

**Komunikasi Pendek/Short Communication**

**Research Notes on the Prevalence and Ovipositional Tendency of Forensically Important Scuttle Fly (Diptera: Phoridae) Found in an Urban Area in Malaysia  
(Nota Taburan dan Kecenderungan Oviposisi Lalat Phorid (Diptera: Phoridae) yang Berkepentingan Forensik di Kawasan Bandar di Malaysia)**

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ABSTRACT

*Phorid flies play an important role in forensic cases and can cause myiasis in humans. Studies on phorid flies species diversity are still limited in Malaysia. This research was carried out to collect information about species and frequency distribution of phorid flies as to provide more information on their roles in forensic and medical entomology. Bait trap was used with 100 g beef liver as baits. The species of the flies were identified using identification keys from Disney as well as Brown and Oliver. There were 449 phorid flies found in Kepong, Kuala Lumpur including *Megaselia scalaris*, *Megaselia spiracularis*, *Megaselia sp.* and phorid flies of genus *X*. Female phorid flies (98.89%) were found more prone to be trapped compared to male phorid flies (1.11%). Most phorid flies trapped in Kepong, Kuala Lumpur were from genus *Megaselia* and consisted of female flies. A total of five species of phorid flies probably new to science were also discovered. This study showed that *Megaselia* flies were found indoors rather than in open spaces. This was corresponding to their discoveries among the decomposing corpse found inside premises.*

*Keywords: Phorid flies, Kepong, diversity, frequency, bait trap, beef liver*

ABSTRAK

*Lalat phorid memainkan peranan penting dalam bidang entomologi forensik dan menyebabkan miasis dalam manusia. Kajian kepelbagaian spesies lalat phorid di Malaysia masih lagi terhad. Maka, kajian ini dapat mengumpulkan maklumat tentang taburan spesies dan frekuensi lalat phorid supaya dapat memberi manfaat yang lebih banyak dalam bidang entomologi forensik dan entomologi perubatan. Perangkap umpan hati lembu sebanyak 100 g digunakan dalam kajian ini. Spesies lalat phorid dikenalpasti dengan menggunakan kekunci identifikasi menurut Disney dan juga Brown dan Oliver. Sebanyak 449 ekor lalat phorid didapati dalam kajian ini. Antaranya termasuklah *Megaselia scalaris*, *Me. spiracularis*, *Megaselia sp.* dan lalat phorid genus *X*. Kajian ini juga menunjukkan bahawa lalat phorid betina (98.89%) lebih kerap terperangkap berbanding dengan lalat phorid jantan (1.11%). Lalat phorid di Kepong, Kuala Lumpur kebanyakannya adalah dari genus *Megaselia* dan terdiri daripada lalat betina. Berkemungkinan besar terdapat spesies baru lalat phorid ditemui dalam kajian ini. Kajian ini juga menunjukkan bahawa *Megaselia sp.* lebih banyak didapati dalam rumah berbanding kawasan terbuka. Ini adalah selari dengan penemuan mereka dalam mayat reput yang dijumpai dalam premis.*

*Kata kunci: Lalat phorid, Kepong, kepelbagaian, frekuensi, perangkap umpan, hati lembu*

Phoridae is the most biologically diversified family in order Diptera. Phoridae consists of thousands species in more than 250 genera. Phoridae or scuttle fly is a small fly (1-6 mm) that is found worldwide. Phorid fly is also known as scuttle fly due to its fast movement with stops in between flight. Phorid flies genus *Megaselia* and *Woodiphora* were found to be abundant in Malaysia forest (Idris & Sajap 2002). There were two phorid flies first time found in forensic cases which occurred in Penang, Malaysia. They were *Megaselia spiracularis* and *Megaselia curtineura* (Thevan et al. 2010). However, their distribution study in Malaysia is still limited. Thus, this study is important in recording the species of phorid flies found and its frequency

distribution in Kepong, Kuala Lumpur in order to provide more benefits in forensic and medical entomology.

