A NEW SPECIES OF STIGMAEID MITES FROM EAST AZARBAIJAN, IRAN (ACARI: PROSTIGMATA: STIGMAEIDAE)

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ABSTRACT: A new species, *Stigmaeus shabestariensis* n. sp., is described and illustrated from specimens collected from soil of an apple orchard at Shabestar (Shendabad), East Azarbaijan, Iran. This species is distinct from similar species of *Stigmaeus* in having two extra isolated shields.

KEY WORDS: Acari, East Azarbaijan, new species, Stigmaeidae, *Stigmaeus*, Iran.

Stigmaeidae is the second most frequent and abundant group of predatory mites on plant leaves, after Phytoseiidae which feed on a variety of arthropods. These mites are generally orange, yellowish, greenish or reddish forming an important component of the Acari fauna of soil, litter, vegetation and even occur on sandflies. This family consists of at least 29 genera distinguished by the following combination of characters: dorsal shields absence or dorsum completely covered by 2-4 shields or partly covered by 3 or more shields ; having the so called "thumb-claw" process and terminal eupathidium on palptarsus; chelicerae free or partially fused and shape of empodia of leg tarsi; coxae I and II distinctly separated from coxae III and IV, and genital and anal openings contiguous (Flechtmann, 1975; Krantz, 1978; Martinez-Ortega et al., 1983; Fan & Zhang, 2005). To date one new species of the genus *Stigmaeus*, *Stigmaeus malekii* Haddad et al., 2006, has been reported from East Azarbaijan and in this paper the second new species is described and figured. The terminology and abbreviations follow Kethley (1990). All measurements are given in micrometres (µm).

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

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

Diagnosis. Idiosoma narrowly to broadly oval in dorsoventral view dimpled or reticulated in most species. Chelicerae incompletely retractile, right and left members indipendent. Palptibial claw subequal to or slightly shorter than palptarsus; accessory claw seta-like or spinelike; terminal eupathidia on

palptarsus basally fused and split into 3 long prongs; subcapitulum with 2 pairs of subcapitular setae, *m* anterolaterad of pharynx. Prodorsum typically with a large shield, bearing 3 pairs of setae (*vi*, *ve* and *sci*) and a pair of platelets bearing setae *sce*; at least one pair of eyes evident in some species, tough not in others, pob present or absent. Dorsal hysterosomal area C–F typically with 1– 2 shields surrounded by 3–5 pairs of platelets, shield with 2–3 pairs of setae; setae d_1 and d_2 never on the same shield; humeral shields large or small, dorso- or ventrolateral, with setae c_2; intercalary shields (F) obvious, entire or divided along midline, with a pair of setae (f_1). Suranal shield (H) entire or divided, with 2–3 pairs of setae (h_3 absent or present). Endopodal shields I–II and III–IV present, divided along midline. Numbers of setae on leg segments variable amoung species, except tibiae uniformly 7-6-6-6. Leg tarsal claws robust; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs(Fan & Zhang, 2005; Summers, 1962).

Stigmaeus shabestariensis **Haddad, Lotfollahi & Akbari n. sp.**
(Figs. 1–7)

FEMALE (n=5)**:** Idiosoma fusiform and elongate. Dorsal and ventral shields except the extra lateral shield on prodorsum are completely with a reticular design. Measurements of holotype (variations in measurements of paratypes in parentheses): Length of body (including gnathosoma) 424 (419–440), (excluding gnathosoma) 361 (354– 373), width 165 (165–185) (Fig. 1).

Gnathosoma**:** Subcapitulum faintly punctate, with 2 pairs of subcapitular (*m*, *n*) and 2 pairs of adoral setae (or_1, or_2) (Fig. 2). Palpal chaetotoxy: tarsus with 1 terminal tridentate eupathidium + 1 solenidion + 5 tactile setae; tibia with 1 well-developed claw + 1 spine-like accessory claw + 2 tactile setae; genua with 1 tactile setae; femur with 3 serrate setae (Fig. 3). Subcapitular setae *n* longer than *m*, *m* = 25, *n* = 38(38–41); *m*–*m* = 32 (28–32), *n*–*n* = 32 (32–33), *m*–*n* = 11 (11–12).

