

## A New Latindiine Cockroach, *Gapudipentax guiting* gen. et sp. n. (Blattodea: Corydiidae: Latindiinae) from the Philippines

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### Abstract

A unique species, *Gapudipentax guiting* Lucañas gen. et sp. n. (Blattodea: Corydiidae: Latindiinae), is described from Sibuyan Island, Philippines. It differs from other genera in Latindiinae by its pentagonal pronotum, brachyptery in males and the absence in venation of the male tegmina. The species would be the fifth Corydiidae recorded from the country and the first from Sibuyan Island, Romblon. A brief discussion on species composition of Latindiinae is provided.

**Keywords:** brachyptery, dimorphism, new genus, new species, Sibuyan Island.

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### Introduction

Qui *et al.* (2016) summarized the problems in the classification of the subfamily Latindiinae and the need to revise the subfamily. Currently it consists of three genera, *Latindia* Stal, *Buboblatta* Hebard and *Sinolatindia* Qui *et al.* (Beccaloni, 2014), although several other genera have been previously placed here (Princis, 1963).

In the Philippines, only four species of Corydiidae are so far recorded, each from four different subfamilies (Beccaloni, 2014). With the exclusion of *Homopteroidea* Shelford from this subfamily (Roth, 1995, 2003; Beccaloni, 2014), no Latindiinae species has been recorded in the Philippines. Here, a new genus and species of Latindiinae cockroach from the Sibuyan Island, Philippines is described.

### Materials and Methods

Collected specimens were preserved in 95% ethyl alcohol, and slide mounted using Canada Balsam. Male specimens were cold macerated by soaking in 10% aqueous Potassium Hydroxide (KOH) solution for 24 hours. They were then washed in distilled water to remove unwanted undissolved internal contents, and then with alcohol series and

anhydrous clove oil to remove excess water. Finally, they were mounted on microscope slides using Canada Balsam.

Illustrations were made by tracings of printed photomicrographs of clear slide-mounted specimens. The degree of sclerotization and pigmentation was made through line thickness and by stippling. The following measurements were obtained:

**TL** (Total length): the length from the tip of the vertex up to the tip of the subgenital plate;

**Pn**: Pronotum length  $\times$  width along the longest axis;

**Tg**: Tegmina length along the longest axis.

Standard deviations for each measurement were also noted. Terminologies used for male genitalia follow Klass (1977), and Roth (2003) for other characters. All specimens were deposited at the Entomological Collections of the UPLB-MNH, Philippines.

### Taxonomy

**Family Corydiidae Saussure 1864**

**Subfamily Latindiinae Handlirsch 1925**

**Genus *Gapudipentax* Lucañas gen. n.**

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**Type species:** *Gapudipentax guiting* Lucañas sp. n. by monotypy.

**Etymology:** a combination of two words: “*Gapud*”, a patronym for the late Dr. Victor P. Gapud, in honor of his contributions to the advancement of insect systematics in the Philippines; + “*pentax*”, in reference to its pentagonal pronotum.

**Diagnosis:** Sexual dimorphism distinct (Figure 1A-B). *Male:* Vertex exposed, truncate. Ocelli absent (Fig. 1C). Pronotum pentagonal with rounded edges, finely pubescent, without Y-shaped sulcation. Forefemora type C, without apical spine (Fig. 1D). Hind basitarsomere distinctly longer than succeeding tarsomere combined; Pulvulli absent on all tarsomeres, ventral side of tarsomere covered with numerous setae. Tarsal claws serrated, symmetrical (Fig. 1E); Arolia well-developed. Tegmina subquadrate, reaching only up to the middle of second abdominal tergite, barely overlapping each other, slightly rounded hind margin (Fig. 1F). Supra-anal plate trapezoidal, with large hyaline macula (Fig. 1G). Subgenital plate entire, symmetrical; style simple, similar (Fig. 1H). *Female:* Same with male, except tegmina and wings fully developed, extending beyond the tip of the abdomen (Fig. 1B). Tegmina only with subcosta and posterior cubital vein distinct. Venation obscured due to damage incurred during preservation, (distinct R and M veins visible in Figure 1B). Supra-anal plate subtriangular, posterior margin with slight mesal indentation. Subgenital plate triangular with medial slit (Fig. 1I).

