

The Ceratopogonidae (Insecta: Diptera) fauna of the Central Black Sea Region in Turkey

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Received: 20.10.2014

Accepted/Published Online: 07.07.2015

Printed: 30.11.2015

Abstract: Within the context of this study, conducted in 2007 and 2008, 64 species of the genera *Allohelea* Kieffer, *Alluaudomyia* Kieffer, *Atrichopogon* Kieffer, *Bezzia* Kieffer, *Brachypogon* Kieffer, *Culicoides* Latreille, *Dasyhelea* Kieffer, *Forcipomyia* Meigen, *Leptoconops* Skuse, *Palpomyia* Meigen, and *Stilobezzia* Kieffer were reported in the Central Black Sea Region of Turkey. Among them, three genera (*Allohelea*, *Alluaudomyia*, and *Brachypogon*) and 26 species are new to the country's fauna.

Key words: Diptera, Ceratopogonidae, biting midges, faunistic, new records, Turkey, Black Sea Region

1. Introduction

The family Ceratopogonidae, distributed worldwide, includes many species of small nematocerous flies, with wing length of 0.6–4.8 mm (Szadziewski et al., 1997). Currently, there are known 6501 extant and fossil species of the biting midges (Borkent, 2015). Of these, more than 1000 have been reported in the Palearctic region (Remm, 1988), and 567 in Europe (Szadziewski et al., 2015).

The larvae and pupae of biting midges live in aquatic and semiaquatic environments (Boorman, 1997; Szadziewski et al., 1997, 2011; Uslu and Dik, 2007), including lakes, rivers, ponds, irrigation channels, sewage systems, swamps, and manure piles among the most preferred (Uslu and Dik, 2007). Adults are usually found around such breeding sites. For development of their eggs, female require a source of protein, and females of the genera *Culicoides*, *Leptoconops*, and *Forcipomyia* (*Lasiohelea*) feed on the blood of mammals and birds (Boorman, 1997). The fact that the females of these genera attack humans and other animals leads to numerous health and economic problems. In humans, the bite of a ceratopogonid female causes pain and a burning sensation at the bite site. In cases where an allergy develops, itching at the bite site may continue for 2 to 3 days (Mullen, 2002). However, the most significant danger associated with biting midges is that they can serve as vectors for numerous species of viruses, protozoan parasites, and nematodes that can cause various diseases among humans, ruminants, horses, and fowl (Dik and Dinçer, 1992; Eren et al., 1995; Mullen, 2002). Important

viral diseases caused by ceratopogonids include oropouche fever in humans; bluetongue, Akabane virus, ephemeral fever, and epizootic hemorrhagic diseases in ruminants; and African horse sickness in horses. The nematodes carried by ceratopogonids can cause mansonielliasis in humans and onchocerciasis in both domestic and wild animals (Dik, 1997; Mullen, 2002).

Following a sequence of studies that were first initiated by Kieffer (1918), species belonging to the genera *Atrichopogon*, *Bezzia*, *Ceratopogon*, *Ceratoculicoides*, *Culicoides*, *Dasyhelea*, *Forcipomyia*, *Leptoconops*, *Palpomyia* and *Stilobezzia* have been reported in Turkey (Edwards et al., 1939; Leclercq, 1966; Navai, 1977; Havelka, 1978; Jennings et al., 1983; Remm, 1988; Dik and Dinçer, 1992; Dik, 1993; Eren et al., 1995; Dik, 1996; Borkent and Wirth, 1997; Yılmaz and Dumanlı, 1997; Eren and İnci, 2002; Taşdemir et al., 2004; Uslu and Dik, 2004; Balık et al., 2005; Szadziewski et al., 2007; Dik et al., 2008; Dominiak and Szadziewski, 2010). *Culicoides* is the most studied genus of the family Ceratopogonidae in Turkey and up to now 57 species have been reported (Dik, 1996; Dik et al., 2006). Of these, 41 occur in the Eastern Anatolian Region, 38 in the Aegean and Central Anatolian Regions, 30 in the Mediterranean Region, 13 in the Marmara Region, and 12 in the Southeastern Anatolian Region (Dik et al., 2006). However, in the Black Sea Region of Turkey the only faunistic study on the genus *Culicoides* was done by Dik et al. (2008), who mentioned 13 species from the provinces of Amasya, Giresun, Ordu, Sinop, and Samsun. Data on

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other genera of Ceratopogonidae in Turkey are much more sparse and can be found in the works of Kieffer (1918, 1919), Unat (1965), Leclercq (1966), Havelka (1978), Remm (1988), Wirth (1994), Borkent and Wirth (1997), Balik et al. (2005), Szadziewski et al. (2007), Dominiak et al. (2007), Dominiak and Szadziewski (2010).

In this paper we present new information on the biting midges, including genera other than *Culicoides*, occurring in the Black Sea Region in Turkey.

2. Materials and methods

A sample collection was performed in the Turkish provinces of Amasya, Çorum, Ordu, Samsun, and Tokat (Figure) from July to September 2007 and from May to September 2008. All of the provinces were visited at least once a month and samples were collected from 43 different locations as given on a map in the Figure.

Biting midges were caught using lights traps with mercury vapor lamps (Dik and Dinçer, 1992; Dik, 1993,

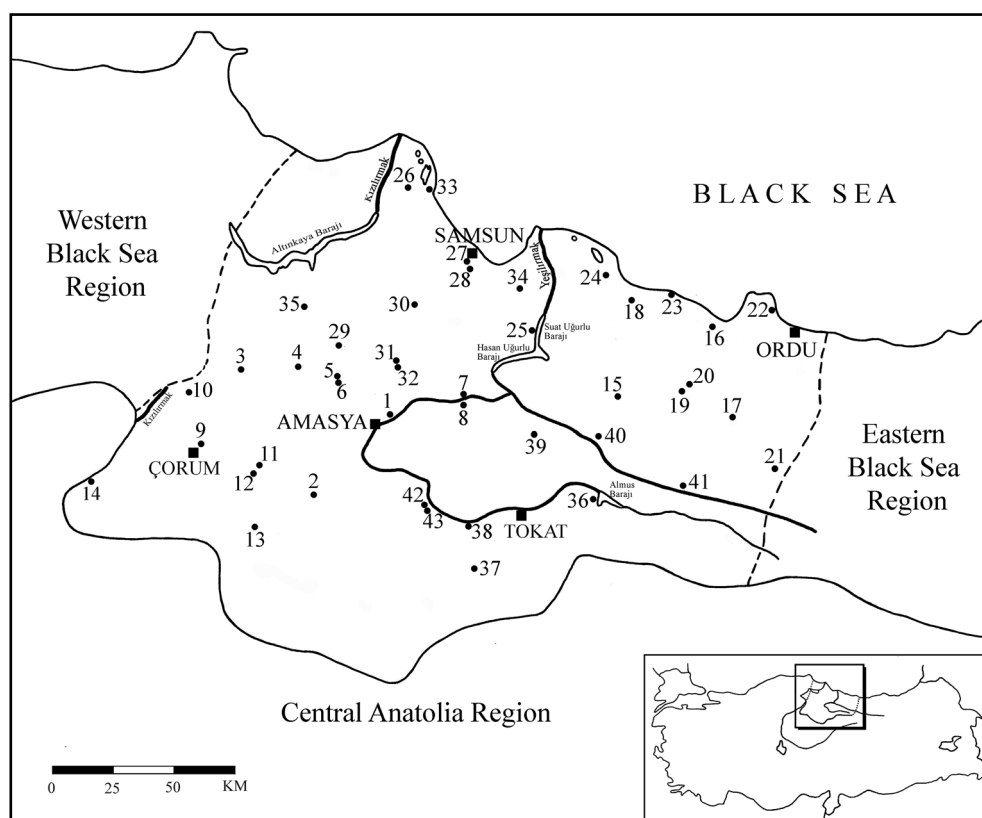


Figure. The Central Black Sea Region of Turkey and sampling sites.

Sampling sites: 1. Amasya: Centrum, Firingiler, 40°41'15.9"N, 35°54'45.9"E, 378 m; 2. Amasya: Göynücek, Kışlabeyi Village, 40°23'25.2"N, 35°33'43.1"E, 542 m; 3. Amasya: Gümüşhacıköy, Keçi Village, 40°49'07.5"N, 35°15'35.4"E, 777 m; 4. Amasya: Merzifon, Yakacık Village, 40°53'48.6"N, 35°25'43.9"E, 877 m; 5. Amasya: Suluova, Centrum, 40°49'24.3"N, 35°37'18.0"E, 473 m; 6. Amasya: Suluova, Çayıüstü Village, 40°48'43.4"N, 35°38'24.4"E, 495 m; 7. Amasya: Taşova, 40°44'55.5"N, 36°17'49.6"E, 242 m; 8. Amasya: Taşova, Güngörmüş Village, 40°43'41.8"N, 36°17'06.3"E, 279 m; 9. Çorum: Centrum, Güney Village, 40°37'47.6"N, 35°05'58.5"E, 1170 m; 10. Çorum: Laçın, Gökgezler Village, 40°48'48.6"N, 34°50'38.6"E, 434 m; 11. Çorum: Mecitözü, Centrum, 40°31'41.1"N, 35°18'22.3"E, 767 m; 12. Çorum: Mecitözü, Hıdırlı Village, 40°29'19.6"N, 35°15'10.9"E, 918 m; 13. Çorum: Ortaköy, Senemoğlu Village, 40°19'24.0"N, 35°21'37.2"E, 533 m; 14. Çorum: Uğurludağ, Eskiçeltelk Village, 40°33'46.6"N, 34°27'00.0"E, 519 m; 15. Ordu: Akkuş, Gökçebayır, 40°43'06.0"N, 37°01'33.5"E, 920 m; 16. Ordu: Fatsa, Ayazlı, 41°00'32.9"N, 37°27'06.9"E, 130 m; 17. Ordu: Gökkyöy, 40°40'18.9"N, 37°36'43.4"E, 850 m; 18. Ordu: İkizce, 41°06'07.9"N, 37°07'45.3"E, 50 m; 19. Ordu: Korgan, Terzili Village, 40°42'06.6"N, 37°17'39.2"E, 1246 m; 20. Ordu: Korgan, Yenipınar Village, 40°47'58.0"N, 37°21'31.6"E, 584 m; 21. Ordu: Mesudiye, Centrum, 40°27'42.7"N, 37°46'23.0"E, 1100 m; 22. Ordu: Perşembe, Yumrutaş Village, 41°06'07.7" N, 37°45'38.3"E, 231 m; 23. Ordu: Ünye, Cevizdere Village, 41°06'26.4"N, 37°20'10.2"E, sea level; 24. Samsun, Terme, Centrum, 41°12'22.4"N, 36°56'14.8"E, sea level; 25. Samsun: Ayvacık, Yenice Village, 41°03'05.5"N, 36°39'17.4"E, 70 m; 26. Samsun: Bafra, Karaköy, 41°31'26.1"N, 36°00'52.5"E, 21 m; 27. Samsun: Centrum, Ataköy, 41°15'22.9"N, 36°17'26.8"E, 150 m; 28. Samsun: Centrum, entrance of Yeşiltepe (Çorak Village), 41°14'29.6"N, 36°16'52.8"E, 32 m; 29. Samsun: Havza, entrance of Mürsel Village, 40°59'26.5"N, 35°43'20.9"E, 642 m; 30. Samsun: Kavak, İdrisli Village, 41°05'45.5"N, 35°59'36.0"E, 706 m; 31. Samsun: Ladik, Tatlıcak Village, 40°55'29.6"N, 35°58'13.1"E, 870 m; 32. Samsun: Ladik, the vicinity of Lake Ladik, 40°54'06.0"N, 35°59'49.9"E, 870 m; 33. Samsun: Ondokuz Mayıs, Yörükler, 41°31'14.8"N, 36°07'23.6"E, sea level; 34. Samsun: Tekkeköy, Kerpiçli Village, 41°09'26.9"N, 36°32'04.4"E, 152 m; 35. Samsun: Vezirköprü, Pazarcı Village, 41°04'18.5" N, 35°30'23.2"E, 690 m; 36. Tokat: Almus, Centrum, 40°22'35.5"N, 36°54'42.5"E, 803 m; 37. Tokat: Artova, Centrum, 40°06'42.1"N, 36°18'14.3"E, 1170 m; 38. Tokat: Centrum, vicinity of Tokat Airport, 40°18'23.5"N, 36°20'12.0"E, 556 m; 39. Tokat: Erbaa, Dereçiftliği, 40°33'22.3" N, 36°37'22.4"E, 384 m; 40. Tokat: Niksar, Şahinli Village, 40°35'09.2"N, 36°53'59.5"E, 270 m; 41. Tokat: Reşadiye, Centrum, 40°23'02.9"N, 37°20'06.3"E, 511 m; 42. Tokat: Turhal, 40°20'21.1"N, 36°08'41.2"E, 507 m; 43. Tokat: Turhal, Arzupınar Village, 40°19'43.7"N, 36°10'52.3"E, 608 m.

