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Article

Stigmaeus kermaniensis, a new species of the genus *Stigmaeus* Koch (Acari: Stigmaeidae) from Iran

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Abstract

A new species of the genus *Stigmaeus* Koch (Acari: Stigmaeidae), *S. kermaniensis* **sp. nov.** is described and illustrated. The new species was collected from soil under pistachio orchards, *Pistacia vera* (Linnaeaus), in Kerman province of Iran.

Key words: Acari, Stigmaeidae, *Stigmaeus,* new species*,* Iran.

Introduction

Mites of the family Stigmaeidae (Acari: Stigmaeidae) are cosmopolitan and consist of predators, ectoparasites of dipterans and pollen feeders. These mites occur in many habitats and form an important component of soil, plant and litter acarofauna (Summers 1966; Ueckermann & Meyer 1987; Walter *et al.* 2009). The genus *Stigmaeus* Koch is one of the most important genera of this family and is represented by 13 species in Iran, namely: *S. elongatus* Berlese, 1886*; S. longipilis* (Canestrini, 1889); *S. sphagneti* (Hull, 1918); *S. unicus* Kuznetzov, 1977; *S. pilatus* Kuznetzov, 1978; *S. candidus* Fan & Li, 1993; *S. alvandis* Khanjani & Ueckermann, 2002; *S. malekii* Haddad *et al.,* 2006; *S. shabestariensis* Haddad, Lotfollahi & Akbari, 2010; *S. shendabadiensis* Haddad, Akbari & Lotfollahi, 2010; *S. boshroyehensis* Khanjani *et al*., 2010; *S. marandiensis* Bagheri & Ueckermann*,* 2011; *S. ueckermanni* Pahlavan Yali, Khanjani & Razmjou, 2011; (Khanjani & Ueckermann 2002; Faraji & Ueckermann 2006; Haddad Irani-Nejad *et al*. 2006, 2010a, b; Khanjani *et al.* 2010; Akbari *et al.* 2010; Bagheri *et al.* 2011; Pahlavan Yali *et al.* 2011). In this paper a new species is described as *S. kermaniensis* **sp. nov**.

Materials and methods

Mites were extracted from soil using a Berlese funnel. Collected specimens were cleared in Nesbitt's fluid and mounted in Hoyer's Medium. The gnathosoma was measured from the base of the chelicerae to the tip of palptibial claw, the length of idiosoma from the suture between gnathosoma and idiosoma to the posterior margin

of idiosoma, the width of idiosoma at the broadest part of the idiosoma and setae were measured from their insertion to their tips; distances between setae were measured between their insertion. Dorsal setal and leg setal designations follow Kethley (1990) and Grandjean (1944), respectively. All measurements are given in micrometers (μm).

Results

Family Stigmaeidae Oudemans, 1931
Type genus: *Stigmaeus* Koch, 1836

Genus: *Stigmaeus* Koch, 1836
Type species: *Stigmaeus cruentus* Koch, 1836

Diagnosis

Body narrowly to broadly oval, members of the genus *Stigmaeus* are recognized by having free chelicerae and 10−16 dorsal idiosomal shields (5 in *S. elangatus*) mostly dimpled or reticulated, prodorsum bears 4 pairs of setae on single or a large median and a pair of lateral shields; eyes present or absent, post-ocular bodies (*pob*) present or absent. Dorsal hysterosomal area without distict shields or with 1−2 shields surrounded by 3−5 pairs of platelets, median shield with 2−3 pairs of setae; humeral shields large or small in ventrolateral position. Suranal shield entire or divided medially, with two or three pairs of setae (h_1, h_2 and h_3), h_3 absent or present; coxisternal shields smooth or reticulate; opisthosomal venter with 3−5 pairs of aggenital setae (ag_1-ag_5); anogenital area with 1−3 pairs setae (g_1-g_3) and three pairs pseudanal setae (ps_1-ps_3). Palptibial claw subequal to or slightly shorter than palptarsus; accessory claw seta-like or spine-like; terminal eupathidia on palptarsus basally fused and split into three long prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1ω + 1 subterminal spine-like eupathidium + 3 basally fused eupathidia.

