

[研究文章 Research Article]

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First Record of Bat Flies (Diptera: Hippoboscoidea) on Batan Island, Southern Luzon, Philippines

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Abstract: This preliminary report presents the bat fly fauna on Batan Island, one of the islands constituting the municipality of Rapu-Rapu, Albay province, the Philippines. During a rapid biodiversity assessment conducted in December 2015, six species of bat flies belonging to the genera *Brachytarsina* Macquart, *Eucampsipoda* Kolenati, *Leptocyclopodia* Theodor, *Megastrebla* Maa, and *Nycteribia* Latreille were documented. Before this paper, there were no published records of bat flies on the island, making this paper the first documentation of streblid and nycteribiid bat flies on Batan Island, Philippines.

Keywords: Albay, Chiroptera, ectoparasites, Hippoboscoidea.

Introduction

Batan Island is a small island situated within Lagonoy Gulf. The islands of Batan, Rapu-Rapu, and Guininayan constitute the municipality of Rapu-Rapu, the only island municipality in Albay province, Philippines. The vegetation of Batan Island is characterized by a few remaining secondary forest fragments with admixtures of large areas of coconut plantations (Crispin et al., 1955). Additionally, the island also has fragmented beach forests and karst areas near the shoreline.

Records of bat ectoparasites on Batan Island are relatively scarce and require further documentation. The first published record of bat ectoparasites on Batan Island was by Amarga & Yap (2017), documenting *Eoctenes spasmae* (Waterhouse), a polycytenid bug ectoparasitic to *Megaderma spasma* (Linnaeus) (Lesser false vampire bat). Subsequently, Amarga & Hastriter (2023) reported *Thaumapsylla breviceps* Rothschild in *Eonycteris spelea* (Dobson) (Cave nectar bat), marking the first published record of an ischnopsyllid flea on the island. To date, there have been no published records of bat flies on Batan Island. Therefore, this paper represents the first published report of ectoparasitic flies associated with bats on Batan Island, Albay province, Philippines, and also provides additional records of bat flies on the Bicol Peninsula, Luzon Island.

Material and Methods

Bat fly specimens were collected during the rapid biodiversity inventory on Batan Island, Albay (see Fig. 1), conducted in December 2015. Mist netting was used to capture the host specimens, and the bats were released after the collection of ectoparasite samples. Bat flies were collected using fine-tipped forceps and preserved in 95% ethanol. Specimens were examined under a Leica S9D dissecting microscope. The map used to indicate the study site was obtained from © Maphill/CC BY-ND (2013). Host names were based on the listing by Wilson & Mittermeier (2019). The specimens are currently in the private parasite collection of the first author, and voucher specimens will be deposited in the National Museum of Natural Science (Taiwan).



Figure 1. The map shows the location of Batan Island, Albay province, Philippines (inset, black box).

Results

Order Diptera Linnaeus
Parvorder Calypttratae Robineau-Desvoidy
Superfamily Hippoboscoidea Samouelle
Family Streblidae Kolenati

Brachytarsina amboinensis Rondani, 1878

Material examined: PHILIPPINES: 5♀♀, 1♂, Brgy. Lagundi, Batan Island, Albay province, ex. *Miniopterus eschscholtzii* (Waterhouse), XII.2015, AK Amarga & R Ante leg.

Remarks: This widespread species primarily acts as an ectoparasite on the genus *Miniopterus* Bonaparte (Miniopteridae) and is known to occur throughout the Oriental and Australasian regions (Maa, 1971; Kwak et al., 2022). In the Philippines, *B. amboinensis* is widely distributed and has been recorded on several islands, including Luzon (Cuy, 1980a), Polillo (Cuy, 1980a), Marinduque (Amarga et al., 2017), Tablas (Jobling, 1951), Mindoro (Alvarez et al., 2016), Bohol (Amarga & Phelps, 2021), Siargao (Amarga & Hastriter, 2022), and Mindanao (Jobling, 1951). Furthermore, the *B. amboinensis* specimens documented in this study were collected from a population of *M. eschscholtzii* in an unnamed cave on Batan Island.

Brachytarsina weneri (Jobling, 1951) (Fig. 2a)

Material examined: PHILIPPINES: 10♀♀, Brgy. Lagundi, Batan Island, Albay province, ex. *Hipposideros diadema* (Geoffroy), XII.2015, AK Amarga & R Ante leg.

Remarks: This Philippine endemic species is primarily associated with insectivorous bats, particularly those of the genus *Hipposideros* Gray. Additionally, it has been reported on *Rhinolophus* Lacépède, *Megaderma* Geoffroy, and *Miniopterus* (Amarga et al., 2017). The record of this species on cave-dwelling Pteropodidae can be considered an accidental occurrence.

Megastrebla parvior (Maa, 1962)

Material examined: PHILIPPINES: 4♀♀, Brgy. Lagundi, Batan Island, Albay province, ex. *Eonycteris spelaea* (Dobson), XII.2015, leg. AK Amarga & R Ante; 1♀, Brgy. Lagundi, Batan Island, Albay province, ex. *Rousettus amplexicaudatus*, XII.2015, AK Amarga & R Ante leg.

Remarks: This species is widespread in the Oriental region, particularly in Southeast Asia (Maa, 1971). *Megastrebla parvior* is the only species under the genus *Megastrebla* Maa documented in the Philippines, and it is parasitic to fruit bats (Pteropodidae), especially those from the genera *Eonycteris* Dobson and *Rousettus* Gray (Maa, 1971).

