

**Orijinal araştırma (Original article)**

## Determination of Tenuipalpidae (Acari: Prostigmata) species in parks and ornamental plants of Ankara, Turkey<sup>1</sup>

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### Summary

Tenuipalpidae (Acari: Prostigmata) species on ornamental plants and shrubs of the parks in Ankara, Turkey were determined during 2005 and 2006. The surveys were done in the growing seasons (april to october) at weekly. In total 1130 samples were collected, 124 plant species were examined of which 23 were infected by these mite groups in Ankara.

As a result, 11 species were identified in the family of Tenuipalpidae, of which five were the first records in Turkey: *Aegyptobia* nr. *cupressus* Baker and Tuttle, 1972; *Aegyptobia aletes* Pritchard & Baker, 1958; *Aegyptobia salisicola* Al-Gboory, 1987; *Cenopalpus lanceolatisetae* (Attiah, 1956) and *Pentamerismus erythreus* (Ewing, 1917). *Cenopalpus pulcher* (Canestrini & Fanzago, 1876) is the most common phytophagous species followed by *Pentamerismus oregonensis* McGregor, 1949 and *Pentamerismus taxi* (Haller, 1877), Cupressaceae is the most important and preferred host plants for the Tenuipalpidae.

However, *Typhlodromus (Anthoseius) bagdasarjani* (Wainstein & Arutunjan, 1967); *Typhlodromus (Anthoseius) tranquillus* (Livshits & Kuznetsov, 1972); *Cheyletogenes ornatus* Canestrini & Fanzago, 1876; *Zetzellia mali* (Ewing, 1917) and *Tydeus* sp. were determined as predatory mites associated with tenuipalpid mites in Ankara.

**Key Words:** Mites, ornamental plants, Tenuipalpidae, Turkey

**Anahtar sözcükler:** Akarlar, park ve süs bitkileri, Tenuipalpidae, Türkiye

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## Introduction

Parks and green areas are important places for people in their social life. The parks and recreation areas have been great importance in Ankara and comprising about 2,766,647 m<sup>2</sup> (Arslan & Çelem, 2001). Many phytophagous insects and mites attacks to ornamental plants in these areas. Due to spraying with pesticides and other activities can easily change their natural balance, it is important to know that these pests as a species level.

Ornamental plants in parks include many groups of plant parasitic mites and beneficial organisms. There have been many reports on the ornamental plant pest mites throughout the world (Jeppson et al., 1975; Ripka, 1997, 1998). In Hungary, 28 phytoseiid, 2 stigmatid, 4 cheyletid, 19 tetranychid and 3 tenuipalpid species were reported from woody ornamentals (Ripka, 1997, 1998). The Tenuipalpidae (Acari: Prostigmata) species are known as flat mites or false spider mites and worldwide in distribution. Tenuipalpidae has comprised 891 valid species belonging to 34 genera. Tenuipalpid species are phytophagous and damage plants by sucking on the epidermal cells of the stems and fruits. Most of the species can cause economic damage to cultivated and ornamental plants (Ripka, 1997, 1998; Mesa et al., 2009).

In previous studies 12 harmful mites species were identify on park plants in Ankara. There are very little known on mites especially on Tenuipalpidae in Turkey (Düzgüneş, 1965; Uysal et al., 2001). *Cenopalpus pulcher* (Canestrini & Fanzago, 1876) was known since 1952 on fruit trees in Turkey (Düzgüneş, 1965). After that only a few reports are available on tenuipalpid mites from ornamental and orchards plants in Turkey (Uysal et al., 2001; Akyazı, 2003). During these studies, on Tetranychidae species some tenuipalpids namely *Aegyptobia tragardhi* Sayed, 1950, *Aegyptobia mcmormicki* (Baker & Pritchard, 1954) and *Pentamerismus taxi* (Haller, 1877) were reported from the parks of Ankara (Uysal et al., 2001).

There is no detailed survey available on the tenuipalpid mites of Turkey. The goal of this study is to present result of observation of the tenuipalpid mite species and a quantitative assessment of them on parks and ornamental plants in Ankara during 2005-2006.

Determination of beneficial mites which are very important for the natural control of phytophagous mites is the other aim of this study.

## Materials and Methods

Tenuipalpid and their predatory mites were surveyed in parks and urban areas of Ankara in weekly intervals between 2005-2006 years. Samplings were done from different localities (Akyurt, Altındağ, Çamlıdere, Çankaya, Çubuk, Etimesgut, Gölbaşı, Kalecik, Kazan, Keçiören, Kızılcahamam, Mamak, Sincan,

and Yenimahalle) in Ankara (Figure.1). In totally 1130 samples were taken from branch and leaves of plants. Mites were extracted by using Berlese funnels and they were preserved in 70% alcohol. After they were cleared in lactophenol solution, mounted in Hoyer's medium for identification. The slides were kept (2-4 weeks) at 35°C in incubator (Düzgüneş, 1980). All the mite specimens were deposited at University of Ankara, Agricultural Faculty, Plant Protection Department, Ankara, Turkey.

