



Distribution and seasonality of horseflies (Diptera: Tabanidae) in Van province of Türkiye with new records

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ABSTRACT. This study was conducted in Van province, which is located in the eastern region of Türkiye. The study area is located in the Irano-Anatolian hotspot region, divided to the east and west by the Anatolian diagonal. Here, we demonstrate the diversity, distribution, and seasonality of horseflies. Malaise and water traps were used to collect adult horseflies. A total of 1026 specimens were collected and 52 species identified. *Chrysops divaricatus* Loew, 1858; *Haematopota csikii* Szilady, 1922; *Haematopota pallidula* (Krober, 1922) and *Haematopota turkestanica* (Krober, 1922) were recorded for the first time from Türkiye. The distribution and seasonality of the species were presented.

Keywords: diversity, first record, horsefly, relative abundance, seasonal surveillance

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INTRODUCTION

Horseflies belong to the order Diptera and the family Tabanidae. Although adults feed on the nectar of flowering plants as a source of energy, most of the female horseflies are blood feeders and attack domestic and wild animals, including humans. They also cause significant economic losses in livestock production due to direct blood loss and cattle weight gain of 0.1 to 1 kg per day (Foil & Hogsette, 1994; Baldacchino et al., 2014). In addition to the direct economic damage, several disease pathogens including protozoa, bacteria, and viruses can be transmitted by horseflies. They have the potential to transmit diseases such as bovine leukosis, vesicular stomatitis, equine infectious anaemia, swine fever, anthrax, and tularemia, as well as different types of trypanosomes and *Anaplasma marginale*, depending on their function as mechanical vectors (Krinsky, 1976; Foil, 1989).

Tabanidae is a significant group in the field of faunistic studies on Diptera, comprising over 4400 species (Evenhuis & Pape, 2023). Approximately 550 species of horseflies have been identified in the Palaearctic region, with 220 of these occurring in Europe (Chvála, 1988; Andreeva, 2004). In Türkiye, the Tabanidae family is represented by 176 species and 15 subspecies belonging to 3 subfamilies (Altunsoy, 2018). Recent research on the seasonal patterns and abundance of horseflies has emphasized the importance of identifying and preventing their attacks on livestock to reduce economic losses. Studies in recent years have provided important information on the ecology, zoogeography, seasonality, and abundance of Tabanidae (De Liberato et al., 2019; Azza et al., 2020; Lucas et al., 2020; Agasoı et al., 2020; Ganeva, 2022; González et al., 2022; Krcmar, 2023; Müller et al., 2023). In Türkiye, Altunsoy and

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Kılıç (2012) investigated the seasonality of horseflies in the western Anatolian part of Türkiye more intensely. The species *Haematopota subcylindrica* Pandellé, 1883 and *Tabanus bromius* Linnaeus, 1758 were observed to have the longest flight period stretching from the first week of May to mid-September. Species that first appeared were part of the genus *Hybomitra* Enderlein, 1922. Nonetheless, there have been no other seasonal studies comparing the regional variations in Türkiye.

The main objective of the current study is to investigate the distribution and seasonal richness of the Tabanidae in Van province, located in Eastern Anatolia of Türkiye, close to the Anatolian diagonal. The Anatolian diagonal acts as a barrier to dispersal and therefore coincides with the distributional limits of many populations (Ekim & Güner, 1986; Çıplak et al., 1993; Altunsoy, 2018). The other importance of the study area is located through the Irano-Anatolian biodiversity hotspot, which is very rich in endemic and narrowly distributed species (Conservation International, 2023). Livestock activities are one of the main sources of income in the study area, which has large plateaus, plains, grasslands, and pastures. The other main purpose of this study is to determine the seasonal activity of Tabanidae species in the area in order to prevent pathogen transmission and economic damage during peak periods by implementing appropriate control strategies.

