A NEW SPECIES OF *TRICHOTROMBIDIUM* KOBULEJ, 1951 (ACARI: PROSTIGMATA: MICROTROMBIDIIDAE) FOR THE TURKISH FAUNA

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[Karakurt, İ. & Sevsay, S. 2013. A new species of *Trichotrombidium* Kobulej, 1951 (Acari: Prostigmata: Microtrombidiidae) for the Turkish fauna. Munis Entomology & Zoology, 8 (2): 739-744**]**

ABSTRACT: In this study, larvae of *Trichotrombidium rafieiae* Saboori, 2002 which are new for Turkish fauna and obtained as an ectoparasite on adult *Musca domestica* (Diptera, Muscidae), are given the morphological characters and drawings of various organs, identification key and its zoogeographical distribution.

KEY WORDS: Acari, Microtrombidiidae, *Trichotrombidium*, larva, Erzincan, Turkey.

Microtrombidiidae is a large family that has 437 species registered in 126 genus (Mąkol & Wohltmann, 2012). The genus *Trichotrombidium* Kobulej, 1951 is known only from larvae and deutonymf forms. *Trichotrombidium* includes two species as *Trichotrombidium hemistriatum* (originally described as *Trichotrombidium hemistriatum* by Riley (1878) and redescribed as *Trichotrombidium muscae* by Kobulej (1951) and known from larvae and deutonymf forms) and *Trichotrombidium rafieiae* (Southcoot, 1994) (known only larval form). The latter species is an ectoparasite on adult *Musca domestica* (Diptera, Muscidae) (Saboori, 2002).

In this paper larvae of *Trichotrombidium rafieiae* is described and illustrated as an ectoparasite on adult *Musca domestica* (Diptera, Muscidae) from Erzincan, Turkey. A short key for larvae of the *Trichotrombidium* species is also proposed. The genus *Trichotrombidium* is recorded from Turkey for the first time.

MATERIAL AND METHODS

Larvae obtained as an ectoparasite on adult *Musca domestica* (Diptera, Muscidae) from Erzincan, Turkey. Examined material was preserved in 70% ethyl alcohol and cleared in 9% KOH. Specimens for light microscope studies (6 larvae) were fixed on slides in Hoyer's medium (Krantz & Walter, 2009). Measurements were taken and drawings made under a Leica DM 4000 microscope with differential interference contrast and phase contrast. Mąkol (2007) and Southcoot (1994) followed for the morphological terminology in the text. All measurements are given in micrometers (μm).

RESULTS AND DISCUSSION

Family Microtrombidiidae Thor, 1935

Genus *Trichotrombidium* Kobulej, 1951

Type species *Trichotrombidium muscae* Kobulej, 1951

***Trichotrombidium rafieiae* Saboori, 2002**

Diagnosis. Scutum and scutellum are available with longitudinal striations in its lateral parts. And larva with the following features: palpal formula: 0-0-0-NN-NNNNNζω; *f*D=28; IP=797 *f*Cx formula: BB-B-B. Pretarsus of legs I–II with paired claws and claw-like empodium. Pretarsus of leg III with outer claw and empodium, inner claw deformed.

Description. Standart measurements in Table 2. Colour in life red. Gnathosoma with horseshoe-like mouth that bearing large denticled membranes outside (Fig. 1). Setae *bs* in the shape of stout calyx, distally seven finger-like. *Adoral* seta smooth. Cheliceral blade short and slightly curved. Seta absent on palp femur and genu. Palp tibia with two nude setae. Palp tarsus with five nude setae, an eupathidium and a solenidion; palpal formula: 0-0-0-NN-NNNNNζω (Figs. 2-3).

Scutum pentagonal; clearly convex at the mid of its anterior border and slightly concave at the mid of its posterior border and with longitudinal striations in its lateral parts. The surface of scutum bears three pairs nonsensillary setae and one pair sensillary setae. *AM* (36 μm) seta smooth. *AL* (37 μm) seta with slightly setules. *S* (66 μm) seta thin and long. *PL* (61 μm) seta with distinctly setules has stem thicker than *AM* and *AL* setae. Two pairs of eyes at the level of *S* seta, each pair situated on the on the oval sclerite. Anterior lens (diameter: 20 μm) larger than posterior one (diameter: 15 μm). Scutellum more narrowed in cooperation with scutum but it with longitudinal striations in its lateral parts similar scutum and slightly convex at the mid of its anterior border. Surface of scutellum bears a pair of c_1 (or *SL*=61 μm) seta. All dorsal setae situated on plates or platelets (the largest c_1 and d_1 plates) barbed and arranged in 5 rows. : *f*D formula: 6-6-6-4-4 (c_1-c_3, d_1-$_3$, e_1-$_3$, f_1-$_2$, h_1-$_2$), (38-76 μm), (h_2 setae observed in idiosoma ventrum). Number of all dorsal setae (*f*D) 28 (Fig. 4).