1996) and black fluorescent lamps (Tilki and Dik, 2003). Osram brand self-ballasted 160 W and 225 mercury vapor lamps and Panlight brand 18 W black fluorescent lamps were used as light sources.

The traps were set before dusk in and around places where adult Ceratopogonidae could be found in large numbers, such as the inside or surroundings of cowsheds; around manure piles; within vegetation composed of grass, shrubs, and trees; and around lakes, rivers, and ponds. The traps were left in place for at least 2 h (Dik and Dinçer, 1992; Dik, 1993, 1996). The samples collected from the vessels were filtered and drained using a fine-meshed strainer and then kept in bottles with 70% ethyl alcohol. Most of the materials were mounted on microscope slides using the method proposed by Wirth and Marston (1968).

3. Results

In this study, 64 species and 11 genera of Ceratopogonidae were reported in the Central Black Sea Region of Turkey (Table 1). Three genera (*Allohelea*, *Alluaudomyia*, and *Brachypogon*) and 26 species are new records for Turkey. The total number of species identified for each genus and at each location is provided in Table 2.

Species review

Tribe: Ceratopogonini

Genus: *Allohelea* Kieffer, 1917

Allohelea tessellata (Zetterstedt, 1850)

Material examined: Samsun: Centrum, Ataköy, 09.VII.2007, 1 ♀; Amasya: Merzifon, Yakacık Village, 16.VII.2007, 1 ♀.

Distribution in Turkey: New record for Turkey.

General distribution: Austria, Belgium, Britain I., French mainland, Germany, Poland, Slovakia, Sweden, Near East, Oriental region (Remm, 1988; Szadziewski and Borkent, 2015).

Genus: *Alluaudomyia* Kieffer, 1913

Alluaudomyia riparia Clastrier, 1978

Material examined: Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♂; Tokat: Reşadiye, Centrum, 17.VII.2008, 1 ♀.

Distribution in Turkey: New record for Turkey.

General distribution: Britain I., Czech Republic, French mainland, Germany, Spanish mainland (Remm, 1988; Szadziewski and Borkent, 2015).

Genus: *Brachypogon* Kieffer, 1899

Brachypogon vaillanti (Mayer, 1955)

Material examined: Amasya: Centrum, Firingiler, 25.VI.2008, 1 ♀, 1 ♂; Ordu: Mesudiye, Centrum, 28.VI.2008, 1 ♀; Tokat: Reşadiye, Centrum, 17.VII.2008, 1 ♀; Amasya: Taşova, 19.VII.2008, 1 ♀; Tokat: Artova, Centrum, 16.VIII.2008, 1 ♀.

Distribution in Turkey: New record for Turkey.

General distribution: Germany, Spanish mainland, Ukraine, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

Brachypogon vitiosus (Winnertz, 1852)

Material examined: Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♀, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Austria, Estonia, French mainland, Germany, Lithuania, Norwegian mainland, Poland, Russia Northwest, Slovakia, Spanish mainland, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

Genus: *Stilobezzia* Kieffer, 1911

Stilobezzia spp.

Material examined: Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 1 ♀; Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 8 ♀♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 1 ♀.

Tribe: Culicoidini Kieffer, 1911

Genus: *Culicoides* Latreille, 1809

Culicoides achrayi Kettle and Lawson, 1955

Material examined: Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 1 ♀.

Distribution in Turkey: Ankara (Eren et al., 1995), Elazığ (Yılmaz and Dumanlı, 1997), Konya (Dik and Dinçer, 1992).

General distribution: Belarus, Belgium, Britain I., Corsica, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Ireland, Lithuania, Northern Ireland, Poland, Portuguese mainland, Russia Central, Russia East, Russia Northwest, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

Culicoides brunnicans Edwards, 1939

Material examined: Ordu: Fatsa, Ayazlı, 23.V.2008, 2 ♀♀, 2 ♂♂.

Distribution in Turkey: New record for Turkey.

General distribution: Britain I., Channel Is., Corsica, Czech Republic, Danish mainland, French mainland, Germany, Ireland, Italian mainland, Northern Ireland, Portuguese mainland, Sardinia, Slovakia, Spanish mainland, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

Culicoides cataneii Clastrier, 1957

Material examined: Samsun: Centrum, Ataköy, 26.IX.2008, 1 ♀.

Distribution in Turkey: Adana (Dik, 1993), Ankara (Eren et al., 1995), Aydın (Dik, 1996; Yağcı et al., 1999), Bursa (Eren and İnci, 2002), Çanakkale, Edirne, Tekirdağ (Deniz et al., 2010), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Dik et al., 2010), Konya (Dik and Dinçer, 1992; Uslu and Dik, 2007), Kütahya (Dik, 1996).

General distribution: Albania, Britain I., Channel Is., Corsica, Croatia, Cyprus, French mainland, Germany, Italian mainland, North Aegean Is., Portuguese mainland, Sardinia, Sicily, Spanish mainland, Switzerland, Near East,

Table 1. Sampling sites and number of specimens of collected species.

Species	Locations																																							
	Amasya					Çorum				Ordu						Samsun							Tokat																	
	Centrum	Merzifon	Göynücek	Gümüşhacıköy	Suluova	Taşova	Centrum	Laçın	Mecitözü	Ortaköy	Uğurludağ	Akkuş	Centrum	Fatsa	Gölköy	Ikizce	Korgan	Mesudiye	Perşembe	Ünye	Centrum	Ayvacık	Bafra	Havza	Kavak	Ladik	Ondokuz	Tekkeköy	Terme	Vezirköprü	Centrum	Almus	Artova	Eirbaa	Niksar	Reşadiye	Turhal			
<i>Allohelea tessellata</i>	♀		1																			1																		
	♂																																							
<i>Alluaudomyia riparia</i>	♀																																							1
	♂															1																								
<i>Brachypogon vaillanti</i>	♀	1					1													1																				1
	♂	1																																						
<i>B. vitiosus</i>	♀																																							
	♂															1																								
<i>Culicoides achrayi</i>	♀												1																											
	♂																																							
<i>C. brunnicans</i>	♀																																							
	♂																																							
<i>C. cataneii</i>	♀																						1																	
	♂																																							
<i>C. circumscriptus</i>	♀	1	9	4	1				2	1	1								1			6				2	1	5	8	1			3	2	1					
	♂		5	4				1	1										1			2					1	1												
<i>C. dewulfi</i>	♀																																							
	♂															1																								
<i>C. duddingstoni</i>	♀																					8																	2	
	♂																					2																	3	
<i>C. dzhafarovi</i>	♀					4				1										1		6																2	4	1
	♂								1																															
<i>C. fagineus</i>	♀												1																										2	
	♂																																							
<i>C. fascipennis</i>	♀																					5	1				2													
	♂																																							
<i>C. festivipennis</i>	♀								5				2		1							3		1					1										1	
	♂														1								2																	
<i>C. furcillatus</i>	♀												4																										1	
	♂																																							
<i>C. gejelensis</i>	♀		1			3			2												1	2			1		1											1	2	
	♂														1						1	1															1			
<i>C. griseidorsum</i>	♀																					2																		
	♂																																							
<i>C. kibunensis</i>	♀														2							4																2	1	
	♂																				1																			

Table 1. (Continued).

Species	Locations																																						
	Amasya					Çorum				Ordu						Samsun						Tokat																	
	Centrum	Merzifon	Göynücek	Gümüşhacıköy	Suluova	Taşova	Centrum	Laçın	Mecitözü	Ortaköy	Uğurludağ	Akkuş	Centrum	Fatsa	Gölköy	İkizce	Korgan	Mesudiye	Perşembe	Ünye	Centrum	Ayvacık	Bafra	Havza	Kavak	Ladik	Ondokuz	Tekkeköy	Terme	Vezirköprü	Centrum	Almus	Artova	Erbaa	Niksar	Reşadiye	Turhal		
<i>C. kolybiensis</i>	♀																			2																			
	♂			1		2														2																			1
<i>C. longipennis</i>	♀	1	4	1						3		3									1	7																1	
	♂		1									1										2																	
<i>C. maritimus</i>	♀					2																4																	
	♂																																						
<i>C. newsteadi</i>	♀		2	2																		1		11				1											
	♂		3																			2																	
<i>C. nubeculosus</i>	♀		1							2																	1										3		
	♂					1				2																	1											1	
<i>C. obsoletus</i> complex	♀		1	1	1	1				5			1	4		1	156				5	6				3	2		4	2	3					3		3	
	♂		1															1		1		3																	
<i>C. odiatus</i>	♀		2	4		1		1		1								1		2																1			
	♂																																						
<i>C. parroti</i>	♀		2	1						2												1				1										1	1		
	♂		9																																				
<i>C. pictipennis</i>	♀									1																													
	♂																																						
<i>C. picturatus</i>	♀																																						6
	♂																																						
<i>C. pulicaris</i>	♀											1		2																									
	♂																																						
<i>C. pumilus</i>	♀		2													1					5															1			
	♂																																						
<i>C. punctatus</i>	♀	1								4		1	1		1	3					1	8	1				2		2									1	
	♂																					1																	
<i>C. puncticollis</i>	♀					9			2	1		1																			1	2	1	6				3	
	♂																															1	2						
<i>C. reconditus</i>	♀									1																													
	♂																																						
<i>C. riethi</i>	♀	1				3			2	2																	2												
	♂		1	3			1																				1								2				
<i>C. saevus</i>	♀	1	3							1	4																												
	♂										1																												
<i>C. shaklawensis</i>	♀																					1																	
	♂																					1																	

Table 1. (Continued).

Species	Locations																																						
	Amasya						Çorum				Ordu						Samsun						Tokat																
	Centrum	Merzifon	Göynücek	Gümüşhacıköy	Suluova	Taşova	Centrum	Laçın	Mecitözü	Ortaköy	Uğurludağ	Akkuş	Centrum	Fatsa	Gölköy	İkizce	Korgan	Mesudiye	Perşembe	Ünye	Centrum	Ayvacık	Bafra	Havza	Kavak	Ladik	Ondokuz	Tekkeköy	Terme	Vezirköprü	Centrum	Almus	Artova	Erbaa	Niksar	Reşadiye	Türhal		
<i>C. simulator</i>	♀																																						
	♂																																						
<i>C. subfasciipennis</i>	♀								1				3		4								1																
	♂												1		1							1																	
<i>C. truncorum</i>	♀																																				1		
	♂																																						
<i>C. vexans</i>	♀																			3																			
	♂																																						
<i>Bezzia albicornis</i>	♀											1										2																	
	♂								1		1																												
<i>B. kuhetiensis</i>	♀		1			1				1																											1		
	♂																																						
<i>Palpomyia flavipes</i>	♀								1																														
	♂																																						
<i>P. serripes</i>	♀														1																								
	♂																																						
<i>P. tibialis</i>	♀																					1																1	
	♂																																						
<i>Dasyhelea bilineata</i>	♀	1	1												1																								
	♂																																						1
<i>D. calycata</i>	♀																																						
	♂																																						
<i>D. fasciigera</i>	♀																																						
	♂						1																																
<i>D. kurensis</i>	♀																																						
	♂									1																													
<i>D. modesta</i>	♀		1	1		1				1	1																												
	♂		1																																				
<i>D. pallidiventris</i>	♀					1	1		1																														1
	♂						1		1																														
<i>Atrichopogon infuscus</i>	♀	3				3	7		3	3		2										6	13	2	1	1		3	3		3			2	4	2	2	3	
	♂		2			1						1											8		1						2			1	2		2	2	
<i>A. minutus</i>	♀					5	1								1																								
	♂																																						
<i>A. rostratus</i>	♀						2					1																										2	
	♂						1																															1	

Table 1. (Continued).

