

*Review article***First record of the genus *Eothrombium* Berlese (Trombidioidea: Tanaupodidae) from Turkey with new morphological data**İbrahim KARAKURT^{1,*}, Sevgi SEVSAY²¹Department of Home Care, Vocational School of Health Services, Erzincan Binali Yıldırım University, Erzincan, Turkey,²Department of Biology, Faculty of Arts and Sciences, Erzincan Binali Yıldırım University, Erzincan, Turkey,*Corresponding author: ibrahim.karakurt@erzincan.edu.tr

Abstract: A newly recorded species for the Turkish fauna, *Eothrombium siculum* Berlese, 1910 is given based on deutonymph stage. The deutonymph of *E. siculum* is described for the first time in this study and new morphological data are provided. Also, diagnosis of deutonymph of *E. siculum* is provided. The genus *Eothrombium* Berlese, 1910, belonging to the Tanaupodidae, is recorded for the first time from Turkey. The distribution of the genus, hitherto known from Hungary, Iceland and Italy, is extended to the territory of Turkey.

Keywords: Acari, distribution, Parasitengonina, Tanaupodid mite

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Introduction

Tanaupodidae includes nine genera. However, until today, only, the genus *Lassenia* Newell, 1957 (*L. hemsinensis* Noei et al., 2018) was given from Turkey (Sevsay, 2017; Noei et al., 2018). The genus of *Eothrombium* was founded by Berlese (1910) with *E. echinatum* (as type species), *E. leptotarsum* and *E. siculum* from Italy. Same author (1912) emphasized on Ta I (L)/Ta I (W) ratio in the description of these species. Lombardini (1961) included *E. dubuim* and *E. incertum* in the genus of *Eothrombium*. Later, Mağol et al. (2018) included a fossil species (*E. fortesambienne*) into this genus. All of members of *Eothrombium* are known from postlarval stages (Mağol & Wohltmann, 2012; Mağol et al., 2018). They are distributed in the Europe (Hungary, Iceland and Italy). This study contains detailed descriptions of deutonymph of *E. siculum* with new morphological data.

Material and Methods

The deutonymph forms were collected directly from Bayburt province (40°03'N 39°53'E 1850 m a.s.l., forest

land, grass area, 17.V.2013 and 40°08'N 40°20'E 1778 m a.s.l., moss litter, 18.IV.2014), Turkey. The samples were transferred to 70 % ethyl alcohol. Specimens for microscope studies (2 deutonymphs) were fixed on slides in Hoyer's medium (Walter & Krantz, 2009). The morphological terminology follows Mağol et al. (2018). For measurements, photographs and drawings an Olympus BX63 microscope was used. All measurements are given in micrometers (µm). The slides are deposited in the Acarology Laboratory of Erzincan Binali Yıldırım University, Erzincan, Turkey (EBYU).

Results**Family: Tanaupodidae Thor, 1835****Genus: *Eothrombium* Berlese, 1910****Diagnosis:** For diagnosis and more information see Mağol et al., 2018Type species: *Eothrombium echinatum* Berlese, 1910**Distribution:** Hungary, Iceland, Italy (Mağol and Wohltmann, 2012) and Turkey.

***Eothrombium siculum* Berlese, 1910**

Diagnosis. Deutonymph. Dorsal setae smooth and slender. All dorsal setae situated on punctated plates. Legs without reticulate pattern. All legs bear nude and barbed setae. Also, all tibia and tarsus (excluding tibia I and tarsus I) of legs with setulose setae. The ratio of Ta I (L)/Ta I (W) in the range of 2-2. 6. External genitalia with two pairs of genital acetabula.

Description. Deutonymph. Morphological measurement values in Table 1. Idiosoma length 725-885, width 430-480 (Fig. 1). Chelicerae and palps typical. Inner side of cheliceral blade with eight teeth. Palp femur-tibia with a number of nude setae. Palp tibia with paradont which situated behind palp tibial claw. Paradont smaller than odontus. Palp tarsus cylindrical with five nude setae, one solenidia and with five eupathidia of which three placed in distal part (Fig. 2).

Table 1. Morphometric data on deutonymphs of *Eothrombium siculum* Berlese, 1910 (n=2).