MATERIAL AND METHODS

The study was conducted in Van province, which is located in Eastern Anatolia, on high mountains, close to the Anatolian diagonal (38°30'04.35"N, 43°22'22.73"E). It has a continental climate with cold and long winters and hot and less rainy summers. The climate is relatively less harsh around Lake Van and Lake Erçiş. The altitude is approximately 1725 m. The vegetation is dominated by meadows, pastures, plateaus, and mountains. The elevation of Van and Erçiş Plain is around 200m. The specimens were collected from the lowlands, highlands, and hilly mountainous regions of Van Province, Gevaş, Gürpınar, Edremit districts, around Erçek Lake and Van Lake in June, July, and August 2016. Adult specimens were collected using Malaise traps, baited with 1-octen-3-ol and methylphenol. 150 cm x 80 cm x 10 cm rectangular black-coloured water traps designed by the author were also used for capturing horseflies. The black colour is used because it enhances the reflective properties of the water, thus improving the visual appeal of the trap. The trapping activities were carried out from the hours of 8 am to 7 pm, when it was light outside. The traps were controlled three times per day. The specimens captured by malaise traps, were killed in ethyl acetate-containing jars, and pinned with insect needles. Identification of specimens at the laboratory was done with a Leica® MZ 12.5 research microscope and an Olympus® BX51 research microscope according to the keys (Chvala et al., 1972; Olsufjev, 1977; Schacht, 1987). A Canon® 60D digital camera was used to take the photographs of the specimens. All identified specimens have been deposited in the Zoological Museum of Eskişehir Technical University (ESTUZOM).

RESULTS

During the study, a total of 1026 individuals, 1023 females and 3 males were collected and identified. The individuals belonged to 3 subfamilies: Pangoninae, Chrysopsinae, and Tabaninae; 4 tribes: Pangoniini, Chrysopsini, Tabanini, and Haematopotini; 10 genera: *Pangonius* Latreille, 1802; *Nemorius* Rondani, 1856; *Chrysops* Meigen, 1803; *Atylotus* Osten Sacken, 1876; *Theriopectes* Zeller, 1842; *Hybomitra* Enderlein, 1922; *Tabanus* Linnaeus, 1758; *Haematopota* Meigen, 1803; *Dasyrhamphis* Enderlein, 1922; *Philipomyia* Olsufjev, 1964 and 52 species. *Chrysops divaricatus* Loew, 1858 from the Chrysopsinae subfamily, represented with 9 specimens; *Haematopota csikii* Szilady, 1922 with 1 specimen; *Haematopota pallidula* (Krober, 1922) with 5 specimens and *Haematopota turkestanica* (Krober, 1922) with 3 specimens from the Tabaninae subfamily are the first records for Türkiye. All information, including months of activity, ratio, and gender of the species are presented in Table 1.

Table 1. Number of individuals and species of horseflies between June 2016 and August 2016.

