

urn: lsid:zoobank.org:pub:87B15BA6-A589-418F-90AD-FD09DE4E6C2D

Belgian Journal of Entomology

On the soil dwelling Staphylinidae (Coleoptera) of Romania

Tim STRUYVE

Leuvensesteenweg 187, 2800 Mechelen, Belgium. E-mail: tim.struyve@gmail.com

Published: Brussels, 22 February 2022

Citation: STRUYVE T., 2022. - On the soil dwelling Staphylinidae (Coleoptera) of Romania. *Belgian Journal of Entomology*, 127: 1–22.

ISSN: 1374-5514 (Print Edition)

ISSN: 2295-0214 (Online Edition)



The Belgian Journal of Entomology is published by the Royal Belgian Society of Entomology, a non-profit association established on April 9, 1855.

Head office: Vautier street 29, B-1000 Brussels.



The publications of the Society are partly sponsored by the University Foundation of Belgium.

In compliance with Article 8.6 of the ICZN, printed versions of all papers are deposited in the following libraries:

- Royal Library of Belgium, Boulevard de l'Empereur 4, B-1000 Brussels.
- Library of the Royal Belgian Institute of Natural Sciences, Vautier street 29, B-1000 Brussels.
- American Museum of Natural History Library, Central Park West at 79th street, New York, NY 10024-5192, USA.
- Central library of the Museum national d'Histoire naturelle, rue Geoffroy SaintHilaire 38, F-75005 Paris, France.
- Library of the Muséum d'Histoire naturelle de Genève, route de Malagnou 1, CH-1208 Genève, Suisse.
- Zoological Record, Thomson Reuters, Publication Processing, 1500 Spring Garden Street, Fourth Floor, Philadelphia PA 19130, USA.

On the soil dwelling Staphylinidae (Coleoptera) of Romania

Tim STRUYVE

Leuvensesteenweg 187, 2800 Mechelen, Belgium. E-mail: tim.struyve@gmail.com

Abstract

The following new taxa are described from Romania: *Cyrtotyphlus carpathica* sp. nov., *Romanotyphlus metaliferensis* gen. nov., sp. nov., *Kladotyphlus ariesensis ariesensis* ssp. nov., *K. ariesensis orientalis* ssp. nov., *Metrotyphlus (Agnatotyphlus) banati* sp. nov., *Banatotyphlus orsovae* sp. nov., *B. siclus* sp. nov., *Banatotyphlus albensis* sp. nov., *Lathrobium trascauensis* sp. nov. and *L. gyorgyi* sp. nov. The following species are new for Romania: *Gynotyphlus perpusillus* Doderó, *Leptomastax rousi* Franz and *Lathrobium anophthalmum* Fauvel. Additional records are given for *Banatotyphlus racovitzai* Decu, *Mayetia carpatica* Decu, *Euaesthetotyphlus almajensis* Coiffait & Decu and *Lathrobium jeanneli* Koch.

Keywords: Europe, new genus, new records, new species, new subspecies, taxonomy

Contents

Introduction	4
Material and methods	5
Collecting methods and habitat	5
Preparation and descriptions.....	6
Results	7
Genus <i>Gynotyphlus</i> Coiffait, 1955	7
<i>Gynotyphlus perpusillus</i> Doderó, 1900	7
Genus <i>Cyrtotyphlus</i> Doderó, 1900	8
<i>Cyrtotyphlus carpathica</i> sp. nov.....	8
Genus <i>Romanotyphlus</i> gen. nov.	9
<i>Romanotyphlus metaliferensis</i> sp. nov.....	11
Genus <i>Allotyphlus</i> Coiffait, 1955	11
Genus <i>Kladotyphlus</i> Pace, 1999	13
<i>Kladotyphlus ariesensis ariesensis</i> ssp. nov.	13
<i>Kladotyphlus ariesensis orientalis</i> ssp. nov.....	13
Genus <i>Metrotyphlus</i> Coiffait, 1959	13
<i>Metrotyphlus (Agnatotyphlus) banati</i> sp. nov.....	13
Genus <i>Banatotyphlus</i> Decu, 1982	15
<i>Banatotyphlus racovitzai</i> Decu, 1982	15
<i>Banatotyphlus orsovae</i> sp. nov.	15
<i>Banatotyphlus siclus</i> sp. nov.....	15
<i>Banatotyphlus albensis</i> sp. nov.....	16

Genus <i>Mayetia</i> Mulsant & Rey, 1875	17
<i>Mayetia carpatica</i> Decu, 1981.....	17
Genus <i>Leptomastax</i> Pirazzoli, 1855	18
<i>Leptomastax rousi</i> Franz, 1975.....	18
Genus <i>Euaesthetotyphlus</i> Coiffait & Decu, 1970.....	19
<i>Euaesthetotyphlus almajensis</i> Coiffait & Decu, 1970	19
Genus <i>Lathrobium</i> Gravenhorst, 1802	19
<i>Lathrobium trascauensis</i> sp. nov.	19
<i>Lathrobium jeanneli</i> Koch, 1939.....	20
<i>Lathrobium gyorgyi</i> sp. nov.	20
<i>Lathrobium anophthalmum</i> Fauvel, 1885	21
<i>Lathrobium</i> sp.....	21
Acknowledgements	21

Introduction

It was after the Staphylinidae meeting in Bratislava from 2015 that I travelled further to Romania to collect more Staphylinidae. Near the known locations of the enigmatic *Caecolinus endogaeus* Jeannel I tried one soil-washing sample, not expecting to find much. It was a big surprise at home when an unknown Leptotyphlinae emerged, about 200 km north of the nearest known species. Independently, György Makranczy found in 2016 females of another undescribed species near the coast of Romania, together with *Gynotyphlus perpusillus* (Doderó). This event resulted into two extra trips more specific to find those fauna: one in autumn 2017 by myself and one in May 2019 by György and myself to find males of the species near the coast (which failed two times) and additional species on other locations.

A good overview of the known soil dwelling or cave inhabiting species for Balkan peninsula, including Romania, is given by HLAVÁČ *et al.* (2017). Their work notes the following Staphylinidae for Romania:

- one Aleocharinae: *Platyola balcanica* Scheerpeltz;
- one Leptotyphlinae: *Banatotyphlus racovitzai* Decu;
- four Pselaphinae: *Mayetia carpatica* Decu, *Bryaxis dolosus* Poggi & Sarbu, *Tychobythinus sulphydricus* Poggi & Sarbu and *Decumarellus sarbui* Poggi;
- five Scydmaeninae: *Ablepton treforti* Frivaldszky, *Leptomastax mehadiensis mehadiensis* Frivaldszky, *L. vlascensis* Karaman, *Cephennium regale* Holdhaus, *Etelea tenue* Petri;
- one Euaesthetinae: *Euaesthetotyphlus almajensis* Coiffait & Decu;
- one Staphylininae: *Caecolinus endogaeus* Jeannel;
- five Paederinae: *Lathrobium coecum* Frivaldszky, *L. jeanneli* Koch, *L. kaszabi* Pace, *L. moraveci* Janák and *Medon dobrogicus* Decu & Georgescu.

Material and methods

COLLECTING METHODS AND HABITAT

All the material was collected using the soil-washing technique. Generally, approximately 20 liters of soil (without litter) were washed and stirred in about 40 liters of water. The floating material was collected with a kitchen sieve (1 mm mesh) and put into a cotton bag. Due to low numbers of the species in several locations this technique was repeated up to 10 times for one sample. In the field the soil was taken from the most appropriate places for this fauna. The samples from several places up to 50 m in distance were combined. The sample can be stored for a few weeks, as long as the leaking water is removed and the sample is not exposed to heat. To extract the fauna, the samples were put on an iron grid (0.5 cm mesh) on a plastic plate with water. When the material dries, the insects end up in the plate where they can be collected in the water or on its surface every few days.



Fig. 1. Collecting the floating material in a bag.

