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A revision of Palaearctic and Oriental *Scymbalium* and *Micrillus*
III. New species, new combinations, and additional records
(Coleoptera: Staphylinidae: Paederinae)

Volker ASSING

A b s t r a c t : Six species of *Scymbalium* ERICHSON, 1839 and *Micrillus* RAFFRAY, 1873 are described and illustrated: *Scymbalium rossii* nov.sp. (Cambodia), *Micrillus virgatus* nov.sp. (Cambodia, South Thailand) of the newly established *M. badius* group, *M. hamatus* nov.sp. (South Morocco) of the *M. testaceus* group, *M. kongi* nov.sp. (Cambodia) of the *M. suturalis* group, and *M. coloratus* nov.sp. (Cambodia) and *M. rougemonti* nov.sp. (Sri Lanka) of the newly established *M. coloratus* group. Based on a re-assessment of the inter- and intrageneric phylogenetic affiliations of *Scymbalium* and *Micrillus*, two species are moved from *Scymbalium* to *Micrillus*: *Micrillus badius* (MOTSCHULSKY, 1858), nov.comb.; *Micrillus nepalensis* (ASSING, 2013), nov.comb. Additional records of one species of *Scymbalium* and of ten species (one of them undescribed) of *Micrillus* are reported, among them five first records from Cambodia (3), Syria (1), and Indonesia (1).

Key words : Coleoptera, Staphylinidae, Paederinae, *Scymbalium*, *Micrillus*, Palaearctic region, Oriental region, taxonomy, new species, new combinations, new records, systematics.

Introduction

According to recent revisions (ASSING 2008, 2013), *Scymbalium* ERICHSON, 1839 was represented in the Palaearctic and Oriental regions by five species, one of them undescribed, in two lineages. *Micrillus* RAFFRAY, 1873 included a total of 22 species, one of them undescribed, in three lineages in the Palaearctic, Oriental, and Afrotropical regions. The generic affiliations of numerous additional unrevised species from the Australian and Afrotropical regions currently assigned to *Scymbalium* are doubtful. For a world catalogue of the species previously assigned to *Scymbalium* and *Micrillus* see ASSING (2013).

An examination of material that has been made available since the latest contribution yielded six additional species, one of *Scymbalium* from Cambodia, one of the *Micrillus badius* group (newly established) from Cambodia and Thailand, one of the *M. testaceus* group from South Morocco, one of the *M. suturalis* group from Cambodia, and two of the newly established *M. coloratus* group from Cambodia and Sri Lanka.

A re-assessment of the inter- and intrageneric affiliations initiated by the discovery of a

"true" *Scymbalium* species in Cambodia resulted in a revision of characters previously used for separating *Scymbalium* and *Micrillus*, and eventually in two new combinations. Additional records of one species of *Scymbalium* and ten (one of them undescribed) of *Micrillus* are reported.

Material and methods

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

MNB Museum für Naturkunde Berlin (J. Frisch, J. Willers)
 MSNF Museo di Storia Naturale, Firenze (L. Bartolozzi)
 NHMB Naturhistorisches Museum Basel (M. Geiser, I. Zürcher)
 NHMW Naturhistorisches Museum Wien (H. Schillhammer)
 NME Naturkundemuseum Erfurt (M. Hartmann, assisted by W. Apfel)
 NMP National Museum of Natural History, Praha (J. Hájek)
 SMNS Staatliches Museum für Naturkunde, Stuttgart (W. Schawaller)
 cAss author's private collection
 cRou private collection Guillaume de Rougemont, Oxford

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss), a Discovery V12 microscope (Zeiss), and a Jenalab compound microscope (Carl Zeiss Jena). The images were created using a digital camera (Nikon Coolpix 995), Axiocam ERc 5s, and Picolay software.

Body length was measured from the anterior margin of the mandibles (in resting position) to the posterior margin of the abdominal segment VIII, 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, the length of the pronotum along the middle, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra (at the sutural angles), 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 discovery of an undescribed *Scymbalium* species closely allied to *S. anale* (NORDMANN, 1837) in the Oriental region inspired a re-examination of characters previously considered relevant for a separation of *Scymbalium* and *Micrillus*. According to a previous contribution, the primary diagnostic character was the morphology of the protarsi: species with dilated protarsomeres I-IV were attributed to *Scymbalium*, whereas species with narrow (undilated) protarsi were assigned to *Micrillus*. This generic concept, however, was weakly supported and considered both tentative and preliminary, particularly because the possibility that dilated protarsi represented a symplesiomorphy could not be ruled out (ASSING 2013). The sister group of the lineage *Scymbalium* + *Micrillus* is unknown.

A re-assessment of morphological characters based on a study of representatives of

"true" *Scymbalium* (i.e., *S. anale* and closely allied species) and of all the species groups of *Micrillus* in fact confirmed that dilated protarsomeres most likely represent a plesiomorphic character state. The morphology of the abdominal segments IX and X, on the other hand, was found to be more informative. They are highly derived in all the species previously assigned to *Micrillus*, with sternite IX and tergite X of conspicuously reduced size and the postero-lateral processes ("valvulae") of segment nine strongly developed and at least twice as long as tergite X (Figs 29, 38). A similar condition is unknown to me from other paederine taxa. Since there is little doubt that such modifications of the apical abdominal segments represent a synapomorphy of *Micrillus*, it follows that dilated protarsomeres I-IV are either a convergent or, more likely, a plesiomorphic condition and that two species previously assigned to *Scymbalium*, *S. badium* and *S. nepalense*, must be transferred to *Micrillus*.

Genus *Scymbalium* ERICHSON, 1839

At present, *Scymbalium* includes only three revised and confirmed species, the West Palaearctic type species *S. anale* (NORDMANN, 1837), the West Palaearctic *S. persimile* CAMERON, 1940 (male unknown), and *S. rossii*, a new species from Cambodia described below. Numerous additional unrevised species from the Australian and Afrotropical regions are currently assigned to *Scymbalium*, but most likely belong to *Micrillus* or other genera (ASSING 2013).

Scymbalium is distinguished from *Micrillus* by unmodified abdominal segments IX and X, postero-lateral processes of segment IX of normal length and normal shape (somewhat depressed, not circular in cross-section), and with an apical spine, relatively coarse punctuation of the forebody, and a stouter and relatively shorter maxillary palpomere IV (approximately one-third as long as maxillary palpomere III). The aedeagus is of similar shape as that of species of the *Micrillus badius* and *M. testaceus* groups, but has strongly sclerotized structures in the internal sac.

Scymbalium anale (NORDMANN, 1837)

Material examined: Italy: 2 exs., Sicilia, Ficuzza (MNB). Turkey: 13 exs., Bursa (?), Güvem env., Işık dağ, 1300 m, 9.IV.1981, leg. Heinz (MNB); 1 ex., Bolu, 3 km E Kibricisık, 1200 m, 26.IV.1984, leg. Heinz (MNB); 1 ex., Ankara, pass between Akdoğan and Kızılcahamam, 1100 m, 5.IV.1977, leg. Heinz (MNB); 4 exs., Elağig, Kuruca Geçidi, 1600 m, 19.IV.1992, leg. Heinz (MNB); 1 ex., Giresun, pass S Koyulhisar, 1800-1900 m, 8.VIII.1985, leg. Heinz (MNB); 2 exs., Muğla, forest ca. 25 km E Muğla, 1200-1300 m, 29.III.1986, leg. Heinz (MNB); 1 ex., Kütahya, 5 km W Simay, 800 m, 23.IV.1978, leg. Heinz (NME); 1 ex., Diyarbakır, Diyarbakır env., 800 m, at light, 8.VII.1974, leg. Heinz (MNB); 1 ex., Bingöl, 20 km W Solhan, 1300 m, 29.IV.1989, leg. Heinz (MNB). Georgia: 2 exs., E Tbilisi, S Sagarejo, Iori river, 19.VI.2015, leg. Snižek (NME, cAss).

Comment: The above records are all within the known range of this widespread species.

Scymbalium rossii nov.sp. (Figs 1-9)

Type material: Holotype ♂: "CAMBODIA - Kampong Chhnang prov., Kampong Chhnang env., Toul Ompel, 12°14'14"N, 104°41'15"E, light trap, 19+21.V.2018, leg. Bernardi, Kong & Rossi / Holotypus ♂ *Scymbalium rossii* sp. n., det. V. Assing 2018" (cAss). Paratype ♀: same data as holotype (cAss).

