

A new species and a new host record of the genus *Eutrombidium* Verdun (Acari: Eutrombidiidae) from Iran

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Abstract

Eutrombidium mossadeghi **sp. nov.** (Acari: Eutrombidiidae) is described and illustrated from larvae ectoparasitic on *Gryllus domesticus* Linnaeus and *G. desertus* Pallas (Orthoptera: Gryllidae) from Ahwaz, Iran. This is the first record of *Gryllus desertus* as a host for the genus *Eutrombidium* Verdun.

Key words: Acari, Eutrombidiidae, *Eutrombidium mossadeghi* **sp. nov.**, *Gryllus domesticus*, *G. desertus*, Iran

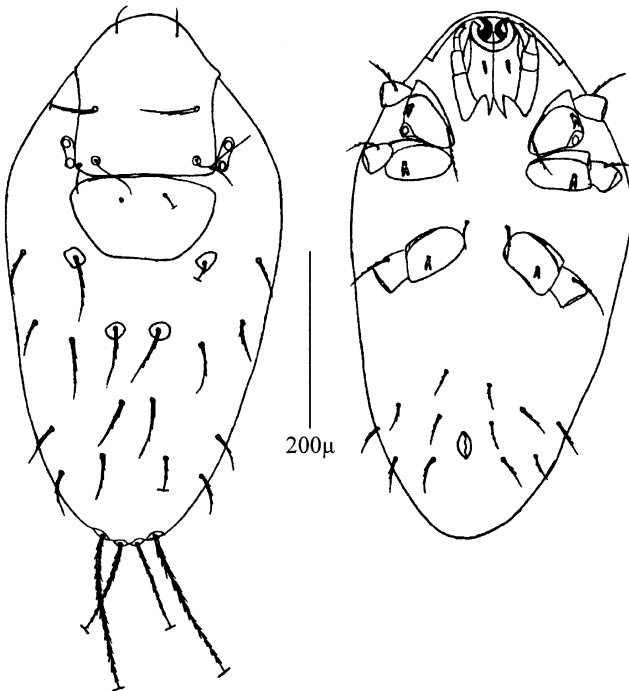
Introduction

Only one species of larval *Eutrombidium* has been described from Iran hitherto (Saboori *et al.* 2000).

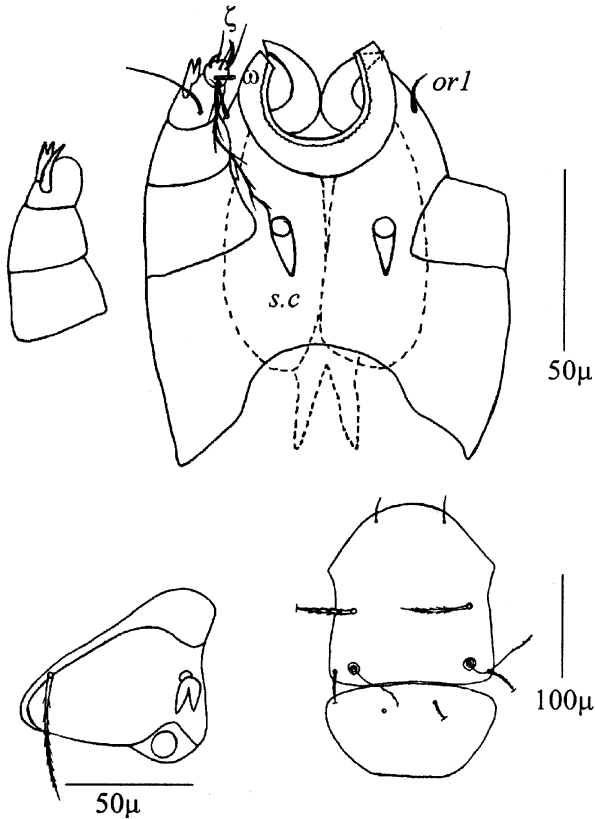
In this paper we describe a new species of *Eutrombidium* (larva) ectoparasitic on *Gryllus domesticus* L. and *G. desertus* Pallas from Iran. The terminology and abbreviations are adapted from Southcott (1993) and Zhang & Saboori (1997). Measurements are given in micrometers.