The experience in Romania was that successful samples for Leptotyphlinae are from more thermophilous forests dominated by Hornbeam (*Carpinus betulus* L.). Those are often accompanied by Lime (*Tilia* sp.), Maple (*Acer pseudoplatanus* L.), Beech (*Fagus sylvatica* L.) or Hazel (*Corylus avellana* L.) for the inland places, near the coast additional Oriental hornbeam (*Carpinus orientalis* Mill.), Turkey oak (*Quercus cerris* L.) and European cornel (*Cornus mas* L.). Samples in beech dominated forest did not have any Leptotyphlinae, but still contained blind beetles (*Anommatus* sp. and *Lathrobium* sp.). The only exception was the location where *Cyrtotyphlus carpathica* has been found. This was under a very old beech tree surrounded with younger individuals, but the form of the old tree revealed that this tree has

grown under open conditions, not in a dense forest. This indicates that the Leptotyphlinae in Romania are rather thermophiles, and the most success for new locations could be achieved in similar habitats. This does not mean that Leptotyphlinae cannot be found in dense beech forests, as such cases are known to me from Croatia. The blind *Lathrobium* sp. are also known from higher altitudes and dense beech forests.



Fig. 2. Type location of *Lathrobium gyorgyi* sp. nov. The steeper parts of the hill provide usually less compressed soil and better results.

PREPARATION AND DESCRIPTIONS

The species of Leptotyphlinae and *Mayetia* were stored in 70 % ethanol. The aedeagus was removed by dissection and embedded on a microscopic slide in PVP (polyvinylpyrrolidone) without a coverslip. The drawings were prepared at a magnification of 800 times. The measurements have an accuracy of 0.0025 mm. Both the specimen and the aedeagus were mounted on a classic mounting card in PVP.

MEASUREMENTS: all measurements are given in mm. They are abbreviated as follows: HL = head length from anterior margin of clypeus to neck; HW = head width, PL = pronotum length; PW = maximal pronotum width; EL: elytral length; EW: width of both elytra combined; AL: length of aedeagus; TL: total length. Since total length may vary up to 25 % depending on the condition of the abdomen, this measurement is based only on one specimen in normal condition, with the abdomen not constricted or swollen.

The material is deposited in three collections: HNHM: Hungarian Natural History Museum (Budapest, Hungary), material collected by György Makranczy and all holotypes; cStr: authors private collection, material collected by the author except the holotypes ; cJal: collection of Paweł Jałoszyński (Wrocław, Poland): one *Leptomastax* for the help with the identification.



Fig. 3. Type locality of *Romanotyphlus metaliferensis* sp. nov. and *Banatotyphlus albensis* sp. nov., just left of the road. South-west facing slope with more thermophilic forest, due to accumulation of erosive material with a loose structure.

Results

Family Staphylinidae Latreille, 1802
Subfamily Leptotyphlinae Fauvel, 1874
Genus *Gynotyphlus* Coiffait, 1955

***Gynotyphlus perpusillus* (Doderò, 1900)**

MATERIAL EXAMINED. ROMANIA: Ion Corvin, 3.XI.2017, 44.092°N 27.813°E: 1 ex. (cStr); Dumbăveni, 3.XI.2017, 43.935°N 28.001°E: 7 exs. (cStr); Floriile, 3.XI.2017, 44.137°N 27.834°E: 2 exs. (cStr); Târgușor 4.XI.2017, 44.495°N 28.476°E: 8 exs. (cStr); Fântâna Mare 5.XI.2017, 44.869°N 28.465°E: 3 exs. (cStr); Gradina 4.XI.2017, 44.500°N 28.447°E: 2 exs. (cStr); Târgușor 27.III.2019, 44.495°N 28.476°E: 14 exs. (cStr); Târgușor 31.V.2016, 44°27'56''N 28°28'28''E: 1 ex. (HNHM); Târgușor 28.VI.2015, 44°27'56''N 28°28'28''E: 5 exs. (HNHM); Târgușor 3.VI.2016, 44°51'44''N 28°41'24''E: 2 exs. (HNHM); Târgușor 01.VI.2016, 44°27'51''N 28°28'17''E: 9 exs. (HNHM).

COMMENTS. This parthenogenetic species, new for Romania, seems widespread and common near the coast. There are subspecies described, but on characteristics that on my experience have too much variation within other species to define subspecies.

Genus *Cyrtotyphlus* Dodero, 1900

***Cyrtotyphlus carpathica* sp. nov.**

urn: lsid:zoobank.org:act:7C70662C-792F-4317-BE56-A7254A43B7C6

Figs 4 A, H, 7 A-B

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Sânbotin, 28.III.2019, 45.171°N 24.393°E: 1 male deposited in the HNHM. PARATYPES. Sânbotin, 2.XI.2017, 45.171°N 24.393°E: 1 female (cStr); Sânbotin, 28.III.2019, 45.171°N 24.393°E: 1 male (cStr).

ETYMOLOGY. The type material was found at the base of the Carpathian mountains.

DESCRIPTION. MEASUREMENTS: HL: 0.125; HW: 0.170; PL: 0.195; PW: 0.1775; EL: 0.135; EW: 0.1675; AL: 0.13; TL: 1,15 mm.

Habitus is that of a typical *Cyrtotyphlus*: robust and shining. Microsculpture on body clearly visible, only in the middle of the pronotum smooth, punctures very sparse. Head with a longitudinal depression from between the false ocelli until between the antennae. Antennae with only 10 segments and two segmented club. Labrum simple without teeth. Aedeagus with broad parameres, at the tip a bit curved. Copulatory piece small, much shorter than the parameres.

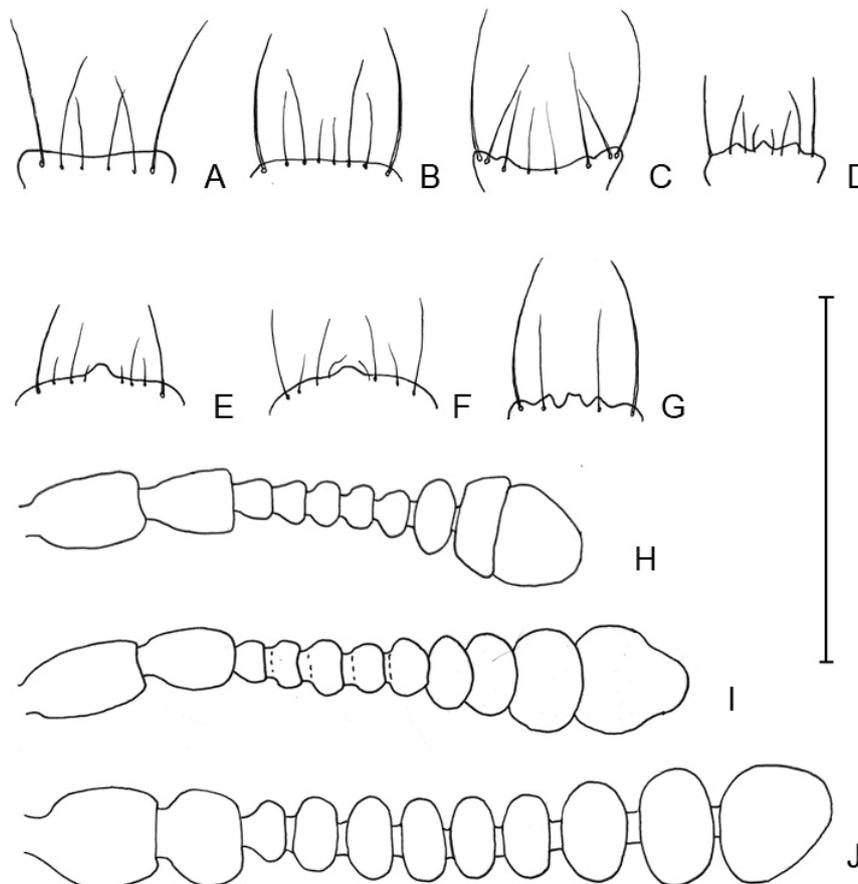


Fig. 4. A-G, labrum. A, *Cyrtotyphlus carpathica* sp. nov. B, *Romanotyphlus metaliferensis* sp. nov. C, *Kladotyphlus ariesensis ariesensis* ssp. nov. D, *Metrotyphlus banati* sp. nov. E, *Banatotyphlus orsovae* sp. nov. F, *Banatotyphlus siclus* sp. nov. G, *Banatotyphlus albensis* sp. nov. H-J, antenna. H, *Cyrtotyphlus carpathica* sp. nov. I, *Romanotyphlus metaliferensis* sp. nov. J, *Kladotyphlus ariesensis ariesensis*. Scale bar: 0,05 mm.

