

Leaf beetles of the tribe Clytrini (Coleoptera: Chrysomelidae: Cryptocephalinae) from Borneo

LEV MEDVEDEV & PAVEL ROMANTSOV

Abstract

A synopsis of the tribe Clytrini from Borneo is presented. Ten new species of Bornean Clytrini are described as new for science: *Pseudolopha borneoensis* **n. sp.**, *Aetheomorpha volkovi* **n. sp.**, *Ae. nigripennis* **n. sp.**, *Ae. flavoapicalis* **n. sp.**, *Ae. maculicollis* **n. sp.**, *Ae. similis* **n. sp.**, *Ae. collaris* **n. sp.**, *Ae. trusmadiensis* **n. sp.**, *Smaragdina nigricapitis* **n. sp.**, and *S. trifoveata* **n. sp.** *Aspidolopha nobilis* L. Medvedev, 1988 is transferred to the genus *Pseudolopha* L. Medvedev & Regalin, 1998 (**n. comb.**). *Clytra duodecimmaculata* (Fabricius, 1775) is recorded from Borneo for the first time. Generic and species keys to the Clytrini of Borneo are given.

Key words: Chrysomelidae, Cryptocephalinae, Clytrini, Borneo, new species, keys.

Zusammenfassung

Es wird eine Übersicht über die Tribus Clytrini von Borneo gegeben. Zehn neue Arten von Borneo werden beschrieben: *Pseudolopha borneoensis* **n. sp.**, *Aetheomorpha volkovi* **n. sp.**, *Ae. nigripennis* **n. sp.**, *Ae. flavoapicalis* **n. sp.**, *Ae. maculicollis* **n. sp.**, *Ae. similis* **n. sp.**, *Ae. collaris* **n. sp.**, *Ae. trusmadiensis* **n. sp.**, *Smaragdina nigricapitis* **n. sp.** und *S. trifoveata* **n. sp.** *Aspidolopha nobilis* L. Medvedev, 1988 wird in die Gattung *Pseudolopha* L. Medvedev & Regalin, 1998 (**n. comb.**) gestellt. *Clytra duodecimmaculata* (Fabricius, 1775) wird zum ersten Mal von Borneo nachgewiesen. Ein Bestimmungsschlüssel für die Gattungen sowie Schlüssel für alle auf Borneo vorkommenden Arten werden erstellt.

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1 Introduction

Leaf beetles from Borneo have been intensively investigated in the last 30 years, especially from the Malaysian part. Ten species of Clytrini were listed in the catalogue of MOHAMEDSAID (2004), mostly from MEDVEDEV (1999). New species of Clytrini were added later by MEDVEDEV & ROMANTSOV (2012) and MEDVEDEV (2013).

The present paper is based mostly on materials collected by PAVEL ROMANTSOV in Borneo (Sabah) during an expedition in the vicinity of Trus Madi in April 2013. This place is situated about 70 km southeast of Kota Kinabalu and reaches an altitude of 2640 m. The slopes of Mount Trus Madi are covered with rich forest vegetation. Collecting of insects was carried out mainly by means of light traps and hand collecting at an altitude between 1160 and 1250 m, in many cases also by sweeping with a net, both by day and night (referred to as “mowing” on the labels).

Ten species are described as new for science. Furthermore we present taxonomic notes on a few poorly known species. Finally, keys to all Clytrini of Borneo are given.

Acronyms of depositories

HT	Collection of HARUO TAKIZAWA, Saitama, Japan
LM	Collection of LEV. MEDVEDEV, Moscow, Russia
BMNH	British Museum of Natural History, London, United Kingdom
NHMB	Naturhistorisches Museum, Basel, Switzerland
PR	Collection of PAVEL ROMANTSOV, Sankt-Petersburg, Russia
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium
ITBC	Institute for Tropical Biology and Conservation, Universiti Malaysia, Sabah
RR	Collection of RENATO REGALIN, Milano, Italy.
UKM	Centre for Insect Systematics, Universiti Kebangsaan, Bangi, Malaysia
ZIN	Collection of Zoological Institute RAN, Sankt-Petersburg, Russia

Acknowledgements

Thanks are due to JAN BEZDĚK (Brno) and an anonymous referee for their valuable suggestions which improved the manuscript, and to R. REGALIN (Milano) for providing a photo of the holotype of *Smaragdina kalimantani* (Fig. 36).

2 Taxonomy

Tituboea delectabilis Baly, 1865 (Figs. 10, 42, 43)

Tituboea delectabilis BALY 1865: 45 (Penang); MEDVEDEV 1999: 54 (Sarawak, Kalimantan); MOHAMEDSAID 2000: 345 (UKM checklist); MOHAMEDSAID 2004: 29 (catalogue).
Tituboea speciosa BALY 1865: 46 (Penang); REGALIN 1997: 109 (= *delectabilis*).

Type material in BMNH, not examined.

Material examined: "Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 24.VIII.2012, A. KLIMENKO leg.", 1 ♂ (PR).

Distribution: Peninsular Malaysia, Borneo (Sabah, Sarawak, Kalimantan).

Clytrasoma bistrispunctata Medvedev, 1999 (Fig. 11)

Clytrasoma bistrispunctata MEDVEDEV 1999: 62 (Sabah); MOHAMEDSAID 2004: 29 (catalogue).

Type material examined: Holotype, labelled "Malaysia, Sabah (Borneo), Sandakan, leg. BAKER", 1 ♀ (LM).

Distribution: Borneo (Sabah).

Clytrasoma celebensis borneoensis L. Medvedev, 2013 (Fig. 12)

Clytrasoma celebensis borneoensis MEDVEDEV 2013: 489 (Sabah).

Type material examined: 1 paratype, labelled "Borneo, Malaysia, Sabah, Kimanis Road 16 M from Keningau, Papar, 18.III.1988, leg. T. NISATO", 1 ♀ (LM).

Remarks: In the original description (MEDVEDEV 2013) there are two different spellings of this species: *borneoensis* and *borneensis*; the spelling *borneoensis* is correct.

Distribution: Borneo (Sabah).

Clytrasoma mohamedsaidi Medvedev, 1999

Clytrasoma mohamedsaidi MEDVEDEV 1999: 61 (Sabah); MOHAMEDSAID 2000: 345 (UKM checklist); MOHAMEDSAID 2004: 29 (catalogue).

Type material in UKM, not examined.

Distribution: Borneo (Sabah).

Aspidolopha buquetii Lacordaire, 1848 (Figs. 1–3, 37–39, 40, 41)

Aspidolopha buquetii buquetii LACORDAIRE 1848: 255 (Java, Sumatra, Singapore, Penang, Trigane, Siam, Borneo); BALY 1865: 50 (Java, Sumatra, Singapore, Penang, Trigane, Siam, Borneo); MOHAMEDSAID 1993: 5 (as *Aspidolopha melanophthalma*, Sabah); MOHAMEDSAID 2000: 345 (UKM checklist); MOHAMEDSAID 2004: 29 (catalogue).

Aspidolopha buquetii egregia BOHEMAN 1859: 154; MEDVEDEV 1999: 55 (Perlis, Pahang, Selangor, Kuala Lumpur, Negeri Sembilan, Sabah).

Aspidolopha buquetii borneensis MEDVEDEV 1985: 96 (Northern Kalimantan [Sabah]).

Type material of *Aspidolopha buquetii* and *A. buquetii egregia* not examined.

Type material examined: Holotype of *Aspidolopha buquetii borneensis*: "Kinabalu"; paratypes of *Aspidolopha buquetii borneensis*: "Nord Borneo, Mont Kina Balu, 8.8.1903, leg. JOHN WATERSTRADT", 1 ♀ (LM); "Kinubalu, Borneo, 1500 m, H. ROLLE, Berlin", 1 ♀ (LM).

Additional material examined: *Aspidolopha buquetii borneensis*: "S. O. Borneo, GROBOWSKY" "Telang, Borneo, 10.81", 1 ♀ (LM); "Borneo, Matang, Xantus", 1 ♂ (LM).

Remarks: Three subspecies of this species are recorded from Borneo (see MEDVEDEV 1999): *buquetii* s. str., ssp. *egregia* Boheman and ssp. *borneensis* Medvedev which looks strange at first sight and is controversially discussed. The first two forms, having rather large areas, are geographically isolated and are differentiated by the colour of their upperside (see key, chapter 3). The subspecies *borneensis* from Sabah differs from ssp. *egregia* Boheman not only by its coloration (compare Figs. 1, 2 with Fig. 3), but also by the shape of the aedeagus (compare Figs. 37–39 with Figs. 40, 41); it may be supposed that it inhabits different biotopes and altitudes and has a very restricted area in contrast to the widely distributed ssp. *egregia*. However, the pattern of the upperside and the form of the aedeagus are rather variable in this species and all registered subspecies might only be different colour forms which need further investigation. MOHAMEDSAID (2004) does not accept subspecies of *A. buquetii* and understands them all as synonyms of *Aspidolopha buquetii*, including *A. melanophthalma* Lacordaire, 1848. The status of *Aspidolopha melanophthalma* was already discussed by MEDVEDEV (1985). The second author of the present paper follows MOHAMEDSAID's view.

Distribution: *Aspidolopha buquetii buquetii*: Java, Bali, South Sumatra, Borneo (South West Kalimantan); *A. b. egregia*: Burma, Thailand, Cambodia, South Vietnam, Peninsular Malaysia, Sumatra (except South), Borneo (Sabah); *A. b. borneensis*: Borneo (Sabah).

Aspidolopha imperialis Baly, 1865 (Figs. 4–7, 73)

Aspidolopha imperialis BALY 1865: 50 (Borneo, Penang); MEDVEDEV 1999: 56 (Perak, Sabah); MOHAMEDSAID 2000: 345 (UKM checklist); MOHAMEDSAID 2004: 29 (catalogue).

Type material in BMNH, not examined.

Material examined: "Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 9.IV.2013, at light, P. ROMANTSOV leg.", 1 ♀ (PR).

Remarks: A single female has black pattern on the base of the pronotum, and two bands and almost all mar-

gins of the elytra are black (Fig. 4); such pattern of the upperside was not known before (MEDVEDEV 1999). Spermatheca see Fig. 73.

Distribution: Peninsular Malaysia, Borneo (Sabah, Kalimantan), Sumatra.

Aspidolopha metallescens L. Medvedev, 2013
(Figs. 8, 9, 74, 92–94)

Aspidolopha metallescens MEDVEDEV 2013: 489 (Sabah).

Type material examined: Holotype, labelled “Borneo, Indonesia, 10.5 m Keningau, Crocker Range, 21.–29.III.1989, leg. H. HAYAKAWA”, 1 ♂ (HT); 1 paratype, labelled “Malaysia, Sabah, Kimanis Road 16 M from Keningau, Papar, 20.III.1988, leg. T. NISATO”, 1 ♀ (LM).

