



New arthropod hosts of ectoparasitic mites (Acari: Prostigmata) from Turkey

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Abstract

Some arachnids and insects that parasitized by ectoparasitic mites were collected from were collected from East-Mediterranean Region of Turkey from September 2007 to November 2008. This study presents some data about the ectoparasitic mites and their new arthropod host interactions in Turkey. The digital photographs and locality knowledges of parasitising arthropods were also given.

Key words: Ectoparasitic mites, Spider, Opiliones, Insect, Turkey

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Ektoparazit akarların (Acari: Prostigmata) Türkiye’den yeni arthropod konakçıları

Özet

Ektoparazit akarlar tarafından parazitlenmiş olan bazı araknid ve böcekler 2007-2008 yılları arasında Doğu Akdeniz Bölgesi’nden toplanmıştır. Bu çalışma, Türkiye’de ektoparazit akarlar ve yeni arthropod konakçıları ile etkileşimleri hakkında bazı veriler sunmaktadır. Parazitlenmiş arthropodların dijital fotoğrafları ve lokalite bilgileri de ayrıca çalışmada verilmiştir.

Anahtar kelimeler: Ektoparazit akarlar, Örümcek, Otbiçen, Böcek, Türkiye

1. Introduction

Ectoparasitic mites have an important impact on several small arthropod groups. Larval stages of these mites of families Erythraeidae and Trombidiidae (Acari: Prostigmata) have a restrictive impact on populations of several kinds of small arthropods. They are generally parasitic on various insects and arachnids. In addition to, several erythraeid and trombidiid species were reported as common ectoparasites of a variety of arthropods, including spiders and insects (Welbourn and Young, 1988; Abro, 1988; Baker and Selden, 1997), harvestmen (Southcott, 1992; Cokendolpher, 1993; Cokendolpher and Mitov, 2007). Especially, larvae of *Leptus* have been reported parasitising members of five of the 11 extant orders of Arachnida (e.g. Acari, Araneae, Opiliones, Pseudoscorpiones, Scorpiones), the majority known from Opiliones (Baker and Selden, 1997).

These mites preferentially attach themselves to the femur and tibia of the leg but also attach to the ocularium and dorsal surface of the scutum (Baker, 1982; Mcaloon and Durden, 2000). Larval mites may remain with the same host for weeks or months before dropping off to become free-living as adults (Southcott, 1989, 1992). After this process, they are assumed to feed upon hemolymph (Abro, 1988). Researchers have insufficient knowledges about the impact of mites upon their arthropod hosts.

Especially, erythraeid mites belonging to genus *Leptus* from these mites are free living as nymphs and adults, but are parasitic on insects and arachnids as larvae (Abro, 1988). These mites are generally found on opilionid in the studies on this subject that examined mites and harvestmen interactions. Therefore, there are few studies belong to non-opilionid arthropods.

There are some studies about ectoparasite on arthropods in Turkey. Trombidiidae and Erythraeidae are most important families and their larvae were reported as ectoparasites of aphids, coleopterans, bumble bees and thrips in the

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country (Bayram vd., 2008; Bayram ve Çobanoğlu, 2005; Girişkin vd., 2006; Goldarezana et al., 2000). The current study presents additional data about new hosts and localities of ectoparasitic mites in Turkey.

2. Materials and methods

This study based on seven adult harvestmens, five adult spiders, one orthopteran and one coleopteran that parasitized by larvae of ectoparasitic mites which were collected from East-Mediterranean Region of Turkey from September 2007 to November 2008. During to our trips in , we collected. Non-opilionid arthropods were captured in the same locality (Locality 5) in September 2008. The infested opilionids were collected in different parts of study area (all localities except locality 5; see map; Figure 1). Mites on captured arthropods from the field were numbered (Table 1). All samples were preserved in 70% ethanol and taken to the laboratory for further analysis. Digital photographs were taken under stereomicroscope (Figures. 2, 3). and all localities are given in below.

Locality 1: **Kahramanmaraş** , Pazarcık , Ulubahçe (37°29.875'N, 037°23.251'E), 917 m, 21.V.2007.

Locality 2: **Kilis** , Musabeyli , Karbeyaz (36°50.372'N, 036°58.021'E), 500 m, 03.V.2007; Sabuncu village (36°50.055'N, 036°53.069'E), 521 m, 02.V.2007.

Locality 3: **Hatay**, Samandağ , Şenköy (36°05.030'N, 036°09.520'E), 499 m, 27.VI. 2007.

Locality 4: **Osmaniye** , Yarpuz , Yarpuz (37°03.480'N, 036°25.210'E), 903 m, 23.V.2007.

Locality 5: **Adana** , Tufanbeyli , İğdebel (Kan pass) (38°16.177'N, 036°21.373'E), 1568 m, 19.X.2008.

Locality 6: **Mersin** , Silifke , surrounding of Silifke castle (36° 22.599'N, 033° 55.027'E), 133 m, 21.IV.2008.

