



Tachinidae (Diptera) species from some uplands in Tokat province (Turkey)

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Abstract: This study was based upon material of the family Tachinidae (Diptera) collected from some uplands of Tokat (Turkey) during 2012 and 2013. In total, 24 species were identified during this study. They are 1 genus and 1 species from the subfamily Exoristinae, 5 genera and 7 species from the subfamily Tachininae, 6 genera and 7 species from the subfamily Dexiinae, 5 genera and 9 species from the subfamily Phasiinae. Among them, *Peleteria varia*, *Linnaemya impudica*, *Macquartia chalconota*, *Peribea tibialis*, *Periscepsia carbonaria* and *Prosenia siberita* were recorded for the first time in Tokat.

Key words: Tachinidae, Fauna, Tokat's uplands, Turkey.

1. Introduction

The family Tachinidae is one of the most diverse dipteran families, with more than 8.000 species (Ziegler 1998). Tachinid flies (Diptera) are among the most important natural enemies of herbivorous arthropods and play significant roles in regulating pest populations. They mostly attack larval Lepidoptera feeding on foliage. Also parasites a range of other insects from Heteroptera (nymphs and adults), Coleoptera (larvae and adults) and Hymenoptera (DeBach and Rosen 1991; Stireman et al. 2006). Because of detailed studies have been made about Tachinidae family in Tokat provinces, tachinid fauna of Tokat provinces is well known (Kara 1998; Kara 1999a; b; Kara and Bayram 1999; Kara 2001a; Kara and Alaoğlu 2001; 2002; Atay and Kara 2014). However, some uplands of Tokat have not been studied so far. In this study, the tachinids of these areas were determined.

2. Materials and Methods

This study was conducted in some uplands of Tokat (Avlunlar, Boyalı-Binecek, Akbelen from Tokat Central, Bereketli and Bozçalı from

Reşadiye, Çatak and Dumanlı from Almus) from 2012 to 2013 (Figure 1).

Tachinids were collected by first author from crop, forest, weed and ornamental plants by an insect net during the vegetation period. The tachinids were identified by the second and third authors using the keys of Mesnil (1944-1965), Tschorsnig and Herting (1994) and Tschorsnig and Richter (1998). Nomenclature and arrangement of tachinids follows Herting and Dely-Draskovits (1993). The specimens were deposited at the Entomology Laboratory in Gaziosmanpaşa University, Agricultural Faculty, Plant Protection Department, Tokat, Turkey.

3. Results

Subfamily: Exoristinae

Tribe: Goniini

***Pales pavidus* (Meigen, 1824)**

Material examined: Reşadiye (Bozçalı), 1♀, N 40°34'55", E 37°18'30", 1553m, 05 July 2012; 1♂, N 40°35'04", E 37°18'38", 1530 m, 16 June 2013.

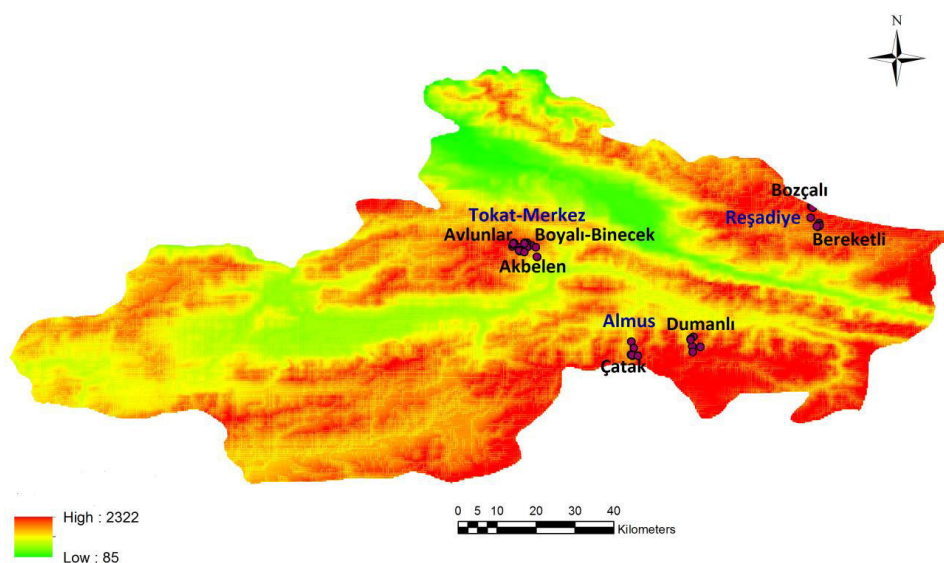


Figure 1. The localities sampled in Tokat province.