Species	JUNE	JULY	AUGUST	Total specimens	(Ratio)
Subfamily: Pangoninae, Tribe: Pangoniini					
<i>Pangonius pyritosus</i> (Loew, 1859)	1	2	-	3♀	0.29
Subfamily: Chrysopsinae					
<i>Nemorius caucasicus</i> (Olsufjev, 1937)	1	3	-	4♀	0.39
<i>Chrysops divaricatus</i> Loew, 1858	-	4	5	9♀	0.88
<i>Chrysops compactus</i> Austen, 1924	2	2	-	3♀	0.29
<i>Chrysops flavipes</i> Meigen, 1804	6	4	10	20♀	1.95
<i>Chrysops hamatus</i> Loew, 1858	2	9	3	14♀	1.36
<i>Chrysops viduatus</i> (Fabricius, 1794)	10	8	12	30♀	2.92
Subfamily: Tabaninae, Tribe: Tabanini					
<i>Atylotus flavoguttatus</i> (Szilady, 1915)	5	4	1	10♀	0.97
<i>Atylotus hendrixi</i> Leclercq, 1966	1	4	-	5♀	0.49
<i>Atylotus loewianus</i> (Villeneuve, 1920)	1	3	-	4♀	0.39
<i>Atylotus quadrifarius</i> (Loew, 1874)	23	78	39	140♀	13.65
<i>Theriopectes tricolor</i> Zeller, 1842	8	3	-	11♀	1.07
<i>Hybomitra acuminata</i> (Loew, 1858)	5	-	-	5♀	0.49
<i>Hybomitra caucasi</i> (Szilady, 1923)	10	6	-	15♀ 1♂	1.56
<i>Hybomitra solstitialis</i> (Meigen, 1820) nec (Lyneborg, 1959)	58	104	33	193♀ 2♂	19.01
<i>Hybomitra erberi</i> (Brauer, 1880)	-	6	1	7♀	0.68
<i>Hybomitra expollicata</i> (Pandella, 1883)	2	7	-	9♀	0.88
<i>Hybomitra ukrainica</i> (Olsufjev, 1952)	-	1	-	1♀	0.10
<i>Tabanus atropathenicus</i> Olsufjev, 1937	-	5	1	6♀	0.58
<i>Tabanus autumnalis</i> Linnaeus, 1761	29	12	-	41♀	3.99
<i>Tabanus bifarius</i> Loew, 1858	29	19	7	55♀	5.36
<i>Tabanus bovinus</i> Linnaeus, 1758	2	9	-	11♀	1.07
<i>Tabanus briani</i> Leclercq, 1962	-	1	-	1♀	0.10
<i>Tabanus bromius</i> Linnaeus, 1758	48	77	58	183♀	17.84
<i>Tabanus cordiger</i> Meigen, 1820	-	2	-	2♀	0.19
<i>Tabanus cuculus</i> Szilady, 1923	1	-	-	1♀	0.10
<i>Tabanus exclusus</i> Pandelle, 1883	7	7	-	14♀	1.36
<i>Tabanus glaucopsis</i> Meigen, 1820	-	2	3	5♀	0.49
<i>Tabanus leleani</i> Austen, 1920	2	1	-	3♀	0.29
<i>Tabanus lunatus</i> Fabricius, 1794	11	10	-	21♀	2.05
<i>Tabanus maculicornis</i> Zetterstedt, 1842	2	-	-	2♀	0.19
<i>Tabanus martinii</i> Kröber, 1928	-	-	3	3♀	0.29
<i>Tabanus miki</i> Brauer, 1880	7	-	3	10♀	0.97
<i>Tabanus olsufjevi</i> Hauser, 1960	-	2	-	2♀	0.19
<i>Tabanus quatuornatatus</i> Meigen, 1820	55	4	-	59♀	5.75
<i>Tabanus regularis</i> Jaennicke, 1866	5	3	-	8♀	0.78
<i>Tabanus spectabilis</i> Loew, 1858	2	1	-	3♀	0.29
<i>Tabanus spodopterus</i> Meigen, 1820	8	-	1	9♀	0.88
<i>Tabanus sudeticus</i> Zeller, 1842	2	-	2	4♀	0.39
<i>Tabanus tergestinus</i> Egger, 1859	2	7	-	9♀	0.88
<i>Tabanus tinctus</i> Walker, 1850	-	7	3	10♀	0.97
<i>Tabanus unifasciatus</i> Loew, 1858	11	-	6	17♀	1.66
Subfamily: Tabaninae, Tribe: Haematopotini					
<i>Haematopota csikii</i> Szilady, 1922	-	1	-	1♀	0.10
<i>Haematopota pallidula</i> (Krober, 1922)	1	2	2	5♀	0.49
<i>Haematopota turkestanica</i> (Krober, 1922)	1	2	-	3♀	0.29
<i>Haematopota bigoti</i> (Gobert, 1881)	2	2	-	4♀	0.39
<i>Haematopota grandis</i> Meigen, 1820	4	7	-	11♀	1.07
<i>Haematopota ocelligera</i> (Kröber, 1922)	4	4	-	8♀	0.78
<i>Haematopota pallens</i> Loew, 1871	2	1	-	3♀	0.29
<i>Haematopota subcylindrica</i> Pandelle, 1883	4	-	-	7♀	0.68
Subfamily: Tabaninae					
<i>Dasyrhamphis unbrinus</i> (Meigen, 1820)	9	4	-	13♀	1.27
<i>Philipomyia aprica</i> (Meigen, 1820)	-	5	-	5♀	0.49
Total	385	448	193	1026	100

