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A New Record for the Turkish House Fly Fauna: *Mesembrina meridiana* (L. 1758) (Diptera: Muscidae)

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ABSTRACT

Muscidae is a wide spread calyptrate family all over the World. On the other hand this family has great importance for ecological, veterinary, medical and forensic science. This family presented with 578 species in Europe and also has great species richness in Turkey. In this study *Mesembrina meridiana* (L. 1758) was reported first time in Turkey. We expect that *M. meridiana* also have great forensic importance due to the two specimens were collected on 3th and 8th days of decomposition; fresh and bloat stages when the Calliphoridae and Sarcophagidae species not certainly active due to seasonal activity periods.

Key words: Mesembrina meridiana, new record, Turkish Muscidae fauna, house fly.

INTRODUCTION

The Muscidae is a large and cosmopolitan family of Diptera that belong to the Calyptrata family group. Today Diptera are one of the three largest and most diverse animal groups in the world comprised of over 160,000 named species in about 150 families (Ssymank *et al*., 2008). In the Catalogue of Palaearctic Diptera (Pont, 1986), 835 valid species are listed, but in recent years many new species have been described especially from the eastern Palaearctic, so far in Europe 578 species reported (Pont, 2004; Pont, 2005; Gregor and Rozkošný, 2007; Pont and Grach, 2008; Pont and Gregor, 2008; Gregor and Rozkošný, 2009; Moon, 2002). This family of small and middle sized flies, with a much diversified ecology, includes some of the most common synanthropic flies. Larvae occur in many habitats: dung, organic decaying matter (decaying vegetation or carrion), on soil and fungi, in fresh water, in tissue of living plants and also in nests of birds or other animals, living as coprophages, saprophages or predators of other invertebrates. Adults are predacious on other insects, pollenophagous, saprophagous on dung or organic decaying matter, bloodsucking or secretophagous on vertebrates (Pont, 1986; Gregor *et al*., 2002). According to many researches, the Muscidae, third important family is dedicated as significant on forensic cases. Muscidae found on human corpses also carcasses is important for the estimation of the postmortem interval and other questions of forensic relevance (Byrd, Castner, 2000; Cai, 2011). Many Muscidae species are the first to locate and oviposit onto corpses or carcasses, and are among the dominant species found on corpses or cacasses (Linhares, 1981; Smith, 1986).

This work provides the first country record for *Mesembrina meridiana* (Linnaeus 1758) extending the known range of the species and taxonomic characters were given in details. The total number of Muscidae species now known from Turkey is 118 (Pont, 1991) and this fauna is clearly still under-recorded as the numbers of species in adjacent countries are 126 for Armenia (Pont, Werner and Kachvoryan, 2005) and 67 for Iran (Moradi *et al*., 2013). In this study, specimens of *M. meridiana* which is a new record for the Turkish fauna were collected on different days of pig decomposition during a forensic entomology research in Eskişehir.

The two female specimens were collected on 3th and 8th days of decomposition, fresh and bloat stages when the Calliphoridae and Sarcophagidae species not certainly active due to seasonal activity periods.

MATERIAL AND METHODS

The first sampling process occurred on the 3th and 8th days of forensic research at decomposition field, the adult samples were collected by nets within 30 cm diameter and preserved in ethyl acetate jars. The nets was used three times each day for collecting Diptera samples. The study was conducted in oak forest on N 39°56'07.12'', E 30°29'34.11'', Eskisehir / near the Tekeciler village (Fig. 1) on 07 July 2012 and 11 August 2012. The species were identificated by The European Families of the Diptera (Oosterbroek, 2006), The Muscidae of Central Europe (Gregor *et al*., 2002); Diptera, family Muscidae (Séguy, 1937). The taxonomical characteristics were shooted and presented by Leica microscope MZ12.5 donated with DFC 480 camera.

Fig. 1. Study area - Eskisehir (Tekeciler village).

RESULTS

The taxonomical characters were described by photos within the quotes of identification keys;

1. Hind tarsomere one without a ventral seta near base. Hind tibia without a strong median true dorsal seta, occasionally with a seta to the posterior side of dorsal placed well in apical half of tibia (Figure 2a).

