

***Melinda pusilla pusilla* (Villeneuve, 1927) (Diptera: Calliphoridae), a new record from India with a revised key to the known Indian species**

Meenakshi Bharti

Department of Zoology and Environmental Sciences, Punjabi University, Patiala, Punjab, India-147002.

(Email: adubharti@gmail.com)

Abstract

Melinda pusilla pusilla (Villeneuve) is recorded for the first time from India. The specimen of this species was collected from Periyar, Kerala falling in the biodiversity rich region of Western Ghats. A key to adults of seven species recorded so far of this genus from India is provided.

Keywords: *Melinda pusilla pusilla*, Calliphoridae, Diptera, new record, India.

Received: 2 November 2015; Revised: 7 December 2015; Online: 21 January 2016.

Introduction

Paradichosia Senior-White and *Paurothrix* Bezzi were synonymized with genus *Melinda* Robineau-Desvoidy by Kurahashi (1970) in his revisionary work on Australian and Oriental Calliphorini. Verves (2005) placed 19 species under genus *Melinda* (Malloch) but treated four species namely *M. crinitarsis*, *M. nigricans*, *M. scutellata* and *M. vanemdeni* under genus *Paradichosia* Senior-White but for the present study, the status assigned by Kurahashi (1970) will be followed. Thus, the genus in question is currently represented by 25 species from the oriental region. *Melinda* (Malloch) was earlier represented by three species from India namely, *M. pusilla indica*, *M. abdominalis* and *M. scutellata*. Later, Nandi (1994) described a new species *M. bengalensis* from West Bengal, Singh and Sidhu (2007) added two new species, *M. chambenensis* and *M. chandigarhensis* from the states of Himachal Pradesh and Punjab (Bharti, 2011) and Bharti (2015) recorded *Melinda flavibasis* from Western Ghats. Presently, *Melinda pusilla pusilla* has been recorded from the regions of Western Ghats, bringing the total number of representatives to eight.

The species of this genus were recorded as parasites of land snails (Kano and Shinonaga, 1968). With long, shovel shaped ovipositor; species of genus *Melinda* are well adapted to viviparous habits which provides an edge over its closely allied and ancestral genus

Calliphora. The material was examined under Nikon SMZ 1500 (Nikon Instruments Inc., Japan) stereo zoom microscope. Digital images of *Melinda pusilla pusilla* were captured with the help of an MP evolution digital camera mounted on Nikon SMZ 1500 using Auto-Montage (Syncroscopy, Division of Synoptics, Ltd, UK) software. The images were processed and cleaned with Adobe Photoshop CS5 (Adobe Systems Software Ireland Ltd.). A revised key to the known Indian species of this genus is provided herewith.

***Melinda pusilla pusilla* (Villeneuve, 1927)
(Fig: 1-3)**

urn:lsid:zoobank.org:act:AB276EE4-8430-4E38-81D8-4B14EE8B7B44

Gymnadichosia pusilla Vill., 1927. *Rev.Zool. Afr.* 15:388.-Villeneuve, 1933, *Bull. Ann. Soc. Ent. Belg.* 73: 196.-Henning, 1941, *Ent. Beih. Berl,-Dahlem* 8:180.

Paradichosia pusilla: Sen.-White *et al.*, 1940, *Fauna Brit. India*, Dipt. 6: 64.- Zumpt, 1956, *Lind., Fliegen Pal. Reg.* 64i: 57. -Kano and Shinonaga, 1968, *Fauna Jap.*, Calliphoridae: 45.

Material examined: 1♂, India, Kerala, Periyar, 11.21N/77.44E, 1061m, 28.10.14; 1♂, India, Kerala, Periyar, 11.21N/77.44E, 1061m, 2.12.14.

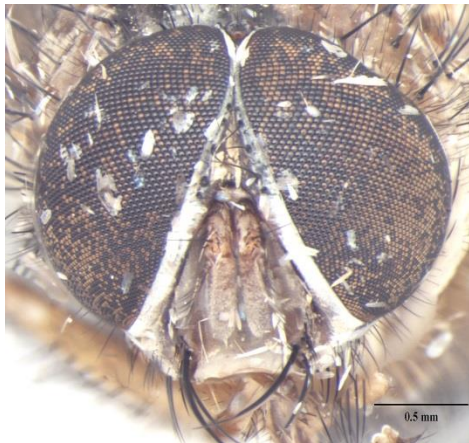


Fig.1. *Melinda pusilla pusilla* (Villeneuve, 1927): Head



Fig. 2. *Melinda pusilla pusilla* (Villeneuve, 1927): Dorsal view



Fig. 3. *Melinda pusilla pusilla* (Villeneuve, 1927): Profile view

Distribution: India, Taiwan, South China, Burma and Japan.