Genus *Romanotyphlus* gen. nov.

urn:lsid:zoobank.org:act:FA296B9F-EEB6-49C6-94B1-CB42CC40813C

TYPE SPECIES. *Romanotyphlus metaliferensis* sp. nov.

ETYMOLOGY. The name is composed of Romania, the country where this genus is found, and the component *-typhlus* from the greek τυφλός (= blind).

TAXONOMIC POSITION. Leptotyphlinae Entomoculiini

DESCRIPTION.

Body cylindrical, yellow and shining. Antennae with 11 articles, fifth article larger than sixth, club three-segmented. Maxillary palps with four articles, article II much bigger than article III, article IV long and very slim. Labial palps with four articles, article III slender, article IV very small. Ligula divided in two membranous branches. Mandibles with a simple tooth. Gular sutures complete and united in the center of the head.

Legs broad, femurs and tibiae with sparse setae, tibiae also with near the apical half of the internal margin and at the apical exterior margin a row of setae. Tarsi two-segmented, first article very short.

Abdomen: slightly wider towards tergite VII, sternites IV-VII (second until fifth visible sternite) with deep basal incision with denser pubescence. Tergites IV-VII with shallow basal impression.

Male genital segment with two pleurites that partially cover the base ventrally and a longer and wider urosternite. Urosternite slightly asymmetric, large with a stronger sclerified apical oval structure.

COMMENTS. Within the Leptotyphlinae the incisions on the sternites IV-VII are unique to the tribe Cephalotyphlini which contains only the genus *Cephalotyphlus* Coiffait, 1955 and to the genus *Paratyphlus* of the tribe Entomoculiini. The other genera within the tribe Entomoculiini have only an incision on sternite VII. Other subfamilies have no incision. *Romanotyphlus* has also those incisions on sternites IV-VII which is the first indication of its position.

COIFFAIT (1972) uses the maxillary palps in his key to divide several tribes: Cephalotyphlini, Metrotyphlini and Neotyphlini have the article III of the maxillary palps as large or bigger than article II. Entomoculiini and Leptotyphlini have the article II bigger than article III. So this would place *Romanotyphlus* into Entomoculiini.

The aedeagus of Entomoculiini and Cephalotyphlini could be divided into three basic types: The Cephalotyphlini, with only the genus *Cephalotyphlus*, has the most basic, symmetric structure: median lobe simple and well developed with at most one simple copulatory piece and well developed parameres with several setae. The genus *Cyrtotyphlus* from the Entomoculiini has also a symmetric aedeagus, but with strongly enlarged parameres that cover most of the less developed apical half of the aedeagus. The remaining Entomoculiini have asymmetric aedeagi with well-developed copulatory pieces, a short or long ventral lamina and a well-developed ventral process (calus proximal sensu COIFFAIT (1972)). The aedeagus of *Romanotyphlus* has clear similarities with most genera of the Entomoculiini, especially *Allotyphlus* Coiffait, 1955 and *Mesotyphlus* Coiffait, 1957. The parameres of *R. metaliferensis* have only one strong seta; *Allotyphlus*, *Entomoculia*, *Mesotyphlus*, *Neocyrtotyphlus* and *Paratyphlus* have three or four setae on the parameres. Similar aedeagi can also be found with Metrotyphlini and Neotyphlini, but those miss the incisions on the sternites.

It can be concluded that *Romanotyphlus* is best placed within the Entomoculiini.

Key to the genera of the soil dwelling Staphylinidae

The most important keys to the genera of Leptotyphlinae in more general are those from PACE (1996) for Italy and COIFFAIT (1972) for the Palearctic. With the introduction of the new genus *Romanotyphlus* and the aberrant *Cyrtotyphlus carpathica*, an updated key is needed. I choose for an as practical as possible key that does not represent the phylogeny.

1. One or more sternites deeply and transversely excavate at the base, the excavations with dense pubescence 2
 - Sternites without transversal excavations at the base tribes Leptotyphlini, Metrotyphlini and Neotyphlini
2. Sternites II to V excavate at the base, antennae 11-segmented..... 3
 - Only sternite V deeply excavate at the base, maxillary palps with second article dilated, much bigger than third..... 5
3. Maxillary palps with second and third articles dilated, third article bigger than the second. Sternites II to V deeply excavated at the base. Median lobe of the aedeagus simple and well developed with no emerging copulatory pieces and well developed parameres. Known from Italy (including Sardinia) and France (only Corsica) *Cephalotyphlus* Coiffait
 - Maxillary palps with second article dilated, much bigger than third..... 4
4. Aedeagus: parameres with four setae, ventral process well developed, copulatory pieces complex, ventral lamina short or long always positioned together with the copulatory pieces. Species known from Spain, Portugal and north Africa..... *Paratyphlus* Blackwelder
 - Aedeagus: parameres with one seta, ventral process well developed, copulatory pieces complex, ventral lamina very long positioned clearly separated from the copulatory pieces. Only known from Romania *Romanotyphlus* gen. nov.
5. Parameres broad, covering most of the apical half of the aedeagus. Antennae 10 or 11-segmented. Currently known from France (Alpes-Maritimes), Italy and Balkan (Montenegro, Slovenia, Romania and Greece)..... *Cyrtotyphlus* Dodero
 - Parameres much smaller than the apical half of the aedeagus 6
6. Antennae with ten segments. Known from Italy, southern France (including Corsica), eastern Spain, Algeria and Tunisia..... *Entomoculia* Croissandeau
 - Antennae with eleven segments 7
7. Tarsi with three segments. Known from Italy, Greece and Turkey *Allotyphlus* Coiffait
 - Tarsi with two segments 8
8. Ligula developed, median lobe of the aedeagus tubiform, only one copulatory piece. Only one species from Italy *Neocyrtotyphlus* Pace
 - Ligula absent, median lobe of the aedeagus not or only slightly tubiform, numerous copulatory pieces..... *Mesotyphlus* Coiffait

***Romanotyphlus metaliferensis* sp. nov.**

urn:lsid:zoobank.org:act:7A27AC56-7AB1-48FD-962C-BFF1CDBB0D90

Figs 4 B, I, 5 A, 6 A-B, 7 C-D

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Blandiana, 1.XI.2017, 46.005°N 23.369°E: 1 male deposited in the HNHM. PARATYPES. ROMANIA: Blandiana, 1.XI.2017, 46.005°N 23.369°E: 4 exs. (cStr); Blandiana, 29.III.2019, 46.005°N 23.369°E: 16 exs. (7 exs. cSTR + 9 exs. HNHM).

ETYMOLOGY. The type material was found on the southern border of Munții Metaliferi.

DESCRIPTION. MEASUREMENTS: HL: 0.1500; HW: 0.1750; PL: 0.1750; PW: 0.1625; EL: 0.1375; EW: 0.1400; AL: 0.2375; TL: 1.2.

Sternite VII and VIII broad undepressed on about half its width, in this depression with additional short setae. Aedeagus: parameres with only one seta, left and right similar. Ventral lamina strong and long, slightly asymmetric. Copulatory piece well developed, asymmetric.

