

Oribatid Mite (Acari: Cryptostigmata) species from Istanbul

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Abstract

This research was carried out to determine the species of Oribatid mites in green areas of Istanbul province; six Oribatid mite species were identified, of which two species were identified for the first time in Turkey. In the present article, six species were identified from the soils of the green areas of Istanbul. The locality and distribution of all recorded Oribatid species are given. *Micreremus gracilior* (Oribatida: Micreremidae) and *Trhypochthonius tectorum* (Trhypochthoniidae) are the newly recorded mites in Turkey.

Keywords: Oribatida, new record, Turkey, Istanbul

Introduction

In this study, Ceratozetidae Berlese, Micreremidae Grandjean, Phenopelopidae Petrunkevitch, Scheloribatidae Jacot, Trhypochthoniidae Willmann, Xenillidae Woolley & Higgins species were identified which belong to the Oribatid mite family. Oribatid mites are usually the most abundant and diverse arthropods in forest soils, twigs, moss and the subtropical environments. They are called “beetle mites” because of their large and rounded shape. They are hard shiny and dark in colour (Norton, 1994; Travé *et al.*, 1996). Subias (2009), listed about 10,000 soil mite species in the latest version of the world mite catalogue. In Turkey, studies on Oribatid mites have increased in recent years (Ayyıldız *et al.*, 2010; Ayyıldız *et al.*, 2013; Bayram and Çobanoğlu, 2009; Baran and Ayyıldız, 2007a, 2007b, 2009; Baran, 2009; Baran *et*

al., 2010; Erman *et al.*, 2007; Toluk and Ayyıldız, 2008a, 2008b, 2008c, 2009a, 2009b, 2011; Per and Ayyıldız, 2004; Sarial and Baran, 2013; Toluk *et al.*, 2009, 2010; Taşdemir *et al.*, 2010).

Oribatid mites are known as bioindicator species for pollution of the environment. As their high density and diversity reflect various levels of environmental problems related to pollution, they are good indicators for assessing an ecosystem (Norton & Sillman, 1985; Cancela da Fonseca, 1990; Kehl & Weigmann, 1992; Lebrun & van Straalen, 1995).

Materials and methods

Between 2006 and 2008, Oribatid mite samples were taken from the soil of the green areas of Istanbul, Turkey. The samples were bagged in tightly closed plastic bags and transferred to the laboratory

(Entomology Laboratory of Central Research Institute, Istanbul) in an icebox. Mites were extracted using Berlese funnels. The specimens were preserved in 70% alcohol.

The mites were cleaned in lactophenol solution and mounted in Hoyer's medium (Düzgüneş, 1980). The slides were dried (2-4 weeks) at 35 °C. All collected mite specimens were considered to assess the abundance of the mite's species.

The slides of the mounted specimens were deposited in the collection of both authors' collection at Ankara University, Ankara and GOP University, Tokat. All the plant samples were collected by the junior author.

Results and discussion

Six Oribatid mites (Acari: Cryptostigmata) namely *Trichoribates trimaculatus* (C. L. Koch)(Trhypochthoniidae), *Trhypochthonius tectorum* (Berlese) (Trhypochthoniidae), *Scheloribates latipes* (C. L. Koch) (Scheloribatidae), *Eupelops acromios* (Hermann) (Phenopelopidae), *Xenillus clypeator* Robineau-Desvoidy (Xenillidae), and *Micreremus gracilior* Willman (Micreremidae) were identified. *X. clypeator*, *M. gracilior* and *T. tectorum* are new records for Turkey (Table 1).

Ceratozetidae Jacot, 1925

Trichoribates trimaculatus (C. L. Koch, 1836)

Examined Material: 5(♀♀) *Picea pungens* (Engelm) (Pinaceae) (22.09.2006) Özgürlük Park; 2(♀♀) *Cupressus arizonica* Green (Cupressaceae) (03.05.2007); Alemdağ, 2(♀♀) *Quercus robur* L. (Fagaceae) (03.05.2007); ÖzgürlükPark ;2(♀♀) *P. pungens* (03.05.2007) Özgürlük Park; 2(♀♀) *Magnolia grandiflora* L (Magnoliceae) (21.05.07) Atatürk Köşkü; 5 (♀♀) *Picea orientalis* L. (Pinaceae) (06.06.07) Özgürlük Park; 1(♀) *P. pungens* (18.06.07); 3(♀♀) *P. pungens* (17.07.07) Özgürlük Park ; 5(♀♀) *Chamaerops excelsa* Hort (Arecaceae) (17.07.2007) Alioğlu Nursery-Şile;1 (♀) *Cedrus atlantica* (Endl.) (Pinaceae) (23.07.07) Özgürlük Park; 5(♀♀) *P. pungens* Özgürlük Park; 9(♀♀) *Eonymus fortunei* (Turcz.) (Celastraceae) (02.03.2008) Özgürlük Park of; 1(♀) *C. atlantica* (14.04.2008) Yıldız Park 7(♀) *C. arizonica* (06.08.2007) Özgürlük Park ; 3(♀) *C. arizonica* (11.07.08) Dostlar Park of; 1(♀) *Albizia julibrissin* (Wall) (21.08.2007) Özgürlük Park; (♀) *P. pungens* (21.08.2007) Özgürlük Park; 3(♀) *P. pungens* (28.08.2007)) Özgürlük Park.

