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Research Note

Myospila pudica pudica (Stein, 1915) (Diptera: Muscidae) in peninsular Malaysia and its ocurrence on a monkey carrion

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Abstract. *Myospila pudica pudica* (Stein, 1915) (Diptera: Muscidae) was recorded for the first time in Malaysia during a forensic entomological study conducted at a forested area of Forensic Science Simulation Site, Faculty of Allied Health Sciences Universiti Kebangsaan Malaysia, Bangi, Selangor. This species can be differentiated from other species of its genus by having R_1 setulose on dorsal surface and R_{4+5} more or less setulose dorsally and ventrally. The legs, including tarsi, are testaceous yellow and palpi blackish. Lateral and ventral surface of scutellum bare below the level of bristles and the third antennal segment is brownish yellow. Other features including the diverging of inner margin of lower squama from scutellum margin. This is also the first report on the occurence of *M. pudica pudica* (Stein, 1915) on animal carcass.

A forensic entomological study was carried out at a forested area of Forensic Science Simulation Site, Faculty of Allied Health Sciences, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia (2.9°N, 101.8°E approximately 30 km to the southeast of Kuala Lumpur city center) in June 2007. The location was a secondary forest, adjacent to occupied buildings of research laboratories and approximately less than 10 meters away from a man-made water canal. Approximately 300 meters to the northwest of the carcass site was an animal house providing animal supply for university's research activities. The location was approximately 42 meters above sea level and there was a range of terrains up to approximately 80 meters to the east.

Among forensically associated blowflies commonly collected from a monkey carcass were several *Hydrotaea* (*Ophyra*) species and unidentified species of adult muscid flies. The unknown specimens were preserved by pinning, labeling the date, time and name of the collector before submitting to the second author for species identification. The specimen was later identified as *Myospila pudica pudica* (Stein, 1915) (Diptera: Muscidae).

The *M. pudica pudica* adults were collected on two separate days, i.e. on 26 June 2007 (1600 hrs) and 28 June 2007 (1750 hrs). During the first collection, the monkey carrion was in the state of fresh to bloating stage of decomposition. The body appeared fresh externally but blowfly oviposition was seen occurring in mouth cavity, genital region and in between hairs of the monkey. There were frequent visits by necrophagous flies such as *Chrysomya rufifacies* and *Chrysomya megacephala*. Ambient temperature was 29C, body temperature was 28.5C and soil temperature was 27ºC. In the second collection, the monkey was in advance stage of decomposition, indicated by collapsed abdominal structure, revealing a mass of actively feeding third instar larvae. Ambient temperature was 28ºC and soil temperature was 33.5ºC. Both specimens of *M. pudica pudica* were captured by using a sweeping net. In both separate occasions, *M. pudica pudica* was a single visitor to the carcass and found on the external surface of the carrion, unlike the swarming and ferocious activities by common forensic calliphorids.

Myospila Rondani belonged to tribe Mydaeini. Current knowledge of Mydaeini tribe in Malaysia is still lacking while a study in Thailand recorded three genera from the tribe Mydaeini, i.e. *Myospila*, *Helina* and *Hebecnema* (Tumrasvin & Shinonaga, 1982). In Japan, there were eight other species of *Myospila* i.e.: *Myospila argentata* (Walker), *Myospila bina bina* (Wiedemann), *Myospila femorata* (Malloch), *Myospila falvibasis* (Malloch), *Myospila japonica* Shinonaga et Iwasa, *Myospila meditabunda* (Fabricius), *Myospila laevis* (Stein) and *Myospila lenticeps* (Thomson) (Kurahashi, 1989).

Myospila pudica pudica (Stein) can be identified by the following morphological characteristics: proseternum setulose; dorsal surface of vein R_1 setulose; R_{4+5} more or less setulose above and below; legs, including tarsi, testaceous yellow; inner margin of lower squama diverging from margin of scutellum, apical margin strongly rounded; palpi blackish; lateral and ventral surface of scutellum bare below the level of bristles; third antennal segment brownish yellow; apex of abdomen quite distinctly pale yellowish orange; scutellum wholly fuscous; fore coxa fuscous in front surface; smaller form, less than 7 mm in length (Kurahashi, 1989). The specimens identified were 6.33 mm and 6.51 mm in length. Its subspecies, *Myospila pudica rufomarginata* (Malloch, 1925), can be differentiated from *M. pudica pudica* by having larger size of more than 7 mm in length. *M. pudica rufomarginata*'s scutellum is pale testaceous on sides and apex and fore coxa is sometimes testaceous in front surface (Kurahashi, 1989).

