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# A revision of the genus *Cassena* Weise, 1892 (Coleoptera, Chrysomelidae)

by **Lev N. Medvedev**

**Abstract.** A revision of the genus *Cassena* Weise, 1892 is given. One new subgenus (*Nepalocassena*) and 6 new species are described: *Cassena* (*Nepalocassena*) *takizawai* sp.nov. (Nepal), *C. costalis* sp.nov. (Thailand), *C. lateralis* sp.nov., *C. laysi* sp.nov. (Philippines, Mindanao), *C. iriana* sp.nov. and *C. riedeli* sp.nov. (New Guinea). *Cassena robusta* Jacoby, 1896 is resurrected from synonymy and treated as a subspecies of *C. collaris* (Baly, 1879). New synonyms are established: *C. terminalis* (Gressitt et Kimoto 1963) is synonymized with *C. apicalis* (Bryant, 1954); *C. femorata* (Jacoby, 1904) is synonymized with *C. dilaticollis* (Jacoby, 1894). The generic position of *Cneorane feae* Jacoby, 1892 is discussed.

**Key words.** Chrysomelidae – Galerucinae – *Cassena* – keys – new species – new synonyms– Oriental Region

## Introduction

The Oriental genus *Cassena* Weise, 1892 has been described twice in different subfamilies. At first it was placed in the subfamily Galerucinae as *Euphyma* Baly, 1879, then renamed twice in response to homonymy (*Solenia* Jacoby, 1886, *Solephyma* Maulik, 1936). Later it was described in the subfamily Alticinae as *Cassena* Weise, 1892 and placed near such typical Alticinae as *Podagrica* Chevrolat, 1837 and *Nisotra* Baly, 1864. Finally, these were united under the valid name *Cassena* Weise, 1892, which was removed to Galerucinae (Bryant 1962, Gressitt & Kimoto 1963a).

To date, this genus includes 43 species, among them 15 continental species, 1 species from the Philippines, 13 species from other SE Asian islands (1 species common on the continent), 14 species from New Guinea and neighbouring islands and 1 from Australia. However, Kimoto (1990) indicates only 4 species, rather than 13, for the islands of SE Asia.

The continental species are have been well studied and may be distinguished without difficulty, partly because of clear characters in the structure of the aedeagus. Keys exist for India (Maulik 1936), China (Gressitt & Kimoto 1963) and Indochina (Kimoto 1989). However, the species from the islands are very poorly studied, many of them described very briefly and with a considerable lack of clarity. A short key, based only on colour and body size has been given for Borneo and New Guinea (Bryant 1962), but almost half of the species known from New Guinea were not included in it. Fortunately, I was presented with a fine opportunity during a visit in the Museum of Comparative Zoology (Cambridge) to study numerous types of Jacoby's species, mostly from the islands.

Food-plants are known for only two species: *Cassena collaris* (Baly, 1879) feeds on Fabaceae (Medvedev & Dang Dap 1982, Jolivet & Hawkeswood 1995), *Cassena intermedia* (Jacoby, 1904) is associated with *Phaseolus aureus* and *P. lunatus* in New Guinea (Kimoto *et al.* 1984). Very possibly, all the species of this genus are associated with Fabaceae.

Nevertheless, although this genus is placed in Galerucinae, it seems to be morphologically near to *Podagrica* and *Nisotra* from Alticinae, disregarding the unthickened hind femora. Both of the Alticinae genera mentioned belong to the first morpho-group (FURTH 1988) characterized by having a distinct metafemoral spring. This is absent in *Cassena* (LABOISSIÈRE 1932).

The following abbreviations are used for the places in which the new species are deposited:

SMNS ..... Staatliches Museum fuer Naturkunde, Stuttgart, Germany
LM ..... The Lev Medvedev collection, Moscow, Russia

## 1. Species of the genus *Cassena* of Continental Asia and Taiwan

### A key to species [1)]

1(4) Wings absent. 8–9 antennal segments of male strongly modified. Upperside fulvous, partly darkened. The following two species may possibly be established as an independent genus. Body flattened above. Species from Nepal. (**Subgenus *Nepalocassena* subgen.nov.**)

2(3) Dirty fulvous, vertex, prothorax and elytra medially marked with dark brown to a greater of lesser degree. Antennae – Fig. 8. Aedeagus short and broad, thick in lateral view (Fig. 10). Length 3.6–4.2 mm. Antennae largely dark brownish, underside and legs partly brownish. ..... ..... ***C. antennata* Takizawa, 1988**

3(2) Fulvous, head above antennae and antennal segments 8–9 piceous, prothorax with poorly delimited brown spots. Antennae – Fig. 9. Aedeagus long and thin, very thin in lateral view (Fig. 11). Length 4.1 mm. Nepal. ..... ***C. takizawai* sp.nov.**

4(1) Wings present. Antennae simple. Body not flattened above. (**Subgenus *Cassena* s.str.**)

5(22) Upperside without metallic sheen.

6(15) Upperside entirely fulvous (or apical part of elytra more pale). Antennal segments 4 and 5 subequal.

7(8) Elytra costate at sides. Fulvous, apices of tibiae and tarsi blackish. Length 4.6 mm. Thailand. ..... ***C. costalis* sp.nov.**

8(7) Elytra with no ridges on the sides.

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[1)] The following species is unknown to me: *Solephyma bicolor* Gressitt et Kimoto, 1963; *Pacific Insects Monography* **1B:** 661. It has therefore not been included in the key:

9(10) Prothorax, elytra and underside entirely fulvous, head much darker, dark fulvous to piceous, antennae blackish with basal segments less dark, tibiae often infuscate. Aedeagus – Fig. 12. Length 3.2–4.0 mm. Taiwan. ..... ***C. sasajii*** **Kimoto, 1969**

10(9) Body fulvous including head, antennae piceous with fulvous basal segments, legs fulvous.

11(12) Elytra entirely fulvous. Length about 6 mm (this size is indicated in the description, but the type series includes 30 specimens). NE Burma (Kambaiti) ..... ***C. uniformis*** **(Bryant, 1954)**

12(11) Elytra fulvous with pale flavous apical part.

13(14) Species from China (Hainan Is). Length 4.2–5.1 mm. ..... ..... ***C. alticoides*** **(Gressitt et Kimoto, 1963)**

14(13) Species from North Vietnam (Tam Dao, 1 immature male). Aedeagus with acute triangular apex (Fig. 13). Length about 4.3 mm. ..... ..... **?*C. alticoides*** **(Gressitt et Kimoto, 1963)** (or a new species)

15(6) Elytra distinctly bicoloured.

16(17) Elytra almost round, as long as wide, piceous with very large spot just beyond humerus, apex and sutural stripe, strongly narrowed to scutellum, light fulvous (Fig. 1). Head, prothorax, scutellum and underside red-fulvous, legs red-fulvous with knees, tibiae and tarsi black. Aedeagus unknown. Length 5.5 mm. South China (Kwantung). This species possibly belongs to the genus *Cyclantipha* Laboissière, 1932. .... ..... ***C. tricolor*** **(Gressitt et Kimoto, 1963)**

17(16) Elytra elongate or elongate ovate, not less than 1.3 times as long as wide.

