



First record of the genus *Eviphis* Berlese (Parasitiformes: Eviphididae) from Türkiye, with some notes on the eviphidid mites in Türkiye

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ABSTRACT: Female specimens of *Eviphis ostrinus* (Koch) have been collected in litters, moss, lichen and soil from different provinces of Türkiye, which has been described as a new record of the Turkish acarofauna. The present study provides description, original drawings, and images of the Turkish specimens of *E. ostrinus*. Also, the recent status of the Turkish eviphidid mite fauna is considered here.

Keywords: Acari, fauna, Parasitiformes, soil mites.

Zoobank: <https://zoobank.org/0272234D-926C-4232-B68A-F8CF7D7CCF31>

INTRODUCTION

The family Eviphididae Berlese is a group in the order Mesostigmata. They can easily be found in soil and decomposing organic matter, and many are phoretic on insects, especially scarab beetles (Halliday, 2010; Mašán and Halliday, 2010). The main morphological diagnostic characters for the family are the presence of an entire dorsal shield and one anterolateral seta on tibia and genu of leg I (Krantz and Walter, 2009; Halliday, 2010; Mašán and Halliday, 2010).

The family includes 17 genera and more than 120 species worldwide (Mašán and Halliday, 2009, 2010). Only five genera of this family have been recorded from Türkiye, namely, *Alliphis* Halbert, *Crassicheles* Karg, *Uroiphis* Berlese, *Scarabaspis* Womersley and *Eviphis* Berlese (present work). The aim of the present paper is to extend the geographic range of the genus *Eviphis* and the species *E. ostrinus* by adding from north-eastern Türkiye.

MATERIALS AND METHODS

Mites were collected by sieving decomposing organic matter. Mites were extracted using modified Berlese-Tullgren funnels and mounted in Hoyer's medium following the methods of Walter and Krantz (2009). After clearing in lactic acid, some specimens of the species were dissected for detailed examination of some structures and mounted in Hoyer's medium for identification (Walter and Krantz, 2009). All measurements are given in micrometres (μm). Specimens were examined, illustrated, photographed, and measured using an Olympus BX63 upright microscope and Olympus DP73 camera. The terminology of the dorsal and ventral setae used in this paper follows that of Lindquist and Evans (1965). The classification of the family Eviphididae used here considers the systematic concept proposed by Mašán and Halliday (2010). Specimens are deposited in the EBYU (Acarology Laboratory of Erzincan Binali Yıldırım University, Erzincan, Türkiye).

RESULTS

Family Eviphididae Berlese, 1913

Genus *Eviphis* Berlese, 1903

***Eviphis ostrinus* (C.L. Koch, 1839)** (Figures 1-11)

Eviphis ostrinus — Berlese, 1903: 242; Willmann, 1956: 225; Shoemake, 1970: 51; Bregetova, 1977: 559; Karg, 1993: 94; Kontschán, 2004: 230; Mašán and Halliday, 2010: 54.

Specimens examined

15 females, Örumcek Forest, Kürtün, Gümüşhane, Türkiye, 40°39'N 39°01'E, 1455 m a.s.l., 1 July 2009, moss and lichen on spruce tree; 20 females, Köse, Gümüşhane, Türkiye, 40°16'N 39°38'E, 1856 m a.s.l., 14 July 2009, litter under *Salix* sp.; 21 females, Tokat, Taşlıca Village, 40° 44' N, 39° 03' E, 1708 m a.s.l., 24 November 2013, under litter of *Abies* sp.; 17 females, Bayburt, Sarımeşe Village, 40°27'N 40°18'E, 1655 m a.s.l., 17 June 2014, in moss; 18 females, Erzurum, Uzunoluk Forest, no date for GPS coordinate, altitue, 27 March 2010, in litter; 3 females, Trabzon, Uzungöl lake, 40°36'N 40°18'E, 1782 m a.s.l., 8 June 2015, under litter of *Picea* sp., 2 females, Bayburt, Gençosman Village, 40°09'N 40°20'E, 1745 m a.s.l., 18 April 2014, in moss; 13 females, Gümüşhane, Kürtün, 40°39'N 38°01'E, 1413 m a.s.l., 28 October 2013, in moss on a stone near stream; one female, Gümüşhane, Kızılali Wold, 40°48'N 39°03'E, 1270 m a.s.l., 13 October 2013, in litter; one female, Gümüşhane, Kürtün, Taşlıca Village, 40°44'N 39°03'E, 1708 m a.s.l., 24 November 2013, under litter of *Abies* sp.; 3 females, Gümüşhane, Kürtün, Örumcek Forest, 40°44'N 39°03'E, 1740 m a.s.l., 24 November 2013, in moss and soil.

