

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/298546981>

Revision of the myrmecophilous genus *Lomechusa* (Coleoptera : Staphylinidae : Aleocharinae)

Article in *Sociobiology* · January 2005

CITATIONS

13

READS

842

1 author:



Peter Hlaváč

Czech University of Life Sciences Prague

135 PUBLICATIONS 518 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Catalogue of Life [View project](#)



The Pselaphinae and Scydmaeninae of Greece [View project](#)

Revision of the Myrmecophilous Genus *Lomechusa* (Coleoptera: Staphylinidae: Aleocharinae)

by

Peter Hlaváč*

ABSTRACT

The myrmecophilous genus *Lomechusa* Gravenhorst is revised. Four new species are described, *L. dvoraki* from Tadjikistan, *L. bordonii* from Italy, *L. kishimotoi* and *L. yunnanensis* from China. The genus *Pterygatemelus* Scheerpeltz is synonymized with the *Lomechusa*. The following synonymies at the species level are established: *L. sicula* Rottenberg is a synonym of *L. paradoxa* Paykull; *L. pratensoides* Wasmann is a synonym of *L. pubicollis* Brisout de Barneville. Synonymies of all varieties of *L. emarginata*, *L. paradoxa* and *L. pubicollis* as stated in Smetana (2004) are confirmed. A lectotype and paralectotypes of *L. atlantica* Koch are designated. Keys to the genera of the subtribe Lomechusina and to the species of the genus *Lomechusa* are given.

Keywords: Staphylinidae, Aleocharinae, Lomechusini, *Lomechusa* revision, Palearctic, new species.

INTRODUCTION

The subtribe Lomechusina is clearly a monophyletic group of three genera (*Lomechusa* Gravenhorst, 1806, *Lomechusoides* Tottenham, 1939 and *Xenodusa* Wasmann, 1894) with 34 described species (Smetana 2004; Hoebecke 1976, Maruyama & Hlaváč 2004) belonging to the tribe Lomechusini, subfamily Aleocharinae of the large family Staphylinidae. Members of Lomechusina occur in northern temperate region of the world with one known species from Myanmar (described in the genus *Prerygatemelus*). The generic placement of *Xenodusa australis* (Montrouzier, 1860), a species from New Caledonia is highly doubtful, and it is very likely that this species belongs to a different genus and subtribe. The Lomechusina reaches its highest diversity in the Palearctic region with 25 described species. Five species and one subspecies of the genus *Xenodusa* Wasmann (Hoebecke, 1976) are known from North America with one species from Mexico.

This revision focuses on *Lomechusa*, a genus with quite difficult systematics. Sexual characters in *Lomechusa* (which are widely used for species diagnostics in the Staphylinidae) are either very similar

*Na doline 14, SK-040 14, Košice, Slovakia. Email: hlavac@shpgroup.net

(aedeagus) or variable in shape (spermatheca) at the species level, and thus they have only limited value for taxonomic and identification purposes in this genus. External characters are most important to separate species of *Lomechusa*. Based on the shape of pronotum and some other characters three groups of species are defined here for *Lomechusa*.

All members of Lomechusina are strict myrmecophiles, inquilines or symphiles of ants. They live with ants of the genera *Formica* Linnaeus, *Myrmica* Latreille, *Camponotus* Mayr and *Lasius* Fabricius.

MATERIAL AND METHODS

Acronyms:

DEI – Deutsche entomologisches Institute, Münchenberg (L. Zerche)
HNHM – Hungarian Natural History Museum, Budapest (O. Merkl)
MNHUB – Museum für Naturkunde der Humboldt-Universität, Berlin (A. Frisch)

MCSNM – Museo Civico di Storia Naturale, Milano

NMB – Naturhistorisches Museum Basel (E. Sprecher)

NMW – Naturhistorisches Museum, Wien (H. Schillhammer)

NSMT – National Science Museum, Tokyo (S. Nomura & M. Maruyama)

SNMB – Slovak National Museum, Bratislava (V. Jánsky)

ZIN – Zoological Institute, St. Petersburg (G.S. Medvedev)

CAB – collection of Arnaldo Bordoni, Firenze

CAZ – collection of Adriano Zanetti, Verona

CJB – collection of Jaroslav Boháč, České Budějovice

CMD – collection of Miroslav Dvořák, Prague

CMS – collection of Michael Schülke, Berlin

CMT – collection of Marc Tronquet, Paris

CPH – the author's collection which will be deposited in SNMB

CVA – collection of Volker Assing, Hannover

The following abbreviations are used in the text: APW – apical pronotal width before the lateral excavation; BPW – basal pronotal width measured between the basal corners of the pronotum; MWE – maximum width of the elytra (measured as in Hlaváč & Lakota, 2000); p (printed); h (hand-written); / (used to separate different labels).

Length of body: As this is a highly variable character in Staphylinidae, which depends on the constriction or expansion of the abdomen during the preparation, this character has low value and it is not used to separate species.

GENUS *LOMECHUSA* GRAVENHORST, 1806**Taxonomic history:**

The first species of the genus *Lomechusa* was described as *Staphylinus emarginatus* Paykull, 1789. Gravenhorst (1806) described the genus *Lomechusa* [with the type species *Lomechusa emarginata* (Payk.) fixed by Latreille (1810)], and Dillwyn (1829) described the genus *Atemeles* [with the type species *Atemeles paradoxus* (Grav.)] subsequently designated by Westwood (1838). Later *Atemeles* was synonymized with *Lomechusa* (Blackwelder 1952: 226). Except for Brisout de Barneville (1860) all authors were using the generic name *Atemeles* for the species of *Lomechusa*, whereas the name *Lomechusa* was applied to species belonging to a different genus which later was described as *Lomechusoides* by Tottenham (1939). Along with the description of a new genus (which included species related to *L. strumosus* Fabricius), Tottenham recognized the confusion around the generic names *Lomechusa* and *Atemeles* and clearly indicated that the name *Lomechusa* should be applied for all species related to *L. emarginata*. Unfortunately subsequent authors (Palm 1949; Schilow 1977a,b, 1981 and Sawada 1994) ignored this taxonomic act and the confusion has continued. Only recently new combinations for both genera have been done, for *Lomechusoides* (Maruyama & Hlaváč 2004) and also for *Lomechusa* (Smetana 2004). This paper is the second revision of the genus *Lomechusa*, the first one was by Wasmann (1896).

Biology:

The life history of the subtribe Lomechusina is, without any doubt, one of best studied of all Coleoptera. This is mainly due to the work of Erich Wasmann (1859-1931), founder and leading authority of modern myrmecophilous studies until his death in 1931. Wasmann (1886, 1887, 1888, 1894, 1897, & 1915) devoted almost 45 years of his life to the study of beetles living in association with ants. Other contemporaries of Wasmann, working on the subject, were Donisthorpe (1927) and Jordan (1913). In the second half of 20th century Berthold Hölldobler (1967) studied the interspecific chemical and mechanical communication, between larvae and adult beetles and their host ants. He showed that the adoption of the *Lomechusa* larvae as well as the adult beetles and their care within the ant colony is dependant on chemical signals. The North American genus *Xenodusa* Wasmann 1894, which has a similar life history to that of *Lomechusa*, was studied by Wheeler (1911).

Lomechusa species are found with *Formica* ants during the summer, but in the winter they inhabit the nests of ants of the myrmicine genus *Myrmica*. The North American genus *Xenodusa* has a similar life

strategy but it over-winters in the nests of carpenter ants of the genus *Camponotus*. *Lomechusoides* has a different way of life and does not change its host, usually it lives with *Formica* only, although one species, *Lomechusoides schneideri* Maruyama & Hlaváč (2004) was recently found in a nest of *Myrmica*. The behavior of the larvae of *Lomechusina* are similar, in particular they prey to a certain extent on their host ants' larvae but they are also fed by their ant hosts. The larvae of *Lomechusa* pupate in the summer, and they appear as adult beetles at the beginning of autumn, after they emigrate from the *Formica* nest, where they have been raised, to nests of the ant genus *Myrmica*. They over-winter in the *Myrmica* brood chambers and in the spring return to a *Formica* nest to breed. The fact that the adult beetle is tolerated and is fed in the nest of ants of two different subfamilies suggests that it is able to communicate efficiently in two different "languages". There is good reason to believe that *Lomechusa* first evolved its myrmecophilic relationships with *Formica* rather than with *Myrmica*. It seems likely that the ancestral *Lomechusa* beetles hatched in *Formica* nests only due to the overwintering. This simple life cycle is now followed by *Lomechusoides*. In the *Formica* nest, however, the immature stages of the ants are discontinued during the winter, and consequently social food flow is reduced. In contrast, the *Myrmica* colony maintains brood throughout the winter. Thus here the social food flow is available as high-grade food sources to the myrmecophiles. It is very significant that *Camponotus*, like *Myrmica* maintains larvae throughout the winter and that is why *Xenodusa* could develop the same life strategy as *Lomechusa* (Hoebeker 1976; Hölldobler & Wilson 1990).

KEY TO THE WORLD GENERA OF LOMECHUSINA:

From other *Lomechusini*, the members of the subtribe *Lomechusina* can be easily recognized by the lateral margins of first visible abdominal tergite having prominent golden-yellow tufts of glandular hairs (trichomes).

- 1- Antennae and legs particularly slender, structure of the pronotum simple. Species from North America *Xenodusa*
- Antennae and legs not particularly slender. Palearctic species
..... 2
- 2- Pronotum with lateral parts dull, finely micropunctured, disk smooth and shining, lateral margin of the pronotum and the base of the elytra with long, erect black setae; lacinia without a hook or a spine *Lomechusoides*
- Structure of the pronotum simple, microsculptured and dull, pronotum

tum and base of the elytra lacking erect black setae; Lacinia with 2-3 apical or subapical spines *Lomechusa*

Remarks:

- Although *Lornechusula* Brauns 1925 shares with *Lomechusina* the presence of trichomes on the abdominal tergites III-V, it was excluded from the *Lomechusina* (Kistner *et al.* 1997: 168) due to other automorphies.

- Many varieties of *Lomechusa emarginata*, *L. paradoxa* and *L. pubicollis* were described by Wasmann and one by Kraatz, based on the shape of the pronotum, coloration and/or the punctuation of different parts of the body. All of them were listed as synonyms of their nominal taxa by Smetana (2004) without any explanation. As these characters are highly variable for *Lomechusa*, I conclude this taxonomical act as correct without referring further to type specimens of the varietal taxa.

LOMECHUSA GRAVENHORST

Lomechusa Gravenhorst, 1806: 178. Type species. *Staphylinus emarginatus* Paykull, designated by Latreille, 1810: 427.

Lomechusa Gravenhorst: Kraatz, 1856: 114; Erichson, 1839: 202.

Atemeles Dillwyn, 1829: 63. Type species. *Lomechusa paradoxa* Gravenhorst, designated by Westwood, 1838: 20.

Atemeles Dillwyn: Kraatz, 1856: 112; Thomson, 1860: 243; Wasmann, 1896: 253; Fenyes, 1920: 302.

Atemeles Stephens, 1832: 107.

Atemeles Stephens: Reitter 1909: 41; Freude & Harde & Lohse 1973: 228; Ganglbauer 1895: 109; Bernhauer & Scheerpeltz 1926: 712 (catalogue); Scheerpeltz 1934: 1664 (catalog).

Goniodes Stephens 1829: 260 (*nec* Nitzsch 1818). Type species. *Goniodes acuminata* Kirby, designated by virtual monotypy.

Pterygatemeles Scheerpeltz 1965: 361. Type species: *Pterygatemeles malaisei* Scheerpeltz, by original designation and monotypy. **New**

Synonym

Remark:

Scheerpeltz in his long and detailed description of *Pterygatemeles* did not give any differential diagnosis or reason why it was necessary to create a new genus for this species. In fact, this species is congeneric to *Lomechusa* in every aspect.

Diagnosis

Within the strictly myrmecophilous subtribe *Lomechusina*, the genus *Lomechusa* is characterized by the combination of the following

characters: (1) antennae more or less robust, not particularly slender; (2) structure of the pronotum simple; (3) pronotum and the base of the elytra lacking erect setae; (4) lacinia with 2-3- apical or subapical spines.

Description

Body robust, parallel-sided. Color variable, usually reddish brown or shades thereof, pronotum and head usually darker. Body length: 3.2-6.1 mm.

Head small, dull, with dense microsculpture and sometimes with sparse, short, golden setae, parallel-sided or slightly narrower posteriorly, margins straight or concave, antennal protuberances well developed, a shallow depression between the eyes, Eyes present, large, about as long as the temples, slightly protuberant or flat. Labrum about twice as wide as long, covered with some golden setae. Mandibles (Fig. 2) symmetrical, feebly curved, without any median teeth, obtusely pointed at the apex. Maxilla (Figs. 1, 66) with the galea larger than the lacinia, galea wide at the apex, lacinia narrowed, with 2-3 apical teeth, setae of the galea and lacinia rather short; lacinia reaching three fourths of the galea length, stipes triangular, stipes and palpifer with few setae and pseudopores. Maxillary palpi 4 segmented, basal segment minute, segment 2 about as long as 3 and slightly wider, narrowed basally, segment 3 cylindrical, both with some setae, terminal segment short, roundly pointed at the apex. Labial palpi (Figs. 3, 67) with the segment 1 large, about 1.5 times as long as segment 2 and much wider; segment 3 thin, roundly acuminate at the apex, about as long as 2. Gular sutures broadly separated, divergent posteriad and also anteriad, closest in the middle of the head length. Mentum (Fig. 4) rhombic, more than twice as wide as long, widest at base, narrowed anteriorly, with mesh-like microsculpture and pseudopores; about 10 long setae present.

Antennae long (Fig. 7), somewhat variable by species. Scape large, oval, about twice as thick as the other segments. Segments 2 and 3 rhombic, segment 2 shorter than 3. Segments 4-10 slightly elongate, more or less the same length. Terminal segment pointed at apex, longer than 9-10 or 7-10 combined.

Pronotum (Fig. 29) very variable in shape and size, strongly transverse, widest at the base, front corners broadly rounded, hind corners more or less acute, basal margin with a large median lobe. Some depressions always present, surface dull, with fine microsculpture and very fine pubescence, hypomeron large.

Mesosternum (Fig. 29) short, shagreened, mesosternal process short and truncate, larger than the truncate metasternal process; isthmus

very short, almost absent, metasternum about three times as long as mesosternum, smooth and glossy, with golden pubescence.

Elytra about as long as or shorter than the pronotum, with sparse and very fine pubescence. Elytron slightly longer than wide. Hind wings fully developed. Hind corners of the elytra usually well defined (or absent only in *L. barbarae*).

Abdomen robust, strongly reflexed in the direction of head, more or less shining, as wide as the apical margins of the elytra, about as long or longer than the head, pronotum and elytra combined. Paratergites on segments III-VII, with prominent tufts of glandular hairs (trichomes). Tergites II-V with or without macrosetae on each side, this chaetotaxy is species characteristic. Venter of the abdomen convex and usually shining, with or without pubescence. Tergites VI and VII shorter than the preceding tergites. Tergite VIII in both sexes with well developed more or less longer corners and large median excavations of different shapes. Sternite VIII usually with an oval margin, corners missing.

Legs (Figs. 14-16) long, setose, tarsal formula 4-5-5, covered with short yellowish pubescence. Tibiae about as long as the femora, all trochanters small and of approximately equal size, semi-triangular. Procoxae long, about 2.5 times as long as wide. Mesocoxae smaller, only slightly longer than wide. Metacoxae very wide, about twice as wide as long.

Sexual dimorphism

This is exhibited in the different shapes of abdominal sternites and/or tergite VIII.

