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Linzer biol. Beitr.	46/1	515-523	31.7.2014

Three new species and a new species group of *Medon* from China and Taiwan (Coleoptera: Staphylinidae: Paederinae)

V. ASSING

A b s t r a c t : Three species of the newly established *Medon profundus* group are described and illustrated: *M. profundus* nov.sp. (China: border region between Shaanxi and Chongqing, Sichuan), *M. yunnanicus* nov.sp. (China: Yunnan), and *M. alesi* (Taiwan). They are evidently closely related and undoubtedly form a monophyletic group. Their known distributions are mapped. The preoccupied name *Medon flavomarginatus* ASSING 2013 is replaced with *M. gilvimarginatus* nov.nom. *Medon* STEPHENS 1833 is now represented in the Palaearctic region by 81 confirmed species.

K e y w o r d s : Coleoptera, Staphylinidae, Paederinae, *Medon*, Palaearctic region, China, Taiwan, taxonomy, new species, new species group, distribution map.

Introduction

According to a recent synopsis, including a checklist, the paederine genus *Medon* STEPHENS 1833 was previously represented in the Palaearctic region by 78 confirmed species, one of them with five subspecies (ASSING 2013). Only 16 of these species had been recorded from the East Palaearctic region. Additional 31 species are currently assigned to *Medon*, but probably belong to other genera of Medonina.

Material recently forwarded to me by Aleš Smetana (Ottawa) and Michael Schülke (Berlin) included several specimens of three evidently closely related, undescribed *Medon* species from several localities in China and Taiwan. These species are hypothesized to represent a monophyletic species group.

Material and methods

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

CAS ..... Chinese Academy of Sciences, Beijing
cAss..... author´s private collection
cSch..... private collection Michael Schülke, Berlin
cSme..... private collection Aleš Smetana, Ottawa

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Ger-

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many) and a Jenalab compound microscope (Carl Zeiss Jena). A digital camera (Nikon Coolpix 995) was used for the photographs. The map was 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 margin of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

Descriptions

***Medon profundus* nov.sp.** (Figs 1-7, Map 1)

T y p e m a t e r i a l : Holotype ♂: "CHINA (border Shaanxi-Sichuan) [now border Shaanxi-Chongqing], Daba Shan, 20 km SSE Zhenping, 1700-1800 m, 31°44'N, 109°35'E (small creek vall., young dry mixed forest, leaf-litt., moss sifted) 9.&12.VII.2001 Wrase [07] / Holotypus ♂ *Medon profundus* sp.n. det. V. Assing 2013" (cAss). Paratypes: 1♂: "CHINA: Border Shaanxi - Sichuan [today border Shaanxi-Chongqing] (Daba Shan), pass 20 km SSE Zhenping, 1700-1800 m, 31°44'N, 109°35'E, 9.VII.2001, leg. M. Schülke [C01-07] / young dry mixed forest, field edge, small creek valley, moss (sifted) [C01-07]" (cSch); 1♂, 1♀: "P.R. China, Sichuan, Emei Shan, N29°33.6', E103°20.6', 27.vi.-5.vii.2009, 1800-2400 m, sifting11-17, V. Grebennikov" (CAS, cAss).

Etymology: The specific epithet (Latin, adjective: deep) alludes to the profound posterior excision of the male sternite VII.

D e s c r i p t i o n : Body length 4.7-5.7 mm; length of forebody 2.6-3.0 mm. Habitus as in Fig. 1. Coloration: head blackish; pronotum brown; elytra dark yellowish-brown; abdomen dark-brown; legs dark-yellowish; antennae reddish to dark-brown.

Head (Fig. 2) approximately as broad as long; punctation fine and dense; interstices with shallow microreticulation. Eyes large and rather weakly convex, 0.8-1.0 times as long as postocular region in dorsal view. Antenna 1.6-1.8 mm long.

Pronotum (Fig. 2) approximately 1.05 times as broad as long and 0.96-0.98 times as broad as head; anterior and posterior margins concave in the middle; punctation dense, fine (though less so than head), and granulose; midline without impunctate longitudinal band.