E t y m o l o g y : This species is dedicated to Walter Rossi (L'Aquila), to whom I am grateful for the generous gift of all the Cambodian specimens treated in this paper.

D e s c r i p t i o n : Body length 7.0-7.7 mm; length of forebody 3.7-4.1 mm. Habitus as in Fig. 1. Body somewhat depressed. Coloration: head and pronotum reddish-brown; elytra reddish; abdomen dark-brown to blackish-brown with the apex (segments VIII-X and the posterior portion of VII) reddish; legs yellowish-red; antennae red.

Head (Fig. 2) 1.10-1.15 times as broad as long; integument with double punctation, with coarse and dense macropunctures and with interspersed micropunctures; median dorsal portion with somewhat sparser punctation; interstices without microsculpture. Eyes approximately as long as postocular region in dorsal view. Antenna long and very slender, approximately 3.0 mm long; antennomeres IV-XI at least approximately twice as long as broad and club-shaped, i.e., basally very thin and apically distinctly dilated, broadest anterior to apex. Maxillary palpus with short and conical apical palpomere, this palpomere approximately one-third as long as palpomere III.

Pronotum (Fig. 2) 1.12-1.15 times as broad as long, broadest near anterior angles, distinctly tapering posteriad; lateral margins straight or weakly sinuate in the middle; posterior margin weakly concave in the middle; macropunctuation dense, slightly less coarse than that of head; micropunctuation scattered, sparser than that of head; midline moderately broadly impunctate.

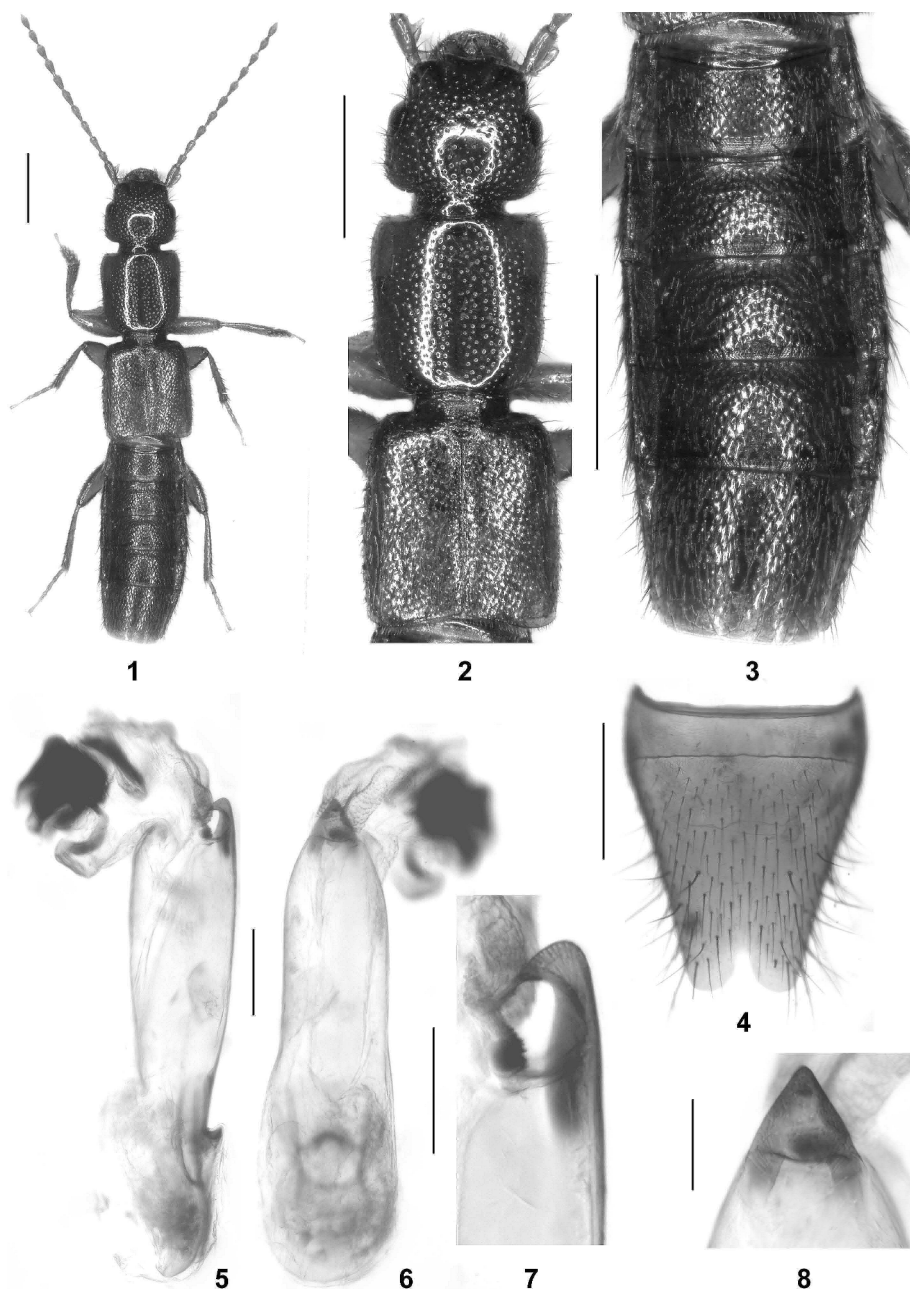
Elytra (Fig. 2) approximately as long as pronotum; punctation rather fine and dense. Hind wings fully developed. Protarsomeres I-IV distinctly dilated in both sexes. Metatarsomere I approximately as long as the combined length of II and III.

Abdomen (Fig. 3) approximately as broad as elytra; punctation distinct and very dense, similar to that of elytra; interstices glossy, with extremely fine and nearly obsolete transverse microsculpture visible only at high magnification (100 x); posterior margin of tergite VII with palisade fringe; tergite X and sternite IX unmodified, not of reduced size; postero-lateral processes of segment IX approximately 1.5 times as long as tergite X, apically with a spine curved upwards.

♂: posterior excision of sternite VIII narrow and short, about one-eighth as long as length of sternite (Fig. 4); aedeagus (Figs 5-8) slender, with short hooked apex (lateral view), and with heavily sclerotized internal structures.

C o m p a r a t i v e n o t e s : This species is evidently closely allied to *S. anale* and *S. persimile*. It is distinguished from both of them by smaller size, paler coloration of the forebody, and coarser punctation of the abdomen. It additionally differs from *S. anale* by a posteriorly less strongly tapering pronotum, relatively larger eyes, a much shorter and narrower posterior excision of the male sternite VIII, and by a much smaller aedeagus (*S. anale*: aedeagus approximately 2.0 mm long) with an apex of different shape in lateral view. The male sexual characters of *S. persimile* are unknown.

D i s t r i b u t i o n a n d n a t u r a l h i s t o r y : The type locality is situated near Kampong Chhnang in the estuary of the affluent of Tonle Sap lake (Fig. 9), Cambodia. The specimens were collected with a light trap, together with seven species of *Micrillus* (one of them undescribed).



Figs 1-8: *Scymbalium rossii*: (1) habitus; (2) forebody; (3) abdomen; (4) male sternite VIII; (5-6) aedeagus in lateral and in ventral view; (7-8) apex of aedeagus in lateral and in ventral view. Scale bars: 1-3: 1.0 mm; 4: 0.5 mm; 5-6: 0.2 mm; 7-8: 0.1 mm.



Fig. 9: Type locality of *Scymbalium rossii*, *Micrillus virgatus*, *M. kongi*, and *M. coloratus*. Photo: Walter Rossi.

Genus *Micrillus* RAFFRAY, 1873

The monophyly of *Micrillus* is constituted above all by conspicuous synaporphies: abdominal sternite IX and tergite X of strongly reduced size; postero-lateral processes ("valvulae") of segment IX very long, circular in cross-section, and without apical spine (Figs 29, 38). The maxillary palpomere IV is slender and at least approximately half as long as the maxillary palpomere III. Including the newly described species and the two species transferred to *Micrillus* in this paper, the genus currently includes 28 species in five species groups, two of them newly established. It appears likely, however, that at least part of the unrevised species still in *Scymbalium* (see catalogue in ASSING 2013) belong to *Micrillus*, too.