For identification, original descriptions and the following keys were used: Pritchard & Baker (1951,1958), Zaher & Yousef (1969), Baker & Tuttle (1972,1987), Chaudhri et al. (1974), Jeppson et al. (1975), Al-Gboory (1987), Gutierrez et al. (1989), Mesa et al. (2009). The identification of the plants that associated with tenuipalpid mites was done by Dr. Ümit Bingöl (Ankara University, Faculty of Science, Biology Department 06100 Tandogan / Ankara).

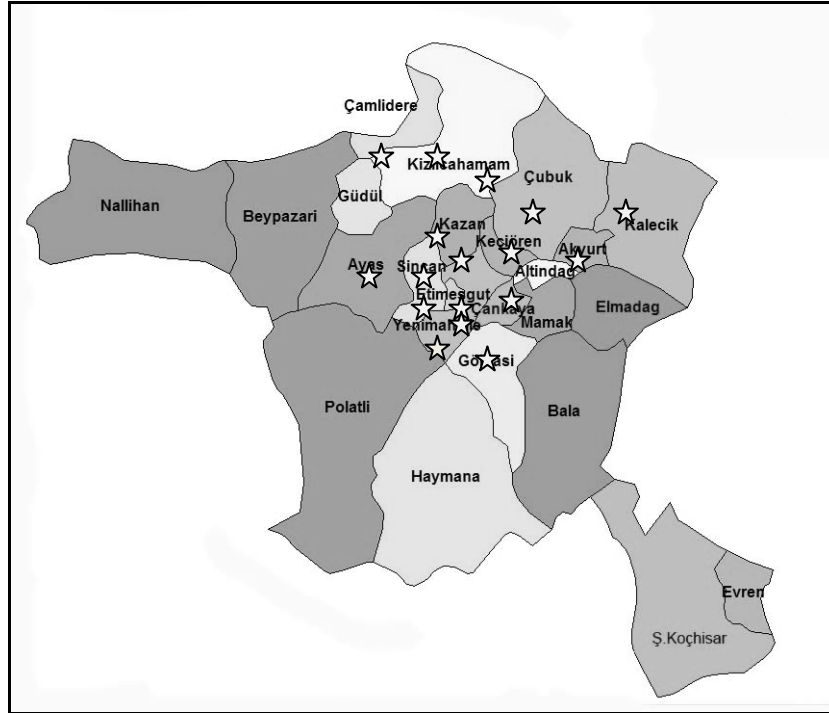


Figure 1. Surveyed areas in Ankara during 2005-2006 ( ☆ Sampling localities).

## Results and Discussion

Eleven species of Tenuipalpidae were identified of which five species were first record for Turkey. *Aegyptobia nr. cupressus* Baker & Tuttle, 1972; *Aegyptobia aletes* Pritchard & Baker, 1958; *Aegyptobia salisicola* Al-Gboory, 1987; *Cenopalpus lanceolatisetae* (Attiah,1956) and *Pentamerismus erythreus* (Ewing,1917) (Table1) (Figure 2).

Table 1. Identified Tenuipalpidae species in parks and urban areas of Ankara in 2005-2006

Genus	Species
<i>Pentamerismus</i> McGregor, 1949	<i>Pentamerismus oregonensis</i> McGregor, 1949
	<i>Pentamerismus taxi</i> (Haller, 1877)
	* <i>Pentamerismus erythreus</i> (Ewing, 1917)
<i>Cenopalpus</i> Pritchard and Baker, 1958	<i>Cenopalpus pulcher</i> (Canestrini & Fanzago, 1876)
	* <i>Cenopalpus lanceolatisetae</i> (Attiah, 1956)
	<i>Cenopalpus lineola</i> (Canestrini & Fanzago, 1876)
<i>Aegyptobia</i> Sayed, 1950	* <i>Aegyptobia</i> nr. <i>cupressus</i> Baker & Tuttle, 1972
	* <i>Aegyptobia salisicola</i> Al-Gboory, 1987
	* <i>Aegyptobia aletes</i> Pritchard & Baker, 1958
	<i>Aegyptobia mccormicki</i> (Baker & Pritchard, 1954)
<i>Brevipalpus</i> Donnadieu, 1875	<i>Brevipalpus phoenicis</i> (Geijskes, 1939)

