On the *Bolitochara* species of the West Palaearctic region (Coleoptera: Staphylinidae: Aleocharinae)

Volker Assing

Abstract

Species of the genus *Bolitochara* Mannerheim, 1830 of the West Palaearctic region are revised. In all, sixteen species are recognized. Six species are described and illustrated: *B. tecta* **n. sp.** (= *B. lucida* auctt.; widespread from Turkey and the Caucasus region to North and West Europe), *B. niticeps* **n. sp.** (Azerbaijan), *B. tenuicollis* **n. sp.** (West Caucasus), *B. anatolica* **n. sp.** (South Turkey), *B. persica* **n. sp.** (North Iran), and *B. recta* **n. sp.** (South Turkey). *Bolitochara humeralis* Lucas, 1846, previously a synonym of *B. varia* Erichson, 1839, is revalidated. The following synonymies are established: *Bolitochara humeralis* Lucas, 1846 = *B. ornata* Kapp, 2010, **n. syn.**; *B. lucida* (Gravenhorst, 1802) = *B. reyi* Sharp, 1875, **n. syn.**; *B. pulchra* (Gravenhorst, 1806) = *B. elongata* Heer, 1839, **n. syn.** A neotype is designated for *Aleochara pulchra* Gravenhorst, 1806, the type species of *Bolitochara*, and for *A. cincta* Gravenhorst, 1806. Lectotypes are designated for *Aleochara lucida* Gravenhorst, 1802, *Bolitochara eximia* Eppelsheim, 1883, *B. elongata* Heer, 1839, *B. mulsanti* Sharp, 1875, *B. obliqua* Erichson, 1837, and *B. caucasica* Eppelsheim, 1890. An examination of the type material of *B. lucida* (Gravenhorst, 1802) revealed that the species has been misinterpreted by virtually all authors since Gravenhorst (1802). This species is apparently extremely rare; recent records are nearly absent. The West Palaearctic *Bolitochara* species are assigned to two species groups, the *B. obliqua* (four species) and the *B. lucida* groups (twelve species). The male primary sexual characters of all West Palaearctic *Bolitochara* species are illustrated. The distributions of most species are revised and mapped. Numerous new country records are reported. A key to the species of the West Palaearctic region and a catalogue of the Palaearctic representatives of the genus are provided.

K e y w o r d s : Coleoptera, Staphylinidae, Aleocharinae, *Bolitochara*, West Palaearctic region, taxonomy, new species, new synonymies, revalidation, misidentification, neotype designations, lectotype designations, distribution maps, new records, key to species, catalogue.

Z u s a m m e n f a s s u n g

Die westpaläarktischen Arten der offenbar paläarktischen Gattung *Bolitochara* Mannerheim, 1830 werden untersucht. Insgesamt sechzehn Arten werden erkannt, sechs davon werden beschrieben: *B. tecta* **n. sp.** (= *B. lucida* auctt.; von der Türkei und der Kaukasusregion bis nach Nord- und Westeuropa verbreitet), *B. niticeps* **n. sp.** (Aserbaidshan), *B. tenuicollis* **n. sp.** (Westkaukasus), *B. anatolica* **n. sp.** (Südtürkei), *B. persica* **n. sp.** (Nordiran) und *B. recta* **n. sp.** (Südtürkei). *Bolitochara humeralis* Lucas, 1846, bisher Synonym von *B. varia* Erichson, 1839, wird revalidiert. Die folgenden Namen werden synonymisiert: *Bolitochara humeralis* Lucas, 1846 = *B. ornata* Kapp, 2010, **n. syn.**; *B. lucida* (Gravenhorst, 1802) = *B. reyi* Sharp, 1875, **n. syn.**; *B. pulchra* (Gravenhorst, 1806) = *B. elongata* Heer, 1839, **n. syn.** Für *Aleochara pulchra* Gravenhorst, 1806, Typusart der Gattung *Bolitochara*, und für *A. cincta* Gravenhorst, 1806 wird ein Neotypus designiert. Für *Aleochara lucida* Gravenhorst, 1802, *Bolitochara eximia* Eppelsheim, 1883, *B. elongata* Heer, 1839, *B. mulsanti* Sharp, 1875, *B. obliqua* Erichson, 1837 und *B. caucasica* Eppelsheim, 1890 werden Lectotypen designiert. Eine Untersuchung der Typen von *B. lucida* (Gravenhorst, 1802) ergab, dass die Art von praktisch allen Autoren seit Gravenhorst (1802) fehlgedeutet wurde. Aktuelle Funde von *B. lucida* (Gravenhorst, 1802) sind nahezu unbekannt. Die westpaläarktischen *Bolitochara*-Arten werden zwei Artengruppen zugeordnet, der *B. obliqua*- (vier Arten) und der *B. lucida*-Gruppe (zwölf Arten). Die Aedoeagi der *Bolitochara*-Arten der Westpaläarktis werden abgebildet. Die Verbreitungsgebiete der meisten Arten werden revidiert und anhand von Karten illustriert. Zahlreiche Erstnachweise werden gemeldet. Eine Bestimmungstabelle der westpaläarktischen Arten und ein Katalog der aus der Paläarktis nachgewiesenen Arten werden erstellt.

Contents

1 Introduction

According to Smetana (2004) and an update of this catalogue (Schülke unpubl.), the genus *Bolitochara* Mannerheim, 1830 of the tribe Homalotini is represented in the Palaeaarctic region by seventeen species. Six of these species are confined to the East Palaearctic and eleven have been recorded from the West Palaearctic including Middle Asia, with the distribution of one species extending eastwards as far as East Siberia.

In addition to these seventeen species, Smetana (2004) lists 24 nomina dubia from Britain, all of them originally described in *Aleochara* Gravenhorst, 1802, 23 of them by Stephens and one by Marsham. They have been attributed to *Bolitochara* at least since Bernhauer & Scheerpeltz (1926). The type material of these names had never been revised.

Bolitochara is not indicated for North America by Newton et al. (2001), suggesting that the distribution of the genus is Palaearctic.

The European species of *Bolitochara* have generally been distinguished based on external characters (e. g., Lohse 1974). The sexual characters have been illustrated only for few species (Assing 2007b, Gusarov 1995, Kapp 2010). However, preliminary studies of West Palaearctic *Bolitochara* species had shown that, while the male secondary sexual characters may be subject to pronounced intraspecific variation and the spermatheca is of very simple shape and thus of little taxonomic significance, the morphology of the aedeagus is rich in characters. In particular, the shape of the ventral process and the internal structures of the median lobe appeared to be both constant and distinctive, and thus highly useful for a reliable identification of the species.

The taxonomic status of some species, particularly *B. reyi* Sharp, 1875, has been subject to discussion (e. g., Hammond 2001). The present study aims at a clarification of these problems, based on a comparative study of the male primary sexual characters of material from various regions of the West Palaearctic that had accumulated over the years. Moreover, previously doubtfully identified or unidentified material primarily from the southeast of the West Palaearctic region was revised.

Bolitochara species are typically found in and on rotting wood, under bark, in tree fungus and mushrooms, and in forest leaf litter; for a more detailed account see Horion (1967). According to Wagner (1995), who revised *Bolitochara* material from the Rhineland in West Germany, the abundance of several species has changed dramatically in the 20th century.

Acknowledgements

I am indebted to the colleagues indicated in the material section for the loan of material under their care. Azadeh Taghavian (MNHNP) and Yvonnick Gérard (IRSNB) invested considerable efforts in trying to locate type material in their respective collections. Al Newton (FMNH) made me aware of the primary homonymy of *Bolitochara elegans* Fairmaire with *B. elegans* Heer. Roger Booth (BMNH) examined material in the Stephens collection and confirmed that the numerous names currently listed as nomina dubia in *Bolitochara* in fact belong to other genera of Aleocharinae. Special thanks are due to Nicklas Jansson (Motala) for the generous gift of the holotype of *B. anatolica*. Mustafa Coskun, Tamer Kayis (both Adıyaman University) and Mustafa Avci (Suleyman Demirel University, Isparta) conducted the window-trap studies in southern Turkey, with which most of the types of *B. anatolica* were collected. Marc Tronquet (Molitg-les-Bains) helped with the identification of a locality in the Pyrenees and assisted in locating type and non-type material in the collections of the MNHNP.

The helpful comments and suggestions of the two reviewers, Benedikt Feldmann (Münster) and Michael Schülke (Berlin), are greatly appreciated.

2 Material and methods

The public and private collections referred to in this study are abbreviated as follows:

BMNH	The Natural History Museum, London (R. G. Booth)
cAss	author's private collection
cFel	private collection Benedikt Feldmann, Münster
cSch	private collection Michael Schülke, Berlin
cSme	private collection Aleš Smetana, Ottawa
cTer	private collection Heinrich Terlutter, Münster
cWun	private collection Paul Wunderle, Mönchengladbach
cZan	private collection Adriano Zanetti, Verona
EMSDU	Entomological Museum, Suleyman Demirel University, Isparta (via N. Jansson and B. Feldmann)
ETHZ	Eidgenössische Technische Hochschule Zürich (A. Müller, F. Schmid)
FMNH	Field Museum of Natural History, Chicago (A. Newton, J. Boone)
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Bruxelles (Y. Gérard)
MHNG	Muséum d'Histoire Naturelle, Genève (G. Cuccodoro)
MNHNP	Muséum National d'Histoire Naturelle, Paris (A. Taghavian)
MNHUB	Museum für Naturkunde der Humboldt-Universität, Berlin (J. Frisch, J. Willers)
MNM	Museum für Naturkunde, Münster (H. Terlutter)
NHMW	Naturhistorisches Museum Wien (H. Schillhammer)
NME	Naturkundemuseum Erfurt (M. Hartmann)

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). A digital camera (Nikon Coolpix 995) was used for the photographs. The maps were created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the labrum to the abdominal apex, the length of the forebody from the anterior margin of the labrum to the posterior margin of the elytra, head length from the anterior margin of the labrum to the posterior margin of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra (at the suture), and the length of the median lobe of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i. e., the side where the sperm

duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

The individual labels of type specimens are separated by slashes; they are cited in the original spelling and format, except that slashes were usually replaced with commas and that capitalized geographic names of countries are given in standard format (i. e., "Turkey" rather than "TURKEY"). Moreover, the following adaptations were made according to the general format requirements of the journal: names of persons (except authors of species) in small capitals, scientific names of genera and species in italics, dates with the months preferably in Roman numbers.

3 Results

3.1 Taxonomy and zoogeography

The present study revealed taxonomic confusion of unexpected dimensions regarding some widespread, but largely misinterpreted species. This is particularly true of *Bolitochara lucida* (Gravenhorst, 1802), the oldest name in the genus and a species that has been misinterpreted by virtually all subsequent authors and that has erroneously been believed to be common and widespread. None of the previous junior synonyms of *B. lucida* and of *B. reyi* Sharp, 1870 was available for this species, either because the type material is conspecific with the true *B. lucida* or with *B. pulchra*, or because they represent junior primary homonyms and are thus not eligible.

An examination of the material at hand yielded as many as six newly described species, one, the species previously misinterpreted as *B. lucida*, widespread from the Caucasus to Scandinavia, the British Isles, and the Pyrenees, two from Turkey, two from the Caucasus region (Adygea, Azerbaijan), and one from Iran. Moreover, three new synonymies are proposed and one previously synonymized name is revalidated. The genus is now represented in the Palaearctic region by 22 and in the West Palaearctic (including Middle Asia) by 16 species.

Bolitochara species have generally been identified based on – partly highly variable – external characters such as coloration, the punctation of the forebody, and the male sexual characters. However, owing to considerable character overlap, some species can be reliably distinguished only based on the morphology of the aedeagus, so that presumably a considerable number of previous records is based on misidentifications, an assumption confirmed while revising material from various collections in the course of the present study. The male secondary sexual characters are taxonomically significant for distinguishing species groups, but are unsuitable for species-level identification. Similarly, the small spermatheca is of uniform and simple morphology, and consequently of little use for taxonomic purposes.

A study of the male primary sexual characters of all the species recorded from the West Palaearctic region revealed a remarkable morphological diversity and interspecific character divergence of the shapes of the ventral process and of the internal structures of the median lobe of the aedeagus. While the absolute size of the aedeagus may be subject to some intraspecific variation, the shapes of the ventral process and of the internal structures appear to be rather constant. They always allow for a positive identification and in some cases represent the only reliable character for the distinction of closely related species. In order to facilitate future identification, a key to species and illustrations of the male primary sexual characters of all the species distributed in the West Palaearctic, including Middle Asia, are provided.

Several widespread species (*B. tecta*, *B. schusteri*, *B. obliqua*, *B. humeralis*) are subject to pronounced clinal colour variation and colour polymorphisms, as well as to variation of the punctation, which partly explain previous misidentifications and the description of synonymic names.

Based on the examined material, the distributions of some species are revised. Zoogeographic data as currently suggested in the literature, including the Palaearctic Catalogue (Smetana 2004), were found to be partly incorrect. This is particularly true of the distributions of *B. varia* and *B. lucida*.

3.2 Species groups

Primarily based on aedeagal morphology and the male secondary sexual characters, the *Bolitochara* species of the West Palaearctic region may be attributed to two species groups.

The four species of the *B. obliqua* group (*B. obliqua*, *B. varia*, *B. humeralis*, *B. lauferi*) share a broad and very short posterior constriction of the head, small body size, and a relatively small pronotum in relation to the head. In particular, they are characterized by the absence of a sexual dimorphism of the elytra, the modifications of the male tergite VII (presence of small granula, absence of a median keel), the shape of the male tergite VIII (without median keel, posteriorly rather weakly concave), and a median lobe of the aedeagus with a long and slender ventral process, with a pair of sclerotized dorso-apical internal sclerites, with an additional pole- or rod-shaped sclerotized structure, and without a conspicuous tube in the internal sac (Figs. 69–81). Based on the morphology of the aedeagus, *B. obliqua* + *B. varia* and *B. humeralis* + *B. lauferi* represent species pairs.

The remaining twelve species form the *B. lucida* group and share the presence of a median keel at least on the male tergite VII and, except for the Middle Asian *B. sogdiana*, a sexual dimorphism of the elytra (male elytra with a more or less pronounced oblong tubercle or keel in the sutural angles) (Figs. 26, 28, 31, 37). Among the species of this group, closer relationships are hypothesized for the

species pairs *B. bella* + *B. recta*, *B. lucida* + *B. anatolica*, and *B. tecta* + *B. niticeps*, as well as for several species allied to *B. lucida*. *Bolitochara bella* and *B. recta* share a synapomorphically derived morphology of the aedeagus, with a small and slender median lobe and with a very long tube in the internal sac of the aedeagus (Figs. 60–62). In addition, they are characterized by the short and broad posterior constriction of the head (Fig. 64) (similar to the condition in the species of the *B. obliqua* group), the absence of a median keel on the male tergite VIII, and a conspicuously long apical lobe of the paramere. The species closely allied to *B. lucida* (*B. lucida*, *B. tecta*, *B. pulchra*, *B. anatolica*, *B. schusteri*, *B. tenuicollis*, *B. niticeps*, *B. persica*) share the presence of a conspicuous broad tube in the internal sac of the aedeagus, which in all these species, except *B. persica*, is distinctly curved (Figs. 1–24). These species are additionally characterized by a distinct and relatively narrow posterior constriction of the head (Figs. 26, 28, 31, 37), the presence of a more or less distinct median keel on the male tergite VIII, and a relatively large aedeagus.

3.3 The species of the *B. lucida* group

Bolitochara lucida (Gravenhorst, 1802) (Figs. 1–5, 25–27, 51)

Aleochara lucida Gravenhorst, 1802: 70 f.
Bolitochara elegans Fairmaire, 1852: 71; preoccupied.
Bolitochara reyi Sharp, 1875: 133; **n. syn.**
Bolitochara eximia Eppelsheim, 1883: 251 f.

Type material examined

B. lucida: Lectotype ♂, present designation: "5305 / *lucida* Gr* / Hist.-Coll. (Coleoptera), Nr. 5305, *Bolitochara lucida* (Gravenhorst, 1802), German., Zool. Mus. Berlin / Syntypus *Bolitochara lucida* (Gravenhorst, 1802), labelled by MNHUB / Lectotypus ♂ *Aleochara lucida* Gravenhorst, desig. V. Assing 2013 / *Bolitochara lucida* Gravenhorst, det. V. Assing 2013" (MNHUB). Paralectotypes: 2♂♂, 2♀♀ [1♂ with additional label "Germ. bor."]: "Hist.-Coll. (Coleoptera), Nr. 5305, *Bolitochara lucida* (Gravenhorst, 1802), German., Zool. Mus. Berlin / Syntypus *Bolitochara lucida* (Gravenhorst, 1802), labelled by MNHUB / Paralectotypus ♂/♀ *Aleochara lucida* Gravenhorst, desig. V. Assing 2013 / *Bolitochara lucida* Gravenhorst, det. V. Assing 2013" (MNHUB).

B. reyi: Holotype ♀: "♀ *Bolitochara reyi*, Type D. S. Paris. [written on mounting label] / Type / France / Sharp Coll, 1905-313 / Holotype *Bolitochara reyi* Sharp, 1875, det. R. G. Booth 2013 / *Bolitochara lucida* (Gravenhorst), det. V. Assing 2013" (BMNH).

B. eximia: Lectype ♂, present designation: "♂ / *eximia* mihi. Mehadia. v. Bodemeyer / *Reyi* Sharp, The Entom. Monthl. Mag. XII. p. 133. / c. Epplsh. Steind, d. / Lectotypus ♂ *Bolitochara eximia* Eppelsheim, desig. V. Assing 2013 / *Bolitochara lucida* (Gravenhorst), det. V. Assing 2013" (NHMW). Paralectotypes: 2♀♀ [on same pin]: "*eximia* mihi. Mehadia. v. Bodemeyer / c. Epplsh. Steind. d." (NHMW); 1♂: "*eximia* mihi. Süd-Ungarn. Merkl / c. Epplsh. Steind. d." (NHMW).

Additional material examined

Germany: 1♀, Brandenburg, 11 km W Angermünde, Glambeck, IX.1931, leg. Müller (MNHUB); 1♂, München (cAss).

Austria: 2♂♂, 1♀, Niederösterreich, Rekawinkel, 2.VII.1897, leg. Skalitzky (NHMW, cAss); 1♂, Rekawinkel, 28.VI.1897 (cAss); 1♂, 1♀, Rekawinkel, 2.VII.1897 (NHMW); 1♀, Rekawinkel, 1900, leg. Pinker (NHMW); 1♂, Rekawinkel (NHMW); 2♂♂, 2♀♀, Niederösterreich, Dornbach (NHMW); 2♂♂, Wien, Lainzer Tiergarten, 19.IX.1953, leg. Schubert (NHMW, cAss); 1♀, Wien, Prater, leg. Pachole (NHMW); 7♂♂, 6♀♀, Burgenland, St. Georgen near Eisenstadt, Tiergarten, 31.V.1968, leg. Franz (NHMW, cAss).

Czech Republic: 1♀, Křivoklát ["Pürglitz"], leg. Hüttenbacher (NHMW); 1♂, Brandys nad Labem (NHMW).

Italy: 1♀, Sicilia, Nebrodi, Foresta Malabotta, in hollow oak, 14.VII.1990, leg. Zanetti (cZan).

Romania: 1♂, Pasul Turnul Roşu ["Rotentm. Pass"], leg. Breit (NHMW); 4♀♀, Băile Herculane, 1895, leg. Ganglbauer (NHMW).

Romania or Serbia: 1♀, "Hungar. merid." (NHMW).

Bosnia-Herzegovina: 1♀, Ivan Sedlo, leg. Czerny (NHMW).

Albania: 1♂, Sarisaltik [41°31′N, 19°48′E], 1180 m, leg. Mader (NHMW).

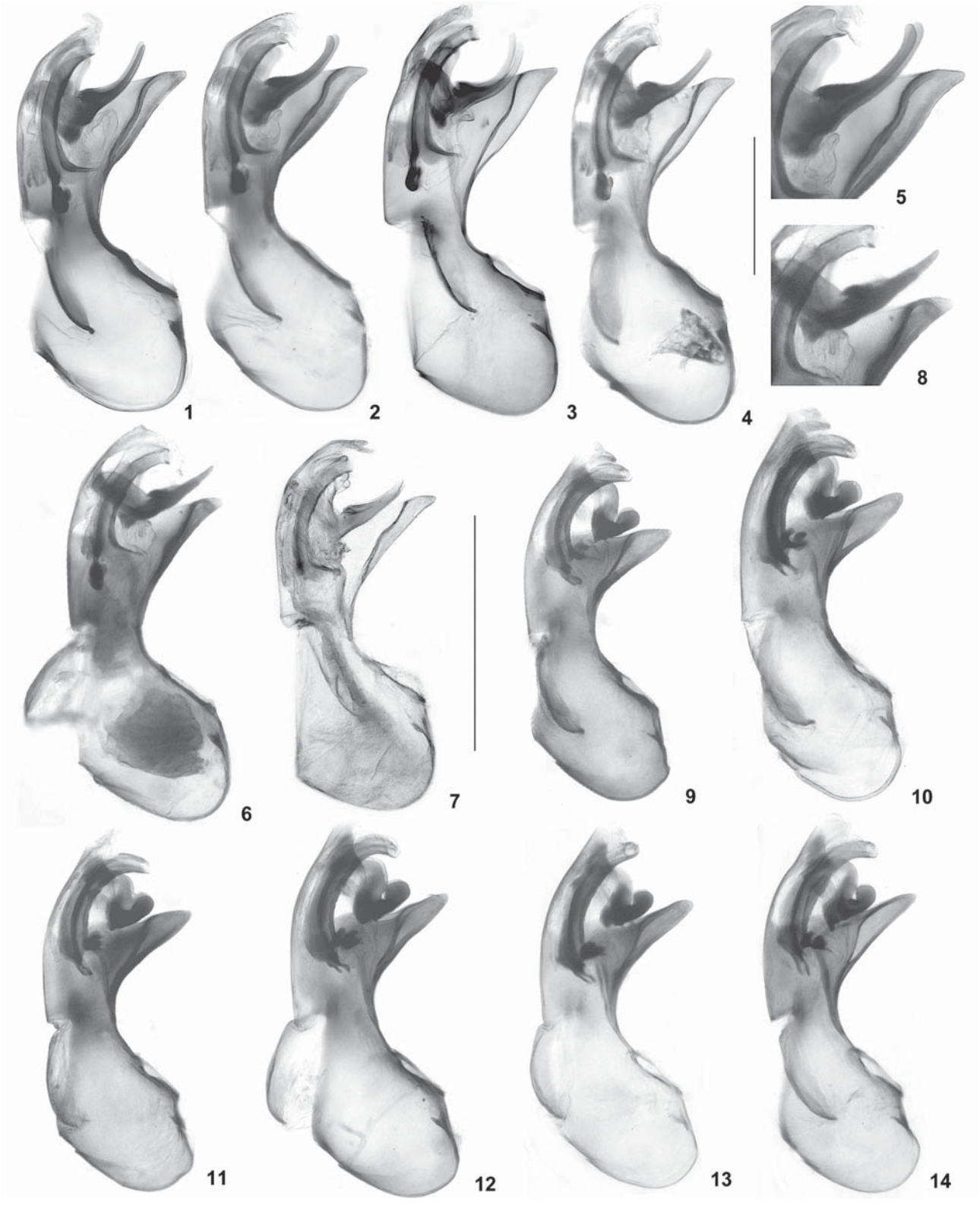
Comment

Aleochara lucida was described in a work on Staphylinidae from the environs of Braunschweig in North Germany (Gravenhorst 1802). Neither the exact locality nor the number of syntypes are specified in the original description. Five specimens qualifying as syntypes, three males and two females, were located in the historical collection of the MNHUB. All of them are conspecific, but surprisingly not conspecific with the previous interpretation of the species.