***Micrillus badius* group**

This species group currently includes three species (see below) distributed in the southern East Palaearctic and Oriental regions. It is distinguished from other species groups by dilated protarsomeres I-IV, from other species groups represented in the East Palaearctic and Oriental regions also by larger body size, denser punctuation of the forebody, a male sternite VIII with a shallow or small posterior excision, and a slender, weakly sclerotized, and practically symmetric aedeagus with a small hooked apex.

***Micrillus badius* (MOTSCHULSKY, 1858), new combination**

Lathrobomorphus badius MOTSCHULSKY, 1858: 646.

Material examined: India: 3 exs., "Bengalen", leg. Nietner (MNB, cAss).

Comment: This species was previously assigned to *Scymbalium*. Based on the shape of the maxillary palpomeres IV and particularly on the modifications of the abdominal segments IX and X, it is moved to *Micrillus*.

Micrillus badius is widespread in India, Bhutan, and Myanmar, but has been collected only on rare occasions (ASSING 2013).

***Micrillus nepalensis* (ASSING, 2013), new combination**

Scymbalium nepalense ASSING, 2013: 1487.

Material examined: Nepal: 1♀, Narayani, Sauraha, Rapti River, 27°35'N, 84°30'E, 180 m, at light, 14.-15.VII.2001, leg. Kopetz (NME).

Comment: This species, a close relative of *M. badius*, was originally described in *Scymbalium* and is here moved to *Micrillus*. It was previously known only from the type locality in West Nepal.

***Micrillus virgatus* nov.sp. (Figs 9-19)**

Type material: Holotype ♂: "CAMBODIA - Kampong Chhnang prov., Kampong Chhnang env., Toul Ompel, 12°14'14"N, 104°41'15"E, light trap, 19+21.V.2018, leg. Bernardi, Kong & Rossi / Holotypus ♂ *Micrillus virgatus* sp. n., det. V. Assing 2018" (cAss). Paratypes: 24♂♂, 20♀♀: same data as holotype (cAss); 1♂: "S-THAIL, Betong 1993, Gunung Cang dun vill., Yala dist., 25.3.-22.4., leg. Horak & Strnad" (NHMW).

Etyymology: The specific epithet is an adjective derived from the Latin noun *virga* (rod) and alludes to the long basal sclerotized structure in the internal sac of the aedeagus.

Description: Body length 8.0-9.5 mm; length of forebody 4.3-5.5 mm. Habitus as in Fig. 10. Coloration: body reddish to reddish-brown, with the elytra usually somewhat paler; legs with the femora pale-reddish to yellowish-brown, the tibiae and tarsomeres I-IV dark-reddish to brown, and tarsomeres V yellow; antennae reddish, with the apical antennomeres often more or less extensively paler and with the apex of antennomere XI yellowish.

Head (Fig. 11) approximately as broad as long; integument dorsally and laterally with dense and very fine punctation bearing short, fine, pale, and depressed setae, and with scattered macropunctures bearing long and black erect setae in lateral and anterior dorsal portions; median and anterior dorsal portions with sparser micropunctation. Eyes 0.5-0.7 times as long as postocular region in dorsal view. Antenna (Fig. 12) long and very slender, approximately 4 mm long; antennomeres IV-X strongly oblong, of gradually decreasing length; IV approximately four times as long as broad; X approximately twice as long as broad. Maxillary palpus slender, apical palpomere of slender conical shape, slightly more than half as long as maxillary palpomere III.

Pronotum (Fig. 11) 1.05-1.10 times as long as broad and approximately 0.95 times as broad as head; lateral margins straight, distinctly converging posteriad in dorsal view; posterior margin broadly and weakly concave; punctation very fine and dense; on either side of middle with dorsal series each composed of 2-6 macropunctures; midline without impunctate median band.

Elytra (Fig. 11) approximately 0.9 times as long as pronotum; punctation extremely fine and extremely dense, rendering the surface matt. Hind wings fully developed. Protarsomeres I–IV distinctly dilated. Metatarsomere I slightly longer than the combined length of II and III.

Abdomen (Fig. 13) approximately as broad as elytra; tergites with very fine and extremely dense micropunctuation bearing short and pale depressed pubescence and with macropunctures bearing very long black setae at posterior margins and on disc; posterior margin of tergite VII with palisade fringe; tergite X and sternite IX very small; postero-lateral processes of segment IX approximately twice as long as tergite X.

♂: posterior excision of sternite VIII concave (Fig. 18); aedeagus (Figs 14–17, 19) approximately 0.95 mm long, symmetric, and weakly sclerotized; internal sac with long rod-like structure basally and with membranous structures apically.

Comparative notes: This species is characterized particularly by its slender body with long and slender legs and antennae, a posteriorly distinctly narrowed pronotum, and by the male sexual characters. The aedeagus is readily distinguished from those of other species of the *M. badius* group by its larger size alone.

Distribution and natural history: The currently known distribution is confined to two localities, one in Cambodia and one in South Thailand. The characteristics and collection data of the type locality (Fig. 9) are identical to those of *Scymbalium rossii*. They suggest that *M. virgatus* is associated with wetlands.

Micrillus sp.

Material examined: Cambodia: 2♀♀, Kampong Chhnang prov., Kampong Chhnang env., Toul Ompel, 12°14'14"N, 104°41'15"E, light trap, 19+21.V.2018, leg. Bernardi, Kong & Rossi (cAss).

Comment: The above females represent an undescribed species of the *M. badius* group distinguished from the syntopic *M. virgatus* by smaller body size, a more slender habitus, much sparser punctation of the head, a greater number of macropunctures in the dorsal series of the pronotum, and other characters. They were collected in the type locality of *Scymbalium rossii*, *Micrillus virgatus*, *M. kongi*, and *M. coloratus*. For the time being, the specimens remain unnamed for want of males.

Micrillus testaceus group

This species group currently includes nine species, eight of them previously described (see ASSING 2008, 2013) and one of them described in the present paper (see below), distributed in the southern West Palaearctic region. They are similar in habitus, body size, punctation, and general aedeagal morphology to the species of the *M. badius* group, but differ by undilated protarsomeres I–IV, less strongly reduced sternite IX and tergite X, and slightly shorter postero-lateral processes of the abdominal segment IX.

Micrillus testaceus (ERICHSON, 1840)

Material examined: Italy: 2♀♀, Sardegna, Giara Pauli Maiori, 39°45'N, 8°58'E, 580 m, 29.III.2014, leg. Meybohm (cAss). Greece: 1 ex., Ahaia, O. Skepasto, Plataniotisa, Agios

Konstantinos, 38°05'N, 22°05'E, 1070 m, 20.V.2011, leg. Giachino & Vailati (cAss). Cyprus: 1 ex., E Lemesos, Germasogeia Reservoir, 34°45'N, 33°05'E, 100 m, 30.III.2016, leg. Frenzel (NME). Turkey: 1 ex. [teneral], Antalya, Kemer-Baraj, S Nazilli, 15.VII.1971, leg. Heinz (MNB); 1♀, Kemer env., 20 m, 18.-22.V.1993, leg. Weigel (NME); 1 ex., Urfa, Hilvan env., 700 m, 14.IV.1980, leg. Heinz (cAss). Syria: 1♂, Jabal al Ansariyah mts., E Latakia, 1500 m, 28.IV.2000, leg. Benedikt (NMP); 1♂, Hermon mts., Burqush env., 1800-2200 m, 5.V.2000, leg. Benedikt (NMP).

C o m m e n t: *Micrillus testaceus* is the most widespread and common species of the genus in the West Palaearctic; for a distribution map see ASSING (2013). The above records are all within the known range of the species.

***Micrillus irakensis* (CAMERON, 1940)**

M a t e r i a l e x a m i n e d: Iraq: 1 ex., Amara, VI.1956, leg. Khalaf (NMP); 1 ex., Diwaniyah, 15.VII.1957, leg. Khalaf (NMP). Syria: 1 ex., Prov. Deir ez-Zur, Euphrates (Halabiyeh), 35°41'N, 39°49'E, at light, 17.-18.VI.1998, leg. Chvojka (cAss).

