

Study of Tenebrionid Fauna of Sulawesi

IV. The Genus *Tetragonomenes* CHEVROLAT, 1878

(Coleoptera, Tenebrionidae, Cnodalonini)

Kiyoshi ANDO¹⁾ and Ottó MERKL²⁾

¹⁾ Entomological Laboratory, Faculty of Agriculture, Ehime University
Tarumi 3–5–7, Matsuyama, 790–8566 Japan

²⁾ Department of Zoology, Hungarian Natural History Museum
H–1088 Budapest, Baross utca 13, Hungary

Abstract The genus *Tetragonomenes* CHEVROLAT, 1878 of Sulawesi, Indonesia is revised. Twenty-one species are recognised, of which 14 species are described as new: *Tetragonomenes caeruleicollis* sp. nov., *T. conspersus* sp. nov., *T. cylindraceus* sp. nov., *T. electris* sp. nov., *T. falsocrenatus* sp. nov., *T. fossiger* sp. nov., *T. gibbulus* sp. nov., *T. grimmi* sp. nov., *T. quadricollis* sp. nov., *T. satorum* sp. nov., *T. schawalleri* sp. nov., *T. septentrionalis* sp. nov., *T. taoi* sp. nov. and *T. yamasakoi* sp. nov. *Tetragonomenes viridans* (FAIRMAIRE, 1898) is redescribed based on the specimens determined by the authors, and two species groups in the genus *Tetragonomenes* are discussed. A key to all the Sulawesi species is provided, and the habitus and male genitalia of the newly described species together with the type species, *Tetragonomenes semiviridis* CHEVROLAT, 1878 are illustrated.

Introduction

The genus *Tetragonomenes* CHEVROLAT, 1878 belonging to the tribe Cnodalonini is widely distributed throughout the Oriental Region, a part of the Palaearctic Region and north of the Australian Region, and consisted 56 species heretofore.

The Sulawesi fauna of this genus has been reviewed by ANDO (2011) who recognised seven species. In this paper, we add 14 species new to this fauna, and provide a key to the species of this island.

Abbreviation applied in the descriptions: EL — length of elytra along midline; EW — maximum width of elytra; IE — distance between eyes; PL — length of pronotum along midline; PW — maximum width of pronotum; TD — transverse diameter of an eye in dorsal view.

Acronyms of specimen depositories: CKAO — private collection of Kiyoshi ANDO, Osaka, Japan; EUMJ — Ehime University Museum, Matsuyama, Japan; CRGN — private collection of Dr. Roland GRIMM, Neuenbürg, Germany; HNHM — Hungarian Natural History Museum; CERL — private collection of Dr. Enrico RUZZIER, London; SMNS — Staatliches Museum für Naturkunde, Stuttgart.

Genus *Tetragonomenes* CHEVROLAT, 1878

Tetragonomenes CHEVROLAT, 1878: clii. Type species: *Tetragonomenes semiviridis* CHEVROLAT, 1878.

Tetragonomecus RYE, 1880: 87. (unjustified emendation).

Obriomaia GEBIEN, 1927: 45. Type species: *Eucyrtus subcostatus* FAIRMAIRE, 1893.

Body oblong to oblong-oval, rarely elongate or cylindrical; colour variable, often with metallic sheen. Head transverse, normally horizontal, and rarely vertical in lateral view, sloping forwards, rounded or trapezoidal in anterior half; clypeus developed; genae small, narrower or as wide as an eye;

postgenae neither thickened nor produced; frons and vertex punctate, frons sloping towards fronto-clypeal suture and laterad into eyes; space between frons and eyes separated by inner ocular sulci; in some species, frons and vertex extremely convex, lateral margins of frons distant from eyes, and deeply excavate below lateral margins, and most of them lacking inner ocular sulci; eyes situated lateral, emarginate in front by genae; antennae short, with distal five or six antennomeres dilated and forming club; labrum transverse, sinuate at middle of apex, exposed only in apical place; fronto-clypeal membrane entirely concealed; labium transversely quadrate, densely pubescent along apical margin; glossa strongly divergent anteriorly; ultimate labial palpomere oblong, longer than wide; mentum variable in shape, with median carina and lateral excavations; submentum flat, semicircular or obtusoid; gula triangular, microsculptured, outer area of suture asperate or coarsely pubescent; maxillae small, galea oblong-oval, tumid apically, shorter than lacinia, cardo semicircular, stipes large and triangular, palpifer with two long hairs, ultimate maxillary palpomere triangular or securiform, longer than wide, rarely wider than long; mandibles asymmetrical, narrow in right mandible, bifurcate at apex, mola oval, occupying almost basal third, inner margins bearing large prosthema with apical setae.

Pronotum transverse, quadrate or trapezoidal, convex; anterior margin emarginate or truncate, sometimes weakly produced forwards, weakly beaded laterally; lateral and basal margins beaded; lateral margins arcuate, undulate or rarely not undulate, sometimes sinuate before base, inner portions along lateral beads frequently narrowly depressed or sulcate; anterior angles rounded and not produced; posterior angle angulate.

Elytra oblong, sometimes spotted or fasciate, with eight or nine punctate striae; humeral calli present; epipleuron not beaded beside metepisternum.

Prosternum shorter than procoxae; prosternal process variable in shape, frequently adunc inwards. Mesoventrite narrow, with V-shaped ridge of various shape. Metaventrite convex medially, furnished with punctures and/or rugose. Abdominal ventrites compactly articulate, punctate and/or rugulose, in some cases fifth ventrite bearing accessories of secondary sexual dimorphism.

Defensive glands compactly annulate throughout, collecting ducts distinct.

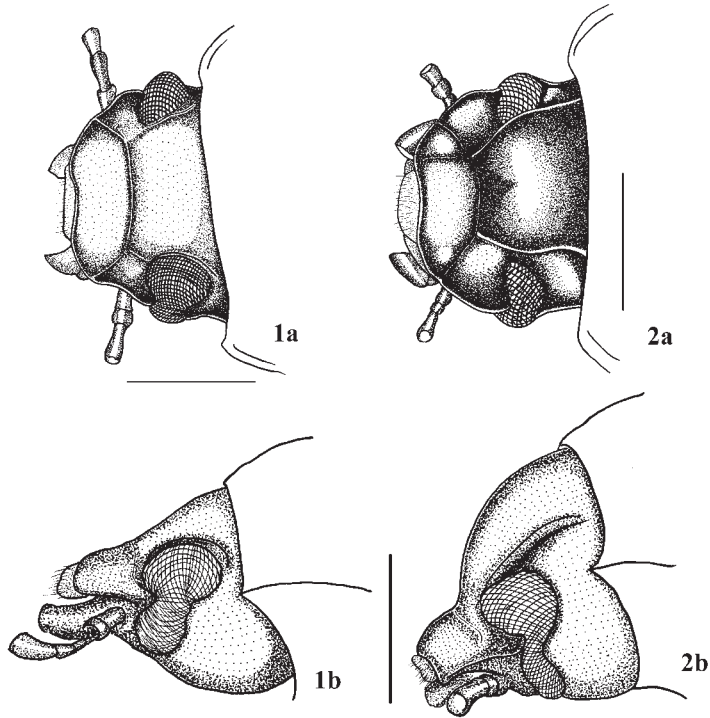
Male genitalia simple, shape of parameres variable.

Female genitalia with ovipositor elongate, slightly sclerotised; coxites with 3rd and 4th lobes fused; gonostyli situated apicolateral, paraproct elongate, very long, spermathecal accessory glands arising from apical part of bursa copulatrix, devoid of primary bursa copulatrix; spermatheca covered by very delicately membranous capsule.

Legs robust to slender; femora thickened, anterior margins of profemora, posterior margins of meso- and metafemora ancipital apically, often with sexually dimorphic tuft; tibiae weakly incurved or straight, sometimes decorated with sex-linked tufts, emargination, sulcus, and pubescence.

Diagnosis. Characteristics of this genus partly overlap with other genera, such as *Augoresthus*, *Plamius*, *Simalura*, *Chariotheca* and *Apteromaia* in the tribe Cnodalonini. This genus has no produced anterior angles of pronotum except for one species *T. acutangulus* (GEBIEN, 1913), which might belong to another genus.

As it was already suggested by ANDO (2011), the genus *Tetragonomenes* can be divided into two groups by the structure of head as shown in Figs. 1–2. Members of the first group have weakly to moderately convex frons and vertex (Figs. 1a–b), with lateral margins of frons separated from eyes by narrow inner ocular sulcus. The second group (Figs. 2a–b) is characterized by extremely convex frons and vertex (similar to a dolphin head in lateral view), with lateral margins of frons distinctly produced laterad, and far from inner margins of eyes, deeply excavate below the produced lateral margins of frons, space between eyes and excavations without inner ocular sulci normally, but rarely recognisable rudimental ocular sulci (e.g. *T. septentrionalis* sp. nov.). Therefore, the inner ocular sulcus and lateral



Figs. 1–2. Head of *Tetragonomenes* spp. — 1a–b, *Tetragonomenes viridans* (FAIRMAIRE, 1898), a: latero-dorsal view, b: lateral view; 2a–b, *T. andoi* MASUMOTO, 1996, a: latero-dorsal view, b: lateral view. Scales: 1 mm.

excavation of frons are individually independent.

Tetragonomenes semiviridis CHEVROLAT, 1878, which is the type species of the genus, and most of the *Tetragonomenes* species, including 13 species of Sulawesi belong to the first group. On the other hand, eight species from Sulawesi, two species from Japan, one species from Taiwan and some undescribed species from Malay Archipelago and Borneo belong to the second group. For the Sulawesi species, the two groups are arranged as follows: The first group: *T. caeruleicollis* sp. nov., *T. conspersus* sp. nov., *T. cyanopterus* ANDO, 2011, *T. falsocrenatus* sp. nov., *T. gibbulus* sp. nov., *T. grimmi* sp. nov., *T. quadricollis* sp. nov., *T. robusticeps* ANDO, 2011, *T. saitorum* sp. nov., *T. schawalleri* sp. nov., *T. taoi* sp. nov., *T. viridans* (FAIRMAIRE, 1898) and *T. yamasakoi* sp. nov.; The second group: *T. andoi* MASUMOTO, 1996, *T. banaszkieviczae* ANDO, 2011, *T. cupreomicans* ANDO, 2011, *T. cylindraceus* sp. nov., *T. electris* sp. nov., *T. fossiger* sp. nov., *T. septentrionalis* sp. nov. and *T. yukae* MASUMOTO, 1996.

KASZAB (1941) described *Tetragonomenes palpalis* from Taiwan, which belongs to the second group. He did not mention the sulci of frons and the peculiarity of strongly convex frons, but noted that this species has very peculiar ultimate palpomere (“Diese Art stelle ich mit Vorbehalt in die Gattung *Obriomaia* [= *Tetragonomenes*] GEB., weil die Palpenbildung so charakteristisch ist, daß für diese Art auf Grund dieses Merkmales eine neue Gattung aufgestellt werden muß”). This characteristic means that the ultimate palpomere is very strongly dilated and wider than long. We think it as one of the important features to define the second species group, and most of the Sulawesi species of

this group have widened ultimate palpomere, whilst only one species, *Tetragonomenes andoi* MASUMOTO, 1996 has the elongate ultimate palpomere.

In spite of the clear difference between these two groups, both of them belong to the genus *Tetragonomenes* because the infrageneric variations of Cnodalonini are constantly rich and sometimes overlap the characteristics of the genera.

1. *Tetragonomenes viridans* (FAIRMAIRE, 1898)

(Figs. 1a–b, 3, 13–14)

Eucyrtus viridans FAIRMAIRE, 1898: 393.

Tetragonomenes viridans (FAIRMAIRE, 1893): KASZAB, 1983: 131; ANDO, 2011: 225.

We could not find the type specimen of *Tetragonomenes viridans* (FAIRMAIRE, 1898) in the collection of Muséum National d'Histoire Naturelle, Paris, although it was still present in this museum in 1983 when KASZAB (1983) checked and transferred this species from *Eucyrtus* to *Tetragonomenes*. Recently, Dr. Enrico RUZZIER of Natural History Museum, London kindly sent us some *Tetragonomenes* specimens from Sulawesi, and we found a pair of specimens which fit well the original description of FAIRMAIRE except for the body size. Therefore we redescribe this species based on these specimens hereinafter, together with the FAIRMAIRE'S original description.

