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Two new species of the genus *Brachycoraebus* Kerremans and *Metasambus* Kerremans (Coleoptera: Buprestidae: Coraebini) from Southeast Asia

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Abstract. Two new species of Oriental Coraebini are described and illustrated: *Brachycoraebus aeneus* sp. nov. from Singapore and *Metasambus circularis* sp. nov. from Singapore and Sumatra. Lectotype of *Metasambus weyersi* (Kerremans, 1900) is designated and its aedeagus pictured.

Key words. Coleoptera, Buprestidae, Coraebini, taxonomy, new species, lectotype designation, Oriental region

INTRODUCTION

The tribe Coraebini Bedel has the highest number of genera in the family Buprestidae (Bellamy, 2008); however, many genera often contain small number of species. These beetles tend to stay at the upper canopy of the forest, especially in the tropics, and are therefore rarely collected. As a consequence, our knowledge about the fauna in this tribe (both their taxonomy and biology) remains rather scanty, nowhere more so than the Southeast Asian region. Major works dealing with the regional faunae include those concerning the French Indochina (Descarpentries & Villiers, 1967a, b), Laos (Baudon, 1968), and the Philippine archipelago (Bellamy, 1990, 1991a, b, 1995, 1998, 2005). Kubáň reviewed the Palaearctic and the Oriental Coraebini (Kubáň, 1995a, b, 1996, 1997).

In this paper, two new species belonging to this tribe are described, one from the genus *Brachycoraebus* Kerremans, and the other from *Metasambus* Kerremans. *Brachycoraebus* is a relatively small genus with 25 species (Bellamy, 2008). Eighteen Oriental and Palaeartic species have been reviewed and described by Kubáň (1995a, b, 1996, 1997), with three additional Philippines species described by Bellamy (2005). In particular, the following five species have been described from Borneo, Peninsular Malaysia, and Sumatra:

Brachycoraebus baumi (Obenberger, 1929). West Malaysia
Brachycoraebus borneensis (Kerremans, 1912). Malaysia (Sarawak)
Brachycoraebus herychi Obenberger, 1940 Borneo
Brachycoraebus piliferus (Deyrolle, 1864). Borneo
Brachycoraebus viridis (Kerremans, 1900). Sumatra

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The genus *Metasambus* is also a very small genus, with only three species known: *M. hoscheki* (Obenberger) 1916 from China, *M. tonkinensis* Descarpentries & Villiers, 1966 from Vietnam, and *M. weyersi* (Kerremans) 1900 from Sumatra.

In June 2013, the author had the privilege of studying the rather extensive personal collection of Buprestidae of Dr. Roman Holynski at Milanowek, Poland, through the Expert-in-Training Program organised by DEST (Distributed European School of Taxonomy). Among Dr. Holynski's collection is a *Brachycoraebus* specimen collected from Singapore by C.J. Saunders in 1922. This specimen appears to be different from any of the known species in the Southeast Asian region, chiefly in terms of colouration and pattern on elytra, and will be described hereinafter. Comparison is made to *Brachycoraebus viridis* (Kerremans, 1900), being one of the species whose distribution is closest to Singapore, and a representative of this species is available in the Holynski's collection. Another specimen of this species was freshly collected by the author from light trap in Singapore recently.

Dr. Roman Holynski's collection also contains a series of Sumatran specimens that are very similar to the Sumatran *Metasambus weyersi* (Kerremans, 1900) but with important structural differences. Similar specimens were freshly collected by the author from foliage in Singapore recently. This new species is described herein and comparison is made to type specimens of *M. weyersi* obtained from The Natural History Museum, London.

MATERIAL AND METHODS

Specimens used in this paper include those collected by me in Singapore and will be deposited in the Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum (formerly Raffles Museum of Biodiversity Research), Singapore. Specimens from, or now in, the following institutions were also examined: RBH: Roman B. Holynski's collection at Milanowek (Poland); NHM: The Natural History Museum, London.