18(19) Scutellum black. Head and prothorax red, elytra fulvous to pale flavous, margined with black, more broadly on suture (Fig. 2). Basal impressions of prothorax sometimes strongly reduced. Aedeagus – Fig. 14. Length 3.8–5.0 mm. Thailand, Laos. ..... ***C. suturalis*** **Kimoto, 1989**

19(18) Scutellum red or fulvous. Elytral pattern different.

20(21) Body red, elytra with pale flavous subapical spot, margined with black (Figs 3,4). Antennae dark with light basal segments, tibiae and tarsi usually black. Aedeagus – Fig. 15. Length 4.5–6.3 mm. Vietnam, Laos, Thailand. (syn. *Solephyma ocellata* Gressitt et Kimoto, 1963). Feeding on *Fabaceae*, including *Mucuna*. ..... ***C. oculata*** **Laboissière, 1934**

21(20) Body reddish-brown, elytra yellowish-brown with margins narrowly infuscate or dark brown with large markings yellowish-brown (Figs 5, 6). Antennae black with 3 basal segments reddish. Legs dark brown with reddish femora. Aedeagus unknown. Length 3.6–4.4 mm. South

Vietnam. Unclear species, according to original description, near *C. oculata* Laboissière. ..... ***C. vietnamica* Kimoto, 1989**

22(5) Upperside metallic, or with at least a metallic tinge.

23(24) Upperside metallic blue or violaceous with elytral apices fulvous. Underside and legs black with metallic tinge, abdomen fulvous. Aedeagus unknown. Length 3.1–4.7 mm. South China, Laos, Thailand, Burma. (*Cassena terminalis* Gressitt et Kimoto, 1963 **syn.nov**.) ..... ..... ***C. apicalis* (Bryant, 1954)**

24(23) Prothorax red, rarely darkened. Elytra entirely metallic blue or violaceous, rarely black.

25(26) Prothorax without longitudinal basal impressions. Elytra dark blue or black, with two lateral ridges along side margin arising from humerus and vanishing beyond centre in female. Legs entirely reddish, underside reddish with dark thorax. Aedeagus unknown. Length 3.0–5.0 mm. Burma, Thailand, South Vietnam. Poorly-known species of fairly unclear generic position. ..... ***C. integricollis* (Jacoby, 1892)**

26(25) Prothorax with distinct longitudinal basal impressions. Elytra without ridges.

27(28) Apices of elytra broad and emarginated. Antennal segment 2 more than twice as short as the following segments. Underside and legs black. Head and prothorax often darkened. Apex of abdomen with hairy brushes. Aedeagus spear-like (Fig. 16). Length 6.5–7.8 mm. India, Burma, Thailand, Laos, South Vietnam. (syn. *Cneorane rubyana* Maulik, 1936; *Cassena rubyana* Kimoto, 1989). ..... ***Cneorane feae* Jacoby, 1892**

28(27) Apices of elytra narrowly rounded. Antennal segment 2 less than twice as short as the following segments. Underside and legs at least partly red. Aedeagus not spear-like. Body smaller.

29(30) Underside and legs entirely red. Body parallel-sided. Aedeagus with tridentate apex and longitudinally ridged underside (Fig. 17). Length 4.7–5.6 mm. Burma, Thailand. ..... ***C. indica* (Jacoby, 1889)**

30(29) Underside usually with red thorax and black abdomen. Legs usually with red femora and black tibiae and tarsi. Body distinctly elongate ovate, broadest at midsection.

31(32) Punctures on sides of elytra stronger and arranged in irregular series. Thorax red. Aedeagus broad, with acute triangular apex (Fig. 18). Length 4.8–6.0 mm. Burma. ..... ***C. abdominalis* (Jacoby, 1892)**

32(31) Punctures of elytra with tendency to longitudinal rows, not markedly stronger at the sides. Thorax often more or less darkened. Aedeagus long and narrow, with truncate apex (Fig.19). Length 4.8–5.7 mm. India,

Burma, Thailand, Laos, Vietnam, South China, Malacca. Feeding on Fabaceae. (syn. *Cassena tonkinensis* Weise, 1922; *Solephyma tinkhami* Gressitt et Kimoto, 1963). ..... ***C. collaris* (Baly, 1879)**

## Subgenus *Nepalocassena* subgen.nov.

**Type of subgenus:** *Cassena antennata* Takizawa, 1988.

**Diagnosis.** Upperside distinctly flattened. Frontal tubercles large, subquadrate or ovate. Antennae of male with strongly modified segments 8–9. Basal impressions of prothorax oblique (not perpendicular!) with respect to basal margin. Elytra with very feeble humeral tubercle. Wings absent.

Differs sharply from the nominative subgenus in the absence of wings and modified antennae of male. Apart from this type species, one new species of the subgenus is described immediately below.

**Distribution.** Nepal.

### *Cassena* (*Nepalocassena*) *takizawai* sp.nov.

**Material examined.** Holotype (male). Nepal, Kashi, 3 km N Dhankuta, 18.VII.1995, leg. O. Gorbunov (LM).

**Description.** Fulvous, hind part of head and antennal segments 8–11 dark brown, prothorax with 5 poorly delimited brown spots.

Head impunctate, frontal tubercles large, ovate with apex produced to very narrow interantennal space. Antennae reach apical third of elytra, proportions of segments: 10–4–5–7–6–5–5–11–9–6–9, segments 8 and 9 modified, as shown on Fig. 8. Prothorax 1.35 times as wide as long, broadest after anterior margin, surface flat, impunctate, with 3 small and round impressions (other than basal grooves): two in middle, one at base . Scutellum as long as wide, broadly rounded. Elytra 1.5 times as long as wide, broadest in apical part, surface feebly convex, humeral tubercle feeble, punctures fine, shallow and dense, interspaces lustrous. Epipleurae wide in anterior half. Segment 1 of fore- and mid-tarsi not widened. Aedeagus (Fig. 10) long and thin, longitudinally grooved along centre of underside, very thin in lateral view.

Length of body 4.1 mm.

**Distribution.** Nepal.

**Etymology.** The species is dedicated to Dr. Haruo Takizawa, a well-known specialist in the Chrysomelidae, who described the first species of this subgenus.

**Differential diagnosis.** Very alike at *C. antennata* Takizawa, 1988, differs in proportions and sculpture of prothorax and elytra and especially in quite different form of aedeagus.

### *Cassena costalis* sp.nov.

**Material examined.** Holotype (female): Thailand, Khao Sok, 8 55′N, 98 45′E, 15.XI.1995, leg. M. Mostovsky (LM).

**Description.** Fulvous with apical antennal segments darker and elytra paler, apices of tibiae and tarsi blackish.

Body comparatively narrow, elongate ovate. Head impunctate, frontal tubercles transverse, feebly convex, sharply delimited posteriorly, interantennal space convex. Antennae reach middle of elytra, proportions of segments: 18–9–14–16–16–16–16–16–15–14 (apical segment absent), preapical segments at least 3 times as long as wide. Prothorax 1.5 times as wide as long, broadest in anterior third, with produced anterior angles, surface convex, finely and sparsely punctate, with feeble basal impressions. Elytra 1.6 times as long as wide with apices broadly rounded, with sharp lateral ridge running from humerus to a little beyond centre and with traces of two more feeble and short ridges just within main ridge; space between main ridge and side margin feebly concave and impunctate, rest of surface with dense punctures partly arranged in short rows.