Original description: “Long. 12 et 14 mill. – oblongus, modice convexus, coerulescenti-viridanus, nitidus, capite prothoraceque magis coeruleis; capite laevi, longiore, antennis fuscis, articulis ultimis opacis, latioribus; prothorace transverso, elytris angustiore, antice vix angustato, lateribus parum arcuatis, sat fortiter marginatis, dorso laevi, basi leviter et paulo arcuatim impresso, angulis posticis sat acute rectis, anticis fere rotundatis; scutello triangulari, obscuro; elytris oblongis, postice vix sensim ampliatis, sat tenuiter striates, striis haud dense punctatis, lateribus et apice magis profundis, intervallis laevibus, dorso planis, lateribus et apice paulo convexiusculis; subtus cum epipleuris pedibusque piceus, vage metallescens, tarsi anterioribus et ceteris minus sat dilatatis. Célèbes (FRUHSTORFER). Les tarsi de cet insecte indiquent un passage aux Platycyrtis, ils sont moins larges que chez ces derniers, mais plus larges que chez les vrais Eucyrtus. Sa forme très oblongue est assez remarquable.”

Redescription. Oblong, moderately convex above, shiny. Colour black, head and pronotum dark metallic green, with strong violet reflection, elytra violet purple, with somewhat bluish reflection, mouthparts, antennae, apical portions of tibiae and tarsi dark reddish brown; in female: head, pronotum and elytra metallic green, elytra with violet-purple reflection in an angle of view.

M a l e. Head transversely elliptic, anterior margin not notched between clypeus and genae; punctures somewhat oblong, dense and coarse, those on frons asperate, larger than on clypeus; clypeus weakly convex, distinctly notched at apex in median three-fifths, fronto-clypeal suture fine and obscure; genae slightly convex, almost evenly narrowed forwards at sides, narrower than eye; frons broad, weakly convex, sloping forwards, sinuate at sides; eyes hardly transverse, distinctly convex, with narrowest point between dorsal and ventral parts as wide as about eight to nine facets, inner ocular sulci deeply engraved. Antennae slender, reaching beyond middle of pronotum, six distal antennomeres forming a club, sparsely decorated with sensory pores. Mentum oval, longitudinally carinate in middle and irregularly depressed at sides of the carina. Ultimate maxillary palpomere thick, very weakly securiform. Gula alutaceous, gular suture not impressed.

Pronotum quadrate, moderately convex, widest before middle, gently slanting laterad and moderately depressed along lateral margins, punctures dense and minute, somewhat asperate, smaller than

on frons and larger than on clypeus; anterior margin slightly emarginate, finely beaded at sides; lateral margins weakly rounded, scarcely sinuate before base, feebly undulate, moderately beaded, basal margin beaded rudimentally; anterior angles obtusely angulate, weakly produced, basal angles rectangular, not produced. Scutellum impunctate, microscopically and transversely rugulose.

Elytra oblong, subparallel-sided, moderately convex, widest at middle, narrowly beaded at sides, humeral calli weak; striae fine and interrupted in part, 5th to 7th striae distinct, 8th stria absent, stria punctures dense in inner four striae, sparse in remaining striae; inner four intervals almost flat, 5th and 6th intervals weakly convex, remaining ones evenly and weakly convex; epipleuron oblique, microsculptured and finely punctate.

Hypomeron sparsely and very coarsely punctate. Prosternum coarsely and obscurely punctate, prosternal process hastate, sloping posteriad, longitudinally sulcate in middle, acute at apex. Mesoventrite with V-shaped ridge broad, anterior angles with minute tip pointed downwards. Metaventrite finely and sparsely punctate in middle and obscurely rugose laterally. Abdomen densely and obscurely punctate; 1st and 2nd ventrites with long sparse pubescence in median half.

Legs robust; inner margins of protibiae shallowly emarginate in apical two-thirds, those of mesotibiae lamellate behind base, metatibiae depressed in basal half, inner margin lamellate and produced inwards in basal half, with a row of pubescence in apical half.

F e m a l e. Abdominal ventrites without long pubescence; inner margins of meso- and metatibiae shallowly emarginate, devoid of row of pubescence.

Specimens examined. 1 ♂, 1 ♀, Peleng Is., C. Sulawesi, 13.II.2013, collector unknown (CERL).

Diagnosis. This species is similar to *Tetragonomenes auripennis* (GEBIEN, 1913) from the Philippines and *T. puerilis* (KULZER, 1951) from Bangkei (Sumatra), but differs from the latter two by the following points: Punctures on frons sparser, clypeus distinctly sinuate at apex, metatibiae depressed in basal half, inner margin lamellate and produced inwards in basal half, with a row of pubescence in apical half, antennae and legs black to dark reddish brown, elytral intervals weakly convex laterally, with punctures finer.

Measurements. Body length: 12–14 mm in description and 8.1–9.6 mm in examined specimens. ♂ (n=1): IE/TD = 2.14, PW/PL = 1.27, EL/EW = 1.76; ♀ (n=1): IE/TD = 2.31, PW/PL = 1.28, EL/EW = 1.88.

2. *Tetragonomenes andoi* MASUMOTO, 1996

(Figs. 2a–b)

Tetragonomenes andoi MASUMOTO, 1996: 522, fig. 1.

Types examined. 1 ♂, paratype, Palopo, Sulawesi, 6.II.1985, M. TAO leg.; 1 ♀, paratype, Puncak near Rante Pao, Celebes, 24.III.1981, K. SUGINO leg. (CKAO).

Specimens examined: 1 ♂, Sumarorong, Mamasa, Sulawesi, Indonesia, 11–16.XII.2008, Local collector leg. (CKAO); 1 ♂, 1 ♀, C. of S. Sulawesi, Tanah Toraja, Karum Ganga, I.2000, Local collector leg. (CKAO).

Body length. 10.3–11.3 mm.

3. *Tetragonomenes yukae* MASUMOTO, 1996

Tetragonomenes yukae MASUMOTO, 1996: 524, fig. 2.

Additional specimens examined since recorded by ANDO (2011): 2 ♂♂, 1 ♀, Puncak Palopo,

Luwu, Palopo, KM 27, C. of S. Sulawesi, 20.I.2000, G. BECCE leg. (CKAO); 1 ♀, Puncak Palopo, Luwu, Palopo, To'Rea, C. of S. Sulawesi, 20.I.2000, G. BECCE leg. (CKAO); 1 ♂, Indonesia, Puncak Palopo, Sulawesi Selatan, 2.I.2000, N. OHBAYASHI leg. (CKAO); 1 ♂, 1 ♀, N. Sulawesi, Mts. Tilongkabila, Gorontalo Prov., alt. ca. 800 m, 30.I–1.II.2010, N. OHBAYASHI leg. (CKAO); 1 ♂, S. Sulawesi, Mamasa, local collector leg. (CKAO); 1 ex., Sumarorong, Mamasa, Sulawesi, Indonesia, 11–16. XII.2008, local collector leg. (CKAO).

Body length. 8.8–10.6 mm.

4. *Tetragonomenes robusticeps* ANDO, 2011

Tetragonomenes robusticeps ANDO, 2011: 222, figs. 10–12, 21.

Additional specimens examined since recorded by ANDO (2011): 1 ♀, Rante Pao, Sulawesi, 4.II.1985, M. TAO leg. (CKAO); 1 ♂, C. Sulawesi, Palopo, Buntu Kayu Angin, Battang, Wara Barat, alt. 350 m, S 02°57'E 120°08', 31.I.2013, K. ANDO leg. (CKAO).

Body length. 6.4–8.3 mm.

5. *Tetragonomenes cyanopterus* ANDO, 2011

Tetragonomenes cyanopterus ANDO, 2011: 221, figs. 7–9, 20.

No available additional specimens since recorded by ANDO (2011).

Body length. 6.5 mm.

6. *Tetragonomenes cupreomicans* ANDO, 2011

Tetragonomenes cupreomicans ANDO, 2011: 224, figs. 13–15, 22.

Additional specimens examined since recorded by ANDO (2011): 1 ♂, 2 ♀♀, Mt. Munumpitaeng, 210 m alt., Manganitu, Sangir Is., N. Sulawesi, Indonesia, 29.IV.2000, A. SAITŌ leg. (CKAO).

Body length. 7.3–7.7 mm.

7. *Tetragonomenes banaszkieviczae* ANDO, 2011

Tetragonomenes banaszkieviczae ANDO, 2011: 219, figs. 1–3, 16.

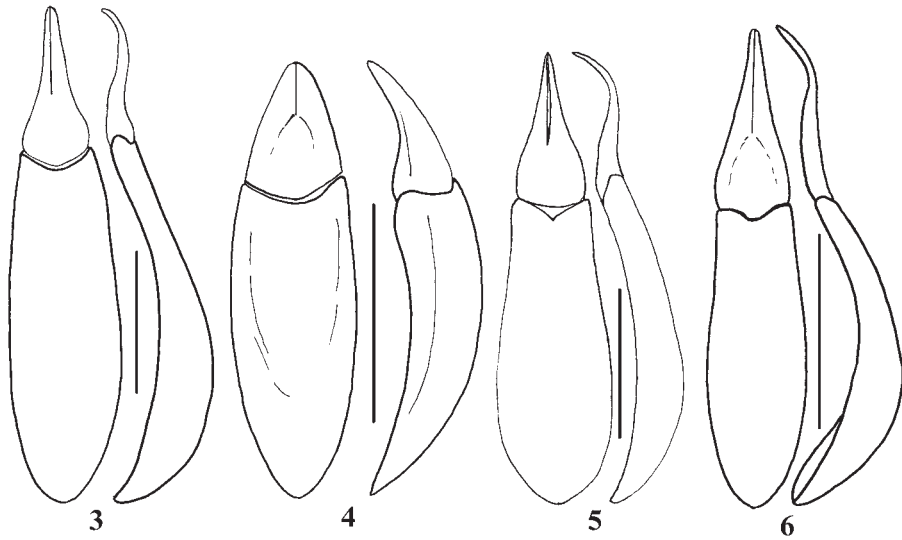
Additional specimens examined since recorded by ANDO (2011): 1 ♀, Gorontalo Utara, Indonesia, Mt. Pontolo (Gunung Pontolo), N. Sulawesi, alt. ca. 1,000–1,400 m, 0°55'36.65"N, 122°03'45.44"E–0°54'59.77"N, 122°04'13.10"E, 24.VI.2012, R. OGAWA leg. (CKAO); 2 ♀♀, Bonebolango, Indonesia, Mt. Tilongkabila (Gunung Tilongkabila), N. Sulawesi, alt. ca. 1,300–1,500 m, 0°35'18.14"N, 123°13'22.71"E–0°35'18.37"N, 123°13'22.61"E, 10.VI.2012, R. OGAWA leg. (CKAO); 1 ♂, ditto, 26.I.2013; 1 ♀, Sumarorong, Mamasa, Sulawesi, Indonesia, 11–16.XII.2008, Local collector leg. (CKAO).

Body length. 9.0–10.7 mm.

8. *Tetragonomenes falsocrenatus* ANDO et MERKL, sp. nov.

(Figs. 4, 15)

Type specimens. Holotype: ♂, C. Sulawesi, Palopo, Kilo Lima Belas, Battang, Wara Barat, alt. 300 m, S 02°57'E 120°07', 2.II.2013, K. ANDO leg. (EUMJ). Paratypes: 1 ♂, C. Sulawesi, Palopo,



Figs. 3–6. Male genitalia of *Tetragonomenes* spp., left: dorsal, right: lateral. — 3, *T. viridans* (FAIRMAIRE, 1898); 4, *T. falsocrenatus* sp. nov.; 5, *T. taoi* sp. nov.; 6, *T. grimmi* sp. nov. Scales: 0.5 mm.

Buntu Kayu Angin, Battang, Wara Barat, alt. 350 m, S02°57'E120°08', 31.I.2013, K. ANDO leg. (CKAO); 1 ♂, Mangkaluku, Malimbu, Sabbang, C. Sulawesi, Indonesia, 27–29.IV.2009, A. SAITÔ leg. (CKAO).

Diagnosis. This new species is very similar to *Tetragonomenes crenatus* (GEBIEN, 1921) from the Philippines, but differs from the latter by the following points: antennal club formed by four distal antennomeres, clypeus emarginate at apex, pronotum with much more denser large punctures, lateral margins distinctly undulate, basal angles never produced laterad; strial punctures of elytra strongly serrate, elytral intervals distinctly convex; claw segment longer and slim rather than robust in *T. crenatus*.

