

A revision of *Medon*. XII. Two new species and a review of the fauna of Georgia (Coleoptera: Staphylinidae: Paederinae)

With 15 figures and 2 maps

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Abstract

Two species of *Medon* STEPHENS, 1833 are described and illustrated: *M. steggiae* spec. nov. (Northwest Georgia: Samegrelo-Zemo Svaneti, Abkhazia) of the *M. fuscus* group and *M. bisinuatus* spec. nov. (China: Zhejiang) of the *M. profundus* group. A revision of previously examined and recently collected material from Georgia revealed that the fauna of this country currently includes six species and that some of the previous records were based on misidentification. All the known records of the genus from Georgia are mapped.

Taxonomic acts

Medon steggiae spec. nov. – urn:lsid:zoobank.org:act:0B7CD2C8-3487-4873-B6B0-45533697760F

Medon bisinuatus spec. nov. – urn:lsid:zoobank.org:act:8D2E686A-AF4B-45DB-AAEE-103EAB99C309

Key words

Coleoptera, Staphylinidae, Paederinae, *Medon*, Palearctic region, Georgia, China, taxonomy, new species, new records.

Zusammenfassung

Zwei Arten der Gattung *Medon* STEPHENS, 1833 werden beschrieben und abgebildet: *M. steggiae* spec. nov. (Nordwest-Georgien: Samegrelo-Zemo Svaneti, Abchasien) aus der *M. fuscus*-Gruppe und *M. bisinuatus* spec. nov. (China: Zhejiang) aus der *M. profundus*-Gruppe. Eine Revision bereits untersuchten sowie neuen Materials aus Georgien ergab, dass die Gattung in diesem Gebiet durch lediglich sechs Arten vertreten ist und dass einige frühere Nachweise auf Fehldetermination beruhen. Alle aus Georgien bekannten Nachweise werden anhand von Karten illustriert.

Introduction

The distribution and diversity of the genus *Medon* STEPHENS, 1833 at a worldwide scale is currently unclear, since previous taxonomic studies have revealed that numerous species originally or subsequently assigned to

this genus actually belong to other genera of Medonina. According to three major revisions of the faunas of the East Mediterranean region, the Middle East, and the Caucasus region (ASSING 2004a), of the Atlantic Islands

and the West Mediterranean region (ASSING 2006), and of the East Palearctic region (ASSING 2013), as well as eight supplements, *Medon* was previously represented in the Palearctic by 84 species, four of them of doubtful identity, in five species groups, and only two confirmed species are known from the Oriental region (ASSING 2018).

While the East Palearctic *Medon* fauna has been addressed in only few studies and there is little doubt that numerous additional species remain to be discovered, that of the West Palearctic region can be considered well-known. This, however, is not true of the fauna of Georgia (including Abkhazia), from where only six species and few records have been reported: *Medon maronitus* (SAULCY, 1865), *M. dilutus pythonissa* (SAULCY, 1865), *M. aban-tensis* BORDONI, 1980, *Medon fuscus* (MANNERHEIM, 1830), *M. sparsiventris* EPPELSHEIM, 1889, and *M. sequax* ASSING, 2004 (ASSING 2004a, b, 2009, 2018).

A study of recently collected specimens and a revision of previously examined material revealed that several previous records were based on misidentification. Moreover, an undescribed species was discovered in this material.

Material and methods

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

MNB	Museum für Naturkunde, Berlin (including coll. Schülke)
NMP	National Museum of Natural History, Praha (J. Hájek)
SNUC	Shanghai Normal University, Shanghai
cAss	author's private collection
cFel	private collection Benedikt Feldmann, Münster
cKoc	private collection Matúš Kocian, Prague

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

Body length was measured from the anterior margin of the mandibles (in resting position) to the abdominal apex, the length of the forebody from the anterior margin of the mandibles to the posterior margin of the elytra, head length from the anterior margin of the frons to the posterior constriction of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra (at the suture), and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

Results

The *Medon* fauna of Georgia

Based on a revision of previously and recently collected *Medon* material from Georgia (including Abkhazia), the currently known fauna is rather poor. Six species, one of them newly described, are reported from this country. One recently described species, which was previously known only from Turkey, is recorded from Georgia for the first time. Previous records of two species, *M. sparsiventris* and *M. sequax*, were based on misidentification; these species are removed from the Georgian fauna.