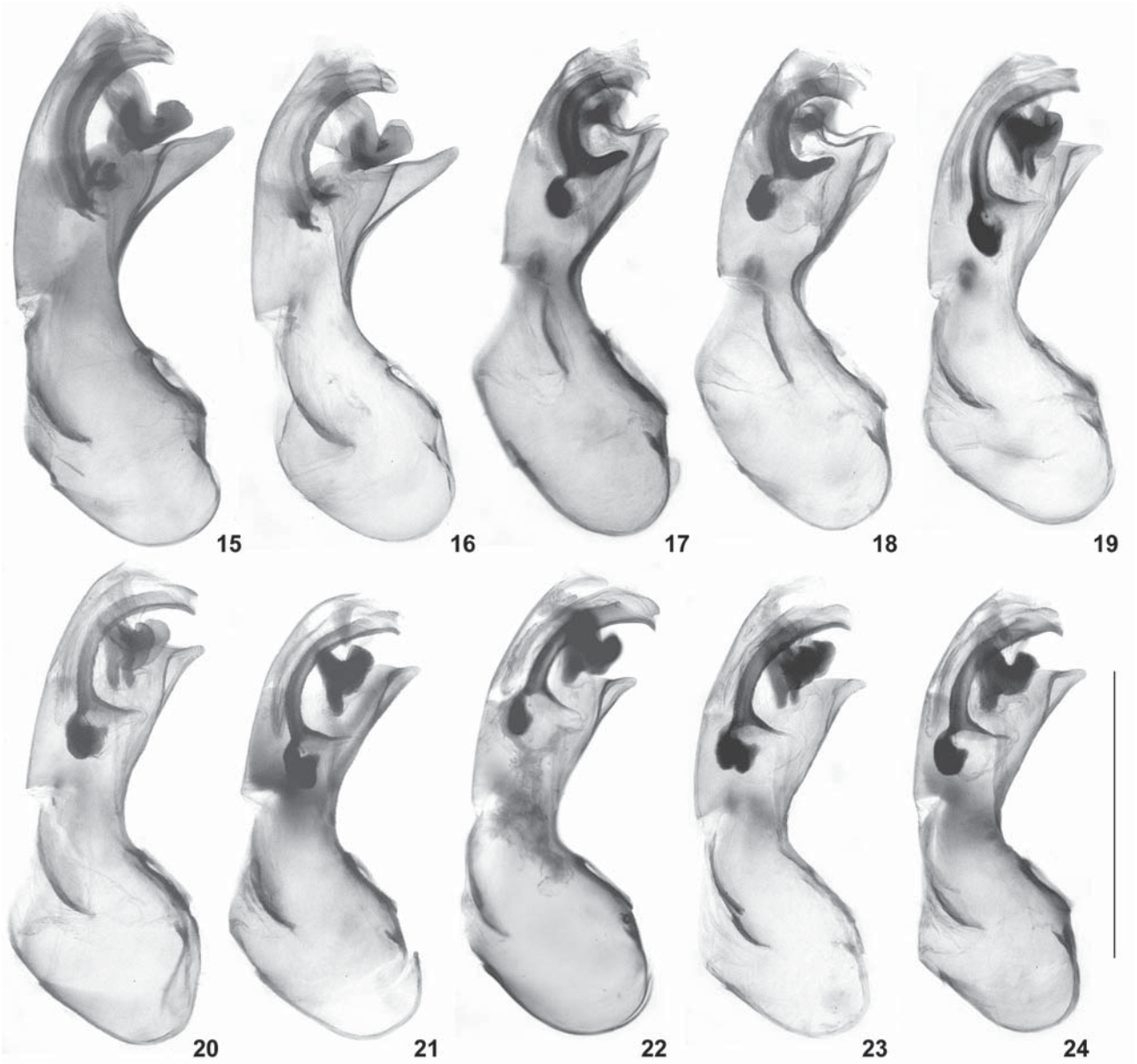
Bolitochara elegans was described from "Sicile" (Fairmaire 1852); the number of syntypes is not specified. The name is a junior primary homonym of *Bolitochara elegans* Heer, 1839, now a synonym of *Zyras haworthi* (Stephens, 1832). According to the curators in charge at the MNHNP and IRSNB, type material could be found neither in the Fairmaire nor in the Fauvel collection, nor in the main collections (Gérard, e-mails 19. and 24.IX.2013; Taghavian, e-mail 6.IX.2013). Although it has not been possible to examine the type material of *B. elegans*, the name is attributed to *B. lucida* (and not to *B. tecta*) as a synonym because the details indicated in the original description ("la tête e le corselet, qui sont très finement pointillés") fit *B. lucida* better than *B. tecta* and because *B. tecta* is unknown from Sicily.

The original description of *B. reyi* is based on a unique female holotype from Paris (Sharp 1875). An examination of this specimen revealed that it is conspecific with the type material of *B. lucida*.

Bolitochara eximia was described from an unspecified number of syntypes from two localities in Romania ("bei Resicza in Südungarn" … "bei Mehadia") (Eppelsheim 1883). Four syntypes, all of them conspecific with the type



Figs. 1–14. *Bolitochara lucida* (1–5; 1: lectotype; 2, 5: paralectotype; 3: Niederösterreich; 4: S-Germany), *B. anatolica* (6–8; 6, 8: holotype; 7: paratype), and *B. tecta* (9–14; 9: holotype; 10: S-Italy; 11: Bosnia; 12: NE-Turkey; 13–14: W-Caucasus). – **1**–**4**, **6**–**7**, **9**–**14**. Median lobe of aedeagus in lateral view. **5**, **8**. Apical internal structures of aedeagus in lateral view. – Scale bars: 0.5 mm (1–4, 6–7, 9–14), 0.2 mm (5, 8).

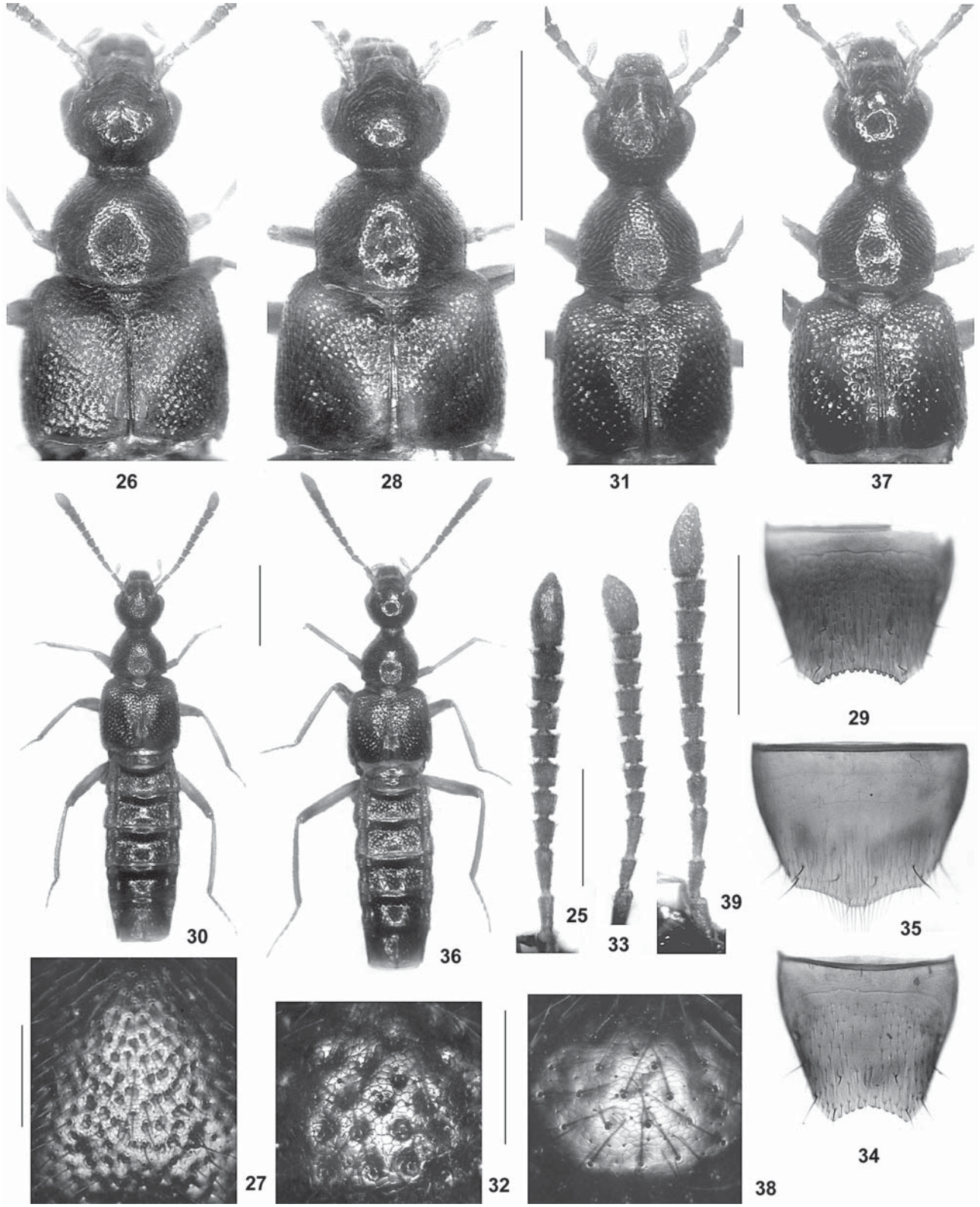


Figs. 15–24. *Bolitochara niticeps* (15–16), *B. tenuicollis* (17–18), and *B. schusteri* (19–24; 19–20: Algeria; 21: Tunisia; 22: Morocco; 23: S-Spain; 24: N-Spain), median lobe of aedeagus in lateral view. – Scale bar: 0.5 mm.

material of *B. lucida*, were located in the EPPELSHEIM collection at the NHMW. One of the two males is designated as the lectotype.

The study of the above type material and of material previously identified as either *B. lucida* and *B. reyi* revealed that *B. lucida* has been misinterpreted by virtually all authors since GRAVENHORST (1802). Consequently, all previous literature records can be regarded as either erroneous or unreliable. Many (but not all) of the specimens standing as *B. reyi* in the collection examined belong to the true *B. lucida*, so that a revision of all collection material is required.

According to SMETANA (2004), *B. lucida* has been recorded from nearly all of Europe, from Spain in the west across Central, North, and South Europe to Russia and Azerbaijan in the east. Based on an examination of the holotype of *B. reyi* and of the reference material of the single British record of *B. reyi*, HAMMOND (2001) concluded that the British specimen belonged to *B. lucida*, that *B. reyi* was absent from Britain, but that *B. reyi* represented a valid species distinguished from *B. lucida* by a



Figs. 25–39. *Bolitochara lucida* (25–27), *B. anatolica* (28–29), *B. tecta* from the West Caucasus (30–35), and *B. niticeps* (36–39). – **25**, **33**, **39**. Antenna. **26**, **28**, **31**, **37**. Male Forebody. **27**. Median portion of pronotum. **29**, **34**. Male tergite VIII. **30**, **36**. Male habitus. **32**, **38**. Median dorsal portion of head. **35**. Male sternite VIII. – Scale bars: 1.0 mm (26, 28, 30–31, 36–37), 0.5 mm (25, 29, 33–35, 39), 0.2 mm (27, 32, 38).

"larger and broader head, with better developed temples, finer puncturation of head and pronotum, denser and more even abdominal puncturation, evident microsculpture on all abdominal tergites, and virtual absence of a diagonal impression on the elytra". Moreover, he observed that the "colouration of *B. reyi* appears to be generally more uniform, with the upper surface generally dark brown and lacking the contrasting colouration that is generally a feature of the elytra and abdomen of *B. lucida*". There is little doubt that HAMMOND's interpretation of *B. reyi* refers to *B. lucida* and that of *B. lucida* to *B. tecta*.

Remarkably, despite the fact that *B. lucida* has three junior synonyms, the species seems to be extremely rare, at least today. With few exceptions, the material examined was collected before 1950, the vast majority before 1930. The most recent record (1990) is from Sicily, but this record is based on a female and requires confirmation. The most recent male-based record is from 1968 (Austria: Burgenland). In Germany, the species was last recorded in 1931. It appears possible that the species was once abundant in Central Europe and has gone extinct in many regions or its population density has declined significantly during the past two centuries, but there is no conclusive evidence supporting this hypothesis, except for the rarity of recent records and for the observation that the abundance of some *Bolitochara* species has been subject to considerable changes in the past (WAGNER 1995). Based on the examined material, the distribution of *B. lucida* is either of the Adriato- or the Ponto-Mediterranean type and largely overlaps with that of *B. tecta*. Since the species closely related to *B. tecta*, except *B. tenuicollis*, have allo- or parapatric distributions (Fig. 52), it does not seem unlikely that the decline of *B. lucida* is a result of interspecific competition. In any case, a thorough revision of material in museum and private collections, especially old material, is required to clarify the previous and current distribution and abundance of the true *B. lucida*. Recent literature records of *B. reyi*, the most likely candidates for records of the true *B. lucida*, are from Hungary (ÁDÁM 1996, 2004), the Czech Republic (LIKOVSKÝ 1988, RÉBL 2010), Poland (MELKE 1996, PAŚNIK 1999), Romania (STAN 2006a, b), and Ukraine (SMOLEŃSKI 1995). The revised distribution is illustrated in Fig. 51.

External characters (strongly transverse head and pronotum; fine and dense punctation of the pronotum) (Figs. 26–27) and the similar morphology (including the internal structures) of the aedeagus (Figs. 1–5) suggest that *B. lucida* is most closely related to *B. anatolica* from South Turkey. It is distinguished from the previous interpretation of *B. lucida*, i. e., *B. tecta*, by the more robust forebody with a more transverse head (1.20–1.25 times as broad as long; width: 0.68–0.75 mm), the less convex (cross-section) and more transverse pronotum (approximately 1.2 times as broad as long; width: 0.75–0.88 mm), by the paler coloration of the head and pronotum (usually yellowish to pale-reddish), the much finer punctation of the head and pronotum (Figs. 26–27), and by the morphology of the larger (0.72–0.75 mm) aedeagus (shapes of ventral process and of internal structures; see Figs. 1–5). The antenna is illustrated in Fig. 25.

Bolitochara anatolica **n. sp.**
(Figs. 6–8, 28–29, 51)

Type material

Holotype ♂: "Turkey, Egirdir, Yukangökdere, N 37°42 964 S [sic] 30°49 899, Kasnak forest Windowtrap 5, Hollow *Quercus* 2007-09-11, NICKLAS JANSSON, MUSTAFA AVCI / Holotypus ♂ *Bolitochara anatolica* sp. n. det. V. Assing 2013" (cAss).

Paratypes: 1 ♀: same data, but "Windowtrap 18 … 2007-05-17" (EMSDU); 1 ♂ [teneral]: "Turkey, Mersin, 40 km N. Gülnar, N 36°30′22.5, E 33°07′43.3, Kösekobanli/Tasdüstü, W-trap 14, Hollow *Quercus* 2006-05-24, NICKLAS JANSSON, MUSTAFA AVCI" (cFel); 1 ♀: "Tur. Anatalya, Akseki N 1200 m, 4-5/6-92, leg. I. RYDH" (cWun).

Etymology

The specific epithet is an adjective derived from Anatolia, the name of the Asian part of Turkey.

Description

Body length 4.0–5.5 mm; length of forebody 2.1–2.5 mm. Coloration: head blackish-brown; pronotum dark-brown with narrowly yellowish margins; elytra blackish-brown, humeral angles, postero-lateral and sutural angles yellowish, humeral and postero-sutural spot connected by more or less extensive, diagonal yellowish band; abdomen blackish-brown, with the posterior margins of the segments reddish; legs reddish; antennae dark-brown, with antennomeres I–III reddish.

Head (Fig. 28) with distinct neck of approximately half the width of head; punctation fine and moderately dense, interstices approximately as broad as, or slightly broader than diameter of punctures, glossy, with very shallow microsculpture. Antenna 1.4–1.6 mm long and gradually incrassate apicad; antennomeres IV weakly oblong, V approximately as long as broad, VI–X of gradually increasing width and increasingly transverse, X nearly 1.5 times as broad as long.

Pronotum (Fig. 28) distinctly transverse, 1.17–1.21 times as broad as long and 1.12–1.15 times as broad as head, strongly narrowed anteriad; lateral margins subparallel or weakly converging posteriad in posterior half in dorsal view; posterior angles sharply marked, lateral margins weakly sinuate in posterior half in dorsal view; punctation fine and dense; interstices with very shallow microsculpture, glossy.

Elytra (Fig. 28) sexually dimorphic, 1.05–1.1 times as long as pronotum; punctation dense and coarse, much more so than that of head and pronotum; interstices with or without shallow microsculpture.

Abdomen much narrower than elytra; punctation variable, moderately dense to rather sparse, decreasing in density from tergite III to tergite VII; microsculpture very shallow to practically obsolete.

♂: elytra with oblong tubercle in sutural angles (Fig. 28); tergite VII with long median keel; tergite VIII with shorter median keel, posterior margin distinctly concave and distinctly serrate (Fig. 29); posterior margin of sternite VIII convexly produced in the middle; median lobe of aedeagus 0.67–0.68 mm long and shaped as in Figs. 6–8.

♀: elytra without tubercles.

Comparative notes

As can be inferred from the similar morphology of the aedeagus, the similar modifications of the male elytra and tergites VII–VIII, as well as from other similar external characters, *B. anatolica* belongs to the *B. lucida* group. Based on the similar morphology of the aedeagus, it is undoubtedly the adelphotaxon of *B. lucida*, from which it is reliably distinguished only by the slightly smaller aedeagus with a more slender ventral process (lateral view) and with differently shaped apical internal structures (compare Figs. 5 and 8). *Bolitochara anatolica* differs from *B. lucida*, the only other representative of this group recorded from Turkey, by the distinctly larger (in relation to head), more transverse, and more finely punctate pronotum, the larger elytra, the darker coloration of the abdomen, and by the different morphology of the aedeagus.

Distribution and natural history

The specimens were found in three localities in southern Anatolia (Fig. 51). Three of the type specimens were collected with window traps in hollow oak trees.

Bolitochara tecta **n. sp.**
(Figs. 9–14, 30–35, 52)

Aleochara lucida auctt., nec Gravenhorst (1802).

Type material

Holotype ♂: "D – Nds., Hannover, Eilenriede, in tree fungus, 28.IX.1986, leg. V. Assing / Holotypus ♂ *Bolitochara tecta* sp. n. det. V. Assing 2013" (cAss).

Paratypes:

Finland: 1 ♀: "Finland, Ourimaa [?], Kauniainen, lake margin, DA Lott. 4.9.1995 / D. A. Lott Bequest, BMNH(E), 2011-133." (BMNH); 1 ♂: "Kuopio / Levander" (NHMW).

Great Britain: 1 ♂, 2 ♀♀: "Surrey, Guildford, G. C. C. / G. C. Champion Coll. B.M. 1927-409." (BMNH); 1 ♂, 1 ♀: "Power. Nettlecomb / J. A. Power. B.M. 1896-96." (BMNH); 2 ♀♀: "Durston Wood, July 3, 1899 / H. Donisthorpe. B.M. 1934-4." (BMNH); 1 ♂: "Addington T. W. / T. Wood Coll. B.M. 1923-806" (BMNH); 1 ♂: "Cobham Park, Kent. J. J. W. / G. C. Champion, B.M. 1964-540" (BMNH); 2 ♂♂, 2 ♀♀: "Cobham. 20.6.89 [written on mounting label] / D. Sharp Coll., B.M. 1932-116" (BMNH); 1 ♂: "Wingham, Kent, H. S. G. / G. C. Champion, B.M. 1964-540" (BMNH); 1 ♂, 1 ♀: "UK: Barles [?], Silwood Park, 21.IX.–6.X.1998 [SU9468], R. G. Booth / *Bolitochara lucida* (Grav.), det. R. G. Booth, 1999" (BMNH); 1 ♂: "Epping Forest, Houghton [?] Camp, 19.X.1969. C265. B. Lewey / Brit. Mus. 1970-136." (BMNH); 1 ♂, 1 ♀: "Croome Park, Worcs SO888436, DA Lott 26.6.1996 / D. A. Lott Bequest, BMNH(E), 2011-133." (BMNH); 1 ♂: "Anses Wood, Hants SU224124, DA Lott, 16.9.1999 / D. A. Lott Bequest, BMNH(E), 2011-133." (BMNH); 1 ♀: "Priors Coppice, Leics SK834053 DA Lott, 19.2.1995 / *Bolitochara lucida* (Gravenhorst) ♀, det DA Lott, 1995 / D. A. Lott Bequest, BMNH(E), 2011-133." (BMNH); 1 ♂: "O. S. TL 99 / W. Norfolk, Thomson, 27.ix.1969 / 'Breck' coll., B.M. 1969-268." (BMNH); 1 ♂: "Sheringham 6/19 / M. Cameron. Bequest. B.M. 1955-147." (BMNH); 1 ♀: "fungus O. S. TL 78 / W.Suffolk, Lakenheath, 28.ix.1969 / 'Breck' coll., B.M. 1969-268." (BMNH); 1 ♀: "Merioneth, Brithdir, 4.iii.1972, M. I. Russell / *Bolitochara lucida* (Grav.), M. I. Russel det. 1972 / BMNH{E} 1975-519 Mark Russel" (BMNH); 1 ♀: "St Fagans, GM ST 1177, 8.vii.1994 / P. M. Hammond, B.M. 1994-174" (BMNH); 1 ♂: "Gregynog, MG (SO 0897), 14.vii.1994 / *lucida* / P. M. Hammond, B.M. 1994-174" (BMNH); 1 ♀: "Westmorland, Rydal, 3.vii.1970 / Coll. P. Hammond, B.M. 1970-196" (BMNH); 1 ♂: "Windsor, Taest [?], IX.28. / H. Donisthorpe, B.M. 1934-4." (BMNH); 1 ♀: "Whitely Woods, on fungus on dead tree, *Polysticeus versicolor*, 19.9.63 [written underneath mounting label] / R. O. S. Clarke. B.M. 1970-374." (BMNH); 1 ♀: "[locality illegible], 18.9.40, fungus. Elne [?] / British Isles: C. J. Saunders. B.M. 1947-234." (BMNH); 1 ♂, 1 ♀: "England / Sharp Coll. B.M. 1905-313." (BMNH); 1 ♂, 1 ♀: "[locality not specified] / Sharp Coll. B.M. 1932-116." (BMNH).

