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A new record of the genus *Echinothrombium* Womersley, 1937 (Acari: Microtrombidiidae) from Turkey

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Abstract: In this study, description and original drawings of *Echinothrombium spinosum* (Canestrini, 1885) are given for postlarval forms. Morphometric data for adult and deutonymphs are presented here. Information about habitat and distribution for the species is also provided. The genus *Echinothrombium* is a new record for the mite fauna of Turkey.

Keywords: Acari, *Echinothrombium*, Microtrombidiidae, New record, Turkey.

Introduction

Microtrombidiidae Thor, 1935 is one of the most common family belong to 126 genera. This family consists of about 451 described species (Mąkol and Wohltmann, 2012, 2013; Adil et al., 2015; Karakurt and Sevsay, 2015; Karakurt et al., 2016; Noei et al., 2015; Sevsay and Adil, 2015). They are well-known worldwide, but poorly investigated in Turkey. The genus *Echinothrombium* Womersley, 1937 occurs in the whole of Europe (Gabryś and Wohltmann, 2003). Only two species are included in this genus; namely, *E. rhodinum* (Koch, 1837) and *E. spinosum* (Canestrini, 1885). This paper deals with the description of *E. spinosum*, as a new record for Turkey. In this study, we aimed to contribute to the knowledge of mites present in Turkey.

Materials and Methods

The following collecting methods were used: hand collecting and extraction in Berlese funnels. Examined material was preserved in 70% ethyl alcohol and cleared in 9% KOH. Specimens for light microscope studies were mounted on slides in Hoyer's medium. Measurements were taken in micrometers (μm) and the figures were taken under a Leica DM 4000 microscope with differential interference contrast (DIC) and phase contrast. In this study, only adult and deutonymph specimens of *E. spinosum*, collected from Giresun and Gümüşhane provinces in 2013-2014, were studied. Terminology and abbreviations follow Mąkol (2007) and Gabryś (1999). All measurements are given in micrometers (μm).

Results

Family Microtrombidiidae Thor, 1935

Subfamily Microtrombidiinae Thor, 1935

Genus *Echinothrombium* Womersley, 1937

Type species *Ottonia spinosa* Canestrini, 1885

***Echinothrombium spinosum* (Canestrini, 1885)**

Adult: Body length 1231, width 810. Idiosoma oval elongate, narrowing towards the rounded end of the body. Medial face of palp tibia with two ctenidia and a radula. Distal ctenidium of palpal tibia has 3-4 strong spinisetae and proximal ctenidium 5-6 slightly weaker spinisetae. Radula composed of 4-6 long spine-like setae (Fig. 1). Lateral face of palp tibia covered with at least 6 long, smooth setae. The base of palp tarsus with long, strong basidont. Palpal tarsus with 4 solenidia terminally (Fig. 2). Anterior part of crista metopica long, extending to vertex which bears numerous long, setulose, nonsensillary setae (*AM*). Posterior process is shorter than anterior part, double eyes sessile, situated at edges of aspidosoma, and level with anterior part of crista metopica (Fig. 3). Dorsal opisthosomal setae of two types (*pDS* I-II). Longer setae *pDS* I (60-85) straight, proximal part of stem with few long setules; distal part with bare arising along outer surface of stem (Fig. 4). Shorter setae *pDS* II (25-55) slightly bent, with relatively long and sparsely distributed setules covering entire stem (Fig. 5). Genital opening with

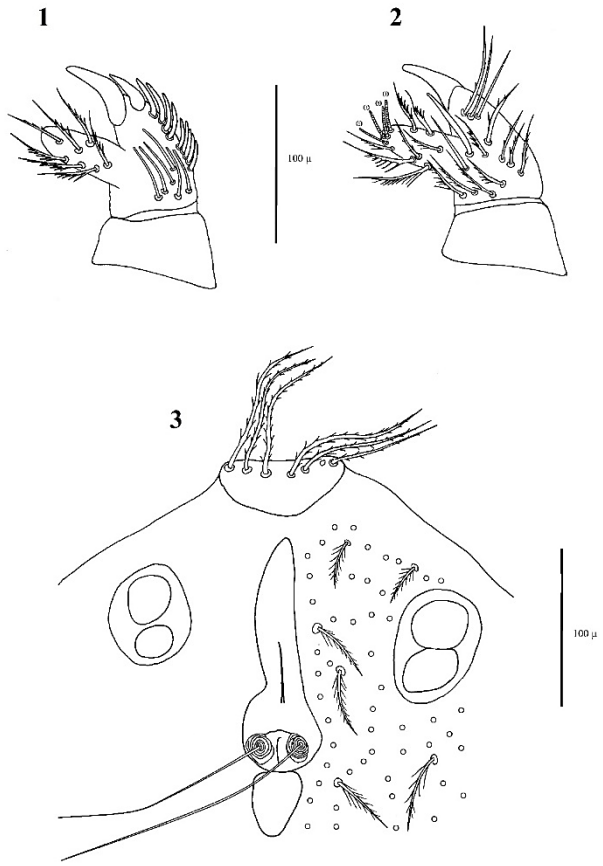

Figure 1-3. *Echinothrombium spinosum* Adult. (1) Medial face of palp tibia-tarsus, (2) Lateral face of palp tibia-tarsus and (3) Crista metopica.

three pairs of acetabula surrounded by epivalves and centrovalves. Legs much shorter than idiosoma; tarsus I, about one and a half as long as wide (Fig. 6).