\* First record for Turkey

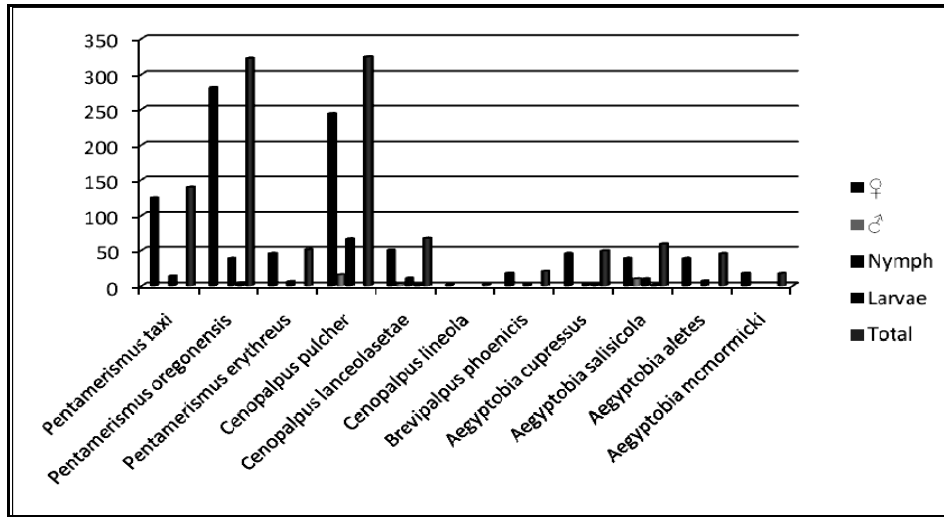


Figure 2. The number of identified Tenuipalpidae species and their different stages in parks and urban areas of Ankara.

## Tenuipalpidae Berlese

### *Cenopalpus* Pritchard & Baker, 1958

#### *Cenopalpus pulcher* (Canestrini & Fanzago, 1876)

Material examined: Altındağ 19.04.06 (29♀♀), 16.06.06 (11 nymph), 23.06.06 (2♀♀, 5 nymph), 12.07.06 (15♀♀); Çankaya 12.04.06 (9♀♀), 23.08.06 (6♀♀, 10 nymph), 08.09.06 (12♀♀), 13.09.06 (10♀♀); 23.06.05 (4 nymph), 11.07.05 (20♀♀, 2 nymph), 11.08.05 (16♀♀, 2 nymph), Gölbaşı 25.07.05 (17♀♀, 3♂♂, 4 nymph); Kalecik 22.08.05 (64♀♀, 11♂♂, 20 nymph); Kazan 01.08.05 (3♀♀, 1 nymph); Mamak 27.09.06 (25♀♀, 2♂♂, 2 nymph); Yenimahalle 16.08.06 (2♀♀).

Comment: This species was firstly collected on fruit trees in Central Anatolia Region of Turkey (Düzgüneş, 1965). Also It was found on *Malus*

*communis* L. (Rosaceae) in Elazığ, Malatya and Erzincan (Taşçıoğlu et al., 1969), Adana, İçel and Kahramanmaraş (Yiğit & Uygun, 1982), Tokat (Yanar & Ecevit, 2005). Pritchard & Baker (1958) and Jeppson et al. (1975) reported that it was common pest on fruit trees. In this study, this species was mainly found on pome and stone fruit trees.

Distribution: Afghanistan, Algeria, Asian countries, Austria, Bulgaria,

Crimea, Cyprus, Denmark, Egypt, England, Georgia, Germany, Greece, The Netherlands, Iran, Iraq, Israel, Italia, Lebanese, Libya, Portugal, Russia, Sicilia, Soviet Union Countries, Syria, Turkey, Ukraine (Pritchard & Baker, 1958; Düzgüneş, 1965; Jeppson et al., 1975; Anonymous, 2007).

#### ***Cenopalpus lanceolatisetae* (Attiah 1956)**

Material examined: Çankaya 11.05.2006 (4♀♀), 24.05.2006 (1♀), 22.08.2006 (1♂), 11.10.2006 (20♀♀); Kalecik 03.08.2006 (6♀♀, 1♂, 4 nymph, 1 larva); Kazan 01.08.2005 (24♀♀, 1♂, 6 nymph, 2 larvae); Mamak 27.09.2006 (3♀♀).

Comment: It was collected from fruit trees, oak, plane-trees and poplar. This is the first record for Turkey.

Distribution: Cyprus, Egypt, England, Greece, Iraq, North Africa, Portugal, (Pritchard & Baker, 1958; Jeppson et al., 1975; Al-Gboory, 1987, Anonymous, 2007).

#### ***Cenopalpus lineola* (Canestrini & Fanzago, 1876)**

Material examined: Çankaya 13.09.2006 (2♀♀).

Comment: It was previously collected on coniferous plants from Bursa and İzmir in 1961 and 1969, respectively (from collection of University of Ankara, Plant Protection Department). This is a pest of pine trees and distributed European and near east countries (Jeppson et al., 1975). It was collected on *Cedrus libani* A.Rich. (Pinaceae) and rarely found species during this study.