Distribution

Species are found throughout almost the whole Palaearctic and part of the Oriental region, from Morocco, Spain, all of Europe and Siberia up to the Russian Far East, China, Japan and Myanmar.

Habitat

Members of the genus *Lomechusa* are exclusively guests of ants of the genera *Formica*, *Myrmica* and occasionally *Lasius*.

KEY TO SPECIES OF THE GENUS *LOMECHUSA*:

- 1 Antennal segments 4-10 elongate oval, posterolateral projections of the elytra absent ***barbarae***
- 2 Antennal segments 4-10 elongate or transverse, never oval, posterolateral projections on the elytra well developed 2
- 2 Pronotum extended posteriorly, ratio APW/BPW less than 0.9, posterior pronotal corners longer and acute (Group *emarginata*) ..
..... 3

- Pronotum not extended posteriorly, with parallel or slightly excavated sides, ratio APW/BPW equal or more than 0.9, posterior pronotal corners shorter and round (Group *paradoxa*) 8
- 3 Basal margin of abdominal tergites III-V with a transverse, convex or concave basal margin 4
- Basal margin of abdominal tergites III-V simple, flat, without any convexity or concavity 5
- 4 Basal margin of abdominal tergites III-V with a transverse, convex basal margin, antennal segment 3 more than 1.55 times as long as 2, macrosetae on tergites II-V present **emarginata**
- Basal margin of abdominal tergites III-V with a transverse, concave basal margin, antennal segment 3 less than 1.55 times as long as 2, macrosetae on tergites II-V totally absent **malaisei**
- 5 Abdominal tergite VIII with short transverse groove in basal third, tergites II-V lacking macrosetae **dvoraki**
- Abdominal tergite VIII simple, at least some of tergites II-V with some macrosetae 6
- 6 Terminal antennal segment as long as antennal segments 8-10 combined, surface of tergites dull **stangei**
- Terminal antennal segment clearly shorter than antennal segments 8-10 combined 7
- 7 Terminal antennal segment short and stout, as thick as the penultimate segment, head bicolored, antennal segment 3 more than 1.55 as long as antennal segment 2; apical margin of pronotum straight **sinuata**
- Terminal antennal segment long and very slender, narrower than penultimate, head unicolored, antennal segment 3 less than 1.5 as long as antennal segment 2; apical margin of pronotum excavated **kishimotoi**
- 8 Scape as long as the terminal antennal segment, pronotum with two deep lateral depressions, diameter of the eyes at least 1.5 times as long as the temples **yunnanensis**
- Terminal antennal segment longer than the scape, diameter of the eyes as long or only slightly longer than the temples 9
- 9 Smaller species, BPW < 1.2 mm; MWE < 1.3 mm 10
- Larger species, BPW > 1.3 mm; MWE > 1.4 mm 11
- 10 . Tergites III and IV lacking macrosetae, antennal segment 3 more than 1.55 times as long as 2, eyes not protuberant, antennae slender and shorter, less than 1.5 mm long, when directed behind reaching the apex of elytra **bifoveolata**
- Macrosetae on tergites III and IV present, antennal segment 3 less than 1.5 times as long as antennal segment 2, eyes markedly

protuberant, antennae more robust and longer, more than 1.6 mm long, when directed behind slightly exceeding the apex of elytra ...

..... **atlantica**

- 11 Large species, BPW > 1.5 mm; MWE > 1.6 mm, abdominal tergites III and IV with more than 5 macrosetae, pronotum shagreened and with widely separated punctation visible mainly on the disk, pronotum appears double-punctured, punctures with golden setae

..... **pubicollis**

- Smaller species, BPW < 1.5 mm; MWE < 1.6 mm, abdominal tergites III and IV with less than 4 macrosetae, pronotum even more densely shagreened, punctation less sparse, lacking golden setae in punctures or setation poorly defined

- 12 Pronotum dull, dark, abdomen dull, unicolorous, dark brown or even black; glandular hairs reddish-brown, trichomes on tergite V weakly developed, antennae when directed behind exceeding apex of elytra, antennal segment 3 more than 1.55 times as long as antennal segment 2, abdominal tergite V lacking macrosetae

..... **bordonii**

- Pronotum lighter, shining, abdomen shining, bicolored, abdominal tergites V, VI and base of abdominal tergite VII darker than the others which are light brown; glandular hairs golden, trichomes on tergite V very well developed, antennae not reaching the apex of elytra when directed behind, antennal segment 3 less than 1.5 times as long as antennal segment 2, abdominal tergites V with one to two macroseta

..... **paradoxa**

ANNOTATED CATALOGUE OF *LOMECHUSA*

GROUP *EMARGINATA*:

Species of this group are well characterized by having the pronotum strongly extended posteriorly, ratio APW/BPW less than 0.85, posterior pronotal angles always longer and sharp.

1. <i>Lomechusa emarginata</i> (Paykull, 1789)	Europe
2. <i>Lomechusa dvoraki</i> new species	Tadjikistan
3. <i>Lomechusa kishimotoi</i> new species	China: Sichuan
4. <i>Lomechusa malaisei</i> (Scheerpeltz, 1965)	Myanmar
5. <i>Lomechusa sinuata</i> (Sharp, 1888)	Japan
6. <i>Lomechusa stangei</i> (Reitter, 1910)	Uzbekistan

GROUP *PARADOXA*:

Species of this group do not have the pronotum extended posteriorly, the sides are parallel or slightly excavated, ratio APW/BPW equal or more than 0.9, posterior pronotal angles short and round.

7. *Lomechusa paradoxa* Gravenhorst, 1806 Europe Caucasus
= *sicula* (Rottenberg, 1870)
8. *Lomechusa atlantica* (Koch, 1937) Morocco
9. *Lomechusa bifoveolata* Brisout de Barneville, 1860 Spain, France
10. *Lomechusa bordonii* new species Italy: Sicily
11. *Lomechusa pubicollis* Brisout de Barneville, 1860 Europe
= *pratensoides* (Wasmann, 1904)
12. *Lomechusa yunnanensis* new species. China: Yunnan

GROUP BARBARAE:

This group is monospecific with antennal segments 4-10 elongate and oval. The posterolateral projections of the elytra are absent and the pronotum has a very unique shape

13. *Lomechusa barbarae* (Schilow, 1977) eastern Russia,
Mongolia, China

SPECIES DESCRIPTIONS

Group *emarginata*:

Lomechusa emarginata (Paykull)
(Figs. 1-17, 29, Plate 2A)

Staphylinus emarginatus Paykull 1789: 56.

Ateomes emarginatus (Paykull): Kraatz 1856-1858: 117; Thomson 1860: 243; Wasmann 1886: 50; Wasmann 1887: 98, 103; Ganglbauer 1895: 112; Wasmann 1896: 64; Wasmann 1896: 253; Reitter, 1909: 41; Wasmann, 1915: 385; Freude, Harde & Lohse, 1973: 228; Schilow, 1977: 324.

Lomechusa emarginata (Paykull): Erichson 1839: 204

Ateomes emarginatus var. *angulicollis* Wasmann 1887: 104. synonymy in Smetana, 2004: 456

Ateomes emarginatus var. *foveicollis* Wasmann 1887: 104. synonymy in Smetana, 2004: 456

Ateomes emarginatus var. *hirticollis* Wasmann 1887: 105. synonymy in Smetana, 2004: 456

Ateomes emarginatus var. *nigricollis* Kraatz 1856: 8. synonymy in Smetana, 2004: 456

Ateomes emarginatus var. *recticollis* Wasmann, 1887: 104. synonymy in Smetana 2004: 456

Type locality:

Presumably in Sweden (based on the title of the work) or also in France. In Paykull (1789) the full text under "Locus" is: "Rarissime occurrit, nec nisi unicum in boleti inveni; e Gallia mihi a Dom. D'Antic missus."

Type material studied

1 ex, SYNTYPE of *L. emarginata* var. *recticollis* Wasmann, labelled as follows: (h) illegible text / (h) red ink, var. *recticollis* Wasm. / (p) D.E.I. coll. Von Heyden / *Lomechusa emarginata* Paykull, P. Hlaváč det., 2004. DEI. 1 ex, SYNTYPE of *L. emarginata* var. *nigricollis* Kraatz, labelled as follows: (h) Svinemunde / (h) var. ?, *nigricollis*, mihi, Svinemunde / (p) red label, TYPUS / (p) coll. Kraatz / (p) coll. DEI, Eberswalde / *Lomechusa emarginata* Paykull, P. Hlaváč det., 2004. DEI. 1 ex, SYNTYPE of *L. emarginata* var. *foveicollis* Wasmann, labelled as follows: (h) *nigricollis* Krtz, Mombach. Im „illegible text", = S. Kraatz vid. / (h) yellow label, 1237 / (h) red ink, var. *foveicollis* Wasm. / (h) Mombach b/Mainz (p) leg.: Heyden / (p) DEI, coll. von Heyden / *Lomechusa emarginata* Paykull, P. Hlaváč det., 2004. DEI. 1 ex, SYNTYPE of *L. emarginata* var. *hirticollis* Wasmann, labelled as follows: (h) *nigricollis* Krtz, ? „Ahrweil Fuss" / (h) red ink, var. *hirticollis* Wasm. / (p) D.E.I. coll. von Heyden / *Lomechusa emarginata* Paykull, P. Hlaváč det., 2004. DEI.

Other material studied

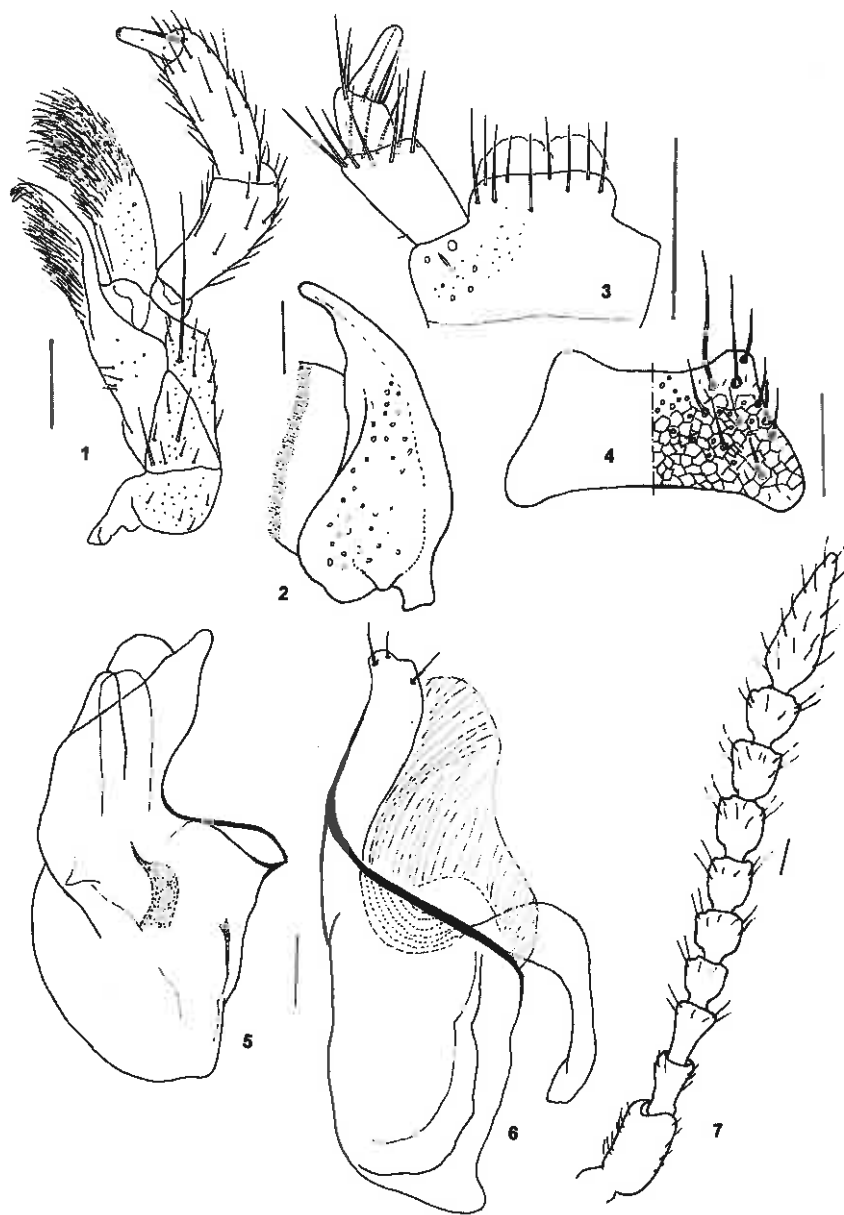
Many specimens from the following localities: France, Switzerland, Germany, Sweden, Czech Republic, Austria, Slovakia, Russia, Ukraine, Serbia

Description:

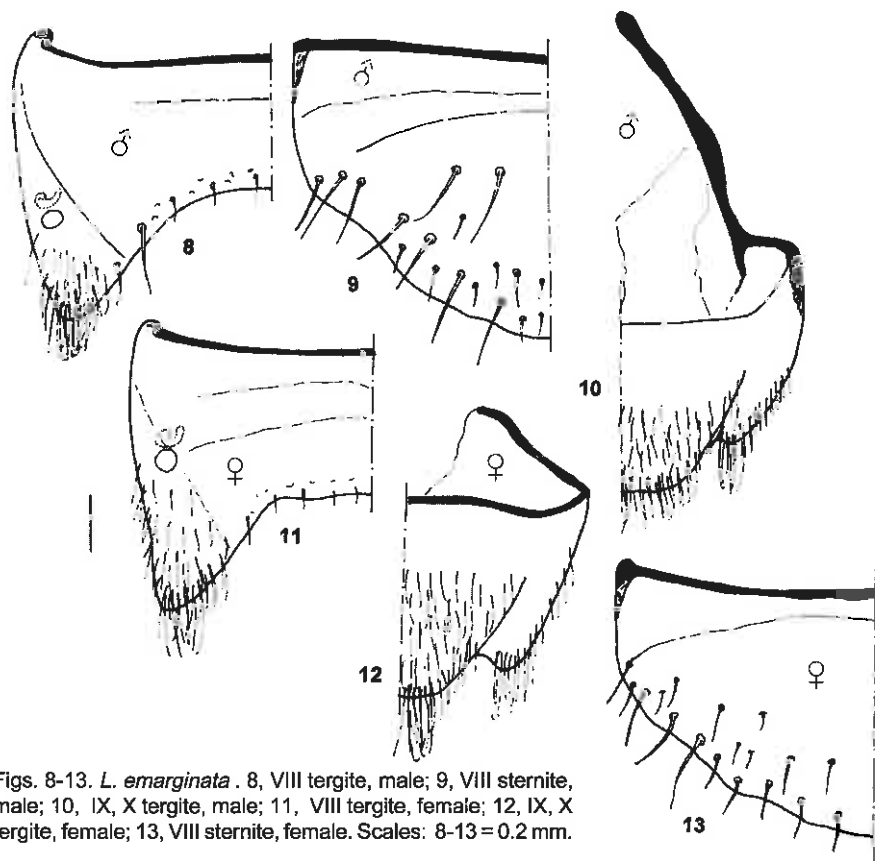
Body very variable in color, from light to dark reddish-brown. Head and pronotum darker than the elytra, all dull and shagreened. Tergites yellowish-brown, shining. Length 3.2-4.5 mm. Maximum width of the elytra 1.34-1.38 mm. Head with a shallow depression between the eyes, eyes larger, protuberant laterally, the diameter of eyes about as long as the length of temples, which are straight and convergent.

Antennae long, reaching the apex of elytra when directed behind. Scape less than twice as long as wide and more than twice as long as the pedicel. Segments 4-10 are elongate, truncate at the apex. Segment 3 is longer, more than 1.5 times as long as pedicel. The terminal segment is variable in length, about 0.39-0.44 mm long, as long or slightly shorter and thinner than segments 8-10 combined.

