

**Revision of the *Apimela* species of the Palaearctic Region  
with a focus on the West Palaearctic fauna,  
and with additional notes on the genus *Franzidota*  
(Coleoptera: Staphylinidae: Aleocharinae: Oxypodini)**

VOLKER ASSING

*Gabelsbergerstr. 2, D-30163 Hannover, Germany; e-mail: vassing.hann@t-online.de*

ASSING V. 2020: Revision of the *Apimela* species of the Palaearctic Region with a focus on the West Palaearctic fauna, and with additional notes on the genus *Franzidota* (Coleoptera: Staphylinidae: Aleocharinae: Oxypodini). *Acta Musei Moraviae, Scientiae biologicae* **105(1)**: 27–90. – Based on a revision of types and additional material, the oxypodine genus *Apimela* Mulsant et Rey, 1874 is represented in the Palaearctic region by 29 described species, seven of them confined to the West Palaearctic including Middle Asia, 21 to the East Palaearctic, and one widespread in the southern East Palaearctic and Oriental regions. Two additional species of which neither type material nor illustrations were available remain of uncertain status. Most of the species are (re-)described and/or illustrated, nine of them for the first time: *Apimela A. mutata* sp. nov. (= *A. macella* auctt.) (widespread in the West Palaearctic region); *A. wunderlei* sp. nov. (South Italy); *A. graeca* sp. nov. (Greece); *A. kirghisica* sp. nov. (Kyrgyzstan); *A. ussurica* sp. nov. (Russian Far East); *A. baculata* sp. nov. (China: Yunnan); *A. bilobata* sp. nov. (China: Zhejiang, Sichuan, Yunnan); *A. auriculata* sp. nov. (China: Yunnan); *A. lamellata* sp. nov. (North Vietnam). Two genus-group and four species-group synonymies are proposed: *Apimela* Mulsant et Rey, 1874 = *Parapimela* Cameron, 1939, syn. nov., = *Himalkompsusa* Pace, 2006, syn. nov.; *Apimela macella* (Erichson, 1839) = *A. pallens* (Mulsant et Rey, 1852), syn. nov., = *A. mulsanti* (Ganglbauer, 1895), syn. nov.; *A. indica* (Cameron, 1939) = *A. assamensis* (Cameron, 1939), syn. nov.; *A. chinensis* Pace, 1999 = *A. tibetana* Pace, 2012, syn. nov. The genus-group synonymies result in the following binomina: *Apimela indica* (Cameron, 1939), comb. nov.; *A. persimilis* (Cameron, 1939), comb. nov.; *A. nepalicola* (Pace, 2006), comb. nov.; *A. sinica* (Pace, 2012), comb. nov.; *A. hartmanni* (Pace, 2006), comb. nov.; *A. taiwanensis* (Pace, 2010), comb. nov.; *A. morvani* (Pace, 1992), comb. nov. “*Apimela*” *lucidula* Pace, 1992 belongs to an oxypodine genus of unknown identity and is excluded from *Apimela*. For various reasons (type material not accessible or not found; descriptions based on females only), several species remain of doubtful identity and partly uncertain generic assignment. *Apimela* is represented in the Palaearctic region by two distinct clades distinguished primarily by the male and female sexual characters, the *A. macella* lineage (seven species) and the *A. mutata* lineage (22 species), both of them distributed across the Palaearctic region. Most *Apimela* species inhabit the banks of rivers and streams with substrates composed of coarse sand and fine gravel in mountainous regions. An updated catalogue of the *Apimela* species of the world and a key to the species of the West Palaearctic region including Middle Asia are provided. The distributions of ten species are mapped. In an appendix, the genus *Franzidota* Pace, 1982 is moved from Oxypodina to Meoticina, and *F. formosana* sp. nov. (Taiwan) and *F. gilva* sp. nov. (Taiwan) are described and illustrated.

**Key words.** Coleoptera, Staphylinidae, Aleocharinae, Oxypodini, Meoticina, *Apimela*, *Franzidota*, Palaearctic region, Oriental region, taxonomy, new species, new synonyms, new combinations, new subtribal assignment, lectotype designation, zoogeography, distribution maps, key to species, catalogue.

### Introduction

*Apimela* was made available by MULSANT & REY (1874) to include two species previously assigned to *Alevonota* Thomson, 1858: *Homalota macella* Erichson, 1839 and *H. pallens* Mulsant et Rey, 1852. They attributed the genus to the Myrmédoniares,

together with other genera most of which are in Athetini today. *Homalota macella* was subsequently designated as the type species by FENYES (1918).

GANGLBAUER (1895) treated *Apimela* as a subgenus of *Atheta* Thomson, 1858 and replaced the junior primary homonym *H. pallens* Mulsant et Rey, 1852 with the nomen novum *Atheta mulsanti*. This systematic concept was also adopted by REITTER (1909), who placed *Apimela* near the subgenus *Alevonota*, but treated *H. pallens* as a valid name again.

BERNHAEUER & SCHEERPELTZ (1926) eventually reinstated *Apimela* as a distinct genus and placed it in the tribe Aleocharini, which at that time included the genera that are in the Oxypodini today. They recognized two genus-group names (*Gyronychina* Casey, 1911 and *Gampsonycha* Bernhauer, 1912) as synonyms of *Apimela* and listed eleven valid species with two synonyms from the Palaearctic region (four species), North America (three), South America (three), and the Oriental region (one).

LOHSE (1974) emphasized the pronotal pubescence pattern as a diagnostic character of the genus and keyed the two species recorded from Central Europe, still retaining *A. pallens* as a valid name. This was corrected by LOHSE (1989), who reinstated *A. mulsanti* as the valid name (with *A. pallens* as a junior synonym) and, in addition, stressed the sickle-shaped claws as an important diagnostic character of the genus.

According to the first edition of the Palaearctic Catalogue (SMETANA 2004), the genus was represented in the Palaearctic region by 13 species, four of them in the West Palaearctic and nine from the East Palaearctic regions, one of them also widespread in the Oriental region. Since then, six additional species from China have been described (ASSING 2006, PACE 2012a), so that SCHÜLKE & SMETANA (2015) list 19 species in the second edition of the Palaearctic Catalogue, eleven of them described by the late Roberto Pace alone. Very recently, another species was described from Greece and Turkey (ASSING 2019).

According to NEWTON (2019), 55 additional species are known from the Oriental (17 species; not counting one species distributed in both the Palaearctic and Oriental regions), the Nearctic (seven), Neotropical (five), Afrotropical (18; seven of them from Madagascar), Australian (seven; two of them from Papua New Guinea), and Pacific regions (one species).

Recent molecular phylogenetic studies (OSSWALD *et al.* 2013) revealed that *Apimela* belongs to the monophyletic subtribe Meoticina (tribe Oxypodini), together with *Meotica* Mulsant et Rey, 1873 and some non-Palaearctic genera.

### Material and methods

The material treated in this study is deposited in the following public and private collections:

BMNH	.....	The Natural History Museum, London (M. Barclay)
HNHM	.....	Hungarian Natural History Museum, Budapest (Gy. Makranczy)
MHNG	.....	Muséum d'Histoire Naturelle, Genève (G. Cuccodoro)
MHNL	.....	Muséum d'Histoire Naturelle, Lyon (H. Labrique)
MNB	.....	Museum für Naturkunde, Berlin (incl. coll. Schülke; J. Frisch, M. Schülke)

Palearctic species of *Apimela*, with notes on *Franzidota* (Coleoptera: Staphylinidae)

NHMW	Naturhistorisches Museum Wien (H. Schillhammer)
NME	Naturkundemuseum Erfurt (M. Hartmann)
SDEI	Senckenberg Deutsches Entomologisches Institut, Münchenberg (L. Behne, M. Schröter)
TLMF	Tiroler Landesmuseum Ferdinandeum Innsbruck (M. Kahlen)
cAss	author's private collection
cFel	private collection Benedikt Feldmann, Münster
cGon	private collection Andrej Gontarenko, Odessa
cPüt	private collection Andreas Pütz, Eisenhüttenstadt
cWun	private collection Paul Wunderle, Mönchengladbach
cZan	private collection Adriano Zanetti, Verona

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss), a Discovery V12 microscope (Zeiss), and a Jenalab compound microscope (Carl Zeiss Jena). The images were created using digital cameras (Nikon Coolpix 995, Axiocam ERc 5s), as well as Labscope and Picolay stacking software. The maps were created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the mandibles (in resting position) to the abdominal apex, the length of the forebody from the anterior margin of the mandibles to the posterior margin of the elytra, head length from the anterior margin of the clypeus to the posterior constriction of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length 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.

Zoogeographic terminology is primarily based on LATTIN (1967). The limits of the zoogeographic regions are in accordance with those mapped in SCHÜLKE & SMETANA (2015).

## Results

Based on the present revision, *Apimela* is represented in the Palearctic region by 29 confirmed species, one of them widespread in the southern East Palearctic and Oriental regions, seven confined to the West Palearctic (including Middle Asia), and 21 to the East Palearctic region. The type material of one West Palearctic and several East Palearctic species was not available for examination, so that their identities remain doubtful. One species belongs to an oxyypodine genus of unknown identity and is excluded from *Apimela*. Nine species are newly described and seven species are transferred to the genus as a consequence of the proposed synonymy of two genus-group names with *Apimela*. Four new species-group synonymies are established, one of them resulting in a name change of a widespread European species.

The present revision revealed considerable confusion resulting from the descriptions by Roberto Pace, who assigned *Apimela* species to three different genera (all of them synonymous), erroneously attributed one species of unknown generic identity to *Apimela*, confounded several species (type series composed of up to three species), failed

to return type material to the institutions indicated as type depository in the original descriptions, and described four species based on unique females. It seems doubtful if their identities will ever be reliably clarified.

### ***Apimela* Mulsant et Rey, 1874**

*Apimela* Mulsant et Rey, 1874: 36 (type species *Homalota macella* Erichson, 1839).

*Gyronychina* Casey, 1911: 218 (type species *Calodera attenuata* Casey, 1883).

*Gompsonycha* Bernhauer, 1912: 108 (type species *Homalota pallens* Mulsant et Rey, 1852).

*Parapimela* Cameron, 1939: 571 (type species *Parapimela indica* Cameron, 1939); **syn. nov.**

*Himalkompsusa* Pace, 2006: 364 (type species *Himalkompsusa nepalicola* Pace, 2006); **syn. nov.**

**Comment.** *Parapimela indica* Cameron, 1939 (type species of *Parapimela* Cameron, 1939) and *Himalkompsusa nepalicola* Pace, 2006 (type species of *Himalkompsusa* Pace, 2006) belong to the *A. macella* clade of *Apimela* (see the comments in the respective species sections below), so that both *Parapimela* and *Himalkompsusa* are established as junior synonyms of the senior name *Apimela*.

**Diagnosis.** Species of relatively small size (in normal preparation 1.7–4.1 mm). Habitus slender and more or less depressed (e.g., Figs 1, 20, 26, 35, 40, 43, 56, 71). Whole body with fine and more or less dense punctation.

Ventral aspect of head: laterally with a weakly pronounced carina on either side; gular sutures broadly separated. Mandibles short and simple; right mandible with, left mandible without small molar tooth; labrum (Figs 5, 61) weakly transverse, anterior margin bilobed in the middle; labium (Figs 6, 60) with relatively short three-jointed palpi and with a rather short, broad, bifid ligula; maxilla as in Fig. 10.

Pronotum relatively small in relation to head; pubescence of midline directed anteriorly in anterior half and posteriorly in posterior half. Pronotal hypomera distinctly visible in lateral view. Prosternum with median elevation. Postero-median process of mesoventrite long and very acute, reaching halfway between mesocoxae. Tarsal formula 5,5,5 (Figs 7–9); tarsi not particularly slender; metatarsus I approximately as long as, or shorter than combined length of metatarsomeres II and III; claws sickle-shaped (Figs 7–9).

Abdomen of subparallel shape; tergite III with or without pronounced sexual dimorphism; tergites III–V with usually shallow, rarely deeper anterior impressions; tergite VI with (only in some species of the *A. macella* clade) or without anterior impression; tergite VII significantly longer than tergites III–VI (individually), with or without sexual dimorphism.

♂: sternite VIII more or less strongly transverse (e.g., Fig. 15), posterior margin weakly produced in the middle; median lobe of aedeagus of similar morphology as in *Meotica*, but without long flagellum; paramere (Fig. 13) small and with short and flattened apical lobe, of similar shape as in *Meotica*, but with weakly sclerotized apical lobe.

♀: sternite VIII less transverse than in male (e.g., Fig. 16); spermatheca either rather short and of more or less uniform shape (e.g., Figs 17, 19, 34) (*A. macella* clade) or with

very small distal portion and extremely long and extremely fine proximal portion forming numerous coils (e.g., Figs 69–70) (*A. mutata* clade).

**Comparative notes.** In habitus, body size, and often also coloration, many *Apimela* species are similar to *Meotica*, with which they were most often confused in the material examined. *Meotica* species, however, are usually of somewhat less slender habitus with a more transverse pronotum and a less parallel abdomen. Moreover, in *Meotica* the pubescence of the pronotal midline is directed posteriad along its entire length, the apex of the paramere is strongly sclerotized (blackish) in the vast majority of species, the internal sac of the aedeagus features a long and coiled flagellum, and the spermatheca is of completely different shape.

In external and to some extent also the sexual characters *Apimela* resembles *Franzidota* PACE, 1982, from which it is distinguished by the tarsal formula (*Franzidota*: 4,5,5), a more slender ligula, a different general shape of the median lobe of the aedeagus, an apical lobe of the paramere of different shape and with less modified setae (*Franzidota*: apical lobe with two conspicuously stout and long setae), and a distal portion of the spermatheca of different shape. In the collections examined, *Apimela* was also often confused with species of *Hydrosmeeta* Thomson, 1858 of the Athetini (tarsal formula 4,5,5; sexual characters completely different), occasionally also with species of *Aloconota* Thomson, 1858, *Amischa* Thomson, 1858, *Anomognathus* Solier, 1849, and *Amarochara* Thomson, 1858.

**Intragenetic affiliations.** The *Apimela* species of the Palearctic region belong to two distinct lineages, the *A. macella* (seven species) and the *A. mutata* clades (22 species), both of them distributed across the West and the East Palearctic regions. The affiliations and identities of one West and one East Palearctic species are unknown because type material was not available. The species of the *A. macella* group are characterized by a mostly rather slender pronotum and often somewhat larger size, but above all by more or less pronounced modifications of the male tergite III (posterior margin produced in the middle, with more or less distinct tubercle or spine-shaped process, mostly with coarsely granulate punctation), often also a sexual dimorphism of other tergites, and a spermatheca of simple, but characteristic and rather uniform shape. In the – usually smaller – species of the *A. mutata* group, on the other hand, the pronotum is often more transverse, the abdominal tergites III–VII lack a sexual dimorphism, and the spermatheca is of highly derived shape (distal portion small and inconspicuous; proximal portion extremely long and fine, arranged in numerous coils).

**Intraspecific variation and identification.** As can be inferred from those species of which more abundant material from various regions was available (*A. macella*, *A. mutata*, *A. procera*), characters such as the coloration, body size, the antennal morphology, the presence/absence of microsculpture, the punctation, and the male secondary sexual characters (only *A. macella* group) may be subject to enormous intraspecific variation. This degree of variability combined with low to moderate interspecific variation may render a reliable identification without examination of the genitalia difficult. Even the primary sexual characters are remarkably uniform within the two clades.

**Zoogeography.** Owing to the scarcity of records, nothing conclusive can be said about distribution patterns in the East Palaearctic region. The same applies to three species (one of them undescribed) in the West Palaearctic, which have been found in only one or two localities. The three West Palaearctic species that have been collected more frequently are widespread (Maps 1–2).

**Natural history.** *Apimela* species typically inhabit banks of streams and rivers with (a mix of) fine gravel and coarse sand deposits, usually in the lower and intermediate parts of mountains and mountain ranges. Such habitats are highly threatened today owing to human influences particularly in more densely populated areas. Some species from the East Palaearctic region appear to be inhabitants of moist forest litter.

The ripicolous species have been collected mostly by floating gravel and sand from the banks of rivers and streams, by sifting flood debris, or on the wing with car-nets and light traps, whereas the forest species have been sifted from moist leaf litter, moss, and debris.

In regions where the two most frequently collected West Palaearctic species, *A. macella* and *A. mutata*, occur sympatrically, they have often been found syntopically. This observation suggests similar habitat requirements, even though these species belong to different lineages. Similarly, several species have been collected together in the same localities in China.

#### Checklist of the *Apimela* species of the world

Including the new combinations and newly described species, the genus now includes 88 species distributed in all major zoogeographic regions. “*Apimela*” *lucidula* Pace, 1992, a species belonging to an oxypodine genus of unknown identity, is omitted from the checklist. Unrevised species of doubtful identity from the Palaearctic region are marked with an asterisk.

Species	Distribution
<i>angkorensis</i> Pace, 2004	Thailand
<i>aptera</i> Pace, 1992	Nepal
<i>arcuata</i> Pace, 2008	Malaysia: Sabah (Borneo)
<i>argentina</i> (Bernhauer, 1912)	Argentina
<i>attenuata</i> (Casey, 1885)	USA
<i>auriculata</i> <b>sp. nov.</b>	China: Yunnan
<i>australiensis</i> Pace, 2003	Australia
<i>baculata</i> <b>sp. nov.</b>	China: Yunnan
<i>basicauda</i> Pace, 1999	Madagascar
<i>bilobata</i> <b>sp. nov.</b>	China: Sichuan, Yunnan, Zhejiang
<i>boliviana</i> Pace, 2009	Bolivia
<i>borneensis</i> Pace, 2008	Malaysia: Sabah (Borneo)
<i>canadensis</i> Klimaszewski et Webster, 2017	Canada
<i>cargillegica</i> Pace, 2016	Australia
<i>carnavonensis</i> Pace, 2015	Australia
<i>castanea</i> Pace, 1999	Madagascar

<i>chilensis</i> Pace, 1987	Chile
<i>chinensis</i> Pace, 1999	China: Sichuan
= <i>tibetana</i> Pace, 2012 <b>syn. nov.</b>	
<i>confundibilis</i> Pace, 2009	Indonesia: Irian Jaya
* <i>consors</i> Pace, 1992	Nepal; North India: Arunachal Pradesh; Hong Kong
	Malaysia: Sabah (Borneo)
	Brazil
	Russia: East Siberia
<i>curticornis</i> Pace, 2008	
<i>errans</i> Pace, 1990	USA
* <i>exiguoides</i> Newton, 2015	USA, Canada
= <i>exigua</i> (Eppelsheim, 1893)	
<i>fenyesi</i> (Bernhauer, 1906)	
<i>fusciceps</i> (Casey, 1893)	
= <i>lepida</i> (Casey, 1911)	
<i>gabonensis</i> Pace, 2009	Gabon
<i>gingeriana</i> Pace, 2016	Australia
<i>glarearum</i> Pace, 2012	China: Shaanxi
* <i>gracilis</i> Normand, 1935	Tunisia
<i>graeca</i> <b>sp. nov.</b>	Greece
<i>hartmanni</i> (Pace, 2006) <b>comb. nov.</b>	Nepal
<i>heteroclita</i> Pace, 1996	Kenya
<i>hova</i> Pace, 1999	Madagascar
<i>indica</i> (Cameron, 1939) <b>comb. nov.</b>	North India
= <i>assamensis</i> (Cameron, 1939) <b>syn. nov.</b>	
<i>jaegeri</i> Pace, 2012	China: Sichuan
<i>jiajinensis</i> Pace, 2012	China: Sichuan
<i>kayovens</i> Pace, 1996	Rwanda
<i>kinabaluicola</i> Pace, 2008	Malaysia: Perak, Sabah (Borneo)
<i>kirghisica</i> <b>sp. nov.</b>	Kyrgyzstan
<i>irimirensis</i> Pace, 1996	Kenya
<i>lambirensis</i> Pace, 2008	Malaysia: Sarawak (Borneo)
<i>lamellata</i> <b>sp. nov.</b>	North Vietnam
<i>lineata</i> (Casey, 1893)	USA
<i>lineola</i> (Kraatz, 1859)	Pakistan; Nepal; Sri Lanka;
= <i>exigua</i> (Kraatz, 1859)	China: Jiangsu; Hong Kong;
= <i>picea</i> (Cameron, 1920)	Taiwan; Thailand; Vietnam;
	Singapore; Indonesia: Java
<i>longicornis</i> (Casey, 1911)	USA
<i>longipennis</i> (Casey, 1911)	USA
<i>luorum</i> Pace, 1996	Kenya
<i>luteiventris</i> Pace, 1990	Philippines
<i>macella</i> (Erichson, 1839)	Europe
= <i>pallens</i> (Mulsant et Rey, 1852) <b>syn. nov.</b>	
= <i>mulsanti</i> (Ganblbauer, 1895) <b>syn. nov.</b>	
<i>mahnerti</i> Pace, 1996	Kenya, Rwanda, Zimbabwe
<i>major</i> Pace, 2008	Malaysia: Sabah (Borneo)
<i>minima</i> Pace, 2009	Indonesia: Irian Jaya
<i>morvani</i> (Pace, 1992) <b>comb. nov.</b>	Nepal
<i>mutata</i> <b>sp. nov.</b>	West Palearctic
= <i>macella</i> auctt.	

<i>nepalicola</i> (Pace, 2006) <b>comb. nov.</b>	Nepal
<i>newarica</i> Pace, 1992	Nepal
<i>obscuripennis</i> Pace, 1999	Madagascar
<i>orousseti</i> Pace, 1990	Philippines
<i>pallescens</i> (Cameron, 1939)	North India; Nepal
<i>papuana</i> Pace, 2000	Papua New Guinea
<i>papuanorum</i> Pace, 2000	Papua New Guinea
<i>paradoxa</i> (Bernhauer, 1921)	Argentina
= <i>homonymus</i> (Blackwelder, 1944)	
<i>perarmata</i> Pace, 2014	Malaysia: Sabah (Borneo)
<i>perreti</i> Pace, 1996	Kenya
<i>persimilis</i> (Cameron, 1939) <b>comb. nov.</b>	North India (Uttarakhand)
<i>plicata</i> Pace, 2008	Malaysia: Sabah (Borneo)
<i>prapatensis</i> Pace, 1993	Indonesia: Sumatra
<i>procera</i> Assing, 2019	Greece; Turkey; Ukraine; Georgia; Russia (West Caucasus); Iran
<i>queenslandica</i> Pace, 2015	Australia
<i>rangirensis</i> Pace, 1996	Rwanda
<i>rougemonti</i> Pace, 1992	Thailand
<i>rufigaster</i> Pace, 1999	Hong Kong
<i>sabulicola</i> (Bernhauer, 1914)	Romania; Bosnia-Herzegovina
= <i>quadraticollis</i> (Scheerpeltz, 1954)	
<i>sakaraensis</i> Pace, 1999	Madagascar
<i>samoensis</i> Pace, 1993	Samoa: Anouama
<i>schuelkei</i> Assing, 2006	China: Yunnan
<i>sinica</i> (Pace, 2012) <b>comb. nov.</b>	China (Sichuan, Nepal); Nepal
<i>sinofluminis</i> Pace, 2012	China: Shaanxi, Yunnan
<i>subparallela</i> (Bernhauer, 1938)	Zaire; Namibia
<i>taiwanensis</i> (Pace, 2010) <b>comb. nov.</b>	Taiwan
<i>templi</i> Pace, 2004	Cambodia
<i>terrestris</i> Pace, 2006	Madagascar
<i>truncata</i> Pace, 2006	Madagascar
<i>uhligi</i> Pace, 1999	Namibia
<i>ussurica</i> <b>sp. nov.</b>	Russian Far East
<i>wunderlei</i> <b>sp. nov.</b>	South Italy
<i>zerchei</i> Pace, 1996	Tanzania
<i>zorzinii</i> Pace, 1994	Philippines: Palawan

### Key to the *Apimela* species of the West Palaearctic region including Middle Asia

*Apimela gracilis*, a species of doubtful identity and generic assignment, is omitted from the key below, as no material was available.

- 1 Male tergite III with posterior margin produced in middle, often with a tubercle or a spine-shaped process, and usually with granulate punctation (Figs 4, 23). Spermatheca simple, with short and stout proximal portion (Figs 17, 19). ..... ***A. macella* group. .... 2**

- Male tergite III unmodified. Spermatheca with small distal portion (visible only at high magnification) and extremely long and fine proximal portion arranged in numerous coils (Figs 69–70). *A. mutata* group. .... 4
- 2 Larger and more slender species (Fig. 20); length of forebody 1.3–1.7 mm. Pronotum weakly oblong or as long as broad, not transverse (Figs 21–22). Forebody with or without distinct microsculpture. Median lobe of aedeagus 0.35–0.40 mm long and shaped as in Figs 24–25. Distributed from Greece to the Caucasus region and Iran (Map 2). .... *procera*
- Smaller and less slender species; length of forebody 1.0–1.3 mm. Pronotum as long as broad or transverse (Figs 2, 18). Forebody with microsculpture. Median lobe of aedeagus <0.35 mm long. .... 3
- 3 Small species; length of forebody 1.0–1.1 mm. Body of yellowish coloration. Eyes less than half as long as postocular region of head (Fig. 18). Antennae shorter and more strongly incrassate (Fig. 18). Pronotum approximately as long as broad. Spermatheca as in Fig. 19. Rare species known only from Romania and Bosnia-Herzegovina (Map 2). .... *sabulicola*
- Species of greater size; length of forebody usually 1.2–1.3 mm. Coloration of body usually reddish to brown (Fig. 1). Eyes more than half as long as postocular region (Fig. 2). Antennae longer and more slender (Fig. 3). Pronotum weakly transverse (Fig. 2). Widespread from West Europe across North Italy and southern Central Europe eastwards to the Carpathians and North Balkans (Map 1). .... *macella*
- 4 Very small species; length of forebody 0.9–1.0 mm. Coloration of body yellow (Fig. 74). Eyes smaller, approximately half as long as postocular region of head (Fig. 75). Antennae shorter and more strongly incrassate (Fig. 76). Elytra shorter, approximately as long as pronotum (Fig. 75). Median lobe of aedeagus 0.19–0.20 mm long and shaped as in Figs 79–81. Known only from one locality in South Italy (Map 1). .... *wunderlei*
- Larger species; length of forebody 1.0–1.3 mm. Body usually of pale-reddish to brown coloration. Eyes at least slightly longer than postocular region of head. Antennae longer and less strongly incrassate. Elytra slightly longer than pronotum. Median lobe of aedeagus 0.23–0.25 mm long and of different shape. .... 5
- 5 Species from Middle Asia. Habitus, aedeagus, and spermatheca as in Figs 84, 88–90, 92. Kyrgyzstan. .... *kirghisica*
- Species from Europe. Sexual characters different. .... 6
- 6 Pronotum larger and more transverse, approximately 1.15 times as broad as long (Fig. 72). Elytra slightly shorter than pronotum (Fig. 72). Habitus more robust (Fig. 71). Coloration nearly uniformly yellowish-red with the head and the

preapical abdominal segments slightly darker (Fig. 71). Head with more pronounced microsculpture (Fig. 72). Spermatheca as in Fig. 73. Known only from one locality in Greece (Map 1). ..... *graeca*

- Pronotum less transverse, approximately 1.10 times as broad as long at most (Fig. 57). Elytra longer than pronotum (Fig. 57). Habitus more slender (Fig. 56). Head with less pronounced microsculpture (Fig. 57). Aedeagus and spermatheca as in Figs 65–68, 69–70. Widespread from Northwest Africa to the Caucasus region (Map 4). ..... *mutata*

### *Apimela macella* group

#### *Apimela macella* (Erichson, 1839)

(Figs 1–17, Map 1)

*Homalota macella* Erichson, 1839: 95.

*Homalota pallens* Mulsant et Rey, 1852: 35 f.; preoccupied; **syn. nov.**

*Atheta mulsanti* Ganblbauer, 1895: 213; replacement name; **syn. nov.**

**Type material examined.** *H. macella*: Lectotype ♀ [dissected prior to present study]: “5380 / *macella* Er., Passav. Waltl. / Zool. Mus. Berlin / *Apimela macella* (Er.) ♀, V.I. Gusarov det. 1993 / Lectotypus ♀ *Homalota macella* Erichson, desig. V. Assing 2019 / *Apimela macella* (Erichson), det. V. Assing 2019” (MNB).

*H. pallens*: Lectotype ♂ [dissected and remounted prior to present study], present designation: “[pale-brown round label glued on card] / *Apimela macella* (Er.) ♂, V.I. Gusarov det. 1993 / Lectotypus ♂ *Homalota pallens* Mulsant et Rey, desig. V. Assing 2019” (MHNL). Paralectotypes: 2♀♀: labels as in lectotype (MHNL); 1♀: “♀ / *Apimela macella* (Er.) ♀, V.I. Gusarov det. 1993” (MHNL).

**Additional material examined.** **Spain: Cataluña:** 2♀♀, Puigcerda, flood debris, V.1962, leg. Curti (MHNG). **France: Midi-Pyrénées:** 1♂, 2♀♀, 1 ex. without abdomen, Hautes-Pyrénées, leg. Pandellé, etc. (BMNH, MHNL, NHMW). **Auvergne:** 1♂, Vichy, leg. Mesmin (NHMW). **Centre:** 1♂, 3 exs., Orléans, leg. Croissandeau (MHNG, SDEI). **Rhône-Alpes:** 1 ex., Lyon (MHNG); 1♂, Beaujolais (SDEI). **Provence:** 2♀♀, Hautes-Provence, Annot env., 900 m, car-net, VI.1988, leg. Wunderle (cWun); 1♀, Annot, Vaire, floated, VI.1988, leg. Wunderle (cAss); 2♀♀, Annot-Iscele, sandy stream bank, VI.1988, leg. Wunderle (cWun); 2♀♀, Digne (MHNG); 1♀, Alpes-Maritimes, Var river, X.1959, leg. Curti (MHNG); 1♀, same data, but V.1959 (MHNG); 1♀, same data, but IV.1956 (MHNG); 1♂, Alpes-Maritimes, Vesubie, flood, IV.1956, leg. Curti (MHNG); 1♀, same data, but XII.1954 (MHNG); 1♀, same data, but III.1951 (MHNG); 1♂, same data, but VI.1957 (MHNG); 1♀, Alpes-Maritimes, Guillaumes, 900 m, 18.VII.1950, leg. Henri [?] (MHNG); 1♂, 1♀, Alpes-Maritimes, Villeneuve-Loubet, leg. St. Claire Deville (NHMW). **Locality not specified:** 1♀, “Gall.” (SDEI).