Family Nycteribiidae Samouelle

Eucampsipoda sundaica Theodor, 1955 (Fig. 2b)

Material examined: PHILIPPINES: 3♀♀, Brgy. Lagundi, Batan Island, Albay province, ex. *Eonycteris spelaea*, XII.2015, AK Amarga & R Ante leg.

Remarks: This species is parasitic on pteropodids and has a wide distribution across Southeast Asia, extending to India (Theodor, 1963; Cuy, 1980b). In the Philippines, it has been documented to associate with the genera *Eonycteris* and *Rousettus* (Cuy, 1980b). Additionally, this species coexists with *M. parvior* and the bat flea *Thaumapsylla* Rothschild.

Leptocyclopodia simulans (Theodor, 1959)

Material examined: PHILIPPINES: 3♀♀, Brgy. Lagundi, Batan Island, Albay province, ex. *Cynopterus luzoniensis* (Peters), XII.2015, AK Amarga & R Ante leg.

Remarks: This species is exclusively parasitic on fruit bats. Additionally, while *L. simulans* is primarily ectoparasitic on *Ptenochirus jagori* (Peters), it has also been recorded on other species, including *C. luzoniensis*, *R. amplexicaudatus*, *E. robusta*, and *M. minimus* (Theodor, 1963; Cuy, 1980b; Amarga & Fornesa, 2020).

Nycteribia allotopa Speiser, 1901

Material examined: PHILIPPINES: 1♀, Brgy. Lagundi, Batan Island, Albay province, ex. *Miniopterus eschscholtzii*, XII.2015, AK Amarga & R Ante leg.

Remarks: This nycteribiid fly has a wide distribution range spanning across the Oriental faunal region (Cuy, 1980b; Amarga et al., 2017), extending into the Palearctic (Maa, 1967; Kim et al., 2012). In the Philippines, *N. allotopa* is associated with the genus *Miniopterus*.

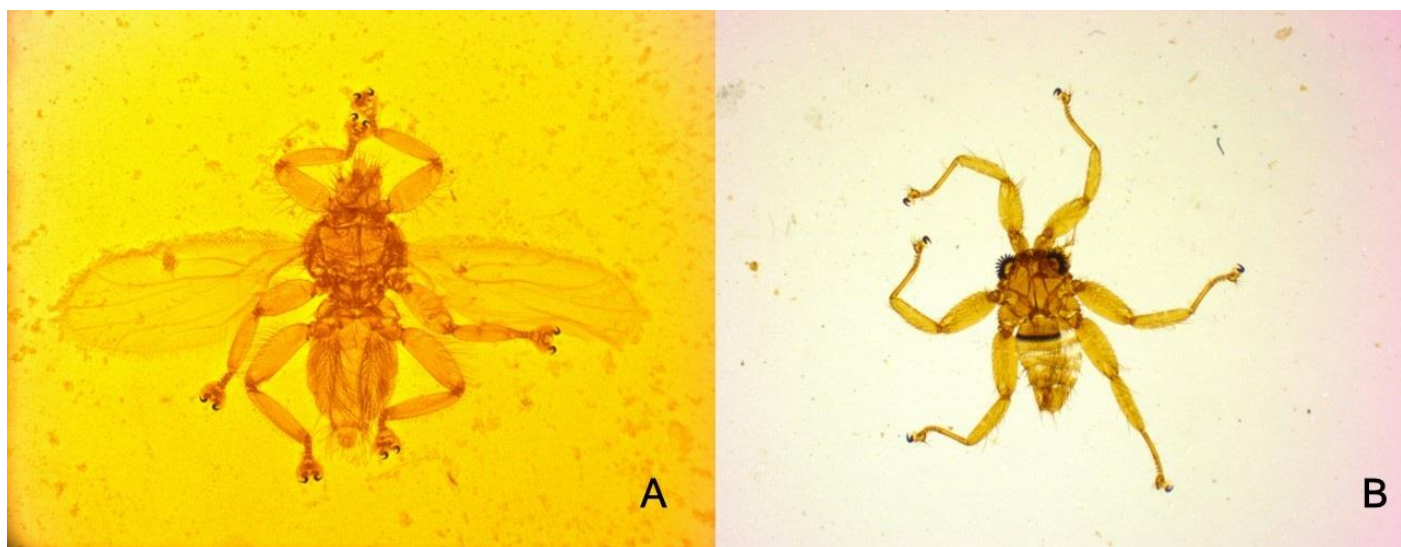


Figure 2. Representative bat fly species recorded on Batan Island, Philippines: (A) *Brachytarsina weneri* (♀, in slide) and (B) *Eucampsipoda sundaica* (♂, in slide).

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菲律賓巴坦島蝙蝠寄生蠅（雙翅目：蠅蠅總科）的首次紀錄

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摘要：本研究報導菲律賓阿爾拜省拉普拉普市巴丹島的蝙蝠寄生蠅相。在 2015 年 12 月的一次快速生物多樣性評估中，我們記錄了 *Brachytarsina* 屬、*Eucampsipoda* 屬、*Leptocyclopodia* 屬、*Megastrebla* 屬和 *Nycteribia* 屬的 6 種蝙蝠寄生蠅。在此之前，該島上沒有已發表的蝙蝠寄生蠅紀錄，因此這項研究代表了首次記錄在菲律賓巴丹島上的蝙蝠蠅科和蛛蠅科。

關鍵詞：阿爾拜省、翼手目、體外寄生蟲、蠅蠅總科