Elytra (Fig. 2) long and broad, approximately 1.2 times as long as pronotum; punctation fine, very dense, and weakly granulose. Hind wings fully developed. Metatarsomere I distinctly longer than II.

Abdomen slightly narrower than elytra; punctation extremely fine and dense; interstices with shallow microreticulation; posterior margin of tergite VII with palisade fringe.

♂: sternite VII (Fig. 3) with large and profound posterior excision, margin of this excision furnished with a distinct comb of numerous long palisade setae and with an additional row of long black setae (Fig. 4); sternite VIII (Fig. 5) small in relation to sternite VII, transverse, and with median impression, this impression without setae, but

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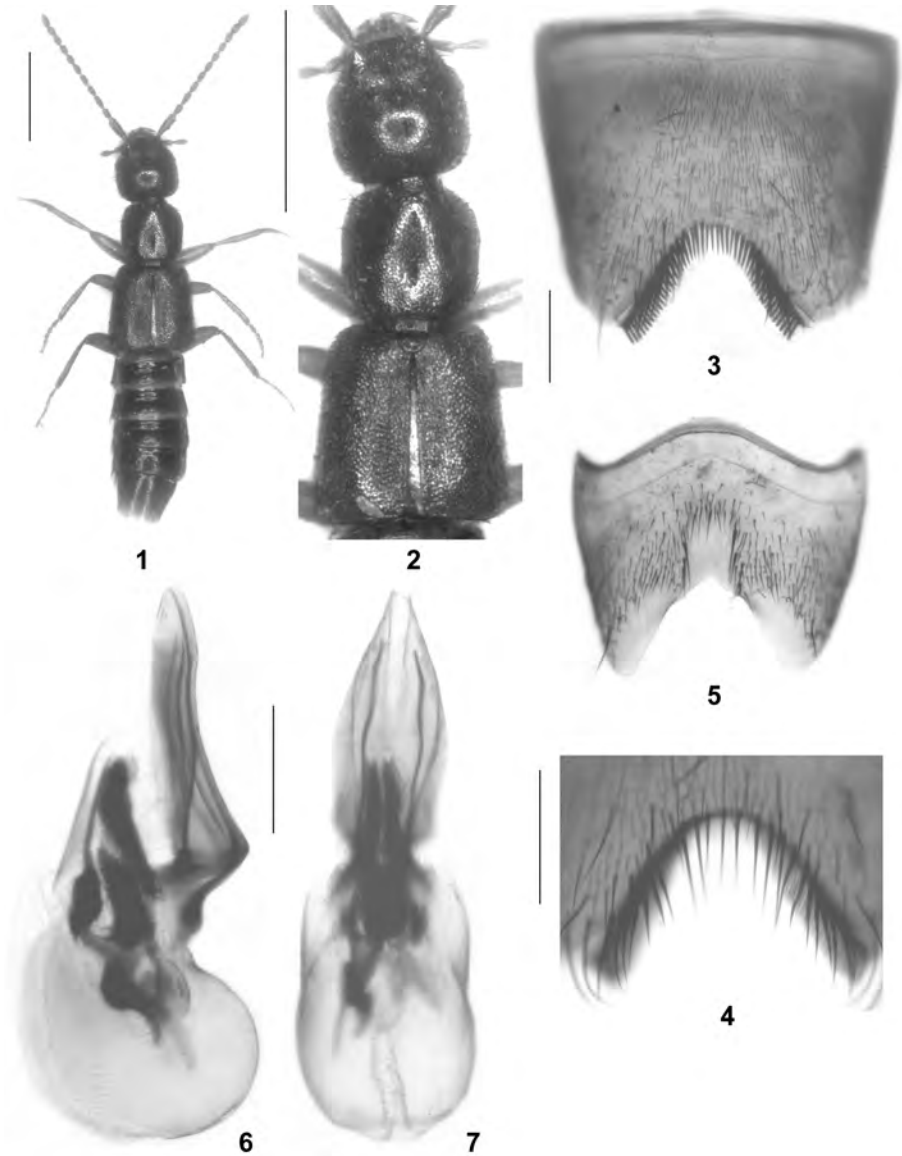
enframed by some long black setae, posterior excision deep and broad; aedeagus (Figs 6-7) approximately 0.9 mm long; ventral process basally distinctly angled in lateral view, apically with ventral carinae and with median furrow; internal sac with numerous dark structures.



