

A Review of the Genus *Cyclonesus* (Coleoptera, Tenebrionidae, Cnodalonini)

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Abstract The tenebrionid genus *Cyclonesus* FAIRMAIRE is revised. A new species, *C. sculpturalis* sp. nov., is described. *Cyclonesus dohertyi* PIC and *C. mucronatus* PIC are synonymized with *C. parvicollis* FAIRMAIRE. The lecto- and paralectotypes of *C. viridipennis* PIC are newly designated. Redescriptions of known species and a key to them are provided.

Key words: Tenebrionidae, *Cyclonesus*, revision, new species, synonym, Southeast Asia.

The genus *Cyclonesus* was established by FAIRMAIRE (1896) based on the species *Cyclonesus parvicollis* FAIRMAIRE from Sumatra. After that, PIC (1922) added to this genus three species, *C. dohertyi*, *C. mucronatus* and *C. viridipennis*, from Borneo and Malacca. Recent studies of this group mainly based on the collections in the Muséum national d'Histoire naturelle, Paris led me to the following conclusion: an undetermined species from Sumatra was a new species by the uniqueness of elytral microsculpture; *Cyclonesus dohertyi* PIC was actually the male of *Cyclonesus parvicollis* FAIRMAIRE; and *Cyclonesus mucronatus* PIC was the female of *Cyclonesus parvicollis* FAIRMAIRE.

The abbreviations and terminology employed herein are as follows: IE – interocular distance; TD – transverse diameter of an eye in dorsal aspect; LA – relative lengths of antennal segments from base to apex; WA – relative widths of antennal segments from base to apex; PL – length of pronotum, measured along midline; PB – width of pronotal base; PW – width of pronotum; EW – width of elytra; EL – length of elytra; LM – relative lengths of metatarsal segments from base to apex; Mesosternal ridge – the ridge surrounding the excavation of mesosternum; MNHN – Muséum National d'Histoire Naturelle, Paris; PCM – collection of Dr. Kimio MASUMOTO, Yokohama; PCS – collection of Mr. Taichi SHIBATA, Hyôgo.

Genus *Cyclonesus* FAIRMAIRE, 1896

Cyclonesus FAIRMAIRE, 1896, Notes Leyd. Mus., **18**: 104 (type species: *C. parvicollis*). — GEBIEN, 1941, Mitt. münchn. ent. Ges., **31**: 1143 (702).

Diagnosis. It is not easy to properly define *Cyclonesus*, since there is no pronounced peculiarity.

The body shape of this genus is very peculiar, but most of the characteristics mentioned in the original description are common to the genus *Euhemicera* ANDO, 1996. The elytral mucrones of the female (FAIRMAIRE, 1896) and the strongly bent mesotibiae of the male are not proved to be diagnostic of this genus, but are restricted only to the type species. The salient features of strongly convex and hemispherical body and extremely broadened elytral epipleura are scarcely seen in the species of the genera *Hemicera* and *Euhemicera*.

After all, the characteristics of *Cyclonesus* are barely defined as follows: elytra strongly convex, almost as long as wide and distinctly wider than pronotum; epipleura much broadened, and abdominal sternites extremely short. The character state of unbordered pronotal base is common with *Hemicera*, *Nanohemicera* and *Euhemicera*. Strikingly, the male genitalia suggest its closer affinity to *Tetraphyllus* (*Addia*-group).

In his original description, FAIRMAIRE noticed about the type "Hab. Sumatra orient.: Deli (Schagen van Leeuwen),—Un seul exemplaire du Musée Leyde." I was unable to find out the type from "Sumatra orient." in the Leyden Museum. On the other hand, a male type with FAIRMAIRE's handwriting label is preserved in MNHN, but is collected from Malaysia.

Key to the Species of the Genus *Cyclonesus*

1. Apex of each elytron with a distinct mucro in female; mesotibiae in male strongly adunc. Sumatra, Malaysia, Borneo. Length 9.5–11.0 mm. *C. parvicollis* FAIRMAIRE
- Apex of each elytron devoid of mucro in female; male unknown. 2
2. Body frosted, covered with sericeous tinge, upper surface provided with fine isodiametric microsculpture. Sumatra. Length 7.7 mm. *C. sculpturalis* sp. nov.
- Body feebly shiny, devoid of microsculpture at least on elytra. Borneo. Length 8.0–8.1 mm. *C. viridipennis* PIC