Dorsum(Fig. 1)**:** Prodorsum almost entirely striated, except for the reticulated propodosomal plate with setae *vi*, *ve* and *sci* and a pair of auxillary shields with setae *sce* , no eyes and pobs evident on propodosomal shield; ratios: *vi*: *vi*– *vi* = 0.5 (0.4–0.5), *ve*: *sci* = 1.2 (1.1–1.2), *sce*: *sci* = 1.1 (1.1–1.2); setae *vi* 17(17–19), *ve* 20, *sci* 17 (17–19), *sce* 19 (19–22); distances: *vi*–*vi* 32 (32–39), *vi*–*ve* 23 (23–25), *ve*-*ve* 48 (47–52), *ve*–*sci* 43 (39–43), *sci*-*sci* 79 (79–82),*sci*–*sce* 25 (22–25). Opisthosoma with an elongate central shield containing setae c_1 and c_2, a pair of elongate-oval lateral shield containing setae d_2 , 3 pairs of small platelets with setae e_1, e_2 and f_1 and a pair of no-setae bearing small platelets ; 14 pairs of dorsal setae (including c_2); setal lengths: c_1 15 (10–15), c_2 16 (16–21), d_1 13 (12–14), d_2 14 (13–15), e_1 15 (14–16), e_2 10 (10–14), f_1 17 (16–19); ratios c_1: c_1–c_1 = 0.4 (0.2–0.4), e_1: e_1–e_1 = 0.3, c_1–c_1: d_1–d_1: e_1–e_1: f_1–f_1 = 0.9–1: 1–1.1: 1–1.2: 1.4–1.6; distances: c_1–c_1 41 (38–41), c_1–d_1 67 (63–67), d_1–d_1 44 (40–44), d_1– d_2 48 (47–52), d_2-d_2 114 (113–136), d_1–e_1 57 (57–63), e_1–e_1 44 (41–48), e_1–e_2 35 (35–40), e_2-e_2 99 (99–118), e_1–f_1 29 (29– 32), f_1–f_1 62 (57–66); Suranal shield reticulated and complete, bearing 3 pairs of setae, h_1 22 (19–23), h_2 29 (28–31), h_3 19 (18–21).

Venter (Fig. 2)**:** Covered with striae except for coxal and anogenital area; Ventral setae *1a*, *3a* and *4a* equal in length, ratio *1a*: *3a*: *4a* = 1.2–1.3: 1.3–1.6: 1.2–1.9; lengths: *1a* 27 (24–27), *3a* 27 (27–32) and *4a* 25 (24– 29). Aggenital area with 4 pairs of setae, ag_1 and ag_2 on same platelet and ag_3 and ag_4 on same platelet, ag_1

18 (15–24), ag_2 18 (17–21), ag_3 21, ag_4 18 (17–21); anogenital valves with 2 pairs of genital setae and 3 pairs of pseudanal setae, lengths: g_1 23 (19–23), g_2 25 (20–25), ps_1 19 (19–23), ps_2 25 (25–27), ps_3 22 (22– 24).

Legs (Figs. 4–7)**:** Length: leg I 181 (175–181), leg II 140 (136–140), leg III 140 (133–140), leg IV 163 (158–163). Counts of setae (solenidia and setae κ not included) on legs I–IV: coxae 2, 2, 2, 2; trochanters 1, 1, 2, 1; femora 4, 4, 3, 2; genua 5 + 1κ, 5, 2, 2; tibiae 5 +1φ+1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 13 + 1ω, 9 + 1ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: $I\omega$ 17 (15–17), $II\omega$ 14 (13–14), $III\omega$ 7, $IV\omega$ 7.

Male: Unknown.

Type materials**:** Holotype female and four paratype females of *S. shabestariensis* n. sp. collected from the soil of an apple orchard at Shabestar (Shendabad), East Azarbaijan, Iran on 15 August 2009, A.Akbari. The type materials are preserved as slide mounted specimens. The holotype and two paratypes are deposited in the Acarological Collection, Department of Plant Protection, Faculty of Agriculture, University of Tabriz, Tabriz, Iran. Two other paratype females will be deposited in the Arachnida Collection of Plant Protection Research Institute, Pretoria, South Africa.

Remarks**:** This species closely resembles *Stigmaeus pulchellus* Kuznetsov, 1978 and *Stigmaeus purpurascens* Summers, 1962 in the body shape and arrangement of shields, however it differs from these species in that dorsal setae are much shorter, propodosomal shield has an extra isolated shield laterally, an extra no-setae-bearing shield lateral to intercalary shields and 2 pairs of aggenital shilds.

