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A new species of ***Muscidifurax*** Girault & Sanders, 1910 (Hymenoptera: Pteromalidae) from Adana province, Turkey

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Summary

In 2007 a new species of the genus ***Muscidifurax*** Girault & Sanders, 1910 (Hymenoptera: Chalcidoidea, Pteromalidae), ***Muscidifurax adanacus*** n. sp., was found from Yüreğir-Adana as a third species of the genus in the Palearctic Region. The new species is described and its diagnostic characters are illustrated, and its systematic position is discussed.

Key words: ***Muscidifurax adanacus*** n. sp., parasitoid, Muscidae, Turkey
Anahtar sözcükler: ***Muscidifurax adanacus*** n. sp., parazitoid, Muscidae, Türkiye

Introduction

The genus ***Muscidifurax*** Girault & Sanders, 1910 (Hymenoptera: Chalcidoidea, Pteromalidae) was described with its type species ***Muscidifurax raptor*** Girault & Sanders, 1910 as a solitary parasite on pupae of ***Musca domestica*** Linnaeus, 1758 in Illinois, USA (Girault & Sanders, 1910). Kogan & Legner (1970) revised the genus and added four new species from Nearctic areas. Since that time several authors have recorded ***Muscidifurax*** with the single species, ***M. raptor***, from the Palearctic region (Graham, 1969; Dzhanokmen, 1978; Boucek & Rasplus, 1991). Hedqvist (1973) described ***Smeagolia perplexa*** as a new genus and species, but later both of which were stated as synonymies of ***M. raptor*** by Boucek (1991). Graham (1969), Kogan & Legner (1970), Boucek & Rasplus (1991) and Boucek & Heydon (1997) discussed the generic characteristics in their works on the genera of Pteromalidae (Hymenoptera), and they summarized diagnostic

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characters of the genus as follows: head protuberant at level of antennal toruli, face receding almost horizontally, antennal scape very long, much longer than an eye; female antenna with one anellus and 7 funicular segments, second flagellar segment large, quadrate, only slightly shorter than the third, usually provided with sensilla; male antenna 2 anelli and 6 hairy pedunculate funicular segments; marginal vein strongly widened in basal half, its lower margin distinctly sinuate; hind margin of first tergite trilobed. Graham (1969) gave lists of synonyms of the genus and its species, ***M. raptor***, and the distribution records and a host list for the species. Geden et al. (1998) recorded the second Palearctic species, ***Muscidifurax raptorellus*** Kogan & Legner, 1970 from France, Germany and Hungary.

The hosts of the ***Muscidifurax*** spp. were recorded by several authors as follows: Family: Calliphoridae: ***Chrysomya macellaria*** (Fabricius, 1793) and ***Phormia regina*** (Meigen, 1826) (Peck, 1963; Graham, 1969; Garrido Torres & Nieves-Aldrey, 1999). Family: Muscidae: ***Fannia canicularis*** (Linnaeus, 1761) (Legner, 1971; Mandeville & Mullens, 1990); ***Fannia femoralis*** (Stein, 1898) (Legner, 1971); ***Musca domestica*** (Graham, 1969; Petersen & Meyer, 1983; Petersen et al., 1983; Meyer & Petersen, 1983; Moreno, 1985; Skoda et al., 1987; Legner, 1989; Greene et al., 1989; Mann et al., 1990; Mandeville & Mullens, 1990; Meyer et al., 1991; Boucek & Rasplus, 1991; Geden et al., 1992; 1998; Petersen & Cawthra, 1995; Almeida & Prado, 1996; Garrido Torres & Nieves-Aldrey, 1999); ***Stomoxys calcitrans*** (Linnaeus, 1758) (Meyer & Petersen, 1983; Petersen & Meyer, 1983; Propp, 1986; Smith et al., 1987; Greene et al., 1989; Meyer et al., 1991; Boucek & Rasplus 1991; Geden et al., 1992; Seymour & Campbell, 1993).