All coxae punctuated. Claparéde's organs laterally between coxae I and coxae II. All coxal setae with setules. *f*Cx formula: BB-B-B. One pair of barbed intercoxal setae *3a* placed in between coxal plates III. Posteriorly following four barbed setae situated anterior and lateral to anal opening. *f*V formula: 2-2u-2. Ventral setae slightly thinner than dorsal setae. Anal opening without sclerite (Fig. 5).

Legs segmentation formula: 6-6-6, for leg chaetotaxy see Table 1. All normal setae on legs I–III setulose. Pretarsus of legs I–II with paired claws and claw-like empodium. Pretarsus of leg III with outer claw and empodium, inner claw deformed (shortened) (Figs. 6-10).

Material examined. 6 larvae were obtained as ectoparasites on adult *Musca domestica* L., 1758, vicinity of Terzibaba Mosque of Erzincan, Turkey, 39°44'41"N 39°30'14"E, 1195 m, 17. 09. 2010, leg. H. H. Özbek.

Distribution. Iran and Turkey.

Discussion. *Trichotrombidium rafieiae* easily separated from *Trichotrombidium hemistriatum* by the number of normal setae on femur I (4 vs. 5), on genu I (4 vs 3), on tibia I (6 vs. 5), *f*D (28 vs. 22), solenidion on genu I (4 vs. 3).

In fact, this species are similar to zoogeographical and morphological properties of Iranian specimens that were given by Saboori (2002). But Turkish specimens (656 length, 423 width) differs from Iranian specimens (388 length, 245 width) by large body. Also, setae AM and AL combined length subequal with distance between their insertation (AM + AL ≡ MA) in Iranian specimens, but not equal in Turkish specimens.

In addition, morphological differences are available of these specimens (see Table 2).

Key to the species of *Trichotrombidium* (larva)

1. 3 solenidion on genu I, *f*D= 22 ..... *Trichotrombidium hemistriatum*
- 4 solenedion on genu I, *f*D= 28 ..... *Trichotrombidium rafieiae*

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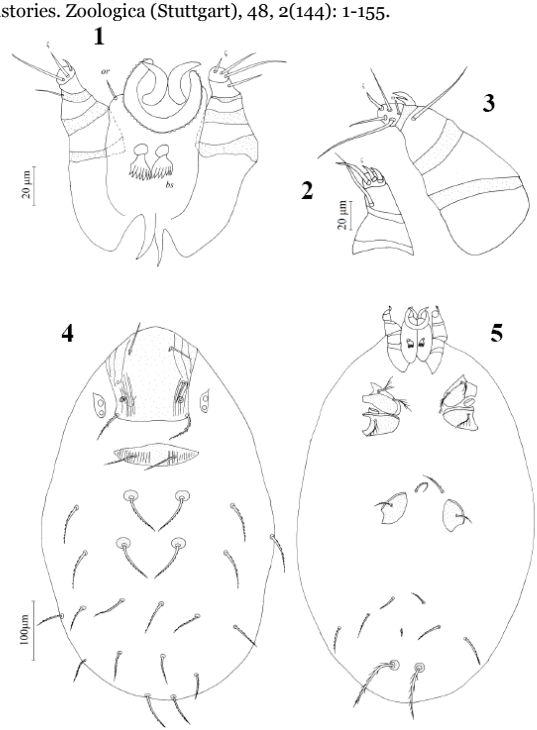
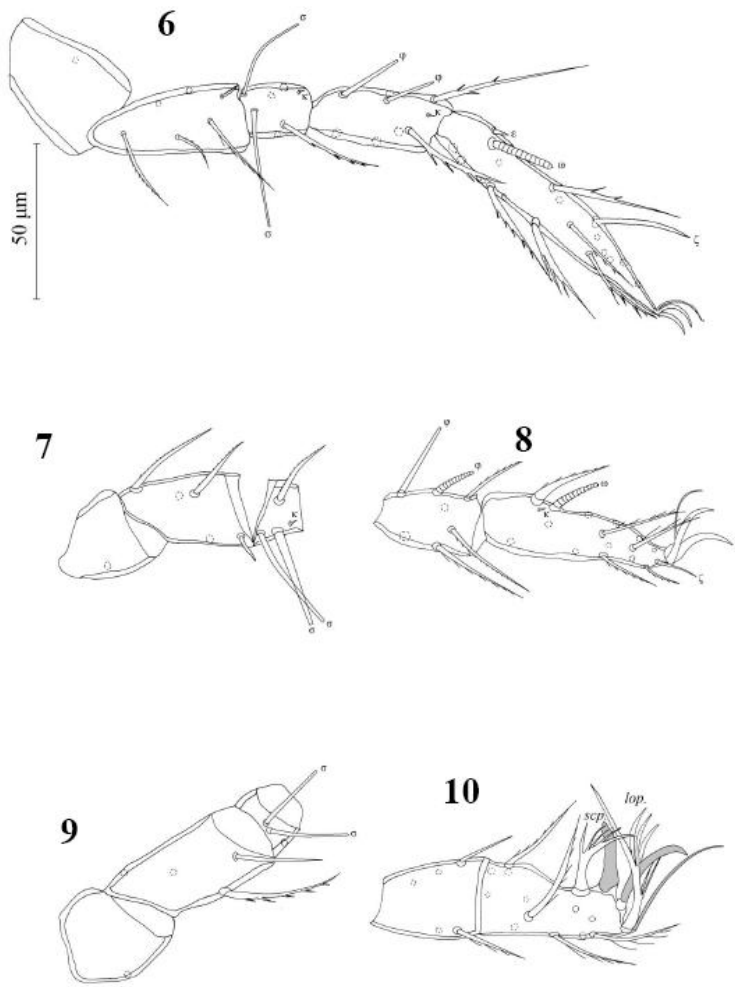