Deutonymphs: Generally smaller than adult (690–750 long, 400–590 wide). There is only one ctenidium of 2–5 spinisetae on medial face of palp tibia; radula consists of 2–3 spinelike setae (Fig. 7). Lateral face of palp tibia with one basidont (Fig. 8). Posterior dorsal opisthosomal setae similar to those in adults but slightly shorter. Genital opening with two pairs of acetabula.

Material examined: 24 November 2013, Giresun, Çatalağaç village, one deutonymph, 40°44'10"N, 38°58'20"E, 952 m., lichenous soil under *Populus* sp.; 28 March 2014, Seyrantepe village, one deutonymph, 40°46'45"N, 38°59'36"E, 1100 m. grass and mossy soil.

21 August 2014, Gümüşhane, Örümcek Forest, one deutonymph, 40°41'06"N, 39°03'08"E, 828 m., litter soil from rock groove; 10 October 2014, Örümcek Forest, one adult, 40°41'07"N, 39°03'05"E, 1106 m., mixed litter under forest; 15 November 2014, Kadırga Plateau, one deutonymph, 40° 41' 30"N, 39° 10' 16"E, 920 m., litter soil under *Abies* sp. (coll. S. Adil).

Distribution: Austria. Hungary, Italy, Norway, Poland, Romania, Spain (Mąkol and Wohltmann, 2012, 2013). New for the Turkish fauna.

Discussion

The adult of Turkish specimens are similar to the European specimen in general appearance (Table 1). European specimens are 1000-1700 in length, 450-1150 in width. L/W 1.44. The length of *pDS I* is 82-100, length of *pDS II* is 35-45. Ta I L/W 1.66 (Mąkol et al., 2008). The Turkish specimen is 1231 in length, 810 in width. L/W 1.51. The length of *pDS I* is 60-82, length of *pDS II* is 25-50. Ta I L/W 1.64. The deutonymphs displays great similarities with the general characteristics of previously known species described elsewhere. This suggests that these species show slight morphological variations.

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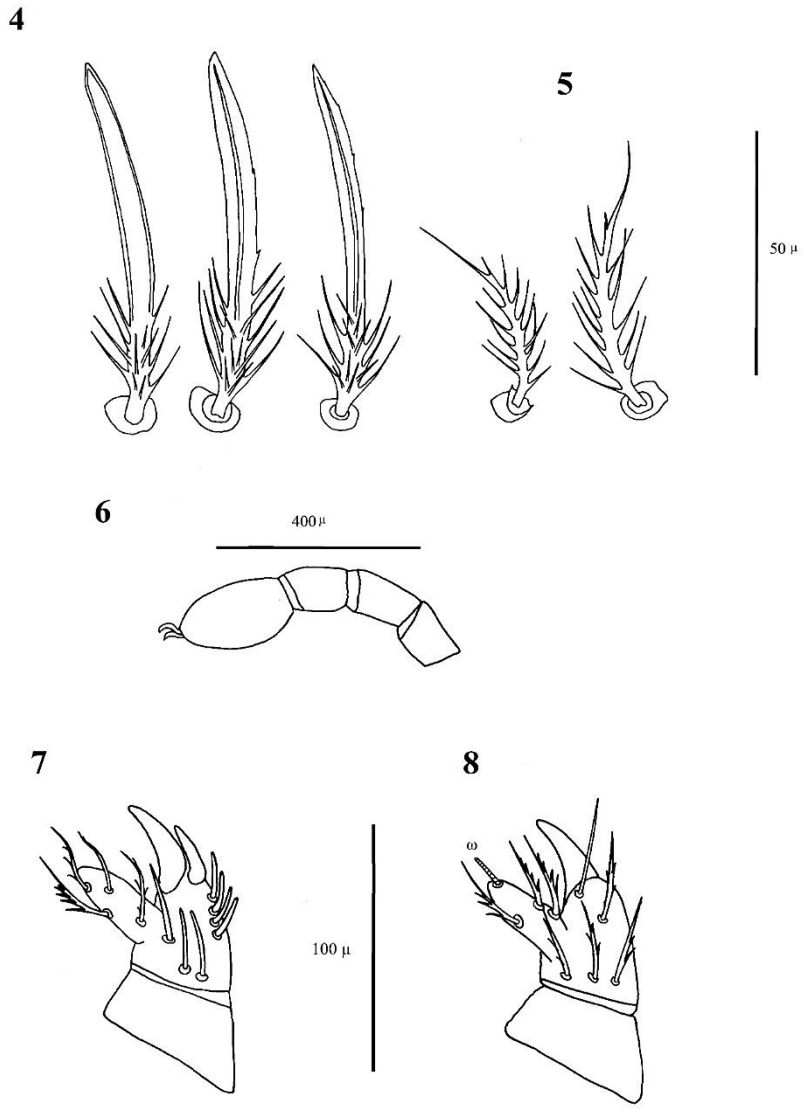

