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Charaea luzonicum sp. nov. (Coleoptera: Chrysomelidae: Galerucinae): the first record of *Charaea* in the Philippines

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Abstract: The first representative of the genus *Charaea* Baly, 1878, *Ch. luzonicum* sp. nov., is described from Luzon Island, the Philippines. Based on the characteristic internal sclerites of the aedeagus, the new species belongs to the *Ch. coomani* species group. Colour photos and drawings of habitus and both male and female genitalia are presented.

Keywords: Coleoptera - Chrysomelidae - Galerucinae - taxonomy - new species - Luzon

INTRODUCTION

The taxonomy and geographic distribution of the genus *Charaea* are insufficiently known. The main reason is a long and complicated history of taxonomic research of the genus *Charaea* (see Bezděk & Lee, 2014). The species were dispersed in various genera (predominantly in *Calomicrus* Dillwyn, 1829 and *Exosoma* Jacoby, 1903) and cummulated to *Charaea* just in several last years (Beenen & Warchałowski, 2010; Bezděk, 2012; Bezděk & Lee, 2014). *Taphinellina* Maulik, 1936, usually treated as synonym of *Charaea*, is not congeneric and its taxonomic position will be clarified in the near future (Bezděk, submitted). Recently, *Charaea* was synonymized either with *Calomicrus* or *Exosoma* (see Medvedev & Sprecher-Uebersax, 1998; Kimoto, 2004) but these acts were unwarrented and not followed by subsequent authors as *Calomicrus* and *Exosoma* are morphologically and partly also geographically remarkably different. Last year, the genus *Charaea* was redescribed, clarified as valid genus and compared with similar genera (Bezděk & Lee, 2014).

Currently, 44 species distributed in the eastern Palaearctic, Himalayas, China and adjacent countries of the Oriental Region are classified in *Charaea*. However, some transfers from other genera are still expected and at least 20 new species are waiting for being described.

During a two weeks stay in Naturhistoriska Riksmuseet Stockholm within the frame of Synthesys (SE-TAF-3534), I examined several tens of species originating from the Philippines and named by the German coleopterist Julius Weise (1844-1925) but never described, including those provided with the unpublished manuscript name *Calomicrus luzonicus*. The specimens belong to *Charaea* and represent the first known *Charaea* specimens from the Philippines. Although the distribution of the genus *Charaea* was significantly extended last year, the discovery of the new species in the Philippines is really surprising and suggests a much wider distribution than expected as there is so far no confirmed occurence of the genus *Charaea* in the Sunda islands of Malaysia and Indonesia.

MATERIAL AND METHODS

All measurements were made using an ocular grid mounted on MBS-10 stereomicroscope (at 16× magnification for the body length and 32× magnification for the remaining measurements). Photographs of specimens were taken with Canon EOS 550D digital camera with Canon MP-E 65 mm objective. Images of the same objects at different focal planes were combined using Helicon Focus 5.1.3 software.

The aedeagus was soaked overnight in cold 10% KOH solution, washed in water and an entomological pin was moved through the basal orifice to push the internal sac through the dorsal opening. The aedeagus with everted sac was put into a depression slide filled with glycerol, covered by a cover slip and photographed. The aedeagus was then put into a microvial with glycerol attached to the pin with the specimen. Subsequently, the figures were edited with Corel Photopaint 12.

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TAXONOMY

Genus *Charaea* Baly, 1878

Charaea Baly, 1878: 376 (type species *Charaea flaviventre* Baly, 1878, by monotypy).
Taphinellina Maulik, 1936: 299 (type species *Taphinella bengalensis* Jacoby, 1900, by original designation).

