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To the knowledge of the genus *Acrocrypta* Baly, 1862 (Chrysomelidae: Galerucinae: Alticini) from Borneo

К познанию земляных блошек рода *Acrocrypta* Baly, 1862 (Chrysomelidae: Galerucinae: Alticini) с Борнео

P.V. Romantsov¹, L.N. Medvedev² П.В. Романцов¹, Λ .Н. Медведев²

¹Russian Entomological Society, Krasnoputilovskaya str., 105–9, St. Petersburg 196240 Russia. E-mail: pawelr@mail.ru ²A.N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, Leninsky prospect, 33, Moscow 119071 Russia. E-mail: lev.n.medvedev@mail.ru

Key words: Coleoptera, Chrysomelidae, Galerucinae, Alticini, Acrocrypta, Malaysia, Borneo. Ключевые слова: Coleoptera, Chrysomelidae, Galerucinae, Alticini, Acrocrypta, Малайзия, Борнео.

Abstract. Checklist of Bornean species of the genus Acrocrypta Baly, 1862 and a key to them are given. Eight new species: Acrocrypta bifasciata sp. n., Acrocrypta bruneica sp. n., Acrocrypta geiseri sp. n., Acrocrypta pseudoaureipennis sp. n., Acrocrypta kinabaluensis sp. n., Acrocrypta sarawakensis sp. n., Acrocrypta sexstigmatica sp. n. and Acrocrypta trusmadiensis sp. n. are described from Borneo. A following new synonymy is proposed: Acrocrypta sabahensis Medvedev et Romantsov, 2014 = Acrocrypta cruciata Medvedev et Romantsov, 2014, syn. n.

Резюме. Приводится полный список видов определительная таблица борнейских рода Acrocrypta Baly, 1862. Описано 8 новых видов с Борнео: Acrocrypta bifasciata sp. п., Acrocrypta bruneica sp. n., Acrocrypta geiseri sp. n., Acrocrypta pseudoaureipennis sp. n., Acrocrypta kinabaluensis sp. n., Acrocrypta sarawakensis sp. n., Acrocrypta sexstigmatica sp. n. и Acrocrypta trusmadiensis sp. n. Предложена следующая синонимия: Acrocrypta sabahensis Medvedev et Romantsov, 2014 = Acrocrypta cruciata Medvedev et Romantsov, 2014, syn. n.

Introduction

Acrocrypta Baly, 1862 is a flea beetle genus consisting of more 56 (63) species and subspecies (taking into account the new species and the changes proposed in this study and with species from genera *Pseudocrypta* Medvedev, 1996 and *Sebaethiella* Medvedev, 1993, which are, according to Konstantinov, Prathapan [2008] synonyms of *Acrocypta*) distributed in the Oriental Region from India (Assam) to the Philippines.

Acrocrypta can be distinguished from other flea beetle genera by the following combination of characters: dorsum convex, glabrous; pronotum without any impressions; preapical segment of maxillary palpes increased, globular;

anterior coxal cavity closed posteriorly; punctation of elytra entirely confused. *Sphaerometopa* Chevrolat, 1867 and *Chabria* Jacoby, 1887 are very similar to *Acrocrypta* but can be distinguished easy by the open anterior coxal cavity.

Although this genus was revised by Döberl [2001] and was cited in the Catalogue of the Malaysian Chrysomelidae [Mohamedsaid, 2004] the studying of the Acrocypta fauna of Borneo should not be considered complete. After works of these authors a few papers with descriptions of new species for science from Borneo have been published [Medvedev, 2010; Medvedev, Romantsov, 2014; Romantsov, Medvedev, 2015]. Moreover in Döberl's key the coloration is the main character to distinguish species. It does not always work with variable species to which the most species with spotted elytra relate. Döberl [2001] correctly indicates that the proportion of the antennal segments is an important character to distinguish Acrocrypta species but have not used this character in his key. Taking this into account we offer a new key and give a table with dimensions of antennal segments for all species that were available to us (Table 1). We tried to examine the type specimens of the involved species, but not all were available to us. In addition, we assume that there are still many undescribed Acrocrypta species from Borneo. So this review is one more step to improve the knowledge of this genus from Borneo. In any case the species group with spotted elytra and with short preapical segments of antennae needs a more detailed study.

In the catalogue of Mohamedsaid [2004] 11 species of *Acrocrypta* from Borneo were listed, but with species from mentioned above papers 17 species from Borneo is known to the moment. Below we describe 8 new species of the genus *Acrocrypta* from Borneo and establish 1 new synonym. So with all of these changes the *Acrocrypta* fauna of Borneo include 24 species. Below we give checklist of the species and a key to them.

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¹Русское энтомологическое общество, Краснопутиловская ул., 105–9, Санкт-Петербург 196240 Россия ²Институт проблем экологии и эволюции им. А.Н. Северцова РАН, Ленинский пр., 33, Москва 119071 Россия

Material and methods

The present paper is based on study of *Acrocrypta* materials from collection of the Natural History Museum, L. Medvedev's collection and on materials collected by P. Romantsov in Borneo (Sabah) during 3 expeditions in 2011–2013.

All measurements were made using an ocular grid mounted on MBS-20 stereomicroscope. Photographs of the habitus were taken by P. Romantsov with a Canon EOS 500D digital camera with combined Canon EF 70–200 mm f/4.0L IS USM and inverted Helios 50 mm objectives. Photographs of aedeagi and some spermatheca were made by P. Romantsov with a Canon EOS 500D digital camera with combined Canon EF 70–200 mm f/4.0L IS USM and inverted EFS 18–55 mm f/3.5–5.6 objectives. Images at different focal planes were combined using Helicon Focus 4.60.3 Pro software.

Exact label data are given for the all material. A slash (/) separates different lines.

The term "preapical antennal segments" used in the text means antennal segments 6-10.

Next abbreviations are used for depository places of types:

ERBER – Dieter Erber's collection (Germany);

GENOVA – Museo Civico di Storia Naturale (Genova, Italy);

NHM – collection of the Natural History Museum (London, United Kingdom). This place has one more abbreviation often used on labels – BMNH (British Museum of Natural History);

LM – L. Medvedev's collection (Moscow, Russia);

PR – P. Romantsov's collection (Saint Petersburg, Russia):

SMNS – Staatliches Museum für Naturkunde (Stuttgart, Germany);

ZMHB – Museum für Naturkunde der Humboldt-Universitat (Berlin, Germany).

Acrocrypta aureipennis Baly, 1876 (Color plate 7: 1; Fig. 67)

Acrocrypta aureipennis Baly, 1876a: 435; Döberl, 2001: 19; Mohamedsaid, 2000: 356; 2004: 149.

Type material. Holotype, \bigcirc , with 3 labels: "Acrocrypta aureipennis Baly", round with red bordering label "Type / H.T.", "Baly, Coll." (NHM).

Distribution. Borneo (Sarawak).

Acrocrypta bifasciata **sp. n.** (Color plate 8: 15; Color plate 10: 32–34)

Material. Holotype, \circlearrowleft : "MALAYSIA, SABAH / Danum Valley, (Lenbah Danum), / $04^{\circ}57^{\circ}58'N$, $117^{\circ}48'E$, 150° / 250 m, 25-29 VII. 2012", "BMNH{E} / $2013^{\circ}134$ / M. Geiser" (NHM).

Description. Fulvous, antennae black with 3 basal segments fulvous and apical segment white, tarsi brown. Each elytron with two narrow transverse black stripes. Both stripes do not reach to the lateral margin and suture. First of them is sinuous, second one arcuate. General view — Color plate 8: 15.

Body widely oval, convex, 1.5 times as long as wide. Head impunctate, shining vertex convex, frontal tubercles triangular, flat and delimited posteriorly with straight impressed line. Antennae reach anterior third of elytra, proportions (in length) of segments

are as 15:7:5:10:10:9:8:8:8:7:15, their proportions in width are as 5:4:5:6:7:7:7:7:7:7:7:7:7:7:7:9 as a basal segments shining and smooth, following ones flattened, shagreen, with thin hairs. Maxillary palpi with penultimate segment swollen. Prothorax 2.35 times as wide as long, broadest at base, side margins almost straight, fore angles obtuse, thickened, hind broadly triangular, front margin almost straight, posterior margin strongly convex, surface with small and shallow punctures, all margins bordered. Anterior coxal cavities closed posteriorly. Scutellum triangular, with sharp apex, impunctate. Elytra 1.11 times as long as wide, with confused, dense and moderately strong primary punctuation and with very small punctures in intervals. Elytral epipleuron wide, slightly concave. Abdomen with 5 distinctly visible sternites, basal sternite as long as 3 following sternites together, apical sternite entire, pygidium rounded at apex. Fore and middle tarsi with short and wide segments (1st equal as long as wide, a little wider than 2nd and slightly narrower than 3rd, hind tarsi with elongated 1st segment (about 2 times as long as wide) which slightly longer than two following segments combined. Hind tibiae slightly curved, with rather wide apical spur (its length is 0.65 of tibia diameter at the apex), fore and middle tibiae unspined. Claws appendiculate. Aedeagus (Color plate 10: 32-34) parallel-sided without any impressions on ventral side, slightly curved in lateral view and with apex strongly bent ventrally and rounded triangular with small tooth, its length 1.2 mm. Apex rounded triangular with small tooth, length of aedeagus 1.2 mm.

Length of body 5.3 mm.

Differential diagnosis. Acrocrypta bifasciata **sp. n.** belongs to the species group with distinctly flattened antennal segments 4–10. This species can be distinguished from all *Acrocrypta* species by having 2 black transverse stripes on each elytron and by shape of aedeagus with apex bended downwards at right angle.