Stigmaeus kermaniensis Changizi & Bagheri sp. nov. (Figs. 1−9)

Female (n= 2)

Dimensions of holotype (measurements of paratype in parenthesis): length of body (including gnathosoma) 513 (510), (excluding gnathosoma) 420 (417), width 181 (170).

Dorsum (Fig. 1): Prodorsum without shield; setae *sce*, d_2, e_2 and f_1 on small platelets and setae *h1, h2 and h3* on suranal shield. Eyes and postocular bodies absent; setae *ve*, *sce*, d_2, f_1, and c_2 longer than other dorsal body setae**.** Dimensions of dorsal setae as follows: *vi* 22(21); *ve* 66 (64); *sci* 28 (26); *sce* 68 (65); c_1 28(27); c_2 (70); d_1 26 (25); d_2 40(38); e_1 21 (25); e_2 22 (21); f_1 52 (51); h_1 29 (28); h_2 39 (38); h_3 27 (26). Distances between dorsal setae: *vi-vi* 31 (34); *ve-ve* 43 (44); *vi-ve* 26 (30); *ve-sci* 46 (42); *sci-sci* 56 (52); *sce-sce* 128 (129); c_1-c_1 51 (50); c_1-c_2 51 (50); c_2-c_2 163 (165); c_1-d_1 70 (68); c_1-d_2 48 (50); c_2-d_2 40 (41); d_1-d_1 45 (44)*;* d_1-d_2 5 1 (52); d_2-d_2 117 (119); d_1-e_1 48 (47); d_2-e_2 100 (102); e_1-e_1 50 (52); e_1-e_2 27 (30); e_1-f_1 32 (33); f_1-f_1 67 (69); f_1-h_1 45 (57); f_1-h_2 42 (44); f_1-h_3 43 (44); h_1-h_1 30 (30); h_1-h_2 16(15); h_2-

h_2 64 (63); h_2-h_3 11 (12); h_3-h_3 72 (73); ratios: *vi*/ *vi*-*vi* 0.7; c_1/ c_1-c_1 0.54; d_1/ d_1-d_1 0.57; e_1/ e_1-e_1 0.42; f_1/ *f1*-f_1 0.77; h_1/ h_1-*h1* 0.96; h_2/ h_2-h_2 0.6; h_3/ h_3-h_3 0.37.

Venter (Fig. 2): Coxisternal shields smooth and divided. Anogenital area (Fig. 3) with four pairs of aggenital setae (*ag1*-*ag4*), three pairs of genital setae (*g1*-*g3*) and three pairs of anal setae (*ps1*-*ps3*); length of ventral setae as follows: *1a* 28(26); *3a* 32(30); *4a* 20(20); *g1* 10(10); *g2* 12(10); *g3* 24(25) ; *ag1* 22(18); *ag2* 20(21); *ag3* 22(22); *ag4* 34(32); *ps1* 41(42); *ps2* 34(35); *ps3* 21(33).

