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Two new species of *Cacia* Newman (Coleoptera, Cerambycidae, Lamiinae) from the Mindoro Biogeographic Region of the Philippines

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Two new species of *Cacia* Newman, 1842, *Cacia (Ipocregyes) katrinae* sp. nov. and *Cacia (Cacia) aeschyae* sp. nov., are described and illustrated from Mindoro Island. Prior to this, only one species was described from Mindoro, *C. estrellae* Hüdepohl, 1989. With the addition of these new species, Mindoro Island now has three species, and the Philippines with 51 species and 2 subspecies of *Cacia*.

Key words: beetle, biogeography, longhorn, Mesosini, new species, Philippines

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INTRODUCTION

The genus *Cacia* Newman (Coleoptera, Cerambycidae, Lamiinae), type species *Cacia spinigera* Newman, 1842, is a widely distributed genus of Mesosini in the tropics with a concentration in Southeast Asia (Breuning, 1938; Medina et al. 2023). The Philippines has the highest species diversity of *Cacia* in the world with 49 species and 2 sub-species (Medina et al. 2023). There are four subgenera belonging to the Philippine fauna: *Acanthocacia* (1 sp.) *Cacia* s. str. (13 spp.), *Corethrophora* (16 spp.), and

Ipocregyes (17 spp., 2 ssp.). Two species were recently added for Philippine fauna, *Cacia (Cacia) cabrasae* Medina et al., 2023 and *Cacia (Ipocregyes) manobo* Medina et al., 2023, both from Southern and Eastern Mindanao respectively.

One of the reasons why the Philippines is a megadiverse country is its biogeographic origin (Diesmos and Brown, 2011; Heaney, 1986; Heaney et al., 1998), wherein each island has differing continental, oceanic, or volcanic origins (Hall, 2002; Hughes et al., 2015; Vallejo, 2014) which can be explained through the Pleistocene Aggregated Island Complex (PAIC) theory (Brown and Diesmos, 2002; Vallejo, 2011). The most well-known biogeographic model for Philippine fauna is based on PAIC model using 150 meters bathymetric line by Heaney (1986), where the Philippines is divided into several regions: Greater Luzon (14 species *of Cacia*), Greater Palawan (2 species of *Cacia*), Romblon Islands, Negros-Panay (12 species of *Cacia*), Greater Mindanao with Camiguin as a separate island (16 species of *Cacia*), Greater Sulu, and Mindoro Island (1 species of *Cacia*). Majorly of the species are island endemic with few having longer distribution ranges. At present, only one species of *Cacia* is documented from Mindoro Island, *C. estrellae* Hüdepohl, 1989, belonging to subgenus *Cacia*s.str.

In this paper, additional two new species of *Cacia* are described and illustrated from Mindoro Island, thus the island now has three species, *Cacia estrellae* Hüdepohl, 1989, *Cacia (Cacia) aeschyae*sp. nov., and *Cacia (Ipocregyes) katrinae* sp. nov.

MATERIALS AND METHODS

Morphological characters were observed under Leica MZ 12.5 stereomicroscope. Habitus images were taken using Canon EOS 6D digital camera equipped with an MP-E 65mm macro lens mounted in Stack-Shot macro rail automated with Helicon Remote version 4.3.0.w. All images were stacked using Helicon Focus version 8.1.1 and processed using a licensed Photoshop CS6 Portable software version.

Measurements of the various body parts as follows:
LB = length of body from antennal support to apices of clothed elytra;
WH = maximum width across head from the outer margin of a gena to that of another;
LG = length of gena from upper margin to lower margin;
LL = length of lower eye lobe from upper margin to lower margin;
WL = maximum width across lower eye lobe;
LP = length of pronotum from base to apex along midline;
WP = maximum width across pronotum;
LE = length of elytra from level of basal margins to apices of clothed elytra; WEH = width of elytra at humeri;
/ separates different lines on a label; // separates different labels.

All measurements are given in millimeters (mm).

Comparative material and specimens used in this study are deposited in the following collections:
DUBC Daugavpils University Biological Collections, Daugavpils, Latvia.
MMCP Milton Medina Collections, Tagum City Philippines.
PNM Philippine National Museum, Ermita, Manila, Philippines.