Etymology**:** This species is named after the region where it was collected.

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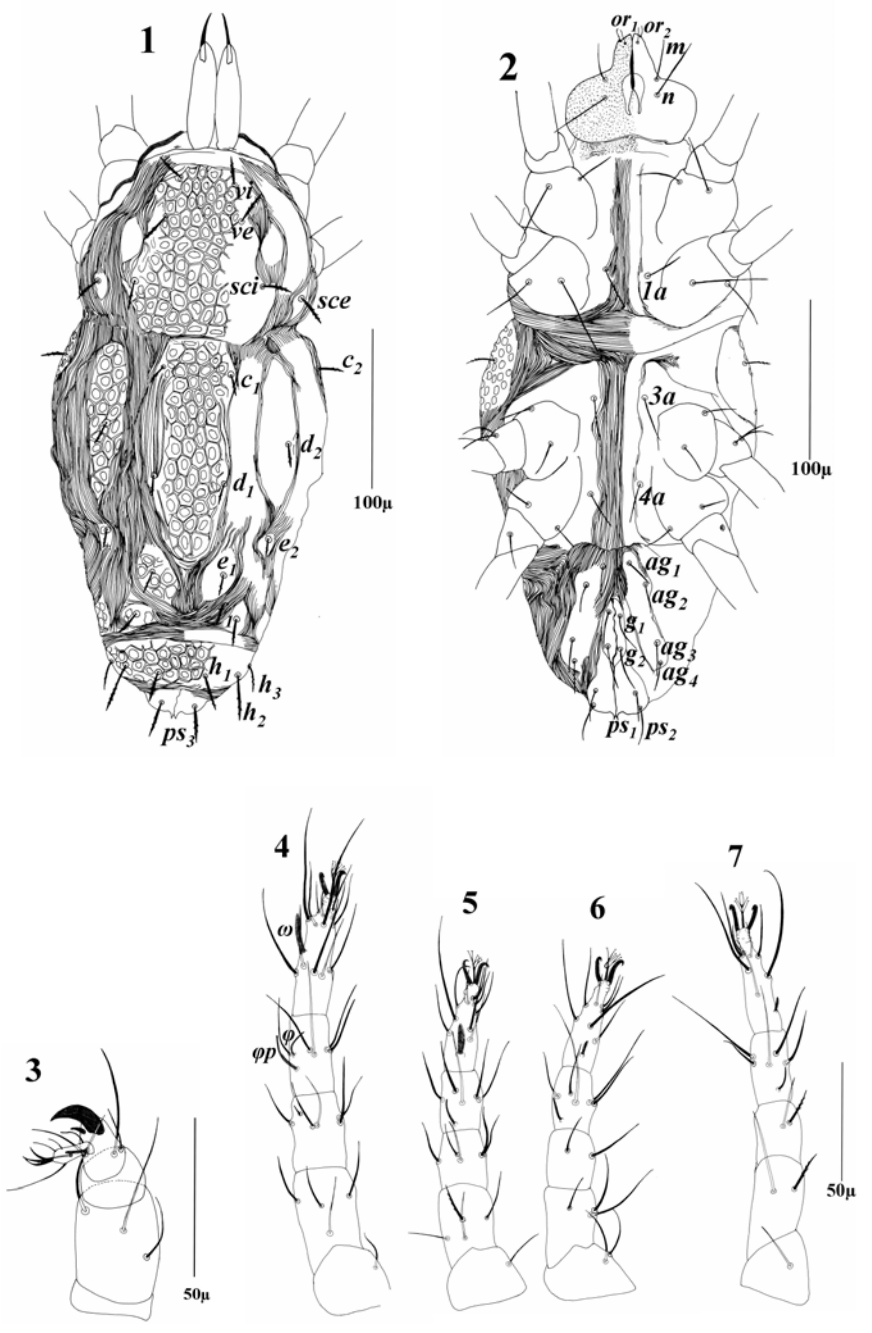

Figures 1–7. *Stigmaeus shabestariensis* Haddad, Lotfollahi & Akbari n. sp. (female): **1.** dorsal view, **2.** ventral view, **3.** Palp, **4.** leg I, **5.** leg II, **6.** leg III, **7.** leg IV.