Distribution in Turkey: Erzurum, Kars (Doğanlar 1975; 1982a; Özbek and Çoruh 2012), Kırklareli (Haeselbarth 1983), Samsun (Tuncer and Ecevit 1996), Tokat (Kara 1998; Atay and Kara 2014), Ankara (Kara and Özdemir 2000), Amasya (Kara 2001b), Afyonkarahisar, Burdur, Isparta (Avcı 2009).

Distribution in the World: West Asia (Kugler 1963), East Europe (Draber-Monko et al. 1991; Hubenov 1992; Tschorsnig et al. 2004), South Europe (Tschorsnig 1992; Tschorsnig et al. 2004), Central Europe (Roznosky and Vanhara 1993), North Europe (Belshaw 1993; Tschorsnig et al. 2004), West Europe (Tschorsnig et al. 2004).

Subfamily: Tachininae

Tribe: Tachinini

Tachina fera (Linnaeus, 1761)

Material examined: Reşadiye (Bereketli), 1♀, N 40°32'14", E 37°19'09", 1478m, 10 June 2013; Tokat Center (Boyalı), 1♂, N 40°29'37", E 36°36'51", 1695 m, 04 June 2012.

Distribution in Turkey: Bingöl, Erzurum (Doğanlar 1982b), Tokat (Kara 1999a), Kastamonu (Korkmaz 2007).

Distribution in the World: Caucasus, Central, East and West Asia, East Siberia, North Africa (Herting and Dely-Draskovits, 1993). East,

North, South and West Europe (Tschorsnig et al. 2004).

Tachina magnicornis (Zetterstedt, 1844)

Material examined: Almus (Çatak), 1♂, N 40°14'23", E 36°53'20", 1132 m, 26 May 2012; 1♂, N 40°16'30", E 37°01'30", 1042 m, 29 May 2012; 1♀, N 40°14'82", E 36°53'39", 1148m, 24 June 2012; 1♂, N 40°14'18", E 36°53'25", 1124 m, 12 June 2013; 2♀, N 40°14'22", E 36°53'20", 1119 m, 20 June 2013; 2♀, N 40°14'22", E 36°53'16", 1144 m, 20 June 2013; 1♂, N 40°14'27", E 36°53'16", 1144 m, 20 July 2013; 1♀, N 40°14'82", E 36°53'39", 1148 m, 03 August 2013; Tokat-Center (Akbelen), 2♀, N 40°28'51", E 36°37'44", 1469 m, 02 August 2013; Tokat-Center (Boyalı-Binecek), 1♂, N 40°29'35", E 36°39'30", 1573 m, 17 June 2012; 1♀, N 40°29'20", E 36°38'50", 1482 m, 01 August 2013; Reşadiye (Bereketli), 1♀, N 40°32'43", E 37°19'20", 1580 m, 01 June 2012; 1♀, N 40°32'16", E 37°19'10", 1517 m, 28 June 2013; Reşadiye (Bozçalı), 1♂, N 40°35'04", E 37°18'38", 1530 m, 10 June 2012; 1♀, N 40°35'03", E 37°18'13", 1582 m, 25 August 2012; Almus (Dumanlı), 1♀, N 40°15'36", E 37°01'42", 1188 m, 30 May 2012; 1♂, N 40°16'55", E 37°01'55", 1362 m, 25 June 2012.

Distribution in Turkey: Balıkesir (Kavut et al. 1974), Bingöl, Hakkari (Doğanlar 1982b),

Tokat (Kara 1999a), Ankara (Kara and Özdemir 2000), Kastamonu (Korkmaz 2007).

Distribution in the World: Caucasus, Central, East and West Asia, East Siberia, Far East (Herting and Dely-Draskovits, 1993), East, North, South and West Europe (Tschorsnig et al. 2004).