Basal margin of the pronotum straight, slightly wider than the head, lateral margins strongly extended posteriorly at the base, with well



Figs. 1-7. *L. emarginata*. 1, Maxilla; 2, Right mandible; 3, Labium; 4, Mentum; 5, Aedeagus, lateral aspect; 6, Left paramera; 7, Antennae. Scales: 1, 3 = 0.1 mm; 2, 4-7 = 0.2 mm.



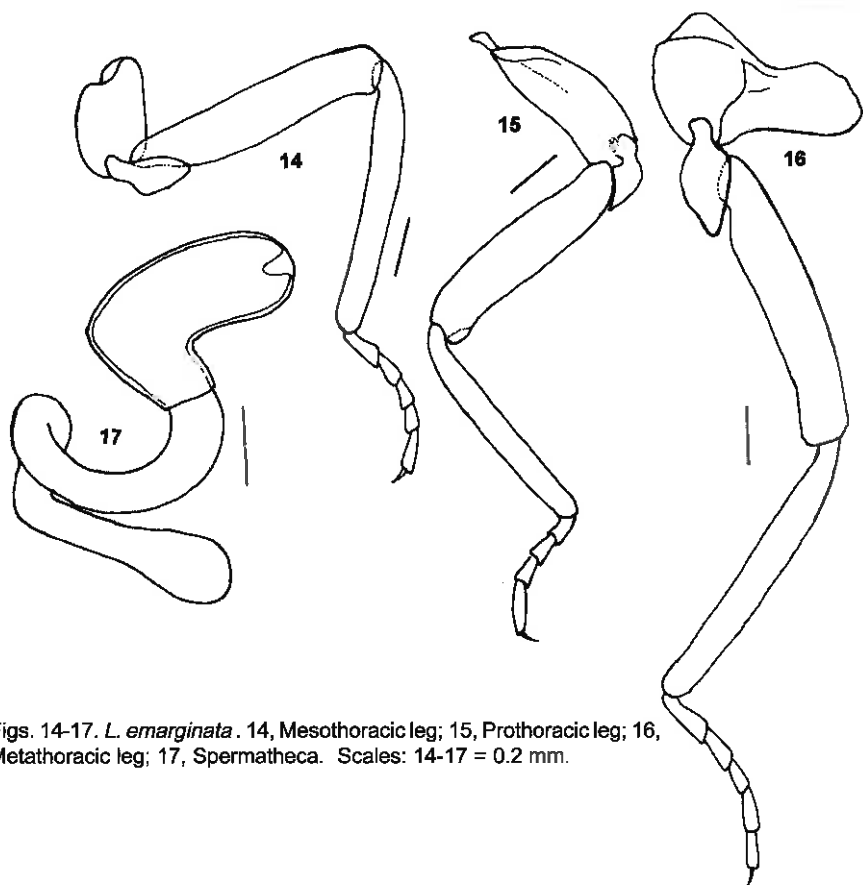
Figs. 8-13. *L. emarginata*. 8, VIII tergite, male; 9, VIII sternite, male; 10, IX, X tergite, male; 11, VIII tergite, female; 12, IX, X tergite, female; 13, VIII sternite, female. Scales: 8-13 = 0.2 mm.

developed lateral excavations. Hind corners long and acute. Disk of the pronotum slightly convex, shallow, lateral depressions joined. Ratios: $APW/BPW = 0.76-0.80$; $MWE/BPW = 0.93-1.0$.

Elytra with fine pubescence which extends weakly to the apex. the width is greatest in the apical third, at the suture they are slightly shorter than the pronotum. The posterolateral projection is well developed.

Abdominal tergites III-V with transverse, convex basal margins. Tergite VII with a transverse apical groove. Tergites II-V with trichomes. The trichomes on tergite V are well developed. Golden pubescence on the first abdominal tergite absent. Chaetotaxy of tergites III-V: 9, 5, 3.

The aedeagus and the spermatheca are shaped as in Figs. 5, 6, 17.



Figs. 14-17. *L. emarginata*. 14, Mesothoracic leg; 15, Prothoracic leg; 16, Metathoracic leg; 17, Spermatheca. Scales: 14-17 = 0.2 mm.

Host ants:

Summer host: *Formica fusca* Fabricius, *Formica cineræ* Mayr, *Formica sanguinea* Latreille; winter host: *Myrmica scabrinodis* Nylander, *Myrmica laevinodis* Nylander, *Myrmica ruginodis* Nylander, *Myrmica sulcinodis* Nylander, *Myrmica rugulosa* Nylander, *Myrmica rubra* L., *Myrmica schencki* Viereck (Grebennikov, pers. comm.).

Differential diagnosis:

L. emarginata is separated from all other species of the *emarginata* group by having abdominal tergites III with a transverse, convex basal margin and by the macrosetation. It is most closely related to *L. dvoraki* and *L. stangei*. It differs from both by the absence of protuberant eyes, and the presence of concave temples and a terminal antennal segment

as thick as segment 10.

Distribution:

Eurasia

***Lomechusa dvoraki* new species**

(Figs.18-22, Plate 2D)

Lomechusa stangei Reitter: Dvořák 1984: 191 [misidentification]

Type locality:

Tadjikistan, Romit, Hissar

Type material studied:

HOLOTYPE, 1F: (p) USSR, Tadjikistan, Romit, Hissar, 2000m, 25.4-3.5.1981, M. Hrabovský lgt. / host ant / (h) *Formica cunicularia*, (p) P. Werner det. 1982 / (p) *Lomechusa stangei* Reitter, det. M. Dvořák, 82 / (p) HOLOTYPE (h) *Lomechusa dvoraki* sp. nov. (p) P.Hlaváč det., 2004. (CMD). PARATYPE, 1M: the same data as holotype / host ant / (p) PARATYPE (h) *Lomechusa dvoraki* sp. nov. (p) P.Hlaváč det., 2004. (CPH); 1F: (p) USSR — Tajikistan, Hissar Mt. Takob, 2000m, Boháč lgt. / (p) PARATYPE (h) *Lomechusa dvoraki* sp. nov. (p) P.Hlaváč det., 2004. (CJB).

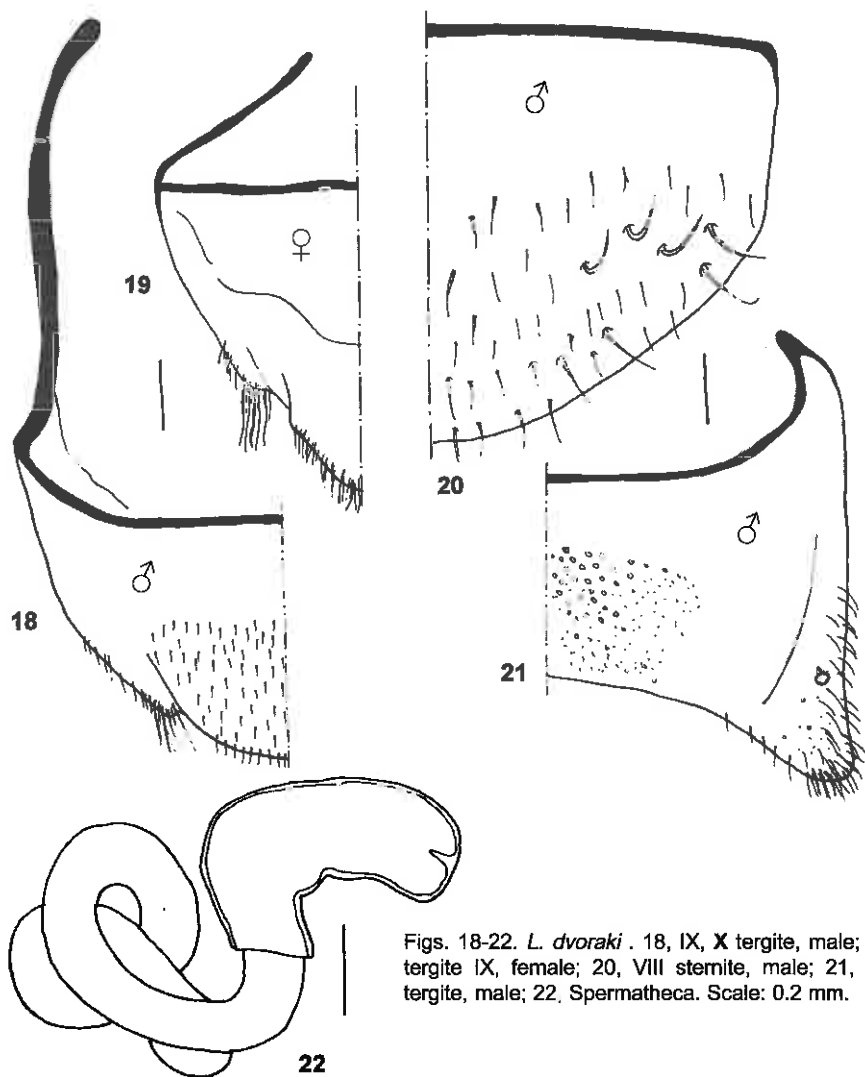
Description:

Body light brown, head and base of abdominal tergites dark brown. Head and pronotum dull and shagreened. Abdomen shining. Length about 4.3 mm, maximum width of the elytra about 1.45 mm. Head with a shallow depression between eyes, eyes larger, protuberant laterally, diameter of eyes slightly shorter than the length of the temples, which are straight and convergent.

Antennae longer, reaching the apex of elytra when directed behind. Scape less than twice as long as wide and about twice as long as the pedicel. Segments 4-10 elongate and truncate at the apex. Segment 3 shorter, less than 1.5 times as long as the pedicel. Terminal segment about 0.34 mm long, distinctly shorter and as thick as segments 8-10 combined.

Basal margin of the pronotum straight, slightly wider than the head. Lateral margin slightly extended posteriorly, with lateral excavations. Hind corners short, and acute. Disk of the pronotum very slightly convex, almost flat, lateral depressions divided into a deep apical depression and a shallow basal depression. Ratios: APW/BPW = 0.84 – 0.87; MWE/BPW = 1.08-1.11.

Elytra with fine pubescence, extending weakly to the apex. Elytra



Figs. 18-22. *L. dvoraki*. 18, IX, X tergite, male; 19, tergite IX, female; 20, VIII sternite, male; 21, VIII tergite, male; 22, Spermatheca. Scale: 0.2 mm.

widest in the apical third, at the suture they are slightly shorter than the pronotum. The posterolateral projection is well developed.

Abdominal tergites III-V simple. Tergite VII with a transverse apical groove. Tergites II-V with trichomes. The trichomes on tergite V are well developed. Golden pubescence on the first tergites absent. Chaetotaxy on tergites III-V absent.

Spermatheca shaped as in Fig. 22. The aedeagus of the only known

male specimen is damaged and the apical lobe is broken.

Host ant:

Formica cunicularia Latreille (determined by P. Werner, 1982).

Etymology:

The species is named after Miroslav Dvořák, Prague for his contributions to our knowledge of myrmecophilous Aleocharinae.

Differential diagnosis:

L. dvoraki is distinguished from all other species of the *emarginata* group by totally lacking macrosetae on abdominal tergites II-V.

Distribution:

Tadjikistan

***Lomechusa kishimotoi* new species**

(Figs. 23-24, Plate 2C)

Type locality:

China, Sichuan, Baoxing

Material studied:

HOLOTYPE, 1F: (p) [CHINA: SICHUAN], Baoxing, Yaoqi Xiang, Mahuanggou (2650m), 2.x.1997, Toshio Kishimoto leg. / (p) HOLOTYPE (h) *Lomechusa kishimotoi* sp. nov. (p) P. Hlaváč det., 2004. (NSMT).

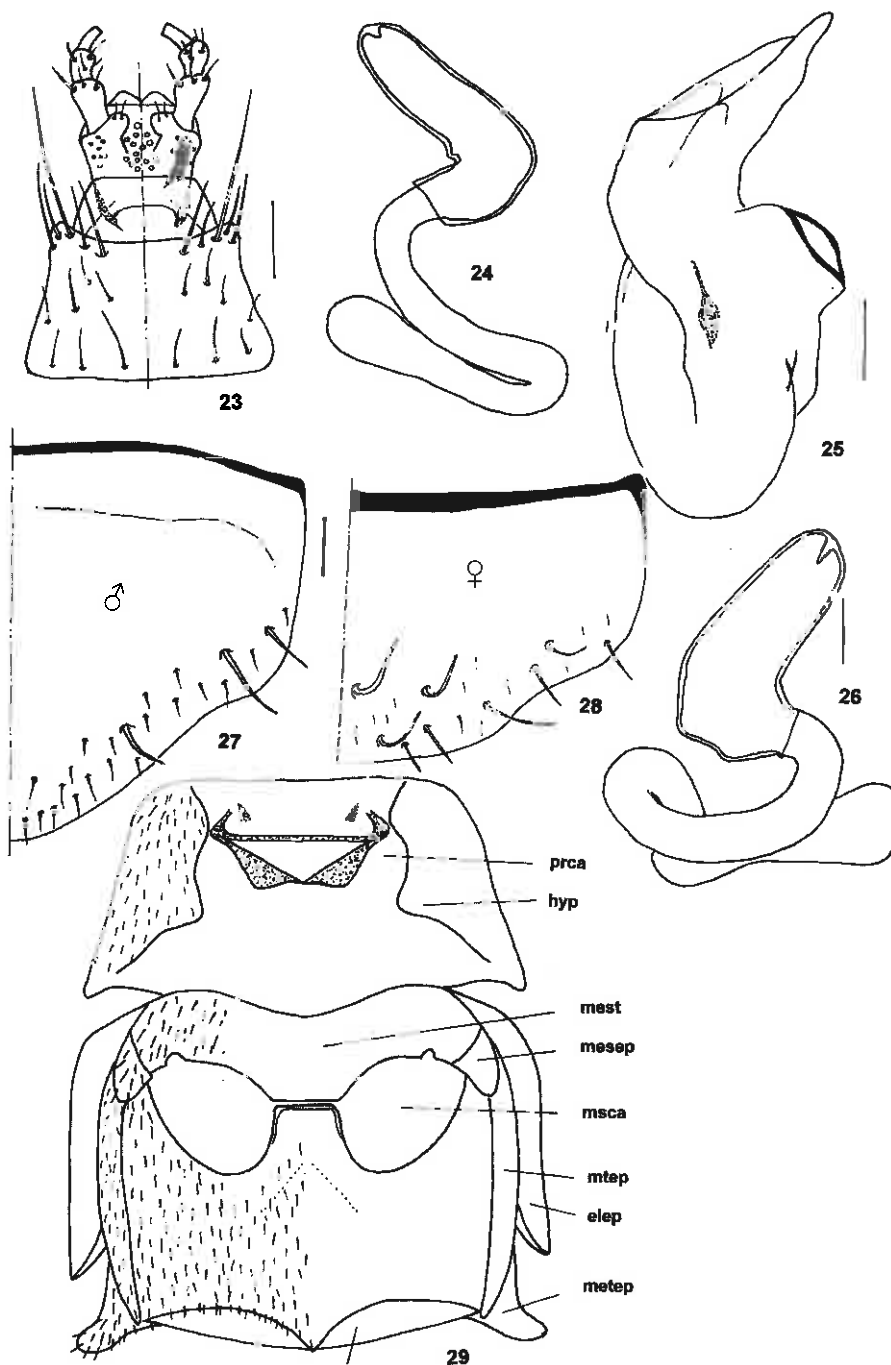
Description:

Body dark blackish, head dull, pronotum and elytra finely punctured and shining. Tergites also shining, reddish-brown, base of tergites darker. Length about 5.1 mm. Maximum width of the elytra 1.6 mm. Head with a triangular depression between the eyes. Eyes small, slightly protuberant laterally, the diameter of the eyes smaller than the length of the temples, which are straight and convergent. Mentum (Fig. 23) long, slightly narrowed anteriorly, apical corners with 5 long setae.