Eutrombidium mossadeghi* sp. nov. (Figs. 1-9)Description*

Holotype larva: idiosoma oval, length 630, maximum width 291. Scutum pentagonal (Figs. 1 & 5), antero-lateral parts of scutum deflexed, with 2 antero-lateral angles directed ventrally in normal position; anterior end rounded, posterior border slightly concave; lateral borders slightly concave, posterolateral angles rounded; AM setae slender, spiniform; AL and PL scutalae stronger, tapering, pointed and setulose. Sensillary setae filiform (Fig. 5).



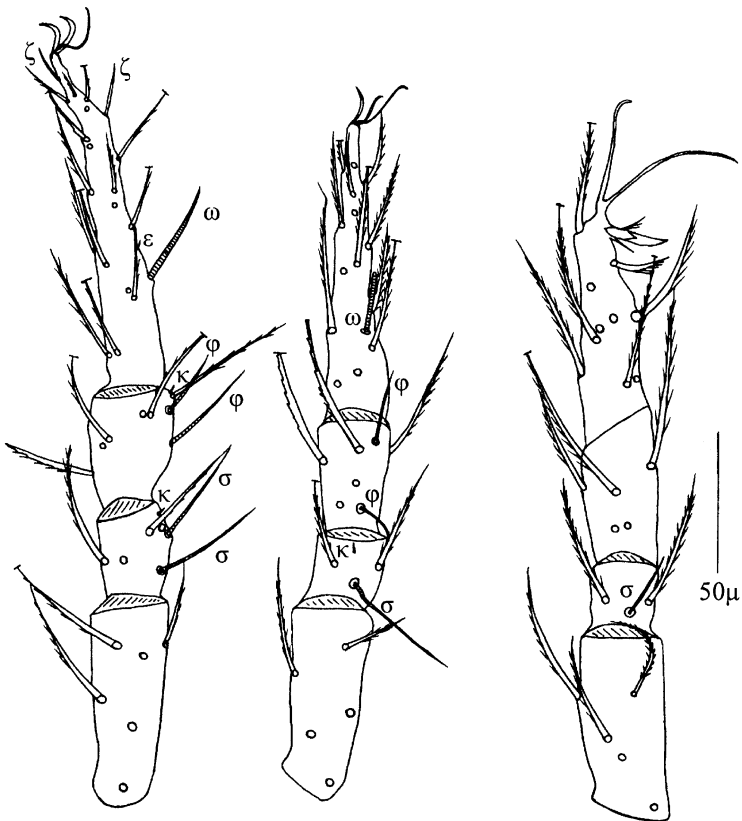
FIGURES 1-2. *Eutrombidium mossadeghi* sp. nov. (larva). 1, idiosoma, dorsal view; 2, idiosoma and gnathosoma, ventral view.



FIGURES 3-6. *Eutrombidium mossadeghi* sp. nov. (larva). 3, palp, dorsal view; 4, gnathosoma, ventral view; 5, scutum and scutellum; 6, coxa I and urstigma

Scutellum trapezium with anterior margin the longest, with two scutalae, similar to those of scutum, arising near anterior margin (Fig. 5). Scutum and scutellum porose. Each lateral eye pair on small ocular shield, about 15 x 34 (Fig. 1). Eyes circular, diameter of anterior 10, posterior 9.

Dorsal idiosomal setae arranged 6 (c row), 6 (d row), 4 (e row), 4 (f row), 4 (h row), total 24; setae tapering, pointed, setulose (Fig.1). Middle pair of first and inner pair of second rows arise from small expanded basal plates, 22 x 17 and 22 x 15 respectively; other setae without expanded basal plates except posterior pygosomals (*h* setae), which have small basal plates. Posterior pygosomals long, tapering and setulose and are broken at the end.



FIGURES 7-9. *Eutrombidium mossadeghi* sp. nov. (larva). 7, femur-tarsus I; 8, femur-tarsus II; 9, femur-tarsus III.