**Switzerland: Bern:** 7 exs., Schwarzwasserbrücke, Sensegraben, 6.V.1983, leg. Kiener (MHNG); 5 exs., Schwarzwasser, 25.V.1982, leg. Kiener (MHNG); 20 exs., Kemmeribodenbad, bank of Emme river, 5.V.1983, leg. Kiener (MHNG, cAss); 1♂, Grasburg, IV.1959, leg. Toumayeff (MHNG); 2♀♀, Grasburg, Sensegraben, 5.VI.1979, leg. Kiener (MHNG). **Fribourg:** 2♀♀, Heitenried, V.1962 (MHNG); 2♂♂, Zollhaus [46°43'N, 7°19'E], Kalte Seuse, 16.V.1985, leg. Kiener (MNB). **Vaud:** 1♂, Aubonne, V.1963, leg. Toumayeff (MHNG); 3 exs., Montreux, leg. Rottenberg (NHMW). **Grisons:** 2♀♀, Rhäzüns, bank of Hinterrhein, 4.V.1985, leg. Kiener (MNB). **Genève:** 3♂♂, 2♀♀, Veyrier, bank of Arve river, flood debris, 27.IX.1968, leg. Besuchet (MHNG); 1♂, 2♀♀, Pont de Sierne, bank of Arve river, flood debris, 20.II.1990, leg. Besuchet (MHNG); 1♀, La London, 1.IV.1965, leg. Besuchet (MHNG); 1♂, 1♀, Les Bailleys, Allondon river flood, 17.II.1990, leg. Besuchet (MHNG); 1♂, 1♀, Perly-Certoux, III.1949, leg. Toumayeff (MHNG).

**Germany: Niedersachsen:** 1♀, Harz, 5 km SW Herzberg, 51°37'39"N, 10°16'20"E, 200 m, bank of Oder river, gravel and sand floated, 24.IV.2020, leg. Assing & Hetzel (cAss). **Nordrhein-Westfalen:** 2♂♂, 1♀, Jülich (NHMW, SDEI); 1♀, Wuppertal-Elberfeld, leg. Scriba (NHMW); 3♂♂, 3♀♀, Rhein-Sieg-Kreis, Windeck, Herchen, bank of Sieg river, 21.V.2005, leg. Feldmann (cFel). **Hessen:** 1♀, Aartal, 25.IV.1988, leg. Wunderle (cAss). **Rheinland-Pfalz:** 2♂♂, 3♀♀, Altenahr, Langfigtal, 6.VI.1987, leg. Wunderle (cWun, cAss); 1♂, 1♀,

Soonwald, Kellenbachtal, 19.V.1991, leg. Wunderle (cWun, cAss). **Bayern:** 1♀, München, Isar flood, leg. Pfaundler (MHNG); 1♂, 3♀♀, München, Grünwald, 17.VI.1910, leg. Ihssen (MNB); 1♂, 5♀♀, Eschenlohe, Murnau, 3.VIII.1937, leg. Ihssen (MNB, cAss); 1 ex., same data, but 15.VII.1937 (MNB); 2♀♀, Garmisch, 22.VI.1935, leg. Ihssen (MNB); 2♀♀, Kreis Tölz, Winkl, 11.V.1964, leg. Lohse (MHNG); 1♀, Allgäu, Pfronten, V–VI.1948, leg. Benick (MHNG); 1♂, Oberbayern, Tall [?], 31.V.1963, leg. Lohse (MHNG). **Austria: Tirol:** 8♂♂, 8♀♀, Lech valley, Stanzach env., Lech river bank, floated, 26.V.1995, leg. Assing & Wunderle (cAss, cWun); 1♂, 4♀♀, Stanzach env., 900–1300 m, car-net, 25.V.1995, leg. Assing (cAss); 3 exs., Stanzach, 920 m, bank of Lech river, 24.V.1995, leg. Terlutter (cFel); 8 exs., Forchach env., Lech floodplain, 910 m, 26.V.1995, leg. Schülke & Grünberg (MNB, cAss); 1♀, Forchach, Lech, Schwarzwasserbach, 26.V.1995, leg. Renner (MNB); 1♂, Forchach, 10.58°N, 47.42°E, bank of Lech river, 910 m, 27.V.1944, leg. Kofler (TLMF); 2♂♂, 3♀♀, same data, but 19.V.1944 (TLMF); 1♀, same data, but 25.V.1944 (TLMF); 1♀, same data, but 13.V.1944 (TLMF); 1♀, same data, but 23.V.1942 (TLMF); 1♂, 1♀, same data, but VIII.1941 (TLMF); 1♀, same data, but 31.V.1940 (TLMF); 2♂♂, 3♀♀, same data, but date not specified (TLMF); 2♀♀, same data, but flood debris, 31.V.1944 (TLMF); 2♂♂, 2♀♀, same data, but 5.VI.1944 (TLMF); 1♀, same data, but 27.V.1944 (TLMF); 1♀, 3 exs., Reutte, leg. Knabl (NHMW, TLMF); 3♂, 2♀♀, Karwendel, Rißtal, Talboden, Weitgriesalm, 47.498°N, 11.457°E, 880 m, at light, 8.VII.1995, leg. Kahlen (TLMF, cAss); 1♂, 3♀♀, same locality, gravel bank, 14.IX.1993, leg. Kahlen (TLMF, cAss); 2♂♂, 2♀♀, Karwendel, Hinterautal, Kotwaldsee, 47.378°N, 11.357°E, 1075 m, gravel bank, 7.V.1992, leg. Kahlen (TLMF, cAss); 1♂, 1♀, Ötztaler Alpen, Huben, bank of Ache river, 47.026°N, 10.992°E, 1200 m, 26.VII.1972, leg. Kahlen (TLMF); 1♀, Unterleutasch, Leutascher Ache, 47.401°N, 11.190°E, 18.V.1984, leg. Kahlen (TLMF); 1♂, 1♀, Außerfern, Weißenbach, right bank of Lech river, 47.433°N, 10.628°E, flood debris, 8.VIII.1985, leg. Kahlen (TLMF); 1♂, Oberinntal, Schlossbachklamm, 47.279°N, 11.239°E, 720 m, 30.III.1974, leg. Kahlen (TLMF); 1♂, 2♀♀, same data, but 13.IV.1981 (TLMF); 1♀, Zirl, Ehnbach, 47.278°N, 11.256°E, 700–800 m, 18.IV.1915, leg. Wörndle (TLMF); 1♀, same data, but 27.V.1928 (TLMF); 1♂, 1♀, same locality, 24.IV.1914, leg. Ratter (TLMF); 1♀, same data, but 9.V.1916 (TLMF); 1♂, 1♀, Zirl, 23.VIII.1937 (TLMF); 1♂, Zirl, 29.VI.1926, leg. Wörndle (TLMF); 1♀, Pflach env., 47.52°N, 10.72°E, 840 m, 18.V.1915 (TLMF); 1♀, Reutte, Tränke, 47.481°N, 10.709°E, 850 m, 5.VI.1915 (TLMF); 2 exs., Reutte, 6.V.1915 (TLMF); 3♂♂, 1♀, Jungholz, 47.574°N, 10.448°E, leg. Ammann (TLMF); 3♂♂, Elmen env., 47.34°N, 10.54°E, bank of Lech river, flood debris, 17.VI.1938, leg. Lechleitner (TLMF); 1♀, same data, but 3.VI.1938 (TLMF); 1♂, 3♀♀, same data, but 20.X.1941 (MHNG, TLMF); 3♂♂, 3♀♀, same data, but 23.V.1942 (TLMF); 1♀, same data, but 5.VI.1940 (TLMF); 1♂, Ausfern, Elmen, 1940, leg. Kofler (MHNG); 6♂♂, 8♀♀, Ausfern, leg. Kofler (TLMF); 9 exs., NE Häselgehr, Alach, 47.318°N, 10.504°E, 22.VI.1935 (TLMF); 1♂, SW Scharnitz, Gießenbach, 47.377°N, 11.236°E, V.1926, leg. Ratter (TLMF); 1♀, Hall in Tirol, 47.283°N, 11.508°E, 3.V.1935, leg. Ratter (TLMF); 1♂, Völs, Innau, 47.265°N, 11.325°E, 580 m, sandy river bank, 18.VIII.2018, leg. Kahlen (TLMF); 1♀, “am Lech”, 2.IV.1940 (TLMF); 1♂, Lechtal, 3.VII.1915 (TLMF); 2 exs., locality illegible, 23.VIII.1932 (TLMF). **Osttirol:** 1♂, 1♀, S Tassenbach, bank of Gailbach, 46.742°N, 12.466°E, 3.VI.1951 (TLMF); 1♀, Thal, bank of Drau river, 46.782°N, 12.663°E, 6.V.1965, leg. Kofler (TLMF); 1♂, same locality, 20.V.1950 (TLMF); 1♀, N Sillian, Villgratental, 46.756°N, 12.436°E, Drau flood, 29.V.1951 (TLMF). 1♀, Sillian env., 46.750°N, 12.419°E, 30.V.1951 (TLMF); 1♀, same data, but 9.VI.1951 (TLMF); 3♀♀, Lienz env., Gasthof Kapau, 46.808°N, 12.856°E, 650 m, 11.IV.1971, leg. Kofler (TLMF). **Oberösterreich:** 1♂, Grünburg, leg. Späth (MHNG); 2♂♂, 2♀♀, Grünburg (NHMW); 1♀, Grünburg, leg. Bernhauer (NHMW). **Niederösterreich:** 3♂♂, 1♀, Lunz (NHMW); 1♀, Lunz, 1889, leg. Haberfelner (NHMW); 2♀♀, Lunz, 1895, leg. Birnbacher (NHMW); 2♂♂, 1♀, Ötscher, leg. Haberfelner, etc. (SDEI). **Kärnten:** 1♂, Eisenkappel env., car-net, 26.VI.–4.VII.1987, leg. Siede & Wunderle (cWun). Locality not specified: 1♂, 1♀, “Alp. Aust.” (SDEI). **Czechia:** 2♀♀, Prague, leg. Skalitzky, etc. (NHMW, SDEI); 1♀, Brandys nad Labem, leg. Skalitzky (NHMW); 3♀♀, 2 exs., Paskov, leg. Graf (MNB, SDEI); 2 exs., Paskov, 26.VI.1896, leg. Gerhard (SDEI); 1 ex., Paskov (SDEI); 2♂♂, 2♀♀, “Moravia”, leg. Reitter, etc. (NHMW). **Czech or Polish territory:** 9♂, 11♀♀, “Silesia: Teschen”, leg. Wanka (MNB, TLMF). **Poland:** 1♂, 4♀♀, 3 exs., Legnica, leg. Gerhard, Letzner (SDEI, TLMF). **Slovenia:** 1 ex., Kranj, Bohinjska Bistrica, Nomenj, Sava river bank, 500 m, 6.VII.1995, leg. Schülke & Grünberg (MNB); 1♂, Kranj, 3 km NE Bohinjska Bistrica, Log, Save river bank, 4.VII.1995, leg. Schülke & Grünberg (cAss); 1♂, Ljubljana, leg. Skalitzky (NHMW). **Italy: Trentino-Alto Adige:** 3♀♀, Ora, 11.VI.1989, leg. Wunderle (cWun); 1♀, Bolzano, Samtal, 28.V.1965, leg. Lohse (MHNG); 2♀♀, Bolzano env., leg. Strupi (MHNG); 1♀, Bolzano (MHNG); 1♂, locality not

specified, leg. Bertolini (NHMW); 1♂, Ultental, Kuppelwies-Fontana Bianca, 46°30–32'N, 10°54–57'E, 1150–1700 m, car-net, 3.VI.2019, leg. Schülke (MNB); 1♂, 6♀♀, Bolzano env., Runkelstein [46°31'N, 11°22'E], bank of Talvera river, 8.IV.1971, leg. Kahlen (TLMF); 1♂, Bolzano, Sarner Schlucht, 46.531°N, 11.364°E, 330–400 m, sand, 15.IV.1990, leg. Kahler (TLMF); 1♀, same locality, floated, 18.IV.1981, leg. Kahlen (TLMF); 1♂, Ora env., Hohlen, stream, 7.IV.1971, leg. Kahlen (TLMF); 2♀♀, Val Venosta, Schnalstal, stream bank, 13.IV.1974, leg. Kahlen (TLMF); 1♂, Vipiteno env., Ridanna [46°55'N, 11°18'E], 13.V.1959, leg. Peez (TLMF); 1♂, Isarco valley, Atzwang, Finsterbach, 46.535°N, 11.491°E, 400–500 m, gravel bank, 4.V.2014, leg. Kahlen (TLMF); 1♂, 1♀, Valle Aurina [Ahrntal], “Kemater Ahrau”, 46.892°N, 11.947°E, 840 m, gravel bank, 6.VI.2014, leg. Kahlen (TLMF, cAss); 1♀, Valle di Braies [Pragser Tal], 46.721°N, 12.134°E, stream debris, 23.VII.1981, leg. Kahlen (TLMF); 4 exs., Ala [45°45'N, 11°00'E] env., 170 m, under stones near stream, 28.V.2019, leg. Gontarenko (cGon, cAss). **Piemonte:** 2♀♀, locality not specified (SDEI). **Veneto:** 1♂, Recoaro (Vi), Agno river, 24.VI.1990, leg. Zanetti (cZan); 2 exs., Chiuppano (Vi), 12.V.1992, leg. Zanetti (cZan). **Friuli-Venezia-Giulia:** 5 exs., exs., W Carnia, bank of Fella river, 46°23'N, 13°07'E, 250 m, flood debris, 12.IX.1998, leg. Schülke (MNB, cAss); 1 ex., SE Villesse, bank of Isonzo river, 45°51'N, 13°27'E, 10 m, flood debris, 13.IX.1998, leg. Schülke (MNB); 2♀♀, Treppo Carnico, stream bank, 6.VI.1958, leg. Pechlaner (MHNG, TLMF). **Emilia-Romagna:** 1♂, Appennino Tosco-Emiliano, Secchia river, 19.VI.1981, leg. Guglielmi (cZan); 1 ex., Modena, Leo-Scoltenna confluence, 1.VI.1996, leg. Zanetti (cZan); 1 ex., Modena, Scoltenna river valley, car-net, 1.VI.1996, leg. Zanetti (cZan); 1♀, Reno, 18.II.1906, leg. Fiori (MNB).

**Hungary:** 1♀, Sopron (SDEI).

**Romania: Maramureș:** 1♀, confluence point of stream Frumuseaua and river Vișeu, 47°49'44"N, 24°13'36"E, 380 m, flotation, 25.V.2003, leg. Makranczy (HNHM); 2♂♂: Valea Vișeului, Vișeu, 1.5km S Tisa confluence, W bank, sandy shoal N hanging bridge, 47°54'04"N, 24°09'33"E, 360 m, from gravelly spots in sandbank, after high water, flotation, 11.VI.2007, leg. Makranczy (HNHM, cAss). **Hunedoara:** 6♂♂, 5♀♀, Munții Retezat, W Nucșoara, wide rocky bed of p. Nucșorul, 1 km N road bridge, 45°28'37"N, 22°54'23"E, 680 m, stream branches, unvegetated sand-gravel spot, floated, 2.VI.2008, leg. Makranczy (HNHM, cAss). **Alba:** 13♂♂, 23♀♀, Arieșeni, right bank of Arieșul Mare, E of bridge over confluence point with râul Cobleș, 46°28'32"N, 22°45'41"E, 830 m, top of gravel/sand heap at riverbank, flotation, 7.VI.2006, leg. Makranczy (HNHM, cAss). **Brașov:** 1♂, 2♀♀, 2.5km SE Bradet, stream Tarlung, gravel bank under and near bridge, 45°33'11"N, 25°47'00"E, 760 m, from fine gravel at bank and pads, flotation, 29.V.2004, leg. Makranczy (HNHM, cAss).

**Bosnia-Herzegovina:** 1♂, 3♀♀, Sarajevo env., Boshia spring, 7.V.1990, leg. Wunderle (cWun, cAss).

**Ukraine:** 1♀, Transcarpathia, Rakhov district, Maliy Bychkov, 28.IV.2010, leg. Gontarenko (cAss).

**Locality illegible or not specified:** 3 exs. (MNB); 2 exs. (BMNH).

**Comment.** *Homalota macella* was described based on an unspecified number of syntypes from “Passaviae in Bavaria meridionali, Dom. Walt!” (ERICHSON 1839). The sole syntype located in the historical collection of the MNB, a female that had already been examined and dissected by V. Gusarov in 1993, is designated as the lectotype. The specimen had an old lectotype label attached to it by V. Gusarov, but the designation was never published. With his permission, it is replaced with a new label.

The original description of *Homalota pallens* is based on an unspecified number of syntypes from “Lyon. Beaujolais” (MULSANT & REY 1852). Having discovered that this name is a junior primary homonym of *Homalota pallens* Redtenbacher, 1849, a species now in *Meotica* Mulsant et Rey, 1873, GANGLBAUER (1895) replaced the name with the nomen novum *Atheta mulsanti*. Four syntypes, a male and three females, were located in the Rey collection at the MHNL. They had been studied, partly dissected, identified as *A. macella*, and labeled as lectotype and paralectotypes by V. Gusarov (now Oslo) in 1993 and 1999, respectively. Since a lectotype designation has never been published, the male is here formally designated as the lectotype. With V. Gusarov’s permission, the old lecto- and paralectotype labels were removed and new labels were attached to the pins with the specimens.

An examination of the type material of *Homalota macella* and *H. pallens* revealed that both names refer to the same species, so that *H. pallens* and its replacement name *A. mulsanti* are placed in synonymy with the senior name *H. macella*. This also means that *Apimela macella* has been misinterpreted by virtually all subsequent authors and that *A. macella* auctt. (nec ERICHSON, 1839) represents an undescribed species. For a description of this species see the section on *A. mutata* below.

**Redescription.** Body length 2.5–3.0 mm; length of forebody 1.2–1.3 mm. Habitus as in Fig. 1. Coloration highly variable; usual coloration: head pale-reddish to brown; pronotum and elytra yellowish to pale-brown; abdomen reddish-yellow to pale-brown, often with the preapical segments slightly darker; legs and antennae yellow; occasionally, the body including the antennae may be significantly darker.

Head (Fig. 2) approximately as broad as long; punctation extremely fine and dense, barely visible in the microsculpture even at high magnification. Eyes moderately convex, approximately 0.6 times as long as postocular region in dorsal view. Antenna (Fig. 3) 0.7–0.8 mm long; antennomeres III distinctly shorter than II, IV–X more than 1.5 times as broad as long and of gradually increasing width. Mouthparts as in Figs 5–6, 10.

Pronotum (Fig. 2) approximately 1.05 times as broad as long and 1.05 times as broad as head, broadest anteriorly, weakly tapering posteriad, and weakly convex in cross-section; lateral margins straight; punctation and microsculpture similar to those of head.

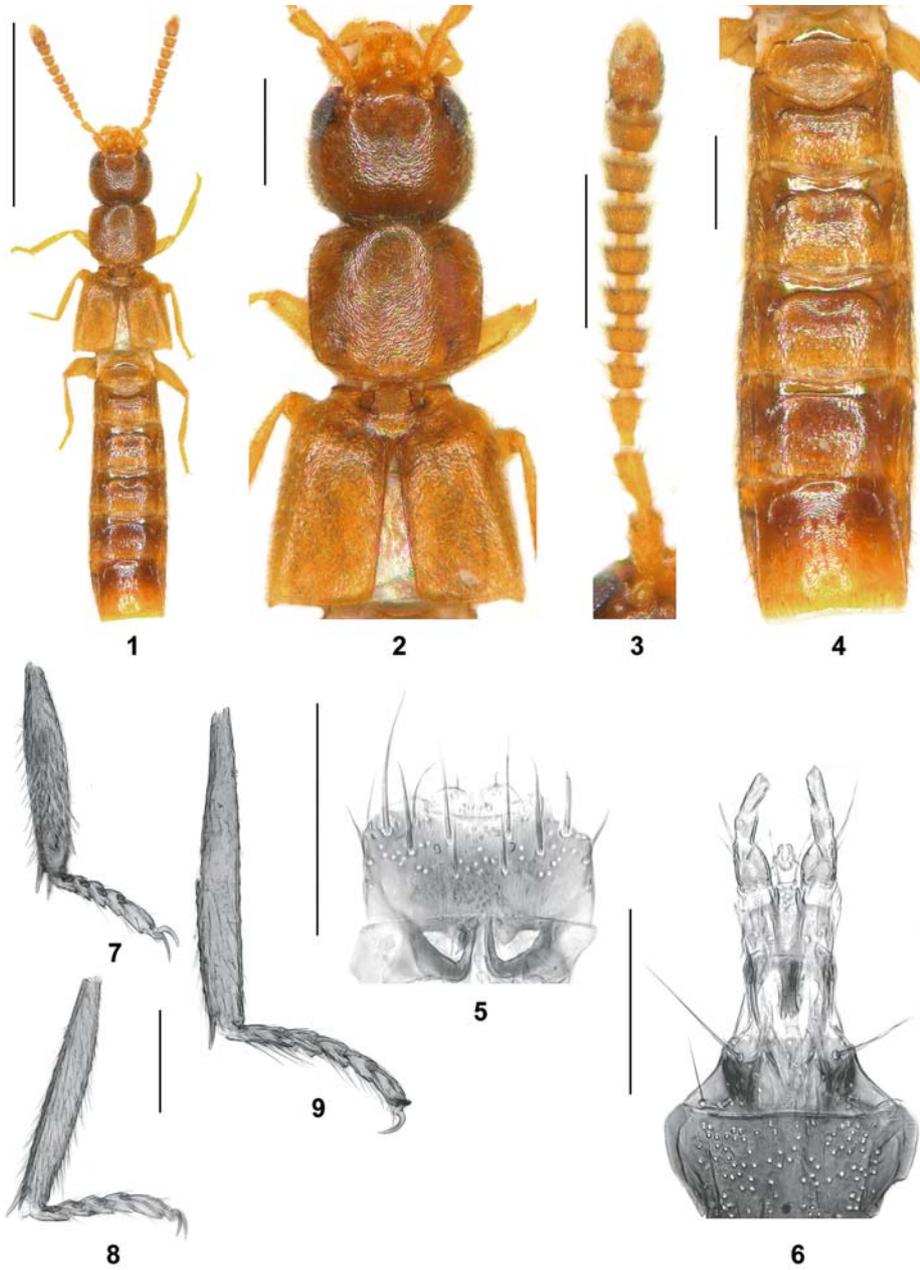
Elytra (Fig. 2) approximately as long as pronotum; punctation extremely fine and dense, barely visible in the pronounced microsculpture even at a magnification of 100×. Hind wings fully developed. Metatarsomere I shorter than the combined length of metatarsomeres II and III. Pro-, meso-, and metatarsus shaped as in Figs 7–9.

Abdominal tergites III–V with very shallow, tergite VI without distinct anterior impressions (Fig. 4); tergite III with sexual dimorphism; punctation fine and dense, somewhat sparser on tergites VII and VIII; interstices with pronounced microsculpture, but glossy; posterior margin of tergite VII with palisade fringe; tergite VIII with truncate or indistinctly concave posterior margin (Fig. 14).

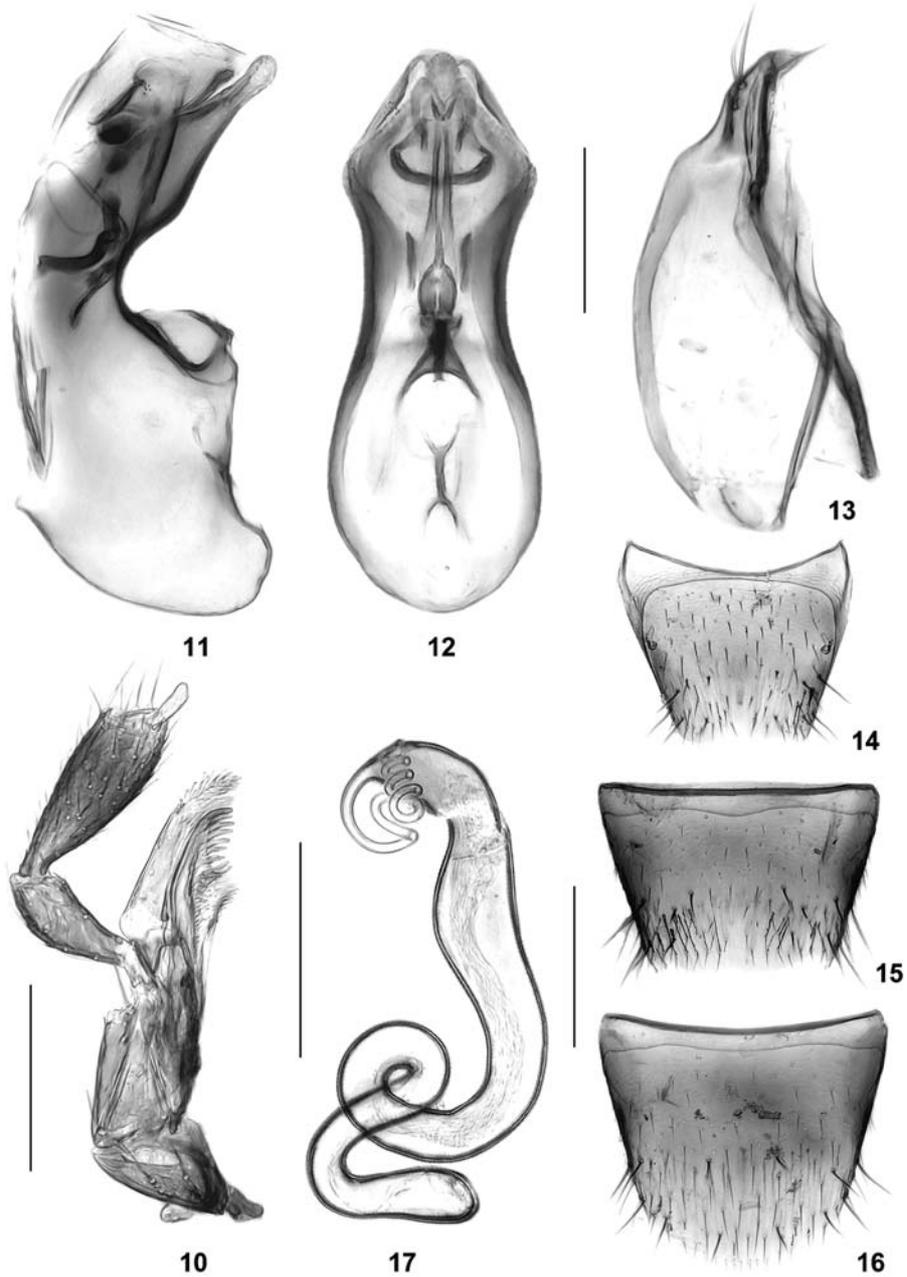
♂: tergite III with posterior margin produced in the middle and with spine-shaped postero-median tubercle (Fig. 4); sternite VIII (Fig. 15) strongly transverse, posterior margin broadly and weakly convex in the middle; median lobe of aedeagus (Figs 11–12) approximately 0.33 mm long; ventral process distinctly angled in lateral view; paramere as in Fig. 13.

♀: sternite VIII (Fig. 16) weakly transverse, longer than tergite VIII, and with broadly convex posterior margin; spermatheca as in Fig. 17.

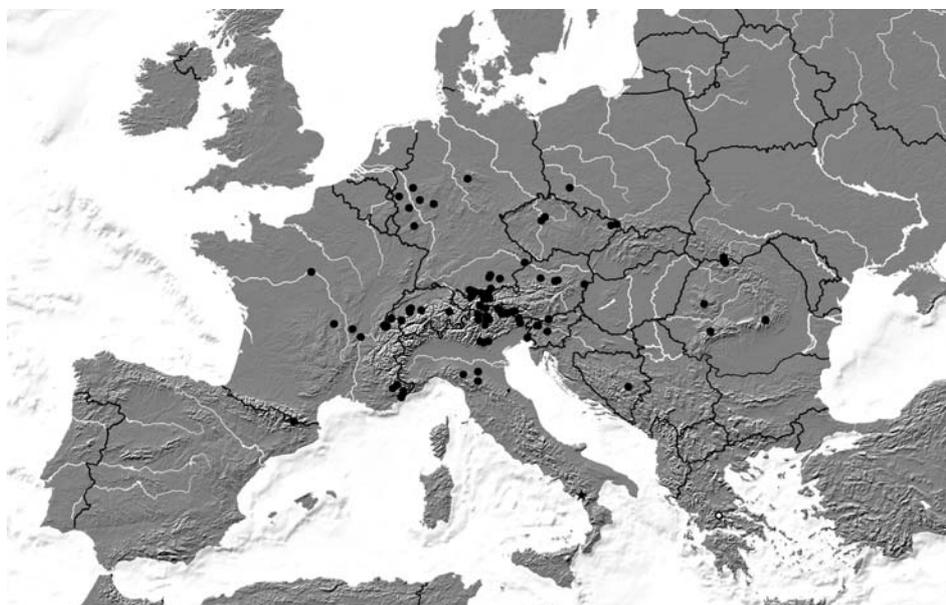
**Comparative notes.** In general appearance (size, habitus, coloration) *A. macella* is most similar to *A. mutata*, with which it was often confused in the examined collections. It differs from *A. mutata* by usually paler and on average longer and more massive antennae, an on average more distinctly microsculptured and less glossy forebody, an on average more slender pronotum, the sexual dimorphism of the abdominal tergite III, the completely different shapes of the male and female sternite VIII, and by the completely different structure of the primary sexual characters. In fact, based on the shared



**Figs 1–9.** *Apimela macella*. 1 – habitus; 2 – forebody; 3 – antenna; 4 – male abdomen; 5 – labrum; 6 – labium; 7 – protibia and protarsus; 8 – mesotibia and mesotarsus; 9 – metatibia and metatarsus. Scale bars: 1: 1.0 mm; 2–4: 0.2 mm; 5–9: 0.1 mm.



**Figs 10–17.** *Apimela macella*. 10 – maxilla; 11–12 – median lobe of aedeagus in lateral and in ventral view; 13 – paramere; 14 – male tergite VIII; 15 – male sternite VIII; 16 – female sternite VIII; 17 – spermatheca. Scale bars: 14–16: 0.2 mm; 10–13, 17: 0.1 mm.