France: 1 ♂: "Basses-Pyrénées, Larrau, 24.VI.1938, G. Tempère" (MHNG); 1 ♂: "Gabas, Bions [?], 10.VI.35 / Coll. G. Tempère, E. Giraud legit" (MHNG); 1 ♀: "Hautes-Pyrénées, St Sauveur [= Saint-Sauveur-les-Bains near Luz-Saint-Sauveur] 15.IX.45, G. Tempère" (MHNG); 1 ♂, 1 ♀: "Htes. Pyren. / Pandellé." (NHMW); 1 ♂, 1 ♀: "Midi-Pyrénées, Les Cammazes, leg. Perrot" (MHNG, cAss); 1 ♂: "Pyrénées" (MHNG); 1 ♀: "Na2, Ain / Coll. Toumayeff" (MHNG); 1 ♀: "Les Charnettes [?], Chartreuse, VIII.38" (MHNG); 1 ♂: "Albertville. Savoi. / Albertville / Albertville / Sharp Coll. 1905-313." (BMNH); 1 ♂: "Beuil, A. M. IX.67" (MHNG); 1 ♂, 3 ♀♀: "Vizzavone, 30.VI.55" (MHNG, cAss); 1 ♂: "Vizzavona, Corsica. G. C. C., 2500–4000 ft. / G. C. Champion Coll., B.M. 1927-409." (BMNH); 1 ♀: "Vizzavona, Corsica. G. C. C., 2500–4000 ft. / ? *B. lucida* Grav. / *Bolitochara lunulata* / G. C. Champion Coll., B.M. 1927-409." (BMNH); 1 ♂: "Vizzavona (Corse), St. Cl Deville" (NHMW); 3 ♂♂: "France / Gallia / Sharp Coll. 1905-313." (BMNH).

Germany: **Niedersachsen**: 1 ♂: same data as holotype (cAss); 2 ♀♀: "D. Hannover, Eilenriede, u. verpilzter Borke, 15.VII.87 [leg. Assing]" (cAss); 1 ♀ [teneral]: "D. Hannover, Eilenriede, auf Baumstamm, 30.V.89 [leg. Assing]" (cAss); 1 ♂: "D. Hannover, Eilenriede, u. *Quercus*-Borke, 22.VIII.87 [leg. Assing]" (cAss); 1 ♀: same data, but "9.V.89" (cAss); 2 ♀♀: "D. Hannover, Eilenriede, in Pilz, 3.X.88 [leg. Assing]" (cAss); 1 ♂, 1 ♀: "D – Hannover, Eilenriede, AK, 11.IV.1991, leg. Assing" (cAss); 1 ♂: "D. Niedersachen, Ith b. Coppenbrügge, 29.IX.1991, Assing" (cAss); 1 ♂, 1 ♀: "D. Deister, Nienstedt, u. *Fagus*-Borke,

23.V.86 [leg. Assing]" (cAss); 1 ♂: "D. Deister, Nienstedt, 22.V.86 [leg. Assing]" (cAss); 1 ♂ [teneral]: "D. Umg. Gifhorn, Rössen[berg]heide, 2.VII.87, F Wald [leg. Assing]" (cAss); 1 ♀: "D/Nds./Hardegsen, Espol, Wald, u. Rinde, 21.9.1991, leg.: Willers" (MNHUB); 1 ♂, 1 ♀: "Nationalpark Harz, Eckertal, 14.6.2003, 350 m, leg. H. Terlutter" (MNM); 1 ♀: "Wathlingen b. Celle / 13.VI.43, Dr. Becker" (MHNG). – **Nordrhein-Westfalen**: 2 ♂♂, 1 ♀: "D-HSK, Neheim, Vößwinkel, Höllinghofen, 13.V.1998, Totholz, leg. M. Elmer" (cFel); 1 ♂, 1 ♀: "*Bolitochara lucida*, 28.9.76 IX/5, Hunau/Bödefeld" (MNM); 3 ♀♀: "D. Westf. Altenbeken, NWZ Ochsenberg, F. Köhler, 8.09.1998" (MNM); 1 ♂: "D. Wf. Breitenbruch, Arnsbg. Scharfenberg, F. Köhler 12.07.2001" (MNM); 1 ♀: "ArnsbBreitenbruch [sic], Windst. Hevensbrink, F. Köhler 17.10.2001" (MNM); 1 ♂: "D, Ms-Amelsbüren, Davert, Inkmannsholz, 8.6.2010 MTB 4111/2, leg. H. Terlutter" (MNM); 1 ♀: "D. Wf. Burbach, Buchhellertal, F. Köhler 2.06.2000" (MNM); 1 ♀: "D. Wf. Siegen-Truppach, Standortübungsplatz, F. Köhler 19.09.2000" (MNM); 1 ♀: "D-Steinhagen Krs. GT, NSG Jakobsberg 2, 4.6.2003 MTB 3916, leg. H. Terlutter" (cTer); 1 ♂: "Haltern/Westf., 27.9.89, Starke leg." (cTer); 1 ♂: "Nachrodt Krs. MK, 27.6.1994, leg. Terlutter" (cTer). – **Hessen**: 1 ♂: "Germ. HS, Sababurg [51°32′N, 9°32′E], Rheinhardswald, 4.–5.10.1987, leg. Wunderle" (cWun); 2 ♂♂, 3 ♀♀: "Marburg, Hessen, Nesselbrunn [50°47′N, 8°38′E], 26.4.1986, Wunderle" (cWun); 1 ♂, 3 ♀♀: "Lampertheimer Wald, Gesiebe Buchenruine, 19.IX.2004, Hetzel leg." (cFel); 1 ♀: "VI.2001, Seeheim-Jugenheim, Heiligenberg, leg. A. Hetzel" (cFel); 1 ♂: "D, Hessen, 6.III.2007, Jägersburger Wald, 2 km E Gernsheim, leg. A. Hetzel" (cFel); 1 ♂: same data, but "10.VI.2007" (cFel); 1 ♂: same data, but "16.IV.2005" (cFel); 2 ♀♀: "D, Hessen, VII.2010, Darmstadt-Arheilgen, NSG Silzwiesen, leg. A. Hetzel" (cFel); 6 ♂♂, 4 ♀♀: "Germania, Hessen, Schwanheimer Wald, 110 mNN, 27.5.1991, leg. J. Frisch, Fulda" (MNHUB, cAss). – **Sachsen-Anhalt**: 3 ♂♂: "Germania or.: Sachsen-Anh., LKr. Sangerhausen, Questenberg, 26.VI.1998, leg. M. Schülke" (cSch). – **Rheinland-Pfalz**: 1 ♂: "D-Rhld, Soonwald [49°55′N, 7°37′E], Kellenbachtal, 19.05. 91, Wunderle" (cWun); 1 ♂: "1.9.85, Rheinl., Unkel [50°35′N, 7°13′E], leg. Wunderle" (cWun); 1 ♂ [teneral]: "D-Rhld. Eifel, Fischbachtal AK, b. Neuerburg [49°59′N, 6°57′E], 01.06.90, Wunderle" (cWun); 1 ♀ [teneral]: "Neuerburg, Eifel, Utscheid, 28.6.72, leg. Siede" (cWun); 2 ♂♂: "20.9.85, Altenahr [50°30′N, 6°59′E], Vischeltal, leg. Wunderle" (cWun); 1 ♀: "D., 9.IV., Ahrtal, Landeskrone [50°33′N, 7°10′E], Scheuern leg. 1979" (cWun); 1 ♀: "D-Rhld-Pfalz, Taben/Saar [49°33′N, 6°35′E], Urwald von Taben, Eichenwald, 23.10.96, P. Wunderle" (cWun); 1 ♂ [teneral]: "D. Rheinl.-Pfalz, Taben-Roth/Saar, 7.VI.1996, leg.: E. Wenzel" (MNM). – **Baden-Württemberg**: 1 ♂: "Germania, Bad/Würtb., Emmendingen-Vogtsb., Kaiserstuhl, Vogelsangpaß 400 m+, I. Wolf leg. 16.9.2008" (cSch); 2 ♀♀: "Emmendingen, Windenreute, 28.7.54" (MNHUB); 1 ♀: "Emmendingen, IX–X.55" (MNHUB); 1 ♀: "*lucida*. Würtembg. v. Roser." (NHMW). – **Bayern**: 1 ♀: "Germania Obb., Lkrs. Berchtesgaden-Land, N Tittmoning bei Schlichtern, Hochufer der Salzach, I. Wolf leg. 26.3.2005" (cSch); 1 ♀: "München, 22.5.1904 / Coll Dr Ihssen" (MNHUB); 1 ♀: "München, 30.IX.14 / Coll Dr Ihssen" (MNHUB); 1 ♀: "München, 19.VII.15. / Coll Dr Ihssen" (MNHUB); 1 ♂: "München, 3.9.10, Gr. Hesselohe / Coll Dr Ihssen" (MNHUB); 1 ♀: "Regensburg, Alling, 8.18 / Coll Dr Ihssen" (MNHUB). – **Thüringen**: 1 ♂: "Thuringia septentr., 1.10.1915, Hainleite b. Retzingen [?], A. Petry legit" (MNHUB); 1 ♀: same data, but "6.4.1915" (MNHUB); 1 ♂: "lg. Puthz, 20.V.1961, Kyffhäuser, Thür., Hornissenthal" (MHNG); 1 ♂: "Heyrode, 26.IV.60, leg. G. Hertzel" (MHNG); 1 ♂: "Heyrode Thür, 24.IV. 60, leg. G. Hertzel" (cAss). – **Sachsen**: 1 ♂, 2 ♀♀: "Hammergrund, Erzgebirge Boh., Skalitzky / 24.VIII.90" (NHMW); 1 ♂: "Erzgeb, VIII.90" (NHMW). – **Locality not specified**: 1 ♂: "Germania, Reitter" (MHNG); 1 ♂: "*Bolitochara lucida* Grav., Germania borealis" (MHNG).

Switzerland: 1 ♂: "CH: GE: Chancy, Moos+Pilze an faulendem Baumstamm, 15.9.1982, leg. Uhlig" (MNHUB); 4 ♂♂, 6 ♀♀: "Blonay, Vaud, Switzerland / Coll. Odier. B.M. 1921-288" (BMNH); 1 ♂: "Simplon" (NHMW).

Austria: **Oberösterreich**: 1 ♂: "Ischl, Oberösterr., Skalitzky" (NHMW). – **Niederösterreich/Wien**: 1 ♂: "A. Wien, Lainzer Tiergarten, 300 / 06.V.1998, leg. Erwin Holzer" (cAss); 2 ♂♂: same data, but "16.V.1999" (cAss); 2 ♂♂, 2 ♀♀: "Wien, Prater, Pachole Wien" (NHMW); 1 ♀: "Wien" (NHMW); 1 ♂: "Wien, Umg., M. Curti / Haltenltg. [?]" (NHMW); 1 ♂: "Wien, Umg., M. Curti / Ver. Quelle, 1909" (NHMW); 1 ♀: "Wien, Umg., M. Curti / 16.07" (NHMW); 1 ♀: "Wien, Umg., Moczarski" (NHMW); 1 ♂: "Umgeb. Wien, Pazourek" (NHMW); 1 ♂, 1 ♀: "Umg. Wien, Laxenburg, coll. A. Kniz" (MNHUB); 1 ♀: "Hadersdf. W., Austr. Breit" (NHMW); 1 ♀: "Lg.-Enzersdorf, Luze" (NHMW); 2 ♀♀: "Lobau bei Wien, A. i. Scheerpeltz" (NHMW); 1 ♂: "Umg. Mödling, O. Scheerpeltz" (NHMW); 1 ♂: "Umg. Mödling, Austria inf., lg. H. Franz / X1787" (NHMW); 1 ♂: "U. Kaltenleutgeben, A. i. O. Scheerpeltz" (NHMW); 1 ♂: "A. i. Kaltenltgb., 29.VI.1912, Curti" (NHMW); 3 ♂♂, 1 ♀: "Kaltenleutgeben, A. i., 15.IX.15, Curti (Eilengraben)" (NHMW); 2 ♂♂: same data, but "26.V.18" (NHMW); 1 ♂: "Schöpfel b. St. Corona, lg. H. Franz / X1806" (NHMW); 1 ♂, 2 ♀♀: "Tullnerbach A. i., leg. O. Scheerpeltz" (NHMW); 2 ♂♂, 1 ♀: "Tullnerbach, Austr. Breit" (MHNG, NHMW); 1 ♀: "Marchegg, A. i., 8.VI.62, leg. E. Gotz / Au, alter verpilzter Kastanienstamm" (NHMW); 1 ♂, 3 ♀♀: "Gglb. 1890, Rekawinkel, 1890" (NHMW); 3 ♂♂, 1 ♀: "Umg. Wien, Rekawinkel, Skalitzky / 22.VI.99" (NHMW); 1 ♀: "Rekawinkel, Wien" (MHNG); 1 ♀: "Gglb. 1886, Pitten" (NHMW); 1 ♂, 2 ♀♀: "*lucida*, Wolfstein" (NHMW); 1 ♂: "Austria inf., Pressbaum, Coll. Gylek" (NHMW); 2 ♀♀: "Pressbaum b. Wien, A. i. O. Scheerpeltz" (NHMW); 1 ♀: "Aufsammlung Nr. XXXII,1, 19.X.1946 / Haitzawinkel bei Pressbaum A. i., leg. Dr. K. Höfler / Wienerwald" (NHMW); 4 ♂♂, 2 ♀♀: "Wechselgeb., Gglb. 1888" (NHMW); 7 ♂♂, 4 ♀♀: "Gglb. 1887, Kranichbg." (NHMW); 3 ♂♂, 1 ♀: "Leithagebirge, Niederösterreich" (NHMW); 1 ♂: "Umg. Wien, A. i." (NHMW); 1 ♂: "N.Oest" (NHMW). – **Steiermark**: 1 ♂: "Weiz, Oststmk., Weizklamm, Jägersteig 750 / 1995-06-23, leg. E. Holzer" (cSch); 1 ♂, 1 ♀, locality not specified, leg. Pipitz (NHMW). – **Kärnten**: 2 ♂♂: "Mallnitz Umgeb." (MHNG); 1 ♂, 2 ♀♀: "Kaernten, M.Dobratsch, IX.905, Schatzm." (NHMW); 2 ♂♂: "Waidisch ob Ferlach / 2.–3.VIII.66 [leg. Lohse]" (MHNG); 1 ♂: "Mauthen, 21.VII.66 / Kärnten, Karn. Alpen [leg. Lohse]" (MHNG); 1 ♀: "Ossiacher Seeufer, Berghof-Annenheim" (NHMW); 1 ♀: "Karawanken, Waidisch, 21.VI.1964, Weise" (MNM); 1 ♀: same data, but "14.VI.1964" (MNM). – **Burgenland**: 1 ♂, 1 ♀: "Rechnitz, Bgl., H. Franz / X1800" (NHMW, cAss).

Hungary: 1 ♀: "Sopron H., Moczarski" (NHMW).

Czech Republic: 1 ♂, 1 ♀: "Zavist / 473. / Prag, coll. Staudinger" (MNHUB, cAss); 3 ♂♂, 2 ♀♀: "Spindelmühle [= Špindlerúv Mlýn], Riesengebirge, Skalitzky" (NHMW); 1 ♀: "Spindelmühle, Riesengb." (NHMW); 1 ♀: "Altvater / Schkydon [?]" (NHMW); 1 ♂, 1 ♀: "Friedberg [= Frymburk nad Vltavou], Boehm. Wald, Skalitzky" (NHMW); 1 ♂: "Moravia, Radhost, Dr. Fleischer" (MNHUB); 3 ♂♂: "Morav." (MNHUB).

Slovakia: 1 ♀: "CSFR, Mala Fatra, 41, Vricko, 500 m, Pilz, 10.VII.1992, Assing" (cAss); 1 ♂: "Muran [= Muráň], 8.V.67 / Slovakei [leg. Lohse]" (MHNG).

Italy: **Lombardia**: 2 ♂♂: "Italia, Pr. Bergamo, Oltre il Colle, Bergwerk b. Zorzone, 25.IX.93, J. Frank leg." (cAss). – **Piemonte**: 1 ♂: "Piemonte, Frabosa Sottana (CN), Miroglio, 17.V.2000, 750 m, castagno, leg. Angelini" (cAss). – **Emilia-Romagna**: 2 ♂♂: "Emilia, Piandelagotti, 27.III.915, A. Fiori" (MNHUB); 1 ♀: "Banpania [?], Napoli, 5.VI.901." (MNHUB). – **Toscana**: 2 ♂♂, 1 ♀: "Toscana, Vallombrosa, Adriano, 900, A. Fiori" (MNHUB); 1 ♀: "Italien, Lazio, Lago di Bracciano, ca. 1 km südl. des Ortes, I. Wolf leg., 22.05.1998" (cSch); 1 ♂, 1 ♀: "Lazio, Bassano Intro, 28.V.908, A. Fiori" (MNHUB). – **Campania**: 1 ♀: "Napoli, 6.VI.1901" (MNHUB); 1 ♀: "M. della Laga, M. Macera d. Morte, m 1400/1700, 10.VII.1978, leg. Audisio" (cZan); 1 ♀: "M. Terminillo (Rieti), 17.VI.1976, leg. W. Rossi" (cZan). – **Basilicata**: 2 ♂♂, 1 ♀: "I – Basilicata, Pollino, 930 m, 14.VII.89, Angelini" (cAss); 1 ♂, 1 ♀: "Pollino, v. Malvento, m. 1700, 14.–15.VIII.1977, leg. F. Angelini e L. de Marzo / in terriccio sotto fungo legnoso" (cAss); 11 ♂♂, 12 ♀♀: "Pollino, Piani Ruggio (PZ), m. 1500, 13.VII.1977, leg. Montemurro" (cAss); 2 ♂♂, 3 ♀♀: "Pollino, dint. sorg. Duglia (PZ), 18.IX.1977, m. 1500, leg. Montemurro" (cAss); 3 ♂♂: "Basilicata, Pollino, San Severino Luc., b. Magnano (PZ), 10.X.99, 800 m, leg. F. Angelini" (cAss); 1 ♂: "Basilicata – Pollino, S. Severino L., bosco Magnano, 24.VII.1999, funghi + legno in faggetta, leg. F. Angelini" (cAss); 1 ♀: "Pollino, v. Malvento, m 1100, 14.15.VIII.1977 [sic], Angelini" (cWun); 1 ♀: same data, but "Angelini/de Marzo" (cZan); 1 ♂: "Basilicata, Maddalena, Abriola (PZ), 1400 m, 22.VII.91, fagg., leg. Angelini" (cAss); 1 ♂: "Basilicata, Accettura, bosco Montepiano (MT), 900 m, 29.IX.02, funghi + quercus, leg. Angelini" (cAss); 2 ♂♂: "Basilicata, Accettura, b. Montepiano (MT), 1030 m, 14.V.1989, querceta, loc. 89 D, sp. n. 28, leg. F. Angelini" (cWun). – **Calabria**: 1 ♂: "Calabria, Aspromonte, M.te Limina, 800 m, rive torr., 14.X.1993, leg. Angelini & Sabella" (cAss); 1 ♂, 1 ♀: "Calabria, Aspromonte, Piano Limina (RC), 800 m, 7.VI.94, leg. F. Angelini" (cAss); 2 ♂♂: "I – Aspromonte, 1000 m, Piani Carmelia, 25.VI.87, Angelini" (cAss); 1 ♂: "Aspromonte, 850 m, str. Antonimina–Zomaro, 15.VI.1991, fagg., leg. Angelini" (cAss); 1 ♀: "Calabria, Sta. Eufemia, lg. Paganetti" (NHMW); 1 ♂: "Calabria, Camigliatello (CS), Fossiata, 22.VI.76, m. 1450, leg. Angelini / sotto corteccia di Abete, campione n.:" (cZan); 1 ♂, 1 ♀: "Calabria, Aspromonte / Paganetti" (NHMW); 1 ♀: "Calabria, Italia, Götzelmann" (NHMW). – **Locality not specified**: 1 ♂, 1 ♀: "Italien" (MNHUB).

Slovenia: 1 ♀: "Marburg, Styria" (MNHUB); 1 ♀: "Logarthal [= Logarska dolina], Luze" (NHMW); 1 ♀: "Görz, Ternov. Wald, VII.908, Krekich" (NHMW).

Romania: 2 ♂♂, 4 ♀♀: "Herkulesbad, Puvlina large [?], 11-5-31." (MNHUB, cAss); 1 ♂: "Herkulesbad, Prulus Shlusht [?], 23.6.32." (MNHUB); 1 ♂, Băile Herculane, 11.V.1931 (MNHUB, cAss); 1 ♂: "Herkulesbad, Deubel" (NHMW); 1 ♂, 2 ♀♀: "N.-Bogsàn [= Bocşa], Banat" (NHMW); 2 ♀♀: "Presbe [= Prejba], Transsylv., Gassner" (NHMW); 1 ♀: "Fogarasch. Geb., Negoihaus, Schuster 98" (NHMW); 1 ♀: "Transs." (MNHUB); 1 ♂: "Transsylv." (MNHUB); 3 ♂♂: "lucida. Alp. Transsylv., Reitter" (NHMW).

Croatia: 1 ♀: "Kroatien, leg. Bragustin [surname illegible] / Velika Duboka [additional data illegible], 11.VIII.1970" (NHMW); 1 ♂: "Croatia, Agram [= Zagreb], Leonhard" (NHMW); 1 ♂, 1 ♀: "*lucida* Grv., Slavonien, Apfelbeck" (NHMW); 1 ♀: "Kroatien, Reitter" (NHMW); 1 ♂, locality not specified, leg. Breit (NHMW).

Serbia: 1 ♂, 1 ♀: "Pirot, 30.IV.2002, under stone on meadow, Hlaváč legit" (cAss); 3 ♂♂, 3 ♀♀: "Serbia: Niš reg, Suva planina, Bojanine Voda env., ca 850 m, 2.VII.2006, Leg., J. Cooter, N43°134′, E22°062′ [sic], sieved/extracted forest litter" (cAss).