Character	Min.-Max.	Character	Min.-Max.
PaTr	30-43	leg I	620-697
PaFe	60-67	Cx II	100-103
PaGe	45-52	Tr II	50-55
PaTi	35-35	bFe II	53-55
PaTa	30-35	tFe II	48-48
Odontus	30-35	Ge II	53-58
IL	725-885	Ti II	55-60
IW	430-480	Ta II	100-110
CML	180-190	leg II	474-474
Sens	103-110	Cx III	95-98
SB	30-33	Tr III	60-60
aO	17-20	bFe III	50-55
pO	23-25	tFe III	53-53
pDS	16-47	Ge III	55-57
pVS	18-38	Ti III	70-70
GOP (L)	80-90	Ta III	105-107
GOP (W)	43-52	leg III	493-495
AOP (L)	-	Cx IV	105-110
AOP (W)	-	Tr IV	88-90
Cx I	100-110	bFe IV	65-70
Tr I	45-58	tFe IV	65-70
bFe I	65-70	Ge IV	80-83
tFe I	75-90	Ti IV	110-112
Ge I	80-98	Ta IV	125-128
Ti I	100-111	leg IV	645-656
Ta I (L)	146-155	IP	2232-2322
Ta I (W)	60-72		

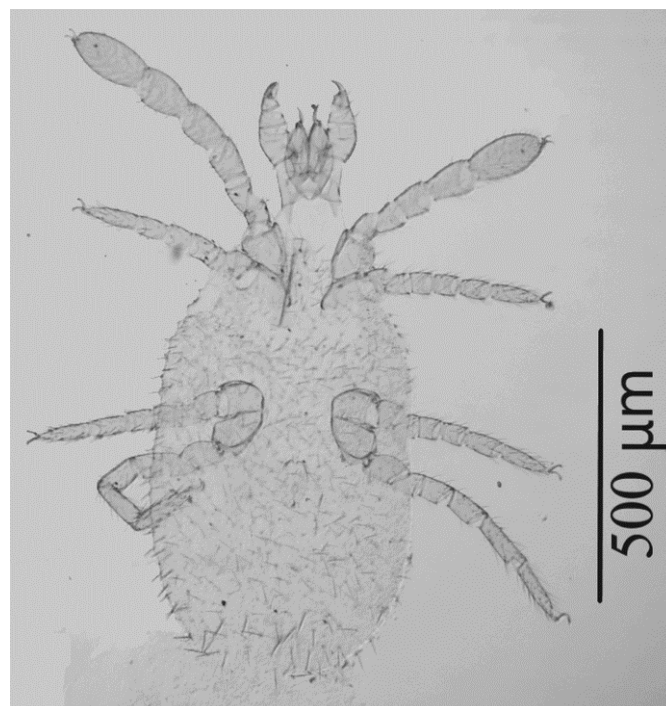


Figure 1. *Eothrombium siculum* Berlese, 1910 (deutonymph). General view.

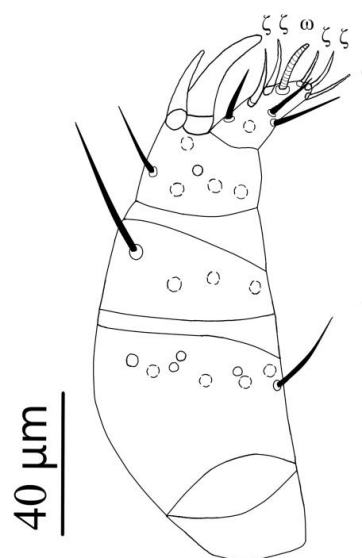


Figure 2. *Eothrombium siculum* Berlese, 1910 (deutonymph). Palp (lateral aspect).

The naso absent. Crista metopica region flat and punctate. Rod of crista linear but anteriorly bifurcate. A pair setae situated at junction of anterior border of aspidosoma and anterior part of crista. Rounded sensillary area bears two smooth sensillary setae. Double and sessile eyes located at mid-lateral sides of crista metopica;

anterior lens smaller than posterior lens. Both lens with short stalks (Fig. 3). Dorsal setae of one type, smooth and slender. All dorsal setae situated on punctated plates. Length of dorsal setae 16-47 (Fig. 4). Ventral setae similar to dorsal setae but shorter and thinner. External genitalia with two pairs of genital acetabula. Epivalves with a pair smooth setae and centrovalves with two pairs smooth setae each of them (Fig. 5).

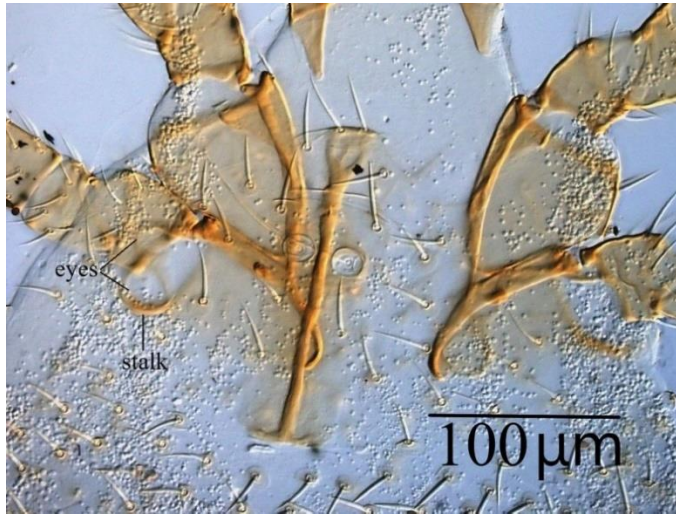


Figure 3. *Eothrombium siculum* Berlese, 1910 (deutonymph). Crista metopica region.