Distribution: Georgia, Greece, Holland, Italia, Poland, Portugal, Turkey, Ukraine (Jeppson et al., 1975; Anonymous, 2007).

#### ***Pentamerismus* McGregor, 1949**

##### ***Pentamerismus oregonensis* McGregor, 1949**

Material examined: Altındağ 19.04.2006 (6♀♀), 04.05.2006 (6♀♀), 19.09.2006 (13♀♀, 1 nymph), 14.07.2006 (3♀♀); Çankaya 24.05.2006 (12♀♀), 07.07.2006 (15♀♀), 08.08.2006 (4♀♀, 3 nymph), 22.08.2006 (8♀♀, 4 nymph, 1 larva), 08.09.2006 (2♀♀), 13.09.2006 (42♀♀, 7nymph), 11.10.2006 (2♀♀, 1 nymph), 11.07.2005 (8♀♀, 1 nymph, 1 larva), 24.07.2005 (13♀♀), 11.08.2005 (3♀♀, 1larva); Çubuk 22.08.2005 (25♀♀, 2 nymph, 1 larva); Gölbaşı 31.07.2006 (6♀♀, 2 nymph), 25.07.2005 (14♀♀, 2 nymph ); Kazan 15.09.2005 (9 ♀♀);

Keçiören 18.10.2006 (36♀♀); Mamak 27.09.2006 (15♀♀); Yenimahalle 23.06.2006 (18♀♀, 3 nymph), 16.08.2006 (8♀♀, 9 nymph), 27.08.2006 (7♀♀, 3 nymph), 01.09.2005 (7♀♀, 2 nymph).

Comment: This species was previously collected on *Pinus* sp. *Thuja orientalis* L. (Pritchard & Baker, 1958; Bayram & Çobanoğlu, 2007). It was collected in high population and common species during this study.

Distribution: Greece, Japan, Turkey, United Kingdom, U.S.A. (Oregon, California and Washington) (Pritchard & Baker, 1958; Anonymous, 2007; Bayram & Çobanoğlu, 2007).

#### ***Pentamerismus taxi* (Haller, 1877)**

Material examined: Altındağ 02.05.2006 (18♀♀); Cankaya 07.07.2006 (14♀♀, 4 nymph), 22.08.2006 (14♀♀, 2 nymph), 08.09.2006 (13♀♀), 13.09.2006 (26♀♀), 11.10.2006 (16♀♀); Çubuk 22.08.2005 (8♀♀, 1 nymph); Yenimahalle 16.08.2006 (16♀♀, 7 nymph).

Comment: *P. taxi* was previously collected from *Juniperus arizonica* (R. P. Adams), *Juniperus sabina* L. (Cupressaceae), *Taxus baccata* L. (Taxaceae) (Uysal et al., 2001) and on *Anemone coronaria* L. (Ranunculaceae) (Bayram & Çobanoğlu, 2007). This species was collected on *T. baccata* during this study.

Distribution: Greece, Poland, Spain, Switzerland, Turkey, Ukraine, United Kingdom, U.S.A. (California, Pennsylvania and Washington DC), (Pritchard & Baker, 1951; Hatzinkolis, 1970; Uysal et al., 2001; Anonymous, 2007).

#### ***Pentamerismus erythreus* (Ewing, 1917)**

Material examined: Altındağ 19.09.2006 (33♀♀, 2 nymph); Yenimahalle 23.06.2006 (12♀♀, 1 nymph).

Comment: This species is a new record for Turkey. This mite was collected on *Chamaecyparis pisifera* (sieb.et.Zucc.) Endl. "Boulevard" (Cupressaceae), *Juniperus virginiana* L. and *Juniperus communis* L. (Cupressaceae). This species was reported from Canada, Russia and U.S.A. (Pritchard & Baker, 1951; Baker & Tuttle, 1987).

Distribution: Canada, Russia, U.S.A. (Pritchard & Baker 1951; Baker & Tuttle, 1987).

#### ***Aegyptobia* Sayed 1950**

##### ***Aegyptobia mccormicki* (Baker & Pritchard, 1954)**

Material examined: Çankaya 15.09.2005 (2♀♀); Keçiören 18.10.2006 (16♀♀).

Comment: It was previously collected from *Thuja* sp. and *Juniperus* sp. (Pritchard & Baker, 1958; Uysal et al., 2001). It was very common on pine trees during this study.

Distribution: Turkey, U.S.A. (Washington) (Pritchard & Baker, 1958; Uysal et al., 2001).