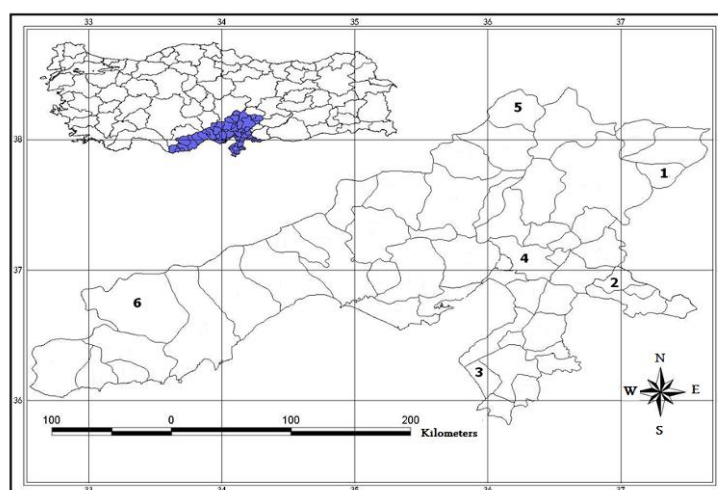


Figure 1. The map of the study area and collecting sites in Turkey: 1. *Kahramanmaraş*, Pazarcık; 2. *Kilis*, Musabeyli; 3. *Hatay*, Samandağ; 4. *Osmaniye*; 5. *Adana*, Tufanbeyli; 6. *Mersin*, Silifke

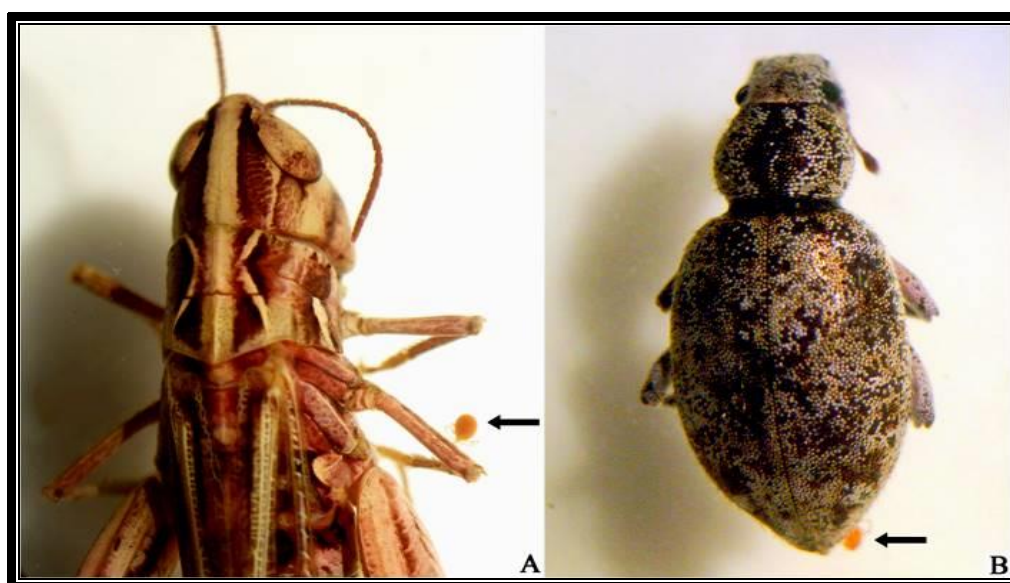


Figure 2. Insects that parasitized by mites. A- *Notostaurus anatolicus* (Krauss, 1896); B- *Brachyderes* sp.