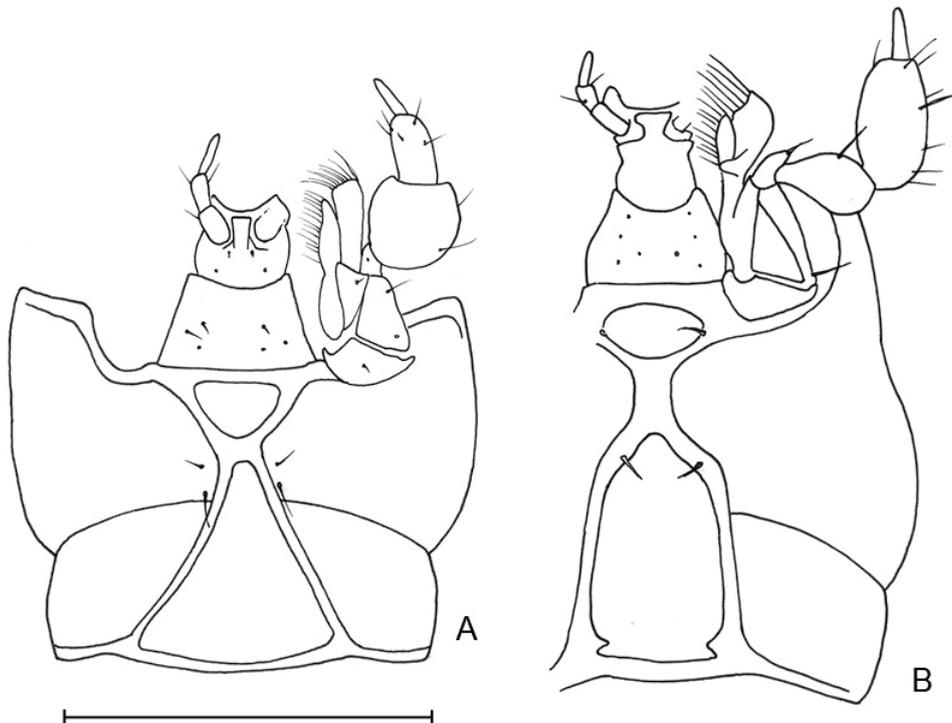


Fig. 5. Head in ventral view. A, *Romanotyphlus metaliferensis* sp. nov., B, *Kladotyphlus ariesensis ariesensis* ssp. nov. Scale bar: 0,05 mm.

Genus *Allotyphlus* Coiffait, 1955

MATERIAL EXAMINED. ROMANIA: Tărgușor 28.VI.2015, 44°27'56"N 28°28'28"E: 1 ex. (HNHM); Tărgușor 1.VI. 2016, 44°27'56"N 28°28'28"E: 1 ex. (cStr).

COMMENTS. This undescribed species has characteristics of an *Allotyphlus*, but a male is necessary to be certain and to describe this species properly.

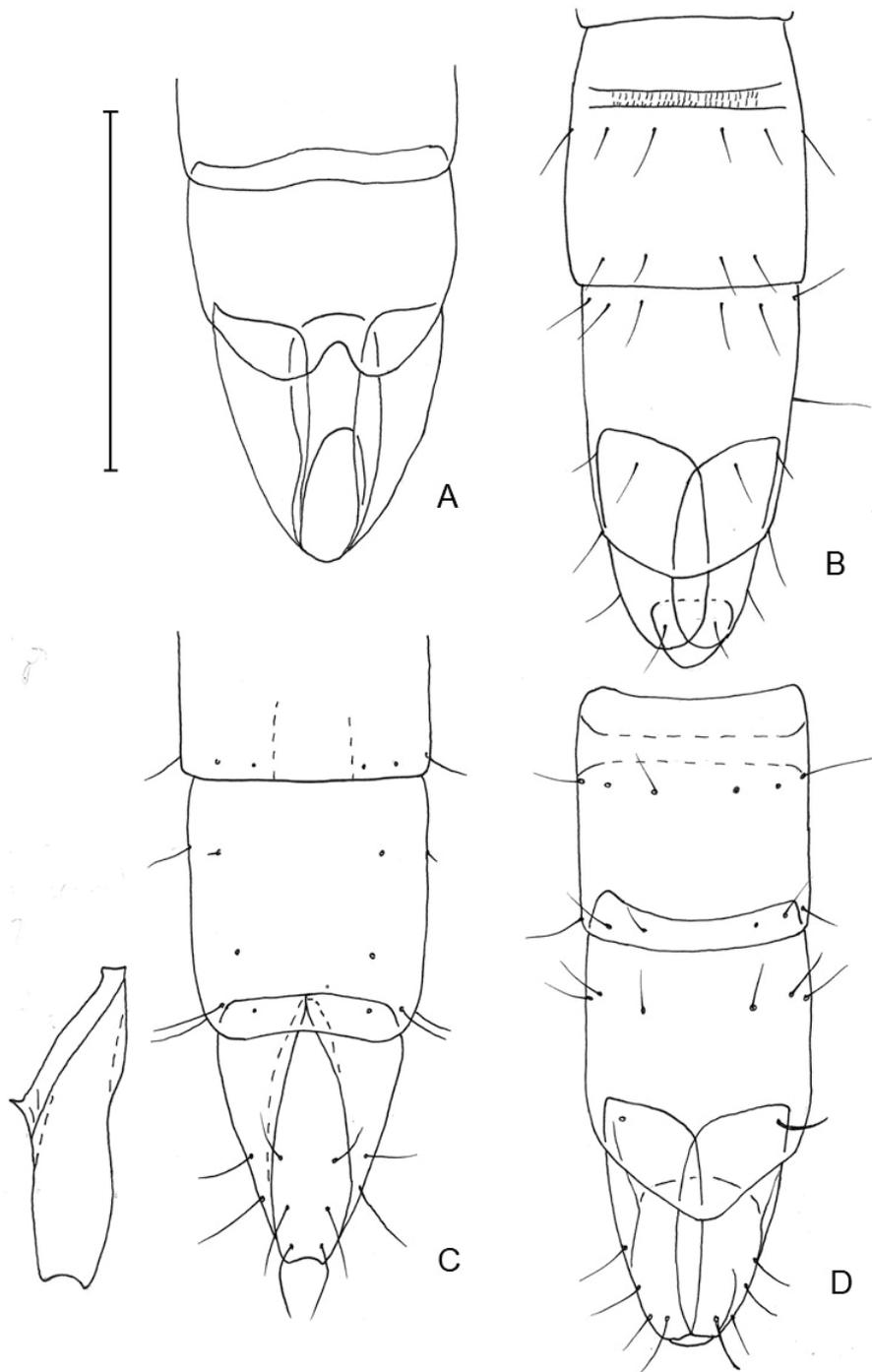


Fig. 6. Abdominal tip in ventral view. A, *Romanotyphlus metaliferensis* sp. nov. male. B, *Romanotyphlus metaliferensis* sp. nov. female. C, *Kladotyphlus ariesensis ariesensis* ssp. nov. male with terminal sternite also drawn separately. D, *Kladotyphlus ariesensis ariesensis* ssp. nov. female. Scale bar: 0,1 mm.

Genus *Kladotyphlus* Pace, 1999

***Kladotyphlus ariesensis ariesensis* ssp. nov.**

urn:lsid:zoobank.org:act:A0204C5D-53BB-41E7-B302-69E3F1677A7A

Figs 4 C, J, 5 B, 6 C, D, 7 E, G

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Brăzești, 25.V.2015, 46.409°N 23.334°E: 1 male deposited in HNHM. PARATYPES. ROMANIA: Brăzești, 25.V.2015, 46.409°N 23.334°E: 3 females (cStr).

ETYMOLOGY. The type material was found in the valley of the river Arieș (Valea Arieșului).

DESCRIPTION. MEASUREMENTS: HL: 0.1400; HW: 0.1675; PL: 0.1700; PW: 0.1675; EL: 0.1450; EW: 0.1575; AL: 0.2325; TL: 1.2.

Antennae with 11 articles, club three-segmented, fifth article not bigger than the sixth. Maxillary palps with 4 articles, articles II and III enlarged, article III bigger than article II, article IV long and very slim. Labial palps with four articles, article III slender, article IV very small. Ligula divided in two membranous branches. Mandibles with a simple tooth. Gular sutures complete and united in the center of the head. Tarsi three-segmented.

Male sternite VII shallow impressed in the central third from the posterior edge more vague towards the base. Sternite VIII in the central third flattened, posterior margin of almost straight.

Male genital segment with two pleurites that partially cover the base ventrally and a longer urosternite. Urosternite slightly asymmetric, only very little overlapping with the pleurites, with a membrane at its right side and a bifid tip.

Aedeagus: parameres absent. Ventral lamina strong and long, slightly asymmetric. Copulatory piece well developed, shorter than the ventral lamina asymmetric.

COMMENTS. *Kladotyphlus* was described by PACE (1999) for *K. kahleni* Pace from Slovenia and is so far the only other species within this genus.