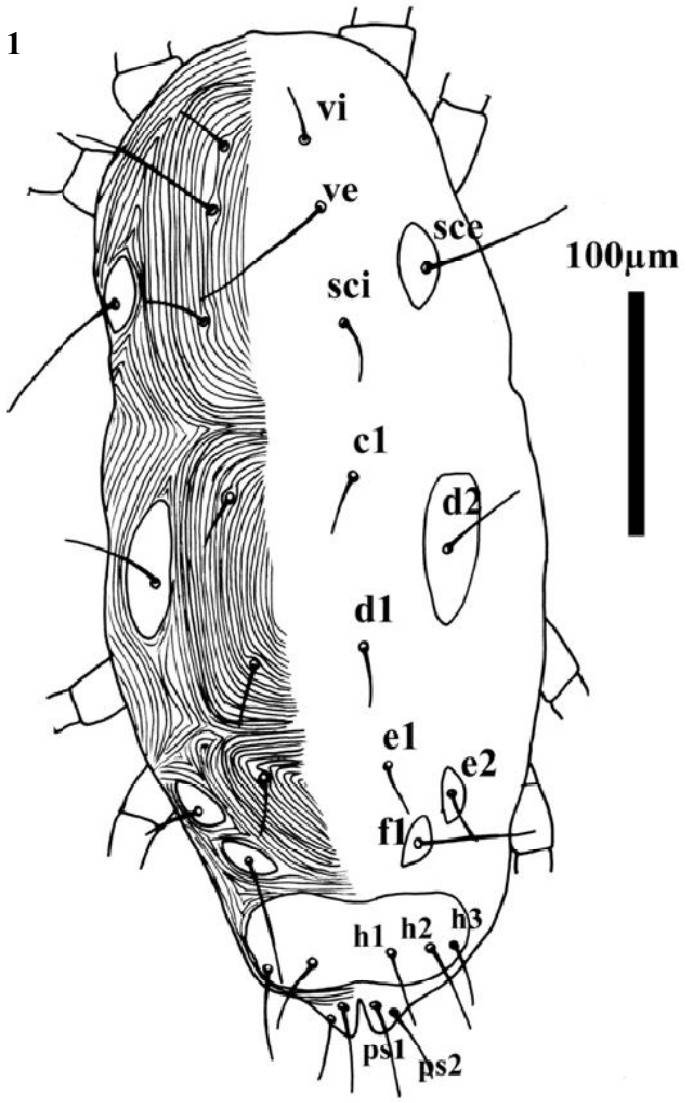
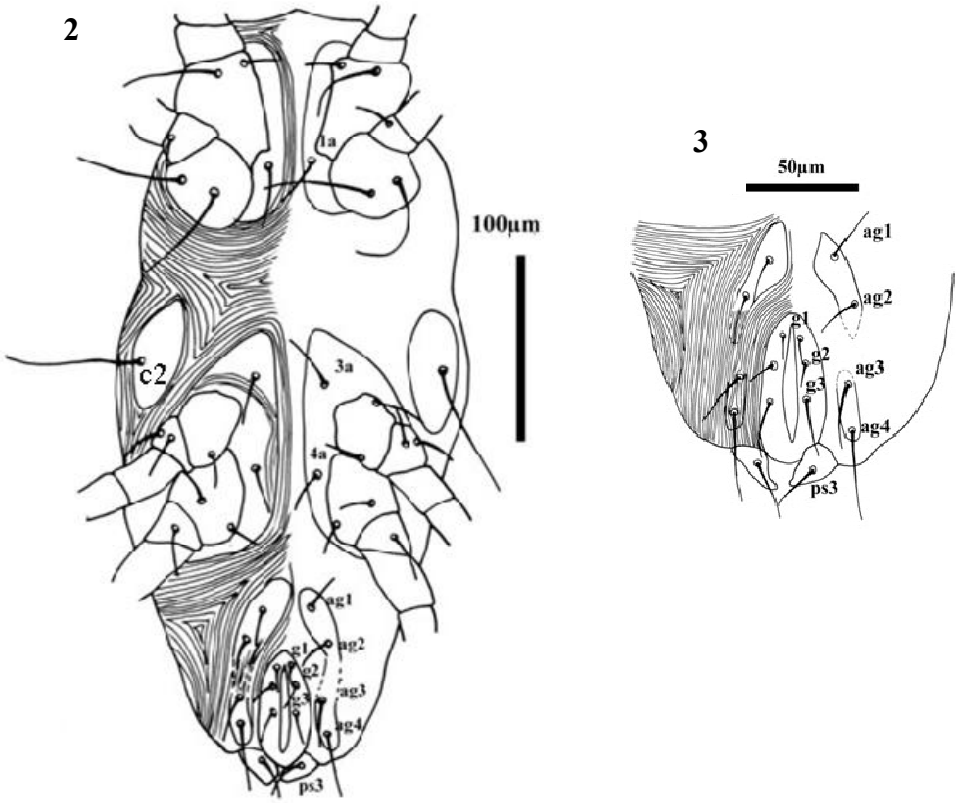


Figure 1. *Stigmaeus kermaniensis* **Changizi & Bagheri sp. nov.** (Female). Dorsal view of idiosoma.



Figures 2−3. *Stigmaeus kermaniensis* **Changizi & Bagheri sp. nov.** (Female). 2. Ventral view of idiosoma; 3. Anogenital area.