2. Vein A1 not reaching wing-margin. Vein M1 straight (Fig. 2b).

3. Wing base and calypters are densely yellow. Large coal black species with deep yellow wing-bases. Lower calypter broad, truncate posteriorly, its posterior margin following. Scutellar margin before diverging away (Figure 3a).

4. Anterior katepisternal seta absent. Anepimeron partly setulose. Meron bare (Figure 3b).

5. Katepisternal setae 0+1. Scutum shining black Base of vein R4+5 bare. (Fig. 4).

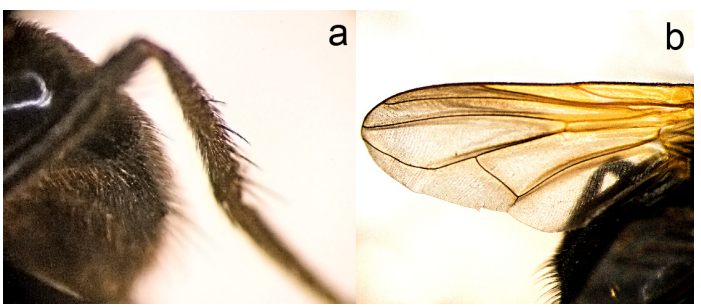

Fig. 2. ♀ a. Hind leg b. Wing Vein A1

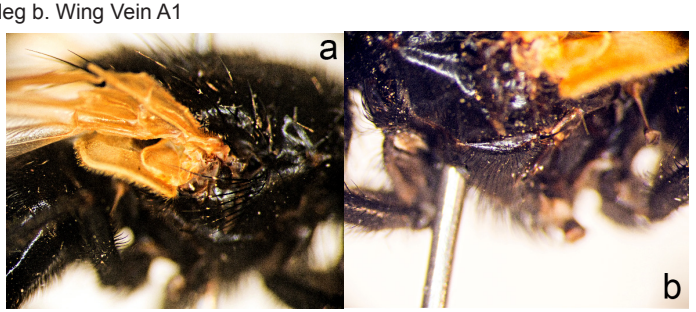

Fig. 3. ♀ a. Wing base and calypters b. Anterior katepisternal seta and Anepimeron

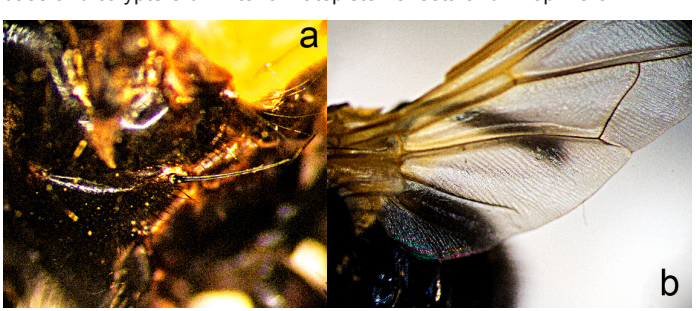

Fig. 4. ♀ a. Katepisternal setae b. Wing vein R4+5

DISCUSSION

Muscid flies are of great forensic importance due to their wide distribution, ubiquitous nature, and close association with man (Bryd and Castner, 2001). They visit a body soon after death, attracted by any exudates rather than the corpse itself. We expect that *M. meridiana* also have great forensic importance due to the specimens were collected on 3th and 8th days of decomposition; fresh and bloat stages when the Calliphoridae and Sarcophagidae species not certainly active due to seasonal activity periods (March and Early April). Adult Muscidae occur in most habitats, except for the most dry. They seem to be most typical inhabitants of the broad-leafed and coniferous forest zones (Sorokina, 2012). Immatures can be found in a wide variety of decaying organic substrates. Major breeding sites include human garbage dumps, open privies, livestock manure, soiled bedding, poultry litter, and wastes around fruit and vegetable processing plants (Moon, 2002).

In this study, *M. meridiana* was reported as new record for Turkish Muscidae fauna. The comparative diversity of the Turkish Muscidae to that of neighboring countries, feeding on variety of foods and living near the places leads us to conclude that the actual diversity of this family in Turkey can be expected to be higher than that currently observed. Therefore, we expect that more new Turkish house fly records will be found in the future for this family.

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