***Kladotyphlus ariesensis orientalis* ssp. nov.**

urn:lsid:zoobank.org:act:0C547705-3F0C-4F12-A724-90529008E68E

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Iara, 01.XI.2017, 46.527°N 23.577°E: 1 male deposited in HNHM.

ETYMOLOGY. This species was found more to the east of the material I've found first.

DESCRIPTION. This species differs from *K. ariesensis ariesensis* sp. nov. only by the shape of the sclerite in the copulatory pieces. There are some other minor differences in the aedeagus like the bending of the tip of the ventral lamina, but larger series should be studied to see the variation in those characteristics.

Genus *Metrotyphlus* Coiffait, 1959

***Metrotyphlus (Agnatotyphlus) banati* sp. nov.**

urn:lsid:zoobank.org:act:A9DB4DE3-32B4-444F-9542-08EB0F6CDFAD

Figs 4 D, 8 A-B.

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Eibenthal, 26.III.2019, 44.546°N 22.205°E: 1 male deposited in the HNHM. PARATYPES. Eibenthal, 26.III.2019, 44.546°N 22.205°E: 3 males and 5 females (cStr) + 1 ex. (HNHM), Eibenthal, 29.V.2015, 44.546°N 22.205°E: 3 exs. (cStr); Cozia, 25.III.2019, 44.628°N 22.039°E: 1 ex. (HNHM).

ETYMOLOGY. The type material was found on the southern border of the Banat mountains.

DESCRIPTION. MEASUREMENTS: HL: 0.1050; HW: 0.1300; PL: 0.1250; PW: 0.1300; EL: 0.1025; EW: 0.1250; AL: 0.175; TL: 0.9-1.

Typical *Metrotyphlus* can be identified by the aedeagus that is like in the figures 8 A-B. Dorsal and ventral sides of the aedeagus almost symmetric, dorsal tip membranous, parameres with four setae.

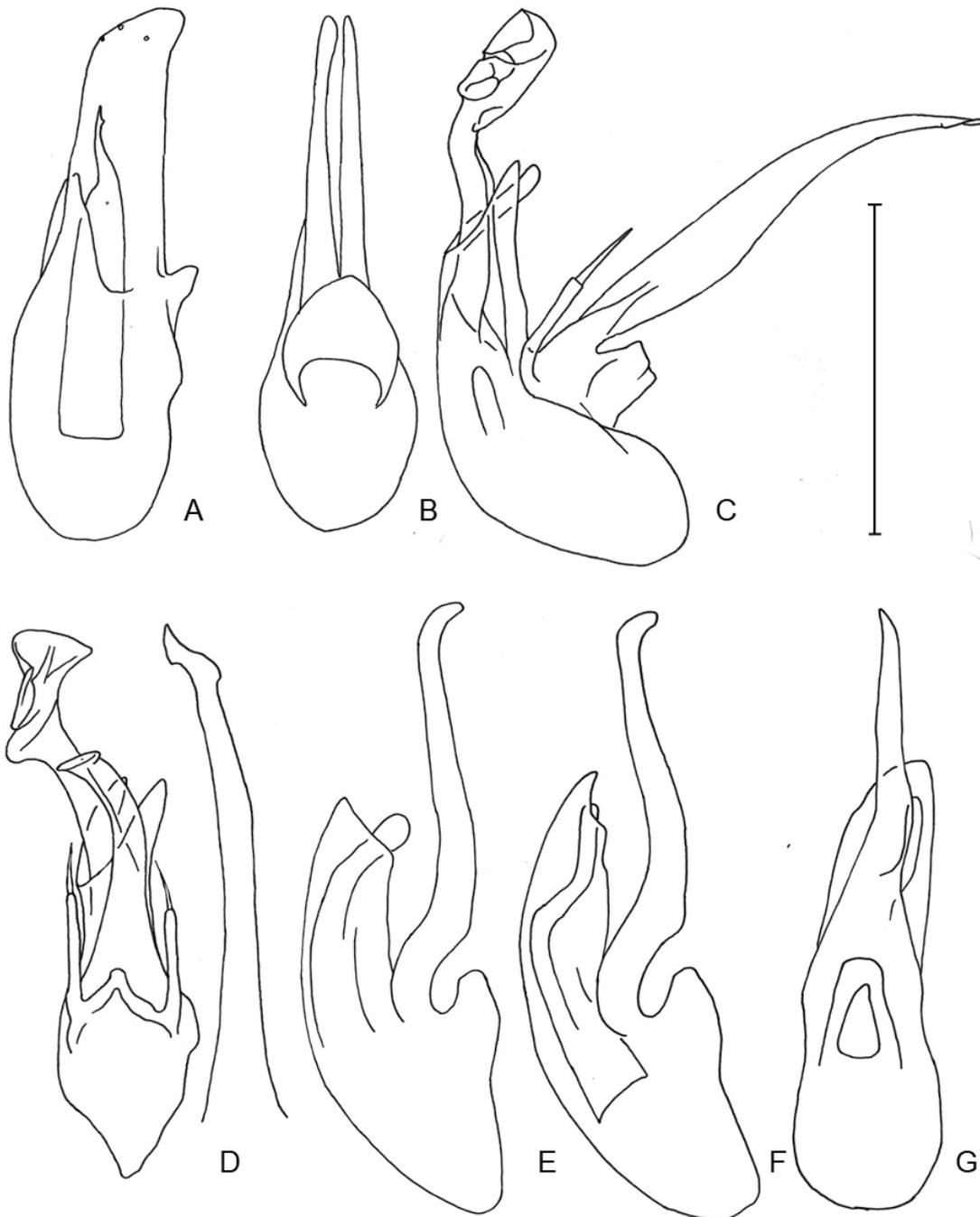


Fig. 7. Aedeagus in lateral (A, C, E and F) and ventral views (B, D and G) with separated ventral lamina (D). A-B, *Cyrtotyphlus carpathica* sp. nov. C-D, *Romanotyphlus metaliferensis* sp. nov. E-G, *Kladotyphlus ariesensis ariesensis* ssp. nov. F, *Kladotyphlus ariesensis orientalis* ssp. nov. Scale bar: 0,05 mm.

Genus *Banatotyphlus* Decu, 1982

***Banatotyphlus racovitzai* Decu, 1982**

Fig. 8 C-D

MATERIAL EXAMINED. ROMANIA: Șopotu Nou, 26.V.2015, 44.809°N 21.842°E: 3 exs. (cStr).

COMMENTS. This new record is near the type location. In the original description the length of this species is mentioned as 1.95 mm. This is clearly an individual stretched to its maximum like the figure shows in this description. My individuals are about 1 mm.

***Banatotyphlus orsovae* sp. nov.**

urn:lsid:zoobank.org:act:0AE010BE-6ADC-4678-ACB4-4A710A878CBC

Figs 4 E, 8 E-G

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Orșova, 26.III.2019, 44.738°N 22.355°E: 1 male deposited in the HNHM. PARATYPES. Orșova, 26.III.2019, 44.738°N 22.355°E: 4 exs. (cStr), Orșova, 27.V.2015, 44.727°N, 22.361°E: 1 female (cStr).

ETYMOLOGY. The type material was found near the city Orsova.

DESCRIPTION. MEASUREMENTS: HL: 0.130; HW: 0.1425; PL: 0.1375; PW: 0.165; EL: 0.125; EW: 0.1475; AL: 0.210; TL: 1.05 mm.

External hardly different from *B. racovitzai*, the median tooth on the labrum is a little bigger. Main difference is in the aedeagus: more elongate, ventral process longer, copulatory pieces sticking out of the capsule of the aedeagus. Ventral side of the aedeagus is on the right side of the body. Females can be recognized by the more pronounced median tooth on the labrum.

***Banatotyphlus siclus* sp. nov.**

urn:lsid:zoobank.org:act:826A2C6B-5D9C-46DF-8E12-9410FABE9BFB

Figs 4 F, 9 A-B

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Eibenthal, 26.III.2019, 44.546°N 22.205°E: 1 male deposited in the HNHM. PARATYPES. Eibenthal, 26.III.2019, 44.546°N 22.205°E: 5 exs. (cStr) + 2 exs. (HNHM); Cozia, 25.III.2019, 44.631°N 22.007°E: 1 male (cStr) + 6 exs. (HNHM). Cozia, 25.III.2019, 44.628°N 22.039°E: 1 ex. (HNHM).