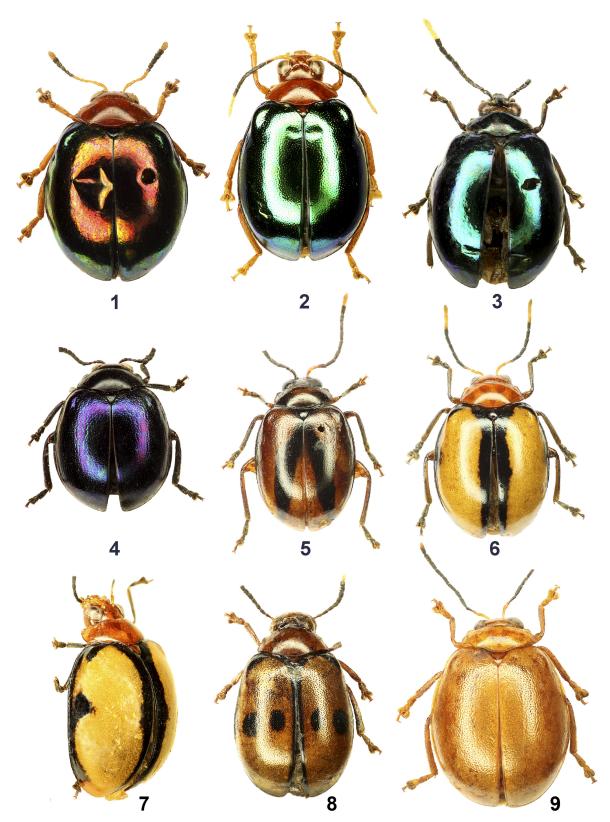
Etymology. The name of the new species refers to 2 black transverse stripes on each elytron.

Acrocrypta bruneica **sp. n.** (Color plate 8: 14; Color plate 10: 51, 52)

Material. Holotype, ♂: "BRUNEI, x-1992 / Temburong District / Ridge NE of Kuala / Belalong, 300m.", "125W MV Light Trap / J H Martin col. / BMHN(E) 1992-172" (NHM).

Description. Fulvous, antennal segments 6–10, 5 spots on each elytron and tarsal segments 2–3 black. General view – Color plate 8: 14.

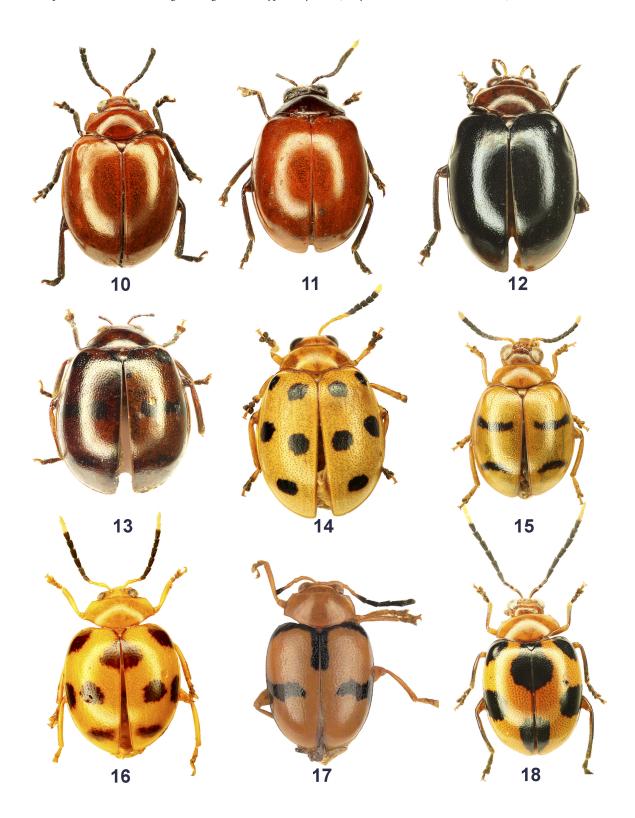
Body widely oval, convex, about 1.4 times as long as wide. Vertex convex, impunctate, with thin longitudinal line in the middle, interantennal space convex, frontal tubercles rectangular flat and distinctly delimited posteriorly. Antennae reach posterior third of elytra, proportions of segments (in length) are as 15:6: 10:11:10:10:10:9:8:8:12, their proportions in width are as 4:4:5:6.5:7:8:8.5:9:9:8.5:8 (1 = 0.25 mm), 2 basal segments shining and smooth, 3rd and following antennal segments are shagreen, distinctly flattened, with thin sparse hairs. Maxillary palpi with penultimate segment swollen. Prothorax 2.3 times as wide as long, more or less trapezoidal, broadest at base, side margins very slightly rounded, almost straight, weakly emarginate before truncated fore angles, which extend outwardly, hind broadly triangular, front margin slightly concave, posterior margin moderately convex, surface with very small and shallow punctation, all margins bordered. Anterior coxal cavities closed posteriorly. Intercoxal prosternal process weakly narrow in middle, slightly expanding beyond procoxae. Scutellum triangular with sharp apex, impunctate. Elytra 1.12 times as long as wide, with well developed humeral callus, the surface with punctures of two kinds: larger punctures and among them smaller ones, with smooth convex callus along lateral margin limited on the sides by a row of points on each side. Legs robust, shiny; metafemora strongly incrassate,



Figs 1–9. Species of the genus $\it Acrocrypta$, general view.

1 – A. aureipennis, female, holotype; 2 – A. viridipennis, female; 3 – A. pseudoaureipennis **sp. n.**, female, holotype; 4 – A. purpurea, female, holotype; 5 – A. signata; 6 – A. semilimbata, male, holotype, dorsal view; 7 – A. semilimbata, female, paratype, lateral view; 8 – A. nigropicta, male; 9 – A. incisa, male. Рис. 1–9. Виды рода Acrocrypta, общий вид.

Рис. 1—9. Виды рода *Acrocrypta*, общий вид. 1—*A. aureipennis*, самка, голотип; 2—*A. viridipennis*, самка; 3—*A. semilimbata*, самка, полотип; 4—*A. nigropicta*, самец; 9—*A. incisa*, самец.



Figs 10–18. Species of the genus Acrocrypta, general view.

 $10-A.\ geiseri\ \mathbf{sp.\,n.}, \\ \text{male, holotype; } 11-A.\ sarawakens is\ \mathbf{sp.\,n.}, \\ \text{male, holotype; } 12-A.\ haemorrhoidal is, \\ \text{male, holotype; } 13-Acrocrypta\ \mathbf{sp.\,A.}, \\ \text{female; holotype; } 13-A.\ sarawakens is\ \mathbf{sp.\,n.}, \\ \text{male, holotype; } 13-A.\ sarawakens is\ \mathbf{sp.\,$ 14 - A. bruneica sp. n., male, holotype; 15 - A. bifasciata sp. n., male, holotype; 16 - A. kinabaluensis, male, holotype; 17 - A. doeberli (after Medvedev, 2010); 18 – A. sexstigmatica sp. n., male, holotype.

Рис. 10–18. Виды рода *Acrocrypta*, общий вид.

10-A. geiseri **sp. n.**, самец, голотип; 11-A. sarawakensis **sp. n.**, самец, голотип; 12-A. haemorrhoidalis, самец, голотип; 13-Acrocrypta sp. A, самка; 14-A. bruneica **sp. n.**, самец, голотип; 15-A. bifasciata **sp. n.**, самец, голотип; 16-A. kinabaluensis, самец, голотип; 17-A. doeberli(по Медведеву [Medvedev, 2010]); 18 - A. sexstigmatica **sp. n.**, самец, голотип.

fore and middle tibiae straight, hind tibiae slightly curved, with wide apical spur. First anterior and middle tarsal segments distinctly dilated, nearly as wide as long, 1.25 times wider than 2nd and 1.5 times narrower than 3rd tarsal segment. 1st tarsal segment of hind legs elongated almost 2 times as long as wide, 1.45 times wider than 2nd and 1.45 times narrower than 3rd tarsal segment. Proportions of meta third metatarsal segments (in length, starting with first) as follows: 16:6:7:13. Abdomen with 5 distinctly visible sternites. Apical sternite entire, pygidium rounded at apex. Hind tibiae very slightly curved with thin spur at apex, middle and fore tibiae straight, unspined. Claws appendiculate. Aedeagus (Color plate 10: 51, 52) parallel-sided with elongated thin apex, slightly curved in lateral view, length of aedeagus 2.5 mm.

Length of body 5.7 mm.

Differential diagnosis. Acrocrypta bruneica sp. n. belongs to the species group with short and distinct flattened segments 4-10. This species can be distinguished from all Acrocrypta species by yellow coloration with 5 spots on each elytron, antennal segments 6–10 and tarsal segments 2-3 black (see a key).

Etymology. The name of the new species refers to the collecting locality.

Acrocrypta coccinelloides Baly, 1876 (Color plate 9: 19)

Acrocrypta coccinelloides Baly, 1876b: 224; Döberl, 2001: 19; Mohamedsaid, 2000: 356; 2004: 149.

Type material. Holotype, ♀, with 3 labels: "*Acrocrypta coccinelloides* Baly", round label with red bordering "Type / H.T.", round label "Sar." (NHM).

Differential diagnosis. Acrocrypta coccinelloides belongs to the species group with spotted elytra and antennae with short preapical segments. This group includes 5 species similar to each other, distinguishable only by shape of aedeagus (see a key), part of them with unclear taxonomic status. In accordance with the description, this species differs from other Acroctypta species with spotted elytra by dark pronotum. However we believe that the species of this group are very variable in coloration. For example in the type series of A. novemmaculata Döberl, 2001 there are two or even three different species (see the discussions of this species below).

So among paratypes of A. novemmaculata there is one specimen with entirely dark pronotum and with spermatheca (Fig. 78) which differs from spermatheca (Fig. 75) of female with fulvous pronotum. Perhaps this specimen with dark pronotum belongs to A. coccinelloides. Unfortunately we could not find spermatheca of the holotype. We believe it is necessary to study more material for the detail knowledge of this species group.

Distribution. Borneo (Sarawak).

Acrocrypta doeberli Medvedev, 2010 (Color plate 8: 17)

Acrocrypta doeberli Medvedev, 2010: 292.