Tabanus was the most dominant genus, comprising 24 species, 479 individuals, and a ratio of 46.66%. This was followed by *Hybomitra* with 6 species, 233 individuals, and a ratio of 22.72%; *Atylotus* with 170 individuals and a ratio of 16.57%. Only three male horseflies could be caught with a water trap belonging to the species *Hybomitra caucasi* (Szilady, 1923) (1♂) and *Hybomitra solstitialis* (Meigen, 1820) nec (Lyneborg, 1959) (2♂♂). The largest number of specimens was collected in Edremit with 244 individuals followed by Van province with 238 individuals, Gevaş with 167 individuals, Gürpınar with 153 individuals, Van Lake with 128 individuals, and Erçek Lake with 96 individuals. Table 1 also shows that the seasonal distribution increased in the middle of the active period. Most individuals were caught in July with the number 448 and in June with 385 individuals (Table 1 and Fig. 1).

Hybomitra solstitialis (Meigen, 1820) nec (Lyneborg, 1959) and *T. bromius* were the richest species in number and both were present throughout the study period with different peaks. The highland habitats in the study area contained the largest number of specimens in Edremit and Van provinces where the highland and wetland habitats exist. *Tabanus autumnalis*, *Tabanus bifarius*, *Tabanus bromius*, *Chrysops flavipes*, *Chrysops hamatus*, *Chrysops viduatus*, *Atylotus quadrifarius*, and *H. solstitialis* (Meigen, 1820) nec (Lyneborg, 1959) were present throughout the study period, with a large peak in number from mid-June to mid-July. *Tabanus quatuornatus* was present from the beginning of June and until the middle of July with a small peak. In late June, *Tabanus exclusus* and *Tabanus lunatus* were large in number but there were only a few specimens at the beginning of July. *Haematopota csikii*, *Hybomitra ukrainica*, *Tabanus briani*, *Tabanus cuculus*, and *Tabanus olsuffevi* were the rarest species, captured only in July, while *Tabanus cuculus* was caught only in June. *Chrysops divaricatus*, *Hybomitra erberi*, *Tabanus miki*, and *Tabanus tinctus* were seen at the beginning of mid-July with a small peak and continued with a small number throughout August (Table 1).

