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A new species of the genus *Stigmaeus* koch (Acari: Stigmaeidae) from Kurdistan province, Iran and description of male of *Prostigmaeus khanjanii* Bagheri and Ghorbani

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**ABSTRACT** — A new species of the genus *Stigmaeus*, *S. kurdistaniensis* n. sp. is described and illustrated based on females collected from soil under apple trees, Ghorveh city, Kurdistan province, Iran. In addition, the male of *Prostigmaeus khanjanii* Bagheri and Ghorbani, 2010 is described. A key to all known Iranian species of the genus *Stigmaeus* is provided.

**KEYWORDS** — Arthropods; soil; predatory mite; ectoparasites; apple tree

**INTRODUCTION**

Stigmaeidae is the largest family within Raphignathoidea, which was established by Oudemans (1931). Members of this family are predators and feed on arthropods, ectoparasites of dipterans and pollen feeders (Summers 1966; Ueckermann and Smith Meyer 1987; Fan and Zhang 2005). This family currently contains 32 genera, of which 12 genera are recorded from Iran (Bayzavi et al. 2013). The genus *Stigmaeus* Koch occurs all over the world but the genus *Prostigmaeus* Kuznetsov has only been recorded from palaeartctic and afrotropical regions (Fan and Zhang, 2005). To date, 4 species of the genus *Prostigmaeus* and 33 species of *Stigmaeus* have been recorded and described from Iran (Khanjani et al. 2014; Bagheri et al. 2014; Bagheri et al. 2010), namely: *Prostigmaeus khanjanii* Bagheri and Ghorbani, 2010; *P. molaviae* Khanjani et al., 2012; *P. tauricus* Kuznetsov, 1984; *P. vrystaatensis* Ueckermann and Meyer, 1978 and *Stigmaeus alvandis* Khanjani and Ueckermann, 2002; *S. boshroyehensis* Khanjani et al., 2010; *S. candidus* Fan and Li, 1993 (=*S. mazandaranicus* Faraji and Ueckermann, 2006); *S. cariae* Khanjani et al., 2012; *S. delaramae* Khanjani et al., 2014; *S. echinopus* Summers, 1962 (Ahaniazad et al. 2013); *S. elongatus* Berlese, 1886; *S. fiscicosus* Ueckermann and Mayer, 1987 (Kamali et al. 2001); *S. glypticus* Summers, 1962 (Hajizadeh et al. 2013); *S. isfahaniensis* Bagheri et al., 2014; *S. haddadi* Zarei and Bagheri, 2012; *S. iranensis* Bagheri et al., 2012a; *S. kermanshyensis* Changizi et al., 2012; *S. kermanshahiensis* Khanjani et al., 2012; *S. ladanae* Nazari et al., 2012; *S. longipilis* Canestrini, 1889 (Pahlevan Yali et al. 2011); *S. malekii* Haddad Irani-Nejad et al., 2006; *S. maraghehiensis* Bagheri et al., 2012b; *S. marandiensis* Bagheri et al., 2011b; *S. miandoabensis* Bagheri and Zarei, 2012; *S. nasrinae* Nazari et al., 2012; *S. petrophilus* Kuznetsov and Petrova, 1979 (Hajizadeh
Materials and Methods

Mites were collected from soil under apple and fig trees in Kurdistan and Hamedan provinces and mounted directly in Hoyer’s medium. The specimens were measured, identified and drawn by means of an Olympus BX51 differential interference contrast microscope under 1000X magnification and equipped with a drawing tube. Body length measurements represent the distance between base of gnathosoma and end of idiosoma; width was measured above coxae III. Setae were measured from the setal base to the tip of the seta; distances between setae were measured between setal bases. Legs measurements are from trochanter to tip pre-tarsus.

The terminology and abbreviations used in the description of the new species follows that of Kethley (1990). Leg chaetotaxy is adapted from Fan and Zhang (2005). All measurements are given in micrometers and the measurements of the paratype are given in parentheses.

Results

Family Stigmaeidae Oudemans, 1931


Type species: Stigmaeus cruentus Koch, 1836 (unknown), by original designation.