**Map 1.** Distributions of *Apimela macella* (black circles), *A. graeca* (white circle), and *A. wunderlei* (star) in Europe, based on examined records.

modifications of the male tergite III, the derived shapes of the male sternite VIII (strongly transverse, weakly produced posteriorly) and the female sternite VIII (significantly longer than tergite VIII and of similar condition as in males of many other oxydopines), as well as the similar general morphology of the aedeagus and the spermatheca, *A. macella* forms a species group (hereafter referred to as the *A. macella* species group) together with *A. procera*, *A. sabulicola*, and several species from the East Palearctic region. It is distinguished from *A. procera* by smaller body size, a less slender habitus, much shorter antennae, less pronounced modifications of the male tergite III, and by a smaller and differently shaped aedeagus.

**Distribution and natural history.** Owing to the long history of misinterpretation of this species, as well as frequent misidentification, previous literature records should be considered doubtful. Based on the examined material, *A. macella* is distributed in the mountainous regions of West, southern Central, South, and Southeast Europe (Pyrenees, Alps, North Apennines, mountain ranges of southeastern Central Europe, Carpathians, North Balkans), with few records also along major rivers further to the north of Central Europe and the northernmost confirmed record from the Harz mountains in North Germany (Map 1). The record from the environs of Hamburg (KOLTZE 1901) refers to *Meotica moczarskii* SCHEERPELTZ, 1927; the voucher specimen (leg. and coll. Koltze; now in SDEI) was examined.

Most of the examined specimens were collected on stream and river banks with substrates consisting of coarse sand and fine gravel, or from flood debris. Some were taken on the wing with car-nets (May and June) or at light traps (July). The altitudes range from near sea-level to at least 1200 m, with the majority of records between 500 and 1000 m. The species was collected nearly throughout the year with a maximum in May and June: February (3 records / 6 specimens); March (3 / 4); April (16 / 28); May (47 / 138); June (29 / 106); July (7 / 12); August (5 / 13); September (4 / 15); October (2 / 6); December (1 / 1).

*Apimela procera* Assing, 2019

(Figs 20–25, Map 2)

*Apimela procera* Assing, 2019: 891 f.

**Type material examined.** See ASSING (2019).

**Additional material examined. Turkey:** 1♀, Rize, ca. 40 km SSW Hopa, source of Çağlayan D., ca. 41°06'N, 41°22'E, 2700–2900 m, 25.VI.1998, leg. Solodovnikov (cAss); 1♂, 1♀, E Doğu Karadeniz Dağları, Barhal Ç. river above Sarigöl (probably in Artvin: 40°57'N, 41°30'E), 800 m, 23.VI.1998, leg. Solodovnikov (cAss); 1♂, same data, but source of Barhal Ç. river, 2400 m (cAss); 1♀, Osmaniye, 6 km NE Osmaniye, 37°07'N, 36°19'E, 130 m, washed from river bank, 10.IV.2004, leg. Assing & Schülke (MNB).

**Ukraine:** 2♂♂, 1♀, Krym peninsula, Iaila range, leg. Moczarski, Knirsch (NHMW, cAss).

**Georgia:** 7♂♂, 12♀♀, Tbilisi env., Mzcheta, bank of Aragvi river, flood debris, leg. Schülke & Wrase (MNB, cAss).

**Russia:** 1♂, 1♀: Krasnodar, 1.5 km N Betta, under bark, 25.IV.1995, leg. Solodovnikov (cAss); 1♀, Kabardino-Balkaria, Verkhnyaya Balkaria, bank of Cherek Balkarsky, 1500 m, 16.V.1996, leg. Solodovnikov (cAss).

**Russian or Georgian territory:** 1♂, 1♀, Kluchor pass, VII.1912, leg. Roubal (NHMW).

**Iran:** 1♀, Mazandaran province, Shahmirzad–Astaneh, Golim, 36°00'N, 53°29'E, 1880 m, 23.V.2006, leg. Frisch & Serri (MNB); 1♀, Mazandaran province, 12 km E Kiyasar, Alikolar, 36°13'N, 53°39'E, 1590 m, 9.VI.2006, leg. Frisch & Serri (MNB); 1♀, Razavi Khorasan province, SW Shandiz, Zoshg, 36°20'N, 59°11'E, 1750 m, 27.V.2006, leg. Frisch & Serri (MNB); 1♂, Azarbayjan-e Gharbi province, road Khoy–Qotur, 32 km W Khoy, Qotur river, 38°28'N, 44°39'E, 1540 m, 28.VIII.2008, leg. Frisch & Serri (cAss); 1♂, Kerman province, 3 km E pass Mahan–Sirch, 30°12'N, 57°26'E, 2430 m, 30.IV.2007, leg. Frisch & Serri (MNB).

**Comment.** The original description is based on material from several localities on the Greek island Samothraki, one in mainland Greece, and one in Osmaniye province, central southern Anatolia. At the time of the description, previously examined material from the Caucasus region was assumed to belong to a distinct species, distinguished from *A. procera* by the presence of distinct microsculpture on the forebody, slight differences in the shape of the aedeagus, and by an often distinctly bicoloured body with the head, pronotum, and abdomen brown to blackish-brown and the elytra yellowish (Figs 20–22). With additional material from the Caucasus region and Ukraine now available, however, these differences are connected by transitional conditions, suggesting that they are to be interpreted as (enormous) clinal rather than interspecific variation. Like *A. macella*, *A. mutata*, and other widespread *Apimela* species, *A. procera* is subject to enormous intraspecific variability of coloration, body size, proportions, antennal morphology, microsculpture (ranging from distinct to absent), elytral length, and other characters. The male primary and secondary sexual characters are illustrated in Fig 23–25. For a detailed description and additional illustrations of this species see ASSING (2019).

**Distribution and natural history.** The vast distribution of *A. procera* ranges from Greece in the west to the Caucasus region in the east and South Iran in the southeast (Map 2). The species has been collected on the banks of streams and rivers with coarse sand and fine gravel at a remarkably wide range of altitudes, from near sea-level up to approximately 2800 m.

***Apimela sabulicola* (Bernhauer, 1914)**

(Figs 18–19, Map 2)

*Aleuonota (Apimela) sabulicola* Bernhauer, 1914: 5.

*Meotica quadraticollis* Scheerpeltz, 1954: 155; synonymy by ASSING & VOGEL (2019).

**Type material.** *Meotica quadraticollis*: see ASSING & VOGEL (2019).

**Comment.** The original description of *A. sabulicola* is based on a unique holotype collected by Bernhauer “am Ufer der Miljačka bei Ilidže in Bosnien” (BERNHAEUER 1914). The holotype, which is deposited in the Bernhauer collection at the Field Museum of Natural History (FMNH), has been out on loan to a colleague for many years. Repeated requests, also from the staff of FMNH, to make this specimen available for study have remained unsuccessful.

*Meotica quadraticollis* was described based on an unspecified number of syntypes from “den transsylvanischen Alpen (Rotenturmpaß)” (SCHEERPELTZ 1954). This name was recently synonymized with *A. sabulicola* by ASSING & VOGEL (2019). Since the holotype of *A. sabulicola* was not accessible, the redescription below is based exclusively on the lectotype of *M. quadraticollis*.

**Redescription.** Small species; body length approximately 2 mm; length of forebody 1.05 mm. Coloration of whole body including appendages yellow (Fig. 18).

Head (Fig. 18) approximately as broad as long; punctation extremely fine and dense, barely visible in the microsculpture even at high magnification. Eyes weakly convex, composed of approximately 30 ommatidia, and less than half as long as postocular region in dorsal view. Antenna 0.65 mm long and distinctly incrassate; antennomeres III distinctly shorter than II, of conical shape, and approximately 1.5 times as long as broad, IV–X strongly transverse, approximately twice as broad as long, and of gradually increasing width.

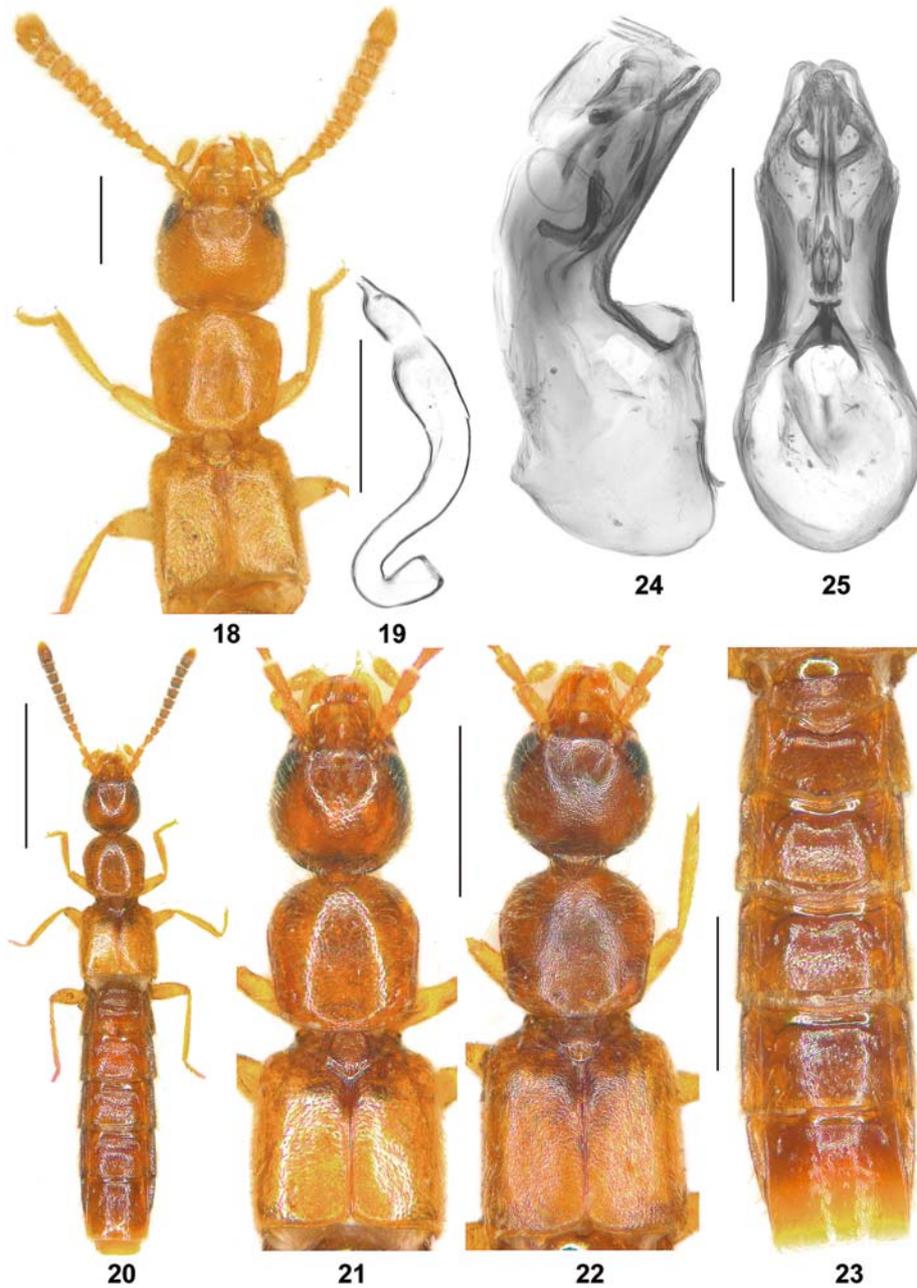
Pronotum (Fig. 18) indistinctly transverse and small in relation to head, 1.05 times as broad as long and approximately as broad as head; punctation and microsculpture similar to those of head.

Elytra (Fig. 18) relatively short, 0.9 times as long as pronotum, with dense and extremely fine punctation barely noticeable in the distinct microsculpture.

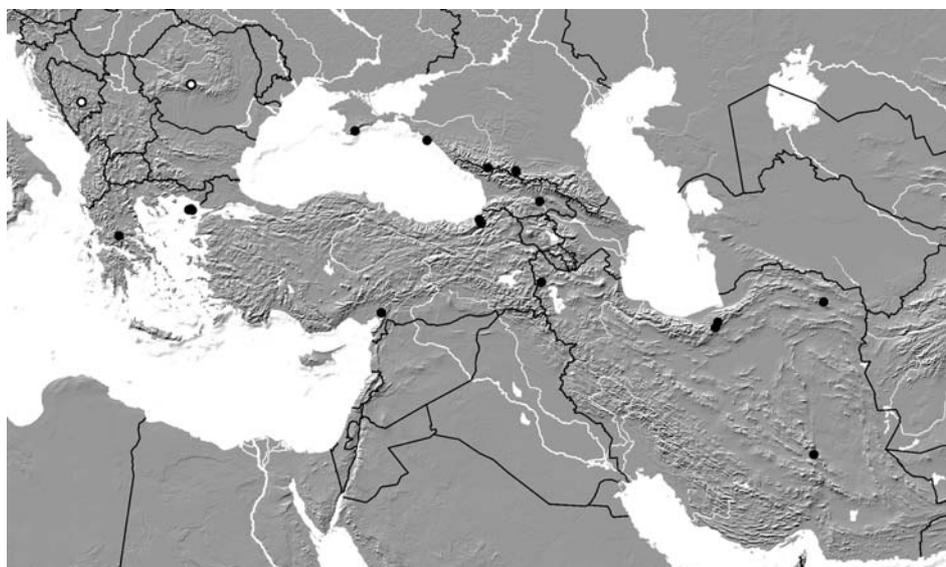
♂: not available.

♀: posterior margin of tergite VIII weakly concave, that of sternite VIII convex; spermatheca as in Fig. 19.

**Comparative notes.** Based on the shape of the spermatheca, this species belongs to the *A. macella* group. It differs from other species of this group by significantly smaller size, paler coloration, smaller eyes, more strongly incrassate antennae with more transverse



**Figs 18–25.** *Apimela sabulicola* (lectotype of *Meotica quadraticollis*) (18–19) and *A. procera* from Samothraki (20–21) and Northeast Anatolia (22–25). 18, 21–22 – forebody; 19 – spermatheca; 20 – habitus; 23 – male abdomen; 24–25 – median lobe of aedeagus in lateral and in ventral view. Scale bars: 20: 1.0 mm; 21–23: 0.5 mm; 18: 0.2 mm; 19, 24–25: 0.1 mm.



**Map 2.** Distributions of *Apimela procera* (black circles) and *A. sabulicola* (white circle), based on examined records.

antennomeres IV–X, shorter elytra, and by the shape of the spermatheca. It is distinguished from the similarly coloured and similarly small *A. wunderlei* of the *A. mutata* group particularly by a much smaller (in relation to head) and significantly less transverse pronotum and by the completely different structure of the spermatheca.

**Distribution and natural history.** *Apimela sabulicola* is currently known only from one locality in Bosnia-Herzegovina (type locality of *A. sabulicola*) and one in South Romania (type locality of *Meotica quadraticollis*) (Map 2). The collection data provided by BERNHAUER (2014) (see above) suggest that, like other West Palaearctic species of the genus, *A. sabulicola* is ripicolous.

***Apimela indica* (Cameron, 1939), comb. nov.**

(Figs 26–34, Map 3)

*Parapimela indica* Cameron, 1939: 572.

*Parapimela assamensis* Cameron, 1939: 573; **syn. nov.**

**Type material examined.** *P. indica*: Lectotype ♂, present designation: “Muncpl. Gardens, Mussoorie 6000’ / Dr. Cameron. 15.IV.22. / Stream Shingle / *Parapimela indica* Cam. Type / M. Cameron. Bequest. B.M. 1955-147. / Syntype / Lectotypus ♂ *Parapimela indica* Cameron, desig. V. Assing 2019 / *Apimela indica* (Cameron), det. V. Assing 2019” (BMNH). Paralectotype ♂: “Mossy Falls, Mussoorie. / Dr. Cameron, 27.III.1928 / Stream Shingle / *Parapimela indica* Cam. / M. Cameron. Bequest. B.M. 1955-147. / Syntype” (BMNH).

*P. assamensis*: Lectotype ♀, present designation: “2 / Naga Hills, Assam (9) / *assamensis* Cam / *Parapimela assamensis* Cam. Type / M. Cameron. Bequest. B.M. 1955-147. / Syntype / Lectotypus ♀ *Parapimela assamensis* Cameron, desig. V. Assing 2019 / *Apimela indica* (Cameron), det. V. Assing 2019” (BMNH).

**Comment.** The original description of *P. indica* is based on an unspecified number of syntypes from “Mussooree district : Municipal Gardens; Mossy Falls. Simla Hills and Chakrata districts, ... . Haldwani district, Kumaun”, that of *P. assamensis* on an unspecified number of female syntypes (“♂ unknown”) from “Assam : Naga Hills” (CAMERON 1939). Two male syntypes of *P. indica* and a female syntype of *P. assamensis* were examined. Lectotypes are designated for both names.

According to CAMERON (1939), *P. assamensis* is distinguished from *P. indica* by darker coloration, a broader head, larger eyes, and stouter antennae. Aside from the coloration, however, these differences cannot be confirmed. Considering the general variability of *Apimela* species, it is concluded that the lectotype of *P. assamensis* is conspecific with the type material of *P. indica*. Both names were made available in the same work. Since *P. indica* is the type species of the *Parapimela* and represented by male type specimens, this name is designated as the senior synonym.

As can be inferred particularly from the male primary and sexual characters and from the shape of the spermatheca, *P. indica* undoubtedly belongs to the *Apimela macella* clade, thus yielding the following genus-group synonymy: *Apimela* Mulsant et Rey, 1874 = *Parapimela* Cameron, 1939, syn. nov.

**Redescription.** Body length 3.8–4.1 mm; length of forebody 1.7–1.8 mm. Habitus as in Fig. 26. Coloration: head blackish-brown to black; pronotum reddish to dark-brown; elytra yellowish to pale-brown; abdomen reddish with tergites VI and VII more or less distinctly and more or less extensively darker; legs yellow; antennae dark-brown with the basal two antennomeres pale-reddish.

Head (Fig. 27) approximately as broad as long or indistinctly transverse; punctuation extremely fine and dense; interstices with or without shallow traces of microsculpture. Eyes large, approximately as long as distance from posterior margin of eye to posterior constriction of head. Antenna (Fig. 28) 1.2–1.3 mm long and slender; antennomeres IV–VII weakly oblong, VIII–X approximately as long as broad, and XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 27) slender, 1.06–1.08 times as long as broad and 1.03–1.14 times as broad as head; punctuation similar to that of head, but even finer.

Elytra (Fig. 27) approximately as long as pronotum, with extremely dense and fine punctuation.

♂: tergite III (Fig. 29) with medially strongly produced posterior margin and with pronounced, almost spine-shaped postero-median tubercle; tergite VIII with weakly concave posterior margin; sternite VIII (Fig. 30) strongly transverse, posterior margin angularly produced and semi-transparent in the middle; median lobe of aedeagus 0.42–0.43 mm long and shaped as in Figs 31–32.

♀: tergite VIII of similar shape as in male; sternite VIII (Fig. 33) less transverse than in male, with broadly convex posterior margin; spermatheca (Fig. 34) of similar shape as in other species of the *A. macella* group.

**Comparative notes.** In general appearance (habitus, body size), *A. indica* somewhat resembles *A. procera*, from which it is distinguished particularly by the shape of the aedeagus.

**Distribution and natural history.** The known distribution ranges across North India, from Uttar Pradesh in the west to Assam in the east (Map 3). The examined type specimens of *A. indica* were collected from stream shingle.

***Apimela sinica* (Pace, 2012), comb. nov.**

(Figs 35–42, Map 3)

*Himalkompsusa sinica* Pace, 2012a: 133.

*Parapimela hartmanni*: Pace (2015), partim.

**Type material examined.** Paratypes: 2♂♂: “CHINA: W-Sichuan, Ya’an Pref., Tianquan Co., Jiajin Shan below Labahe / N.R.St., 54 km W Ya’an, 30.02.90N, 102.26,71E, 1500 m, 12.VII.1999, leg. Pütz / Paratypus *Himalkompsusa sinica* mihi, det. R. Pace 2009 / *Himalkomopsusa sinica* n. sp., det. R. Pace 2009 / *Apimela sinica* (Pace), det. V. Assing 2019” (cPüt).

**Additional material examined. Nepal:** 1♂, W Pokhara, Pewa Lake and river, 28°14’N, 83°54’E, 28–29.IX.2012, leg. Schmidt / “*Parapimela hartmanni* Pace, det. R. Pace 2015” (NME).

**China:** 10 exs., Sichuan, Ya’an Prefecture, Tianquan County, 54 km W Ya’an, Jiajin Shan, valley below Labaha N. R. Station, 30°03’N, 102°27’E, 1500 m, gravel, 12.VII.1999, leg. Schülke (MNB, cAss); 3 exs., Yunnan, Dali Bai Autonomous Prefecture, Babian Jiang river bank, 24°51’27”N, 100°29’22”E, 1800 m, washed from sand and gravel, from roots of vegetation, 16.IX.2009, leg. Schülke (MNB, cAss).

**Comment.** The original description is based on a male holotype and ten paratypes from “China: W-Sichuan, Ya’an Prefecture, Tianquan Co., Jiajin Shan, below Labahe nr. Station, 55 km W Ya’an, 1500 m, 30°02’90”N [sic] 102°26’71”E [sic]” (PACE 2012a). The above non-type male from Nepal was reported as *Parapimela hartmanni* by PACE (2015).

*Apimela sinica* is subject to enormous intraspecific variation of the punctuation of the head and pronotum (ranging from extremely fine to distinct), of the shape of the head, of the shape of the pronotum (more or less distinctly oblong; lateral margins straight to distinctly sinuate), and of the male secondary sexual characters (posterior margin of tergite III nearly straight to strongly produced in the middle; tergite VII with very variable number of granulose punctures). For illustrations of the external and male sexual characters see Figs 35–42 and PACE (2012a). The currently known distribution is illustrated in Map 3.

This species is highly similar to *A. indica*. The only significant differences found are the smaller body size (*A. sinica*: length of forebody 1.4–1.6 mm) and the smaller size of the otherwise practically identical aedeagus (*A. sinica*: length of median lobe 0.34–0.36 mm). Additional material is needed to decide if these differences are to be interpreted as inter- or intraspecific variation.

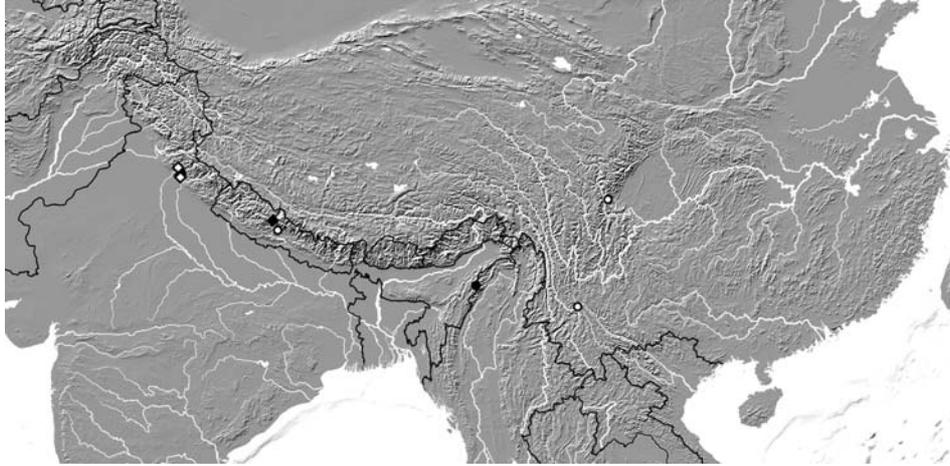
The distribution currently includes China (Sichuan, Yunnan) and Nepal.

***Apimela persimilis* (Cameron, 1939), comb. nov.**

(Figs 43–51, Map 3)

*Parapimela persimilis* Cameron, 1939: 572 f.

**Type material examined.** Lectotype ♂, present designation: “Dehra Dun. Dr. M. Cameron, 27/2 1921. / Stream Shingle / *Parapimela persimilis* Cam. Type / M. Cameron. Bequest. B.M. 1955-147. / Syntype / Lectotypus ♂ *Parapimela persimilis* Cameron, desig. V. Assing 2019 / *Apimela persimilis* (Cameron), det. V. Assing 2019” (BMNH). Paralectotypes: 1♂ [without aedeagus]: “Nim Nadi, Dehra Dun / Dr. Cameron, 9.IV.23 / E.1.199 / *persimilis* Cam. / M. Cameron. Bequest. B.M. 1955-147. / Syntype” (BMNH); 1♀: “Lachiwala, Dehra Dun / Dr. Cameron, 14.III.22. / Stream Shingle / M. Cameron. Bequest. B.M. 1955-147. / Syntype” (BMNH).



**Map 3.** Distributions of *Apimela indica* (black circles), *A. persimilis* (white diamonds), *A. nepalicola* (black diamond), and *A. sinica* (white circles), based on examined records.

**Additional material examined. India:** 3 ♀♀, Uttarakhand, Chakrata, Saiya, 3600 ft., 30.IV.1921, leg. Cameron (BMNH).

**Comment.** The original description is based on an unspecified number of syntypes from “Dehra Dun. Siwaliks: Lachiwala” (CAMERON 1939). Three syntypes, two males and one female, were examined. The male in better condition is designated as the lectotype.

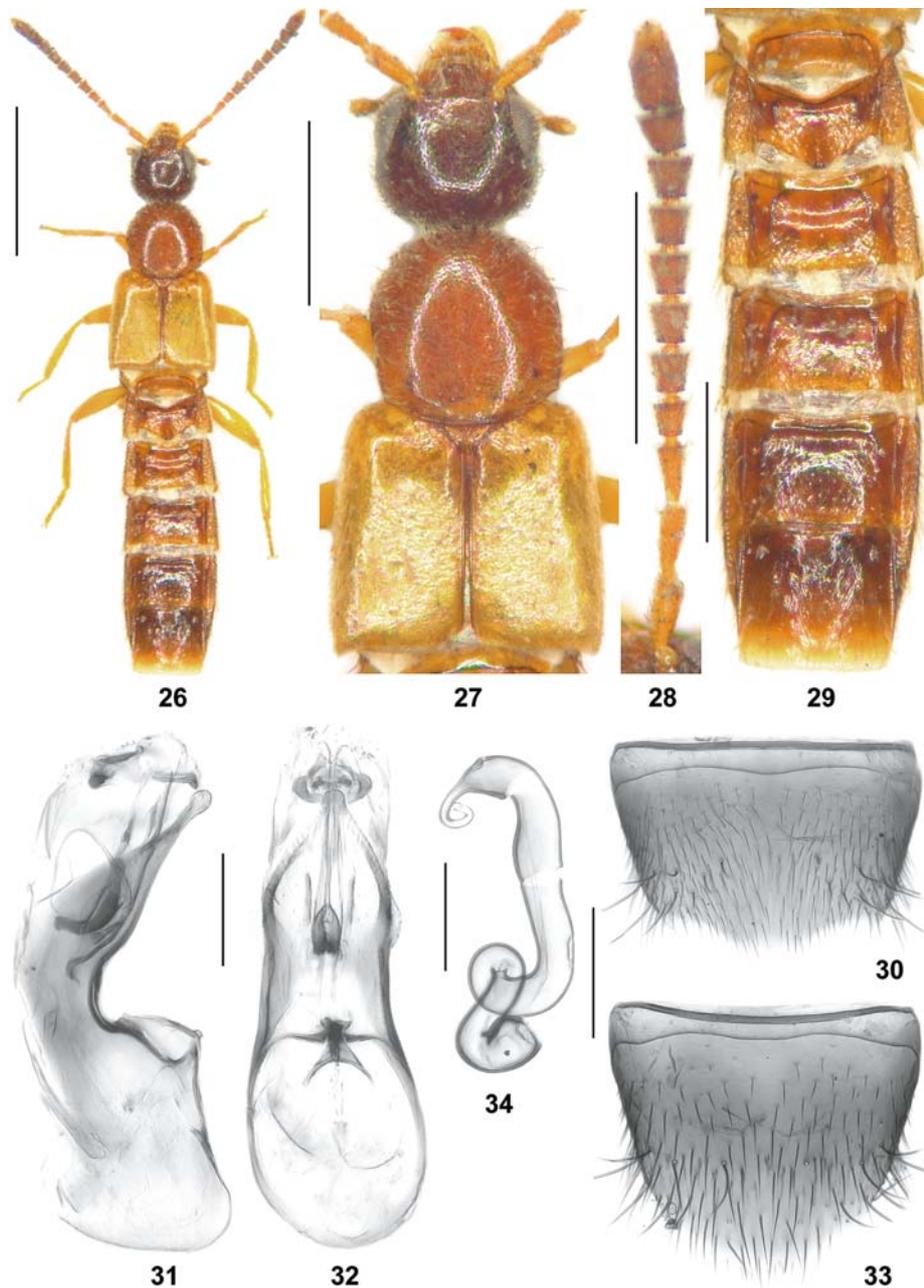
**Redescription.** Body length 2.9–3.8 mm; length of forebody 1.3–1.7 mm. Habitus as in Fig. 43. Coloration: head reddish to brown; pronotum reddish-yellow to reddish-brown; elytra pale-yellow; abdomen reddish to brown with the posterior margins of the tergites yellowish to reddish; legs yellow; antennae dark-brown with the basal 2–3 antennomeres pale-reddish.

Head (Fig. 44) weakly oblong; punctuation extremely fine and dense; interstices with or without shallow traces of microsculpture. Eyes large, approximately as long as distance from posterior margin of eye to posterior constriction of head, or nearly so. Antenna (Fig. 43) 1.0–1.1 mm long and slender; antennomeres IV–V weakly oblong, VIII–X weakly transverse, and XI approximately as long as the combined length of IX and X.