Etymology. The specific name is named after false + crenatus.

Measurements. Body length: 6.7–7.0 mm. ♂ (n=3): IE/TD = 1.91–2.22, PW/PL = 1.25–1.29, EL/EW = 1.89–1.92.

Description. Oblong, subparallel at sides, moderately convex above. Colour dark reddish brown, head, pronotum and scutellum bluish green, anterior part of head more or less yellowish, elytra olivaceous, antennae and ventral side included with elytral epipleura dark reddish brown, mouthparts, seven basal antennomeres and legs reddish brown.

Male. Head convex posteriorly, coarsely and densely punctate, punctures on frons denser and coarser than on clypeus and genae; clypeus distinctly convex, clearly emarginate at apex; eyes rather large, without inner ocular sulci, with narrowest part between dorsal and ventral as long as the length of four facets. Antennae robust, four distal antennomeres dilated and forming distinct club. Mentum triangular, rugulose. Ultimate maxillary palpomere weakly securiform.

Pronotum quadrate, moderately convex, widest at middle, very densely and coarsely punctate, obscurely sulcate along lateral margins; anterior margin angulately emarginate, with angles obtusely produced; lateral margins weakly undulate, feebly sinuate before base, narrowly beaded; posterior an-

gles rectangular. Scutellum quadrate, twice as wide as long.

Elytra oblong, parallel-sided, widest at apical third; striae weakly engraved, strial punctures dense and coarse, seemingly serrate; intervals strongly convex, finely and densely punctate, 7th and 8th intervals strongly raised near humeri; epipleuron flat, continuous to elytral apices.

Prosternal process cuneiform, depressed in middle. Abdominal ventrites densely covered with setigerous punctures, longitudinally depressed in middle between 1st and 2nd ventrites.

Legs short and robust; femora scarcely ridged; tibiae almost straight, irregularly rugulose and sparsely pubescent.

F e m a l e. Unknown.

9. *Tetragonomenes conspersus* ANDO et MERKL, sp. nov.

(Fig. 16)

Type specimen. Holotype: ♀, Batu boto, Marimbu, Sabbang, C. Sulawesi, Indonesia, 1.V.2009, A. SAITÔ leg. (EUMJ).

Diagnosis. This new species is similar to *Tetragonomenes clypealis* (GEBIEN, 1913), from the Philippines, but differs from the latter by the following points: Eyes more produced laterad, antennal club formed by five antennomeres, punctures on frons oblong and larger and sparser than in *T. clypealis*, pronotum weakly undulate at sides, elytral intervals sparsely punctate.

Etymology. The specific epithet refers to the spotted elytra.

Measurements. Body length: 7.0 mm. ♀ (n=1): IE/TD = 2.73, PW/PL = 1.34, EL/EW = 1.85.

Description. Oblong, subparallel-sided posteriorly, moderately convex above, shiny. Colour dark reddish brown, head and pronotum bluish green, scutellum black, elytra bluish green, each with an elongate brassy spot situated behind humeri to before apex between fourth and seven intervals, strongly and broadly bordered by purple, venter and legs dark reddish brown, mouthparts, tarsi and antennae reddish brown.

F e m a l e. Head transversely elliptic, strongly convex in posterior half; clypeus convex, depressed near each lateral corner, slightly sinuate at apex; fronto-clypeal suture tenuous; genae narrower than eye, with curvature of outer margin not linked with that of clypeus; frons broad and strongly convex, gently descendant laterad; punctures dense and coarse, somewhat oblong, those on frons larger and denser than on clypeus; eyes strongly convex above and produced laterad, with narrowest point between dorsal and ventral parts as wide as five facets, inner ocular sulci deep and wide. Antennae loosely articulate, antennal club formed by five antennomeres. Ultimate maxillary palpomere very short, weakly securiform. Mentum oval, convex, depressed at sides of median longitudinal carina, depressed areas unevenly foveolate in part.

Pronotum quadrate, widest at middle, distinctly convex, steeply sloping laterally, broadly depressed but not sulcate along lateral margins, densely and coarsely punctate, punctures round, smaller than on frons; anterior margin nearly straight, scarcely beaded; lateral margins feebly arcuate, slightly sinuate before base, weakly beaded, with a few undulations in median third; anterior angles obtuse, slightly produced, posterior angles rectangular. Scutellum flat, with microscopic rugosities.

Elytra elongate, widest behind middle, with striae very weak in inner three striae, and strongly impressed in 5th and 6th striae, strial punctures rather dense in inner three striae and sparse in remaining ones; intervals sparsely and minutely punctate, weakly convex, strongly so in 6th and 7th intervals, edged in outer margins of 5th and 6th intervals, 7th to 9th intervals vertical; epipleuron flat and smooth.

Prosternal process fusiform, oblique behind coxae, broadly and longitudinally sulcate in middle,

acute at apex. Ridges of mesoventrite simple Metaventrite finely and sparsely punctate. Abdominal ventrites densely and finely punctate.

Legs rather slender; inner margins of meso- and metatibiae slightly emarginate in apical half, respectively.

M a l e. Unknown.

10. *Tetragonomenes taoi* ANDO et MERKL, sp. nov.

(Figs. 5, 17)

Type specimems. Holotype: ♂, S. Sulawesi, Pine Tree Forest, Battang, Tana Toraja, 10.II.2013, K. ANDO leg. (EUMJ). Paratypes: 3 ♀♀, Palopo, Sulawesi, 7.II.1985, M. TAO leg. (2 ♀♀, CKAO, 1 ♀, HNHM); 1 ♀, ditto, 4.VI.1982 (CKAO); 1 ♀, ditto, 5.VI.1982 (HNHM).

Diagnosis. This new species is similar to *Tetragonomenes tibialis* (KULZER, 1951) from the Philippines, but readily separable from the latter by the following characters: Space between eyes less than three times of eye; mentum obtrapezoidal; anterior margin of clypeus truncate; punctures on head coarse; pronotum widest at base; prosternum without longitudinal carina; inner margin of male metatibiae devoid of tufted pubescence. This species is also similar to *T. robusticeps* ANDO, 2011 from Sulawesi, but clearly differs from the latter in having different shape of parameres, and more arcuately emarginate anterior margin of pronotum, none-emarginate apical margin of clypeus, and unspotted elytra.

Etymology. This new species is dedicated to the collector of the type series, Mr. Minoru TAO, Yokohama, Japan.

Measurements. Body length: 7.0–8.1 mm. ♂ (n=1): IE/TD = 1.82, PW/PL = 1.46, EL/EW = 1.72; ♀ (n=5): IE/TD = 1.67–1.88, PW/PL = 1.43–1.57, EL/EW = 1.58–1.65.

Description. Oblong-oval, moderately convex above, shiny. Colour dark reddish brown, head, pronotum and scutellum slightly greenish dark blue, elytra purple, reflected with brassy tinge in an angle, legs black, venter dark reddish brown, mouthparts, antennae and tibiae more or less reddish brown. In females, sutural intervals of elytra brassy, and lateral intervals (outer from fifth interval) tinged with dark greenish blue throughout or in apical third, and the latter case looking like an oblong spot.

M a l e. Head depressed, coarsely and densely punctate, punctures asperate and larger on frons than on other dorsal part of head, anterior margin between clypeus and genae hardly notched; clypeus slightly convex, truncate at apex; fronto-clypeal suture tenuous; frons flat, sloping forwards; eyes large, distinctly produced laterad, narrowest point between dorsal and ventral parts as wide as about eight facets, inner ocular sulci deep and broad. Antennae loosely articulate, six distal antennomeres forming weak club; 11th oval. Ultimate maxillary palpomere weakly seculiform. Mentum obtrapezoidal, with a longitudinal carina in middle, and shallowly depressed at sides of the carina.

Pronotum subtrapezoidal, widest at base; anterior margin shallowly and arcuately emarginate, hardly beaded; lateral margins weakly tapering in basal two-thirds and steeply so in apical third, faintly undulate, very thickly beaded; anterior angles acute, weakly produced; disc weakly convex, not sulcate along lateral beads, punctures rather dense, smaller than those on frons. Scutellum flat and almost smooth, sometimes with a few microscopical punctures.

Elytra oblong, subparallel-sided, moderately convex, widest at middle, humeral calluses distinct; striae finely impressed, strial punctures rather sparse; intervals weakly convex, a little more strongly so on 7th to 9th, finely and sparsely punctate; epipleuron flat, alutaceous.

Prosternal process triangular, rounded at sides and pointed at apex, excavate in middle of posteri-

or half, thence distinctly slanting apicad. Abdominal ventrites weakly convex, densely covered with setigerous punctures.

Legs slender; femora weakly clavate; metatibiae abruptly dilated behind base.

F e m a l e. No clear sexual dimorphism is recognised except for narrower frons.

11. *Tetragonomenes grimmi* ANDO et MERKL, sp. nov.

(Figs. 6, 18)

Type specimens. Holotype: ♂, C. Sulawesi, Palopo, Palu, Indonesia, VIII.2012, Bakri SAINUDDIN leg. (EUMJ). Paratypes: 2 ♂♂, 5 ♀♀, same data as for the holotype. (1 ♂, 3 ♀♀, CKAO, 1 ♂, 2 ♀♀, HNHM); 1 ♂, 1 ♀, ditto, IX.2012, Local collector leg. (CKAO); 3 ♂♂, 1 ♀, Indonesia, Sulawesi bor., 2 km NW Tomohon, bottom of Mt. Lokon, 830–850 m, 01°21'28"N, 124°48'57"E, 29–31.I.2004, A. SKALE leg. (CRGN).

Diagnosis. This new species is very similar to *Tetragonomenes taoi* sp. nov., but is clearly different from the latter in the following characteristics: Body slender; head convex, more densely punctate; clypeus weakly notched or moderately sinuate at apex; mentum hexagonal; pronotum slightly emarginate at anterior margin, widest at middle or middle and base, anterior angles scarcely produced, lateral margins narrowly beaded; parameres different in shape.

Etymology. This new species is named after a specialist of Tenebrionidae, Dr. Roland GRIMM, Neuenbürg, Germany, who helped us with the loan of type specimens.

Measurements. Body length: 6.5–8.8 mm. ♂ (n=7): IE/TD = 2.50–3.00, PW/PL = 1.30–1.37, EL/EW = 1.64–1.84; ♀ (n=7): IE/TD = 2.73–3.00, PW/PL = 1.28–1.57, EL/EW = 1.67–1.88.

Description. Oblong or oblong-oval, moderately convex above, shiny. Colour dark reddish brown, head, pronotum and scutellum dark olivaceous or bluish green, elytra strong purple, more or less brassy on sutural intervals, in some cases, strong purple part changing into greenish dark blue in an angle of view, legs black, tibiae and venter dark reddish brown, mouthparts and antennae reddish brown.

M a l e. Head transversely hexagonal, moderately convex, anterior margin scarcely notched between clypeus and genae, punctures dense, very coarse and asperate on frons and a little small on clypeus; clypeus convex medially, shallowly emarginate or slightly notched at apex; genae narrower than eye; eyes well produced laterad, at narrowest point as wide as six facets, inner ocular sulci deep, starting middle of eye and distinctly broadened posteriad. Antennae loosely articulate, reaching before middle of pronotum; six distal antennomeres forming club. Ultimate maxillary palpomere weakly seculiform. Mentum hexagonal, weakly carinate along middle, and shallowly depressed at sides.

Pronotum transversely quadrate, moderately convex, widest at middle or some specimens at middle and base, without sulci along lateral beads, punctures moderately dense, finer than those on frons; anterior margin slightly emarginate, almost straight in median greater part; lateral margins almost parallel or very slightly narrowed forwards in basal two-thirds, steeply narrowed to apex in apical third, distinctly undulate between apical third and basal fourth. Scutellum smooth and shiny.

Elytra oblong, slightly divergent and widest at basal third, humeral calluses strong; striae fine, weakly impressed, striae punctures minute, rather dense in 1st to 3rd, sparse in remaining striae; intervals densely microsculptured and finely punctate, weakly convex in inner four intervals, distinctly so in fifth to ninth, all intervals evenly flattened near apical portion; epipleuron flat, dull owing to dense microsculpture.