Peleteria rubescens (Robineau-Desvoidy, 1830)

Material examined: Almus (Çatak), 1♂, N 40°14'28", E 36°53'14", 1120 m, 10 June 2012; 1♀, N 40°14'27", E 36°53'16", 1144 m, 11 June 2012; 1♂, N 40°14'28", E 36°53'14", 1120 m, 03 September 2013; Almus (Dumanlı), 1♀, N 40°16'39", E 37°01'33", 1012 m, 11 June 2013; 1♀, N 40°15'36", E 37°01'42", 1188 m, 22 June 2013; 1♀, N 40°14'17", E 36°53'72", 1144 m, 02 July 2013; 1♀, N 40°16'39", E 37°01'33", 1012 m, 13 September 2013; Tokat-Center (Akbelen), 1♂, N 40°29'56", E 36°37'01", 1685 m, 20 June 2013; 1♀, N 40°28'49", E 36°37'47", 1455 m, 20 July 2013; Tokat Center (Boyalı Binecek), 1♂, N 40°29'57", E 36°38'53", 1555 m, 25 June 2013; 1♂, N 40°29'56", E 36°38'31", 1542 m, 07 July 2013; Reşadiye (Bereketli) 1♂, N 40°32'20", E 37°19'17", 1567 m, 25 May 2013.

Distribution in Turkey: Erzurum (Doğanlar 1975), Tokat (Kara 1999a), Ankara (Khan and Özer 1984; Kansu et al. 1986; Kara and Özdemir 2000), Zonguldak (Korkmaz 2007).

Distribution in the World: Central, East and West Asia, East Siberia (Herting and Dely-Draskovits, 1993), East, North, South and West Europe (Tschorsnig et al. 2004).

Peleteria varia (Fabricius, 1794)

Material examined: Reşadiye (Bozçalı), 1♂, N 40°38'00", E 37°18'41", 1537m 01 June 2012; Tokat Center (Boyalı), 1♂, N 40°27'57", E 36°40'13", 1059 m, 15 August 2013; Almus (Çatak), 1♀, N 40°14'23", E 36°53'20", 1132 m, 16 August 2013.

Distribution in Turkey: Amasya (Kara 2001b).

Distribution in the World: Caucasus, Far East, North Africa (Herting and Dely-Draskovits 1993), East, South and West Europe (Tschorsnig et al. 2004).

Tribe: Linnaemyiini

Linnaemya impudica (Rondani, 1859)

Material examined: Tokat-Center (Akbelen-Aylunlar), 1♀, N 40°29'37", E 36°36'51", 1695m, 20 June 2012; 1♂, N 40°28'39", E 36°38'26", 1382 m, 25 June 2013.

Distribution in Turkey: Bingöl (Doğanlar, 1982b).

Distribution in the World: East, North, South and West Europe (Tschorsnig et al. 2004).

Tribe: Macquartiini

Macquartia chalconota (Meigen, 1824)

Material examined: Tokat-Center (Boyalı Binecek), 2♀, N 40°29'51", E 36°38'28", 1541m, 26 July 2013.

Distribution in Turkey: Amasya (Kara 2001b)

Distribution in the World: Caucasus (Herting and Dely-Draskovits 1993), East, North, South and West Europe, West Asia (Tschorsnig et al. 2004).

Tribe: Siphonini

Peribaea tibialis (Robineu Desvoidy, 1851)

Material examined: Reşadiye (Bozçalı), 1♀, N 40°33'25", E 37°17'69", 1464 m, 14 July 2012; 1♂, N 40°35'06", E 37°18'35", 1542 m, 25 July 2013.

Distribution in Turkey: Amasya (Kara 2001b), Zonguldak (Korkmaz 2007).

Distribution in the World: Caucasus, Central, East and West Asia, West Europe (Herting and Dely-Draskovits 1993), East, South and West Europe, West Asia (Tschorsnig et al. 2004).

Subfamily: Dexiinae

Tribe: Dexiini

Prosenia siberita (Fabricius, 1775)

Material examined: Tokat-Center (Avlunlar), 1♂, N 40°28'45", E 36°37'47", 1464 m, 20 June 2012; Almus (Dumanlı), 1♀, N 40°16'37", E 37°01'30", 1042 m, 20 June 2013.

Distribution in Turkey: Manisa (Kara 2001a).

Distribution in the World: East, North, South and West Europe (Tschorsnig et al., 2004), Central and East Asia, East Europe (Richter 2008).