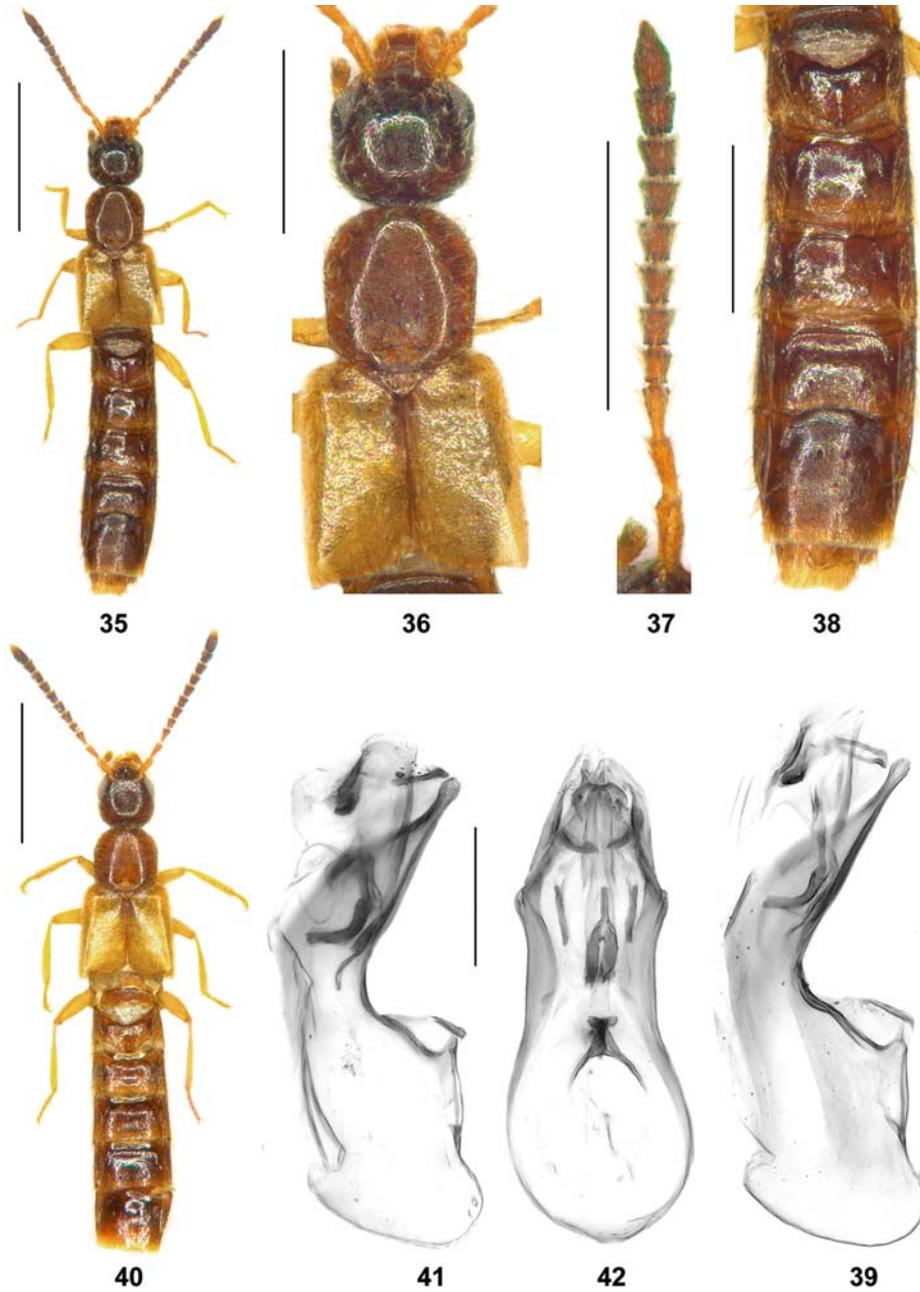
Pronotum (Fig. 44) slender, 1.05–1.10 times as long as broad and approximately 1.05 times as broad as head; punctuation similar to that of head.

Elytra (Fig. 45) approximately as long as pronotum, with extremely dense and fine punctuation.

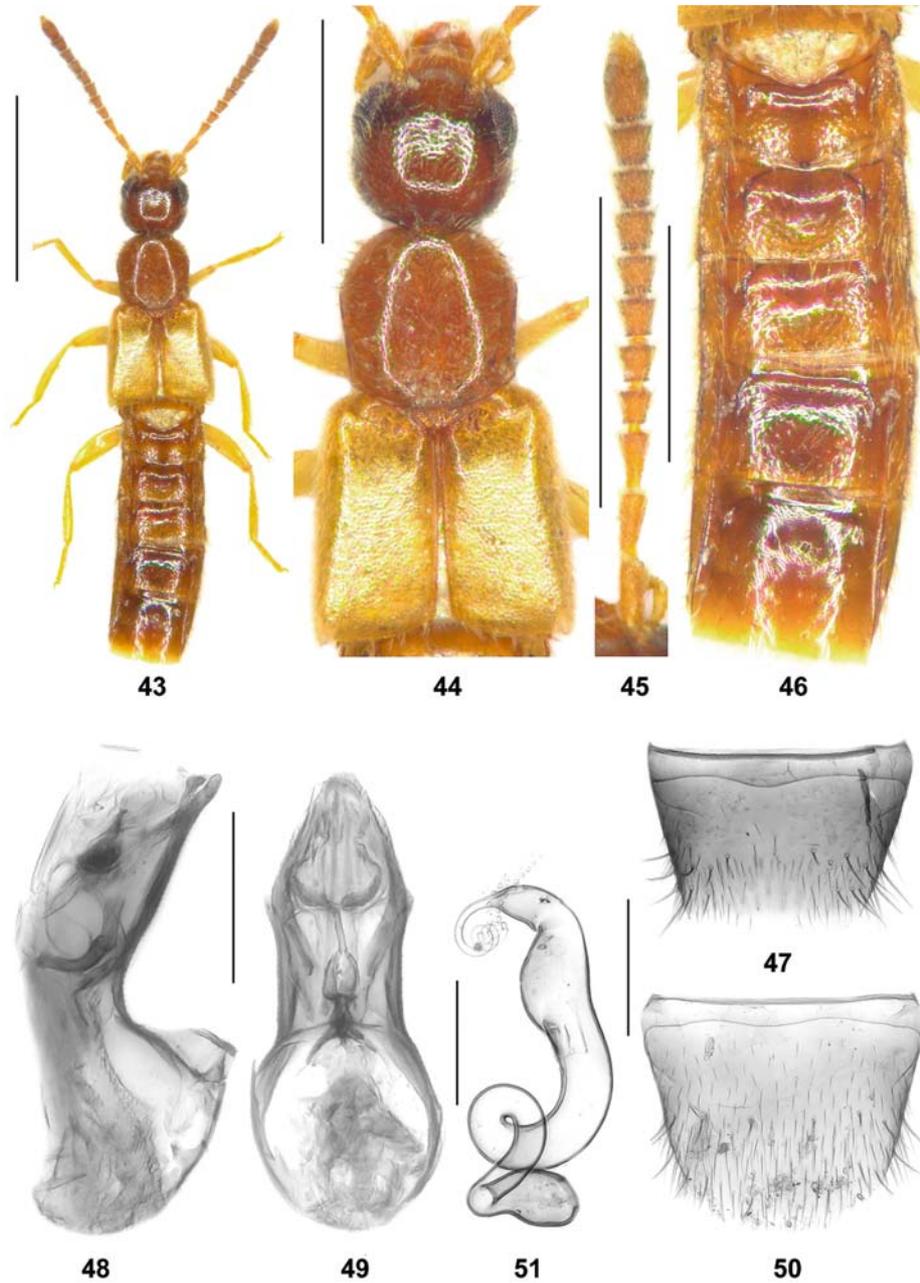
♂: tergite III (Fig. 46) with posterior margin produced in the middle and with pronounced, almost spine-shaped postero-median tubercle; posterior margin of tergite VIII weakly concave in the middle; sternite VIII (Fig. 47) strongly transverse, posterior



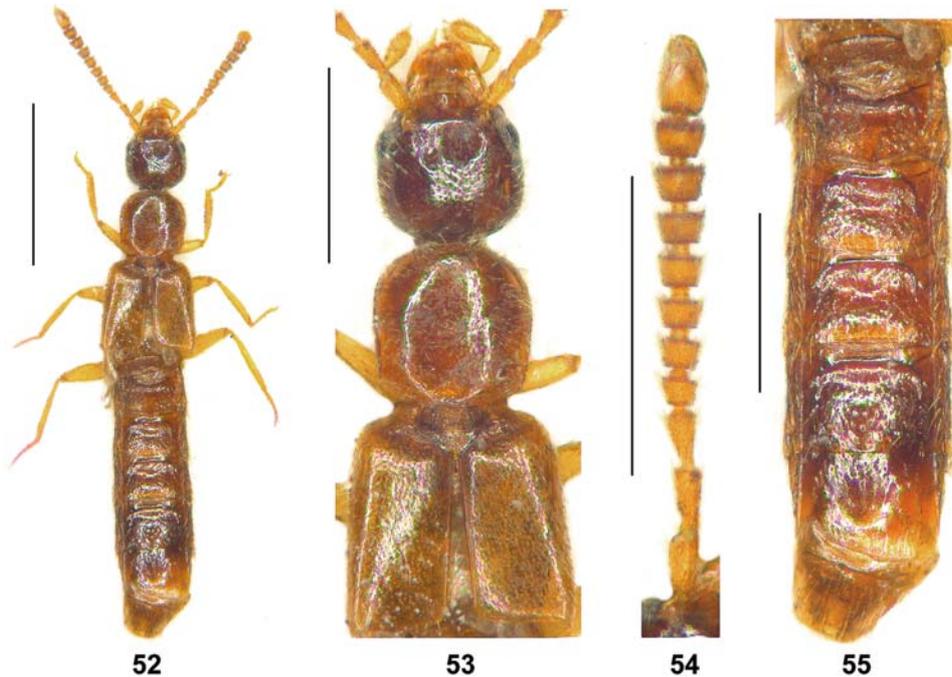
**Figs 26–34.** *Apimela indica* (26–32: lectotype of *A. indica*; 33–34: lectotype of *A. assamensis*). 26 – habitus; 27 – forebody; 28 – antenna; 29 – male abdomen; 30 – male sternite VIII; 31–32 – median lobe of aedeagus in lateral and in ventral view; 33 – female sternite VIII; 34 – spermatheca. Scale bars: 26: 1.0 mm; 27–29: 0.5 mm; 30,33: 0.2 mm; 31–32, 34: 0.1 mm.



**Figs 35–42.** *Apimela sinica* from Nepal (35–39) and from the type locality in Sichuan (40–42). 35, 40 – habitus; 36 – forebody; 37 – antenna; 38 – male abdomen; 39, 41–42 – median lobe of aedeagus in lateral and in ventral view. Scale bars: 35, 40: 1.0 mm; 36–38: 0.5 mm; 39, 41–42: 0.1 mm.



**Figs 43–51.** *Apimela persimilis* (43–49: lectotype; 50–51: paralectotype). 43 – habitus; 44 – forebody; 45 – antenna; 46 – male abdomen; 47 – male sternite VIII; 48–49 – median lobe of aedeagus in lateral and in ventral view; 50 – female sternite VIII; 51 – spermatheca. Scale bars: 43: 1.0 mm; 44–46: 0.5 mm; 47, 50: 0.2 mm; 48–49, 51: 0.1 mm.



**Figs 52–55.** *Apimela nepalicola*, paratype. 52 – habitus; 53 – forebody; 54 – antenna; 55 – male abdomen. Scale bars: 52: 1.0 mm; 53–55: 0.5 mm.

margin obtusely produced and semi-transparent in the middle; median lobe of aedeagus 0.28 mm long and shaped as in Figs 48–49.

♀: tergite VIII of similar shape as in male; sternite VIII (Fig. 50) less transverse than in male, with broadly convex posterior margin; spermatheca (Fig. 51) of similar shape as in other species of the *A. macella* group.

**Comparative notes.** *Apimela persimilis* is distinguished from the sympatric *A. indica* particularly by the paler coloration of the head, smaller body size, shorter and less slender antennae, and a much smaller aedeagus.

**Distribution and natural history.** This species has been recorded from several localities Uttarakhand, North India (Map 3). One of the paralectotypes was collected from stream shingle.

***Apimela nepalicola* (Pace, 2006), comb. nov.**

(Figs 52–55, Map 3)

*Himalkompsusa nepalicola* Pace, 2006: 364.

**Type material examined.** Holotype ♂ [in poor condition: antennae missing; aedeagus damaged]: “NEPAL, Kali Gandaki valley, below Sirkung, 27.V.2002, 2500 mNN, leg. Schmidt / Holotypus *Himalkompsusa*

*nepalicola* mihi, det. R. Pace 2003 / *Himalkompsusa nepalicola* n. gen., n. sp., det. R. Pace 2003 / *Apimela nepalicola* (Pace), det. V. Assing 2019” (NME). Paratypes: 1♀: same data as holotype (NME); 1♂: “NEPAL, Dhaulagiri Himal, Kali Gandaki valley, Sirkung, 2700–2800 mNN, 28.V.2001, leg. J. Schmidt” (NME).

**Comment.** The original description is based on a male holotype and four paratypes (one male and three females) from four localities in Nepal (PACE 2006) (Map 3). Based on the primary and secondary sexual characters, this species undoubtedly belongs to the *A. macella* clade. The similar shape of the aedeagus suggests that it is closely allied to *A. indica* and *A. sinica*. It is distinguished from both by antennae with distinctly transverse antennomeres IV–X, significantly smaller eyes, and significantly coarser punctuation on the male abdomen (Figs 52–55).

### *Apimela mutata* group

#### *Apimela mutata* sp. nov.

(Figs 56–70, Map 4)

*Apimela macella* (misinterpretation): GANGLBAUER (1895), BERNHAUER & SCHEERPELTZ (1926), HORION (1967), LOHSE (1974), SMETANA (2004), SCHÜLKE & SMETANA (2015).

**Type material.** Holotype ♂: “A. Tirol, Stanzach, Lechtal, 900–1300 m, Autokescher, 25.V.1995 Assing / Holotypus ♂ *Apimela mutata* sp.n., det. V. Assing 2019” (cAss).

Paratypes: **Morocco:** 3♂♂, 1♀: “Morocco – Haut Atlas, ca. 60 km SW Asni, bank of O. Nfiss river [floated from gravel], 1260 m, No. 20, 30.XII.2002, 30°57'20N, 08°14'56W, P. Wunderle & V. Assing” (cAss, cWun); 1♂: “MOROCCO – 40 km SSE Marrakech, Arhbalou, 1030 m, No. 10, 31°18'38N, 07°44'44W, [stream valley, sifted from poplar and *Rubus* litter], 28.XII.2002, V. Assing” (cAss); 2♂♂: “Urika [= Ourika river] / *macella* Er., Marocco, Quedenfeldt / Collect. Eppelsh.” (NHMW); 1 ex.: “Urika / Marocco, Quedenf.” (MNB).

**France:** 2♀♀: “Peyerimhoff 99, Digne B. A. / *Apimela* / *macella*” (NHMW); 3 exs.: “Digne, B. Alpes” (MHNG); 2 exs.: “Digne (B. Alp.), Peyerimhoff” (MHNG); 2♀♀: “Villeneuve-Loubet, Alpes-Maritimes, St. Cl. Deville / Claire-Deville, Provence. / *macella*” (NHMW); 1 ex.: “Villeneuve-Loubet (Alpes-Maritimes), St Claire Deville” (TLMF); 1 ex.: “St Aygulf, Var. 3.51” (MHNG); 1♂: “Inond. Var. A.M. 2.51” (cAss); 6 exs.: “In. Var. 3.51” (MHNG); 1 ex.: same data, but XII.54 (MHNG); 1 ex.: same data, but IV.51 (MHNG); 1 ex.: same data, but XII.55 (MHNG); 2 exs.: same data, but XI.55 (MHNG); 1 ex.: same data, but “51” (MHNG); 1 ex.: same data, but X.56 (MHNG); 13 exs.: same data, but IV.56 (MHNG, cAss); 3 exs.: same data, but X.53 (MHNG); 2 exs.: same data, but III.57 (MHNG); 1 ex.: same data, but VI.57 (MHNG); 1 ex.: same data, but XII.59 (MHNG); 4 exs.: same data, but V.59 (MHNG); 3 exs.: same data, but X.1959 (MHNG); 5 exs.: same data, but XII.59 (MHNG); 1 ex.: “In. Vesubie, A.M. 13.XI.50” (MHNG); 1 ex.: “Beuil, A.M. 20.V.50” (MHNG); 1 ex.: same data, but II.60 (MHNG); 1 ex.: “In. Loup, A.M. X.53” (MHNG); 1♂: “Avignon, Détritrus des Inond. du Rhône, Dr. A. Chobaut” (MHNG); 1♀: “Pont du Pali, A.M. 20.3.46” (MHNG); 2 exs.: “Guillaumes, A.M. VI.51” (MHNG); 2 exs.: “Orléans / Vidit Fauvel” (MHNG); 1 ex.: “France” (BMNH).

**Germany:** 2♂♂: “*macella* Er., Moosburg. [Bayern], v. Sonnenburg. / Collect. Eppelsh.” (NHMW); 1♀: “VI-87., Büren / Collect. Eppelsh.” (NHMW); 1 ex.: “Umg. Wolftratschn., Puppling Au Hüdepohl, 5.57” (MHNG); 4 exs.: “Wolftratschn. O.B, Puppling. Au, 25.6.35 / Coll. Dr. Ihssen” (MNB); 11 exs.: “München, Grünwald, 17.6.1910 / Coll. Dr. Ihssen” (MNB); 2 exs.: “Innauen bei Ering. 31.3.12 / Coll. Dr. Ihssen” (MNB); 4 exs.: “München, 24.8.31 / Coll. Dr. Ihssen” (MNB); 2 exs.: “München 3.9.10, Gr. Hesselohle / Coll. Dr. Ihssen” (MNB); 1♂: “München, Ob. Bay. 3.9.10. / Coll. Dr. Ihssen” (cAss); 1♂: “Eschenlohe, Murnau O.B., 3.8.37 / Coll. Dr. Ihssen” (cAss); 1 ex.: “310 / *macella*, Passau, Waltl. sec. Fauv. / 167” (SDEI); 1 ex.: “Cassel. / coll. Kraatz” (SDEI).

**Austria: Tirol:** 1♂, 1♀, 1 ex.: “A – Stanzach/Lech, Namloser Tal, 24.05.95 K. Renner” (cAss, MNB); 1 ex.: “Austria: Tirol, Lechauen b. Forchach, 910 m, 26.05.1995, Schülke & Grünberg” (MNB); 1♀: “Nti Außerfern, Weißenbach, leg. Kahlen / Errachau [47.403°N, 10.572°E] 920 m, 12.7.90 Lichtfang” (TLMF); 1♂: “Außerfern Tir., leg. Kahlen / Weißenbach, re. Lechufer [47.433°N, 10.628°E], 8.8.85 Anspüllicht” (TLMF); 1♀: same data,

but “Angeschwemmtes” (TLMF); 2♂♂: “NTi Oberinntal, leg. Kahlen / Stams 17.6.83, Linke Innau [47.289°N, 10.995°E], Angeschwemmtes” (TLMF); 7 exs.: “Elmen, Ti. sept., leg. Lechleitner 1941 / Angeschwemmt a. Lech 20.10.41” (TLMF); 2 exs.: “Elmen, Ti. sept., leg. Lechleitner 23.5.1942 / aus Angeschw. gesiebt” (TLMF, cAss); 5 exs.: “Elmen, Lechtal, Ti. b. leg. 22.V.37” (TLMF); 10 exs.: “23.8.37, Klimm [47.336°N, 10.533°E]” (TLMF); 1 ex., “Forchach, Tirol, leg. Dr. Kofler / aus Angeschw. ges. 21.6.44” (TLMF); 3 exs.: same data, but 27.5.44 (TLMF); 3 exs.: same data, but “Lechufer, 27.5.44” (TLMF); 7 exs.: same data, but 25.5.44 (TLMF); 2 exs.: same data, but 19.5.44 (TLMF); 1 ex.: same data, but 24.5.44 (TLMF); 3 exs.: same data, but 13.5.44 (TLMF); 2 exs.: “Forchach, Tirol, leg. Dr. Kofler” (TLMF); 3 exs.: “Innufer, Ampaß [47.273°N, 11.486°E] 3.VI.28 / Innufer, VI-1928 / Umg. Innsbruck, A. Wörndle” (TLMF); 1 ex.: same data, but 21.VIII.27 (TLMF); 1 ex.: same data, but 18.IX.27 (TLMF); 12 exs.: “Alach [47.318°N, 10.504°E], 22.VI.35” (TLMF); 1 ex.: “Kematner Au [47.265°N, 11.274°E; 590 m], 27.3.27 / Umg. Innsbruck, Ti. J. Ratter” (TLMF); 1 ex.: “Lechtal 8.V.15” (TLMF); 1 ex.: “Lechtal 3.VII.15” (TLMF); 3 exs.: “Lechtal 1.V.15” (TLMF); 1 ex.: “Lechtal 7.V.15” (TLMF). **Osttirol:** 5 exs.: “O-Tirol Kofler, Lesendorf-Isel [46.845°N, 12.716°E], 14 Mai 1965” (TLMF, cAss). **Czechia:** 1♀: “Skal. / coll. Türk / *deformis* Kraatz, Prag / *macella*” (NHMW); 1♂, 1♀: “Brandeis a. E. [= Brandýs nad Labem], Bohem., Skalitzky / *macella* Er. / ex coll. Skalitzky” (NHMW); 2♂♂: “♀ / Paskau, Dr. Graf / *macella* / ex coll. Scheerpeltz” (NHMW); 3 exs.: “Paskau, Dr. Graf” (MNB); 1 ex.: “Moravia, Reitter” (BMNH). **Czech or Polish territory:** 4 exs.: “Silesia: Teschen, Th. v. Wanka” (MNB). **Slovakia:** 4 exs.: “Slovensko Tepla [=Trenčianska Teplá]” (MHNG); 2 exs.: “Tepla Slovaquie” (MHNG); 2 exs.: “Slovensko Tr. Teplá, VAH, 13.V.1978, Roubal” (MHNG). **Italy: Trentino-Alto Adige:** 1♂, 2 exs.: “Südtir. Bozen Umg. – Kahlen / Talfer bei Runkelstein, 8.4.71” (TLMF, cAss); 1 ex., “Südtir. Bozen Umg. – Kahlen / Kardaun [46.484°N, 11.390°E], 7.4.71, Bachufer” (TLMF); 1 ex.: “Südtir. Bozen Umg. – Kahlen / Sarnerschlucht [46.531°N, 11.364°E], 8.5.71, in Geröll am Talferufer” (TLMF); 1 ex.: same data, but additional note “in feuch. Sand” [TLMF]; 1 ex.: “Branzoll [46.404°N, 11.321°E], 11.5.32 / Bozen Umg., Ti. Pechlaner” (TLMF); 1 ex.: “Branzoll, Bach, 22.5.33 / Umg. Bozen, Ti. Pechlaner” (MHNG); 1♂: “Bozen Umg., Ti. Strupi” (MHNG); 1♂: “Trient, Bertolini / Collect. Eppelsheim” (NHMW). **Piemonte:** 1♀: “*macella*, Piemont, Bergagli / Collect. Eppelsheim” (NHMW); 2 exs.: “Piemont. Baudi. / coll. Stierlin” (SDEI); 1 ex.: “*macella*, Piemont” (BMNH). **Lombardia:** 2 exs.: “Val. Camonica, Cogno, leg. G. Krüger, coll. O. Leonhard” (MNB). **Veneto:** 1♂, 1♀: “Foce Tagliamento VE, 19.IV.1973, leg. A. Zanetti” (cZan); 3♂♂: “I – Treviso, Sernaglia d. Batt. [45.845°N, 12.129°E; 100 m], leg. Kahlen / Li. Piaveufer, 20.5.85” (TLMF). **Friuli-Venezia Giulia:** 13 exs.: “Italia bor., Friuli – Ven. Giul. (5), Fella-Ufer W Carnia, 250 m, Hochwassergenist Eisenbahnbrücke, 46°23'N, 13°07'E, 12.IX.1998, M. Schülke” (MNB, cAss); 16 exs.: “Italia bor., Friuli – Ven. Giul. (6), Fella-Mündung in den Tagliamento, Hochw.genist, 46°22'17"N, 13°07'01"E, 250 m, 13.IX.1998, M. Schülke” (MNB, cAss, cFel); 6♂♂, 2♀♀: “I – Udine, Amaro, Tagliamento-Fella-Au [46.364°N, 13.118°E], leg. Kahlen / 250 m, 22.6.1996, Hochwassergenist am rechten Fella-Ufer” (TLMF); 4 exs.: same data, but “16.5.1996, feuchtes Schotterufer” (TLMF, cAss); 4 exs.: same data, but “linke Tagliamento-Au, ..., 17.5.1996, Schlammufer” (TLMF, cAss); 2 exs.: same data, but 15.11.2012 (TLMF); 2 exs.: same data, but “1.9.2003, Hochwassergenist an der Fella” (TLMF, cAss); 1♂, 1♀: “I – Udine, Cornino, rechte Tagliamento-Au [46.222°N, 13.022°E], leg. Kahlen / 160 m, 23.6.1996, Hochwassergenist” (TLMF); 1♀, 2 exs.: “I – Udine, Flagogna, rechte Tagliamento-Au [46.200°N, 12.972°E], leg. Kahlen / 140 m 7.12.2002, Pionier-Au, Hochwassergenist” (TLMF); 1 ex.: same data, but “Schotterbank, Feinkies unter Weidengesträuch” (TLMF); 2 exs.: same data, but 15.11.2012 (TLMF); 2 exs.: “I – Udine, Canussio, linke Tagliamento-Au [45.842°N, 12.977°E], leg. Kahlen / 10 m 30.4.2009, Kiesufer, Spülsaum” (TLMF). **Emilia:** 4 exs.: “Emilia, Secchia, 24.VIII.96, A. Fiori” (MNB); 4 exs.: “Emilia, Reno, 11.XI.906, A. Fiori” (MNB); 2 exs.: same data, but 30.XI.98 (MNB); 1 ex.: same data, but 13.X.902 (MNB); 3 exs.: same data, but 22.X.97 (MNB). **Basilicata:** 5 exs.: “I-Basilicata; No. 11 Car-Net, Lagonello, Rivello Fiume Noci, 250 mNN, 40°03'N, 15°46'E, 10.05.02, P. Wunderle” (cWun, cAss). **Locality not specified:** 1 ex.: “Italie sept.” (BMNH). **Romania:** 1♀: “ROMANIA, jud. Mehedinți, Valea Cernei, 1km E Scarișoara, gravel island in river Cerna, 380 m / flotation from sand/gravel + plant debris on sand [172], 45°01'19"N, 22°33'33"E, 11.IV.2006, Gy. Makranczy / *Apimela macella* (Er.), det.: Ádám 2006” (HNHM); 5 exs.: “ROMANIA, jud. Maramureș, Valea Vișeuului, Vișeu, 1.5km S Tisa confluence, W bank, sandy shoal N hanging bridge, 360 m / from gravelly spots in sandbank, after high water, flotation [305], 47°54'04"N, 24°09'33"E, 11.VI.2007, Gy. Makranczy / *Apimela mulsanti* (Ganglb.), det.: Ádám 2006” (HNHM, cAss).

**Croatia:** 1♂: “*macella* Er., Croatien, Apfelbeck / Collect. Eppelsheim” (NHMW).

**Bosnia-Herzegovina:** 1♂, 2♀♀, 1 ex.: “Bosnien, Ilidze, Paganetti / *sabulicola* Bh. / ex coll. Scheerpeltz / *sabulicola*” (NHMW); 1♀: “Sarajevo, Hochwass” (MHNG).

**Albania:** 1♂: “♂ / Tirana, Mader / *sabulicola* Bernh.? / ex coll. Scheerpeltz” (NHMW); 1♀: “♂ / Alban. m., M. Tomor, A. Winkler / *Meotica eximia* m. / ex coll. Scheerpeltz / Typus *Meotica eximia* O. Scheerpeltz” (NHMW).

**Bulgaria:** 1♂: “Mittl Struma, Kresana Defilé, Bulg Zentr Mac, J. Breit leg. 13.VI.37” (MHNG); 1 ex.: “Bulgaria, Trevna, V-1912, leg. M. Hilf, coll. O. Leonhard” (SDEI).

**Greece:** 32 exs.: “GR. Fthiotis, 470 m, 9, 38°49’31N, 22°04’58E, SW Lamia, Inachos river bank, 05.IV.2001, Assing & Wunderle” (cAss, cWun); 1♂, 2 exs.: “Greece: Fthiótida: N Palaeovráha, mead., forest remnants, car net, 38°54’44”–55’34”N, 22°03’06”–04’18”E, 170–250 m, 10.IV.2017, leg. M. Schülke [GR2017-15]” (MNB, cAss); 7♂♂, 10♀♀: “GR. Fokis, 13, 640 m, 25 km SW Lamia, Stromi, river bank, 38°41’24N, 22°12’54E, 640 m, river bank, gravel floated, 06.IV.2001, V. Assing” (cAss); 2 exs.: same data, but leg. Wunderle (cWun); 1♀: “Greece: Fokida, N Parnassós, Graviá > Marióláda, Platanus for., mead., 350 m, car net, 38°39’50”–40’31”N, 22°26’37”–27’53”E, 8.IV.2017, Schülke [GR2017-10]” (MNB); 11 exs.: “GREECE Athamanon Plaka, 6.4.1992, 300 mNN, leg. J. Frisch, Fulda” (MNB, cWun, cAss); 1 ex.: “Grèce Epire, Ampelos 12 km de Tristenon 530 m, 27.IV.73, Löbl” (MNHG).

**Ukraine:** 1♂: “Ross. subcp., Mukačevo [=Mukachevo], náplav, I.36” (MHNG).

**Georgia:** 2♀♀: “Kaukas. Leder, Michailowo am Suramgebirg. [= Khashuri] / Collect. Eppelsheim” (NHMW); 10 exs.: “Transcauc. Georgia, Mzcheta pr. Tbilisi, 12.–13.VI.1987, Hochwassergenist, Aragwiufer, leg.: Wrase, Schülke” (MNB, cAss).

**Azerbaijan:** 1♂, 1♀: “Lenkoran, Leder (Reitter). / Collect. Eppelsheim” (NHMW).

**Locality not specified:** 1♂, 1♀, 1 ex.: “Coll. Türk / *macella*” (NHMW).

**Comment.** *Apimela mutata* is identical to the (mis-)interpretation of *A. macella* of all previous authors except ERICHSON (1839).

**Description.** Body length 2.1–3.1 mm; length of forebody 1.0–1.3 mm. Habitus as in Fig. 56. Coloration variable: head pale-brown to dark-brown; pronotum yellowish-brown to brown; abdomen pale-brown (usually with the preapical segments slightly darker) to blackish-brown with the posterior margins of segments III–VI, the posterior portion of segment VII, and segments VIII–X yellowish; legs yellow; antennae brown to dark-brown with the basal three antennomeres yellowish.

Head (Fig. 57) approximately as broad as long; punctation extremely fine and dense; interstices with shallow microsculpture visible only at high magnification (100×). Eyes moderately convex, approximately 0.7 times as long as postocular region in dorsal view. Antenna (Fig. 58) approximately 0.7 mm long; antennomeres III distinctly shorter than II, IV–X approximately 1.5 times as broad as long and of gradually increasing width. Labium and labrum as in Figs 60–61.

