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New Data About *Tabanus karaosus* Timmer 1984 (Diptera: Tabanidae) from Turkey

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ABSTRACT

Flies of the family Tabanidae are common, widespread pests, known to take blood meals from many mammals including humans, and are known vectors of a number of diseases. Tabanidae is wide family that represented with 165 species in Turkey, have possesion of great importance on economical and medical level. Allotype description of *Tabanus karaosus*, member of this family that was described on 1984 by Timmer, firstly accomplished on this study. Distribution of this species on Turkey is exhibited and variations demonstrated with collected samples comparison by holotype descriptions. In this study, taxonomical characterters of male specimens were offered repeatedly, also illustrations of male and female genitals were given, for the first time.

Key words: Allotype, *Tabanus karaosus,* Tabanidae, Diptera, Insecta

INTRODUCTION

Family Tabanidae*,* represented by 4300 species worldwide (Lehane, 2005), 650 species in Palearctic Region (Chvala *et al*. 1972) and 165 species and 14 subspecies in Turkey. (Kılıç, 2006; Andreeva *et al*. 2009; Altunsoy & Kılıç, 2010). Many studies of the systematic and distribution of Tabanidae in Turkey exist (Kılıç, 2001a, b, c, 2003, 2004, 2005, 2006; Kılıç & Öztürk, 2002; Yaman & Yağcı, 2004; Karsavuran *et al*. 2005; Erdoğmuş, 2005; Andreeva *et al*. 2009; Altunsoy & Kılıç, 2010). Nevertheless, faunal complex of Turkey is not completely known. The genus *Tabanus* is represented with 62 species in Turkey.

Tabanus karaosus were described by Timmer from Turkey (Black Sea Region: Trabzon: Maçka). Timmer's description was given based on only two female specimens. Holotype specimen is collected from 360 m. altitude, on 08.07.1977, in Trabzon, Maçka and Paratype specimen collected at 1700 m altitude on 08.07.1977, Zigana, from Trabzon. Type samples have been preserved in the Amsterdam Instituut voor Taxonomische Zoölogie (Zoology Museum). Another report about *T. karaosus* Tim. given by Schacht (1984) and on date 30. 07. 1983, from Rize, İkizdere, at 1800 m, 10 female individual records presented. These specimens were deposited at Die Zoologische Staatssammlung München (Germany), Germany, also used for

observations about this study. Up to now any other record has not been reported about *T. karaosus*.

This study reports the examination of 42 female and 7 male individuals collected from eastern Black Sea Region. The collected female specimens were compared with holotype description and adult variation is reported. Illustrations of the genital structure, that not exist on description are given for the first time, also other taxonomical characters illustrations, which are important for species level identification. Illustrations of taxonomical characters and genital structures of unknown male are given in this study for the first time (Figs. 2-5).

MATERIAL AND METHODS

Adult samples were collected with established Malaysian insect traps and water traps on selected destinations from different locations of eastern Black Sea region. The collected specimens were dispatched in etyl acetat containing jars, moved to the laboratory as explained on previous studies (Kılıç, 2005; Altunsoy & Kılıç, 2010).

Specimens of male and female were softened in softening plate, then their abdomens were removed and macerated in 5% KOH for 24 hours at 25 °C. The abdomens were opened, and spermathecae and aedeagus were dissected. Spermathecae and aedeagus were cleaned and soft tissues were removed. Illustrations of taxonomical characters and genital structures were made by Leice MZ 12.5 microscope.

RESULTS AND DISCUSSION

Material examined: Trabzon (Uzungöl): 50 m, 3 ♀♀, 27.06.2008; Artvin (Borçka): 896 m, 2 ♀♀, 1 ♂, 29.06.2009; Artvin (Karagöl): 1470 m, 3 ♀♀, 1 ♂, 25.06.2009; Artvin (Murgul): 1520 m. 5 ♀♀, 1 ♂, 27.06.2009; Rize (Ayder): 941 m, 6 ♀♀, 2 ♂, 30.06.2009; Trabzon (Uzungöl): 50 m 2 ♀♀, 01.07.2009; Trabzon (Çayırbağı): 1121 m 4 ♀♀, 1 ♂, 02.07.2009; Trabzon (Düzköy): 238 m, 4 ♀♀, 02.07.2009; Trabzon (Tonya): 582 m, 3 ♀♀, 03.07.2009; Artvin (Karagöl): 1510 m: 6♀♀, 1 ♂, 25.08.2009; Trabzon (Maçka) 235 m, 4 ♀♀, 27.08.2009.