Antennae shorter not reaching the apex of elytra when directed behind. Scape less than twice as long as wide and about twice as long as the pedicel, segments 4-10 elongate and truncate at the apex. Segment 3 shorter, less than 1.5 times as long as the pedicel. The terminal segment is about 0.34 mm long, distinctly shorter and thinner than segments 8-10 combined.

Basal margin of the pronotum deeply concave, about as wide as the head, lateral margins concave. Hind corners short and obtuse. Disk of the pronotum flat, lateral depressions joined. Ratios: APW/BPW = 0.43; MWE/BPW = 0.97.

Elytra with fine pubescence, extending weakly to the apex, as long as



the pronotum at suture. Posterolateral projection well developed.

Abdominal tergites simple, tergite VII lacking a transverse apical groove. Tergites II-V with trichomes, trichomes on tergite V weakly developed. Golden pubescence on the first tergite absent. Chaetotaxy of tergites III-V: 1-2, 0, 0.

Spermatheca shaped as in Fig. 24. Male unknown.

Host ant:

Unknown

Etymology:

The species is named after the collector, Toshio Kishimoto, from Japan.

Differential diagnosis:

L. kishimotoi is distinguished from all other species of the *emarginata* group by having the apical margin of pronotum as wide as the head and deeply excavated. Also distinguished by the long elytra which are longer at the suture than the pronotum and by the weakly developed trichomes on the abdominal tergite V.

Distribution:

China: Sichuan

***Lomechusa malaisei* (Scheerpeltz) new combination**

(Figs. 66-71, Plate 2B)

Pterygatemelas malaisei Scheerpeltz 1965: 363.

Type locality:

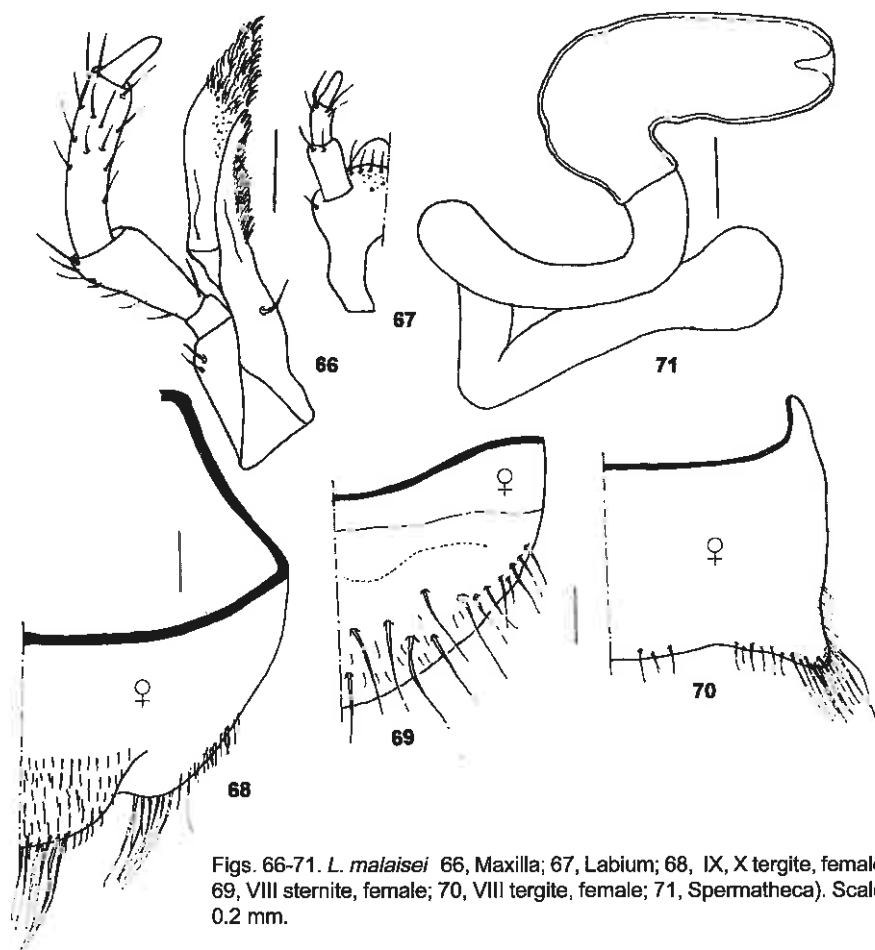
NE Myanmar, Kambaiti

Type material studied

PARATYPE, 1M: (p) N.E. Burma, Kambaiti, 7000ft, (h) 1/5 1934, (p) R. Malaise / (p) Schwedische Indien-Barma Expedition 1934 / (p) blue label ex. Coll. Scheerpeltz / (h) red label *Malaisei* Schp. / (p) red label COTYPUS (h) *Pterygatemelas Malaisei* (p) O. Scheerpeltz / (p) PARATYPE, *Lomechusa malaisei*, (Scheerpeltz, 1965), P. Hlaváč det., 2004. NMW.

Note:

Figs. 23-24. *L. kishimotoi*. 23 Mentum & labium; 24, Spermatheca). Figs. 25-28. *L. sinuata*. 25, Aedeagus, lateral aspect; 26, Spermatheca; 27, VIII sternite, male; 28, VIII sternite, female). Scale: 0.2 mm. Fig. 29. *L. emarginata*. 29, Pronotum and meso, metathorax, ventral aspect. prca - procoxal cavity, hyp - hypomerion, mest - mesosternum, mesep - mesepimeron, msca - mesocoxal cavity, mtep - metepisternum, elep - elytral epipleuron, metep - metepimeron, mtca - metacoxal cavity). Scale: 0.5 mm)



Figs. 66-71. *L. malaisei* 66, Maxilla; 67, Labium; 68, IX, X tergite, female; 69, VIII sternite, female; 70, VIII tergite, female; 71, Spermatheca). Scale: 0.2 mm.

The Holotype of this species should be deposited in Swedish Museum of Natural History in Stockholm, Sweden but it was not available for this study.

Description:

Body shining reddish-brown, pronotum and head black, base of tergites IV-VI also darker, almost black. Length about 6.1 mm. Maximum width of the elytra 1.63 mm. Head with a rather deep depression between the eyes with a small hump in the middle. Eyes strongly protuberant. Temples concave, parallel and about twice as long as the

diameter of the eyes.

Antennae long, almost reaching the apex of elytra when directed behind. Scape twice as long as wide and twice as long as the pedicel. Segment 3 about 1.5 times as long as the pedicel. Terminal segment about 0.48 mm long, shorter and narrower than segments 8-10 combined.

Base of the pronotum straight, only slightly wider than the head, strongly expanded basally. Hind corners extraordinarily long and acute. Four depressions are well developed, the lateral ones oblique and largest, the apical depressions triangular, all meeting in the middle of the disk Ratios: APW/BPW = 0.36; MWE/BPW = 1.16.

Elytra about 1.18 times shorter at the suture than the pronotum. Posterolateral projections well developed.

Abdominal tergites dull. Tergites III-V with transverse, concave basal margins, tergite VII lacking a transverse groove. Tergites II-V with trichomes, the trichome on tergite V well developed. Golden pubescence on the first tergite absent. Chaetotaxy on tergites III-V absent.

Spermatheca shaped as in Fig. 71. Male unknown.

Host ant:

unknown

Differential diagnosis:

L. malaisiae is distinguished from all other species of the *emarginata* group by the shining surface of the pronotum. Because the apical pronotal margin is only slightly wider than the head, it is similar to *L. kishimotoi* from which it differs by the different shape of the pronotum and the well developed trichomes on abdominal tergite V.

Distribution:

North-eastern Myanmar

Lomechusa sinuata (Sharp)
(Figs. 25-28)

Atemeles sinuatus Sharp 1888: 288

Atemeles sinuatus, Wasmann 1896: 254

Lomechusa sinuata, Smetana 2004: 456

Type locality:

Japan, Chiuzenji

Material examined:

1M: (p) Kamitakeri, Maruseppu T., Hokkaido, Japan, 1.5.1999, Y. Kida leg. (CPH); 1F: the same data but collected on 26.iv.1999, (CPH).

Note:

The species was described from a single specimen collected on 21.VIII.1881 in the company of a *Myrmica* ant (Sharp 1888). As this is a well known, endemic, and relatively common species from the Japanese islands, I thought that the examination of the holotype was not necessary.

Description:

Body reddish-brown, last tergites and head darker. Head bicolored, anterior third darker, reddish-brown, basal two-thirds brown. Pronotum and elytra shining, maxillary palpi, antennae and legs the same color as the elytra. Length about 4.0 mm. Maximal width of the elytra about 1.4 mm. Head with a shallow depression between the eyes. Eyes smaller, slightly protuberant laterally. Diameter of the eyes shorter than the length of the temples, which are concave and convergent.

Antennae longer, reaching the apex of elytra when directed behind. Scape twice as long as wide and more than twice as long as the pedicel. Segment 3 longer, more than 1.55 times as long as the pedicel. Segments 4-10 elongate, truncate at the apex. Terminal segment about 0.31-0.33 mm long, distinctly shorter and as thick as segments 8-10 combined.

Basal margin of pronotum straight, wider than head, lateral margins strongly concave, hind corners short, acute. Disk of the pronotum with two separated depressions, lateral depressions deep in the shape of circles. Ratios: APW/BPW = 0.87-0.88; MWE/BPW = 1.00-1.05.

Elytra with fine pubescence, slightly extending to the apex. Elytra longer than the pronotum at the suture. Posterolateral projection well defined.

Abdominal tergites simple, tergite VII lacking a transverse groove. Tergites II-V with trichomes. The trichomes on tergite V are well developed. Golden pubescence on the first tergites present. Chaetotaxy of tergites III-V: 2, 1-2, 1-2.

The aedeagus and spermatheca are shaped as in Figs. 25, 26.

Host ant:

Formica japonica Motschulsky; *Myrmica* ssp.

Differential diagnosis:

L. sinuata is distinguished from all other species of the *emarginata* group by having a bicolored head. From *L. emarginata* it differs in its simple, flat abdominal tergites III-V; from *L. dvoraki*, *kishimotoi* and *L. stangei* in the longer antennal segment 3 which is more than 1.55 times

as long as antennal segment 2.

Distribution:

Japan: Hokkaido, Honshu, Kyushu

Lomechusa stangei (Reitter)

(Fig. 32, Plate 3C)

Atemeles Stangei Reitter, 1910: 50.

Atemeles stangei, Schilow 1977: 325, Figs. 2, 11

"*Atemeles stangei* Reitter": Dvořák 1984: 191 [misidentification, *Lomechusa dvoraki* new species].

Lomechusa stangei, Hlaváč & Lakota 2000: 163, Figs. 1, 2.

Type locality:

Uzbekistan: Ferghana: Marghelan = Marghilon.

Type material studied:

LECTOTYPE, 1F: (p) Ferghana, Marghelan / (h) *Atemeles stangei* m. 1909 / Coll. Stange / coll. Reitter / / (p) HOLOTYPE (h) *Atemeles stangei* Reitter / red label (p) LECTOTYPE (h) *Lomechusa stangei* Reitter, (p) P. Hlaváč design., 2000, (HNHM). PARALECTOTYPE, 1F: (h) Ferghana, Marghelan / (p) coll. Reitter / (p) PARATYPE (h) *Atemeles stangei* Reitter / red label (p) PARALECTOTYPE *Lomechusa stangei* Reitter, P. Hlaváč design., 2000, (HNHM).

Description:

Body unicolorous light, reddish-brown. Length about 4.6 mm. Maximal width of the elytra about 1.55 mm. Head with a shallow depression between the eyes. Eyes smaller, slightly protuberant laterally, the diameter of the eyes about the same as the length of the temples, which are straight and convergent.

Antennae longer, exceeding the apex of elytra when directed behind. Scape more than twice as long as pedicel, segment 3 shorter, less than 1.5 times as long as pedicel. Segments 4-10 elongate, truncate at the apex. Terminal segment about 0.47 mm long, slightly longer and as broad as segments 8-10 combined.

Basal margin of the pronotum straight, wider than the head, lateral margin strongly concave. Hind corners long and acute. Disk of the pronotum slightly convex, lateral depressions large, joined. Ratios: APW/BPW = 0.78; MWE/BPW = 1.0.

Elytra smooth with fine pubescence weakly extending to the apex. Elytra very short, at the suture 1.5 times shorter than the pronotum. Posterolateral projection well defined.

Abdominal tergites simple, tergite VII lacking a transverse groove.

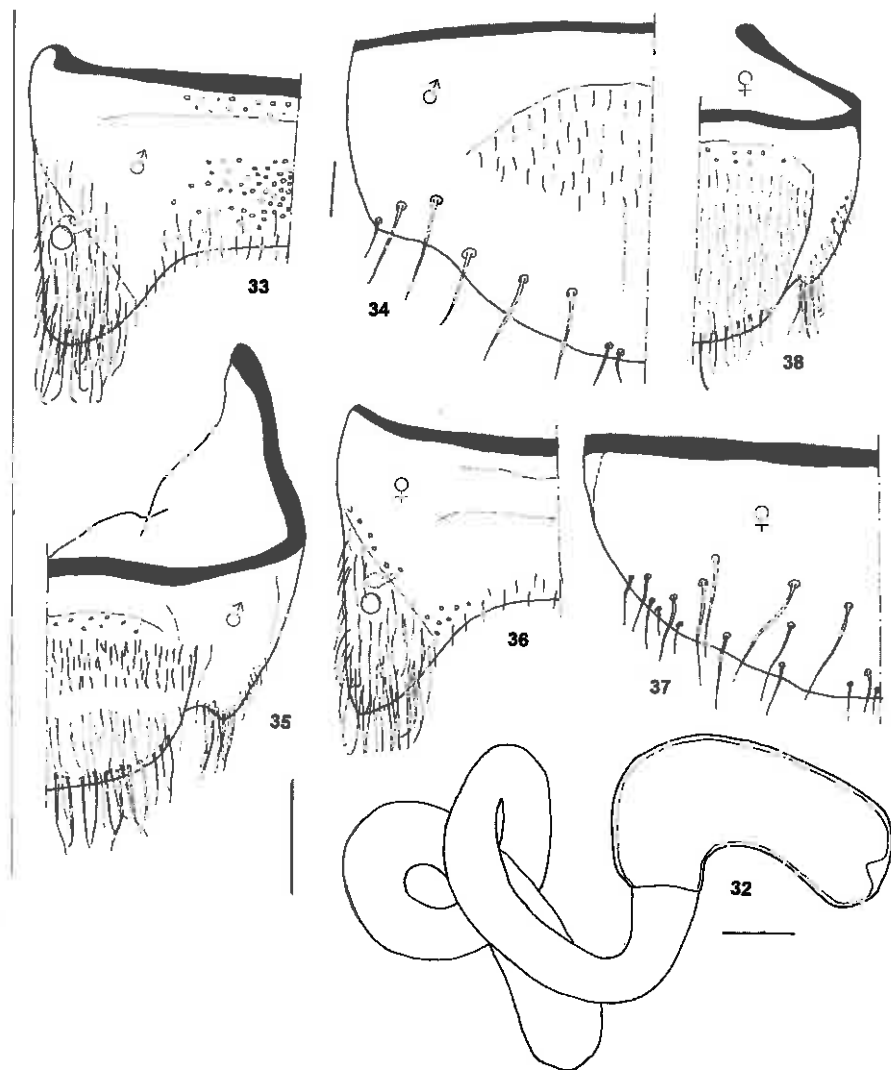


Fig. 32. *L. stangei* (32 – spermatheca). Scale: 0.2 mm. Figs. 33-37. *L. paradoxa*. 33, VIII tergite, male; 34, VIII sternite, male; 35, IX, X tergite, male; 36, VIII tergite, female; 37, VIII sternite, female. 38, IX, X tergite, female; Scale: 0.2 mm.