Species	Locations																																						
	Amasya						Çorum						Ordu						Samsun						Tokat														
	Centrum	Merzifon	Göynücek	Gümüşhacıköy	Suluova	Taşova	Centrum	Laçın	Mecitözü	Ortaköy	Uğurludağ	Akkuş	Centrum	Fatsa	Gölköy	İkizce	Korgan	Mesudiye	Perşembe	Ünye	Centrum	Ayvacık	Bafra	Havza	Kavak	Ladik	Ondokuz	Tekkeköy	Terme	Vezirköprü	Centrum	Almus	Artova	Erbaa	Niksar	Reşadiye	Türhal		
<i>A. winnertzi</i>	♀																																						
	♂															1																							
<i>Forcipomyia acidicola</i>	♀																																						
	♂						1																																
<i>F. brevipennis</i>	♀																																					1	
	♂									1	1								1									1											
<i>F. frutetorum</i>	♀																																						
	♂										1																												
<i>F. fuliginosa</i>	♀																																						
	♂																																					1	
<i>F. glauca</i>	♀																																						
	♂																												1										
<i>F. murina</i>	♀																																						
	♂									1																													
<i>F. velox</i>	♀															2																							
	♂															2																							
<i>Leptoconops bidentatus</i>	♀																																					2	
	♂																																					2	
<i>L. borealis</i>	♀																																						
	♂																																				2		

Table 2. Number of species identified according to genus and location.

Genus	Number of species	Number of species identified according to location				
		Amasya	Çorum	Ordu	Samsun	Tokat
<i>Allohelea</i>	1	1	-	-	1	-
<i>Alluaudomyia</i>	1	-	-	1	-	1
<i>Atrichopogon</i>	4	3	2	3	1	3
<i>Bezzia</i>	2	1	2	-	1	1
<i>Brachypogon</i>	2	1	-	2	-	1
<i>Culicoides</i>	36	16	16	19	21	24
<i>Dasyhelea</i>	6	4	3	1	1	3
<i>Forcipomyia</i>	7	1	3	2	2	2
<i>Leptoconops</i>	2	-	-	-	-	2
<i>Palpomyia</i>	3	-	1	1	1	1
<i>Stilobezzia</i>	?	-	-	-	-	-
Total	64	27	27	29	28	38

North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides circumscriptus* Kieffer, 1918**

Material examined: Samsun: Centrum, Ataköy, 09.VII.2007, 1 ♀, 04.VIII.2007, 2 ♀♀, 2 ♂♂, 15.IX.2007, 2 ♀♀, 18.V.2008, 1 ♀, 1 ♂; Samsun: Tekkeköy, Kerpiçli Village, 18.VII.2007, 5 ♀♀, 1 ♂; Samsun: Kavak, İdrisli Village, 20.VII.2007, 2 ♀♀; Samsun: Centrum, entrance of Yeşiltepe (Çorak Village), 07.VIII.2007, 1 ♂; Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 1 ♀; Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 1 ♀; Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 1 ♀; Çorum: Mecitözü, Hıdırlı Village, 09.IX.2007, 2 ♀♀, 1 ♂; Amasya: Suluova, Çayüstü Village, 11.IX.2007, 3 ♀♀, 2 ♂♂; Samsun: Ladik, Tatlıcak Village, 12.IX.2007, 1 ♀, 1 ♂; Amasya: Suluova, Centrum, 19.V.2008, 1 ♀, 2 ♂♂; Amasya: Centrum, Firingiler, 25.VI.2008, 1 ♀; Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 1 ♀; Tokat: Almus, Centrum, 27.VI.2008, 3 ♀♀; Çorum: Laçın, Gökgezler Village, 21.VII.2008, 1 ♂; Samsun: Terme, Centrum, 09.VIII.2008, 8 ♀♀; Çorum: Uğurludağ, Eskiçeltek Village, 14.VIII.2008, 1 ♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 9 ♀♀, 5 ♂♂; Tokat: Artova, Centrum, 16.VIII.2008, 2 ♀♀; Ordu: Korgan, Yenipınar Village, 20.VIII.2008, 1 ♀, 1 ♂.

Distribution in Turkey: Adana (Navai, 1977; Dik, 1993), Amasya, Giresun, Ordu, Samsun, and Sinop (Dik et al., 2008), Ankara (Jennings et al., 1983; Eren et al., 1995), Antalya (Jennings et al., 1983; Dik, 1993; Dik et al., 2012), Aydın (Dik, 1996; Yağcı et al., 1999), Bursa (Eren and İnci, 2002), Çanakkale (Deniz et al., 2010; Dik et al., 2012), Edirne, İstanbul, Kırklareli, Tekirdağ (Deniz et al., 2010), Denizli (Jennings et al., 1983; Dik, 1996), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Navai, 1977; Tilki and Dik, 2003; Dik et al., 2010), İzmir (Navai, 1977; Dik, 1996; Dik et al., 2012), Konya (Jennings et al., 1983; Dik and Dinçer, 1992; Dik and Ergül, 2006; Uslu and Dik, 2007), Kütahya (Dik, 1996), Mersin (Dik, 1993), Muğla (Dik, 1996; Dik et al., 2012).

General distribution: Albania, Azores, Belarus, Belgium, Bosnia and Herzegovina, Britain I., Bulgaria, Corsica, Croatia, Cyprus, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Ireland, Italian mainland, Lithuania, North Aegean Is., Northern Ireland, Norwegian mainland, Poland, Portuguese mainland, Romania, Russia Central, Russia North, Russia Northwest, Sardinia, Sicily, Slovakia, Spanish mainland, Switzerland, Ukraine, Afro-tropical region, East Palearctic, Near East, North Africa, Oriental region (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides dewulfi* Goetghebuer, 1936**

Material examined: Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♂.

Distribution in Turkey: Adana (Navai, 1977).

General distribution: Belgium, Britain I., Channel Is., Corsica, Czech Republic, Danish mainland, Estonia,

French mainland, Germany, Ireland, Italian mainland, Luxembourg, Northern Ireland, Norwegian mainland, Poland, Romania, Russia North, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides duddingstoni* Kettle and Lawson, 1955**

Material examined: Samsun: Centrum, Ataköy, 04.VIII.2007, 4 ♀♀, 2 ♂♂, 15.IX.2007, 1 ♀, 25.IX.2008, 1 ♀, 26.IX.2008, 2 ♀♀; Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 2 ♀♀, 3 ♂♂.

Distribution in Turkey: Denizli, Kütahya (Dik, 1996), Konya (Dik and Dinçer, 1992), Sinop (Dik et al., 2008).

General distribution: Britain I., Corsica, Czech Republic, Danish mainland, Estonia, Faroe Is., French mainland, Germany, Ireland, Northern Ireland, Poland, Romania, Sardinia, Slovakia, Spanish mainland, Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides dzhafarovi* Remm, 1967**

Material examined: Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 1 ♀; Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 4 ♀♀; Samsun: Centrum, Ataköy, 15.IX.2007, 1 ♀; Çorum: Mecitözü, Centrum, 21.V.2008, 1 ♂; Samsun: Centrum, entrance of Yeşiltepe (Çorak Village), 24.VI.2008, 1 ♀; Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 1 ♀; Ordu: Mesudiye, Centrum, 28.VI.2008, 1 ♀; Tokat: Reşadiye, Centrum, 17.VII.2008, 1 ♀; Tokat: Niksar, Şahinli Village, 18.VII.2008, 4 ♀♀; Tokat: Artova, Centrum, 16.VIII.2008, 2 ♀♀.

Distribution in Turkey: Adana (Dik, 1993), Aydın (Dik, 1996; Yağcı et al., 1999), Ankara (Eren et al., 1995), Antalya (Jennings et al., 1983; Dik, 1993), Denizli (Jennings et al., 1983; Dik, 1996), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Dik et al., 2010), Konya (Dik and Dinçer, 1992), Kütahya (Dik, 1996), Mersin (Dik, 1993).

General distribution: Bosnia and Herzegovina, Croatia, Czech Republic, French mainland, Italian mainland, Slovakia, Spanish mainland, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides fagineus* Edwards, 1939**

Material examined: Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 1 ♀; Tokat: Reşadiye, Centrum, 17.VII.2008, 2 ♀♀.

Distribution in Turkey: Edirne, İstanbul, Kırklareli, Tekirdağ (Deniz et al., 2010), Konya (Dik and Dinçer, 1992).

General distribution: Britain I., Corsica, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Italian mainland, Lithuania, Portuguese mainland, Russia East, Russia North, Russia Northwest, Sardinia, Slovakia, Spanish mainland, Switzerland,

Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides fascipennis* (Staeger, 1839)**

Material examined: Samsun: Centrum, Ataköy, 04.VIII.2007, 2 ♀♀, 15.IX.2007, 3 ♀♀; Samsun: Bafra, Karaköy, 10.VIII.2007, 1 ♀; Samsun: Ladik, the vicinity of Lake Ladik, 12.IX.2007, 2 ♀♀.

Distribution in Turkey: Antalya (Dik, 1993), Konya (Dik and Dinçer, 1992).

General distribution: Andorra, Austria, Belarus, Belgium, Bosnia and Herzegovina, Britain I., Corsica, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Hungary, Ireland, Italian mainland, Lithuania, Northern Ireland, Norwegian mainland, Poland, Portuguese mainland, Romania, Russia Central, Russia East, Russia North, Russia Northwest, Slovakia, Spanish mainland, Sweden, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides festivipennis* Kieffer, 1914**

Material examined: Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 2 ♀♀; Çorum: Mecitözü, Hıdırlı Village, 09.IX.2007, 3 ♀♀; Samsun: Centrum, Ataköy, 15.IX.2007, 2 ♀♀, 18.V.2008, 1 ♂, 25.IX.2008, 1 ♀, 26.IX.2008, 1 ♂; Çorum: Mecitözü, Centrum, 21.V.2008, 2 ♀♀; Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♀, 1 ♂; Samsun: Havza, entrance of Mürsel Village, 20.VII.2008, 1 ♀; Samsun: Terme, Centrum, 09.VIII.2008, 1 ♀; Tokat: Artova, Centrum, 16.VIII.2008, 1 ♀.

Distribution in Turkey: Ankara (Eren et al., 1995), Antalya (Jennings et al., 1983), Aydın (Yağcı et al., 1999), Bursa (Eren and İnci, 2002), Diyarbakır (Navai, 1977), Edirne, Kırklareli (Deniz et al., 2010), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Navai, 1977; Dik et al., 2010), İzmir (Navai, 1977; Dik, 1996), Konya (Dik and Dinçer, 1992; Uslu and Dik, 2007), Kütahya (Dik, 1996), Muğla (Dik et al., 2012), Sinop (Dik et al., 2008).

General distribution: Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Britain I., Channel Is., Corsica, Croatia, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Hungary, Ireland, Italian mainland, Lithuania, Luxembourg, Norwegian mainland, Poland, Portuguese mainland, Russia Central, Russia North, Russia Northwest, Sardinia, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides furcillatus* Callot, Kremer and Paradis, 1962**

Material examined: Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 4 ♀♀; Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 1 ♀.