Myospila pudica pudica (Stein) is an Oriental species and its distribution has been recorded in Japan, Taiwan, Philippines and Indonesia (Kurahashi, 1989), including *M. pudica rufomarginata* which was recorded in Thailand (Tumrasvin & Shinonaga, 1982). Another species, *M. lenticeps* (Thomson) has been recorded for the first time in Kuala Lumpur in 2003 with attraction towards mixed fruits bait (Omar *et al.*, 2003) but no further knowledge on bionomics or feeding behavior was elaborated. For other species of *Myospila*, many were dung-breeding flies such as *M. japonica* Shinonaga et Iwasa, *M. laevis* (Stein), *Myospila lauta* (Stein), *M. bina bina* (Wiedemann), and *M. meditabunda* (Fabricius) (Iwasa, 1984). However, there was no previous record of *M. pudica pudica*'s behavior or its occurrence on animal carcass.

Several other species of Muscidae play a greater role in Malaysia and have been recorded in forensic entomology cases such as *Synthesomyia nudiseta* (Wulp) (Omar et al., 1994) and *Ophyra* species (Lee et al., 2004), while *Musca domestica* Linnaeus and *Stomoxys calcitrans* (Linnaeus) are known of their medical importance as vectors of diseases (Sulaiman, 1990). Even though the discovery of *M. pudica pudica* demonstrated the possibility of its behavior associated with carrion, the role of this species as a forensic indicator is uncertain because there was no evidence of larvae or eggs found. Furthermore, the occurrence of *M. pudica pudica* could possibly be an adventives relationship with the carrion instead of being a necrophagous species (Smith, 1986). Therefore, more studies should be carried

out to understand the role of *M. pudica pudica* in decomposition process and enrich our understanding of the bionomics of Muscidae in Malaysia.

Notes on the specimens:

Specimens examined. MALAYSIA (MALAYA); 1♀, Selangor, Bangi, 28.VI.2007, R.M. Zuha.

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REFERENCES

Iwasa, M. (1984). Studies on the dung-breeding flies in Japan. III. The larvae of the genus *Myospila* Rondani, with remarks on some significant features in relation to feeding habits (Diptera, Muscidae). *Japanese Journal of Entomology* **52**(3): 341-351.

Kurahashi, H. (1989). Notes on the tribe Mydaeini from Japan. II. *Myospila* Rondani (Diptera: Muscidae). *New Entomology* **38**(1,2): 2-13.

Lee, H.L., Krishnasamy, M., Abdullah, A.G. & Jeffery, J. (2004). Review of forensically important entomological specimens in the period of 1972 -2002. *Tropical Biomedicine* Supplement 69-75.

Omar, B., Marwi, M.A., Chu, M.S., Jeffery, J. & Kurahashi, H. (2003). Distribution of medically important flies at various altitudes of Titiwangsa Range near Kuala Lumpur, Malaysia. *Tropical Biomedicine* **20**(2): 137-144.

Omar, B., Marwi, M.A., Mansar, A.H., Rahman, M.S. & Oothuman, P. (1994). Maggots of *Synthesiomyia nudiseta* (Wulp) (Diptera: Muscidae) as decomposers of corpses found indoors in Malaysia. *Tropical Biomedicine* **11**: 145-148.

Smith, K.G.V. (1986). *A Manual of Forensic Entomology*. Cornell University Press, Ithaca, New York.

Sulaiman, S. (1990). *Entomologi Perubatan*. Penerbit UKM, Bangi.

Tumrasvin, W. & Shinonaga, S. (1982). Studies of medically important flies in Thailand. VIII. Report on 73 species of muscid flies (excluding Muscinae and Stomoxyinae) with the taxonomic keys (Diptera: Muscidae). *Japanese Journal of Sanitary Zoology* **33**(3): 181-199.