Prosternal process sharply cuneate, oblique posteriorly and pointed at apex. Abdominal ventrites moderately punctate; fifth ventrite slightly depressed near apex.

Legs simple; inner margin of metatibiae slightly emarginate in apical two-thirds, then bearing short pubescence.

F e m a l e. Inner margins of metatibiae not emarginate.

12. *Tetragonomenes saitorum* ANDO et MERKL, sp. nov.

(Figs. 7, 19)

Type specimens. Holotype: ♂, Sapura, Pomalaa, Kolaka, S. E. Sulawesi, Indonesia, 30.XII.1999, A. SAITÔ leg. (EUMJ). Paratypes: 1 ♂, 2 ♀♀, same data as for the holotype (1 ♂, 1 ♀, CKAO, 1 ♀, HNHM); 1 ♀, Gunung Lagoro (20–95 m), Matanayo, Kombewaha, Lasalimu, Buton Is., SE. Sulawesi, Indonesia, 26.XII.2001, S. SAITÔ leg. (HNHM).

Diagnosis. This new species is similar to *Tetragonomenes robusticeps* ANDO, 2011 from Sulawesi and *T. auripennis* (GEBIEN, 1921) from the Philippines, but differs from the latter two by the following points: Elytra devoid of iridescent fasciae, finely alutaceous elytral intervals, finer and not rugulose punctures on frons. This new species is also similar to *T. cupreomicans* ANDO, 2011, though the narrowest point between dorsal and ventral parts of eyes is about more than width of 5.5 to 6 facets, the frons not extremely raised and devoid of deep lateral sulci.

Etymology. The specific name is named in honor of the collectors of the type series, Dr. Akiko SAITÔ and Mr. Shusei SAITÔ.

Measurements. Body length: 6.9–7.7 mm. ♂ (n=2): IE/TD = 2.73, PW/PL = 1.25–1.26, EL/EW = 1.79–1.82; ♀ (n=3): IE/TD = 2.73–3.00, PW/PL = 1.31–1.37, EL/EW = 1.69–2.00.

Description. Oblong, subparallel-sided or more or less steeply tapering posteriorly, moderately convex, lambent. Colour blackish brown, head, pronotum and scutellum greenish blue, elytra brassy to aeneous, legs dark reddish brown, mouthparts and antennae reddish brown.

M a l e. Head hexagonal, moderately convex, punctures coarse and oblong, those on frons asperate, much more larger and denser than on clypeus; clypeus weakly convex in middle, distinctly sinuate at apex; fronto-clypeal suture tenuous; genae flat, a little narrower than eye, outer margins straight, following the same curvature as that of clypeus; frons steeply sloping forwards and gently so laterad, microsculptured between punctures; eyes large and well convex, with narrowest point between dorsal and ventral parts as wide as 5.5 to 6 facets, inner ocular sulci deep and broad, reaching before neck. Antennae with distal six antennomeres forming weak club. Ultimate maxillary palpomere short, securiform. Mentum obtrapezoidal, with median carina raised forwards, depressed and rugulose at sides of the carina.

Pronotum transversely quadrate, widest at middle, sericeous, gently convex, not sulcate along lateral margins, punctures dense and large, not oblong, and larger than on clypeus and a little smaller than on frons; anterior margin straight, not beaded; lateral margins weakly arcuate, slightly sinuate before base, feebly and irregularly undulate, narrowly and distinctly beaded; anterior angles obtusely rounded, not produced, posterior angles rectangular. Scutellum microscopically punctate.

Elytra elongate, rather pointed at apices, widest at humeral portion; humeral calli distinct; striae tenuous, deepened in apical portions of 4th to 6th striae, strial punctures small and rather sparse; intervals weakly convex, strongly so on 6th and 7th, sparsely and microscopically punctate, lateral three intervals (7th, 8th and 9th) vertical.

Prosternal process narrow triangular, weakly depressed along middle, pointed at apex, strongly oblique in posterior half. Metasternum microscopically punctate in median half. Abdominal ventrites finely and densely punctate.

Legs robust; inner margin of mesotibiae slightly emarginate in apical half, that of metatibiae slightly emarginate and bearing a row of pubescence in apical two-thirds; tibiae rather slender.

F e m a l e. Inner margin of metatibiae devoid of a row of pubescence.

13. *Tetragonomenes schawalleri* ANDO et MERKL, sp. nov.

(Figs. 8, 20)

Type specimen. Holotype: ♂, Indonesia, Sulawesi, Palu Donggala, 25.VII.2002, 10 m (alt.), W. SUPPANTSCHITSCH leg. (SMNS).

Diagnosis. This new species is similar to *Tetragonomenes viridans* (FAIRMAIRE, 1898) from Sulawesi. Based on the original description of FAIRMAIRE, this new species is readily separable from the latter by the pronotum distinctly arcuate at sides, with disc densely and finely punctate. This new species is also similar to *T. puerilis* (KULZER, 1951) from Bangkei (Sumatra), but differs from the latter by the following points: Clypeus distinctly sinuate at apex, frons between eyes 2.5 times of the width of eye, punctures on frons and clypeus larger and coarser, pronotum not sulcate along lateral margins, with punctures finer, elytral intervals not smooth, finely punctate, and densely covered with fine microsculpture, legs dark reddish brown, inner margins of tibiae with obscure lamellate edge in each basal portion.

Etymology. The specific epithet is dedicated to Dr. Wolfgang SCHAWALLER, Staatliches Museum für Naturkunde, Stuttgart, who helped us with the loan of many specimens for the study of this series.

Measurements. Body length: 8.0 mm. ♂ (n=1): IE/TD = 2.50, PW/PL = 1.27, EL/EW = 1.80.

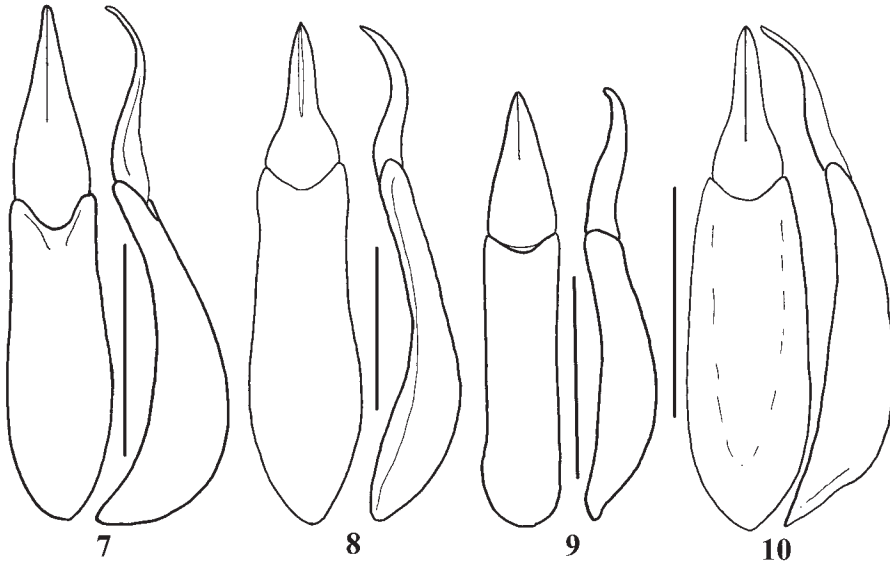
Description. Oblong, parallel-sided, robust, moderately convex above, lambent. Colour dark reddish brown, mouthparts and six basal antennomeres lighter, dorsal surface bluish metallic green, partly with violet reflection.

M a l e. Head subquadrate, strongly convex posteriorly, microsculptured, densely punctate, punctures on frons asperate, more or less oblong, larger than on clypeus and genae; clypeus weakly convex, sloping forwards, depressed at sides, distinctly emarginate at apex, fronto-clypeal suture obscure medially and very fine laterally; genae rounded and more or less reflexed at sides, curvature of outer margins continuous with that of clypeus, without notch between clypeus and genae; frons broad, gently convex, moderately sloping forward and laterad; eyes large, strongly convex, narrowest point between dorsal and ventral parts as wide as six facets, inner ocular sulci deeply engraved, moderate in width. Antennae with six distal antennomeres forming loosely articulate club. Ultimate maxillary palpomere weakly securiform. Mentum oval, irregularly depressed, with weak median longitudinal carina.

Pronotum quadrate, widest at middle, moderately convex above, steeply sloping laterad, not sulcate along lateral margins, punctures dense, not oblong, smaller than on frons; anterior margin weakly emarginate, finely beaded laterally; lateral margins feebly arcuate, tenuously beaded and irregularly undulate, slightly sinuate before base; anterior angles obtusely angulate, a little produced, posterior angles rectangular, not produced. Scutellum depressed, sparsely punctate.

Elytra elongate, subparallel-sided, strongly convex, widest at apical third, humeri weakly humped; striae fine, very weakly striate in inner four striae, strongly engraved in 5th and 6th, striae punctures sparse and minute, very sparse on 5th to 8th; intervals almost flat, densely covered with fine microsculpture, edged in outer margins of 5th and 6th intervals, vertical in lateral three intervals, minutely punctate, punctures dense in inner four intervals and sparse in remaining ones, densely punctate area of inner four intervals with more or less uneven surface; epipleuron flat and smooth.

Prosternal process narrow triangular, oblique behind coxae, distinctly sulcate in middle, acute, but rounded at apex. Abdomen with three basal ventrites densely and very coarsely punctate, each



Figs. 7–10. Male genitalia of *Tetragonomenes* spp., left: dorsal, right: lateral. — 7, *T. satorum* sp. nov.; 8, *T. schawalleri* sp. nov.; 9, *T. yamasakoi* sp. nov.; 10, *T. quadricollis* sp. nov. Scales: 0.5 mm.

puncture of 1st and 2nd ventrites with long seta.

Legs robust, inner margin of each tibia with an obscure lamellate edge in basal portion, that of metatibiae with a row of pubescence in apical half.

F e m a l e. Unknown.

14. *Tetragonomenes yamasakoi* ANDO et MERKL, sp. nov.

(Figs. 9, 27)

Type specimens. Holotype: ♂, LUWU: Indonesia, Puncak Palopo, Palopo-city, S. Sulawesi, 23–26.IV.2010, R. OGAWA leg. (EUMJ). Paratypes: 1 ♀, Indonesia, To'Rea, Sulawesi Selatan, I.2000, Local collector leg. (CKAO); 1 ♀, C. Sulawesi, Sampuraga, Mt. Farum Humpenai, alt. 1,400 m, 5. II.2013, K. ANDO leg. (CKAO).

Diagnosis. There is no similar species with fusiform body. This new species is slightly similar in pronotal lateral margin and shape of clypeus to *Tetragonomenes quadricollis* sp. nov., but readily separable from the latter by the antennae shorter, pronotum more coarsely and densely punctate, with basal angles not produced, elytral striae tenuous but not fine, deeply engraved laterally, striae punctures a little denser, elytral intervals more distinctly convex laterally, parameres different in shape.

Etymology. This species is dedicated to Dr. Junsuke YAMASAKO, the University of Tokyo, who helped us during the field survey in Sulawesi.

Measurements. Body length: 5.4–6.2 mm. ♂ (n=1): IE/TD = 3.75, PW/PL = 1.46, EL/EW = 1.58; ♀ (n=2): IE/TD = 3.33–3.34, PW/PL = 1.46–1.56, EL/EW = 1.65–1.75.

Description. Oblong, dilated fusiform, distinctly convex, lambent. Colour dark reddish brown, antennae and tarsi light reddish brown, or reddish brown only in five basal antennomeres in one paratype, head, pronotum and scutellum greenish blue or greenish dark blue, elytra brassy-purple (one paratype) otherwise brassy (one paratype) or greenish brassy (holotype), in the case of brassy-purple

elytra, humeral part and apical part of each elytron obscurely tinged with dark blue as a spot-like.

M a l e. Head semicircular, rather weakly convex above, alutaceous, moderately punctate, punctures on frons larger than clypeus and genae; clypeus slightly convex, weakly rounded and not sinuate at apex, fronto-clypeal suture very fine, visible in part; genae as wide as eye, barely produced laterad, outer curvature continuous with that of clypeus; frons gently convex, moderately sloping forwards and laterad; eyes weakly convex and small, with narrowest point between dorsal and ventral parts as wide as four facets, inner ocular sulci narrow and short. Antennae with six distal antennomeres forming loosely articulate club. Ultimate maxillary palpomere short, weakly securiform. Mentum oval, with median longitudinal carina distinct, weakly depressed laterally.