Diagnosis — (Based on Fan and Zhang, 2005).

Female — Idiosoma narrowly to broadly oval in dorsoventral view, white, yellow, red or dark red in life. Chelicerae separate. 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 3 long prongs or simple; counts of setae and solenidia from palpto-trochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1ω + 1 sub-terminal spine-like eupathidium+3 eupathidia (basally fused). Prodorsum usually with a large shield, bearing 3 pairs of setae (vi, ve and sci) and a pair of platelets bearing setae scc; eyes present or absent, post-ocular bodies (pob) present or absent.

Dorsal hysterosomal areas C-F usually with 1-2 shields surrounded by 3-5 pairs of platelets, sometimes much reduced or absent, shields with 2-3 pairs of setae; setae d1 and d2 never on same shield; humeral shields large or small, dorso- or ventrolateral, with setae c2; intercalary shields (F) obvious, entire or divided along midline, with a pair of setae (f1). Suranal shield (H) entire or divided, with 2-3 pairs of setae (h3 absent or present). Endopodal shields I-II and III-IV present, divided along midline. Ventral opisthosoma with 3-5 pairs of aggenital setae; genital and anal valves fused or contiguous, with 1-3 pairs of genital setae and 3 pairs of pseudanal setae.

Leg tarsal claws robust; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I-IV: coxae (excluding 1a, 3a and 4a) 2 + 1elcp, 2, 2, 2; trochanters 1, 1, 2, 1; femora 4-6, 4-6, 3, 2; genua 3-5 + 1κ, 3-4 + 0-1κ, 0-3, 0-3; tibiae 5 + 0-1φ + 1φρ, 5 + 1φρ, 5 + 1φρ; tarsi 13 + 1ω, 8-9 + 1ω, 7 + 1ω, 6-7 + 0-1ω. Male. Solenidia on tarsi I-IV: 2, 2, 2, 2.

Stigmaeus kurdistaniensis n. sp.

(Figs. 1-2)

Diagnosis — Prodorsum with large, reticulated shield; eyes absent and post-ocular bodies present; median hysterosomal shield with 2 pairs of setae; suranal shield entire, with 2 pairs of setae (h3 absent). All dorsal shields reticulated. Endopodal shields and coxal areas reticulated; dorsal setae long.
FIGURE 1: Stiginaeus kurdistaniensis n. sp. (female): A – Dorsal view; B – Ventral view; C – Palp; D – Leg I; E – Leg II; F – Leg III; G – Leg IV.
Figure 2: Stigmaeus kurdistaniensis n. sp. (male): A – Dorsal view; B – Ventral view; C – Palp; D – Chelicera; E – Leg I; F – Leg II; G – Leg III; H – Leg IV.
and serrate. Aggenital plate reticulated and with 3 pairs of setae (q12-qg3) and genital shield with 1 pair of setae (g). Palp tarsus with one tridentae eupathidium and palp genu with 2 setae. Femora I-II with 6, 5 setae respectively; genu I-IV 3(+/+)-3(+/+)-1. Palp and leg’s segments with reticulations.

Type materials — Holotype female and 3 paratype females collected from soil under apple trees, Malus domestica Borkh. (Rosaceae), Iran: Kurdistan Province, Ghorveh city (35°10’ N, 47°48’ E, 1906 m a.s.l.) 4 September 2013, coll. F. Amini. The holotype female and 2 paratype females are deposited as slide-mounted specimens in the Collection of the Acarology Laboratory, University of Bu-Ali Sina, Hamadan, Iran and one paratype female will be deposited in the National Collection of Arachnida, Plant Protection Research, Pretoria, South Africa.

Description

Female (n = 4) — Colour in life red. Idiosoma oval. Measurements of holotype with measurements of paratypes in parentheses: Length of body (excluding gnathosoma) 600 (559 – 618), (including gnathosoma) 761 (700 – 753); width 420 (313 – 415).