Figures 1-5. *Trichotrombidium rafieiae* (larva) 1. Gnathosoma (ventral), 2. Palp; genu, tibia and tarsus (lateral), 3. Palp (dorsalateral), 4. Idiosoma (dorsal), 5. Idiosoma (ventral).



Figures 6-10. *Trichotrombidium rafieiae* (larva) 6. Leg I, 7. Leg II; trochanter, femur and genu, 8. Leg II (tibia and tarsus), 9. Leg III (trochanter, femur and genu), 10. Leg III (tibia and tarsus).

Table 1. Leg chaetotaxy of larvae of *Trichotrombidium rafieiae*

	Tr	Fe	Ge	Ti	Ta
Leg I	1n	6n	4n, 2σ,1κ	6n, 2φ,1κ	16n, 1ω,1ε,1ζ
Leg II	1n	5n	2n, 1σ,1κ	5n,2φ	14n,1ω,1ε,1ζ
Leg III	1n	4n	2n,1σ	5n	12n, 1scp, 1 lop.

Table 2. Morphometric data on larvae of *Trichotrombidium rafieiae*.

Characters	*T.rafieiae* (n=6) Min.	Max.	Mean	*T.rafieiae* Saboori, 2002
L	590	762	656	388
W	379	485	423	245
L/W	1.51	1.57	1.54	1.58
AMB	59	62	60.5	51
AW	101.7	112.6	105.7	102
PW	113.4	119.3	115.9	114
SB	91.2	94.5	93.3	87
ASB	115.2	120.8	117.5	94
PSB	25.5	29.2	27.4	24
SD	144.3	148.6	146.5	118
Scutum (W)	148.8	154.2	151.5	126
AP	49.1	53.8	51.8	49
SA	28.9	31.1	29.5	27
SP	25.8	27.6	26.5	26
AM	45.9	49.5	47.7	24
LN	28.3	35.1	32.2	22
MSA	46.8	55.8	52.4	46
AL	36.5	38	37	32
PL	55.5	61.5	57	48
S	65.8	65.8	65.8	53
MA	57.2	62	60.2	51
PSL	34	36	35	34
LSS	142.3	150	146.5	128
SL	53.6	59.2	57	68
PLN	20.5	21.5	21	19
QW	67.2	70.8	68.5	53
DS Min.	37	40	38	36
DS Max.	64.5	76.5	70	53
h_1	48.2	48.9	48.5	36
h_2	71.5	80.7	75.5	73
SA/SP	1.12	1.12	1.12	1

AW/AMB	1.8	2.06	1.93	1.8
AW/QW	1.45	1.67	1.53	1.92
SL/QW	0.78	0.88	0.81	1.28
LSS/QW	2.1	2.1	2.1	2.4
HS/PLN	1.65	1.68	1.66	1.78
Cx I	55.2	70	64.3	58
Tr I	31	37	33.5	37
Fe I	47.2	49.5	48	37
Ge I	18.5	22.3	19.5	22
Ti I	40.5	46.5	43	41
Ta I	77.5	83.5	80.5	80
Leg I	275	310	288.8	275
Cx II	60	65	62.5	53
Tr II	30.5	35.5	32.5	29
Fe II	43.5	48	45.5	37
Ge II	16	24	18.5	19
Ti II	33	35	34	36
Ta II	60	68.8	63.5	65
Leg II	240	265	256.5	239
Cx III	59	66.1	62.8	51
Tr III	32	38.9	35.5	27
Fe III	45.6	52.7	49	43
Ge III	16.5	20	18	15
Ti III	29	35.5	32.5	31
Ta III	50	58.1	54	51
Leg III	238	265	251.8	218
IP	765	815	796.5	732