Bosnia-Herzegovina: 5 ♂♂, 5 ♀♀: "Bosnia-Herzegovina, 12 km S Kladanj, Konjuh planina, 950 m, beech and fir forest, 16.X.2005, leg. Hlaváč" (cAss); 1 ♀: same data, but "leg. Vít" (cAss); 1 ♂, 5 ♀♀: "Nevesinje, V. Zoufal" (NHMW); 4 ♂♂, 2 ♀♀: "Herzegovina, Jablanica, 1901 / Leonhard" (NHMW).

Bulgaria: 1 ♂: "Schiptschenska pl., Schipka-Balkan, ca. 1200 m" (NHMW); 1 ♂, 2 ♀♀: "Jumrukchal, Schipka-Balkan" (NHMW, cAss); 2 ♂♂, 1 ♀: "*lucida* Grv., Kedscha-Balkan, Starke 1879." (NHMW).

Greece: 1 ♂: "GR – Makhedonia, Grevena, Smolika Mt., Smixi, 1450 m, 18.–20.VI.2002, Wachtel" (cAss).

Ukraine: 2 ♂♂: "Bukowina, Czernovitz" (NHMW).

Turkey: **Kocaeli**: 2 ♂♂: "Asia-minor, Goek-Dagh, v. Bodemeyer" (MNHUB, cAss). – **Bolu**: 1 ♂: "Bolu, Anat. bor., leg. F. Schubert / 13.VIII.75" (cAss). – **Sinop**: 2 ♂♂: "Cangaldagh, Anat. bor., 16.–26.V.57, leg. F. Schubert" (NHMW, cAss); 1 ♂: TR [11] – Ordu, 18 km NE Akkuş, 40°56′03″, 37°06′47″E, 920 m, mixed deciduous forest, 15.VII.2008, Schülke (cSch). – **Gümuşhane**: 1 ♂, 1 ♀: "TR [3] – Gümuşhane [sic], ca. 25 km SW Gümuşhane [sic], Tersundağı Geç., 2070 m, 40°17′38N, 39°18′02E, 24.VII.2006, M. Schülke" (cSch, cAss). – **Trabzon**: 1 ♀: "Maçka-Trabzon, Pontus, Schubert, VII.71" (cAss). – **Rize**: 2 ♀♀: "TR [26] – Rize, 40 km SSE Rize, W Sivrikaya, *Abies* forest, 2050 m, 40°41′27N, 40°38′44E, 2050 m, 1.VIII.2006, V. Assing" (cAss); 3 ♂♂, 3 ♀♀: same data, but "M. Schülke" (cSch); 1 ♂: "TR [33] – Rize, ca. 40 km S Ardeşen, Çat, 1240 m, *Alnus* forest, 40°51′44N, 40°56′25E, 3.VIII.2006, V. Assing" (cAss). – **Artvin**: 1 ♂: "Turkey or., Yalnizçam Geçidi, near Sauşat, 20.VI.99, 1800–2000 m, Lackner lgt." (cAss); 1 ♂: "Borcka, Asm. NO, 1500 m, leg. F. Schubert / VII.71" (cAss).

Armenia: 1 ♀: "Conradt 92, Somchetien [= Armenia, Lori province]" (NHMW).

Russia: 10 ♂♂, 2 ♀♀: "RU [25] – W-Caucasus, 9 km SW Teberda, Teberdinski range, 2000 m, 43°22′40″N, 41°39′38″E, 27.VII.2011, V. Assing" (cAss, cFel); 3 ♂♂, 2 ♀♀: "RU [16] – W-Caucasus, 13 km SW Teberda, 1450 m, spruce forest, 43°19′54″N, 41°39′58″E, 22.VII.2011, V. Assing" (cAss, cFel); 1 ♂: "RU: Krasnod.Kr.NW Caucac. Temnolesskaia nr. Mezmai 800 m, 8.VI.1999 A. Smetana [R3]" (cSme); 1 ♀: "Russia – Krasnodar terr., Sochi, Staraya Matsesta, 100 m, forest, ca. 43°34N, 39°48E, 5.VI.1998, Solodovnikov" (cAss); 1 ♂: "Sotschi, Rost" (MNHUB); 2 ♀♀: "Circassien" (MNHUB).

Georgia: 2 ♂♂ [teneral]: "Georgia: Martveli district, 5 km NE Doberzeni vill., Tekhuri riv. val., 800–900 m, 26.–28.VI.2008, Putchkov" (cSch, cAss); 6 ♂♂, 2 ♀♀: "Caucas. min. bor., Trialetskij Chreb, Bakuriani, 1800–2200 m, 15.–20.VI.1987, leg.: Wrase, Schülke" (MNHUB, cAss); 1 ♂: "Caucasus Tbatani [42°17′N, 45°14′E] 79, Leder, (Reitter)" (MNHUB); 2 ♂♂, 2 ♀♀: "Kaukas Leder, Michailowo am Suramgnb. [recte: Suramgeb.; = Mikhailovo, 41°59′N, 43°35′E]" (NHMW); 1 ♂, 1 ♀: "Abchasien" (MNHUB).

Locality not specified: 1 ♂: "Caucasus" (NHMW).

Etymology

The specific epithet (Latin, adjective: hidden, secret) alludes to the fact that the true identity of this species has been misinterpreted by previous authors.

Comment

Bolitochara tecta is conspecific with the interpretation of *B. lucida* of LOHSE (1974), HAMMOND (2001), and probably all other authors since GRAVENHORST (1802). For more details see the section on *B. lucida* above.

Description

Body length 4.2–5.4 mm; length of forebody 2.0–2.5 mm. Habitus as in Fig. 30. Coloration: head reddish to dark-brown; pronotum dark-reddish to dark-brown, usually slightly paler than head and with narrowly paler margins; elytra dark-brown to blackish, with the humeral angles usually extensively and the sutural angles less extensively reddish, often also postero-lateral angles and posterior margins reddish, the reddish coloration of the humeral and the sutural angles usually connected by a more or less distinct diagonal reddish band; abdomen with tergites III–V reddish with more or less distinct and more or less extensive dark spot in the middle, sometimes leaving only the lateral and the posterior margins reddish; tergite VI dark-brown to blackish, with the posterior margin and the paratergites usually reddish; tergite VII dark-brown to blackish, with the posterior portion more or less extensively reddish; tergite VIII yellowish to reddish; legs yellowish to yellowish-brown, with the apices of the metafemora often slightly darker; antenna dark-reddish to dark-brown, with the basal 2–3 antennomeres and antennomere XI yellowish to reddish.

Head (Fig. 31) approximately 1.1 times as broad as long and with distinct neck of approximately half the width of head; punctation with variable, mostly moderately coarse and moderately dense punctation (Fig. 32); interstices on average usually narrower than diameter of punctures (often except for the more sparsely punctate median dorsal portion) and with shallow microreticulation (Fig. 32). Antenna (Fig. 33) 1.5–1.6 mm long and moderately slender; at least antennomeres VII–X more or less distinctly transverse.

Pronotum (Fig. 31) moderately slender and strongly convex in cross section, 1.10–1.18 times as broad as long and 1.09–1.16 times as broad as head; posterior angles sharply marked, lateral margins usually weakly sinuate in posterior half in dorsal view; punctation dense and distinct, but somewhat finer than that of head.

Elytra (Fig. 31) sexually dimorphic, 1.10–1.15 times as long as pronotum; punctation dense and coarse, much more so than that of head and pronotum; microsculpture absent.

Abdomen much narrower than elytra, punctation rather coarse, dense in anterior impressions of tergites III–VI, rather sparse on remainder of tergal surfaces; interstices without appreciable microsculpture and glossy.

♂: elytra (Fig. 31) with more or less pronounced oblong tubercle in sutural angles, disc more or less distinctly, diagonally impressed; tergite VII with long median keel and with moderately dense tubercles; tergite VIII with less distinct median keel, without tubercles, posterior margin distinctly concave and weakly serrate (Fig. 34); posterior margin of sternite VIII obtusely produced in the middle (Fig. 35); median lobe of aedeagus 0.58–0.66 mm long and shaped as in Figs. 9–14.

♀: elytra without tubercles and very indistinctly impressed at most.

Intraspecific variation

A study of the above material revealed that, in external characters, *B. tecta* is enormously variable. In the north, the species is usually somewhat smaller, of more slender habitus, and of generally more reddish coloration with the black markings on the elytra and the abdomen contrasting with the remainder of the body, whereas specimens from the south of the distribution tend to be larger, more robust, and of more uniformly brown to dark-brown coloration. Moreover, the punctation, the diagonal impression on the elytra, and the modifications of the male tergite VII and particularly those of the male elytra are subject to considerable variation. For illustrations of the external characters of a male from the West Caucasus see Figs. 30–32. Even the size of the aedeagus and the shape of the ventral process, are subject to some intraspecific variation. The ventral process tends to be somewhat more elongated in material seen from the West Caucasus, but this condition is not even constant within the Caucasian populations and they are linked to the condition seen in populations from other regions by intermediate conditions (Figs. 9–14), so that these differences are attributed to intra- rather than interspecific variation.

Comparative notes

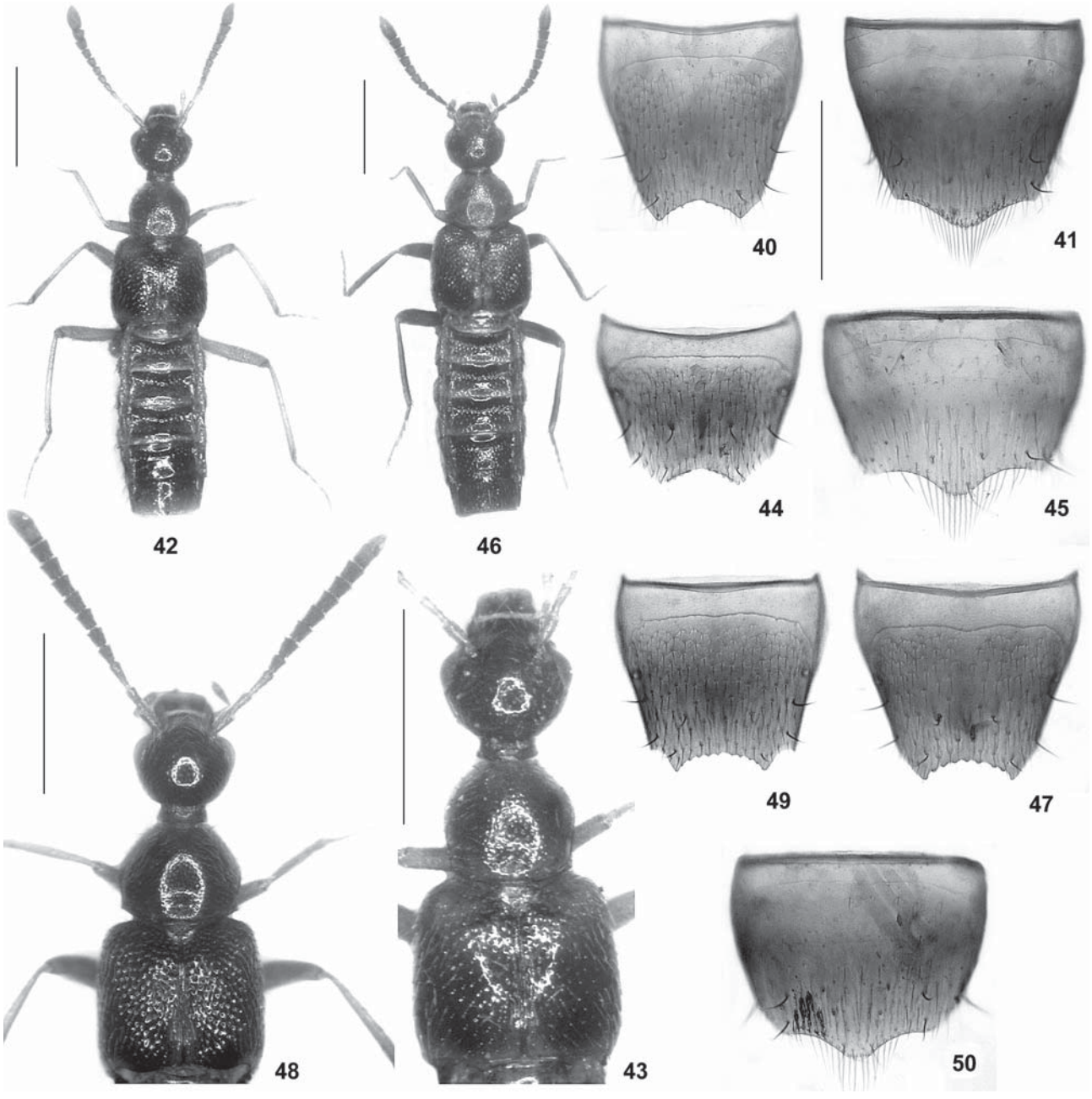
As can be inferred from the similar morphology of the aedeagus, the similar modifications of the male elytra and tergites VII–VIII, as well as from other similar external characters, *B. tecta* is closely related to *B. lucida* and allied species, from which it differs particularly by the morphology of the aedeagus. It is additionally distinguished from the sympatric *B. lucida* by the usually darker coloration and the coarser punctation of the head and pronotum, and by the less transverse and more convex pronotum. For characters separating it from the sympatric *B. tenuicollis* see the comparative notes in the section on that species.

Distribution and natural history

The revised distribution of *B. tecta* is apparently of the expansive Ponto-Mediterranean type and ranges from the western and central Caucasus region, northern Anatolia, and southern mainland Italy to Scandinavia, Great Britain, and the Pyrenees (Fig. 52). Previous records from North Africa (Morocco, Algeria, Tunisia) (SMETANA 2004)

and from southern Spain (GAMARRA & OUTERELO 2005) are most likely based on misidentification and probably refer to *B. schusteri*.

The examined material was collected mainly from under, or on, bark of deciduous trees and from mushrooms in various, mostly forest, habitats. Teneral adults were collected during the period from May through July. Most of the literature data on the natural history of *B. lucida* probably refer to *B. tecta*. However, owing to the previous taxonomic confusion and frequent misidentifications of the species of the *B. lucida* group, these data are not fully reliable.



Figs. 40–50. *Bolitochara niticeps* (40–41), *B. tenuicollis* (42–45), *B. schusteri* from Algeria (46–47), and *B. persica* (48–50). – **40**, **44**, **47**, **49**. Male tergite VIII. **41**, **45**, **50**. Male sternite VIII. **42**, **46**. Male habitus. **43**, **48**. Male forebody. – Scale bars: 1.0 mm (42–43, 46, 48), 0.5 mm (40–41, 44–45, 47, 49–50).

Bolitochara niticeps **n. sp.**
(Figs. 15–16, 36–41, 52)

Type material

H o l o t y p e ♂: "Azerbaijan Talysh rg., Astara env., remnants of wet deciduous forest, 13.V.2001, T. LACKNER / Holotypus ♂ *Bolitochara niticeps* sp. n. det. V. ASSING 2013" (cAss).

P a r a t y p e s: 1♂, 2♀♀: same data as holotype (cAss); 4♂♂, 4♀♀: "Azerbaijan SE Talysh Mts, Masalli – Isti Su, 10–13.V.2001, T. LACKNER" (cAss); 2♀♀: "Azerbaijan Talysh Mts, Lenkoran–Lerik rte 40 km Bobogil, 1–5.V.2001, T. LACKNER" (cAss); 1♀: "Azerbaijan SE Talysh Mts. KM 14–15 Rte Lenkoran–Lerik, 30.IV–9.V.2001, T. LACKNER" (cAss); 1♂: "Talysch, ROST / *Bolitochara lucida* (Gr.), MNHUB Berlin" (MNHUB); 1♀: "Talysch, ROST / *lucida*, FAUVEL det." (MNHUB).

Etymology

The specific epithet is a noun composed of niti- (from nitidus: shiny) and -ceps (head). It alludes to the glossy head with fine punctation and nearly obsolete microsculpture.

Description

Body length 4.5–6.0 mm; length of forebody 2.2–2.5 mm. Habitus as in Fig. 36. Coloration: head dark-brown to blackish-brown; pronotum reddish-brown to dark-brown with narrowly yellowish margins; elytra blackish-brown to blackish, humeral angles extensively yellowish to pale-reddish, postero-lateral and sutural angles narrowly reddish, reddish humeral and postero-sutural spot often connected by diagonal, more or less distinct reddish band, sometimes whole posterior margin narrowly yellowish; abdomen with segments III–V reddish, with more or less extensively infuscate middle, tergite VI blackish, with narrowly reddish lateral and posterior margins, tergites VII and VIII infuscate with broadly reddish posterior margins; legs yellowish-red; antennae brown, with antennomeres I–III(IV) and XI yellowish to reddish.

Head (Fig. 37) with distinct neck of approximately half the width of head; punctation fine and sparse, interstices broader than diameter of punctures, glossy, with almost obsolete microsculpture visible only at high magnification (Fig. 38). Antenna (Fig. 39) 1.7–1.9 mm long and slender; antennomeres IV and V distinctly oblong; VI–VIII weakly oblong; IX approximately as broad as long; X weakly transverse.

Pronotum (Fig. 37) slender and strongly convex in cross section, approximately 1.05 times as broad as long and 1.05 times as broad as head; posterior angles sharply marked, lateral margins concave in posterior half in dorsal view; punctation fine and dense; interstices without apparent microsculpture.

Elytra (Fig. 37) sexually dimorphic, approximately 1.1 times as long as pronotum; punctation dense and coarse, much more so than that of head and pronotum; microsculpture absent.

Abdomen much narrower than elytra, except for the coarsely and densely punctured anterior impressions of tergites III–VI with distinct and rather sparse punctation; interstices without appreciable microsculpture and glossy.

♂: elytra (Fig. 37) with more or less pronounced oblong tubercle in sutural angles, disc shallowly, diagonally impressed and with adjacent, more or less pronounced diagonal elevation; tergite VII with long median keel (Fig. 36); tergite VIII with less distinct median keel, without lateral tubercles, posterior margin distinctly concave and weakly serrate (Fig. 40); posterior margin of sternite VIII obtusely produced in the middle (Fig. 41); median lobe of aedeagus 0.70–0.76 mm long and shaped as in Figs. 15–16.

♀: elytra without tubercles and without distinct impressions and elevation, somewhat uneven at most.

Comparative notes

As can be inferred from the similar morphology of the aedeagus, the similar modifications of the male elytra and tergites VII–VIII, as well as from other similar external characters, *B. niticeps* is most closely related to *B. tecta*, from which it differs by the more glossy appearance, the finer and sparser punctation of the head, the less pronounced microsculpture on the head, the longer and more slender antennae, the slender pronotum, and particularly by the larger aedeagus with a differently shaped apex of the ventral process (lateral view).

Distribution and natural history

The specimens were collected in four localities in the Talysh region, Azerbaijan (Fig. 52). At least some of them were found in a deciduous forest.

Bolitochara tenuicollis **n. sp.**
(Figs. 17–18, 42–45, 51)

Type material

H o l o t y p e ♂: "Russia: W-Caucasus, Adygeja, Guzeripl env., 700 m, 1.VII.1999, leg. PUTCHKOV / Holotypus ♂ *Bolitochara tenuicollis* sp. n. det. V. ASSING 2013" (cAss).

P a r a t y p e s: 4♂♂, 7♀♀: same data as holotype (cSch, cAss).

Etymology

The specific epithet (adjective) is composed of the Latin adjective tenuis (slender, narrow) and an adjective derived from the Latin noun collum (neck). It alludes to the small and slender pronotum.

Description

Body length 4.0–5.2 mm; length of forebody 2.0–2.4 mm. Habitus as in Fig. 42. Coloration: head brown;

Fig. 51. Distributions of *Bolitochara lucida* (circles; open circle: female-based record), *B. anatolica* (diamonds), and *B. tenuicollis* (star), based on examined records.

pronotum pale-reddish; elytra brown to blackish-brown, humeral angles, postero-lateral and sutural angles, and the narrow posterior margin yellowish, humeral and postero-sutural spot connected by a more or less distinct and more or less extensive diagonal yellowish band; abdomen reddish, with segment VI, the anterior three fourths of segment VII, and often also a small median spot on tergites III–V infuscate; legs yellow; antennae reddish, with antennomeres I–III yellowish.

Head (Fig. 43) with distinct neck of less than half the width of head; punctation fine and rather sparse, interstices broader than diameter of punctures, glossy, with very shallow microsculpture. Antenna 1.4–1.5 mm long and gradually incrassate apicad; antennomeres IV weakly oblong, V approximately as long as broad, VI–X of gradually increasing width and increasingly transverse, X approximately 1.5 times as broad as long.

Pronotum (Fig. 43) small in relation to head and indistinctly transverse, 1.00–1.05 times as broad as long and approximately as broad as head, broadest in anterior half, strongly narrowed anteriad, and weakly tapering in posterior half; lateral margins weakly sinuate in posterior half in dorsal view; posterior angles sharply marked; punctation fine and moderately dense; interstices without microsculpture, glossy.

Elytra (Fig. 43) sexually dimorphic, approximately 1.15 times as long as pronotum; punctation moderately coarse, moderately dense, and defined; interstices usually broader than diameter of punctures, without microsculpture, and glossy.

Abdomen much narrower than elytra; punctation dense and rather coarse in anterior impressions of tergites III–V, sparse on remainder of tergal surfaces, decreasing in density from tergite III to tergite VII; microsculpture absent.

♂: elytra with oblong tubercle in sutural angles; tergite VII with relatively short median keel in posterior half; tergite VIII with very short and fine median keel, posterior margin distinctly concave and weakly serrate (Fig. 44); posterior margin of sternite VIII obtusely produced in the middle (Fig. 45); median lobe of aedeagus 0.70–0.72 mm long and shaped as in Figs. 17–18.

♀: elytra without tubercles.

Comparative notes

The similar modifications of the male elytra and tergites VII–VIII, the similar general morphology of the aedeagus, and other external similarities leave no doubt that *B. tenuicollis* is closely related to *B. tecta* and allied species. Among the species of this species group, *B. tenuicollis* is particularly characterized by the small and slender

pronotum, the pale coloration, the less dense punctation of the pronotum, the glossy appearance of the whole body, the sparse abdominal punctation, and particularly by the morphology of the aedeagus.

Distribution and natural history

The type locality is situated in the Republic of Adygea, West Caucasus, Russia (Fig. 51). Additional data are not available.

Bolitochara schusteri Bernhauer, 1908
(Figs. 19–24, 46–47, 52)

Bolitochara schusteri Bernhauer, 1908: 35 f.

Material examined [see also Assing 2007b]

Tunisia: 1 ♀, Ain Soltane, Ghardimaou env., 30.IV.2004, leg. Lackner (cAss); 1 ♂, Ain Soltane, Jendouba, 36°29′N, 8°19′E, 600 m, oak forest, sifted, 28.XII.2004, leg. Wunderle (cAss).

Algeria: 2 ♂♂, 1 ♀, Kabylie, Forêt d'Akfadou, 1000 m, 4.–7.VI.1980, leg. Sama & Magnani (cZan, cAss); 1 ♂, Grande Kabylie, Yakouren, forêt Beni-Ghobri, Bois Sacré, 750 m, V.1953, leg. Fagel (MHNG).