Distribution in Turkey: Elazığ (Yılmaz and Dumanlı, 1997), İzmir (Navai, 1977).

General distribution: Britain I., Corsica, Danish mainland, French mainland, Germany, Ireland, Northern Ireland, Poland, Portuguese mainland, Slovakia, Spanish mainland, Switzerland (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides gejelensis* Dzhafarov, 1964**

Material examined: Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 1 ♂; Ordu: Perşembe, Yumrutaş Village, 13.VIII.2007, 1 ♀, 1 ♂; Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 3 ♀♀; Çorum: Mecitözü, Hıdırlı Village, 09.IX.2007, 2 ♀♀; Samsun: Ladik, Tatlıcak Village, 12.IX.2007, 1 ♀; Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♂; Tokat: Almus, Centrum, 27.VI.2008, 1 ♀; Tokat: Reşadiye, Centrum, 17.VII.2008, 2 ♀♀; Tokat: Niksar, Şahinli Village, 18.VII.2008, 1 ♀; Samsun: Havza, entrance of Mürsel Village, 20.VII.2008, 1 ♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 1 ♀; Tokat: Artova, Centrum, 16.VIII.2008, 2 ♀♀; Samsun: Centrum, Ataköy, 25.IX.2008, 3 ♀♀, 26.IX.2008, 2 ♀♀, 1 ♂.

Distribution in Turkey: Amasya, Samsun (Dik et al., 2008), Ankara (Eren et al., 1995), Antalya (Jennings et al., 1983; Dik, 1993), Aydın (Dik, 1996; Yağcı et al., 1999), Bursa (Eren and İnci, 2002), Denizli (Dik, 1996), Edirne (Deniz et al., 2010), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Dik et al., 2010), İzmir (Dik, 1996), Konya (Dik and Dinçer, 1992; Uslu and Dik, 2007), Kütahya (Dik, 1996), Mersin (Dik, 1993), Muğla (Dik et al., 2012).

General distribution: Albania, Bosnia and Herzegovina, Corsica, Croatia, French mainland, Italian mainland, North Aegean Is., Portuguese mainland, Sardinia, Sicily, Spanish mainland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides griseidorsum* Kieffer, 1918**

Material examined: Samsun: Centrum, Ataköy, 18.V.2008, 2 ♀♀.

Distribution in Turkey: New record for Turkey.

General distribution: Britain I., Corsica, French mainland, Italian mainland, Poland, Spanish mainland, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides kibunensis* Tokunaga, 1937**

Material examined: Samsun: Centrum, Ataköy, 04.VIII.2007, 1 ♀, 18.V.2008, 1 ♀; Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 2 ♀♀; Ordu: Perşembe, Yumrutaş Village, 13.VIII.2007, 1 ♂; Ordu: Fatsa, Ayazlı, 23.V.2008, 2 ♀♀; Ordu: Mesudiye, Centrum, 28.VI.2008, 4 ♀♀; Tokat: Artova, Centrum, 16.VIII.2008, 1 ♀.

Distribution in Turkey: Ankara (Eren et al., 1995), Bursa (Eren and İnci, 2002), Denizli (Dik, 1996), Elazığ (Yılmaz and Dumanlı, 1997), Konya (Dik and Dinçer, 1992; Uslu and Dik, 2007).

General distribution: Albania, Andorra, Belarus, Belgium, Bosnia and Herzegovina, Britain I., Channel Is., Corsica, Croatia, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Hungary, Ireland, Italian mainland, Lithuania, Luxembourg, Northern Ireland, Norwegian mainland, Poland, Portuguese mainland, Romania, Russia Central, Russia North, Sardinia, Sicily, Slovakia, Slovenia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Near East, Nearctic region, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides kolymbiensis* Boorman, 1988**

Material examined: Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 2 ♂♂; Ordu: Mesudiye, Centrum, 28.VI.2008, 2 ♀♀, 2 ♂♂; Tokat: Reşadiye, Centrum, 17.VII.2008, 1 ♂; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 1 ♀.

Distribution in Turkey: Elazığ (Yılmaz and Dumanlı, 1995).

General distribution: Dodecanese Is. (Szadziewski and Borkent, 2015).

***Culicoides longipennis* Khalaf, 1957**

Material examined: Ordu: Ünye, Cevizdere Village, 23.VII.2007, 1 ♀; Samsun: Centrum, Ataköy, 04.VIII.2007, 1 ♀, 1 ♂, 15.IX.2007, 1 ♀, 25.IX.2008, 2 ♀♀; Samsun: Centrum, entrance of Yeşiltepe (Çorak Village), 07.VIII.2007, 2 ♀♀; Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 1 ♀, 1 ♂; Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 3 ♀♀, 1 ♂; Amasya: Suluova, Çayüstü Village, 11.IX.2007, 1 ♀; Amasya: Centrum, Firingiler, 25.VI.2008, 1 ♀; Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 3 ♀♀; Tokat: Niksar, Şahinli Village, 18.VII.2008, 1 ♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 4 ♀♀, 1 ♂.

Distribution in Turkey: Adana (Navai, 1977; Dik, 1993), Ankara (Eren et al., 1995), Antalya (Jennings et al., 1983; Dik, 1993; Dik et al., 2012), Aydın (Jennings et al., 1983; Dik, 1996; Yağcı et al., 1999), Bursa (Eren and İnci, 2002), Denizli (Jennings et al., 1983; Dik, 1996), Edirne, İstanbul, Kırklareli (Deniz et al., 2010), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Tilki and Dik, 2003), İzmir (Navai, 1977; Dik, 1996; Dik et al., 2012), Konya (Jennings et al., 1983; Dik and Dinçer, 1992; Uslu and Dik, 2007), Kütahya (Dik, 1996), Mersin (Dik, 1993), Muğla (Dik et al., 2012), Samsun (Dik et al., 2008).

General distribution: Bosnia and Herzegovina, Corsica, Croatia, Cyprus, Dodecanese Is., French mainland, Italian mainland, North Aegean Is., Portuguese mainland, Sardinia, Spanish mainland, Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides maritimus* Kieffer, 1924**

Material examined: Samsun: Centrum, Ataköy, 04.VIII.2007, 3 ♀♀; 18.V.2008, 1 ♀; Amasya: Suluova, Centrum, 19.V.2008, 2 ♀♀; Tokat: Turhal, 20.V.2008, 1 ♀.

Distribution in Turkey: Ankara, Antalya and Aydın (Jennings et al., 1983), Bursa (Eren and İnci, 2002), Denizli (Dik, 1996), Elazığ (Yılmaz and Dumanlı, 1997), Hatay and İzmir (Navai, 1977), Konya (Jennings et al., 1983; Dik and Dinçer, 1992; Uslu and Dik, 2007; Dik and Ergül, 2006), Samsun and Sinop (Dik et al., 2008).

General distribution: Albania, Belgium, Britain I., Corsica, Cyprus, Czech Republic, Danish mainland, French mainland, Germany, Hungary, Italian mainland, North Aegean Is., Poland, Portuguese mainland, Romania, Russia Central, Sardinia, Sicily, Slovakia, Spanish mainland, the Netherlands, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides newsteadi* Austen, 1921**

Material examined: Samsun: Bafra, Karaköy, 10.VIII.2007, 11 ♀♀; Amasya: Gümüşhacıköy, Keçi Village, 10.IX.2007, 2 ♀♀; Samsun: Centrum, Ataköy, 15.IX.2007, 1 ♀, 18.V.2008, 1 ♂, 26.IX.2008, 1 ♂; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 2 ♀♀, 3 ♂♂; Samsun: Ondokuz Mayıs, Yörükler, 19.VIII.2008, 1 ♀.

Distribution in Turkey: Ankara (Jennings et al., 1983; Eren et al., 1995), Antalya (Jennings et al., 1983; Dik, 1993), Aydın (Jennings et al., 1983; Dik, 1996; Yağcı et al., 1999), Çanakkale, Edirne, İstanbul, Kırklareli, Tekirdağ (Deniz et al., 2010), Denizli (Jennings et al., 1983), Elazığ (Yılmaz and Dumanlı, 1997), Konya (Jennings et al., 1983; Dik and Dinçer, 1992; Dik and Ergül, 2006), Sinop (Dik et al., 2008).

General distribution: Albania, Austria, Azores, Balearic Is., Belgium, Britain I., Corsica, Cyprus, Danish mainland, Dodecanese Is., French mainland, Germany, Greek mainland, Hungary, Ireland, Italian mainland, Latvia, Madeira, North Aegean Is., Northern Ireland, Norwegian mainland, Portuguese mainland, Sardinia, Sicily, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides nubeculosus* (Meigen, 1830)**

Material examined: Tokat: Turhal, Arzupınar Village, 15.VII.2007, 1 ♀, 2 ♂♂; Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 3 ♀♀; Çorum: Mecitözü, Hıdırlı Village, 09.IX.2007, 2 ♀♀, 2 ♂♂; Samsun: Ladik, Tatlıcak Village, 12.IX.2007, 1 ♀, 1 ♂; Amasya: Suluova, Centrum, 19.V.2008, 1 ♂; Tokat: Reşadiye, Centrum, 17.VII.2008, 1 ♂; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 1 ♀.

Distribution in Turkey: Adana (Dik, 1993), Antalya (Dik, 1993; Dik et al., 2012), Bursa (Eren and İnci, 2002), Denizli (Dik, 1996), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Dik et al., 2010), İzmir (Navai, 1977; Dik, 1996; Dik et al., 2012), Konya (Dik and Dinçer, 1992; Uslu and Dik, 2007), Kütahya (Dik, 1996), Mersin (Dik, 1993).

General distribution: Albania, Austria, Belarus, Belgium, Britain I., Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Ireland, Italian mainland, Luxembourg, Northern Ireland, Norwegian mainland, Poland, Portuguese mainland, Russia Central, Russia East, Russia North, Russia Northwest, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

Culicoides obsoletus complex

Material examined: Samsun: Tekkeköy, Kerpiçi Village, 18.VII.2007, 4 ♀♀; Samsun: Kavak, İdrisli Village, 20.VII.2007, 3 ♀♀; Ordu: Ünye, Cevizdere Village, 23.VII.2007, 5 ♀♀; Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 3 ♀♀; Ordu: Perşembe, Yumrutaş Village, 13.VIII.2007, 1 ♂; Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 3 ♀♀; Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 1 ♀; Ordu: Korgan, Terzi Village, 22.VIII.2007, 6 ♀♀; Çorum: Mecitözü, Hıdırlı Village, 09.IX.2007, 2 ♀♀; Amasya: Gümüşhacıköy, Keçi Village, 10.IX.2007, 1 ♀; Amasya: Suluova, Çayüstü Village, 11.IX.2007, 1 ♀; Samsun: Ladik, Tatlıcak Village, 12.IX.2007, 2 ♀♀; Samsun: Centrum, Ataköy, 18.V.2008, 4 ♀♀, 3 ♂♂, 25.IX.2008, 1 ♀, 26.IX.2008, 1 ♀; Çorum: Mecitözü, Centrum, 21.V.2008, 3 ♀♀; Ordu: Fatsa, Ayazlı, 23.V.2008, 4 ♀♀; Tokat: Reşadiye, Centrum, 17.VII.2008, 3 ♀♀; Ordu: Centrum, Kayabaşı Village, 08.VIII.2008, 1 ♀; Samsun: Terme, Centrum, 09.VIII.2008, 2 ♀♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 1 ♀, 1 ♂; Ordu: Korgan, Yenipınar Village, 20.VIII.2008, 150 ♀♀, 1 ♂; Ordu: İkizce, 24.IX.2008, 1 ♀.