Additional material examined: “Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 9.IV.2013, at light, P. ROMANTSOV leg.”, 1 ♀ (PR); same locality, 24.V.2014, A. KLIMENKO leg., 3 ♂♂ (PR); same as before, but 2.–4.VI.2014, 1 ♀ (PR).

Remarks: This species has the elytra entirely metallic or with a fulvous preapical spot (Figs. 8, 9). Spermatheca see Fig. 74, length of spermatheca 0.52 mm. Aedeagus see Figs. 92–94, length of aedeagus 2 mm.

Distribution: Borneo (Sabah).

Aspidolopha nigricollis L. Medvedev & Romantsov, 2012
(Fig. 13)

Aspidolopha nigricollis MEDVEDEV & ROMANTSOV 2012: 75 (Sabah).

Type material examined: Holotype, labelled “Malaysia, N Borneo, Keningau dist., Trus Madi Mt., h~1500 m, 1–3.V.2006, leg. K. VAKSOV”, 1 ♀ (LM). Dorsal view see Fig. 13.

Distribution: Borneo (Sabah).

Pseudolopha nobilis (L. Medvedev, 1988) **n. comb.**
(Fig. 15)

Aspidolopha nobilis MEDVEDEV 1988: 47 (Sabah).

Type material examined: Holotype, labelled “N. Borneo, Kinabalu-Geb[iet]”, 1 ♀ (LM). Dorsal view see Fig. 15.

Remarks: This species has the characters of *Pseudolopha* L. Medvedev & Regalin, 1998. It was stated in the original description of this species that the margins of the pronotum and the elytra have short hairs. Higher magnification now showed that also frons, pronotum and elytra are covered with extremely short hairs.

Distribution: Borneo (Sabah).

Pseudolopha borneoensis **n. sp.**
(Figs. 14, 75)

Holotype (♀): “Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 7.IV.2013, at light, P. ROMANTSOV leg.” (ZIN).

Paratype: same locality, 9.IV.2013, at light, P. ROMANTSOV leg.”, 1 ♀ (PR).

Etymology

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

Description

Background of elytra and pronotum dark, with dull metallic bluish green with golden pubescence which gives an iridescent hue; labrum black; antennae black with 3 basal segments dark fulvous; pronotum with fulvous area at posterior angles; abdomen, trochanters and tibiae except apices fulvous. Dorsal view see Fig. 14.

Body ovate, 1.6 times as long as wide. Clypeus shining, sparsely punctate, frons and vertex dull, finely and very densely punctate, without pubescence, 1.75 times as wide as transverse diameter of eye. Antennae distinctly serrate from the 5th segment on, 1st and 2nd segments thick, 3rd cylindrical, 4th moderately widened to apex. Pronotum 2.2 times as wide as long, broadest at base, anterior angles obtuse, posterior angles rounded, surface very densely and finely punctate, with short pubescence. Scutellum triangular with rounded apex, very densely punctate and pubescent, with impunctate and convex bare area on apex. Elytra 1.3 times as long as wide, slightly narrowed posteriorly, broadly rounded to apex, surface dull, without basal convexity, very densely punctate and finely pubescent. Pygidium finely punctate, with dense golden pubescence. Propleurae with dense white pubescence. Spermatheca as in Fig. 75, length of spermatheca 0.35 mm. Body length 4.9 mm (paratype)–5.0 mm (holotype).

Differential diagnosis

The new species differs from *Pseudolopha splendens* by the fulvous area at the posterior angles of the pronotum and by the smaller size. On differences to other species of the genus see the key (chapter 3).

Distribution

Borneo (Sabah).

Pseudolopha splendens L. Medvedev, 2013
Pseudolopha splendens MEDVEDEV 2013: 490 (Sabah).

Type material in NHMB, not examined.

Distribution: Borneo (Sabah).

Aetheomorpha volkovi **n. sp.**
(Figs. 25, 48–50, 80–82)

Holotype (♂): “Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 10.IV.2013, at light, P. ROMANTSOV leg.” (ZIN).

Paratypes: same locality, 5.IV.2013 collected by mowing in the daytime, 1 ♀ (PR); same locality, 8.IV.2013, at light, 1 ♀ (PR); same locality, 9.IV.2013, collected by mowing at night, 1 ♀ (PR); same locality, 10.IV.2013, collected by mowing in the daytime, 1 ♀ (LM); same locality, 11.IV.2013, collected by mowing in the daytime, 1 ♀ (PR).

Etymology

The new species is named after ANATOLY VOLKOV (Moscow), who co-sponsored the expedition to Borneo in the year 2013.

Description (male)

Head, pronotum and scutellum metallic bronze, only anterior margin of labrum fulvous, antennae black with 4 basal segments fulvous. Elytra metallic bronze with large hawk-like fulvous spot in the apical third. Underside fulvous with metallic luster, especially on pygidium, legs black with fulvous trochanters and tibiae. Dorsal view see Fig. 25.

Body parallel-sided. Clypeus impunctate, frons distinctly, but not strongly punctate, without pubescence, vertex very finely and sparsely punctate, interocular space twice as wide as transverse diameter of eye. Antennae serrate from the 5th segment on, 4th segment very feebly triangular. Pronotum twice as wide as long, broadest in basal third, with obtuse anterior and rounded posterior angles, surface strongly and densely punctate on sides, but finely and sparsely in the middle. Scutellum broadly triangular with rounded apex, practically impunctate. Elytra 1.45 times as long as wide, strongly and densely punctate, except apical slope with more fine and sparse punctures. Pygidium exposed, very finely punctate and pubescent. Prosternum pubescent, propleurae bare and nitid. Aedeagus (Figs. 48–50) with finger-like and truncate apical process, very strongly curved downwards, with underside very deeply longitudinally concave, length of aedeagus 1.6 mm. Body length 4.5 mm.

Female: Sides of pronotum fulvous, tibiae black with fulvous base, other colour and sculpture as in male. Spermatheca as in Figs. 80–82, length of spermatheca 0.35–0.40 mm. Body length 5.7–6.0 mm.

Differential diagnosis

The new species is very similar to *Aetheomorpha obscura*, but the latter species has a black head with fulvous labrum, whereas *A. volkovi* has the head entirely metallic bronze coloured. The aedeagi of both species are different, compare Figs. 46, 47 with Figs. 48–50. On differences to other species of the genus see the key (chapter 3).

Distribution

Borneo (Sabah).

Aetheomorpha nigripennis n. sp. (Figs. 24, 78)

Holotype (♀): “Malaysia, N Borneo, Sabah, Kenin-gau dist., Trus Madi Mt., 1230 m, N 05°25'39.4", E 116°25'43.2", 9.IV.2013, P. ROMANTSOV leg.” (ZIN).

Paratypes: “Malaysia, N Borneo, Sabah, Kenin-gau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5" 9.IV.2013, P. ROMANTSOV leg.”, 2 ♀♀ (PR). All specimens were collected at light.

Etymology

The name of the new species refers to the almost black elytra.

Description

Head black with labrum and sometimes anterior part of clypeus fulvous, antennae black with 3 basal segments fulvous. Pronotum and scutellum fulvous, elytra almost black, a small area surrounding the scutellum brownish (Fig. 24). Underside with apical part of abdomen and pygidium black, legs black.

Body moderately elongate, almost parallel-sided. Head practically impunctate, except a small area along inner margin of eye with fine punctures and short hairs, frons with 3 round grooves: two before clypeus and a larger one before vertex; interocular space twice as wide as transverse diameter of eye. Antennae serrate from the 4th segment on, which is triangular, as wide as long, and smaller than 5th, next segments distinctly more transverse. Pronotum 2.1 times as wide as long, broadest at base, with obtuse anterior and rounded posterior angles, surface shining, evenly convex and practically impunctate. Scutellum triangular, impunctate. Elytra 1.4 times as long as wide, surface shining, finely and moderately densely punctate, with practically smooth apical slope. Prosternum not pubescent, propleurae smooth and bare. Spermatheca C-like with clubbed ductus (Fig. 78), length of spermatheca 0.4 mm. Body length 5.1–5.3 mm. Pygidium exposed.

Differential diagnosis

The new species is similar to *Aetheomorpha semistriata*, but the elytra of *A. nigripennis* are confusedly punctate, and head and elytra are black. From *A. obscura* it can be distinguished by the entirely fulvous pronotum and black elytra, without any light spots on the disc (except sometimes basally near the sutural area). On differences to other species of the genus see the key (chapter 3).

Distribution

Borneo (Sabah).

Aetheomorpha trusmadiensis n. sp. (Fig. 28)

Holotype (♀): “Malaysia, N Borneo, Sabah, Kenin-gau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 10.IV.2013, at light, P. ROMANTSOV leg.” (ZIN).

Paratype: same locality and date, 1 ♀ (PR).

Etymology

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

Description

Black. Head red with darkened anterior part of clypeus. Antennae black with segments 1–3 more or less fulvous (Fig. 28). Pronotum red with sides feebly darkened. Prosternum and propleurae fulvous. Abdomen fulvous with basal half of first sternite black. Legs black with fulvous coxae and trochanters.

Body elongate, parallel-sided. Head practically impunctate, except a small area along inner margins of eyes with fine punctures and short hairs, frons with a deep groove in the middle and two very feeble ones anteriorly, interantennal space 2.3 times as wide as transverse diameter of eye. Antennae distinctly serrate from the 4th segment on. Pronotum 1.8 times as wide as long, broadest before base, with obtuse anterior and rounded posterior angles, lateral margins rounded, surface shining, convex and practically impunctate. Scutellum triangular, impunctate. Elytra 1.6 times as long as wide, surface finely and rather densely punctate with impunctate apical slope. Prosternum not pubescent, propleurae smooth and bare. Structure of spermatheca unknown (we could not find it in both specimens). Body length 3.9–4.0 mm.

Differential diagnosis

The new species is very similar to *Aetheomorpha nigripennis* n. sp., but differs by distinctly smaller size and almost red head, black scutellum and black metasternum (Fig. 28). On differences to other species of the genus see the key (chapter 3).

Distribution

Borneo (Sabah).

Aetheomorpha semistriata L. Medvedev, 1999

(Figs. 27, 54, 55)

Aetheomorpha semistriata MEDVEDEV 1999: 64 (Bali).

Holotype in NHMB, not examined.

Type material examined: 1 paratype, labelled "Indonesia, Bali, Danau Buyan, 1300 m, 19–21.II.1994, BOLM". Dorsal view see Fig. 27, aedeagus see Figs. 54, 55.

Distribution: Malacca, Indonesia (Sumatra, Bali), possibly from Borneo.

Aetheomorpha flavoapicalis n. sp.

