

Research Note

New locality record of *Isomyia paurogonita* Fang & Fan, 1986 (Diptera: Calliphoridae) from Peninsular Malaysia and Borneo

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Abstract. *Isomyia paurogonita* Fang & Fan, 1986 (Diptera: Calliphoridae), a rare species of the subfamily Rhiniinae (tribe Cosminini) was recorded for the first time in Malaysia. We collected one male and two females during a field trip conducted at Genting Highland, Pahang, peninsular Malaysia in May 2011. A 3-day old cow liver was offered as attractant and dipterans collected were transferred to the laboratory for specimens processing and identification. The adults of *I. paurogonita* were attracted to the odour and then captured by using a sweep net. *Isomyia paurogonita* was also recorded from two other localities in Peninsular and Malaysian Borneo, namely Gombak Utara, Selangor and Sibul, Sarawak.

The Oriental *Isomyia* has been studied and revised by Peris (1952) and James (1970). Since then, scattered checklists and new species of *Isomyia* have been described and published from various parts of Asia including India (Nandi, 2004; Singh & Sidhu, 2004), Sri Lanka (Kurahashi, 2001), China (Liang, 1991; Deng & Fan, 2006), Philippines (Kurahashi & Magpayo, 2000), Thailand (Kurahashi & Bunchu, 2011; Bunchu, 2012), Malaysia and Singapore (Kurahashi *et al.*, 1997), Indonesia (Kurahashi, 2003) and Indochina (Kurahashi & Chohanadisai, 2001).

In Malaysia, a total of 18 species of *Isomyia* from peninsular and Malaysia Borneo were recorded viz. *Isomyia borneensis* (Peris), *Isomyia ceballosi* (Peris), *Isomyia chalconotum* James,

Isomyia chrysoides (Walker), *Isomyia confixa* (Walker), *Isomyia cupreoviridis* (Malloch), *Isomyia delectans* Walker, *Isomyia dotata* (Walker), *Isomyia electa* Villeneuve, *Isomyia fulvicornis* (Bigot), *Isomyia hetauda* Kurahashi & Thapa, *Isomyia malayensis* (Townsend), *Isomyia mallochi* James, *Isomyia oestracea* (Séguy), *Isomyia perisi* James, *Isomyia pictifacies* (Bigot), *Isomyia pseudonepalana* (Senior-White, Aubertin & Smart) and *Isomyia viridaurea* (Wiedemann) (Kurahashi *et al.*, 1997; Kurahashi & Leh, 2009). In year 1997, an additional five *Isomyia* species namely *I. delectans*, *I. hetauda*, *I. perisi*, *I. pictifacies* and *I. pseudonepalana* were recorded in Malaysia by Kurahashi *et al.* (1997). Since then, no new *Isomyia* species is reported therein.

The Genus *Isomyia* is identified through several characteristics as follows: stem vein of wing with distinct setulae on postero-dorsal side of basal section; subalar knob bare; thoracic squama usually tongue-like, although some *Isomyia* species may have lobulated squama; Arista plumose; outer *ph* present; presutural *ac* well developed, *dc* also well developed and propleuron bare. The *Isomyia* is generally a medium to large sized fly, its thorax appears metallic green, blue or purple colouration and virtually dusted. The humerus, propleuron and mesopleuron are concolorous with thoracic dorsum. The abdomen also concolorous with the thoracic dorsum, sometime it is dusted or tessellated. The male eyes are holoptic or subholoptic (Kurahashi *et al.*, 1997).

Isomyia paurogonita was first described in Yunnan province, China (Fang & Fan, 1986). It is closely related to *Isomyia pseudoviridana* Peris, 1952 and *Isomyia versicolor* Bigot, 1877, which have not been recorded in Malaysia. *Isomyia paurogonita* can be distinguished from both species as it is mesopleuron largely clothed with yellowish hairs. In this paper, we provide a key to differentiate the three mentioned species.

Most *Isomyia*'s bionomics and behaviors are not known to science. Among the species, the female *Isomyia delectans* has been noted to frequent decaying animal matter and human excrement while the male *Isomyia viridaurea* was found hovering in small swarms under the trees (Kurahashi *et al.*, 1997).

A field trip to Genting Highland, Pahang state was conducted for Diptera collection. A 3-day old beef liver served as bait and was placed at bushes near to a telecommunication transmission tower at Bukit Cincin (3°43' N 101°79' E) which is about 1,722 m above sea level. The temperature ranged between 16-24°C with humidity 60-90%. Additional field collections were conducted by the third author in two different habitats. One female of *I. paurogonita* was collected for each location namely the forest at Gombak Utara, Selangor (3°25' N 101°73' E) and Katibas River, Sibul, Sarawak (2°01' N 112°33'

E). The later location is also indicated a new locality record for Malaysian Borneo.