Medon maronitus (SAULCY, 1865)

(Map 1)

Material examined: Georgia: Samtskhe-Javakheti: 1 ♀, Trialeti Range, N Bakuriani, E Tsaghveri, 41°47'25"N, 43°32'27"E, 1150 m, stream valley with mixed forest, litter near stream sifted, 8.VII.2019, leg. Assing (cAss).

Comment: For previous records of this widespread species from Georgia see ASSING (2004a, 2018). The distribution in Georgia is illustrated in Map 1.

Medon dilutus pythonissa (SAULCY, 1865)

(Map 2)

Material examined: Georgia: Samtskhe-Javakheti: 1 ♀, Meskheti Range, ca. 30 km WSW Borjomi, 41°43'52"N, 43°06'34"E, 1020 m, moist road margin with alder, oak, etc., litter sifted, 9.VII.2019, leg. Assing (cAss).

Comment: Several previous records from Georgia were reported by ASSING (2004a, 2018). All known records are shown in Map 2.

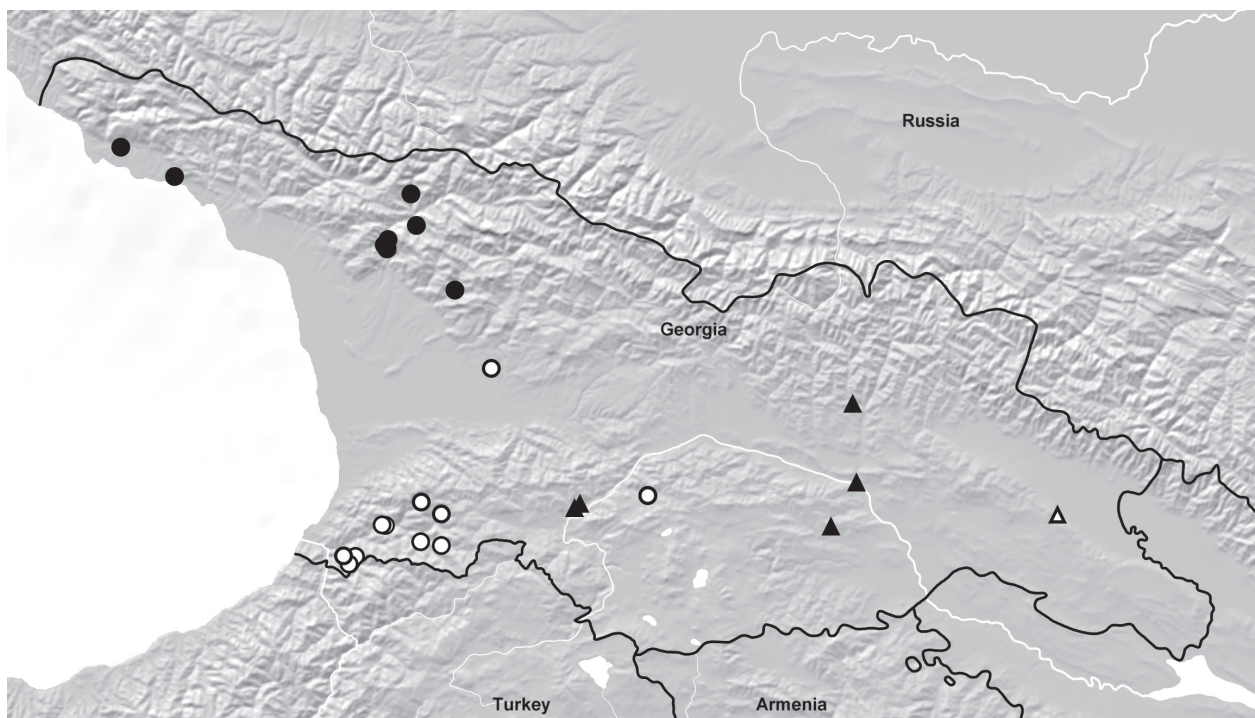
Medon assingi ANLAŞ, 2015

(Map 1)

