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STIGMAEUS KAMILI, A NEW SPECIES OF THE GENUS *STIGMAEUS* (ACARI: STIGMAEIDAE) FROM TURKEY WITH NEW DATA OF OTHER STIGMAEID MITES

BY

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ABSTRACT

***Stigmaeus kamili*, a new species of the genus *Stigmaeus* (Acari: Stigmaeidae) from Turkey with new data of other stigmateid mites. -** A new species, *Stigmaeus kamili* is described and illustrated from female, male and protonymph, from Turkey. *Stigmaeus pilatus* Kuznetzov, 1978 which is new record for the Turkish fauna, is redescribed. Another stigmaeid mite, *Storchia robustus* (Berlese, 1885) is recorded from new localities.

Key-words: Acari, Stigmaeidae, *Stigmaeus*, *Storchia*, new species, new record, Turkey.

INTRODUCTION

The genus *Stigmaeus* is one of the largest groups of the family Stigmaeidae. These cosmopolitan mites live on soil, grass, leaf, mulch, litter, moss, lichen, bark, beetle frass, crevices in rock and leaf cavities, and a few of them are parasitic on phlebotomine flies. Formerly it was known from Turkey by four species (KOÇ & AYYILDIZ, 1997). Mites of the genus *Storchia* live on moss, grass, various litters, bark and stored products and collected from hair at barbers. Up to now five species of the genus *Storchia* are known. In Turkey, one species of *Storchia* is recorded by KOÇ AND AYYILDIZ (1997).

In this paper a new species, *Stigmaeus kamili* is described and figured from Turkey. *Stigmaeus pilatus* Kuznetzov, 1978 recorded for the first time from Turkey is redescribed. *Storchia robustus* (Berlese, 1885) is recorded from new localities. The terminology used is based on GRANDJEAN (1944) and KETHLEY (1990). All measurements are given in micrometers (µm). Type materials and examined specimens are deposited in the Zoological Museum of Atatürk University, Erzurum, Turkey.

Stigmaeus Koch, 1836

Type species - *Stigmaeus cruentus* Koch, 1836.

Dorsum with 10-16 shields, ornamented in most species. Propodosomal shield with three or four pairs of setae, auxiliary shields bearing setae *sce* and may occur near each