Length of body 4.6 mm.

**Distribution.** Thailand.

**Differential diagnosis.** Differs immediately from all species of this genus in its costate elytra.

### *Cassena apicalis* (Bryant, 1954)

*Cassena terminalis* (Gressitt et Kimoto, 1963) **syn.nov.**

**Remarks.** In the original description the colour of the underside was given as black (BRYANT 1954), while *C. terminalis* had black underside with fulvous abdomen, and this was the only difference between the two species. However, in reality, the type series of *C. apicalis* also has abdomen fulvous (Dr. Sharon Shute, personal communication). For this reason I unite these species.

### *Cneorane feae* Jacoby, 1892

*Cneorane rubyana* Maulik, 1936 (synonymized by MEDVEDEV 2002)
*Cassena rubyana*: KIMOTO (1989).

**Remarks.** This species has closed anterior coxal and basal grooves on prothorax, and because of these characters it was removed from genus *Cneorane* Baly, 1865 to *Cassena* (KIMOTO 1989). In strictly formal terms, this is correct, but this species differs from all species of *Cassena* and its generic position somewhat unclear. The basal grooves on the prothorax in this species are very feeble and sometimes absent. It also differs from typical *Cneorane* Baly, 1865 in having closed anterior coxal cavities and brushes on the apex of the abdomen; *Cneorane rubyana* Maulik, 1936 is a synonym of *Cneorane feae* Jacoby, 1892 (MEDVEDEV 2002). I exclude this species from the genus *Cassena* and return it, in preliminary fashion, to *Cneorane*.

## 2. Species of the genus *Cassena* of the islands of SE Asia, except the Philippines

### Key to species

1(2) Upperside entirely metallic blue. Prothorax 1.65 times as wide as long, finely and sparsely punctate. Elytra 1.35 times as long as wide. Median lobe of 5th abdominal sternite very short. Aedeagus – Fig. 20. Underside dark, legs fulvous. Length 2.6–3.0 mm. Ternate, Halmaheira. ..... ..... ***C. coerulea*** **(Jacoby,1894)**

2(1) Head and prothorax red or fulvous, elytra metallic blue, green, violaceous or black.

3(8) Antennae with segments 1–3 reddish, 4–8 black and 9–11 fulvous.

4(7) Elytra metallic blue. Prothorax very finely and sparsely punctate.

5(6) 3 basal antennal segments, underside and legs red-fulvous. Aedeagus widened to apex, rather broad, about 4 times as long as wide (Fig. 21). Length 3.3–3.5 mm. Sulawesi. ..... ***C. laevicollis*** **(Jacoby, 1886)**

6(5) Basal antennal segment, underside, tibiae except bases and tarsi black, antennal segments 2 and 3 more or less darkened. Aedeagus parallel-sided, about 6.5 times as long as wide (Fig. 22). Length 4.75–5.3 mm. Sulawesi. ..... ***C. apicicornis*** **Laboissière, 1932**

7(4) Elytra black. Prothorax twice as wide as long, microscopically finely punctate. Elytra finely punctate, punctures partly arranged in double or triple rows. Underside and legs fulvous. Aedeagus unknown. Length 6.3 mm. Sulawesi. ..... ***C. chapuisi*** **(Jacoby, 1886)**

8(3) Antennae with black apical segments or entirely fulvous.

9(12) Antennae entirely fulvous, sometimes apical segments a little darker. Legs fulvous. Elytra blue.

10(11) Underside black or piceous. Prothorax distinctly and closely punctate. Aedeagus – Fig. 23. Length 3.3–5.2 mm. Sulawesi. ..... ..... ***C. celebensis*** **(Jacoby, 1886)**

11(10) Underside fulvous. Prothorax with very small and feeble punctures, almost smooth. Elytra with very fine and moderately dense punctures. Aedeagus unknown. Length 6 mm. ..... ***C. vorax*** **Weise, 1908**

12(9) Antennae black with fulvous base.

13(19) Underside fulvous.

14(15) Prothorax distinctly punctate, 1.75 times as wide as long. Elytra 1.35 times as long as wide, strongly and densely punctate, partly arranged in short rows. Antennae of male as long as body. Fifth abdominal sternite

with rounded hind margin and very short central lobe. Aedeagus (Fig. 24) narrow. Length 1.9–2.2 mm. Tenimber. ..... ***C. punctatissima*** **(Jacoby, 1894)**

15(14) Prothorax with sparse microscopic punctures or almost impunctate. Elytra greenish-blue, sometimes with bronze tint. Body much larger. Elytra 1.3–1.4 times as long as wide.

16(17,18) Species from Java. Antennal segments 2–4 subequal (1–1.1–1.2). Prothorax 1.7–1.8 times as wide as long. Length 4.25–5.0 mm. ..... ***C. punctata*** **Laboissière, 1932**

17(16,18) Species from Mysol. Prothorax 1.6–1.7 times as wide as long. Aedeagus long and thin, about 7.5 times as long as wide, underside convex, roof-like (Fig. 25). Length 3.5 mm. ..... ***Cassena mysolensis*** **Weise, 1922**

18(16,17) Species from Sulawesi. Antennal segment 4 twice as long as 2 (segments 2–4 proportions 1–1.5–2). Prothorax 1.9 times as wide as long. Aedeagus broad, about 4 times as long as wide, underside flat (Fig. 26). Length 4.5 mm. ..... ***Cassena*** **sp.**

19(13) Underside at least partly dark.

20(23) Prothorax distinctly punctate.

21(22) Prothorax distinctly and very finely punctate. Antennae black with 4 basal segments fulvous. Elytra bluish-green. Length 5 mm. Sulawesi. .... ..... ***C. ribbei*** **Weise, 1892**

22(21) Prothorax with moderately large and dense punctures and acute basal angles. Antennae of female black with 4 basal segments fulvous, males have also segments 5–7 more or less fulvous. Elytra metallic green. Aedeagus parallel-sided with triangular apex, base not widened, underside flat, especially in apical half (Fig. 27); one specimen has a longitudinal impression along the basal half of the underside. Length of males 3.4–3.6 mm, females 4.1–4.4 mm. Sulawesi (Tora). ..... ***C. ribbei*** **Weise, 1892**

23(20) Prothorax with very fine and sparse punctures or indistinctly punctate.

24(25) Elytra bronze green, scutellum piceous or black, legs fulvous. Prothorax almost impunctate. Length 3.5–4.0 mm. Java. ..... ***C. aeneipennis*** **Laboissière, 1932**

25(24) Elytra blue or violaceous. Legs usually with red femora and black tibiae and tarsi.

26(27) Underside usually black. Punctures of elytra with tendency to longitudinal seriation, not markedly stronger at the sides. Aedeagus long

and narrow, with truncate apex (Fig. 19). Length 6.0–7.2 mm. Sumatra, Java, Malacca. ..... ***C. collaris robusta* Jacoby, 1896**

27(26) Underside fulvous. Body more elongate and narrower, brighter blue and more strongly punctate-striate. Aedeagus – Fig. 28. Length 6.0 mm. Borneo (Sarawak). ..... ***C. brooksi* Bryant, 1962**

### *Cassena collaris robusta* (Jacoby, 1896) (resurrected from synonymy)

*Solenia robusta* Jacoby, 1896
*Cassena collaris* (Baly, 1879): HEIKERTINGER & CSIKI (1940).