ETYMOLOGY. from the Latin word for sickle, referring to the curved form of the ventral process.

DESCRIPTION. MEASUREMENTS: HL: 0.150; HW: 0.170; PL: 0.160; PW: 0.175; EL: 0.120; EW: 0.165; AL: 0.235; TL: 1.1 mm.

External hardly different from *B. racovitzai*, the main difference is in the aedeagus: it is within the known species from this genus easily recognizable by the strongly curved long ventral process.

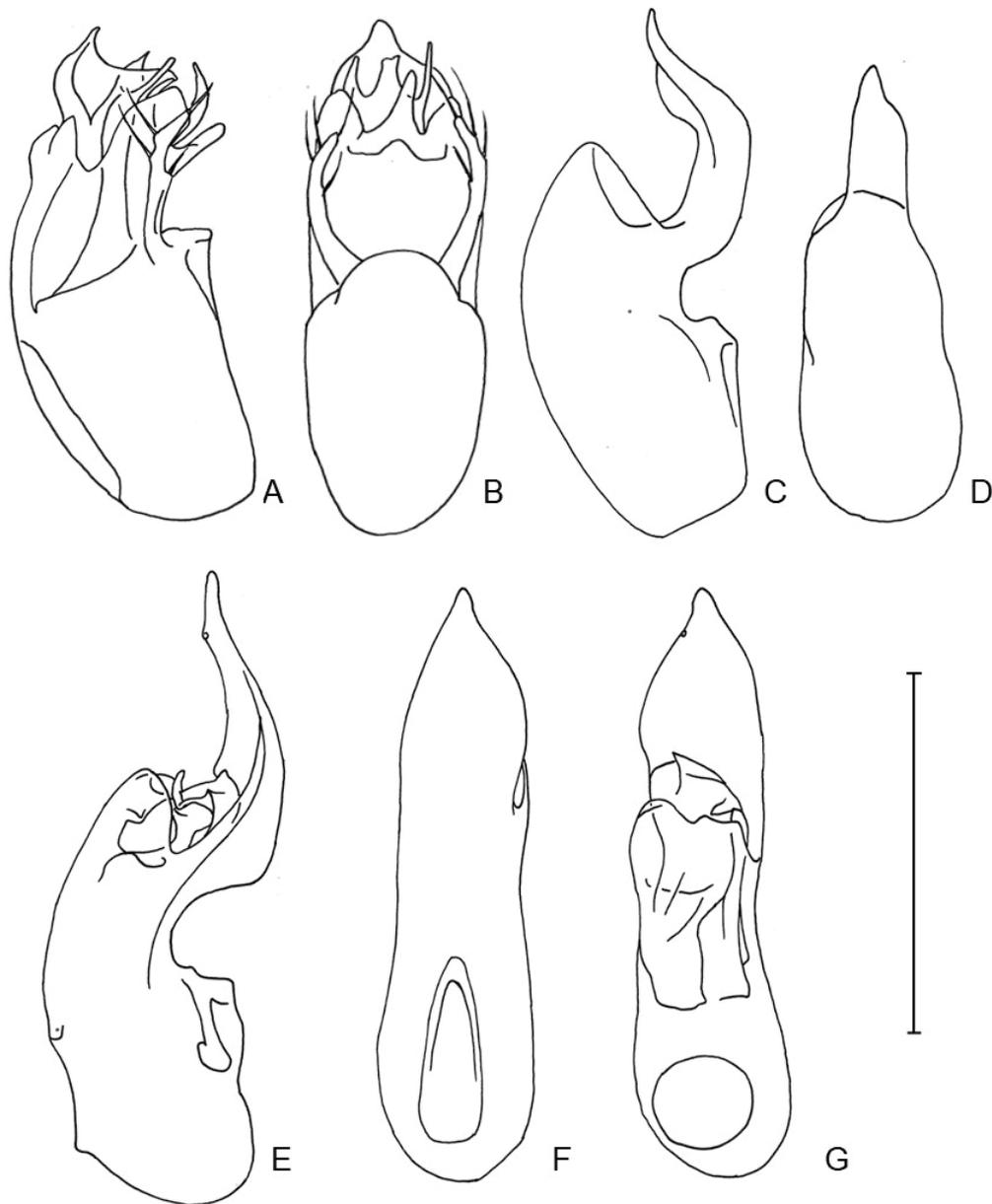


Fig. 8. Aedeagus in lateral (A, C and E), ventral (B, D and F) and dorsal views (G). A-B *Metrotyphlus banati* sp. nov. C-D, *Banatotyphlus racovitzae* Decu. E-G, *Banatotyphlus orsovae* sp. nov. Scale bar: 0,05 mm.

***Banatotyphlus albensis* sp. nov.**

urn:lsid:zoobank.org:act:829EA293-83AF-4365-87E0-BBCD12F59B6E

Figs 4 G, 9 C-D

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Blandiana, 29.III.2019, 46.005°N 23.369°E: 1 male deposited in the HNHM. PARATYPES. Blandiana, 29.III.2019, 46.005°N 23.369°E: 1 male (cStr) + 1 female (HNHM).

ETYMOLOGY. The type material was found in the county Alba in Romania.

DESCRIPTION. MEASUREMENTS: HL: 0.1100; HW: 0.1250; PL: 0.1250; PW: 0.1225; EL: 0.0950; EW: 0.1250; AL: 0.1550; TL: 1. mm.

Typical *Banatotyphlus* like the description, including mouthparts and modified setae on the front tarsi. Externally less like the other three known species from this genus. Excavation of the last complete sternite of the male more rounded compared to the other known species and labrum with three teeth, of which the middle is bifid. Aedeagus more elongate than that of the other known species.

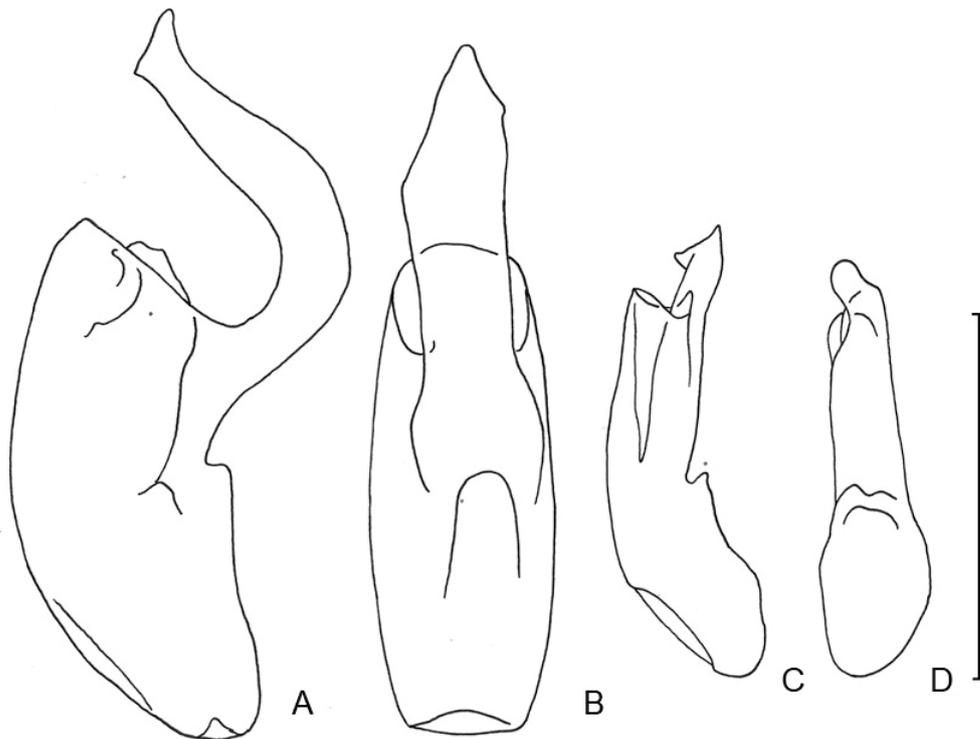


Fig. 9. Aedeagus in lateral (A and C) and ventral views (B and D). A-B, *Banatotyphlus siclus* sp. nov. C-D, *Banatotyphlus albensis* sp. nov. Scale bar: 0,05 mm.