M. raptor and some of the nearctic species of ***Muscdifurax*** were mass-reared, and released into dairies, poultry wastes, feedlots; confined livestock and cattle confinements for biological control of house fly, ***S. calcitrans*** and ***Fannia*** spp. in USA (Legner, 1971; Meyer & Petersen, 1983; Petersen & Meyer, 1983; Petersen et al., 1983; Greene et al., 1989; Meyer et al., 1991; Geden et al., 1992; 1998; Petersen & Cawthra, 1995).

Recently one specimen of ***Muscidifurax*** was swept in a marshy place from the plantation of ***Arundo donax*** Linnaeus, 1758 in Yuregir, Adana province. After identification works a new species of the genus was found.

Material and Methods

The specimen was swept from the plantation of ***A. donax*** in a marshy place of Yuregir-Adana, in fall, 2007. The specimen was killed in alcohol and preserved in a vial for the taxonomic studies. The left forewing and antenna were mounted in Canadian balsam. Photographs of diagnostic characters of the new species were taking using a stereo-microscope with a digital camera attached. The figures of ***Muscidifurax*** spp. (except ***adanacus*** n. sp.) were redrawn from the figures of Kogan & Legner (1970).

Results and Discussion

In 2007 a new species of the genus ***Muscidifurax*** (Hymenoptera: Chalcidoidea, Pteromalidae), ***Muscidifurax adanacus*** n. sp. was found from Yuregir-Adana as a third species of the genus in the Palearctic Region.

Muscidifurax adanacus n. sp.

Etymology

The name is derived from the name of location of the new species.

Material examined

Holotype female: Turkey: Adana, Yüreğir, 36^0 52' 48" N, 35^0 17' 43" E, 13 m, 15. XI. 2007, leg. M. Doğanlar, swept from ***A. donax*** plantations (Museum of Plant Protection Department, Agriculture Faculty, Mustafa Kemal University, Antakya-Hatay, Turkey).

Diagnosis

Head protuberant at level of antennal toruli, face receding almost horizontally, female antenna with antennal scape very long, much longer than an eye, having one anellus and 7 funicular segments, second flagellar segment large, quadrate, only slightly shorter than the third, without sensilla; forewing with marginal vein strongly widened in basal half, its lower margin distinctly sinuate; forewing margin not ciliate; hind margin of first tergite of gaster trilobed.

Description

Female: Holotype 4.8 mm. Body (Figure 1) black, with bluish reflexions excepts scapus, pedicel and anelli testaceous, funicular brown, tip of clava yellow, femora brown, tibiae and tarsi yellow, pretarsi brown. Wings hyaline, widened part of marginal vein, stigma and tip of parastigma dark brown, other parts of veins light brown; hind wing veins yellow with tips of marginal vein brown.

Head (Figure 2) in dorsal view wider than thorax (7: 5.2), almost twice as broad as long; occiput with fine ridge; temple about half of eye width; in frontal view head as wide as its height; eye 1.28x as long as broad, malar space 0.65x length of an eye; clypeus with lower margin slightly emarginated, its surface distinctly longitudinally and densely striated; remainder of face reticulated, distance between lateral ocellus and eye margin 0.58x the distance between lateral ocelli. Right mandible with 4 teeth, the left with 3. Antennae (Figure 3 A) inserted at level of lower margin of eye, closer to lower margin of clypeus than to median ocellus (2.4: 4.0). Antennae with combined length of pedicellus plus flagellum 1.31x as long as the width of head, scapus 1.34x as long as the length of eye and 2.87x the length of pedicellus, the latter 2.5x longer than broad; proportions of antennal segments as follows (length:width): 43:4; 15:6; 3:4; 8:4-5; 9:5; 9:5; 8:5; 7:5; 7:5; 6:5; 15(7:5:3):5. Annellus slightly transverse, first funicular segment truncate cone

shaped, twice as long as basal bread; without sensilla, 0.53x as long as length of pedicellus, following two segments of funicle equal in length, 1.8x longer than broad, other segments gradually shortening towards apex, last segment slightly longer than broad (6:5), almost equal in length to first claval segment (6:7), clava longer than preceding two funicular segment (5:4). Sensillae arranged in one row on segments of flagellum, including claval segments.