**Remarks.** *Solenia robusta* Jacoby, 1896 was synonymized with *Cassena collaris* (Baly, 1879) by HEIKERTINGER & CSIKI (1940). I studied a male syntype of *S. robusta* and found that it has same aedeagus as *Cassena collaris*. However, the body of the specimens known from Malacca, Sumatra and Java, is larger than that found in the continental population (6.0–7.2 mm) and they very often have entirely black antennae and hind legs. Because of geographical separation and the differences cited I suggest reclassifying the insular populations (the former *S. robusta*) as a subspecies of *C. collaris*.The nominate subspecies *Cassena collaris collaris* (Baly, 1879) is composed of continental populations.

## 3. Species of the genus *Cassena* of the Philippines and Sulu Island

### Key to species

[Head, prothorax and scutellum red or fulvous red, antennae black with basal segments red.]

1(2) Elytra metallic blue with apex and narrow lateral margin red (Fig. 7). Antennae red with darkened apical segments; underside and legs red. Aedeagus (Fig. 29) curved in apical third to less than a right angle. Length 6.1 mm. Mindanao. ..... ***C. lateralis* sp.nov.**

2(1) Elytra entirely metallic blue. Aedeagus feebly curved in lateral view.

3(4) Thorax red, abdomen black, legs black with fore- and mid-femora red. Antennal segment 4 twice as long as 2. Prothorax widest in anterior third, with acute anterior angles. Aedeagus (Fig. 30) with triangular apex and moderately broad base. Length 6.1 mm. Mindanao. ..... ***C. laysi* sp.nov.**

4(3) Underside and all femora red.

5(8) Tibiae and tarsi black.

6(7) Apices of elytra attenuate. Aedeagus broader, about 4–5 times as long as width in middle (Fig. 31). Body larger, 5.0–6.2 mm. Leyte. ..... ..... ***C. leyteana* L. Medvedev, 1995**

7(6) Apices of elytra not attenuate. Aedeagus narrow, about 8 times as long as width in middle (Fig. 32). Length 4.0 mm. Luzon (Buraned), 1 male. ..... ..... ***Cassena* sp.**

8(5) Legs entirely fulvous or with darkened apices of tibiae and tarsi. All the following species are represented by single males.

9(10) Aedeagus rather broad, about 4.5 times as long as wide, at base about twice as wide as in middle (Fig. 33). Length 4.8 mm. Mindoro. ..... ..... ***Cassena* sp.**

10(9) Aedeagus long and thin, 7–8 times as long as width in middle.

11(12) Aedeagus at base twice as wide as in middle (Fig. 34). Antennae black with fulvous basal segments. Length 4.2 mm. Panay. ..... ***Cassena* sp.**

12(11) Aedeagus at base about 1.5 times as wide as in middle (Fig. 35). Antennae fulvous to dark fulvous. Length 4.9 mm. Sulu I. (Mangola). ... ..... ***Cassena* sp.**

### *Cassena lateralis* sp.nov.

**Material examined.** Holotype (male): Philippines, Mindanao, S. Cotabato Prov., Manobo Tasaday Forest Reserve, Mt. Tasaday, 3.II.–10.III.1991, leg. P. Lays (LM).

**Description.** Body red, apical antennal segments slightly darkened, elytra metallic blue with apices, narrow lateral margin, poorly delimited from main surface, and epipleurae red (Fig. 7).

Body comparatively narrow, elongate ovate. Head finely and sparsely punctate, frontal tubercles convex and sharply delimited, interantennal space rather broad and almost flat. Antennae almost reach middle of elytra, proportions of segments: 14–7–9–9–11–11–11-11–10–9–12, preapical segments about 2.5–3 times as long as wide. Prothorax 1.35 times as wide as long, broadest in midsection, with produced and acute anterior angles, surface convex, very finely punctate, basal grooves about 1/7 of prothoracic length in middle. Elytra 1.6 times as long as wide, with apices elongate and narrowly rounded, surface distinctly and densely punctate. Segment 1 of fore- and mid-tarsi widened, broader than long. Aedeagus in lateral view strongly curved in apical 2/5, almost forming a right angle, with triangular apex, on underside flattened in apical half, with short longitudinal ridge (Fig. 29).

Length of body 6.1 mm.

**Distribution.** Philippines.

**Differential diagnosis.** Resembles continental species *C. apicalis* (Bryant, 1954), but differs in having red lateral margin of elytra and underside.

### *Cassena laysi* sp.nov.

**Material examined.** Philippines, Mindanao, S. Cotabato Prov., Manobo Tasaday Forest Reserve, Mt. Tasaday, 3.II.–10.III.1991, leg. P. Lays (LM).

**Description.** Red, antennae black with two basal segments red, abdomen, tibiae, fore- and mid-tarsi and hind legs black.

Body ovate, more narrowed at the front than at the rear. Head finely and very sparsely punctate, frontal tubercles convex, obliquely placed and partly produced into rather narrow interantennal space, well delimited, especially posteriorly. Antennae reach anterior third of elytra, proportions of segments: 10–4–7–9–7–8–8–7–7–7–10, preapical segments about 2.5 times as long as wide. Prothorax 1.4 times as wide as long, broadest in anterior third, with produced anterior angles, surface convex, very finely and sparsely punctate, basal grooves about 1/4 of prothoracic length at midsection. Elytra 1.4 times as long as wide, with apices not elongate, surface finely and rather densely punctate, punctures partly arranged in short rows. Segment 1 of fore- and mid-tarsi moderately widened, triangular, as long as wide. Aedeagus (Fig. 30) about 3 times as long as width in middle, with elongate triangular apex and slightly widened base (1.2 times as wide as in middle).

Length 4.0 mm.

**Distribution.** Philippines.

**Etymology.** The species is named after its collector.

**Differential diagnosis.** Near *C. leyteana* L. Medvedev, 1995, differs in colour of legs and form of aedeagus.

## 4. Species of the genus *Cassena* of New Guinea, including the Aru Islands

### Key to species [2)]

1(2) Head and upperside metallic bronze, antennae and legs fulvous, underside fuscous. Prothorax with very minute scattered punctures. Length 4.5 mm. Papua New Guinea. ..... ***C. montana* Bryant, 1962**

2(1) Upperside bicoloured.

3(6) Elytra bicoloured.

4(5) Body fulvous, including antennae; elytra with basal quarter and transverse band beyond centre, interrupted on suture, black. Prothorax impunctate. Length 5.0 mm. New Guinea (Dorey). ..... ..... ***C. wallacei* Bryant, 1962**

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[2)] The following species are unknown to me; they have therefore not been included in the key: *Cassena concolor* Bryant, 1962: *Ann. Mag. Nat. Hist.* **(13)5:** 371; *Cassena leopoldi* Laboissière, 1932: *Mem. Mus. Hist. Nat. Belgique, hors ser.* **4(4):** 180.

5(4) Elytra metallic blue with fulvous apex. Prothorax red-fulvous with 4 indistinct piceous spots, finely punctate, 2.2 times as wide as long. Elytra 1.2 times as long as wide. Apical sternite of male with very short and broad apical lobe. Aedeagus (Fig. 36) with 3 ridges on underside. Length 3.7 mm. Thorax black. New Guinea. ..... ***C. terminata*** **(Jacoby, 1894)**

6(3) Elytra single-coloured.