Morocco: 2 ♀♀, Larache, II.1899, leg. Vaucher (MNHNP); 2 ♂♂, 1 ♀, Larache, 1910, leg. Vaucher (MNHNP, cAss); 1 ♂, Azrou, 1400–1900 m, leg. Alluaud (MNHNP); 1 ♂, Azrou, 1900, leg. Alluaud (MNHNP); 1 ♀, Moyen-Atlas, Michliffen, 1900, leg. Kocher (MNHNP); 1 ♂, Michliffen (MNHNP).

Spain: 1 ♂, 1 ♀, Andalucía, Tarifa (CA), Puerto del Bujeo, 24.III.1987, leg. Siede (cWun); 1 ♀, Andalucía, Cádiz, Sierra de Fates, 350 m, sifted, 26.III.1994, leg. Wunderle (cWun); 1 ♂, Andalucía, Jaén, Sierra de Cazorla, Cazorla, Nava de San Pedro [37°55′N, 3°00′W], 1400 m, 6.X.1993, leg. Wunderle (cWun).

Locality not specified: 1 ♂ (MNHUB).

Comment

Bolitochara schusteri was originally described based on a unique male holotype ("bei dem einzigen in meiner Sammlung befindlichen Exemplare … . Das Tierchen …") from Tunisia ("Tunis (Ain Draham)") (Bernhauer 1908) and subsequently reported also from Morocco and Spain (Lindberg & Bernhauer 1931, Assing 2007b). The holotype, which was invalidly designated as the lectotype by Gusarov (1995), was examined during a visit to the FMNH several years ago.

Based on the similar external and male sexual characters, *B. schusteri* is closely related to *B. tecta* and allied

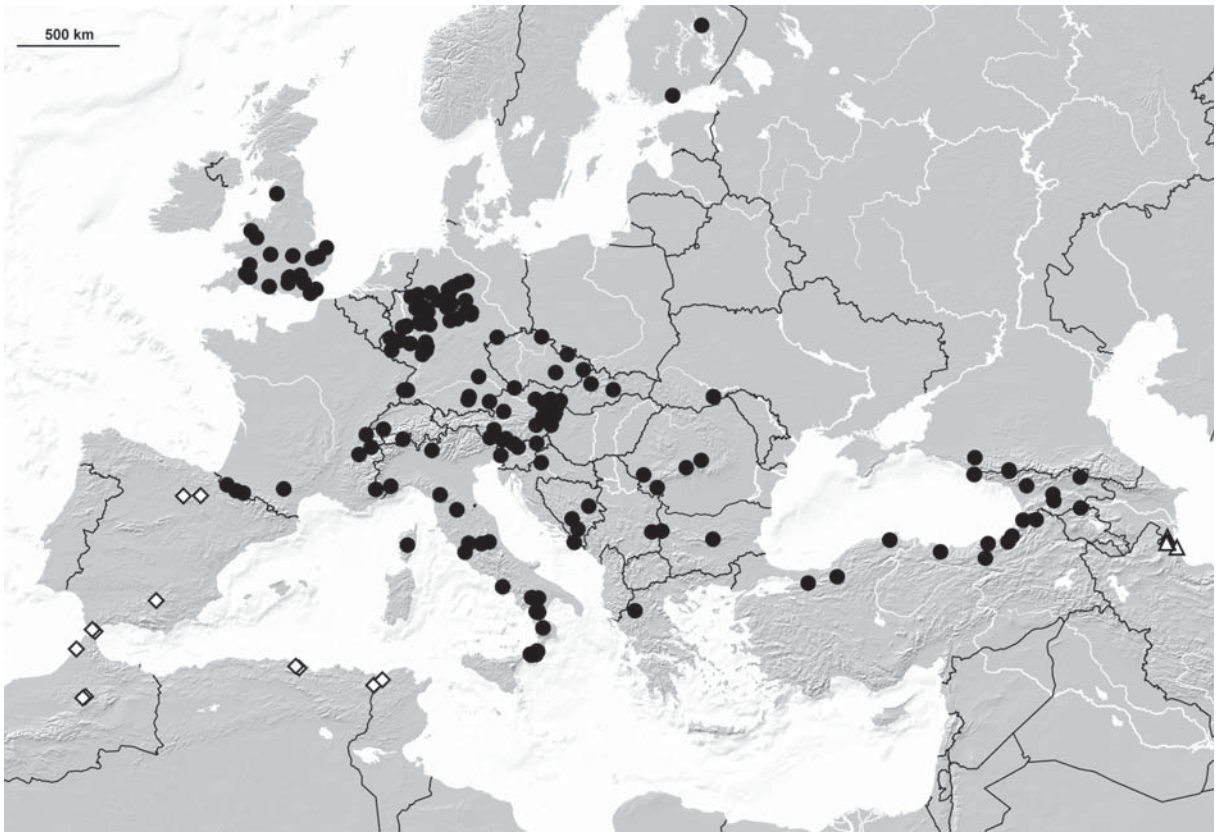


Fig. 52. Distributions of *Bolitochara tecta* (circles), *B. schusteri* (diamonds), and *B. niticeps* (triangles), based on examined records.

species. Like other species of the genus, *B. schusteri* is subject to considerable intraspecific variation, including the coloration. Also, in the material seen from Algeria and Tunisia, the punctation of the pronotum is significantly more distinct (Fig. 46) than in material seen from Spain. Moreover, the aedeagus of the males from Algeria and Tunisia is larger (0.66–0.71 mm; males from Spain: 0.62–0.64 mm), and the internal tube of the aedeagus is slightly more strongly bent in the males from Algeria (Figs. 19–24). However, in view of the otherwise evident similarity of the aedeagus and the fact that intraspecific variation may be pronounced also in other *Bolitochara* species, these differences are attributed to intra- rather than interspecific variation. For an illustration of the aedeagus of the holotype see Assing (2007b). The male tergite VIII is illustrated in Fig. 47.

Among the species of the *B. lucida* group, *B. schusteri* is externally characterized by a combination of the coloration (head and pronotum usually concolorous pale-reddish; elytra predominantly blackish, with the yellowish spots in the humeral and the sutural angles relatively small and diagonal band indistinct to obsolete; legs partly infuscate: meso- and metatibiae, meso- and metafemora usually more or less distinctly brown to dark-brown), the rather small pronotum (in relation to the head), and the usually fine punctation of the head and the pronotum. It is readily distinguished from the often similarly coloured and sympatric *B. humeralis* by the presence of a distinct and slender neck, as well as by the longer and more slender antennae.

The distribution is of the Atlanto-Mediterranean type and ranges from Tunisia across Algeria and Morocco to northern Spain (Fig. 52), where it parapatrically borders on that of *B. tecta*. Previous records of *B. lucida* from North Africa and southern Spain most likely refer to *B. schusteri*. The above specimens from Algeria represent a new country record.

Bolitochara persica **n. sp.**
(Figs. 48–50, 56–57)

Type material

Holotype ♂: "Iran; Kasp. Meer, 18.VIII.1967, leg. Marchalowski / Holotypus ♂ *Bolitochara persica* sp. n. det. V. Assing 2013" (cAss).

Paratype ♂ [left antenna and right hind leg missing]: "N-Iran, Prov. Mazandaran, N-Elburz, Now Shahr, sw, Primary Forrest [sic], 500 m, 36.35.20N, 51.34.05E, 03.06.08, leg. D. Frenzel" (NME).

Etymology

The specific epithet is an adjective derived from Persia, the ancient name of the region where this species was collected.

Description

Body length 5.0–5.5 mm; length of forebody 2.2–2.5 mm. Pronotum 1.13–1.16 times as broad as long and 1.13–1.19 times as broad as head. Other external characters as in *B. niticeps*.

♂: elytra (Fig. 48) with pronounced oblong tubercle in sutural angles, disc very weakly uneven, without distinct diagonal impression or elevation; tergite VII with long median keel; tergite VIII with very short median keel, posterior margin distinctly concave and distinctly serrate (Fig. 49); posterior margin of sternite VIII obtusely produced in the middle (Fig. 49); median lobe of aedeagus 0.58 mm long and shaped as in Figs. 56–57.

♀: unknown.

Comparative notes

Bolitochara persica is characterized particularly by the distinctive morphology of the aedeagus. It differs from the externally similar and geographically close *B. niticeps* by the larger and broader pronotum, the absence of distinct elevations or impressions on the male elytra, as well as by the much smaller aedeagus with a ventral process and internal structures of completely different shape.

Distribution and natural history

The species is currently known only from two localities in northern Iran. The paratype was collected in a primary forest at an altitude of 500 m.

Bolitochara pulchra (Gravenhorst, 1806)
(Figs. 53–55)

Aleochara pulchra Gravenhorst, 1806: 164 f.
Aleochara cincta Gravenhorst, 1806: 166.
Bolitochara elongata Heer, 1839: 349; **n. syn.**
Bolitochara flavicollis Mulsant & Rey, 1861: 93.

Type material examined

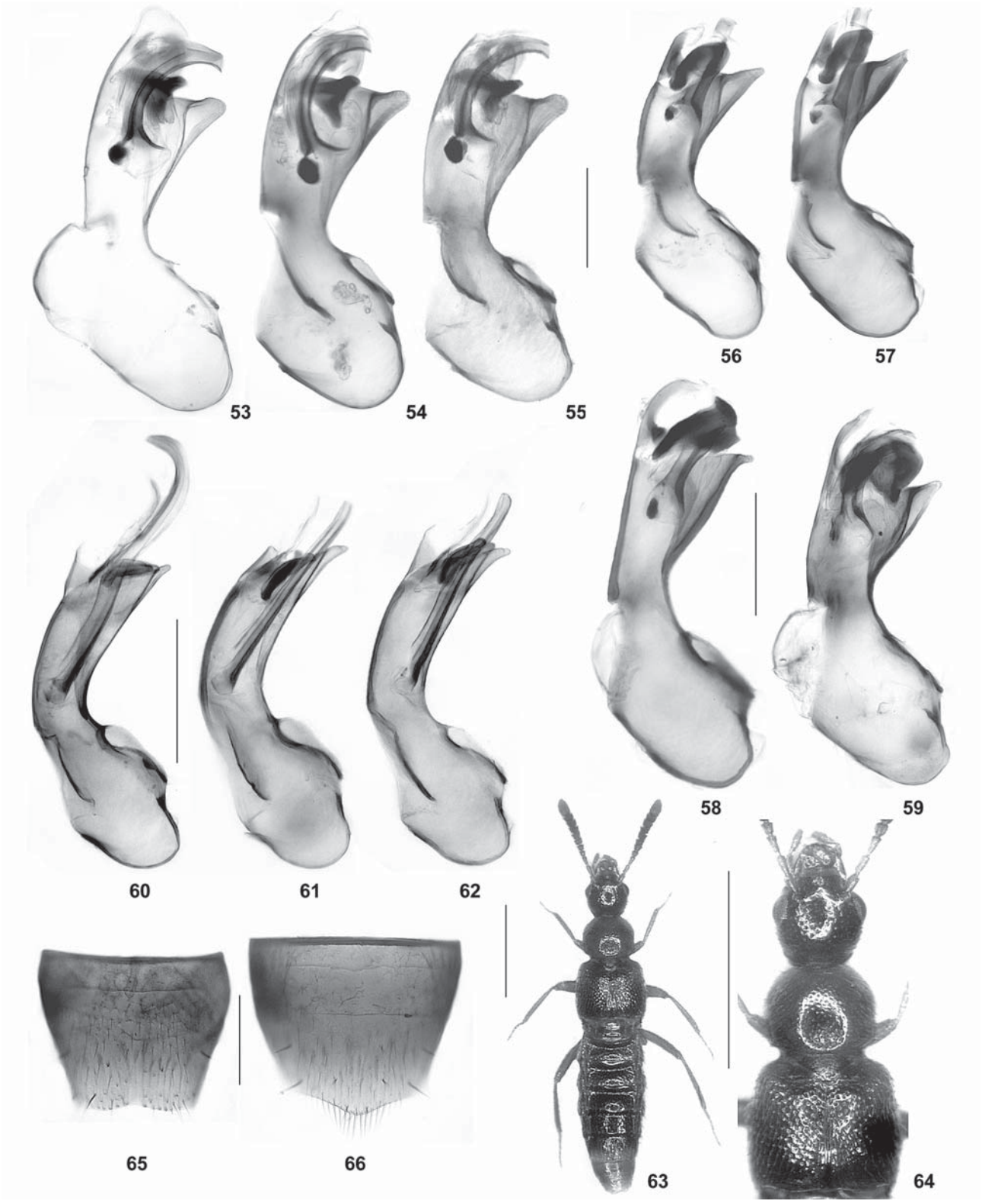
Aleochara pulchra and *A. cincta*: Neotype ♂, present designation: "5306 / *lunulata*, Staph. *lun.* Pk., *Aleoch. lun.* Gyll., *cincta* & *pulchra* Gr. / Neotypus ♂ *Aleochara pulchra* Gravenhorst, desig. V. Assing 2013 / Neotypus ♂ *Aleochara cincta* Gravenhorst, desig. V. Assing 2013 / *Bolitochara pulchra* Gravenhorst, det. V. Assing 2013" (MNHUB).

Bolitochara elongata: Lectotype ♂, present designation: "[red triangular label] / a [= Matt Kt. Glarus, leg. Heer] / Lectotypus ♂ *Bolitochara elongata* Heer, desig. V. Assing 2013 / *Bolitochara pulchra* (Gravenhorst) det. V. Assing 2013" (ETHZ).

Additional material examined

Norway: 1 ♂, Oslo, IX.1940, leg. Holgersen (BMNH).

Sweden: 2 ♂♂, 1 ♀, Filipstad, 2.VIII.1996, leg. Eifler (cAss); 1 ♂, Filipstad, car-net, 17.VII.1995, leg. Eifler (cAss); 1 ♂, 1 ♀, Filipstad, 11.VIII.1999, leg. Eifler (cAss); 1 ♀, Värmland, locality illegible, VI.–VII.1975 (MHNG); 1 ♂, 1 ♀, Lappland, Jokkmokk, VII.1988, leg. Terlutter (cTer).



Figs. 53–66. *Bolitochara pulchra* (53–55; 53: neotype of *B. pulchra* and *B. cincta*; 54: lectotype of *B. elongata*; 55: Sweden), *B. persica* (56–57; 56: holotype; 57: paratype), *B. mulsanti* (58), *B. sogdiana* (59), *B. bella* (60), and *B. recta* (61–66; 61: Tunceli; 62: Hatay). – **53**–**62**. Median lobe of aedeagus in lateral view. **63**. Habitus. **64**. Forebody. **65**. Male tergite VIII. **66**. Male sternite VIII. – Scale bars: 1.0 mm (63–64), 0.2 mm (53–62, 65–66).

Finland: 1 ♂, 1 ♀, Kuhmo, Lake Kellojärvi, Lato Saari island, pitfall, 9.–17.IX.2000, leg. WÖLDECKE (cAss); 1 ♂, same locality, VI.–VIII.2001, leg. HEJNO (cAss); 1 ♂, Kuhmo, pitfall, 5.VIII.1997, leg. HEJNO (cAss); 1 ♂, Lappi, 9.IX.1995, leg. BLAKE (BMNH).

France: 1 ♀, Île de France, Fontainebleau, V.1892 (BMNH); 1 ♂, 1 ♀, Alpes Maritimes, St. Martin-Vésubie, leg. BUCHET (MHNG); 1 ♂, 1 ♀, Hautes Vosges (MHNG).

Germany: 1 ♀, Hannover, Stöcken, fallow, pitfall, IX.1986, leg. ASSING (cAss); 1 ♀, Niedersachsen, NW Hannover, Helstorfer Heide, heathland, pitfall, V.1981, leg. ASSING (cAss); 1 ♀, same data, but VIII.1985, leg. ASSING (cAss); 1 ♀, Hannover (MHNG); 1 ♀, Niedersachsen, N Gifhorn, NSG Rössenbergheide, X.1986, leg. ASSING (cAss); 1 ♀, same locality, pine forest, sifted from moss, 14.IV.1988, leg. ASSING (cAss); 1 ♂, Nordrhein-Westfalen, Bad Berleburg, Raumland An der Hörre, sifted, 4.X.2004, leg. TERLUTTER (cTer); 1 ♂, Mecklenburg-Vorpommern, Ziernsee, IX.1921 (MNHUB); 1 ♂, Brandenburg, Reichenkreuzer Heide, 2 km SW Henzendorf, 11.VIII.1998, leg. PÜTZ (cAss); 1 ♂, 1 ♀, Niederlehme (MNHUB); 1 ♀, Brandenburg, Liepnitzsee (MNHUB); 1 ♂, Sachen/Sachsen-Anhalt, Dübener Heide, X.1927, leg. HEIDENREICH (cAss); 1 ♀, Thüringen, Kyffhäuser, 10.VIII.1953 (MNHUB); 1 ♀, Bayern, Bernau, bog, 2.IX.1989, leg. HIRGSTETTER (cAss); 2 ♀♀, Bayern, Aschaffenburg, leg. WAGNER (MNHUB); 2 ♂♂, Bayern, Sünching, 12.VIII.1918, leg. WAGNER (MNHUB); 1 ♂, Bayern, Alling, IX.1918, leg. WAGNER (MNHUB); 1 ♀, Bayern, Burglengenfeld, X.1913, leg. WAGNER (MNHUB).

Switzerland: 1 ♂, locality not specified (MHNG).

Austria: 1 ♂, Niederösterreich, Tullnerbach (NHMW); 1 ♂, 3 ♀♀, locality not specified (MHNG).

Czech Republic: 1 ♂, Konstantinovy Lázně (cAss).

Italy: 1 ♀, Lombardia, locality illegible, leg. FIORI (MNHUB); 1 ♂, Lombardia, Grignetta ["Grigna mer."; 45°55′N, 9°23′E] (MHNG); 1 ♂, Trentino, Sagron Mis [46°12′N, 11°56′E], VIII [year not specified] (cAss).

Romania: 1 ♀, Miercurea-Ciuc, S Pangarati pass, 46°45′N, 25°42′E, 970 m, 27.VII.2013, leg. MEYBOHM (cAss).

Russia: 1 ♂, Kadniza/Volga, leg. HIEKE (MNHUB); 1 ♀, Iljinka/Volga, 6.VII.1961, leg. HIEKE (MNHUB).

Locality not specified or not identified: 1 ♀ (MHNG); 1 ♂, "Kölligsf.", IV.1914 (MHNG).

Comment

The original descripton of *Aleochara pulchra* is based on one specimen collected by GRAVENHORST himself and three additional specimens from the STURM collection, parts of which went to the Münchener Zoologische Staatssammlung (HORN et al. 1990). *Aleochara cincta* was described from an unspecified number of syntypes from the KNOCH collection, which is housed in the MNHUB (HORN et al. 1990). Type localities are specified in neither of the descriptions, suggesting that the type material of both names was collected in Central Europe, probably Germany. The GRAVENHORST collection was deposited in the "Zoologisches Museum der Universität Breslau" (today Wrocław in Poland), which according to GRAVENHORST (1832) had two specimens of *A. pulchra*, but was completely destroyed (ASSING 2009). According to the respective curator and technician in charge, type material of *A. pulchra* and *A. cincta* was found neither in the MNHUB (WILLERS, e-mail 29.VII.2013) nor in the Münchener Staatssammlung (BALKE, e-mail 9.VIII.2013). Thus, it can be concluded that it is lost. Since *Aleochara pulchra* is the type species of the genus *Bolitochara*, a neotype designation appears advisable to define and stabilize not only the identity of *Bolitochara pulchra*, but also the synonymy of *B. cincta* with *B. pulchra*. To this end, a male from the historical series of *Aleochara pulchra* in collections of the MNHUB is selected and designated as the neotype of both *Aleochara pulchra* Gravenhorst and *A. cincta* Gravenhorst, thus rendering the synonymy of both names objective. The species is unambiguously characterized by the morphology of the aedeagus (Figs. 53–55). For additional characters see the key at the end of this article.

Bolitochara elongata, previously a synonym of *B. lucida*, was described from Switzerland ("Matt") (HEER 1839); the number of syntypes is not specified. One male syntype was located in the HEER collection at the ETHZ; it is designated as the lectotype. The specimen is conspecific with *B. pulchra*. The aedeagi of the neotype of *B. pulchra* (and *B. cincta*), of the lectotype of *B. elongata*, and of a male from Sweden are illustrated in Figs. 53–55.

Bolitochara pulchra is widespread from West Europe to East Siberia (SMETANA 2004). According to WAGNER (1995), its abundance has significantly decreased in many parts of Germany.

Bolitochara mulsanti Sharp, 1875
(Fig. 58)

Bolitochara mulsanti SHARP, 1875: 132.

Type material examined

Lectotype ♂, present designation: "Macugnaga / Macugnaga, Piedmont / Monte Rosa / *Bolitochara elongata* Rey. nec Heer. = *B. mulsanti* Sharp. / SHARP Coll 1905-313. / ?Syntype / ?Syntype, det. R. G. BOOTH 2013 / Lectotypus ♂ *Bolitochara mulsanti* Sharp, desig. V. ASSING 2013 / *Bolitochara mulsanti* Sharp, det. V. ASSING 2013" (BMNH). Paralectotypes: 1 ♀: "Macugnaga / Macugnaga, Piedmont / Monte Rosa / *Bolitochara elongata* Rey. nec Heer. = *B. mulsanti* Sharp. / SHARP Coll 1905-313. / ?Syntype" (BMNH); 1 ♂: "France / Gallia / SHARP Coll 1905-313. / ?Syntype" (BMNH).

Comment

SHARP (1875) introduced the name *B. mulsanti* for MULSANT & REY's erroneous interpretation of *B. elongata* Heer, without specifying any type material or type localities. Thus, the material seen by SHARP up to 1875 may be regarded as syntypes. Three specimens, two males and one female, from the SHARP collection meet this criterion, particularly since one of the males has a label "*Bolitochara elongata* Rey. nec Heer. = *B. mulsanti* Sharp" attached to it. This male is designated as the lectotype.

The distribution of *B. mulsanti* ranges from South Italy to France, the British Isles, Scandinavia northwards to Lapland, European Russia, Ukraine, and the northern Balkans (Horion 1967, Smetana 2004, Zanetti 1995). For the purpose of the present paper, material from Germany, Austria, North Italy, Switzerland, and France was studied. In the collections examined, it was most frequently confused with *B. tecta*. The median lobe of the aedeagus is illustrated in Fig. 58.

Bolitochara bella Märkel, 1844
(Figs. 60, 67)

Bolitochara bella Märkel, 1844: 209 f.

Material examined

Spain: 1 ♂, 1 ♀, Girona, fungus on beech stump, 23.VIII.1996, leg. Lott (BMNH, cAss).