The bait used attracted blow flies such as *Chrysomya pinguis* (Walker) and *Lucilia porphyrina* (Walker), with the presence of *Hydrotaea chalcogaster* (Wiedemann) (Diptera: Muscidae). Adults of *I. paurogonita* were observed resting on the adjacent plants. They seem to be attracted to the bait's odour but they did not land on it. The adults of *I. paurogonita* were collected by using a sweep net and transferred to plastic bottles. The adult flies were then brought to the Multipurpose Laboratory in the Faculty of Medicine, Universiti Teknologi MARA, Shah Alam and killed by using chloroform, pinned, labeled, and then placed into an oven for 3-4 days. The preserved specimens were identified and confirmed by the third author.

We collected one male and two females from this study (Figure 1). The adult of *I. paurogonita* can be diagnosed with the following characteristics: subcoastal sclerite next to humeral cross vein bare below; thoracic squama not lobulated and not reaching the base of scutellum, its longitudinal diameter is longer than the transverse; the body is slender; basicosta fuscous or black; mesothoracic spiracles fuscous; mesopleuron entirely or largely clothed with yellow hairs, with a row of long black pilose hairs along the posterior margin (Figure 2); lunule clearly with black setulae; parafacial hairs whitish, fine and long; head holoptic in male fly while dichoptic in female. The body length ranged from 6.0-7.0 mm.

The bionomics of *I. paurogonita* is unknown. It may be attracted to odour but it did not oviposit on the bait. In addition to that, *I. paurogonita* females were collected by using 2-3 days old spoiled beef (approximately 0.5 kg) from study sites in Selangor and Sarawak, and they were collected together with other flies which were attracted to the decomposing bait. Thus, its role in the ecology of decomposition and its potential in forensic entomology need further investigations. The location records showed that the flies are inhabiting forested areas from lowlands to highlands in peninsular Malaysia while in Sarawak, the female fly

was collected near to a river, which is also a rural area. This species is not synanthropic and is found in forests or rural areas at various altitude.

Isomyia paurogonita is considered smaller sized (6-7 mm) compared to the other members of *Isomyia*. Among the largest *Isomyia* are *I. ceballosi*, *I. chalconotum*, *I. electa*, *I. oestracea*, *I. perisi* and *I. pictifacies* where their body lengths are more than 12 mm (Kurahashi *et al.*, 1997). With the addition of this species, the total *Isomyia* species recorded in Malaysia become 19, although

the record of *I. mallochi* and *I. confisa* were in doubt since there was no available material for examination and a careful taxonomical revision need to be carried out on these species (Kurahashi *et al.*, 1997). Bunchu (2012) recorded 14 species of *Isomyia* in Thailand, mainly collected from Chiang Mai areas. Eight species of these *Isomyia* occur both in Thailand and Malaysia. Table 1 shows the list of *Isomyia* species recorded in Malaysia and Thailand compiled from Kurahashi *et al.* (1997), Kurahashi & Leh (2009) and Bunchu (2012).

Table 1. List of *Isomyia* species recorded in Malaysia and Thailand. (+ = present)

Species	Peninsular Malaysia	Malaysian Borneo (Sabah and Sarawak)	Thailand (Bunchu, 2012)
<i>Isomyia</i>			
<i>borneensis</i>	+	+	+
<i>ceballosi</i>		+	
<i>chalconotum</i>	+		
<i>chrysoides</i>	+	+	
<i>confixa</i> ?	+	+	
<i>cupreoviridis</i>	+		+
<i>delectans</i>		+	
<i>dotata</i>	+	+	+
<i>electa</i>	+		
<i>facialis</i>			+
<i>fulvicornis</i>	+	+	
<i>hetauda</i>	+		+
<i>lugubris</i>			+
<i>malayensis</i>	+	+	
<i>mallochi</i> ?	+		
<i>oestracea</i>	+	+	+
<i>paurogonita</i>	+	+	
<i>perisi</i>		+	
<i>pichoni</i>			+
<i>pictifacies</i>	+	+	+
<i>pseudonepalana</i>	+		+
<i>pseudoviridana</i>			+
<i>singhi</i>			+
<i>viridaurea</i>	+	+	+
<i>watanasaki</i>			+
Subtotal	16	13	
Total species recorded	19		14