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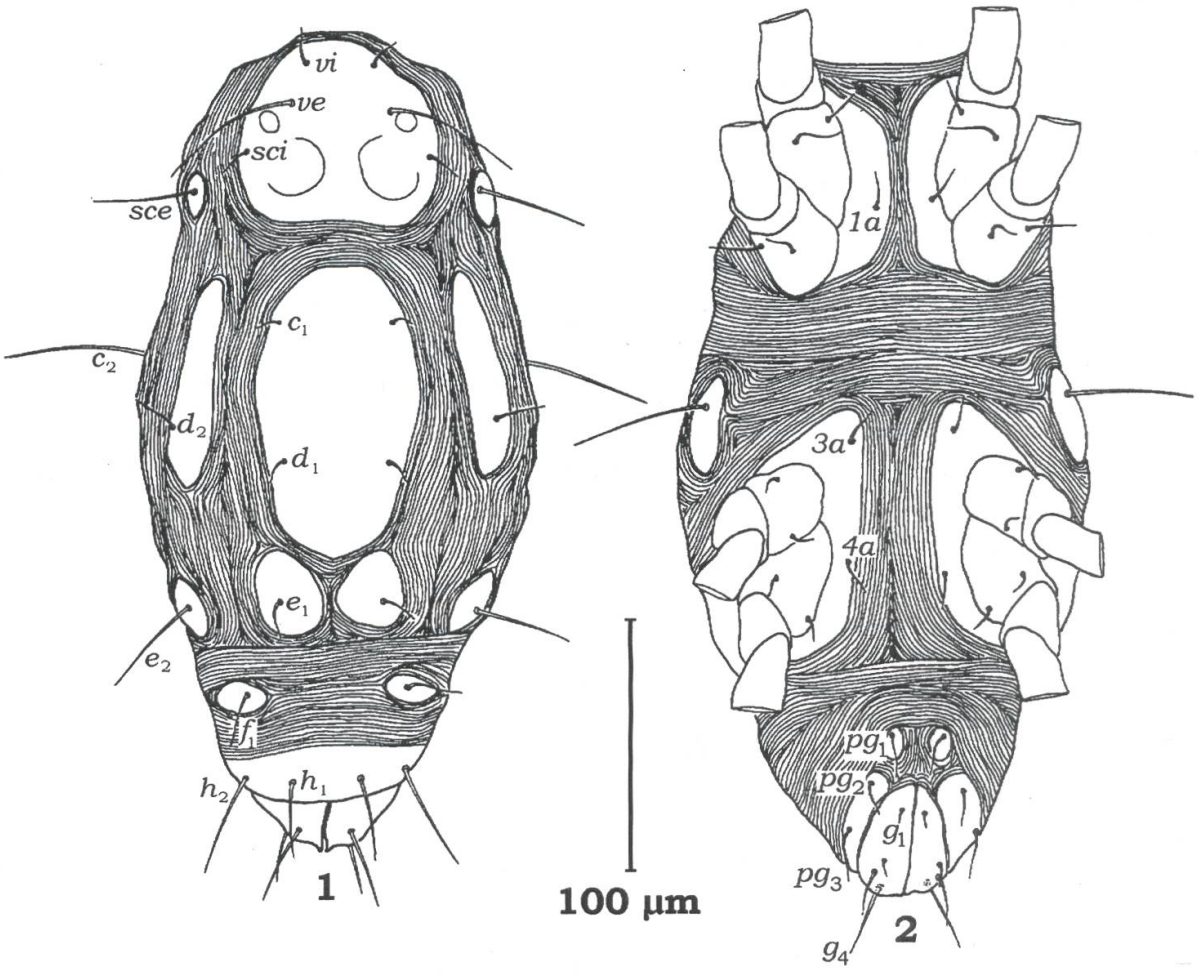
shoulder margin. Dorsal hysterosoma with two median shields, central and suranal; with three to five pairs of smaller, usually paired shields, humerals, marginals, median zonals, lateral zonals and intercalaries. 13-14 pairs of dorsal body setae.

Stigmaeus pilatus Kuznetzov, 1978
(Figs 1, 2)

Female - Length of body (excluding gnathosoma): 333-363, width: 147-167.

Gnathosoma - Length of gnathosoma 66. Ventrally with two pairs of adoral setae, two pairs of subcapitular setae, dimensions of subcapitular setae: *n*: 16, *m*: 20, distances between *n-n*: 26, *m-m*: 20, *n-m*: 17. Chelicerae 93 (including digits), its bases separated. Palpi 95, count of setae and solenidion on palpi (femur to tarsus): 3, 2, 2 + 1 well-developed claw + 1 accessory claw, 5 + 1 ω + 1 tridentate eupathidium, tibial claw as long as tarsus.

Dorsum - No reticulation on dorsal shields. Propodosomal shield with three pairs of setae, one pair of eyes located between setae *ve* and *sci*, large postocular bodies behind eyes. Seate *sce* placed on small auxiliary shields. Setae c_2 on humeral shields, situated lateroventrally. Central shield with two pairs of setae, c_1 and d_1, come slightly between



FIGS 1-2.
Stigmaeus pilatus (Female) - 1. Dorsal view, 2. Ventral view.

median zonal shields. Marginal shields with setae d_2. Lateral zonal shields with setae e_2. Median zonal shields divided, with setae e_1. Intercalary shields divided, with setae f_1. Suranal shield not a pair, with two pairs of setae, h_1 and h_2. Areas between shields covered with smooth striae. Dorsal body setae with minute and fine spinules. Dimensions of setae as follows: *vi*: 23, *ve*: 87, *sci*: 17, *sce*: 53, c_2: 73, c_1=d_1=d_2=e_1: 20, e_2: 40, f_1: 37, h_1: 33, h_2: 43. Distance between setae: *vi-vi*: 27, *ve-ve*: 37, *vi-ve*: 17, *sci-sci*: 70, *ve-sci*: 27, c_1-c_1=d_1-d_1: 43, c_1-d_1: 56, h_1-h_1: 25, h_2-h_2: 60, h_1-h_2: 20.