The genus resembles the Mainland Asian genus *Sinolatindia* Qui *et al.* 2016, in terms of exposed vertex, ocelli absent, absence of Y-shaped sulcation in the pronotum, forefemora type C without terminal spine, tarsal claws serrated, supraanal plate with medial non-setose macula, and elongate, apically twisted L3. On the other hand, it differs from it by the pentagonal pronotum, tegmina and wings reduced in male but well developed in females (well-developed in males, unknown in females of *Sinolatindia*), arolia well-developed (absent in *Sinolatindia*), subgenital plate symmetrical (weakly assymetrical in *Sinolatindia*), and the

left and right phallomere of the genitalia distinct (separation indistinct in *Sinolatindia*).

Despite morphological similarity with *Sinolatindia*, the internal male genitalia of *Gapudipentax* is much closer to the Australian *Austropolyphaga* Mackerras, 1968. Furthermore, it also resembles *Austropolyphaga* in terms of vertex exposed, ocelli absent, Y-sulcation in the pronotum absent, forefemur Type C without terminal spine, tarsi slender covered with minute spines, arolia well-developed and the genitalia with distinct left and right phallomeres, L3 elongate and hook-like; it differs by pentagonal pronotum, tegmina and wings reduced in male but well developed in females (well-developed in males, absent in females of *Austropolyphaga*), tarsal claws serrated (simple in *Austropolyphaga*), supraanal plate with medial non-setose macula (absent in *Austropolyphaga*), subgenital plate symmetrical.

**Known distribution:** Philippines.

*Gapudipentax guiting* Lucañas sp. n.

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**Diagnosis:** (same as generic diagnosis).

**Description:** *Size* (mm): Male: TL: 5.04; Pn: 1.30 x 1.53; Tg: 1.90. Female: TL: 6.00; Pn: 1.33 x 1.60; Tg: 4.45.

*Male* (Fig. 1A): Light brown throughout. Brachypterous. Head triangular (Fig. 1C). Vertex greatly exposed, nearly straight. Interocular distance greater than interantennal distance. First 13 antennomeres short, succeeding tarsomeres elongate. Third segment of maxillary palp longer, fifth segment bulbous. Pronotum pentagonal with rounded edges, finely pubescent, without Y-shaped medial sulcation. Forefemora type C, without terminal spine (Fig. 1D). Hind basitarsomere distinctly longer than succeeding tarsomere combined. Pulvulli absent, ventral side of tarsomeres covered with numerous setae. Tarsal claws serrated, symmetrical (Fig. 1E). Arolia well-developed. Tegmina subquadrate, reaching only up to the middle of second abdominal tergite, barely overlapping each other, slightly rounded hind