C o m m e n t: *Micrillus irakensis* had been recorded only from Iraq and Israel. The above specimen from Syria represents a new country record.

***Micrillus scabrosus* (FAUVEL, 1875)**

M a t e r i a l e x a m i n e d: Morocco: 1 ex., Kenitra, II-III.1961, leg. Mussard (MNUB).

C o m m e n t: This micropterous species is endemic to North Morocco (ASSING 2008).

***Micrillus hamatus* nov.sp. (Figs 20-24)**

T y p e m a t e r i a l: Holotype ♂: "MOROCCO SE, 3.6.2007, Zagora 30 km SE, Zaouia-el-Barrahnia, Drâa riv., Lgt. F. Houška / Holotypus ♂ *Micrillus hamatus* sp. n., det. V. Assing 2018" (cAss).

E t y m o l o g y: The specific epithet (Latin, adjective: hooked) alludes to the shape of the apex of the aedeagus in lateral view.

D e s c r i p t i o n: Body length 7.0 mm; length of forebody 3.6 mm. Habitus as in Fig. 20. Coloration: head blackish-brown with the anterior margin of the frons yellowish-brown; pronotum, elytra, and abdomen yellowish-red; legs yellowish; antennae yellowish-red.

Head 1.1 times as long as broad; punctation fine and moderately dense; median dorsal portion extensively impunctate; integument with extremely fine transverse microsculpture visible only at high magnification (100 x). Eyes weakly convex, not protruding from lateral contours of head, slightly shorter than postocular portion in dorsal view. Antennae slender; antennomere IV approximately twice as long as broad; antennomere X approximately 1.5 times as long as broad.

Pronotum 1.25 times as long as broad and as broad as head, of trapezoid shape, broadest at anterior angles and tapering posteriad; posterior margin weakly concave; punctation fine and moderately dense; midline impunctate; interstices without microsculpture.

Elytra nearly as long as pronotum; punctation very dense and very fine. Hind wings present. Protarsomeres I-IV undilated; metatarsomere I very long, slightly longer than the combined length of metatarsomeres II-IV.

Abdomen approximately as broad as elytra; punctation dense and fine; posterior margin of tergite VII with palisade fringe.

♂: sternite VIII (Fig. 21) distinctly oblong, its posterior excision broadly and weakly concave; posterolateral processes of segment IX (valvulae) long and slender; aedeagus (Figs 22-24) 0.95 mm long, symmetric, and weakly sclerotized; ventral process hook-shaped in lateral view; internal sac with long dark membranous structure.

Comparative notes: Based on the long and slender valvulae IX and on the male primary and secondary characters, *M. hamatus* belongs to the *M. testaceus* group (see ASSING 2008, 2013). It is distinguished from all the species of this group by the conspicuously hook-shaped apex and the strongly sclerotized internal structures of the aedeagus. It is additionally distinguished from the three *Micrillus* species previously recorded from Morocco as follows:

from the widespread *M. testaceus* (ERICHSON, 1840) by the coloration, a less flat forebody, longer antennae with more oblong antennomeres IV-X, a more slender and more oblong pronotum, and longer elytra;

from *M. scabrosus* (FAUVEL, 1875) and *M. tenuipennis* ASSING, 2008 (both distributed in North Morocco) by a much paler and distinctly bicoloured body, a less flat forebody, a relatively smaller head, much larger eyes (strongly reduced in *M. scabrosus* and *M. tenuipennis*), a posterior less strongly tapering pronotum, and much longer elytra.

For illustrations of *M. testaceus*, *M. scabrosus*, and *M. tenuipennis* see ASSING (2008).

Distribution: The type locality is situated to the southeast of Zagora, South Morocco, not far from the border with Algeria.

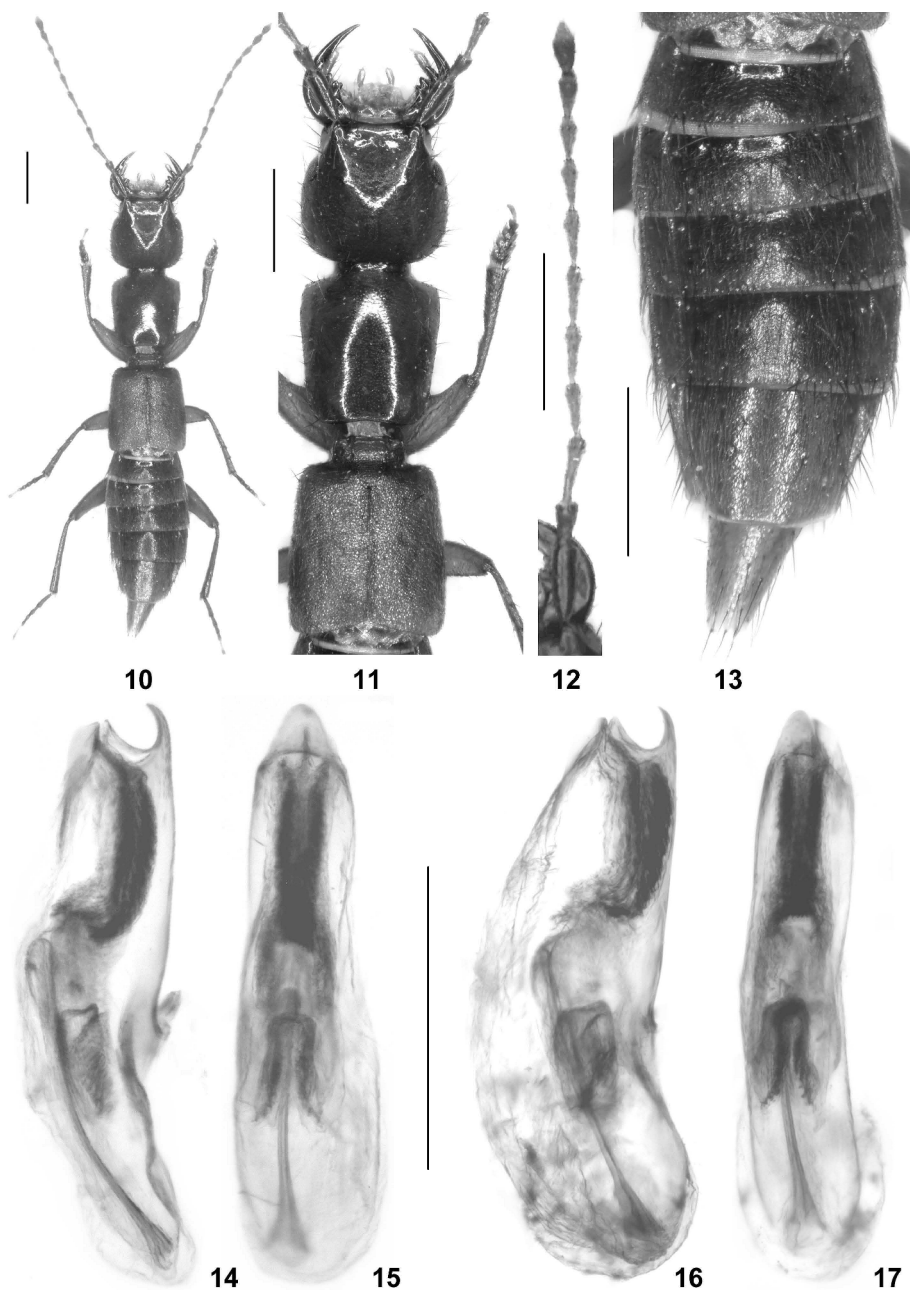
***Micrillus suturalis* group**

The *M. suturalis* group is characterized by a relatively large, slender, and weakly asymmetric aedeagus with a long series of conspicuous sclerotized spines in the internal sac, and by a broad and shallow posterior excision of the male sternite VIII (ASSING 2013). This group includes two species, *M. suturalis*, a species distributed in the south of the Oriental region and *M. kongi*, a new species from Cambodia described below. In external characters they are similar to species of the *M. badius* group, but distinguished by smaller body size and undilated protarsomeres I-IV.