Venter **-** Endopodal shields completely separated without dimples and bearing *1a*, *3a* and *4a*. Surface on coxae smooth. Paragenital setae three pairs, pg_1=pg_2: 17, pg_3: 23. Anogenital covers with four pairs of setae, g_1: 10, g_2: 13, g_3: 23, g_4: 37. Paragenital and anogenital setae slightly spinulate.

Legs **-** Leg I 206, leg II 167, leg III 163, leg IV 183. Leg segments with fine reticulations incompletely developed. Number of setae (solenidia in parentheses) on leg segments as follows: tarsi 14(ω)-10(ω)-8(ω)-8(ω), tibiae 7(ϕ,ϕp)-6(ϕp)-6(ϕp)-6(ϕp), genua 4(*k*)-4(*k*)-1-1, femora 6-4-3-2, trochantera 1-1-2-1, coxae 2-2-2-2. Genua I and II each bearing minute solenidion k.

Male - Not observed.

Examined materials **-** Two females from litter of grass and soil Aşkale, Erzurum, 01. VIII. 1999; three females from grassy soil, Narman, Erzurum, 23. V. 2002.

Distribution **-** The Baltic States (KUZNETZOV, 1978; KUZNETZOV and PETROV, 1984; KHAUSTOV and KUZNETZOV, 1997; KAZMIERSKI, 2000).

Remarks - This species can be distinguished by the following characters: lack of reticulation of the shields, eyes present, postocular bodies large, median zonal and intercalary shields divided, marginal shields large, suranal shield entire, dorsal body setae unequal in length. The Turkish specimens exhibit all the characters of *S. pilatus*. However, no apodemal striae on propodosomal shield in the specimens collected from Aşkale.

Stigmaeus kamili sp. nov.
(Figs 3-20)

