



Formosan Entomologist

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New Records of Three Potter Wasps (Hymenoptera: Vespidae: Eumeninae) from Taiwan **【Research report】**

台灣產三種新記錄蜾蠃及其描述 (膜翅目: 胡蜂科: 蜾蠃亞科) **【研究報告】**

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Received: 2005/10/03 Accepted: 2006/11/08 Available online: 2007/03/01

Abstract

Three species of potter wasps, i.e., *Epsilon fujianensis*, *Paraleptomenes miniatus miniatus*, and *Subancistrocerus sichelii*, are reported from Taiwan for the first time. Diagnosis and illustrations of the three species are provided, and the male of *Epsilon fujianensis* is first described herein. The genus *Epsilon* is new to Taiwan.

摘要

本文報導台灣產三種新記錄蜾蠃，分別為 *Epsilon fujianensis*、*Paraleptomenes miniatus miniatus* 和 *Subancistrocerus sichelii*。文內提供三種蜾蠃雌雄蟲的診斷特徵及說明附圖，其中 *Epsilon fujianensis* 的雄蟲為首次描述。*Epsilon* 為本島的新記錄屬。

Key words: potter wasps, *Epsilon*, *Paraleptomenes*, *Subancistrocerus*, new record

關鍵詞: 蜾蠃、*Epsilon*、*Paraleptomenes*、*Subancistrocerus*、新記錄。

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New Records of Three Potter Wasps (Hymenoptera: Vespidae: Eumeninae) from Taiwan

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ABSTRACT

Three species of potter wasps, i.e., *Epsilon fujianensis*, *Paraleptomenes miniatus miniatus*, and *Subancistrocerus sichelii*, are reported from Taiwan for the first time. Diagnosis and illustrations of the three species are provided, and the male of *Epsilon fujianensis* is first described herein. The genus *Epsilon* is new to Taiwan.

Key words: potter wasps, *Epsilon*, *Paraleptomenes*, *Subancistrocerus*, new record

Introduction

Potter wasp is the common name for the insects of the subfamily Eumeninae, with aculeate wasps belonging to the family Vespidae. The members of this subfamily are predatory and mostly solitary, and many of them build their nests with mud on solid substrata or within internal spaces of different dead vegetable parts. Although being the most diverse group within the Vespidae, progress in the taxonomy of the eumenines is slow, owing to the chaotic condition of their higher category classification (Carpenter and Cumming, 1985).

As in other parts of the world, the eumenine fauna of Taiwan has remained only partly investigated. Until now, some 60 species of named potter wasps have been recorded from the island (Yeh and

Lu, unpubl.). These names involve, of course, some uninvestigated synonymies and misidentifications, and there are new records and new species waiting to be discovered. In this study, we report three newly collected potter wasps from Taiwan; among them is the genus *Epsilon* which is new to Taiwan.

Materials and Methods

The eumenine wasps studied here were collected mainly by sweep nets near their nests, since they are not easily attracted by bait and are generally difficult to trap. The wasps were killed either by ethyl acetate or freezing for subsequent preparation. The specimens were mounted on micro pins or glued by transparent fingernail paint directly to small card triangles, and examined under

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45× stereomicroscope. The digital pictures of the specimens were taken with a Canon 350D camera with 1000 × 1000-dpi resolution and manipulated thereafter by HeliconFocus imaging software for complete depth-of-field. The figures of male antennae were drawn under a 45× stereomicroscope assisted with drawing tube.

The terminology used here follows that of Carpenter and Cumming (1985) and Yamane (1990) for general morphology (for abbreviations used herein, see below) and Harris (1979) for surface sculpturing.

BL, body length (head + mesosoma + metasomal T1 and T2); FWL, forewing length; HW, head width; OD, diameter of ocellus; POL, minimum distance between the inner margins of the posterior ocelli; S, metasomal sterna or antennal segments; T, metasomal terga.

Epsilon fujianensis Lee, 1981 (Figs. 1, 4-4)

Epsilon fujianensis Lee, 1981. Wuyi Sci. J. 1: 197.

Diagnosis

Female: Body tumid, black with a few yellow markings.

Head as wide as mesosoma, foveate-reticulate in front, moderately punctate at occiput behind posterior ocelli; occipital carina distinct laterally and weak dorsally, distance between anterior ocellus and posterior ocelli about equal to OD and about 1/2 as long as POL; paired cephalic fovea closely set to each other and located in a depression surrounded posterolaterally by 2 tiny protuberances; clypeus obscurely areolate-rugulose, wider than long (about 15: 12), anterior margin truncate and 1/5 as wide as clypeus.