Description (n=25)

Dorsum (Figs 1, 6). Dorsal shield 520-550 long, 410-440 wide at the level widest point, hemispherical, bearing 30

pairs of simple and pointed setae. Marginal setae distinctly longer than other dorsal setae, except for setae *j2*. *S3* longest dorsal setae, 55-65 long, setae *z1* slim and microsetae.

Venter (Figs 2, 7). Pre-sternal shield close to sternal shield and weakly sclerotized. Sternal shield 100-120 long, 75-90 wide at the level of coxae II, bearing three pairs of needle-like setae and two pairs of pores; surface of the shield without any sculptural pattern. In some specimens, a transverse line between *st1* and *st2* visible, in most of them invisible this transverse line. Anal shield 95-120 long, 105-130 wide, and subtriangular. In most specimens, metapodal platelets abutting posterior parts of peritrematal shield and rarely fused with peritrematal shields (Figs 8, 9).

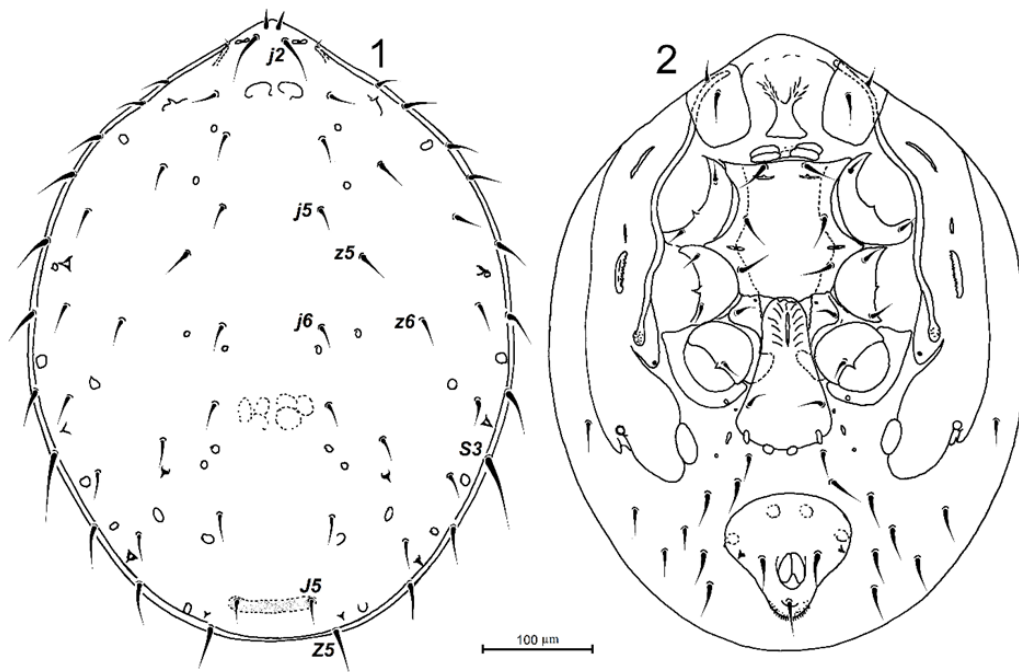
Gnathosoma. Ventral surface of gnathosoma as in Figure 3, epistome with elongate central projection (Fig. 4) and cheliceral segments long and thin, cheliceral digits slender, movable digit with two small subdistal teeth (Figs 5, 10).

Spermathecal apparatus. Sacculus foemineus well developed, sclerotized, and large (Fig. 11).