Table 1: Oribatid mite species collected from Turkey.

Species	Host Plant	Number of Specimen	Abundance (%)
<i>T. trimaculatus</i>	<i>C. arizonica</i>	12♀♀	19,05
	<i>A. julibrissin</i>	1♀♀	1,05
	<i>Q. robur</i>	1♀♀	1,05
	<i>P. pungens</i>	23♀♀	36
	<i>M. grandiflora</i>	1♀♀	1,05
	<i>C. atlantica</i>	2♀♀	3
	<i>P. orientalis</i>	5♀♀	7,09
	<i>C. excelsa</i>	5♀♀	7,09
	<i>E. fortunei</i>	9♀♀	14,02
<i>T. tectorum</i>	<i>P. pungens</i>	1♀♀	1,05
<i>S. latipes</i>	<i>C. arizonica</i>	1♀♀	1,05
<i>E. acromios</i>	<i>H. helix</i>	1♀♀	1,05
<i>X. clypeator</i>	<i>H. helix.</i>	1♀♀	1,05
<i>M. gracilior</i> *	<i>C. atlantica</i>	1♀♀	1,05

*new records for the fauna of Turkey.

Remarks: This species was previously recorded in Bulgaria, Bosnia-Hercegovina, Macedonia, Romania, Serbia, Slovenia and Balkan peninsula and Turkey (Willman, 1941; Kunst, 1958, 1959, 1961; Tarman & Cervek, 1976; Tarman, 1983; Ayyıldız, 1987, 1988b; Vasiliu and Ivan 1995; Ayyıldız and Özkan, 1998; Dik et al., 1999; Mahunka et al. 2013).

Trhypochthoniidae Willmann, 1931

***Trhypochthonius tectorum* Berlese, 1896**

***Hypochthonius tectorum* Berlese, 1896.**

Examined Material: 1(♀) *P. pungens* (22.09.2006) Özgürlük Park.

Remarks: This species is a new record for Turkey *T. tectorum* was recorded in Europe in Bulgaria, Croatia, Greece, Macedonia, Slovenia and Ukraine; Turkey and on Vancouver Island in Canada (Tarman & Cervek, 1976; Mahunka, 1979; Lindo and Winchester, 2007; Seniczak et al., 2011; Subías and Shtanchaeva, 2011; Mahunka et al., 2013).

Schelorbitidae Jacot, 1935

***Schelorbitates latipes* (C. L. Koch 1844)**

Examined Material: 1(♀) *Pinus pinea* L. (litter) (04.09.2007) Özgürlük Park

Remarks: This species was previously recorded in Finland, Germany, Hungary, Norway, Netherlands, Sweden, Switzerland, Iceland and Turkey (Konya, Erciyes) (Dik et al., 1999; Per and Ayyıldız, 2004).

Phenopelopidae Petrunkevitch, 1955

***Eupelops acromios* (Hermann, 1804)**

Examined Material: 1(♀) *Hedera helix* L. (04.09.2007) Bahçeköy.

Remarks: This species was previously recorded in Ethiopia, Greece (Rhode Island), Georgia, India, Iran, Italy, Latvia, Poland, Portugal, Turkey (Konya, Yozgat) (Bhaduri and Raychaudhuri, 1981; Baranovska, 2007; Dik et al., 1999; Emilov et al., 2012; Ermilov and Rybalov, 2014; Lotfollahi and Irani-Nejad, 2010; Murvanidze & Kvavadze

2009; Seniczak and Seniczak, 2006; Seniczak and Seniczak, 2013; Skubała and Marzec, 2013; Taşdemir et al., 2010; Weigmann, 2013).

Xenillidae Woolley and Higgins, 1966

***Xenillus clypeator* Robineau-Desvoidy, 1839**

Examined Material: 1(♀) *H. helix*. (05.09.2007) Bahçeköy.

Remarks: This species was previously recorded in Albania, Bulgaria, Romania, Croatia, Greece, Turkey (Erzurum) (Ayyıldız, 1988a; Dik et al., 1999; Mahunka et al., 2013).

Micreremidae Grandjean, 1954

***Micreremus gracilior* Willman, 1931**

Examined Material: 1(♀) *C. atlantica* (29.09.2006), University of Istanbul Sabahattin Zaim.

Remarks: This species is a new record for Turkey. Host plants *Cedrus atlantica* is new. *M. gracilior* previously recorded in Italy and Romania (Cavalloro and Martino, 1985; Vasiliu, Ivan & Vasiliu, 1993).

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