(Figs. 26, 51–53)

Holotype (♂): "Malaysia, N Borneo, Sabah, Kenin-gau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 7.IV.2013, collected by mowing in the daytime, P. ROMANTSOV leg." (ZIN).

Etymology

The name of the new species refers to its coloration.

Description

Dark bronze, labrum dark fulvous, antennae black with segments 2–4 fulvous, apical slope of elytra light fulvous, tibiae with basal halves fulvous (Fig. 26).

Body parallel-sided. Clypeus smooth, frons densely punctate without pubescence near eyes, vertex very finely and sparsely punctate, interocular space 2.3 times as wide as transverse diameter of eye. Antennae distinctly serrate from the 5th segment on, proportions of segments are as 6-4-3-4, with basal segment thick and 4th segment feebly triangular. Pronotum 1.8 times as wide as long, broadest near base, but rather feebly narrowed anteriorly, with anterior angles obtusely angulate and posterior angles broadly rounded, surface strongly and unevenly punctate, with interspaces mostly larger than punctures. Scutellum triangular with rounded apex, very finely and densely punctate at base, remaining surface shining and practically impunctate. Elytra 1.4 times as wide as long, strongly and densely confusedly punctate, including apex. Pygidium entirely exposed, convex, finely punctate and pubescent. Prosternum pubescent, propleurae bare and nitid. Aedeagus (Figs. 51–53) with triangular apex, strongly curved downwards, length of aedeagus 1.47 mm. Body length 4.7 mm.

Differential diagnosis

The new species is similar to *Aetheomorpha takizawai*, but differs from the latter species by the colour of pronotum, elytra and underside, as well as by larger size (see the key, chapter 3, and compare Figs. 20 and 26).

Distribution

Borneo (Sabah).

Aetheomorpha maculicollis n. sp.

(Figs. 22, 44, 45, 77)

Holotype (♂, Fig. 22): "Malaysia, N Borneo, Sabah, Kenin-gau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 11.IV.2013, collected by mowing in the daytime, P. ROMANTSOV leg." (ZIN).

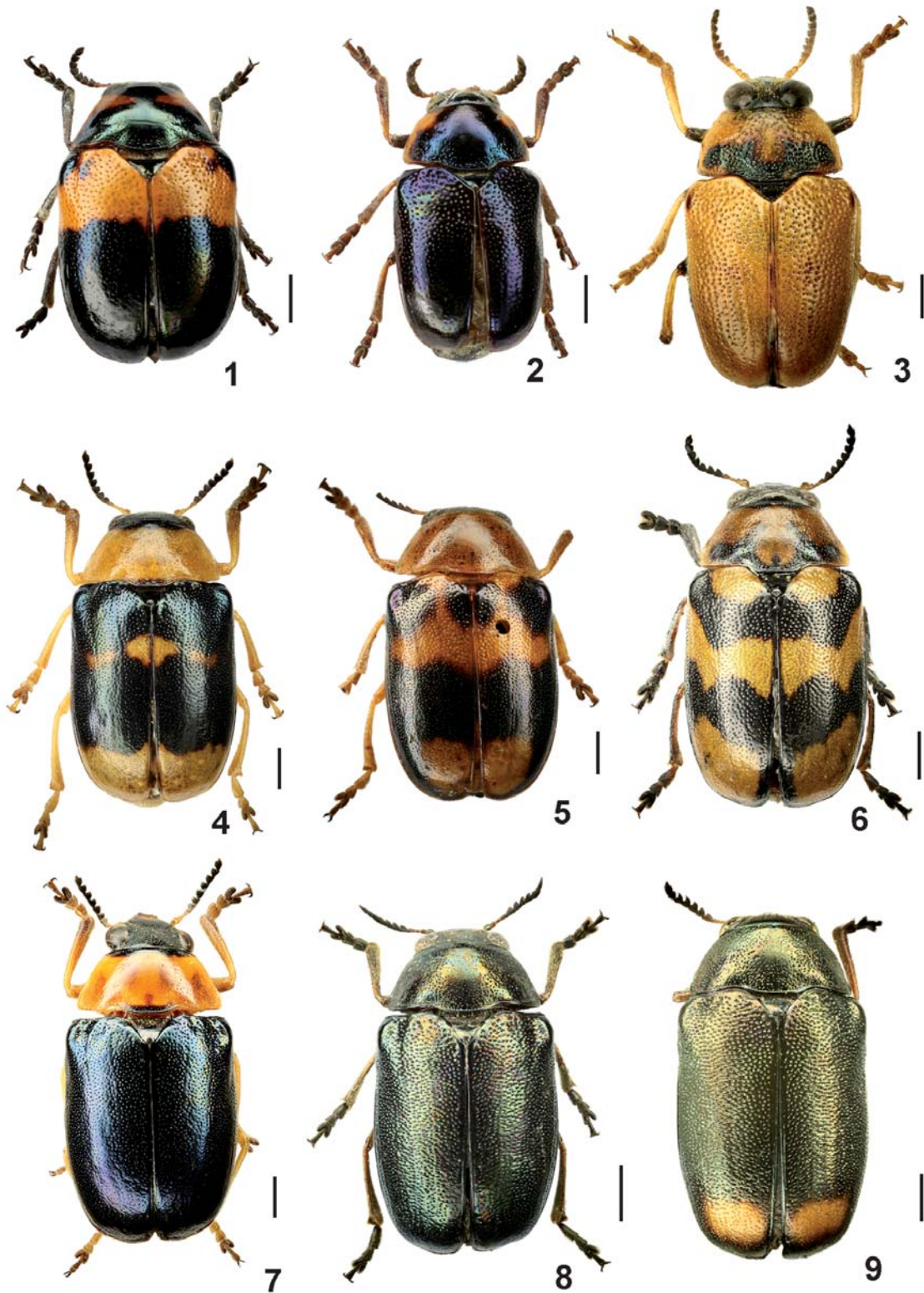
Paratypes: same locality, 9.IV.2013, at light, 5 ♂♂, 2 ♀♀ (LM, PR); same locality, 10.IV.2013, collected by mowing in the daytime, 1 ♀ (LM); same locality, 4.IV.2013, at light, 1 ♀ (LM).

Etymology

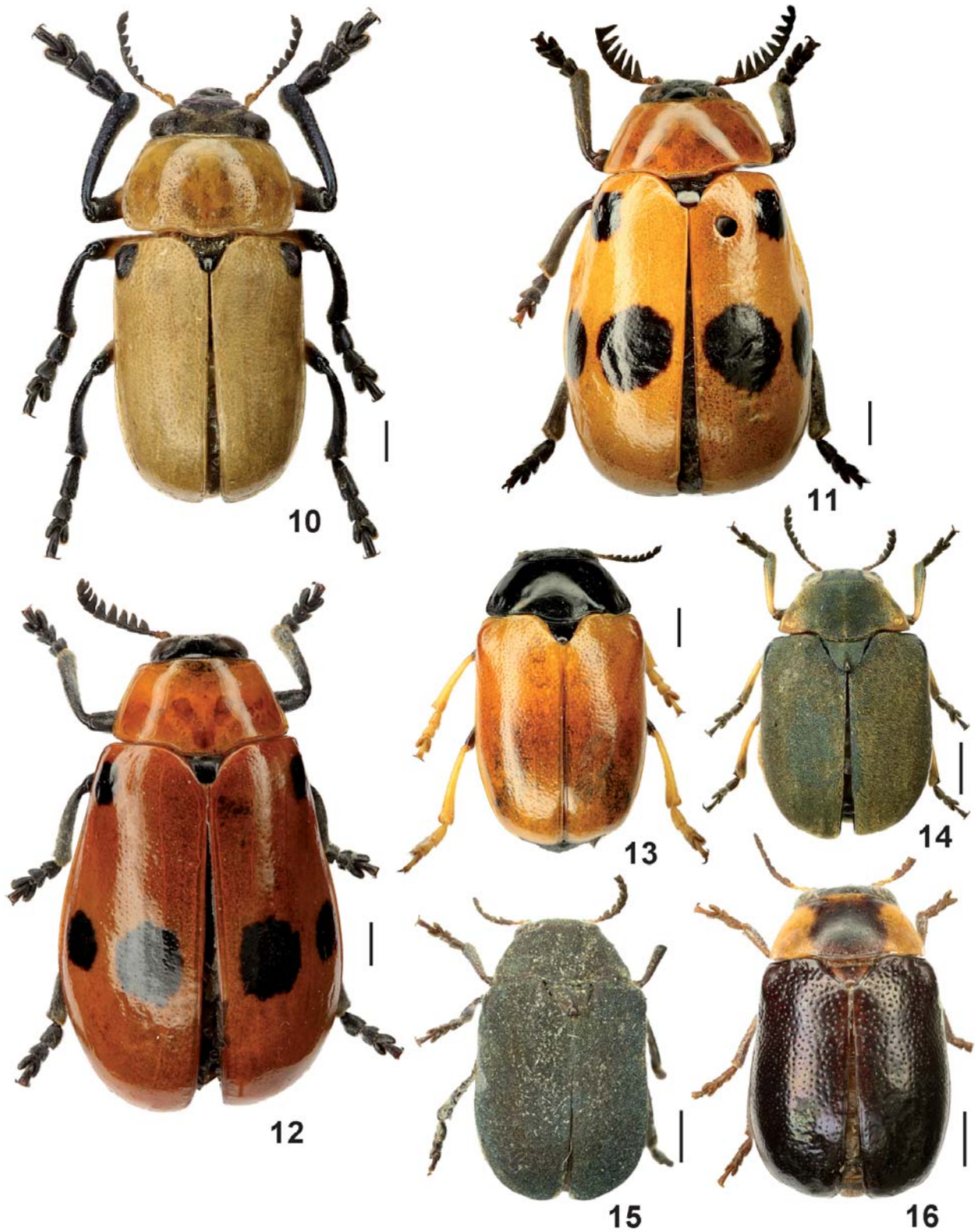
The name of the new species refers to its coloration.