Cyclonesus parvicollis FAIRMAIRE, 1896

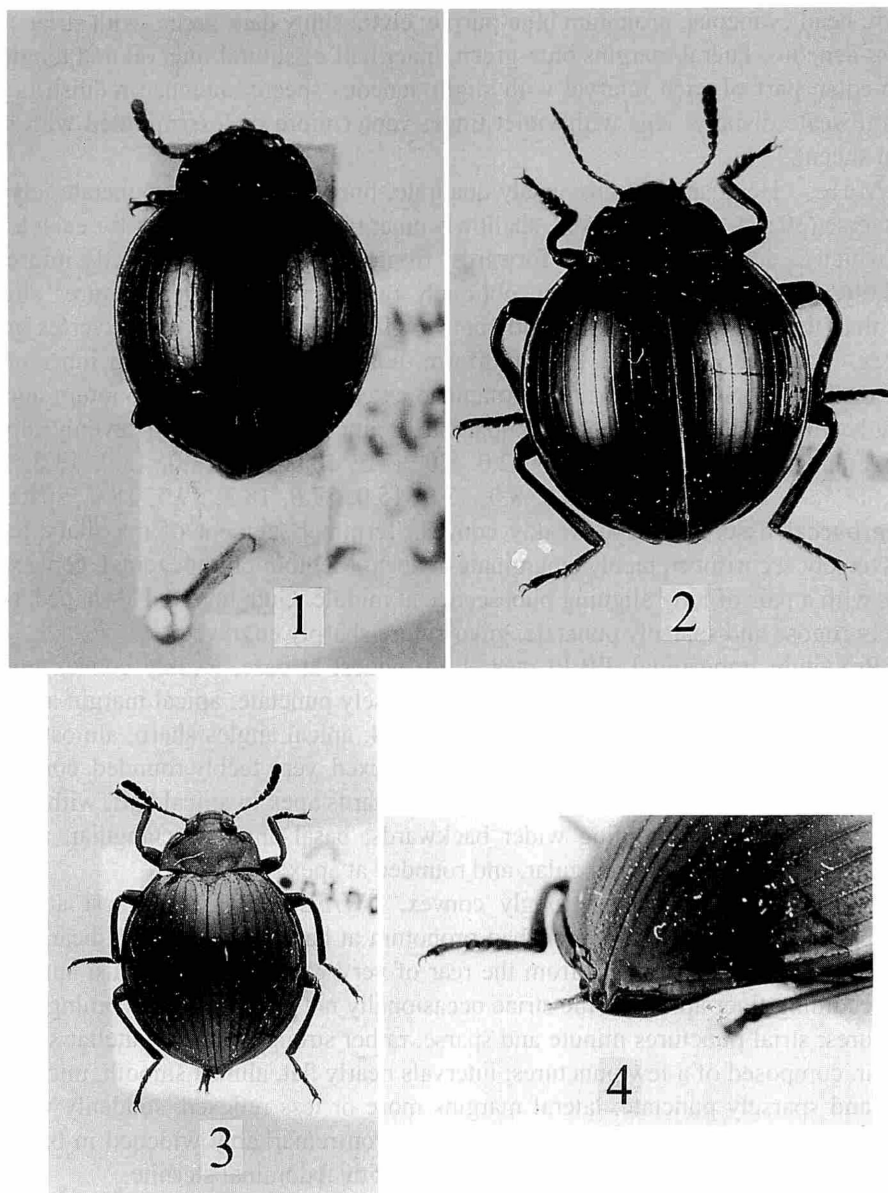
(Figs. 1–12)

Cyclonesus parvicollis FAIRMAIRE, 1896, 105 (type area: Sumatra). — GEBIEN, 1941, 1143 (702). Type depository: MNHN.

Cyclonesus dohertyi PIC, 1922, 21 (type area: Malacca). — GEBIEN, 1941, 1143 (702). Type depository: MNHN. [*Syn. nov.*]

Cyclonesus mucronatus PIC, 1922, 21 (type area: Borneo). — GEBIEN, 1941, 1143 (702). Type depository: MNHN. [*Syn. nov.*]

General. Body hemispherical, about 1.16–1.24 times as long as wide, and lustrous; pronotum remarkably small in contrast to large elytra. Colour dark reddish



Figs. 1-4. *Cyclonesus parvicollis* FAIRMAIRE; 1, Type ♂, deposited in MNHN; 2, male specimen from Malaysia; 3, female specimen from N. Borneo; 4, elytral apices in ♀.