TAXONOMY

***Cacia (Ipocregyes) katrinae* sp. nov.**
(Fig. 1A)

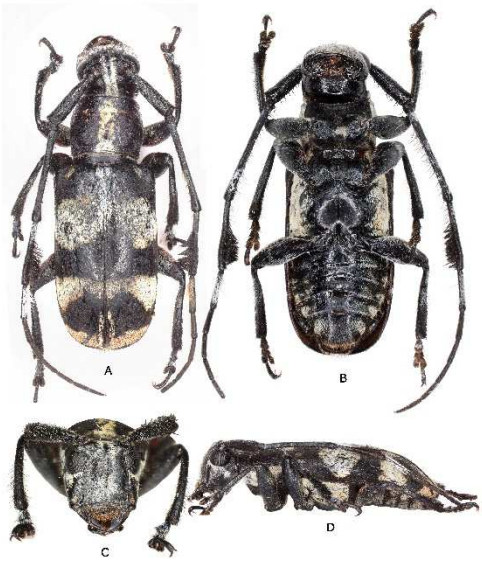

Fig. 1. Habitus of *Cacia (Ipocregyes) katrinae* sp. nov.: A. Dorsal aspect, B. Ventral aspect, C. Frons, D. Lateral aspect.

HOLOTYPE. male: PHILIPPINES – Southern Luzon, Oriental Mindoro / Baco / vi.2017, loc. Collector leg. / MMCP, printed on redcard.

PARATYPE female: same label as the holotype / DUBC, printed on red card. Type specimen will be deposited at PNM.

Description. Measurements: Holotype male: LB (LH+LP+LE): 11.5 mm. LH: 1.5 mm. WH: 3.0 mm. LG: 1.0 mm. LL: 1.0 mm. WL: 1.0 mm. LP: 2.0 mm. WP: 3.0 mm. LE: 8.0 mm. WEH: 4.5 mm. Paratype female: LB (LH+LP+LE): 12.0 mm. LH: 1.5 mm. WH: 3.0 mm. LG: 1.5 mm. LL: 1.0 mm. WL: 1.0 mm. LP: 2.0 mm. WP: 3.5 mm. LE: 8.5 mm. WEH: 5.0 mm.

Adult male. Teguments head including frons, genae, and antennae matte black; underside of the body, femora, clypeus, legs, pronotum, and elytra dark brown to black.

Head twice wider than long. The junction between the frons and vertex is slightly raised with a very shallow longitudinal slit along the midline. Vertex with two parallel white and yellowish bands of pubescence from the base up to the apex of the frons. Genae longer than wide, densely covered with whitish and yellowish recumbent pubescence, with few erect black and brownish setae. Posterior end of genae with a shallow dent covered with whitish recumbent setae and few black erect setae. Eyes matte black, lower eye lobesas long as wide, back of the eyes densely covered with semi-erect brownish setae. The apical margin of the head is lined with long whitish setae. Clypeus light brown, glabrous, and lustrous. Labrum matte black densely covered with whitish and yellowish recumbent setae with few erect black setae. Mandible matte black, base with dense black recumbent setae, lateral side with deep depression covered with white and black setae.

Antennae slightly longer than the body; scape slightly robust, rugose, with apical cicatrix, densely covered with whitish recumbent pubescence with black erect setae; with dense micropunctures. Scape, pedicle, antennomeres III to V are densely covered with black or brownish erect setae, the rest of antennomeres are covered with few erect setae. Antennomeres III and IV with whitish pubescence near the base; antennomere III longer than IV; antennomere V entirely covered with whitish pubescence; tuft of black setae at antennomere IV; antennomeres III to XI cylindrical; antennomeres VI to XI densely covered with fine recumbent pubescence, with few black erect setae.

Prothorax. Prothorax slightly rugose, covered with fine black recumbent pubescence, lined with 3 longitudinal bands of whitish and yellowish pubescence as follows: along the midline of pronotum, and a thick band at each lower end of propleura. Prosternum

densely covered with black and whitish erect setae.

Elytra. Elyra is longer than wide, parallel-sided, and smoothly rounded at the apex. The humeral angle is slightly raised; the basal third of elytra rugose with fine punctures, finer towards the apex. Lateral side from humerus up to basal third with apical declivity, smoother towards the apex. With three bands of whitish to yellowish recumbent pubescence as follows: a short longitudinal band near the humeral angle, a thick pre-median band from near the lateral margin to the elytral suture, and a thick post-median band lined from the elytral margin to suture interrupted at the middle in elytral margin forming a broken circle (Fig. 1A). Elytral margin lined with erect black setae, apex rounded covered with thick whitish and yellowish recumbent setae.