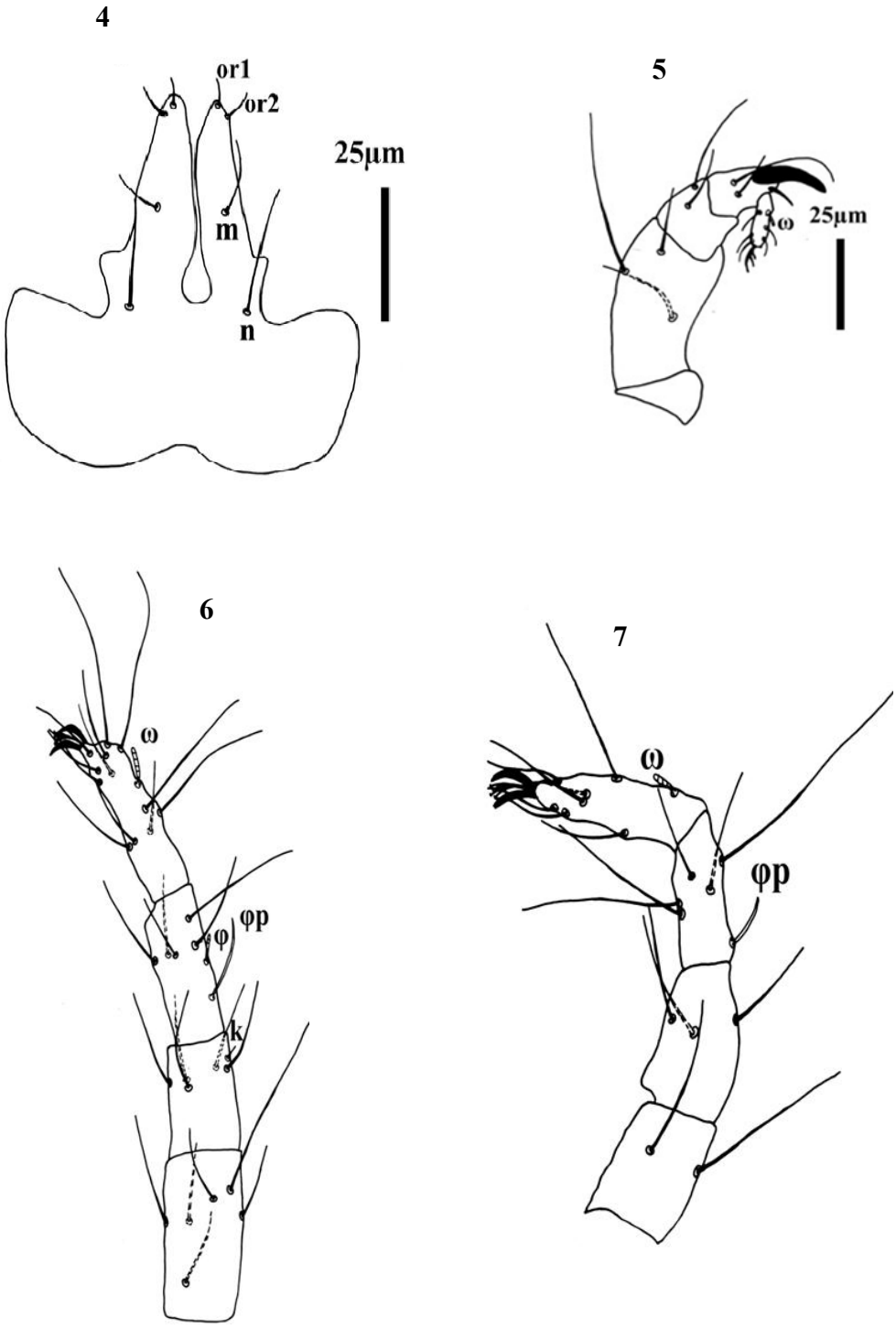
Gnathosoma (Fig. 4): Subcapitulum with two pairs of subcapitular setae (*m* and *n*), *m* 20 (21), *n* 28 (29) and two pairs of adoral setae (ro_1 and ro_2), ro_1 7 (7), ro_2 10 (9); palpi five segmented (Fig. 5); tarsus with one terminal tridentate eupathidium + one solenidion (ω) and four simple setae, one simple eupathidion; tibia with one well-developed claw + one seta-like accessory claw and two setae; genu with two setae and femur with three setae.