Mesosoma 1.6x longer than broad, pronotum medially 2.26x as wide as long; mesonotum 1.67x as wide as long, parapsidal furrows incomplete. Scutellum (Figure 4) almost flat, as broad as long without frenum. Propodeum (Figures 4, 5) with two distinct median carinae, wide apart frm each other posteriorly; plicae present, nucha developed, posterior margin of nucha sharply margined; propodeal callus and supracoxal flanges covered with dense white hairs. Forewing (Figure 6) apical part of forewing, with margin no ciliae, with ratio of costal cell: marginal: postmarginal: stigmal veins as: 64: 33: 24: 18; stigmal vein forming an angle with the postmarginal vein at about 45 degrees, stigma large; speculum very broad, basal half of forewing without hairs; costal cell almost twice as long as length of marginal vein, the latter 6.6x as long as basal width.

Metasoma (Figure 8) distinctly broader than mesosoma, elongated, pointed, as long as head plus mesosoma, 1.9x as long as broad. Hind margin of first tergite distinctly trilobed (Figure 9), shorter than scutellum; last tergum almost twice longer than broad at its base; ovipositor slightly projecting.

Discussion

The new species is similar to the species of the genus, ***Muscidifurax zaraptor*** Kogan & Legner, 1970 and ***M. raptorellus*** having forewing with margin not ciliate (Figures 6, 7 B, C), but not similar to ***M. raptor***, since it has forewing with apical magrin ciliate (Figure 7 A). It is also similar to ***M. raptorellus*** in having the first funicular segment without sensilla (Figures 3 A, C), in ***M. raptor*** and ***M. zaraptor*** having the first funicular segment with sensillae (Figures 3 B, D). It differs from the other species in having propodeum with double median carinae (Fig. 4, 5), (in other species propodeum (Figure 5) with single median carina); it differs also from ***M. zaraptor*** in having the first funicular segment without sensilla (Figure 3 A), (in ***M. zaraptor*** the first funicular segment with two rows sensilla (Figure 3 D); it differs from ***M. raptorellus*** in having funicular segments longer than broad (in ***M. raptorellus*** funicular segments 2-4 almost quadrate, 5-7 transverse (Figure 3 C).

Biology: The Holotype was swept from the plantation of ***A. donax*** in a marshy place together with many specimens of ***Fannia*** sp.

Figure 1. ***Muscidifurax adanacus*** n. sp. body, general apperance (original).

Figure 2. ***Muscidifurax adanacus*** n. sp. head in lateral view (original).