Legs. Procoxa and metacoxa raised, covered with semi-erect whitish setae. Femora and protibiarobust, covered with fine whitish pubescence with few semi-erect whitish or yellowish setae. Basal half of mesotibia, metatibia, and tarsi are covered with fine whitish semi-erect setae, apical half with black semi-erect setae. Claws dark brown, simple. Mesosternum, mesepisternum, metepisternum, metasternum, mesepimeron and abdominal ventrites are densely covered with whitish and yellowish recumbent pubescence and semi-erect setae; ventrite V is broader than ventrites I to IV individually.

Genitalia. Whole system of genitalia recurved when viewed laterally. Aedeagus and tegmen are the same length (4.0 mm); endophallus (8.0 mm) is twice longer than the aedeagus and tegmen individually. Parameres are bottle-shaped, separated at the apex, apex lined with soft long yellowish setae. Aedeagus parallel-sided, broader at midline, lanceolate towards the slightly blunt apex. Basal third of endophallus broader with thick bands of sclerites and forming two lines towards the midline.

Adult female. There is no morphological difference between the male and female except for the slight difference in body size and anadditional small band of whitish pubescence at the lateral side of the elytra near the humeral angle. Tegument of the underside of the body is darker in females than in males.

Diagnosis. This new species belongs to sub-species *Ipocregyes* for having no apical spines in antennomeres III or IV, antennomere III with a tuft of hairs, and the inner side of antennomere III is not inflated. The closest congener of the new species is *Cacia manobo* Medina et al. 2023 for having similar body form and elytral bands but can be easily differentiated in terms of the pronotal bands (*C. manobo* thickly covered with whitish and yellowish pubescence with V-like black pubescence along the apical median area vs. a thinner band of whitish pubescence along the midline from base to apex in *C. katrinae* sp. nov.). A thick tuft of hairs at antennomere IV is absent in *C. manobo*, present in *C. katrinae* sp. nov. The new species is also close to *C. marionae* Hüdepohl, 1989 but can be easily distinguished by their differences in the head, pronotal, and elytral bands.

Etymology. This new species is named after Katrina Barševska, the daughter of the third author.

Distribution. Philippines (Southern Luzon, Oriental Mindoro, Baco).

***Cacia (Cacia) aeschyae* sp. nov.**
(Fig. 2A)

HOLOTYPE male: PHILIPPINES – Southern Luzon, Oriental Mindoro / Puerto Gallera / vi.2017, loc. collector leg. / MMCP, printed on red card. Type specimen

will be deposited at the Philippine National Museum (PNM).

Description. Measurements: Holotype male: LB (LH+LP+LE): mm. LH: 1.5 mm. WH: 2.5 mm. LG: 1.0 mm. LL: 0.5 mm. WL: 0.5 mm. LP: 2.0 mm. WP: 3.0 mm. LE: 8.0 mm. WEH: 4.0 mm.

Teguments head, prothorax, and elytradark brownish; underside of the body, antennae, and legs are light brownish.

Head broader than long; vertex, frons, and genae densely covered with yellowish recumbent pubescence; frons with deep punctturations arranged in random; longitudinal line visible from base to apex; vertex with thick band of yellowish pubescence from base up to margin between frons; genae wider than long; eyes dark brown as long as wide; apical margin of head slightly concave, lined with long erect yellowish setae; clypeus light brownish, lustrous, glabrous; labrum broader than long, densely covered with semi-erect yellowish setae; mandibles lustrous, dark brownish, basal half with punctturations, with lateral depression, and covered with semi-erect yellowish setae. Scape slightly robust towards apex with cicatrix, covered with fined recumbent yellowish pubescence with moderate erect long yellowish setae. Antennomeres III to XI cylindrical, covered with fine recumbent yellowish pubescence, underside with numerous long erect yellowish setae; Antennomere III longer than IV and V combined; antennomeres VI to XI of the same length.

Fig. 2. Genitalia of *Cacia (Ipocregyes) katrinae* sp. nov.: A-C. Whole system of genitalia, A. Lateral aspect, B. Ventral aspect, C. Dorsal aspect. D-F. Aedeagus, D. Dorsal aspect, E. Ventral aspect, F. Lateral aspect. G. Tegmen.

Fig. 3. Habitus of *Cacia (Cacia) aeschyae* sp. nov.: A. Dorsal aspect, B. Ventral aspect, C. Lateral, D. Frons.