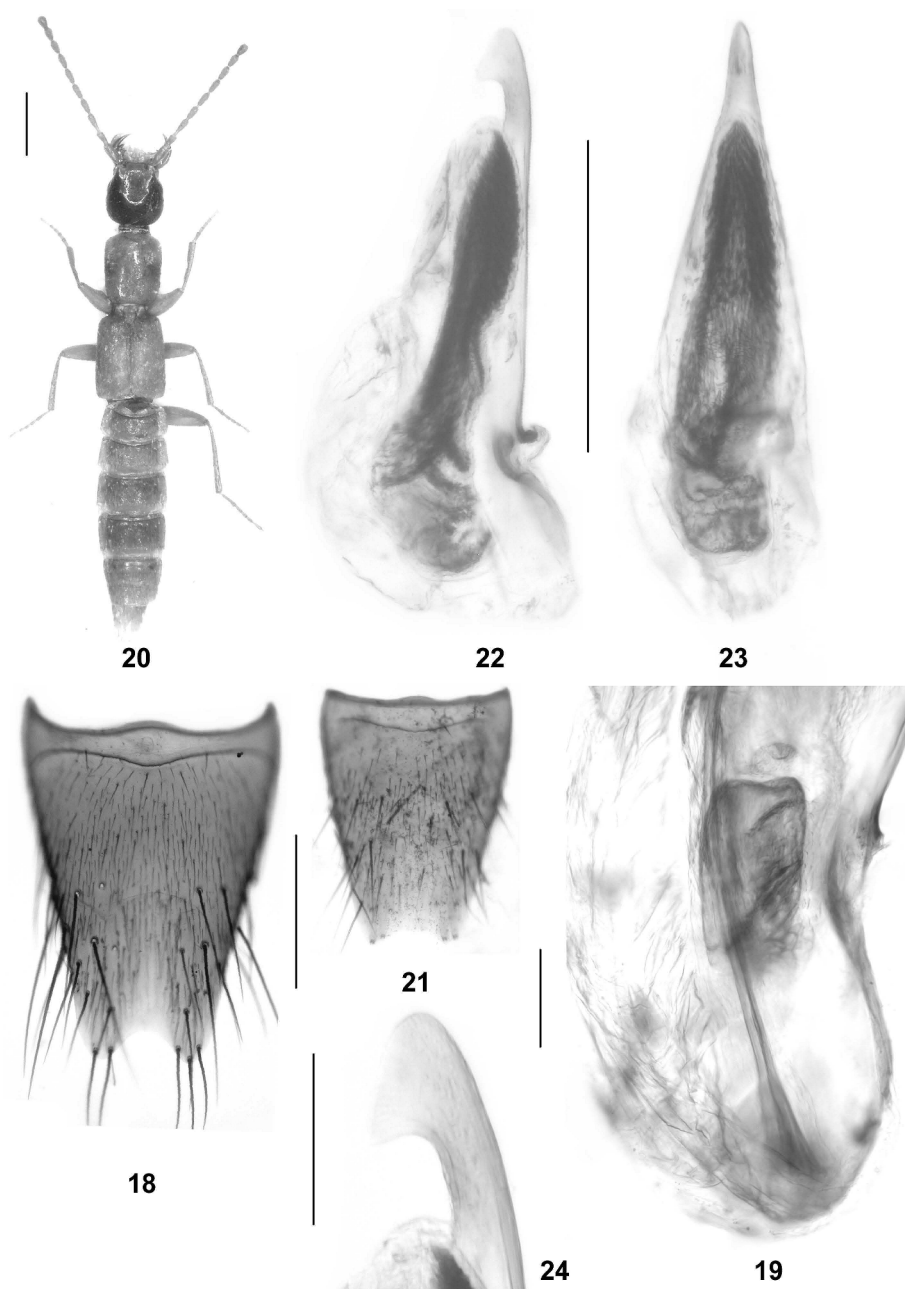
***Micrillus suturalis* (CAMERON, 1930)**

Additional material examined: Thailand: 1 ex., Lom Sak, 40 km N Phetchabun, 120 m, VIII.1987, leg. Thielen (SMNS).

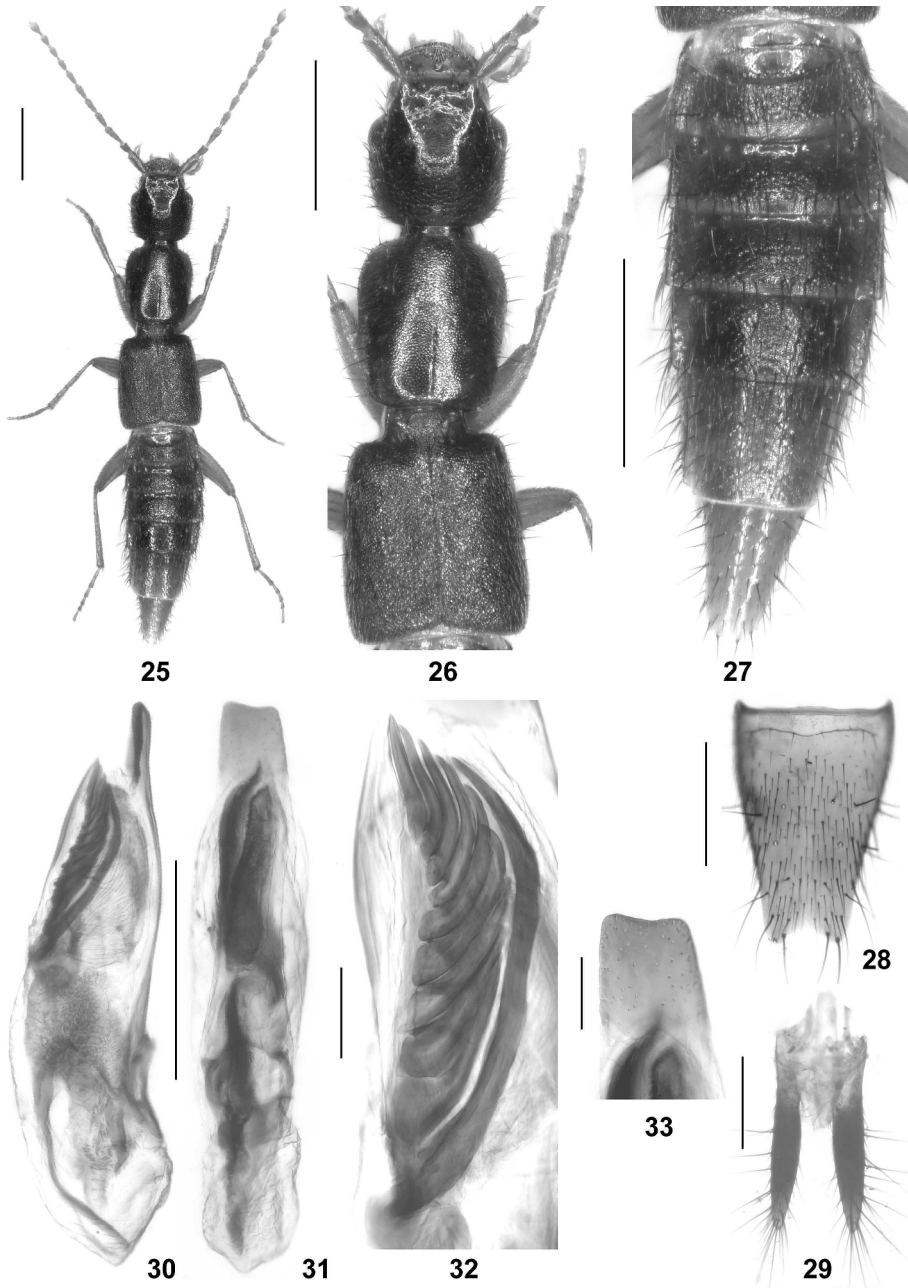
Comment: This species is widespread, but not common, in the Oriental region, its distribution ranging from Thailand and Peninsular Malaysia to Java and Borneo. For a distribution map see ASSING (2013).



