

A new species of genus *Ceropupa* from Luzon, Philippines (Hemiptera: Derbidae: Sikaianini), with a key to the species of *Ceropupa* Emeljanov, 1996

*Sheryl A. Yap¹ and Thierry Bourgoin²

¹*Crop Protection Cluster, College of Agriculture, and UPLB Museum of Natural History University of the Philippines Los Baños, Laguna, Philippines*

²*Museum National d'Histoire Naturelle, Institut de Systematique, Evolution, Biodiversite (ISYEB): UMR 7205 MNHN-CNRS-UPMC-EPHE, CP 50, Entomologie, 45 rue Buffon, F-75005 Paris*

(Email: sayap3@up.edu.ph)

Abstract

The genus *Ceropupa* Emeljanov, 1996 is reported for the first time from the Philippines and a new species, *C. adams* is added to the Philippine derbid fauna. This new species differs from the other species by the presence of the following characters: basal half of costal vein with three white spots, apical part have 10 red transverse veins, base of tegmen to half-length of clavus not entirely darkened, with pale spots $\frac{1}{4}$ before $\frac{1}{2}$ of clavus, and apical part of wing entirely darkened. An identification key, photos of habitus and male genitalia, type habitat, and host plant are given.

Keywords: *Ceropupa*, *Derbidae*, *Philippines*, *new species*, *new country record*

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Introduction

The family Derbidae represents the third largest family of the Fulgoromorpha after Delphacidae and Cixiidae with about 160 genera and 1600 species (Bourgoin, 2016). It was established by Spinola in 1839 but it was only in 1917 that F. Muir was able to comprehensively collect and study them in the Philippines. Muir (1917) noted that the derbid fauna is very rich in the Philippines. This was supported by Zelazny (1981) during his survey in the Philippines on sucking insects feeding on coconut palms, and he reported 1 new genus and 44 new species and proposed 6 new combinations in the tribe Rhotanini. Since Zelazny's comprehensive work on the tribe Rhotanini, there is very little information that has been published on other tribes of Philippine Derbidae.

Sikaianini has the least number of species being described among the tribes of the subfamily Otiocerinae. Distribution covers Afrotropical, Australasian, Indo-Malayan, Nearctic, and Neotropical regions. It is composed of six genera and 33 species

(Bourgoin, 2016). Most genera are well represented in the Philippines.

Muir (1917) distinguished Sikaianini from other derbid tribes by the following set of characters: subcostal cell very short or absent; eyes in front reaching to base of clypeus; and female with genital styles abortive. The first Philippine sikaianine species to be described was *Sikaiana makii* Muir, 1915. The other seven species were described by Muir (1917) together with the establishment of the tribe. Since the establishment of the Sikaianini in 1917, no other work has been done on this tribe in the country.

Adams is the northernmost town of Ilocos Norte bounded by neighboring towns in Ilocos Norte (Pagudpud, Dumalneg, Venter); Calanasan, Apayao, and Santa Praxedes, Cagayan. It is located at 18°28' N 120°54' E. The highest peak of Mt. Pao is around 1,340 meters above sea level (Figure 1). It is part of the northern portion of the Cordillera Mountains (Brown *et al.*, 2012). At present, assessment of vegetation of Mt. Pao is lacking. The following



Figure 1: Mt. Pao, Adams, Ilocos Norte, type locality of *Ceropupa adams* sp. n.
(Photo courtesy of Ace Amarga)

description is based mainly on the lead author’s observations during field work. It is a less disturbed tropical lower montane forest. As you enter deep into the forest, the crowns become overlapping, limiting the entry of sunlight. Species that are not shade-tolerant thrive only at the edges of rivers, creeks and streams. The species below the trees rely only on crown gaps for their light requirements. Brown *et al.* (2012) showed some photographs of the inner portion of the forest. The forest floor is inhabited by ferns, vines, saplings, seedlings, pandans, palms and herbs.

Materials and Methods

Adult planthoppers were collected using an insect net and aspirator. Specimens were killed using a cyanide bottle. Collected specimens were brought to the laboratory for preservation and identification. Adults were mounted on insect pins or paper points. All specimens were labelled properly with respect to

locality, date of collection and collector. Direct observations and dissection of specimens have been made using dissecting microscope. Wing terminologies followed Bourgoïn *et al.* (2014). Voucher specimens and types were deposited at the Museum of Natural History-UPLB (UPLBMNH).