For dissection of the genitalia the specimens were relaxed for a night in a jar under moist atmosphere, then the genitalia were removed and subsequently cleaned for a short while in hot KOH.

All specimens were examined using stereo-microscopes. The illustrations were made with a Visionary Digital ™ BK Plus Lab System outfitted with a Canon EOS Mk. III camera.

TAXONOMY

Brachycoraebus Kerremans, 1903

Generally, this genus is very similar to *Coraebus* Gory & Laporte, but as the name suggests, it is distinguished from the latter by the body being shorter and wider (2.2 – 2.5 × longer than wide) and more flattened above. For detailed information about taxonomy of the genus *Brachycoraebus*, see (Kubáň, 1995a). Note that the sexual dimorphism in this genus can be quite significant; for instance, *B. viridis* has distinct differences in colouration and ornamentation between the sexes (the female was described as a new species *B. picturellus* by Kerremans).

Brachycoraebus aeneus, sp. nov.

(Figs. 1, 2)

Description. Small, slender species; dorsal side nitid dark, with aeneus reflection depending on angle of light, covered with short, stout, adpressed golden setae, almost evenly distributed except for some small bare patches (but not forming distinct spots or fasciae) and slightly more dense in the hind elytral third; ventral side black with very slight bronze tinge. Size: male, 3.6 mm length × 1.5 mm width; female, 4.2 mm length × 1.9 mm width.

Head: Median impression deep. Epistome with arcuately emarginate apical margin, 1.2 times as long as wide, about 1.2 times narrower than diameter of one antennal socket, without transverse carina, supra-antennal carinae strongly elevated, unconnected. Inner eye margins straight, almost parallel-sided. Head sculptured like pronotum. Antenna not reaching base of pronotum, obtusely and shortly serrate from 4th joint, joints 1 and 2 elongately oval, 3 somewhat shorter and much slenderer, conical.

Pronotum 1.9 times wider than long, broadest at middle, disc convex, with shallow pre-basal depression, sides broadly explanate; lateral pronotal margin regularly rounded, entire lateral margins finely but deeply crenulate (Fig. 1b); posterior pronotal margin bisinuous; sculpture almost entirely homogenous, becoming wrinkled on the sides and near the hind angle but not forming long, transverse furrows like that of *B. viridis*. Laterodiscal carinae inconspicuous.

Scutellum subcordate, almost twice as wide as long, flat. Elytra 1.7–1.8 times longer than wide, each with two shallow depressions: transverse along base and longitudinal behind humeri, extending to the level of metacoxae; lateral margin

Fig. 1. *Brachycoraebus aeneus*, sp. nov., holotype male (a) habitus dorsal, (b) sculpture on sides of pronotum and its lateral margin, and reticulation on elytra.

finely crenulate, with crenulations more or less vanishing before midlength, apices subtruncate and finely serrate. Texture composed of tightly-packed, tiled formation; each tile slightly more elongate than that of pronotum, laterally and posteriorly elevated, defining a pit in the centre (Fig. 1b).

Underside with similar textures as above, setae adpressed and yellowish; anterior margin of prosternum arcuately emarginate, gular lobe separated by furrows and broadly rounded, prosternal process wide and broadly truncated.

The male holotype genitalia is damaged and therefore not illustrated.

Female (Fig. 2) larger, slightly more robust (elytral length-to-width ratio is 1.7 in female, 1.8 in male), without slight cupreous red on the head, stronger aeneus reflection on the dorsal surface, and slightly different pattern formed by the bare patches, otherwise there is no significant difference from the male.

Diagnosis. *Brachycoraebus aeneus* differs from *B. viridis* (Kerremans, 1900) (Fig. 3) from Sumatra in colouration, sculpture, slender body, and deeply crenulate lateral pronotal margins. Other species similar in size and coloration (especially the females) include *B. herychi* Obenberger, 1940 from Borneo and *B. helferi* Obenberger, 1922 from Thailand and Burma, but the elytra in the males of these two species are marked with patches with bluish-violet reflection and pilose fasciae.