Pronotum (Fig. 57) of very variable shape, approximately 1.1 times as broad as long and 1.1 times as broad as head, broadest in anterior half and weakly tapering in posterior two-thirds, or with subparallel lateral margins, weakly convex in cross-section; punctation and microsculpture similar to those of head.

Elytra (Fig. 57) long, at least approximately 1.1 times as long as pronotum; punctation extremely fine and dense, barely visible in the pronounced microsculpture even at a magnification of 100×. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of metatarsomeres II and III, or nearly so.

Abdominal tergites III–V with very shallow, tergite VI without distinct anterior impressions (Fig. 59); tergite III and punctation without sexual dimorphism; punctation

fine and dense, somewhat sparser on tergites VII and VIII; interstices with pronounced microsculpture; posterior margin of tergite VII with palisade fringe; tergite VIII (Fig. 62) with truncate or indistinctly concave posterior margin.

♂: sternite VIII (Fig. 63) weakly transverse, posterior margin obtusely angled in the middle; median lobe of aedeagus (Figs 65–68) small and slender, approximately 0.25 mm long; internal sac with weakly sclerotized structures.

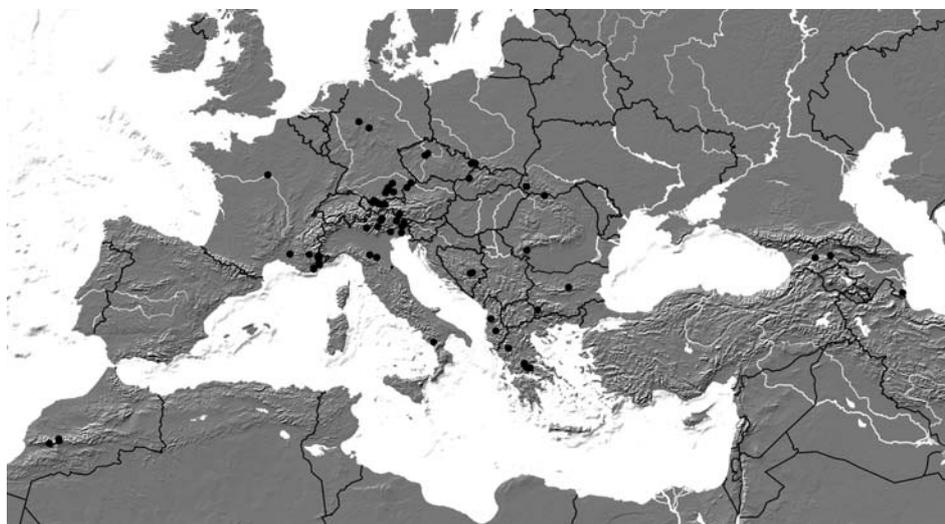
♀: sternite VIII (Fig. 64) of similar shape as that of male, but posterior margin weakly concave in the middle; proximal portion of spermatheca with numerous thin coils (Figs 69–70).

**Intraspecific variation.** This species is enormously variable, not only regarding coloration (ranging from nearly uniformly yellow to blackish-brown, often bicoloured with the forebody pale and the abdomen dark) and body size, but also regarding proportions of body parts, the relative length of the antennae and the shape of the antennomeres, the shape of the pronotum, the microsculpture, and other characters.

**Comparative notes.** Based on the absence of a sexual dimorphism of the abdominal tergite III and the abdominal punctation, on the absence of a distinct anterior impression on tergite VI, the morphology of the aedeagus (median lobe slender and without distinctly sclerotized internal structures), and on the structure of the spermatheca (proximal portion extremely long and thin, forming numerous coils), *A. mutata* is closely allied to *A. wunderlei*, *A. graeca*, *A. kirghisica*, and several other species from the East Palearctic region. This lineage is hereafter referred to as the *A. mutata* group. *Apimela mutata* is distinguished from *A. wunderlei*, *A. graeca*, and *A. kirghisica* by darker average coloration and by the morphology of the aedeagus. For additional characters see the respective species sections below.

**Distribution and natural history.** Most of the previous records of *A. macella* most likely refer to this species. Based on the examined material, *A. mutata* is widespread in the southern West Palearctic region, its confirmed range extending from Morocco eastwards to the Caspian Sea (East Azerbaijan) (Map 4). The majority of the revised specimens was collected from fine gravel, coarse sand, and mud substrates or sifted from flood debris on the banks of streams and rivers, mostly in mountainous regions, with few records also from plains in France and Central Europe. On several occasions, beetles were caught with car-nets in April and May. According to the labels with specified data, the altitudes range from near sea-level to approximately 1300 m. This species was frequently found syntopically with *A. macella*. The examined specimens were collected throughout the year, with a maximum in spring and minima in January/February and July: January (1 record / 1 specimen); February (2 / 2); March (7 / 14); April (14 / 90); May (27 / 67); June (13 / 61); July (2 / 2); August (6 / 21); September (6 / 35); October (7 / 19); November (6 / 13); December (8 / 17).

**Etymology.** The specific epithet is the past participle of the Latin verb *mutare* (to (ex-)change). It alludes to the fact that this species has changed both its interpretation and its name.



Map 4. Distribution of *Apimela mutata*.

*Apimela graeca* sp. nov.

(Figs 71–73, Map 1)

**Type material:** Holotype ♀: “GR. Fthiotis, 470 m, 9, 38°49’31N, 22°04’58E, SW Lamia, Inachos river bank, 05.IV.2001, Assing & Wunderle / Holotypus ♀ *Apimela graeca* sp. n., det. V. Assing 2020” (cAss). Paratypes: 2♀: same data as holotype (cAss, cWun).

**Description.** Body length 2.5–2.7 mm; length of forebody 1.1–1.3 mm. Habitus as in Fig. 71. Coloration: body reddish-yellow with the head and parts of the preapical abdominal segments slightly darker; legs yellow; antennae dark-brown with the basal 2–3 antennomeres yellowish.

Head (Fig. 72) approximately as broad as long and more or less distinctly wedge-shaped, i.e., broadest behind eyes; punctation extremely fine, practically invisible in the pronounced microsculpture even at high magnification (100×). Eyes approximately half as long as postocular region in dorsal view. Antenna approximately 0.7 mm long and distinctly incrassate apically; antennomeres III slender and shorter than II, IV distinctly transverse, and VI–X approximately twice as broad as long and of gradually increasing width.

Pronotum (Fig. 72) distinctly transverse, approximately 1.15 times as broad as long and 1.15 times as broad as head, broadest near anterior angles, distinctly tapering in posterior two-thirds, and weakly convex in cross-section; lateral margins straight; punctation more, microsculpture less distinct than that of head.

Elytra (Fig. 72) slightly shorter than pronotum; punctation fine and dense, visible at high magnification (100×). Hind wings fully developed. Metatarsomere I approximately as long as the combined length of metatarsomeres II and III.

Abdominal tergites III–V with very shallow, tergite VI without distinct anterior impressions; punctation fine and dense, much sparser on tergites VII and VIII; interstices with pronounced microsculpture; posterior margin of tergite VII with palisade fringe; tergite VIII with weakly convex posterior margin.

♂: unknown.

♀: spermatheca with distal portion of distinctive shape (Fig. 73), proximal portion very long and arranged in numerous thin coils.

**Comparative notes.** Based on the external and sexual characters, *A. graeca* belongs to the *A. mutata* group. It is readily distinguished from other West Palearctic congeners by external characters alone, particularly by the relative large and distinctly transverse pronotum, relatively short elytra, and the shape of the distal portion of the spermatheca, so that a description based exclusively on females appears justifiable. It is additionally separated from *A. wunderlei* by larger body size, larger eyes, and a more or less distinctly wedge-shaped head, and from *A. mutata* by the coloration.

**Distribution and natural history.** This species is currently known from a single locality to the southwest of Lamia, Greece (Map 1). The specimens were washed from gravel substrate of a river bank at an altitude of 470 m, together with numerous specimens of *A. mutata*.

**Etymology.** The specific epithet refers to the fact that this species is currently known only from Greece.

*Apimela wunderlei* sp. nov.

(Figs 74–83, Map 1)

**Type material.** Holotype ♂: “I–Basilicata; No. 11 Car-Net, Lagonello, Rivello Fiume Noci, 250 mNN, 40°03′N, 15°46′E, 10.05.02, P. Wunderle / Holotypus ♂ *Apimela wunderlei* sp. n., det. V. Assing 2019” (cAss). Paratypes: 9♂♂, 15♀♀: same data as holotype (cWun, cAss).

**Description.** Small species; body length 1.7–2.0 mm; length of forebody 0.9–1.0 mm. Habitus as in Fig. 74. Coloration: body nearly uniformly dark-yellow, with the preapical abdominal segments often slightly darker.

Head (Fig. 75) approximately as broad as long or weakly transverse; punctation extremely fine and dense; interstices with shallow microsculpture visible only at high magnification (100×). Eyes small and weakly convex, approximately half as long as postocular region in dorsal view. Antenna (Fig. 76) 0.5–0.6 mm long and distinctly incrassate apically; antennomeres III weakly oblong and much shorter than II, IV–X approximately twice as broad as long and of gradually and distinctly increasing width.

Pronotum (Fig. 75) distinctly transverse, approximately 1.15 times as broad as long and 1.05 times as broad as head, broadest in anterior half, weakly tapering in posterior two-thirds, and weakly convex in cross-section; lateral margins straight; punctation and microsculpture similar to those of head.

Elytra (Fig. 75) approximately as long as pronotum; punctation extremely fine and dense, barely visible in the pronounced microsculpture even at a magnification of 100×. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of metatarsomeres II and III, or nearly so.

Abdominal tergites III–V with very shallow, tergite VI without distinct anterior impressions; tergite III and punctation without sexual dimorphism; punctation fine and dense, somewhat sparser on tergites VII and VIII; interstices with pronounced microsculpture; posterior margin of tergite VII with palisade fringe; tergite VIII (Fig. 77) with more or less truncate posterior margin.

♂: sternite VIII (Fig. 78) weakly transverse, posterior margin obtusely angled in the middle; median lobe of aedeagus (Figs 79–81) slender, 0.19–0.20 mm long; ventral process apically bent dorsad in lateral view; internal structures weakly sclerotized.

♀: sternite VIII (Fig. 82) less transverse than that of male, posterior margins weakly concave in the middle; proximal portion of spermatheca (Fig. 83) with numerous thin coils.

**Comparative notes.** Based on the external and sexual characters, *A. wunderlei* clearly belongs to the *A. mutata* group. It is distinguished from *A. mutata* by smaller size, paler coloration, smaller eyes, shorter and more strongly incrassate antennae with a shorter antennomere III and more transverse antennomeres IV–X, a broader and more transverse pronotum, shorter elytra, and by a smaller aedeagus with an apically differently shaped ventral process. It differs from the similarly small and similarly coloured *A. sabulicola* of the *A. macella* group by shorter antennae with more transverse antennomeres V–X, a more transverse head and pronotum, a larger pronotum (in relation to the head), more convex eyes, the shape of the spermatheca, and most likely also by unmodified anterior tergites of the male abdomen (male sexual characters of *A. sabulicola* unknown).

**Distribution and natural history.** All the type specimens were collected with a car-net in Basilicata, South Italy (Map 1).

**Etymology.** This species is dedicated to Paul Wunderle (Mönchengladbach), who collected the type series.

*Apimela kirghisica* sp. nov.

(Figs 84–92)

**Type material.** Holotype ♂: “Kyrgyzstan: Issyk-Kul, Balykchy – Cholpon-Ata: N Toruaygyr: Ter-Ajgyr-River, 1800 m, N42°33'13" E076°24'28", 01.07.2011, leg. J. Frisch / Holotypus ♂ *Apimela kirghisica* sp. n., det. V. Assing 2019” (MNB). Paratypes: 1♂, 4♀♀: same data as holotype (MNB, cAss); 1♂: “Kyrgyzstan: Chui, S Bishkek, SW Koytash: Taty, 1500 m, N42°40'21" E0074°38'46", 05.07.2011, leg. J. Frisch” (MNB).

**Description.** Body length 2.2–2.5 mm; length of forebody 1.0–1.2 mm. Habitus as in Fig. 84. Coloration variable: head dark-brown to blackish-brown; pronotum yellowish-red to reddish-brown; elytra yellowish; abdomen pale reddish with segment VI and the anterior portion of VII more or less distinctly infuscate and with the apex yellowish; legs yellow; antennae brown to dark-brown with the basal three antennomeres yellowish.

Head (Fig. 85) approximately as broad as long; punctation fine and dense; interstices with distinct fine microreticulation. Eyes weakly convex, 0.5–0.7 times as long as postocular region in dorsal view. Antenna 0.6–0.7 mm long; antennomeres III distinctly shorter than II, IV–X at least approximately twice as broad as long and of gradually increasing width.

Pronotum (Fig. 85) approximately 1.15 times as broad as long and 1.15 times as broad as head, broadest in anterior half, weakly tapering in posterior two-thirds, and weakly convex in cross-section; lateral margins straight; punctation and microsculpture similar to those of head.

Elytra (Fig. 85) slightly longer than pronotum; punctation extremely fine and dense. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of metatarsomeres II and III, or slightly shorter.

Abdominal tergites III–V with very shallow, tergite VI without distinct anterior impressions; tergite III and punctation without sexual dimorphism; punctation fine and dense, somewhat sparser on posterior tergites; interstices with distinct microsculpture; posterior margin of tergite VII with palisade fringe; tergite VIII (Fig. 86) with truncate posterior margin.

♂: sternite VIII (Fig. 87) weakly transverse, posterior margin angularly produced in the middle; median lobe of aedeagus (Figs 88–90) small and slender in lateral view, nearly 0.25 mm long; internal sac with weakly sclerotized structures.

♀: sternite VIII (Fig. 91) with convex posterior margin; proximal portion of spermatheca with numerous thin coils, distal portion strongly enlarged (Fig. 92).

**Comparative notes.** As can be inferred from the similar external and sexual characters, *A. kirghisica* is closely allied to *A. mutata*, from which it differs by more pronounced microsculpture (and consequently less shine) on the forebody, more strongly transverse antennomeres IV–X, a more transverse pronotum, a posteriorly more angularly produced male sternite VIII, an aedeagus with a differently shaped, in ventral view broader ventral process and with a smaller crista apicalis, and a spermatheca with a distal portion of different shape.

**Distribution and natural history.** This species is currently known from two localities in northern and northeastern Kyrgyzstan. The type specimens were collected on river banks at 1500 and 1800 m.

**Etymology.** The specific epithet (adjective) alludes to the currently known distribution.

*Apimela ussurica* sp. nov.

(Figs 93–96)

**Type material.** Holotype ♂: “♂ / Rußland, Ussuri-Gebiet, Rajon Lazo, Lasowka-Tal b. Lazo, 28.V.1993, leg. Sundukow / Holotypus ♂ *Apimela ussurica* sp. n., det. V. Assing 2019” (MNB). Paratype ♂: same data as holotype (cAss).

**Description.** Body length 2.5–2.6 mm; length of forebody 1.2–1.3 mm. Habitus as in Fig. 93. Coloration: head blackish; pronotum dark-brown; elytra yellow; abdomen with the apex (posterior portions of segments VII and VIII, all of segments IX–X) yellowish to yellowish-brown; legs yellow; antennae blackish-brown with the basal 2–3 antennomeres yellow. Externally (Figs 93–94) highly similar to dark-coloured specimens of *A. mutata*, reliably distinguished only by the shape of the aedeagus.

♂: median lobe of aedeagus 0.25 mm long and shaped as in Figs 95–96.

♀: unknown.

**Comparative notes.** *Apimela ussurica* is reliably distinguished from the similar and evidently closely related *A. mutata* only by a more strongly curved (lateral view) and more slender (ventral view) median lobe of the aedeagus with a larger crista apicalis and internal structures of different shapes. Based on the details indicated in the original description of *A. exiguides*, *A. ussurica* differs from this species by paler coloration (*A. exiguides*: head black; pronotum and elytra blackish-brown; abdominal segments V–VII blackish) and a relatively smaller head, a less transverse antennomere IV, a less transverse pronotum (*A. exiguides*: pronotum twice as broad as long).

**Distribution and natural history.** This species is currently known only from the type locality in the Russian Far East. Additional data are not available.

**Etymology.** The specific epithet is an adjective derived from Ussuri, the region where the type locality is situated.

***Apimela pallescens* (Cameron, 1939)**

(Figs 97–99)

*Atheta* (*Dralica*) *pallescens* Cameron, 1939: 307.

**Type material examined.** Syntype ♂ [dissected by R. Pace; aedeagus missing]: “Holotype / Marah / Nakraunda, Siwaliks. / Dr. Cameron. 22-X.22. / *pallescens* Cam. Type / M. Cameron. Bequest. B.M. 1955-147. / *Apimela pallescens* (Cam.) det. R. Pace 1986, Holotypus / *Apimela pallescens* (Cameron), det. V. Assing 2019” (BMNH).

**Additional material examined.** **India:** 1♀ [dissected by R. Pace], Dehra Dun, Nun Nadi, 17.VII.1971, leg. Cameron (BMNH); 1♀ [dissected by R. Pace], Mussoorie, Arni Gad, 12.VI.1921, leg. Cameron (BMNH); 1♀ [dissected by R. Pace], same data, but 16.X.1921 (BMNH); 1♀ [dissected by R. Pace], Siwaliks, Kheri Rau, 23.X.1921, leg. Cameron (BMNH). **Nepal:** 1♂, Bagmati Prov., Kathmandu env., Phulchauki, 1700 m, 10.V.1981, leg. Löbl (MHNG).

**Comment.** The original description is based on an unspecified number of syntypes from “Siwaliks : Nakaraunda. In a marsh” (CAMERON 1939). Therefore, despite the holotype labels attached to the sole type specimen in the Cameron collection, this specimen is a syntype rather than a holotype. Since this specimen is in poor condition without an aedeagus, it is not designated as the lectotype.

This species lacks distinctive external characters separating it from other representatives of the *A. mutata* group. For illustrations of the habitus and the aedeagus see Figs 97–99.

***Apimela aptera* Pace, 1992**

(Fig. 100)

*Apimela aptera* Pace, 1992a: 280 f.

**Type material examined.** Holotype ♂: “NEPAL, Khandbari District / Bakan W of Tashigaon 3250 m, 4.IV.1982, A. & Z. Smetana / Holotypus *Apimela aptera* m., det. R. Pace 1986 / *Apimela aptera* sp. n., det. R. Pace 1986 / *Apimela aptera* Pace, det. V. Assing 2019” (MHNG).

**Comment.** The original description of *A. aptera* is based on a unique male from a high-altitude locality in East Nepal; subsequent records are wanting. This species is characterized by relatively small eyes (composed of approximately 25 ommatidia and

little more than half as long as postocular region in lateral view), short antennae with strongly transverse antennomeres IV–X, a broad and wedge-shaped head, a strongly transverse pronotum, short elytra, probably reduced hind wings (note that a palisade fringe at the posterior margin of tergite VII is still visible), and the shape of the aedeagus. For illustrations of the habitus and the aedeagus see Fig. 100 and PACE (1992a), respectively.

***Apimela hartmanni* (Pace, 2006), comb. nov.**

(Figs 101–103)

*Parapimela hartmanni* Pace, 2006: 365.

**Type material examined.** Holotype ♂: “NEPAL, Prov. Lamjung, Annapurna around [sic], vor Khudi, 800 m NN, leg. Hartmann, 19.IX.1992 / Holotypus *Parapimela hartmanni* m., det. R. Pace 1993 / *Parapimela hartmanni* sp. n., det. R. Pace 1993 / *Apimela hartmanni* (Pace), det. V. Assing 2019” (NME).

**Additional material examined. Nepal:** 2♂♂, 2♀♀, Dolpo, Thuli Bheri valley, E Jupal, 28°58'N, 82°52'E, 2100 m, 7.IX.2012, leg. Schmidt (NME, cAss); 1♀, Seti prov., Bajhang distr., 12 km NE Chainpur, Talkot Gad S Talkot, 29°36'N, 81°18'E, 1400 m, riverside, at light, 28.VI.2009, leg. Weigel (NME).

**Comment.** The original description is based on a unique male from the Annapurna range, Nepal. PACE (2012b, 2015) subsequently reported the species from three additional localities in Nepal. The material identified by R. Pace in NME, however, is composed of three species, one of them *A. hartmanni* (including the holotype), a female of a species of unknown identity, and a male (of the *A. macella* clade) described as *A. granulata* above. Based on the shapes of the aedeagus and the spermatheca, as well as on the unmodified anterior tergites of the male, this species belongs to the *A. mutata* and not to the *A. macella* lineage (which includes the type species of *Parapimela*). *Apimela hartmanni* is characterized by a slender habitus, a weakly transverse pronotum, slender antennae, yellowish elytra contrasting with the significantly darker head, pronotum, and abdomen, and by the shape of the aedeagus. For illustrations of the external characters and the aedeagus see Figs 101–103 and PACE (2006), respectively.

***Apimela newarica* Pace, 1992**

(Fig. 104)

*Apimela newarica* Pace, 1992a: 281.

**Material examined. Nepal:** 1♂, W Pokhara, Pewa lake and river, 28°14'N, 83°54'E, 28–29.IX.2012, leg. Schmidt (NME).

**Comment.** The original description is based on a unique female from “Nepal, Mt. Phulchoki” (Central Nepal) deposited in the Muséum National d’Histoire Naturelle, Paris (PACE 1992a). Owing to the current restrictive loan policy of this institution, an examination of the holotype was not possible. Based on the illustration of the spermatheca in PACE (1992a), this species belongs to the *A. mutata* group. The above male (Fig. 104) was reported from Nepal by PACE (2015).

This species is characterized by small size (body length 2.1 mm; length of forebody 0.95 mm), a dark head distinctly contrasting with the yellowish pronotum and elytra, short and distinctly incrassate antennae with strongly transverse preapical antennomeres, and a strongly transverse pronotum.

***Apimela lineola* (Kraatz, 1859)**

(Fig. 105, 142–143)

*Oxypoda lineola* Kraatz, 1859: 27 f.*Homalota exigua* Kraatz, 1859: 36 f.*Atheta picea* Cameron, 1920: 256 f.

**Type material examined.** *Oxypoda lineola*: Syntypes: 4♀♀ [in poor condition; all dissected by R. Pace]: “Ceylon, J. Nietner / Syntypus / coll. Kraatz / DEI Eberswalde / *Pseudomeotica lineola* (Kr.), det. R. Pace 1984 / COL - 11510-4, DEI Müncheberg” (SDEI).

**Comment.** *Apimela lineola* (male sexual characters unknown) has been reported from numerous localities in the Oriental and southern East Palaearctic regions, but in view of its external resemblance (Figs 105, 142) to some *Franzidota* species, it seems likely that previous records are at least partly based on misidentification. Based on the shape of the distal portion of the spermatheca (Fig. 143), *A. lineola* is correctly placed in *Apimela*.

***Apimela rufigaster* Pace, 1999**

(Fig. 106)

*Apimela rufigaster* Pace, 1999: 116 f.

**Type material examined.** Holotype ♂: “HONG KONG, Tai Po VII.1996, G. de Rougemont / Holotypus *Apimela rufigaster* m., det. R. Pace 1996 / *Apimela rufigaster* sp. n., det. R. Pace 1996 / *Apimela rufigaster* Pace, det. V. Assing 2019” (MHNG).

**Comment.** *Apimela rufigaster*, at present only known from Hong Kong, is distinguished from the highly similar *A. lineola* only by a slightly larger and more robust body, longer antennae, and particularly by conspicuously large eyes (significantly longer than postocular region both in lateral and in ventral view). For illustrations of the habitus and the aedeagus see Fig. 106 and PACE (1999), respectively.

***Apimela jaegeri* Pace, 2012***Apimela jaegeri* Pace, 2012a: 128.

**Comment.** The original description is based on a unique male holotype from “China: W-Sichuan, Ya’an Prefecture, Tinquan Co., Jiajin Shan, below Labahe nr. Station, 54 km W Ya’an, 1500 m, 30°02’90”N 102°26’71”E [sic], ..., leg. A. Pütz” deposited in Staatliches Museum für Tierkunde, Dresden (PACE 2012a). The holotype was not found in this institution (O. Jäger, e-mail 21 Oct., 2019), nor was it located in cPüt (A. Pütz, e-mail 19 Oct., 2019). Based on the illustrations of the habitus and the aedeagus provided by PACE (2012a), this species belongs to the *A. mutata* group.

***Apimela glarearum* Pace, 2012**

(Figs 107–108)

*Apimela glarearum* Pace, 2012a: 129 f.

**Type material examined.** Holotype ♂ [dissected by R. Pace]: “China: Shaanxi, 108.17 E, 34.09 N, River bank [Rubble] 7 km E Zhouzhi, Autoroute 100 km 72, 400 m, 24.08.1995, leg. A. Pütz / Holotypus *Apimela glarearum* mihi, det. R. Pace 2009 / *Apimela glarearum* n. sp., det. R. Pace 2009 / *Apimela glarearum* Pace, det. V. Assing 2019” (cPüt). Paratype ♂ [dissected by R. Pace]: same data as holotype / “*Apimela* cf. *sinoflumini* Pace, det. V. Assing 2019” (cPüt).

**Comment.** The original description is based on a male holotype and two paratypes from “China: Shaanxi, Qin Ling Shan, 34°09′N 108°17′E, autoroute 100, 72 km S of Zhouzhi, 400 m” (PACE 2012a). An examination of the holotype and a male paratype revealed that these specimens are not conspecific. The illustrations of the habitus and the male sexual characters provided by PACE (2012a: figures 5, 36–37) refer only to the holotype. Based on external characters, the paratype may be conspecific with *A. sinofluminis*. The habitus and the aedeagus of the holotype are illustrated in Figs 107–108.

***Apimela jiajinensis* Pace, 2012**

(Figs 109–110)

*Apimela jiajinensis* Pace, 2012a: 129.

**Type material examined.** Paratypes: 4 exs.: “CHINA: W-Sichuan, Ya’an Pref., Tianquan Co., Jiajin Shan below Labahe / N.R.St., 54 km W Ya’an, 30.02.90N, 102.26.71E [sic], 1500 m, 12.VII.1999, leg. Pütz / Paratypus *Apimela jiajinensis* mihi, det. R. Pace 2009 / *Apimela jiajinensis* n. sp., det. R. Pace 2009 / *Apimela jiajinensis* Pace, det. V. Assing 2019” (cPüt).

**Additional material examined.** China: 29 exs., Sichuan, Ya’an Prefecture, Tianquan County, 54 km W Ya’an, Jiajin Shan, valley below Labahe N. R. Station, 30°03′N, 102°27′E, 1500 m, gravel, 12.VII.1999, leg. Schülke (MNB, cAss); 3 exs. [teneral], Sichuan, NW Chengdu, Qincheng Shan, “30.55N, 103.30E”, 600 m, river bank, 4.VI.1997, leg. Schülke (MNB, cAss).

**Comment.** The original description is based on a male holotype and 53 paratypes from “China: W-Sichuan, Ya’an Prefecture, Tianquan Co., Jiajin [sic] Shan, valley above Labahe nr. [sic] Station, 57 km W Ya’an, 1800 m, 30°08′63″N [sic] 102°25′18″E” (PACE 2012a). The examined paratypes are from a geographically close, but different locality, suggesting that PACE (2012a) had not noticed that the type material was collected in two localities rather than one. The above non-type material was collected together with the examined paratypes. For illustrations of the habitus and the primary sexual characters see Figs 109–110 and PACE (2012a), respectively.

***Apimela sinofluminis* Pace, 2012**

(Fig. 114)

*Apimela sinofluminis* Pace, 2012a: 128 f.

**Material examined.** China: Yunnan: 1♂, Baoshan Pref., mountain range 25 km S Tengchong, 24°48′N, 98°32′E, 1900 m, degraded primary deciduous forest, sifted, 2.VI.2007, leg. Pütz (cPüt); 1♀, Baoshan Pref., Gaoligong Shan, 35 km SE Tengchong, near Xiaoheishan N.R., 24°50′N, 98°46′E, 2110 m, deciduous forest, sifted, 4.VI.2007, leg. Pütz (NME).

**Comment.** The original description is based on a male holotype and a female paratype from “China: Shaanxi, River bank at autoroute 110, km 65, 57 km W Xian, sifted, 34°09′N, 108°20′E, ..., leg. A. Pütz” deposited in Staatliches Museum für Tierkunde, Dresden (PACE 2012a). The type material was found neither in this institution (O. Jäger, e-mail 21 Oct., 2019) nor in cPüt (A. Pütz, e-mail 19 Oct., 2019). The above non-type specimens were reported from Yunnan by PACE (2016).

Based on the unmodified anterior tergites of the male and the shapes of the aedeagus and the spermatheca, this species belongs to the *A. mutata* group. For illustrations of the habitus and the primary sexual characters see Fig. 114 and PACE (2012a), respectively.

*Apimela schuelkei* Assing, 2006

(Fig. 115)

*Apimela schuelkei* Assing, 2006: 1153 ff.**Type material examined.** See ASSING (2006).**Additional material examined. China:** 1♀, Yunnan, Nujiang Lisu Aut. Pref., Gongshan Co., Gaoligong Shan, 27°45'N, 98°36'E, 2500 m, snowfield, 19.VI.2005, leg. Smetana (cAss).**Comment.** The original description is based on five type specimens from two localities in “Nujiang Lisu Aut. Pref., Gongshan Co., Gaoligong Shan” (ASSING 2006). The above non-type female was collected in the type locality. For illustrations of the habitus and the primary sexual characters see Fig. 115 and ASSING (2006), respectively.*Apimela baculata* sp. nov.

(Figs 116–119)

**Type material.** Holotype ♂: “CHINA: Yunnan [CH07-18], Baoshan pref., mountain range 22 km S Tengchong, 1750 m, 24°49'29"N, 98°29'27"E, second. forest, litter, dead wood sifted, 2.VI.2007, M. Schülke / Holotypus ♂ *Apimela baculata* sp. n., det. V. Assing 2019” (MNB). Paratypes: 1♀: same data as holotype (cAss).**Description.** Body length 2.3–2.5 mm; length of forebody 1.0–1.1 mm. Habitus as in Fig. 116. Coloration: head brown to dark-brown; pronotum reddish; elytra yellowish; abdomen yellowish-red with segment VI and the anterior portion of segment VII infuscate; legs yellow; antennae dark-brown with the basal 2–3 antennomeres yellow.