Figs 1-7: *Medon profundus* nov.sp.: (**1**) habitus; (**2**) forebody; (**3**) male sternite VII; (**4**) posterior excision of male sternite VII; (**5**) male sternite VIII; (**6-7**) aedeagus in lateral and in ventral view. Scale bars: 1-2: 1.0 mm; 3-7: 0.2 mm.

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Comparative notes: Together with the two other species described below, *M. profundus* forms a distinct species group, hereafter referred to as the *M. profundus* group, characterized among Palaearctic *Medon* by the fine punctation of the forebody (general appearance somewhat resembling species of *Lithocharis* DEJEAN 1833), the granulose punctation of the pronotum, the deep posterior excision of the male sternite VII with an uninterrupted comb of numerous long palisade setae, the deep and broad posterior excision of the male sternite VIII, and by the morphology of the aedeagus (ventral process distinctly separated from the aedeagal capsule, basally either abruptly curved or distinctly angled, and ventrally with carinae; internal sac with numerous dark structures). The granulose punctation of the pronotum, the modifications of the male sternites VII and VIII, as well as the derived morphology of the aedeagus evidently represent synapomorphies and leave no doubt that the *M. profundus* group is monophyletic. For characters distinguishing *M. profundus* from the two species described below see the comparative notes in the following sections.

Distribution and natural history: The species is currently known from two localities in China, one in the Daba Shan (Shaanxi/Chongqing) and one in the Emei Shan (Sichuan) (Map 1). The specimens were collected at altitudes between 1700 and 2400 m, those from the Daba Shan were sifted from leaf litter and moss in a young dry mixed forest.

***Medon yunnanicus* nov.sp.** (Figs 8-13, Map 1)

Type material: Holotype ♂: "CHINA: Yunnan, Baoshan Pref., Gaoligong Shan, 78 km N Tengchong, 2000 m, 25°44'49"N, 98°33'29"E, cleft with creek and forest remnant, litter & dead wood sifted, 1.IX.2009, leg. M. Schülke [CH09-21] / Holotypus ♂ *Medon yunnanicus* sp. n. det. V. Assing 2013" (cAss). Paratype ♂: same data as holotype (cSch).

Etymology: The specific epithet is an adjective derived from Yunnan, the Chinese province where the type locality is situated.

Description: Body length 5.5 mm; length of forebody 3.1-3.2 mm. Habitus as in Fig. 8. Coloration: head blackish; pronotum and elytra pale-brown to dark-brown, with the humeral angles more or less extensively paler (yellowish-brown); abdomen brown; legs dark-yellowish; antennae reddish-brown, with antennomeres I-II reddish.

Head (Fig. 9) as broad as long or weakly oblong; punctation fine and dense; interstices without microreticulation. Eyes moderately large and weakly convex, approximately 0.8 times as long as postocular region in dorsal view. Antenna 1.7-1.8 mm long.

Pronotum (Fig. 9) 1.02-1.04 times as broad as long and approximately as broad as head; anterior and posterior margins concave in the middle; punctation dense, fine, and granulose; midline with very narrow impunctate longitudinal band.

Elytra (Fig. 9) long and broad, nearly 1.2 times as long as pronotum; punctation fine, very dense, and weakly granulose. Hind wings fully developed. Metatarsomere I distinctly longer than II.

Abdomen distinctly narrower than elytra; punctation extremely fine and dense; tergites III-VI with shallow, tergites VII-VIII with pronounced microreticulation; posterior margin of tergite VII with palisade fringe.