Tergites II-V with trichomes. The trichomes on tergite V are well developed. Golden pubescence on first tergite present, Chaetotaxy of tergites III-V: 2, 2, ?.

Spermatheca shaped as in Fig. 32. Male unknown.

Host ant:*Myrmica* sp.**Differential diagnosis:**

L. stangei is distinguished from all other species of the *emarginata* group by having the terminal antennal segment as long as 3 previous ones together and by the dull surface of all visible abdominal tergites.

Distribution:

Uzbekistan

Group *paradoxa*:

Lomechusa paradoxa Gravenhorst
(Figs. 33-41, Plate 3A)

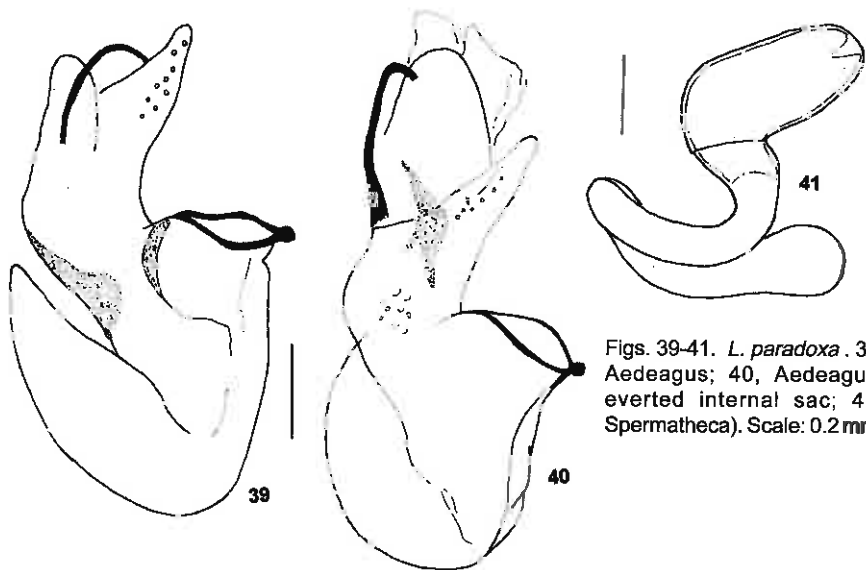
Lomechusa paradoxa Gravenhorst 1806: 180

Atemeles paradoxus, Kraatz 1856: 116; Thomson 1860: 243; Wasmann 1887: 98; Wasmann 1894: 64; Ganglbauer 1895: 113; Reitter 1909: 41; Wasmann 1915: 385; Freude, Harde & Lohse 1973: 229; Schilow 1977: 326, Figs. 5, 9, 14.

Lomechusa paradoxa, Erichson 1839: 203.

Atemeles paradoxus var. *siculus* Rottenberg, 1870: 24. **New Synonym**

Atemeles paradoxus var. *acuticollis* Wasmann, 1887: 102. syn-



Figs. 39-41. *L. paradoxa*. 39, Aedeagus; 40, Aedeagus, everted internal sac; 41, Spermatheca). Scale: 0.2 mm.

onymy by Smetana 2004: 456

Atemeles paradoxus var. *laticollis* Wasmann, 1887: 101. synonymy by Smetana 2004: 456

Atemeles paradoxus var. *nigricans* Wasmann, 1906: 3. synonymy by Smetana 2004: 456

Atemeles paradoxus var. *obsoleticollis* Wasmann, 1887: 102. synonymy by Smetana 2004: 456

Atemeles paradoxus var. *picicollis* Wasmann, 1894: 205. synonymy by Smetana 2004: 456

Atemeles paradoxus var. *plicicollis* Wasmann: Freude, Harde & Lohse 1973: 229 (misspelling).

Atemeles paradoxus var. *rhombicollis* Wasmann, 1888: 266, 273. synonymy by Smetana 2004: 456

Remark:

Atemeles siculus was unknown to Wasmann when he revised the genus (Wasmann 1887: 103, 106 and Wasmann 1896: 256) and it was not included in his keys; the syntype I have examined has the structure of the pronotum very similar to that of *L. pubicollis*, additionally other characters are also identical (BPW, MWE, chaetotaxy of abdominal tergites III and IV). Therefore I consider it as a synonym of *L. paradoxa*.

Type locality:

"Parisiis" [Paris, France].

Type material studied:

SYNTYPE of *Atemeles paradoxa* var. *acuticollis* Wasmann: (h) 1505 / (p) Frankfurt, leg.: Heyden / (p) DEI, coll. von Heyden / (red ink, h) var. *acuticollis* Wasm. / (p) *Lomechusa paradoxa* Gravenhorst, P. Hlaváč det., 2004, (DEI); 2 SYNTYPES of *Atemeles paradoxa* var. *obsoleticollis* Wasmann: (h) Gausalgesheim. / (p) DEI, coll. von Heyden / (red ink, h) var. *obsoleticollis* Wasm. / (p) *Lomechusa paradoxa* Gravenhorst, P. Hlaváč det., 2004, (DEI); SYNTYPE of *Atemeles siculus* Rottenberg: (p) Catania, Rottenberg / (h) *Atemeles siculus* Rott. / (p) red label SYNTYPUS / (p) coll. DEI Eberswalde / (p) *Lomechusa paradoxa* (Rottenberg), P. Hlaváč det., 2004. DEI.

Other material:

Many specimens from the following localities: Germany, Czech Republik, Austria, Slovakia, Russia, Turkey

Description:

Body light brown, head from light brown to black, sometimes bicolored, with dense microsculpture and with very sparse, fine golden

pubescence. Abdomen shiny, tergites V, VI and base of VII darker. Body length about 3.7-4.3 mm. Maximum width of the elytra 1.35-1.47 mm. Head with a shallow depression and small carina between the antennal prominences. Eyes moderate in size, slightly protuberant laterally. Diameter of the eyes about as long as the length of temples, which are slightly concave and convergent.

Antennae shorter, not reaching the apex of elytra when directed behind. Scape about 1.8 times as long as wide and slightly more than twice as long as the pedicel, segment III shorter, less than 1.5 times as long as the pedicel. Terminal segment about 0.31 mm long, distinctly shorter and as thick as segments 8-10 combined.

Basal margin of the pronotum straight, slightly wider than the head. Lateral margins parallel, with a large shallow excavation. Basal corners short and obtuse. Disk slightly convex, with large lateral depressions. Pronotum very densely shagreened, punctuation closer, lacking golden setae in punctures or chaetotaxy poorly defined. Ratios: APW/BPW = 0.91-0.98; MWE/BPW = 1.10-1.13.

Elytra with fine pubescence, weakly extending to apex. Elytra widest at the apex, at the suture slightly shorter than the pronotum, with a very shallow lateral excavation mid-length, Posterolateral projections well developed.

Abdominal tergites with the basal margins simple. Tergite VII lacking a transverse groove. Tergites II-V with trichomes. Trichomes on tergite V well developed. Chaetotaxy of tergites III-V: 3-5, 2-4, 1-2.

The aedeagus and spermatheca are shaped as in Figs. 39, 40, 41.

Host ants:

Summer host: *Formica rufibarbis* Fabricius; Winter host: *Myrmica ruginodis*; *Myrmica laevinodis* Nylander; *Myrmica scabrinodis* Nylander; *Myrmica rugulosa* Nylander, *Myrmica rubra* L.

Differential diagnosis:

L. paradoxa is distinguished from all other species of the *paradoxa* group by having a bicolored head. It is closely related to the larger species of the group, *L. pubicollis* and *L. bordonii*. It differs from *L. pubicollis* in the different macrochaetotaxy of abdominal tergites II-V and in the shorter antennae. It differs from *L. bordonii* in having a longer antennal segment 3 which is more than 1.55 times as long as antennal segment 2. It also differs from *L. bordonii* in the dull surfaces of the visible abdominal tergites and the well developed trichomes on abdominal tergite V.

Distribution:

Europe, Turkey, Caucasus

Lomechusa atlantica (Koch)
(Figs. 42-47, Plate 1A)

Atemeles atlanticus Koch, 1937: 30

Lomechusa atlantica, Smetana 2004: 456

Type locality:

Morocco, Grand Atlas, Tachdirt

Type material studied:

LECTOTYPE (here designated): (p) Tachdirt, Alto Atl. 25.3.1935, R. e C. Koch / red label (h) Holotypus / (p) Museo Civico di Storia Naturale MILANO / (h) *Atemeles atlanticus* Koch (p) det. C. Koch, (MCSNM); PARALECTOTYPES: the same locality as lectotype, 6 ex in MCSNM, 3 ex in NMB.

Note:

The species was described from 25 specimens from the same locality as stated in the original description. Because the holotype was not fixed by Koch, all these specimens are considered as syntypes. To fix the identity of this species a lectotype is designated here.

Other material:

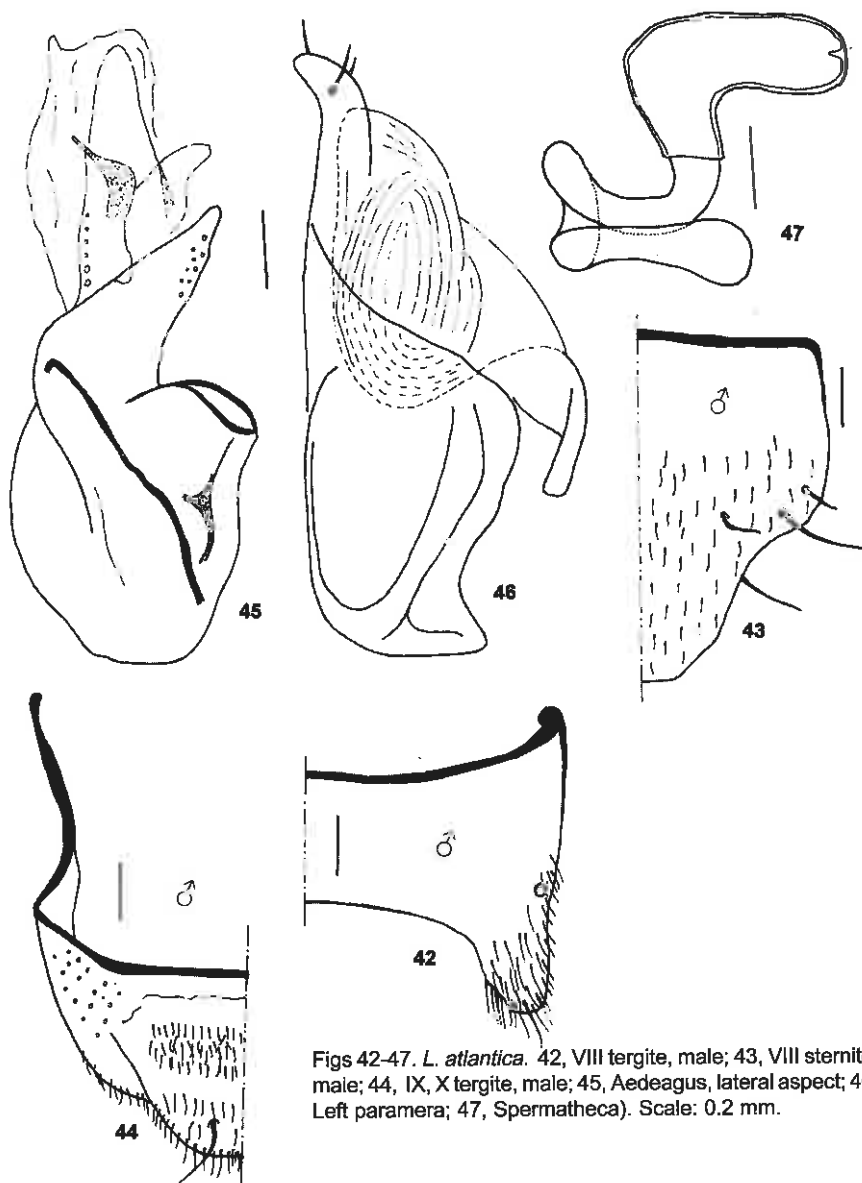
1F: (p) Maroc, Massif du Jebel Masker, Col d'Inouzane, 2250 m, Ex collection . A. Hollande, (CMT) ; 2 ex: (p) Hoher Atlas, Oukaïmeden, lg. H. Franz, (CVA, CPH)

Description:

Body reddish-brown, head black, pronotum and elytra dull, abdominal tergite IX and maxillary palpi yellower. Length 3.2-3.5 mm. Maximum width of elytra 1.25-1.35 mm. Head with a shallow depression between eyes. Eyes large, protuberant laterally, diameter of the eyes slightly shorter than the length of the temples, which are straight and convergent.

Antennae long, reaching the apex of elytra when directed behind. Scape about twice as long as the pedicel. Segment 3 shorter, less than 1.5 times as long as pedicel. Segments 4-10 elongate and truncate at the apex; terminal segment about 0.35 mm long, distinctly shorter than but as thick as segments 8-10 combined.

Base of pronotum straight, distinctly wider than the head. Lateral margins straight, with only shallow lateral excavations. Hind corners short, acute. Disk of pronotum slightly convex, lateral depressions



Figs 42-47. *L. atlantica*. 42, VIII tergite, male; 43, VIII sternite, male; 44, IX, X tergite, male; 45, Aedeagus, lateral aspect; 46, Left paramera; 47, Spermatheca). Scale: 0.2 mm.

separated and well developed, basal depressions absent. Ratios: APW/BPW = 0.91-0.96; MWE/BPW = 1.09-1.17.

Elytra with fine pubescence, extending to the apex; widest in the apical fourth, at the suture slightly shorter than the pronotum, with

very shallow lateral excavations mid-length. Posterolateral projections well defined.

Abdominal tergites with the basal margin simple. Tergite VII lacking a transverse groove. Tergites II-V with trichomes. The trichomes on tergite V well developed. Golden pubescence present on the first tergites. Chaetotaxy of tergites III-V: 1, 1, 0.

The aedeagus and the spermatheca are shaped as in Figs. 45, 46, 47.

Host ant:

Lasius flavus myops Forel; *Myrmica* sp.

Differential diagnosis:

L. atlantica is very closely related to *L. bifoveolata* in size and general appearance but differs in having flat, not protuberant eyes, longer antennae which when directed behind, exceeds the base of the elytra, a longer antennal segment 3 which is more than 1.55 times as long as antennal segment 2, and by the presence of macrosetae on the abdominal tergites II-V.