Distribution in Turkey: Adana (Dik, 1993), Amasya, Giresun, Samsun (Dik et al., 2008), Ankara (Eren et al., 1995), Antalya (Jennings et al., 1983; Dik, 1993), Aydın (Jennings et al., 1983; Dik, 1996; Yağcı et al., 1999), Bursa (Eren and İnci, 2002), Çanakkale (Dik et al., 2012), Denizli (Jennings et al., 1983), Edirne, İstanbul, Kırklareli, Tekirdağ (Deniz et al., 2010), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Tilki and Dik, 2003), İzmir (Navai, 1977), Konya (Dik and Dinçer, 1992; Dik and Ergül, 2006), Kütahya (Dik, 1996), Mersin (Dik, 1993), Muğla (Dik, 1996).

General distribution: Albania, Andorra, Austria, Azores, Balearic Is., Belarus, Belgium, Bosnia and Herzegovina, Britain I., Canary Is., Channel Is., Corsica, Croatia, Cyprus, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Hungary, Ireland, Italian mainland, Lithuania, Madeira, North Aegean Is., Northern Ireland, Norwegian mainland, Poland, Portuguese mainland, Russia Central, Russia East, Russia North, Russia Northwest, Sardinia, Sicily, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Near East, Nearctic region, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

Culicoides odiatus Austen, 1921

Material examined: Ordu: Perşembe, Yumrutaş Village, 13.VIII.2007, 2 ♀♀; Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 1 ♀; Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 1 ♀; Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 1 ♀; Amasya: Gümüşhacıköy, Keçi Village, 10.IX.2007, 4 ♀♀; Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 1 ♀; Çorum: Laçın, Gökgezler Village, 21.VII.2008, 1 ♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 2 ♀♀; Ordu: Korgan, Yenipınar Village, 20.VIII.2008, 1 ♀.

Distribution in Turkey: Adana (Dik, 1993), Ankara (Eren et al., 1995), Antalya (Jennings et al., 1983; Dik, 1993), Aydın (Jennings et al., 1983; Dik, 1996), Denizli (Jennings et al., 1983; Dik, 1996), Diyarbakır (Navai, 1977), Edirne, Tekirdağ (Deniz et al., 2010), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Navai, 1977; Dik et al., 2010), İzmir (Navai, 1977; Dik, 1996), Konya (Jennings et al., 1983; Dik and Dinçer, 1992; Uslu and Dik, 2007), Kütahya (Dik, 1996), Mersin (Dik, 1993), Muğla (Dik, 1996).

General distribution: Albania, Corsica, Crete, Cyprus, Dodecanese Is., French mainland, Greek mainland, Italian mainland, North Aegean Is., Portuguese mainland, Sardinia, Sicily, Spanish mainland, Switzerland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

Culicoides parroti Kieffer, 1922

Material examined: Samsun: Kavak, İdrisli Village, 20.VII.2007, 1 ♀; Samsun: Centrum, Ataköy, 04.VIII.2007, 1 ♀; Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 1 ♀; Çorum: Mecitözü, Hıdırlı Village, 09.IX.2007, 2 ♀♀; Amasya: Gümüşhacıköy, Keçi Village, 10.IX.2007, 1 ♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 2 ♀♀, 9 ♂♂; Tokat: Artova, Centrum, 16.VIII.2008, 1 ♀.

Distribution in Turkey: Ankara (Edwards et al., 1939), Aydın (Jennings et al., 1983), Edirne, (Deniz et al., 2010), Elazığ (Yılmaz and Dumanlı, 1997), Konya (Uslu and Dik, 2007), Kütahya (Dik, 1996), Muğla (Dik et al., 2012).

General distribution: Belgium, Britain I., Corsica, Cyprus, Czech Republic, French mainland, Germany, Hungary, Ireland, Italian mainland, Northern Ireland, Poland, Portuguese mainland, Russia Central, Russia East, Sardinia, Sicily, Slovakia, Spanish mainland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

Culicoides pictipennis (Staeger, 1839)

Material examined: Çorum: Mecitözü, Centrum, 21.V.2008, 1 ♀.

Distribution in Turkey: Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Navai, 1977), İzmir (Navai, 1977; Dik et al., 2012).

General distribution: Austria, Belarus, Belgium, Britain I., Corsica, Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Ireland,

Italian mainland, Lithuania, Northern Ireland, Poland, Portuguese mainland, Russia Central, Russia East, Russia Northwest, Sardinia, Sicily, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides picturatus* Kremer and Dedit, 1961**

Material examined: Tokat: Reşadiye, Centrum, 17.VII.2008, 6 ♀♀.

Distribution in Turkey: Amasya (Dik et al., 2008), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Dik et al., 2010), Konya (Dik and Dinçer, 1992).

General distribution: Britain I., Channel Is., Corsica, Danish mainland, French mainland, Italian mainland, Portuguese mainland, Romania, Sardinia, Sicily, Spanish mainland, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides pulicaris* (Linnaeus, 1758)**

Material examined: Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 1 ♀; Ordu: Fatsa, Ayazlı, 23.V.2008, 2 ♀♀.

Distribution in Turkey: Ankara (Eren et al., 1995), Aydın (Dik, 1996; Yağcı et al., 1999), Bursa (Eren and İnci, 2002), Edirne, İstanbul, Kırklareli, Tekirdağ (Deniz et al., 2010), Elazığ (Yılmaz and Dumanlı, 1997), İzmir (Navai, 1977; Dik et al., 2012), Konya (Dik and Dinçer, 1992; Dik and Ergül, 2006; Uslu and Dik, 2007), Kütahya (Dik, 1996), Muğla (Dik et al., 2012).

General distribution: Albania, Belarus, Belgium, Britain I., Channel Is., Corsica, Crete, Cyprus, Czech Republic, Danish mainland, Dodecanese Is., Estonia, Finland, French mainland, Germany, Greek mainland, Hungary, Ireland, Italian mainland, Lithuania, Luxembourg, North Aegean Is., Northern Ireland, Norwegian mainland, Poland, Portuguese mainland, Russia Central, Russia North, Sardinia, Sicily, Slovakia, Spanish mainland, Sweden, Switzerland, the Netherlands, Ukraine, Afro-tropical region, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides pumilus* (Winnertz, 1852)**

Material examined: Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 1 ♀; Samsun: Centrum, Ataköy, 18.V.2008, 1 ♀, 24.V.2008, 2 ♀♀, 26.IX.2008, 2 ♀♀; Ordu: Gökçöy, 16.VII.2008, 1 ♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 2 ♀♀.

Distribution in Turkey: Antalya (Dik, 1993), Elazığ (Yılmaz and Dumanlı, 1997), Konya (Dik and Dinçer, 1992), Samsun (Dik et al., 2008).

General distribution: Germany (Remm, 1988; Borkent and Wirth, 1997)

***Culicoides punctatus* (Meigen, 1804)**

Material examined: Samsun: Centrum, Ataköy, 09.VII.2007, 2 ♀♀, 04.VIII.2007, 1 ♀, 08.IX.2007, 1 ♀, 15.IX.2007, 2 ♀♀, 18.V.2008, 1 ♀, 1 ♂, 26.IX.2008,

1 ♀; Tokat: Turhal, Arzupınar Village, 15.VII.2007, 2 ♀♀; Samsun: Tekkeköy, Kerpiçli Village, 18.VII.2007, 2 ♀♀; Ordu: Ünye, Cevizdere Village, 23.VII.2007, 1 ♀; Samsun: Bafra, Karaköy, 10.VIII.2007, 1 ♀; Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 1 ♀; Çorum: Mecitözü, Hıdırlı Village, 09.IX.2007, 2 ♀♀; Samsun: Ladik, Tatlıcak Village, 12.IX.2007, 1 ♀; Samsun: Ladik, Ladik Gölü çevresi, 12.IX.2007, 1 ♀; Tokat: Turhal, 20.V.2008, 1 ♀; Çorum: Mecitözü, Centrum, 21.V.2008, 2 ♀♀; Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♀; Amasya: Centrum, Firingiler, 25.VI.2008, 1 ♀; Tokat: Reşadiye, Centrum, 17.VII.2008, 1 ♀; Ordu: Korgan, Yenipınar Village, 20.VIII.2008, 3 ♀♀; Ordu: İkizce, 24.IX.2008, 1 ♀.

Distribution in Turkey: Ankara (Jennings et al., 1983; Eren et al., 1995), Antalya (Jennings et al., 1983; Dik, 1993), Aydın (Leclercq, 1966; Jennings et al., 1983), Bursa (Eren and İnci, 2002), Çanakkale, Edirne, İstanbul, Kırklareli, Tekirdağ (Deniz et al., 2010), Elazığ (Yılmaz and Dumanlı, 1997), İzmir (Dik, 1996), Konya (Jennings et al., 1983; Dik and Dinçer, 1992; Dik and Ergül, 2006), Kütahya (Dik, 1996), Samsun and Sinop (Dik et al., 2008).

General distribution: Albania, Belarus, Belgium, Britain I., Channel Is., Corsica, Cyprus, Czech Republic, Danish mainland, Dodecanese Is., Estonia, Finland, French mainland, Germany, Hungary, Ireland, Italian mainland, Latvia, Lithuania, Luxembourg, Northern Ireland, Norwegian mainland, Poland, Portuguese mainland, Russia Central, Russia North, Russia Northwest, Sardinia, Sicily, Slovakia, Spanish mainland, Switzerland, the Netherlands, Afro-tropical region, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides puncticollis* (Becker, 1903)**

Material examined: Tokat: Turhal, Arzupınar Village, 15.VII.2007, 4 ♀♀; Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 1 ♀; Amasya: Suluova, Çayüstü Village, 11.IX.2007, 5 ♀♀; Amasya: Suluova, Centrum, 19.V.2008, 4 ♀♀; Tokat: Turhal, 20.V.2008, 3 ♀♀; Çorum: Mecitözü, Centrum, 21.V.2008, 1 ♀; Tokat: Almus, Centrum, 27.VI.2008, 1 ♀, 1 ♂; Tokat: Reşadiye, Centrum, 17.VII.2008, 3 ♀♀; Çorum: Laçın, Gökgezler Village, 21.VII.2008, 2 ♀♀; Çorum: Uğurludağ, Eskiçelttek Village, 14.VIII.2008, 1 ♀; Tokat: Artova, Centrum, 16.VIII.2008, 6 ♀♀, 2 ♂♂; Tokat: Centrum, vicinity of Tokat Airport, 17.VIII.2008, 2 ♀♀.

Distribution in Turkey: Adana (Jennings et al., 1983; Dik, 1993), Ankara (Eren et al., 1995), Antalya and Denizli (Jennings et al., 1983), Aydın (Jennings et al., 1983; Dik, 1996; Yağcı et al., 1999), Çanakkale, Edirne, Kırklareli, Tekirdağ (Deniz et al., 2010), Diyarbakır (Navai, 1977), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Dik et al., 2010), İzmir (Navai, 1977; Jennings et al., 1983; Dik, 1996), Konya (Jennings et al., 1983; Dik and Dinçer, 1992; Dik

and Ergül, 2006; Uslu and Dik, 2007), Kütahya (Dik, 1996).

General distribution: Albania, Balearic Is., Belgium, Britain I., Corsica, Cyprus, Dodecanese Is., French mainland, Hungary, Italian mainland, Madeira, Poland, Portuguese mainland, Sardinia, Slovakia, Spanish mainland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides reconditus* Campbell and Pelham-Clinton, 1960**

Material examined: Çorum: Mecitözü, Centrum, 21.V.2008, 1 ♀.

Distribution in Turkey: Ankara (Eren et al., 1995), Elazığ (Yılmaz and Dumanlı, 1997).