Remarks: Kurahashi (1970) recognised three subspecies of *Melinda pusilla* Villeneuve namely, *Melinda pusilla pusilla* (Villeneuve), *Melinda pusilla indica* Kurahashi and *Melinda pusilla tribulis* (Villeneuve). Of the three subspecies only *Melinda pusilla indica* was reported to be present in India. *Melinda pusilla pusilla* new record from India differs from the earlier recorded species i.e. *M. pusilla indica* by the absence of hairs on the eyes, presence of presutural intra-alar and black hairs on sternopleura. The author was not able to separate two Indian species of genus *Melinda*, namely *M. bengalensis* Nandi and *M. chambaensis* Singh and Sidhu in the key to Indian species of genus *Melinda* provided in the paper due to lack of suitable morphological characters which could clearly distinguish these two species. Furthermore, an effort was made to procure the type material of the above listed species but the curators of the depositories mentioned in the paper could not verify the existence of type material in the depositories. Henceforth, the species were keyed out together in the present paper.

Bionomics: The species was collected from the outskirts of Periyar city, Kerala falling in the biodiversity rich regions of Western Ghats. The place is notable for its wildlife sanctuary and has been marked as protected area category II by IUCN. The temperature varies, depending upon the altitude (highest 1700m) and it ranges between 15°C in December and January and 31°C in April and May. Annual precipitation is between 2000 and 3000 mm. The flora mainly consists of tropical evergreen and moist deciduous forests, grasslands, stands of eucalyptus, hundreds of flowering plant taxa, including about 171 species of grass and 140 species of orchids. The area is surrounded by plantations of crops such as tea, cardamom, and coffee. The area is a famous tiger reserve and elephant reserve and is also known for more than 160 butterfly taxa, including the lime butterfly, Malabar tree nymph, and Travancore evening brown, and many kinds of moths, such as the Atlas moth.

Key to the species of genus *Melinda*

1. Eyes bare2
 - Eyes hairy3
2. Legs black; pre-sutural intra-alar absent, epaulet and basicosta black; facial carina very strong.....***M. bengalensis* Nandi, *M. chambaensis* Singh & Sidhu** (Not sufficient morphological characters to separate the two species)
 - Legs entirely yellow; pre-sutural intra-alar present, epaulet and basicosta yellow; facial carina weak***M. pusilla pusilla* (Villeneuve)**
3. Scutellum entirely black4
 - Scutellum with at least apex yellowish 5
4. Facial carina absent; thorax and abdomen dark, blackish-grey, thorax showing traces of three dark stripes anteriorly; femora and tibia entirely fulvous yellow, tarsi black; wings quite conspicuously yellowish at the base; dc: 2+3.....***M. flavibasis* (Malloch)**
 - Facial carina present; thorax shining black with purplish tinge and dark longitudinal stripes, tergites two and three light brown, black in the middle and tergites 4 and 5 dark brown; legs brownish; wings hyaline; dc: 3+4***M. chandigarhensis* Singh & Sidhu**
5. Front coxa yellow in front, femora fulvous yellow entirely; none of the hind tibial bristles exceptionally long or slender in both the sexes6
 - Front coxa fuscous in front, femora fulvous yellow or dark brown entirely; one or two of the hind tibial bristles in male, 2-3X as long as tibial diameter, sternopleura covered with black hairs, abdomen in both sexes black except for narrow reddish margin.....***M. scutellata* (Senior-White)**
6. Scutellum entirely semi-pellucid yellow; sternopleura covered with black fine hairs, mesothoracic spiracle dark brown.....***M. abdominalis* (Malloch)**
 - Scutellum with only the apex or apical margin yellow, black at base; sternopleura at least in part covered with yellow or brown soft hairs; mesothoracic spiracle pale yellow.....***M. pusilla indica* Kurahashi**

Acknowledgements

The author is grateful to Dr. Knut Rognes (University of Stavanger, Faculty of Arts and Education, department of Early Childhood Education, NO-4036, Stavanger, Norway) for guidance and suggestions. Financial assistance rendered by Department of Science and Technology, Ministry of Science and Technology, New Delhi, vide Project No. SR/WOS-A/LS-275/2012 (G) is gratefully acknowledged. Author also thanks anonymous reviewers for the valuable suggestions.

References

Bharti, M. 2011. An updated checklist of blow flies from India. *Halteres* 3: 34–37.

Bharti, M. 2015. *Melinda flavibasis* (Malloch, 1931) (Diptera: Calliphoridae) a new record from India with a revised key to the known Indian species. *International Journal of Dipterological Research* 26(1): 3-6.

Kano, R. and Shinonaga S. 1968. Calliphoridae (Insecta: Diptera). *Fauna Japonica*. Tokyo: Biogeographical Society of Japan. 181pp.+23pls.

Kurahashi, H. 1970. The tribe Calliphorini from oriental and Australian regions. I. *Melinda*-group (Diptera:Calliphoridae). *Pacific Insects* 12(3): 519-542.

Nandi, B.C. 1994. Studies on calliphorid flies (Diptera:Calliphoridae) from Calcutta and adjoining areas. *Journal of Bengal Natural History Society* 13(2): 37-47.

Singh, D. and Sidhu, I.S. 2007. Two new species of *Melinda* Robineau-Desvoidy (Diptera: Calliphoridae) from India with a key to the Indian species of this genus. *Journal of Bombay Natural History Society* 104 (1): 55-57.

Verves, Y.G. 2005. A catalogue of Oriental Calliphoridae (Diptera). *International Journal of Dipterological Research* 16(4): 233-310.

Villeneuve, J. 1927. Mydaires superieurs nouveaux de lile de Formose. *Revue de Zoologie Africaine* 15: 387-397.