Subfamily Pselaphinae Latreille, 1802

Genus *Mayetia* Mulsant & Rey, 1875

***Mayetia carpatica* Decu, 1981**

MATERIAL EXAMINED. ROMANIA: Sâmbotin, 2.XI.2017, 45.171°N 24.393°E: 14 exs. (cStr); Sâmbotin, 28.III.2019, 45.171°N 24.393°E: 98 exs. (cStr); Orșova, 26.III.2019, 44.738°N 22.355°E: 12 exs. (cStr); Orșova, 26.III.2019, 44.727°N, 22.362°E: 3 exs. (cStr) + 2 exs. (HNHM); Micăsasa, 28.III.2019, 46.111°N 24.143°E: 7 exs. (cStr).

COMMENTS. These new records expand the range of this species a little to the west, but a greatly to the east and even on the other side of the Carpathian mountains.

Subfamily Scydmaeninae Leach, 1815

Genus *Leptomastax* Pirazzoli, 1855

***Leptomastax rousi* Franz, 1975**

MATERIAL EXAMINED. ROMANIA: Tărgușor 4.XI.2017, 44.495°N 28.476°E: 5 exs. (cStr & cJal).

COMMENTS. This species was known from Bulgaria (Nesebar) and Georgia (Abkhazia) and is new for Romania.

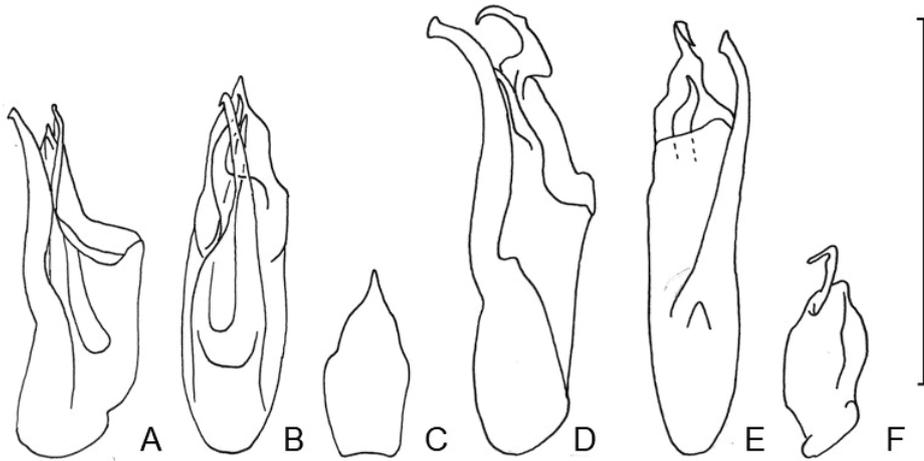


Fig. 10. Aedeagus in lateral (A and D) and ventral views (B and E) and dorsal plate of the aedeagus (C and F). A-C, *Lathrobium trascauensis* sp. nov. D-F, *Lathrobium gyorgyi* sp. nov. Scale bar: 1 mm.

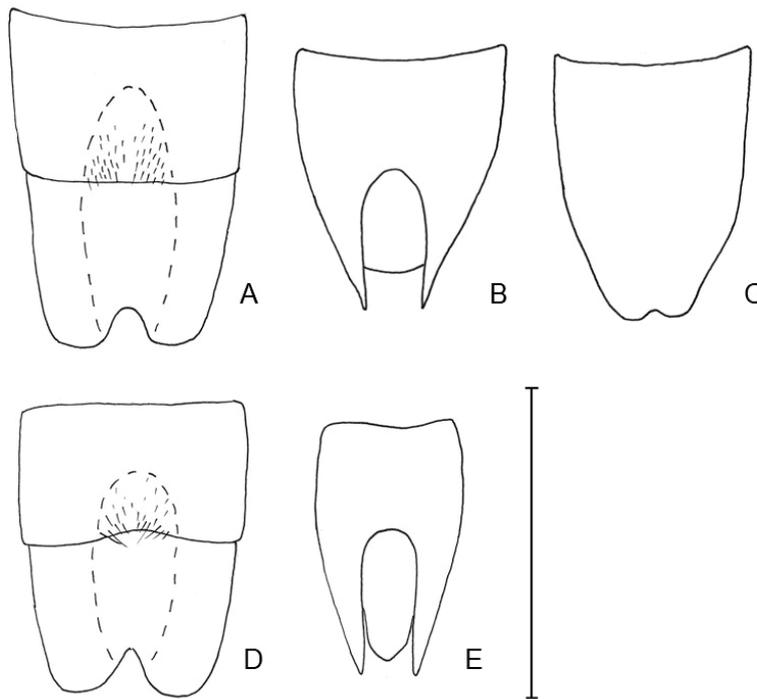


Fig. 11. Male sternite VII and VIII (A and D), female tergite IX (B and E) and female sternite VIII (C). A-C, *Lathrobium trascauensis* sp. nov. D-E, *Lathrobium gyorgyi* sp. nov. Scale bar: 1 mm.

Subfamily Euaesthetinae Fleming, 1821
Genus *Euaesthetotyphlus* Coiffait & Decu, 1970

***Euaesthetotyphlus almajensis* Coiffait & Decu, 1970**

MATERIAL EXAMINED. ROMANIA: Șopotu Nou, 26.V.2015, 44.809°N 21.842°E: 2 exs. (cStr); Bozovici, 26.V.2015, 44.996°N 21.981°E: 6 exs. (cStr).

COMMENTS. This species was described from the Banat mountains, these are the first additional records.

Subfamily Paederinae Fleming, 1821
Genus *Lathrobium* Gravenhorst, 1802

***Lathrobium trascauensis* sp. nov.**

urn:lsid:zoobank.org:act:5F4C7501-F69D-45B8-A961-0E5C54CC38B5

Figs 10 A-C, 11 A-C

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Iara, 01.XI.2017, 46.527°N 23.577°E: 1 male deposited in the HNHM. PARATYPES. ROMANIA: Iara, 01.XI.2017, 46.527°N 23.577°E: 1 male and 1 female (cStr).

ETYMOLOGY. The type material was found on the northern border of Muntele Trascău.

DESCRIPTION. MEASUREMENTS: HL: 0.75; HW: 0.69; PL: 0.88; PW: 0.61; EL: 0.70; EW: 0.70; AL: 1.0; TL: 5.5 - 6.0.

Completely depigmented, orange-reddish. Head a little longer than wide, sides convex. punctures sparse: distance about the size of the punctures itself. Microsculpture isodiametric, clearly present. Eyes reduced to a small yellow spot, maximal diameter smaller than the second article of the antennae. Antennae about 1.4 mm long, third article about 0.8 times as wide as long, article X about as wide as long.

Pronotum elongate, parallel. Punctuation a little denser and stronger than on the head, absent on the broad middle line. Microsculpture absent.

Elytra about as long as wide, Slightly wider near the apex. Punctuation as strong like on the pronotum, less dense. Surface without clear microsculpture but with irregular wrinkles.

Abdomen almost parallel, widest near the segment VI–VIII (visible segments 4–5). Punctuation small and sparse. Surface with strong isodiametric microsculpture.

This species belongs to a group of very similar species with *L. coecum* Frivaldszky, 1883, *L. jeanneli* Koch, 1939, *L. kaszabi* Pace, 1983 and *L. moraveci* Janák, 1987. Externally completely like *L. jeanneli*, which is also geographically the closest and was commonly found by soil washing in the eastern Apuseni mountains. The aedeagus and secondary sexual characters are described by JANÁK (1987).

FEMALE: sternite VIII prolonged into a bilobed apex, tergite VIII without modifications. Tergite IX like Fig. 11B.

MALE: sternites V to VII with a central, posterior impression, on sternite V very weak, clearly visible on sternite VII and VIII. Sternite VII with between the normal yellow hairs some smaller black setae, more dense in the posterior part of the impression (only hairs drawn on Fig. 10). Sternite VIII with evenly distributed smaller black setae between the yellow hairs and a small excavation at the posterior edge. Impression strongest near the base.