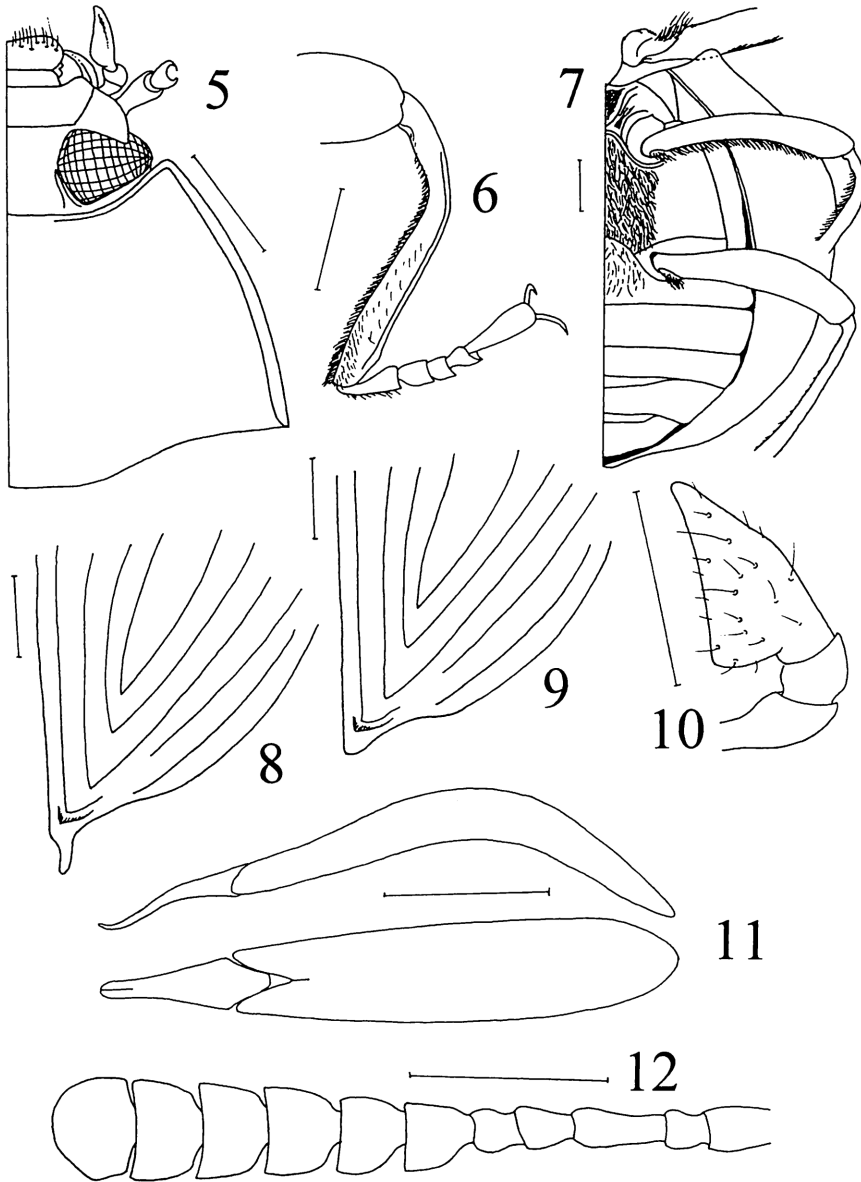
brown; head cyaneous; pronotum blue-purple; elytra shiny dark green, with striae more or less aeneous, lateral margins blue-green, inner half of sutural interval and longitudinal median part of each interval with slight aeneous sheen; antennae reddish brown, and infusate distally; legs with violet tinge; venter more or less mingled with blue-green sheen.