Type material (in SMNS) is not examined. Differential diagnosis. This species was described

on base one male. The figure of aedeagus was lacking in the description, in which was written: aedeagus (lost during preparation) thin, stick-like, with truncate apex. This species similar to A. cruciata Medvedev et Romantsov, 2014, which here we consider as a synonym of A. sabahensis Medvedev et Romantsov, 2014. It would be necessary to compare the specimens A. sabahensis with the type of A. doeberli and with specimens from the type locality with the same coloration for comparison of their aedeagi. We believe that A. sabahensis is very variable species in coloration. The apex of its aedeagus is broadly rounded. In some specimens aedeagus apex rounded so widely that almost looks like almost flat, which is close to "truncate apex" from description of *A. doeberli*. Possibly all these species are identical.

Distribution. Borneo (Sabah).

Acrocrypta geiseri sp. n. (Color plate 8: 10; Color plate 10: 53, 54)

Material. Holotype, ♂: "SARAWAK / Mt.Dulit, / 4,000 ft. / Moss forest. / 19.X.1932", "Oxford Univ. Exp. / B. M. Hobby & A. W. Moore. / B. M. 1933-254" (NHM).

Description. Body red-brown, tibiae and apex of hind femurs black, antennae with 2 basal segments red-brown, rest segments black (9-11 ones lacking). General view - Color plate 8: 10.

Body widely oval, convex, 1.48 times as long as wide. Vertex with very small and fine punctures, labrum with weakly convex anterior margin, impunctate, clypeus triangular, raised, hangs over the labrum, frontal ridge convex with the apex narrow and wedged between frontal tubercles, which are convex, oval, obliquely set with the broadly triangular line restricting frontal tubercles posteriorly. Antennal 3 basal segments shining and smooth, 4th and following antennal segments are shagreen, enlarged and very slightly flattened, with thin hairs, proportions of segments (in length) are as 16:6:8:12:11:11:10:9 (rest lacking), their proportions in width are as 5:4:5.5:6.5:7:8:8.5:9(1 = 0.25 mm). Maxillary palpi with penultimate segment swollen. Prothorax 2.24 times as wide as long, broadest at base. Lateral margins weakly rounded and slightly emarginate before narrowly rounded anterior angles, hind angles broadly triangular, front margin almost straight, posterior margin strongly convex, surface with very small and shallow punctures, all margins bordered. Anterior coxal cavities closed posteriorly. Intercoxal prosternal process narrow in middle, widely expanding beyond procoxae. Scutellum elongated, triangular, impunctate. Elytra 1.15 times as long as wide, surface with small and shallow punctation, apical part almost impunctate. Humeral callus thickened, prominent, from below distinctly limited by rather deep impression. Elytral epipleuron slightly concave, broad on base, gradually narrowed behind and disappear near apex. Segment 1 of all tarsi not widened. Abdomen with 5 distinctly visible sternites. Apical sternite entire, pygidium rounded at apex with small punctures. Fore and middle tarsi with short and wide segments (1st equal as long as wide, a little wider than 2nd and slightly narrower than 3rd), hind tarsi with elongated 1st segment (about twice as long as wide) which slightly longer than two following segments combined. Hind tibiae very slightly curved with thick and rather long spur at apex, middle and fore tibiae straight, unspined. Claws appendiculate. Aedeagus as in Color plate 10: 53, 54. Length of aedeagus 1.5 mm.

Length of body 5.8 mm.

Differential diagnosis. Acrocrypta geiseri sp. n. belongs to the species group with entirely unicolorous elytra and with slightly elongated (less than 1.5 times as long as wide) middle antennal segments. It is similar to A. sarawakensis sp. n. from which differs by unicolorous pronotum and elytra, proportions of middle antennal segments (Table 1) and by rounded-triangular apex of aedeagus.

Etymology. The new species is named after Michael Geiser (London, Great Britain), curator of Chrysomelidae collections in NHM.

Table 1. Antennal segments of species of the genus Acrocrypta, length, width (1 = 0.25 mm) and their ratio. Таблица 1. Антенномеры видов рода Acrocrypta, длина, ширина (1 = 0.25 мм) и их соотношение.

Species Вид	Antennal segments / Антенномеры											The average value of the ratio of length to width for segments 6–10 / Cpeahee значение отношения длины к ширине для сегментов 6–10
	1	2	3	4	5	6	7	8	9	10	11	of the 1 fo C OTHOM
Acrocrypta purpurea Baly, 1876, holotype / голотип	16 4 4	6 4 1.5	7 4 1.75	8 5 1.6	8 5 1.6	8 7 1.14	8 8 1	7 8.5 0.82	8 9 0.89	6 9 0.67	_	0.9
Acrocrypta sarawakensis sp. n.	17 5 3.4	6 4 1.5	8 4.5 1.78	10 5 2	9 7 1.29	8 7 1.14	10 9 0.11	8 9 0.89	7 9 1.89	9 10 0.9	17 9 1.89	0.96
Acrocrypta quadrimaculata Medvedev et Romantsov, 2014, holotype / голотип	10 4 2.5	5 3 1.67	4 3 1.33	5 4 1.25	5 4.5 1.11	5 5 1	5.5 6 9.92	5 5.5 0.91	6.5 6.5 1	7 6 1.17	12 5.5 2.18	1
Acrocrypta nigropicta (Jacoby, 1896), specimen from Borneo / экземпляр с Борнео	21 8 2.63	7 5 1.4	11 7 1.57	12 8 1.5	11 8 1.39	11 8.5 1.29	11 10 1.1	10 10.5 0.95	9 10 0.9	8 9 0.89	16 9 1.78	1.03
Acrocrypta aureipennis Baly, 1876, holotype / голотип	20 5 4	7 5 1.4	13 5 2.6	9 5 1.8	9 5.5 1.64	7 6 1.17	9 7 1.29	8 8 1	8 9 0.89	8 9 0.89	15 9 1.67	1.05
Acrocrypta bruneica sp. n. , holotype / голотип	15 4 3.75	6 4 1.5	10 5 2	11 6.5 1.69	10 7 1.43	10 8 1.25	10 8.5 1.18	9 9 1	8 9 0.89	8 8.5 0.94	12 8 1.5	1.05
Acrocrypta bifasciata sp. n. , holotype / голотип	15 5 3	7 4 1.75	5 5 1	10 6 1.67	10 7 1.43	9 7 1.29	8 7 1.14	8 7 1.14	8 7 1.14	7 7 1	15 7 2.14	1.14
Acrocrypta coccinelloides Baly, 1876, holotype / голотип	15 4 3.75	5 3.5 1.43	8 4 2	7 4.5 1.56	7 5 1.4	8 5 1.6	8 6 1.33	8 8 1.14	8 8 1.14	7 7 1	11 6 1.83	1.24
Acrocrypta similis Döberl , 2001 holotype, / голотип	20 5 4	7 4 1.75	9 4 2.25	10 5 2	9 6 1.5	8 6 1.33	9 7 1.29	8 7 1.14	9 7 1.29	8 7 1.14	9 7 1.29	1.24
Acrocrypta novemmaculata Döberl , 2001, paratype from Borneo / паратип с Борнео	16 5 3.2	6 4 1.5	7 4 1.75	7 5 1.4	7 5 1.4	8 5 1.6	8 6 1.33	7 6 1.17	7 7 1	7 6 1.17	13 6 2.17	1.25
Acrocrypta octopunctata Döberl, 2001, holotype / голотип	19 5 3.8	5 4 1.25	10 4 2.5	9 5.5 1.64	9 6 1.5	9 7 1.29	10 6.5 1.54	9 6.5 1.38	9 8 1.13	8 8 1	12 7 1.71	1.27
Acrocrypta trusmadiensis sp. n., holotype / голотип	15 5 3	6 4.5 1.33	9 5 1.8	13 7 1.86	13 8 1.63	13 8 1.63	11 8.5 1.29	10 8 1.25	11 8.5 1.29	9 8 1.13	16 7 2.29	1.32
Acrocrypta kinabaluensis sp. n. , holotype / голотип	117 5 3.4	6 4 1.5	7 4 1.75	11 5.5 2	12 6 2	12 7 1.71	11.5 7 1.64	11 7 1.57	10.5 7 1.50	10 6 1.67	12 6 2	1.62
Acrocrypta viridipennis Jacoby, 1898, holotype / голотип	20 6 3.33	7 5 1.4	15 5 3	16 5 3.2	14 6 2.33	15 7 2.14	14 7.5 1.87	14 8 1.75	13.5 8 1.69	13 7 1.86	20 7 2.86	1.86
Acrocrypta pseudoaureipennis sp. n.	26 8 3.25	9 7 1.29	18 7 2.57	21 7 3	18 8 2.25	19 8.5 2.24	17 9 1.89	17 9 1.89	16 9 1.78	17 10 1.7	27 11 2.45	1.9
Acrocrypta sexstigmatica sp. n. , holotype / голотип	19 5 3.8	6 4 1.5	9 5 1.8	15 6 2.5	16 7 2.29	14 7 2	14 7 2	13 7 1.86	11 8 1.83	10 6 1.67	13 5 2.6	1.94

Table 1 (completion). Таблица 1 (окончание).