Head (Fig. 117) approximately as broad as long; punctation fine and dense; interstices with shallow microsculpture visible only at high magnification (100×). Eyes weakly convex, approximately 0.6–0.7 times as long as postocular region in dorsal view. Antenna 0.60–0.68 mm long and distinctly incrassate apically; antennomeres III approximately twice as long as broad and much shorter than II, IV–X distinctly transverse and of increasing width, X more than twice as broad as long, and XI slightly longer than the combined length of IX and X.

Pronotum (Fig. 117) approximately 1.15 times as broad as long and 1.1 times as broad as head, broadest in anterior half, distinctly tapering in posterior two-thirds, and weakly convex in cross-section; punctation and microsculpture similar to those of head.

Elytra (Fig. 117) 0.85–0.91 times as long as pronotum; punctation fine and dense, slightly less dense than that of head and pronotum. Hind wings not examined, possibly of reduced length. Metatarsomere I approximately as long as the combined length of metatarsomeres II and III.

Abdominal tergites III–IV with shallow, tergites V–VI without distinct anterior impressions; punctation extremely fine, denser on anterior than on posterior tergites; microsculpture composed of superficial, but rather large meshes; posterior margin of tergite VII with palisade fringe; tergite VIII with more or less truncate posterior margin.

♂: posterior margin of sternite VIII obtusely angled in the middle; median lobe of aedeagus (Figs 118–119) slender, 0.27 mm long; internal sac with pair of long rod-shaped structures.

♀: sternite VIII weakly produced, in the middle weakly concave; spermatheca not found in segments VIII–X.

**Comparative notes.** Regarding its coloration and the relatively short elytra, *A. baculata* somewhat resembles *A. schuelkei*, which too is known only from the Chinese province Yunnan. It is distinguished, however, by darker antennomeres IV–XI, a shorter antennomere XI, the absence of an anterior impression on the abdominal tergite V (unique), and by a significantly smaller aedeagus (*A. schuelkei*: median lobe 0.35 mm long) of different shape and with differently shaped internal structures. The new species differs from *A. sinofluminis*, which it resembles in body size, body shape, and coloration, by shorter elytra, antennae with more transverse antennomeres IV–X, and a larger aedeagus with a ventral process of different shape. If the scale bar provided by PACE (2012a) is correct, the median lobe of *A. sinofluminis* is 0.21 mm long. For illustrations of *A. schuelkei* and *A. sinofluminis* see Figs 114–115, ASSING (2006), and PACE (2012a), respectively.

**Distribution and natural history.** The type locality is situated in West Yunnan, China. The specimens were sifted from litter in a secondary forest at an altitude of 1750 m.

**Etymology.** The specific epithet is an adjective derived from the Latin noun baculum (rod). It alludes to pair of long rod-shaped structures in the internal sac of the aedeagus.

***Apimela chinensis* Pace, 1999**

(Figs 111–113, 120)

*Apimela chinensis* Pace, 1999: 116.

*Apimela tibetana* Pace, 2012a: 130; **syn. nov.**

**Material examined.** *Apimela chinensis*: Holotype ♀: “CHINA, Sichuan, Gongga Shan, above Camp 3, 3050 m, 22.VII.1994, A. Smetana [C18] / Holotypus *Apimela chinensis* m., det. R. Pace 1996 / *Apimela chinensis* sp. n., det. R. Pace 1996 / *Apimela chinensis* Pace, det. V. Assing 2019” (MHNG).

*Apimela tibetana*: Paratypes: 3♂♂: “CHINA: W-Sichuan, Ganzi Tibetan Auton. Pref., Daxue Shan, River Valley / 5 km E Kangding, 2500–2600 m, 30.03.N, 102.00.E, 24.VI.1999, leg. A. Pütz / Paratypus *Apimela tibetana* mihi, det. R. Pace 2009 / *Apimela tibetana* n. sp., det. R. Pace 2009 / *Apimela chinensis* Pace, det. V. Assing 2020” (cPüt).

**Comment.** The original description of *A. chinensis* is based on a unique female holotype from Gongga Shan (China: Sichuan), that of *A. tibetana* on a male holotype and 11 paratypes from “China: W-Sichuan, Ganzi Tibetan Auton. Prefecture, Daxue Shan, river valley, 5 km E Kangding, 30°03’N, 101°00’E [sic], 2500–2600 m” (PACE 1999, 2012a), a locality only some 50 km from the type locality of *A. chinensis*. A comparison of the three paratypes of *A. tibetana* with the holotype of *A. chinensis* yielded no evidence that they should belong to different species, so that *A. tibetana* is placed in synonymy with the senior name *A. chinensis*. Based on the primary and secondary sexual characters, this species belongs to the *A. mutata* group. It is characterized by a slender habitus and dark coloration. For illustrations of the habitus and the primary sexual characters see Figs 111–113, 120 and PACE (1999, 2012a), respectively.

***Apimela bilobata* sp. nov.**

(Figs 121–128)

**Type material.** Holotype ♂: “CHINA: Zhejiang [CH07-42], Hangzhou Pref., Tianmu Shan, 57 km W Linan, 30°11’28”N, 119°07’18”E, 157 m, creek valley, rocks and gravel bank, floatation, 19.VI.2007, M. Schülke / Holotypus ♂ *Apimela bilobata* sp. n., det. V. Assing 2019” (MNB). Paratypes: 11 exs.: same data as holotype

(MNB, cAss); 5 exs.: “CHINA: W-Sichuan 1999, Ya’an Prefecture, Tianquan Co., Jiajin Shan, Tal unterh. Labahe N.R.St., 54 km W Ya’an, 30°03N, 103°27E, Schotter, Weiden, 1500 m, 12.VII., leg. M. Schülke” (MNB, cAss); 11 exs.: “CHINA: Yunnan, Dali Bai Aut. Pref., 24°59’09.2”N, 100°24’27.5”E, 1620 m, river bank, washed from gravel and sand, 7.IX.2009, leg. M. Schülke [CH09-33]” (MNB, cAss); 1 ex.: “CHINA: Yunnan, Dali Bai Aut. Pref., Babian Jiang river bank, 24°49.01.1”N, 100°32.29.7”E, 1705 m, washed from sand and gravel, running on bank, 13.IX.2009, leg. M. Schülke [CH09-50]” (cAss).

**Description.** Variable species; body length 2.4–3.2 mm; length of forebody 1.0–1.3 mm. Habitus as in Fig. 121. Coloration: head brown to blackish; pronotum reddish to brown; elytra yellowish; abdomen dark-yellow to brown with the preapical segments more or less distinctly and more or less extensively infuscate; yellowish-red with segment VI and the anterior portion of segment VII infuscate; legs yellow; antennae dark-brown with the basal 2–3 antennomeres yellow.

Head (Fig. 122) weakly oblong to weakly transverse; punctation extremely fine and dense; interstices with microsculpture. Eyes large, approximately as long as postocular region in dorsal view. Antenna approximately 0.8 mm long and weakly incrassate apically; antennomeres III shorter than II, IV weakly transverse, V–X of increasing width and increasingly transverse, X approximately 1.5 times as broad as long, and XI longer than the combined length of IX and X.

Pronotum (Fig. 122) approximately 1.15 times as broad as long and 1.15 times as broad as head, broadest in anterior half, distinctly tapering in posterior two-thirds, and weakly to moderately convex in cross-section; punctation and microsculpture similar to those of head.

Elytra (Fig. 122) 1.05–1.15 times as long as pronotum; punctation extremely fine and dense, even finer and denser than that of head and pronotum. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of metatarsomeres II and III.

Abdominal tergites III–V with shallow, tergite VI without distinct anterior impressions; punctation dense and distinct on anterior, less dense and finer on posterior tergites; microsculpture fine and composed of transverse meshes; posterior margin of tergite VII with palisade fringe; tergite VIII (Fig. 123) with truncate posterior margin.

♂: sternite VIII (Fig. 124) distinctly transverse, posterior margin angularly produced in the middle; median lobe of aedeagus (Figs 125–126) rather stout and approximately 0.3 mm long, at base of ventral process with a conspicuous pair of processes.

♀: sternite VIII (Fig. 127) less transverse than in male, posteriorly obtusely produced in the middle; spermatheca as in Fig. 128.

**Comparative notes.** This highly variable species is reliably distinguished from all its congeners by the morphology of the aedeagus, particularly the pronounced pair of processes at the base of the ventral process.

**Distribution and natural history.** *Apimela bilobata* is widespread in China and currently known from Sichuan, Zhejiang, and West Yunnan. The specimens were collected from gravel of river banks at altitudes of 160–1700 m.

**Etymology.** The specific epithet (adjective) alludes to the conspicuous pair of lobes at the base of the ventral process of the aedeagus.

*Apimela auriculata* sp. nov.

(Figs 129–130, 138–139)

**Type material.** Holotype ♂: “CHINA: Yunnan [CH07-14], Baoshan Pref., Gaoligong Shan, 33 km SE Tengchong, 2100–2200 m, 24°51′22″N, 98°45′36″E, decid. forest, litter, wood, fungi sifted, 31.V.2007, M. Schülke / Holotypus ♂ *Apimela auriculata* sp. n., det. V. Assing 2019” (MNB). Paratype ♂: same data as holotype (cAss).

**Description.** Body length 2.2–2.3 mm; length of forebody 1.1–1.2 mm. Habitus as in Fig. 129. Coloration: body blackish; legs yellow; antennae dark-brown with the basal two antennomeres yellow.

Head (Fig. 130) weakly transverse; punctation fine and dense; interstices with shallow microsculpture visible only at high magnification (100×). Eyes large, moderately convex, and nearly as long as postocular region in dorsal view. Antenna approximately 0.7 mm long and moderately incrassate apically; antennomeres III slightly shorter than II, IV–X increasingly transverse and of increasing width, X less than twice as broad as long, and XI slightly longer than the combined length of IX and X.

Pronotum (Fig. 130) 1.15–1.20 times as broad as long and 1.15 times as broad as head, broadest in anterior half, distinctly tapering in posterior two-thirds, and weakly convex in cross-section; punctation indistinct, even finer and denser than that of head; microsculpture nearly obsolete, visible only at high magnification.

Elytra (Fig. 130) approximately 1.25 times as long as pronotum; punctation fine and extremely dense. Hind wings fully developed. Metatarsomere I barely as long as the combined length of metatarsomeres II and III.

Abdominal tergites III–V with shallow, tergite VI without distinct anterior impressions; punctation fine, denser on anterior than on posterior tergites; microsculpture composed of superficial, but rather large meshes; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII indistinctly concave in the middle.

♂: posterior margin of sternite VIII obtusely angled in the middle; median lobe of aedeagus (Figs 138–139) slender, 0.28 mm long, at base of ventral process with small tooth-shaped process; internal structures of distinctive shapes.

♀: unknown.

**Comparative notes.** Based on the unmodified male anterior abdominal tergites and the morphology of the aedeagus, this species is tentatively assigned to the *A. mutata* group. It is distinguished from all other species known from the Palearctic region by the shape of the aedeagus and (except *A. chinensis* and *A. tibetana*) by its dark coloration. It additionally differs from the dark-coloured *A. chinensis* (male unknown) by larger eyes, less transverse antennomeres IV–X (*A. chinensis*: antennomere IV approximately twice as broad as long; antennomeres V–X more than twice as broad as long), and a smaller pronotum (in relation to the head and elytra) with finer and less dense punctation, and from *A. tibetana* by larger eyes, less dense and less distinct punctation of the head and pronotum, a narrower and less transverse pronotum, and less distinct microsculpture of the abdomen.

**Distribution and natural history.** The type locality is situated in Gaoligong Shan, Northwest Yunnan, China. The specimens were sifted from litter in a deciduous forest at an altitude of 2100–2200 m.

**Etymology.** The specific epithet is an adjective derived from the Latin noun *auricula* (ear). It alludes to the pair of ear-shaped dorso-apical structures of the aedeagus.

***Apimela taiwanensis* (Pace, 2010) comb. nov.**

*Parapimela taiwanensis* Pace, 2010: 29.

**Comment.** The original description is based on a male holotype and four paratypes from “Taiwan, Taitung Hsien, Hsinkangshan above Chengkung” (PACE 2010). Based on the shapes of the aedeagus and of the spermatheca, as well as on the unmodified anterior tergites of the male, this species belongs to the *A. mutata*, not to the *A. macella* lineage (which includes the type species of *Parapimela*). For illustrations of the habitus and the aedeagus see PACE (2010).

***Apimela lamellata* sp. nov.**

(Figs 131–137, 140–141)

**Type material.** Holotype ♂: “N-Vietnam – pass 8 km NW Sa Pa, 22°21′10″N, 103°46′01″E, 2010 m, secondary forest, 6.VIII. 2013, V. Assing [7a+2] / Holotypus ♂ *Apimela lamellata* sp. n., det. V. Assing 2019” (cAss). Paratypes: 1♂: “N-Vietnam – 7 km NW Sa Pa, 22°20′58″N, 103°46′47″E, 2000 m, primary forest, 29.VII. 2013, V. Assing [2+2]” (cAss); 1♀: “N-Vietnam – pass 8 km NW Sa Pa, 22°21′13″N, 103°46′01″E, 2030 m, forest margin, 10.VIII. 2013, V. Assing [10a+2]” (cAss).

**Description.** Body length 2.6–3.0 mm; length of forebody 1.2–1.3 mm. Habitus as in Fig. 131. Coloration: head dark-brown; pronotum and elytra reddish; abdomen pale-reddish with most of tergite VI and the anterior portion of tergite VII weakly infuscate; legs yellow; antennae reddish to reddish-brown with the basal three antennomeres pale-reddish.

Head (Fig. 132) approximately as broad as long, of subquadrate shape; punctuation extremely fine and dense; interstices with or without barely noticeable microsculpture. Eyes large and distinctly convex, nearly as long as postocular region in dorsal view. Antenna (Fig. 133) approximately 0.7 mm long and slender; antennomeres III approximately twice as long as broad and distinctly shorter than II, IV approximately 1.5 times as broad as long, and V–X approximately twice as broad as long (or nearly so) and of gradually increasing width.

Pronotum (Fig. 132) approximately 1.15 times as broad as long and 1.1 times as broad as head, broadest in anterior half, distinctly tapering posteriad; lateral margins straight in posterior two-thirds; punctuation similar to that of head; interstices without microsculpture.

Elytra (Fig. 132) 1.10–1.15 times as long as pronotum; punctuation extremely fine and dense. Hind wings fully developed. Metatarsomere I slightly longer than the combined length of metatarsomeres II and III.

Abdominal tergites III–V with shallow, tergite VI without anterior impressions; tergites without sexual dimorphism; punctuation fine and moderately dense on tergites III–VI, somewhat sparser on tergites VII and VIII; interstices with shallow microsculpture composed of rather large meshes; posterior margin of tergite VII with palisade fringe; tergite VIII (Fig. 134) with truncate posterior margin.

♂: sternite VIII (Fig. 135) strongly transverse, posterior margin weakly convex in the middle; median lobe of aedeagus (Figs 140–141) 0.3 mm long and of highly distinctive morphology; ventral process basally with a pair of pronounced lamellae.

♀: sternite VIII (Fig. 136) moderately transverse, posterior margin convex, in the middle weakly concave; spermatheca (Fig. 137) with moderately numerous and moderately thin coils.

**Comparative notes.** This species is particularly characterized by the conspicuous morphology of the aedeagus, and additionally by the distinctly bicoloured body and the shape of the spermatheca. Most other species known from the southern East Palearctic and Oriental regions probably belong to the *A. mutata* group and have a spermatheca with an extremely long and thin proximal portion arranged in extremely numerous coils. For illustrations of the species described from these regions see PACE (1992a, b, 1993, 1999, 2004, 2008, 2012a, 2014) and ASSING (2006).

**Distribution and natural history.** This species was recorded from three localities in the vicinity of Sa Pa, North Vietnam. The specimens were collected by sifting litter, moss, and roots in a degraded primary forest and in secondary deciduous forests with bushes and bamboo undergrowth at altitudes of 2000–2030 m.

**Etymology.** The specific epithet (Latin, adjective) alludes to the pronounced pair of lamellae projecting from the basal portion of the ventral process of the aedeagus.

### Species of doubtful identity

#### *Apimela gracilis* Normand, 1935

*Apimela gracilis* Normand, 1935: 385 f.

**Comment.** The original description is based “un exemplaire” from “Le Kef” (Tunisia) collected “au pied d’un lentisque, en chassant les hypogés” (NORMAND 1935). The Normand collection is deposited in the Laboratoire d’Entomologie et d’Ecologie, Institut National Agronomique, Tunis. Owing to the restrictive loan policy of this institute (ASSING & WUNDERLE 1997), an examination of the holotype was not possible.

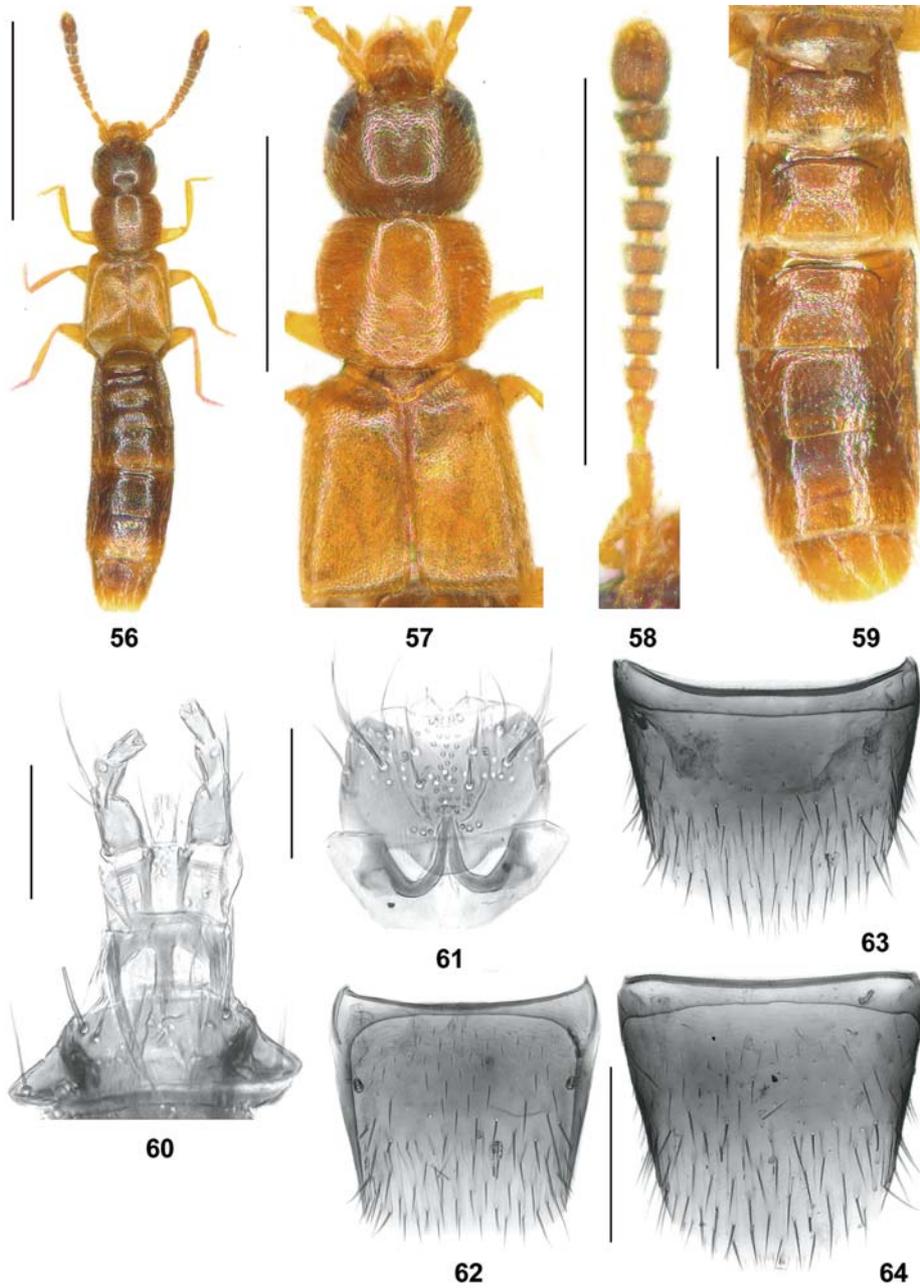
According to the original description, this species is characterized by small body size (2 mm), yellow coloration, strongly reduced eyes (approximately one-fifth as long as postocular region) composed of only few ommatidia, and a strongly transverse pronotum (1.5 times as broad as long). Until the holotype is accessible or until material matching the original description and from the vicinity of the type locality is available, the identity (including the generic assignment) of this species must remain doubtful.

#### *Apimela exiguides* (Eppelsheim, 1893)

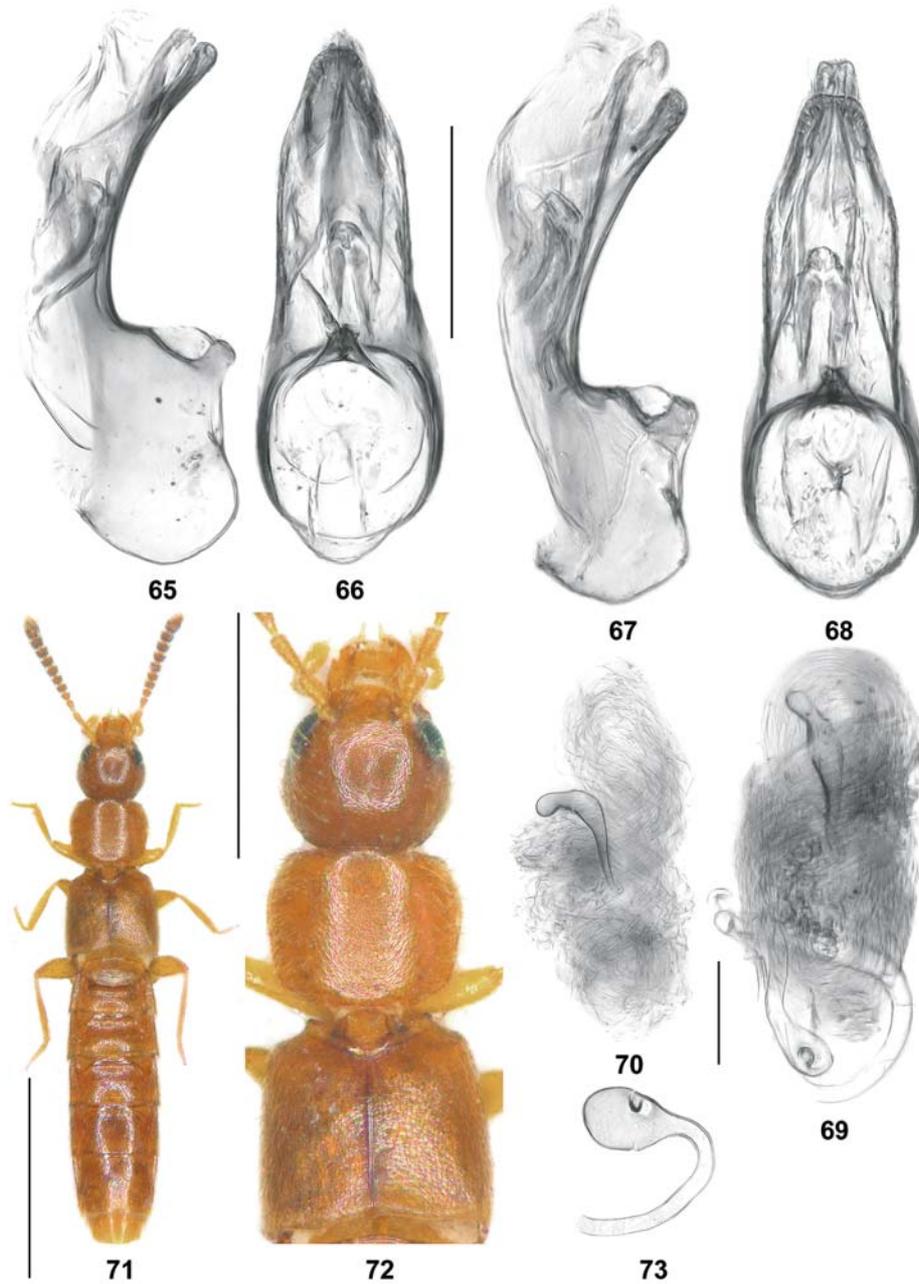
*Aleuonota exigua* Eppelsheim, 1893: 24 f. (preoccupied; junior secondary homonym of *Apimela exigua* (Kraatz, 1859) = *A. lineola* (Kraatz, 1859)).

*Apimela exiguides* Newton, 2015: 10 (replacement name).

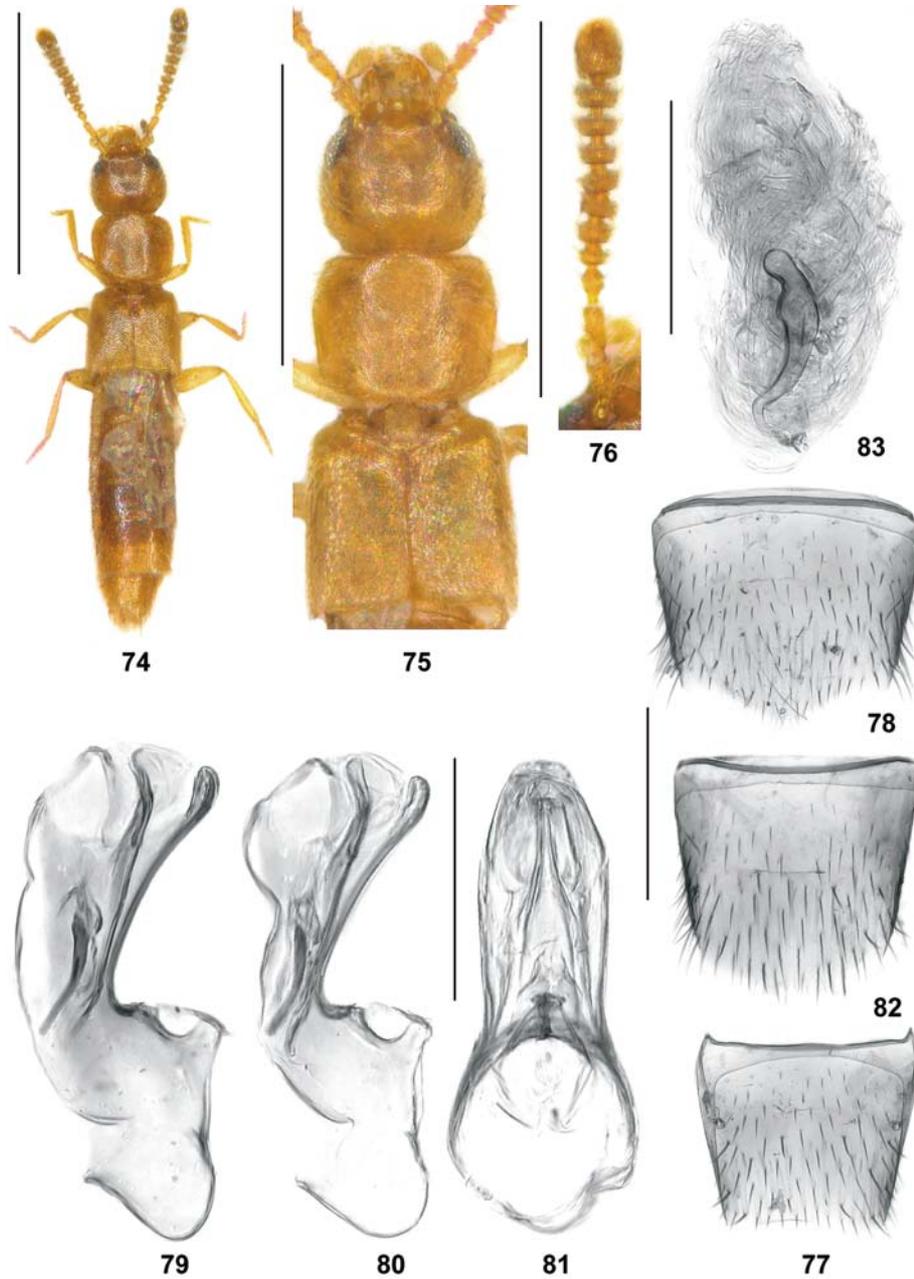
**Comment.** The original description is based on “Ein einziges Stück” from the Baikal region (EPPELSHEIM 1893). The holotype was loaned out to a colleague in 1995 [sic] and



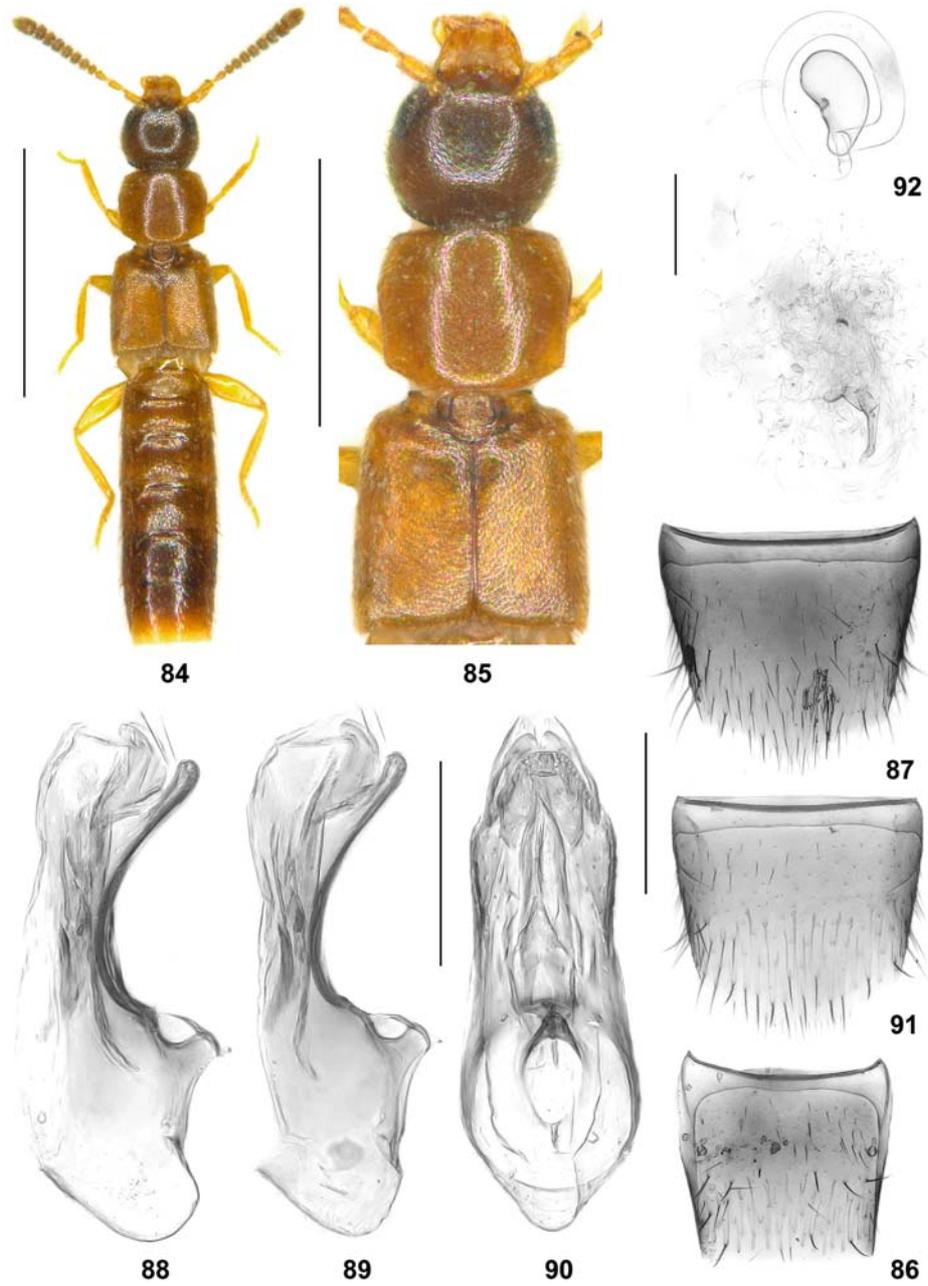
**Figs 56–64.** *Apimela mutata*. 56 – habitus; 57 – forebody; 58 – antenna; 59 – male abdomen; 60 – labium; 61 – labrum; 62 – male tergite VIII; 63 – male sternite VIII; 64 – female sternite VIII. Scale bars: 56: 1.0 mm; 57–59: 0.5 mm; 62–64: 0.2 mm; 60–61: 0.05 mm.