Mesosoma deeply, coarsely, and densely foveate, pronotal carina moderately developed; tegulae reaching apex of parategulae, broad and coriarius, posterior lobe angular and distinctly protruding; mesepimeron coriarius near posterior margin; metanotum

narrow and belt-shaped, protruding upwards laterally and concave medially; metapleuron broadly strigate, centrally coriarius; propodeum without horizontal shelf and distinct carinae, propodeal valvulae reduced and round. Wings transparent, hind wings tinted with dark brown.

Metasoma bell-shaped, 1st segment semicircular and 2nd segment subrectangular in dorsal view; 1st segment about as wide as and shorter than 1/2 length of 2nd segment, 2nd segment with short and indistinct semitransparent apical lamella; T2 punctate, T3 obscurely punctulate, other terga coriarius.

Body black, marked with yellow as follows: a tiny transverse spot at lower margin of ocular notch, short stripes behind compound eyes, a pair of transverse stripes closely set to each other at middle of pronotum dorsally, narrow apical bands on metasomal T1 and T2, and band on anterior margin of T1 sinuate, narrowing laterally and notched medially; propodeal valvulae dull yellow.

Male: General characteristic of male resembles those of females. Differences are noted as follows: clypeus vivid yellow, black at apical margin, with apical margin more distinctly emarginate; spots at ocular notch larger, stripes behind compound eyes shorter; pronotal spots larger, angular posteriorly and covering 1/2 of area of dorsal side; tegulae with small yellow spot at posterior lobes; legs with paired yellow spots at fore and middle tibiae, and a tiny ventroapical spot at fore femora; S13 of antenna tiny, hooked and spike-like, longer than S12, apex not reaching basal margin of S11.

Measurements (in mm): ♀, BL 8.7~10.5, HW 3.2~3.4, FWL 9.1~9.7; ♂, BL 8.0, HW 2.9, FWL 8.0.

Materials examined: ILAN: Fushan Research Center, 650 m, 1 ♀, 13-V-2003, S. S. Lu; 1 ♀, 11-XI-2003, S. S. Lu; 1 ♂, 22-X-2004, W. C. Yeh.

Other distribution: China.

Remarks: This species was formerly



Fig. 1



Fig. 2



Fig. 3

Figs. 1-3. 1. *Epsilon fujianensis* ♀; 2. *Paraleptomenes m. miniatus* ♀; 3. *Subancistrocerus sichelii* ♀.

only recorded from China (Fujian and Sichuan Provs.; Lee, 1981) and was neglected by Soika in his 1994 monograph

of Oriental eumenines. Following Soika's (1994) key to the genus, this species is closest to *E. achterbergi* Soika, which has

only been recorded from the Solomon Islands. *Epsilon fujianensis* differs from *E. achterbergi* mainly in the body maculation being distinctly less developed, and can be easily separated from it by the clypeal coloration that is entirely black in the female and mostly pale-yellow in the male (with a broad curved band interrupted medially along the basal margin of the clypeus in *E. achterbergi*, cf. Soika, 1994). In external morphology, *E. fujianensis* differs from *E. achterbergi* in the clypeal surface being obscurely areolate-rugulose, but not distinctly punctate as in the latter.

We observed females of *E. fujianensis* nesting, up to 2~3 m, in crevices or holes of wooden crossbeams of a corridor in a mountain forest area. The male was caught while flying around a rotten stump on an open lawn.

Paraleptomenes miniatus miniatus

(Saussure, 1885) (Figs. 2, 4-3)

Odynerus miniatus miniatus Saussure, 1855.

Et. Fam. Vesp. 3: 249 (in division *Parodynerus*).

Paraleptomenes miniatus miniatus Soika, 1994. Ann. Mus. Civ. St. Nat. 90: 125.

Pterochilus pulchellus Smith, 1870. Trans. Entom. Soc. Lond. 7(3): 190.

Odynerus wroughtoni Cameron, 1898. Mem. Manchester Soc. 42(11): 44.

Diagnosis

Female: A small species with narrow reddish-brown 1st metasomal segment.

Head densely foveate-reticulate, clypeus slightly wider than long (5: 4), obscurely and broadly rugose, with 2 weak sub-medial carinae, apical margin truncate and about 1/3 as wide as clypeus; distance between anterior ocellus and posterior ocelli wider than OD and 1/2 as long as POL, vertex without distinct cephalic fovea, occipital carina weak.

Mesosoma densely foveate-reticulate dorsally, less so on mesoscutellum and

metanotum, gently inclined from mesoscutellum and steeply so on propodeum; anterior side of pronotum coriarius laterally and sparsely punctate medially, with paired central pits, pronotal carina weak laterally and not visible medially; tegulae broadly oval, posterior apex pointed and reaching middle of parategula; mesopleura shallowly punctate, area from posterior part of mesopleura to anterior part of propodeum coriarius; propodeum shallowly rugose, without horizontal shelf and distinct carinae, propodeal valvulae large and round. Wings transparent.