Species Вид	Antennal segments / Антенномеры											The average value of the ratio of length to width for segments 6–10 / Среднее значение отношения длины к ширине для сегментов 6–10
	1	2	3	4	5	6	7	8	9	10	11	The averance of the ratio of 1 for segments Cpeahee отношения для для сегмения для для сегмения
Acrocrypta sabahensis Medvedev et Romantsov, 2014, holotype / голотип	15 4 3.75	6 4 1.5	7.5 3 2.5	10 4 2.5	10.5 4.5 2.33	10 4 2.5	10 4 2.5	10 4,5 2.22	9 4 2.25	9 4 2.25	11 4 2.75	2.29
Acrocrypta semilimbata Romantsov et Medvedev, 2015, holotype / голотип	20 6 3.33	8 5 1.6	14 5 2.8	16 6 2.67	15 6 2.5	15 6 2.5	15 6 2.5	13 6 2.17	12 5.5 2.18	12 5.5 2.18	17 5.5 3.09	2.27
Acrocrypta signata Döberl , 2001, paratype / паратип	15 5 3	5 4 1.25	11 6 1.83	15 5 3	14 5.5 2.55	14 5 2.8	13 5 2.6	13 5 2.6	12 5 2.4	12 5 2.4	17 5.5 3.09	2.48
Acrocrypta incisa Döberl , 2001	23 6 3.83	8 5 1.60	12 5 2.4	20 6 3.33	17 6 2.83	16 6 2.67	15 6 2.5	15 6 2.5	16 6 2.67	16 6 2.67	10 6 1.67	2.6
Acrocrypta haemorrhoidalis Döberl , 2001, holotype / голотип	20 6 3.33	7 5 1.4	10 6 1.67	20 7 2.86	11 7 1.57	_	_	_	_	_	_	-
Acrocrypta geiseri sp. n. , holotype / голотип	16 5 3.2	6 4 1.5	8 5.5 1.45	12 6.5 1.85	11 7 1.57	11 8 1.38	10 8.5 1.18	9 9 1	_	-	_	-
Acrocrypta novemmaculata Döberl , 2001, paratype from the Philippines / паратип с Филиппин	14 4.5 3.11	6 4 1.5	11 4 2.75	10 4.5 2.22	10 5 2	10 6 1.67	9 6 1.5	9 6 1.5	_	_	-	-
Acrocrypta sp. A	15 4 3.75	6 4 1.5	9 4 2.25	8 5 1.6	_	-	-	-	-	_	-	-

Acrocrypta haemorrhoidalis Döberl, 2001 (Color plate 8: 12; Color plate 10: 55, 56)

 $\label{eq:corrypta} A crocrypta\ hae morrhoidalis\ {\tt D\"oberl, 2001:21; Mohamedsaid, 2004:150.}$

Type material. Holotype, ♀, with 4 labels: "SARAWAK / MT. Dulit, / 4,000 ft / Moss forest. / 27.X.1932", "Oxford Univ. Exp. / B. M. Hobby & / A. W. Moore. / B. M. 1933-254", "Acrocrypta / haemorrhoidalis / mihi / det. Döberl, 2000", red label "HOLOTYPUS" (NHM).

Differential diagnosis. Among the genus *Acrocrypta* there are not species which similar to *A. haemorrhoidalis* in coloration. However among other Alticini of Borneo there are a few species from the genus *Chabria* (for example *Ch. jacobyi* Chen, 1898) very similar to *A. haemorrhoidalis* in coloration but having anterior coxal cavity open posteriorly.

Distribution. Borneo (Sarawak).

Acrocrypta incisa Döberl, 2001 (Color plate 7: 9; Color plate 10: 35, 36; Fig. 71)

Acrocrypta incisa Döberl, 2001: 21; Mohamedsaid, 2004: 150. Type material is not examined (in ERBER).

Distribution. Borneo, Peninsular Malaysia, Sumatra.

Acrocrypta kinabaluensis **sp. n.** (Color plate 8: 16; Figs 57, 58)

Material. Holotype, ♂: "BORNEO, SABAH / Kinabalu N. P.:Poring? 500 m, 23.-24. XI. 1996 / leg. W. SCHAWALLER" (LM).

Description. Body yellow, antennae with segments 4–9 black, elytra with 9 black spots: one common spot on suture below scutellum and 4 spots on each elytron (one on the humeral callus, two placed transversely across the middle, and one near the apex). General view – Color plate 8: 16.

Body widely oval, convex, about 1.42 times as long as wide. Vertex smooth, impunctate, labrum rather narrow, not emarginate at the forefront, clypeus impunctate, slightly raised, frontal tubercles rectangular, slightly convex, distinctly delimited from vertex by straight line. Antennae reach the middle of elytra, proportions of segments (in length) are as 17:6:8:12:12: 12:11:10:9:13, their proportions in width are as 6:4:4:5:6:7: 7:7:7:6.5:6 (1 = 0.25 mm), 3 basal segments shining and smooth, 4th and following antennal segments are shagreen, slightly enlarged but not flattened, with thin hairs. Maxillary palpi with penultimate segment swollen. Prothorax 2.22 times as wide as long, broadest at base, side margins almost straight, fore angles rounded triangular, hind angles broadly triangular with sharp the tips, front margin moderately concave, posterior margin strongly convex, surface almost impunctate, all margins bordered (bordering of anterior and posterior ones very weak, almost disappearing in the middle of posterior margin). Anterior coxal cavities closed posteriorly. Scutellum triangular, impunctate. Elytra 1.1 times as long as wide, surface with small punctures, apical part almost impunctate. Humeral callus slightly convex, weakly prominent. Epipleura smooth, broad, gradually narrowed after the middle of elytra and disappear just before the apex. Segment 1 of all tarsi not widened. Abdomen with 5 distinctly visible sternites. Apical sternite entire, pygidium rounded at apex. Hind tibiae with thin spur at apex, middle and fore tibiae unspined. Claws appendiculate. Length of aedeagus 1.5 mm.

Length of body 5.1 mm.

Differential diagnosis. Acrocrypta kinabaluensis **sp. n.** belongs to the species group with spotted elytra and antennae with elongated preapical segments. It is similar to *A. sexstigmatica* **sp. n.** from which it differs by position of common spot on suture below scutellum, a little shorter preapical antennal segments (about 1.6 times as long as wide) and shape of aedeagus with simple triangular apex (Figs 57, 58).

Etymology. The name of the new species refers to the collecting locality.

Acrocrypta nigropicta (Jacoby, 1896) (Color plate 7: 8; Color plate 10: 37, 38)

 ${\it Sphaerometopa~nigropicta}~{\it Jacoby,~1896:~430;~Mohamedsaid,~2000:~358.}$

 $\label{eq:corrected} A crocrypta\,ni gropicta: {\it Medvedev}, 1996: 77, 82; {\it Mohamedsaid}, 2004: 150.$

Type material (in GENOVA). The holotype was examined by L. Medvedev in 1996.

Material. $1 \cline{\circ}$, "Banguey / b. Borneo"; 1 specimen, "Banguey / Staudinger" (LM).

Distribution. Borneo, Philippines.

Acrocrypta novemmaculata Döberl, 2001. (Color plate 9: 23; Fig. 79)

Acrocrypta novemmaculata Döberl, 2001: 22; Mohamedsaid, 2004: 150.

Type material. Paratypes: $1\cupe2$, "Philippines, Mindanao, South Cotabato Prov., Manobo Tasaday Forest Reserve, Mt. Tasaday", "124"32"E/6"18"N, 1000-1100 m, 3.-31.V.1993, leg. Pascal Lays" (LM); $1\cupe2$, "Mt. Kinabalu, Kenokok, 3300 ft, 22.-26.IV.1929" (NHM); $1\cupe2$, "Borneo / Kina Balu", "Quop / W. Sarawak / G.E. Bryant / IV.1914", "G. Bryan Coll." (NHM); $1\cupe2$, "Borneo / Kina Balu", "Whitehead", "Fry Coll. / 1906. 100" (LM); $1\cupe2$, "Borneo, Sabah W / Mt. Kinabalu, Hot / Springs Poring / leg. Snizek, 11.2000" (LM).

Differential diagnosis. Type series of this species includes specimens from Philippines and Borneo (the holotype is from Philippines, Palawan). But Döberl haven't studied aedeagi of paratypes from Borneo. All the paratypes

from Borneo have aedeagi of different shape which does not resemble to the images from the Döberl's [2001] paper (Fig. 79). Holotype is in ZMBH and was not studied by us. But we examined the paratype (Color plate 9: 23) from Philippines (Mindanao). The comparison of this paratype with ones from Borneo indicates that they belong to different species. The paratype from Philippines is larger (6.6 mm) and have more wider and less convex interantennal space, with very wide frontal ridge, entering between frontal tubercles, completely separated them from each other and with cambered line delimiting frontal tubercles posteriorly. All paratypes from Borneo are smaller (not more 5.5 mm) and have aedeagi similar to that of A. octopunctata Döberl, 2001. We believe that all paratypes (perhaps except one with entirely dark pronotum) of A. novemmaculata from Borneo belong to A. octopunctata. We suggest A. novemmaculata occurs only in Philippines. In fact A. novemmaculata is similar to A. medvedevi Döberl, 2001 which have a similar general view and structure of the head and from which A. novemmaculata differs by a little shorter preapical antennal segments and by the shape of aedeagus.

Distribution. Philippines.

Remark. After the return the manuscript from the reviewers, we received photographs (common view, head and labels) of the holotype kindly made by Konstantin Nadein. The photos showed the holotype and the paratype from Mindanao are very similar to each other externally and have the same structure of the head so it completely confirms our conclusions. In addition, it was revealed that the holotype is a female (in the description the male is indicated), respectively, the image of the aedeagus given by Döberl [2001] refers to one of the paratypes from Philippine.

Acrocrypta octopunctata Döberl, 2001 (Color plate 9: 20, 21; Color plate 10: 39–41; Fig. 75)

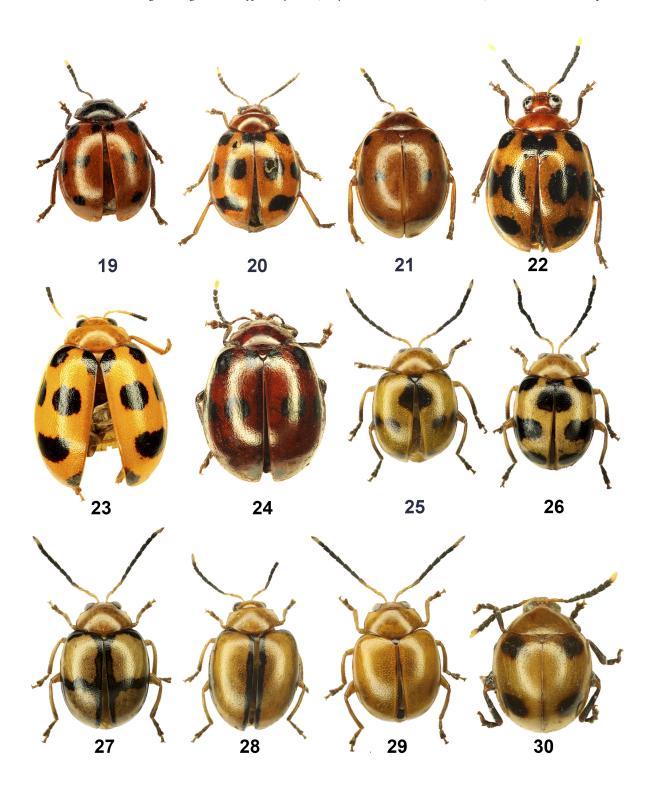
Acrocrypta octopunctata Döberl, 2001: 24; Mohamedsaid, 2004: 150.