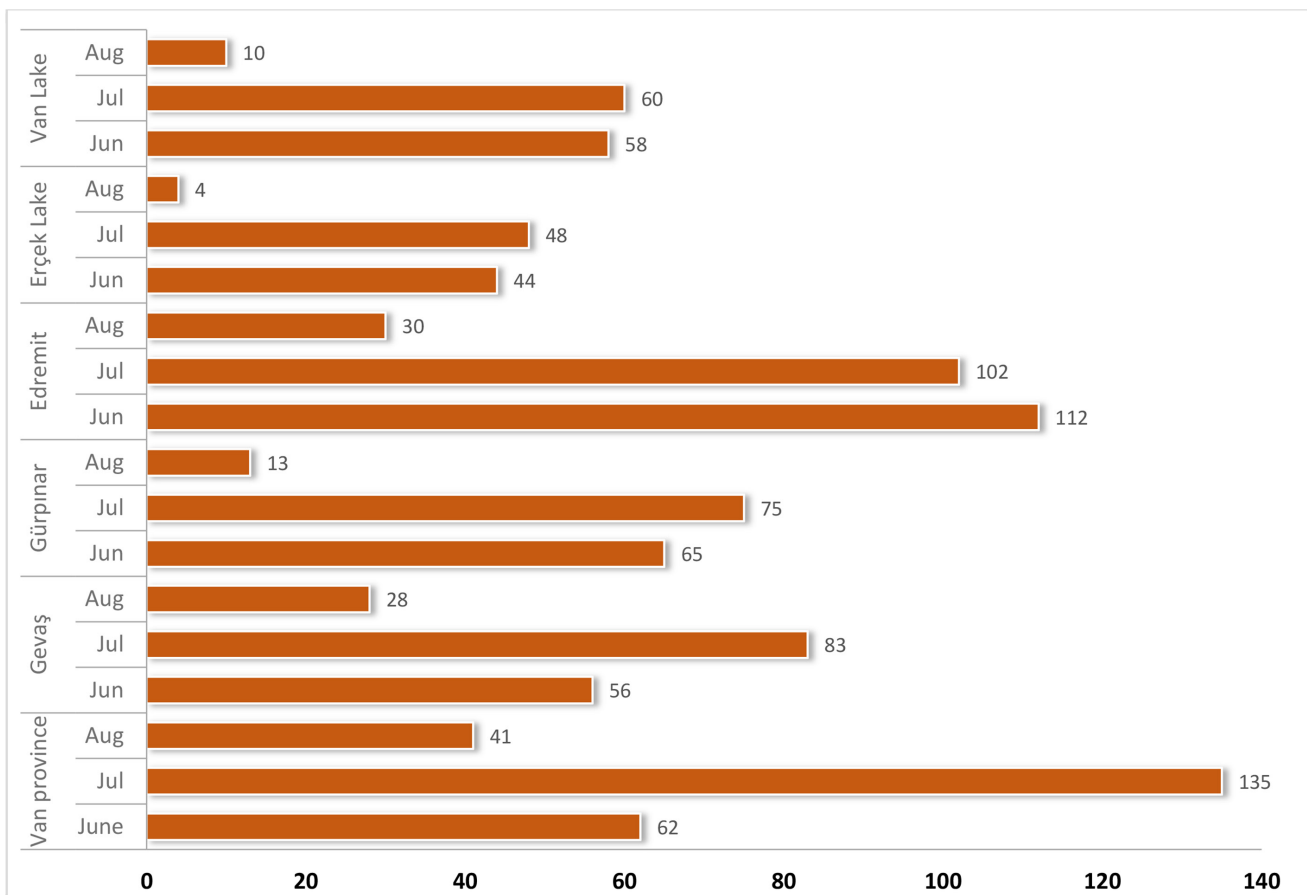


Figure 1. Distribution of the horseflies according to collection areas and months.

New records for Türkiye

Order Diptera Linnaeus, 1758

Family Tabanidae Latreille, 1802

Subfamily Chrysopsinae Lutz, 1905

Tribus Chrysopsini Enderlein, 1922

Chrysops divaricatus Loew, 1858 (Figs 2A–C)

Material examined. 1♀, Van province (38°30'39.91"N, 43°28'18.41"E, 1850 m a.s.l.), 06.08.2016; 1♀, Gevaş (38°17'22.43"N, 43°06'33.78"E, 1760 m a.s.l.), 29.07.2016; 2♀♀, 02.08.2016; 3♀♀, Edremit (38°25'03.37"N, 43°15'13.53"E, 1694 m a.s.l.), 15.07.2016; 2♀♀, Van Lake (38°42'01.83"N, 43°12'45.05"E, 1806 m a.s.l.), 15.08.2016; Malaise trap, Coll. FA, ESTUZOM.

Distribution. Czech Republic, Danish mainland, East Palaearctic, Estonia, Finland, Germany, Hungary, Kazakhstan, Lithuania, Mongolia, Norwegian mainland, Poland, Romania, Russia, Siberia, Slovakia, Sweden, Switzerland, Ukraine (Chvala et al., 1972; Olsufjev, 1977; GBIF, 2023).

Subfamily Tabaninae Latreille, 1802

Tribus Haematopotini Bequaert, 1930

Haematopota csikii Szilady, 1922 (Figs 2D–F)

Material examined. 1♀, Gevaş (38°17'22.43"N, 43°06'33.78"E, 1760 m a.s.l.), 29.07.2016; Malaise trap, Coll. BA, ESTUZOM.

Distribution. Albania, Austria, Bulgaria, French mainland, Portuguese mainland, Romania, Slovakia, Spanish mainland (Chvala et al., 1972; Olsufjev, 1977; GBIF, 2023).

Haematopota pallidula (Krober, 1922) (Figs 2G–I)

Material examined. 1♀, Gevaş (38°17'22.43"N, 43°06'33.78"E, 1760 m a.s.l.), 13.06.2016; 2♀♀ Gürpınar (38°17'28.60"N, 43°22'39.15"E, 1752 m a.s.l.), 11.07.2016; 1♀, Edremit (38°25'03.37"N, 43°15'13.53"E, 1694 m a.s.l.), 17.07.2016; 1♀, Erçek Lake (38°41'52.44"N, 43°39'06.73"E, 1812 m a.s.l.), 21.07.2016; Malaise trap, Coll. BA, ESTUZOM.