Distribution:

Morocco

Lomechusa bifoveolata Brisout de Barneville
(Figs.48, 49, Plate 1C)

Lomechusa bifoveolata Brisout de Barneville, 1860: 345

Atemeles bifoveolatus Brisout de Barneville: Wasmann, 1887: 103

Type locality:

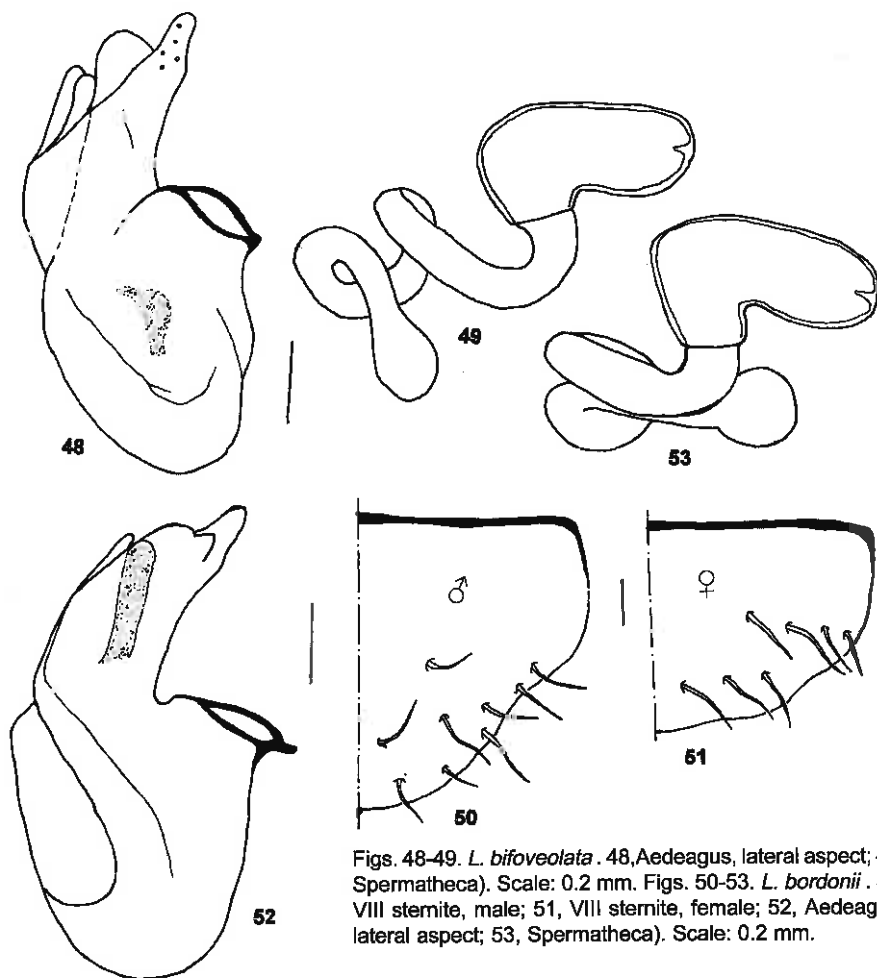
unknown

Type material studied:

SYNTYPE (?): (h) illegible word, *bifoveolata* / (p) *bifoveolata* Bris. illegible word / (p) Coll. Kraatz / (p) red label Syntypus / (p) coll. DEI, Eberwalde / (h) *bifoveolata* Bris. / (p) *Lomechusa bifoveolata* Brisout, P. Hlaváč det., 2003, (DEI);

Other material:

1M, 1F: (h) Banyuls, P.O. v.08 / (p) M. Cameron. Bequest. B.M. 1955-147 / one with determination label (h) *Atemeles bifoveolatus* Bris. (p) J. Jarrige det., (NHM); 1M, 1F: (p) France (Pyrénées - Orientales, Banyuls-mer, Ex. Collection A. HOLLANDE, (CPH, CVA); 1ex: (p) ESPAGNE, Gerona, C. Jeanne / (h) Sierra de Tossa de Mar, 20.iv.1962 / (p) Coll. J. Ochs in Coll. M. Curti, MHNG - 1991, (MHNG).



Figs. 48-49. *L. bifoveolata*. 48, Aedeagus, lateral aspect; 49, Spermatheca). Scale: 0.2 mm. Figs. 50-53. *L. bordonii*. 50, VIII sternite, male; 51, VIII sternite, female; 52, Aedeagus, lateral aspect; 53, Spermatheca). Scale: 0.2 mm.

Note:

The Collection of Brisout de Barneville is deposited in MNHN, *Lomechusini* are in the box number 41, but during my inspection neither type nor other specimens of *Lomechusa bifoveolata* were present.

Description:

Body from light to dark reddish-brown, head darker, head, pronotum and elytra dull; tergum IX and maxillary palpi lighter. Length about 3.8 mm, maximal width of the elytra 1.30-1.35 mm. Head with a shallow

depression between the eyes. Eyes small, not protuberant laterally. The diameter of the eyes about as long as the length of temples, which are straight and convergent.

Antennae shorter, not reaching the apex of elytra when directed behind. Scape twice as long as wide and more than twice as long as the pedicel. Segment 3 longer, more than 1.5 times as long as the pedicel. Segments 4-10 elongate, truncate at apex, terminal segment about 1.3 mm long, distinctly shorter and as thick as segments 8-10 combined.

Base of pronotum straight, distinctly wider than the head. Lateral margins slightly extended, with lateral excavations. Hind corners short, obtuse. Disk of pronotum slightly convex, lateral and basal depressions well defined. Ratios: APW/BPW = 0.92-0.98; MWE/BPW = 1.13-1.16.

Elytra with fine pubescence, slightly extending to apex. Elytra widest in the apical third, at the sutures slightly shorter than pronotum, with a very shallow lateral excavation in the middle of the length. Posterolateral projection well defined.

Abdominal tergites with the basal margin simple. Tergite VII lacking a transverse groove. Tergites II-V with trichomes. The trichomes on tergite V are well developed. Golden pubescence present on the first tergites. Chaetotaxy on tergites III-V absent.

The aedeagus and the spermatheca are shaped as in Figs. 48, 49.

Host ant:

The specimen from Spain was pinned together with an ant of the genus *Lasius*. This could be first record of *Lomechusa* living with *Lasius*.

Differential diagnosis:

L. bifoveolata is separated from all other species of the *paradoxa* group by the total absence of macrosetae on the abdominal tergites II-V. It is very closely related to *L. atlantica* in size and general appearance but has protuberant eyes, shorter antennae (which only reach the base of the elytra when directed behind) and a shorter antennal segment 3 which is less than 1.55 times as long as antennal segment 2.

Distribution:

Spain, France

***Lomechusa bordonii* new species**

(Figs. 50-53, Plate 1D)

Type locality:

Italy, Sicily, Etna mountains, Rosso hill

Type material studied:

HOLOTYPE, M: (p) Italy, Etna, Mt. Rosso, 1756 m, 10.x.1992 / (p) HOLOTYPE, (h) *Lomechusa bordonii* sp. nov., (p) P.Hlaváč det., 2004. (CAB). PARATYPES (1M, 3F): the same data as holotype, (CAB, CPH, CMM)

Description:

Body dark brown, elytra lighter, pronotum black, dull with lateral margins brown. Head black, with dense microsculpture and with sparse, fine golden pubescence. Abdomen dull, with dense punctation, all segments black-brown with only the base of tergite VIII lighter. Body length about 3.7 – 3.9 mm. Maximal width of the elytra 1.3-1.4 mm. Head with a shallow depression between the eyes. Eyes moderate in size, not very protuberant laterally. Diameter of the eyes about as long as the length of the temples, which are slightly concave and convergent.

Antennae long, almost reaching the apex of elytra when directed behind. Scape about 1.6 times as long as wide and twice as long as the pedicel. Segment 3 longer, more than 1.5 times as long as the pedicel. Segments 4-10 elongate, truncate at the apex. Terminal segment about 0.31 mm long, distinctly shorter than and as thick as segments 8-10 combined.

Base of pronotum straight, much wider than the head. Lateral margins slightly extended, with only shallow lateral excavations. Hind corners short. Disk of pronotum slightly convex, the two antero-lateral depressions well defined, basal depression absent. Ratios: APW/BPW = 0.91-0.99; MWE/BPW = 1.06-1.19..

Elytra with fine pubescence, extending weakly to the apex. The width is greatest in the apical quarter. Elytra slightly shorter than the pronotum at the suture, with a very shallow lateral excavation in the middle. Posterolateral projections well developed.

Abdominal tergites III-V with a transverse, concave basal margin. Tergite VII lacking a transverse groove. Tergites II-V with trichomes. The trichome on tergite V weakly developed. Golden pubescence present on the first tergites. Chaetotaxy of tergites III-V: 1-2, 1-2, 0

The aedeagus and the spermatheca are shaped as in Figs. 52, 53.

Host ant:

unknown

Etymology:

The name is patronymic, named after my friend Arnaldo Bordon who provided this species for study.

Differential diagnosis:

L. bordonii is distinguished from all other species of the *paradoxa* group by the weakly defined trichomes on the abdominal tergite V and by abdominal tergites III-V having a transverse, concave basal margin.

Distribution:

Italy

Lomechusa pubicollis Brisout
(Figs. 54-58, Plate 3B)

Lomechusa pubicollis Brisout 1860: 346.

Atemeles pubicollis Brisout: Wasmann 1887: 98; Wasmann 1896: 254; Ganglbauer 1895: 113; Reitter 1909: 41; Wasmann 1915: 384; Freude Harde & Lohse 1973: 229; Schilow 1977: 326.

Atemeles excisa Thomson 1871: 371; Wasmann 1887: 103; synonymy in Wasmann 1894: 284.

Atemeles pubicollis var. *excisa* Thomson 1871: 371; Wasmann 1894: 63. synonymy in Smetana 2004: 456

Atemeles pubicollis var. *foreli* Wasmann 1892: 351. synonymy in Smetana 2004: 456

Atemeles pubicollis var. *flexicollis* Wasmann 1887: 101. synonymy in Smetana 2004: 456

Atemeles pubicollis var. *truncicoloides* Wasmann 1911: 270; Wasmann 1915: 385. synonymy in Smetana 2004: 456

Atemeles pratensoides Wasmann 1904: 10. **New Synonym**

Atemeles paradoxus var. *major* Kraatz 1858: 117, synonymy in Wasmann 1887: 99

Atemeles inflatus Kraatz 1861: 412, synonymy in Wasmann, 1887: 99, not *Lomechusa inflata* Zetterstadt, 1828: 95

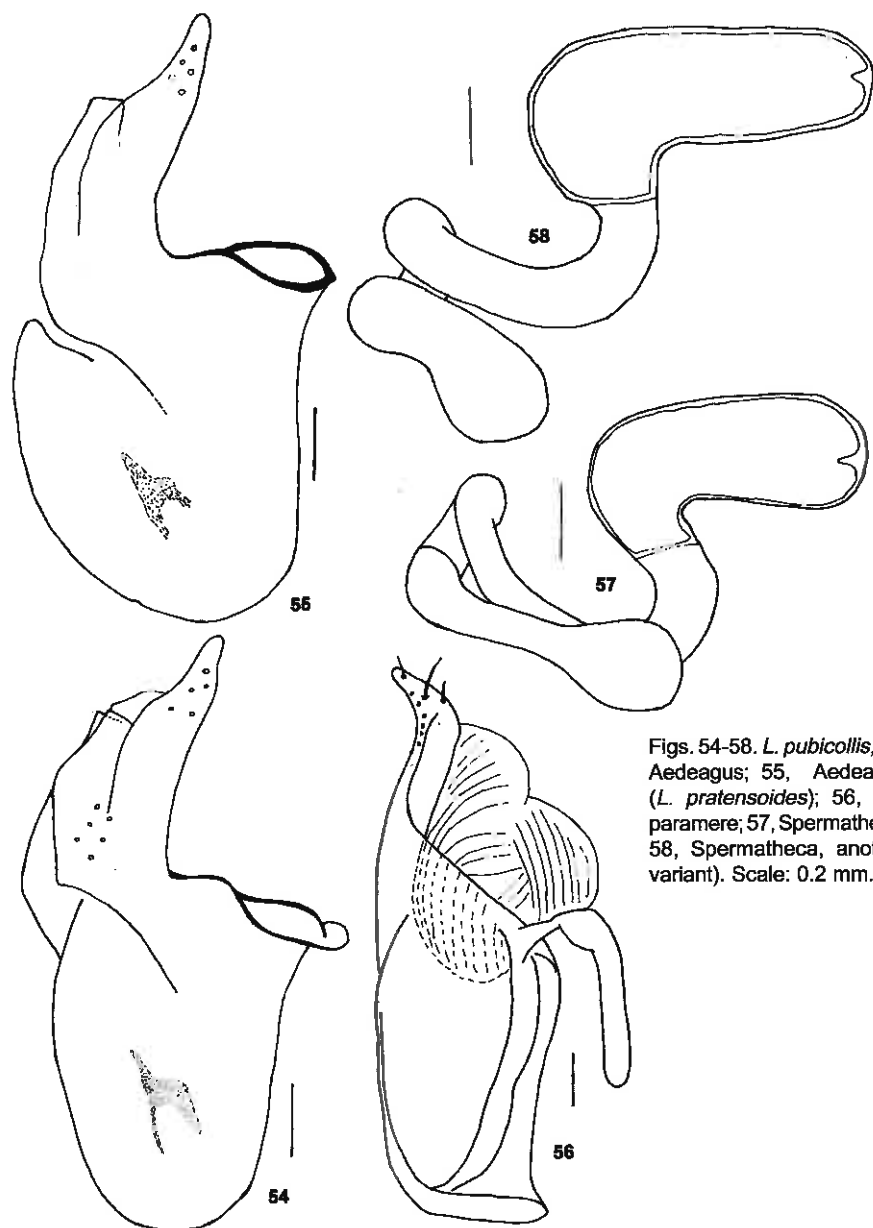
Type locality:

Sicily, Catania

Type material studied:

SYNTYPE of *Atemeles pratensoides* Wasmann: 1M: (h) 5/03 Luxemburg, b. *F. pratensis* / (h) *Atemeles pratensoides* Wasm. / (p) M. Cameron, Bequest, B.M. 1955-147 / (p) red label: COTYPE / *Lomechusa pubicollis* Brisout, P. Hlaváč det., 2003, (NHM); SYNTYPE of *Atemeles pratensoides* Wasmann: (p) Luxemburg, Wasmann / (h) 5/03, Luxemburg, b. *F. pratensis* / (h) P. E. Hosmann donavit / blue label ex coll. Scheerpeltz / (h) red ink *Atemeles pratensoides* Wasm Cotype / red label (p) COTYPUS (h) *Atemeles pratensoides* Wasmann / *Lomechusa pubicollis* Brisout, P. Hlaváč det., 2004, (NMW). SYNTYPE of *Atemeles*

pubicollis var. *truncicoloides* Wasmann: (p) Lippspringge Wasmann / (h) b. *F. truncicola* 8/09 / (h) *Atemeles pubicollis* subsp. *truncicoloides* Wasm / (red ink, h) var. *truncicoloides* Wasmann / (h) Wasmann ded.



Figs. 54-58. *L. pubicollis*, 54, Aedeagus; 55, Aedeagus (*L. pratensis*); 56, Left paramere; 57, Spermatheca; 58, Spermatheca, another variant). Scale: 0.2 mm.

/ (p) D.E.I. coll. von Heyden / (p) *Lomechusa pubicollis* Brisout, P. Hlaváč det., 2004, (DEI); SYNTYPE of *Atemeles pubicollis* var. *truncicoloides* Wasmann: (p) Lippasprunge Wasmann / (h) b. *F. truncicola* 8/09 / (red ink, h) *At. pubicollis truncicoloides* Wasm, Cotype / (red label, p) SYNTYPUS / (p) coll. DEI Eberswalde / (p) *Lomechusa pubicollis* Brisout, P. Hlaváč det., 2004, (DEI); SYNTYPE of *Atemeles pubicollis* var. *flexicollis* Wasmann: (h) hardly visible text abrweiler Fuss / (red ink, h) var. *flaxicollis* Wasm. / (p) (p) D.E.I. coll. von Heyden / (p) *Lomechusa pubicollis* Brisout, P. Hlaváč det., 2004, (DEI).

Other material:

Many specimens from the following localities: Germany, Czech Republic, Austria, Slovakia.

Description:

Body dark brown. Head black, with dense microsculpture and with very sparse, fine golden pubescence. Abdomen shiny, tergites V and VI and the base of VII darker, almost black. Body length about 4.5-5.0 mm. Maximum width of elytra 1.62-1.72 mm. Head with a shallow depression and small carina between the antennal prominences. Eyes moderate in size, slightly protuberant laterally. Diameter of the eyes about as long as the length of temples, which are slightly concave and convergent.