***Aegyptobia* nr. *cupressus* Baker & Tuttle, 1972**

Material examined: Çankaya 08.09.2006 (14♀♀), 23.07.2005 (7♀♀, 1 nymph); Etimesgut 31.08.2006 (10♀♀); Kalecik 03.08.2006 (11♀♀, 1 nymph, 2 larvae); Keçiören 16.06.2006 (2♀♀).

Comment It was previously collected on Cupressaceae from U.S.A (Baker & Tuttle, 1972). This is a new record for Turkey and was collected on *Juniperus horizontalis* L.

Distribution: U.S.A. (California) (Baker & Tuttle, 1972)

***Aegyptobia* *aletes* Pritchard & Baker, 1958**

Material examined: Altındağ 04.05.2006 (18♀♀), 23.06.2006 (2♀♀), 19.09.2006 (7♀♀, 6 nymph); Çankaya 07.07.2006 (6♀♀, 1 nymph), 08.09.2006 (6♀♀).

Comment: It was previously collected on Cupressaceae from U.S.A (Pritchard & Baker, 1958). This is a new record for Turkey. This mite was collected on *Juniperus horizontalis*, *Juniperus virginiana* and *Thuja orientalis* L. (Cupressaceae) in Ankara.

Distribution: U.S.A. (California, Utah) (Pritchard & Baker, 1958).

***Aegyptobia* *salisicola* Al-Gboory, 1987**

Material examined: Çankaya 08.09.2006 (11♀♀, 4 nymph), 23.07.2005 (4♀♀, 2 nymph); Etimesgut 31.08.2006 (1 nymph); Mamak 27.09.2006 (8♀♀); Yenimahalle 01.09.2005 (6♀♀, 1 nymph).

Comment: It was previously collected on *Salix* sp. from Iraq (Al-Gboory, 1987). This species is a first record from Turkey. This mite was collected on *Populus alba* L. and *Populus tremula* L. (Salicaceae)

Distribution: Iraq (Al-Gboory, 1987).

***Brevipalpus* *Donnadieu*, 1875**

***Brevipalpus* *phoenicis* (Geijskes, 1939)**

Material examined: Altındağ 30.08.2006 (10♀♀, 2 nymph), 19.08.2005 (7♀♀).

Comment: This species was collected on fruit trees and ornamental plants, and it was distributed many countries (Düzgüneş, 1965; Baker et al., 1975; Jeppson et al., 1975; Baker & Tuttle, 1987).

Distribution: Argentina, Australia, Brazil, Ceylon, Congo, Cuba, Egypt, Etiopya, Germany, Greece, Hawaii Island, India, Italy, Kenya, Malaya, Mexico, Netherlands, Oaxaca, Philippines, Portugal, Sicily, Sinaloa, Spain, Taiwan, Tanjanika, Trinidad, Turkey, U.S.A, Vera Cruz, Venezuela, (Düzgüneş, 1965; Baker et al., 1975; Jeppson et al., 1975; Baker & Tuttle, 1987; Anonymous, 2007).

### **Beneficial mite species**

#### **Cheyletidae Leach, 1815**

##### ***Cheyletogenes ornatus* (Canestrini & Fanzago, 1876)**

Material examined: Çankaya 09.07.06 (4♀♀), 08.09.06 (1♀); Altınpark 08.09.06 (1 ♀).

Comment: This species was previously reported from citrus and pome trees in İzmir and Bursa, respectively (Madanlar, 1991; Kumral, 2005). *C. ornatus* also reported from dried apricot storages in İzmir (Çobanoğlu, 2008). It was found with *P.taxi* on *Taxus baccata* in Ankara. This species was associated with the *P.oregonensis*, *A.salisicola*, *P.taxi* and *A.aletes* (Table 3).

Distribution: Cosmopolitan and distributed world wide (Smiley & Knutson, 1982; Gerson et al., 2003).

#### **Phytoseiidae Berlese**

##### ***Typhlodromus (Anthoseius) bagdasarjani* Wainstein & Arutunjan, 1967**

Material examined: Çankaya 08.08.06 (1 ♀).

Comment: *T. (Anthoseius) bagdasarjani* was reported from woody ornamental plants in Ankara (Çobanoğlu et al., 2003). It was very common species all over Turkey. It was associated with *P. oregonensis* population on *Thuja orientalis* L. (Cupressaceae).

Distribution: Africa, Asia and Europe (Smiley & Knutson, 1982); Armenia, Azerbaijan, Turkmenistan (Moraes et al., 2004).

##### ***Typhlodromus (Anthoseius) tranquillus* (Livshits & Kuznetzov, 1972)**

Material examined: Yenimahalle 16.08.06 (1 ♀).

Comment: This predatory mite species is common on fruit trees and vineyard and distributed all over the country (Çobanoğlu, 1997; Göven et al., 2002). It was associated with *P.taxi* population on *Taxus baccata* L. in this study.