? = need revision on taxonomical status

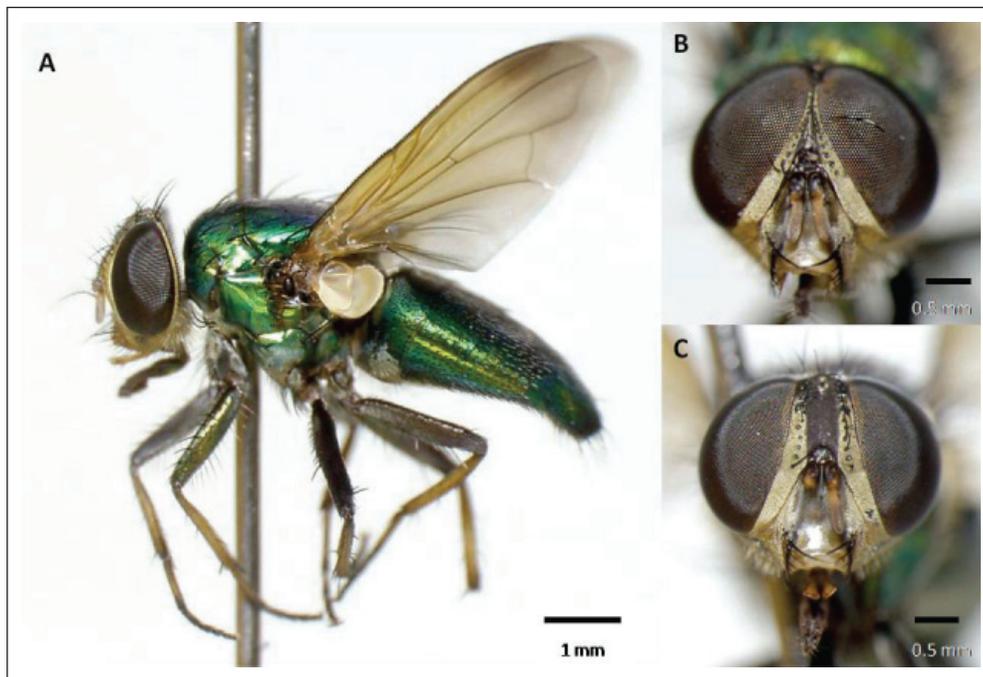


Figure 1. *Isomyia paurogonita* Fang & Fan, 1986. A: female habitus, lateral view, B: male head (holoptic), frontal view, C: female head (dichoptic), frontal view

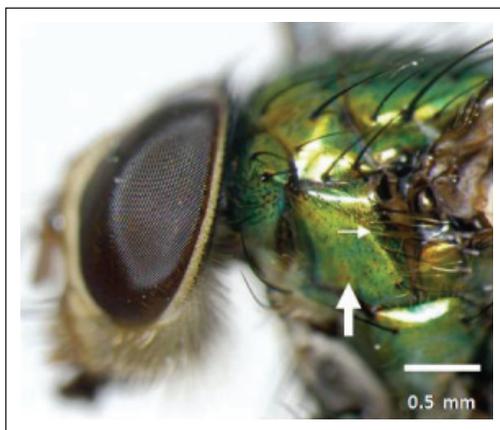


Figure 2. Mesopleuron of *I. paurogonita* is entirely or largely clothed with yellow hairs (thick arrow), with a row of long black pilose hairs along the posterior margin (thin arrow)

Key to distinguished *I. paurogonita* from the closely related species (suitable for both sexes):

1. Mesopleuron entirely covered with black hairs, with a row of long black pilose hairs along the posterior margin (No record from Malaysia).....*I. pseudoviridana* Peris
– Mesopleuron clothed with yellow hairs.....2

2. Mesopleuron entirely clothed with yellow hairs, with a row of long black pilose hairs along the posterior margin

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- Mesopleuron clothed with yellow hairs on lower small part, with a row of yellow pilosity (No record from Malaysia).....

I. versicolor (Bigot)

Notes on specimens, localities and collectors:

Specimens examined. MALAYSIA (MALAYA): 1 male 2 females, Pahang, Genting Highland, Bukit Cincin, 1,722m, 25.v.2011, S. Aisha (UiTM); 1 female, Selangor, Gombak District, Gombak Utara, 32 km NNE of Kuala Lumpur, forest, 5.v.2008, H. Kurahashi (NSMT*). MALAYSIA (BORNEO): 1 female, Sarawak, Sibul Division, Katibas River, Menyarin River mouth, forest, 9.ix.2011, H. Kurahashi (SM**).

* NSMT= National Museum of Nature and Science, Tsukuba, Japan

** SM= Sarawak Museum (Natural History Reference Collection), Kuching, Malaysia

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