Dorsum (Figure 1A) — All dorsal shields reticulated; prodorsum with large shield medially; bearing three pairs of setae (vi, ve, sci), post ocular bodies (pob) present and eyes absent, setae sce located on small plates laterally; hysterosomal area C-E with a large shield medially and 4 pairs of small plates, median hysterosomal shield with two setae (c1, d1), setae d2 located on large, lateral, hysterosomal shields; ventro-lateral, humeral plate with setae c2; intercalary shields (F) with setae f1; suranal shield (H) entire, bearing 2 pairs of setae (h1, 2). All dorsal setae long and with a cluster of barbs distally except setae c2 sparsely serrate; setae c2 longer than the others. Lengths of dorsal setae: vi 95 (93 – 97), ve 125 (114 – 123), sci 73 (67 – 75), sce 93 (93 – 98), c1 86 (82 – 90), c2 136 (130 – 137), d1 88 (82 – 90), d2 91 (86 – 94), e1 90 (82 – 92), e2 98 (87 – 99), f1 96 (87 – 99), h1 90 (90 – 92), h2 85 (84 – 86). Distances between dorsal setae: vi-ve 35 (39 – 40), ve-ve 100 (89 – 103), sce-sce 235 (232 – 251), c1-c2 89 (77 – 94), c2-c2 420 (312 – 417), d1-d1 92 (73 – 95), d2-d2 291 (257 – 293), e1-e1 83 (73 – 82), e2-e2 292 (243 – 289), f1-f1 165 (145 – 167), h1-h1 68 (56 – 65), h2-h2 141 (134 – 142), vi-ve 125 (62 – 125), ve-sce 58 (57 – 67), sce-sce 50 (37 – 47), c1-c2 95 (99 – 157), d1-d2 108 (92 – 106), e1-e2 101 (82 – 94), h1-h2 45 (37 – 45), c1-d1 100 (93 – 105), d1-e1 100 (81 – 102), e1-f1 79 (75 – 83), f1-h1 91 (72 – 89); ratio: vi/ve 2.71 (2.38), c1/c1-c1 0.97 (0.95 – 1.06), d1/d1-d3 0.96 (0.99 – 1.17), e1/e1-e1 1.08 (1.12 – 1.13), f1/f1-f1 0.58 (0.59 – 0.6), h1/h1-h1 1.32 (1.61 – 1.42), c1-c1: d1-d1: e1-e1: f1-f1: 0.53 (0.53 – 0.56): 0.55 (0.50 – 0.56): 0.50 (0.49 – 0.50): 1.0 (1.0).

Venter (Figure 1B) — Ventral cuticle striated coaxial regions I-II and III-IV with reticulations (Figure 1B). Lengths of setae Ia 36 (35 – 40), Ib 38 (31 – 40), 1c 70 (65 – 72), 2b 63 (59 – 67), 2c 42 (39 – 43), 3a 38 (38 – 42), 3b 43 (38 – 45), 3c 45 (31 – 40), 4a 41 (36 – 43), 4b 37 (37 – 41), 4c 37 (33 – 38), ag3 34 (33 – 37), ag3 39 (37 – 40), ag3 49 (47 – 50), g 27 (25 – 30), ps1 65 (66 – 73), ps2 37 (37 – 45), ps3 40 (39 – 44). Aggenital area reticulated, with 3 setae (ag3-c1), setae ag3 longer than ag3-c1; genital shield with 1 pair of setae (g); anal plate with 3 pairs of setae (ps1-3), pseudanal setae ps1 distally serrated and almost two times longer than setae ps2-3.

Gnathosoma (Figure 1C) — Ventral infracapitulum with two pairs of infracapital setae, m 43 (40 – 43) and n 34 (29 – 36), two pairs of adoral setae, or1 29 (30 – 32), or2 38 (37 – 39) (Figure 1C). Chelicerae free 95 (95 – 100), movable digit 127 (126 – 132) (Figure 1A). Palp five segmented, palp tarsus with 4 simple setae + one simple eupathidium + one solenidion (ω) + one tridentae eupathidium, palp tibia with two setae + one well developed claw + one accessory claw seta-like, palp genu with one seta and palp femur with three setae (Figure 1C).