Material examined: Georgia: Adjara: 1 ♀, Chakvistavi, 41°40'47"N, 41°52'19"E, 330 m, soil-washing, 8.VI.2021, leg. Brachat & Meybohm (cAss); 1 ♂, 2 ♀ ♀, Kintrishi National Park, 41°44'15"N, 41°59'01"E, 430 m, deciduous forest with chestnut, beech, rhododendron, and *Hypericum*, litter sifted, 10.VI.2012, leg. Brachat & Meybohm (cAss); 2 ♂ ♂, 1 ♀, Chakvistavi, 41°40'47"N, 41°52'19"E, 330 m, stream valley in deciduous forest, litter sifted, 17.V.2019, leg. Brachat & Meybohm (cAss); 1 ♂, W Chakvistavi, 41°40'42"N, 41°51'10"E, 220 m, stream valley with deciduous forest (old alder and elm trees), litter sifted, 18.V.2019, leg. Brachat & Meybohm (cAss); 2 ♀ ♀, E Chakvistavi, 41°40'44"N, 41°53'09"E, deciduous forest, litter sifted, 400 m, 19.V.2019, leg. Brachat &



Map 1: Distributions of *Medon assingi* (black circles) and *M. maronitus* (white circles) in Georgia.



Map 2: Distributions of *Medon steggiae* (black circles), *M. abantensis* (white circles), *M. dilutus pythonissa* (black triangles), and *M. fuscus* (white triangle) in Georgia.

Meybohm (cAss); 1 ♀, E Chakvistavi, 41°40'38"N, 41°52'38"E, 380 m, dry forest litter sifted, 19.V.2019, leg. Brachat & Meybohm (cAss); 1 ♀, E Chakvistavi, 41°40'34"N, 41°52'30"E, 320 m, rhododendron litter sifted, 20.V.2019, leg. Brachat & Meybohm (cAss); 1 ♂, 3 ♀ ♀, E Chakvistavi, 41°40'34"N, 41°52'49"E, 360 m, road margin, deciduous forest margin, litter sifted, 20.V.2019, leg. Brachat & Meybohm (cAss).

Comment: The original description of *M. assingi* is based on three males collected in two localities in Şırnak and Artvin provinces, East Turkey (ANLAŞ 2015). The above material represents the first records from Georgia, where the known distribution of this species is confined to the southwest (Map 1).

Medon fuscus (MANNERHEIM, 1830)

(Map 2)

Comment: This widespread species is currently known from a single locality in eastern Georgia (ASSING 2018) (Map 2).

Medon abantensis BORDONI, 1980

(Map 2)

Material examined: Georgia: Adjara: 1 ♀, E Chikuneti, 41°30'38"N, 41°52'37"E, 580 m, 23.V.2018, leg. Brachat & Meybohm (cAss); 3 ♀♀, E Chikuneti, 41°30'47"N, 41°53'12"E, 800 m, 23.V.2018, leg. Brachat & Meybohm (cAss); 3 ♂♂, 4 ♀♀, Skhalta valley, 41°34'52"N, 42°21'54"E, 800 m, 22.VI.2017, leg. Brachat & Meybohm (cAss); 1 ♂, Skhalta valley, 41°33'42"N, 42°26'20"E, 980 m, 22.VI.2017, leg. Brachat & Meybohm (cAss); 1 ex., Meskheti Range, NE Khulo, 41°42'17"N, 42°21'49"E, 1120 m, E-slope with predominant *Corylus*, mostly *Corylus* litter sifted, 12.VII.2019, leg. Schülke (MNB); 1 ex., Shavsheti Range, SW Khulo, 41°35'04"N, 42°15'08"E, 610 m, mixed forest margin with rhododendron and fern undergrowth, sifted, 13.VII.2019, leg. Schülke (MNB); 1 ♂, 2 exs., Shavsheti Range, SW Khulo, 41°34'41"N, 42°15'01"E, 1090 m, slope with various trees, bushes, and fern undergrowth, sifted, 13.VII.2019, leg. Assing & Schülke (cAss, MNB); 1 ex., Meskheti Range, NW Khulo, 41°44'44"N, 42°14'36"E, 1090 m, stream valley with hazelnut, litter sifted, 14.VII.2019, leg. Schülke (MNB); 2 ♂♂, 6 ♀♀, 1 ex., Meskheti Range, NW Shuakhevi, Gobroneti, 41°39'18"N, 42°02'41"E, 710 m, stream valley with deciduous trees and bushes, litter near stream sifted, 15.VII.2019, leg. Assing & Schülke (cAss, MNB); 1 ♀, 1 ex., Meskheti Range, NW Shuakhevi, Gobroneti, 41°39'01"N, 42°02'08"E, 430 m, stream valley with deciduous trees and bushes, litter near stream sifted, 15.VII.2019, leg. Assing & Schülke (cAss, MNB); 1 ♀, Shavsheti Range, SE Batumi, Machakhela National Park, 41°28'55"N, 41°51'29"E, 680 m, stream valley with alder, hazelnut, chestnut, and rhododendron, litter sifted, 16.VII.2019, leg. Assing (cAss); 1 ex., Shavsheti Range, SE Batumi, Machakhela National Park, 41°30'34"N, 41°49'04"E, 170 m, forest margin with ash, walnut, hazelnut, chestnut, and rhododendron, litter sifted, 17.VII.2019, leg. Schülke (MNB). **Samtskhe-Javakheti:** 3 ♂♂, 6 ♀♀, Trialeti Range, N Bakuriani, E Tsaghveri, 41°47'22"N, 43°32'29"E, 1170 m, mixed forest margin, litter on scree sifted, 8.VII.2019, leg. Assing (cAss). **Imereti:** 1 ♂, N Kutaisi, Sataplia Nature Reserve, 42°18'58"N, 42°39'30"E, 330 m, mixed deciduous forest with large rocks, litter sifted, 16.VIII.2021, leg. Schülke (cAss).