Description

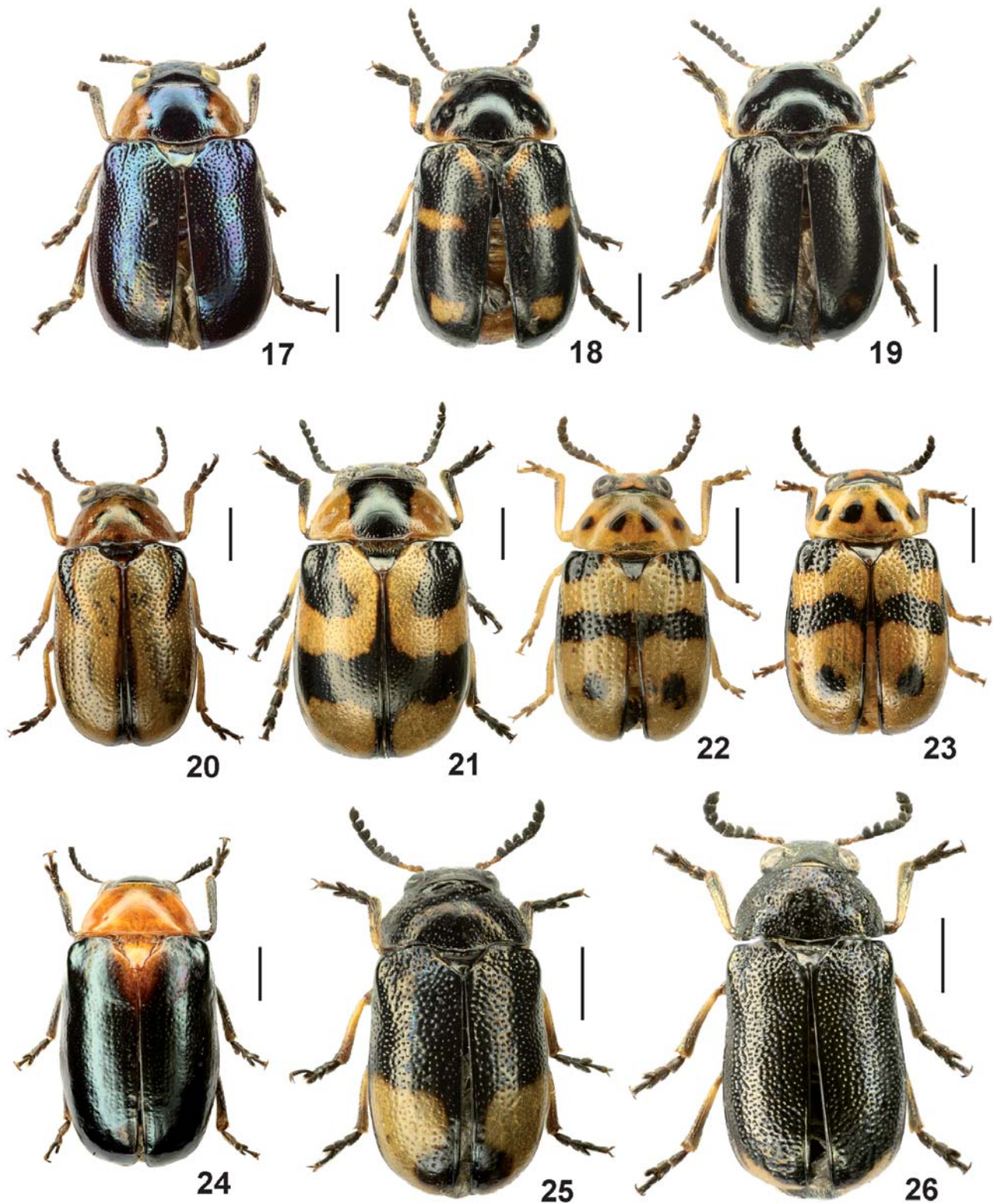
Fulvous; vertex, stripes along eyes, antennae except basal segments 1–3, four spots on pronotum, scutellum, triangular humeral spot, narrow transverse band before the middle of elytra, preapical spot, lateral margin, apex and suture between band and apex, metasternum except pleurae, upperside of apical half of tibiae, tarsi and sometimes middle of the 5th abdominal sternite and apex of pygidium black.



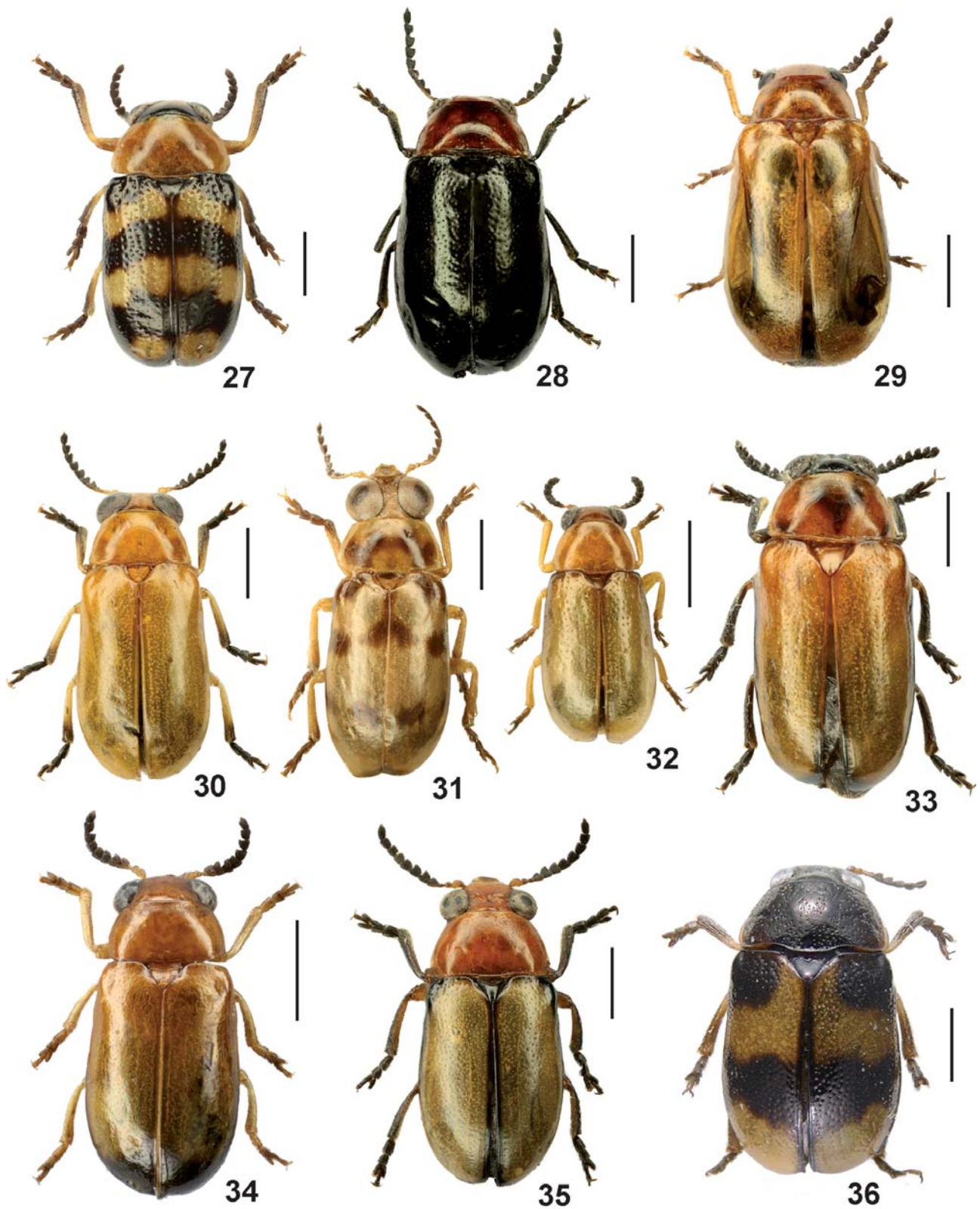
1–9. *Aspidolopha* spp. from Borneo, dorsal views. – 1, 2. *A. buquetii borneensis*. 3. *A. buquetii egregia* (specimen from Thailand). 4–7. *A. imperialis*. 8, 9. *A. metallescens* (9 = holotype). – Scales: 1 mm.



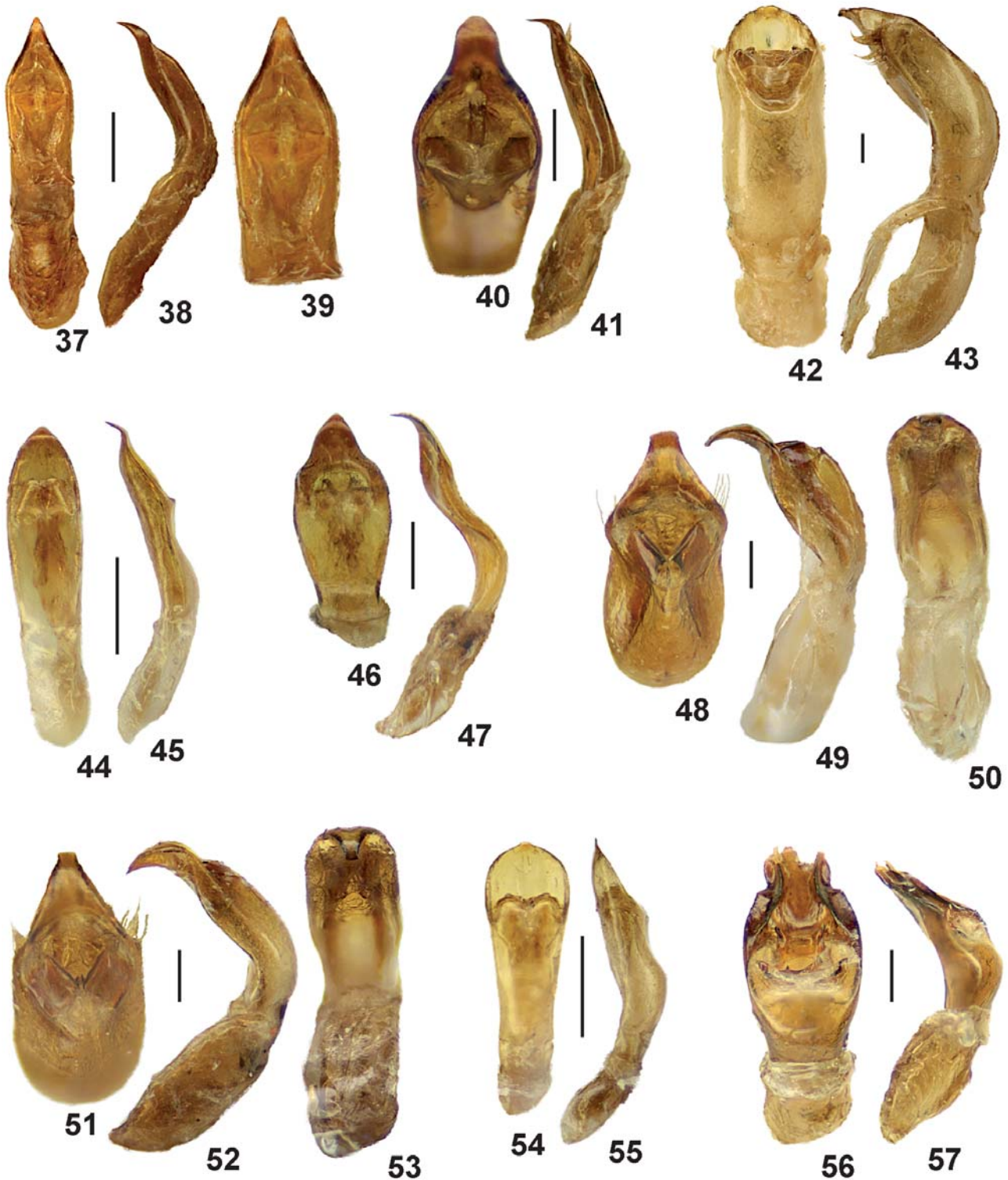
10–16. Chrysomelidae from Borneo, dorsal views. – 10. *Tituboea delectabilis* (male). 11. *Clytrasoma bistrispunctata*. 12. *C. celebensis borneoensis*. 13. *Aspidolopha nigricollis*. 14. *Pseudolopha borneoensis* n. sp. 15. *P. nobilis*. 16. *Aetheomorpha kinabaluensis*. – Scales: 1 mm.