Type material. Holotype, ♂, "SARAWAK / foot of Mt.Dulit, / Jupction of rivers / Tinjar & Lejok. / 18.IX.1932", "Oxford Univ. Exp. / B. M. Hobby & / A. W. Moore. / B. M. 1933-254", "Old secondary forest". Paratype, 1♂, "Mt. Matang, / W. Sarawak, / XII'. 13 - I'. 14 / G. E. Bryant", "G. Bryant Coll. / 1919-147" (NHM).

Material. 13, "Sarawak / Bidi. 1908-9 / C. J. Brooks. / B. M. 1929-551." (NHM). Moreover we think all paratypes of *A. novemmaculata* from Borneo (except one with dark pronotum) refer to this species.

Differential diagnosis. The specimen that was selected by Döberl as a holotype, has very weakly sclerotized aedeagus but has coloration (Color plate 9: 21) entirely consistent with the description (brown pronotum and elytra with four small black spots in each elytron). The paratype has dark brown elytra and almost entirely black pronotum (almost like pronotum of A. coccinelloides). The paratype has more sclerotised (but not completely too) aedeagus (Color plate 10: 39-41). Probably Döberl made the image of aedeagus on base of that paratype. By the way, all the paratypes of A. novemmaculata from Borneo have the same shape of aedeagus and we believe all of them (except one with dark pronotum) refer to A. octopunctata, which is, apparently, species with rather variable coloration. Actually all this species group (with spotted elytra and antennae with short preapical segments) needs more detailed study.

Distribution. Borneo (Sarawak).



Figs 19–30. Species of the genus *Acrocrypta*, general view.

19 – A. coccinelloides, female, holotype; 20 – A. octopunctata, male, paratype of A. novemmaculata from Borneo; 21 – A. octopunctata, male, holotype; 22 – A. trusmadiensis sp. n., male, holotype; 23 – A. novemmaculata, female, paratype from the Philippines; 24 – A. similis, male, holotype; 25–29 – A. sabahensis, coloration forms: 25–26 – coloration form A, 25 – male, paratype, 26 – male, holotype; 27 – coloration form C, male, holotype of A. cruciata; 28 – coloration form D, male; 29 – coloration form E, male; 30 – A. quadrimaculata, male, holotype.

Рис. 19–30. Виды рода *Acrocrypta*, общий вид.

 $19-A.\ coccinelloides$, самка, голотип; $20-A.\ octopunctata$, самец, паратип $A.\ novemmaculata$ с Борнео; $21-A.\ octopunctata$, самец, голотип; $22-A.\ trusmadiensis$ **sp. n.**, самец, голотип; $23-A.\ novemmaculata$, самка, паратип с Филиппин; $24-A.\ similis$, самец, голотип; $25-29-A.\ sabahensis$, цветовые формы: 25-26- цветовая форма $A.\ 25-$ самец, паратип, 26- самец, голотип; 27- цветовая форма $A.\ constant a$, самец, голотип $A.\ constant a$, самец, голотип.

Figs 31-56. Species of the genus Acrocrypta, aedeagi.

31 - A. quadrimaculata, holotype, dorsal view; 32 - 34 - A. bifasciata $\mathbf{sp.n.}$, holotype: 32 - dorsal view, 33 - apex, 34 - lateral view; 35 - 36 - A. incisa: 35 - dorsal view, 35 - 36 - A. 36 – lateral view; 37–38 – A. nigropicta: 37 – dorsal view, 32–34 – A. sabahensis (42–43 – holotype; 44 – paratype): 42 – dorsal view, 43–44 – lateral view; 43–44 – A. sabahensis (42–43 – holotype; 44 – paratype): 42 – dorsal view, 43–44 – lateral view; 45–46 – A. signata, paratype: 45 – dorsal view, 46 – lateral view; 47–48 – A. semilimbata, holotype: 47 – dorsal view, 48 – lateral view; 49–50 – A. sexstigmatica sp. n., holotype: 49 – dorsal view; 50 – lateral view; 51–52 – A. bruneica sp. n., holotype: 51 – dorsal view, 52 – lateral view; 53–56 – A. haemorrhoidalis, holotype: 55 – dorsal view, 56 – lateral view; 56 – lateral view; 56 – lateral view; 57 – dorsal view, 56 – lateral view; 57 – dorsal view, 56 – lateral view; 57 – dorsal view, 57 – dorsal view, 57 – dorsal view, 58 – dorsal view, 58 – lateral view; 58 – 50 – A. haemorrhoidalis, holotype: 57 – dorsal view, 58 – lateral view; 58 – dorsal view; 58 – dorsal view, 58 – lateral view; 58 – dorsal view; 58 – dorsal

Рис. 31–56. Виды рода Acrocrypta, эдеагусы.

31 – *А. quadrimaculata*, голотип, вид сверху; 32–34 – *А. bifasciata* **sp. n.**, голотип: 32 – вид сверху, 33 – вершина, 34 – вид сбоку; 35–36 – $A.\ incise: 35$ – вид сверху, 36 – вид сбоку; 37 – 38 – $A.\ nigropicta: 37$ – вид сверху, 38 – вид сбоку; 39 – 41 – $A.\ octopunctata: 39$ – вид сверху, 40 – вершина, Acrocrypta pseudoaureipennis **sp. n.** (Color plate 7: 3; Fig. 68)

Material. Holotype, $\ \$: "BORNEO: SABAH / Kinabalu N. P.: Headguarters / 1500-1600 m, 11.-15.XI.1996 / leg. W. SCHAWALLER", (LM)

Description. Head black, with yellow vertex and borders of labrum, antennae black with 2 apical segments entirely white. Underside, legs and 1st (partly) abdomen segment black, remain part of abdomen fulvus. Pronotum black with very feeble blue metallic shine, elytra green. General view – Color plate 7: 3.

Body widely oval, convex, about 1.4 times as long as wide. Vertex smooth almost impunctate, labrum broad, shagreen with narrow triangular emarginate at the forefront, clypeus with sparse and fine punctation, triangular, raised, hangs over the labrum, with long bristles along the front edge, interantennal space rather wide and convex, frontal ridge wide, enters between frontal tubercles, completely separated them from each other, frontal tubercles rectangular, almost flat but distinctly delimited posteriorly and anteriorly. Antennae reach the middle of elytra, proportions of segments (in length) are as 26:9:18:21:18:19:17:17:16:17:27, their proportions in width are as 8:7: 7:7:8:8.5:9:9:9:10:11 (1 = 0.25 mm), 3 basal segments shining and smooth, 4th and following antennal segments are shagreen, slightly flattened, with thin hairs. Maxillary palpi with penultimate segment swollen. Prothorax 2.3 times as wide as long, broadest at base, side margins almost straight, fore angles sharp triangular, prominent, hind angles broadly triangular, front margin moderately concave, posterior margin strongly convex, surface with very small and shallow punctation, all margins bordered. Anterior coxal cavities closed posteriorly. Intercoxal prosternal process narrow in middle, widely expanding beyond procoxae. Scutellum elongated, triangular, impunctate. Elytra 1.13 times as long as wide, surface with very small and shallow punctation, apical part almost impunctate. Humeral callus thickened, prominent, from below limited by deep groove with a single row of deep and narrow punctures. Epipleura deep concave, moderately broad on base, greatly expanded on the level of metasternum, and suddenly disappear on the level of third abdominal segment. Segment 1 of all tarsi not widened. Abdomen with 5 distinctly visible sternites. Basal sternite as long as 2 following sternites together, $4^{\text{th}}\,\text{narrow}$ and 4 times shorter than 1st, apical sternite 4 times shorter than 1st. Apical sternite entire, pygidium rounded at apex. Hind tibiae very slightly curved with spur at apex, middle and fore tibiae straight, unspined. Claws appendiculate. Spermatheca - Fig. 68, length of spermatheca 0.37 mm.

Length of body 8.6 mm.

Differential diagnosis. Acrocrypta pseudoaureipennis **sp. n.** belongs to the species group with metallic elytra and is similar to Acrocrypta aureipennis Baly, 1876, from which it differs by black pronotum, antennal segments 5–10 which are about 2 times as long as wide and the shape of spermatheca.

Etymology. The name of the new species indicates its similarity to *A. aureipennis* Baly, 1876.

Acrocrypta purpurea Baly, 1876 (Color plate 7: 4; Figs 59, 60, 70)

Acrocrypta purpurea Baly, 1876b: 224; Döberl, 1994: 179; 2001: 19; Mohamedsaid, 2004: 150.

Type material. Holotype, \subsetneq , with 4 labels: "Acrocrypta / purpurea / Baly," round with red bordering "Type / H.T.", "Baly, Coll.", round label "Sar." (NHM).

Material. 1 \circlearrowleft , "SARAWAK / Bidi / 20. I. 1909 / C. J. Brooks, / B.M. 1936-681" (NHM).

Distribution. Borneo (Sarawak).