Male. Head small, transversely quadrate, finely and sparsely punctate; clypeus transverse (30 : 7), slightly convex, shallowly emarginate at apex except for each lateral 1/6, which is arcuately produced forwards; fronto-clypeal suture distinctly impressed medially, finely so laterally; genae obliquely raised laterad, with punctures slightly finer than the rest of head; frons gently convex, IE/TD=ca. 1.02 to 1.07; vertex gently convex, moderately punctate. Eyes reniform, comparatively large, with inner ocular sulci distinct on posterior portions. Antennae extending to base of pronotum and not strongly clubbed; 11th segment subquadrate, rounded in basal half, evenly tapered apicad, and truncate at apex; LA=12.0, 8.0, 17.5, 10.0, 8.0, 13.0, 12.0, 13.5, 12.0, 12.0, 15.5; WA=8.5, 7.3, 7.5, 8.0, 8.0, 13.0, 15.0, 17.0, 18.3, 19.5, 18.0. Space between buccal fissure and eye weakly convex. Terminal segment of maxillary palpus transversely securiform, feebly emarginate at apex. Mentum obtapezoidal, convex apically, with a pair of long aligning pubescence at middle. Gula inverted V-shaped, transversely rugose and sparsely punctate; gular suture sharply engraved.

Pronotum trapezoidal, PB/PL=ca. 1.58, widest at base, weakly convex on disc but slightly depressed at base, minutely and sparsely punctate; apical margin arcuately emarginate, narrowly bordered in each lateral 1/4; apical angles sharp, almost rectangular and produced forwards; lateral margins reflexed, very feebly rounded, convergent in basal half, then further strongly convergent towards apex in apical half, with borders distinct and narrow, becoming wider backwards; basal angles rectangular, not produced. Scutellum smooth, triangular, and rounded at apex.

Elytra wholly rounded, strongly convex, EW/EL=ca. 1.01, widest at middle (EW/PB=1.96), and a little wider than pronotum at base; elytral striae linear, narrow but deep, 6th to 8th extending from the rear of very weak humeral callus, and gradually becoming finer apicad, some striae occasionally not sulcate, but becoming rows of punctures; strial punctures minute and sparse, rather strong at base; scutellar striole irregular, composed of a few punctures; intervals nearly flat, almost smooth, microscopically and sparsely punctate; lateral margins more or less reflexed, suddenly vanished before strongly emarginate apex; elytral epipleuron remarkably widened in basal 5/8, irregularly depressed, extending to the middle of 5th abdominal sternite.

Prosternum with apical margin acute and a little produced downwards at middle; prosternal process coarse, sparsely pubescent, flattened between coxae. Mesosternal V-shaped ridge weakly raised, continuing basad onto rounded and obliquely declivous inflexed portions. Metasternum sparsely and obscurely punctulate, weakly and shallowly concave at middle, where hairs are dense and recumbent. Abdominal sternites short, depressed, weakly convex along midline, sparsely punctulate, longitudinally rugose sublaterally except for 5th; 1st sternite strongly bordered at base, with sparse recum-



Figs. 5–12. *Cyclonesus parvicollis* FAIRMAIRE. — 5, Head and pronotum in ♂; 6, mesotibia in ♂; 7, venter of hind body in ♂; 8, elytral apex in ♀; 9, elytral apex in ♂; 10, maxillary palpus; 11, male genitalia, lateral view (upper) and dorsal view (below); 12, antenna. (Scales: 1 mm for Figs. 5–9 and 11–12, 0.5 mm for Fig. 10.)

bent hairs medially; 4th membranous in median half. Male genitalia fusiform; parameres with apices spatulate and slightly reflexed in dorsal view.

Legs robust; trochanter with a bunch of piles; femora long, profemur slightly dilated apicad, with short recumbent pubescence on posterior margin near trochanter and postero-ventral side, posterior margin of mesofemur shallowly emarginate and densely decorated with long recumbent hairs in basal 5/6, anterior margin of metafemur abruptly divergent from base to middle; pro- and mesotibiae flattened, protibia incurved at basal 1/5, mesotibia strongly adunc at basal 1/3, with two rows of long pubescence along inner margin, dorsal margin of metatibia with short pubescence in apical half along inner margin; LM=20.0, 6.0, 5.0, 19.0.

Female. Body darker than in male; head and pronotum more or less blue-purple, with brassy lustre; elytra dark green, and covered throughout with aeneous sheen, lateral margin aeneous; legs metallic blue-purple; punctures on head denser; frons a little more strongly convex; gular suture parallel-sided; space between buccal fissure and eye nearly flat; pronotum with the elevation of lateral borders weaker; punctures on elytral striae more distinct, elytral apices with a pair of sharp lyrate apiculi, which are directed downwards; apical margin of prosternum more acute at middle; metasternum and 1st abdominal sternite devoid of any pubescence, 5th sternite more strongly sinuous at sides; posterior margin of mesofemur neither pubescent nor emarginate anywhere, mesotibia not adunc and devoid of the rows of pubescence, LM=15.0, 5.5, 4.0, 16.5.