Pronotum trapezoidal, widest at base, moderately convex, not sulcate along lateral margins, punctures dense, nearly as large as on frons; anterior margin straight, finely beaded in lateral portions; lateral margins weakly rounded, not sinuate before base, narrowly beaded, devoid of undulations; anterior angles obtuse, not produced, posterior angles obtusely angulate. Scutellum smooth.

Elytra oblong elliptic, distinctly convex, widest at basal fourth, finely beaded at sides, humeral calli weakly humped; striae tenuous, interrupted in part, deepened in 6th and 7th striae, strial punctures minute and sparse; intervals sparsely and microscopically punctate, slightly convex in inner five intervals, weakly so on 9th, moderately so in 6th to 8th; epipleuron flat and smooth.

Prosternal process oblong and horizontal, irregularly tuberculate medially. Metaventricle minutely punctate and densely rugulose. Abdominal ventrites minutely and densely punctate.

Legs short and robust; tibiae longitudinally rugulose, gently incurved, dorsal side of metatibiae weakly depressed in apical half.

F e m a l e. Metatibiae not depressed dorsally.

15. *Tetragonomenes quadricollis* ANDO et MERKL, sp. nov.

(Figs. 10, 28)

Type specimens. Holotype: ♂, Mangkaluku, Malimbu, Sabbang, C. of S. Sulawesi, Indonesia, 27–29.IV.2009, A. SAITÔ leg. (EUMJ). Paratype: 1 ♀, same data as for the holotype. (CKAO).

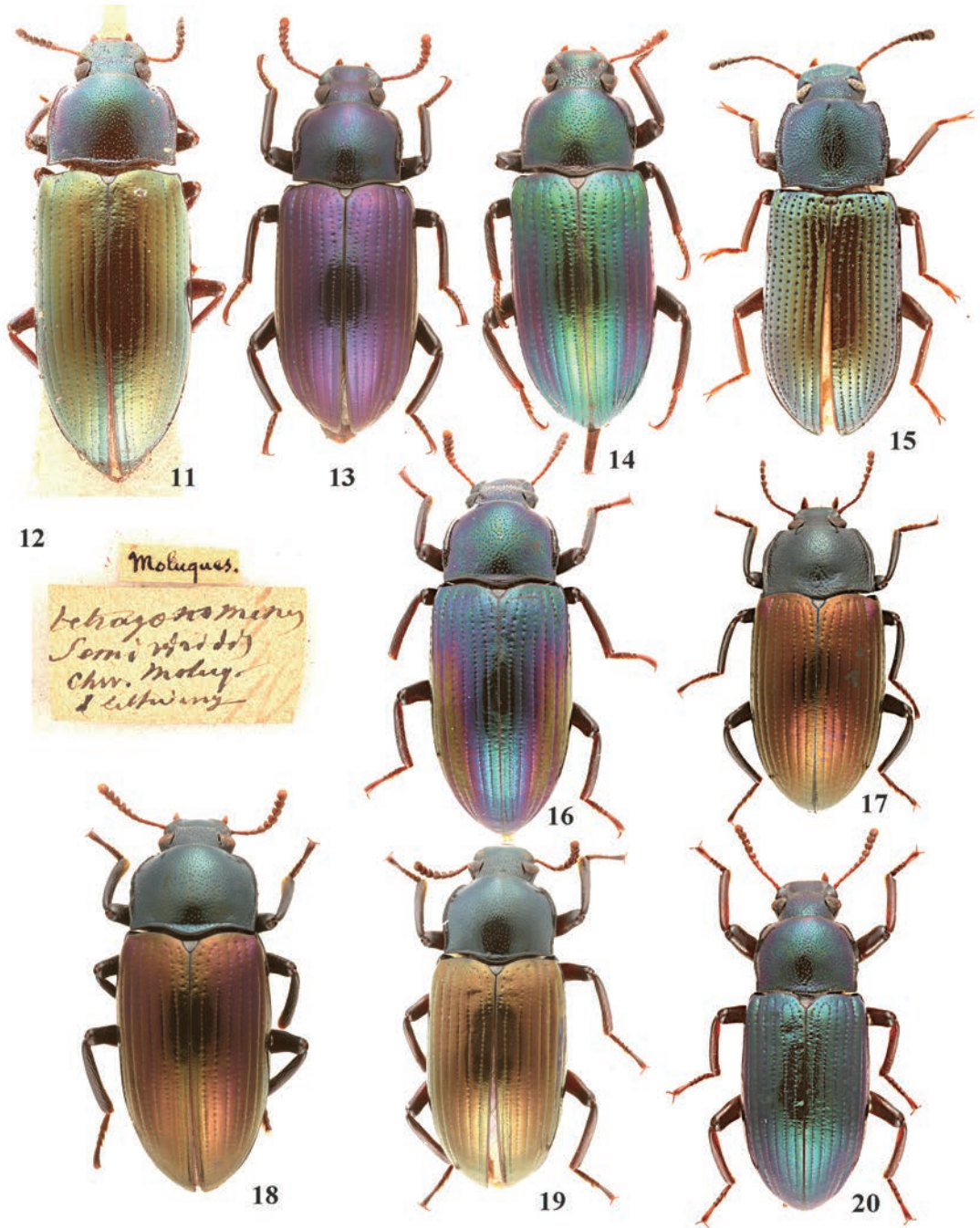
Diagnosis. This new species has no similar species in having the following points: Elytra much wider than pronotum, long and slender antennae, almost straight lateral margins of pronotum, very tenuous or hardly striate elytra, punctures not linked with lines, and hardly punctate elytral intervals. See the diagnosis of *T. yamasakoi* sp. nov. as it is slightly similar to this new species.

Etymology. The specific epithet refers to the squared pronotum.

Measurements. Body length: 5.2–5.6 mm. ♂ (n=1): IE/TD = 2.86, PW/PL = 1.26, EL/EW = 1.62; ♀ (n=1): IE/TD = 2.86, PW/PL = 1.30, EL/EW = 1.67.

Description. Oblong-oval, gently convex, more or less gibbous, lambent. Colour reddish brown to dark reddish brown, head and pronotum dark reddish brown or dark brown, elytra dark blue, antennae and tarsi reddish brown, venter and legs dark reddish brown except for tarsi.

M a l e. Head transversely elliptic, moderately convex posteriad, densely punctate, punctures on frons umbilicate in part, larger than on clypeus and genae, and those on clypeus setigerous; clypeus slightly convex, truncate at apex in straight line, fronto-clypeal suture narrow and distinct; genae weakly convex, wider than eye in dorsal view, curvature of outer margins followed with that of clypeus, so that devoid of notch between clypeus and genae; frons weakly convex, gently sloping forwards and laterad; eyes rather small, roundly produced laterad, with narrowest point between dorsal and ventral parts as wide as four or five facets, inner ocular sulci deep and sharp, curved behind eyes and not reaching towards neck. Antennae long and slender, reaching beyond base of pronotum, with



Figs. 11–20. Habitus of *Tetragonomenes* spp. — 11, *T. semiviridis* CHEVROLAT, 1878, type; 12, *T. semiviridis* CHEVROLAT, 1878, labels; 13, *T. viridans* (FAIRMAIRE, 1898), male; 14, *T. viridans* (FAIRMAIRE, 1898), female; 15, *T. falsocrenatus* sp. nov.; 16, *T. conspersus* sp. nov.; 17, *T. taoi* sp. nov.; 18, *T. grimmi* sp. nov.; 19, *T. saitorum* sp. nov.; 20, *T. schawalleri* sp. nov.

five distal antennomeres forming a club. Ultimate maxillary palpomere right-angled triangular, rounded at outer margin. Mentum narrow and obtrapezoidal, convex, sloping laterad from the weak longitudinal median carina.

Pronotum quadrate, widest at base, moderately convex, steeply sloping laterad, not sulcate along lateral margins, densely and minutely punctate, very smooth between punctures; anterior margin very shallowly emarginate, narrowly beaded in each lateral fourth; lateral margins almost straight except for anterior corners, very narrowly beaded and not undulate; basal margin not beaded; anterior angles obtusely rounded, slightly produced, posterior angles rectangular, sharply angulate, faintly produced. Scutellum small and cordiform, smooth.

Elytra fusiform, distinctly convex, widest at middle, finely beaded at sides; humeral calli indistinct; striae very fine and weak, strial punctures rather large, dense on 1st stria, sparse on the rest; intervals flat, weakly convex in 5th to 9th, with surface scarcely punctate; epipleuron flat and smooth.

Prosternal process inverted drop-shaped, almost smooth, feebly depressed in middle, slightly slanting posteriad, and pointed ventrad at apex. Ridges of mesoventrite consisting of small and short frontal tubercles. Metaventrite and abdominal ventrites microscopically and sparsely punctate.

Legs slender; inner margins of metatibiae without tuft of pubescence.

F e m a l e. No clear external differences are recognised.

16. *Tetragonomenes gibbulus* ANDO et MERKL, sp. nov.

(Figs. 21, 29)

Type specimen. Holotype: ♂, Sapura, Pomalaa, Kolaka, SE. Sulawesi, Indonesia, 30.XII.1999, A. SAITÔ leg. (EUMJ).

Diagnosis. This new species is similar to *Tetragonomenes crenatus* (GEBIEN, 1921) from the Philippines, but differs from the latter by the following points: Antennal club consists of six distal antennomeres, elytra strongly convex behind base, elytral intervals very strongly convex, strial punctures minute, not large and serrate, pronotum widest at apical third, with anterior corners obtuse.

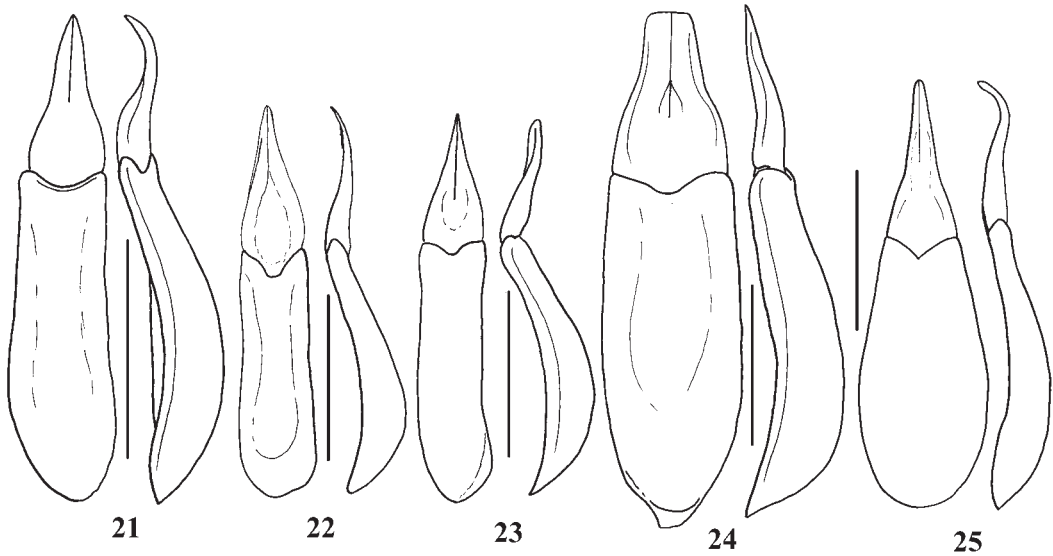
Etymology. The specific epithet refers to the rather strongly convex elytra.

Measurements. Body length: 5.1 mm. ♂ (n=1): IE/TD = 4.00, PW/PL = 1.27, EL/EW = 1.57.

Description. Oblong-oval, strongly convex above, more or less gibbous behind bases of elytra, lambent. Colour dark reddish brown, head, pronotum and scutellum blackish brown, elytra dark blue, with purplish hue in an angle of view, mouthparts, antennae and tarsi light reddish brown.

M a l e. Head trapezoidal, alutaceous, extremely densely punctate, those on frons more or less asperate, outer margin slightly sinuate between clypeus and genae; clypeus gently convex, distinctly notched in middle of apex, fronto-clypeal suture obscure; genae flat, wider than eye; eyes small, weakly convex above and moderately so laterad, with narrowest point between dorsal and ventral parts as wide as five facets, inner ocular sulci shallow. Antennal club loosely articulate, composed of six distal antennomeres. Ultimate maxillary palpomere subrectangular-triangular, distinctly rounded in outer margin. Mentum transversely obtrapezoidal, twice as wide as long, with a tenuous longitudinal median carina, unevenly depressed at both sides of the carina.