Table 1. Metric data of *Eutrombidium mossadeghi* sp. nov. larvae

Character	Holotype	Paratype	Character	Holotype	Paratype
IL	630	1135	MPS	>92	--
IW	291	640	AW/QW	2.31	2.56
LN	~12	~12	PSL/PLN	4.47	4.29
MA	78	75	Ta I(L)	109	104
AW	109	105	Ta I(H)	14	17
PW	143	135	Ti I	36	41
SB	106	102	Ge I	27	34
MSA	80	73	Fe I	65	63
ASB	145	136	Tr I	34	32
PSB	14	15	Cx I	65	68
L	159	151	Ta II(L)	90	--
W	152	153	Ta II(H)	19	--
AP	60	61	Ti II	36	--
SA	53	51	Ge II	24	23
SP	19	19	Fe II	61	61
AM	29	~15	Tr II	34	34
AL	56	--	Cx II	63	68
PL	--	--	Ta III(L)	70	68
AMB	63	61	Ta III(H)	19	17
SE	~65	--	Ti III	48	48
PLN	19	17	Ge III	22	23
PSL	85	73	Fe III	58	61
PSW	155	146	Tr III	36	36
QW	47	41	Cx III	61	61
QL	--	44	SA/SP	2.78	2.68
DS	34-61	43-61	AW/AMB	1.73	1.72
MDS	51	53	QL/QW	--	1.07
LPS	>153	--	PSW/QW	3.29	3.56

Ventral surface of idiosoma with two setulose setae a little anterior to coxae III, 27 long. Well behind coxae III, ventral hysterosomalae arranged 4, 4 (in front of anus), 4 (behind anus); anus oval, 24 x 17, lips of valves irregular (Fig. 2).

Medial coxala I (*1a*) slender, setulose, 48 long; lateral coxala I (*1b*) and coxalae II (*2b*) and III (*3b*) large, distinctly bilobed, 14-19 long, the lobes fully separated, equal in size or almost so, the split extending about 3/4 of length of scobillum from apex (Fig. 6). Urstigma oval, leg scobalae normal, pointed.

Leg setal formula: Leg I: Ta-1 ω , 1 ϵ , 2 ζ , 17B; Ti- 2 ϕ , 1 κ , 6B; Ge- 2 σ , 1 κ , 4B; Fe- 6B; Tr- 1B (Fig. 7). Leg II: Ta- 1 ω , 14B; Ti- 2 ϕ , 5B; Ge-1 σ , 1 κ , 2B; Fe- 5B; Tr- 1B (Fig. 8). Leg III: Ta- 11B; Ti- 5B; Ge- 1 σ , 2B; Fe- 4 or 5B; Tr- 1B (Fig. 9). Tarsal claws I and II normal, fal-ciform and smooth. Tarsus III with roxala arising halfway along its dorsum, setulose; cultala arising from 3/4 of distance along dorsum; dumala with some setules; calcanala with some setules and broken at the end. Anterior claw thickened, with sharply pointed tip; middle and posterior claw slender.

Gnathosoma small, under anterior projection of dorsal scutum. Sclerotized oral "ring" not closed dorsally, with membranes inside it. Inner margin of outer ring finely dentate. Oral setae (*orI*) nude. Chelicerae robust; cheliceral blade sickled-shaped with 1 tooth subterminally (Fig. 4). Palpal trochanter, femur and genu without setae. Palptibia with a nude seta and a conical seta (Fig. 3). Palpal tibial claw with two small, separated, blunt, finger-like tines. Palptarsus with a solenidion, a eupathidium, a barbed and long seta and 4 nude setae (Fig. 4). Subcapitular setae (*s.c*) conical, blunt, 12 x 5 across at base.

IP = 336 + 334 + 295 = 965 holotype

Measurements are given in table 1.

Etymology

This species is named in honour of Prof. M. S. Mossadegh (Dept. of Plant Protection, Shahid Chamran University, Ahwaz, Iran).

Types

The holotype (ARS-20000913-1a) and paratype (ARS-20000913-1b) larvae were ectoparasitic on *G. domesticus* and *G. desertus*, collected by A. Nemati on 23 June 1998, in Ahwaz, Iran. The holotype is deposited in the Acarological Collection, Department of Plant Protection, College of Agriculture, Shahid Chamran University, Ahwaz, Iran, and the paratype is deposited in the Acarological Collection, Zoological Museum, College of Agriculture, Tehran University, Karaj, Iran.

Remarks

E. mossadeghi **sp. nov.** differs from all *Eutrombidium* species (except *E. sepasgosariani* Saboori *et al.*, 2000) with the large and deeply cleft lateral coxala I and coxalae II and III.