Aedeagus with the ventral plate in lateral view almost straight with only with a small hook on the top. Dorsal plate with a prolonged tip. Between the ventral and dorsal plates two sclerites, one small and long, hardly curved and one shorter broad sclerite with a curved top.

***Lathrobium jeanneli* Koch, 1939**

MATERIAL EXAMINED. ROMANIA: Blandiana, 1.XI.2017, 46.005°N, 23.369°E: 3 exs. (cStr); Blandiana, 29.III.2019, 46.005°N, 23.369°E: 7 exs. (cSTR); Banpotoc, 31.X.2017, 45.909°N 23.007°E: 1 ex. (cSTR), Brăzești, 01.XI.2017, 46.403°N 23.349°E: 2 exs. (cSTR); Brăzești, 01.XI.2017, 46.403°N 23.308°E: 1 ex. (cSTR), Aiud, 01.XI.2017, 46.324°N 23.615°E: 2 exs. (cStr).

COMMENTS. This species seems to be common in soil washing samples in that area. The new dates correspond to the distribution pattern presented in JANÁK (1987).

***Lathrobium gyorgyi* sp. nov.**

urn:lsid:zoobank.org:act:7E743F2C-D1D3-4246-8DAE-042848C103C1

Figs 10 D-F, 11 D-E

TYPE MATERIAL EXAMINED. HOLOTYPE. ROMANIA: Orșova, 26.III.2019, 44.727°N 22.362°E: 1 male deposited in the HNHM. PARATYPES. ROMANIA: Orșova, 26.III.2019, 44.727°N 22.362°E: 3 exs. (cStr) + 2 females (HNHM); Orșova, 27.V.2015, 44.727°N 22.361°E: 1 female (cStr).

ETYMOLOGY. The type material was collected with the help of György Makranczy.

DESCRIPTION. MEASUREMENTS: HL: 0.75; HW: 0.67; PL: 0.86; PW: 0.60; EL: 0.70; EW: 0.70; AL: 1.2; TL: 5.5 - 6.0.

Completely depigmented, orange-reddish. Head a little longer than wide, sides convex. punctures very sparse: in the middle distance about twice the size of the punctures itself. Microsculpture isodiametric, clearly present. Eyes reduced to a small yellow spot, maximal diameter about half the diameter of the second article of the antennae. Antennae about 1.5 mm long, third article about 0.7 times as wide as long, article X about as wide as long.

Pronotum elongate, parallel. Punctuation a little denser and stronger than on the head, absent on the broad middle line. Microsculpture absent.

Elytra about as long as wide, slightly wider near the apex. Punctuation as strong like on the pronotum, less dense. Surface without clear microsculpture but with irregular wrinkles.

Abdomen almost parallel, widest near the segment VI-VIII (visible segments 4-5). Punctuation small and sparse. Surface with strong isodiametric microsculpture.

FEMALE: tip of sternite VIII rounded, tergite VIII without modifications. Tergite IX like fig. X.

MALE: sternites VI-VII with a central weak impression. Sternite VII with between the normal yellow hairs some smaller black setae, more dense in the posterior part of the impression (only hairs drawn on fig. X). Sternite VIII with a small excavation at the posterior edge.

Aedeagus with the ventral plate in lateral view curved, top truncate. Dorsal plate with at the top first curved upwards then narrowly sickle-shaped curved downwards with a small lobe on the sickle. Between the ventral and dorsal plate only one sclerite with a curved top visible.

COMMENTS. This species belongs to a group of very similar species with in Romania : *L. coecum* Frivaldszky, 1883, *L. jeanneli* Koch, 1939, *L. kaszabi* Pace, 1983 and *L. moraveci* Janák, 1987. *L. coecum* is geographically the closest, also found in the Banat mountains. The aedeagus is

described by PACE (1983), the description of *L. coecum* by COIFFAIT (1982) was based on *L. anophthalmum* Fauvel at that time seen as a synonym, corrected by PACE (1984). Based on the aedeagus *L. anophthalmum* seems closer related. Externally no reliable difference with *L. anophthalmum*.

***Lathrobium anophthalmum* Fauvel, 1885**

MATERIAL EXAMINED. ROMANIA: Eibenthal, 26.III.2019, 44.546°N 22.205°E: 3 females (cStr) + 1 male and 1 female (HNHM).

COMMENTS. This species was described from “Hongaria & Serbia” without further details. The type specimen is missing in the collection Fauvel. The description of *L. coecum* by COIFFAIT (1982) was based on *L. anophthalmum* Fauvel at that time seen as a synonym, corrected by PACE (1984). For a long time several related species were considered as the same species, also JEANNEL (1922) noted *L. anophthalmum* as a synonym of *L. coecum* and mentions the species from Serbia, Banat, Transylvanian alps and Bihar mountains, which have now each their own species.

COIFFAIT (1982) contains a figure of the aedeagus of *L. anophthalmum* s. str., but those figures are a bit simplified and so difficult to interpretate. PACE (1984) described the subspecies *L. anophthalmum stolense* with only a figure of the aedeagus as description, type location is Serbia: Stol planina, about 40 km south of our location. The publication does not say where the type is, but it is at least not in Verona, the hometown of Pace. Our individual correspond enough with the drawings. Without a clear difference between the two subspecies no further placement of our material is made.

***Lathrobium* sp.**

MATERIAL EXAMINED. ROMANIA: Șopotu Nou, 26.V.2015, 44.809°N 21.842°E: 1 female (cStr).

COMMENTS. I don't see a real difference with *L. anophthalmum* or *L. gyorgyi*, but also *L. coecum* cannot be excluded. Without a male identification is not possible.

Acknowledgements

I would like to extend my sincere thanks to György Makranczy for the help to collect a big part of the material, Paweł Jałoszyński for the identification of the *Leptomastax* and Jerry Wilson for the textual corrections. I thank Jean Orousset for carefully proof-reading this manuscript.

References

- COIFFAIT H., 1972. - Coléoptères Staphylinidae de la région Paléarctique occidentale I. Généralités. Sous-familles: Xantholininae et Leptotyphlinae. *Nouvelle Revue d'Entomologie*, 2 (Supplément): I-IX + 1-651.
- COIFFAIT H., 1982. - Coléoptères Staphylinidae de la région Paléarctique occidentale IV. Sous-famille Paederinae. Tribu Paederini 1 (Paederi, Lathrobii). *Nouvelle Revue d'Entomologie*, 12 (Supplément): 1-440.
- HLAVÁČ P., PERREAU M. & ČEPLÍK D., 2017. - *The subterranean beetles of the Balkan Peninsula*. Czech University of the Sciences, Prague, 267 pp.
- JANÁK J., 1987. - Neue Erkenntnisse zur Systematik, Bionomie und Verbreitung anophthalmer Staphyliniden im rumänischen Gebirge Munții Apuseni (Coleoptera, Staphylinidae). *Zeitschrift für Entomologie*, 8/9: 201-210.
- JEANNEL R., 1922. - Deux Staphylinides endogés aveugles des monts Bihar. *Bulletinul Societatii de Stiinte din Cluj*, 1: 344-347.
- PACE R., 1983. - *Lathrobium kaszabi* sp. n. del gruppo di *L. coecum* J. Frivaldszky (Coleoptera, Staphylinidae). *Annales Historico-Naturales Musei Nationalis Hungarici*, 75: 159-162.
- PACE R., 1984. - Due nuovi *Lathrobium* del Durmitor e della Serbia (Coleoptera, Staphylinidae). In: NONVEILLER G. (ed.). - *Contributions to the endogean fauna of Coleoptera of Durmitor*. Crnogorska Akademija Nauka i Umjetnosti, 337-362.

PACE R., 1996. - Coleoptera Staphylinidae Leptotyphlinae. In: *Fauna d'Italia*, 34. Calderini, Bologna, 1-328.

PACE R., 1999. - Descrizione di *Kladotyphlus kahleni* gen n., sp. n. di Leptotyphlinae della Slovenia (Coleoptera: Staphylinidae). *Acta entomologica slovenica*, 7: 77-83.
