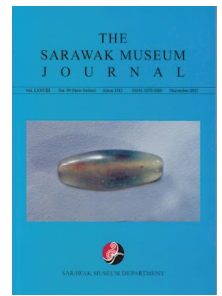




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A PRELIMINARY STUDY ON THE DISTRIBUTION OF *DROSOPHILA MELANOGASTER* SPECIES GROUP (Diptera: Drosophilidae) IN KUCHING DIVISION, SARAWAK, MALAYSIA

Tan Siew Hwa and Wong Siew Fui

ABSTRACT

The distribution of eleven *Drosophila* species, members of *ananassae* and *montium* subgroups, belonging to the *melanogaster* species group were studied in three districts of Kuching Division, Sarawak, Malaysia. A total of 861 fruit flies were collected from the districts of Kuching, Bau and Lundu from 3rd to 28th March 2015. Nine species from the *ananassae* subgroup and two species belonging to the *montium* subgroup were obtained in the study. The most common *Drosophila* species collected in Kuching Division was the *D. bipectinata* while *Drosophila ananassae*, *D. anomalata* and *D. sp. cf. jambulina* were the three species strongly associated with residential area in Kuching District. *D. pseudoananassae pseudoananassae* was the species that was only collected in Lundu District. In this study, nine new records of the genus *Drosophila* from Sarawak were established among which five were new records from southwest Borneo.

Keywords: *Drosophila melanogaster*, new records, Kuching, Sarawak, Borneo

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INTRODUCTION

The fruit fly, *Drosophila melanogaster* Meigen, 1830 is a fly of economic and medical significance. It is one of the most important insects used in biological studies and research on genetics, evolution, developmental biology, neurobiology and behavioural science (Adams *et al.* 2000). It has been used as an experimental subject for over a century due to its small size and short life cycle. They are easily obtained from the wild as they are particularly attracted to rotten fruits.

The *D. melanogaster* species group belongs to the subgenus *Sophophora*, which was established by Sturtevant (1942). From the species group level, it

is divided into subgroups, and further divided into complexes, which contain sibling or cryptic species or even subspecies. According to McEvey & Schiffer (2015), the *D. melanogaster* species group consists of 366 species and is divided into 27 subgroups. Among the 27 subgroups, the *ananassae* is the most common subgroup. This subgroup contains 25 described species which are distributed throughout Southeast Asia and are probably indigenous to the region (McEvey *et al.* 1987; McEvey & Schiffer 2015). Based on the external male genitalia morphology classification, the *ananassae* subgroup is further divided into three species complexes – *ananassae*, *biplectinata* and *ercepeae* (Bock 1980).

The largest subgroup under the *D. melanogaster* species group is the *montium* subgroup and it consists of at least 81 described species (Mou *et al.* 2005). The *montium* subgroup is divided into eight species complexes – *auraria*, *bakoue*, *bocqueti*, *jambulina*, *kikkawai*, *nikananu*, *birchii* and *serrata* (Zhang *et al.* 2003; Schiffer & McEvey 2006). Their distribution covers a wide range of geographical regions – from Southeast Asian to tropical Africa – and they occur mainly in the former region (Lemeunier *et al.* 1986). This subgroup can be easily distinguished from other subgroups by a large sex-comb on the male fore leg (Baimai 1980).

The biogeography of the *D. melanogaster* species group is very complex. Many studies have been carried out in order to understand the evolution and origin of these species (Bock 1980; Lemeunier *et al.* 1986; McEvey *et al.* 1987; Singh & Sisodia 2013; McEvey & Schiffer 2015).

It has been 50 years since the first Drosophilidae distribution study carried out by Okada (1964) in Sarawak, Malaysia. The aim of this study is to obtain an updated record of the species checklist and to determine the composition and distribution pattern of drosophilid fauna present at the three different habitations in Kuching Division, Sarawak.

MATERIALS AND METHODS

Distribution surveys of *Drosophila* species group were conducted in the three districts of Kuching Division, namely Kuching, Bau and Lundu (Fig. 1). The samplings were carried out from 3rd to 28th March 2015. Three different habitats were selected for the study. The first survey was conducted in the garden of Fairview Guesthouse in Kuching City. The guesthouse is a double