Distribution. Central European Russia, Near East, South European Russia, Ukraine (Chvala et al., 1972; Olsufjev, 1977; GBIF, 2023).

Haematopota turkestanica (Krober, 1922) (Figs 2J–L)

Material examined. 1♀, Gürpınar (38°17'28.60"N, 43°22'39.15"E, 1759 m a.s.l.), 14.07.2016; 1♀, Erçek Lake (38°41'52.44"N, 43°39'06.73"E, 1812 m a.s.l.), 08.06.2016; 1♀, 23.07.2016; Malaise trap, Coll. BA, ESTUZOM.

Distribution. Bulgaria, East European Russia, East Palaearctic, South European Russia, Ukraine (Chvala et al., 1972; Olsufjev, 1977; GBIF, 2023).

DISCUSSION

This study reports four new records for the Türkiye Tabanidae fauna. The study area, located in the Eastern Anatolian Region of Türkiye is under the influence of the Anatolian Diagonal, which is the biogeographical boundary between the Central Anatolian and Eastern Anatolian regions (Mutun, 2010; Bilgin, 2011, Kaplı et al., 2013). The Anatolian Diagonal acts as a barrier for many populations and taxa. Many groups that cannot cross this barrier, either actively or passively, have formed isolated taxa through speciation (Demirsoy et al., 2002; Gündüz et al., 2007). The fact that the study area is located in the Irano-Anatolian hotspot makes the present study even more important, especially because the invertebrate fauna of this hotspot has not been well studied.