17–26. *Aetheomorpha* spp. from Borneo, dorsal views. – 17. *Ae. kinabaluensis*. 18, 19. *Ae. obscura*. 20. *Ae. takizawai*. 21. *Ae. collaris* n. sp. 22. *Ae. maculicollis* n. sp. 23. *Ae. similis* n. sp. 24. *Ae. nigripennis* n. sp. 25. *Ae. volkovi*. 26. *Ae. flavoapicalis* n. sp. – Scales: 1 mm.



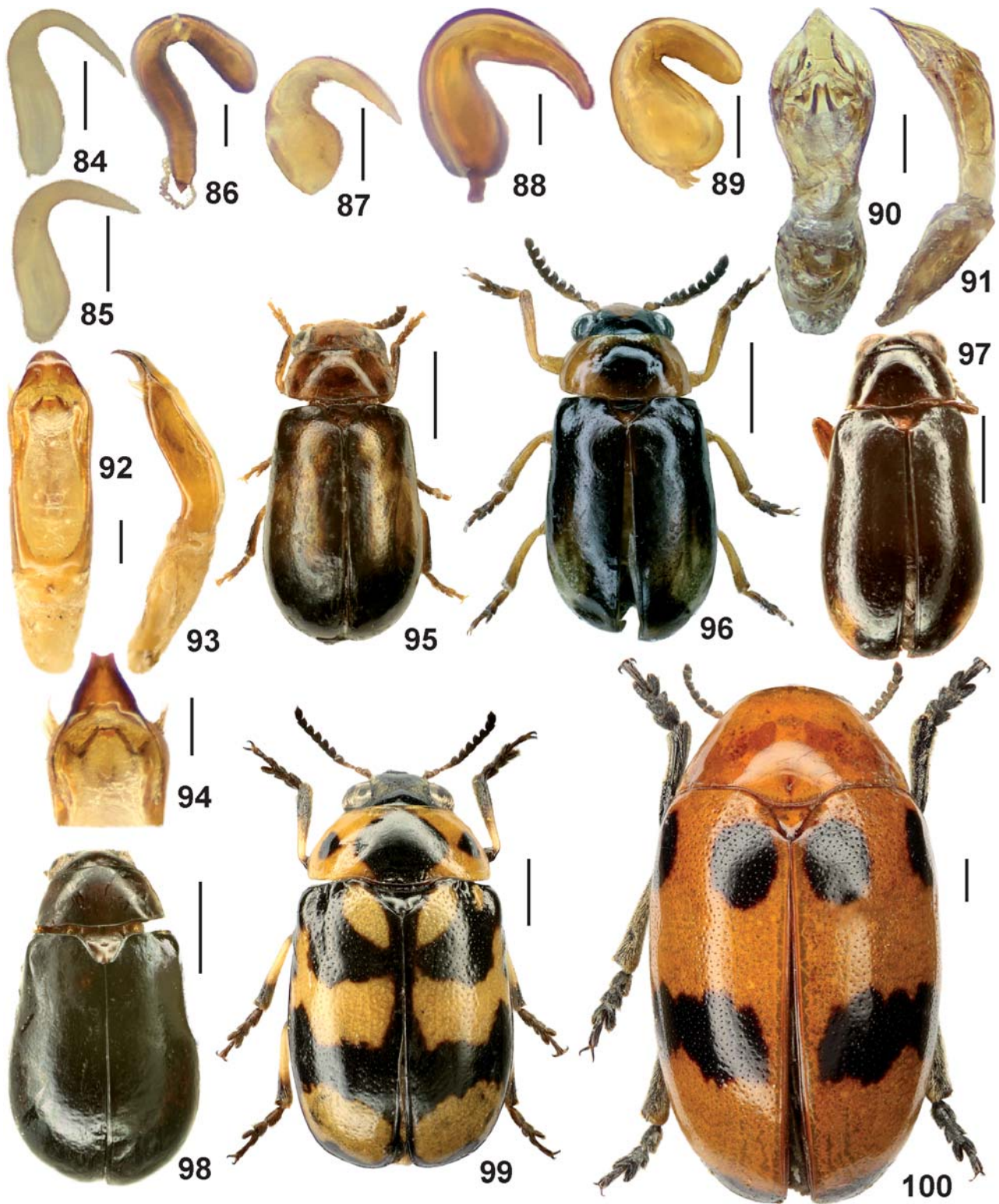
27–36. *Aetheomorpha* spp. and *Smaragdina* spp. from Borneo, dorsal views. – 27. *Aetheomorpha semistriata* (paratype). 28. *Ae. trusmadiensis* n. sp. 29. *Smaragdina borneensis*. 30. *S. bakeri*. 31. *S. brunneonotata*. 32. *S. linearis*. 33. *S. nigricapitis* n. sp. 34. *S. sabahensis*. 35. *S. trifoveata* n. sp. 36. *S. kalimantani* (photo R. REGALIN). – Scales: 1 mm.



37–57. Chrysomelidae from Borneo, aedeagi, dorsal (37, 42, 44, 46, 51, 54, 56), lateral (38, 41, 43, 45, 47, 48, 49, 52, 55, 57), and ventral (50, 53) views, apices (39, 40). – 37–39. *Aspidolopha buquetii borneensis*. 40, 41. *A. b. egregia* (specimen from Thailand). 42, 43. *Tituboea delectabilis*. 44, 45. *Aetheomorpha maculicollis* n. sp. 46, 47. *Ae. obscura*. 48–50. *Ae. volkovi*. 51–53. *Ae. flavoapicalis* n. sp. 54, 55. *Ae. semistriata*. 56, 57. *Ae. takizawai*. – Scales: 0.25 mm.



58–83. Chrysomelidae from Borneo, aedeagi, dorsal (58, 63, 65, 67, 70), lateral (59, 62, 64, 66, 68, 72), and ventral (60, 69, 71) views, apex (61), and spermathecae (73–83). – 58–60. *Smaragdina sabahensis*. 61, 62. *S. bakeri*. 63, 64. *S. brunneonotata*. 65, 66. *S. linearis*. 67–69. *S. trifoveata* n. sp. 70–72. *S. nigricapitis* n. sp. 73. *Aspidolopha imperialis*. 74. *A. metallescens*. 75. *Pseudolopha borneoensis* n. sp. 76. *Aetheomorpha collaris* n. sp. 77. *Ae. maculicollis* n. sp. 78. *Ae. nigripennis* n. sp. 79. *Smaragdina sabahensis*. 80–82. *Aetheomorpha volkovi* n. sp. 83. *Ae. kinabaluensis*. – Scales: 0.1 mm (73–83), 0.25 mm (58–72).



84–100. Chrysomelidae from Borneo, spermathecae (84–89), aedeagi, dorsal (90, 92) and lateral (91, 93) views, apex (94), and dorsal views of the beetles (95–100). – 84, 85. *Smaragdina bakeri*. 86 *Aetheomorpha similis* n. sp. 87. *Smaragdina* sp. 88. *Aetheomorpha ornatula*. 89. *Ae. coerulea*. 90, 91. *Smaragdina flavovariegata*. 92–94. *Aspidolopha metallescens*. 95. *Smaragdina* sp. 96. *S. flavovariegata* (holotype). 97, 98. *Smaragdina tristis*. 99. *Aetheomorpha ornatula*. 100. *Clytra duodecimmaculata*. – Scales: 0.1 mm (84–89), 0.25 mm (90–94), 1 mm (95–100).

Body cylindrical (male) or slightly ovate (female). Head impunctate, except triangular areas near eyes which are finely punctate and pubescent. Antennae distinctly serrate from the 5th segment on, 4th segment much smaller, triangular. Pronotum twice as wide as long, broadest before base, anterior and posterior angles rounded, surface convex, shining, with very sparse microscopically small punctures. Scutellum triangular, smooth. Elytra with epipleural lobe and moderately strong punctures arranged in irregular rows, more distinct near suture; apical slope almost impunctate. Pygidium distinctly exposed, especially in female. Aedeagus with acute triangular apex with apical tip curved downwards (Figs. 44, 45), length of aedeagus 0.8 mm. Spermatheca U-like, with very thin and acute apical end (Fig. 77), length of spermatheca 0.33 mm. Body length of male 3.2–3.6 mm, of female 4.0–4.3 mm.

Differential diagnosis

The new species differs from most Oriental species by having four round black spots in a transverse row on the pronotum. A few continental and Philippine species sometimes also have four spots on the pronotum, but they are not round and mostly placed near the base, moreover these species have other elytral pattern and a different shape of the aedeagus. *Aetheomorpha maculicollis* n. sp. also bears some resemblance to *A. jacobyi* L. Medvedev, 1988 from North India, Bhutan and Laos, but clearly differs by other elytral pattern, especially by the preapical elytral spot, and by a different shape and sculpture of the aedeagus. On the difference to the very near species *A. similis* n. sp. see below.

Distribution

Borneo (Sabah).

Aetheomorpha similis n. sp. (Figs. 23, 86)

Holotype (♀): “Malaysia, N Borneo, Sabah, Kenin-gau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 10.IV.2013, at light, P. ROMANTSOV leg.” (ZIN).

Etymology

The new species is named after its similarity to the preceding species.

Description

Coloration nearly identical to the preceding species, only labrum black (Fig. 23).

Body broadly ovate. Structure of head, antennae, pronotum and scutellum same as in the preceding species. Elytra 1.2 times as long as wide, with feeble epipleural lobes and moderately strong and dense confused punctures, without any trace of rows. Pygidium entirely exposed. Spermatheca U-like, of same thickness along its

length, ductus simple basally, spiraled distally (Fig. 86), length of spermatheca 0.42 mm. Body length 4.9 mm.

Differential diagnosis

Very similar to the preceding species, but differing by the black labrum, confused elytral punctures, larger size and especially the other form of the spermatheca (compare Figs. 77 and 86).

