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Article

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

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ABSTRACT
A new species of the genus *Stigmaeus* Koch, 1836 (Acari: Trombidiformes: Stigmaeidae), *S. lorestaniensis* **sp. nov.** is described and illustrated. This new species was collected from soil and litter under apricot tree, *Prunus armeniaca* L. (Rosaceae) in Lorestan province, southwest Iran.

KEY WORDS: Iran; Lorestan Province; new species; predatory mites; Raphignathoidea.

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INTRODUCTION

The family Stigmaeidae with more than 630 species belonging to 34 genera is the largest family in the superfamily Raphignathoidea (Beron 2020; Akyol 2021). Members of this family are usually predators and feed on small insects and spider mites; a few are parasitic and some are phytophagous (Fan and Zhang 2005). The genus *Stigmaeus* Koch, 1836, is the largest in this family and currently includes about 150 species (Beron 2020; Rostami and Mohammad-Doustaresharaf 2021). The majority of this genus are free-living predators and live in soil, plant litter, lichen, moss and stored products and a few of them are parasitic on insects like phlebotomine flies (Fan and Zhang 2005; Majidi *et al.* 2019; Khaustov 2020). So far 45 species have been reported from Iran (Rostami and Mohammad-Doustaresharaf 2021; Mohammad-Doustaresharaf and Bagheri 2021). In this paper, *S. lorestaniensis* **sp. nov.** is described as a new species.

MATERIALS AND METHODS

The samples were collected from soil and litter under *Prunus armeniaca* (Rosaceae), in Shorab village (33° 27′ N, 48° 41′ E), Lorestan province, Iran, then were labeled and taken by plastic bags to the Acarological laboratory, Department of Plant Protection, Faculty of Agriculture, Lorestan University, Iran. Mites were extracted by Berlese-Tullgren funnels. Specimens were mounted directly on

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permanent slides in Hoyer's medium. The slides were dried in an oven at about 50 °C for seven days, sealed with nail polish and examined under an Olympus BH-2 microscope. A camera lucida was used for the drawings. The terminology and abbreviations used in this description follow those of Kethley (1990) and Grandjean (1939, 1944, 1946). All measurements are given in micrometers (μm); the holotype measurements (female) are followed by the paratype in parentheses.

Superfamily Raphignathoidea
Family Stigmaeidae Oudemans, 1931
Genus *Stigmaeus* Koch, 1836

Type species: *Stigmaeus cruentus* Koch, 1836, by subsequent designation by Berlese (1910).

Stigmaeus lorestaniensis sp. nov. (Figs. 1–9)

http://zoobank.org/urn:lsid:zoobank.org:act:2320252F-D136-466C-844F-95D12F6FDD5B

Diagnosis

Eyes and post-ocular bodies absent; dorsal shields smooth; median zonal shield divided; suranal shield divided with two pairs of setae (*h3* absent); aggenital shield divided into two sclerites each bearing four setae and genital shield with two pairs of setae; palp genu with one seta; femora I-IV 4-4-3-2; genua I-IV 5+1κ-2-0-0; tarsi II with 8+1*ω*.

Description (female, n= 2)