7(16) Antennae entirely fulvous or dark fulvous, in one case fulvous with fuscous apices of segments.

8(11) Elytra without distinct metallic colour, with only feeble metallic lustre, not appearing darker than prothorax. Aedeagus with 3 ridges on underside.

9(10) Body orange-yellow, elytra darker, yellowish-brown. Prothorax feebly cordiform with acute hind angles. Length of moderately long aedeagus 1.8 mm (Fig. 37). Length of body 6.3–7.0 mm. Irian Yaya. ..... ..... ***C. iriana*** **sp.nov.**

10(9) Body brown, head and prothorax fulvous. Prothorax not cordiform, with obtuse hind angles. Length of very long aedeagus 2.2 mm (Fig. 38). Length of body 5.8–6.0 mm. Papua New Guinea. ..... ***C. riedeli*** **sp.nov.**

11(8) Elytra with distinct metallic colour, sharply contrasting with fulvous or reddish prothorax.

12(15) Elytra metallic bronze.

13(14) Underside and legs fulvous. Prothorax very minutely punctate. Elytra very closely punctured, dull metallic bronze. Length 5.0 mm. Papua New Guinea. ..... ***C. cheesmanae*** **Bryant, 1962**

14(13) Underside and legs black. Antennal segments with fuscous apices. Prothorax impunctate. Elytra less closely punctate, metallic bronze, lustrous. Length 5.0 mm. Papua New Guinea. ..... ..... ***C. flavicollis*** **Bryant, 1962**

15(12) Elytra metallic blue or violaceous. Underside entirely or mostly black, legs fulvous with hind femora more or less black. Prothorax 1.9–2.1 times as wide as long, impunctate. Elytra with fine punctures placed in close, almost regular rows. Fifth abdominal sternite feebly arcuate, with very short apical lobe. Aedeagus (Fig. 39) with 3 ridges on underside. Length 5.5 mm. New Guinea (*C. femorata* (Jacoby, 1904) **syn.nov.**). ..... ..... ***C. dilaticollis*** **(Jacoby, 1894)**

16(7) Antennae black with 3.4 basal segments fulvous, in one case fulvous with fuscous apices of segments. Elytra metallic blue or violaceous.

17(18) Prothorax except usual basal impressions with longitudinal impressed lines along side margin, starting near hind angles and dividing more or

less convex lateral callus. Underside and legs fulvous with darkened abdomen and black tarsi. Prothorax twice as wide as long, with acute anterior and obtuse posterior angles, surface very finely punctate. Elytra with more or less geminate rows of fine punctures. Length of body 3.5–5.5 mm. New Guinea (Humboldt Bay and Dorey). ..... ..... ***C. sulcicollis* Laboissière, 1932**

18(17) Prothorax with impressed line along side margin feeble, short, sometimes indistinct, lateral callus undeveloped. Underside black.

19(20) Species from Aru Island (Wokan). Prothorax 1.85 times as wide as long, with all but indistinct punctures. Elytra distinctly, but not closely, punctate, partly in roughly regular rows. Hind margin of 5th abdominal sternite of male almost straight, with very small and short apical lobe. Aedeagus (Fig. 40) narrow, without transparent window before apex, lacking sculpture on underside, smooth and evenly convex. Length of body 2.1–3.2 mm. Indication for New Guinea needs confirmation, for Sulawesi (LABOISSIÈRE 1932) very doubtful. ..... ..... ***C. aruensis* (Jacoby, 1886)**

20(19) Species from New Guinea.

21(22) Aedeagus without ridges on smooth and convex underside, with transparent window before apex (Fig. 41). Prothorax 1.85 times as wide as long, with distinct, sparse punctures. Elytra 1.4 times as long as wide. Fifth abdominal sternite with very small, short apical lobe. Length 2.2–2.3 mm. ..... ***C. elongata* (Jacoby, 1894)**

22(21) Aedeagus, if known (*C. albertisi*, Fig. 42), with 3 ridges on underside. Type of *C. intermedia* (single female) seems to be identical with type of *C. albertisi*; *C. papuana* has been cited as a synonym of *C. intermedia*. Body large, 4.2–5.3 mm. All three species might possibly be united. ..... ***C. albertisi* (Jacoby, 1886), *C. papuana* (Jacoby, 1904), *C. intermedia* (Jacoby, 1904)**

### *Cassena sulcicollis* Laboissière, 1932

**Remarks.** According to LABOISSIÈRE (1932), this species differs from all others of the genus in the specific structure of its prothorax, represented with an impressed line parallel to the side margin and dividing the lateral callus. In reality, practically all species from New Guinea and many species from other islands have the same impressed line, usually less developed and sometimes almost indistinct.

### *Cassena iriana* sp.nov.

**Material examined.** Holotype (male): Irian Yaya, Yayawijaya, Langda, 2100–2300m, 27–28.VIII.1992, leg. A. Riedel (SMNS). Paratypes: same locality and date, 4 females (SMNS, LM).

**Description.** Orange-yellow, elytra darker, yellowish-brown with feeble metallic lustre.

Body elongate ovate, more narrowed towards the front than to the rear. Head impunctate, frontal tubercles subtriangular, flat, well delimited, reaching apical third of elytra, proportions of segments: 13–7–9–9–9–9–7–7–7–6–9, preapical segments about 3 times as long as wide. Prothorax 1.6 times as wide as long, widest in anterior third, side margins rounded but feebly emarginated before acute hind angles; because of this, prothorax looks slightly cordiform; anterior angles not produced; surface flattened, finely punctate, with more or less distinct longitudinal sulcus along side margin, basal grooves about 1/5 of prothoracic length in middle. Elytra 1.3 times as long as wide, broadest in middle, surface with moderately strong and rather dense punctures, not arranged in rows, clear or otherwise. Aedeagus (Fig. 37) thin, underside with sharp lateral and central ridges, length 1.8 mm.

Length of body 6.3–7.0 mm.

**Distribution.** New Guinea: Irian Yaya.

**Differential diagnosis.** Differs markedly from all known species in colour of upperside, with elytra not significantly darker than prothorax.

### *Cassena riedeli* sp.nov.

**Material examined.** Holotype (male): Papua New Guinea: Morobe, Wau, Mt. Kaindi, 1850–2150 m, 8.X.1992, leg. A. Riedel (SMNS). Paratype: same locality, 1550 m, 7.X.1992, 1 female, (LM).

**Description.** Brown, head and prothorax fulvous, elytra with very feeble metallic lustre, prothorax and elytra contrast more if compared with preceding species.

Body ovate. Head as in preceding species, antennae reach middle of elytra, proportions of segments: 9–4–6–7–7–7–7–7–7–7–9, preapical segments about 3 times as long as wide. Prothorax twice as wide as long, widest in midsection, not emarginate before obtuse hind angles, anterior angles not produced, surface moderately convex, with same sculpture as in preceding species. Elytra as in preceding species. Aedeagus thin and very long, with sharp lateral and central ridges, length 2.2 mm.

Length of body 5.8–6.0 mm.

**Distribution.** Papua New Guinea.

**Etymology.** The species is named after its collector.

**Differential diagnosis.** Very near to *C. iriana* sp.nov., differs in proportions of antennal segments, non-cordiform prothorax, small difference in colour and size of body and especially in very long aedeagus.