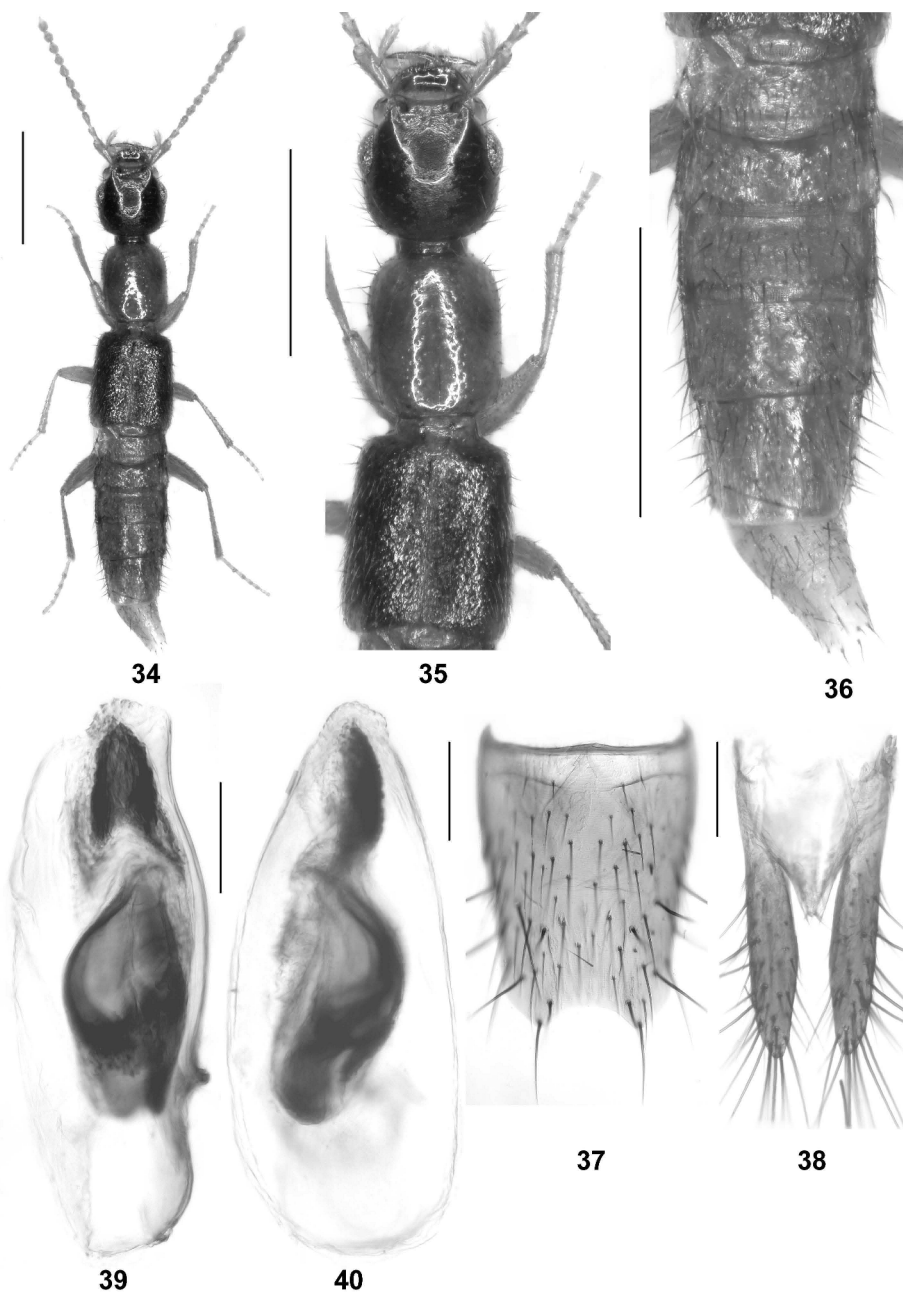
Figs 10-17: *Micrillus virgatus*: (10) habitus; (11) forebody; (12) antenna; (13) abdomen; (14-17) aedeagus in lateral and in ventral view of males from Thailand (14-15) and Cambodia (16-17). Scale bars: 10-13: 1.0 mm; 14-17: 0.5 mm.



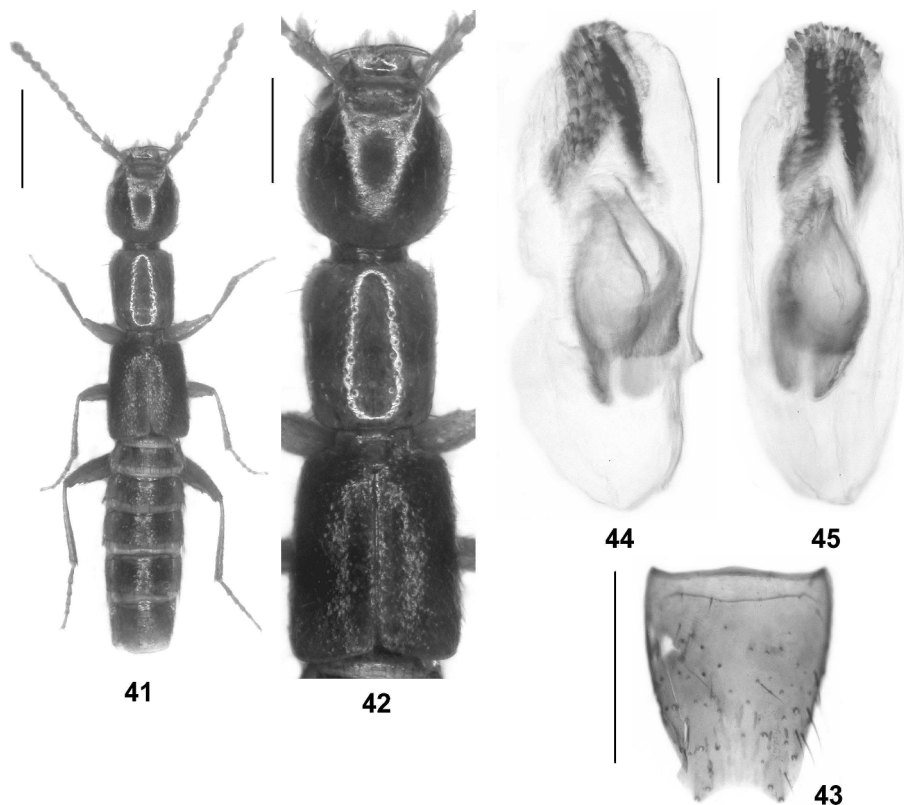
Figs 18-24: *Micrillus virgatus* (18-19) and *M. hamatus* (20-24): (18, 21) male sternite VIII; (19) basal portion of aedeagus in lateral view; (20) habitus; (22-23) aedeagus in lateral and in ventral view; (24) apex of ventral process in lateral view. Scale bars: 20: 1.0 mm; 18, 21-23: 0.5 mm; 19, 24: 0.1 mm.



Figs 25-33: *Micrillus kongi*. (25) habitus; (26) forebody; (27) abdomen; (28) male sternite VIII; (29) abdominal segments IX-X; (30-31) aedeagus in lateral and in ventral view; (32) apical internal structures of aedeagus; (33) apex of aedeagus in ventral view. Scale bars: 25-27: 1.0 mm; 28-31: 0.5 mm; 32-33: 0.1 mm.



Figs 34-40: *Micrillus coloratus*: (34) habitus; (35) forebody; (36) abdomen; (37) male sternite VIII; (38) abdominal segments IX-X; (39-40) aedeagus in lateral and in ventral view. Scale bars: 34-36: 1.0 mm; 37-38: 0.2 mm; 39-40: 0.1 mm.



Figs 41-45: *Micrillus rougemonti*: (41) habitus; (42) forebody; (43) male sternite VIII; (44-45) aedeagus in lateral and in ventral view. Scale bars: 41: 1.0 mm; 42-43: 0.5 mm; 44-45: 0.1 mm.

***Micrillus kongi* nov.sp.** (Figs 9, 25-33)

Type material: Holotype ♂: "CAMBODIA - Kampong Chhnang prov., Kampong Chhnang env., Toul Ompel, 12°14'14"N, 104°41'15"E, light trap, 19+21.V.2018, leg. Bernardi, Kong & Rossi / Holotypus ♂ *Micrillus kongi* sp. n., det. V. Assing 2018" (cAss). Paratypes: 4♂♂, 2♀♀: same data as holotype (cAss).