Figure 4-8. *Echinothrombium spinosum* Adult. (4) pDS I (5) pDS II (6) Leg I genu-tarsus; 7-8 Deutonymph (7) Medial face of palp tibia-tarsus (8) Lateral face of palp tibia-tarsus

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Table 1. Morphometric data on adult and deutonymphs of *Echinothrombium spinosum*, with comparison to European specimens (neotype ♀).

Character	***E. spinosum*-adult (n=1)**	***E. spinosum*-deutonymph (n=4) (min-max)**	***E. spinosum*-neotype ♀ Mąkol et al., 2008 (n=1)**
LB	1231	691-749	1340
WB	810	426-583	930
LB/WB	1.51	1.28-1.62	1.44
Ch BS (L)	160	112-120	188
Ch BS (W)	65	47-53	87
Ch Cl	45	36-39	95
PaTr (L)	30	27-30	70
PaTr (W)	45	39-44	83
PaFe (L)	137	92-112	162
PaFe (W)	103	66-77	115
PaGe (L)	52	35-48	55
PaGe (W)	70	44-57	92
PaTi (L)	85	45-55	100
PaTi (W)	55	31-41	60
Odo (L)	49-49	37-39	52-55
Par (L)	32-31	24-36	35-35
diCt(n)	4-3	2-6	5-5
prCt(n)	5-5	0	6-7
Bas	1-1	1-1	1-1
Rad (n)	6-4	2-2	6-5
PaTaSol(n)	2	1-1	4
PaTa (L)	52	24-35	80
PaTa (W)	24	14-16	30
pDS I	60-82	43-70	82-100
pDS I [P]	6	5-5	5
pDS II	25-51	20-53	35-45
pDS II [P]	4	4-4	5
vS [S] (min-	30-33	24-25	30-40
vS [P]	4	4	5
CML	216	142-168	280
CMW	18	12-15	28
AL (n)	7	5-7	9
AL (L)	87	60-67	55-125
RCM	93	75-90	200
SAL	54	36-39	50
SAW	52	35-40	50
SB	25	17-19	30
SE	144	118-125	180
pPr	62	33-48	30
OL	64	40-48	85-80
OCM	93	55-77	112
ao	21	15-20	28
pO	13	8-13	23
O-O	178	124-159	224
OaD	90	54-79	130
OSD	52	35-60	100
GOp (L)	212	90-100	212
An (L)	95	55-62	100
Cx_I	138	98-112	196
Tr_I	67	47-60	108
Bf_I	162	97-112	200
Tf_I	126	64-79	160
Ge_I	146	80-83	180

Table 1. To be continued.

Character	***E. spinosum*-adult (n=1)**	***E. spinosum*-deutonymph (n=4) (min-max)**	***E. spinosum*-neotype ♀ Mąkol et al., 2008 (n=1)**
Ti_I	151	89-93	190
Ta_I (L)	232	152-159	285
Ta _I (W)	141	98-99	172
Ta _I (L/W)	1.64	1.53-1.62	1.66
Leg I	1022	658-674	1319
Cx_II	133	85-101	172
Tr_II	70	35-44	102
Bf_II	115	49-63	132
Tf_II	73	44-59	94
Ge_II	82	48-50	102
Ti_II	100	50-67	133
Ta_II	169	96-106	200
Leg II	742	423-463	935
Cx_III	128	87-88	180
Tr_III	63	35-40	108
Bf_III	99	52-70	132
Tf_III	68	41-44	93
Ge_III	77	40-47	107
Ti_III	99	57-61	132
Ta_III	165	93-100	206
Leg III	699	425-436	958
Cx_IV	120	99-101	245
Tr_IV	87	49-52	132
Bf_IV	139	85-89	186
Tf_IV	100	55-58	137
Ge_IV	123	70-76	176
Ti_IV	159	88-94	206
Ta_IV	197	113-127	240
Leg IV	925	564-590	1322
IP	3388	2070-2161	4534