♂: sternite VII (Fig. 10) with large and moderately deep posterior excision, margin of this excision furnished with a distinct comb of numerous palisade setae and with an

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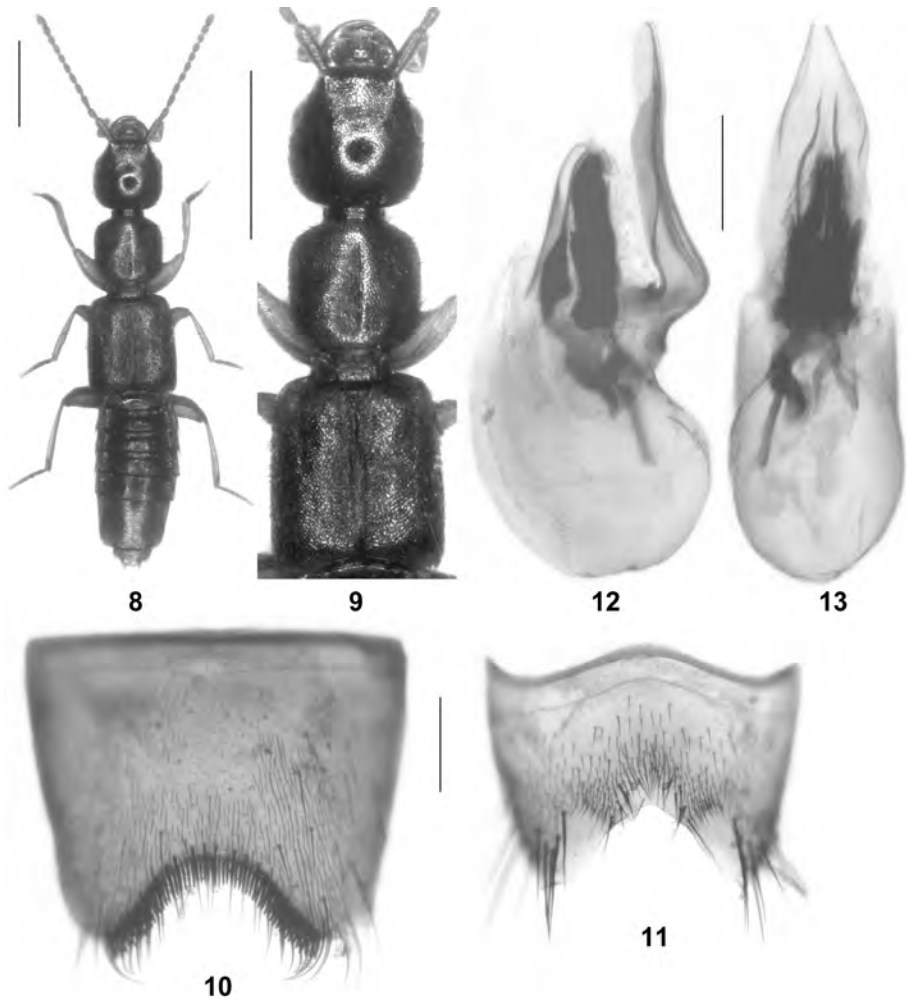
additional row of long black setae; sternite VIII (Fig. 11) small in relation to sternite VII, transverse, and with shallow median impression, this impression with fine depressed pubescence and with some longer black setae, posterior excision deeply and broadly V-shaped; aedeagus (Figs 12-13) 0.98 mm long; ventral process basally abruptly curved in lateral view and apically notched in ventral view, apically with pair of ventral carinae; internal sac with numerous dark structures.



Figs 8-13: *Medon yunnanicus* nov.sp.: (**8**) habitus; (**9**) forebody; (**10**) male sternite VII; (**11**) male sternite VIII; (**12-13**) aedeagus in lateral and in ventral view. Scale bars: 8-9: 1.0 mm; 10-13: 0.2 mm.