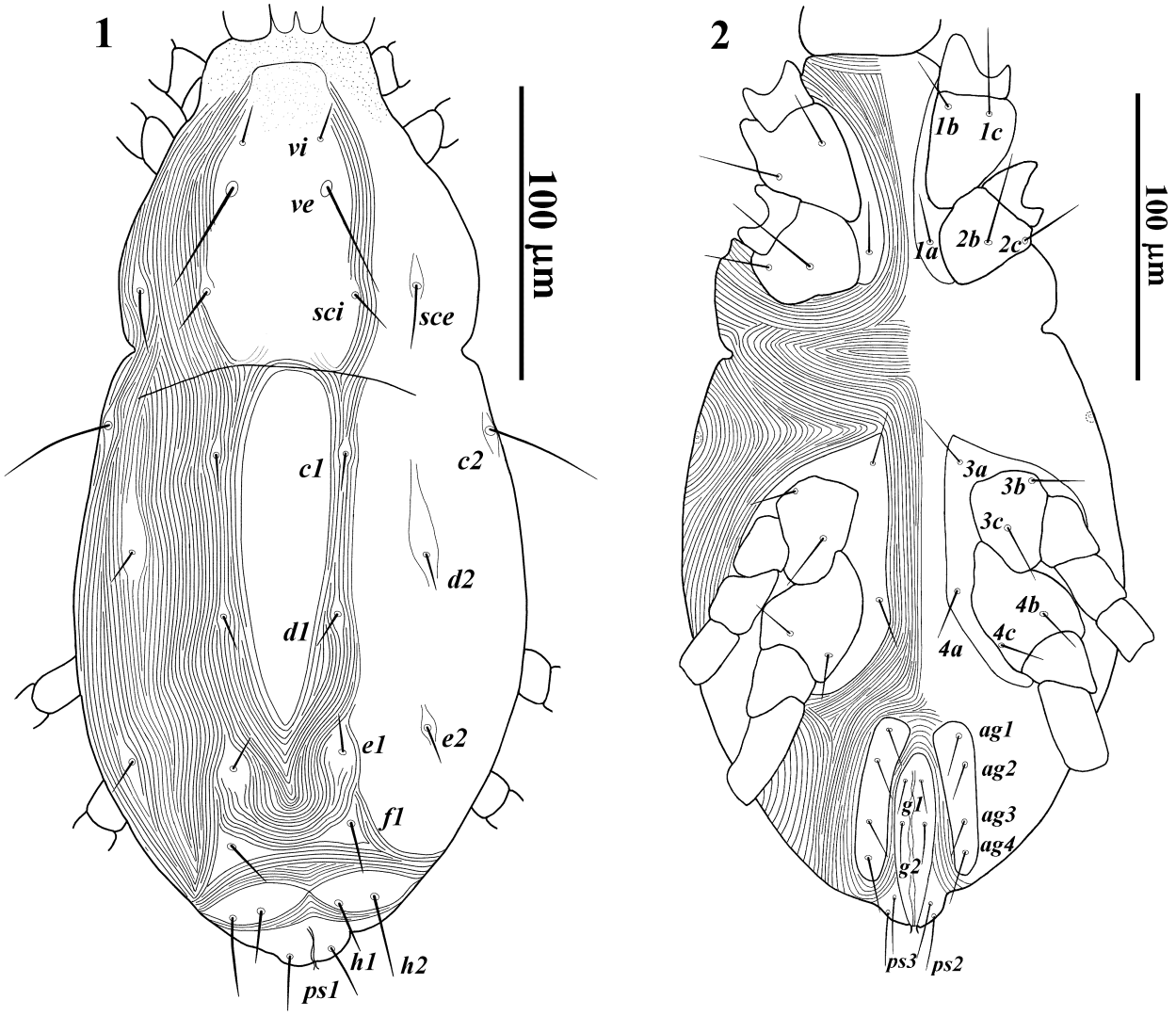
Idiosoma oval. Length of body (excluding gnathosoma) 315 (307); width 157 (161) at level of seta *c2*; length of gnathosoma 105 (108); width of subcapitulum 82 (87); palp 98 (95); chelicera 85 (82).