Great Britain: 1 ♀, Pembrokeshire, St. Forence, 13.VII.1983, leg. Lott (BMNH); 1 ♂, 1 ♀, Somerset, Nettlecombe, leg. Power (BMNH); 1 ♀, Oxfordshire, Wychwood Forest, 7.V.1937 (BMNH); 1 ♂, Hampshire, Brockenhurst district, leg. Cameron (BMNH); 1 ♂, Hampshire, New Forest, 7.VII.1915, leg. Sharp (BMNH); 1 ♂, 1 ♀, Surrey, Beddington Sewage Farm, 5.V.1996, leg. Booth (BMNH); 1 ♀, Surrey, Cobham, 23.V.1889, leg. Sharp (BMNH); 1 ♂, Surrey, Caterham, leg. Champion (BMNH); 1 ♀, East Devon, Budleigh Salterton, leg. Champion (BMNH); 1 ♂, 1 ♀, Kent, Kearsney, 3.IX.1907 (BMNH); 1 ♀, West Berkshire, Hungerford, 5.IX.1913 (BMNH); 1 ♀, Hungerford, 26.VIII.1913 (BMNH); 1 ♀, East Sussex, Milton Hide, 24.VII.1936 (BMNH); 1 ♂, 2 ♀♀, London, Richmond Park, 6.V.1984, leg. Hammond (BMNH); 1 ♀, London, Bexley (BMNH); 2 ♂♂, London, Dulwich (BMNH); 2 ♂♂, Suffolk, Herringswell, V.1980, leg. Hammond (BMNH); 1 ♂, Essex, Highlands Park, 22.VII.1967, leg. Hammond (BMNH); 1 ♂, Worcestershire, Croome Park, 16.V.1996, leg. Lott (BMNH); 1 ♂, Leicestershire, Rushpit Wood, 6.V.1990, leg. Lott (BMNH); 1 ♀, Monmouthshire, Piercefield, 11.VIII.1994, leg. Hammond (BMNH); 1 ♂, 1 ex., Chatham district, leg. Cameron (BMNH); 1 ♂ [teneral], Wales, Powys, Vaynor Park, 12.VII.1994, leg. Hammond (BMNH); 1 ♂, Isle of Wight, Cowes, leg. Champion (BMNH).

France: **Aquitaine**: 1 ♂, Gironde, Brannens, 3.VI.1934, leg. Tempère (MHNG); 2 ♂♂, 2 ♀♀, Gironde, Carisnac [?], 11.IV.1937, leg. Tempère (MHNG); 3 ♂♂, 1 ♀, Gironde, St.-Vincent-de-Paul, 6.VI.1937, leg. Tempère (MHNG, cAss); 1 ♂, 1 ♀, Gironde, Beychac-et-Caillau, 11.VI.1945, leg. Tempère (cAss); 1 ♀, Bordeaux env., Bontaut [?], 17.VI.1936, leg. Tempère (MHNG); 1 ♀, N Bordeaux, swamp, 10.VII.1927, leg. Tempère (MHNG); 1 ♂, Basses-Pyrénées, Larrau, VI.1938, leg. Tempère (MHNG); 1 ♀, Basses-Pyrénées, "Issol", on mushrooms, 29.IX.1942 (MHNG); 2 ♀♀, Gironde, Talence, 4.IV.1943, leg. Tempère (MHNG); 1 ♂, 3 ♀♀, Gironde, "Citon. Cenac" [?], 30.VI.1934, leg. Tempère (MHNG); 2 ♂♂, Gironde, Sadirac, 22.IV.1935, leg. Tempère (MHNG); 1 ♂, Gironde, Villenave-d'Ornon, 16.IV.1926, leg. Tempère (MHNG); 1 ♀, Gironde, Léognan, 10.IV.1944, leg. Tempère (MHNG); 1 ♀, same data, but 29.VII.1928 (MHNG). – **Midi-Pyrenées**: 1 ♂, S Ax les Thermes, L'Hospitalet/Ariege, 1300 m, 21.VI.1999, leg. Wolf (cSch); 3 ♂♂, 3 ♀♀, "Les Cammazes, Tarn, Per." (MHNG, cAss). – **Île de France**: 1 ♀, Lardy, 1894 (BMNH); 2 ♂♂, 4 ♀♀, Fontainebleau, V.1892 (BMNH); 1 ♂, 3 ♀♀, Fontainebleau, IV.1893 (BMNH); 1 ♂, 1 ♀, Fontainebleau, VIII.1893 (BMNH); 2 ♂♂, 2 ♀♀, Paris env. (BMNH). – **Picardie**: 1 ♂, Oise, Compiègne, V.1891 (BMNH); 1 ♂, Compiègne, VI.1894 (BMNH). – **Rhône-Alpes**: 1 ♂, 1 ♀, Ain, IX.1964, leg. Toumayeff (MHNG). – **Provence**: 1 ♀, Vaucluse, 4 km W Saint-Saturnin-lès-Apt, flood debris, IV.1987 (BMNH); 1 ♀, Var, "Grafaron" [?], 26.IV.1937 (MHNG); 1 ♂, Var, Siagne ["Emb. Siagne"], III.1937 (MHNG); 1 ♀, Var, "Forêt Don", V.1928 (MHNG).

Germany: **Niedersachsen**: 1 ♂, Hannover, Eilenriede, under beech bark, 12.IV.1988, leg. Assing (cAss); 1 ♀, SW Hannover, Deister, Nienstedt, 22.V.1986, leg. Assing (cAss); 1 ♂, 1 ♀, Alfeld, Wrisbergholzen, 1.VIII.1992, leg. Sprick (cAss). – **Nordrhein-Westfalen**: 2 ♂♂, 1 ♀, Porta Westfalica, Wittekindsberg, 10.VI.1993, leg. Assing (cAss); 1 ex. [det. Feldmann], Düsseldorf-Benrath, Schlosspark, pitfall, 15.V.2004, leg. Wenzel (cFel); 1 ♂, Bliesheim, 18.VI.1988, leg. Wunderle (cWun); 1 ♀, Rees, Millinger Bruch, ash tree, 27.VII.1996, leg. Scharf (cTer). – **Hessen**: 1 ♂, Marburg, Neuhöfe, under bark of oak, 7.VI.1987, leg. Assing (cAss); 1 ♀, Marburg-Cölbe, bank of Lahn river, flood debris, 26.III.1988, leg. Wunderle (cWun); 1 ex. [det. Feldmann], 2 km E Gernsheim, Jägersburger Wald, 6.III.2007, leg. Hetzel (cFel); 2 ex. [det. Feldmann], Darmstadt-Arheilgen, NSG "Silzwiesen", VII.2010, leg. Hetzel (cFel); 1 ex. [det. Feldmann], Darmstadt-Eberstadt, dead beech, VI.1997, leg. Hetzel (cFel); 1 ♂ [teneral], Darmstadt, 21.VII.1966, leg. Hansen (MHNG); 2 ♀♀, Dambroich, under bark, 8.XII.1985, leg. Siede & Wunderle (cWun); 2 ♀♀, Dautphe-Buchenau, Katzenbachtal, car-net, 26.IV.1987, leg. Wunderle (cWun). – **Thüringen**: 1 ♀, Kyffhäuser, "Kaltenburg" [locality not identified], 8.V.1992, leg. Hermann (cAss). – **Rheinland-Pfalz**: 2 ♂♂, Altenahr, 2.VI.1984, leg. Wunderle (cWun); 1 ♀, Lahnstein, NSG Koppelstein, 24.–27.V.1985, leg. Wunderle (cWun); 4 ♂♂, Speyer env., in tree fungus, 29.V.1993 (cAss); 2 ♂♂, 1 ♀, Dümpelfeld, under bark, 18.V.1985, leg. Klapperich (cWun); 2 ♂♂, 1 ♀, Unkel [50°35′N, 7°13′E], 1.IX.1985, leg. Wunderle (cWun); 1 ♂, 1 ♀, Ahrtal, Landeskrone [50°33′N, 7°10′E], 9.IV.1979, leg. Scheuern (cWun); 1 ♂, Hunsrück, Soonwald [49°55′N, 7°37′E], Kellenbachtal, 19.V.1991, leg. Wunderle (cWun); 1 ♂, Kastellaun, Behrens Knipp, 19.V.1958, leg. Schmaus (MHNG); 1 ♂, Koblenz, "Königsbacher", flood plain of Rhein river, sifted from litter under poplar wood, 16.XII.2012, leg. Siede (cAss). – **Baden-Württemberg**: 1 ♀, Emmendingen-Sexau, Hornwald, sifted, 18.IX.2008, leg. Wolf (cSch); 1 ex. [det. Feldmann], Wyhl, Rhein-Auwald, car-net, 9.VI.2000, leg. Renner (cFel).

Switzerland: 4 ♂♂, 4 ♀♀, Genève, 10 km W Genève, L'Allondon, 46°12′N, 6°00′E, litter, dead wood, and mushrooms sifted, 11.V.2013, leg. Schülke (cSch, cAss).

Austria: **Vorarlberg**: 1 ♀, W Bregenz, Speichenwiesen, 14.V.1999, leg. Assing (cAss). – **Niederösterreich/Wien**: 1 ♂, Schachau, on tree fungus, 21.VIII.1961 (MHNG); 2 ♂♂, Feichsen, 13.VI.1965, leg. Puthz (MHNG); 1 ♀, Rogatsboden, 13.VIII.1959, leg. Puthz (MHNG); 1 ♂, Albern, flood debris, 1.IV.1952, leg. Malicky (MHNG); 1 ♂, Lainzer Tiergarten, 300 m, 14.V.1997, leg. Holzer (cSch). – **Steiermark**: 1 ♂, Bezirk Hartberg, Stubenberg, Schielleitten, 400 m, in *Laetiporus sulphureus*, 10.X.1999, leg. Holzer (cAss); 1 ♀, Bezirk Hartberg, Sankt Johann bei Herberstein [47°12′N, 15°49′E], Tierpark, 400 m, 3.VII.2000, leg. Holzer (cAss); 1 ♀, same data, but 4.IX.1997 (cSch). – **Kärnten**: 1 ♂, 1 ♀, Ferlach, VII.1960, leg. Lohse (MHNG). – **Burgenland**: 1 ♂, Neusiedlersee, Kaisereiche, 28.VIII.–9.IX.1988, leg. Melber (cAss); 1 ♀, Kaisereiche, 27.V.1993, leg. Peschel (cSch); 1 ♀ [teneral], Neusiedlersee, Donnerskirchen, 21.VIII.1985, leg. Assing (cAss); 1 ♂, Neusiedlersee, Zeilerberg near Jois, 7.IV.1991, leg. Sprick (cAss).

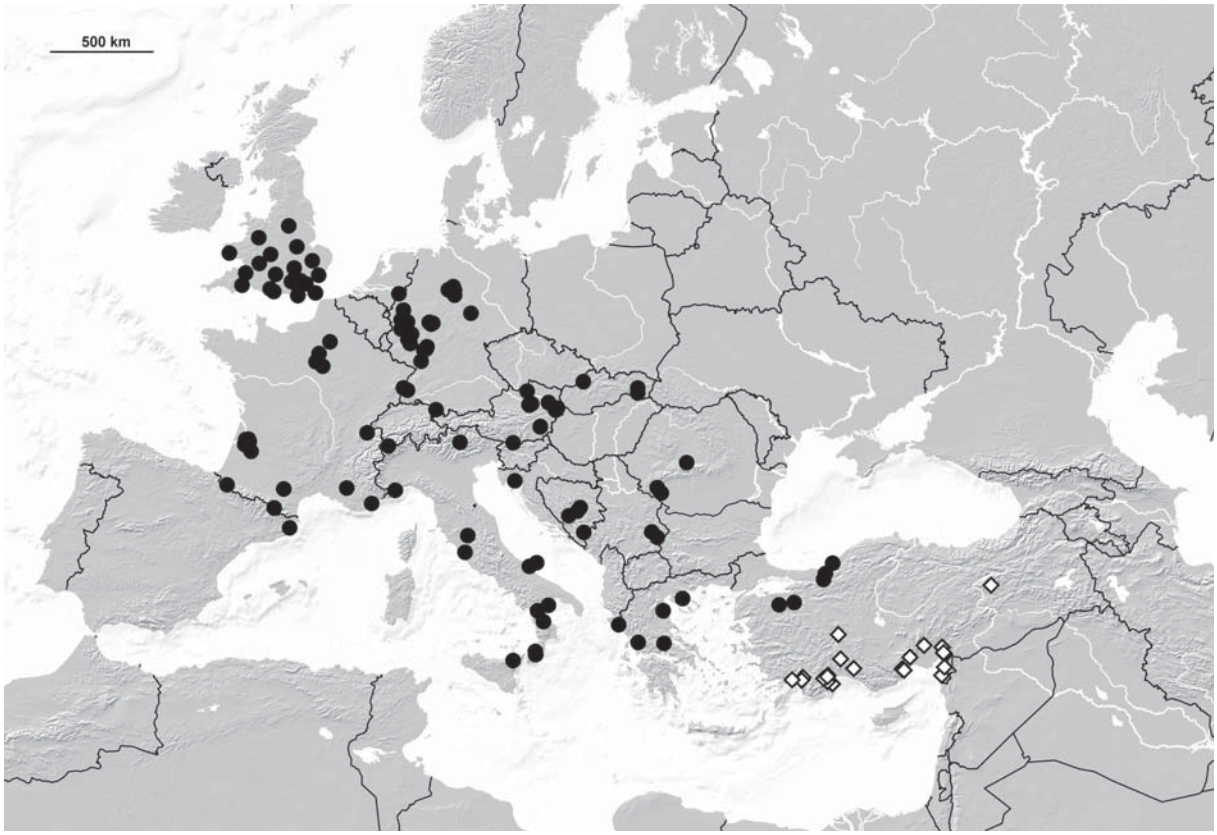


Fig. 67. Distributions of *Bolitochara bella* (circles) and *B. recta* (diamonds), based on examined records.

Slovakia: 2 ♂♂, 2 exs., Herl'any env. [48°47′N, 21°29′E], tree fungus, 30.VII.2006, leg. Hlaváč (cAss); 1 ♂, 1 ♀, 2 exs., Horovce env., 29.IV.2006, leg. Hlaváč (cAss); 1 ♂, 1 ♀, Nový Salas env., Presev, 8.V.1998, leg. Smatana (cSch).

Italy: **Trentino-Alto Adige**: 1 ♂, Auer (Ora), Castelfeder, 11.VI.1989, leg. Wunderle (cWun). – **Aosta**: 1 ♂, Valpellina, 45°50′N, 7°19′E, 1230 m, 22.IX.2002, leg. Meybohm (cAss). – **Piemonte**: 2 ♂♂, Cuneo, Colle San Bernardo, pass, 850–1150 m, 12.X.1997, leg. Wolf (cSch). – **Umbria**: 1 ♂, 1 ♀, Perugia, Ovieto-Prodo, 350–500 m, car-net, 2.VI.2000, leg. Wunderle (cWun). – **Toscana**: 1 ♂, Firenze, "Mt. di Calvani, Mungona", 650 m, 1.V.1991, leg. Wunderle (cWun). – **Puglia**: 2 ♂♂, 1 ♀, Foresta Umbra, bosco Sfilzi, beech forest, 700 m, 13.VII.1991, leg. Angelini (cAss); 1 ♂, Gargano, W San Marco in Lamis, Montenero, 900 m, oak litter, 30.XII.1994, leg. Assing (cAss). – **Lazio**: 5 ♂♂, 2 ♀♀, Lago di Bracciano, 1 km S Bracciano, 22.V.1998, leg. Wolf (cSch, cAss). – **Basilicata**: 1 ♀, San Severino Lucano (PZ), Serra Cappellina, 1000 m, beech forest, 30.VII.1990, leg. Angelini (cWun); 1 ♂, Policoro (MT), 31.XII.1990, leg. Angelini (cAss); 1 ♂, Fot (PZ), 1000 m, beech forest, 2.VI.1991, leg. Angelini (cAss). – **Calabria**: 1 ♂, San Giorgio (RC), 15.X.1993, leg. Adorno (cWun); 1 ♂, Antonimina, Portigliola river, 4.VI.1994, leg. Angelini (cAss). – **Sicilia**: 1 ♂, Montalbano E. (ME), bosco Malabotta, 900 m, beech trunk, 3.VI.1993, leg. Angelini (cAss).

Romania: 2 ♂♂, 1 ♀, Sibiu, rotting oak trunk, 25.IV.2003, leg. Vit (cAss); 1 ♂, Sibiu, hollow tree, 23.IV.2003, leg. Vit (cAss); 1 ♀, Drobeta-Turnu Severin, 10.–11.VI.1995, leg. Prudek (cSch); 4 ♂♂, Băile Herculane, leg. Winkler (MHNG).

Croatia: 1 ♂, Krk island, Krk env., 15.VII.1999, leg. Holzer (cAss).

Bosnia-Herzegovina: 2 ♂♂, 3 ♀♀, NW Sarajevo, Gromiljak [53°57′N, 18°03′E], 7.V.1990, leg. Wunderle (cWun, cAss); 3 ♂♂, 5 ♀♀, Gromiljak, under bark of oak, 300 m, 5.V.1990, leg. Wunderle (cWun); 1 ♀, Kraljevska-Sutjesca, 300–600 m, carnet, 5.V.1990, leg. Wunderle (cWun); 1 ♂, 2 ♀♀, Bjelašnica planina (MHNG); 1 ♀, Prozor, 16.VIII.1977, leg. Lohse (MNHG).

Serbia: 1 ♂, 1 ♀, Niš env., Babička gora, Donji Dušnik, 43°08′N, 22°05′E, 800 m, 5.VII.2006, leg. Hlaváč (cAss); 1 ♂, Gramada planina, S Sastav Reka, 29.IV.2007, leg. Stévanović (cAss).

Greece: 1 ♂, Ipiros, Igoumenitsa env., 8.VI.2002, leg. Wachtel (cAss); 1 ♂, Katara pass, 1500 m, 13.V.1997, leg. Wolf (cSch); 1 ♂, Pieria, above Skotina, 650 m, beech forest, 9.IV.1998, leg. Wunderle (cWun); 1 ♂, Fthiotis, Oros Kallidromo, SSE Lamia, 38°44′N, 22°32′E, under stone, 7.IV.2001, leg. Assing (cAss); 1 ♀, Chalkidiki, NW Megali Panagia, 40°28′N, 23°34′E, 1000 m, 21.V.2005, leg. Bayer (cSch).

Turkey: 1 ♂, Bursa, S Mustafa Kemalpaşa, 7 km SW Karaorman, 39°55′N, 28°28′E, 440 m, 15.IV.2010, leg. Brachat (cAss); 15 ♂♂, 14 ♀♀, 32 exs. [partly teneral], Bursa, Uludağı, Baraklı, 27.VII.–3.VIII.2000, leg. Smatana (cAss); 1 ♀, Sakarya, 2 km W Dikmen, 40°42′N, 30°53′N, 700 m, 4.V.2012, leg. Brachat & Meybohm (cAss); 1 ♂, Düzce, 24 km NW Düzce, road Cilimli → Kaplandede Tepe, 40°55′N, 31°02′E, 710 m, 2.V.2012, leg. Meybohm & Brachat (cAss); 1 ♀, Zonguldak, Amaçlar env., 190 m, 17.–18.VI.2003, leg. Smatana (cSch).

Comment

The original description is based on a male and a female syntype (Märkel 1844). Localities are not specified, but the specimens were probably collected in southeastern Germany. The distinctive aedeagus of *B. bella* is illustrated in Fig. 60.

According to Smetana (2004) and the revised material (Fig. 67), the distribution of the relatively common *B. bella* is similar to that of *B. tecta*, of the Ponto-Mediterranean type, and ranges from northwestern Turkey and South Italy to northeastern Spain, France, Great Britain, Denmark, European Russia, and Ukraine. The above specimens from Spain and Croatia represent new country records. In Turkey, this species is confined to the northwest, its distribution not overlapping with that of the closely related *B. recta* (see below).

Bolitochara recta **n. sp.**
(Figs. 61–67)

Type material

H o l o t y p e ♂: "TR. – Antalya, No. 23, W Kemer, road to Ovacik, *Quercus* litter, 325 m, 36°36′18N, 30°38′38E, 2.IV.2002, V. Assing / Holotypus ♂ *Bolitochara recta* sp. n. det. V. Assing 2013" (cAss).

P a r a t y p e s: 2♂♂, 1♀: same data as holotype (cAss); 1♂, 1♀: same data, but leg. Wunderle (cWun); 5♂♂, 3♀♀: "TR – Antalya, 1120 m, W Kemer, S Hisar, No. 24, *Quercus*, *Carpinus*, 36°44′02N, 30°26′23E, 2.IV.2002, V. Assing" (cAss); 1♀: same data, but leg. Wunderle (cWun); 1♀: "N36°43′ E030°26′, T Umg. Antalya, südl. Hisar, 1120 m, 23.IV.2001, Meybohm, Brachat" (cAss); 1♂: "N36°57′ E030°29′, Türkei Umg. Antalya, Tal sö Termessos, 300 m, Meybohm 22.IV.2001" (cAss); 1♂. "10.III.79, Türkei, Umg. Antalya, Termessos / Coll. G. A. Lohse, MHNG-1994" (MHNG); 1♂: "Antalya-Saklikent, 40 km W Antalya, 1900–2100 mH, Kiefernwald, Leg. Schulz, 27.V.93, Türkei" (cAss); 1♀: "TR-Südküste, Str. Antalya–Saklikent, 1600 m, 10.V.2000, Meybohm, Brachat" (cAss); 1♂: "Akseki/Pamphylien (TR), leg. Esser 19.III.02" (cAss); 1♂, 1♀: "TR – Denizli, 1245 m, 10, ca. 50 km N Fethiye, S Cameli, *Q. ilex* litter, 36°58′55N, 29°16′15E, 09.VII.2002, V. Assing" (cAss); 1♂: "TR – Denizli, 1500 m, 9, ca. 30 km N Fethiye, N Arpacik, pass, 36°52′41N, 29°10′43E, 09.VIII.2002, V. Assing" (cAss); 1♀: "TR – Muğla, No. 14, SE Köyceğiz, 10 m, floodplain wood, 36°56′50N, 28°43′56E, 28.III.2002, P. Wunderle" (cWun); 1♀: "N37°32′52 E31°9′24 (11), TR Isparta Sütçüler, nw Kasimlar, ca. 1200 m, 14.IV.2008, leg. Meybohm & Brachat" (cAss); 2♂♂, 4♀♀: "TR [16] – Konya, Sultan Dağları, NW Dereçine, 38°28′53″N, 31°14′38″E, 1320 m, oak for., sifted, 21.IV.2011, P. Wunderle" (cWun, cAss); 1♂, 2♀♀: "TR Mersin (48), Güzeloluk–Erdemli, S Aydinlar 1350 m / 36°44′59N, 34°7′48E, (48) leg. 7.V.2004, Brachat & Meybohm" (cAss); 1♂: "Namrun, Anat. m., 11.–26.V.60, leg. F. Schubert" (cAss); 1♂: same data, but "10.V.–3.VI.63" (cAss); 1♂: "Turkey: Anatolia mer., Mersin: Arsanli 15 km NW Erdemli, 11.–19.V.1994, leg. Hauck" (cSch); 1♂, 2♀♀: "TR – Adana, 1, N Osmaniye, Karatepe, Laurisilva, 37°17′03N, 36°14′04E, 24.IV.2002, Meybohm" (cAss); 1♂, 3♀♀: "TR – Adana, 1, Karatepe, Laurisilva, 200 m, 24.IV.–1.V.2002, 37°17′12N, 36°14′22E, Meybohm & Brachat" (cAss); 1♂: "TR – Adana, N Osmaniye, Karatepe Nat. Park, 200 m, 37°17′12N, 36°14′22E, Laurisilva, *Q. suber*, N. 13, 28.XII.2000, Wunderle" (cWun); 1♂: "N36°58′36 E36°17′59 (49, TR Umgeb. Osmaniye, Str. Erzin → Zorkun, 930 m, 5.V.2007, leg. Meybohm & Brachat" (cAss); 1♀: "TR [42] – Osmaniye, Karatepe, 37°18′05N, 36°14′03E, 140 m, 30.IV.2005, Brachat & Meybohm" (cAss); 1♂: "Osmaniye, Asm. 1000 m, 1.–8.V.69, leg. F. Schubert" (cAss); 3♂♂, 1♀: "TR [38] – Adana, NW Imamoğlu, SW Karsantı, 37°29′52N, 35°22′48E, 1110 m, 28.IV.2005, Brachat & Meybohm" (cAss); 2♂♂, 2♀♀: "Turkey (Antakya), Kızıl Dağı, 20 km W Antakya, NW Teknepinar, 36°12′33″N, 35°57′30″E, 340 m, *Quercus* forest with *Pinus*, sifted, 3.IV.2004, leg. M. Schülke [T04-06]" (cSch, cAss); 2♀♀: "TR – Antakya, 8, 803 m, Iskenderun, Sogukoluk, 29.IV.2002, 36°29′30N, 36°09′50E, Meybohm & Brachat" (cAss); 1♂: "Turquie: Tunceli, Tunceli–Ovacik, 1100 m, 5.VI.1986 / Besuchet-Löbl, Burckhardt" (cAss).