Distribution

Borneo (Sabah).

Aetheomorpha collaris n. sp. (Figs. 21, 76)

Holotype (♀): “Malaysia, N Borneo, Sabah, Kenin-gau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 9.IV.2013, collected by mowing at night, P. ROMANTSOV leg.” (ZIN).

Paratypes: same locality, 7.IV.2013, 1 ♀ (PR); same locality, 5.IV.2013, collected by mowing at night, 1 ♀ (PR).

Etymology

The name of the new species refers to the coloration of the pronotum.

Description

Head black with fulvous anterior part of labrum, antennae black with 3 basal segments fulvous, pronotum fulvous with black central stripe, very distinctly widened at anterior margin, scutellum black, elytra fulvous with large humeral area, transverse band behind middle, apex and all margins narrowly black (Fig. 21), pygidium fulvous with apex more or less black, underside fulvous with inner part of propleurae and apex of apical abdominal sternite black, legs black with tibiae and base of femora fulvous.

Body elongate, slightly ovate. Head finely punctate on clypeus and more strongly on frons, vertex practically impunctate, inner margin of eyes pubescent, interantennal space about twice as wide as transverse diameter of eye. Antennae serrate from the 5th segment on, 4th segment practically cylindrical. Pronotum twice as wide as long, broadest before base, lateral margins feebly rounded, anterior angles obtuse, posterior angles rounded, surface shining, impunctate except fine punctures along hind margin. Scutellum triangular, impunctate. Elytra 1.3 times as long as wide, surface with dense, moderately strong and entirely confused punctures, except almost impunctate apical slope. Prosternum not pubescent, propleurae smooth and bare. Spermatheca C-like with globular basal part, ductus thin, long and spiraled (Fig. 76), length of spermatheca 0.35 mm. Body length 5.4–5.8 mm.

Differential diagnosis

The new species is very similar to *Aetheomorpha ornatula* Baly, 1865 from Singapore and Peninsula Malaysia, but *A. ornatula* has – instead of a stripe – the prono-

tum with a large black spot which is connected with the front and basal margins, an additional small black spot at each side, and the elytra with a more developed black area which includes shoulder, narrow stripes along the basal margin and scutellum, as well as a black band from the shoulder to the suture (compare Figs. 21 and 99); moreover, its spermatheca is U-like (Fig. 88).

Distribution

Borneo (Sabah).

Aetheomorpha obscura L. Medvedev, 2013
(Figs. 18, 19, 46, 47)

Aetheomorpha obscura MEDVEDEV 2013: 491 (Sabah).

Type material examined: Holotype, labelled "N. Borneo, Kinabalu, 5000–6000 ft, leg. A. DODGE & G. GOSS", 1 ♂ (LM).

Additional material examined: "Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 7.IV.2013, at light, P. ROMANTSOV leg.", 1 ♂ (PR); same locality, 9.IV.2013, at light, 1 ♂ (PR).

Remarks: Only a single male from Kinabalu was known before; it has the elytra with a dark fulvous band before the middle and a fulvous spot on the apical slope. One specimen from Trus Madi has darker elytra with a very small fulvous spot on the apical slope, but the other specimen has a basal stripe along the scutellum, a distinct band before the middle and a fulvous preapical spot (Figs. 18, 19). The body length of these specimens is 4.0–4.4 mm, while the holotype is 4.5 mm long. All three known specimens have the same form and sculpture of the aedeagus (Figs. 46, 47), length of the aedeagus 1.25 mm.

Distribution: Borneo (Sabah).

Aetheomorpha takizawai L. Medvedev, 2013
(Figs. 20, 56, 57)

Aetheomorpha takizawai MEDVEDEV 2013: 490 (Sabah).

Holotype in ITBC, not examined.

Type material examined: 3 paratypes, labelled "Malaysia, Sabah, TM tower, Kimanis, Papar, 27.III.2008, leg. H. TAKIZAWA", 1 ♂ (LM); "Malaysia, Sabah, Gunung Emas, Crocker Mts., 22.IV.1993, leg. JENIS & STRBA", 1 ♀ (LM); "Borneo, Sabah, Crocker Range N. P., Gunung Emas, 6.–18.VI.1996, 1500–1700 m, leg. J. KODADA", 1 ♀ (LM).

Distribution: Borneo (Sabah).

Aetheomorpha kinabaluensis L. Medvedev, 2013
(Figs. 16, 17, 83)

Aetheomorpha kinabaluensis MEDVEDEV 2013: 491 (Sabah).

Holotype (♀) in ITBC, not examined, labelled "Sabah, UMS hill, Kota Kinabalu, 6.V.2007, leg. H. TAKIZAWA", with a small fulvous spot on the apex of the elytra.

Type material examined: 1 paratype, labelled "Borneo, Kinabalu", 1 ♀ (LM), elytra entirely metallic.

Additional material examined: "N. Borneo, Kinabalu Geb.", 1 ♀ (LM); "Nord Borneo, Mont Kina Balu, 8.8.1903, leg. JOHN WATERSTRADT", 1 ♀ (LM), both with entirely metallic elytra.

Remarks: The record of the continental *Aetheomorpha coerulea* Jacoby, 1802 (MEDVEDEV 1999, 2013; MOHAMEDSAID 1993, 2004) from Borneo is incorrect and refers in reality to *A. kinabaluensis*. This species differs from *A. coerulea* Jacoby in the entirely black clypeus and femora, the entirely fulvous underside, the spermatheca with the basal branch shorter and 1.5 times as thick as the apical branch (Fig. 83), and the slightly larger body length (4.9–5.5 mm). *A. coerulea* has clypeus and femora fulvous, and meso- and metathorax metallic blue; spermatheca see Fig. 89.

Distribution: Borneo (Sabah).

Smaragdina trifoveata n. sp.
(Figs. 35, 67–69)

Holotype (♂): "Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 9.IV.2013, P. ROMANTSOV leg." (ZIN).

Paratype: same locality, 11.IV.2103, collected by mowing in the daytime, 1 ♀ (PR).

Etymology

The name of the new species refers to the sculpture of the head.

Description

Head and pronotum red fulvous, antennae black with 3 basal segments fulvous, scutellum black, elytra pale flavous with lateral margin and apex black (lateral margin very narrow, apex broader and poorly delimited), underside including pygidium black, legs black with fulvous femora and underside of tibiae (Fig. 35).

Head finely punctate on frons and more distinctly on vertex, with 3 distinct grooves: two on frons and a deeper one on vertex; interocular space about 1.15 times (male) and 1.3 times (female) as wide as transverse diameter of eye. Antennae distinctly serrate from the 4th segment on, which is almost same in size as the 5th, but more triangular. Pronotum 1.8 times as wide as long, with all angles rounded, surface convex, very finely and sparsely punctate. Scutellum triangular. Elytra 1.45 times as long as wide, finely and confusedly punctate. Apex of pygidium broadly rounded. Segment 1 of anterior tarsus not widened. Aedeagus with triangular and very acute apex curved downwards, underside evenly convex (Figs. 67–69), length of aedeagus 1.12 mm. Body length 3.9 mm (male), 4.5 mm (female).

Differential diagnosis

The new species differs well from all species from Malaysia by a combination of trifoveate head, elytral pat-

tern and the shape of the aedeagus. It resembles a bit a female of an undescribed species from Kalimantan which has also has three grooves on the head (see MEDVEDEV 1999).

Distribution

Borneo (Sabah).

Smaragdina tristis L. Medvedev, 1999
(Figs. 97, 98)

Smaragdina tristis MEDVEDEV 1999: 68 (Sabah); MEDVEDEV 2013: 492 (Sarawak); MOHAMEDSAID 2000: 345 (UKM checklist); MOHAMEDSAID 2004: 29 (catalogue).

Type material examined: Holotype, labelled "Sandakan, Borneo, BAKER", 1 ♂ (LM). Dorsal view see Fig. 97.

Additional material examined: "Sarawak, Semongok, 12 mi. S. Kuching 10.XII.1974, A. EARNshaw", 1 ♀ (LM). Dorsal view see Fig. 98.

Distribution: Borneo (Sabah, Sarawak).

Smaragdina nigricapitis n. sp.
(Figs. 33, 70–72)

Holotype (♂): "Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 9.IV.2013, P. ROMANTSOV leg." (ZIN).

Paratype: same locality, 11.IV.2013, collected by mowing in the daytime, 1 ♂ (PR).

Etymology

The name of the new species refers to the coloration of the head.

Description

Fulvous, head black, antennae black with 3 basal segments fulvous, elytra with wide darkened sides and apex, underside fulvous with two darkened areas on metasternum and apex of abdomen black, pygidium darkened, legs black with bases of femora and tibiae fulvous (Fig. 33). Darkening of the lateral sides of the elytra narrower in the paratype than in the holotype.

Head with frons distinctly punctate near eyes and pubescent, other parts of head almost impunctate, without grooves on flat frons and convex vertex, interocular space practically twice as wide as transverse diameter of eye. Antennae distinctly serrate from the 4th segment on, which is only a little smaller than the 5th. Pronotum 1.6 times as wide as long, broadest near base, all angles rounded, surface convex, impunctate. Scutellum triangular. Elytra 1.8 times as long as wide, with dense and strong confused punctures, partly arranged in irregular rows, but very feeble on apical slope. Pygidium broadly rounded on apex. Segment 1 of anterior tarsus not widened. Aedeagus as in Figs. 70–72, length of aedeagus 1.5 mm. Body length 4.4 mm.

Differential diagnosis

The new species is similar to *Smaragdina luteicollis* Lacordaire, 1848 from Java and Sumatra, from which it differs by the entirely black head and entirely fulvous elytra.

Distribution

Borneo (Sabah).

Smaragdina bakeri L. Medvedev, 1999
(Figs. 30, 61, 62, 84, 85)

Smaragdina bakeri MEDVEDEV 1999: 69 (Sabah); MOHAMEDSAID 2000: 345 (UKM checklist); MOHAMEDSAID 2004: 29 (catalogue).

Type material examined: Holotype, labelled "Malaysia, Sabah (Borneo), Sandakan, BAKER", 1 ♂ (LM).

Additional material examined: "Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 9.IV.2013, at light, P. ROMANTSOV leg.", 1 ♂, 1 ♀ (LM), 1 ♂ (PR); same locality and date, collected in the daytime, 1 ♀ (LM); same locality, 6.IV.2013, at light, 1 ♂, 5 ♀♀ (PR); same locality, 10.IV.2013, 1 ♀ (PR).

Remarks: We provide figures of the aedeagus (Figs. 61, 62) and figures of the hitherto unknown spermatheca (Figs. 84, 85); length of aedeagus 1.3 mm, length of spermatheca 0.22–0.27 mm. Dorsal view see Fig. 30.