It differs from *E. sepasgosariani* by the shape of lateral coxala I and coxalae II-III, and their equal lobes; by setulose medial coxala I (nude in *E. sepasgosariani*); by the number of normal setae on Ti I (6 v.s. 5) and Ti III (5 v.s. 4); by longer AW (105-109 v.s. 66-69), PW (135-143 v.s. 99-102), SB (102-106 v.s. 72-74), MSA (73-80 v.s. 44), ASB (136-145 v.s. 94), L (151-159 v.s. 108), W (152-153 v.s. 105-110), AMB (61-63 v.s. 32-33), PSL (73-85 v.s. 55), PSW (146-155 v.s. 97-99), LPS (>153 v.s. 38-44), MPS (>92 v.s. 66), Ta I (104-109 v.s. 60-63), Ta II (116 v.s. 52), Ta III (68-70 v.s. 38-44) and IP (965 v.s. 620).

It differs from *E. orientale* Southcott, 1993 by the number of solenidialae on Ge II (1 v.s. 2), Ti I (2 v.s. 1) and Ti II (2 v.s. 0); by the number of normal setae on Ti I (6 v.s. 7), Ti II (5 v.s. 7), Ti III (5 v.s. 4) and Fe III (5 v.s. 4); by longer MA (75-78 v.s. 50-66), PW (135-143 v.s. 108-127), SB (102-106 v.s. 81-95), MSA (73-80 v.s. 54-63), ASB (136-145 v.s. 101-127), L (151-159 v.s. 120-145), AP (60-61 v.s. 40-45), SA (51-53 v.s. 29-33), LPS (>153 v.s. 75-90), Ta I (104-109 v.s. 70-82), Ta II (116 v.s. 63-74) and Ta III (68-70 v.s. 51-62); by shorter AMB (61-63 v.s. 77-93).

It differs from *E. africanum* Southcott, 1993 by the number of solenidialae on Ge I (2 v.s. 1) and Ti II (2 v.s. 0); by the number of normal setae on Ti I (6 v.s. 7), Ge I (4 v.s. 5) and Fe I (6 v.s. 5); by longer MA (75-78 v.s. 51), PW (135-143 v.s. 115-124), SB (102-106 v.s. 88-91), MSA (73-80 v.s. 48), ASB (136-145 v.s. 108), L (151-159 v.s. 131), W (152-153 v.s. 131-140), AP (60-61 v.s. 40-47), SA (51-53 v.s. 27-38), LPS (>153 v.s. 93-135), Ta I (104-109 v.s. 74-90), Ta II (90 v.s. 62-81) and Ta III (68-70 v.s. 51-62).

It differs from *E. indicum* Southcott, 1993 by the number of solenidialae on Ti I (2 v.s. 1) and Ti II (2 v.s. 1); by the number of normal setae on Ti I (6 v.s. 7), Ti II (5 v.s. 6) and Fe III (5 v.s. 4); by longer MA (75-78 v.s. 57), PW (135-143 v.s. 104-106), SB (102-106 v.s. 77-79), MSA (73-80 v.s. 56), ASB (136-145 v.s. 107), L (151-159 v.s. 134), W (152-153 v.s. 122-125), AP (60-61 v.s. 35-36), AL (56 v.s. 36-38), LPS (>153 v.s. 116-120), Ta I (104-109 v.s. 90) and Ta II (90 v.s. 66); by shorter LN (~12 v.s. 33).

It differs from *E. trigonum* (Hermann, 1804) by longer MA (75-78 v.s. 49-61), PW (135-143 v.s. 116-130), MSA (73-80 v.s. 48-58), ASB (136-145 v.s. 108-119), L (151-159 v.s. 130-145), AP (60-61 v.s. 43-50), SA (51-53 v.s. 27-36), LPS (>153 v.s. 59-79), Ta I (104-109 v.s. 78) and Ta II (90 v.s. 58-73), and by shorter AM (~15-29 v.s. 34-62).

It differs from *E. macfarlanei* Southcott, 1993 by the number of solenidialae on Ti I (2 v.s. 1) and Ti II (2 v.s. 0); by the number of normal setae on Fe III (5 v.s. 4); by longer PW (135-143 v.s. 98), SB (102-106 v.s. 75), MSA (73-80 v.s. 25), ASB (136-145 v.s. 59), L (151-159 v.s. 82), AP (60-61 v.s. 38), SA (51-53 v.s. 21), LPS (>153 v.s. 96), Ta I (104-109 v.s. 81) and Ta II (116 v.s. 67).