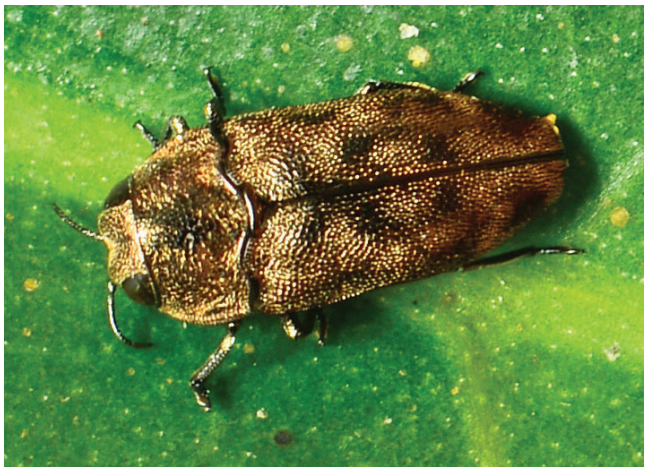

Fig. 2. *Brachycoraebus aeneus*, sp. nov., paratype female, taken when still alive (Photograph by: L.F.Cheong).

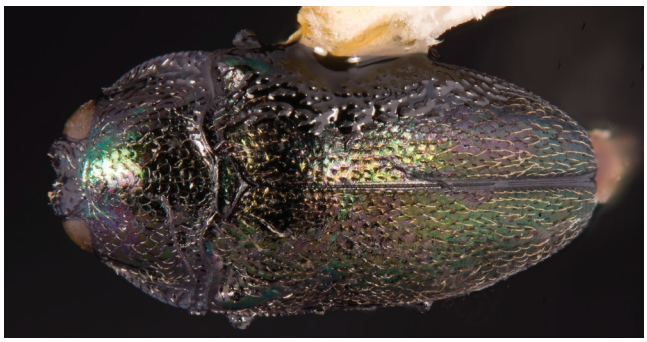

Fig. 3. Dorsal habitus *of Brachycoraebus viridis* (Kerremans, 1900), non-type, Sumatra, RBH.

Etymology. The specific name is the Latin adjective *aeneus* referring to the bright brassy reflection of this species.

Type specimens. Holotype male (ZRC.COL.100), "Singapore, jungle", coll. C.J. Saunders, 29 April 1922; Paratype female (ZRC.COL.101), "Singapore, Nee Soon swamp forest", coll. L.F. Cheong & YW Cheong, 29 September 2013.

Remarks. The holotype's genitalia is damaged, and its left hind leg is broken off.

Metasambus Kerremans 1903

Metasambus is morphologically similar to *Sambus*. The main difference between them lies in, among others, the following: for *Metasambus*, the prosternum is narrowed and subacuminate at the rear, its metacoxa is not dilated on the internal side and its external side projecting anterad, and body more elongate (*Sambus* rarely elongate).

Metasambus weyersi (Kerremans, 1900)

(Figs. 4, 5)

Coraebus weyersi Kerremans, 1900: 12
Metasambus weyersi Kerremans, 1903: 237

Fig. 4. Dorsal habitus of *Metasambus weyersi* (Kerremans, 1900), lectotype, male, Sumatra, NHM (photo by :Harry Taylor: Natural History Museum).

Type material examined. The lectotype male of *M. weyersi* (Kerremans), here designated to preserve stability of nomenclature, is labeled "Sumatra, Weyers /Weyersi Kerr. Type /SYNTYPE (round label, blue) /Kerremans. 1903-59/C. Weyersi Kerrem. Sumatra /Metasambus Kerremans". It is directly pinned and in good condition and is deposited in NMH. Another six paralectotypes from NMH (sex not examined) are labeled "Sumatra, Weyers /Weyersi Kerr. Type /SYNTYPE (round label, blue) /Kerremans. 1903-59", and two paralectotypes from RBH (sex not examined) are labeled "Sumatra/ Metasambus weyersi Kerr. co-type/Metasambus weyersi Kerr. det. R. Hołyński 1985/coll. RBHołyński BPkpt" and "Sumatra Hindrapoera/Ex B.M.[N.H.] Duplicate/ Metasambus weyersi Kerr. det. R. Hołyński 1985/coll. RBHołyński BPkpu" respectively.