Dorsum (Fig. 1) – All dorsal shields smooth, anteromarginal area of prodorsum punctuated, prodorsal shield with three pairs of setae (*vi, ve, sci*); eyes and post-ocular bodies absent; setae *sce* on minute individual platelets, located laterally. Median hysterosomal shield without setae, setae *c1* and *d1* on small plates lateral to central shield. Setae *c2* on small shields placed dorsolaterally; marginal shields almost small and bearing setae *d2*; median zonal shield divided and with seta *e1*; setae *e2* on small lateral zonal shields; intercalary shields with setae *f1*; suranal shield divided, bearing two pairs of setae (*h1* and *h2*), *h3* absent, setae *ve* and *c2* are subequal in length and longer than other setae. Lengths of dorsal setae: *vi* 13 (14), *ve* 42 (45), *sci* 18 (17), *sce* 23 (25), *c1* 13 (14), *c*2 41 (39), *d1* 14 (15), *d2* 15 (14), *e1* 13 (14), *e2* 13 (13), *f1* 18 (19), *h1* 19 (17), *h2* 29 (30). Distances between dorsal setae: *vi–vi* 30 (27), *vi–ve* 15 (17), *ve–ve* 32 (34), *ve–sci* 39 (37), *sci–sci* 56 (58), *sci–sce* 32 (30), *sce–sce* 104 (110), *c1–c1* 49 (45), *c1–d1* 59 (57), *d1–d1* 40 (37), *d1–d2* 41 (37), *d2–d2* 108 (103), *d1–e1* 45 (40), *d2–e2* 63 (60), *e1–e1* 36 (33), *e1–e2* 33 (35), *e2–e2* 107 (104), *e1–f1* 27 (26), *f1–f1* 47 (43), *f1–h1* 31 (29), *f1–h2* 30 (32), *h1–h1* 30 (25), *h1–h2* 12 (10), *h2–h2* 58 (47). Ratio: *vi/vi–vi* 0.43 (0.51), *c1/c1–c1* 0.26 (0.31), *d1/d1–d1* 0.35 (0.40), *e1/e1–e1* 0.36 (0.42), *f1/f1–f1* 0.38 (0.44), *ve/sci* 2.33 (2.64), *h1/h2* 0.65 (0.56), *ve/vi* 3.23 (3.21).

Venter (Fig. 2) – All ventral setae and plates smooth, striation longitudinal between coxisternal regions I-II and III-IV, and transversal between coxae II and III. Aggential shield divided into two sclerites each bearing four setae (*ag1-4*) and genital shield with two pairs of setae (*g1* and *g2*); anal plate with three pairs of setae (*ps1-3*). Lengths of ventral setae: *1a* 17 (16), *1b* 16 (16), *1c* 28 (30), *2b* 36 (34), *2c* 25 (24), *3a* 22 (20), *3b* 16 (17), *3c* 15 (15), *4a* 19 (17), *4b* 14 (15), *4c* 12 (11), *ag1* 14 (14), *ag2* 13 (12), *ag3* 12 (13), *ag4* 23 (21), *g1* 13 (12), *g2* 17 (19), *ps1* 20 (19), *ps2* 20 (18), *ps3* 21 (20).

Gnathosoma (Figs. 3–5) – Subcapitulum with two pairs of subcapitular setae, *m* 20 (18) and *n* 46 (42), two pairs of adoral setae, *or1* 7 (6), *or2* 8 (9) (Fig. 3). Chelicerae free 60 (58), movable digit 27 (28) (Fig. 4). Palp 96 (92), palp tarsus with four simple setae + one simple eupathidium + one solenidion [ω 4 (4)] + one tridentate eupathidium, palp tibia with two setae + one well developed

claw + one seta-like accessory claw, palp genu with one seta and palp femur with three setae. Palpal supracoxal setae (*ep*) small, with distinctly rounded tip 3 (3). Tibial claw of palp 12 (11) longer than palp tarsus 9 (9) (Fig. 5).



Figures 1–2. *Stigmaeus lorestaniensis* **sp. nov.** (female) – 1. Dorsal view of idiosoma; 2. Ventral view of idiosoma.