## 1. Species of the genus *Cassena* of Australia

### *C. cowleyi* (Blackburn, 1896)

**Remarks.** The only species known to date.

Head, prothorax and scutellum fulvous red, antennae black with three basal segments flavous, elytra dark blue, irregularly punctate.

Length about 5 mm.

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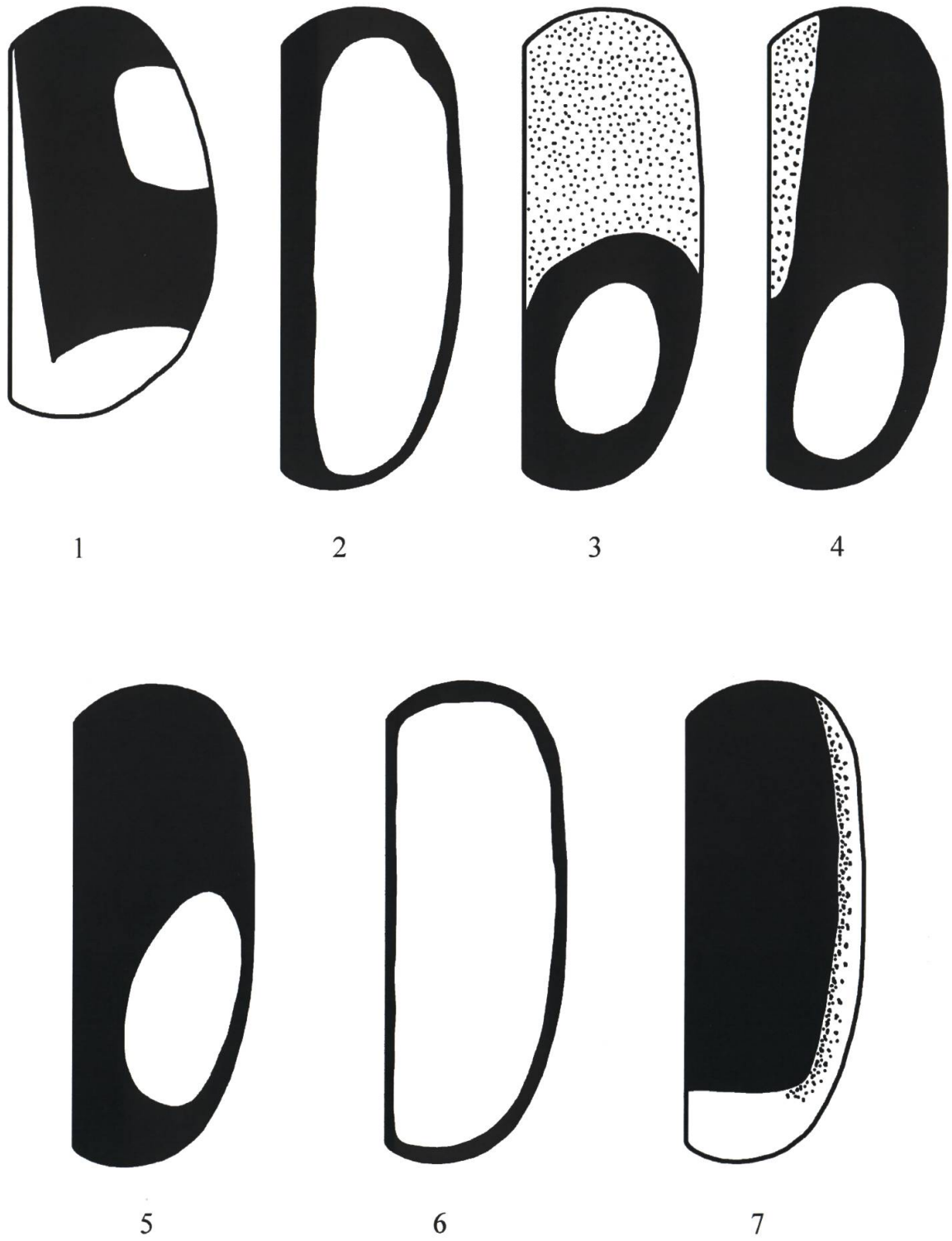
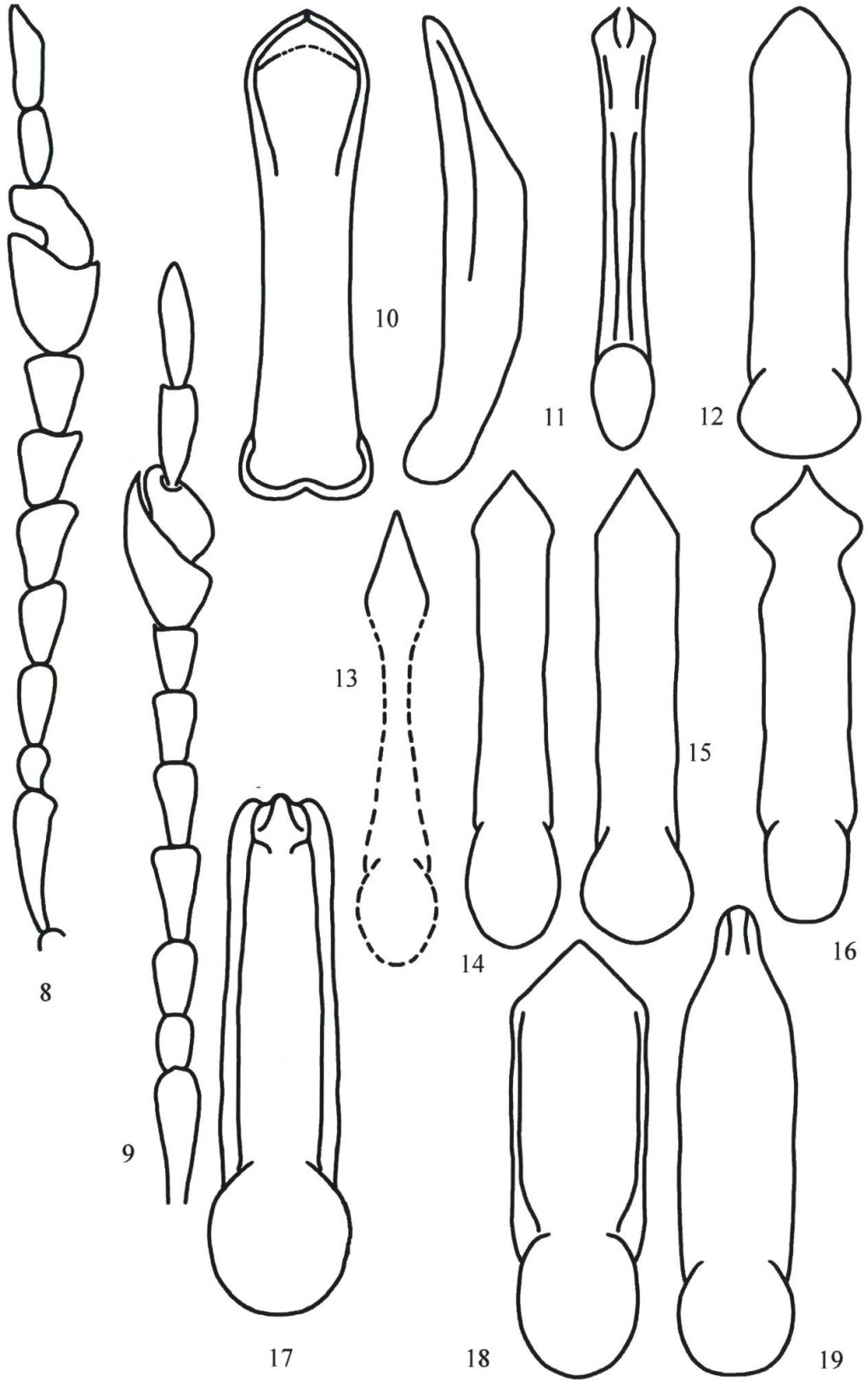
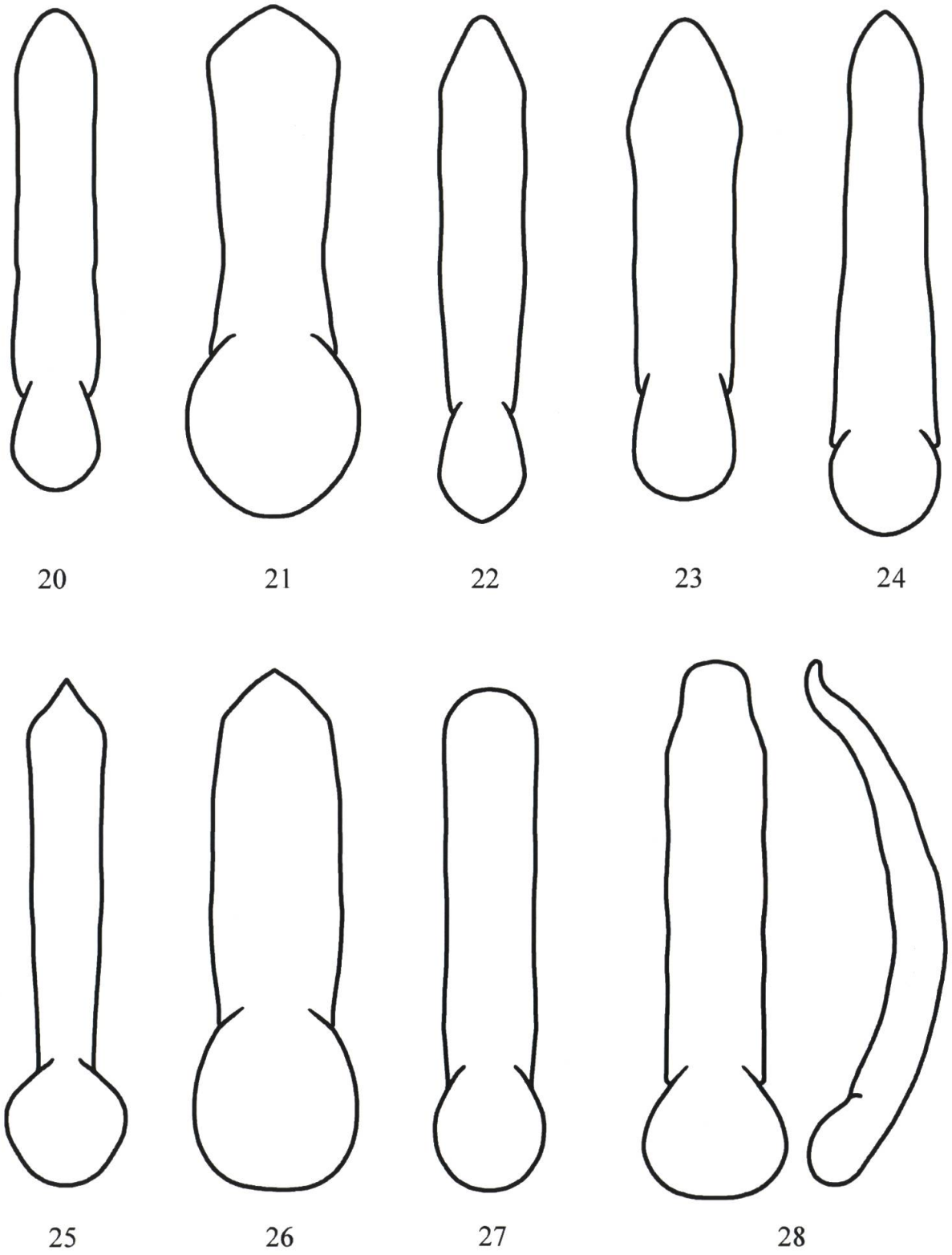