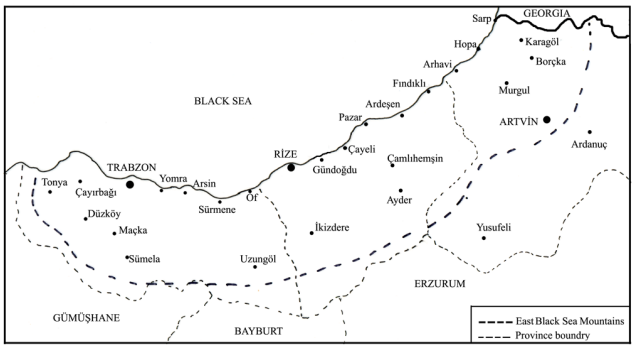

Fig. 1. Study area (East Black Sea region of Turkey).

Variability of female

Reviewed examples are separated by the following characters from Timmer's holotype description. The variations of *T. karaosus* are presented by these characters.

In line with these data, as with other species of connected with *T. bromius* L. group, is said to be extremely variable, especially in the abdomen and the antenna patterns and also palp color and patterns.

Head. Frontal index 1: 4.5-5.0. Frons generally grey dusted but blackish dusted in some specimens. Lower callus rectangular to circular like holotype description, but differently from than, touching eye margins in little specimens and because of the pubescens, appers separate from upper callus in this specimens (Fig. 2a).

Antennae. First two segment have great variability on the colorization and hairings. These segments are generally full of black colored, grayish white dusted and black haired. Nevertheless, like holotype and paratype, they dark brown colored, blackish grey dusted and black haired in some specimens. Third segment black colored, as holotype. Differently, some specimens may be grayish dusted (Fig 2b). It could presence grayish dusted in some specimens.

Palpi. Palpi have variability on the colorization and hairing. Basal segments of palpi generally grey colored, and densely long black haired, as holotype description. It was determined as brownish grey colored in some specimens. Apical segments of all specimens were not different from holotype description except two specimens; apical segments were whitish colored and densely short and long haired (Fig 2c).

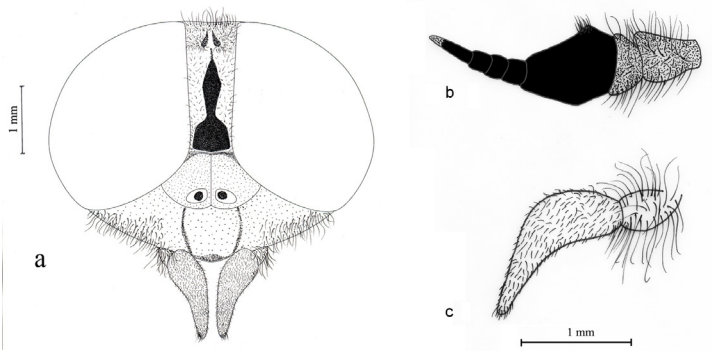

Fig. 2. *Tabanus karaosus* (female), a) frons, b) antenna, c) palpi.

Thorax. Black, grayish dusted and completely short black haired. Mesonotum thinly blackish grey dusted, with five, rather distinct, continuous, longitudinal stripes. Differently, due to blackish pubescens, stripes not visible in some specimens, and mesonotum appears completely black. Notopleural lobes grayish dusted and densely short black haired. Legs completely black, with yellowish brown knees. Wings clear or light brownish tinted in some specimens. Veins dark brown or blackish colored.

Abdomen. It was determined, coloration on abdomen very variable. Generally dorsum of abdomen black colored and short black colored. Despite the holotype description, some species have three rows of paler bluish-grey colored. Two specimens have brown side markings on tergite 2 like T. bromius, as described in the holotype. Venter black, a darker madian stripe was determined only on a few specimens.

Length of body; 13-17 mm.

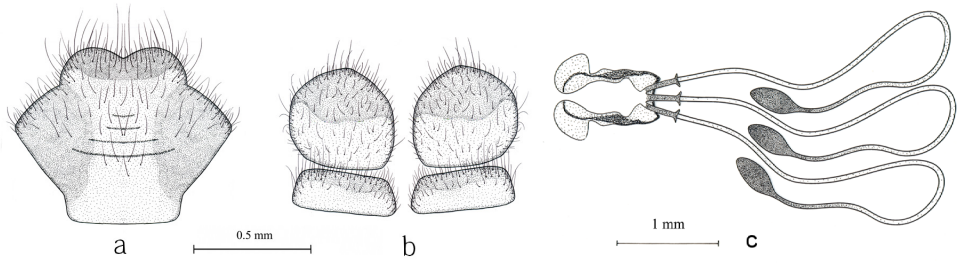

Fig. 3. *Tabanus karaosus* (female), a) subgenital plate, b) cerci, c) spermatecha.

Description of Unknown Male

Head. Not very large and not brooder than thorax. Eyes naked and unbanded. The facets on the upper two-thirds of eyes large and sharply separated from the lower area with small facets. Vertex with a row of long black hairs, postocular margin rather narrower and black colored (Fig. 4a).