Pronotum quadrate, strongly convex in anterior two-thirds, steeply sloping laterally and not sulcate along lateral margins, densely and coarsely punctate, widest at basal third, thence lateral margins roundly narrowed forwards and evenly narrowed backwards, and sinuate before base, moderately beaded and not undulate; anterior margin slightly emarginate, finely beaded laterally; basal margin not beaded; anterior angles angulate, slightly obtuse than rectangular, a little produced, posterior angles acute angled. Scutellum finely rugulose, with a few microscopic punctures.



Figs. 21–25. Male genitalia of *Tetragonomenes* spp., left: dorsal, right: lateral. — 21, *T. gibbulus* sp. nov.; 22, *T. caeruleicollis* sp. nov.; 23, *T. septentrionalis* sp. nov.; 24, *T. cylindraceus* sp. nov.; 25, *T. electricis* sp. nov. Scales: 0.5 mm.

Elytra oblong oval, moderately convex, widest at middle, humeral calli small and distinct; striae fine and constant, stria punctures minute and rather sparse, very sparse in 5th to 8th striae; intervals finely punctate and somewhat irregularly rugulose, strongly convex except for 1st and 2nd intervals which are weakly so, outer two intervals vertical; epipleuron flat and smooth.

Hypomeron coarsely decorated with deep punctures. Prosternum long before coxae, about 1.5 times as long as a procoxa; prosternal process cuneiform, horizontal, irregularly depressed in middle, and acute at apex. Ridges of mesoventrite forming a clearly elevated V. Metaventrite very finely and sparsely punctate, obliquely rugose at both sides of median depressed line. Abdominal ventrites finely and densely punctate throughout.

Legs slender and simple.

F e m a l e. Unknown.

17. *Tetragonomenes caeruleicollis* ANDO et MERKL, sp. nov.

(Figs. 22, 30)

Type specimen. Holotype: ♂, UPT, Wolowa (alt. 90 m), Pasar Wajo, Buton Is., SE. Sulawesi, Indonesia, at light, 28.XII.2001, A. SAITÔ leg. (EUMJ).

Diagnosis. This new species is similar to *Tetragonomenes grimmi* sp. nov., but differs from the latter by the following points: Mentum semicircular, pronotum not undulate at sides, with punctures larger, humeral calli weak, elytra without purple hue.

Etymology. The specific name is derived from the colour of pronotum.

Measurements. Body length: 6.6 mm. ♂ (n=1): IE/TD = 3.00, PW/PL = 1.30, EL/EW = 1.72.

Description. Oblong, subparallel-sided posteriorly, distinctly convex, shiny dorsally. Colour dark reddish brown, more or less lighter in mouthparts, five basal antennomeres, and tarsi, head and

pronotum blue, and tending to slightly greenish, elytra olivaceous, with metallic brassy hue.

M a l e. Head hexagonal, distinctly convex, weakly alutaceous, outer margin between clypeus and genae clearly notched; punctures rather oblong, dense on clypeus, asperate and extremely dense on frons; clypeus gently convex, depressed at sides, shallowly emarginate at apex, fronto-clypeal suture fine and clear; genae flat and small, narrower than eye; frons strongly convex, steeply sloping laterad; eyes more or less transverse, distinctly convex, with narrowest point between dorsal and ventral parts as wide as six facets, inner ocular sulci deep and clear, not followed along ocular margins posteriorly. Antennae with six distal antennomeres forming a loose club. Ultimate maxillary palpomeres right-angled triangular, rounded at outer margin. Mentum semicircular, with a longitudinal carina in middle, weakly and irregularly depressed at sides of the carina.

Pronotum quadrate, moderately convex, alutaceous, widest before middle, not sulcate along lateral margins, punctures dense and asperate, larger than on clypeus and a little smaller than on frons; anterior margin straight, not beaded; lateral margins gently arcuate in anterior half and weakly rounded in posterior half, not sinuate before base, uneven but not undulate, distinctly beaded; anterior angles obtusely angulate, posterior angles rectangular. Scutellum microscopically rugulose and punctulate.

Elytra elongate, strongly convex, widest behind humeri, thence evenly narrowed to apices; striae fine, deepened in 5th and 6th striae, 8th stria very short, strial punctures minute and sparse, those in 6th, 7th, and 8th much more sparse than in other striae; intervals almost flat in inner four intervals, weakly convex in the rest, elevated in outer margins of 5th, 6th and 7th intervals, minutely and moderately punctate; epipleuron flat, a little oblique in plane.

Hypomeron with sparse, large and deep punctures. Prosternal process triangular, oblique behind coxae, shallowly and broadly sulcate in middle, acute and sharpened at apex. Mesoventrite without ridges, only with a pair of small tubercles before coxae. Metaventrite rather weakly convex, microscopically and sparsely punctate. Abdominal ventrites evenly and densely covered with minute punctures.

Legs rather slender; femora long, reaching beyond lateral margins of body, posterior margin of metafemora with tuft of short pubescence between basal sixth and middle; tibiae slightly incurved.

F e m a l e. Unknown.

18. *Tetragonomenes septentrionalis* ANDO et MERKL, sp. nov.

(Figs. 23, 31)

Type specimens. Holotype: ♂, Mt. Munumpitaeng, alt. 210 m, Manganitu, Sangir Is., N. Sulawesi, Indonesia, 29.IV.2000, A. SAITÔ leg. (EUMJ). Paratype: 1 ♀, N. Sulawesi, 1 km W, Toraut, 200 m, 0°33'49"N, 123°54'38"E, A. SKALE leg., clearing at riverside (CRGN).

Diagnosis. This new species is very similar to *Tetragonomenes cupreomicans* ANDO, 2011 from Sulawesi, but differs from the latter by the following points: Elytral intervals slightly convex, very weakly microsculptured, coarsely and very densely punctate, parameres with basal half not rounded at sides in dorsal view.

Etymology. The specific epithet refers to northern Sulawesi where this species occurs.

Measurements. Body length: 6.1–6.3 mm. ♂ (n=1): IE/TD = 2.73, PW/PL = 1.27, EL/EW = 1.76; ♀ (n=1): IE/TD = 2.50, PW/PL = 1.23, EL/EW = 1.77.

Description. Oblong, rather steeply convergent posteriorly, moderately convex above, shiny. Colour dark reddish brown, head, pronotum and scutellum dark blue, elytra olivaceous, with somewhat purplish hue (purplish brassy), mouthparts and ventral sides of femora reddish brown.

M a l e. Head transversely elliptic, strongly convex above; clypeus slightly convex, distinctly sloping forwards, rounded at apex, densely punctate, punctures setigerous, fronto-clypeal suture fine and clear; genae depressed, narrower than eye, with curvature of outer margins followed to that of clypeus; frons steeply and extremely convex from just behind fronto-clypeal suture, gently slanting laterad, and overlapping eyes in part, weakly sinuate in anterior half of lateral margins, deeply excavate beneath lateral margins, punctures large and asperate, more or less oblong in part, a little larger than those on clypeus; eyes large, convex above, with narrowest point between dorsal and ventral parts as wide as two facets, inner ocular sulci shallow, recognisable only in posterior part. Antennae with six distal antennomeres forming a club. Ultimate maxillary palpomere short, weakly securiform. Mentum obtrapezoidal, strongly convex, truncate at apex and rounded at base, distinctly depressed at both sides of median longitudinal carina.

Pronotum trapezoidal, widest at base, distinctly convex above, steeply slanting laterad, and depressed along lateral margins, punctures dense and coarse, nearly as large as on frons but not asperate; anterior margin roundly and slightly produced in median two-thirds, not beaded; lateral margins gently rounded, not undulate, scarcely sinuate before base, distinctly beaded; basal margin not beaded; anterior angles obtusely angulate, a little produced, posterior angles obtusely angulate. Scutellum almost smooth.

Elytra oblong fusiform, moderately convex, widest at basal two-fifths, humeral calli weakly hump; striae tenuous and clear, strial punctures dense, sparser on 7th and 8th striae; intervals minutely and rather densely punctate, flat, 8th slightly convex, 8th and 9th intervals vertical; epipleuron flat, somewhat oblique laterad, minutely rugulose.

Prosternal process parallel-sided, broad and sloping posteriad, widely sulcate in middle and rounded at apex. Ridges of mesoventrite simple. Metaventricle finely punctate, with anterior process coarsely and rugosely punctate. Abdominal ventrites evenly and finely punctate.

Legs robust; posterior margins of meso- and metafemora sparsely setous; metatibiae with inner margin shallowly emarginate and densely pubescent in about apical two-thirds.

F e m a l e. Antennae shorter, inner margins of metatibiae neither emarginate nor densely pubescent.

19. *Tetragonomenes cylindraceus* ANDO et MERKL, sp. nov.

(Figs. 24, 32–33)

Type specimens. Holotype: ♂, Mt. Laloggola, alt. 600 m, Tirawuta, Kolaka, SE. Sulawesi, Indonesia, at light, 1.I.2000, A. SAITÔ leg. (EUMJ). Paratypes: 2 ♂♂, same data as for the holotype (1 ♂, CKAO, 1 ♂, HNHM).

Diagnosis. This new species is similar in body shape and truncate apex of parameres to *Tetragonomenes palpalis* (KASZAB, 1941) from Taiwan, but differs from the latter by the following points: Frons more coarsely and densely punctate, pronotum more densely punctate, with anterior angles more produced, elytra with punctures of 6th to 8th striae serrate and very coarse, intervals distinctly convex, inner margins of male protibiae not bisinuate.

Etymology. The specific epithet refers to the cylindrical body shape.

Measurements. Body length: 6.6–7.4 mm. ♂ (n=3): IE/TD = 1.88–2.14, PW/PL = 1.16–1.19, EL/EW = 1.85–1.93.

Description. Oblong, cylindrical, strongly convex, shiny above. Colour dark reddish brown to blackish brown, head and pronotum dark olivaceous, or bluish green, scutellum black, elytra olivaceous or metallic blue, five basal antennomeres and tarsi reddish brown.

M a l e. Head transversely elliptic, strongly convex posteriorly, densely punctate, punctures on frons asperate, very dense and coarse, outer margin between clypeus and genae distinctly notched; clypeus moderately convex, truncate at apex, fronto-clypeal suture fine, obscure in part; genae transverse, narrower than eye; frons extremely convex, steeply sloping forwards and weakly slanting laterad, obliquely narrowed forwards at sides in anterior two-thirds, very deeply excavate beneath lateral margins; eyes transverse, distinctly convex above and strongly produced antero-laterad, inner ocular sulci absent, narrowest point between dorsal and ventral parts as wide as 5.5 facets. Antennae with distal four antennomeres forming a club. Ultimate maxillary palpomere wider than long, strongly securiform. Mentum obtrapezoidal, emarginate at apex, with short tongue-shaped process which is directed forwards.

Pronotum trapezoidal, strongly convex, and very steeply slanting laterally, not sulcate along lateral margins, densely and coarsely punctate, the punctures asperate and more or less oblong, nearly as large as on frons, remarkably dense along lateral margins in part; anterior margin roundly produced in median two-thirds, and sinuate at sides, not beaded; lateral margins weakly rounded, neither sinuate before base nor undulate throughout, moderately beaded; basal margin not beaded; anterior angles rectangular, faintly produced, posterior angles obtuse, not produced. Scutellum flat, with a few coarse punctures.

Elytra oblong, subparallel-sided, strongly convex, humeral calli very weakly humped; striae tenuous, 3rd, 4th and 5th striae distinct, 8th rudimental, strial punctures serrate, dense and minute on inner four striae, large and sparse in 5th to 7th striae, very large and sparse in 8th; intervals nearly flat in inner five and 9th intervals, edged in outer margins of 4th, 5th and 6th intervals, weakly convex on apical portions and 6th to 8th; epipleuron narrow, flat, finely rugulose.

Hypomeron with dense and coarse punctures, space between punctures elevated, somewhat rugose. Prosternal process cuneate, uneven and very coarsened by irregular tubercles and rugosities. Ridges of mesoventrite entirely rudimental. Metaventrite and abdominal ventrites densely covered with large and very coarse punctures.