Remarks. (Kerremans, 1900) stated that there are 15 specimens in the syntype series but only nine are available for this study. See further comments under "Remarks" of *Metasambus circularis*, sp. nov.

Fig. 5. Aedeagus of *Metasambus weyersi* (Kerremans, 1900).

Supplementary description. Aedeagus (Fig. 5) is longer and more sub-parallel in comparison to *Metasambus circularis*, sp. nov.. See further comparative remarks under "Diagnosis" of *Metasambus circularis*, sp. nov..

***Metasambus circularis*, sp. nov.**
(Figs. 6, 7)

Description. Small and rather slender; surface black with slight purplish tinge; head bronzy green, with strong violaceous reflection on occiput, pronotum with violet tinge along lateral margin; pubescence on elytra white, forming three – at base, middle, and apical fourth – transverse bands (each consisting of two ring-shaped spots), design on apical part more distinct; the three bands becoming somewhat zigzaggy towards lateral margin. Length: 3.8 mm, width: 1.3 mm.

Head slightly grooved on occiput, groove becoming indistinct on front, surface imbricate except at groove area, clothed with white hairs, denser on occiput and clypeal margin. Clypeal suture distinct; epistome narrow, width about 2.5 times less than length; antennae reaching to middle of pronotum.

Pronotum 1.6 times wider than long, greatest width of prothorax near middle; sides flattened and regularly arcuate, very slightly sinuate anteriorly and posteriorly; anterior margin slightly bisinuate, median lobe nearly straight; base strongly bisinuate, with large median lobe broadly truncate in front of scutellum; disk convex anteriorly, broadly concave in basal part, with a rather deep depression inside of lateral carina reaching from base to midlength; lateral carina slightly arcuate, reaching from posterior angles to apical fifth; pronotal surface concentrically rugose on disc, here finely punctured, more coarsely and densely so towards lateral margin; hairs on disc sparse, dark, inconspicuous, recumbent, on sides denser, long, white.

Scutellum triangular. Elytra narrower at base than middle of pronotum, with a slight depression along lateral margin

Fig. 6. Dorsal habitus of *Metasambus circularis*, sp. nov., holotype male.

behind humerus; sides slightly sinuate at the level of metacoxae, expanded at apical third, then strongly attenuate to tips, which are separately rounded and finely dentate, with denticulation coarser near the sutural and lateral angles; surface obsoletely imbricate, finely punctate, clothed with inconspicuous hairs of the same colour as the surface, with a series of thicker white setae forming at base, middle, and apical fourth three transverse bands.Ventral side imbricate.

Aedeagus (Fig. 7) expanded near the middle and shorter in comparison to *Metasambus weyersi* (Kerremans, 1900).

Variability: There is also some variation in the amount of reflection on the occiput, ranging from feebly cupreous to obviously violet, and in the design of the pattern on the elytra. In the Singapore specimens, the head is slightly wider (head-to-pronotum ratio 0.69–0.70) than that of the Sumatran specimens (0.67–0.68).

Diagnosis. Very similar to *Metasambus weyersi* (Figs. 4, 5), but head distinctly broader: head to pronotum ratio is 0.67–0.70, as compared to 0.61–0.63 in *M. weyersi*; vertex simply sulcate ("mamelonne", i.e., forming two breast-shaped domes, in *M. weyersi*). The pronotum shows varying degree of twin-peakness, and its concentric rugosity varies from obsolete to moderate, but never as strong as in *M. weyersi*; the lateral carina on the pronotum is less distinct, running to apical fifth, and close to the lateral margin,

Fig. 7. Aedeagus of *Metasambus circularis*, sp. nov.