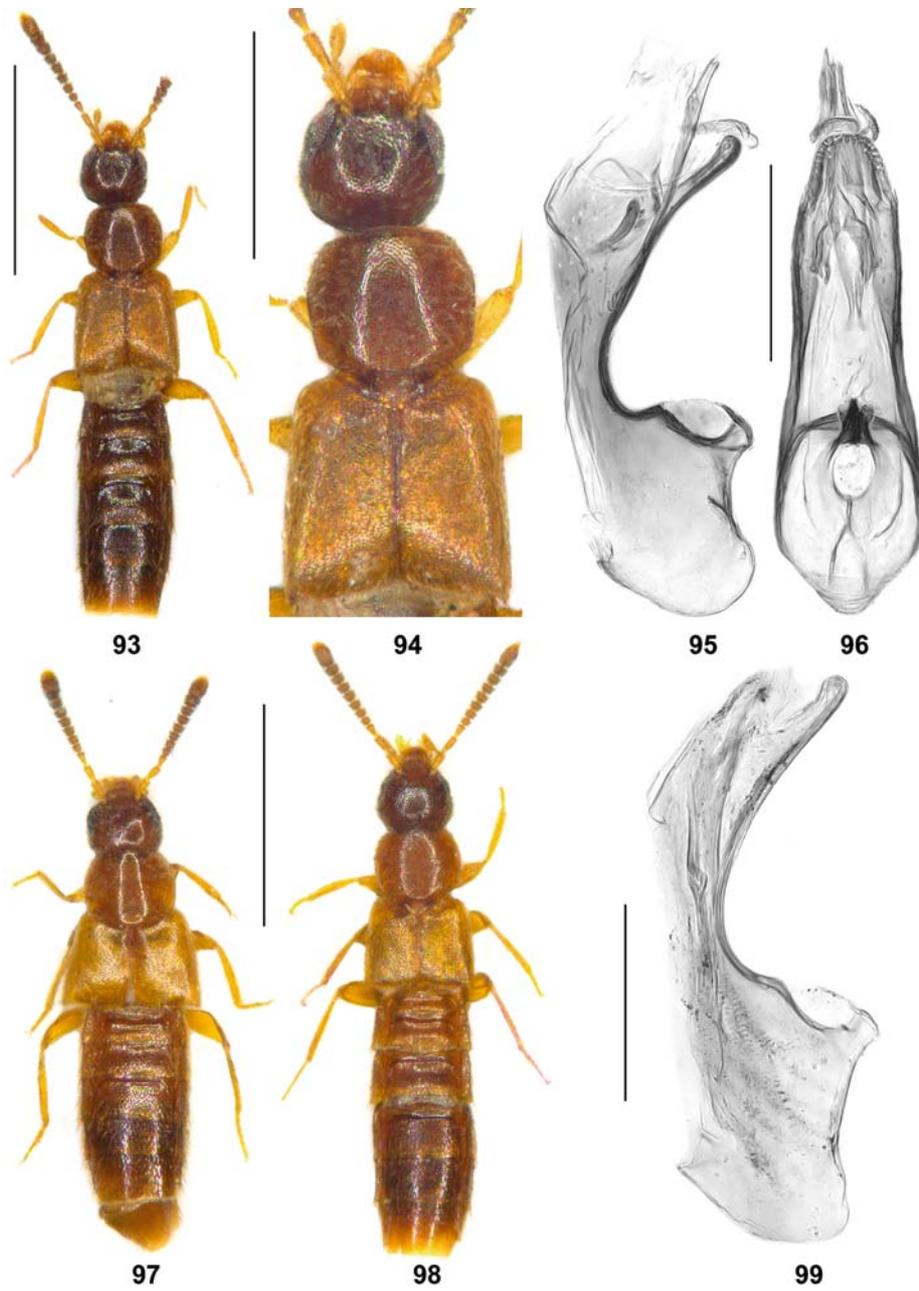
**Figs 65–73.** *Apimela mutata* (65–70) from Austria (65–66), Greece (67–69), and Georgia (70) and *A. graeca* (71–73). 65–68 – median lobe of aedeagus in lateral and in ventral view; 69–70 – spermatheca; 71 – habitus; 72 – forebody; 73 – distal portion of spermatheca. Scale bars: 71: 1.0 mm; 72: 0.5 mm; 65–70, 73: 0.1 mm.



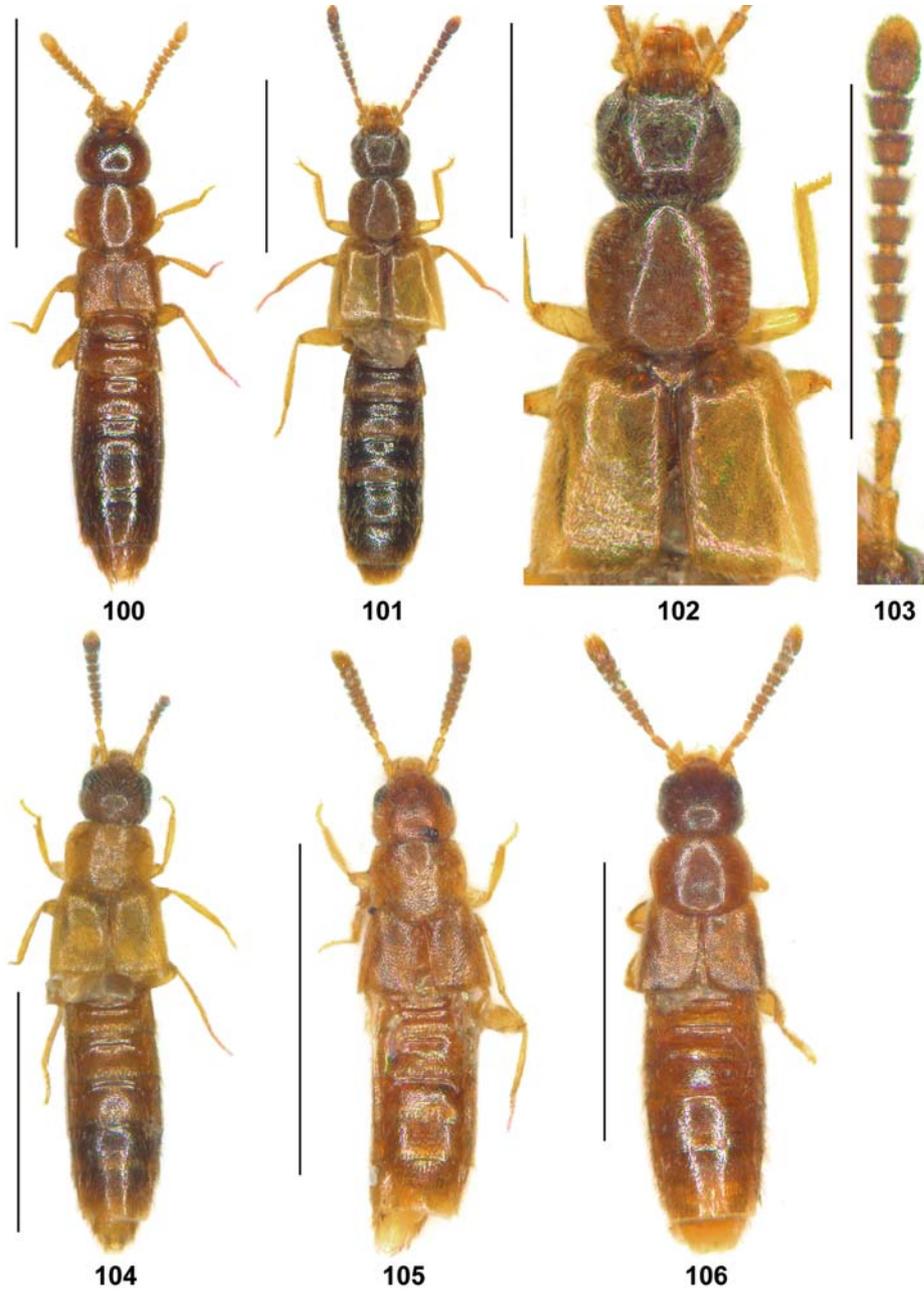
**Figs 74–83.** *Apimela wunderlei*. 74 – habitus; 75 – forebody; 76 – antenna; 77 – male tergite VIII; 78 – male sternite VIII; 79–81 – median lobe of aedeagus in lateral and in ventral view; 82 – female sternite VIII; 83 – spermatheca. Scale bars: 74: 1.0 mm; 75–76: 0.5 mm; 77–78, 82: 0.2 mm; 79–81, 83: 0.1 mm.



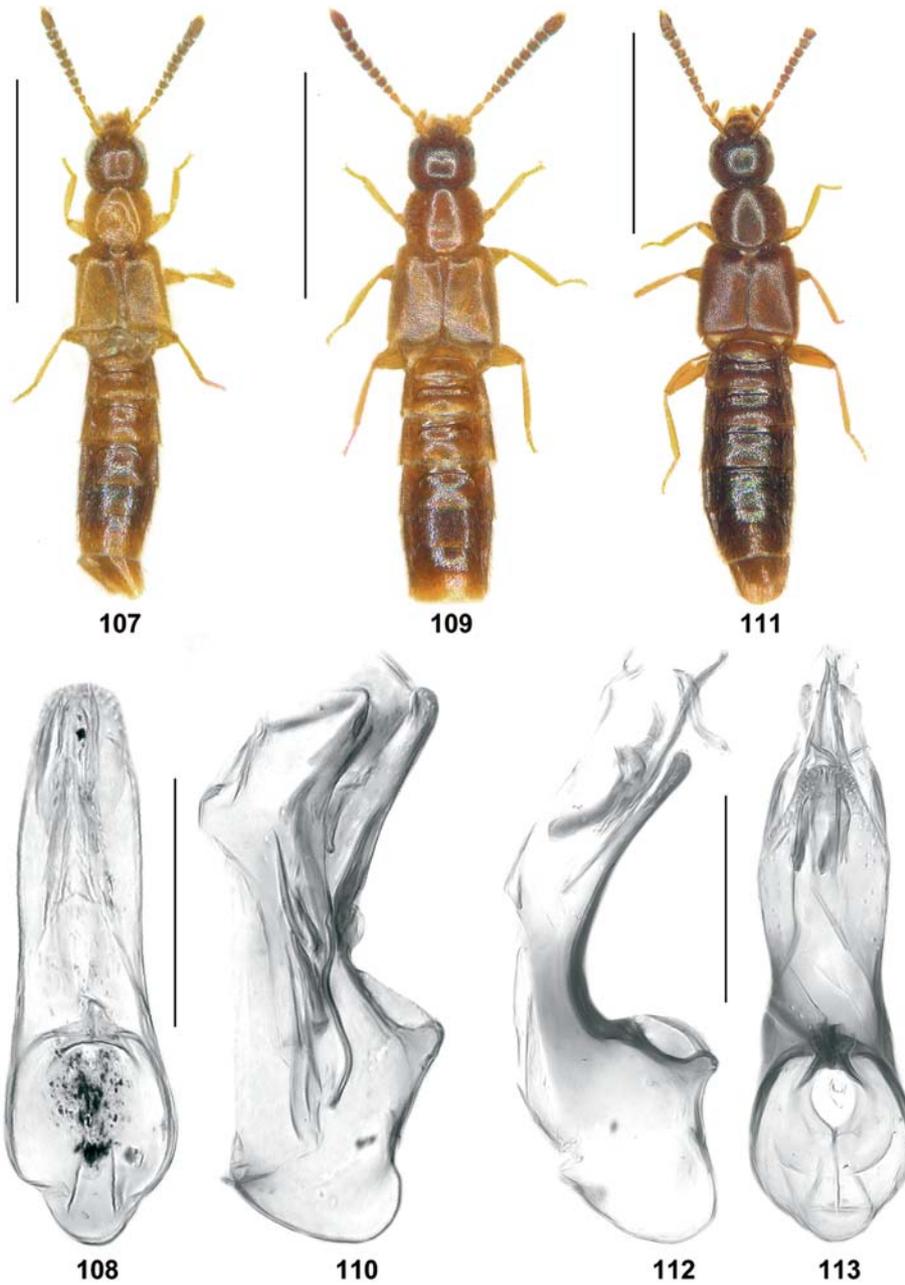
**Figs 84–92.** *Apimela kirghisica*. 84 – habitus; 85 – forebody; 86 – male tergite VIII; 87 – male sternite VIII; 88–90 – median lobe of aedeagus in lateral and in ventral view; 91 – female sternite VIII; 92 – spermatheca. Scale bars: 84: 1.0 mm; 85: 0.5 mm; 86–87, 91: 0.2 mm; 88–90, 92: 0.1 mm.



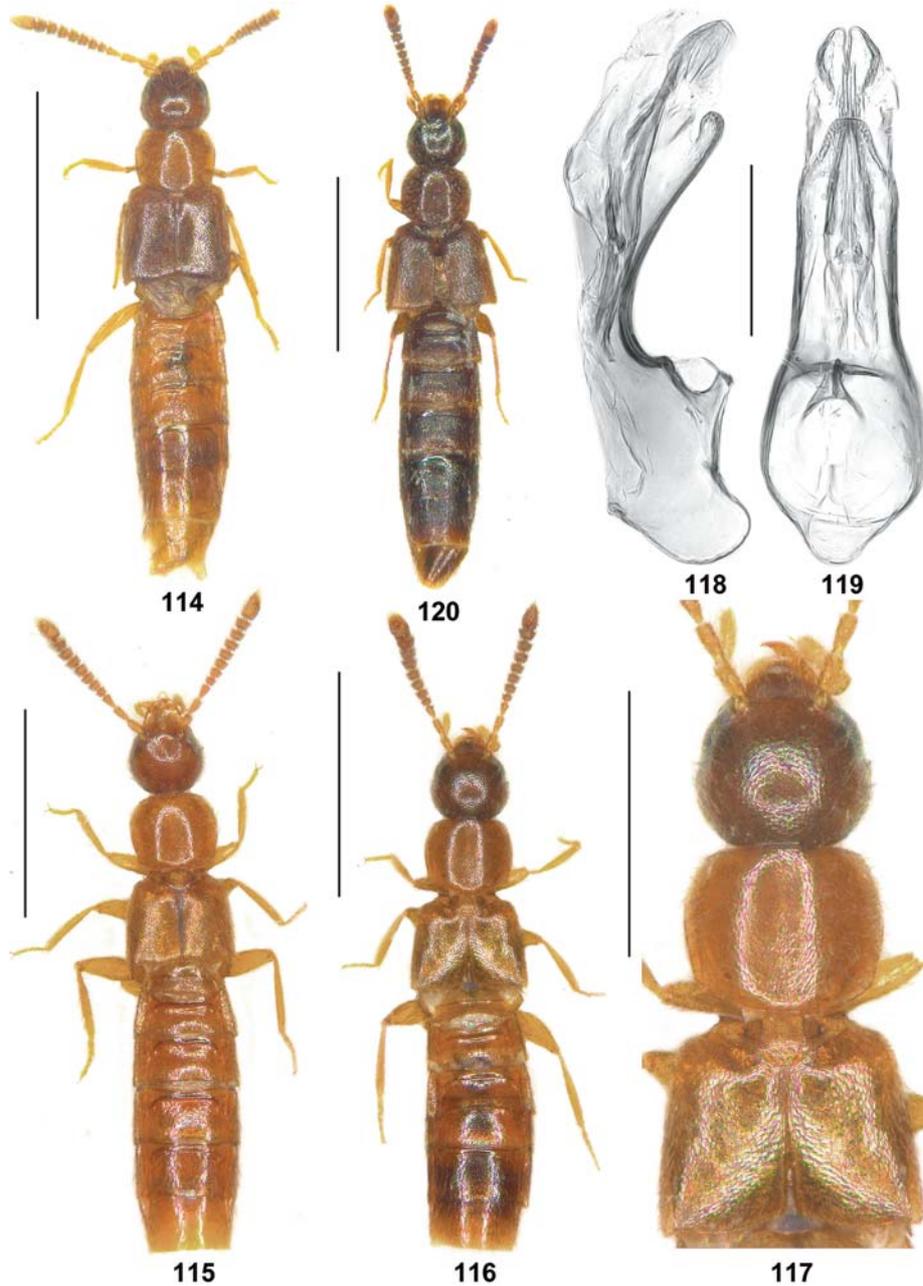
**Figs 93–99.** *Apimela ussurica* (93–96) and *A. pallescens* (97–99) from Mussoorie (97) and Nepal (98–99). 93, 97–98 – habitus; 94 – forebody; 95–96, 99 – median lobe of aedeagus in lateral and in ventral view. Scale bars: 93, 97–98: 1.0 mm; 94: 0.5 mm; 95–96, 99: 0.1 mm.



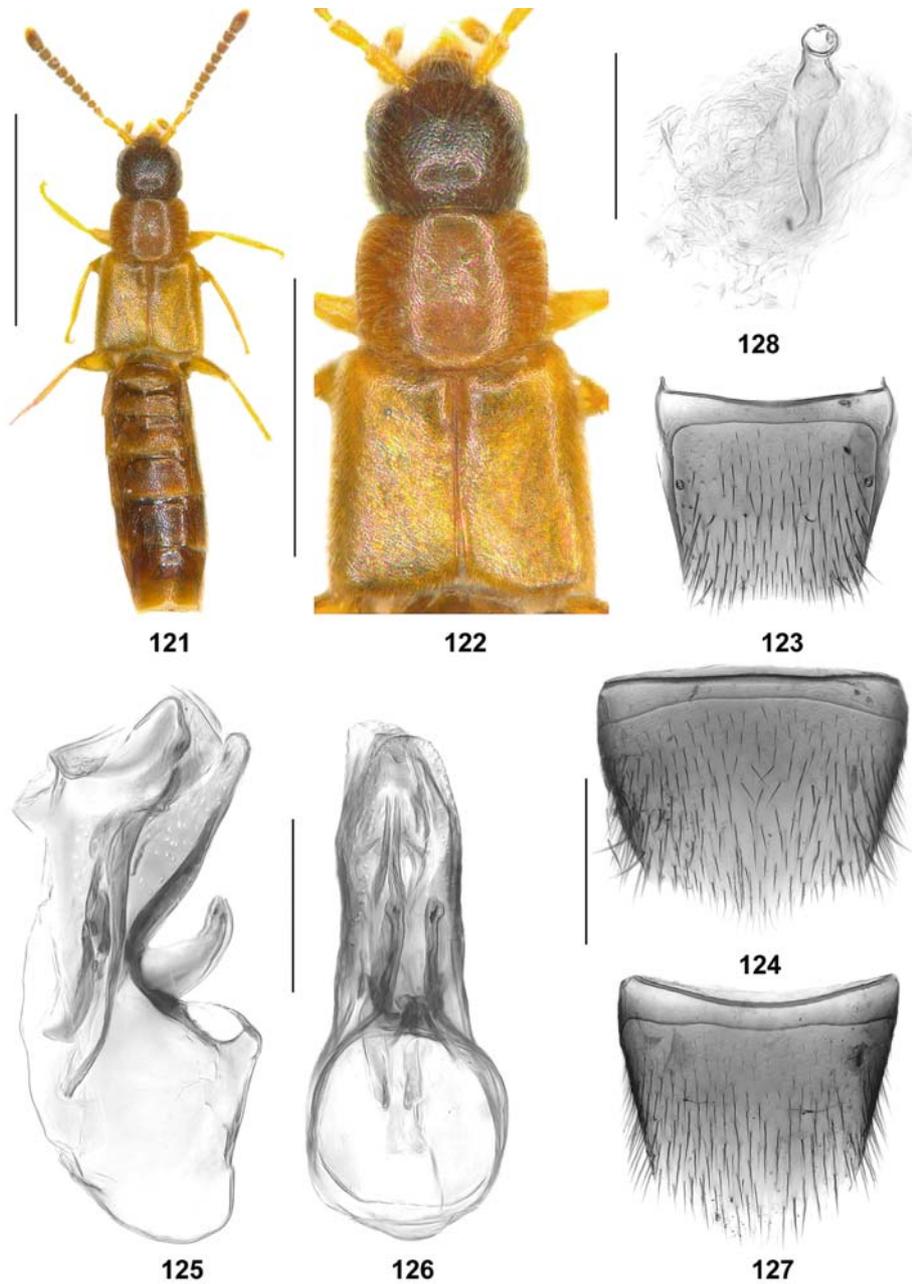
**Figs 100–106.** *Apimela aptera* (100), *A. hartmanni* (101–103), *A. newarica* (104), *A. lineola* (105), and *A. rufigaster* (106). 100–101, 104–106 – habitus; 102 – forebody; 103 – antenna. Scale bars: 100–101, 104–106: 1.0 mm; 102–103: 0.5 mm.



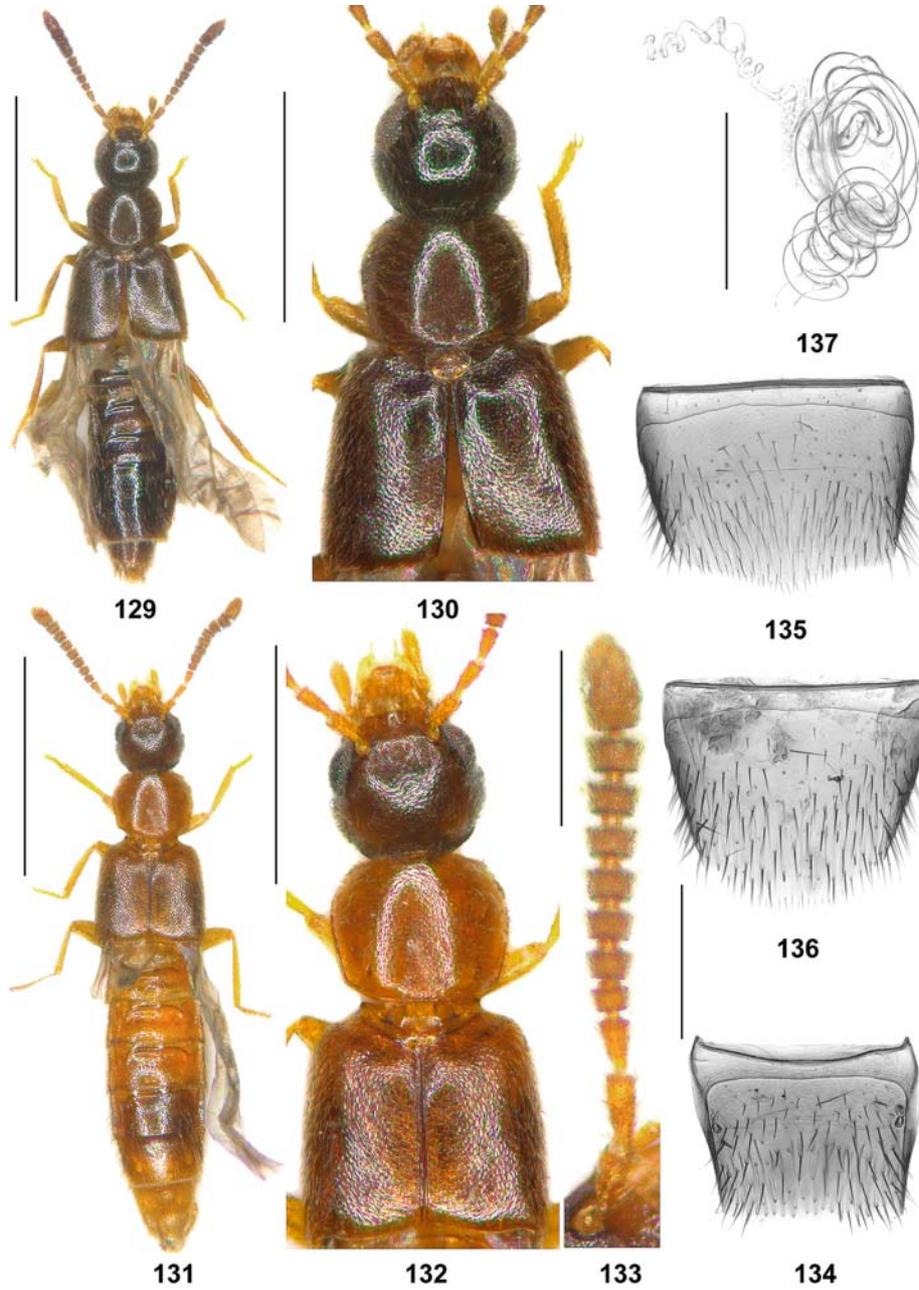
**Figs 107–113.** *Apimela glarearum*, holotype (107–108), *A. jiajinensis* (109–110), and *A. chinensis* (paratype of *A. tibetana*) (111–113). 107, 109, 111 – habitus; 108, 110, 112–113 – median lobe of aedeagus in lateral and in ventral view. Scale bars: 107, 109, 111: 1.0 mm; 108, 110, 112–113: 0.1 mm.



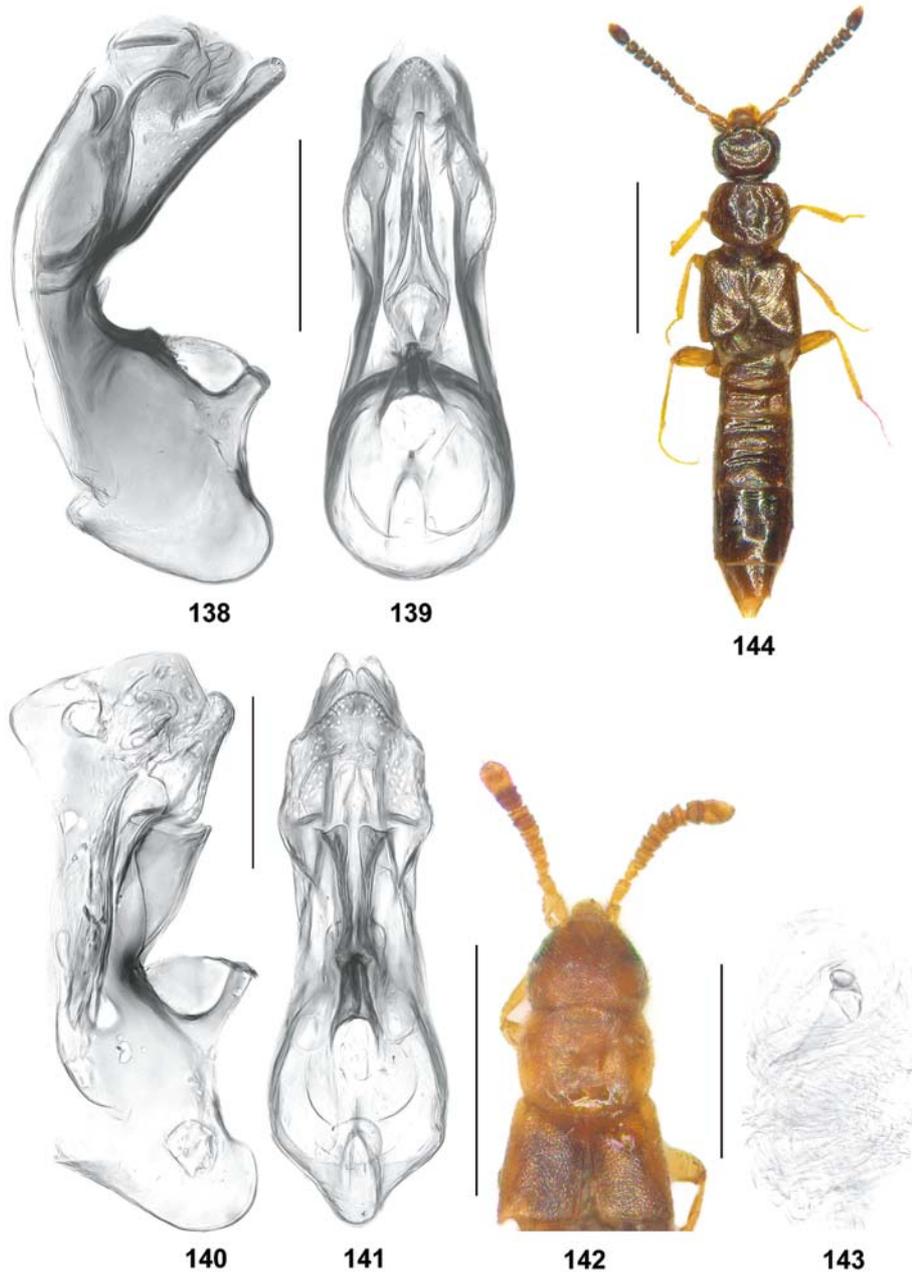
**Figs 114–120.** *Apimela sinofluminis* from Yunnan (identified as such by R. Pace) (**114**), *A. schuelkei* (**115**), *A. baculata* (**116–119**), and *A. chinensis*, holotype (**120**). 114–116, 120 – habitus; 117 – forebody; 118–119 – median lobe of aedeagus in lateral and in ventral view. Scale bars: 114–116, 120: 1.0 mm; 117: 0.5 mm; 118–119: 0.1 mm.