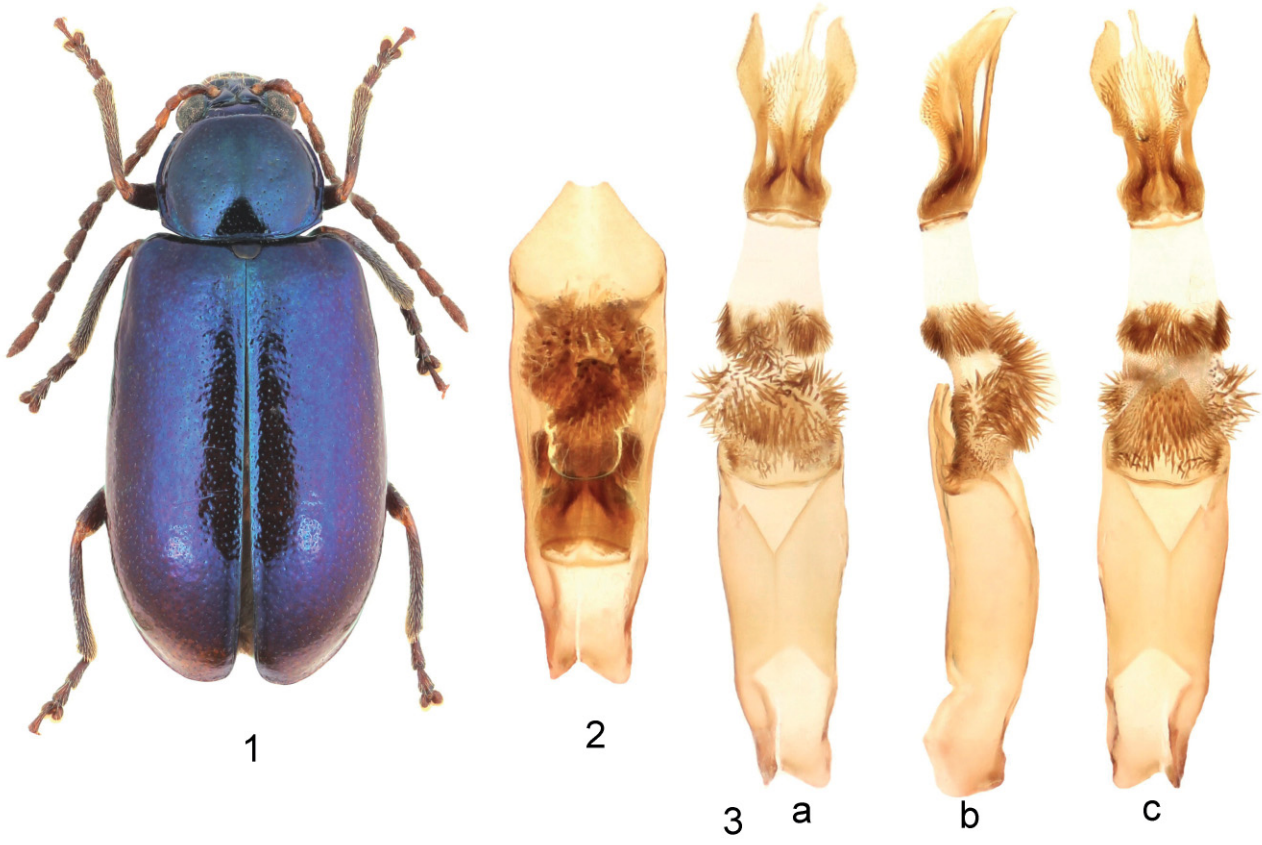
Charaea luzonicum Bezděk sp. nov.

Figs 1-10

Holotype: NHRS-JLKB 000023081; male; Mt. Banahao; P. I. Baker leg.

Paratypes: NHRS-JLKB 000023079; male; Mt. Banahao; P. I. Baker leg. – NHRS-JLKB 000023082; female; Mt. Banahao; P. I. Baker leg. – NHRS-JLKB 000023080; female; Mt. Banahao; P. I. Baker leg. – NHRS-JLKB 000023083; female; Mt. Banahao; P. I. Baker leg. – NHRS-JLKB 000023085; Baguio, Benguet; P. I. Baker leg.
The specimens are provided with one additional red label: HOLOTYPUS, [or PARATYPUS], *Charaea luzonicum* sp. nov., J. Bezděk det., 2014. All the specimens are deposited in Naturhistoriska Riksmuseet Stockholm (Sweden).

Diagnosis: Due to a diagnostic structure of the aedeagus and particularly the internal sac with long clavate lateral sclerites, *Charaea luzonicum* sp. nov. belongs to the *Ch. coomani* group as tentatively defined by Bezděk & Lee (2014). Currently, the group contains 4 species: *Ch. coomani* (Gressitt & Kimoto, 1963) (Vietnam), *Ch. hainanicum* (Gressitt & Kimoto, 1963) (China: Hainan), *Ch. mimicum* (Medvedev, 1998) (Taiwan) and *Ch. kelloggi* (Gressitt & Kimoto, 1963) (Taiwan, Hongkong, China: Fujian, Guizhou, Guangdong).
A male of *Ch. hainanicum* was not available for this study, but the apex of its aedeagus is widely obtusangulate (Fig. 12) based on the drawing in the original description, while it is concave in *Ch. luzonicum* sp. nov. (Fig. 10). From the other three species, *Charaea luzonicum* sp. nov. can be distinguished by wider pro- and mesotarsomeres I (other species in *Ch. coomani* group have also parallel pro- and mesotarsomeres I but slenderer), shorter subapical antennomeres (2.2 times as long as wide in *Ch. luzonicum* sp. nov. while 2.5 times in *Ch. kelloggi* and 3 times in *Ch. coomani* and *Ch. mimicum*), an aedeagus not prolonged apically and its ventral side with shallow median impression (aedeagus with more or less prolonged apex and without impression in *Ch. kelloggi*, *Ch. coomani* and *Ch. mimicum*) (cf. Figs 10-14), the outer sides of lateral sclerites in aedeagus with fine