whereas in *M. weyersi*, it runs more or less distinct, from posterior angle to apical fourth, at a distance away from the pronotal margin, together with it forming the shape of a bow. The elytra is always more parallel sided, whereas in *M. weyersi*, it is more strongly sinuate at the level of metacoxa; the scutellum shape also differs: the central violet part is bigger and more triangular, whereas the scutellum of *M. weyersi* is more depressed, with a central violet part small and rather circular; the silver pilosity on the elytra can vary a bit, the median band consists of "ring" broken anteriorly but does not form a wide solid band like that of *M. weyersi*. Aedeagus different from that of *M. weyersi* in size, overall shape and shape of the apex. Note that the above measurements and characters of *Metasambus weyersi* are not included in Kerremans' original description; they are based on my examination of seven syntypes from NHM and two additional specimens from RBH.

Etymology. The specific name is the Latin adjective *circularis* describing the circular pattern on the elytra of this species.

Type specimens. Holotype male (ZRC.COL.102), "Singapore, Rifle Range [forest]", coll. L.F. Cheong & Y.W. Cheong, 9 July 2011; 6 paratypes (sex not examined): 1 ex. same data as holotype (ZRC.COL.103); 4 exs.: Sumatra (RBH), without further data; 1 ex. Sumatra Hindrapoera (RBH), without further data.

Remarks. Of the five Sumatran paratypes, four bear these additional labels: "*Coraebus weyersi* Kerr, Sumatra, co-type", followed by "Not *Metasambus weyersi* Kerr, B Levey det. 1971". The fifth Sumatran paratype bears the label: "*Metasambus weyersi Kerr. co-type*". Despite the label "co-type", these could be instances when specimens are labelled as 'co-type' when they are merely topotypic, or compared with type, and they are actually not types at all. The first four paratypes probably did not belong to the type-series of *M. weyersi* Kerr., since the labels are somewhat different (labeled as "*Coraebus weyersi Kerr. co-type*", not "*Weyersi* Kerr. Type", location is "Sumatra", not "Sumatra Hindrapoera", etc.). Furthermore, the fifth paratype is labeled as "*Metasambus weyersi*", not "*Coraebus weyersi*". Kerremans described the species as *Coraebus* in 1900, and only three years later erected the genus *Metasambus*, so the label for the fifth paratype "*Metasambus weyersi*" must have been attached later. Finally, it should be noted that at this point, it remains impossible to tell whether the original syntype series for *Metasambus weyersi* is a mixed series or not, even if one were to regard the five *M. circularis* from Sumatra as not true types. This is because, of the fifteen syntypes mentioned by (Kerremans, 1900), only a total of nine *M. weyersi* are available for study for this paper.

Discussion. The three previously described species in this genus are quite widely separated: *Metasambus hoscheki* in Kiautschou, China (Shandong in NE of China), *M. tonkinensis* in Indochina, and *M. weyersi* in Sumatra. There seems to be extensive gaps along the entire range of the genus *Metasambus*. Yet, is it not anomalous that now, with the addition of this newly described species, we have two closely related species within Sumatra? Given the small and cryptic nature of *Metasambus* species, an obvious conjecture is that we have poor knowledge of the actual distribution of all the *Metasambus* species. Or it could be a genus with species having a restricted distribution, but there exist in the Oriental region undiscovered species, which collectively would close the seemingly extensive gaps. Yet another reason for the disjunct distribution could be that some original *Metasambus* species were eliminated elsewhere by other species better pre-adapted to changes in environmental conditions (e.g., climate). The existence of two closely related species in Sumatra could be a result of recent speciation. Or it could be that both *Metasambus weyersi* and *M. circularis* have wider distribution ranges that happen to overlap in Sumatra. Similar existence of pairs or groups of closely related species in one area is also found in other Buprestid taxa: for instance, the interesting case of at least four *Exagistus* species, three of which are closely related, found on Mt. Trus Madi, Sabah (Holynski, 2011).

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