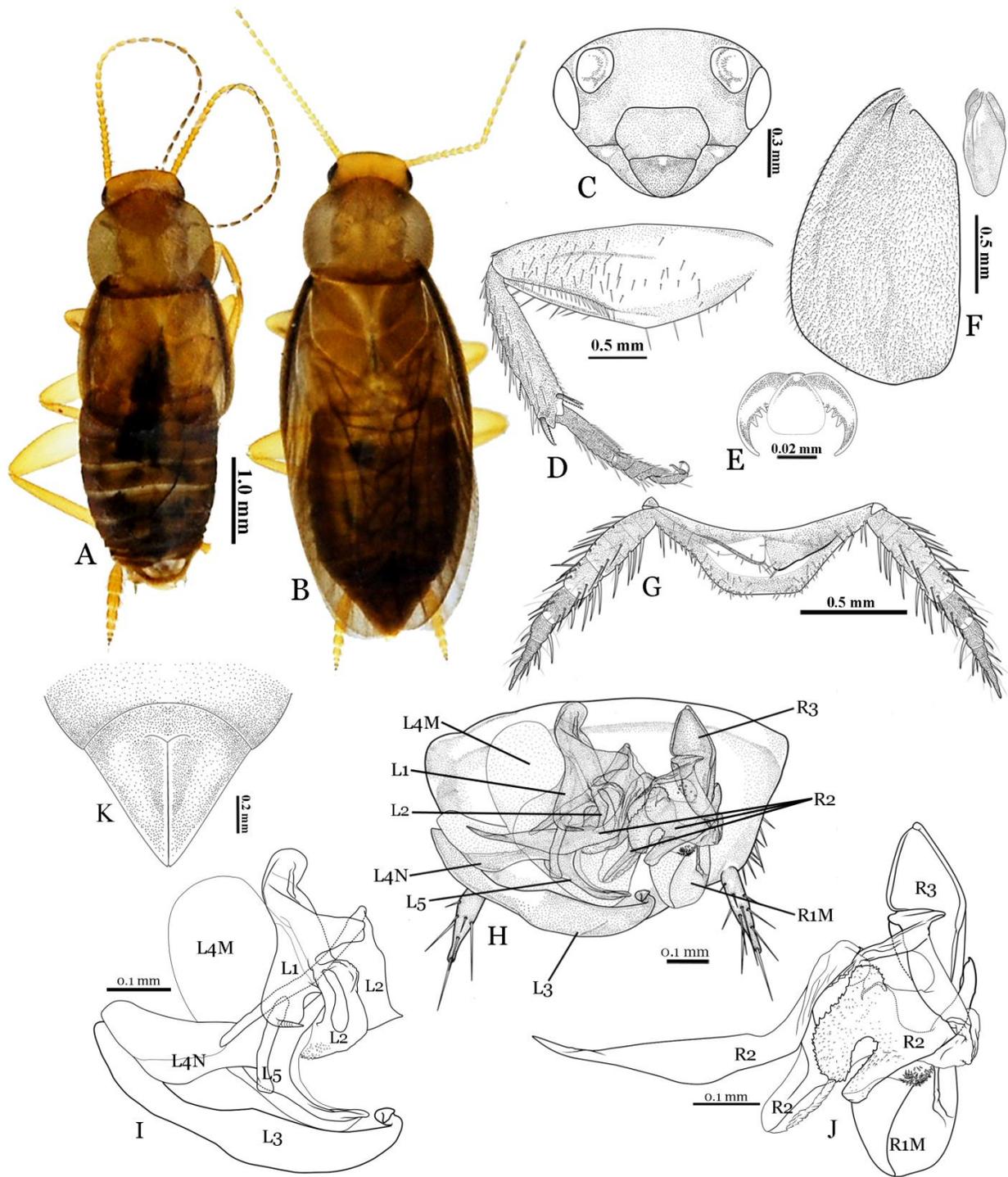


Figure 1. *Gapudipentax guiting* Lucañas gen. et sp. n.: Habitus (A) Male and (B) female; (C) head; (D) prothoracic leg; (E) tarsal claw; (F) Tegmina and hind wing; (G) male supra-anal plate; (H) male subgenital plate and genitalia, (I) left phallomere, (J) right phallomere; (K) female subgenital plate.

margin (Fig. 1F); venation indistinct, covered by setae. Hindwing reduced, venation indistinct (Fig. 1F). Abdominal tergites unspecialized. Supra-anal plate trapezoidal, with large hyaline macula (Fig. 1G). Subgenital plate symmetrical. Interstylar margin entire; style simple, similar. Male genitalia (Fig. 1G): L3 basally narrow, medially broad, hook twisted apically. R3 apically acute. R2 bifid, covered with barb-like structures.

*Female* (Fig. 1B): Similar with male except slightly larger and macropterous. Tegmina hyaline, with distinct subcosta and posterior cubital vein. Hind wings well developed, (unfortunately the tegmina and wings have been damaged during slide mounting and cannot be described further) distinct R and M veins visible in Figure 2B. Supra-anal plate subtriangular, posterior margin with slight mesal indentation. Subgenital plate triangular with medial slit (Fig. 1I).

#### Material examined

**Holotype:** 1 male, Philippines: Sibuyan Island, Mount Guiting-guiting National Park 10.xii.2016 (CCLucañas/DEMGGeneral, UPLBMNH BLA-00693♂, mounted on slide)

**Paratypes:** 1 female, 1 nymph same data as holotype (CCLucañas/DEMGGeneral, UPLBMNH BLA-00694♀, mounted on slide; BLA-00695 nymph).