Metasomal terga punctulate, more obscurely so on T1; T1 narrow, about 7/10 as wide as T2.

Body black, legs yellowish-brown and 1st metasomal segment reddish-brown, marked with pale yellow as follows: clypeus except for brownish apical 2/5 and paired lateral crescent spots, almost entire ocular notch, a cross-shaped spot between antennal sockets, a long stripe behind compound eyes, ventral side of scape; a pair of transverse subtriangular spots closely set to each other on dorsal side of pronotum, a round spot on dorsal mesepisternum, paired spots at anterior and posterior extremes of tegulae, parategulae, paired lateral spots on mesoscutellum and metanotum, propodeal valvulae brownish; narrow apical rings on metasomal T1, T2, and S2 and a pair of round lateral spots on T2.

Variation: Quite often lateral spots of mesoscutellum, metanotum, and metasomal T2 diminished or even absent.

Male: The male is similar to females, but with clypeus entirely yellow and 1st metasomal segment narrower. S13 of antenna tiny and spine-like, distinctly shorter than S11, S12 atrophied and indiscernible.

Measurements (in mm): ♀ BL 5.5~6.5, HW 2.0~2.2, FWL 5.1~5.5; ♂ BL 6.2, HW 1.9, FWL 4.8.

Materials examined: TAIPEI CITY:

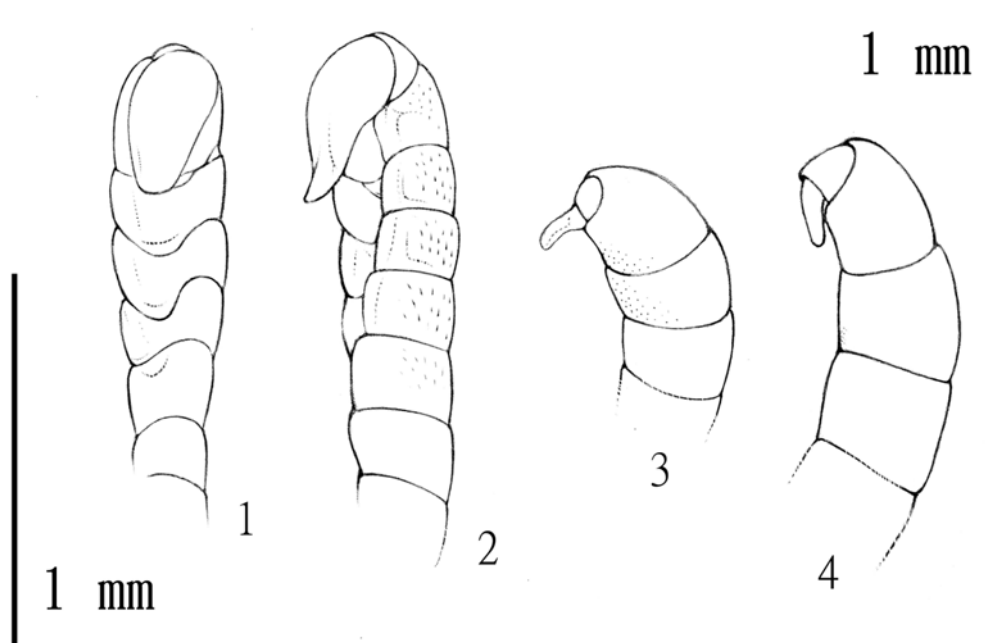


Fig. 4. Apical part of male antennae: 1, 2. *Subancistrocerus sichelii*, ventral and lateral oblique views; 3. *Paraleptomenes m. miniatus*, lateral view; 4. *Epsilon fujianensis*, lateral view.

CKS Memorial Hall, 1 ♀, 6-VII-2003, S. S Lu; 1 ♀, 15-VII-2003, S. S Lu. CHIAYI CITY: Chiayi Park, 1 ♂ 1 ♀, 22-IX-2005, S. S. Lu. PINGTUNG: Neipu, Laopi, 20 ♀, 22-VII-1-VIII-2004, W. H. Chi & W. Y. Chi; Yingda Farm, 1 ♀, 12-X-2004, W. C. Yeh.

Other distribution: India and Sri Lanka.