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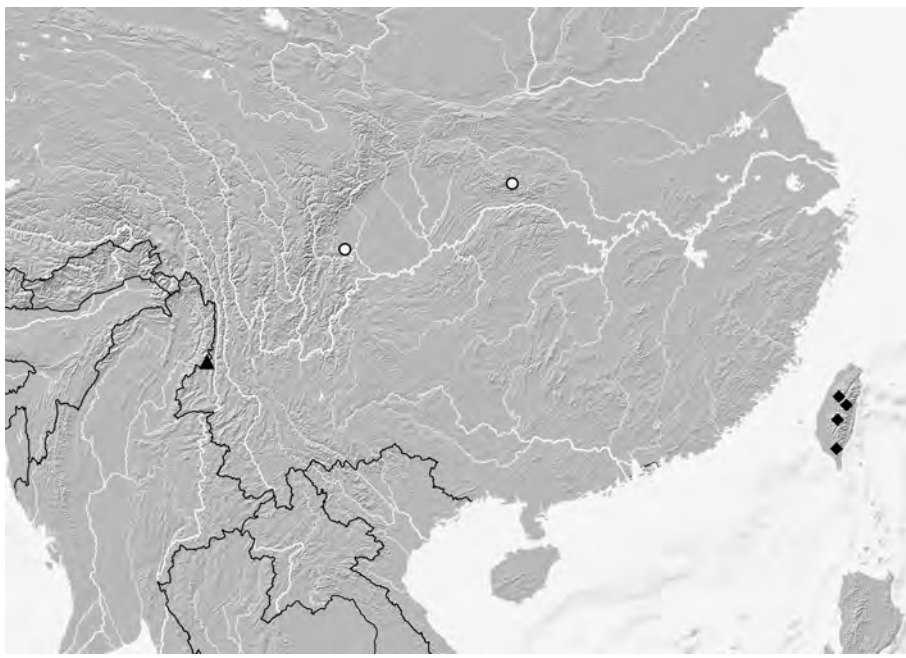
Comparative notes: This species is characterized particularly by the distinctive shapes and chaetotaxy of the male sternites VII and VIII, as well as by the morphology of the aedeagus. It differs from the evidently closely related *M. profundus* by slightly larger body size, the absence of microsculpture on the head, the presence of a narrow impunctate band along the midline of the pronotum, the less deep posterior excision of the male sternite VII, the pubescent median impression and the V-shaped posterior excision of the male sternite VIII, and by the morphology of the larger aedeagus (shape of ventral process both in lateral and in ventral view).

Distribution and natural history: The type locality is situated in the Gaoligong Shan, Yunnan, China (Map 1). The specimens were sifted from leaf litter in a stream valley at an altitude of 2000 m.



Map 1: Distributions of the species of the *Medon profundus* group in China and Taiwan: *Medon profundus* nov.sp. (circles), *M. yunnanicus* nov.sp. (triangle), and *M. alesi* nov.sp. (diamonds).

***Medon alesi* nov.sp.** (Figs 14-19, Map 1)

Type material: Holotype ♂: "TAIWAN, Pingtung Hsien, Peitawushan trail at 1500 m, 1.V.1992, A. Smetana [T110] / Holotypus ♂ *Medon alesi* sp. n. det. V. Assing 2013" (cSme). Paratypes: 2♂♂, 1♀: same data as holotype (cSme, cAss); 1♀: "TAIWAN, Pingtung Hsien, Pietawushan [sic] Trail at 2000 m 23.V.1991, A. Smetana [T91]" (cSme); 1♂: "TAIWAN, Taichung Hsien, Anmashan, 2225 m 11.V.1992, A. Smetana [T123]" (cSme, cAss); 1♀: "TAIWAN, Taichung Hsien, Anmashan, 2225 m, 14.V.92, A. Smetana [T130]" (cSme); 2♂♂, 4♀♀: "TAIWAN, Taichung Hsien, Anmashan, 2230 m, 1.V.90, A. Smetana [T33]" (cSme, cAss); 4♀♀: "TAIWAN, Taichung Hsien, Anmashan, 2230 m, 12.V.92, A. Smetana [T127]" (cSme, cAss); 1♂: "TAIWAN, Taichung Hsien, Anmashan, 2230 m 4.V.1990, A. Smetana [T43]" (cAss); 4♀♀: "TAIWAN, Nantou Hsien, Nenkaoshan trail, 2050-2150 m, 8.V.1992, A. Smetana [T120]" (cSme); 1♀: "TAIWAN, Nantou Hsien, Shanlinchi, 1650 m 19.V.1991, A. Smetana [T87]" (cSme); 1♂, 2♀♀: TAIWAN - Chiayi Co., Alishan, Nat. Scen. Area, Road 18, km 84, 2100 m, decaying stump, 8.I.2009, leg. Vít [14]" cAss).