The location chosen was Kepong with 3.11°N, 101.42°E. There were three places chosen randomly in Kepong which are houses, market and landfill area, respectively. The fly trap used (Figure 1) was a trap modified from previous researches with 100 g of decomposed beef liver (Amoudi et al. 1989; Disney 2005). The trap was placed in each of the locations for 12 hours from 0700-1900 hours (Nazni et al. 2007). After 12 hours, the flies trapped were caught killed with chloroform and preserved in 70% ethanol (Disney 1994). The baits with eggs deposited were then reared into adults in the laboratory. The phorid flies

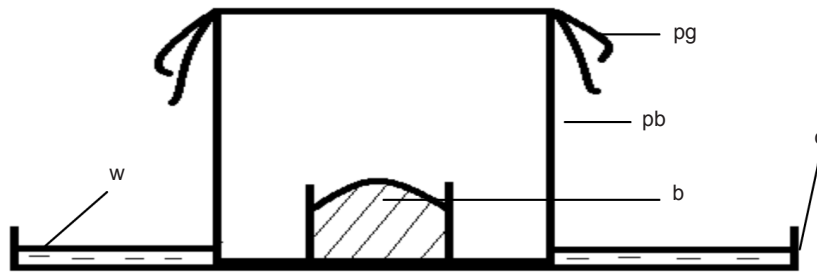


FIGURE 1. Modified phorid fly trap (W = water; C = container; B = bait; PB = plastic bottle; PG = polyester gauze)

were then identified using established descriptions and identification keys (Disney 1994). The frequency of the phorid flies was determined according to locations and sexes.

In this research, there was lack of female phorid flies identification keys. Thus, the female phorid flies could not be identified and was labelled with numbers such as *Megaselia* sp. 1 and so on.

The distribution of phorid flies in Kepong was shown in Figure 2. From the result, adult *Megaselia* sp. 5 was not found in any of the location but had oviposition activity. *Megaselia* sp. 1 and *Megaselia* sp. 3 were found to be the most abundant inside houses. *Me. scalaris* was evenly distributed in all locations but did not have any oviposition activity. *Me. spiracularis* on the other hand was only found inside houses but had the most active oviposition activity amongst the phorid flies. There were two genus of phorid flies found in this research, the majority of

genus *Megaselia* and some phorid flies of genus X. This is because *Megaselia* is cosmopolitan in nature (Disney 1994; Idris & Sajap 2002). They are highly distributed in Malaysia and other Oriental countries (Idris & Sajap 2002). *Megaselia* was transported to all over the world together with other synanthropic flies through human activities (Brown & Oliver 2007). The diversity of phorid flies in Kepong, Kuala Lumpur was found to be lesser compared to studies by Idris and Sajap (2002) where they had successfully collected 26 genera of phorid flies in five forests in Malaysia.

Most phorid flies caught were of females compared to males (Figure 3). This was because females were prone to lay eggs on decomposed organic material which had high protein content for the maturity of the eggs (Disney 1994, 2005). One of the baits was found to be occupied by larvae of *Sarcophaga* sp. and there was absence of larvae of phorid flies in this bait. This could be due to the