Legs (Figures 1D-G) — Length of leg I 253 (243 – 273); leg II 221 (208 – 238); leg III 223 (223 – 243), leg IV 251 (253 – 270). 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 6-5-3-2, genua 3(+/+)/3(+/+)/3(+/+) 1-1; tibiae 5(+v, +v-p)-5(+v-p)-5(+v-p)-5(+v-p)-5(+v-p); tarsi 13(ω)-9(ω)+7(ω)-7(ω)+. Length of solenidia: I ω 25 (20 – 30), II ω 25 (26 – 28), III ω 15 (14 – 20), IV ω 15 (14 – 18); I ω 39 (37 – 39), I ω 16 (12 – 18), II ω 32 (32 – 35), III ω 24 (24 – 29), IV ω 28 (27 – 29); I κ 72 (72 – 77), II κ 12 (10 – 11).
Male (n = 1) — Idiosoma oval. Length of body (excluding gnathosoma) 587, (including gnathosoma) 655; width 275.

Dorsum (Figure 2A) — Dorsal shields completely reticulated; prodorsal shield bearing four pairs of setae (vi, ve, sci, sce); post ocular bodies (pob) present; eyes absent; hysterosomal area C-F almost covered by large median and 3 pairs of plates laterally (Figure 2A); median and lateral hysterosomal shields fused, with setae ci, d1, d2, e1, intercalary shield divided with setae f1; suranal shield entire, with two pairs of setae (h1, h2). All dorsal setae barbed. Lengths of dorsal setae: vi 92, ve 107, sci 70, sco 100, ci 50, cv 95, d1 45, d2 55, e1 30, cv 107, f1 80, h1 52, h2 70. Distances between dorsal setae: vi-vi 37, ve-ve 85, sci-sci 67, sce-sce 325, ci-c1 57, cv-c2 275, d1-d1 57, d2-d2 182, e1-e1 42, e2-e2 150, f1-f1 92, h1-h1 37, h2-h2 80, vi-ve 55, ve-sci 62, sci-sce 45, ci-c2 50, d1-d2 65, e1-e2 60, h1-h2 25, c1-d1 67, d1-e1 60, e1-f1 42, f1-h1 52. Ratio: vi/vi-vi 2.48, ci/c1-c1 0.87, d1/d1-d1 0.78, e1/e1-e1 0.71, f1/f1-f1 0.86, h1/h1-h1 1.4, h2/h2-h2 0.87, h1/h2 0.74, c1/c1: d1/d1: e1/e1: f1-f1 : 0.62: 0.62: 0.45: 1.0.

Venter (Figure 2B) — Endopodal shields II and III-IV with reticulations. Lengths of setae l1 22, l2 35, l3 35, lb 35, lc 27, la 2, lb 22, lc 17, la 27, lb 25 and 4c 20, ag1 26, ag2 30, ag3 38, ps1 27, g1 2, gz 2. Aggenital plate smooth with three setae (ag1-3).

Gnathosoma (Figures 2C-D) — Ventral infracapitulum reticulated and with two pairs of infracapitular setae, m30 and n 22, two pairs of adoral setae, or1 22, or2 32 (Figure 2B). Chelicerae free 132, movable digit 65 (Figure 2D). Palp five segmented, palp tarsus with 4 simple setae + one simple eupathidium + one solenidion (ω) + one tridentate eupathidium, palp tibia with two setae + one well developed claw + one spine-like accessory claw, palp genu with two setae and palp femur with three setae (Figure 2C).

Legs (Figures 2E-H) — Length of leg I 224, leg II 195; leg III 185, leg IV 205. Setation same as female except tarsi I-IV with two solenidia and solenidia longer. Length of solenidia: L w1 43, l w2 25, II w1 38, II w2 22, III w1 32, II ω1 12, IV w1 26, IV w2 12; I ϕ 35, I ψ 15, II ϕ 20, III ϕ 20, IV ϕ 23; I k 55; II k 8.