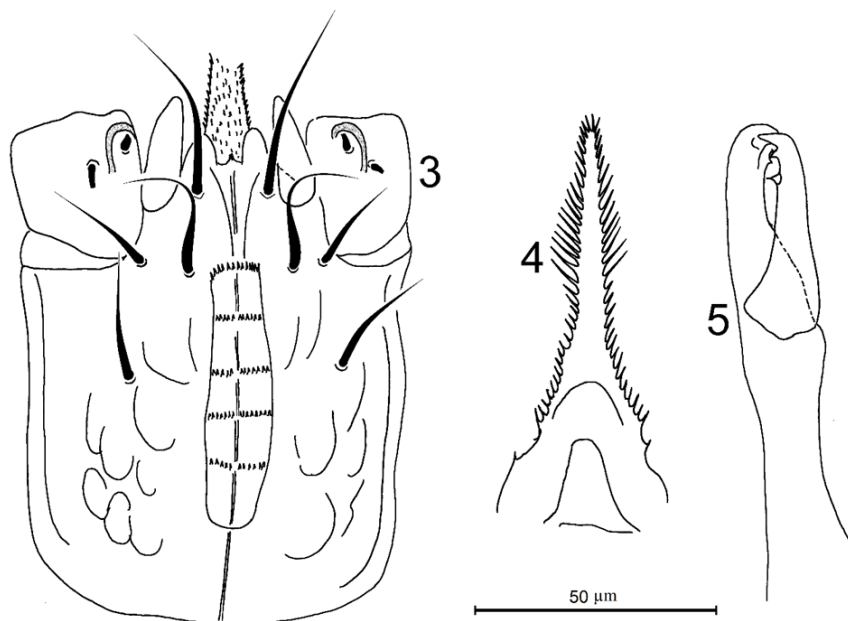
Legs. Leg chaetotaxy is usual for the genus (Mašán and Halliday, 2010).

Distribution

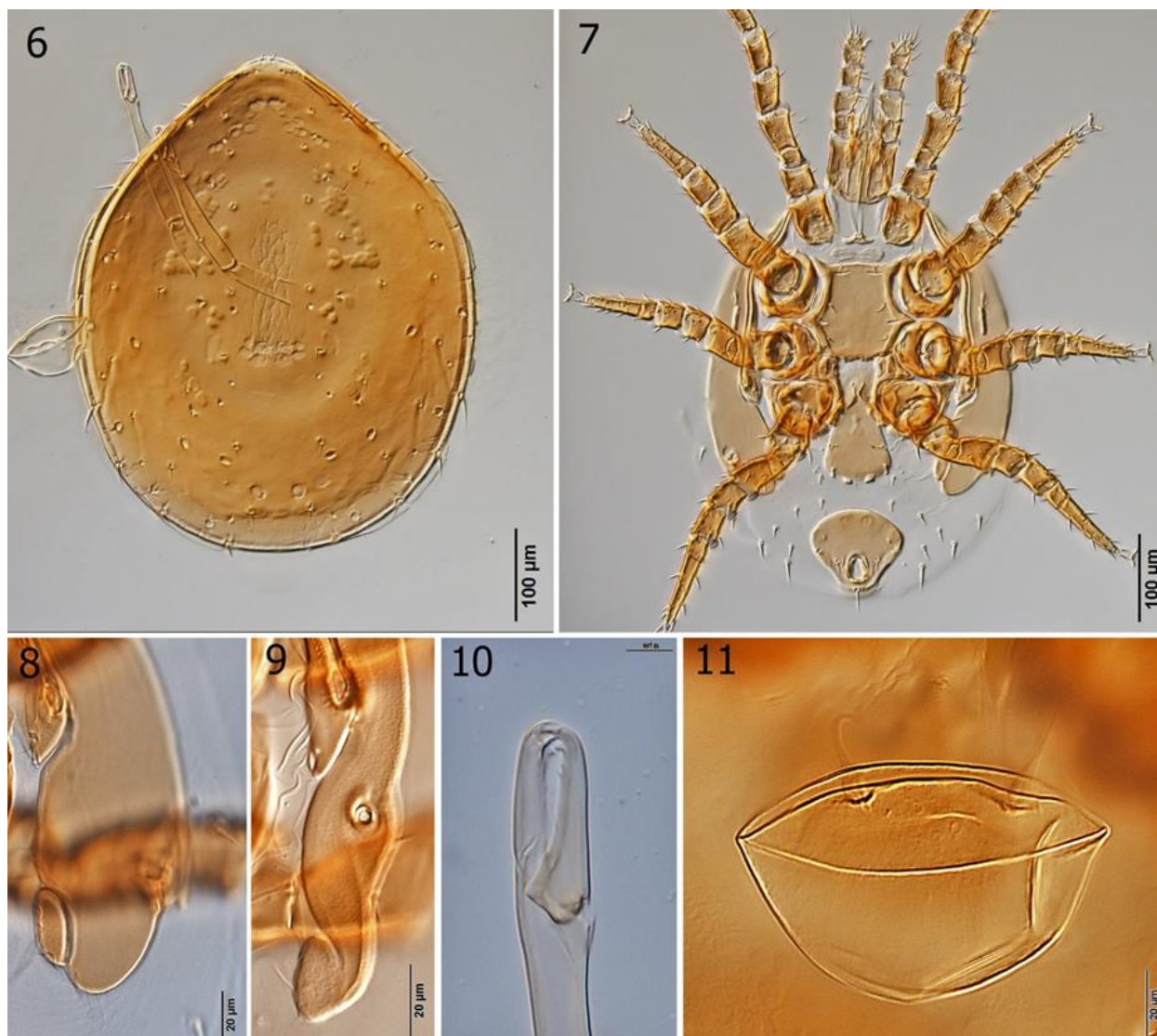
It is known in Europe and Asia (Mašán and Halliday, 2010).