Legs robust; profemora tumid, coarsely and densely punctate; protibiae distinctly incurved near apical portion, inner margin of mesotibiae slightly emarginate just before apex.

F e m a l e. Unknown.

20. *Tetragonomenes fossiger* ANDO et MERKL, sp. nov.

(Figs. 26, 34)

Type specimen. Holotype: ♂, Lenganeng (530 m), Tahuna, Sangir Is., N. Sulawesi, Indonesia, at light, 30.IV.2000, A. SAITÔ leg. (EUMJ).

Diagnosis. This new species has the head similar to *Tetragonomenes palpalis* (KASZAB, 1941) from Taiwan, but is readily separable from the latter by the following points: Body slenderer, antennal club consists of five antennomeres, frons with punctures larger and very coarse, pronotum with anterior margin distinctly emarginate, elytral intervals more finely and a little more densely punctate, inner margins of male protibiae not bisinuate.

Etymology. The specific epithet refers to the deeply excavate part below the lateral margins of frons.

Measurements. Body length: 6.3 mm. ♂ (n=1): IE/TD = 2.50, PW/PL = 1.17, EL/EW = 1.98.

Description. Oblong, cylindrical, strongly convex above, shiny. Colour dark reddish brown, head, pronotum and scutellum olivaceous, elytra purple, with suture greenish brassy, mouthparts, tarsi and four basal antennomeres reddish brown.

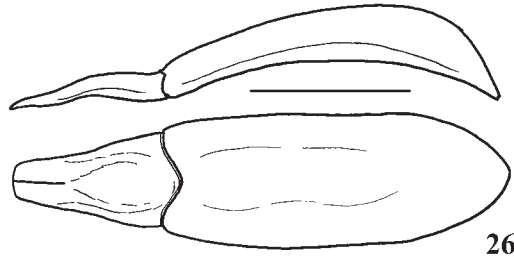


Fig. 26. Male genitalia of *Tetragonomenes fossiger* sp. nov., above: lateral, below: dorsal. Scale: 0.5 mm.

M a l e. Head quadrate, strongly convex in posterior part, densely punctate, anterior margin between clypeus and genae slightly notched; clypeus weakly convex, shallowly emarginate at apex, with punctures minute, fronto-clypeal suture obscure, hardly visible; genae evenly flat, narrower than eye, entirely rounded at outer margins, minutely and sparsely punctate; frons extremely strongly convex, convergent forward at sides in straight line, steeply slanting behind fronto-clypeal suture, deeply excavate beneath lateral margins, punctures coarse and close on vertex, and becoming slightly sparser anteriorly, larger than those on clypeus; eyes large, hardly transverse, weakly convex above and distinctly so laterad, with narrowest point between dorsal and ventral parts as wide as four facets, without inner ocular sulci. Antennae with five distal antennomeres forming club. Ultimate maxillary palpomere wider than long, short and robust securiform. Mentum obtrapezoidal, depressed, with short tongue-shaped process at middle which is produced forwards.

Pronotum trapezoidal, widest before base, strongly convex, vertically sloping in lateral portions, weakly depressed along finely beaded lateral margins, densely and moderately punctate, punctures nearly as large as on frons; anterior margin roundly produced in median three-fourths, sinuate laterally, not beaded; lateral margins gently arcuate, neither sinuate before base nor undulate; anterior angles rectangular, produced, posterior angles obtusely angulate, not produced. Scutellum flat, rounded at sides, with a few coarse punctures.

Elytra elongate, subparallel-sided, strongly convex, widest behind base, humeral calli very weak; striae very fine, 4th to 6th stronger, 8th vestigial, strial punctures distinct, dense on inner three striae, and sparse on other striae; intervals flat, very finely punctulate, 7th, 8th and 9th intervals flat or almost flat, 4th, 5th and 6th intervals edged in outer margins, lateral four intervals vertical; epipleuron flat and smooth.

Hypomeron very coarsely punctate. Prosternal process fusiform, irregularly depressed and coarsely punctate, weakly arcuate at sides, bent inwards behind coxae, acute but rounded at apex. Ridges of mesoventrite oblique, weakly raised. Metaventrite weakly convex, finely punctate and somewhat obliquely rugulose. Abdominal ventrites convex, densely punctate.

Legs short; tibiae weakly incurved, inner margins of mesotibiae rather densely pubescent in apical half; tarsi short and compact except for long and robust claw segment.

F e m a l e. Unknown.

21. *Tetragonomenes electricis* ANDO et MERKL, sp. nov.

(Figs. 25, 35)

Type specimens. Holotype: ♂, Toari, alt. 45–60 m, Pomalaa, kolaka, SE. Sulawesi, Indonesia,

31.XII.1999, A. SAITÔ leg. (EUMJ). Paratypes: 2 ♂♂, Toari, alt. 45–60 m, Pomalaa, kolaka, SE. Sulawesi, Indonesia, 31.XII.1999, S. SAITÔ leg. (CKAO); 1 ♂, Hutan Beko, Sabilambo, alt. 200 m, Kolaka, SE. Sulawesi, Indonesia, 26.XII.1999, S. SAITÔ leg. (HNHM); 1 ♀, ditto, 27.XII.1999, S. SAITÔ leg. (CKAO).

Diagnosis. This new species is similar to *Tetragonomenes yukae* MASUMOTO, 1996 from Sulawesi, but differs from the latter by the following points: Mentum oval or oblong tongue-shaped instead of hexagonal in the latter, elytral intervals slightly raised, but surface is flat, striae punctures larger and denser, pronotal punctures weaker and more obscure, elytral fasciae different in shape and in colour pattern.

Etymology. The specific epithet is derived from *Ēlectra*, the daughter of King Agamemnon in Greek mythology

Measurements. Body length: 8.0–9.8 mm. ♂ (n=4): IE/TD = 1.58–2.35, PW/PL = 1.13–1.23, EL/EW = 1.76–1.80; ♀ (n=2): IE/TD = 1.50–2.22 PW/PL = 1.20–1.21, EL/EW = 1.67–1.74.

Description. Oblong-oval, gently divergent posteriorly, strongly convex above, strongly shiny. Colour black, head, pronotum, scutellum and legs dark blue, that of head lighter and somewhat greenish, venter dark greenish blue, mouthparts dark reddish brown, elytra violet blue, each elytron with a basal and a subapical brassy spot, sometimes tinged with reddish purple at middle, reaching lateral margin but not reaching suture, and bordered by brassy tinge, basal spot quadrate, occupying about basal third and contact with basal margin, subapical spot obliquely transverse, reaching basal third, and separated from apical portion of elytron.

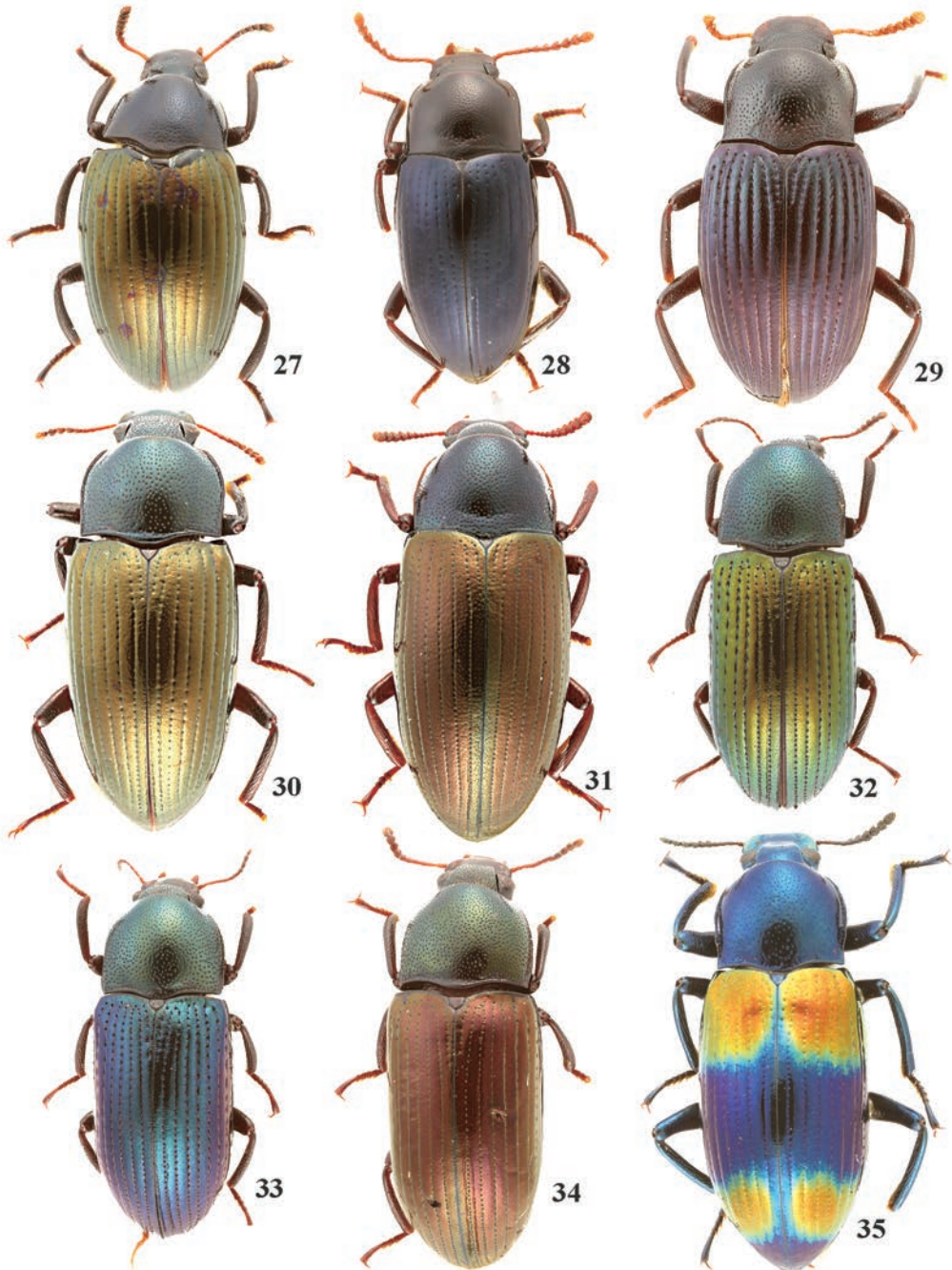
Male. Head transversely elliptic, convex posteriorly, anterior margin not notched between clypeus and genae; clypeus weakly convex, moderately emarginate at apex, punctures oblong, obscure and rather dense, fronto-clypeal suture fine; genae broad and flat, rounded at sides, more or less reflexed laterally, narrower than eye; frons extremely convex, steeply slanting behind fronto-clypeal suture, finely and sparsely punctate, with lateral margins roundly narrowed forward in basal two-thirds, and sinuate in apical third, deeply sulcate below roof-shaped lateral edges; eyes transverse, moderately convex above and produced laterad, with narrowest point between dorsal and ventral parts as wide as five to six facets, devoid of inner ocular sulci. Antennae slender, six distal antennomeres forming loosely articulate club, with coarse sensory pores, reaching beyond middle of pronotum. Ultimate maxillary palpomere wider than long, weakly securiform. Mentum oval or oblong tongue-shaped, unevenly depressed, with a longitudinal carina in middle.

Pronotum trapezoidal, strongly convex, widest at middle, gently depressed along lateral margins, moderately punctate, punctures asperate in part, a little larger than those on frons; anterior margin straight, a little sinuate in its corners, not beaded; lateral margins evenly narrowed forwards and roundly so backwards from the widest point, slightly sinuate before base, very narrowly beaded, with weak undulations; basal margin not beaded; anterior angles obtusely angulate, a little produced, posterior angles rectangular. Scutellum almost smooth, with a few microscopic punctures.

Elytra oblong, strongly convex, widest at apical third, transversely depressed at basal seventh, humeral calli very weak; striae very weak or rudimental, striae punctures rather large, dense on inner three striae, and sparse on other striae; inner four intervals almost flat, other intervals weakly convex, mostly impunctate; epipleuron flat and oblique, alutaceous.

Prosternal process narrow triangular, distinctly bent inwards behind coxae, deeply sulcate in middle of posterior half, and pointed at apex. Mesoventrite with V-shaped ridge uneven, moderately sloping forwards. Metaventrite strongly convex, finely and sparsely punctate. Abdominal ventrites with setigerous punctures very coarse and dense on basal three ventrites.