Length: 9.5–11.0 mm; width: 6.5–8.5 mm.

Type examined. 1♂, Lenggong, Malaysia (MNHN, Type! I was unable to find the type specimen labeled Sumatra).

Specimens examined. 1♂, Lenggong, Malaysia, 26-V-1975, Y. KIYOYAMA leg. (PCS); 1♂, 2♀♀, Near Keningau, Sabah, N. Borneo, 30-III-1988, M. ITOH leg. (PCM); 1♂, Malacca (type of *C. dohertyi* PIC, MNHN); 1♀, Borneo (type of *C. mucronatus* PIC, MNHN); 2 exs., Pontianak, Bornéo Occ., 1898 (MNHN); 2 exs., ditto, 1900 (MNHN); 6 exs., Pelawan besar, Est Bornéo, 1937, M. E. WALSH leg. (MNHN).

Distribution. Sumatra, Malay Peninsula, Borneo.

Cyclonesus viridipennis PIC, 1922

(Figs. 13–14)

Cyclonesus viridipennis PIC, 1922, 21 (type area: Borneo). — GEBIEN, 1941, 1143 (702). Type depository: MNHN.

Redescription. Female. Body nearly hemispherical, a little longer than in the preceding species, about 1.33–1.35 times as long as wide, distinctly convex and feebly lustrous above; elytra distinctly larger and wider than pronotum. Colour dark reddish brown to reddish brown; head and pronotum coppery; elytra emerald-green, with strong purple sheen except for strial lines under certain direction of light; antennae dark reddish brown; venter and legs with slight violet and/or brassy-blue sheen.

Head trapezoidal, weakly convex, sparsely and irregularly punctate, interspace among the punctures very smooth; clypeus well-developed, weakly convex in middle, slightly emarginate at apex in median 5/6; fronto-clypeal suture hardly impressed; genae not strongly tumescent; frons slightly or weakly convex, IE/TD=ca. 1.33, devoid of inner ocular sulci; occiput with rugulose derma among punctures. Antennae short, not reaching base of pronotum; 11th segment trapezoidal; LA=8.0, 4.0, 8.0, 7.0, 5.0, 6.0, 6.0, 6.5, 6.4, 6.5, 11.0; WA=5.8, 4.8, 4.9, 5.4, 6.0, 9.0, 11.0, 13.0, 13.0, 14.0, 13.0. Space between buccal fissure and eye broad, gently convex, with an excavation of antennal reception at the innermost portion. Terminal segment of maxillary palpus securiform. Mentum obtrapezoidal, longer than wide, with long pubescence. Gula cuneate, with dense and transverse microscopical lines.

Pronotum trapezoidal, PB/PL=ca. 2.0, widest at base, weakly convex medially, and hardly sulcate along lateral margins; punctures minute and sparse, rather weakly impressed, more minute than those on head, and becoming smaller towards marginal portions; apical margin distinctly emarginate though nearly straight in middle, very narrowly bordered except for median 1/3; apical angles acute, produced forwards; lateral margins gently reflexed and moderately bordered, roundly convergent to before middle, thence evenly convergent to apex; basal angles rectangular, not produced, just fitting to the sulci of elytral lateral margins. Scutellum as long as wide, nearly smooth with some microscopical punctures.

Elytra rounded, strongly convex, strongly dilated backwards from base, widest at middle, EL/EW=1.02, with striae narrow, distinctly engraved, becoming gradually shallower posteriorly and rudimentary on apical portion, 6th to 8th striae not reaching humeral callus; strial punctures distinct, slightly lenticular in form, rather dense, becoming sparser apically, 6th and 7th striae terminating at the summit of humeral callus; intervals broad, nearly flat, feebly convex on 8th and 9th, microscopically and sparsely punctate; humeral callus moderately swollen; scutellar striole short and not striate; elytral epipleuron smooth, depressed, very broad behind base (nearly twice as wide as episternum beside epipleuron), distinctly tapered posteriorly.

Prosternum moderately raised in middle, very narrowly bordered at apex, with a minute apico-median stub, which is directed downwards; prosternal process cuneiform, unbordered, dilated posteriorly and abruptly narrowed from posterior portion of coxae to acute apex, with hair-bearing punctures (hairs recumbent). Mesosternal V-shaped ridge very weakly raised, sparsely pubescent, continuing basad onto roundly declivous inflexed portions. Metasternum short, sparsely punctate and rugulose laterally, with fine recumbent hairs restricted in median 1/3; process between mesocoxae trapezoidal. Abdominal sternites short and much transverse, distinctly depressed laterad on 3rd to 5th sternites, microscopically punctate; 4th feebly covered with isodiametric microsculpture.