E t y m o l o g y : This species is dedicated to Vannak Kong (Sisophon: Mean Chey University), one of the collectors of all the Cambodian specimens treated in the present paper.

D e s c r i p t i o n : Body length 6.6-7.5 mm; length of forebody 3.7-3.8 mm. Habitus as in Fig. 25. Coloration: forebody blackish-brown to black, with the elytra (at least the narrow suture and posterior margins) slightly paler; abdomen blackish-brown to black with the paratergites, the anterior margins of the tergites (sometimes also all of tergite III), and the apex (segments VIII-X except for the postero-lateral processes of segment IX; posterior half of segment VII) reddish; legs yellowish-red; antennae pale-reddish to reddish with the basal antennomeres slightly darker than the apical antennomeres.

Head (Fig. 26) oblong, approximately 1.1 times as long as broad, broadest across eyes,

slightly tapering posteriad behind eyes; dorsal surface with dense setiferous micropunctuation in posterior and lateral portions, median dorsal portion with very sparse micropunctuation; scattered setiferous macropunctures present in anterior and lateral portion; integument with extremely fine transverse microsculpture. Eyes slightly more than half as long as postocular region. Antenna approximately 2.9 mm long and moderately slender; antennomeres IV-X of gradually decreasing length; IV approximately twice as long as broad; X weakly oblong. Apical palpomere of maxillary palpus of slender conical shape, approximately two-thirds as long as maxillary palpomere III.

Pronotum (Fig. 26) approximately 1.15 times as long as broad and 1.05-1.10 times as broad as head; lateral margins straight, converging posteriad in posterior three-fourths in dorsal view; posterior margin weakly concave; punctuation fine, very dense, and granulose; midline with or without very narrow impunctate band.

Elytra (Fig. 26) slightly shorter than pronotum; punctuation extremely fine and extremely dense, barely visible in the pronounced microsculpture; surface matt. Hind wings fully developed. Protarsomeres I-IV not dilated. Metatarsomere I slightly longer than the combined length of II and III.

Abdomen (Fig. 27) narrower than elytra; tergites with distinct and moderately dense micropunctuation bearing yellow and depressed to suberect pubescence of variable length and with macropunctures bearing very long and erect black setae; posterior margin of tergite VII with palisade fringe; tergite X and sternite IX of strongly reduced size (Fig. 29); postero-lateral processes of segment IX approximately three times as long as tergite X (Fig. 29).

♂: posterior excision of sternite VIII concave and moderately deep (Fig. 28); aedeagus (Figs 30-33) large in relation to body size, approximately 1.3 mm long, slender, weakly asymmetric, and weakly sclerotized; internal sac with distinctive internal structures, apically with a conspicuous comb-like series of one very long and approximately ten shorter sclerotized spines.

Comparative notes: As can be inferred from the similar external characters and particularly from the similarly derived morphology of the aedeagus, *M. kongi* is undoubtedly closely allied to *M. suturalis*. It differs from this species by the shapes of the apex and of the internal structures of the aedeagus. For illustrations and a redescription of *M. suturalis* see ASSING (2013).

Distribution and natural history: The type locality (Fig. 9) and the collection data are identical to those of *Scymbalium rossii* and *Micrillus virgatus*. One of the male paratypes is teneral.

***Micrillus coloratus* group**

This newly established species group includes two species, both of them described below: *M. coloratus* from Cambodia and *M. rougemonti* from Sri Lanka. Regarding the structure of the maxillary palpi, the shape of the protarsi, the shape of the head, and the shape of the male sternite VIII they are similar to the species of the *M. suturalis* group. They are, however, distinguished from them by distinctly smaller body size, less slender antennae (preapical antennomeres transverse), a larger head (in relation to pronotum), the shape of the pronotum (slender and only indistinctly tapering posteriad), much sparser

punctuation of the head and the pronotum, a broadly impunctate median band on the pronotum, less strongly reduced abdominal sternite IX and tergite X, and a much smaller (in relation to body size) and more compact aedeagus without series of spines in the internal sac. They differ from the - often similarly small - species of the *M. aegyptiacus* group by the shape of the male sternite VIII (*M. aegyptiacus* group: deeply and narrowly incised posteriorly), a symmetric aedeagal capsule, and internal structures of the aedeagus of different general morphology.

***Micrillus coloratus* nov.sp.** (Figs 9, 34-40)

Type material: Holotype ♂: "CAMBODIA - Kampong Chhnang prov., Kampong Chhnang env., Toul Ompel, 12°14'14"N, 104°41'15"E, light trap, 19+21.V.2018, leg. Bernardi, Kong & Rossi / Holotypus ♂ *Micrillus coloratus* sp. n., det. V. Assing 2018" (cAss). Paratypes: 2♂♂, 2♀♀: same data as holotype (cAss).

E t y m o l o g y: The specific epithet (Latin, adjective) alludes to the distinctive coloration.

D e s c r i p t i o n: Body length 4.5-5.0 mm; length of forebody 2.5-2.8 mm. Habitus as in Fig. 34. Coloration: forebody bicoloured with the head blackish-brown to black, the pronotum bright reddish, and the elytra reddish-yellow to dark-brown with reddish margins; abdomen pale-reddish; legs dark-yellowish; antennae yellowish-red.

Head (Fig. 35) approximately as long as broad, broadest across eyes, distinctly tapering posteriad behind eyes; dorsal surface with fine and sparse punctuation; median dorsal portion extensively impunctate; interstices with fine transverse microsculpture. Eyes large and distinctly convex, approximately as long as postocular region, or nearly so. Antenna approximately 1.5 mm long; antennomeres IV-V indistinctly oblong, preapical antennomeres transverse. Apical palpomere of maxillary palpus of slender conical shape, more than half as long as maxillary palpomere III.

Pronotum (Fig. 35) slender, 1.20-1.24 times as long as broad and 0.90-0.95 times as broad as head; lateral margins straight, only indistinctly converging posteriad, nearly parallel in dorsal view; posterior margin nearly truncate; punctures moderately dense and of variable size; midline broadly impunctate; interstices glossy.

Elytra (Fig. 35) as long as, or slightly longer than pronotum; punctuation moderately fine and moderately dense, rather ill-defined; interstices without microsculpture; surface with some shine. Hind wings fully developed. Protarsomeres I-IV not dilated. Metatarsomere I slightly longer than the combined length of II and III.

Abdomen (Fig. 36) narrower than elytra; tergites with distinct punctuation bearing long and suberect to erect black setae and with interspersed punctures bearing fine pale setae; interstices with transverse microsculpture; posterior margin of tergite VII with palisade fringe; tergite X and sternite IX small (Fig. 38); postero-lateral processes of segment IX approximately twice as long as tergite X (Fig. 38).

♂: posterior excision of sternite VIII concave and moderately deep (Fig. 37); aedeagus (Figs 39-40) small in relation to body size, approximately 0.5 mm long, compact, and weakly sclerotized; internal sac with a basal pair of large and dark asymmetric structures and with a dark membranous apical structure.

C o m p a r a t i v e n o t e s: Based on the similar external and particularly on the similar male sexual characters, *M. coloratus* is undoubtedly closely allied to *M.*

rougemonti from Sri Lanka (see below). It is distinguished from this species by smaller size, the coloration and shape of the head (*M. rougemonti*: head distinctly oblong), shorter antennae, and by the shape and the internal structures of the aedeagus.

Distribution and natural history: The type locality (Fig. 9) and the collection data are identical to those of *Scymbalium rossii*, *Micrillus virgatus*, and *M. kongi*.

***Micrillus rougemonti* nov.sp.** (Figs 41-45)

Type material: Holotype ♂ [abdominal apex damaged]: "CEYLON, Habarana, 15.III.81, Rougemont / Holotypus ♂ *Micrillus rougemonti* sp. n., det. V. Assing 2013" (cRou).

Etyymology: This species is dedicated to Guillaume de Rougemont, Oxford, who collected the holotype.

Description: Body length 5.7 mm; length of forebody 3.1 mm. Habitus as in Fig. 41. Coloration: head dark-brown with frons and posterior portion pale-reddish; pronotum pale-reddish; elytra brown with the suture and the posterior margins narrowly paler; abdomen reddish, with the middle of tergite VI darker brown; legs dark-yellowish; antennae pale-reddish.