Legs robust; meso- and metafemora without appendage in posterior margins; tibiae gently in-



Figs. 27–35. Habituses of *Tetragonomenes* spp. — 27, *T. yamasakoi* sp. nov.; 28, *T. quadricollis* sp. nov.; 29, *T. gibbulus* sp. nov.; 30, *T. caeruleicollis* sp. nov.; 31, *T. septentrionalis* sp. nov.; 32–33, *T. cylindraceus* sp. nov., 32: colour variation of green, 33: that of blue; 34, *T. fossiger* sp. nov.; 35, *T. electris* sp. nov.

curved, inner margin of protibia densely pubescent in apical half, that of meso- and metatibiae gently so. Female. No clear external differences are recognised.

A Key to the Species of Sulawesian *Tetragonomenes* CHEVROLAT, 1878

1. Eyes coarsely faceted; frons extremely convex beside eyes, thence produced laterad as a roof-shape, very deeply sulcate below roof-shaped sides of frons, sulci running directly posteriad, and not along inner margins of eyes. (The second group) 15
- Eyes finely faceted; frons gradually elevated from lateral portion to centre, not forming a roof-shape at sides, inner ocular sulci normal or absent, contact with eyes. (The first group) 2
2. Pronotal sides undulate. 3
- Pronotal sides not undulate. 12
3. Eyes with narrowest point between dorsal and ventral parts narrower than four facets. 4
- Eyes with narrowest point between dorsal and ventral parts wider than five facets. 5
4. Eyes without inner ocular sulci; clypeus emarginate at apex. Body length 6.7–7.0 mm. *T. falsocrenatus* sp. nov.
- Eyes with inner ocular sulci; clypeus not emarginate at apex. Body length 6.5 mm. *T. cyanopterus* ANDO, 2011
5. Elytra with humeral and apical spots; frons densely rugose on coarse punctures. 6
- Elytra without humeral and apical spots; frons not rugose. 7
6. Elytra with 1st and 2nd intervals occupying longitudinal band throughout, band contact with humeral and apical spots. Body length 7.0 mm. *T. conspersus* sp. nov.
- Elytra without longitudinal band in middle. Body length 6.4–8.3 mm. *T. robusticeps* ANDO, 2011
7. Humeri and lateral intervals of elytra different in colour reflection from that of sutural intervals. 8
- Elytra single colored throughout. 10
8. Male metatibiae not rugulose, with inner margin deplanate and roundly produced in basal two-fifths, with row of pubescence in apical half. Body length 8.0–9.5 mm. *T. viridans* (FAIRMAIRE, 1898)
- Male metatibiae densely and longitudinally rugulose, with inner margin not deplanate, without row of pubescence in apical half. 9
9. Body robust; clypeus truncate at apex; pronotum widest at base, with anterior angles more produced forwards. Body length 7.0–8.1 mm. *T. taoi* sp. nov.
- Body slimmer; clypeus slightly or distinctly emarginate at apex; pronotum widest at middle, or rarely at middle and at base, with anterior angles less produced, directed downwards. Body length 6.5–8.8 mm. *T. grimmi* sp. nov.
10. Pronotum sericeous, with anterior angles not produced; six distal antennomeres distinctly dilated, forming distinct club; IE/TD = 2.73–3.00; inner margin of male metatibiae without row of pubescence. Body length 6.9–7.7 mm. *T. saitorum* sp. nov.
- Pronotum shiny, with anterior angles slightly or moderately produced; five distal antennomeres forming weak club, six antennomere slightly or weakly dilated; IE/TD = 2.14–2.50; inner margin of male metatibiae with row of pubescence. 11
11. Inner margin of male protibiae shallowly emarginate and setigerous in apical half, that of meso- and metatibia deplanate and distinctly produced outwards. Body length 8.0–14.0 mm.

- *T. viridans* (FAIRMAIRE, 1898)
- Inner margin of male protibiae shallowly emarginate in apical four-fifths and setigerous in apical three-fifths, that of meso- and metatibia weakly deplanate and scarcely produced outwards. Body length 8.0 mm. *T. schawalleri* sp. nov.
12. Elytra with striae deep and tenuous, elytral intervals very strongly convex; inner ocular sulci weak; lateral margins of pronotum sinuate before base. Body length 5.1 mm. *T. gibbulus* sp. nov.
- Elytra with striae not deep, elytral intervals weakly convex; inner ocular sulci deep; lateral margins of pronotum scarcely sinuate before base. 13
13. Clypeus rounded or truncate, not emarginate at apex; eyes with narrowest point between dorsal and ventral parts narrower than five facets. 14
- Clypeus slightly or distinctly emarginate at apex; eyes with narrowest point between dorsal and ventral parts wider than six facets. *T. caeruleicollis* sp. nov.
14. Pronotum gently narrowed forwards at sides. Body length 5.4–6.2 mm. *T. yamasakoi* sp. nov.
- Pronotum parallel at sides in basal five-sixths. Body length 5.2–5.6 mm. *T. quadricollis* sp. nov.
15. Elytra neither fasciate nor spotted; pronotal sides not undulate; clypeus not emarginate, weakly rounded at apex; narrowest point of eye about as wide as 2 to 5.5 facets. 16
- Elytra fasciate or spotted; pronotal sides undulate; clypeus emarginate at middle of apex; narrowest point between dorsal and ventral parts of eye as wide as about 5 to 8 facets. 19
16. Eyes with narrowest point between dorsal and ventral parts of eye about as wide as two facets; inner margins of protibiae weakly incurved in apical portion; five distal antennomeres weakly clavate. 17
- Eyes with narrowest point between dorsal and ventral parts of eye wider than four facets; inner margins of protibiae strongly incurved before apex; five distal antennomeres distinctly clavate. 18
17. Head distinctly notched between clypeus and genae; elytral striae tenuous and distinct, elytral intervals almost flattened; body above well sericeous. Body length 7.3–7.7 mm. *T. cupreomicans* ANDO, 2011
- Head not notched between clypeus and genae; elytral striae obscurer, elytral intervals convex; body above less sericeous. Body length 6.1–6.3 mm. *T. septentrionalis* sp. nov.
18. Elytra with distinctly engraved striae; striae punctures large, coarse and serrated; elytral intervals evenly convex, more sparsely punctate; hypomeron coarsely and densely punctate. Body length 6.6–7.4 mm. *T. cylindraceus* sp. nov.
- Elytra with feebly engraved striae; striae punctures small and fine, not serrated; elytral intervals flat on disc, more densely punctate; hypomeron coarsely but more sparsely punctate. Body length 6.3 mm. *T. fossiger* sp. nov.
19. Elytra not depressed behind base; frons sparsely punctate. 20
- Elytra distinctly to weakly depressed behind base; frons coarsely punctate. 21
20. Elytra deep metallic green, elytral intervals flat except for slightly convex posterior parts of 5th to 8th; striae punctures finer; six distal antennomeres slender; narrowest point between dorsal and ventral parts of eye as wide as seven to eight facets. Body length: 9.0–10.7 mm. *T. banaszkieviczae* ANDO, 2011
- Elytra deep violet blue, elytral intervals weakly and constantly convex; striae punctures coarser; six distal antennomeres distinctly dilated; narrowest point between dorsal and ventral parts of eye as wide as five to six facets. Body length 8.0–9.8 mm. *T. electricis* sp. nov.

21. Pronotum coarsely punctate, with lateral margins sinuate before base; elytra feebly striate or not striate in part, striae punctures finer and sparser, intervals flat; narrowest point between dorsal and ventral parts of eye as wide as seven to eight facets; body colour reddish purple to violet purple, elytral spots metallic green; ultimate maxillary palpomere longer than wide. Body length 10.3–11.3 mm. *T. andoi* MASUMOTO, 1996
- Pronotum more finely punctate, with lateral margins hardly sinuate before base; elytra weakly striate, striae punctures larger and denser, intervals weakly convex; narrowest point between dorsal and ventral parts of eye as wide as five facets; body colour deep blue to greenish blue, elytral spots reddish purple; ultimate maxillary palpomere longer than wide. Body length 8.8–10.6 mm. *T. yukae* MASUMOTO, 1996

Acknowledgements

We express our deep gratitude to the following colleagues for giving or loaning materials under their care: Drs. Junsuke YAMASAKO, the University of Tokyo, Akiko SAITÔ, Natural History Museum and Institute, Chiba, Wolfgang SCHAWALLER, Staatliches Museum für Naturkunde, Stuttgart, Roland GRIMM, Neuenbürg, Enrico RUZZIER, Natural History Museum, London, and Ryo OGAWA, Kobe University, and Messrs Hiroyuki KONISHI, Nara, Yasuhiko HAYASHI, Hyôgo, Shusei SAITÔ, Chiba. Cordial thanks are due to Drs. Eva SPRECHER-UEBERSAX and Isabelle ZÜRCHER, Natural History Museum of Basel, and Antoine MANTILLERI and Olivier MONTREUIL, Museum national d'Histoire naturelle, Paris, for their kind help on the examination of type materials under their care. Thanks are also due to Dr. Nobuo OHBAYASHI, Kanagawa, for his help to our study and critically reading the original manuscript of this paper. Senior author would like to his sincere gratitude to the Ministry of State for Research and Technology, Indonesia (RISTEK), for providing issuance of the research visa (No.111/SIP/FRP/SM/IV/2012).

要 約

安藤清志・Ottó MERKL: スラウェシ産ゴミムシダマシ相の研究 (鞘翅目). VI. ——— スラウェシのチビキマワリモドキ属の検討を行い、種の検索表を付与した。本島の種については FAIRMAIRE (1898), MASUMOTO (1996), ANDO (2011) などが7種を記録している。このうち一部の種群には頭部に際立った特徴を具えるものがあり、その特徴が台湾および日本に産する種に共通することを指摘するとともに、本属のタイプ種である *Tetragonomenes semiviridis* CHEVROLAT, 1878 の画像を初めて掲載し、これらの種群について検討を行った。また、*Tetragonomenes viridans* (FAIRMAIRE, 1893) については模式標本を発見することができず、著者らが原記載と突合し、特徴が合致した種をもとに再記載を試みた。今回の研究で、新たに14種を新種と認め、次の種名で記載した：*Tetragonomenes caeruleicollis* sp. nov., *T. conspersus* sp. nov., *T. cylindraceus* sp. nov., *T. electris* sp. nov., *T. falsocrenatus* sp. nov., *T. fossiger* sp. nov., *T. gibbulus* sp. nov., *T. grimmi* sp. nov., *T. quadricollis* sp. nov., *T. satorum* sp. nov., *T. schawalleri* sp. nov., *T. septentrionalis* sp. nov., *T. taoi* sp. nov. および *T. yamasakoi* sp. nov.

References

- ANDO, K., 2011. Four new species of the genus *Tetragonomenes* CHEVROLAT, 1878 (Coleoptera: Tenebrionidae: Cnodalonini) from Sulawesi. *Annales Zoologici, Warszawa*, **61** (2): 219–228, 26 figs.
- CHEVROLAT, L. A. A., 1878. Diagnoses d'espèces nouvelles de diaspérides. *Comptes Rendus de la Société Entomologique de*

Belgique, **21**: CXLVII–CLII.

- FAIRMAIRE, L., 1898. Descriptions de Coléoptères d'Asie et de Malaisie. *Annales de la Société Entomologique de France*, **67**: 382–400.
- GEBIEN, H., 1927. Fauna sumatrensis. Tenebrionidae (Col.). *Supplementa Entomologica*, **15**: 22–58.
- KASZAB, Z., 1941. Tenebrioniden aus Formosa (Col.). *Stettiner Entomologische Zeitung*, **102**: 51–72, 10 figs.
- KASZAB, Z., 1983. Synonymie indoaustralischer und neotropischer Tenebrioniden (Coleoptera). *Acta Zoologica Academiae Scientiarum Hungaricae*, **29** (1–3): 129–138.
- MASUMOTO, K., 1996. Two new species of the genus *Tetragonomenes* (Coleoptera, Tenebrionidae) from Sulawesi. *Japanese Journal of Entomology*, **64**: 521–525.
- RYE, E. C., 1880. Insecta. Coleoptera. Tenebrionidae. In RYE, E. C. (ed.), *The Zoological Record for 1878; being the volume fifteen of the record of Zoological literature* Pp. 83–90, London.

Manuscript received 13 February 2015;
revised and accepted 23 February 2015.