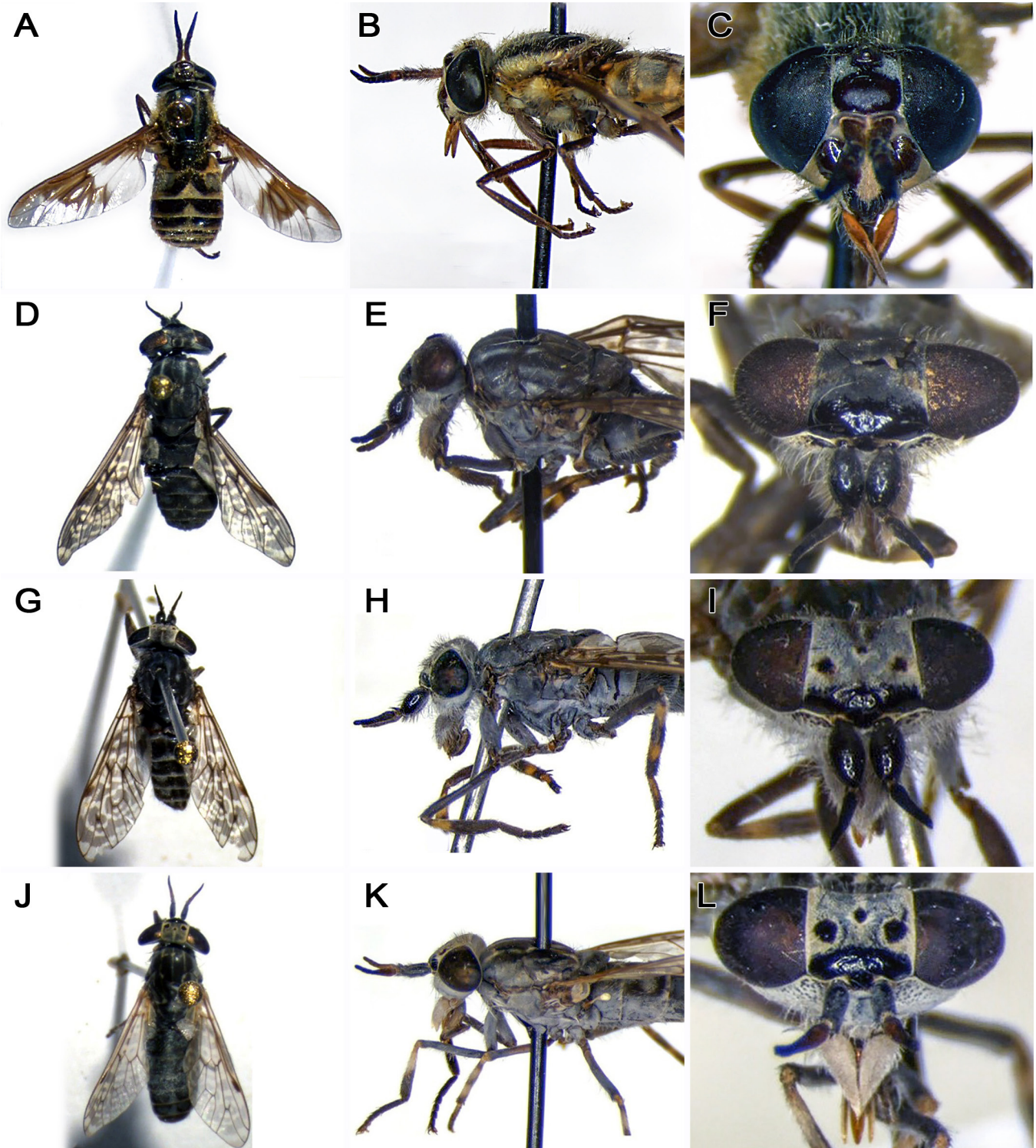


Figure 2. The newly recorded species of Tabanidae from Türkiye. Habitus, dorsal (A., D., G., J.), and lateral view (B., E., H., K.), head, frontal view (C., F., I., L.). **A–C.** *Chrysops divaricatus* Loew, 1858, ♀; **D–F.** *Haematopota csikii* Szilady, 1922, ♀; **G–I.** *Haematopota pallidula* (Krober, 1922), ♀; **J–L.** *Haematopota turkestanica* (Krober, 1922), ♀.

It has been determined that many Tabanidae in Türkiye are limited to areas either to the east or west of the Anatolian diagonal and cannot surpass it (Kılıç, 2006; Altunsoy & Ayaz, 2021). The Caucasian species *Silvius latifrons* Olsufjev, 1937; *Hybomitra montana* (Meigen, 1820), and *Hybomitra morgani*

(Surcouf, 1912) are distributed only in the eastern part of the diagonal; *Haematopota sumelea* Timmer, 1984; *Tabanus karaosus* Timmer, 1984; *Philipomyia rohdendorfi* (Olsufiev, 1937), and *Tabanus hissaricus* Baratov, 1962 are endemic in the northern part of the diagonal, but since they cannot cross the diagonal, their distribution is limited to the north of the Eastern Black Sea mountain range (Altunsoy & Kılıç, 2011). The European species *Hybomitra muehlfeldi* (Brauer, 1880), *Tabanus briani* Leclercq, 1962, *Atylotus flavoguttatus* (Szilády, 1915), and *Haematopota pluvialis* (Linnaeus, 1758) are widely distributed in Türkiye and various parts of the world. However, they are limited to the western part of the diagonal and have not been able to expand their distribution to the Caucasus or Iranian Turan (Altunsoy & Kılıç, 2011). The most important result of this study was the detection of four new records for Türkiye. *H. turkestanica* and *H. pallidula*, which are known as Central Asian species and rarely distributed in some European regions. *C. divaricatus* was mostly reported and studied in Russia (Pestov & Panyukova, 2013; Agasoı et al., 2020). The introduction of these species into Türkiye occurred through the Irano-Anatolian hotspot. Although they are widely distributed in Europe and Asia, their distribution in Türkiye is restricted by the Anatolian Diagonal and remains limited in the eastern parts. *H. csikii* was a rare species, reported from some European regions and in the present study, only one female specimen was collected in mid-July (Jezek, 1976; Leclercq, 1980).