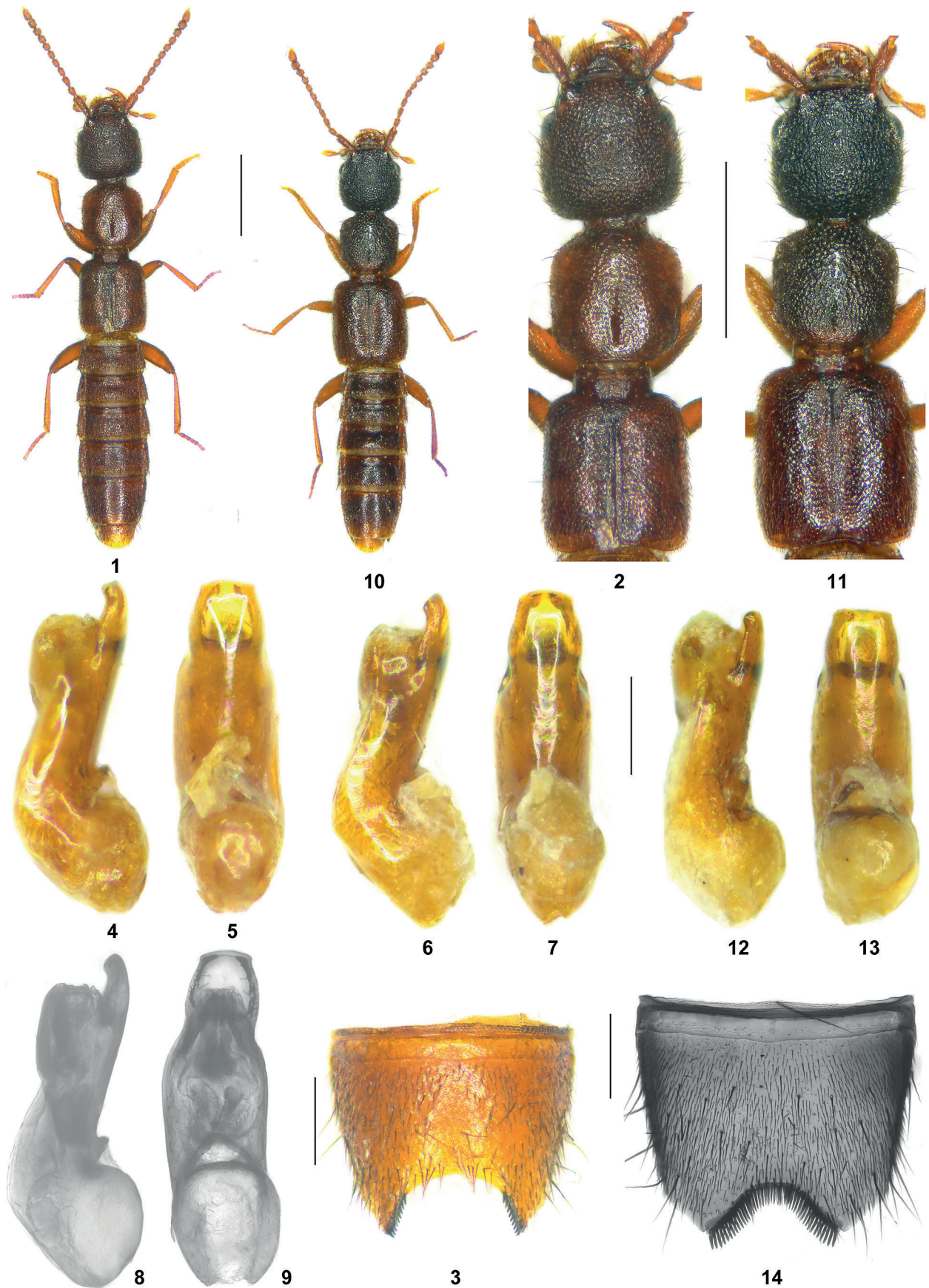
Comment: *Medon abantensis* was originally described based on a unique male from a locality in Bolu (BORDONI 1980). According to SCHÜLKE & SMETANA (2015), *M. abantensis* was previously known from Turkey,