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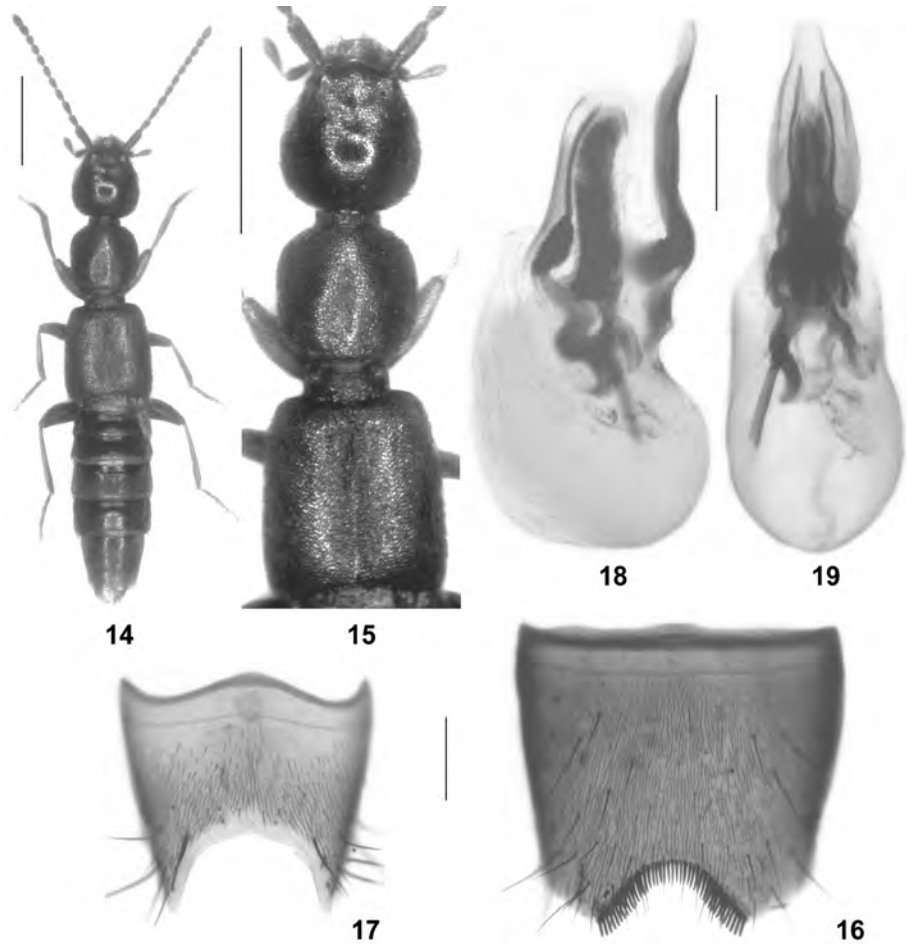

Figs 14-19: *Medon alesi* nov.sp.: (**14**) habitus; (**15**) forebody; (**16**) male sternite VII; (**17**) male sternite VIII; (**18-19**) aedeagus in lateral and in ventral view. Scale bars: 14-15: 1.0 mm; 16-19: 0.2 mm.

E t y m o l o g y : The species is dedicated to Aleš Smetana (Ottawa), who collected nearly all the type specimens.

D e s c r i p t i o n : Body length 4.9-5.8 mm; length of forebody 2.7-3.3 mm. Habitus as in Fig. 14. Coloration: head blackish; pronotum and abdomen dark-brown; elytra brown; legs dark-yellowish; antennae brown to dark-brown.

Head (Fig. 15) as broad as long or weakly oblong; punctation fine and dense; interstices with shallow microreticulation. Eyes moderately large and rather weakly convex, approximately 0.7 times as long as postocular region in dorsal view. Antenna 1.7-1.8 mm long.