Distribution: Africa, Asia and Europe (Smiley & Knutson, 1982); Azerbaijan, Caucasus region (Moraes et al., 2004).

### **Stigmaeidae Oudemans**

#### ***Zetzellia mali*** (Ewing, 1917)

Material examined: Altındağ 02.05.06 (1 ♀). 23.06.06 (2 ♀♀), 12.07.06 (2 ♀♀), 12.09.06 (2 ♀♀); Çankaya 09.07.06 (2 ♀♀); Gölbaşı 25.07.05 (1 ♂); Kalecik 22.08.05 (1 ♀).

Comment: *Agistemus* and *Zetzellia* are common genera of this group in Turkey and this species were associated with *C.pulcher*. It was found with eriophyid, tetranychid and tenuipalpid mites (Oomen, 1982; Woolhouse & Harmsen., 1984).

Distribution: Cosmopolitan and distributed world wide (Smiley & Knutson, 1982; Gerson et al., 2003).

### **Tydeidae Kramer, 1877**

#### ***Tydeus* sp.**

Material examined: Çankaya 23.06.05 (2 ♀♀); Gölbaşı 25.07.05 (2 ♀♀).

Comment: The mites feed on pollen, fungi and plant tissue, various mites and insect eggs (Gerson & Smiley, 1990). It was associated with *P.oregonensis* on *Acer* sp. in this study.

Distribution: Asia and Europe and all over the world (Jeppson et al., 1975; Smiley & Knutson, 1982).

### **Conclusion**

During this study, 124 plant species were collected and out of these 24 plant species were infected by tenuipalpid species which were collected 1204 specimen. Determinations of species density were *Pentamerismus* sp. 513 (47%), *Cenopalpus* sp. 394 (36%), *Aegyptobia* sp. 171 (15%) and *Brevipalpus* sp. 21 (2%) (Figure 3). Most common species was found *Pentamerismus* sp. and following *Cenopalpus* species. *Juniperus* sp. and *Thuja* sp. plants species were the most preferred plant species by this group of mites (Table 2). *A.nr.cupressus*, *A.aletes*, *A.salisicola*, *C.lanceolatisetae* and *P.erythreus* species are first record for Turkish fauna.

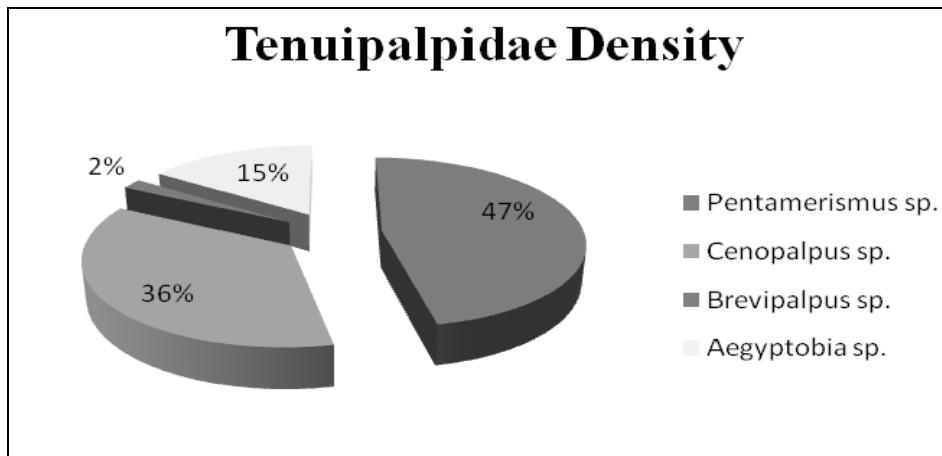


Figure 3. Number of individual as Tenuipalpidae genus from parks and urban areas in Ankara.

In 2005, the first tenuipalpid population was observed in June, mite population was relatively increased during July and after that population level was reached at the highest level in August. Mite population was began to decrease in September and after that there was not seen any mite. Considering the relative humidity, average value was 62,8% during April-May while humidity was decreased average 54,85% following months. Average temperature value was 12,6°C during April-May while this value was 24°C in July and August. The mite population density was lower when the temperature was lower and relative humidity was higher during early season (Figure 4). In July and August which temperature was higher and relative humidity was lower and the population density was at the highest level (118,217) respectively.

In 2006, the first tenuipalpid population was observed in April, mite population was relatively increased during August and after that the population level was reached at the highest level. Mite population was began to decrease in October and after that there was not seen any mite population. Considering the average relative humidity, the value was 59,2% during April-May while humidity was decreased average 48,95% following months. Average temperature value was 13,56°C during April-May while this value was 24,30°C in July and August. The mite population density was lower when the temperature was lower during early season while the population density was at the highest level (220,298) in July and August which temperature was higher and relative humidity was lower respectively (Figure 4).