Remarks — The new species Stigmaeus kurdistanensis n. sp. resembles S. siculus (Berlese, 1883) in that dorsal shields are reticulated, median hysterosomal shield with two setae, pob present, eyes and h3 absent. However it differs from the latter in: all dorsal and ventral setae longer than that of S. siculus; ventral infracapitulum and all leg and palp segments with reticulations in E. kurdistanensis instead of smooth in S. siculus and pob small, between setae ve-sci in the new species instead of large in S. siculus.

The new species also resembles S. echinopus Summers, 1962, in having all leg and palp segments with reticulations, suranal shield entire and reticulated, pob present and median hysterosomal shield with two setae. However, S. kurdistanensis differs from the latter in: aggenital shield reticulated instead of smooth in S. echinopus, all dorsal and ventral setae longer than those of S. echinopus and genual setae k short in S. kurdistanensis in contrast to long in S. echinopus.

Immature stages — Unknown.

Etymology — The species is named after the locality where it was collected, namely Kurdistan province.

Genus: Stigmaeus Kuznetsov, 1984

Type species: Stigmaeus tauricus Kuznetsov, 1984

Diagnosis — (Based on Ueckermann and Meyer, 1987 and Fan and Zhang, 2005).

Female — Idiosoma elongate and somewhat spindle-shaped; prodorsum with a large shield medially, bearing 3 pairs of setae namely vi, ve and sci; setae see lateral to scenium; pob and eyes absent; humeral shields ventro-laterally, with setae c2; opisthosome with a relatively long median shield carrying setae ci and d1; setae e1 placed on 2 small shields posterior to median shield; intercalary shields (F) divided along midline, with a pair of setae (f1); suranal shield (H) entire or divided, bearing 3 pairs of setae (h1-3). Chelicerae separate. Palptibial claw subequal to or slightly shorter than palptarsus; accessory claw seta-like or spinelike; terminal eupathidia on palptarsus separate, counts of setae and solenidia from palprochonter to palptarsus: 0,
Male — Solenidia on tarsi I-IV: 2, 2, 2, 2.

Prostigmaeus khanjanii Bagheri and Ghorbani, 2010
(Fig. 3)

Diagnosis — Prodorsum with large, reticulated shield medially with 3 setae (vi, ve, sci); opisthosomal shield reticulated, with 2 pairs of setae (c1, d1), suranal shield entire, bearing 3 pairs of setae (ht1-3). Endopodial shields I-II and III-IV present; aggenital shield with 4 pairs of setae (ag1-4); genital plate with 3 pairs of setae (gs3). Palp genu with 2 setae; terminal eupathidia on palptarsus separate.

Leg segments’ setal formulae as follows: coxae 2-2-2-2; trochanters 1-1-2-1; femora 6-4-3-2, genua 5+(+n)-5(+n)-2-2; tibiae 5(+cφ, +ϕρ)-5(+cϕρ)-5(+ϕρ)-5(+cϕρ); tarsi 13(+ω)-9(+ω)-7(+ω)+7(+ω).

Male. As in female but: shields of hysterosomal area E-F fused; Tarsi I-IV with two solenidia.

Description

Male (n = 3) — Idiosoma elongate. Length of body (excluding gnathosoma) 377 – 417, (including gnathosoma) 433 – 470; width 197.

Material examined — Three males collected from soil under fig trees, Ficus carica L. (Moraceae), Iran: Hamadan Province, Heydareh village (34°48’27” N, 48°28’08.5”E, 1873 m a.s.l.), 6 November 2013, coll. F. Amini. Deposited as slide-mounted specimens in the Collection of the Acarology Laboratory, University of Bu-Ali Sina, Hamadan, Iran.