Pronotum and Propleuron with deep punctures; pronotal disc slightly raised, broadest at the middle; prothorax densely covered with recumbent yellowish pubescence with few erect yellowish setae arranged in random. Elytra twice longer than wide, with dense punctures from base towards post-median, finer towards apex. Humeri angled and slightly raised. Elytra broadest at humeri tapering towards apex, with three transverse bands of recumbent yellowish pubescence: a transverse band at the base and humeri, a pre-median band from margin to suture, and thick postmedian band towards apex. Elytral margin lined with long erect yellowish setae from the lateral side of humeri to apex. Scutellum triangular covered with recumbent yellowish setae.

Procoxa and metacoxa are robust, raised, and covered with fine recumbent pubescence with few erect yellowish setae. Femora robust; femora, tibia, and tarsi covered with fine recumbent yellowish pubescence with few short erect yellowish setae. Claws simple.

Mesosternum quadrangular, with fine recumbent setae; mesepimeron, mesepisternum, metepisternum, metasternum, and abdominal ventrites densely covered with recumbent yellowish pubescence; mesepimeron slightly wider than long; metepisternum rectangular; ventrite I as broad as ventrite V; ventrite I broader than ventrites II, III, and IV individually.

Genitalia. Aedeagus (3.0 mm) recurved when viewed laterally, broadest at premedian, tapering towards apex, apex slightly blunt; tegmen (3.5 mm) longer than aedeagus, parameres four times longer than wide (1.0 mm, 0.25 mm), parallel-sided not meeting from base to apex; apex of parameres lined with long soft erect yellowish setae.

Adult female. Unknown.

Differential diagnosis. This new species belongs to *Cacia* sēnsū strictō for having an apical spine at antennomere III, and no apical spines in IV and VI. This species is close to *C. trimaculata* Breuning, 1947 for having three bands of whitish pubescence at the elytra but can be easily differentiated based on the pronotal bands (*C. aeschyae* sp. nov. fully covered with yellowish pubescence vs. thick median longitudinal band of whitish pubescence in *C. trimaculata*). Both species also differ in terms of elytral bands (thinner bands in *C. aeschyae* sp. nov. vs. thick circular bands in *C. triomaculata*). *Cacia aeschyae* sp. nov. is distinct for having a body tapering towards apex more robust in *C. triomaculata*. Finally, antennomere VI of *C. triomaculata* covered with whitish pubescence, absent in *C. aeschyae* sp. nov. This new species also differs from *Cacia estrellae* Hüdepohl,

1989 which can be found in the same biogeographic region for having a much-tapered body form and no two-toned femora.

Etymology. The new species is named after Aeschy Rose Medina, the daughter of the first author.

Distribution. Philippines (Southern Luzon, Oriental Mindoro, Baco).

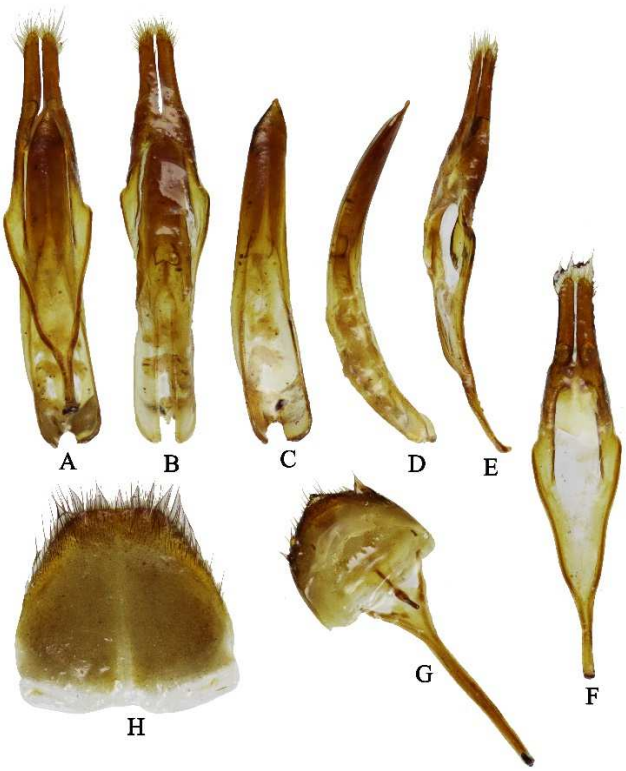

Fig. 4.*Cacia (Cacia) aeschyae* sp. nov.: A. Whole system of genitalia, ventral aspect. B. Whole system of genitalia, dorsal aspect. C. Aedeagus, ventral aspect. D. Aedeagus, lateral aspect. E. Tegmen, lateral aspect. F. Tegman, ventral aspect. G. 9th tergite. H. 7th abdominal tergite.

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