Legs short; trochanter with some short pubescence; femora extending beyond lateral margins of elytra, posterior margin of mesofemora with very short hairs basally; tibiae short, hardly ancipital along outer margin; each segment of protarsi very short

and compact, metatarsi with 3rd segment as long as but narrower than 2nd, LM=8.0, 3.0, 3.0, 12.0.

Male. Unknown.

Length: 8.0–8.1 mm; width: 6.0–6.4 mm.

Type examined. Lectotype: ♀, Borneo holl. [printed on white square label]/type [hand writing by pencil on sepia small square label]/TYPE [printed on small and transverse red square label]/*Cyclonesus viridipennis* n. sp. [handwriting by pencil on sepia and thin square label]/Muséum Paris/coll. M. Pic [printed by black ink on white square label]/Lectotype [printed]/*Cyclonesus viridipennis* Pic/Design. K. ANDO, 1994 [handwriting by black ink on transverse red square label and surrounded by black printed marginal line]. Paralectotype: 1♀, Borneo holl. [printed on white square label]/type [handwriting by pencil on sepia small square label]/TYPE [printed on small and transverse red square label]/*Cyclonesus viridipennis* Pic [handwriting by pencil on sepia and thin square label]/Muséum Paris/coll. M. Pic [printed by black ink on white square label]/Paralectotype [printed]/*Cyclonesus viridipennis* Pic/Design. K. ANDO, 1994 [handwriting by black ink on transverse red square label and surrounded by black printed marginal line]. All the types are deposited in MNHN.

Distribution. Borneo.

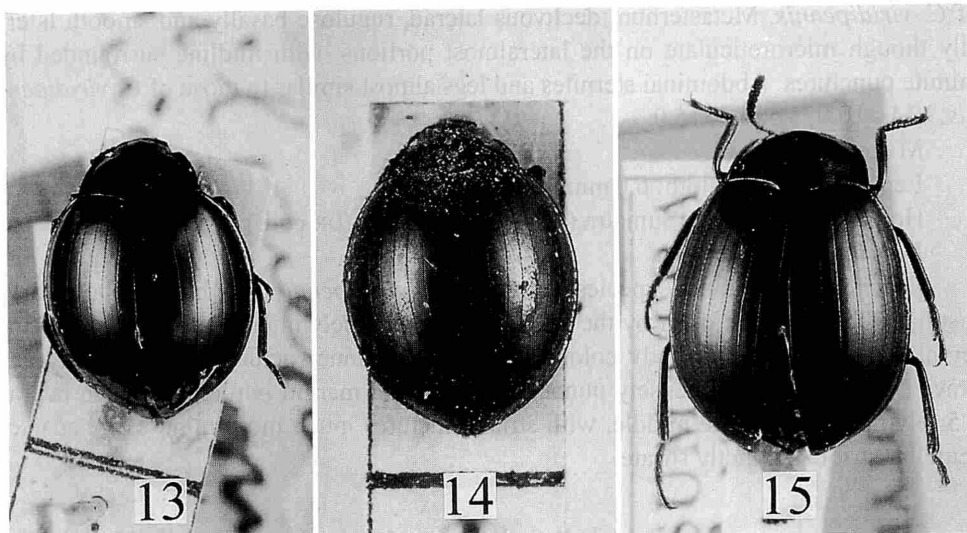
Diagnosis. This species is closely allied to *C. parvicollis* FAIRMAIRE, but distinctly different from the latter in the following points: punctures on the head finer; outer margins of tibiae hardly ancipital; body smaller; apical angles of pronotum more obtuse; elytral striae weaker and becoming vestigial in apical area, elytral apex in female devoid of acuminate hook.

Cyclonesus sculpturalis sp. nov.

(Fig. 15)

Female. Hemispherical, smaller and slightly sharper at apices of elytra than in *C. parvicollis* FAIRMAIRE, covered with feeble sericeous lustre. Colour black; head green; pronotum purple medially and blue-green laterally with somewhat brassy sheen; elytron sericeous dull-green, with lateral margin lustrous metallic green; venter dark reddish brown with slight green or blue sheen; legs reddish brown, with slight blue sheen; antennae infusate.