Acrocrypta quadrimaculata Medvedev et Romantsov, 2014 (Color plate 9: 30; Color plate 10: 31)

Acrocrypta quadrimaculata Medvedev et Romantsov, 2014: 249

Type material. Holotype, \circlearrowleft , "E. Malaysia, Borneo, Sabah, Kinabalu Mt., 6°0'N, 116°33'E, 1500 m, 27-31.VII.2009, leg. O. Gorbunov" (LM).

Distribution. Borneo (Sabah).

Acrocrypta quadripunctata (Jacoby, 1885)

Sphaerometopa quadripunctata Jacoby, 1885: 41. Acrocrypta quadripunctata: Jacoby, 1899: 313; Bryant, 1923: 139; Heikertinger, Csiki, 1940: 498; Döberl, 2001: 19; Mohamedsaid, 2004: 151.

Type material (in GENOVA) is not examined.

Additional material examined. We have a lot of specimens from Borneo which are very similar to this species according to its description. They have fulvous body; thorax, legs and antennae black, except the apical segment testaceous; elytra minutely punctured, fulvous, each elytron with two small black spots placed transversely at the middle. But they all have anterior coxal cavities open posteriorly. At first *A. quadripunctata* was described as *Sphaerometopa* which has anterior coxal cavities open posteriorly. But later this species was transferred [Jacoby, 1899: 313] to *Acrocrypta* with remark: "must be placed in *Acrocrypta* on account of the closed anterior cavities". We suggest it is necessary to study the type in order to determine the exact generic affiliation.

Distribution. Borneo (Sarawak).

Acrocrypta sabahensis Medvedev et Romantsov, 2014 (Color plate 9: 25–29; Color plate 10: 42–44; Figs 76, 77)

Acrocrypta sabahensis Medvedev et Romantsov, 2014: 250. Acrocrypta cruciata Medvedev et Romantsov, 2014: 249, svn. n.

Type material. *Acrocrypta sabahensis*: holotype, \circlearrowleft , "Malaysia, N Borneo, Sabah, Keningau distr., Trus Madi Mt., N 5° 25′38″, E 116° 26′2″, 1160 m, 24–27.III.2012, leg. P. Romantsov" (PR). Paratypes: $5\circlearrowleft$, 6 \subsetneq , with the same locality and date; $1\circlearrowleft$, "Kota Kinobalu 5. 59 N, 116.09 E, h~1500 26–30.12.2011, leg N. Vikhrev" (PR).

Acrocrypta cruciata: holotype, \circlearrowleft , "Malaysia, N Borneo, Sabah, Keningau distr., Trus Madi Mt., N 5° 25′38″, E 116° 26′2″, 1160 m, 24-26. III.2012, leg. P. Romantsov" (LM). Paratypes, $3\circlearrowleft$, $2\subsetneqq$, with the same locality and date (PR, LM).

Material. $6\footnotesize{0}$, $3\footnotesize{0}$, "Malaysia, N Borneo, Sabah, Keningau distr., Trus Madi Mt., N 5° 25'38", E 116° 26'2", 1160 m, 24-27.III.2012, leg. P. Romantsov" (PR); $3\footnotesize{0}$, $1\footnotesize{0}$, the same locality, 8.04.2013 (PR); $1\footnotesize{0}$, "Borneo, Sabah, Tibow 45 km NE of Sapulut / 600-900 m, 7-15 Apr / Bolm lgt. 2000" (LM); $2\footnotesize{0}$, "N Borneo / Mt. Kinabalu", "Mesilau Trall / 20.III.1964.", "Royal. Soc. Exped. /coll S. Kuech. /BM. 1964-250" (BMNH); $1\footnotesize{0}$, "MALAYSIA, SABAH / Kinabalu National Park, / headquarters, $6\footnotesize{0}$ 00"N, 116° 32'E / 1550-1650 m, 12-15.VII.2012" (BMNH).

Differential diagnosis. This species is very variable in coloration: typical form has scutellum black, elytra with common pear-like spot on suture at base, humeral area, transverse, band in middle, interrupted on suture and transverse spot near apex black. Underside with large black mark occupying the middle part of 1st abdominal sternite and all metasternum except episterna and epimera. Legs with apices of tibiae and tarsi blackish or entirely yellow.

Variation: (A) elytra with pear-shaped spot on suture basally, humeral area, transverse band in the middle (interrupted on suture) and transverse spot near apex black. Sometimes part of the black spots are less developed. Underside with large black mark occupying the middle part of 1st abdominal sternite and all of metasternum except episternum and epimera, apices of tibiae and tarsi blackish (Color plate 9: 25, 26); (B) coloration of elytra is the same as above but underside and legs entirely yellow; (C) elytra with black basal and sutural margin and a narrow transverse band just behind the middle (Color plate 9: 27), apices of tibiae and tarsi blackish, underside entirely yellow; (D) elytra with black basal and sutural margin without narrow transverse band just behind the middle (Color plate 9: 28), apices of tibiae and tarsi blackish, underside entirely yellow; (E) dorsal, ventral surfaces and legs entirely yellow (Color plate 9: 29).

We have a lot of specimens with different coloration but having identical others characters, the aedeagi of all these specimens are indistinguishable too. In addition, almost all these specimens have identical collecting location and host plant so we believe that all these specimens belong to the same species.

Distribution. Borneo (Sabah).

Comments. The comparison of the types showed that the aedeagi of *A. cruciata* and *A. sabahensis* are indistinguishable. Now we suggest that the coloration of *A. cruciata* (elytra with black basal and sutural margin and narrow band just behind middle widened at side margin) fall within the broad variability of *A. sabahensis*. We therefore establish the following synonymy: *A. cruciata* Medvedev et Romantsov, 2014 is a new synonym of *A. sabahensis* Medvedev et Romantsov, 2014.

Acrocrypta sarawakensis sp. n. (Color plate 8: 11; Figs 61, 62)

Material. Holotype, ♂: "Mt. Matang / W Sarawak / Dec 1913. / G. E. Bryant", "G. E. Bryant / 1919-147" (NHM).

Description. Body dark brown except elytra red-brown and last antennal segment white. General view – Color plate 8: 11.

Body widely oval, convex, 1.43 times as long as wide. Vertex impunctate, labrum broad with a few long setae and with very weakly concave anterior margin, clypeus impunctate, triangular, raised, hangs over the labrum, frontal ridge convex, wide, enters between frontal tubercles, separated them from each other. Frontal tubercles rectangular, convex, smooth and shining, obliquely set, distinctly delimited posteriorly and anteriorly. The line restricting frontal tubercles posteriorly has trapezoidal form. Antennae almost reach the middle of elytra, proportions of segments (in length) are as 17:6:8:10:9:8:10:8:9:7:17, their proportions in width are as 5:4:4.5:5:7:7:9:9:10:9:9 (1 = 0.25 mm), 3 basal segments shining and smooth, 4th and following antennal segments are shagreen, distinctly flattened, with thin hairs. Maxillary palpi with penultimate segment swollen. Prothorax 2.6 times as wide as long, broadest at base, side margins almost straight, fore angles rounded triangular, prominent, hind angles broadly triangular, front margin strongly concave, posterior margin strongly convex, surface with small and shallow punctation, all margins bordered. Anterior coxal cavities closed posteriorly. Intercoxal prosternal process narrow in middle, widely expanding beyond procoxae. Scutellum triangular, slightly shagreen. Elytra 1.05 times as long as wide, surface with very small and shallow punctation, apical part almost impunctate. Humeral callus convex and prominent, broad on base, gradually narrowed behind and disappear near apex. Segment 1 of all tarsi not widened. Abdomen with 5 distinctly visible sternites. Apical sternite entire, pygidium rounded at apex. Fore and middle tarsi with short and wide segments: 1st equal as long as wide, equal to the width to 2nd and 1.6 times narrower than 3rd, hind tarsi with elongated 1st segment (about 2.5 times as long as wide) which 1.3 times longer than two following segments combined. Hind tibiae slightly curved with wide and long (about as long as maximal width of hind tibiae) spur at apex, middle and fore tibiae straight, unspined. Claws appendiculate. Aedeagus as in Figs 61, 62; its length1.5 mm.

Length of body 6 mm.

Differential diagnosis. Acrocrypta sarawakensis **sp. n.** belongs to the species group with entirely unicolorous elytra and with slightly elongated (less than 1.5 times as long as wide) preapical antennal segments. It is similar to *A. geiseri* **sp. n.** from which differs by darkened pronotum, proportions of preapical antennal segments (Table 1) and by triangular apex of aedeagus.

Etymology. The name of the new species refers to the collecting locality.

Acrocrypta sexstigmatica **sp. n.** (Color plate 8: 18; Color plate 10: 49, 50; Fig. 73)

Material. Holotype, \circlearrowleft : "Borneo, Sabah, 1240m, / Crocker Range, IV.2013 / Kota Kinabalu→Tambunan / N 5°51′33.7″, E 116°17′24.1″ / General collecting", "BMNH{E} 2013-58, M.V.L. Barclay, B.H. Garner, H. Mendel & A. Giusti", "BMNH{E} 1221376" (NHM). Paratypes: $2 \$, the same data (BMNH and PR).