Antenna. As mentioned in the description of female, but segment 3 more slender, with small, nearly rectangular dorsal tooth at base. First two segments completely black colored, blackish-grey dusted and long black haired. Third segment is dark brown to black colored. Basal part grey dusted (Fig. 4b).

Palpi. Grayish-brown colored dark grey dusted, oval and rather slender, distinctly pointed; clothed with longer grey and black hairs, especially anteriorly (Fig. 4c).

Thorax. Black, grayish dusted and completely short black haired. Notopleural lobes grayish dusted and densely short black haired. Legs are completely black, with yellowish brown knees. Wings, clear, or light brownish tinted in some specimens. Veins dark brown or blackish colored. Halters dark brown with a partly yellowish brown knob.

Abdomen. Dorsum of abdomen black colored, densely short black haired. Abdomen have similar pattern with female but lateral patches on tergite 2 are usually larger. Differently from female tergite 3, with very small dark brown side marks. Venter grayish-black, black dusted and mostly black haired.

Length of body; 11-14 mm.

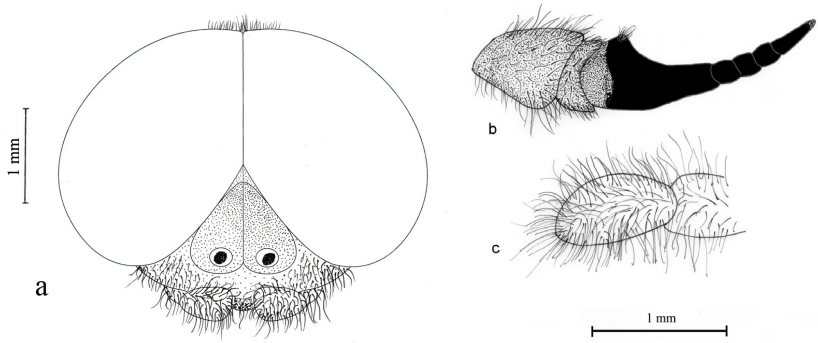

Fig. 4. *Tabanus karaosus* (male), a) frons, b) antenna, c) palpi.

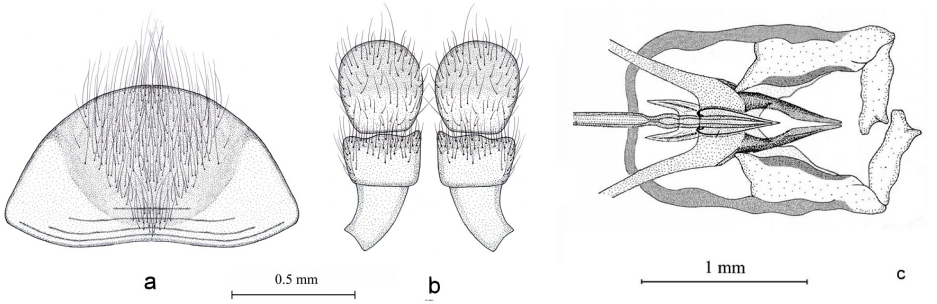

Fig. 5. *Tabanus karaosus* (male), a) subgenital plate, b) cerci, c) aedeagus.

Timmer has given a well holotype description however it was not possible to present genital structure dissection and illustration because of only two specimen availability. While Timmer was identifying these species, the black type of *T. miki*, *T. indrae* and *T. armeniacus*, which are closely related with, were compared and the types of distinctive characters were given in description. In identification process, in addition to these features, morphological differences on subgenital plate, cerci and spermatecha structures were compared and dissimilarities of *T. karaosus* Tim. was clearly revealed by comparison with other species.

General morphological characters of male subjects was evaluated, just as in the female specimens of *T. miki*, *T. indrae* and *T. armeniacus* are thought to be in close relationship with *T. karaosus* Tim. However, the antenna structure and morphologic genital differences (Figs. 4-5) facilitate separation from other species.

Adult *T. karaosus* Tim. specimens (June, July and August) were collected from Turkey's eastern Black Sea region in the period of activities of Tabanidae species and all were found to show activity during the summer. Thus within a year of this species are thought to be more than one generation.

Study takes place in the northern and southern parts of Eastern Black Sea mountain range throughout (Fig. 1). T. karaosus Tim. have been determined in this region, which Trabzon, Rize and Artvin provinces locates in the northern part of the Eastern Black Sea Mountains. In line with the data obtained, T. karaosus Tim. cannot reach beyond the inner part of the Anatolian mountain range, it can only spread amongst the northern side of these mountain range in 3000-4000 m. altitude. Therefore this species is limited to the northern side of Black Sea Region in Turkey can be said of the spread. However no data is found on literature about spread in Georgia and Armenia, eastern neighbors of Turkey. In these areas, these types of analysis are required to ensure sufficient data and improvement of this study.

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