Key to the species of *Ceropupa*

1. Basal half of costal vein with two white spots, base of tegmen to half-length of clavus entirely darkened, with no pale spots $\frac{1}{4}$ before $\frac{1}{2}$ of clavus, apical part of wing with one pale spot between veins of RP and M*C. trismegista* Emeljanov, 1996
- Basal half of costal vein with three white spots, apical part have 10 red transverse veins, base of tegmen to half-length of clavus not entirely darkened, with pale spots $\frac{1}{4}$ before $\frac{1}{2}$ of clavus, apical part of wing entirely darkened*C. adams* sp. n.

Genus *Ceropupa* Emeljanov, 1994

Ceropupa Emeljanov, 1996: 94.

Type species: *Ceropupa trismegista* Emeljanov, 1996, Entom. Rev. 75(2): 94. Ha Shon Bing, Hoa Bing, and Cao Phong Provinces, Vietnam

***Ceropupa adams* Yap and Bourgoïn sp. n.**
(Figs. 2-8)

[urn:lsid:zoobank.org:pub:940B66E4-50EC-4300-B2E4-758CB72C8903](https://doi.org/10.21203/rs.3.rs-1000000/v1)

Diagnosis: In general, the form and color are very similar to those of the type species, *C. trismegista* from Vietnam. However, *C. adams* has the basal half of costal vein with three white spots, apical part have 10 red transverse veins, base of tegmen to half-length of clavus not entirely darkened, with pale spots ¼ before 1/2 of clavus, and apical part of wing entirely darkened.

Description: Minute species. Head dorsally narrower than pronotum; laterally, apex of vertex at level with or slightly projecting in front of eyes; base of vertex as wide as long; junction of vertex and frons laterally angulate; base of clypeus laterally straight; ventral margin of eyes incised; scape shorter than wide; pedicel as long as face, not flattened, unbranched; small sensory plate organs present on antennae; stenosis of antenna at middle; arista subterminal; pronotum broad, posterior margin with shallow notch at middle, median carinae 3-carinate; mesonotum large without carinae; subcostal cell absent; M forked near or middle of tegmen; median cell reaching middle of tegmen; C1 present; CuA separated with M; base of C3 shorter than length of C4; claval veins barely distinct; hindwings not more than half as long as tegmina, ampliate; Cu1 of hindwing unbranched. Female genitalia reduced.

Colour. Body yellowish or reddish brown to dark brown; head, including antennae, dark brown to black and proboscis white. Pronotum entirely dark brown. Mesonotum and metanotum dark brown. Scutellum yellowish brown to reddish yellow. Thorax ventrally reddish brown. Legs yellow. Costal veins of forewings red.

Basal half of costal area entirely darkened. Abdomen dorsally light brown, venter dark brown, lateral regions reddish.

Male genitalia: Lateral margin of pygofer angulate, median process single and concave; gonostylus twice as long as wide at widest point, apex hook-like; inner ventral margin of paramere convex; anal tube convex, shorter than gonostyle.

Body length: 1.8 mm

Forewing: 5.0 - 6.0 mm

Type material: PHILIPPINES: LUZON: Ilocos Norte: Holotype, male, Mt. Pao, Adams, N18°26'44.0", E120°52'53.3", 617m asl, *Pinanga urosperma*, 22-vi-2011, SAYap and MVYngente, UPLBMNH HEM-02266

Other material examined: PHILIPPINES: LUZON: Ilocos Norte: 1♀, Mt. Pao, Adams, N18°26'44.0", E120°52'53.3", 617m asl, *Pinanga urosperma*, 22-vi-2011, SAYap and MVYngente, UPLBMNH HEM-02267.