Legs (Figs. 6−9): Length of legs I-IV (from base of coxae to tips of tarsal claws): 226 (210)- 162 (153)- 157 (156)- 180 (182). Chaetotaxy of leg segments as follows: coxae (excluding *1a*, *3a* and *4a*) 2-2-2-2, trochanters 1-1-2-1; femora 6-5-3-2; genua 5 (+ 1κ)-4-4-3; tibiae 5 (+1φ +1φρ)-5 (+1φρ)-5 (+1φρ)-5(+1φρ); tarsi 13 (+1ω)-8 (+1ω)-7 (+1ω)-7(+1ω).

Male and immature stages: Unknown.

Etymology

The specific epithet is derived from its type locality, Kerman.



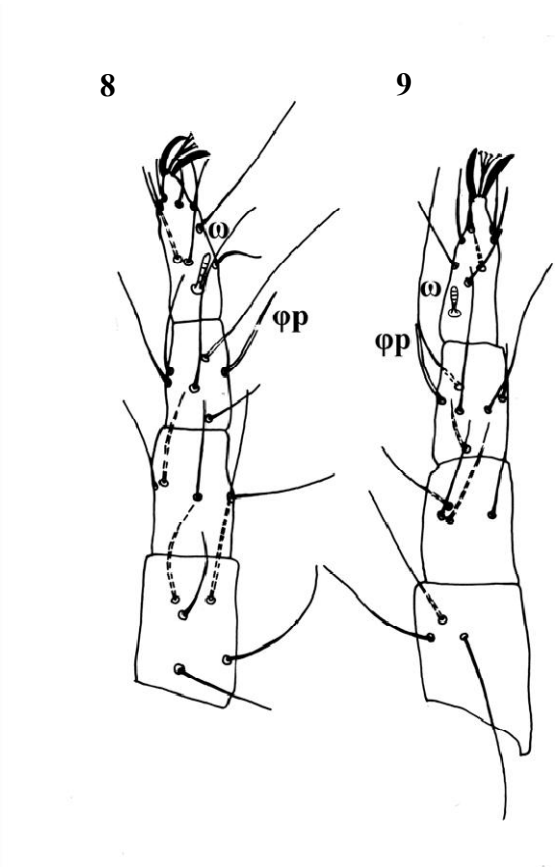
Figures 4−7. *Stigmaeus kermaniensis* **Changizi & Bagheri sp. nov.** (Female). 4. Subcapitulum; 5. Palp; 6. Leg I; 7. Leg IV.

Type material

Holotype female and one paratype female were collected from soil in pistachio orchards, 20 August 2010, Kerman, Iran, by Mohammad Changizi. The holotype female will be deposit in the Mite Collection of Plant Protection Research Institute, Pretoria, South Africa and paratype female in the Acarological Collection, Department of Plant Protection, Faculty of Agriculture, University of Maragheh, Iran.

Remarks

Stigmauss kermaniensis Changizi & Bagheri **sp. nov.** resembles *S. elongatus* Berlese, 1886 and *S. candidus* Fan & Li, 1993 in shape of dorsal body and chaetotaxy of femora I-IV. However these three species distinguished from each other by the following features: (1) prodorsum without prodorsal shield in new species *vs.* with a small and reticulated prodorsal shield in two later species, (2) *S. elongatus* with five pairs of aggenital setae *vs*. with four pairs in the later species, (3) numbers of setae on genua II-IV differ in three species: [(*S. kermaniensis* 4-4-3), (*S. elongatus* 5-3-2) and (*S. candidus* 2-0-1)], (4) numbers of simple setae on tarsus I-IV differ in three species: [(*S. kermaniensis* 13-8-7-7), (*S. elongatus* 13-9-7-7) and (*S. candidus* 12-8-6-6)].



Figures 8–9. *Stigmaeus kermaniensis* **Changizi & Bagheri sp. nov.** (Female). 8. Leg II; 9. Leg III.

Acknowledgment

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چکیده

گونه جدیدی از جنس *Stigmaeus* Koch (Acari: Stigmaeidae) به نام *S. kermaniensis* **sp. nov.** توصیف و ترسیم می‌شود. این گونه از خاک باغ‌های پسته، *Pistacia vera* (Linnaeaus) در استان کرمان جمع‌آوری شد.