Etymology

The specific epithet (Latin, adjective: straight) alludes to the straight internal tube of the aedeagus, the most conspicuous character distinguishing this species from the closely related *B. bella*.

Description

Body length 3.2–4.5 mm; length of forebody 1.4–1.8 mm. Habitus as in Fig. 63. Coloration variable: head reddish to brown; pronotum reddish to reddish-brown, of similar coloration as head or paler; elytra usually with a more or less extensive, brown to blackish postero-lateral spot not reaching posterior margin, often with the scutellar region more or less distinctly infuscate, occasionally black coloration more extensive; abdomen with tergites III–V concolorous red or more or less distinctly darkened in the middle; tergite VI brown to black, occasionally with the margins reddish; anterior portion of tergite VII more or less extensively infuscate, rarely completely reddish; segments VIII–X reddish; legs yellowish-red to red; antennae reddish, often with antennomeres V–X somewhat darker.

Head (Fig. 64) without distinct neck; punctation variable, mostly rather fine and moderately sparse, with the interstices on average slightly broader than diameter of punctures; microsculpture shallow to practically obsolete. Antenna approximately 1 mm long and distinctly, gradually incrassate apicad; antennomeres IV as long as broad or weakly transverse, V distinctly transverse, VI–X of gradually increasing width and increasingly transverse, X approximately twice as broad as long, or nearly so.

Pronotum (Fig. 64) 1.15–1.20 times as broad as long and 1.15–1.20 times as broad as head, broadest in anterior half; lateral margins in posterior half distinctly converging in dorsal view; posterior angles marked, nearly rectangular; punctation usually more or less similar to that of head; interstices with or without very shallow microsculpture, glossy.

Elytra (Fig. 64) sexually dimorphic, 1.05–1.10 times as long as pronotum; punctation dense and distinctly coarser

than that of head and pronotum; interstices without microsculpture, and glossy.

Abdomen narrower than elytra; punctation moderately dense and rather fine; microsculpture absent, glossy.

♂: elytra with more or less pronounced oblong tubercle or carina in sutural angles (Fig. 64); tergite VII with median keel in posterior half; tergite VIII without median keel, posterior margin weakly concave and weakly serrate (Fig. 65); posterior margin of sternite VIII obtusely angled in the middle (Fig. 66); median lobe of aedeagus approximately 0.45 mm long and shaped as in Figs. 61–62; internal tube long and straight.

♀: elytra without tubercles.

Comparative notes

The similar modifications of the male elytra and tergites VII–VIII, the similarly derived morphology of the aedeagus, particularly the long internal tube and the distinctly elongated apical lobes of the parameres, and other external similarities leave no doubt that *B. recta* is closely related to *B. bella*, presumably its adelphotaxon. *Bolitochara recta* is distinguished from this species by the distinctly less dense and somewhat finer punctation of the head and pronotum, the on average paler coloration (*B. bella*: head usually distinctly darker than pronotum), and by the morphology of the aedeagus. In *B. bella*, the aedeagus is more strongly curved in lateral view and the internal tube is longer, much more distinctly projecting from the apex of the median lobe, and apically distinctly curved dorsad.

Distribution and natural history

The known distribution is confined to southern Anatolia and ranges from Muğla and Denizli in the west to Tunceli and Hatay in the east. Judging from the available data, it may allopatrically border on the range of *B. bella* in northwestern and northern Anatolia (Fig. 67). Those specimens for which personal observations are available or whose labels provide additional data were sifted from leaf litter in various kinds of forest (oak, hornbeam, laurisilva, flood-plain forests, etc.). The altitudes range from near sea-level (10 m) to approximately 2000 m.

Bolitochara sogdiana Gusarov, 1995
(Fig. 59)

Bolitochara sogdiana Gusarov, 1995: 82 f.

Comment

Bolitochara sogdiana was originally described from Uzbekistan (Gusarov 1995) and subsequently reported also from Kyrgyzstan (Assing 2008). The aedeagus is illustrated in Fig. 59.

3.4 The species of the *B. obliqua* group

Bolitochara obliqua Erichson, 1837
(Figs. 68–71, 82)

Bolitochara obliqua Erichson, 1837: 298.
Bolitochara foveola Motschulsky, 1860: 587.
Bolitochara obliqua v. *caucasica* Eppelsheim, 1890: 161.

Type material examined

B. obliqua: Lectotype ♂, present designation: "5307 / *obliqua* Er., Brieselang. Er.* / Syntypus *Bolitochara obliqua* Erichson, 1837, labelled by MNHUB 2013 / Lectotypus ♂ *Bolitochara obliqua* Erichson, desig. V. Assing 2013 / *Bolitochara obliqua* Erichson, det. V. Assing 2013" (MNHUB). Paralectotype ♀: "Hist.-Coll. (Coleoptera), Nr. 5307, *Bolitochara obliqua* Erichson, 1837, German., Erichs. – Waltl., Zool. Mus. Berlin / Syntypus *Bolitochara obliqua* Erichson, 1837, labelled by MNHUB 2013 / Paralectotypus ♀ *Bolitochara obliqua* Erichson, rev. V. Assing 2013 / *Bolitochara obliqua* Erichson, det. V. Assing 2013" (MNHUB).

B. caucasica: Lectotype ♂, present designation: "Kaukas, Leder, Linik. / c. Epplsh. Steind. d. / Lectotypus [old curator label] / Lectotypus ♂ *Bolitochara caucasica* Eppelsheim, desig. V. Assing 2013 / *Bolitochara obliqua* Erichson, det. V. Assing 2013" (NHMW). Paralectotypes: 1♀: "Kaukas, Leder, Sarjal. 1/9 75. / c. Epplsh. Steind. d. / Lectotypus [old curator label]" (NHMW); 2♂♂, 2♀♀ [all on one pin]: "Kaukas, Leder, Ach Bulach / c. Epplsh. Steind. d. / var. *caucasica* Eppelsh. / Cotypus [old curator label]" (NHMW); 1 ♂, 1 ♀: "Kaukas, Leder, Urwald bei Tcharsach [?] / c. Epplsh. Steind. d. / Cotypus [old curator label]" (NHMW).

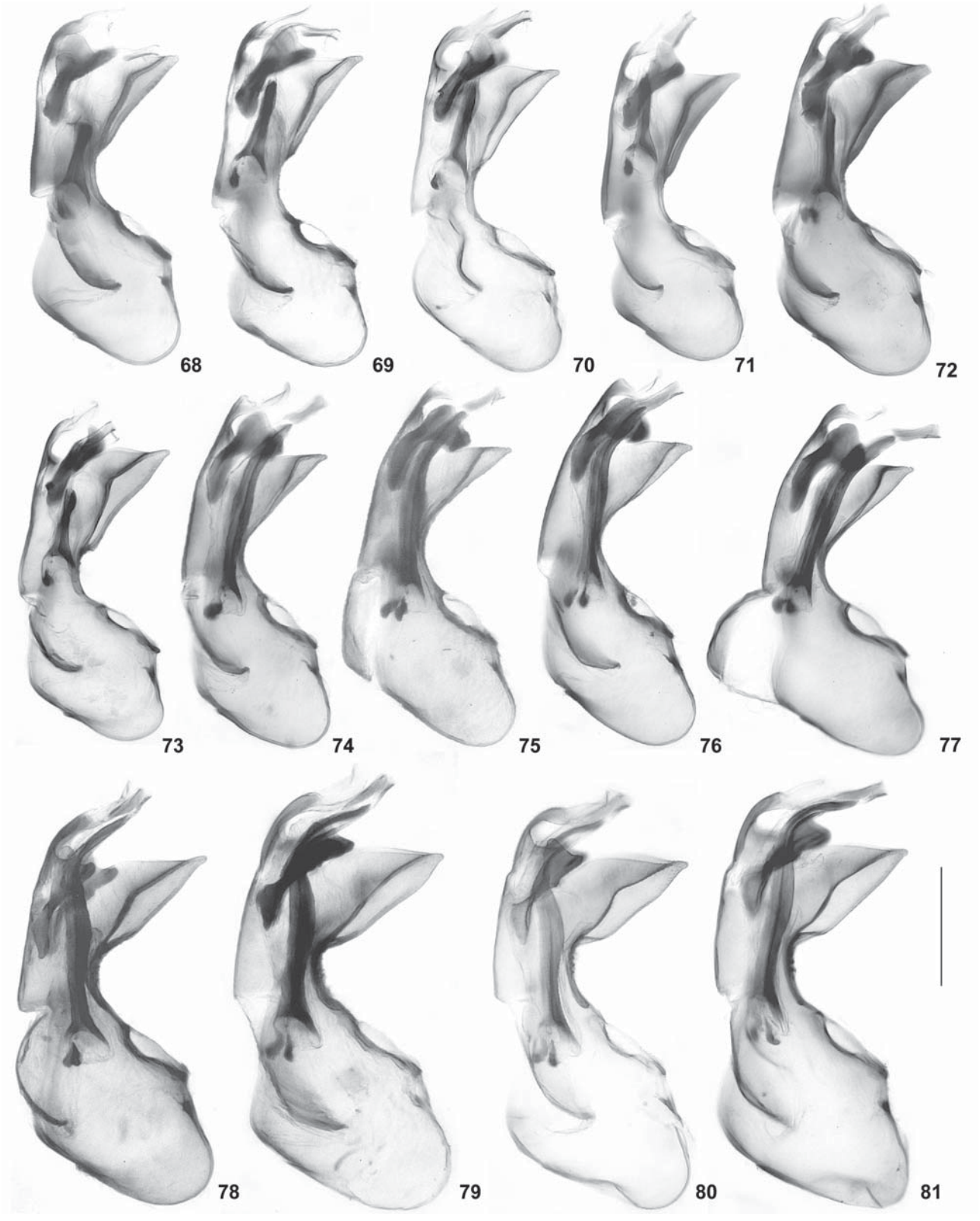
Additional material examined [selection; see comment below]

Spain: 2♂♂, 1♀, Picos de Europa, Espinama env., 30.VII.1972, leg. Lohse (MHNG, cAss); 1♀, Castilla-La Mancha, Cantalojas, Arroyo de Tejera Negra, 41°13′N, 3°23′W, 1660 m, 30.X.2009, leg. Lencina (cAss).

France: 1♂, Gironde, Carisnac [?], 1.IV.1937, leg. Tempère (MHNG); 3♂♂, 2♀♀, Gironde, Beychac-et-Caillau, 11.VI.1945, leg. Tempère (MHNG); 1♂, 1♀, Gironde, "Citon. Cenac" [?], 30.VI.1934, leg. Tempère (MHNG); 1♀, Gironde, La Haillan, 7.VII.1965, leg. Tempère (MHNG); 1♂, Auvergne, Clermont-Ferrand, Farnette, 21.III.1916 (MHNG); 1♂, Midi-Pyrénées, Saleich, II.1948 (MHNG); 2♂♂, 5♀♀, Tarn, Forêt de Gresigne, 27.VI.1976, leg. Lohse (MHNG, cAss); 4♂♂, 4♀♀, Vizzavone, VI.1955 (MHNG, cAss); 1♂, 1♀, Corse, Vizzavone, leg. Fagniez (MNHNP); 1♂, Corse, La Foce (MNHNP); 1♂, Corse, Corte, leg. Fagniez (MNHNP); 2♀♀, Corse, locality not specified (MNHNP).

Greece: 1♀, Crete, Samaria valley, 21.–22.III.1975, leg. Fülscher & Meybohm (MHNG); 1♀, W-Crete, Kandanos, 17.III.1976, leg. Fülscher & Meybohm (MHNG).

Turkey: **Çanakkale**: 1♂, Kaz Dağı, Ayazma, 39°45′N, 26°50′E, 440 m, 11.IV.2010, leg. Brachat & Meybohm (cAss). – **Kastamonu**: 3♀♀, 15 km N Tosya, Ilgaz Gecidi, 41°08′N, 34°04′E, 1660 m, 23.III.2010, leg. Assing (cAss). – **Sinop**: 1♂, Çangal Dağı, 7.–15.VI.1960, leg. Schubert (cAss). – **Ordu**: 2 exs., 18 km NE Akkuş, 40°56′N, 37°07′E, 920 m, mixed deciduous forest, 15.VII.2008, leg. Schülke (cSch, cAss). – **Artvin**: 2♂♂, Borçka env., 21.VI.1999, leg. Lackner (cAss). – **Bitlis**: 1♂, Tatvan, 1900 m, 20.V.1969, leg. Schubert (cAss). – **Izmir**: 1♀, Boz Dağları, Bozdağ env., 1500–1700 m, 30.V.–3.VI.2003, leg.



Figs. 68–81. *Bolitochara obliqua* (68–72; 68: N-Germany; 69: S-Italy; 70: NE-Turkey; 71: Georgia; 72: Iran), *B. varia* from Corsica (73), *B. lauferi* (74–77; 74–75: Isparta; 76: Adana; 77: Kahramanmaraş), and *B. humeralis* (78–81; 78: Algeria; 79: paratype of *B. ornata* from Sicily; 80: Corsica; 81: Pyrenees), median lobe of aedeagus in lateral view. – Scale bar: 0.2 mm.

LOHAJ (cSch). – **Antalya**: 1 ♀, Kale–Finike, 8.III.1979 (cAss); 1 ♂, Akseki, 16.III.2000, leg. ESSER (cAss). – **Mersin**: 1 ♂, 1 ♀, 40 km N Gülnar, 36°30′N, 33°08′E, trap in hollow oak tree, 24.VI.2006, leg. JANSSON & AVCI (EMSDU); 1 ♂, 1 ♀, same data, but 24.V.2006 (EMSDU, cAss).

Ukraine: 4 exs., Crimea, Crimeas reserve, upper part of Katcha river, 800 m, 10.V.2000, leg. IVANOV (cSch, cAss).

Georgia: 3 exs., Telavi district, 5 km N Kobadze, Turlo river valley, 1100 m, 5.–6.VIII.2008, leg. PUTCHKOV (cSch, cAss); 1 ♂, Martkopi, "LEDER (REITTER)" (MNHUB); 4 ♂♂, 6 ♀♀, Trialetskiy Khrebet, Bakuriani, 1800–2200 m, 15.–20.VI.1987, leg. SCHÜLKE & WRASE (MNHUB, cAss).

Russia: 1 ♂, 1 ♀, Krasnodar, Sochi, Staraya Matsesta, ca. 43°34′N, 39°48′E, 100 m, forest, 5.VI.1998, leg. SOLODOVNIKOV (cAss); 1 ♂, 2 ♀♀, Daghestan, Upper Gunip, 1500–1600 m, 25.VI.1989, leg. GOLOVATCH (MHNG); 1 ♂, Tulskaya oblast, Jefremov, 53°09′N, 38°07′E, 19.IV.1986, leg. PÜTZ (cAss); 1 ♀, Tulskaya oblast, Jefremov, town forest, 53°09′N, 38°08′E, sifted, 5.VIII.2003, leg. PÜTZ (cAss).

Iran: 1 ♂, Mazandaran, Chalus, 18.VIII.1967, leg. MARCHALOWSKI (cAss).

Comment

Bolitochara obliqua was described from a male and a female collected "im Brieselanger Forst", Berlin (ERICHSON 1837). The type specimens were located in the historical collection of the MNHUB; the male is designated as the lectotype.

The original description of *B. foveola* is based on an unspecified number of syntypes from two localities in the Crimean Pensinsula, Ukraine (MOTSCHULSKY 1860), that of *B. caucasica* on an unspecified number of syntypes collected "von Leder hauptsächlich im armenischen Gebirge" (EPPELSHEIM 1890). Eight syntypes of *B. caucasica* from four localities were located in the EPPELSHEIM collection at the NHMW. One of the males is designated as the lectotype.

Previous keys (e. g., LOHSE 1974) have relied mainly on characters relating to the coloration, particularly of the abdomen and the antennae. This species, however, is subject to enormous intraspecific variation, especially of the coloration. To some extent, this variation is evidently clinal. The coloration of the pronotum ranges from bright reddish to dark-brown, and the abdomen may be uniformly blackish or, more rarely, distinctly bicoloured, with the anterior segments more or less extensively reddish. Even the punctation of the forebody is highly variable. In material from most regions, the head and the pronotum are more densely punctate than those of other species of the *B. obliqua* group, but in some specimens seen from Greece, for instance, the punctation of the head and the pronotum is very fine and sparse. Thus, *B. obliqua* is best identified based on the morphology of the aedeagus, which is subject to only slight intraspecific variation (Figs. 68–72).

The species is widespread from Turkey, Russia, and the Baltic region across South, Central, and southern North Europe to West Europe (SMETANA 2004). Aside from the records listed above, numerous additional specimens from various regions of South and Central Europe were examined. The above records from Spain and Iran represent new country records. The distribution in Turkey is illustrated in Fig. 82. Most likely, previous records of *B. varia* from localities other than Sardinia, Corsica, and southeastern mainland France refer to specimens of *B. obliqua* with more extensive reddish coloration.

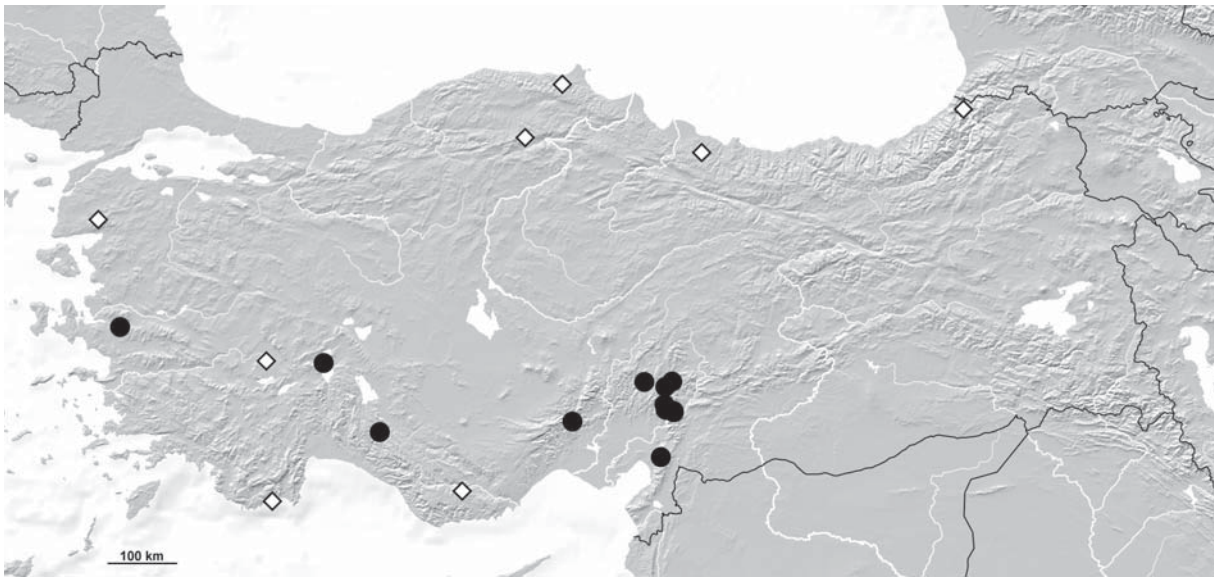


Fig. 82. Distributions of *Bolitochara lauferi* (circles) and *B. obliqua* (diamonds) in Turkey, based on examined records.

Bolitochara varia Erichson, 1839
(Fig. 73)

Bolitochara varia Erichson, 1839: 59.
Bolitochara loevior Fairmaire & Brisout de Barneville, 1859: 35 f.

Type material examined

B. loevior: Lectotype ♂ [dissected prior to present study]: "Hyères / Esterel / Muséum Paris, Coll. L. Fairmaire / Type / *Bolitochara loevior* Fairm., Gall. mer. / Lectotypus ♂ *Bolitochara loevior* Fairmaire et Brisout, V. Gusarov des. 1993 / Paralectotypus ♂ *Bolitochara loevior* Fairmaire et Brisout, V. Gusarov des. 1993 / *Bolitochara* ♂♂ *varia* Er., V. I. Gusarov det. 1993 / *Bolitochara varia* Erichson, det. V. Assing 2013" (MNHNP). Paralectotype ♂ [undissected]: attached to the same pin as lectotype (MNHNP).

Additional material examined

France: **Corse**: 4 ♂♂, 4 ♀♀, foresta di Tartagine, 750 m, 27.VII.1980, leg. Sette (cWun, cZan, cAss); 1 ♀, Castagniccia, 1150 m, sifted, 7.IV.1990, leg. Wunderle (cWun); 1 ♀, Porto-Vecchio, 9.V.1881 (MNHNP); 1 ♀, locality not specified (MNHNP).