***Zeuxia cinerea* Meigen, 1826**

Material examined: Reşadiye (Bereketli), 1♂, N 40°32'43", E 37°19'20", 1580 m, 01 June 2012; Almus (Çatak), 1♂, N 40°14'18", E 36°53'25", 1124 m, 18 September 2013.

Distribution in Turkey: Tokat (Kara 1999b), Karabük, Kastamonu, Zonguldak (Korkmaz, 2007).

Distribution in the World: Central, East, South and West Europe (Tschorsnig et al. 2004), Central and West Asia, North Africa (Herting and Dely-Draskovits 1993).

***Zeuxia tricolor* (Porthschinsky, 1881)**

Material examined: Almus (Çatak), 1♂, N 40°15'30", E 37°02'51", 1150 m, 07 July 2012; 1♂, N 40°14'23", E 36°53'20", 1132 m, 16 August 2013.

Distribution in Turkey: Konya (Herting 1984), Tokat (Kara 1999b), Amasya (Kara 2001b).

Distribution in the World: West Asia (Herting and Dely-Draskovits 1993), East Europe (Tschorsnig et al. 2004).

Tribe: Voriini***Eriothrix rufomaculatus* (De Geer, 1776)**

Material examined: Reşadiye (Bereketli), 1♂, N 40°32'43", E 37°19'20", 1580 m, 01 June 2012; Tokat-Center (Avlunlar), 1♂, N 40°29'26", E 36°36'49", 1684 m, 06 June 2012; Reşadiye (Bozçalı), 1♂, N 40°35'04", E 37°18'38", 1530 m, 10 June 2012; Tokat-Center (Boyalı-Binecek), 1♂, N 40°29'21", E 36°38'50", 1482 m, 26 May 2013; Almus (Çatak), 1♂, N 40°14'27", E 36°53'16", 1144 m, 20 July 2013.

Distribution in Turkey: Erzurum (Doğanlar 1982b), Tokat (Kara 1999b), Bartın, Kastamonu, Zonguldak (Korkmaz 2007).

Distribution in the World: Caucasus, Central, East and West Siberia, Far East (Herting and Dely-Draskovits 1993), East North, South and West Europe (Tschorsnig et al. 2004).

***Periscepsia carbonaria* (Panzer, 1798)**

Material examined: Almus (Çatak), 1♀, N 40°14'23", E 36°53'25", 1124 m, 10 August 2012; Almus (Dumanlı), 1♀, N 40°15'36", E 037°01'42", 1188 m, 22 June 2013; Tokat-Center

(Boyalı-Binecek), 1♀, N 40°29'21", E 36°38'50", 1482 m, 26 May 2013.

Distribution in Turkey: Denizli (Kavut et al. 1974), Ankara (Khan and Özer 1984; Kansu et al. 1986; Bayram and Kılınçer 1987; Kara and Özdemir 2000).

Distribution in the World: Caucasus, West Asia (Herting and Dely-Draskovits 1993), North, South and West Europe (Tschorsnig et al. 2004).

***Athrycia impressa* (Van Der Wulp, 1869)**

Material examined: Tokat-Center (Boyalı), 1♀, N 40°29'20", E 36°38'50", 1482 m, 05 August 2013.

Distribution in Turkey: Erzurum (Doğanlar 1982b), Tokat (Kara 1999b).

Distribution in the World: East and West Asia (Herting and Dely-Draskovits 1993), East, North, South and West Europe (Tschorsnig et al. 2004).

***Voria ruralis* (Fallén, 1810)**

Material examined: Almus (Çatak), 1♀, N 40°14'28", E 036°53'14", 1140 m, 28 May 2013.

Distribution in Turkey: İzmir (Kavut et al. 1974), Erzurum (Avcı and Özbek 1990), Tokat (Kara 1999b), Niğde (Kara and Özdemir 2000), Amasya (Kara 2001b), Karabük (Korkmaz 2007), Hatay (Kaya and Kornoşor 2008).

Distribution in the World: Central, East and West Asia (Herting and Dely-Draskovits 1993), East, North, South and West Europe (Tschorsnig et al. 2004).

Subfamily: Phasiinae**Tribe: Phasini*****Clytiomya continua* (Panzer, 1798)**

Material examined: Tokat-Center (Boyalı-Binecek), 1♂, N 40°29'35", E 036°39'30", 1573 m, 17 June 2012; Tokat-Center (Akbelen-Avlunlar), 1♂, N 40°29'43", E 036°36'50", 1692 m, 27 May 2013.