Type locality: Philippines, Luzon, Ilocos Norte

Distribution: Philippines, northern Luzon

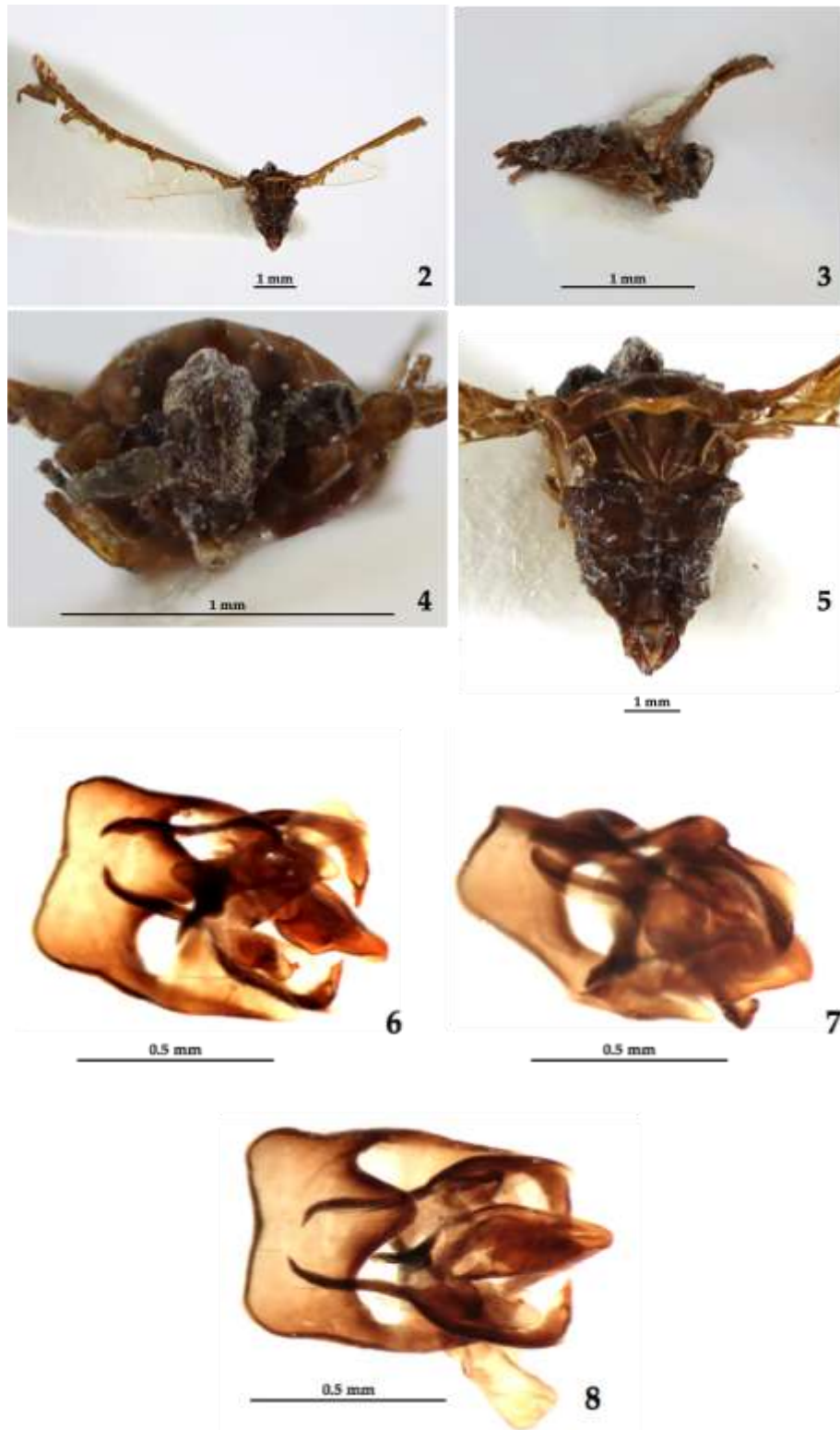
Etymology: The species refers to the type locality and is treated as a noun in apposition.

Habitat and life history traits (Fig 9): *C. adams* thrives in a dipterocarp forest in northern part of Luzon Island. It is found underneath the leaves of *Pinanga urosperma* Becc.

Discussion

The recent discovery of a new species was thought to be a new genus. However, further research and morphological analysis revealed that it belongs to genus *Ceropupa* described by Emeljanov (1996) based on a female specimen from Ha Shon Bing, Hoa Bing, and Cao Phong Provinces, Vietnam. Emeljanov (1996) compared the genus with *Leomelicharia* Muir, *Distantinia* Muir, and *Muiria* Kirkaldy.

In the present paper, a new species of *Ceropupa*, *C. adams* is described and reported for the first time in the country. This contribution provides an additional record



Figures 2-5: *Ceropupa adams* sp. n. (holotype): 2. habitus, dorsal view; 3. habitus, lateral view; 4. head, frontal view; 5. thorax and abdomen, dorsal view.

Figures 6-8: *Ceropupa adams* sp. n. male genitalia: 6. dorsal view; 7. lateral view; 8. ventral view. (Images taken by Laurent Fauvre)



Figure 9: *Pinanga urosperma* Becc., type host plant of *Ceropupa adams* sp. n.

making the tribe Sikaianini well represented in the country, with five genera and nine species.

Records of host plants in the tribe Sikaianini were all unidentified. However, the lead author was able to observe and gather data during field work. *Ceropupa adams* were collected and observed feeding in *Pinanga urosperma*.

The Philippines is among the richest regions in the world in terms of flora and fauna. It is considered as a site of megadiversity in the world. With its 7,107 islands, the Philippines is

the most promising region where a great diversity of small and delicate insects including the family Derbidae, could be found. Furthermore, having observed feeding on palms, a detailed study should be done on the specific host plant associations of derbids on palms.

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