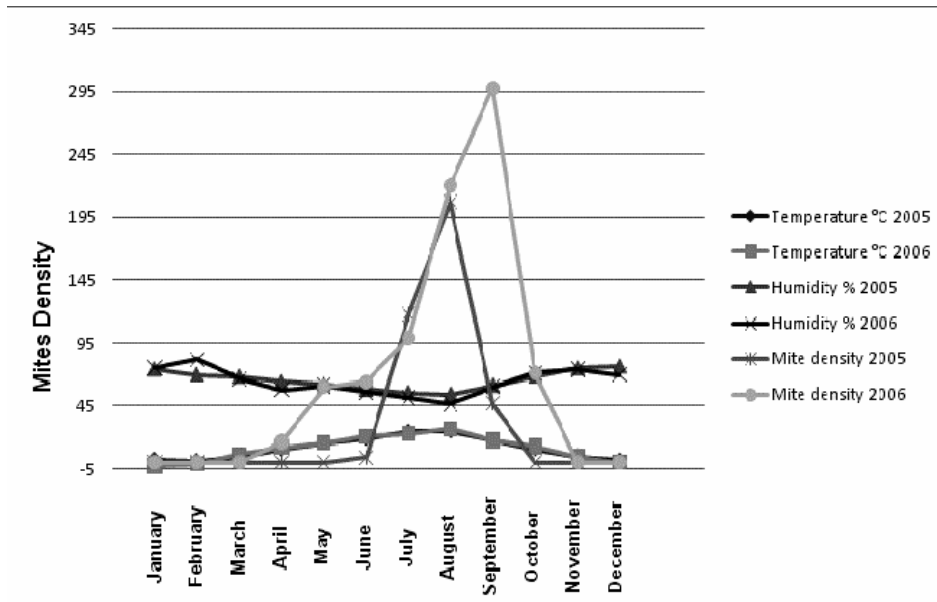


Figure 4. Temperature and collected individual numbers (mite density) from surveyed areas of Ankara during 2005-2006.

These figure are belongs to total observed number of mites from samples in laboratory which are not belongs to population density studies in field.

From the data, Tenuipalpidae species are rich biodiversity in the parks and urban areas of Ankara. It has been found five species as first records of tenuipalpid species. The determination of Tenuipalpidae species is important all over the country and must be the next step.

Five beneficial mite species belong in 4 families are identified and observed with associated certain tenuipalpid and plant species (Table 2, 3). The relation of the plant pest mites and beneficial mites are also very important.

Table 2. Phthoragous mites and inhabiting plants in parks and urban area in Ankara

Plants species	<i>Pentamerismus taxi</i> (Haller, 1877)	<i>Pentamerismus oregonensis</i> McGregor, 1949	<i>Pentamerismus erythreus</i> (Ewing, 1917)	<i>Cenopalpus pulcher</i> (Canestrini & Fanzago, 1876)	<i>Cenopalpus lanceolatisetae</i> (Attiah, 1956)	<i>Cenopalpus lineola</i> (Canestrini & Fanzago, 1876)	<i>Brevipalpus phoenicis</i>	<i>Aegyptobia cupressus</i> Baker & Tuttle, 1972	<i>Aegyptobia salisicola</i> Al-Gboory, 1987	<i>Aegyptobia aletes</i> Pritchard & Baker, 1958	<i>Aegyptobia mcnormicki</i> (Baker & Pritchard, 1954)	<i>Aegyptobia</i> sp.
<i>Malus communis</i> L.				+								
<i>Cydonia vulgaris</i> Pers.				+	+							
<i>Prunus domestica</i> L.				+								
<i>Populus alba</i> L.								+				+
<i>Populus nigra</i> L.					+							
<i>Malus floribunda</i> Siebold.				+	+							
<i>Quercus robur</i> L.					+							
<i>Platanus orientalis</i> L.					+							
<i>Thuja orientalis</i> L.		+								+		+
<i>Pyrus communis</i> L.				+								
<i>Cedrus libani</i> A. Rich.		+				+						
<i>Juniperus horizontalis</i> Moench		+						+		+	+	+
<i>Populus tremula</i> L.								+				
<i>Pelargonium peltatum</i> (L.) L'Her.							+					
<i>Taxus baccata</i> L.	+	+										
<i>Juniperus oxycedrus</i> L.												
<i>Juniperus excelsa</i> M. Bieb.		+										
<i>Juniperus virginiana</i> L. var. 'Skyrocket'			+							+		
<i>Chamaecyparis pisifera</i> 'Boulevard'		+	+							+		
<i>Thuja orientalis</i> L. <i>Aurea compacta</i> Nana												+
<i>Crateagus crus- galli</i> L.				+								
<i>Acer</i> sp.		+										
<i>Juniperus communis</i> L.			+									+
<i>Juniperus horizontalis</i> Moench											+	+