Figs 1-3. *Charaea luzonicum* sp. nov. (1) Habitus (male, holotype, 5.2 mm). (2)Transmitted light illumination of aedeagus in dorsal view, internal sac not everted. (3) Aedeagus with everted internal sac (a - dorsal, b - lateral, c - ventral view). Not to scale.

denticulations (Fig. 7; smooth in *Ch. kelloggi* and *Ch. mimicum*, not studied in *Ch. coomani*).

Etymology: Derived from Luzon Island where the type series was collected.

Description: Dorsal side glabrous, oval, convex. Colour metallic bluish-black, abdomen yellowish brown, mandibles brown with black apices, labrum metallic with brownish anterior margins, antennae black with antennomeres I-III brownish, legs metallic with brownish knees.

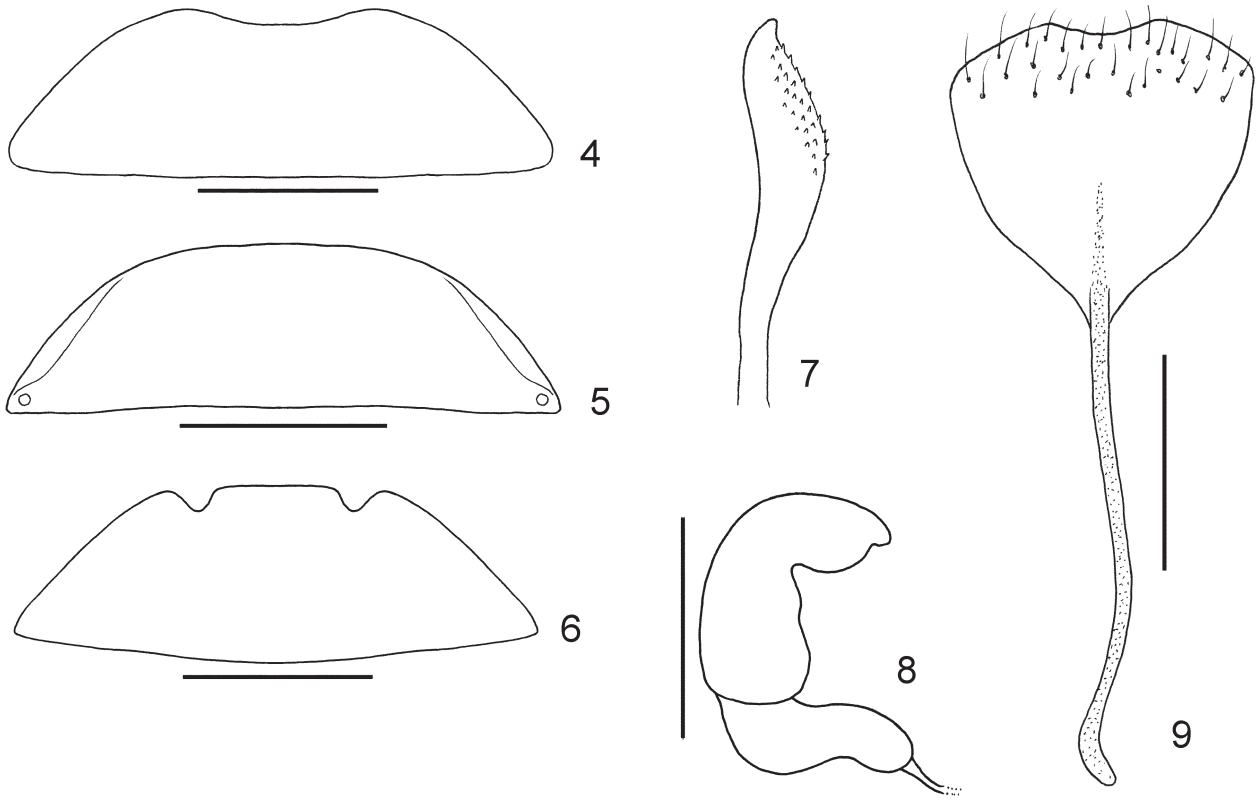
Male (holotype, Fig. 1). Labrum transverse, with six pores in transverse row bearing pale seta, with rounded and convergent lateral margins, anterior margin emarginate in middle. Anterior part of head nearly impunctate, lustrous, with several long setae on anterior margin of clypeus, along lateral margins of nasal keel and along anterior margins of antennal sockets. Nasal keel wide, moderately convex. Interantennal space 1.8 times as wide as transverse diameter of antennal socket. Frontal tubercles large, subtriangular, elevated, lustrous, glabrous, impunctate, anterior tips divergent, separated by nasal keel. Interocular space wide, 2.2 times as wide as transverse diameter of eye. Vertex separated from frontal tubercles by deep furrow, impunctate, behind each eye with several long setae. Antennae filiform, 0.55 times as long as body, length ratio of antennomeres equals 12-5-6-10-10-10-10-10-11-11-15, antennomeres I–III lustrous, covered with sparse setae, antennomeres IV-XI dull, covered with dense short setae.