It differs from *E. feldmanmuhsammae* Feider, 1977 by longer MA (75-78 v.s. 52-55), PW (135-143 v.s. 90-100), SB (102-106 v.s. 68-73), MSA (73-80 v.s. 48), ASB (136-145 v.s. 85-87), L (151-159 v.s. 103-116), W (152-153 v.s. 97-116), AP (60-61 v.s. 35-36), SA (51-53 v.s. 19), Ta I (104-109 v.s. 71-76), Ta II (90 v.s. 57-64), and Ta III (68-70 v.s. 43-49).

It differs from *E. australiense* Southcott, 1993 by longer MA (75-78 v.s. 38-62), AW (105-109 v.s. 71-97), PW (135-143 v.s. 88-113), SB (102-106 v.s. 63-84), MSA (73-80 v.s. 33-50), ASB (136-145 v.s. 79-100), L (151-159 v.s. 95-121), W (152-153 v.s. 95-126), AP (60-61 v.s. 36-49), SA (51-53 v.s. 24-34), AMB (60-61 v.s. 35-56), LPS (>153 v.s. 52-79), Ta I (104-109 v.s. 48-69) and Ta II (90 v.s. 41-63).

It differs from *E. occidentale* Southcott, 1993 by the number of solenidialae on Ti II (2 v.s. 0); by the number of normal setae on Ge I (5 v.s.4), Ti II (5 v.s. 7), Ti III (5 v.s. 4) and Fe III (5 v.s. 4); by longer MA (75-78 v.s. 54), PW (135-143 v.s. 114-117), MSA (73-80 v.s. 52), ASB (136-145 v.s. 105), L (151-159 v.s. 116-126), W (152-153 v.s. 131-134), AP (60-61 v.s. 40-45), SA (51-53 v.s. 28-29), LPS (>153 v.s. 79-82), Ta I (104-109 v.s. 68-77), Ta II (90 v.s. 61-64) and Ta III (68-70 v.s. 51-55).

It differs from *E. verdense* Southcott, 1993 by the number of solenidialae on Ti I (2 v.s. 1) and Ti II (2 v.s. 1); by the number of normal setae on Ti I (6 v.s. 7), Ti II (5 v.s. 3) and Ge I (4 v.s. 2); by longer MA (75-78 v.s. 57-64), PW (135-143 v.s. 119-123), SB (102-106 v.s. 83-91), MSA (73-80 v.s. 54-60), ASB (136-145 v.s. 106-111), L (151-159 v.s. 129-135), W (152-153 v.s. 131-140), AP (60-61 v.s. 42-45), SA (51-53 v.s. 29-30), LPS (>153 v.s. 91-98), Ta I (104-109 v.s. 64-78), Ta II (90 v.s. 63-64), and Ta III (68-70 v.s. 51-56).

It differs from *E. centrale* Southcott, 1993 by the number of solenidialae on Ti II (2 v.s.0); by the number of normal setae on Ti I (6 v.s. 7), Ge I (5 v.s. 4) and Fe III (5 v.s. 4); by longer MA (75-78 v.s. 38-50), AW (105-109 v.s. 86-99), PW (135-143 v.s. 92-104), SB (102-106 v.s. 70-82), MSA (73-80 v.s. 30-46), ASB (136-145 v.s. 79-106), L (151-159 v.s. 98-126), W (152-153 v.s. 110-120), AP (60-61 v.s. 34-43), SA (51-53 v.s. 23-27), LPS (>153 v.s. 63-72), Ta I (104-109 v.s. 68-73) and Ta II (90 v.s. 59-63)

It differs from *E. robauxi* Southcott, 1993 by the number of solenidialae on Ti I (2 v.s. 1) and Ti II (2 v.s.1); by the number of normal setae on Fe III (5 v.s. 4); by longer MA (75-78 v.s. 54-57), AW (105-109 v.s. 84-97), PW (135-143 v.s. 90-98), SB (102-106 v.s. 63-72), MSA (73-80 v.s. 48-56), ASB (136-145 v.s. 80-98), L (151-159 v.s. 102-121), W (152-153 v.s. 102-116), AP (60-61 v.s. 30-38), SA (51-53 v.s. 18-22), LPS (>153 v.s. 81-98), Ta I (104-109 v.s. 67-73), and Ta II (90 v.s. 59-66).

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