Georgia (Abkhazia), and Cyprus. The records from Abkhazia had been reported by ASSING (2004b, 2009); they all belong to *M. steggiae* (see below). Also, some of the records previously reported and mapped in ASSING (2009) were revised in the course of the present study and in fact refer to other species. In view of the confirmed distribution, which ranges from Northwest Turkey across North Turkey to the Lesser Caucasus in Southwest Georgia, the previous record from Cyprus (ANLAŞ 2012) appears highly doubtful. Some of the above material was erroneously reported as *M. sparsiventris* by ASSING (2018). The distribution in Georgia is restricted to the west and southwest (Map 2).

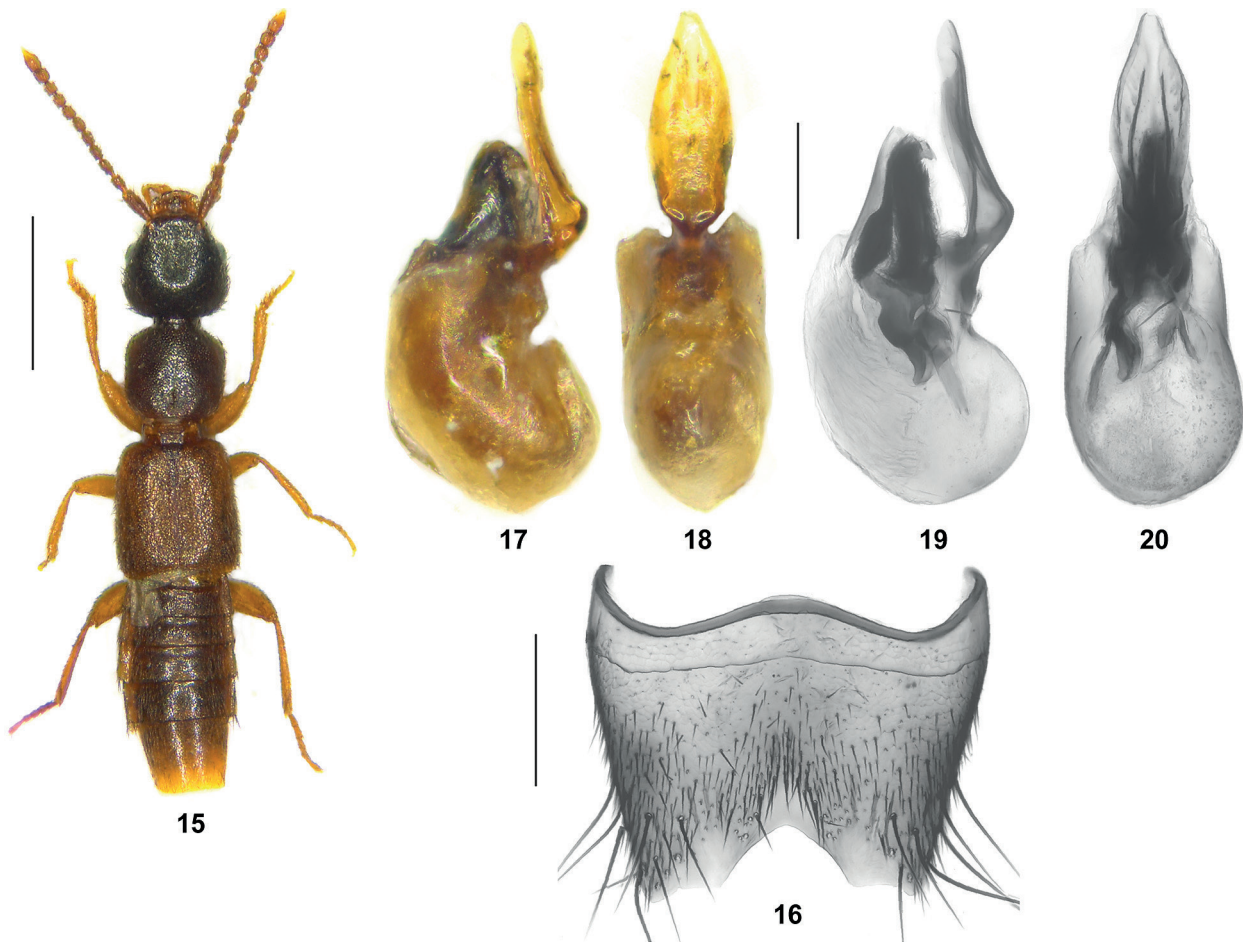
Medon steggiae spec. nov.