Pronotum lustrous, 1.3 times as broad as long, widest in middle, moderately convex, covered with double punctures (smaller and larger). Anterior margin nearly straight, unbordered, lateral margins rounded with broad border, posterior margin straight in middle, lateral parts rounded, thinly bordered. Anterior angles distinctly swollen, rectangular, posterior angles with small pointed tip. All angles with setigerous pore bearing long pale seta, additional short setae visible on lateral margins of pronotum.

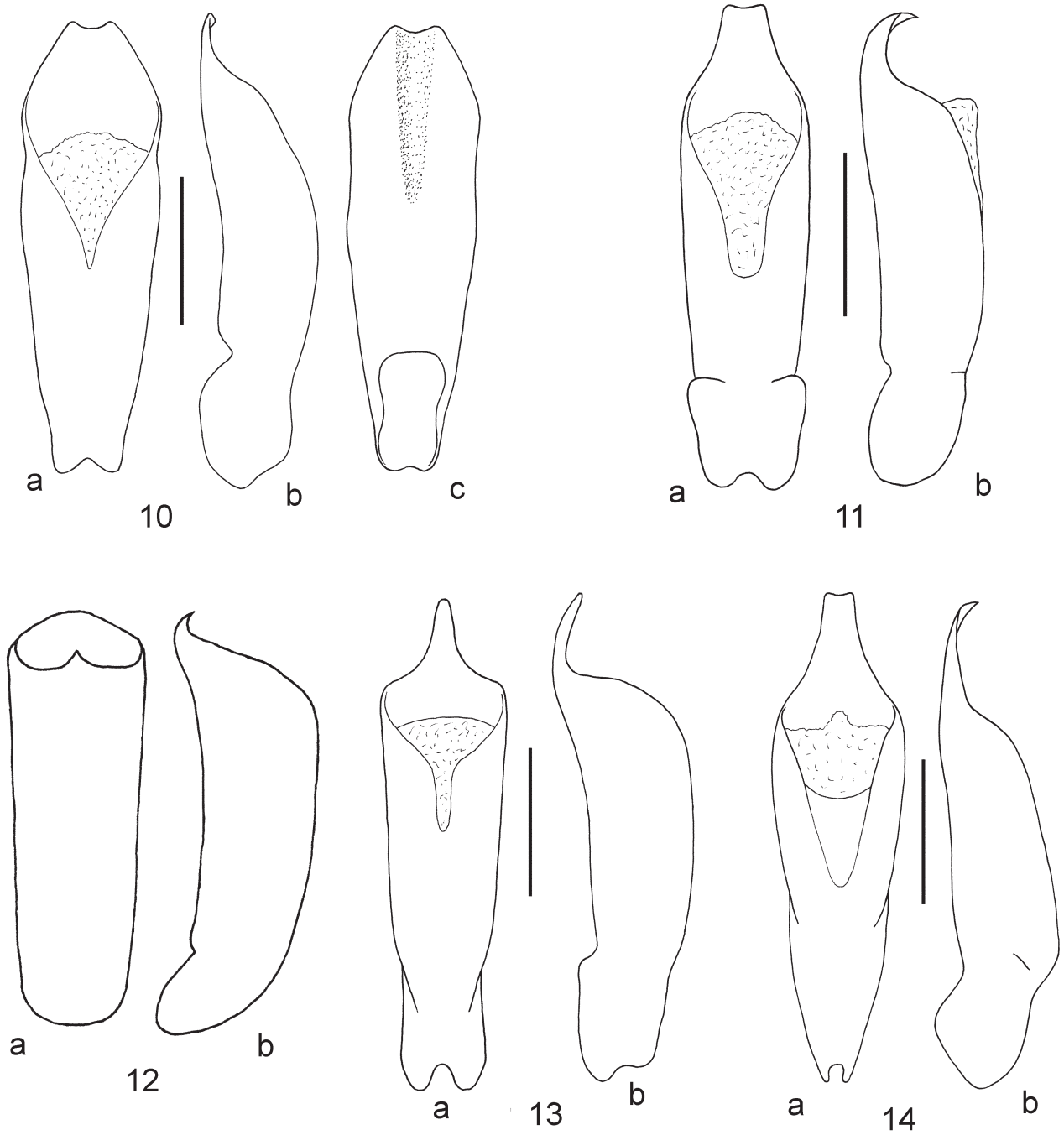
Scutellum subtriangular with widely rounded tip, impunctate, glabrous.