Italy: **Sardegna**: 1 ♀, Oristano, leg. Lostia (MNHNP); 1 ♂ [aedeagus missing], locality not specified, leg. Lostia (MNHNP).

Comment

The original description of *B. varia* is based on an unspecified number of syntypes from Sardinia. A lectotype was designated and illustrated by Gusarov (1995), who also designated a lectotype of *B. loevior* Fairmaire & Brisout de Barneville (described from "Provence") and confirmed the synonymy of *B. loevior* with *B. varia*.

The aedeagus is extremely similar to that of *B. obliqua*, suggesting that *B. varia* and *B. obliqua* are very close relatives whose gene pools were separated only rather recently. The aedeagus of *B. varia* differs from that of *B. obliqua* only by the slightly broader ventral portion and the angular base of the ventral process in lateral view and by the slightly different shape of the dorso-apical internal structure (Fig. 73). For the time being, *B. varia* is considered a distinct species, also because it appears to occur sympatrically with *B. obliqua* at least in Corsica and Provence. However, the possibility that an examination of more material of *B. varia* may reveal that the observed differences in the shape of the aedeagi are linked by intermediate conditions cannot be ruled out completely.

According to Smetana (2004), the distribution of this species ranges from Spain across North Africa (Morocco, Algeria, Tunisia), France, Italy, and Greece to Syria. Confirmed, male-based records, however, are at present known only from Sardinia, Corsica, and Provence, suggesting that the distribution of *B. varia* is of the Tyrrhenian type. There is little doubt that records from other regions are based on a confusion with externally similar species, particularly the variable *B. obliqua*, but also the similar *B. humeralis*, and/or females of *B. schusteri*.

Bolitochara lauferi Bernhauer, 1908
(Figs. 74–77, 82)

Bolitochara lauferi Bernhauer, 1908: 35 f.

Comment

The original description is based on two syntypes, among them at least one male, from "Syrien mit dem Fundorte: Montes Amanus" (today: Nur Dağları in southern Turkey) (Bernhauer 1908). The lectotype, which was designated by Gusarov (1995), was examined during a visit to the FMNH.

The aedeagus is subject to some intraspecific variation as illustrated in Figs. 74–77. Based on the internal structures of the aedeagus (presence of a long and apically curved internal structure), this species is most closely related to *B. humeralis*.

The distribution of *B. lauferi* is confined to southern Turkey (Fig. 82). For recent records see Assing (2006, 2007a, 2013). An additional record was communicated by Michael Schülke: 1 ♂, Antalya, E Teke geçidi, 37°15′N, 31°46′E, 1380 m, mixed pine and oak forest, 17.II.2011, leg. Schülke (cSch).

Bolitochara humeralis Lucas, 1846, **revalidated**
(Figs. 78–81, 83)

Bolitochara humeralis Lucas, 1846: 100 f.
Myrmedonia festiva Saulcy, 1866: 51 f.
Bolitochara ornata Kapp, 2010: 1515 ff.; **n. syn.**

Type material examined

B. humeralis: Holotype ♀ [dissected prior to present study]: "370 / Muséum Paris, coll. Lucas / *Bolithocara* [sic] *humeralis*, Lucas / *Bolitochara* ♀ *varia* Er., V. I. Gusarov det. 1993 / *Bolitochara humeralis* Lucas, det. V. Assing 2013" (MNHNP).

B. ornata: Paratypes: 1 ♂: "Sicilia Montalbano El., bosco Malabotta, 1000 m, 3.6.1993 (ME), faggetta, leg. F. Angelini / Paratypus ♂ *Bolitochara ornata* spec. nov., det. A. Kapp 2010 / *Bolitochara humeralis* Lucas, det. V. Assing 2013" (cZan); 1 ♂: "Sicilia Madonie, Isnello (PA), 11.VI.1993, torr., leg. F. Angelini / Paratypus ♂ *Bolitochara ornata* spec. nov., det. A. Kapp 2010 / *Bolitochara humeralis* Lucas, det. V. Assing 2013" (cZan).

Additional material examined

Morocco: 1 ♀, locality illegible, V.1894, leg. Vaucher (MNHNP).

Algeria: 1 ♂, Kabylie, Forêt d'Akfadou, 1000 m, 4.–7.VI.1980, leg. Sama & Magnani (cZan); 1 ♂, El Kseur, Forêt d'Akfadou, 1160 m, 30.X.1984, leg. Boffa et al. (cAss); 1 ♂, 2 ♀♀, Edough (MNHNP); 1 ♀, Kabylie, Yakouren, VI.1901 (MNHNP).

Tunisia: 1 ♀, Ain Soltane, 17 km NW Ghardimaou, 29.IV.2004, leg. Lackner (cAss); 1 ♀, Ain Draham, leg. Demoflys (MHNG).

France: 1 ♂, Pyrénées-Orientales, Sorède, VI.1952, leg. Jarrige (MNHNP); 1 ♀, Pyrénées-Orientales, La Massane, VI.1961, leg. Dajoz (MNHNP); 1 ♂, same data, but 23.VI.1960

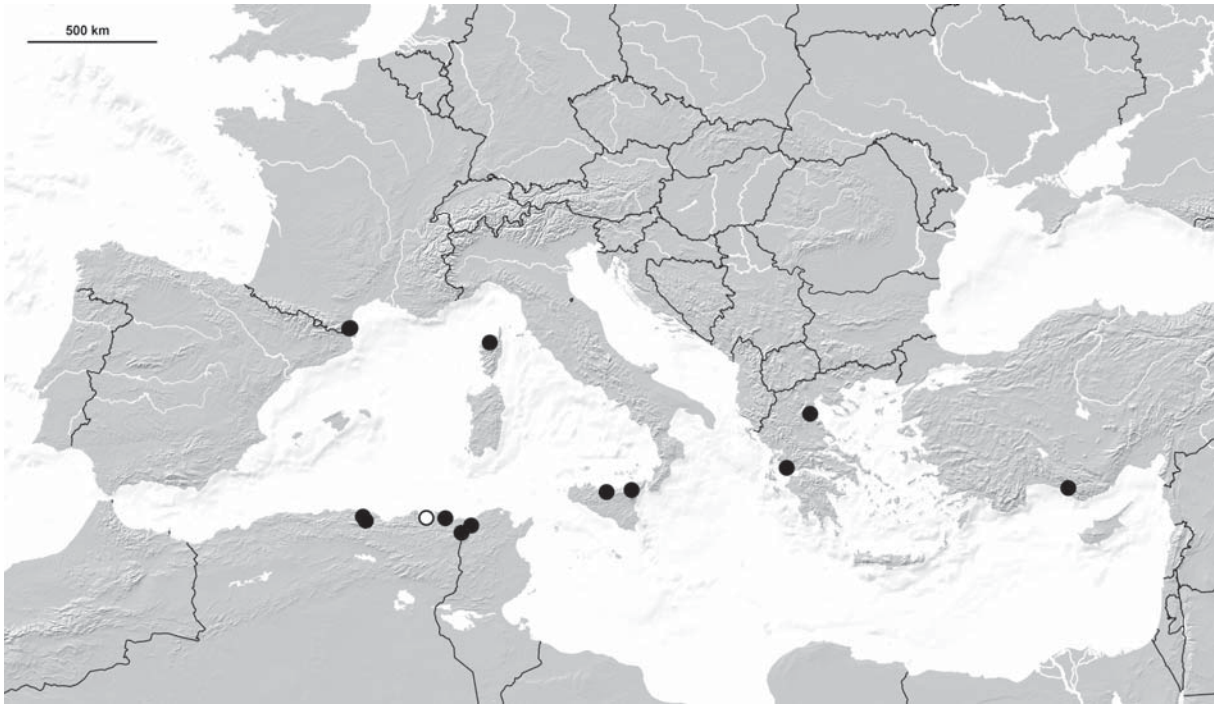


Fig. 83. Distribution of *Bolitochara humeralis* (filled circles: revised records; open circle: literature record) in the Mediterranean region.

(MNHNP); 1 ♂, Corse, foresta di Tartagine, 750 m, 27.VII.1980, leg. SETTE (cAss).

Greece: 5 exs. [teneral], Oros Olympos, between Petra and Dion, 300 m, Polyporaceae on *Platanus* river banks, 21.IV.2013, leg. TAGLIAPIETRA & ZANETTI (cZan, cAss); 3 exs., Aetolia-Akarnania, 5 km N Katokhí, Lesini forest [ca. 38°27′N, 21°15′E], 30.IV.1999, leg. ANGELINI (cAss).

Turkey: 1 ♂, Antalya, Alanya → Taşkent, 30 km from Alanya, 36°32′N, 32°14′E, 1140 m, 25.IV.2008, leg. BRACHAT (cAss).

Comment

The original description of *B. humeralis* is based on a unique female holotype from "les environs de Philippeville" in Algeria (LUCAS 1846). The specimen was studied by GUSAROV (1995), who placed *B. humeralis* in synonymy with *B. varia*. *Bolitochara festiva* (Saulcy, 1866), which was described from "Bône" in Algeria based on a unique holotype, had been listed as a synonym of *B. humeralis* by BERNHAUER & SCHEERPELTZ (1926). The type specimen was looked for, but not found in the SAULCY collection in Paris (GUSAROV 1995; TAGHAVIAN, e-mail 6.IX.2013). The original description of *B. festiva*, however, is in perfect agreement with *B. humeralis* and leaves little doubt that the previously established synonymy is correct.

Bolitochara ornata was described from 34 type specimens collected in several localities in Sicily (KAPP 2010).

An examination of the type material of *B. humeralis* and *B. ornata* and of the additional material listed above, partly from the vicinity of the type localities of *B. humeralis* and *B. festiva* revealed that these names refer to the same species and that the holotype of *B. humeralis* is not conspecific with *B. varia*. Consequently, *B. humeralis* is revalidated, and *B. ornata* and *B. festiva* are placed in synonymy with this name.

Bolitochara humeralis is remarkably variable in external characters, particularly regarding the coloration. In material from North Africa, the elytra are nearly uniformly blackish, sometimes with a faint bluish hue, with the humeral angles mostly only indistinctly paler and the diagonal paler band only weakly indicated at most. In the populations from other regions, the elytra are distinctly bicoloured, with the anterior portion and sometimes also the suture more or less extensively, and often also the posterior margins narrowly yellowish to reddish, leaving the disc more or less extensively dark-brown to blackish. Also, the abdominal segments III–V are mostly as dark as the posterior segments, or nearly so, in specimens from North Africa, whereas they are more or less distinctly and more or less extensively reddish in material collected elsewhere. The aedeagus is subject to some intraspecific variation, too, but this applies to the whole range of the species (Figs. 78–81). The extent of the variation, however, does not exceed that of other widespread congeners (e. g.,

B. obliqua, *B. schusteri*, *B. tecta*), and the observed differences do not suggest the presence of distinct species, so that these differences are attributed to intra- rather than interspecific variation.

From other species of the *B. obliqua* group, *B. humeralis* is distinguished by the (nearly) uniformly pale-reddish to dark-reddish coloration of the head and pronotum (head only indistinctly darker than pronotum at most), as well as by the larger (0.60–0.63 mm; other species: 0.50–0.54 mm) and differently shaped aedeagus. Based on the shared presence of a long sclerotized structure in the internal sac of the aedeagus, *B. humeralis* is most closely related to *B. lauferi* from Turkey.

The examined records suggest that *B. humeralis* has a Holo-Mediterranean distribution, ranging from the Pyrenees to Tunisia, Greece, and Turkey (Fig. 83). Judging from the little material that has become available and from the scattered records, the species appears to be rather rare.

3.5 Key to the *Bolitochara* species of the West Palaearctic region

1 Head with very short posterior constriction of much more than half the width of head, without distinct neck (Fig. 64). ♂: sutural angles of elytra with or without oblong keel or tubercle; tergite VII with or without median keel. **2**

– Head with distinct posterior constriction (i. e., with distinct neck) of approximately half the width of head or only slightly broader (Figs. 26, 28, 31, 37). ♂: sutural angles of elytra with oblong keel or tubercle (Figs. 26, 28, 31, 37); tergite VII and often also tergite VIII with – sometimes indistinct – median keel (Fig. 38); median lobe of aedeagus relatively large and with conspicuous curved tube in internal sac (e. g., Figs. 1–24). The *B. lucida* group (partim). **9**

2 ♂: tergite VII granulosely sculptured (i. e., with numerous small tubercles), but without median keel; elytra unmodified. Species of variable coloration, reliably identified only by the morphology of the aedeagus. The *B. obliqua* group. **3**

– ♂: tergite VII with median keel; elytra with or without oblong tubercles or keel in sutural angles. The *B. lucida* group (partim). **6**

3 Head and pronotum uniformly pale-reddish to dark-reddish (head only slightly darker than pronotum at most). ♂: median lobe of aedeagus 0.60–0.63 mm long and shaped as in Figs. 78–81. – Distribution Holo-Mediterranean: North Africa, Pyrenees, Corsica, Sicily, Greece, Turkey (Fig. 83). Rare. ..... ***humeralis*** Lucas

– Head usually darker than pronotum, the latter reddish to dark-brown. ♂: median lobe of aedeagus 0.55 mm long at most, of different morphology. **4**

4 Head and pronotum on average with denser punctation and more distinct microsculpture. ♂: median lobe of aedeagus as in Figs. 68–72. – Widespread and common species, from Russia, Turkey (Fig. 82), and the Baltic region westwards to Spain. ..... ***obliqua*** Erichson

– Head and pronotum mostly with sparser punctation and with shallower microsculpture. ♂: median lobe of aedeagus of different morphology. – Species with more restricted distributions (Turkey, Sardinia, Corsica, Provence). **5**

5 Abdomen mostly completely black. Pronotum on average more slender. ♂: median lobe of aedeagus as in Figs. 74–77; internal sac with long rod-like structure. – Southern Turkey (Fig. 82). ..... ***lauferi*** Bernhauer

– Abdomen with tergites III–V usually slightly paler than tergites VI–VII. Pronotum on average more transverse. ♂: aedeagus shaped as in Fig. 73; internal sac with basal sclerotized structure much shorter, similar to that of *B. obliqua*. – Distribution Tyrrhenian: Corsica, Sardinia, Provence. ..... ***varia*** Erichson

6 Pronotum smaller and more slender, approximately 1.05 times as broad as long and 1.05–1.10 times as broad as head; posterior half of lateral margins sinuate in dorsal view. ♂: sutural angles of elytra without oblong tubercles or elevations; median lobe of aedeagus as in Fig. 59. – Middle Asia: Kyrgyzstan, Uzbekistan. ..... ***sogdiana*** Gusarov

– Pronotum relatively larger and more transverse, at least approximately 1.15 times as broad as long and 1.15 times as broad as head. ♂: sutural angles of elytra with more or less pronounced oblong tubercles or elevations; median lobe of aedeagus of different shape. – Unknown from Middle Asia. **7**

7 Elytra longer, approximately 1.1 times as long as pronotum, each elytron with an extensive diagonal impression extending from the humeral angle to the posterior margin, these impressions separated by the elevated sutural portion. Head and pronotum more or less concolorous, brown to blackish-brown. Legs and antennae longer. ♂: median lobe of aedeagus with very short internal tube (Fig. 68). – Widespread in Europe except for the south, from Ukraine, Russia, and the Baltic countries in the east to France in the west. ..... ***mulsanti*** Sharp

– Elytra shorter and broader, less than 1.1 times as long as pronotum and without distinct impressions or elevations (Fig. 64). Pronotum reddish, usually more or less distinctly contrasting with the brown to blackish head. Legs and antennae shorter. ♂: median lobe of aedeagus with long internal tube; apical lobe of paramere conspicuously long. The *B. bella* subgroup. **8**

8 Head and pronotum with very dense punctation and subdued shine; interstices narrow, much narrower than diameter of punctures. Head on average of darker coloration. ♂: median lobe of aedeagus more strongly curved in lateral view; internal tube longer, more projecting from apex of median lobe, and distinctly curved dorsad in lateral view (Fig. 60). – Widespread from northern Turkey across South and Central Europe to the British Isles and northeastern Spain (Fig. 67). ..... ***bella*** Märkel

– Head and pronotum (Fig. 64) with less dense punctation and more shine; interstices noticeable, though often narrower than diameter of punctures. Head on average of paler coloration. ♂: median lobe of aedeagus less strongly curved in lateral view; internal tube shorter, less distinctly projecting from apex of median lobe, and straight (Figs. 61–62). – Southern Turkey (Fig. 67). ..... ***recta* n. sp.**

9 Pronotum broader, approximately 1.2 times as broad as long (Figs. 26, 28). Head and pronotum with fine and dense punctation (Figs. 26, 28). ♂: median lobe of aedeagus with a pair of oblique and apically more or less acute apical internal structures (lateral view). **10**

– Pronotum less broad, less than 1.2 times as broad as long (Figs. 31, 37). Head and pronotum often with coarser punctation (Figs. 31, 37). ♂: median lobe of aedeagus of different morphology. **11**

10 Coloration darker; head blackish-brown to blackish; pronotum dark-brown with paler margins; abdomen, except for the narrow posterior margins of the segments, blackish-brown to blackish. ♂: median lobe of aedeagus 0.67–0.68 mm long, with dagger-shaped apical internal structures (Figs. 6–8). – Southern Turkey (Fig. 51). ..... ***anatolica* n. sp.**

– Head and pronotum reddish; abdominal segments III–IV, VIII–X, and posterior portion of VII almost entirely reddish. ♂: median lobe of aedeagus larger, 0.72–0.76 mm long, apical internal structures of different shape (Figs. 1–5). – Described from Germany more than two centuries ago, only few, mostly old records known: ?Sicily, Balkans, Central Europe, France (Fig. 51). ..... ***lucida*** (Gravenhorst)

11 Antenna long and slender; antennomeres V and VI distinctly oblong, X very weakly transverse at most (Figs. 39, 48). – Eastern Caucasus and Iran. **12**

– Antenna less slender; antennomeres V and VI as broad as long or weakly transverse, X distinctly transverse (Fig. 33). – Unknown from the Eastern Caucasus and Iran. **13**

12 ♂: median lobe of aedeagus smaller, 0.5 mm long at most, and shaped as in Figs. 56–57; internal tube shorter and not curved. – Northern Iran. ..... ***persica* n. sp.**

– ♂: median lobe of aedeagus larger, 0.72–0.76 mm long, and shaped as in Figs. 15–16; internal tube much longer and distinctly curved. – Azerbaijan (Fig. 52). ..... ***niticeps* n. sp.**

13 Pronotum relatively small and slender, 1.00–1.05 times as broad as long and approximately as broad as head (Figs. 42–43). Antennomeres V–X reddish to dark-reddish. ♂: median lobe of aedeagus shaped as in Figs. 17–18. – West Caucasus: Adygea (Fig. 51). ..... ***tenuicollis* n. sp.**

– Pronotum relatively larger, distinctly transverse and distinctly broader than head (e. g., Fig. 2). Antennomeres V–X reddish-brown to blackish-brown. ♂: median lobe of aedeagus of different shape. **14**

14 Legs darker, meso- and metafemora, as well as meso- and metatibia more or less distinctly infuscate. Head and pronotum more or less concolorous, bright reddish to reddish-brown. ♂: median lobe of aedeagus as in Figs. 19–24. – North Africa and Iberian Peninsula (Fig. 52). ..... ***schusteri*** Bernhauer

– Legs yellowish to reddish-yellow. Head and pronotum concolorous or head distinctly darker than pronotum. **15**

15 Head usually of distinctly darker coloration than the yellowish-red to reddish pronotum. Posterior constriction slightly more than half as wide as head. ♂: median lobe of aedeagus as in Figs. 53–55. – Rare (except in the Alps and in North Europe), but widespread from France to East Siberia. ..... ***pulchra*** (Gravenhorst)

– Head and pronotum more or less concolorous, usually reddish-brown to dark-brown. Posterior constriction of head approximately half as wide as head (Fig. 31). ♂: median lobe of aedeagus as in Figs. 9–14. – Distribution probably Ponto-Mediterranean, ranging from northern Turkey, the Caucasus region, and European Russia across the Balkans and Central Europe to North Europe, the British Isles, and the Pyrenees (Fig. 52). ..... ***tecta* n. sp.**

3.6 Catalogue of the *Bolitochara* species of the Palaearctic region

anatolica **n. sp.** – South Turkey

bella Märkel, 1844 – Ponto-Mediterranean: Europe; Northwest Turkey

humeralis Lucas, 1846; **revalidated** (= *festiva* (Saulcy, 1866), = *ornata* Kapp, 2010; **n. syn.)** – Holo-Mediterranean: North Africa (Tunisia, Algeria, Morocco); Italy (Sicily), France (Pyrenees, Corsica), Greece, Turkey

indica Cameron, 1939 – North India, Nepal

lauferi Bernhauer, 1908 – South Turkey

lobata Sawada, 1970 – Japan

lucida (Gravenhorst, 1802) (= *reyi* Sharp, 1875; **n. syn.**, = *eximia* Eppelsheim, 1883) – France, Germany, Austria, Czech Republic, Romania, Albania, Bosnia-Herzegovina, ?Italy (Sicily)

mulsanti Sharp, 1875 – Europe, except for the south

niticeps **n. sp.** – Azerbaijan

obliqua Erichson, 1837 (= *foveola* Motschulsky, 1860, = *caucasica* Eppelsheim, 1890) – Europe, from the Caucasus region to Spain; Iran, Turkey

persica **n. sp.** – North Iran

pulchra (Gravenhorst, 1806) (= *cincta* (Gravenhorst, 1806), = *elongata* Heer, 1839; **n. syn.**, = *flavicollis* Mulsant & Rey, 1861) – trans-Palaearctic, from France to East Siberia

recta **n. sp.** – South Turkey

schusteri Bernhauer, 1908 – Atlanto-Mediterranean: Spain, Morocco, Algeria, Tunisia

sinica Pace, 2010 – China: Yunnan

smetanai Pace, 1989 – Nepal

sogdiana Gusarov, 1996 – Middle Asia: Uzbekistan, Kyrgyzstan

taiwanensis Pace, 2008 – Taiwan

tecta **n. sp.** (= *lucida* auctt.) – Ponto-Mediterranean: from Turkey, Armenia, and the Caucasus region to Scandinavia, the British Isles, and the Pyrenees

tenuicollis **n. sp.** – West Caucasus: Adygea

varia Erichson, 1839 (= *loevior* Fairmaire & Brisout de Barneville, 1859) – France: Corsica, Provence; Italy: Sardinia

varipes Sharp, 1888 – Japan

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Author's address:

Dr. VOLKER ASSING, Gabelsbergerstraße 2, 30163 Hannover, Germany;
e-mail: vassing.hann@t-online.de

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