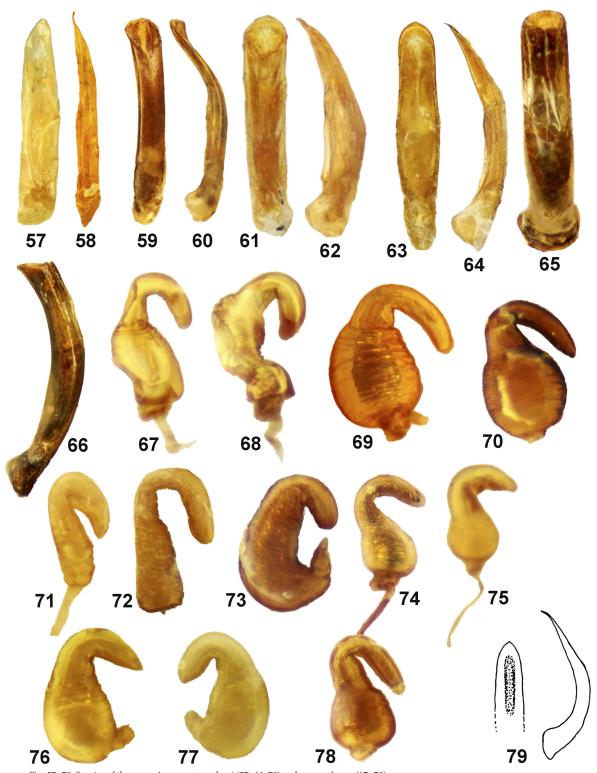
Description. Fulvous, antennae black with 3 basal segments fulvous from below and 2 apical segments entirely white, mesoand metasternum, tibiae (except underside of fore tibiae), tarsi and 1st (partly) abdomen segment black. Elytra with joint black pearshaped spot on suture basally and longitudinal spot near apex, each elytron with humeral area and short transverse band in the middle (starting from lateral margin and reaching the middle of elytra) black. General view – Color plate 8: 18.

Body widely oval, convex, about 1.5 times as long as wide. Vertex smooth, almost impunctate, interantennal space narrow, convex, frontal tubercles rectangular flat and delimited posteriorly with straight impressed line. Antennae reach posterior third of elytra, proportions of segments (in length) are as 19:6:9:15: 16:14:14:13:11:10:13, their proportions in width are as 5:4: 5:6:7:7:7:7:6:5:5 (1 = 0.25 mm), 3 basal segments shining and smooth, 4th and following antennal segments are shagreen, enlarged (but not flattened) with thin hairs. Maxillary palpi with penultimate segment swollen. Prothorax 2.1 times as wide as long, broadest at base, side margins slightly rounded, fore angles obtuse, thickened, hind sharp triangular, front margin moderately concave, posterior margin strongly convex, surface with very small and shallow punctation, all margins bordered (hind margin very weak). Anterior coxal cavities closed posteriorly. Intercoxal prosternal process weakly narrow in middle, slightly expanding beyond procoxae. Scutellum elongated, triangular, impunctate. Elytra 1.23 times as long as wide, surface with small and shallow punctation, apical part almost impunctate. Segment 1 of all tarsi not widened. Abdomen with 5 distinctly visible sternites. Basal sternite as long as 2 following sternites together, 4th narrow and 4 times shorter than 1st, apical sternite 4 times shorter than 1st. Apical sternite entire, pygidium rounded at apex. Hind tibiae very slightly curved with thin spur at apex, middle and fore tibiae straight, unspined. Claws appendiculate. Aedeagus (Color plate 10: 49, 50) parallel-sided with elongated thin apex, slightly curved in lateral view, its length 1.75 mm.

Length of body 4.6 mm.

Female. Elytra a little wide, 1.15 times as long as wide, length of body 4.6–4.7 mm, spermatheca – Fig. 73, length of spermatheca 0.4 mm.

Differential diagnosis. The new species belongs to the group with spotted elytra and not flattened antennal segments. *Acrocrypta sexstigmatica* **sp. n.** can be distinguished from species of this group by joint sutural black spots (one on basally and one near apex) which are



Figs 57–79. Species of the genus Acrocrypta, aedeagi (57–66, 79) and spermathecae (67–78). 57–58 – A. kinabaluensis sp. n., holotype: 57 – dorsal view, 58 – lateral view; 59– 60 – A. purpurea: 59 – dorsal view, 60 – lateral view; 61–62 – A. sarawakensis sp. n., holotype: 61 – dorsal view, 62 – lateral view; 63– 64 – A. trusmadiensis sp. n., holotype: 63 – dorsal view, 64 – lateral view; 65–66 – A. similis, holotype: 65 – dorsal view, 66 – lateral view; 67 – A. aureipennis, holotype; 68 – A. pseudoaureipennis, holotype; 69 – A. viridipennis; 70 – A. purpurea, holotype; 71 – A. senilimbata, paratype; 73 – A. sexstigmatica sp. n., paratype; 74 – Acrocrypta sp. A, 75 – A. octopunctata, paratype of A. novemmaculata from Borneo, Kenokok; 76–77 – A. sabahensis, paratypes; 78 – A. coccinelloides?, paratype of A. novemmaculata from Borneo, Quope; 79 – A. novemmaculata (after Döberl, 2001).

Puc. 57–79. Виды рода Acrocrypta, эдеагусы (57–66, 79) и сперматеки (67–78).

57–58 – А. kinabaluensis sp. n., голотип: 57 – вид сверху, 58 – вид сбоку; 59–60 – А. purpurea: 59 – вид сверху, 60 – вид сбоку; 61–62 – А. sarawakensis sp. n., голотип: 61 – вид сверху, 62 – вид сбоку; 63–64 – А. trusmadiensis sp. n., голотип: 63 – вид сверху, 64 – вид сбоку; 65–66 – А. similis, holotype: 65 – вид сверху, 66 – вид сбоку; 67 – А. aureipennis, голотип; 68 – А. pseudoaureipennis, голотип; 69 – А. viridipennis; 70 – А. purpurea, голотип; 71 – А. incisa; 72 – А. semilimbata, паратип; 73 – А. sexstigmatica sp. n., паратип; 74 – Acrocrypta sp. A; 75 – А. octopunctata, паратип А. novemmaculata с Борнео, Кенокок; 76–77 – А. sabahensis, паратипы; 78 – А. coccinelloides?, паратип А. novemmaculata с Борнео, Куопе; 79 – А. novemmaculata (по [Döberl, 2001]).

not known in other representatives of this group and by shape of aedeagus with elongated thin apex.

Etymology. The name of the new species refers to its coloration.

Acrocrypta signata Döberl, 2001 (Color plate 7: 5; Color plate 10: 45, 46)

 $Acrocrypta\ signata\$ Döberl, 2001: 25; Mohamedsaid, 2004: 151.

Type material. Paratype, \circlearrowleft , "B. N. Borneo. / Mt. Kinabalu, / Lumu Lumu, / 5.500 ft. / April 1929", (LM).

Material. 2♂, "N Borneo / Mt. Kinabalu", "Mesilau Cave / 24. iii. 1964. / 6,175 ft.", "Royal. Soc. Exped. / coll S. Kuech. / BM. 1964-705" (NHM).

Distribution. Borneo (Sabah).

Acrocrypta similis Döberl, 2001 (Color plate 9: 24; Figs 65, 66)

Acrocrypta similis Döberl, 2001: 25; Mohamedsaid, 2004: 151.

Type material. Holotype, \circlearrowleft , "Mt. Matang, / W. Sarawak, / Jan. 1914. / G. E. Bryant" (NHM). Paratypes: $1\circlearrowleft$, "Fed. Malay States: / 1909, / C. J. Brooks, / B. M. 1931-570." (NHM); $1\circlearrowleft$, "Quop / W. Sarawak. / G.E. Bryant / IV. 1914" (LM).

Material. 1♂, "SARAWAK: / Bidi. 1908-9. / C.J. Brooks. / B. M. 1929-551" (NHM); 1♂, "SARAWAK: / 1907-1909. / C.J. Brooks. / B. M. 1936-681" (NHM).

Distribution. Peninsular Malaysia, Borneo (Sarawak).

Acrocrypta semilimbata Romantsov and Medvedev, 2015 (Color plate 7: 6, 7; Color plate 10: 47, 48; Fig. 72)

Acrocrypta semilimbata Romantsov et Medvedev, 2015: 46. Type material. Holotype, \circlearrowleft , "MALAYSIA, N Borneo, Sabah, \sim 16 km NW Tambunan, Crocker Range, h \sim 1660 m, at light, N 05°48'47", E 116°20'16" 24.VI.2014 A. Klimenko leg." (PR). Paratype, 1 \circlearrowleft , "Borneo, Sabah, Km 53 road KT-Tambunan, E slope GN Emas, 700 m, 1.-5 Apr. 2000, Bolm lgt." (LM).

Material. 1 \updownarrow , "B.N. Borneo, Mt. Kinabalu, Lumu Lumu, 8.4.1929." (NHM).

Acrocrypta trusmadiensis sp. n. (Color plate 9: 22; Figs 63, 64)

Material. Holotype, \circlearrowleft : "MALAYSIA, N Borneo, / Sabah, Keningau dist., / Trus Madi Mt., h~1250m, / N 05°26′35″, E 116°27′5″ / 5-12.II.2015 A. Klimenko leg" (PR).

Description. Body fulvous with darkened metasternum, antennae black with 3 basal segments fulvous and apical segment white. Elytra yellow-brown, each elytron with 5 rather large black spots, two at the base (the outer one close to the scutellum, the other on the humeral callus), two placed transversely across the middle (touching with each other), and transverse shaped one near the apex. Legs with darkened tibiae and tarsi. General view – Color plate 9: 22.

Body widely oval, convex, about 1.48 times as long as wide. Vertex with small and fine punctures, labrum broad, with weakly concave anterior margin and with sparse long setae. Clypeus impunctate, triangular, raised, hangs over the labrum, with long bristles along the front edge, interantennal space rather narrow and convex, frontal ridge convex with the apex narrow wedged between frontal tubercles, but not separated them from each other, frontal tubercles triangular, obliquely set, the line restricting frontal tubercles posteriorly triangular broken. Antennae reach anterior third of elytra, proportions of segments (in length) are as 15:6:9:13:13:13:11:10:11:9:16, their proportions in width are as 5:4.5:5:7:8:8:8.5:8:8.5:8:7 (1=0.25 mm), 3 basal segments shining and smooth, 4^{th} and following antennal segments are shagreen, slightly enlarged but not flattened, with thin hairs.