**Distribution:** Philippines: Sibuyan Island.

**Etymology:** The specific epithet is derived from Mt. Guiting-guiting where the species was collected; and from “guiting” a local term which means teeth, referring to the spikes on the tarsal claws.

**Ecology:** The species was found under the sloughing bark of an unidentified dead tree. Their flat bodies allow them to hide along the crevices between the bark and sapwood and they were fast enough to hide among the crevices every time a piece of bark is peeled off. Several adult females and nymphs were observed along with a single male, which may suggest a subsocial behavior.

Aside from *G. gutting*, other organisms found under the bark of the dead tree included

scorpions, pseudoscorpions and some flat crab-like assassin bugs (Reduviidae), which may prey upon *G. gutting*.

**Remarks:** The aberrant sexual dimorphism of this species is interesting. This is the first report of tegmina and wing reduction due to sexual dimorphism being more expressed in males than in female cockroaches. Additional specimens may be needed to examine the extent of wing polymorphism even within the same sex. It is possible that females retained their fully developed wings in order to search for a more specialized habitat, like sloughing barks of trees, to deposit its ootheca. Additional observations are needed to confirm this hypothesis.

#### Notes on species composition of Latindiinae

The subfamily Latindiinae was established by Handlirsch (1925) to contain the minute, delicate winged *Latindia* Stal. Brues and Melander (1932) have raised it to the family level but Grandcolas (1996) and Roth (2003) retained it as a subfamily under Corydiidae (syn. Polyphagidae). Princis (1963) listed twelve genera: *Latindia* Stal, *Paralatindia* Saussure, *Ipsoma* Bolivar, *Ctenoneura* Hanitsch, *Compsodes* Hebard, *Homopteroidea* Shelford, *Melestora* Stal, *Bucolion* Rehn, *Biolleya* Saussure, *Buboblatta* Hebard, *Ipoblatta* Karny and *Stenoblatta* Walker under this subfamily. Roth (1971, 2003) moved *Biolleya* and *Stenoblatta* in Blaberidae: Panchlorinae and Blaberinae, respectively. Meanwhile Estrada-Alvarez and Guadarrama (2013) moved *Myrmecoblatta* Mann to Latindiinae. Beccaloni (2014) lists only *Latindia*, *Buboblatta* and the recently described *Sinolatindia* under Latindiinae. Here a new genus, *Gapudipentax* is described and placed in Latindiinae. Meanwhile, recent molecule-based phylogenetic studies, suggests close relationship between *Latindia* and *Paralatindia* (Wang *et al.*, 2017), and that Latindiinae is sister clade to Nocticolidae (Djernaes *et al.*, 2015; Wang *et al.*, 2017; Legendre *et al.*, 2015) and thus requires some change in taxonomic rank.

Unfortunately, the male genitalia of *Latindia* had not been fully described, inhibiting the identification of true relationships among the known genera. So far, among the listed genera,

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only the male genitalia of *Ctenoneura*, *Homopteroidea*, *Sinolatindia* and *Gapudipentax* have been described in detail (Roth, 1995; Qui *et al.*, 2016, 2017). The male genitalia of *Ctenoneura* lacks a distinct hook-like sclerite (Qui *et al.*, 2017) indicating that it doesn't belong in this subfamily or any other established subfamily under Corydiidae. Meanwhile, all *Homopteroidea*, except *H. abberans* (Hanitsch), have rather complicated male genitalia with an indistinct hook-like sclerite and no particular separation between the left and right phallomeres (Roth, 1995). The genitalia of *Buboblatta* was illustrated in caudal view by Grandcolas (1996) revealing distinct sclerite of left and right phallomere, although it is unclear whether L3 is elongate and hook-like. Meanwhile, only the hook-like sclerite (L3) of the left phallomere had been described for species of *Compsodes* and *Myrmecoblatta* (Gutierrez, 2012; Estrada-Alvarez & Guadarrama, 2013), which are similar to *Sinolatindia*, *Gapudipentax* and *Austropolyphaga*.

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