Remarks: We compared one female *P. m. miniatus* from India deposited in the TARI (Taiwan Agricultural Research Institute) with the specimens collected in Taiwan, and no distinct differences could be observed. The general ecology of this species was well described by Krombein (1978, as *P. mephitis*) in Sri Lanka. In Taiwan, *P. m. miniatus* is a human commensal. Females make vertically parallel multiple-tube nests attached to the walls of verandahs or buildings, mainly on the shaded upper parts. The shape of the nest is quite similar to that

from Sri Lanka as described by Krombein. The behaviors of progressive provisioning of larvae by females and brother-sister mating of this species, as observed by Krombein, are very interesting and worthy of further study. According to Soika (1994), the former distribution of this species only includes India and Sri Lanka, and its segregated existence in Taiwan suggests that either more records will be found in the intermediate countries, or it may have invaded the island very recently due to human activities.

Subancistrocerus sichelii (Saussure, 1885) (Figs. 3, 4-1, -2)

Odynerus sichelii Saussure, 1885. Et. Fam. Vesp. 3: 206 (in division *Subancistrocerus*).

Subancistrocerus sichelii Iwata, 1965. Mushi, 38: 105.

Ancistrocerus intendens Walker, 1860. Ann. Mag. Nat. Hist. 3(5): 304.

Diagnosis

Female: A small black species, with a few pale markings and whitish apical rings on metasomal T1 and T2.

Head foveolate anteriorly, punctulate behind vertex; clypeus obscurely punctulate, slightly wider than long (5: 4), apical margin about 1/3 as wide as clypeus, slightly emarginate with obscure lateral teeth; distance between anterior ocellus and posterior ocelli equal to OD and 1/2 as long as POL, paired cephalic fovea exposed; occipital carina weak.

Mesosoma elongate, coarsely and deeply foveate dorsally, anterior side of pronotum coriarius laterally and sparsely punctate medially, with paired central pits, pronotal carina weak; tegulae round and smooth, posterior lobes not clearly defined and reaching posterior apex of parategula; propodeum shallowly foveate-reticulate, with horizontal shelf, propodeal valvulae reduced and tiny. Wings transparent.

Metasomal T1 punctate-reticulate, T2 punctulate; T1 narrowed and about 4/5 as wide as T2.

Body black, marked with pale yellow as follows: basal stripe of clypeus; tiny spots on ocular notches, behind compound eyes, on dorsal side of pronotum medially, and sometimes also on apical part of clypeus; a longitudinal spot between antennal sockets, ventral side of scape, and ventral side of flagella rusty; paired spots at anterior and posterior extremes of tegulae, parategulae and anterior side of fore tibiae; propodeal valvulae transparent, narrow apical bands on metasomal T1, T2, and S2 whitish; legs mainly dark brown.

Variation: Basal stripe of clypeus sometimes reduced as paired spots, or even not existed; paired spots on tegulae sometimes absent.

Male (broken teneral in alcohol): The male is similar to the female in general appearance, but differs as follows: clypeus pale, laterally dark with a longitudinal

central dark stripe; S13 of antenna hooked, broadened apically and as long as S11 and S10 combined; apical concavity of antenna formed mainly on S8~S11.

Measurements (in mm): ♀ BL 6.4~7.5, HW 2.0~2.1, FWL 5.3~5.7.

Materials examined: PINGTUNG: Neipu, Laopi, 1 ♀ 1 ♂, 15-VII-2004, S. S. Lu; 1 ♀, 17-VII-2004, W. H. Chi; 3 ♀, 16-VIII-2004, W. L. Chi.

Other distribution: India, Sri Lanka, Myanmar, Nepal, Sikkim, Thailand, Cambodia, Malaysia, and Singapore.

Remarks: In Laopi, the females were frequently discovered flying around near nests of *P. m. miniatus*.

Acknowledgments

We are grateful to Mr. H. T. Shih for his kind help while the authors were examining the eumenine collection in the TARI. We thank the Chi family for providing us with the specimens of *Paraleptomenes m. miniatus* and *Subancistrocerus sichelii* from Pingtung. Thanks are also due to Dr. Laszlo Ronkay of the Hungarian Natural History Museum for providing copies of Saussure's original literature. Mr. Y. M. Chen kindly helped make the drawings of male antennae.

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Received: October 3, 2005

Accepted: November 8, 2006

台灣產三種新記錄蜾蠃及其描述（膜翅目：胡蜂科：蜾蠃亞科）

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摘 要

本文報導台灣產三種新記錄蜾蠃，分別為 *Epsilon fujianensis*、*Paraleptomenes miniatus miniatus* 和 *Subancistrocerus sichelii*。文內提供三種蜾蠃雌雄蟲的診斷特徵及說明附圖，其中 *Epsilon fujianensis* 的雄蟲為首次描述。*Epsilon* 為本島的新記錄屬。

關鍵詞：蜾蠃、*Epsilon*、*Paraleptomenes*、*Subancistrocerus*、新記錄。