Head broadened; clypeus short, weakly convex, minutely punctate, truncate at apex; labrum barely visible; genae triangular, feebly tumescent laterad, gently rounded at sides just in front of eyes, linearly convergent towards apices in apical 2/3, with punctures sparse, similar in size to those on clypeus but sparser; frons broadened, gently convex, much more sparsely punctate than on clypeus, with fine isodiametric microsculpture, IE/TD=ca. 1.40; inner ocular sulci sharp and deep posteriorly. Antennae short, extending a little beyond middle of pronotum, densely pubescent in distal 7 segments; 7th to 10th segments much produced inwards than outwards; 11th oval, as long as wide; LA=9.0, 7.0, 10.0, 7.0, 6.0, 7.0, 8.0, 8.0, 8.5, 9.0, 13.0; WA=6.5, 6.0, 6.0,



Figs. 13–15. Habitus. — 13–14. *Cyclonesus viridipennis* Pic; lectotype, ♀ (13); paralectotype, ♀ (14). — 15. *Cyclonesus sculpturalis* sp. nov., holotype, ♀.

6.5, 7.0, 10.0, 11.0, 12.5, 14.0, 14.0, 13.0. Terminal segment of maxillary palpus uniformly securiform. Mentum U-shaped, steeply sloping towards base, shallowly emarginate at apex, with a pair of long aligning pubescence on each side of the middle. Submentum pentagonal, parallel-sided, with a few punctures.

Pronotum trapezoidal, transverse, PB/PL=ca. 2.0, widest at base; disc convex, strongly so in apical half, with punctures minute and rather dense, larger than those on frons, space among punctures covered with fine isodiametric microsculpture; apical margin roundly emarginate, feebly bordered in each lateral 1/5; apical angles nearly rectangular but the corners rounded, slightly produced forwards; lateral margins very weakly, rather evenly convergent from base to apex, somewhat sinuous before base, with borders distinct, elevated throughout; basal angles acute.

Elytra oval, rather strongly convex, widest before middle, EL/EW=ca. 1.08, devoid of any apical mucrones, with striae strongly impressed, becoming gradually shallower and finer towards apices, 7th and 8th not reaching humeral callus; strial punctures minute, visible, almost sparse, and much sparser apically; intervals flat, sparsely punctate, with fine isodiametric microsculpture; humeral callus very weakly swollen; scutellar striole distinctly engraved; elytral epipleuron depressed, extending to base of 5th abdominal sternite, not so broadened along metepisterna as in *C. parvicollis*.

Prosternum roundly emarginate at apex, with a sharp apico-median stub produced downwards; prosternal process horizontal, convex, slightly dilated backwards, and abruptly narrowed before apex, with two longitudinal, shallow grooves parallel to each other. Mesosternal V-shaped ridge comparatively small, weakly raised, coarsened by vermiculate derma, with sparse and long pubescence, unedged anteriorly in the manner

of *C. viridipennis*. Metasternum declivous laterad, rugulose basally and smooth laterally though microreticulate on the lateralmost portions, with midline surrounded by minute punctures. Abdominal sternites and legs almost similar to those of *C. viridipennis*; LM=10.0, 5.5, 4.5, 15.0.

Male. Unknown.

Length: 7.7 mm; width: 6.0 mm.

Holotype: ♀, Médan, Sumatra (MNHN: R. OBERTHÜR coll.).

Distribution. Sumatra.

Diagnosis. This new species resembles *C. viridipennis* PIC, but can be clearly distinguished from the latter by the following points: finely microsculptured elytral intervals; slightly different body colour; IE/TD=1.40; inner ocular sulci distinctly engraved; pronotum more densely punctate, with apical margin bordered in each lateral 1/5; elytra widest before middle, with striae punctures much more minute and sparse; scutellar striae distinctly striate.

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要 約

安藤清志：Cyclonesus 属の再検討。—— 東南アジア固有の Cyclonesus 属について検討を行った。既知種の再記載を行い、あわせて *C. viridipennis* PIC に近縁の種を、体表面を覆う微細構造などの相違をもとに新種と認め、*C. sculpturalis* と命名し記載を行った。既知種のうち、PIC (1922) が記載した2種、*C. dohertyi* と *C. mucronatus* を FAIRMAIRE が記載した *C. parvicollis* の下位同物異名として取り扱った。

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