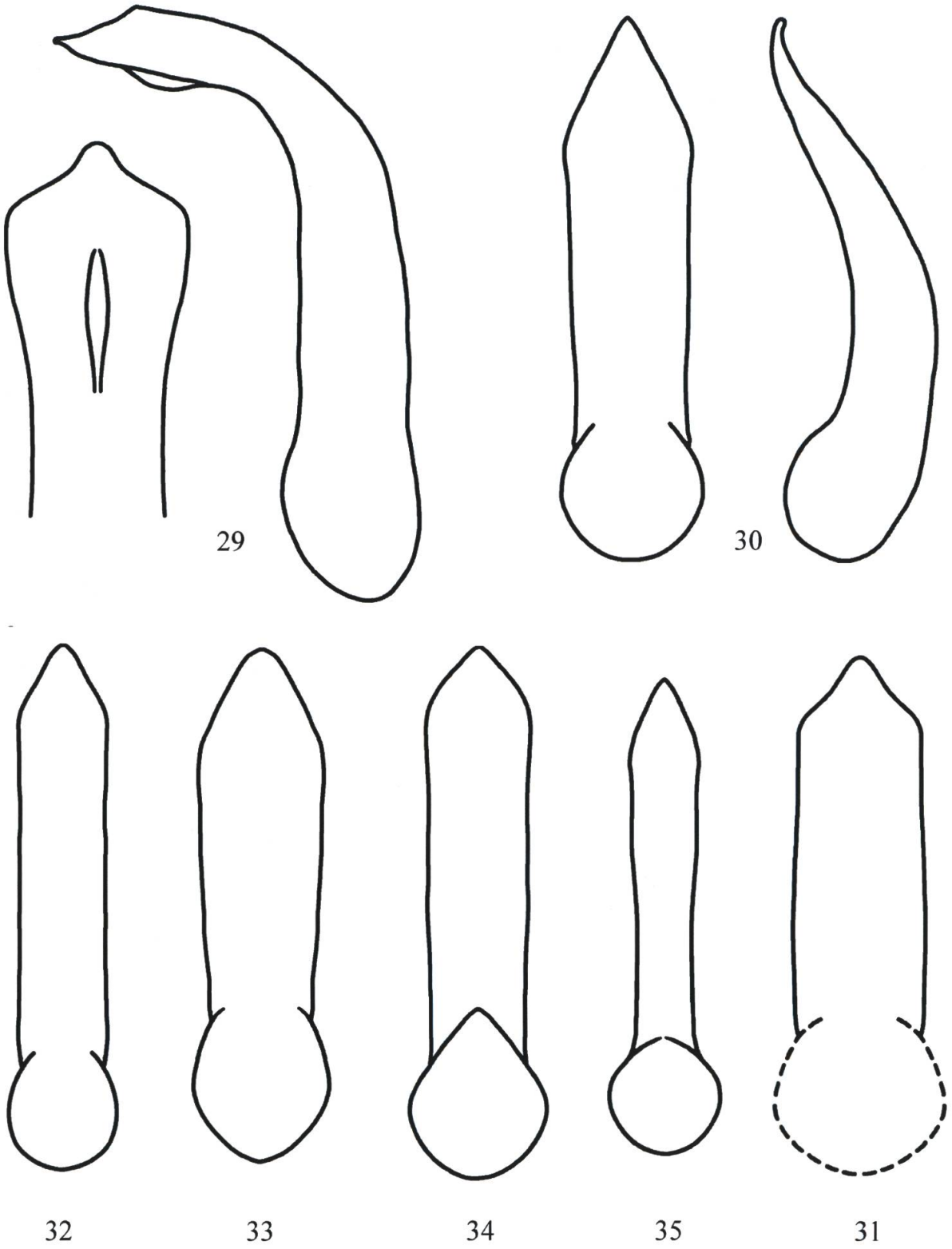

**Figs 1–7.** 1–7, Elytral pattern: 1 – *C. tricolor* (Gressitt et Kimoto); 2 – *C. suturalis* Kimoto; 3, 4 – *C. oculata* Laboissière; 5, 6 – *C. vietnamica* Kimoto; 7 – *C. lateralis* sp.nov.



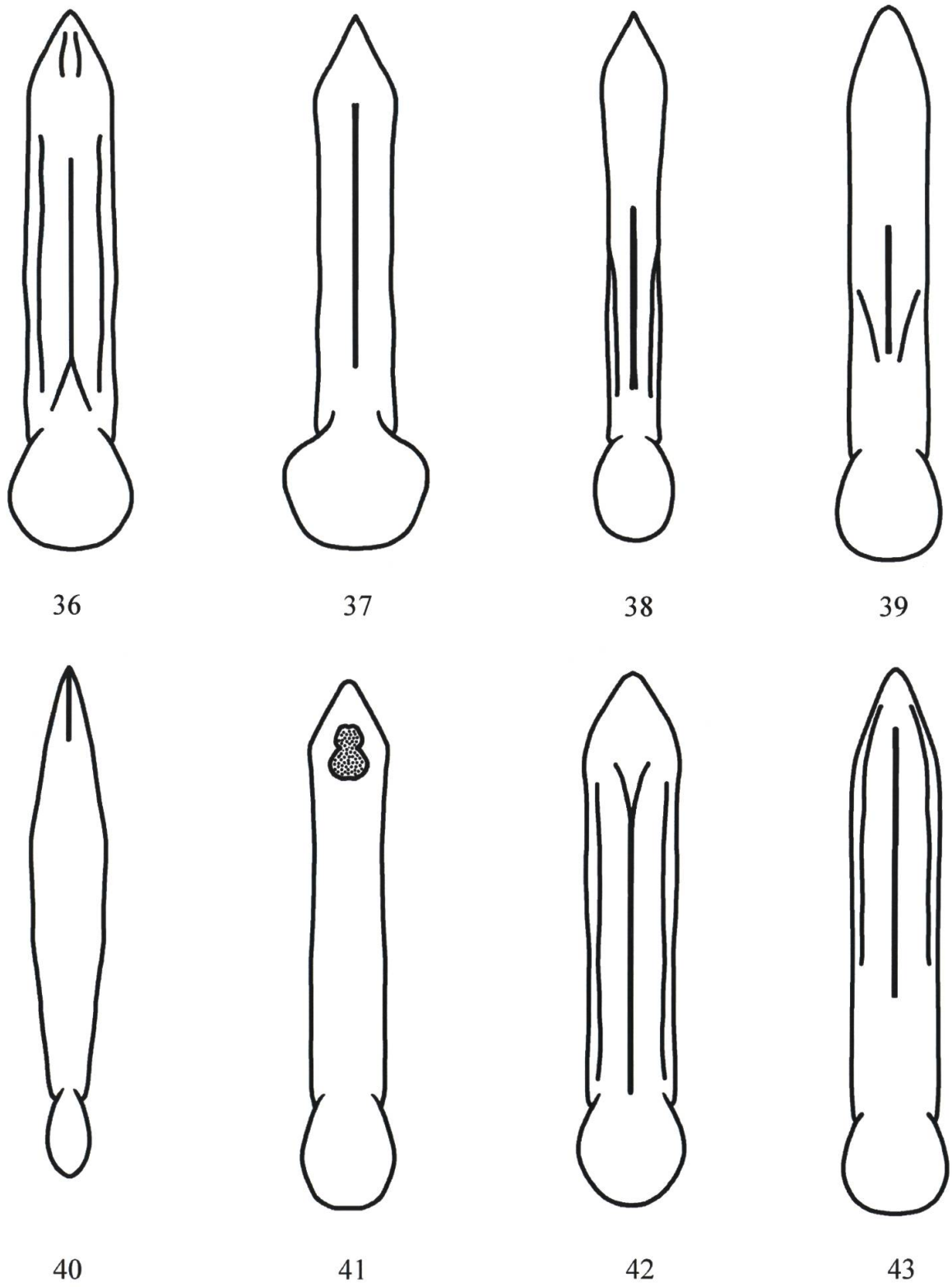

**Figs 8–19.** 8–9, Antennae: 8 – *C antennata* Takizawa, type; 9 – *C. takizawai* sp.nov. 10–19, Aedeagi: 10 – *C. antennata* Takizawa, type (dorsal, lateral); 11 – *C. takizawai* sp.nov.; 12 – *C. sasajii*, type; 13 – *C. alticoides* (Gressitt et Kimoto); 14 – *C. suturalis* Kimoto; 15 – *C. oculata* Laboissière; 16 – *Cneorane feae* Jacoby; 17 – *Cassena indica* (Jacoby); 18 – *C. abdominalis* (Jacoby); 19 – *C. collaris* (Baly).




**Figs 20–28.** Aedeagi: 20 – *C. coerulea* (Jacoby), type; 21 – *C. laevicollis* (Jacoby), type; 22 – *C. apicicornis* Laboissière; 23 – *C. celebensis* (Jacoby), type; 24 – *C. punctatissima* (Jacoby), type; 25 – *C. mysolensis* Weise, type; 26 – *C.* sp., Sulawesi; 27 – *C. ribbei* Weise; 28 – *C. brooksi* Bryant (dorsal, lateral).




**Figs 29–35.** Aedeagi: 29 – *C. lateralis* sp.nov. (dorsal, lateral); 30 – *C. laysi* sp.nov. (dorsal, lateral); 31 – *C. leyteana* L. Medvedev; 32 – *C.* sp., Luzon; 33 – *C.* sp., Mindoro; 34 – *C.* sp., Panay; 35 – *C.* sp., Sulu.




**Figs 36–43.** Aedeagi: 36 – *C. terminata* (Jacoby), type; 37 – *C. iriana* sp.nov.; 38 – *C. riedeli* sp.nov.; 39 – *C. dilaticollis* (Jacoby), type; 40 – *C. aruensis* (Jacoby), type; 41 – *C. elongata* (Jacoby), type; 42 – *C. albertisi* (Jacoby), type; 43 – *C. femorata* (Jacoby), type.