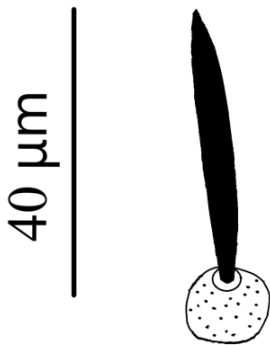


Figure 4. *Eothrombium siculum* Berlese, 1910 (deutonymph). Dorsal seta.



Figure 5. *Eothrombium siculum* Berlese, 1910 (deutonymph). Genital opening.

Legs without reticulate pattern and shorter than idiosoma. Tarsus I oval, tibia I shorter than tarsus I. The ratio of Ta I (L)/Ta I (W) in the range of 2-2.6 (mean value 2.2) (Fig. 6). All legs bear nude and barbed setae. Also all tibia and tarsus (excluding tibia I and tarsus I) of legs with setulose setae (Fig. 7).

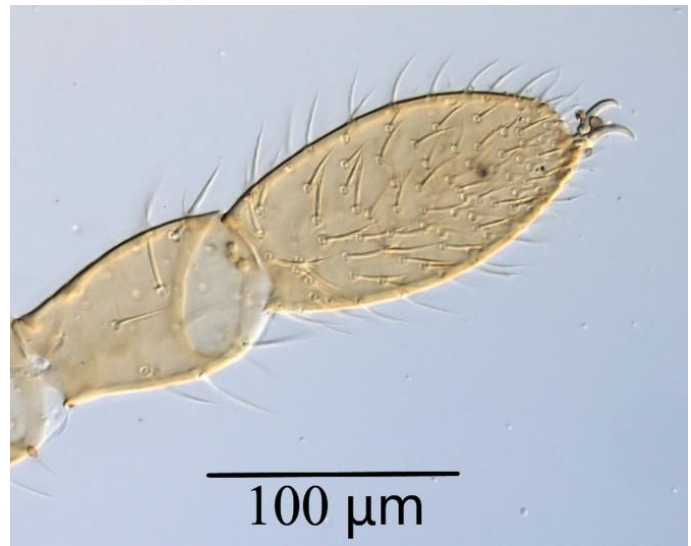


Figure 6. *Eothrombium siculum* Berlese, 1910 (deutonymph). Tibia and tarsus I.

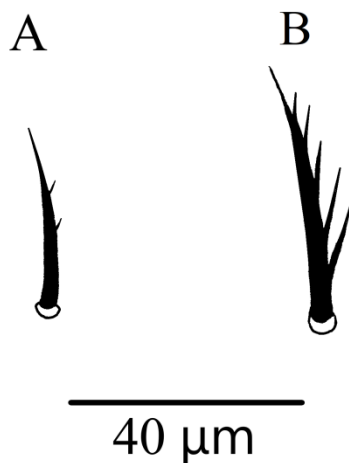


Figure 7. *Eothrombium siculum* Berlese, 1910 (deutonymph). A. Barbed seta on tibia IV, B. Setulose seta on tibia IV.

Discussion

Mağol et al. (2018) provided a comparative table regarding as tanaupodid genera (postlarval forms). The members of *Eothrombium* separate from other postlarvals of *Rhinothrombium* by the shape of anterior part of crista (except for *E. incertum*). While end of anterior part of crista is bifurcate in *Eothrombium*, it is linear in *Rhinothrombium*. Also naso absent in *Eothrombium* while *Rhinothrombium* with naso (For more information see Mağol et al., 2018). *E. siculum* seems similar to *E. echinatum* because they have similar structure of tibia I and tarsus I. The ratio of tarsus I length/wide of *E. siculum* in range 2.0-2.6 (according to Berlese (1912) tarsus I length/wide 2.42 in adult of *E. siculum*) but this ratio 2.66 in *E. echinatum* (Berlese, 1912) and ≥ 3 in *E. fortesambianse*, *E. incertum* and *E. leptotarsum* (Berlese, 1912; Lombardini, 1961; Mağol et al., 2018). Also, length of tibia I/tarsus I < 0.7 in *E. siculum* but this ratio > 0.7 in *E. echinatum*.

The ratio IL/IW < 2 (IL: 1150, IW: 600) in adult of *E. siculum* (Berlese, 1912), and likewise this ratio < 2 (IL: 725/885, IW: 430/480) in deutonymphs of *E. siculum*. The length of dorsal setae up to 47 in deutonymphs of *E. siculum* while up to 70 in adults of *E. siculum* (Berlese, 1912; Thor and Willmann, 1947). All legs bear nude and barbed setae in deutonymphs of *E. siculum* but this information not stated by Berlese (1912) for adults of *E. siculum*.

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Ethical Approval

The authors don't declare ethical approval.

Conflicts of Interest

The authors declare that they have no conflict of interest.

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