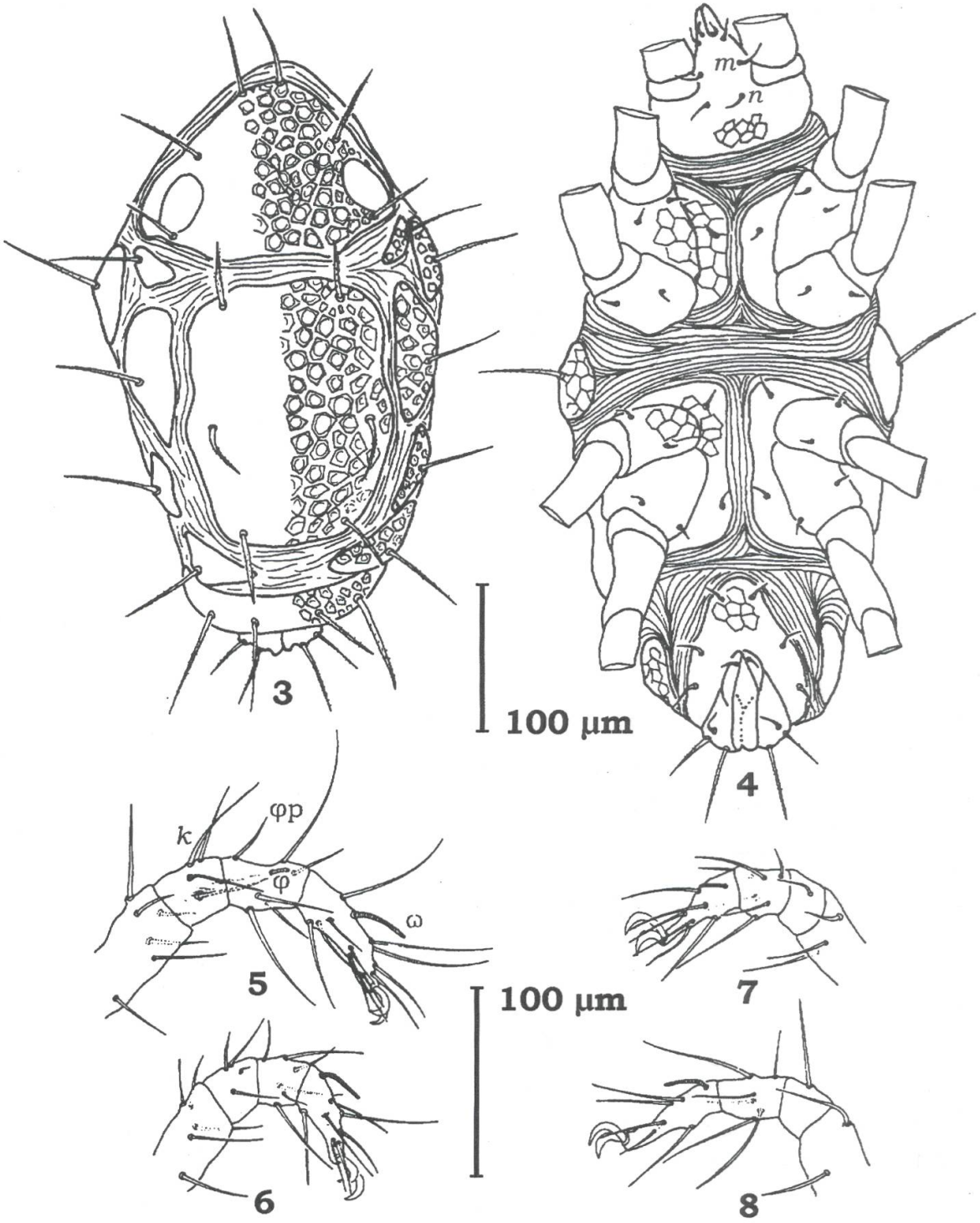
Protonymph - Length of body (excluding gnathosoma): 280, width: 173.

Gnathosoma **-** Length of gnathosoma 60. Subcapitular setae one pair. Chelicerae 86 (including digits). Palpi 84, numbers of setae on palpal segments as in female.

Dorsum **-** As in female, but less sclerotized, faintly ornamented and central shield with two pairs of setae. Dorsal body setae with minute and fine spinules. Dimensions of setae as follows: *vi*: 30, *ve*: 40, *sci*: 23, *sce*: 33, c_1: 27, c_2: 37, d_1: 27, d_2: 30, e_1: 27, e_2: 40, f_1: 47, h_1: 37, h_2: 27. Distance between setae: *vi-vi*: 13, *ve-ve*: 50, *vi-ve*: 27, *sci-sci*: 77, *ve-sci*: 30, c_1-c_1: 43, d_1-d_1: 57, c_1-d_1: 50, h_1-h_1: 13, h_2-h_2: 27, h_1-h_2: 10.

Venter **-** Endopodal shields completely separated without dimples and bearing *1a* and *3a* but *4a* absent. Paragenital setae one pair, 13. Anogenital covers with three pairs of setae, the third pair slightly longer than other two pairs.

Legs **-** Leg I 160, leg II 117, leg III 113, leg IV 130. Number of setae (solenidia in parentheses) on leg segments as follows: tarsi 14(ω)-10(ω)-8(ω)-7(ω), tibiae 7(ϕ,ϕp)