Distribution: Borneo (Sabah).

Smaragdina borneensis L. Medvedev, 2013
(Fig. 29)

Smaragdina borneensis MEDVEDEV 2013: 491 (Sabah).

Holotype (♂) in ITBC, not examined.

Type material examined: 1 paratype, labelled "Malaysia, Sabah: Kinabalu Park, HQ Ranaw, 14–15.IV.2008, leg. H. TAKIZAWA", 1 ♀ (LM). Dorsal view see Fig. 29.

Distribution: Borneo (Sabah).

Smaragdina sabahensis L. Medvedev, 1999
(Figs. 34, 58–60, 79)

Smaragdina sabahensis MEDVEDEV 1999: 68 (Sabah); MOHAMEDSAID 2000: 345 (UKM checklist); MOHAMEDSAID 2004: 29 (catalogue).

Type material examined: Holotype, labelled "Malaysia, Sabah (Borneo), Sandakan, BAKER", 1 ♂ (LM); paratypes, same locality, 4 ♀♀ (LM).

Additional material examined: "Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 9.IV.2013, collected by mowing in the daytime, P. ROMANTSOV leg.", 2 ♀♀ (LM, PR); same locality, "06.IV.2013, at light, P. ROMANTSOV leg.", 1 ♂ (PR).

Remarks: This species was known only from East Sabah (Sandakan). We provide figures of the aedeagus

(Figs. 58–60) and of the spermatheca (Fig. 79); length of aedeagus 0.9 mm, length of spermatheca 0.27 mm. Dorsal view see Fig. 34.

Distribution: Borneo (Sabah).

Smaragdina brunneonotata L. Medvedev, 1999

(Figs. 31, 63, 64)

Smaragdina brunneonotata MEDVEDEV 1999: 69 (Sabah).

Type material examined: Holotype, labelled “Indonesia, Kalimantan Barat, Gunung Palung Nat. Park, T. SUROV leg.”, 1 ♂ (LM). Dorsal view see Fig. 31, aedeagus see Figs. 63, 64.

Additional material examined: “Malaysia, S Borneo, Sabah, Nabawan dist., ~7 km N Pensiangan vill., h~530 m, N 04°35'16", E 116°19'27", 01.III.2014, P. ROMANTSOV leg.”, 1 ♂ (PR).

Distribution: Borneo (Kalimantan, Sabah).

Smaragdina kalimantani L. Medvedev & Regalin, 1998

(Fig. 36)

Smaragdina kalimantani MEDVEDEV & REGALIN 1998: 17 (Indonesia: Kalimantan).

Type material in RR, not examined.

Remarks: The description is based on a male from West Kalimantan (“Indonesia: Kalimantan occ, NG. Sarawai distr., Totang”). We assume that this species might also be found on the Malaysian part of Borneo.

Distribution: Indonesia, Sarawai (Melawi).

Smaragdina linearis L. Medvedev & Kantner, 2002

(Figs. 32, 65, 66)

Smaragdina linearis MEDVEDEV & KANTNER 2002: 265 (Sabah); MEDVEDEV 2013: 492 (Sabah, Sarawak).

Holotype in NHMB, not examined.

Type material examined: 2 paratypes, labelled “Malaysia-Sabah, Gunung Emas, Crocker Mts., 22.IV.1993, leg. JENIS & STRBA”, 1 ♂, 1 ♀ (LM).

Additional material examined: “Malaysia, Sabah, Kg., Kabayau, Telipok, Kota Kinabalu, 15.X.2007, H. TAKIZAWA”, 1 ♀ (LM); “Malaysia, N Borneo, Sabah, Keningau dist., Trus Madi Mt., h~1250 m, N 05°26'35", E 116°27'5", 8.IV.2013, collected by mowing in daytime, P. ROMANTSOV leg.”, 1 ♂ (PR).

Remarks: The species has a very feebly darkened lateral margin of the elytron in the anterior half. Dorsal view see Fig. 32, aedeagus see Figs. 65, 66; length of aedeagus 0.9 mm.

Distribution: Borneo (Sabah); MEDVEDEV's (2013) record of this species from Sarawak actually refers to Sabah.

Clytra duodecimmaculata (Fabricius, 1775)

(Fig. 100)

Cryptocephalus decemmaculatus FABRICIUS 1775: 106 (“Cape of Good Hope”).

Type material not examined.

Material examined: A single specimen with the label “Borneo, coll. DUVIVIER” was found in IRSNB.

Remarks: This species is widely distributed in SE Asia, but recorded for the first time from Borneo. Dorsal view see Fig. 100.

Distribution: Myanmar, Indochina, South China, Sumatra, Java, Timor, Sumba, Borneo (Sabah).

3 Keys to the Clytrini of Borneo

Key to genera

- 1 Frons and vertex with dense erect hairs. Antennae sharply serrate, almost pectiniform, segments 6–10 about 3 times as wide as long. – Epipleurae very short, reaching to the middle of metasternum. Elytra of male strongly dilated in the middle. Pygidium covered by elytra. Tarsi broad, second segment broader than long. Body length 9–15 mm. *Clytrasoma* Jacoby 1908
- Frons and vertex glabrous or with short, mostly adpressed pubescence. Antennae moderately serrate, segments 6–10 not more than twice as wide as long. 2
- 2 Anterior legs of male elongate, head of male enlarged. First antennal segment widened. – Propleurae pubescent. Pygidium covered by elytra. *Tituboea* Lacordaire, 1848
- Anterior legs of male not elongate and head of male not enlarged. First antennal segment not or feebly widened. 3
- 3 Pygidium not covered by elytra. 4
- Pygidium covered by elytra. 6
- 4 Propleurae not pubescent. Prosternal triangle usually not or at most sparsely pubescent. Epipleural lobe of elytra feeble, epipleurae not vertical. Hind angles of pronotum broadly rounded. – This genus is poorly distinguished from *Smaragdina* (see alternative to couple 6). *Aetheomorpha* Lacordaire, 1848
- Propleurae pubescent. Prosternal triangle between coxae, pleural suture and anterior margin with dense adpressed pubescence. Elytra with well developed epipleural lobe, epipleurae almost vertical. Pronotum with broadly rounded hind angles, often punctate. – Apex of pygidium mostly emarginate in female. Head with pubescent stripes along eyes, sometimes connected on frons. Body narrowed anteriorly and posteriorly. 5
- 5 Upperside not pubescent. *Aspidolopha* Lacordaire, 1848
- Upperside with short pubescence (longer on sides). *Pseudolopha* L. Medvedev & Regalin, 1998
- 6 Prosternal triangle between coxae, pleural suture and anterior margin of propleurae with dense adpressed pubescence. Pronotum with narrowly rounded hind angles. Tibiae thick. *Clytra* Laicharting, 1781
- Propleurae not pubescent. Hind angles of pronotum broadly rounded. Tibiae thin. – Some species are transitional to *Aetheomorpha*. *Smaragdina* Chevrolat, 1836

Clytrasoma Jacoby, 1908

- 1 Antennae 11-segmented with immobile appendix. Body black, pronotum and elytra fulvous, each elytron with moderately large humeral spot and two spots behind the middle black, propleurae black with fulvous lateral margin. – Elytra of female widened posteriorly, with maximal width in apical third, 1.5 times as long as wide. Body length 11.3–11.6 mm. Male unknown. – Borneo (Sabah, Sarawak). *C. celebensis borneoensis* L. Medvedev, 2013

- Antennae 12-segmented with mobile 12th segment. Body fulvous, head, venter and legs black, elytra with three black spots (humeral and two median ones)..... 2
- 2 Male: Elytra not widened, distinctly punctate, 1.5 times as long as wide and 1.35 times as wide as pronotum. 12th antennal segment truncate. Propleurae black with fulvous lateral margin. Body length 14.8 mm. Aedeagus without any impressions on upperside, with two shallow grooves on underside before apex. – Female unknown, but almost certainly without widened elytra. – Borneo (Sabah)..... *C. mohamedsaidi* L. Medvedev, 1999
- Female: Elytra distinctly widened, feebly punctate, 1.25 times as wide as long, 1.6 times as wide as pronotum. 12th antennal segment not truncate at apex. Propleurae fulvous. Body length 9.0–10.6 mm. – Male unknown, but almost certainly with strongly widened elytra. – Borneo (Sabah)..... *C. bistripunctata* L. Medvedev, 1999

Tituboea Lacordaire, 1848

Only one species treated, *T. delectabilis* Baly, 1865: Body fulvous; head, antennae except basal segments, scutellum, three spots (sometimes reduced to humeral one) on elytra, knees, tibiae and tarsi black with more or less distinct metallic luster. Aedeagus as in Figs. 42, 43, length of aedeagus 2.9 mm. Body length 8.4–10.6 mm. – Borneo (Sabah, Sarawak, Kalimantan), Malacca, Sumatra (*Tituboea speciosa* Baly, 1865).

Aspidolopha Lacordaire, 1848

- 1 Body length less than 6.0 mm. Scutellum with distinct sharp central ridge. Frons with dense hair stripes along eyes..... 2
- Body length more than 6.0 mm. Scutellum without or with a very weak central ridge. Frons without dense hair stripes along eyes..... 4
- 2 Hind part of elytra (or sometimes entire elytra) metallic blue, humeral spot present or absent (Figs. 1, 2). – Pronotum with large basal band and usually with darkened anterior margin. Aedeagus as in Figs. 37–39. – Borneo (Sabah)..... *A. buquetii borneensis* L. Medvedev, 1999
- Elytra with humeral spot and 1–2 transverse bands (sometimes strongly reduced)..... 3
- 3 Elytra with transverse humeral spot and two well developed bands. Pronotum with broad basal band. – Java, Bali, South Sumatra, Borneo (South West Kalimantan)..... *A. buquetii buquetii* Lacordaire, 1848
- Elytra with round humeral spot and (often reduced) median band; preapical band reduced to a spot or absent (Fig. 3). Pronotum with basal band reduced or absent. – Aedeagus as in Figs. 40–41. – Burma, Thailand, Cambodia, South Vietnam, Peninsular Malaysia, Sumatra (except South), Borneo (Sabah)..... *A. buquetii egregia* Boheman, 1859
- 4 Body elongate, punctuation of pronotum and elytra denser, wrinkled; upper side entirely metallic or elytra with fulvous preapical spot (Figs. 8, 9). – Body length 5.7–6.7 mm. – Borneo (Sabah)..... *A. metallescens* L. Medvedev, 2013
- Body broader, pronotum and elytra shining..... 5
- 5 Pronotum entirely black, extremely shallowly punctured. Elytra fulvous, shining, with moderately dense punctures (Fig. 13). Body length 7.8 mm. – Borneo (Sabah)..... *A. nigricollis* L. Medvedev & Romantsov, 2012
- Pronotum fulvous or bicolor, distinctly punctate. Elytra never entirely fulvous, more densely punctate (Figs. 4–7).