A review of the literature did not reveal any data on the seasonal activity and distribution of horseflies in the current study area. Compared to the literature, this is the most comprehensive study in the province of Van. It can be seen that only Schacht carried out studies between 1983 and 1987. Schacht (1984) reported *Atylotus hendrixi* from Erçek Lake; *Tabanus semiargenteus* (Olsufjev, 1937) and *Tabanus olsufjev* from Başkale as new records. *Atylotus hendrixi* was also collected in the present study from Gevaş and Edremit. Schacht (1987) also described *Tabanus alvarengai* sp. n. from the districts of Van, Çatak, and Akçabük as a new species. *Tabanus bromius*, one of the most collected species during the study period, is known to attack humans (Chvala et al., 1972; Krčmar & Maric, 2006). Consequently, they present a risk of pathogen transmission between livestock and humans. *Chrysops*, *Tabanus*, *Atylotus*, and *Haematopota* species have been identified as mechanical vectors of *Francisella tularensis* bacteria, which cause tularaemia in humans (Krinsky, 1976; Petersen et al., 2009). Werszko et al. (2020) reported the detection of *Megatrypanum trypanosomes* in *T. bromius* and *T. maculicornis* in Poland. Ganyukova et al. (2018) isolated trypanosomes from *C. divaricatus*, which is the first record for Türkiye. These species require special attention because they have the potential to affect the productivity of farm animals. The activity of Tabanidae is seasonal and aligns with the geographical altitude, temperature, humidity, and precipitation (Miletti et al., 2011; Altunsoy & Kılıç, 2012; Herczeg et al., 2014). In Türkiye; the most comprehensive study was conducted by Altunsoy and Kılıç (2012) and the seasonality of the ten most abundant species was determined. The results demonstrated that *T. bifarius*, *T. unifasciatus*, *D. umbrinus*, *T. quatuornotatus* were most abundant in June, while the other six species peaked in July. *Haematopota subcylindrica* and *T. bromius* had the longest period from the first week of May to mid-September (Altunsoy & Kılıç, 2012). Similarly, in the present study, *T. bromius* and *H. solstitialis* (Meigen, 1820) nec (Lyneborg, 1959) were found to be the species with the longest periods. In the present study, *P. aprica* was collected in small numbers only in July. This result is different from that of Altunsoy and Kılıç (2012) who found this was one of the most abundant species during the study period. This result can be attributed to the fact that geographical and climatic conditions may influence the seasonality of the horseflies. Therefore, seasonality studies should be interpreted in different regions.

The results of the current study are valuable for determining the horsefly fauna and their seasonal activity in the study area, which has significant livestock activities. The findings also significantly contribute, by providing necessary information, to control the diseases transmitted by blood-sucking female tabanids, thus reducing economic losses. Now, the number of species in the Tabanidae family reaches 180 in Türkiye. It appears required and beneficial to do further studies to examine the distribution and seasonal activity of the Tabanidae over the entirety of Türkiye.

AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: F. Altunsoy and B. Ayaz: Field studies and specimen samplings, drafting, editing and proofreading the manuscript; F. Altunsoy: Identification of the specimens. Both authors read and approved the final version of the manuscript.

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AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in the Zoological Museum of Eskisehir Technical University, and are available from the curator, upon request.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included plants and arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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انتشار و فعالیت فصلی مگس‌های اسب (Diptera: Tabanidae) در استان وان ترکیه و ثبت رکوردهای جدید

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چکیده: این مطالعه در استان وان واقع در ناحیه شرقی ترکیه انجام شد. منطقه مورد مطالعه در کانون پرتنوع ایران-آناتولی قرار داشته و توسط عارضه جغرافیایی آناتولی به دو قسمت شرقی و غربی تقسیم شده است. در مقاله، ما تنوع، انتشار و فعالیت فصلی مگس‌های اسب را مشخص کردیم. تله‌های مالایز و تله‌های تشتکی برای جمع‌آوری افراد بالغ این دوبلان استفاده شد. مجموعاً ۱۰۲۶ نمونه جمع‌آوری و ۵۲ گونه شناسایی شد. از میان گونه‌های شناسایی شده، چهار گونه شامل *Chrysops divaricatus* Loew, 1858؛ *Haematopota csikii* Szilady, 1922؛ *Haematopota pallidula* (Krober, 1922) و *Haematopota turkestanica* (Krober, 1922) برای اولین بار از ترکیه ثبت شدند. محدوده انتشار و دوره فعالیت فصلی این چهار گونه نیز ارائه گردید.

واژگان کلیدی: تنوع، گزارش نخست، مگس اسب، فراوانی نسبی، نظارت فصلی