Antennae reaching the apex of elytra when directed behind. Scape about 1.8 times as long as wide and slightly more than twice as long as the pedicel. Segment 3 shorter, less than 1.5 times longer than 2. Terminal segment about 0.34 mm long, distinctly shorter than segments 8-10 combined.

Base of pronotum straight, slightly wider than the head. Lateral margins parallel, with a large and shallow excavation, hind angles short and obtuse. Disk slightly convex, with large, hole-like depressions near the anterior corners. Pronotum shagreened with very sparse and distinct punctation visible mainly on the disk, giving the appearance of double punctation. Distinct punctures with golden setae. Ratios: APW/BPW = 0.92-0.96; MWE/BPW = 1.08-1.13.

Elytra with fine microsculpture and pubescence, extending weakly to the apex. Elytra widest at the apex, at the suture slightly shorter than the pronotum, with very shallow lateral excavation in the middle. Posterolateral projections well developed.

Abdominal tergites with the basal margin simple. Tergite VII lacking a transverse groove. Tergites II-V with trichomes. Trichomes on tergite V well developed. Chaetotaxy of tergites III-V: 7-12, 5-9, 2-4.

The aedeagus and the spermatheca are shaped as in Figs. 54-58.

Host ants:

Summer hosts: *Formica rufa* Linné, *Formica truncicola* Nylander, *Formica pratensis* Retrius. Winter hosts: *Myrmica laevinodis*, *Myrmica ruginodis*, *Myrmica sulcinodis*, *Myrmica rubra*.

Differential diagnosis:

L. pubicollis is separated from all other species of the *paradoxa* group by the large number of macrosetae on the abdominal tergites III-V. In general appearance it is very also closely related to *L. paradoxa* but it is larger and has shorter antennae (which only reach the base of elytra when directed behind).

Distribution:

Europe, Caucasus

***Lomechusa yunnanensis* new species**

(Figs. 59-61, Plate 4)

Type locality:

China, northern Yunnan, Dali Bai Nat.

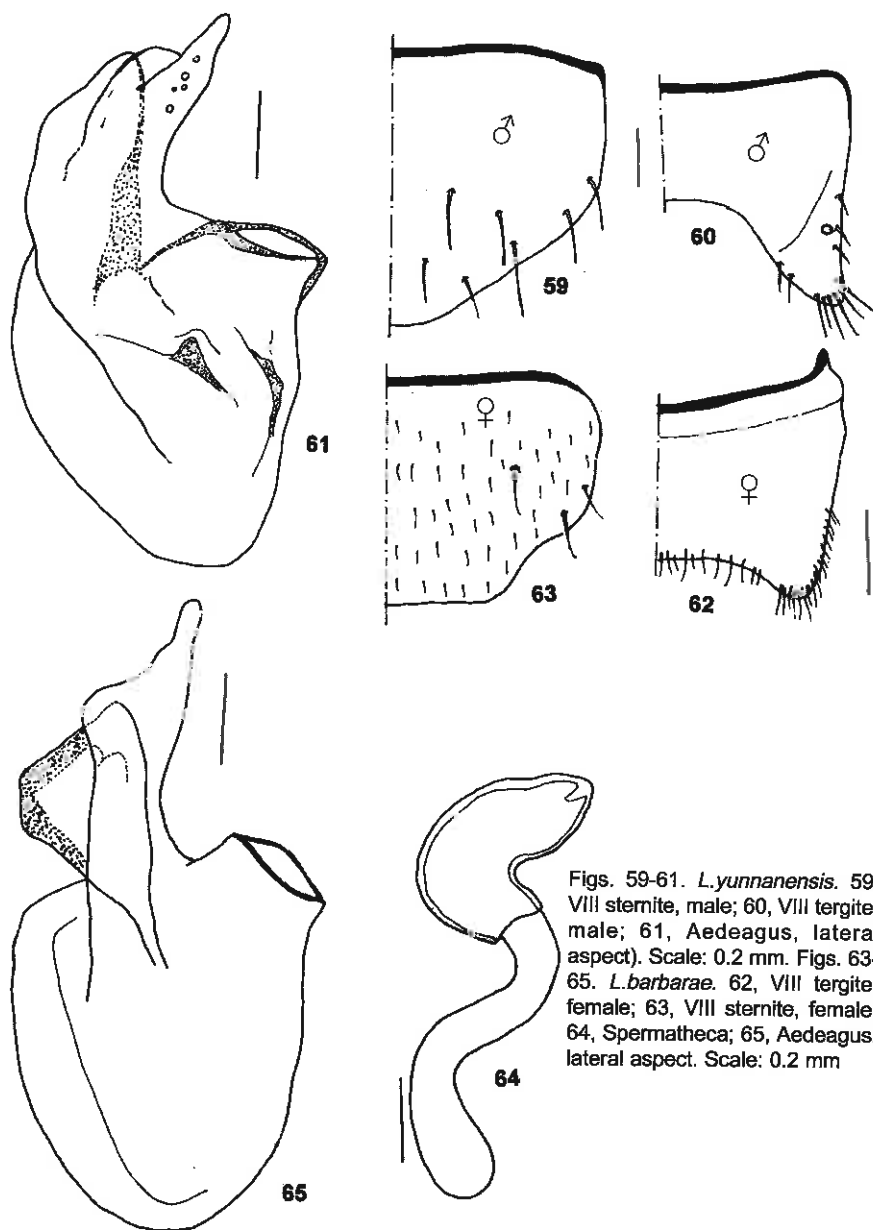
Type material studied:

HOLOTYPE, 1M: (p) CHINA (N-Yunnan) Dali Bai Nat., Aut. Pref., Diancang Shan, 4 km W Dali old town, 2900-3000m, 25°41,4'N/100°06,7'E, E slope, former stone pit (under stones), 31.VIII.2003 Wrase [20] / (p) HOST ANT: (h) *Myrmica* sp. (p) P. Hlaváč det., 2003 / (p) HOLOTYPE (h) *Lomechusa yunnanensis* sp. nov. (p) P. Hlaváč det., 2003. CMS.

Description:

Body light-brown, pronotum reddish-brown, head black, head, pronotum and elytra dull; tergites shining, III-V reddish-brown, VI-VII black. Length approximately 4.6 mm. Maximum width of elytra 1.7 mm. Head with a shallow depression between eyes. Eyes large, protuberant laterally, diameter of the eyes about 0.7 times of the length of temples, which are slightly convex and convergent.

Antennae short, not reaching the apex of elytra when directed behind. Scape twice as long as wide and twice as long as the pedicel. Segment 3 shorter, less than 1.5 times as long as pedicel. Segments 4-10 elongate and truncate at the apex. Terminal segment as wide as segments 8-10 but about 0.31 mm. shorter than and as thick as 9-10 combined.



Figs. 59-61. *L. yunnanensis*. 59. VIII sternite, male; 60, VIII tergite, male; 61, Aedeagus, lateral aspect). Scale: 0.2 mm. Figs. 63-65. *L. barbarae*. 62, VIII tergite, female; 63, VIII sternite, female; 64, Spermatheca; 65, Aedeagus, lateral aspect. Scale: 0.2 mm

Base of pronotum straight, distinctly wider than the head, lateral margins with shallow lateral excavations. Hind angles short and

obtuse. Disk of the pronotum slightly convex, lateral depressions well developed, deep, basal depressions absent. Ratios: APW/BPW = 0.95; BPW/LP = 0.95; MWE/BPW = 1.20; LP/LPP = 4.90.

Elytra with fine pubescence, extending weakly to the apex. Longer than pronotum at the suture. Posterolateral projection well developed.

Abdominal tergites with basal margin simple. Tergite VII lacking a transverse groove. Tergites II-V with trichomes, the trichome on tergite V well developed. Golden pubescence present on the first tergites. Chaetotaxy of tergites III-V: 2, 2, 0

Legs slender, each femur stouter than each tibia.

The aedeagus shaped as in Fig. 61. Female unknown.

Host ant:

Unknown

Etymology:

The species name means, from the Chinese province of Yunnan.

Differential diagnosis:

L. yunnanensis is distinguished from all other species of the *paradoxa* group by having large eyes, their diameter at least 1.5 times as long as the temples and by a scape with the same length as the terminal antennal segment.

Distribution:

China, northern Yunnan. Known only from the type locality.

Group *emarginata*

Lomechusa barbarae (Schilow)
(Figs. 62-65, Plate 1B)

Atemeles barbarae Schilow, 1977: 323.

Lomechusa barbarae, Smetana 2004: 456

Type locality:

Russia: Buryatskiy Avtonomnyj Okrug, Ulan-Ude (=Верхнеудинск) (Verchneudinsk)

Type material studied:

HOLOTYPE, 1M: (h) Верхнеудинск, (Verchneudinsk), 17.vii.33 / (h) *Atemeles emarginatus* Pay. / red label (p) Holotypus (h) *Atemeles barbarae* sp. nov., W. Schilow des. 976 / (p) HOLOTYPE, *Lomechusa barbarae*, (Schilow, 1977), P. Hlaváč det., 2004. (ZIN).

Other material:

1F: (h) 1828 / (p) N. CHINA: P.M.Hammond. B.M. 1967-215 / (p)

Heilungjiang, Harbin, (h) x.64, (p) P.M.Hammond / (h) *Atemeles barbarae* (p) W. Schilow det. (h) 1981, (NHM).

Description:

Body light reddish-brown, pronotum and elytra slightly shining; apical tergites slightly darker. Length 4.2-4.4 mm, maximal width of elytra 1.7-1.75 mm. Head with a large depression between eyes. Eyes large, protuberant laterally. Diameter of the eyes slightly shorter than the length of temples, which are strongly concave and convergent.

Antennae shorter, not reaching the apex of elytra when directed behind. Scape twice as long as wide and twice as long as the pedicel. Segment 3 short, only about 1.2 times as long as pedicel. Segments 4-10 elongate, oval. Terminal segment about 0.4 mm long, distinctly shorter than but of the same width as segments 8-10 combined.

Base of the pronotum concave, more than twice as wide as the head. Lateral margin straight, expanded basally, with only small lateral excavations in the basal quarter, hind corners short, obtuse. Disk of the pronotum flat, lateral depressions large and well separated, basal depressions absent. Ratios: APW/BPW = 0.73-0.78; MWE/BPW = 1.17-1.21.

Elytra with fine pubescence, lateral margins arched, widest in the middle. At the suture about 1.3 times shorter than the pronotum. Posterolateral projections totally absent.

Abdominal tergites with the basal margins simple. Tergite VII lacking a transverse groove. Tergites II-V with trichomes, the trichomes on tergite V well developed. Golden pubescence on first tergites present. Chaetotaxy of tergites III-V: 10, 15, 5.

Aedeagus and spermatheca shaped as in Figs. 64, 65.

Host ant:

Unknown

Differential diagnosis:

L. barbarae is a very isolated species within the genus and is easily distinguished from all other species of the genus by the elongate, oval antennal segments IV-X and the absence of posterolateral projections of the elytra. From species of the *paradoxa* group it differs in having large eyes, their diameter at least 1.5 times as long as the temples and in having the scape the same length as the terminal segment.

Distribution:

Russia: Buryatskiy Autonomous Area, Mongolia, China: Heilongjiang (correct spelling of Heilungjiang)

ACKNOWLEDGMENTS

My thanks go to all the people who made available to me the material for this study. They are all listed in the section on institutions and collections in the Materials and Methods above. My special thanks go to Alexey Solodovnikov, Alfred Newton, Jr, Margaret Thayer (all FMNH) and Munetoshi Maruyama (NSMT) for help during this study. I also thank J. Cooter, Hereford for his kind comments and checking the English terminology and F. Čiampor, Bratislava for making the photographs.

REFERENCES

- Bernhauer, M. & O. Scheerpeltz. 1926. Staphylinidae VI. In: Coleopterorum Catalogus, Pars 82. Ed., S. Schenkling. W. Junk, Berlin. pp. 499-988.
- Blackwelder, R. E. 1952. The generic names of the beetle family Staphylinidae, with an essay on genotypy. Bulletin of the United States National Museum 200: iv + 483 pp.
- Brisout de Barneville, C. 1860. Descriptions de quelques Coléoptères nouveaux propres à la faune française et spécialement aux environs de Paris. Annales de la Société Entomologique de France (3) 8: 339-350.
- Dillwyn, L. E. 1829. Memoranda relating to Coleopterous insects, found in the neighborhood of Swansea. W. C. Murray and D. Rees, Swansea. 75 pp. orig. pub.
- Donisthorpe, J. K. 1927. The guests of British ants, their habits and life histories. Routledge and Sons, London, 244 pp.
- Dvořák, M. 1984. Zur Kenntnis einiger myrmekophiler Staphylinidae (Coleoptera). Acta Entomologica Bohemoslovaca 81: 190-203.
- Erichson, W. F. 1839. Genera et species staphylinorum insectorum coleopterorum familiae, pp. viii + 1-400. F. H. Morin, Berlin.
- Fenyés, A. 1920. Coleoptera. Fam. Staphylinidae. Subfam. Aleocharinae. In: P. Wytsman Genera Insectorum fascicles 173A-173B; 1-414.
- Freude, H. & K. W. Harde, & G. A. Lohse 1973. Die Käfer Mitteleuropas, Band 5 Staphylinidae II (Hypocyphtinae und Aleocharinae) Pselaphidae, Goecke & Evers, Krefeld, 381 pp.
- Ganglbauer, L. 1895. Die Käfer von Mitteleuropa. Die Käfer der österreichisch-ungarischen Monarchie, Deutschlands, der Schweiz, sowie des französischen und italienischen Alpengebietes. Vol. 2, Familienreihe Staphylinidea, I. Theil: Staphylinidae, Pselaphidae. Carl Gerold's Sohn, Vienna. vi + 881 pp.
- Gravenhorst, J. L. C. 1806. Monographia Coleopterorum Micropterorum. H. Dieterich, Gottingae [Göttingen]. xvi + 248 pp., 1 pl.
- Hlaváč, P. & J. Lakota. 2000. Lectotype designation and redescription of *Lomechusa stangei* Reitter (Coleoptera: Staphylinidae: Aleocharinae). Entomological Problems 31(2): 163-164.
- Hoebeker, E. R. 1976. A Revision of the genus *Xenodusa* (Staphylinidae, Aleocharinae) for North America. Sociobiology 2(2): 109-143.