***Legs* (Figs. 6–9) –** Legs measurements from coxae to tarsus (including pretarsus): leg I 180 (185); leg II 135 (132); leg III 140 (137), leg IV 163 (166). Setal formulae of leg segments (solenidia in parentheses and not included in setal counts) as follows: coxae 2-2-2-2; trochanters 1-1-2-1; femora 4-4-3-2; genua 5(+κ)-2-0-0; tibiae 5 (+φ+φp)-5(+φp)-5(+φp)-5(+φp); tarsi 13(+ω)-8(+ω)-7 (+ω)-7 (+ω) (Figs. 6–9). Length of solenidia: Iω 12 (11), IIω 8 (7), IIIω 5 (4), IVω 4 (5). Iφρ 13 (14), Iφ 11 (10), IIφρ 8 (9), IIIφρ 8 (7), IVφρ 7 (7), I κ 5 (5).

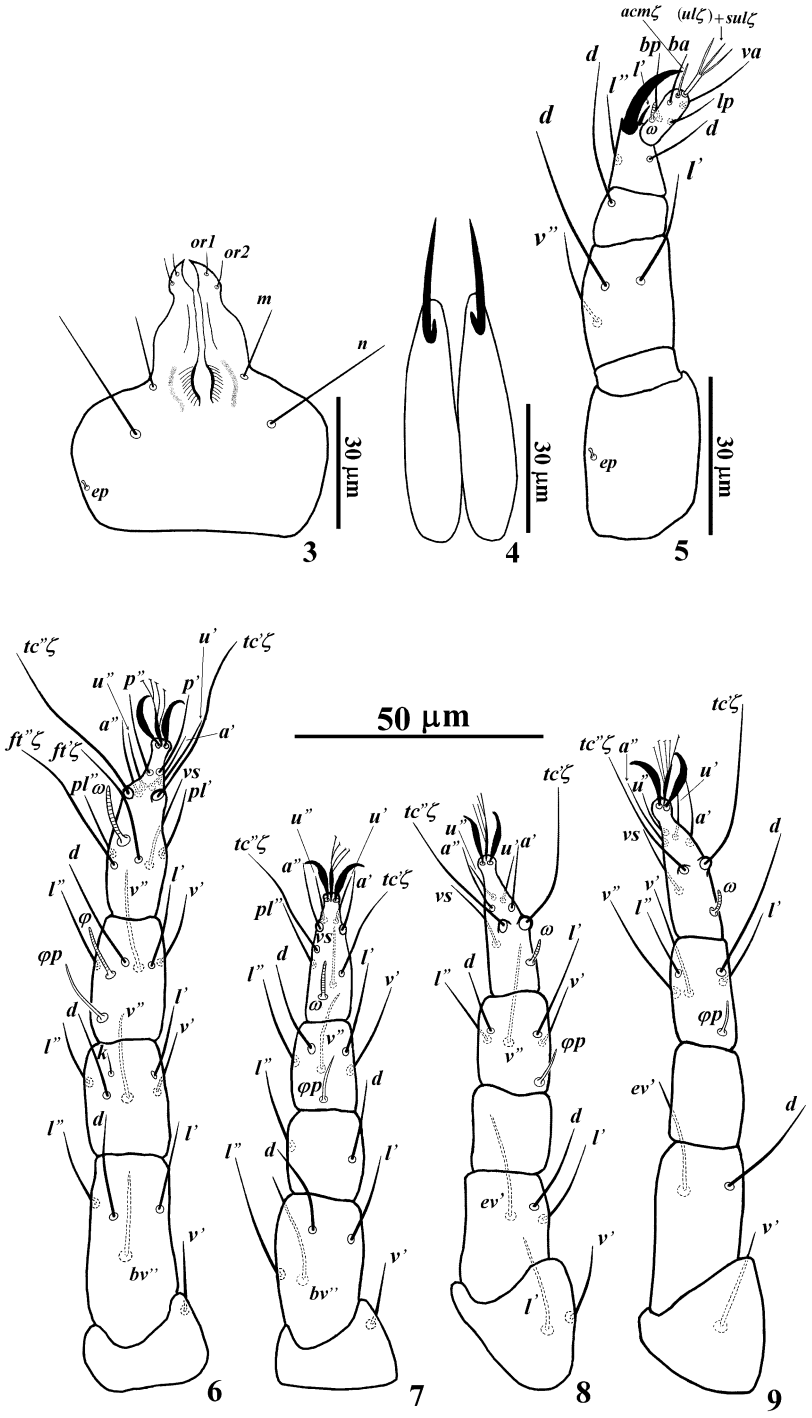
Male – Unknown.