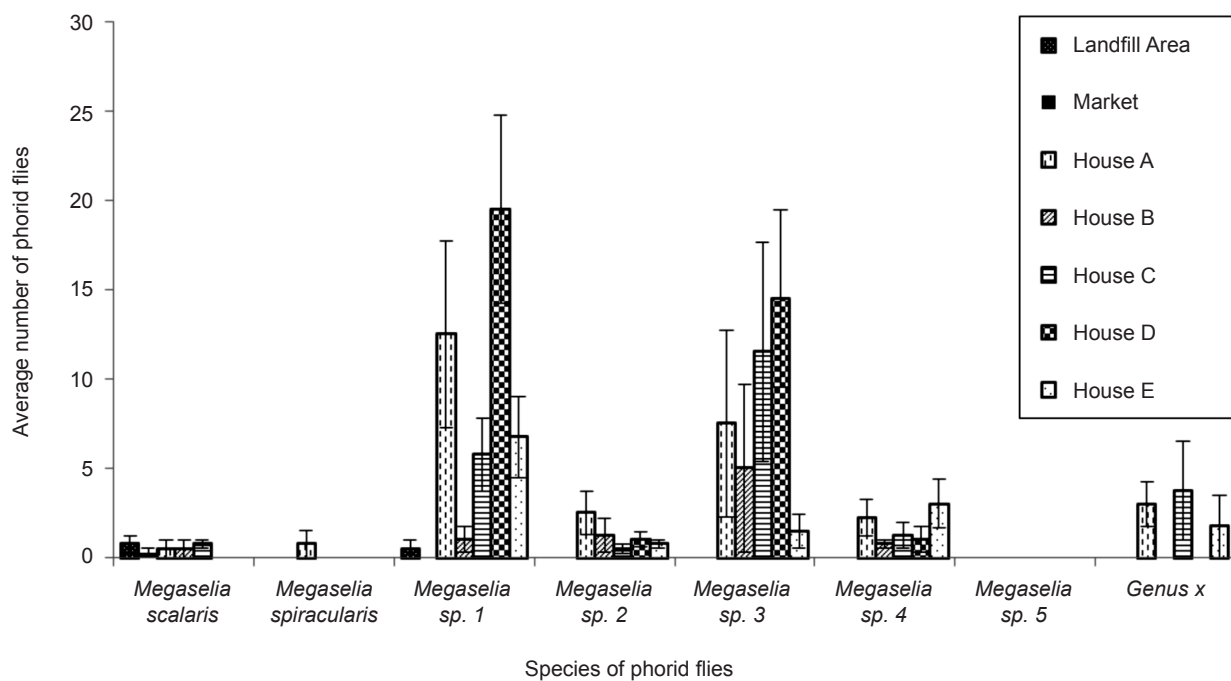


FIGURE 2. Phorid flies species distribution in Kepong, Kuala Lumpur. The values are stated as average  $\pm$  standard error

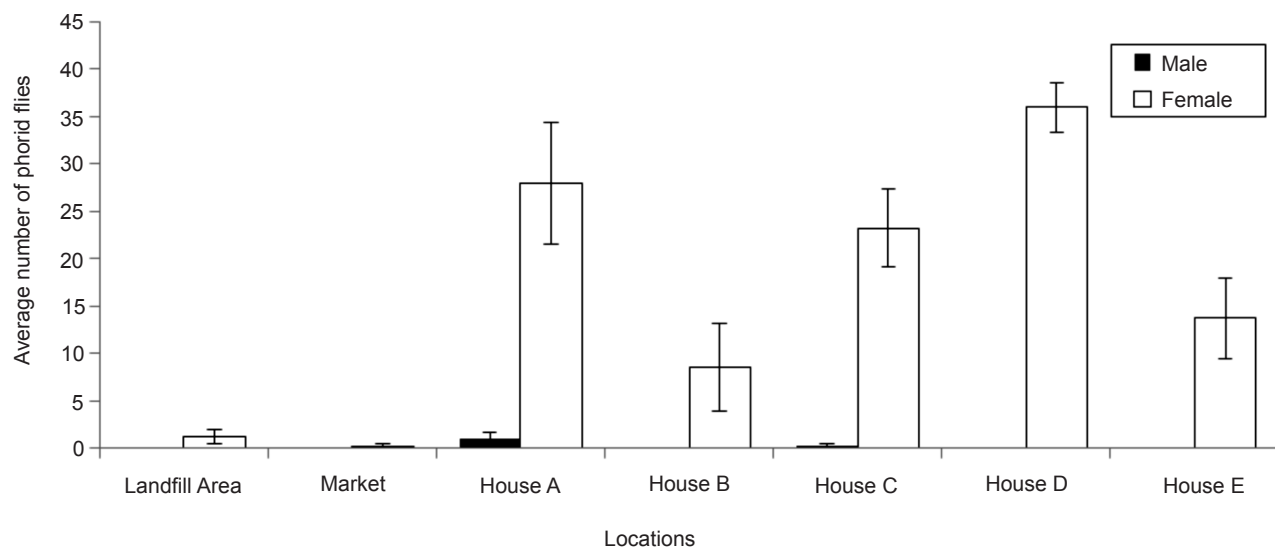


FIGURE 3. Phorid flies distribution according to sexes in Kepong, Kuala Lumpur. The values are stated as average  $\pm$  standard error

competition occurred between both flies (Disney 2005). Besides, phorid flies do not oviposit at any corpse that had been colonized by Calliphoridae larvae or larvae of other big flies (Reiba & Madea 2010).

Most of the phorid flies caught were found inside houses compared to market and landfill area. This is because phorid flies are able to enter an enclosed area compared to other large flies (Disney & Manlove 2009). Phorid flies have smaller sizes that enable them to reach corpse enclosed in plastic bag and a building with closed door and windows (Disney 1994). Thus, this make the phorid flies important in forensic cases in confined areas. Open areas such as landfill areas and markets are known to have frequent abundance of large flies such as Calliphoridae, Sarcophagidae and *Musca domestica*. This is because both of these places have a lot of food such as decomposed organic food, raw food, fruits and others. Thus, competition between these large flies and the smaller phorid flies causes their absence or found in a small numbers in these open areas (Disney 2005).

Most of the phorid flies in Kepong, Kuala Lumpur were from genus *Megaselia*. Most phorid flies found were females. All of the phorid flies undergone oviposition except *Me. scalaris* and phorid fly of genus X. There might be new species of phorid flies found in this research. There were eight different phorid flies found. All the unidentified flies will be sent to Dr. Henry Disney from University of Cambridge for further identification.

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