Dorsum (Figure 3A) — Prodorsum with rather large reticulations, large shield bearing 3 pairs of setae (vi, ve, sci); post ocular bodies (pob) and eyes absent; hysterosoma with an elongate, large median shield, with 2 setae (c1, d1); zonal and intercalary shields fused, bearing 2 pairs of setae (c1, f1); suranal shield entire and with 2 pairs of setae (ht1, ht2). All hysterosomal shields reticulated. Lengths of dorsal setae: vi 19 – 23, ve 19 – 24, sci 24 – 25, sce 21 – 22, c1 11 – 13, c2 23 – 27, d1 8 – 11, d2 14 – 17, e1 11 – 16, e2 10 – 15, f1 9 – 11, ht1 21 – 26, ht2 21 – 24, ht3 20 – 23. Distances between dorsal setae: vi-vi 23 – 26, ve-ve 43 – 46, sci-sci 54 – 57, sce-sce 120 – 127, c1-c1 35 – 41, c2-c2 212 – 220, d1-d1 28 – 30, d2-d2 320 – 325, e1-e1 92 – 95, e2-e2 118 – 123, f1-f1 57 – 63, ht1-h1 42 – 43, ht2-h2 59 – 63, h3-h3 27 – 37, vi-vi 41 – 45, ve-sce 6 – 9, sci-sci 35 – 43, c1-c2 84 – 91, d1-d2 63 – 71, e1-e2 46 – 53, ht1-h2 11 – 14, c1-d1 61 – 63, d1-e1 62 – 66, e1-f1 30 – 32, f1-h1 48 – 49. Ratio: vi/vi 0.83 – 0.88, c1/c1 0.30 – 0.31, d1/d1 0.32 – 0.36, e1/e1 0.36, f1/f1 0.15 – 0.17, h1/h1 0.05 – 0.06, h2/h2 0.35 – 0.45, h1/h2 0.35 – 0.38, c1/c1: d1-d1: e1-e1: f1/f1: 0.61 – 0.65: 0.47 – 0.49: 1.50 – 1.61: 1.0.

Venter (Figures 3B-C) — Ventral cuticle with striae; endopodal shields II-III and III-IV present and smooth (Figure 17). Lengths of setae la 17 – 21, lb 22 – 25, lc 24 – 30, lb 32 – 37, lc 31 – 32, la 26 – 31, lb 20 – 24, lc 15 – 18, la 21 – 26, lb 14 – 17 and 4c 17 – 18, ag1 18 – 24, ag2 19 – 21, g1 2 – 3, g2 3 – 5, ps1 15 – 17. Aggenital plate with striae and two setae (ag2-1). Genital plate indicated in figure 18.

Gnathosoma (Figure 3D) — Ventral infracapitulum with two pairs of subcapitular setae, m 15 – 18 and m 16 – 17, two pairs of adoral setae, or1 7 – 10, or2 5 – 6 (Figure 3B). Chelicerae free 58 – 63, movable digit 29 – 34 (Figure 3A). Palp five segmented, palp tarsus with 4 simple setae + one solenidion (ω) + 2 subterminal spine-like eupathidia + 2 separate eupathidia, palp tibia with two setae + one well developed claw + one spine-like accessory claw, palp genu with two seta and palp femur with three setae (Figure 3D).

Legs (Figures 3E-H) — Length of leg I 163 – 167; leg II 123 – 125; leg III 124 – 128; leg IV 150 – 155. 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 6-4-3-2, genua 5+(+n)-5(+n)-2-2; tibiae 5(+cφ, +ϕρ)-5(+cϕρ)-5(+ϕρ)-5(+cϕρ); tarsi 13(+ω1, +ω2)-9(+ω1, +ω2)-7(+ω1, +ω2)-7(+ω1, +ω2). Length of solenidia: I ω1 29 – 35, II ω1 17 – 19, I ω2 28 – 29, I ω2 13 – 14, III ω1 25 – 29, III ω2 4 – 6, IV ω1 23 – 26, IV ω2 6 – 7, I ϕp 19 – 24, I ϕp 6 – 9, II ϕp 15 – 18, III ϕp 11 – 15, IV ϕp 14 – 16; I κ 3 – 5; II κ 4 – 7.