**Figs 121–128.** *Apimela bilobata*. 121 – habitus; 122 – forebody; 123 – male tergite VIII; 124 – male sternite VIII; 125–126 – median lobe of aedeagus in lateral and in ventral view; 127 – female sternite VIII; 128 – distal portion of spermatheca. Scale bars: 121: 1.0 mm; 122: 0.5 mm; 123–124, 127: 0.2 mm; 125–126, 128: 0.1 mm.



**Figs 129–137.** *Apimela auriculata* (129–130) and *A. lamellata* (131–137). 129, 131 – habitus; 130, 132 – forebody; 133 – antenna; 134 – male tergite VIII; 135 – male sternite VIII; 136 – female sternite VIII; 137 – spermatheca. Scale bars: 129, 131: 1.0 mm; 130, 132: 0.5 mm; 133–136: 0.2 mm; 137: 0.1 mm.



**Figs 138–144.** *Apimela auriculata* (138–139), *A. lamellata* (140–141), *A. lineola*, syntype (142–143), and “*Apimela*” *lucidula*, holotype (144). 138–141 – median lobe of aedeagus in lateral and in ventral view; 142 – forebody; 143 – spermatheca; 144 – habitus. Scale bars: 144: 1.0 mm; 142: 0.5 mm; 138–141, 143: 0.1 mm.

never returned (SCHILLHAMMER, e-mail 14 Oct., 2019). Repeated requests to make this specimen available for study both by Harald Schillhammer (NHMW) and the author have been unsuccessful. Consequently, the identity of this species must remain doubtful for the time being.

***Apimela consors* Pace, 1992**

*Apimela consors* Pace, 1992a: 281.

**Comment.** The original description is based on a unique female from “Nepal, Kathmandu Valley, Sundarijal” (Central Nepal) deposited in the Muséum National d’Histoire Naturelle, Paris (PACE 1992a). An examination of the holotype was not possible (see the section on *A. newarica*). Based on the illustration of the spermatheca in PACE (1992a), this species belongs to the *A. mutata* group.

***Apimela morvani* (Pace, 1992) comb. nov.**

*Parapimela morvani* Pace, 1992a: 281 f.

**Comment.** The original description, which is based on a unique female from “Nepal, Roukoum” [= Rukum, to the south of the West Dhaulagiri range] deposited in the natural history museum in Verona (PACE 1992a), fails to indicate any characters that may serve to distinguish it from other pale-coloured *Apimela* species of similar size (2.6 mm). The holotype was not examined, but it can be inferred from the shape of the spermatheca provided with the description that this species does not belong to the *A. macella* lineage like the type species of *Parapimela*, but to the *A. mutata* lineage. Until a male from the vicinity of the type locality is available, the identity of this species must be considered doubtful.

**Species excluded from *Apimela***

**“*Apimela*” *lucidula* Pace, 1992**

(Fig. 144)

*Apimela lucidula* Pace, 1992a: 281.

**Type material examined.** Holotype ♂: “NEPAL Manang Distr. For. W Bagarchhap 2200 m 21.IX.83 Smetana & Löbl / Holotypus *Apimela lucidula* m., det. R. Pace 1988 / *Apimela lucidula* sp. n., det. R. Pace 1988 / “*Apimela*” *lucidula* Pace, det. V. Assing 2019” (MHNG).

**Comment.** The original description is based on a unique male from Gandaki province, Central Nepal. The holotype is teneral and in poor condition. As can be inferred from its external and male sexual characters (pubescence pattern of the pronotum; shape of the claws; long and slender tarsi; shape of the parameres), this species does not belong to *Apimela*, not even to Meoticina, but to an oxypodine genus of unknown identity (undescribed?). For illustrations of the habitus and the aedeagus see Fig. 144 and PACE (1992a), respectively.

### Notes on the genus *Franzidota* Pace, 1982

Originally assigned to Bolitocharini (now Bolitocharina, subtribe of Homalotini), *Franzidota* Pace, 1982 was subsequently moved to the Oxypodini by PACE (1992a), based on the morphology of the genitalia and on a revision of the tarsal formula (4,5,5). The genus previously included 13 species from the southern East Palaearctic and Oriental region (twelve species) and from Madagascar (one species) (PACE 1992a, 2008, NEWTON 2019). Some of the Himalayan species and one from Borneo are micropterous. Prior to the present study, *Franzidota* was assigned to the subtribe Oxypodina (NEWTON 2019, SCHÜLKE & SMETANA 2015).

Recently studied material of Aleocharinae from Taiwan included two undescribed species which undoubtedly belonged to *Franzidota*. An examination of these species revealed that the genus is closely allied to *Meotica* and particularly to *Apimela* of the Meoticina, as can be inferred primarily from the generally similar primary and secondary sexual characters (aedeagus with flagellum in internal sac; paramere with short apical lobe; spermatheca with long and coiled proximal portion and with small and weakly sclerotized distal portion; shapes of tergite and sternite VIII). In consequence, *Franzidota* is moved from the Oxypodina to the Meoticina.

*Franzidota* is distinguished from *Apimela* by the tarsal formula (4,5,5), a broader and shorter ligula (PACE 1982: figure 26; PACE 1984: figure 2), a different general shape of the median lobe of the aedeagus, an apical lobe of the paramere with two conspicuously long and stout setae, and a distal portion of the spermatheca of characteristic shape.

#### *Franzidota formosana* sp. nov.

(Figs 145–151)

**Type material.** Holotype ♂: “TAIWAN – Chiayi Co., Alishan, Road 18, km 85, 2000 m, *Cryptomeria* stump, 11.IV.2009, leg. Vit [5] / Holotypus ♂ *Franzidota formosana* sp. n., det. V. Assing 2020” (cAss). Paratypes: 10♀♀: same data as holotype (cAss).

**Description.** Body length 1.8–2.2 mm; length of forebody 0.7–0.9 mm. Habitus as in Fig. 145. Coloration: head dark-brown to blackish-brown; pronotum and elytra reddish to brown; abdomen pale-reddish to reddish-brown with tergites V–VI and the anterior portion of tergite VII more or less distinctly infuscate (tergite V usually less so than tergite VI); legs yellow; antennae yellow to reddish, often with antennomeres I–II and XI paler than antennomeres III–X.

Head approximately as broad as long or weakly transverse and slightly wedge-shaped (dilated behind eyes; of similar shape as in species of the genus *Amischa*); punctuation dense and very fine, barely noticeable in the pronounced microsculpture. Eyes nearly as long as postocular region in dorsal view. Antenna approximately 0.5 mm long; antennomeres IV moderately transverse, V–X of gradually increasing width and increasingly transverse, and X approximately twice as broad as long.

Pronotum approximately 1.2 times as broad as long and 1.2 times as broad as head; punctuation dense and very fine, barely noticeable in the pronounced microsculpture.

Elytra approximately as long as pronotum; punctation dense, more distinct than that of head and pronotum. Hind wings fully developed. Metatarsomere I slightly shorter than the combined length of metatarsomeres II and III.

Abdominal tergites III–V with shallow, tergite VI without anterior impressions; punctation fine and moderately dense; microsculpture shallow, forming a network of rather large meshes connecting the punctures; posterior margin of tergite VII with palisade fringe; tergite VIII (Fig. 146) with truncate posterior margin.

♂: sternite VIII (Fig. 147) strongly transverse, posterior margin weakly sinuate; median lobe of aedeagus (Figs 148–149) 0.24 mm long; ventral process weakly curved in lateral view and narrow in ventral view; paramere (Fig. 150) 0.25 mm long, apical lobe with two conspicuously long and stout setae.

♀: spermatheca shaped as in Fig. 151.

**Comparative notes.** *Franzidota* species were previously unknown from Taiwan. The new species is distinguished from the widespread *F. virgula* (Fauvel, 1905) (aedeagus unknown), which has also been recorded from Yunnan, by larger body size, paler elytra (*F. virgula*: elytra blackish), finer punctation of the pronotum, and a differently shaped distal portion of the spermatheca. For an illustrations of the spermatheca of *F. virgula* see PACE (1982: figure 28).

Using the key PACE (1992a), *F. formosana* would key out at couplet 4 together with *F. kuwapanicola* Pace, 1992 (male unknown) and *F. gokanica* Pace, 1992 (male unknown), both of which are currently known only from Nepal. *Franzidota formosana* is distinguished from both of them by the shape of the spermatheca, by a much darker head, and by the presence of distinct microsculpture on the head and pronotum. For illustrations of the spermathecae of *F. kuwapanicola* and *F. gokanica* see PACE (1992a: figures 31–32).

**Distribution and natural history.** The type locality is situated in the Alishan range, Chiayi County, Central Taiwan. The specimens were collected from a stump of *Cryptomeria* sp.

**Etymology.** The specific epithet is an adjective derived from Formosa, the historical name of Taiwan.

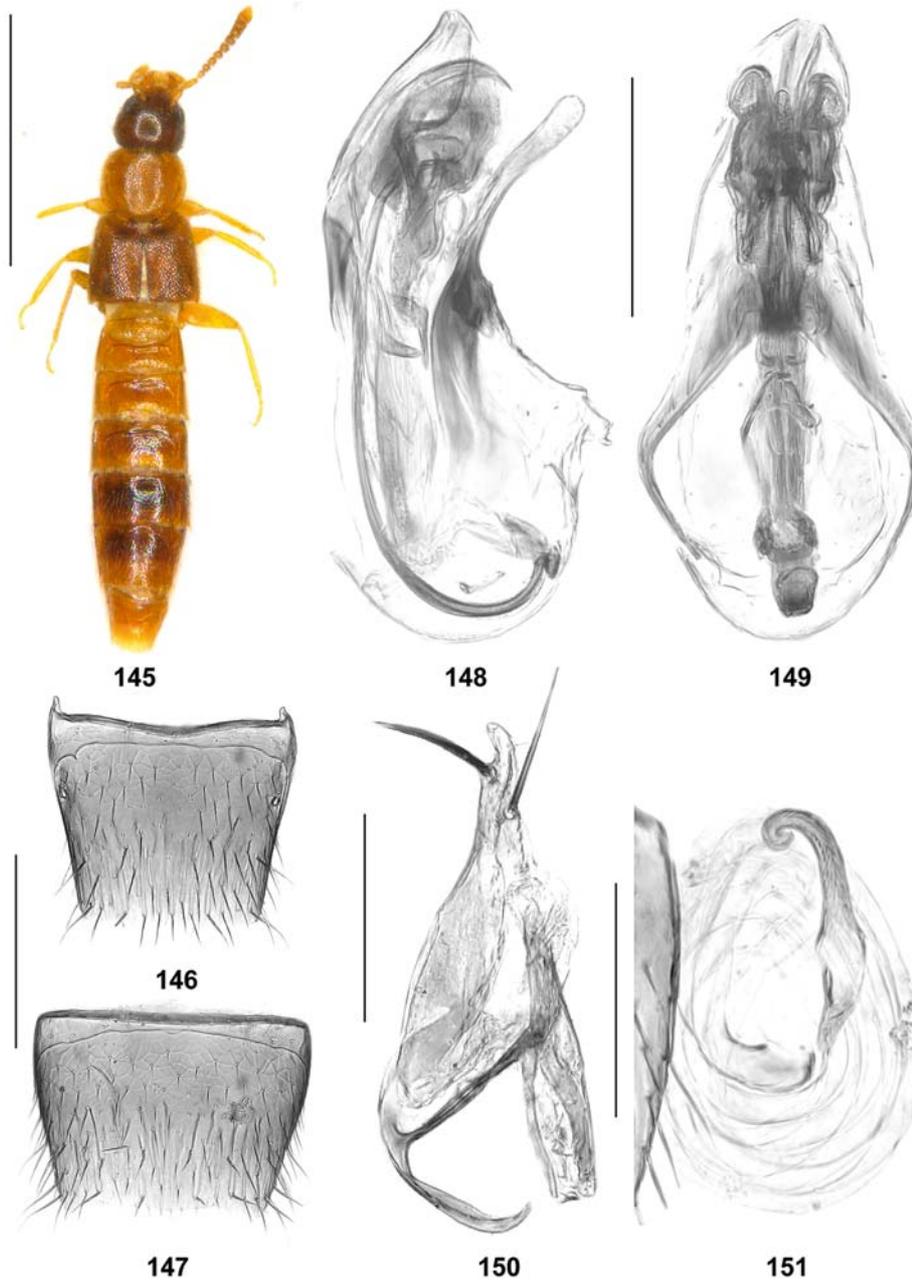
***Franzidota gilva* sp. nov.**

(Figs 152–157)

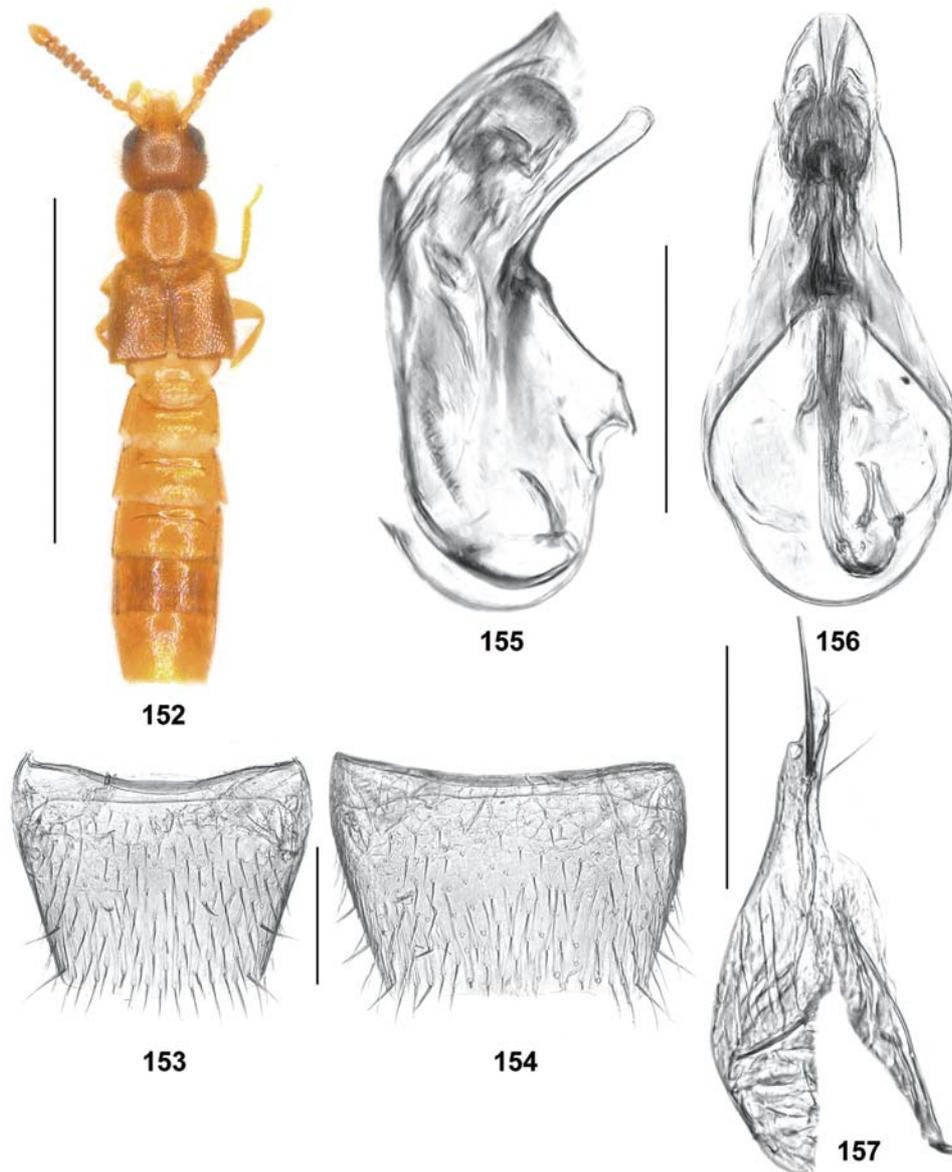
**Type material.** Holotype ♂: “TAIWAN – Taitung Co., Rd. no. 20, km 184, 600 m, decaying trunk with termites, 10.IV.2007, leg. Vít [9] / Holotypus ♂ *Franzidota gilva* sp. n., det. V. Assing 2020” (cAss).

**Description.** Body length 1.8 mm; length of forebody 0.7 mm. Species of slender habitus (Fig. 152). Coloration: body yellow with the head dark-yellow; legs yellow; antennae dark-yellow with antennomeres I–II and the apex of XI pale yellow.

Head transverse, not distinctly dilated posteriorly (not wedge-shaped); punctation dense and very fine, barely noticeable in the pronounced microsculpture. Eyes as long as postocular region in dorsal view. Antenna approximately 0.4 mm long; antennomeres IV distinctly transverse, V approximately twice as broad as long, V–X of gradually increasing width, and VII–X more than twice as broad as long.



**Figs 145–151.** *Franzidota formosana*. 145 – habitus; 146 – male tergite VIII; 147 – male sternite VIII; 148–149 – median lobe of aedeagus in lateral and in ventral view; 150 – paramere; 151 – spermatheca. Scale bars: 145: 1.0 mm; 146–147: 0.2 mm; 148–151: 0.1 mm.



**Figs 152–157.** *Franzidota gilva*. 152 – habitus; 153 – male tergite VIII; 154 – male sternite VIII; 155–156 – median lobe of aedeagus in lateral and in ventral view; 157 – paramere. Scale bars: 152: 1.0 mm; 153–157: 0.1 mm.

Pronotum 1.2 times as broad as long and 1.15 times as broad as head; punctation and microsculpture similar to those of head.

Elytra slightly shorter than pronotum; punctation dense, more distinct than that of head and pronotum. Hind wings fully developed.

Abdominal tergites III–V with shallow, tergite VI without anterior impressions; punctation fine and dense; microsculpture shallow, forming a network of rather large meshes connecting the punctures; posterior margin of tergite VII with palisade fringe; tergite VIII (Fig. 153) with truncate posterior margin.

♂: sternite VIII (Fig. 154) strongly transverse, posterior margin weakly sinuate; median lobe of aedeagus (Figs 155–156) 0.20 mm long; ventral process short, weakly curved in lateral view and narrow in ventral view; paramere (Fig. 157) as long as median lobe, apical lobe with two conspicuously long and stout setae.

♀: unknown.

**Comparative notes.** *Franzidota gilva* is distinguished from other species of the genus by the yellow coloration of the body (including the elytra) and by the shape of the aedeagus. It additionally differs from *F. formosana*, the only other species known from Taiwan, by smaller body size, a more slender habitus, and more transverse antennomeres VII–X.

**Distribution and natural history.** The type locality is situated in Southeast Taiwan. The holotype was collected from a decaying tree trunk with termites.

**Etymology.** The specific epithet (Latin, adjective: yellow) alludes to the coloration.

### Acknowledgements

The colleagues indicated in the material section arranged loans of material from the collections under their care. Alexey Solodovnikov assisted with the identification of a Ukrainian locality. The helpful comments and suggestions of Benedikt Feldmann (Münster) and an anonymous reviewer are much appreciated.

### References

- ASSING V. 2006: Six new species of micropterous *Atheta* and *Apimela* from northern Yunnan, China (Coleoptera: Staphylinidae, Aleocharinae). *Linzer Biologische Beiträge* **38** (2): 1143–1156.
- ASSING V. 2019: On the Staphylinidae of the Greek island Samothraki (Insecta: Coleoptera). *Linzer Biologische Beiträge* **51** (2): 881–906.
- ASSING V. & VOGEL J. 2019: The mother of synonyms: on the *Meotica* species of the Palaearctic Region (Coleoptera, Staphylinidae, Aleocharinae, Oxypodini). *Linzer Biologische Beiträge* **51** (2): 731–772.
- ASSING V. & WUNDERLE P. 1997: A revision of the species of *Euryalea* MULSANT & REY, *Pseudocalea* LUZE and *Ocyota* SHARP (Coleoptera, Staphylinidae, Aleocharinae). *Entomologische Blätter* **93** (2–3): 93–126.
- BERNHAEUER M. 1912: Eine neue Staphylinidengattung der mitteleuropäischen Fauna. *Entomologische Blätter* **8**: 108–109.
- BERNHAEUER M. 1914: Beiträge zur Kenntnis der paläarktischen Staphyliniden-Fauna. II. *Münchener Koleopterologische Zeitschrift* **4** (1): 1–10.
- BERNHAEUER M. & SCHEERPELTZ O. 1926: *Staphylinidae VI*. In: JUNK, W. & SCHENKLING, S. (eds), *Coleopterorum Catalogus, pars 82*. Berlin: 499–988.
- CAMERON M. 1920: New species of Staphylinidae from Singapore. Part III. *The Transactions of the Entomological Society of London* **1920**: 212–284.

- CAMERON M. 1939: *The Fauna of British India, including Ceylon and Burma. Coleoptera. Staphylinidae. Vol. IV. Parts I–II*. London, Taylor and Francis: 691 pp.
- CASEY T.L. 1911: *New American species of Aleocharinae and Myllaeninae. Pp. 1–245*. In: *Memoirs on the Coleoptera. II*. Lancaster, Pennsylvania, New Era Printing Co.: 250 pp.
- EPPELSHEIM E. 1893: Beitrag zur Staphylinen-Fauna des südwestlichen Baikal-Gebietes. *Deutsche Entomologische Zeitschrift* **1893 (1)**: 17–67.
- ERICHSON W.F. 1839: *Genera et species Staphylinorum insectorum coleopterorum familiae. Erster Band; pp. 1–400*. F.H. Morin, Berlin: 954 pp.
- FENYES A. 1918: *Coleoptera Fam. Staphylinidae subfam. Aleocharinae*. In: WYTSMAN, P. (ed.): *Genera Insectorum, Fascicle 173a*. Bruxelles, Louis Desmet-Verteneuil: 1–110.
- GANGLBAUER L. 1895: *Die Käfer von Mitteleuropa. Die Käfer der österreichisch-ungarischen Monarchie, Deutschlands, der Schweiz, sowie des französischen und italienischen Alpengebietes. Zweiter Band. Familienreihe Staphyloidea. 1. Teil: Staphylinidae, Pselaphidae*. Carl Gerold's Sohn, Wien: 881 pp.
- HORION A. 1967: *Faunistik der mitteleuropäischen Käfer. Bd. XI: Staphylinidae, 3. Teil: Habrocerinae bis Aleocharinae (ohne Subtribus Athetae)*. Überlingen-Bodensee: 419 pp.
- KOLTZE W. 1901: *Fauna Hamburgensis. Verzeichniss der in der Umgegend von Hamburg gefundenen Käfer*. Hamburg: 178 pp.
- KRAATZ G. 1859: Die Staphylinen-Fauna von Ostindien, insbesondere der Insel Ceylan. *Archiv für Naturgeschichte* **25**: 1–196.
- LATTIN G. DE 1967: *Grundriss der Zoogeographie*. Gustav Fischer Verlag, Stuttgart: 602 pp.
- LOHSE G.A. 1974: *Tribus 15–19 (Schistogenini – Aleocharini); pp. 221–292*. In: FREUDE H., HARDE K.W. & LOHSE G.A. (eds), *Die Käfer Mitteleuropas, Bd. 5*. Goecke & Evers, Krefeld: 391 pp.
- LOHSE G.A. 1989: *23. Familie: Staphylinidae (II) (Aleocharinae); pp. 185–240*. In: LOHSE G.A. & LUCHT W.H. (eds), *Die Käfer Mitteleuropas. 1. Supplementband mit Katalogteil*. Goecke & Evers, Krefeld: 346 pp.
- MULSANT E. & REY C. 1852: Description de quelques coléoptères nouveaux ou peu connus de la tribu des Brachelytres. *Opuscules Entomologiques* **1**: 15–46.
- MULSANT E. & REY C. 1874: Histoire naturelle des Coléoptères de France. Tribu des brévipennes. Famille des aléochariens. Septième branche: Myrmédoniaires. *Annales de la Société d'Agriculture Histoire Naturelle et Arts Utiles de Lyon* (4) **6** [1873]: 33–727.
- NEWTON A.F. 2015: *New nomenclatural and taxonomic acts and comments: Staphylinidae; pp. 9–15*. In: LÖBL, I. & LÖBL, D. (eds), *Catalogue of Palearctic Coleoptera. Volume 2. Hydrophiloidea – Staphyloidea. Revised and updated edition*. Brill, Leiden: xxvi + 1702 pp.
- NEWTON A.F. 2019: *StaphBase: Staphyliniformia world catalog database (version Nov. 2018)*. In: ROSKOV, Y., OWER, G., ORRELL, T., NICOLSON, D., BAILLY, N., KIRK, P.M., BOURGOIN, T., DEWALT, R.E., DECOCK, W., NIEUKERKEN, E. VAN, ZARUCCHI, J., PENEV, L. (eds), *Species 2000 & ITIS Catalogue of Life, 2019 Annual Checklist. Digital resource at www.catalogueoflife.org/annual-checklist/2019. Species 2000*. Naturalis, Leiden, the Netherlands.
- NORMAND H. 1935: Contribution au catalogue des coléoptères de Tunisie (4me fascicule). *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **25**: 356–390.
- OSSWALD J., BACHMANN L. & GUSAROV V.I. 2013: Molecular phylogeny of the beetles tribe Oxypodini (Coleoptera: Staphylinidae: Aleocharinae). *Systematic Entomology* **38**: 507–522.
- PACE R. 1982: Aleocharinae del Nepal e dell'India settentrionale raccolte dal Prof. Herbert Franz. I. Bolitocharini (Coleoptera Staphylinidae). *Bollettino della Società Entomologica Italiana* **114 (4–7)**: 87–96.
- PACE R. 1984: Due Aleocharinae attere appartenenti a due nuovi generi raccolte in Estremo Oriente dal Dr. Ivan Löbl (Coleoptera, Staphylinidae). *Revue Suisse de Zoologie* **91 (4)**: 895–901.
- PACE R. 1992a: Aleocharinae nepalesi del Museo di Ginevra. Parte VII (conclusione): Oxypodini e Aleocharini (Coleoptera, Staphylinidae). *Revue Suisse de Zoologie* **99 (2)**: 263–342.
- PACE R. 1992b: Aleocharinae della Thailandia (Coleoptera, Staphylinidae). *Bollettino del Museo Civico di Storia Naturale di Verona* **16** (1989): 227–268.
- PACE R. 1993: Nuove aleocharinae orientali (Coleoptera, Staphylinidae). *Bollettino del Museo Civico di Storia Naturale di Verona* **17** (1990): 127–180.
- PACE R. 1999: Aleocharinae dell Cina: Parte V (conclusione) (Coleoptera, Staphylinidae). *Revue Suisse de Zoologie* **106 (1)**: 107–164.
- PACE R. 2004: Aleocharinae di Thailandia, Cambogia, Laos e Malaysia (Coleoptera, Staphylinidae). *Belgian Journal of Entomology* **6**: 243–302.

- PACE R. 2006: *Aleocharinae del Nepal al Naturkundemuseum di Erfurt (Insecta: Coleoptera: Staphylinidae)*. In: HARTMANN M. & J. WEIPERT (eds), *Biodiversität und Naturlausstattung im Himalaya Band II*. Verein der Freunde und Förderer des Naturkundemuseums Erfurt e.v., Erfurt: 343–408.
- PACE R. 2008: Le specie di Thamiaraeini, Oxypodini, Hoplandriini e Aleocharini del Borneo (Coleoptera, Staphylinidae). *Revue Suisse de Zoologie* **115 (1)**: 157–183.
- PACE R. 2010: Thamiaraeini, Lomechusini, Oxypodini, Hoplandriini e Aleocharini di Taiwan (Coleoptera, Staphylinidae). *Bollettino del Museo Civico di Storia Naturale di Verona* **34**: 19–54.
- PACE R. 2012a: Biodiversità delle Aleocharinae della Cina: Hygronomini e Oxypodini (Coleoptera, Staphylinidae). *Beiträge zur Entomologie, Keltern* **62 (1)**: 125–163.
- PACE R. 2012b: *New data, two new genera and new species of Aleocharinae from Indian and Chinese Subregions (Insecta: Coleoptera: Staphylinidae)*. In: HARTMANN M. & J. WEIPERT (eds), *Biodiversität und Naturlausstattung im Himalaya Band IV*. Verein der Freunde und Förderer des Naturkundemuseums Erfurt e.v., Erfurt: 283–296.
- PACE R. 2014: Aleocharinae from Sabah (Borneo) collected by Guillaume de Rougemont (Coleoptera, Staphylinidae). *Linzer Biologische Beiträge* **46 (1)**: 727–794.
- PACE R. 2015: Contributo alla conoscenza della biodiversità delle Aleocharinae del Nepal (Insecta: Coleoptera: Staphylinidae). *Vernate* **34**: 199–227.
- PACE R. 2016: Aleocharinae della Cina al “Naturkundemuseum” di Erfurt (Insecta: Coleoptera: Staphylinidae). *Vernate* **35**: 295–336.
- REITTER E. 1909: *Fauna Germanica. Die Käfer des Deutschen Reiches. II. Band*. K.G. Lutz, Stuttgart: 392 pp.
- SCHEERPELTZ O. 1954: Bestimmungstabelle der bis heute bekannt gewordenen paläarktischen Arten der Gattung *Meotica* MULS. REY. (Col. Staph.). *Koleopterologische Rundschau* **32** [1951–1954]: 149–158.
- SCHÜLKE M. & SMETANA A. 2015: *Staphylinidae, pp. 304–1134*. In: LÖBL, I. & LÖBL, D. (eds), *Catalogue of Palaearctic Coleoptera. Volume 2. Hydrophiloidea – Staphyloidea. Revised and updated edition*. Brill, Leiden: xxvi + 1702 pp.
- SMETANA A. 2004: Staphylinidae, subfamily Aleocharinae, pp. 353–494. In: LÖBL, I. & SMETANA, A. (eds), *Catalogue of Palaearctic Coleoptera. II. Hydrophiloidea – Histeroidea – Staphyloidea*. Apollo Books, Stenstrup: 942 pp.