Etymology

The specific epithet is derived from type locality, "Lorestan" province, Iran where it was collected.

Type material

Holotype female and one paratype female were collected from soil under apricot tree, *Prunus armeniaca* L. (Rosaceae), 5 August 2021, Shorab village, (33° 27′ N, 48° 41′ E), Lorestan Province, Iran, by Mohammad Ahmad-Hosseini. The holotype female is deposited in the Acarological collection, Department of Plant Protection, Faculty of Agriculture, Lorestan University, Khorramabad, Iran. One female paratype is deposited in the Acarological collection, Jalal Afshar Zoological Museum (JAZM), Department of Plant Protection, Faculty of Agriculture, University of Tehran, Karaj, Iran.



Figures 3–9. *Stigmaeus lorestaniensis* **sp. nov.** (female) – 3. Dorsal view of left palp; 4. Dorsal view of chelicerae, 5. Subcapitulum; 6. Leg I; 7. Leg II; 8. Leg III; 9. Leg IV.

Remarks

The new species *Stigmaeus lorestaniensis* **sp. nov.** resembles *S. devlethanensis* Akyol & Koç, 2007; *S. karabagiensis* Akyol & Koç, 2007 and *S. pseudoparmatus* Doğan, Doğan & Erman, 2017 by the following characters: dorsomedial setae *c1* and *d1* originate on small detached shields from central shield, eyes and post-ocular bodies absent, aggential area with four pairs of setae, palp genu with one seta and in the setal formula of femora (4-4-3-2). But, it can be distinguished from them by; setal formula of genua 5(+*k*)-2-0-0 in the new species (5(+*k*)-2-0-l in *S. karabagiensis*, 5(+*k*)-5-2-2 in *S. devlethanensis* and 5(+*k*)-2-0-l in *S. pseudoparmatus*); suranal shield divided and with two pairs of setae (entire, with three pairs of setae in *S. devlethanensis* and divided with three pairs of setae in *S. karabagiensis* and also in *S. pseudoparmatus*); tarsi II with 8(+ω) setae (with 9(+ω) in other related species); aggenital plates with four pairs of setae (aggenital plates split into two pairs small shields, *ag1* and *ag2* on the same shields and *ag3* and *ag4* on other shields in *S. devlethanensis* and *ag1* located on integument, others on aggenital shields in *S. pseudoparmatus*); prodorsal shield with three pairs of setae (prodorsal shield reduced, with two pairs of setae in *S. karabagiensis* and *S. pseudoparmatus*).

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REFERENCES

Akyol, M. (2021) Two new records of stigmaeid mites (Acari: Stigmaeidae) for the Turkish fauna. *Ksu Journal of Agriculture and Nature*, 24(2): 430–434. DOI: 10.18016/ksutarimdoga.vi.774206

Akyol, M. & Koç, K. (2007) Four new species of the genus *Stigmaeus* (Acari: Stigmaeidae) from Turkey. *Archives des Sciences*, 60: 41–50.

Berlese, A. (1910) Acari nuovi. Manipulus V. *Redia*, 6: 199–214.