General distribution: Belarus, Britain I., Corsica, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Ireland, Lithuania, Northern Ireland, Poland, Romania, Russia Central, Slovakia, East Palearctic (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides riethi* Kieffer, 1914**

Material examined: Çorum: Centrum, Güney Village, 14.VII.2007, 1 ♂; Çorum: Mecitözü, Hıdırlı Village, 09.IX.2007, 1 ♀; Amasya: Suluova, Çayüstü Village, 11.IX.2007, 3 ♀♀, 1 ♂; Samsun: Ladik, Tatlıcak Village, 12.IX.2007, 2 ♀♀, 1 ♂; Amasya: Suluova, Centrum, 19.V.2008, 2 ♂♂; Çorum: Mecitözü, Centrum, 21.V.2008, 1 ♀; Amasya: Centrum, Firingiler, 25.VI.2008, 1 ♀; Çorum: Laçın, Gökgözler Village, 21.VII.2008, 2 ♀♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 1 ♂; Tokat: Artova, Centrum, 16.VIII.2008, 2 ♂♂.

Distribution in Turkey: Ankara (Eren et al., 1995), Denizli (Dik, 1996), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Dik et al., 2010), İzmir (Dik, 1996), Konya (Dik and Dinçer, 1992; Uslu and Dik, 2007), Mersin (Dik, 1993).

General distribution: Albania, Belgium, Britain I., Czech Republic, Danish mainland, Estonia, French mainland, Germany, Hungary, Ireland, Italian mainland, Latvia, Northern Ireland, Poland, Portuguese mainland, Romania, Russia Central, Russia North, Russia Northwest, Russia South, Slovakia, Spanish mainland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides saevus* Kieffer, 1922**

Material examined: Tokat: Turhal, 20.V.2008, 1 ♀; Çorum: Mecitözü, Centrum, 21.V.2008, 1 ♀; Amasya: Centrum, Firingiler, 25.VI.2008, 1 ♀; Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 4 ♀♀, 1 ♂; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 3 ♀♀.

Distribution in Turkey: Adana and Antalya (Dik, 1993), Aydın (Dik, 1996), Diyarbakır, Hatay and İzmir (Navai, 1977), Denizli (Jennings et al., 1983), Elazığ (Yılmaz and Dumanlı, 1997), Konya (Dik and Dinçer, 1992), Kütahya (Dik, 1996), Mersin (Dik, 1993).

General distribution: Albania, Austria, Bulgaria, Cyprus, French mainland, Greek mainland, Hungary, Moldova, North Aegean Is., Romania, Sicily, Slovakia, Spanish mainland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides shaklawensis* Khalaf, 1957**

Material examined: Samsun: Vezirköprü, Pazarcı Village, 08.VIII.2007, 1 ♀; Tokat: Turhal, 20.V.2008, 1 ♂; Samsun: Centrum, Ataköy, 04.VIII.2007, 1 ♂, 26.IX.2008, 1 ♀.

Distribution in Turkey: Ankara (Eren et al., 1995), Aydın (Yağcı et al., 1999), Bursa (Eren and İnci, 2002), Denizli (Dik, 1996), Elazığ (Yılmaz and Dumanlı, 1997), Hatay (Dik et al., 2010), Konya (Dik and Dinçer, 1992; Uslu and Dik, 2007).

General distribution: Bulgaria, Corsica, Cyprus, Czech Republic, Dodecanese Is., French mainland, Italian mainland, North Aegean Is., Slovakia, Spanish mainland, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides simulator* Edwards, 1939**

Material examined: Tokat: Turhal, 20.V.2008, 1 ♀.

Distribution in Turkey: Ankara (Eren et al., 1995), Elazığ (Yılmaz and Dumanlı, 1997), Konya (Dik and Dinçer, 1992; Dik and Ergül, 2006).

General distribution: Belarus, Belgium, Britain I., Channel Is., Czech Republic, Danish mainland, Estonia, French mainland, Germany, Hungary, Italian mainland, Lithuania, Poland, Portuguese mainland, Russia Central, Russia East, Russia Northwest, Slovakia, Spanish mainland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides subfasciipennis* Kieffer, 1919**

Material examined: Tokat: Turhal, Arzupınar Village, 15.VII.2007, 1 ♀; Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 3 ♀♀, 1 ♂; Samsun: Centrum, Ataköy, 18.V.2008, 1 ♀, 1 ♂; Çorum: Mecitözü, Centrum, 21.V.2008, 1 ♀; Ordu: Fatsa, Ayazlı, 23.V.2008, 4 ♀♀, 1 ♂.

Distribution in Turkey: Antalya (Jennings et al., 1983), Aydın, Denizli, and Kütahya (Dik, 1996), Elazığ (Yılmaz and Dumanlı, 1997), Konya (Dik and Dinçer, 1992; Uslu and Dik, 2007).

General distribution: Austria, Belarus, Belgium, Britain I., Corsica, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Hungary, Italian mainland, Lithuania, Poland, Portuguese mainland, Russia Central, Russia East, Russia North, Sardinia, Sicily, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides truncorum* Edwards, 1939**

Material examined: Tokat: Almus, Centrum, 27.VI.2008, 1 ♀.

Distribution in Turkey: Ankara (Eren et al., 1995), Elazığ (Yılmaz and Dumanlı, 1997), Konya (Dik and Dinçer, 1992), Kütahya (Dik, 1996).

General distribution: Belgium, Britain I., Corsica, Czech Republic, Danish mainland, Estonia, French mainland, Germany, Russia North, Russia Northwest, Sardinia, Slovakia, Spanish mainland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Culicoides vexans* (Staeger, 1839)**

Material examined: Ordu: Mesudiye, Centrum, 28.VI.2008, 3 ♀♀.

Distribution in Turkey: Elazığ (Yılmaz and Dumanlı, 1997), Konya (Dik and Dinçer, 1992; Dik and Ergül, 2006), Kütahya (Dik, 1996).

General distribution: Austria, Belgium, Britain I., Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Ireland, Lithuania, Northern Ireland, Norwegian mainland, Poland, Portuguese mainland, Russia Central, Slovakia, Spanish mainland, Switzerland, Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

Tribe: Palpomyiini Enderlein, 1936

Genus: *Bezzia* Kieffer, 1899

***Bezzia albicornis* (Meigen, 1818)**

Material examined: Çorum: Laçın, Gökgözler Village, 21.VII.2008, 1 ♂; Samsun: Centrum, Ataköy, 04.VIII.2007, 1 ♀, 15.09.2007, 1 ♀; Çorum: Uğurludağ, Eskiçeltelk Village, 14.VIII.2008, 1 ♀, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Austria, Belgium, Croatia, Czech Republic, French mainland, Germany, Hungary, Lithuania, Poland, Slovakia, Spanish mainland, Sweden, Switzerland, Ukraine, former Yugoslavia, Afro-tropical region, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Bezzia kuhetiensis* Remm, 1967**

Material examined: Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 1 ♀; Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 1 ♀; Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 1 ♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 1 ♀.

Distribution in Turkey: New record for Turkey.

General distribution: Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

Genus: *Palpomyia* Meigen, 1818

***Palpomyia flavipes* (Meigen, 1804)**

Material examined: Çorum: Mecitözü, Hıdırlı Village, 09.IX.2007, 1 ♀.

Distribution in Turkey: New record for Turkey.

General distribution: Andorra, Austria, Belarus, Belgium, Britain I., Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary,

Ireland, Italian mainland, Latvia, Lithuania, Northern Ireland, Norwegian mainland, Poland, Russia Central, Russia North, Russia Northwest, Slovakia, Spanish mainland, Sweden, Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

***Palpomyia serripes* (Meigen, 1818)**

Material examined: Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♀.

Distribution in Turkey: New record for Turkey.

General distribution: Austria, Belgium, Britain I., Croatia, Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Ireland, Italian mainland, Lithuania, Norwegian mainland, Poland, Slovakia, Spanish mainland, Sweden, Switzerland, the Netherlands, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Palpomyia tibialis* (Meigen, 1818)**

Material examined: Tokat: Niksar, Şahinli Village, 18.VII.2008, 1 ♀; Samsun: Terme, Centrum, 09.VIII.2008, 1 ♀.

Distribution in Turkey: Balıkesir-Bandırma, Kuş Lake (larvae) (Balık et al., 2005). Adults are reported for the first time.

General distribution: Austria, Belarus, Belgium, Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Norwegian mainland, Poland, Romania, Russia North, Russia Northwest, Slovakia, Sweden, the Netherlands, Ukraine, former Yugoslavia, East Palearctic, Near East, Nearctic region (Remm, 1988; Szadziewski and Borkent, 2015).

Subfamily: Dasyheleinae Lenz, 1934

Genus: *Dasyhelea* Kieffer, 1911

***Dasyhelea bilineata* Goetghebuer, 1920**

Material examined: Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♀; Amasya: Centrum, Firingiler, 25.VI.2008, 1 ♀; Tokat: Reşadiye, Centrum, 17.VII.2008, 1 ♂; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 1 ♀.

Distribution in Turkey: İzmir-Bornova (Dominiak and Szadziewski, 2010)

General distribution: Austria, Belgium, Britain I., Bulgaria, Croatia, Czech Republic, Estonia, Finland, French mainland, Germany, Gibraltar, Hungary, Ireland, Italian mainland, Norwegian mainland, Poland, Romania, Russia North, Slovakia, Spanish mainland, Switzerland, Ukraine (Remm, 1988; Szadziewski and Borkent, 2015).

***Dasyhelea calycata* Remm, 1972**

Material examined: Tokat: Turhal, 20.V.2008, 2 ♂♂.

Distribution in Turkey: New record for Turkey.

General distribution: Bosnia and Herzegovina, Britain I., Bulgaria, Hungary, Lithuania, Poland, Romania, Slovakia, Spanish mainland, Ukraine (Remm, 1988; Szadziewski and Borkent, 2015).

***Dasyhelea fasciigera* Kieffer, 1925**

Material examined: Amasya: Taşova, 19.VII.2008, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Bulgaria, Czech Republic, Estonia, Hungary, Spanish mainland (Remm, 1988; Szadziewski and Borkent, 2015).

***Dasyhelea kurensis* Remm, 1967**

Material examined: Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Azerbaijan, Kyrgyzstan, Romania, Turkmenistan, Ukraine (Remm, 1988; Szadziewski and Borkent, 2015).

***Dasyhelea modesta* (Winnertz, 1852)**

Material examined: Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 1 ♀; Amasya: Gümüşhacıköy, Keçi Village, 10.IX.2007, 1 ♀; Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 1 ♀; Çorum: Uğurludağ, Eskiçelttek Village, 14.VIII.2008, 1 ♀; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 1 ♀, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Andorra, Austria, Belgium, Britain I., Bulgaria, Czech Republic, Estonia, French mainland, Germany, Hungary, Ireland, Lithuania, Norwegian mainland, Poland, Romania, Russia North, Russia Northwest, Spanish mainland, Sweden, Switzerland, the Netherlands, Ukraine (Remm, 1988; Szadziewski and Borkent, 2015).

***Dasyhelea pallidiventris* (Goetghebuer, 1931)**

Material examined: Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 1 ♀; Amasya: Suluova, Centrum, 19.V.2008, 1 ♀; Tokat: Turhal, 20.V.2008, 1 ♀; Amasya: Taşova, 19.VII.2008, 1 ♀, 1 ♂; Çorum: Laçın, Gökgezler Village, 21.VII.2008, 1 ♀, 1 ♂; Samsun: Terme, Centrum, 09.VIII.2008, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Czech Republic, Estonia, Finland, Germany, Lithuania, Poland, Sweden, Ukraine (Remm, 1988; Szadziewski and Borkent, 2015).