urn:lsid:zoobank.org:act:0B7CD2C8-3487-4873-B6B0-45533697760F
(Figs 1–9, Map 2)

Type material: Holotype ♂: "GEORGIA [45] – Zemo Svaneti, N Jvari, 42°49'02"N, 42°01'54"E, 600 m, stream valley, 9.VIII.2021, V. Assing / Holotypus ♂ *Medon steggiae* sp. n. det. V. Assing 2021" (cAss). Paratypes: 1 ♂, 3 ♀♀: same data as holotype; 2 ♀♀ [1 teneral]: "GEORGIA [GE2021-45]: Zemo Svaneti, N Jvari, 42°49'02"N, 42°01'54"E, 600 m, stream valley with mixed deciduous forest, litter sifted, 9.VIII.2021, leg. M. Schülke" (MNB); 11 ♂♂, 9 ♀♀: "GEORGIA [61] – Zemo Svaneti, N Jvari, 42°49'02"N, 42°01'54"E, 600 m, stream valley, 18.X.2021, V. Assing" (cAss); 1 ♀: same data, but "[61a]" (cAss); 5 exs., "GEORGIA [GE2021-61]: Zemo Svaneti, N Jvari, 42°49'02"N, 42°01'54"E, 600 m, stream valley with mixed deciduous forest, litter sifted, 18.X.2021, leg. M. Schülke" (MNB); 2 ♂♂: "GEORGIA [GE 2021-44]: Zemo Svaneti, N Jvari, 42°49'58"N, 42°01'28"E, 620 m, stream valley with mixed deciduous forest, litter sifted, 9.VIII.2021, leg. M. Schülke" (MNB, cAss); 2 ♀♀: "GEORGIA [62] – Zemo Svaneti, N Jvari, 42°49'58"N, 42°01'28"E 620 m, stream valley, 18.X.2021, V. Assing" (cAss); 1 ♀: same data, but "[62a]" (cAss); 1 ♂: "GEORGIA [59] – Zemo Svaneti, N Martvili, Lebarde valley, 42°38'46"N, 42°25'40"E, 840 m, 17.X.2021, V. Assing" (cAss); 2 ♀♀: "GEORGIA [32] – Zemo Svaneti, N Khaishi, 43°02'38"N, 42°10'20"E 1250 m, mixed forest, 5.VIII.2021, V. Assing" (cAss); 1 ♀: "GEORGIA [GE2021-32]: Zemo Svaneti, N Khaishi, 43°02'38"N, 42°10'20"E, 1250 m, mixed forest, moist litter near small stream sifted, 5.VIII.2021, leg. M. Schülke" (MNB); 1 ♀: "GEORGIA [GE 2021-38]: Zemo Svaneti, S Khaishi, 42°54'45"N, 42°11'39"E, 840 m, alder forest, litter near logs sifted, 7.VIII.1921, leg. M. Schülke" (MNB); 2 ♂♂ [1 teneral], 2 ♀♀: "GEORGIA – Svaneti, 10–15 km N Jvari, 42°49'02"N, 42°01'52"E, 600 m, 20.VII.2019, leg. J. & B. Martens [8]" (cAss); 1 ♂: "N42°49'02" E42°01'52 (10), Georgien Svaneti, Jvari ca. 20 km N 600 m, Brachat & Meybohm 25.6.2017" (cAss); 5 exs.: "GEORGIA, Svaneti, valley of Khuberi river, leaf litter sifting, 720 m, 42.856190N, 42.039260E, 11.VII.2015 M. Kocian lgt." (cKoc, cAss); 1 ♂, 1 ♀ [teneral]: "W Caucasus: Abkhazia,



