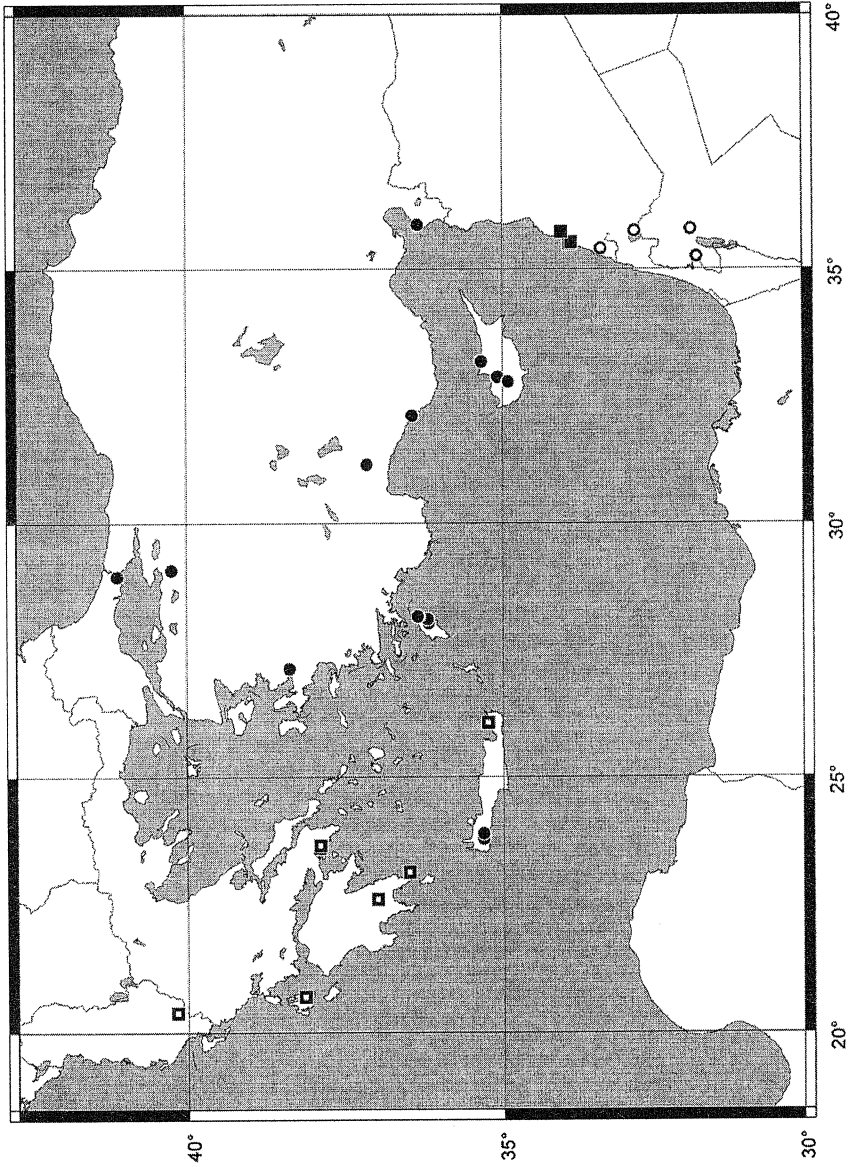


Fig. 301. Distribution of *Choleva bedeli* Jeannel (filled circles), *C. emgei* Reitter (empty squares), *C. cribrata* Saulcy (empty circles) and *C. hirtula* Reitter (filled squares) throughout eastern Mediterranean area.

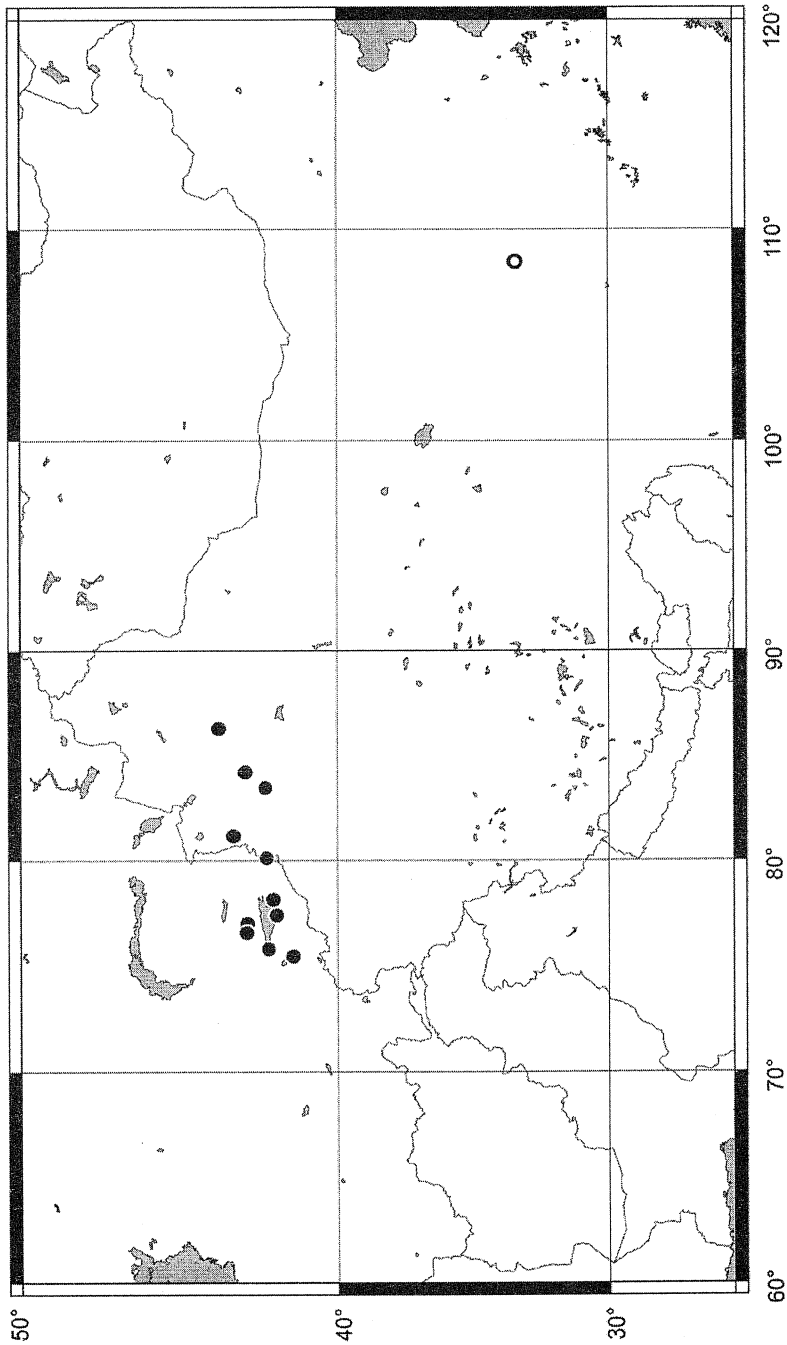


Fig. 302. Distribution of *Choleva matthiesseni* Reitter (filled circles) and *C. schuelkei*, sp. nov. (empty circle) throughout central Asia and China.