Figures 1-2. *Eviphis ostrinus* (female) – 1. Dorsal view, 2. Ventral view.



Figures 3-5. *Eviphis ostrinus* (female) – 3. Gnathosoma, 4. Epistome, 5. Chelicera.



Figures 6-11. *Eviphis ostrinus* (female). **6.** Dorsal view, **7.** Ventral view, **8-9.** Variations of the posterior end of peritrematal shields, **10.** Chelicera; **11.** Sacculus foemineus.

DISCUSSION

In recent years, there are some comprehensive taxonomic works on the family Eviphididae, such as Mašán and Halliday (2010) and Halliday (2010), but the eviphidid fauna of Türkiye is poorly investigated and represents only seven species: *Alliphis halleri* (Canestrini and Canestrini) (Çobanoğlu, 2001; Urhan and İpek, 2007), *Scarabaspis inexpectatus* (Oudemans) (Urhan and İpek, 2006), *Alliphis kargi* Arutunian (Mašán, 2010), *Allipis* sp. (Kılıç et al., 2012), *Crassicheles striatus* (Berlese), *Uroiphis scabratus* Berlese (Urhan, 2006) and *Eviphis ostrinus* (Koch) (including the present work). Urhan and İpek (2007) reported *A. halleri* and *A. siculus* from Türkiye, but Halliday (2008) stated that *A. siculus* as illustrated and described by the authors is not consistent with the types of *A. siculus* and appears to be the same as *A. halleri*. Also, Urhan and İpek (2008) reported *Alliphis chirophorus* Willmann and *Iphidosoma razumovae* Bregetovae from Denizli province. *A. chirophorus* is the synonymy of *A. halleri* and the genus *Iphidosoma* and the species of *I. razumovae* were transferred to the Ologamasidae (Mašán and Halliday, 2010), so *A. siculus*, *A. chirophorus* and *I. razumovae* reported by

Urhan and İpek (2007, 2008) are not introduced to Turkish eviphidid mite fauna.

Urhan (2006) reported two species in the genus *Crassicheles* from Denizli province: *C. concentricus* (Oudemans) and *C. holsaticus*, but *C. concentricus* is the synonymy of *C. striatus* and *C. holsaticus* (Wilmann) is the synonymy of *Uroiphis scabratus* (Mašán and Halliday, 2010).

Mašán and Halliday (2010) gave a detailed description and taxonomic status for the genus *Eviphis* and the species and considered a monotypic genus in the family Eviphididae (see pp. 53-60). This genus is reported for the first time herein from Türkiye. Although numerous female specimens were collected from Bayburt, Gümüşhane, Trabzon, Giresun, and Erzurum provinces, males were not obtained. This is a very strange condition for the Turkish specimens, so I presented some illustrations and photos here, such as dorsal and ventral shields, chelicera, gnathosoma and epistome.

I hope they will be useful for the next taxonomic studies on this species. Morphological characters of the Turkish

specimens are similar those of previously presented specimens of *E. ostrinus* from other regions of the world (Shoemaker, 1970; Bregetova, 1977; Karg, 1993; Mařán and Halliday, 2010).

Statement of ethics approval

Not applicable.

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Conflict of interest

There is no potential conflict of interest.

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