Subfamily: Forcipomyiinae Lenz, 1934

Genus: *Atrichopogon* Kieffer, 1906

***Atrichopogon infuscus* Goetghebuer, 1929**

Material examined: Ordu: Ünye, Cevizdere Village, 23.VII.2007, 6 ♀♀; Samsun: Centrum, entrance of Yeşiltepe (Çorak Village), 24.VI.2008, 3 ♀♀, 07.VIII.2007, 1 ♀, 3 ♂♂; Samsun: Bafra, Karaköy, 10.VIII.2007, 1 ♀, 1 ♂; Ordu: Akkuş, Gökçebayır, 14.VIII.2007, 2 ♀♀, 1 ♂; Tokat: Erbaa, Dereçiftliği, 15.VIII.2007, 2 ♀♀; Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 4 ♀♀; Amasya: Suluova, Çayüstü Village, 11.IX.2007, 2 ♀♀, 1 ♂; Samsun: Ladik, Tathıcak Village, 12.IX.2007, 3 ♀♀; Samsun: Centrum, Ataköy, 15.IX.2007, 4 ♀♀, 25.IX.2008, 5 ♀♀, 5 ♂♂; Amasya: Suluova, Centrum, 19.V.2008, 1 ♀; Tokat: Turhal, 20.V.2008, 1 ♀; Amasya: Centrum, Firingiler, 25.VI.2008, 3 ♀♀; Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 3 ♀♀; Tokat: Almus, Centrum, 27.VI.2008, 4

♀♀, 1 ♂; Samsun: Ayvacık, Yenice Village, 15.VII.2008, 2 ♀♀; Tokat: Reşadiye, Centrum, 17.VII.2008, 2 ♂♂; Tokat: Niksar, Şahinli Village, 18.VII.2008, 3 ♀♀, 2 ♂♂; Amasya: Taşova, 19.VII.2008, 3 ♀♀; Samsun: Havza, entrance of Mürsel Village, 20.VII.2008, 1 ♀; Çorum: Laçın, Gökgezler Village, 21.VII.2008, 3 ♀♀; Samsun: Terme, Centrum, 09.VIII.2008, 3 ♀♀, 2 ♂♂; Amasya: Göynücek, Kışlabeyi Village, 15.VIII.2008, 2 ♂♂; Tokat: Artova, Centrum, 16.VIII.2008, 2 ♀♀, 2 ♂♂; Tokat: Centrum, vicinity of Tokat Airport, 17.VIII.2008, 2 ♀♀; Samsun: Ondokuz Mayıs, Yörükler, 19.VIII.2008, 3 ♀♀.

Distribution in Turkey: New record for Turkey.

General distribution: Austria, Belgium, Czech Republic, Estonia, Germany, Hungary, Italian mainland, Lithuania, Poland, Slovakia, Spanish mainland, Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

***Atrichopogon minutus* (Meigen, 1830)**

Material examined: Ordu: Perşembe, Yumrutaş Village, 13.VIII.2007, 2 ♀♀; Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 1 ♀; Amasya: Suluova, Çayüstü Village, 11.IX.2007, 1 ♀; Amasya: Suluova, Centrum, 19.V.2008, 4 ♀♀; Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♀; Tokat: Almus, Centrum, 27.VI.2008, 2 ♀♀.

Distribution in Turkey: New record for Turkey.

General distribution: Andorra, Austria, Azores, Belgium, Britain I., Bulgaria, Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Lithuania, Norwegian mainland, Poland, Slovakia, Spanish mainland, Switzerland, the Netherlands, East Palearctic, Near East, Nearctic region (Remm, 1988; Szadziewski and Borkent, 2015).

***Atrichopogon rostratus* (Winnertz, 1852)**

Material examined: Amasya: Taşova, Güngörmüş Village, 16.VIII.2007, 2 ♀♀; Tokat: Almus, Centrum, 27.VI.2008, 1 ♀; Tokat: Reşadiye, Centrum, 17.VII.2008, 1 ♂; Tokat: Niksar, Şahinli Village, 18.VII.2008, 2 ♀♀; Amasya: Taşova, 19.VII.2008, 1 ♂; Çorum: Uğurludağ, Eskiçelttek Village, 14.VIII.2008, 1 ♀; Tokat: Artova, Centrum, 16.VIII.2008, 1 ♀; Tokat: Centrum, vicinity of Tokat Airport, 17.VIII.2008, 1 ♀.

Distribution in Turkey: Konya (Bashara-Su), Dauda (Remm, 1988)

General distribution: Britain I., Canary Is., Czech Republic, Danish mainland, Germany, Greek mainland, Hungary, Ireland, Italian mainland, Macedonia, Poland, Romania, Slovakia, Spanish mainland, Ukraine, North Africa, Mongolia, China, Japan (Remm, 1988; Szadziewski and Borkent, 2015).

***Atrichopogon winnertzi* Goetghebuer, 1922**

Material examined: Ordu: Fatsa, Ayazlı, 23.V.2008, 1 ♂.

Distribution in Turkey: Mersin-Erdemli (Szadziewski et al., 2007).

General distribution: Austria, Belgium, Britain I., Bulgaria, Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Italian mainland, Lithuania, Macedonia, Poland, Slovakia, Slovenia, Spanish mainland, Sweden, Switzerland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

Genus: *Forcipomyia* Meigen, 1818

***Forcipomyia acidicola* (Tokunaga, 1937)**

Material examined: Amasya: Taşova, 19.VII.2008, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Austria, Belarus, Belgium, Czech Republic, Estonia, Germany, Norwegian mainland, Poland, East Palearctic, Near East, Nearctic region (Remm, 1988; Szadziewski and Borkent, 2015).

***Forcipomyia brevipennis* (Macquart, 1826)**

Material examined: Ordu: Korgan, Terzi Village, 22.VIII.2007, 1 ♂; Samsun: Ladik, Tatlıcak Village, 12.IX.2007, 1 ♂; Çorum: Mecitözü, Centrum, 21.V.2008, 1 ♂; Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 1 ♂; Tokat: Almus, Centrum, 27.VI.2008, 1 ♀.

Distribution in Turkey: New record for Turkey.

General distribution: Austria, Belgium, Britain I., Croatia, Czech Republic, Estonia, French mainland, Germany, Hungary, Ireland, Italian mainland, Lithuania, Norwegian mainland, Poland, Romania, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, East Palearctic, Nearctic region (Remm, 1988; Szadziewski and Borkent, 2015).

***Forcipomyia frutetorum* (Winnertz, 1852)**

Material examined: Çorum: Ortaköy, Senemoğlu Village, 26.VI.2008, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Andorra, Austria, Belgium, Britain I., Canary Is., Germany, Hungary, Slovakia, Spanish mainland, Ukraine, Afro-tropical region, East Palearctic, Near East, Nearctic region, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Forcipomyia fuliginosa* (Meigen, 1818)**

Material examined: Tokat: Niksar, Şahinli Village, 18.VII.2008, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Austria, Belgium, Britain I., Canary Is., Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Italian mainland, Lithuania, Norwegian mainland, Poland, Slovakia, Sweden, Switzerland, Ukraine, Afro-tropical region, Australian region, East Palearctic, Near East, Nearctic region, Neotropical region, North Africa, Oriental region (Remm, 1988; Szadziewski and Borkent, 2015).

***Forcipomyia glauca* Macfie, 1934**

Material examined: Samsun: Ondokuz Mayıs, Yörükler, 19.VIII.2008, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Belgium, Britain I., Czech Republic, Estonia, French mainland, Germany, Ireland, Lithuania, Poland, Russia North, Russia Northwest, Switzerland, East Palearctic, Nearctic region, Neotropical region (Remm, 1988; Szadziewski and Borkent, 2015).

***Forcipomyia murina* (Winnertz, 1852)**

Material examined: Çorum: Mecitözü, Centrum, 21.V.2008, 1 ♂.

Distribution in Turkey: New record for Turkey.

General distribution: Andorra, Austria, Belgium, Britain I., Bulgaria, Canary Is., Czech Republic, French mainland, Germany, Hungary, Poland, Romania, Slovakia, Spanish mainland, Sweden, Ukraine, Afro-tropical region, East Palearctic, Near East, Nearctic region, North Africa, Oriental region (Remm, 1988; Szadziewski and Borkent, 2015).

***Forcipomyia velox* (Winnertz, 1852)**

Material examined: Ordu: Fatsa, Ayazlı, 23.V.2008, 2 ♀♀, 2 ♂♂.

Distribution in Turkey: New record for Turkey.

General distribution: Austria, Belgium, Bulgaria, Czech Republic, Estonia, French mainland, Germany, Hungary, Kaliningrad Region, Lithuania, Poland, Romania, Slovakia, Spanish mainland, Switzerland, the Netherlands, Ukraine, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

Subfamily: Leptoconopinae Noè, 1907

Genus: *Leptoconops* Skuse, 1889

***Leptoconops bidentatus* Gutsevich, 1960**

Material examined: Tokat: Reşadiye, Centrum, 17.VII.2008, 2 ♀♀, 2 ♂♂.

Distribution in Turkey: New record for Turkey.

General distribution: French mainland, Italian mainland, Ukraine, East Palearctic, Near East, North Africa (Remm, 1988; Szadziewski and Borkent, 2015).

***Leptoconops borealis* Gutsevich, 1945**

Material examined: Tokat: Centrum, vicinity of Tokat Airport, 17.VIII.2008, 2 ♂♂.

Distribution in Turkey: New record for Turkey.

General distribution: Russia Central, Ukraine, East Palearctic, Near East (Remm, 1988; Szadziewski and Borkent, 2015).

4. Discussion

As a result of this study conducted in the Central Black Sea Region, 26 species of the genera *Allohelea*, *Alluaudomyia*, *Atrichopogon*, *Bezzia*, *Brachypogon*, *Culicoides*, *Dasyhelea*, *Forcipomyia*, *Leptoconops*, and *Palpomyia* were reported in Turkey for the first time, and the total number of genera and species of the family Ceratopogonidae known to occur here increased to 13 and 102, respectively. Two species of *Culicoides*, *Culicoides brunnicans* Edwards and

C. griseidorsum Kieffer, are new to the Turkish fauna, and the number of species of the genus has reached 59.

Dik et al. (2006) reported previously that *Culicoides circumscriptus*, *C. festivipennis*, *C. maritimus*, and *C. pulicaris* were found in 6 of the geographical regions of Turkey, with the exception of the Black Sea Region of Turkey, and that they represented the most common and widespread species of *Culicoides* in Turkey. Dik et al. (2006) also reported that *C. cataneii*, *C. gejelensis*, *C. longipennis*, *C. nubeculosus*, the *C. obsoletus* complex, *C. odiatus*, *C. puncticollis*, *C. saevus*, and *C. shaklawensis* had been found in 5 of Turkey's geographical regions and that they represented the next most widespread species of *Culicoides*. In a previous study, Dik et al. (2008) reported that, among the abovementioned common species, *C. circumscriptus*, *C. festivipennis*, *C. maritimus*, *C. gejelensis*, *C. longipennis*, and *C. obsoletus* complex species had been found also in the Black Sea Region. In this study, all of the abovementioned widespread species reported by Dik et al. (2006) were reported in the Central Black Sea Region. Consequently, based on the results of the recent (Dik et al., 2006) and present studies conducted in the Black Sea Region, it is now possible to state that *C. circumscriptus*, *C. festivipennis*, *C. maritimus*, and *C. pulicaris* are found in all geographical regions of Turkey. Nine species of *Culicoides*, namely *C. cataneii*, *C. gejelensis*, *C. longipennis*, *C. nubeculosus*, *C. obsoletus* complex, *C. odiatus*, *C. puncticollis*, *C. saevus*, and *C. shaklawensis*, can be found in at least 6 geographical regions of Turkey.

In all provinces of the Central Black Sea Region of Turkey where the study was conducted (Amasya, Çorum, Ordu, Samsun, and Tokat), *Atrichopogon infuscus*, *Culicoides circumscriptus*, *C. dzhafarovi*, *C. gejelensis*, *C. longipennis*, *C. obsoletus* complex, and *C. punctatus* were the most common species in the studied areas. On the other hand, *C. festivipennis*, *C. nubeculosus*, *C. odiatus*, *C. parroti*, *C. pumilus*, *C. puncticollis*, *C. riethi*, *C. subfasciipennis*, *Dasyhelea pallidiventris*, and *Forcipomyia brevipennis* were found to be common and widespread in at least 4 of the provinces of the Central Black Sea Region. *C. flavipulicaris* and *C. sahariensis*, detected previously by

Dik et al. (2008) in Samsun and Ordu, respectively, were not found in this study.