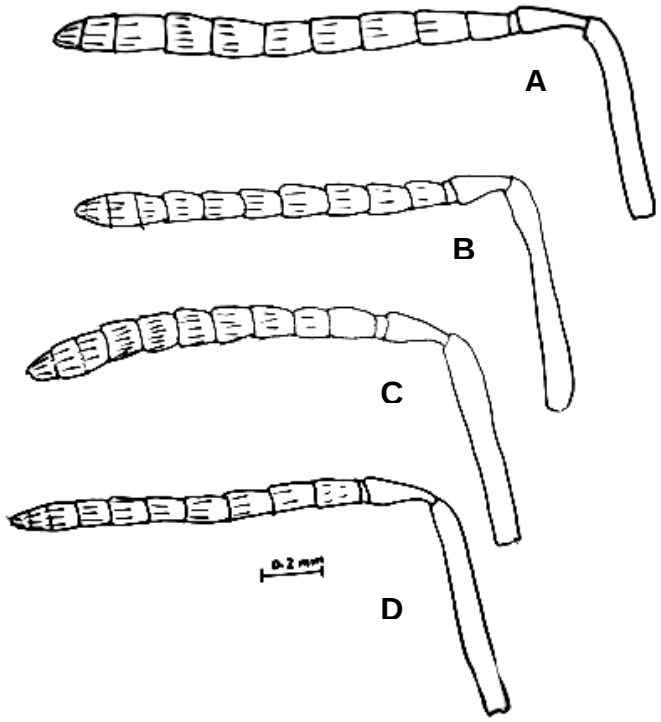

Figure 3. ***Muscidifurax*** spp. antennae; A) ***Muscidifurax adanacus*** n. sp.
B) ***Muscidifurax raptor*** Girault & Sanders
C) ***Muscidifurax raptorellus*** Kogan & Lenger
D) ***Muscidifurax zaraptor*** Kogan & Lenger (original).

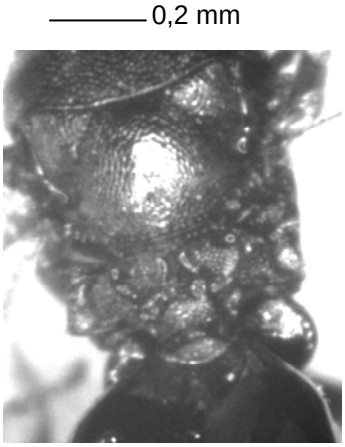

Figure 4. ***Muscidifurax adanacus*** n. sp. propodeum and part of scutellum (original).

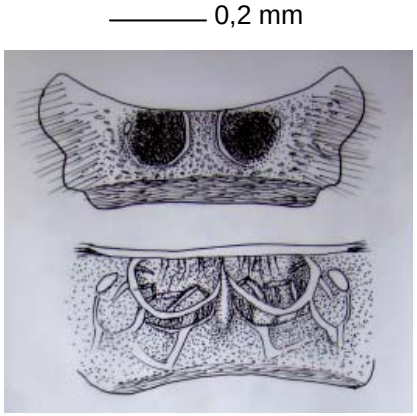

Figure 5. ***Muscidifurax*** spp. propodeum; ***Muscidifurax adanacus*** n. sp. (above), ***Muscidifurax zaraptor*** Kogan & Legner (below) (original).

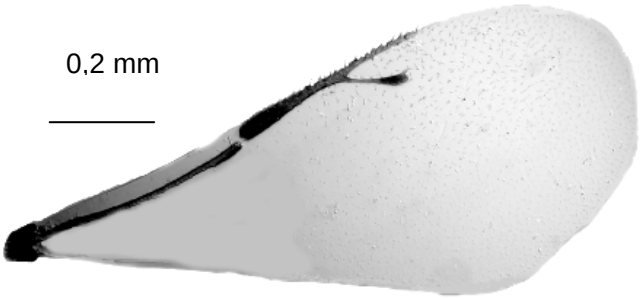

Figure 6. ***Muscidifurax adanacus*** n. sp. forewing (original).