Maxillary palpi with penultimate segment swollen. Prothorax 2.5 times as wide as long, broadest at base, side margins rounded, fore angles thick, rounded, hind angles broadly triangular, front margin weakly concave, posterior margin moderately convex, surface with small and shallow punctation, all margins bordered. Anterior coxal cavities closed posteriorly. Intercoxal prosternal process very narrow in middle, sharp expanding beyond procoxae. Scutellum, convex, triangular, impunctate. Elytra 1.13 times as long as wide, surface with rather dense and moderately large punctation, apical part more weakly punctured. Humeral callus convex, prominent. Elytral epipleuron deep concave, broad on base, gradually narrowed behind and disappear near apex. Fore and middle tarsi with slightly elongated 1st segment (about 1.35 times as long as wide), which wider than transverse 2nd (1.5 times as wide as long) and narrower than bilobed and transverse 3nd segment (1.5 times as wide as long), hind tarsi with elongated $1^{\rm st}$ segment (2.2 times as long as wide) which 1.5 times longer than two following segments combined. Abdomen with 5 distinctly visible sternites. Basal sternite as long as 3 following sternites together, apical sternite about 3 times shorter than 1st. Apical sternite entire, pygidium broadly rounded at apex. Hind tibiae very slightly curved with thick and long spur at apex, middle and fore tibiae straight, unspined. Claws appendiculate. Length of aedeagus 2.2 mm.

Length of body 6.8 mm.

Differential diagnosis. Acrocrypta trusmadiensis sp. n. belongs to the species group with spotted elytra and antennae with short preapical segments. This group includes 5 species similar to each other, distinguishable only by shape of aedeagus (see a key), part of them with unclear taxonomic status. Acrocrypta novemmaculata from the Philippines has similar aedeagus (Fig. 79) but differ by more wider and less convex interantennal space, with wide frontal ridge, enters between frontal tubercles, completely separated them from each other and with cambered line delimiting frontal tubercles posteriorly, and by a little shorter preapical antennal segments.

Etymology. The name of the new species refers to the collecting locality.

Acrocrypta viridipennis Jacoby, 1898 (Color plate 7: 2; Fig. 69)

Acrocrypta viridipennis Jacoby, 1898: 378; Döberl, 2001: 18; Mohamedsaid, 2000: 356; 2004: 151.

Type material is not examined.

Material. 1 \circlearrowleft , "Kina-Balu-Geb. / 1500 m / Coll. Waterstadt" (LM); 1 \circlearrowleft , "BORNEO: SABAH, Crocer / Randge N. P., Gunung Emas / 6.-18.VI.1996, 1500-1700 m / leg. J. KODADA" (LM); 1 \circlearrowleft , "Borneo / Kinabalu" (LM); 1 \circlearrowleft , "BORNEO: SABAH, 1240 m / Crocer / Randge, IV.2013 / Kota Kanabalu-Tambunang / N 05°51′33.7", E 116°17′24.1" / General collecting" (NHM).

Distribution. Borneo (Sabah).

Acrocrypta sp. A (Color plate 8: 13; Fig. 74)

Material. 1 \updownarrow , "N BORNEO. / BETTOTAN, / NR. SANDAKAN. / Aug. 1927." (NHM).

Differential diagnosis. Acrocrypta sp. A is similar to *A. doeberli* Medvedev, 2010 and *A. bifasciata* **sp. n.** which have black transverse stripes on elytra as well but differs by coloration, large body (5 mm) and different proportions of 1–4 antennomeres (the rest are broken in our specimen). We suggest that it is a new species but don't describe it because of insufficiency of material and damage of single specimen which we have.

Distribution. Borneo (Sabah).

Key to species of the genus Acrocrypta Baly, 1862

- 1(8). Elytra green, aureate with green margins or purple with distinct metallic shine.
- 2(5). Humeral callus from below limited by deep furrow with a single row of larger punctures which contrasts with basal punctuation. Epipleura deep concave with greatest width on the level of the border of metasternum and abdomen. Elytra green or aureate with green margins. Spermatheca narrow with thin base.
- 3(4). Pronotum black with very feeble blue metallic shine, elytra green (Color plate 7: 3). Antennae black with 2 apical segments white. Antennal segments 6–10 longer, about 1.8 times as long as wide. Spermatheca (Fig. 68). Length of body 8.2 mm
- 2(5). Deep furrow with a single row punctures from below humeral callus absent or indistinct among basal punctation. Epipleura almost flat or slightly concave with greatest width on the level of the middle of metasternum. Elytra green or purple. Spermatheca with thick base.

- 8(1). Elytra with or without black marks, metallic shine absent.
- 9(16). Elytra entirely unicolorous.
- 10(13). Preapical antennal segments more than 2.5 times as long as wide. Length of body either large (more 7 mm) or small (less 4.5 mm).

- 13(10). Preapical antennal segments less than 1.5 times as long as wide. Beetles medium size (length of body about 6 mm). Apex of aedeagus more or less triangular.
- 14(15). Pronotum more transverse (almost 2.5 times as wide as long). Head and pronotum darker than elytra,

- 16(9). Elytra not unicolorous.
- 18(17). Elytra brown or yellow with black pattern.
- 19(22). Elytra yellow with black margins (except extreme apex) without any black spots or bands. Antennae with elongate segments (all ones except second 2 times as long as wide at least).
- 20(21). Larger (7.1– 8.6 mm). Aedeagus with triangular apex (Color plate 10: 47). Antennae yellow with segments 4–8 black. General view (Color plate 7: 6, 7) Acrocrypta semilimbata
- 21(20). Smaller (less 4.5 mm). Aedeagus with broadly rounded apex (Color plate 10: 42). Antennae yellow with segments 4–9 black. General view (Color plate 9: 28). See also thesis 35 Acrocrypta sabahensis
- 22(19). Elytra brown or yellow with black spots or bands. Antennae with short or elongate preapical antennal segments.
- 23(32). Elytra with black bands (sometimes elytra besides bands with spots on suture basally and humeral area *Acrocrypta* sp. A).
- 24(27). Elytra with two transverse bands not reaching lateral margins and suture. Basal and lateral margins without black border.

- 27(24). Elytra with one transverse or with one longitudinal band. Either basal or lateral margins with black border. Antennae with elongate preapical segments (2 times as long as wide at least).
- 28(29). Elytra with black margins (except just the apex) and with oblique longitudinal band running from scutelum to black marginal border near apex (Color plate 7: 5). Antennae black except brown two basal and white apical segments. Length of body about 5 mm, aedeagus (Color plate 10: 45, 46) Acrocrypta signata
- 29(28). Elytra with one transverse band. Length of body less 4.5 mm.
- 30(31). Fulvous, antennae black with 3 basal and 2 apical segments fulvous, elytra with basal margin (wider on humeral area), anterior third of suture and narrow transverse band in the middle (not reaching suture)

black (Color plate 8: 17). Length of body 4 mm. Aedeagus with truncate apex Acrocrypta doeberli

32(23). Elytra with black spots.

33(38). Antennae with elongate preapical segments (more than 1.5 times as long as wide).

- 34(35). Smaller (not more than 4.5 mm, usually 3.5–4 mm). Aedeagus with rounded apex (Color plate 10: 43, 44). Preapical antennal segments more than twice as long as wide. Very variable in coloration: (A) elytra with pearshaped spot on suture basally, humeral area, transverse band in the middle (interrupted on suture) and transverse spot near apex black (Color plate 9: 25, 26). Sometimes part of the black spots are less developed. Underside with large black mark occupying the middle part of first abdominal sternite and all of metasternum except episternum and epimera, apices of tibiae and tarsi blackish; (B) coloration of elytra is the same as above but underside and legs entirely yellow; (C) elytra with black basal and sutural margin and a narrow transverse band just behind the middle, apices of tibiae and tarsi blackish, underside entirely yellow (Color plate 9: 27); (D) elytra with black basal and sutural margin without narrow transverse band just behind the middle (Color plate 9: 28), apices of tibiae and tarsi blackish, underside entirely yellow; (E) dorsal, ventral surfaces and legs entirely yellow (Color plate 9: 29). Spermatheca (Figs 76, 77) Acrocrypta sabahensis
- 35(34). Larger (more than 4.5 mm). Aedeagus with sharp apex. Elytra with common spot on suture basally or below scuttelum.
- 36(37). Elytra with common spot on suture basally (Color plate 8: 18). Aedeagus (Color plate 10: 49, 50) parallel-sided with elongated thin apex. Preapical antennal segments more elongate (about 1.9 times as long as wide). Length of body 4.6–4.7 mm
- 37(36). Elytra with common spot on suture below scuttelum (Color plate 8: 16). Apex of aedeagus not thin, triangular (Figs 57, 58). Preapical antennal segments less elongate (about 1.6 times as long as wide). Length of body 5.1 mm Acrocrypta kinabaluensis sp. n.
- 38(33). Antennae with short preapical segments (less than 1.4 times as long as wide).
- 40(39). Larger (more 5 mm). Combination of characters is not as above.

...... Acrocrypta nigropicta

- 42(41). Elytra without black margins, with a few black spots. Combination of characters is not as above.
- 44(43). Apex of aedeagus not elongate, triangular or truncated. Preapical antennal segments about 1.2–1.3 times as long as wide. Anterior angles of pronotum rounded, not extend outwardly. Here 5 species similar to each other, distinguishable only by shape of aedeagus, part of them with unclear taxonomic status (see discussion above).
- 45(38). Pronotum not black (darkened in the middle of the middle part).
- 46(47). Elytra fulvous, each elytron with 2 small black spots placed transversely at the middle. Length of body 5.5 mm. Unclear species *Acrocrypta quadripunctata* 47(46). Elytra fulvous, each elytron with 4–6 black spots.
- 48(49). Aedeagus narrow (Color plate 10: 39–41). Colouration variable: (A) elytra light-brown, each elytron with 4 small black spots, one at the humeral callus, two placed transversely across the middle and one near the apex (Color plate 9: 21); (B) elytra brown or red-brown (Color plate 9: 20), each elytron with 5–6 black spots, two at the base (the outer one close to the scutellum, the other on the humeral callus), two placed transversely across the middle (touching with each other), and two near the apex (sometimes connected in form with five spots) Acrocrypta octopunctata 49(48). Aedeagus broad.

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