Distribution in Turkey: İzmir (Karsavuran 1986), Tokat (Kara and Alaoğlu 1999; Atay and Kara 2014), Eskişehir (Aksu 2005).

Distribution in the World: West Asia (Kugler 1963), East and Central Asia (Herting 1984), East Europe (Draber-Monko et al. 1991; Hubenov 1992; Tschorsnig et al. 2004), South

Europe (Tschorsnig 1992; Tschorsnig et al. 2004), North and West Europe (Tschorsnig et al. 2004).

Ectophasia crassipennis (Fabricius, 1794)

Material examined: Reşadiye (Bereketli), 1♀, N 40°32'11", E 37°19'09", 1454 m, 26 July 2012; 1♂, N 40°35'01", E 37°18'13", 1582 m 25 July 2013.

Distribution in Turkey: South and South Eastern Anatolia (Yüksel 1968), Adana, Diyarbakır (Lodos 1961), Adana (Şimşek et al. 1994), Tokat (Atay and Kara 2014).

Distribution in the World: Caucasus, East Asia, East Siberia (Herting and Dely-Draskovits, 1993), East, North, South and West Europe (Tschorsnig et al. 2004).

Ectophasia oblonga (Robineau-Desvoidy, 1830)

Material examined: Tokat-Center (Akbelen-Avlunlar), 1♀, N 40°28'56", E 36°37'47", 1492 m, 23 June 2012; Tokat-Center (Boyalı), 1♂, N 40°27'59", E 36°40'12", 1070 m, 20 July 2013.

Distribution in Turkey: Ankara (Memişoğlu and Özer 1994), Tekirdağ (Öncüler and Kıvan 1995; Kıvan 1996; Baur 2005), Tokat (Kara 1998; Atay and Kara 2014), Gaziantep, Kahramanmaraş, Kilis (İslamoğlu and Kornoşor 2003; 2007), Eskişehir (Aksu 2005), Bartın, Karabük, Kastamonu, Zonguldak (Korkmaz 2007), Adıyaman, Batman, Diyarbakır, Mardin, Siirt, Şanlıurfa (Gözüaçık et al. 2010).

Distribution in the World: Eastern Europe (Hubenov 1992; Tschorsnig et al. 2004), Southern Europe (Tschorsnig 1992; Tschorsnig et al. 2004), Eastern Europe, the South Caucasus (Herting 1984), Caucasus, West Asia (Herting and Dely-Draskovits, 1993), Western Europe (Tschorsnig et al. 2004).

Gymnosoma clavata (Rohdendorf, 1947)

Material examined: Tokat Center (Akbelen-Avlunlar), 1♂, N 40°29'43", E 36°36'50", 1692 m, 27 May 2013; 1♂, N 40°29'49", E 36°36'56", 1670 m, 13 June 2013.

Distribution in Turkey: Erzurum (Doğanlar 1982b), İzmir (Karsavuran 1986; Karsavuran and Kara 2003; Baur 2005), Tokat (Kara 1998; Atay and Kara 2014), Eskişehir (Aksu 2005), Karabük, (Korkmaz 2007).

Distribution in the World: West Asia (Kugler 1963; 1974), North Europe, The Middle East, East Europe, The Soviet Central Asia (Herting 1984; Zimin et al. 1988), East Europe (Draber- Monko et al. 1991; Tschorsnig et al. 2004), South Europe (Tschorsnig 1992; Tschorsnig et al. 2004), West Europe (Tschorsnig et al. 2004), East Asia (O'Hara et al. 2009).

Gymnosoma rotundata (Linnaeus, 1758)

Material examined: Tokat-Center (Avlunlar), 1♂, N 40°28'45", E 36°37'47", 1464 m, 07 July 2012; Almus (Çatak), 1♀, N 40°14'82", E 36°14'82", 1119 m, 24 June 2012; 1♂, N 40°14'22", E 36°53'20", 1119 m, 20 June 2013; Almus (Dumanlı), 1♂, N 40°14'50", E 37°01'48", 1319 m, 03 July 2013; 1♂, N 40°15'30", E 37°02'51", 1650 m, 04 August 2013; 1♂, N 40°16'30", E 37°01'30", 1042 m, 03 September 2013; Reşadiye (Bozçalı), 1♂, N 40°34'50", E 37°18'25", 1568 m, 25 June 2012; Reşadiye (Bereketli) 1♀, N 40°32'24", E 37°19'24", 1545 m, 25 June 2012; Tokat Center (Akbelen), 1♀, N 40°28'51", E 36°37'44", 1469 m, 14 September 2013.