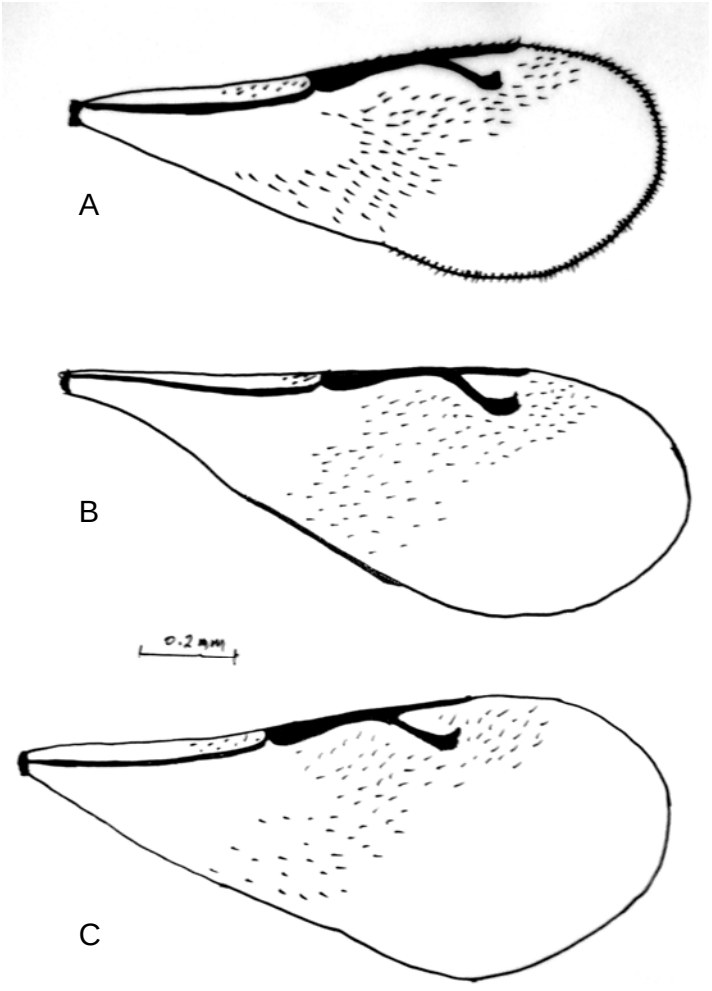

Figure 7. ***Muscidifurax*** spp. forewing: A) ***Muscidifurax raptor*** Girault & Sanders
B) ***Muscidifurax raptorellus*** Kogan & Legner
C) ***Muscidifurax zaraptor*** Kogan & Legner (original).

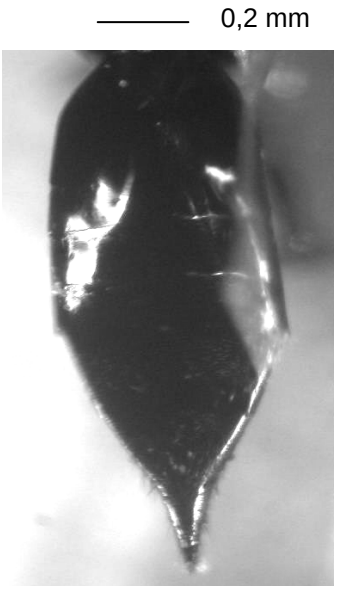

Figure 8. ***Muscidifurax adanacus*** n. sp. gaster (original).

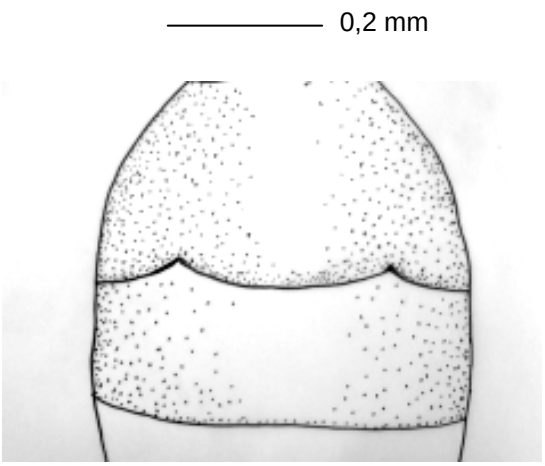

Figure 9. ***Muscidifurax adanacus*** n. sp. first two tergites of gaster (original).

Özet

Adana, Türkiye'den bulunan yeni bir *Muscidifurax* Girault & Sanders, 1910 (Hymenoptera: Chalcidoidea, Pteromalidae) türü

Adana, Yüreğir'de 2007 yılında ***Muscidifurax*** Girault & Sanders, 1910 (Hymenoptera: Chalcidoidea, Pteromalidae) cinsine ait Palearktik Bölgedeki üçüncü bir türü bulunmuş ve ***Muscidifurax adanacus*** n. sp. olarak isimlendirilip tanımlanmıştır. Bu türün ayırt edici özelliklerinin fotoğrafları dijital kamera yardımıyla mikroskoptan çekilmiştir. Bu yeni tür, cinsin diğer türleri ile karşılaştırılarak benzer türlerin özellikleri tartışılmıştır.

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