Table 3. Identified beneficial mite and associated harmful mite species and their host plants in Ankara, 2005-2006

Dates	Host Plants	Harmful Mite	Beneficial Mite
25.07.2005	<i>Acer</i> sp.	<i>Pentamerismus oregonensis</i> McGregor, 1949	<i>Tydeius</i> sp.
07.07.2006	<i>Thuja orientalis</i> L.	<i>P.oregonensis</i> McGregor, 1949	<i>Cheyletetogenes ornatus</i> (Canestrini & Fanzago, 1876)
08.08.2006	<i>Thuja orientalis</i> L.	<i>P.oregonensis</i> McGregor, 1949	<i>Typhlodromus (Anthoseius) bagdasarjani</i> Wainstein & Arutunjan, 1967
16.08.2006	<i>Taxus baccata</i> L.	<i>Pentamerismus taxi</i> (Haller, 1877)	<i>T.(Athoseius) tranquillus</i> (Livshits & Kuznetsov, 1972)
08.09.2006	<i>Taxus baccata</i> L.	<i>Pentamerismus taxi</i> (Haller, 1877)	<i>C. ornatus</i> (Canestrini & Fanzago, 1876)
29.07.2005	<i>Cydonia vulgaris</i> Pers.	<i>Cenopalpus pulcher</i> (Canestrini & Fanzago, 1876)	<i>Zetzellia mali</i> (Ewing, 1917)
02.05.2006	<i>Malus communis</i> L.	<i>C.pulcher</i> (Canestrini & Fanzago, 1876)	<i>Z. mali</i> (Ewing, 1917)
23.06.2006	<i>Malus communis</i> L.	<i>C.pulcher</i> (Canestrini & Fanzago, 1876)	<i>Z. mali</i> (Ewing, 1917)
12.07.2006	<i>Malus communis</i> L.	<i>C.pulcher</i> (Canestrini & Fanzago, 1876)	<i>Z. mali</i> (Ewing, 1917)
22.08.2006	<i>Malus floribunda</i> Siebold.	<i>C.pulcher</i> (Canestrini & Fanzago, 1876)	<i>Z.mali</i> (Ewing, 1917)
08.09.2006	<i>Populus alba</i> L.	<i>A.salisicola</i> Al-Gboory, 1987	<i>C. ornatus</i> (Canestrini & Fanzago, 1876)
08.09.2006	<i>Juniperus horizontalis</i> Moench	<i>Aegyptobia</i> sp.	<i>C. ornatus</i> (Canestrini & Fanzago, 1876)
19.09.2006	<i>Chamaecyparis pisifera</i> 'Boulevard'	<i>A.aletes</i> Pritchard & Baker, 1958	<i>C. ornatus</i> (Canestrini & Fanzago, 1876)

## Özet

### Ankara ilinde park ve süs bitkileri üzerindeki Tenuipalpidae (Acari: Prostigmata) türlerinin saptanması

2005-2006 yılları arasında Ankara parklarından toplanan çalimsı ve süs bitkileri üzerinden zararlı Tenuipalpidae (Acari: Prostigmata) türleri belirlenmiştir. Survey gelişme sezonu (nisan - ekim) boyunca haftalık olarak yapılmıştır. Toplam 1130 örnek alınmış bunlardan 124 bitki türünden 23 bitkinin bu akar grubu ile bulaşık olduğu tespit edilmiştir.

Tenuipalpidae familyasına ait 11 tür kaydedilmiştir. Bu türlerden *Aegyptobia nr. cupressus* Baker & Tuttle, 1972; *Aegyptobia aletes* Pritchard & Baker, 1958; *Aegyptobia salisicola* Al-Gboory, 1987; *Cenopalpus lanceolatisetae* (Attiah, 1956) ve *Pentamerismus erythreus* (Ewing, 1917) ülkemiz için ilk kayıttır. *Cenopalpus pulcher* (Canestrini & Fanzago, 1876) en sık rastlanan tür olup ardından *Pentamerismus oregonensis* McGregor, 1949 ve *Pentamerismus taxi* (Haller, 1877) gelmektedir. Cupressaceae familyasına ait bitkiler Tenuipalpidler için önemli konukçudur.

Bununla birlikte *Typhlodromus (Anthoseius) bagdasarjani* (Wainstein & Arutunjan, 1967); *Typhlodromus (Anthoseius) tranquillus* (Livshits & Kuznetsov, 1972);

*Cheyletogenes ornatus* Canestrini & Fanzago, 1876; *Zetzellia mali* (Ewing, 1917) ve *Tydeus* sp. gibi faydalı akarlarda tenuipalpidler ile birlikte tespit edilmiştir.

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