Head (Fig. 42) 1.1 times as long as broad, strongly convex in cross-section, rather large in relation to pronotum, and with weakly marked posterior angles; punctation fine and very sparse; interstices with pronounced microsculpture composed predominantly of transverse striae. Eyes large, approximately as long as postocular region in dorsal view. Antenna 1.8 mm long; antennomeres IV-VII weakly oblong, VIII-IX approximately as long as broad, and X weakly transverse. Maxillary palpus slender, apical palpomere needle-shaped and approximately half as long as palpomere III.

Pronotum (Fig. 42) 1.23 times as long as broad and 0.9 times as broad as pronotum; lateral margins straight, very weakly converging posteriad in dorsal view; punctation fine, but less so than that of head, less sparse than that of head; midline broadly impunctate; interstices without microsculpture.

Elytra (Fig. 42) 1.05 times as long as pronotum; punctation fine and moderately dense. Hind wings fully developed. Protarsomeres I-IV not dilated. Metatarsomere I approximately as long as combined length of II and III.

Abdomen approximately as broad as elytra; punctation rather sparse and moderately fine; interstices with distinct transverse microsculpture; posterior margin of tergite VII with palisade fringe; tergite X and sternite IX very small.

♂: posterior excision of sternite VIII broadly concave (Fig. 43); aedeagus (Figs 44-45) 0.45 mm long, symmetric, and weakly sclerotized, with distinctive internal structures.

Comparative notes: This species is characterized particularly by a relatively large, oblong, and distinctly convex head, by distinct transverse microsculpture of the head and abdomen, very sparse and fine punctation of the head, the shape of the male sternite VIII, as well as by the morphology of the aedeagus. For characters separating it from the closely allied *M. coloratus* see the comparative notes in the preceding section.

Distribution: The type locality is situated in central Sri Lanka. The holotype was sifted (Rougemont pers. comm.).

Micrillus aegyptiacus group

The *M. aegyptiacus* group includes the remaining species. The currently known distribution includes Northeast Africa southwards to Sudan, the southern East Palaearctic and the Oriental regions. Representatives of this group are mostly of small body size and characterized among the species groups with unmodified protarsomeres particularly by a deep and narrow posterior incision of the male sternite VIII and a relatively small, compact, and distinctly asymmetric aedeagus.

Micrillus siamensis ASSING, 2013

Material examined: Cambodia: 13♂♂, 11♀♀, Kampong Chhnang prov., Kampong Chhnang env., Domnatpopol near Toul Ompel vill., banks of branch of Tonle Sap lake, 12°14'N, 104°41'E, light trap, 19 & 21.V.2018, leg. Bernardi, Kong & Rossi (cAss); 1♀, Banteay Meanchey prov., Mean Chey University campus, 13°35'N, 102°56'E, light trap, 25.V.2018, leg. Bernardi, Kong & Rossi (cAss); 1♂, Banteay Meanchey prov., orchard near Sisophon, light trap, 26.V.2018, leg. Bernardi, Kong & Rossi (cAss); 5♂♂, 4♀♀, Kampong Chhnang prov., Rolea B'ier distr., Chreybak near Ourung vill., 12°11'59"N, 104°37'03"E, light trap, 20 & 23.V.2018, leg. Bernardi, Kong & Rossi (cAss).

Comment: The above material represents the first records since the original description, which is based on a unique male from the environs of Bangkok, Thailand (ASSING 2013).

Micrillus intermedius (CAMERON, 1936)

Material examined: Laos: 3 exs., Vientiane province, Vang-Vieng, 18°55'N, 102°27'E, 300 m, 10.–15.V. & 1.–6.VI.2001, leg. Kolibáč (NHMB, cAss). Thailand: 3♀♀, Chumphon province, Pha To env., 9°48'N, 98°47'E, 27.III.–14.IV.1996, leg. Majer (NHMB, cAss). Cambodia: 1♂, 3♀♀, Kampong Chhnang prov., Kampong Chhnang env., Domnatpopol near Toul Ompel vill., banks of branch of Tonle Sap lake, 12°14'N, 104°41'E, light trap, 19 & 21.V.2018, leg. Bernardi, Kong & Rossi (cAss).

Comment: The previously known distribution of *M. intermedius* included Malaysia, Thailand, and Laos (ASSING 2013). The above specimens from Cambodia represent a new country record.

Micrillus distortus ASSING, 2013

Material examined: Laos: 2 exs., 240 km N Vientiane, 10 km N Luang Prabang, Mekong, 250 m, primary forest, at light, X.1992, leg. Somsy (MNB, cAss). Thailand: 1 ex., 220 km NW Bangkok, 65 km NW Thai-Thani, 25 km NW Lan-Sak, 110 m, IX.1990 (MNB); 1 ex., 220 km NW Bangkok, 55 km W Uthai-Thani, 2 km SW Pak-Muang, 120 m, "ix.1991" [sic] (MNB); 1♂, Lamphun, Ban Lam Chan, Tambon, Phla Tu Pa, light trap, 23.X.2016, leg. Rossi (cAss). Vietnam: 1♂, Lam Dong Province, Cat Tien District, Nam Cat Tien National Park, headquarter area, 120 m, at light, 11–15.VI.2015, leg. Bartolozzi et al. (MSNF). Cambodia: 13♂♂, 10♀♀, Kampong Chhnang prov., Kampong Chhnang env., Domnatpopol near Toul Ompel vill., banks of branch of Tonle Sap lake, 12°14'N, 104°41'E, light trap, 19 & 21.V.2018, leg. Bernardi, Kong & Rossi (cAss); 1♂, Banteay Meanchey prov., orchard near Sisophon, light trap, 26.V.2018, leg. Bernardi, Kong & Rossi (cAss). Indonesia: 3 exs., N-Sumatra, Dolok-Merungir, at light, 1.X.–14.XI.1884, leg. Kern (MNB, cAss).

Comment: This species was previously known from Laos, Vietnam, and North Thailand; for a map see ASSING (2013). The above specimens from Cambodia and Indonesia represent new country records.

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Zusammenfassung

Sechs Arten der Gattungen *Scymbalium* ERICHSON, 1839 und *Micrillus* RAFFRAY, 1873 werden beschrieben und abgebildet: *Scymbalium rossii* nov.sp. (Kambodscha), *Micrillus virgatus* nov.sp. (Kambodscha, Süd-Thailand) aus der *M. badius*-Gruppe, *M. hamatus* nov.sp. (Südmorokko) aus der *M. testaceus*-Gruppe, *M. kongi* nov.sp. (Kambodscha) aus der *M. suturalis*-Gruppe sowie *M. coloratus* nov.sp. (Kambodscha) und *M. rougemonti* nov.sp. (Sri Lanka) aus der *M. coloratus*-Gruppe. Auf der Grundlage einer neuen Bewertung der intra- und intergenerischen Beziehungen von *Scymbalium* und *Micrillus* werden zwei ehemals der Gattung *Scymbalium* zugeordnete Arten in die Gattung *Micrillus* gestellt: *Micrillus badius* (MOTSCHULSKY, 1858), nov.comb.; *Micrillus nepalensis* (ASSING, 2013), nov.comb. Weitere Nachweise einer *Scymbalium*-Art sowie von zehn *Micrillus*-Arten (davon eine unbeschrieben) werden gemeldet, darunter fünf Erstnachweise aus Kambodscha (3), Syrien (1) und Indonesien (1).

References

- ASSING V. (2008): A revision of the *Micrillus* species of the Palaearctic region, with notes on two species from adjacent parts of the Afrotropical and Oriental regions (Coleoptera: Staphylinidae: Paederinae). — Stuttgarter Beiträge zur Naturkunde Serie A, Neue Serie **1**: 301-344.
- ASSING V. (2013): On the Palaearctic and Oriental species of *Scymbalium* and *Micrillus* (Coleoptera: Staphylinidae: Paederinae). — Linzer Biologische Beiträge **45** (2): 1479-1520.
- MOTSCHULSKY V. DE. (1858): Énumération des nouvelles espèces de coléoptères rapportés de ses voyages. — Bulletin de la Société Impériale des Naturalistes de Moscou **31** (2): 634-670.

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