Figs 1–14: *Medon steggiae* spec. nov. (1–9), *M. lanugo* from Samsun (10–13), and *M. bisinuatus* (14): 1, 10 – habitus; 2, 11 – forebody; 3, 14 – male sternite VII; 4–7, 12–13 – aedeagus in lateral and in ventral view; 8–9 – aedeagus in transparent light in lateral and in ventral view. Scale bars: 1–2, 10–11: 1.0 mm; 3–9, 12–14: 0.2 mm.



Figs 15–20: *Medon bisinuatus*: 15 – habitus; 16 – male sternite VIII; 17–18 – aedeagus in lateral and in ventral view; 19–20 – aedeagus in transparent light in lateral and in ventral view. Scale bars: 15: 1.0 mm; 16–20: 0.2 mm.

env. Novyi Afon, valley of Psyrtska riv. (*Fagus orientalis*, *Coryllus* [sic]) / Pirov env., 30.IV.2002, Under stone on meadow, Hlaváč lgt.” (cAss); 1 ♂: “Georgia – Abkhazia, Novyi Afon, *Fagus orientalis* forest, 22.VII.2002, Koval” (cAss); 1 ♂: “GEORGIA – Abkhazia, Upper course of Mtshishta River [near Otkhara village], 200 m, (*Caprinus* [sic] + *Coryllus*), 28.viii.2001, Koval” (cAss).

Etymology: This species is dedicated to my dear friend and colleague Ina Steggenwenz (nickname: Steggi) to reward, and finally put an end to, her determined and relentless nudging, nagging, and pushing me to have a species named after her, at the occasion of her retirement.

Description: Body length 4.5–5.8 mm; length of fore-body 2.5–2.9 mm. Habitus as in Fig. 1. Coloration: body reddish-brown to dark-brown with the head mostly blackish-brown to black; legs reddish; antennae dark-reddish.

Head (Fig. 2) approximately as broad as long; punctuation shallow, but defined, very dense, and umbilicate. Eyes weakly convex and rather small, less than half as long as postocular region in dorsal view.

Pronotum (Fig. 2) slightly narrower than head, with shallow, but defined, non-confluent punctuation, narrowly impunctate along midline.

Elytra (Fig. 2) slightly shorter than pronotum. Hind wings present, but possibly of reduced length. Posterior margin of tergite VII with palisade fringe.

♂: sternite VII (Fig. 3) and sternite VIII with similar modifications as many other species of the *M. fuscus* group; aedeagus approximately 0.7 mm long and shaped as in Figs 4–9.

Comparative notes: Based on the modifications of the male sternites VII–VIII and on the morphology of the aedeagus, *M. steggiae* belongs to the *M. fuscus* group. This group includes a number of similar species, most of which are distributed in the East Mediterranean, the Caucasus region, and the Middle East. The representatives of this group are distinguished only by slight differences in the morphology of the aedeagus, sometimes also by the shape and chaetotaxy of the male sternite VII and by external characters. The aedeagus of *M. steggiae* is most similar to that of *M. lanugo* ASSING, 2004, a species distributed in Turkey where it is widespread and rather common. The new species is distinguished from *M. lanugo* by smaller and less convex eyes, significantly shorter elytra, less coarse and shallower punctuation of the head; much shallower, less coarse, less dense, and non-confluent punctuation of the pronotum, and a slightly longer aedeagus with an apex of different shape (both in

lateral and in ventral view). For comparison, the external characters and the aedeagus of *M. lanugo* are illustrated in Figs 11–13. *Medon fusculoides* COIFFAIT, 1970, which is distributed from East Turkey to Armenia, Azerbaijan, and Iran and whose aedeagus somewhat resembles that of *M. steggiae* and *M. lanugo*, differs from the new species by larger eyes, longer elytra, darker colouration, and a broader and apically less distinctly narrowed apex of the aedeagus (ventral view). For illustrations of *M. fusculoides* see ASSING (2004a).