Body length 6.9–7.4 mm. – Borneo (Sarawak, Kalimantan), Peninsular Malacca, Sumatra. *A. imperialis* Baly, 1865

Pseudolopha L. Medvedev & Regalin, 1998

- 1 Upperside entirely dark bluish without an iridescent tint (Fig. 15). – Body length 5.2 mm. – Borneo (Sabah)..... *P. nobilis* (L. Medvedev, 1988) (n. comb.)
- Upperside with fulvous pattern on pronotum or elytra..... 2
- 2 Upperside dark metallic purple with fulvous apices of elytra. Body length 8.3 mm. – Borneo (Sabah)..... *P. splendens* L. Medvedev, 2013
- Upperside dark and dull metallic bluish green with fulvous area at posterior angles of pronotum and golden pubescence which gives an iridescent tint (Fig. 14). Body length 4.9–5.0 mm. – Borneo (Sabah)..... *P. borneoensis* n. sp.

Aetheomorpha Lacordaire, 1848

- 1 Pronotum unicoloured..... 2
- Pronotum bicoloured (in male *A. volkovi* pronotum dark bronze with very narrow, poorly visible fulvous lateral margins)..... 7
- 2 Pronotum metallic. Antennae serrate from the 5th segment on..... 3
- Pronotum fulvous or red..... 4
- 3 Pronotum metallic blue or greenish blue, finely and sparsely punctate. Elytra fulvous, with humeral area (sometimes prolonged in oblique stripe) and all margins narrowly dark metallic. Underside dark fulvous to piceous. Body length 3.9–4.2 mm. – Borneo (Sabah)..... *A. takizawai* L. Medvedev, 2013, male
- Pronotum metallic bronze, strongly punctate. Elytra metallic bronze with fulvous apex. Underside metallic bronze. Body length 4.7 mm. – Female unknown. – Borneo (Sabah)..... *A. flavoapicalis* n. sp.
- 4 Head metallic blue. – Elytra see couplet 3. Body length 4.5–5.9 mm. See also couplet 10. – Borneo (Sabah)..... *A. takizawai* L. Medvedev, 2013, female
- Head not metallic..... 5
- 5 Elytra with irregular rows of punctures, black with three fulvous bands. Antennae serrate from the 5th segment on. – Head yellow, with labrum, vertex and stripes along eyes black (Fig. 27). Underside fulvous with black area. Body length 3.4–4.5 mm. Aedeagus see Figs. 54, 55. – Malacca, Sumatra, Bali, possibly from Borneo..... *A. semistriata* L. Medvedev, 1999
- Elytra confusedly punctate, black, anterior margin and scutellum sometimes fulvous. Antennae serrate from the 4th segment on. – Male unknown..... 6
- 6 Head red with partly darkened clypeus. Scutellum black. Metasternum black, abdomen fulvous with partly black basal segment. Body length 3.9–4.0 mm. – Borneo (Sabah)..... *A. trusmiensis* n. sp.
- Head black with fulvous labrum. Scutellum fulvous. Underside fulvous with apex of abdomen and pygidium black. Body length 5.1–5.3 mm. – Borneo (Sabah)..... *A. nigripennis* n. sp.
- 7 Pronotum fulvous with transverse row of four black spots. Antennae distinctly serrate from the 5th segment on, with widely triangular 4th segment. – Head fulvous with black vertex, elytra fulvous with three bands and narrow margins black. Underside fulvous with black markings..... 8

- Coloration of pronotum not as before. Antennae serrate from the 5th segment on, with very feebly triangular 4th segment. **9**
- 8** Elytra with irregular rows of punctures. Labrum fulvous. Spermatheca as in Fig. 77. Body length of male 3.2–3.6 mm, of female 4.0–4.3 mm. – Borneo (Sabah). **A. maculicollis n. sp.**
- Elytra confusedly punctate. Labrum black. Spermatheca as in Fig. 86. Body length of female 4.9 mm. – Borneo (Sabah). **A. similis n. sp.**
- 9** Head metallic. **10**
- Head black with fulvous labrum. **12**
- 10** Elytra fulvous with humeral area (sometimes prolonged in an oblique stripe) and all margins black. – Pronotum fulvous with a dark metallic spot or sometimes with two spots. Body length 4.5–5.9 mm. Dorsal view see Fig. 20, aedeagus see Figs. 56, 57. See also couplet 4. – Borneo (Sabah). **A. takizawai** L. Medvedev, 2013
- Elytra entirely or mostly metallic. **11**
- 11** Elytra entirely metallic blue or with small fulvous area near apex. Pronotum fulvous with central blue stripe. Body length 4.9–5.5 mm. – Clypeus and femora entirely black, underside of body entirely fulvous. Male unknown. – Borneo (Sabah). **A. kinabaluensis** L. Medvedev, 2013
- Elytra dark bronze with large fulvous apical spot, deeply incised near suture. Pronotum dark bronze with fulvous lateral margins which are very narrow in male and broader in female. Body length of male 4.5 mm, of female 5.7–5.9 mm. – Borneo (Sabah). **A. volkovi n. sp.**
- 12** Pronotum black with narrow fulvous margins. Elytra black, sometimes with one or two poorly delimited fulvous spots (one transverse before middle, another before apex). Body length 4.5–4.7 mm. Female unknown. – Borneo (Sabah). **A. obscura** L. Medvedev, 2013
- Pronotum fulvous with black central stripe. Elytra fulvous with large humeral area, transverse band behind the middle, apex and all margins narrowly black. Body length 5.4–5.8 mm. Male unknown. – Borneo (Sabah). **A. collaris n. sp.**

Clytra Laicharting, 1781

Only one species treated, *C. duodecimmaculata* (Fabricius, 1775): Body elongate ovate. Colour of upperside variable: pronotum from red fulvous to black; elytra red fulvous with basal, median and apical markings black, but markings sometimes strongly reduced. Legs black. Body length 11–12 mm. – Borneo, Myanmar, Indochina, South China, Sumatra, Java, Timor, Sumba.

Smaragdina Chevrolat, 1836

- 1** Body very narrow, elongate. Elytra with regular rows of punctures, more feeble at sides and on apical slope, 1.7 times (male) and 1.5 times (female) as long as wide. Body length of male 2.6–2.8 mm, of female 3.3–4.0 mm. – Frons as wide as eye. Body fulvous, with antennal segments 4–11 black; elytra with mostly darkened sides and apex (Fig. 32), sometimes also on basal part or with black apex; females with darkened scutellum, tibiae and tarsi. Aedeagus as in Figs. 65, 66. – Borneo (Sabah). **S. linearis** L. Medvedev & Kantner, 2002
- Body less narrow. Elytra without regular rows of punctures. Body length of male more than 3 mm, of female 3.4–5.1 mm. **2**

- 2** Eyes large. Frons narrow, 0.4–0.5 times as wide as eye in male, 0.65 times in female. **3**
- Eyes of moderate size. Frons at least 0.8 times as wide as eye. **4**
- 3** Eyes enormously large. Frons very narrow, 0.4 times as wide as eye. Dorsum fulvous, pronotum with two angulate spots; elytra with five spots (1, 2, 2; connected with the lateral stripes) and the extreme apex dark brown (Fig. 31). Aedeagus as in Figs. 63, 64. Body length 4.5–4.9 mm. – Borneo (Sabah, Kalimantan). **S. brunneonotata** L. Medvedev, 1999
- Eyes moderately large. Frons less narrow, 0.5 times as wide as eye in male, 0.65 times in female. Body fulvous without any dark spots (Fig. 30). Aedeagus with three ridges beneath (Figs. 61, 62). Body length 4.0–4.5 mm. – Borneo (Sabah). **S. bakeri** L. Medvedev, 1999
- 4** Head at least partly black. **5**
- Head fulvous. – Pronotum entirely fulvous. **8**
- 5** Head black, only labrum fulvous. **6**
- Head fulvous with black vertex. – At least middle of pronotum black. **7**
- 6** Pronotum black with side margins narrowly fulvous. Elytra fulvous, with humeral area, a band in the middle and narrow sides and suture black. Frons about twice as wide as eye. Aedeagus with triangular apex. Body length of male 4.1 mm. Female unknown. – Borneo (West Kalimantan, Sarawai). **S. kalimantani** L. Medvedev & Regalin, 1998
- Pronotum entirely fulvous or fulvous with darkened Y-marking on middle disk. Elytra fulvous with darkened sides and apex (Fig. 33). Frons of male 1.15 times as wide as eye. Aedeagus with apex narrowly truncate (Figs. 70–72). Body length 4.1–4.4 mm. – Borneo (Sabah). **S. nigricapitis n. sp.**
- 7** Frons of female 2.1 times as wide as eye. Pronotum black in the middle. Elytra black with fulvous stripe, widened in the middle and reduced in the basal third (Fig. 95). Spermatheca see Fig. 87. – Borneo (Sabah). **S. sp.** [This species is possibly identical with *S. flavovariegata* L. Medvedev, 1999 from Sumatra and Malacca. Dorsal view of the holotype see Fig. 96, aedeagus see Figs. 90, 91. Body length of female 4.0 mm.]
- Frons narrower, 0.8 times as wide as eye in male, 1.1 times in female. Pronotum almost entirely black. Elytra black with fulvous spot before apex. Aedeagus with acutely triangular apex. – Body length 3.5–3.6 mm. – Borneo (Sabah, Sarawak). **S. tristis** L. Medvedev, 1999
- 8** Frons with three distinct grooves, wrinkled near the eyes, 1.15 times as wide as eye in male, 1.3 times in female. Scutellum black, elytra pale flavous with lateral margin and apex black (Fig. 35). – Aedeagus with triangular, very acute apex curved downwards, underside evenly convex (Figs. 67–69). – Borneo (Sabah, possibly also Kalimantan). **S. trifoveata n. sp.**
- Frons smooth without any grooves. Differently coloured. **9**
- 9** Elytra fulvous with well delimited black apex, sides and suture (Fig. 34). Frons about 1.5 times as wide as eye in male, 1.05 times in female. Aedeagus with elongate triangular apex, but apical tip not acute (Figs. 68–60). Body length 2.8–3.5 mm. – Underside with black breast and fulvous venter. Spermatheca as in Fig. 79. – Borneo (Sabah). **S. sabahensis** L. Medvedev, 1999
- Elytra entirely fulvous (Fig. 29). Frons in both sexes about 1.75 times as wide as eye. Aedeagus with elongate and acutely triangular apex (see MEDVEDEV 2013, fig. 10). Body length 3.4–4.0 mm. – Borneo (Sabah). **S. borneensis** L. Medvedev, 2013

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