The highest diversity of species was found in Tokat (Table 2), which may be attributed to the extensive agricultural and animal husbandry activities that are conducted in the region, which create a suitable environment for the reproduction and growth of some Ceratopogonidae species, and especially for *Culicoides* (Uslu and Dik, 2007, 2010). Another factor that may contribute to the high number of species is the geographical location of Tokat Province within the Kelkit Basin. As a transition region between the Black Sea and the Central Anatolian Regions, the province harbors different types of climates and floristic structures within its boundaries, and the province is also a transition region between the European-Siberian and the Iran-Turan floristic regions (Karaer and Kılınç, 2001). In this regard, the different types of climates and floristic structures in Tokat Province may have resulted in a greater diversity of species.

The number of species recorded in the Amasya-Göynücek, Amasya-Taşova, Çorum-Mecitözü, Çorum-Ortaköy, Ordu-Fatsa, and Tokat-Reşadiye locations was notable. Compared to the other studied locations, these locations are poorly studied but had a great number species and newly reported species. Therefore, future faunistic studies in these locations and their surroundings will lead to the identification of new records for Turkey.

The present study conducted in the Central Black Sea Region shows that Turkey has a rich biting midge fauna, and that the number of species belonging to genera other than *Culicoides* is also significant. Accordingly, it can be stated that further studies on this family, taking into account the genera other than *Culicoides*, will contribute significantly to the number of known species in Turkey.

Acknowledgments

We would like to express our thanks to Prof Dr Bilal Dik from Selçuk University and to Prof Dr Ryszard Szadziewski and Dr Patrycja Dominiak from the University of Gdansk (Poland) for their help and assistance in the identification of some biting midge species during this study.

References

- Balık S, Ustaoglu MR, Taşdemir A, Yıldız S, Özbek M (2005). A preliminary study on the macrobenthic invertebrate fauna of Kuş Lake (Bandırma). EÜ Su Ürünleri Dergisi 22: 347–349 (in Turkish with abstract in English).
- Boorman J (1997). Family Ceratopogonidae. In: Papp L, Darvas B, editors. Contributions to a Manual of Palaearctic Diptera, Volume 2, Nematocera and Lower Brachycera. Budapest, Hungary: Science Herald, pp. 349–368.
- Borkent A (2015). World Species of Biting Midges (Diptera: Ceratopogonidae). Available online at <http://www.inhs.illinois.edu/files/1114/2384/5200/CeratopogonidaeCatalog.pdf>.
- Borkent A, Wirth WW (1997). World species of biting midges (Diptera: Ceratopogonidae). B Am Mus Nat Hist 233: 1–257.
- Deniz A, Öncel T, Patakakis MJ (2010). Species composition of *Culicoides* Latreille, 1809 (Diptera: Ceratopogonidae) in Thrace Region of Turkey. Kafkas Univ Vet Fak 16: 1057–1060.

- Dik B (1993). Determination of *Culicoides* Latreille, 1908 (Diptera: Ceratopogonidae) species in Adana, İçel and Antalya arounds. *Türk Vet Hek Derg* 5: 48–55 (in Turkish with abstract in English).
- Dik B (1996). Determination of *Culicoides* species (Diptera: Ceratopogonidae) from Aegean Region. *Türkiye Parazitoloji Dergisi* 20: 131–137 (in Turkish with abstract in English).
- Dik B (1997). Ceratopogonid'ler ve Parazitolojik Önemleri. In: Özcel MA, Daldal N, editors. *Parazitolojide Artropod Hastalıkları ve Vektörler*. İzmir, Turkey: Türkiye Parazitoloji Derneği, pp. 111–143 (in Turkish).
- Dik B, Dinçer T (1992). Studies on *Culicoides* (Diptera: Ceratopogonidae) species around Konya. *Doğa Türk Vet Hay Derg* 16: 199–215 (in Turkish with abstract in English).
- Dik B, Ergül R (2006). Nocturnal flight activities of *Culicoides* (Diptera: Ceratopogonidae) species in Konya. *Türkiye Parazitoloji Dergisi* 30: 213–216.
- Dik B, Kurt M, Aydın İ (2008). A study on *Culicoides* (Diptera: Ceratopogonidae) species in Black Sea Region in Turkey. *Bornova Vet Kont Araşt Enst Derg* 30: 23–26.
- Dik B, Yağcı Ş, Linton YM (2006). A review of species diversity and distribution of *Culicoides* Latreille, 1809 (Diptera: Ceratopogonidae) in Turkey. *J Nat Hist* 40: 947–1967.
- Dik B, Yaman M, Uslu U (2010). *Culicoides* species (Latreille, 1809) (Diptera: Ceratopogonidae) in Hatay Province. *Kafkas Univ Vet Fak Derg* 16 (Suppl. B): 255–258 (in Turkish with abstract in English).
- Dik B, Yavru S, Uslu U, Yapıcı O, Esin E (2012). Determination of *Culicoides* species (Diptera: Ceratopogonidae) as suspect vectors of epizootic haemorrhagic disease and bluetongue viruses in southern and western Anatolia by RT-PCR. *Revue Méd Vét* 163: 505–510.
- Dominiak P, Braverman Y, Szadziewski R (2007). New records of biting midges of the genus *Dasyhelea* from Israel with notes on synonymy in the genera *Culicoides* and *Forcipomyia* (Diptera: Ceratopogonidae). *Pol J Entomol* 76: 257–265.
- Dominiak P, Szadziewski R (2010). Distribution and new synonymy in European biting midges of the genus *Dasyhelea* Kieffer (Diptera: Ceratopogonidae). *Zootaxa* 2437: 1–37.
- Edwards FW (1939). Family Ceratopogonidae. In: Edwards FW, Oldroyd H, Smart J, editors. *British Blood-Sucking Flies*. London, UK: British Museum of Natural History, pp. 25–50, 129–148.
- Eren H, İnci A (2002). Species of *Culicoides* (Diptera: Ceratopogonidae) determined in an area of Bursa (Gemlik). *Türkiye Parazitoloji Dergisi* 26: 199–200 (in Turkish with abstract in English).
- Eren H, Yağcı Ş, Dinçer Ş (1995). Determination of *Culicoides* (Diptera: Ceratopogonidae) species in Ankara. *Ankara Üniv Vet Fak Derg* 42: 179–182 (in Turkish with abstract in English).
- Havelka P (1978). Ceratopogonidae. In: Illies J, editor. *Limnofauna Europaea*. 2nd ed. Stuttgart, Germany: Gustav Fischer Verlag, pp. 441–458.
- Jennings M, Boorman J, Ergün H (1983). *Culicoides* from Western Turkey in relation to bluetongue disease of sheep and cattle. *Rev Elev Méd Vét Pays Trop* 36: 67–70.
- Karaer F, Kılınç M (2001). The flora of Kelkit Valley. *Turk J Bot* 25: 195–238.
- Kieffer JJ (1918). Chironomides d'Afrique et d'Asie conservés au Museum National Hongrois de Budapest. *Annales Historico-Naturales Musei Nationalis Hungarici* 16: 31–136 (in French).
- Kieffer JJ (1919). Chironomides d'Europe conservés au Musée National Hongrois de Budapest. *Annales Historico-Naturales Musei Nationalis Hungarici* 17: 1–160 (in French).
- Leclercq M (1966). Contribution à l'étude des diptères suceurs de sang de Turquie. *Bull Rech Agron Gembloux* 1: 455–457 (in French).
- Mullen GR (2002). Biting Midges (Ceratopogonidae). In: Mullen GR, Durden L, editors. *Medical and Veterinary Entomology*. San Diego, CA, USA: Academic Press, pp. 163–183.
- Navai S (1977). Biting-midges of the genus *Culicoides* (Diptera: Ceratopogonidae) from South-west Asia. PhD, University of Maryland, College Park, MD, USA.
- Remm H (1988). Family Ceratopogonidae. In: Soos A, Papp L, editors. *Catalogue of Palaearctic Diptera, Volume 3, Ceratopogonidae-Mycetophilidae*. Budapest, Hungary: Akademiai Kiado, pp. 11–110.
- Szadziewski R, Borkent A, Dominiak P (2015). Fauna Europaea: Ceratopogonidae. In: Beuk P, Pape T, editors. *Fauna Europaea: Diptera Nematocera*. Fauna Europaea Version 2.6.2. Available online at <http://www.faunaeur.org>.
- Szadziewski R, Dominiak P, Tóthová A (2007). European *Atrichopogon* biting midges of the subgenus *Melohelea* (Diptera: Ceratopogonidae). *Pol J Entomol* 76: 267–284.
- Szadziewski R, Gwizdalska-Kentzer M, Gilka W (2011). Order Diptera, Family Ceratopogonidae. In: van Harten A, editor. *Arthropod Fauna of the United Arab Emirates, Volume 4*. Abu Dhabi, UAE: Dar Al Ummah Printing, Publishing, Distribution & Advertising, pp. 636–653.
- Szadziewski R, Krzywiński J, Gilka W (1997). Diptera Ceratopogonidae, biting midges. In: Nilsson AN, editor. *Aquatic Insects of North Europe-Taxonomic Handbook, Volume 2, Odonata-Diptera*. 2nd ed. Stenstrup, Denmark: Apollo Books, pp. 243–263.
- Taşdemir A, Ustaoglu MR, Balık S (2004). An investigation on the Diptera fauna of İkizgöl Lake (Bornova, İzmir, Türkiye). *EÜ Su Ürünleri Dergisi* 21: 263–265 (in Turkish with abstract in English).
- Tilki N, Dik B (2003). The effects of different light-sources on the capture of *Culicoides* species (Diptera: Ceratopogonidae). *Türkiye Parazitoloji Dergisi* 27: 144–147 (in Turkish with abstract in English).
- Unat EK (1965). Türkiye'nin Tıbbi Parazitolojik Coğrafyası. In: Unat EK, Yaşarol Ş, Merdivenci A, editors. *Türkiye'nin Parazitolojik Coğrafyası*. İzmir, Turkey: Ege Üniversitesi Tıp Fakültesi Yayınları, pp. 1–40 (in Turkish).

- Uslu U, Dik B (2004). Seasonal distribution of species *Culicoides* (Diptera: Ceratopogonidae) in Konya province. *Vet Bil Derg* 20: 5–10 (in Turkish with abstract in English).
- Uslu U, Dik B (2007). Description of breeding sites of *Culicoides* species (Diptera: Ceratopogonidae) in Turkey. *Parasite* 14: 173–177.
- Uslu U, Dik B (2010). Chemical characteristics of breeding sites of *Culicoides* species (Diptera: Ceratopogonidae). *Vet Parasitol* 169: 178–184.
- Wirth W (1994). The subgenus *Atrichopogon* (*Lophomyidium*) with a revision of the Nearctic species (Diptera: Ceratopogonidae). *Insecta Mundi* 8: 17–36.
- Wirth WW, Marston N (1968). A method for mounting small insects on microscope slide in Canada balsam. *Ann Entomol Soc Am* 61: 783–784.
- Yağcı Ş, Eren H, Dinçer Ş (1999). Some of the species of Nematocera (Diptera) determined in Aydın area. *Türkiye Parazitoloji Dergisi* 23: 210–215 (in Turkish with abstract in English).
- Yılmaz H, Dumanlı N (1995). Some species of *Culicoides* (Diptera: Ceratopogonidae) identified for the first time in Elazığ and it's vicinity, Turkey. *Turk J Vet Anim Sci* 19: 223–230 (in Turkish with abstract in English).
- Yılmaz H, Dumanlı N (1997). Investigations on *Culicoides* (Diptera: Ceratopogonidae) species in Elazığ province. *FÜ Sağlık Bilimleri Dergisi* 11: 135–143 (in Turkish with abstract in English).