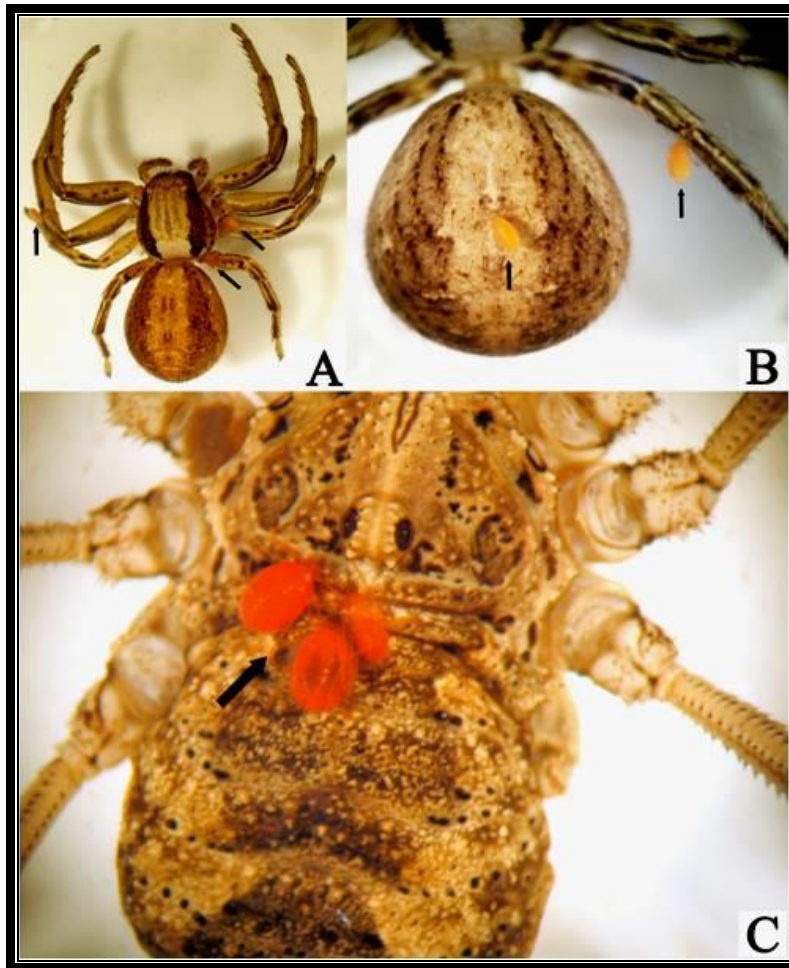


Figure 3. Arachnids that parasitized by mites. A and B- *Xysticus striatipes* L. Koch, 1870; C- *Opilio parietinus* (De Geer, 1778)

Table 1. The number of ectoparasitic mites on different body parts of arthropods

HOST/ HOST SITE	Carapace	Abdomen	Legs	Number of the total parasitic mites for each sample
ARANEAE				
Sample 1	2		1	3
Sample 2		1	1	2
Sample 3	1		3	4
Sample 4			4	4
Sample 5	1		1	2
OPILIONES				
Sample 1	1		1	2
Sample 2			3	3
Sample 3	3	1	2	6
Sample 4	1		1	2
Sample 5			4	4
Sample 6	2	1		3
Sample 7	1		1	2
ORTHOPTERA				
Sample 1			1	1
COLEOPTERA				
Sample 1		1		1
Number of total parasitic mites	12	4	23	39

3. Results

This study is about ectoparasitic mites and their arthropod hosts in Turkey. Arthropods were parasitized by the larvae of Trombidiidae and Erythraeidae. The mode of attachment of these mites is generally the same as that used by larval mites. The identification of arthropods and their ectoparasitic mites were listed below (Table 2).

Table 2. The list of arthropods and their ectoparasitic mites in collected sites

HOST	PARASITE
ARANEAE (Thomisidae) <i>Xysticus striatipes</i> L. Koch, 1870	Trombidiidae, <i>Allothrombium</i> sp.
OPILIONES <i>Opilio parietinus</i> (De Geer, 1778)	Erythraeidae, <i>Leptus</i> sp.
ORTHOPTERA <i>Notostaurus anatolicus</i> (Krauss, 1896)	Trombidiidae, <i>Allothrombium</i> sp.
COLEOPTERA (Curculionidae, Brachyderinae) <i>Brachyderes</i> sp.	Trombidiidae, <i>Allothrombium</i> sp.

Mites are preferentially attached to different body parts of their arthropod hosts. We observed that ectoparasitic mites prefer to infest especially legs of arthropods. The ratio of infested body parts of arthropods by the larvae of ectoparasitic mites is: carapace 31%, abdomen 10% and legs 59%, respectively. Because the legs are touching on soil, they are probably more infested than other parts of body by the larvae of ectoparasitic mites.

Although the parasitized harvestmen were captured in spring and summer from the study area, spiders and insects were only collected near the end of the autumn. The reason of this situation may be decreasing of metabolism rapidly in these animals because the temperature falls in this season.

Before our research, there were only four studies about ectoparasite on arthropods in Turkey (Table 3). Apart from these studies, there are no other published records about ectoparasitic mites that parasitized Turkish arthropods. Our study presents additional data about new host and localities of ectoparasitic mites. This is important, because there are limited number of studies in this subject in Turkey.

Table 3. Records of arthropods infected by ectoparasitic mites in Turkey

Host	Ectoparasitic Mite Species	Location	Reference
COLEOPTERA <i>Adalia bipunctata</i>	<i>Allothrombium triticism</i> (Trombidiidae)	Ankara	Çobanoğlu vd., (2008)
HOMOPTERA <i>Hyalopterus pruni</i>	<i>Allothrombium triticism</i> (Trombidiidae) <i>Erythraeus ankaraicus</i> (Erythraeidae)	Ankara	Bayram ve Çobanoğlu (2005)
HYMENOPTERA <i>Bombus</i> sp.	<i>Macrocheles</i> sp. (Macrochelidae)	Bursa	Girişkin vd., (2006)
THYSANOPTERA <i>Odontothrips</i> sp.	<i>Azaritrombium telletxae</i> (Trombidiidae)	Antalya	Goldarezana et al., (2000)

Acknowledgements

We thank Dr. Mustafa C. Darılmaz (Aksaray University) and Dr. Abdurrahman AYVAZ (Erciyes University) for identification of the species of Coleoptera and Orthoptera.

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(Received for publication 04 May 2017; The date of publication 15 December 2017)