Beron, P. (2020) *Acarorum Catalogus VII. Trombidiformes, Prostigmata, Raphignathoidea. Fam. Barbutiidae, Caligonellidae, Camerobiidae, Cryptognathidae, Dasythyreidae, Dytiscacaridae, Eupalopsellidae, Homocaligidae, Mecognathidae, Raphignathidae, Stigmaeidae, Xenocaligonellididae*. Pensoft Publishers National Museum of Natural History Bulgarian Academy of Sciences Sofia, 306 pp. DOI: 10.3897/ab.e55087

Doğan, S., Doğan, S. & Erman, O. (2017) Description of five new species of the genus *Stigmaeus* Koch (Acari: Raphignathoidea: Stigmaeidae) from Turkey. *Zootaxa*, 4276(4): 451–478. DOI: 10.11646/zootaxa.4276.4.1

Fan, Q.-H. & Zhang, Z.-Q. (2005) Raphignathoidea (Acari: Prostigmata). *Fauna of New Zealand*. 52: 1–400. DOI: 10.7931/J2/FNZ.52

Grandjean, F. (1939) Les segments postlarvaires de l'hysterosoma chez les oribates (Acariens). *Bulletin de la Societe Zoologique de France*, 64: 273–284.

Grandjean, F. (1944) Observations sure les Acariens de la famille des Stigmaeidae. *Archives des Sciences Physiques et Naturelles*, 26: 103–131.

Grandjean, F. (1946) Au sujet de l'organe de Claparede, des eupathides multiples et des taenidies mandibulaires chez les Acariens actinochitineux. *Archives des Sciences Physiques et Naturelles*, 28: 63–87.

Kethley, J. (1990) Acarina: Prostigmata (Actinedida). *In*: Dindal, D.L. (Ed.), *Soil biology Guide*. John Wiley & Sons, New York, pp. 667–756.

Khaustov, A.A. (2020) New records of predatory mites of the genus *Stigmaeus* (Acari: Prostigmata: Stigmaeidae) from Western Siberia with the redescriptions of *S. dignus* Kuznetsov and *S. uzunolukensis* Ozcelik and Doğan. *Acarina*, 28: 177–191.

Koch, C.L. (1836) Deutschlands Crustacean, Myriapoden und Arachniden. *Regensburg*, 4(9): 1–40.

Majidi, M., Hajiqanbar, H. & Saboori, A. (2019) Parasitic stigmaeid mites (Acari: Stigmaeidae) of phlebotomine sandflies (Diptera: Psychodidae) in Fars Province, southern Iran. *International Journal of Acarology*, 45(1–2): 41–47. DOI: 10.1080/01647954.2018.1549098

Mohammad-Doustaresharaf, M. & Bagheri, M. (2021) Raphignathoid mites (Acariformes: Raphignathoidea) in parts of the Azerbaijan provinces of Iran. *Acarological Studies*, 2: 56–65. DOI: 10.47121/acarolstud.865260

Oudemans, A.C. (1931) Acarologische aanteekeningen CVIII. *Entomologische Berichten*, 8: 251–263.

Rostami, A. & Mohammad-Doustaresharaf, M. (2021) Description of *Stigmaeus bagherii* n. sp. (Acari: Stigmaeidae), with a key to the known species of *Stigmaeus* from Iran. *International Journal of Acarology*, 47(3): 222–232. DOI: 10.1080/01647954.2021.1887933

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Stigmaeus lorestaniensis گونهٔ جدید از جنس *Stigmaeus* (Acari: Stigmaeidae) از جنوب غرب ایران

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چکیده

یک گونهٔ جدید از جنس *Stigmaeus* Koch, 1936 (Acari: Trombidiformes: Stigmaeidae) با نام *Stigmaeus lorestaniensis* توصیف و ترسیم شد. این گونه از خاک زیر درخت زردآلو *Prunus armeniaca* L. (Rosaceae) در استان لرستان، جنوب غرب ایران جمع‌آوری شد.

واژگان کلیدی: ایران؛ استان لرستان؛ گونهٔ جدید؛ کنه‌های شکارگر؛ Raphignathoidea.

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