Pronotum (Fig. 15) approximately 1.05 times as broad as long and as broad as head; anterior and posterior margins concave in the middle; punctation dense, fine, and granulose; midline without impunctate longitudinal band.

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Elytra (Fig. 15) long and broad, approximately 1.15-1.18 times as long as pronotum; punctation finely granulose and very dense. Hind wings fully developed. Metatarsomere I distinctly longer than II.

Abdomen slightly narrower than elytra; punctation extremely fine and dense; interstices with microreticulation; posterior margin of tergite VII with palisade fringe.

♂: sternite VII (Fig. 16) with moderately deep posterior excision, margin of this excision furnished with a distinct comb of numerous long palisade setae and with an additional row of long black setae; sternite VIII (Fig. 17) small in relation to sternite VII, transverse, without median impression, median portion with fine pubescence and with some longer black setae, posterior excision deep and broad, margins of this excision without pubescence; aedeagus (Figs 18-19) approximately 0.9 mm long; ventral process basally abruptly curved in lateral view, apically with pair of long ventral carinae; internal sac with numerous dark structures.

Comparative notes: *Medon alesi* differs from the two other species of the *M. profundus* group by slightly smaller eyes, slightly shorter elytra, the shape of the posterior excision of the male sternite VII (similar to that of *M. yunnanicus*), the shape and chaetotaxy of the male sternite VIII, and by the differently shaped ventral process of the aedeagus (basally abruptly curved, not distinctly angled in lateral view).

Distribution and natural history: The known distribution is confined to several localities in Taiwan (Map 1). Most specimens were sifted from leaf litter in primary broadleaved, evergreen, and mixed forests (SMETANA pers. comm.), three from a decaying stump, at altitudes of 1500-2230 m.

Corrigenda

***Medon ripicola* (KRAATZ 1854)**

Comment: This species was erroneously indicated from the Canary Islands in a previous contribution (ASSING 2013). There is currently no confirmed record of *M. ripicola* from this archipelago.

***Medon gilvimarginatus* nov.nom.**

Medon flavomarginatus ASSING 2013: 252; preoccupied.

Comment: *Medon flavomarginatus* ASSING 2013 is a primary junior homonym of *Medon flavomarginatus* BERNHAUER 1942, a species originally described from Costa Rica as *Medon* (*Lithocharis*) *flavomarginatus* (BERNHAUER 1942); *Lithocharis* DEJEAN 1833 is now a distinct genus. The replacement name *M. gilvimarginatus* is proposed for *M. flavomarginatus* ASSING 2013.

Acknowledgements

I am indebted to Aleš Smetana (Ottawa) and Michael Schülke (Berlin) for the loan of material from their collections, to Michael Schülke also for the generous gift of the holotypes of *M. profundus*

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and *M. yunnanicus*. Lee Herman (New York) kindly made me aware of the homonymy of *M. flavomarginatus*; Pedro Oromí (La Laguna) notified me of the erroneous record of *M. ripicola* from the Canary Islands. Benedikt Feldmann (Münster) proof-read the manuscript.

Zusammenfassung

Drei Arten aus der neu definierten *Medon profundus*-Gruppe werden beschrieben und abgebildet: *M. profundus* nov.sp. (China: Grenzregion zwischen Shaanxi und Chongqing, Sichuan), *M. yunnanicus* nov.sp. (China: Yunnan) und *M. alesi* (Taiwan). Diese Arten sind nahverwandt und bilden zweifellos eine monophyletische Gruppe. Die derzeit bekannte Verbreitung der Arten wird anhand einer Karte illustriert. Das primäre Homonym *Medon flavomarginatus* ASSING 2013 wird durch *M. gilvimarginatus* nov.nom. ersetzt. *Medon* STEPHENS 1833 ist mit nunmehr insgesamt 81 überprüften Arten in der Paläarktis vertreten.

Reference

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Zeitschrift/Journal: Linzer biologische Beiträge

Jahr/Year: 2014

Band/Volume: 0046_1

Autor(en)/Author(s): Assing Volker

Artikel/Article: Three new species and a new species group of Medon from China and Taiwan (Coleoptera: Staphylinidae: Paederinae) 515-523