Distribution and natural history: The type material was collected in several localities in Abkhazia and Samegrelo-Zemo Svanetia, Northwest Georgia (Map 2). Some of the specimens had erroneously been reported as *M. abantensis* or *M. sequax* by ASSING (2004b, 2018). The material was mostly sifted from leaf litter in moist mixed and deciduous forests at altitudes of 200–1250 m. Two specimens were collected by soil-washing. Three paratypes found in April, July, and August are teneral.

Species from China and Taiwan

Medon alesi ASSING, 2014

Material examined: Taiwan: 1 ♂ [identified by B. Feldmann], Nantou, Ren'ai, 24°03'32"N, 121°09'44"E, 1950 m, deciduous forest, sifted, 27.VII.2018, leg. Hetzel (cFel).

Comment: The distribution of *M. alesi* is confined to Taiwan, where it seems to be rather common (ASSING 2014, 2018).

Medon bisinuatus spec. nov.

urn:lsid:zoobank.org:act:8D2E686A-AF4B-45DB-AAEE-103EAB99C309
(Figs 14–20)

Type material: Holotype ♂: “CHINA: Zhejiang Prov., Lin'an County, West Tianmushan Nat. Res., 350 m NWW of Original Temple of Lion Sect, 30.3426°N 119.4302°E, J. Hájek & J. Růžička leg. / (WT14) 28.vi.2017, 1190 m, sift #08, broad-leaved deciduous forest, detritus along rocks and fallen logs near brook / Holotypus ♂ *Medon bisinuatus* sp. n. det. V. Assing 2019” (SNUC). Paratypes: 1 ♂, 1 ♀: same data as holotype; 2 ♀♀: same data, but “sift #13, 2.vii.2017”; 1 ♀: same data, but “100 m SE top Immortal Peak, (WT13) 28.vii.2017, 1470 m, sift #07, dwarf forest, under bamboo and other shrubs, near water source”. (Paratypes in SNUC, NMP, and cAss).

Etymology: The specific epithet (Latin, adjective) alludes to the bisinuate posterior margin of the male sternite VIII.

Description: Body length 4.2–5.2 mm; length of forebody 2.4–2.7 mm. Habitus as in Fig. 20. Coloration: head

blackish; pronotum dark-brown to blackish-brown; elytra brown, with the humeral angles indistinctly paler; abdomen brown to dark-brown; legs dark-yellowish; antennae dark-reddish with antennomere I somewhat darker.

Head approximately as broad as long; punctuation fine and dense, coarser on frons; interstices with shallow microreticulation. Eyes moderately large, approximately 0.7–0.8 times as long as postocular region in dorsal view.

Pronotum: punctuation dense, fine (though less so than that of head), and granulate. Elytra long and broad, approximately 1.15 times as long as pronotum; punctuation fine, very dense, and weakly granulate. Hind wings fully developed.

♂: sternite VII (Fig. 14) with large and deep concave posterior excision, margin of this excision furnished with a distinct comb of numerous long palisade setae and laterally with additional long black setae; sternite VIII (Fig. 16) small in relation to sternite VII, transverse, with conspicuously sinuate posterior margin, posterior excision moderately deep and moderately broad; aedeagus (Figs 17–20) approximately 0.8 mm long; ventral process of characteristic shape; internal sac with dark structures of characteristic arrangement.

Comparative notes: Based on the derived shapes and chaetotaxy of the male sternites VII–VIII and on the synapomorphically modified morphology of the aedeagus, *M. bisinuatus* belongs to the *M. profundus* group, which previously included four species from China and Taiwan (ASSING 2014, 2018). It is reliably distinguished from other species of this group only by the shapes of the male sternites VII and VIII, as well as by the shape of the aedeagus. For comparison see the illustrations provided by ASSING (2014, 2018).

Distribution and natural history: The specimens were collected by sifting litter in two geographically close localities in the West Tianmu Shan reserve, Zhejiang, China. The altitudes range from 1190 to 1470 m.

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I am indebted to the colleagues indicated in the material section and in particular to Volker Brachat (Geretsried) and Heinrich Meybohm (Großhansdorf) for the generous gift of Staphylinidae collected by them and by Jochen Martens during their field trips to Georgia. Alexey Solodovnikov (Copenhagen) assisted in the identification of a locality in Abkhazia. Benedikt Feldmann (Münster) and Michael Schülke proof-read and reviewed the manuscript.

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