Elytra 1.6 times as long as wide and 0.6 times as long as body, widest behind middle, almost glabrous (with very scarse short pale setae on apical slopes), densely covered with fine small confused punctures. Humeral calli well developed. Epipleura impunctate, wide basaly, gradually narrowing and disappearing before apex. Macropterous.

Anterior coxal cavities opened posteriorly. Prosternal process thinly visible but not elevated between procoxae. Ventral surface lustrous, sparsely covered with fine punctures and pale setae, metepisterna dull, covered



Figs 4-9. *Charaea luzonicum* sp. nov. (4) Female last ventrite. (5) Female pygidium. (6) Male last ventrite. (7) Right lateral sclerite in aedeagus. (8) Spermatheca. (9) Sternite VIII. Scale bars: 0.5 mm for Figs 4-6, 0.25 mm for Figs 8-9.



Figs 10-14. Aedeagus (a - dorsal, b - lateral, c - ventral view). (10) *Charaea luzonicum* sp. nov. (11) *Ch. coomani*. (12) *Ch. hainanicum* (based on Gressitt & Kimoto, 1963). (13) *Ch. kelloggi*. (14) *Ch. mimicum*. Scale bar: 0.5 mm.

with dense setae. Abdomen with last ventrite transverse, posterior margin with two short subtriangular incisions, median lobe slightly concave (Fig. 6).

Legs slender. All tibiae with apical spur in both sexes. Length ratio of protarsomeres I, II, III and V equals 9-6-5-11, protarsomere I robust, parallel, 1.8 time as long as wide; length ratio of mesotarsomeres I, II, III and V equals 11-9-5-12, mesotarsomere I robust, subparallel, with lateral margins shallowly widely concave, 2.2 time as long as wide; length ratio of metatarsomeres I, II, III and V equals 12-8-5-12, metatarsomere I elongate triangular, 2.4 times as long as wide. Claws appendiculate.

Aedeagus symmetrical, subtubular, parallel subapicaly, basal half slightly convergent, apical part convergent with tip concave, ventral side with shallow furrow in apical half (Figs 2, 10). Internal sac with three sclerites: very slender median sclerite and pair of lateral sclerites which are flat, subclavate, with outer lateral side covered

with fine denticulations. Median sclerite is slightly longer than lateral ones (Figs 3, 7).

Female: Interocular space slightly wider, 2.55 time as wide as transverse diameter of eye. Protarsomere I and mesotarsomere I not parallel but elongate triangular. Last ventrite transverse with posterior margin widely shallowly concave (Fig. 4). Pygidium transverse, widely rounded (Fig. 5). Sternite VIII (Fig. 9) subtriangular with anterior margin shallowly concave in middle, laterally oblique, lateral margins slightly rounded towards tignum, short setae are cummulated along posterior margin, tignum slender, twice longer than sternite VIII, apically bent. Spermatheca: nodulus poorly delimited, elongate, slightly wider than cornu, cornu shortly C-shaped with inner angle sharp, apex with indicated appendix, proximal spermathecal duct robust, slightly S-shaped (Fig. 8).

Dimensions: Males: 4.3-5.3 mm (holotype 5.3 mm), females: 4.7-5.3 mm.

Distribution: Philippines (Luzon Isl.).

Type locality: Philippines, Luzon, Banahao Mt. [14°03′53″N 121°28′47″E].

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