Distribution in Turkey: Eastern Black Sea Region (Kurt 1975), Tokat (Kara 1998), Karabük, Kastamonu, Zonguldak (Korkmaz 2007).

Distribution in the World: West Asia (Kugler 1963), East Asia, North Europe (Herting 1984), East Europe (Zimin et al. 1988; Draber-Monko et al. 1991; Hubenov 1992), South Europe (Tschorsnig 1992), North Europe (Belshaw 1993).

Phasia obesa (Fabricius, 1798)

Material examined: Reşadiye (Bereketli), 1♀, N 40°32'20", E 37° 19' 24", 1545 m, 06 July 2012.

Distribution in Turkey: Tokat (Kara and Alaoğlu 1999).

Distribution in the World: East and North Europe (Tschorsnig et al. 2004), Central, East and West Asia (Herting and Dely-Draskovits 1993).

Tribe: Cyldromyini

Cylindromyia bicolor (Olivier, 1812)

Material examined: Tokat Center (Boyalı-Binecek), 1♂, N 40°29'20", E 36°38'50", 1482 m, 17 August 2012.

Distribution in Turkey: Black Sea Region (Işık et al. 1987), Tokat (Kara and Alaoğlu 1999), Zonguldak (Korkmaz 2007).

Distribution in the World: Caucasus, Central and West Asia (Herting and Del-Draskovits 1993), East, North, South and West Europe (Tschorsnig et al. 2004).

Cylindromyia brassicaria (Fabricius, 1775)

Material examined: Almus (Çatak), 1♂, N 40°14'17", E 036°53'72", 1144 m, 18 August 2013; Tokat-Center (Boyalı-Binecek), 1♀, N 40°29'56", E 36°38'31", 1542 m, 07 July 2013; 1♀, N 40°29'51", E 36°38'28", 1541 m, 15 August 2013; Tokat-Center (Akbelen), 1♂, N 40°28'39" E 36°38'29", 1382 m, 05 July 2013; Reşadiye (Bozçalı), 1♀, N 40°38'00", E 37°18'41", 1537 m, 01 June 2012; 1♀, N 40°35'06", E 37°18'35", 1542 m, 25 July 2012.

Distribution in Turkey: Erzurum (Doğanlar 1982b), İzmir (Karsavuran 1986), Tokat (Kara and Alaoğlu 1999; Atay and Kara 20014), Eskişehir (Aksu 2005).

Distribution in the World: The Palearctic region from England to Japan (Herting 1960), Eastern and Southern Asia North Africa, (Ziegler 1991), Eastern Europe (Hubenov 1992), Southern Europe (Tschorsnig 1992), Northern Europe, England (Belshaw 1993).

Cylindromyia auriceps (Meigen, 1838)

Material examined: Tokat Center (Boyalı-Binecek), 1♀, N 40°29'21", E 36°38'50", 1482 m, 29 May 2012; 1♂, N 40°29'20", E 030°40'03", 1471 m, 26 June 2013; Tokat-Center (Avlunlar), 1♀, N 40°29'41", E 36°38'50", 1707 m, 04 July 2013; Reşadiye (Bereketli), 1♀, N 40°32'15", E 37°19'08", 1506 m, 15 July 2012.

Distribution in Turkey: Tokat (Kara and Alaoğlu 1999), Eskişehir (Aksu 2005), Kastamonu, Zonguldak (Korkmaz 2007).

Distribution in the World: Caucasus, North Africa, West Asia (Herting and Del-Draskovits 1993), East, North, South and West Europe (Tschorsnig et al. 2004).

4. Conclusions

There are 16,000 parasitoids species in the order Diptera. Approximately 8,000 of them

belong to the Tachinidae. All tachinid flies are parasitoids in their larval stage and their hosts all belong to the Arthropoda, almost exclusively the Insecta. Therefore, this family is very important in terms of biological control studies. It is necessary to reveal the presence in their nature, to explain of the biology and host parasitoid relationship for be able to benefit from these parasitoids in biological control programs. In this study it was aimed to reveal the presence of tachinids in some uplands of Tokat which has not been studied yet.

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