Remarks — Males of this species exhibit all fea-
FIGURE 3: Prostigmaeus khanajnii Bagheri and Ghorbani (male): A – Dorsal view; B – Ventral view; C – Genital plate; D – Palp; E – Leg I; F – Leg II; G – Leg III; H – Leg IV.
tures of the female descriptions, except that the male tarsi I-IV are with two solenidia instead of one solenidion in female, zonal and intercalary shields fused, bearing 2 pairs of setae \((e_1, f_1)\) whereas completely separate in the female.

**Key to the Iranian species of genus Stigmaeus (Female)**

1. Median propodosomal shield absent .............. 2
   — Median propodosomal shield present .............. 3

2. Genua II-III with 5-3 setae ................. S. saboorii
   — Genua II-III with 4-4 setae ............. S. kermaniensis

3. Hysterosoma without median shield ............ 4
   — Hysterosoma with median shield ............. 7

4. Genua II-IV with 2-0-1 setae .............. 5
   — Genua III-IV with 5-3-3 setae ........ S. elongatus

5. Femora I-II with 4-4 setae, suranal shield divided ........................................... 6
   — Femora I-II with 6-5 setae, suranal shield entire ................................................. S. candidus

6. Prodorsal shield smooth, aggenital setae \(ag_{1,2}\) inserted on soft cuticle, genu I with one solenidiun ......................... S. shendabadiensis
   — Prodorsal shield in center region reticulated, aggenital setae \(ag_{1,2}\) inserted on entire shield, genu I without solenidiun .......... S. nasrinae

7. Median hysterosomal shield with 2 pairs of setae ............................................. 8
   — Median hysterosomal shield with 3 pairs of setae .................................................... 25

8. Femur I with 4 setae .............................. 9
   — Femur I with 6 setae ............................ 21

9. Femur IV with 1 seta ................. S. alcandidis
   — Femur IV with 2 setae .......................... 10

10. Genu I with 3 (1) setae .......... S. ueckermannii
    — Genu I with 5 (1) setae ........................ 11

11. Genu III without seta .................................. 12
    — Genu III with 1 or 2 setae ........................ 15

12. Genu IV with 1 seta ............................ 13
    — Genu IV with 2 setae .............................. 14

13. Genu II with 2 setae .......................... S. cariae
    — Genu II with 3 setae ............................. S. miandoabienisis

14. Genu II with 3 setae; seta \(h_3\) present; prodorsal shield reticulated ........ S. kermanshahiensis
    — Genu II with 4 setae; seta \(h_3\) absent; prodorsal shield smooth ...................... S. iranensis

15. Genua II-III with 4-1 setae .............. 16
    — Genua II-III with 5-2 setae .................... 18

16. Prodorsal, median, lateral and median zonal shields reticulated ........ S. makouiensis
    — Prodorsal, median, lateral and median zonal shields smooth ............................... 17

17. Palp tarsus with one bifurcate eupathidium ....................... S. isfahaniensis
    — Palp tarsus with one tridentate eupathidium ........................................ S. marandiensis

18. Suranal shield entire ............................ 19
    — Suranal shield divided ............................ S. pulchellus

19. Dorsal shields heavily ornamented with polygonal cells; tarsi II with 9 (1) setae .............. 20
    — Dorsal shields reticulated, tarsi II with 8 (1) setae ........................................ S. maraghehiensis

20. Coxisternal, ano-genital shields, hypostome and legs reticulated ........ S. ladanae
    — Coxisternal, ano-genital shields and legs smooth and hypostome punctuated ........ S. shabestariensis

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21. Femur II with 4 setae .................................................. 22
   — Femur II with 5 setae ............................................ 24
22. Genua III-IV without setae ......................... S. unicus
   — Genua III-IV with 1 setae ................................. 23
23. Prodorsal shield smooth, eyes present, 3 pairs aggenital setae ........................................ S. pilatus
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27. Femur II with 4 setae .................................................. 28
   — Femur II with 5 setae ............................................ 29
28. Eyes present; tarsi II with 9 (1) setae ................................................. S. boshroyensis
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29. Genua III with 1 smooth seta, prodorsal shield reticulated .................................................. 30
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