- Hölldobler, B. 1967. Die Physiologie der Gast-Wirt-Beziehungen (Myrmecophilie) bei Ameisen. I. Das Gastverhaeltnis der *Atemeles* und *Lomechusa* Larven (Col. Staphylinidae) zu *Formica* (Hym. Formicidae). Zeitschrift für Vergleichende Physiologie 56: 1-21.
- Hölldobler, B. & E. O. Wilson 1990. The Ants. The Belknap Press of Harvard University Press Cambridge, Massachusetts, pp. 723.
- Jordan, K. H. C. 1913. Zur Morphologie und Biologie der Myrmecophilen Gattungen *Lomechusa* und *Atemeles* und einiger Verwandter Formen. Zeitschrift für Wissenschaftliche Zoologie 107(2): 346-386.
- Kistner, D. H., A. Weissflog, K. Rosciśzewski, & U. Maschwitz 1997. New Species, New Genera, and New Records of Myrmecophiles Associated with Army Ants (*Aenictus* sp.) with the Description of a New Subtribe of Staphylinidae (Coleoptera: Formicidae: Aenictinae). Sociobiology 29(2): 123-221.
- Koch, C. 1937. Diagnose préliminaire de quelques nouveaux Staphylinides de France et du Maroc. Revue française d'Entomologie 4: 24-31.
- Kraatz, G. 1856 (1858). Naturgeschichte der Insekten Deutschlands, Abteilung 1, Coleoptera, vol. 2, Staphylinii. Lief. 1-2, pp. i-vii, 1-376. Nicolaische Buchhandlung, Berlin.
- Latreille, P. A. 1810. Considérations Générales sur l'Ordre Naturel des Animaux composant les Classes des Crustacés, des Arachnides, et des Insectes, avec un Tableau Méthodique de leurs Genres disposés en Familles. F. Schoell, Paris. 444 pp.
- Maruyama, M. & P. Hlaváč 2004. Two New Species of *Lomechusoides* (Coleoptera, Staphylinidae, Aleocharinae, Lomechusini) from Sichuan, China. Elytra Tokyo, 32(1): 105-113.
- Montrouzier, 1860. Essai sur la faune entomologique de la Nouvelle-Calédonie (Balade) et des îles des Pins, Art, Lifu, etc. Annales de la Société Entomologique de France (3) 8: 229-308.
- Palm, T. 1949. De nordiska *Lomechusa-arterna* (Col. Staphylinidae). Entomologisk Tidskrift 70 (1): 97-102.
- Paykull, G. 1789. Monographia Staphylinorum Sveciae. J. Edman, Upsaliae [Uppsala]. 8 + 81 pp.
- Reitter, E. 1909. Fauna Germanica. Die Käfer des Deutschen Reiches. Vol. 2. K. G. Lutz, Stuttgart. 392 pp., pls. 41-80.
- Reitter, E. 1910. *Atemeles Stangei* n. sp. Wiener Entomologische Zeitung 29: 50
- Rottenberg, A. 1870. Beiträge zur Coleopteren-Fauna von Sicilien. Berliner Entomologische Zeitschrift 14: 11-40.
- Sawada, K. 1994. New myrmecophilous Coleoptera in Nepal and Japan (Histeridae and Staphylinidae). Contributions from the Biological Laboratory, Kyoto University 28: 357-365.
- Scheerpeltz, O. 1934. Staphylinidae VIII: Supplementum II. In: Coleopterorum Catalogus, Pars 130. Ed., S. Schenkling. W. Junk, Berlin. pp. 1501-1881.
- Scheerpeltz, O. 1965. Wissenschaftliche Ergebnisse der Schwedischen Expedition 1934 nach Indien und Burma. Coleoptera Staphylinidae. Arkiv för Zoologi serie 2, 17(2): 93-371.

- Schilow, W. F. 1977a. Eine neue Art myrmecophiler Käfer aus der Tadshikischen SSR (Coleoptera, Staphylinidae, Aleocharinae). Deutsche Entomologische Zeitschrift 24 (4-5): 371-372.
- Schilow, W. F. 1977b. Taxonomische Bemerkungen über die Kurzflügler der Gattung *Atemeles* aus der UdSSR (Coleoptera, Staphylinidae, Aleocharinae). Reichenbachia 16: 323-326.
- Schilow, W.F. 1981. Die *Lomechusa*-Arten der Sowjetunion und angrenzender Gebiete (Coleoptera: Staphylinidae, Aleocharinae). Reichenbachia 19: 213-223.
- Sharp, D. 1888. The Staphylinidae of Japan. Annals and Magazine of Natural History (6) 2: 277-295
- Smetana, A. 2004. Staphylinidae, pp. 237-698 – In I. Löbl & A. Smetana (editors): Catalogue of Palearctic Coleoptera, Vol. 2. Stenstrup: Appolo Books, 942 pp.
- Stephens, J. F. 1829. A systematic catalogue of British insects: being an attempt to arrange all the hitherto discovered indigenous insects in accordance with their natural affinities. Part 1, Insecta Mandibulata. Baldwin and Cradock, London. xxxiv + 416 pp.
- Stephens, J. F. 1832. Illustrations of British entomology, or a synopsis of indigenous insects, containing their generic and specific distinctions, with an account of their metamorphoses, times of appearance, localities, food, and economy, as far as practicable. Mandibulata, Vol. 5. Baldwin & Cradock, London. pp. 1-240, pls. 24-26.
- Thomson, C. G. 1860. Skandnaviens Coleoptera, synoptiskt bearbetade. Vol. 2. Berlingska Boktryckeriet, Lund. 304 pp.
- Thomson, C. G. 1871. Bidrag till Sveriges Insect-fauna (2). Opuscula Entomologica, 4: 361-397.
- Tottenham, C. E. 1939. Some notes on the nomenclature of the Staphylinidae (Coleoptera). Part 1. Proceedings of the Royal Entomological Society of London (B) 8: 224-226.
- Wasmann, E. 1886. Ueber die Lebensweise einiger Ameisengäste, I. Deutsche Entomologische Zeitschrift 30(1): 49-66.
- Wasmann, E. 1887. Ueber die europäischen *Atemeles*. Deutsche Entomologische Zeitschrift 31(1): 97-107.
- Wasmann, E. 1888. Beiträge zur Lebensweise der Gattungen *Atemeles* und *Lomechusa*. Tijdschrift voor Entomologie, 31: 245-328.
- Wasmann, E. 1892. *Atemeles pubicollis* Bris., Var. *Foreli* n. var. Deutsche Entomologische Zeitschrift 36(2): 351.
- Wasmann, E. 1894. Zur Lebens- und Entwicklungsgeschichte von *Atemeles pubicollis*, mit einem Nachtrag über *Atemeles emarginatus*. Deutsche Entomologische Zeitschrift 38(2): 281-284.
- Wasmann, E. 1896. Revision der *Lomechusa*-Gruppe. Deutsche Entomologische Zeitschrift 40(2): 244-256.
- Wasmann, E. 1897. Zur Biologie der *Lomechusa*-Gruppe. Deutsche Entomologische Zeitschrift 39(2): 275-277.
- Wasmann, E. 1904. Ein neuer *Atemeles* aus Luxemburg. Deutsche Entomologische Zeitschrift 48(1): 9-11.

- Wasmann, E. 1911. Die Anpassungsmerkmale der *Atemeles*, mit einer Uebersicht ueber die mitteleuropäischen Verwandten von „*Atemeles paradoxus* Grav.“ 179. Beitrag zur Kenntniss der Myrmekophilen. 1^{er} Congrès International d'Entomologie 265-272.
- Wasmann, E. 1915. Viviparität und Entwicklung von *Lomechusa* and *Atemeles*. Wiener Entomologische Zeitung 34(8-10): 382-393.
- Westwood, J. O. 1838. Synopsis of the genera of British insects, pp. 1-48. In: (1838-1840) An introduction to the modern classification of insects, founded on the natural habits and corresponding organization of the different families. Vol. 2, xi + 587 + 158 pp. Longman, Orme, Brown, Green and Longmans, London.
- Wheeler, W. M. 1911. Notes on the myrmecophilous beetles of the genus *Xenodusa*, with a description of the larvae of *X. cava* (LeC.). Journal of the New York Entomological Society 19: 163-169.

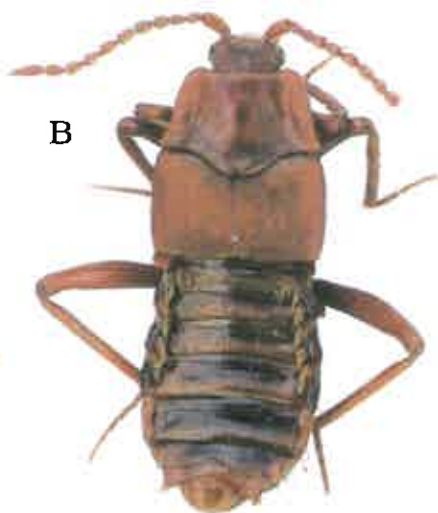


Plate 1. Dorsal view of the entire beetle. A, *Lomechusa atlantica*; B, *L. barbarae*; C, *L. bifoveolata*; D, *L. bordoni*.

A



B



C



D



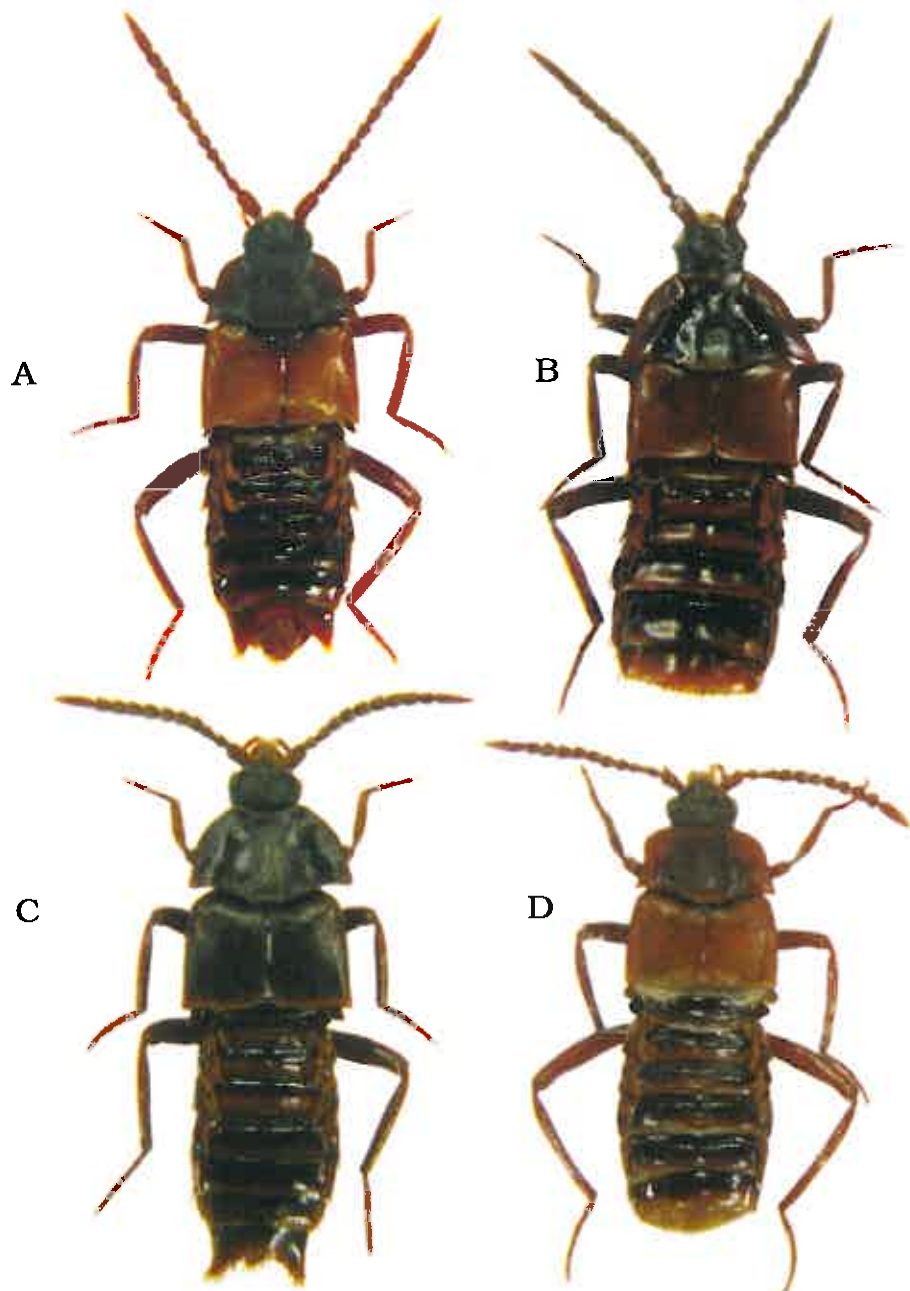


Plate 2. Dorsal view of entire beetle: A, *Lomechusa emarginata*; B, *L. malaisei*; C, *L. kishimotoi*; D, *L. dvoraki*.

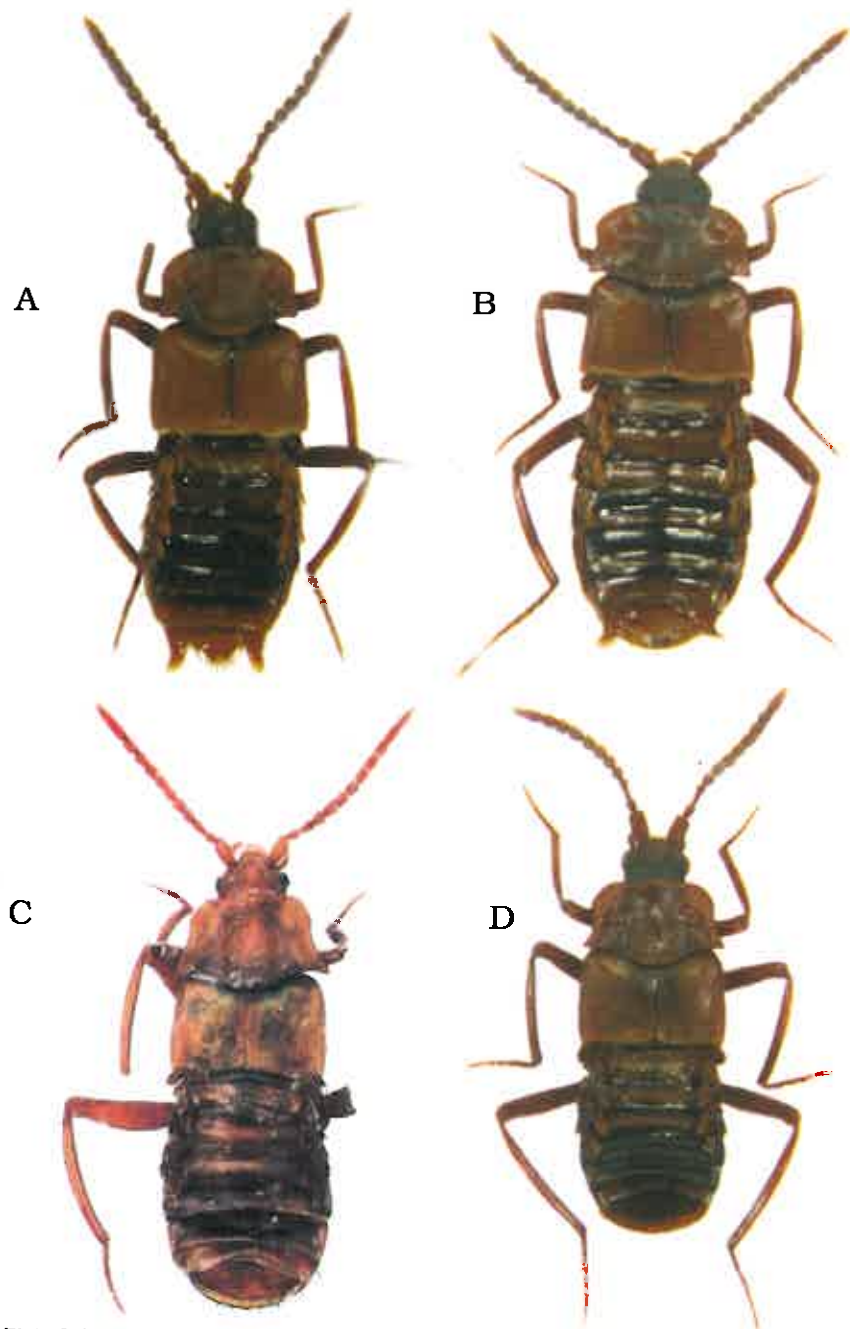


Plate 3. Dorsal view of the entire beetle. A, *Lomechusa paradoxa*; B, *L. pubicollis*; C, *L. stangei*; D, *L. sinuata*.



Plate 4. Dorsal view of the entire beetle. *Lomechusa yunanensis*