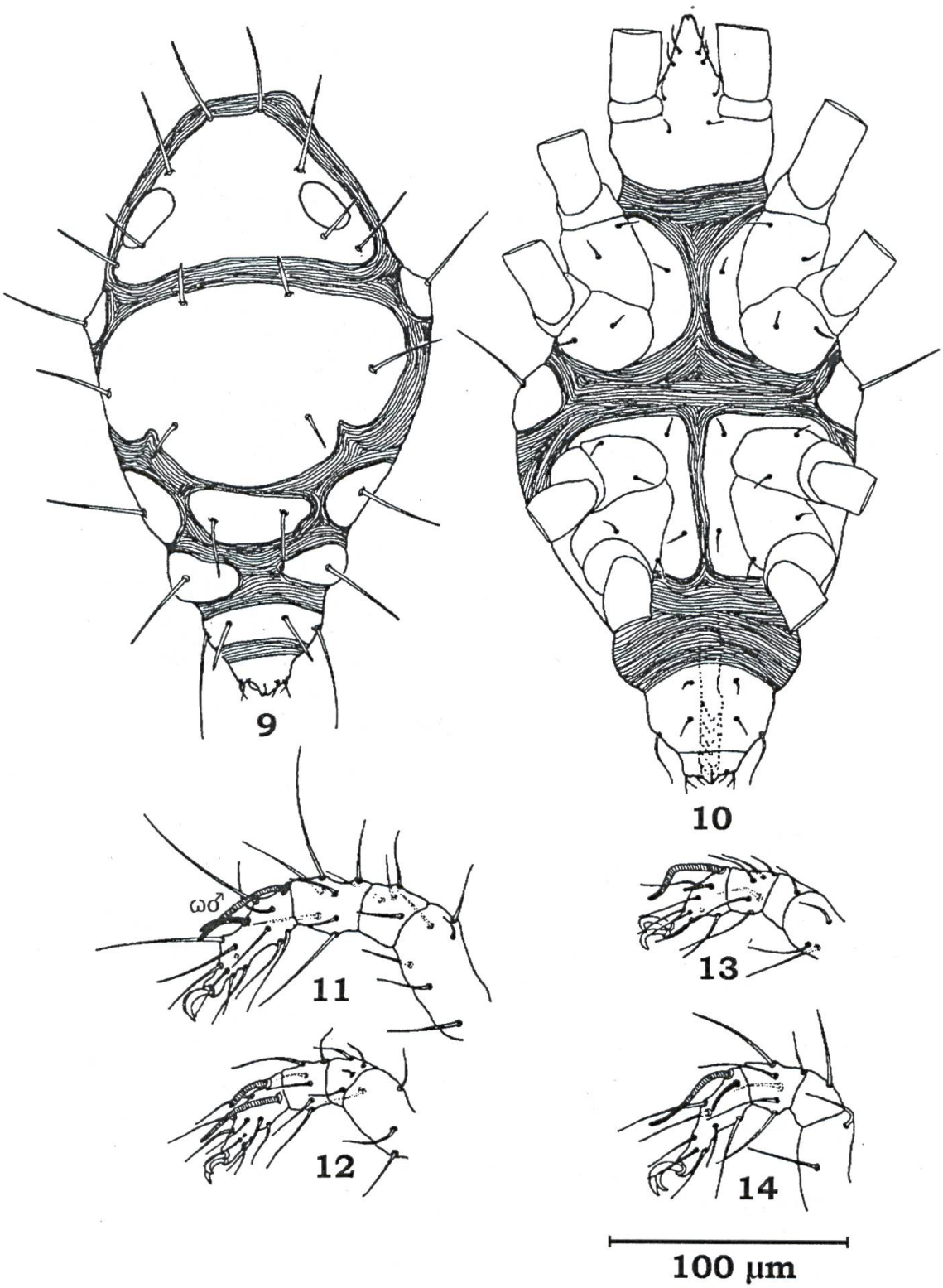
FIGS 3-8.

Stigmaeus kamili sp. nov. (Female) - 3. Dorsal view, 4. Ventral view, 5. Leg I, 6. Leg II, 7. Leg III, 8. Leg IV.

6(ϕp)-6(ϕp)-6(ϕp), genua 4(*k*)-3(*k*)-0-0, femora 4-4-3-1, trochantera 0-0-1-0, coxae 2-2-2-0. Medioventral seta absent from tarsus IV.

Female. HOLOTYPE - Length of body (excluding gnathosoma): 390, width: 217.

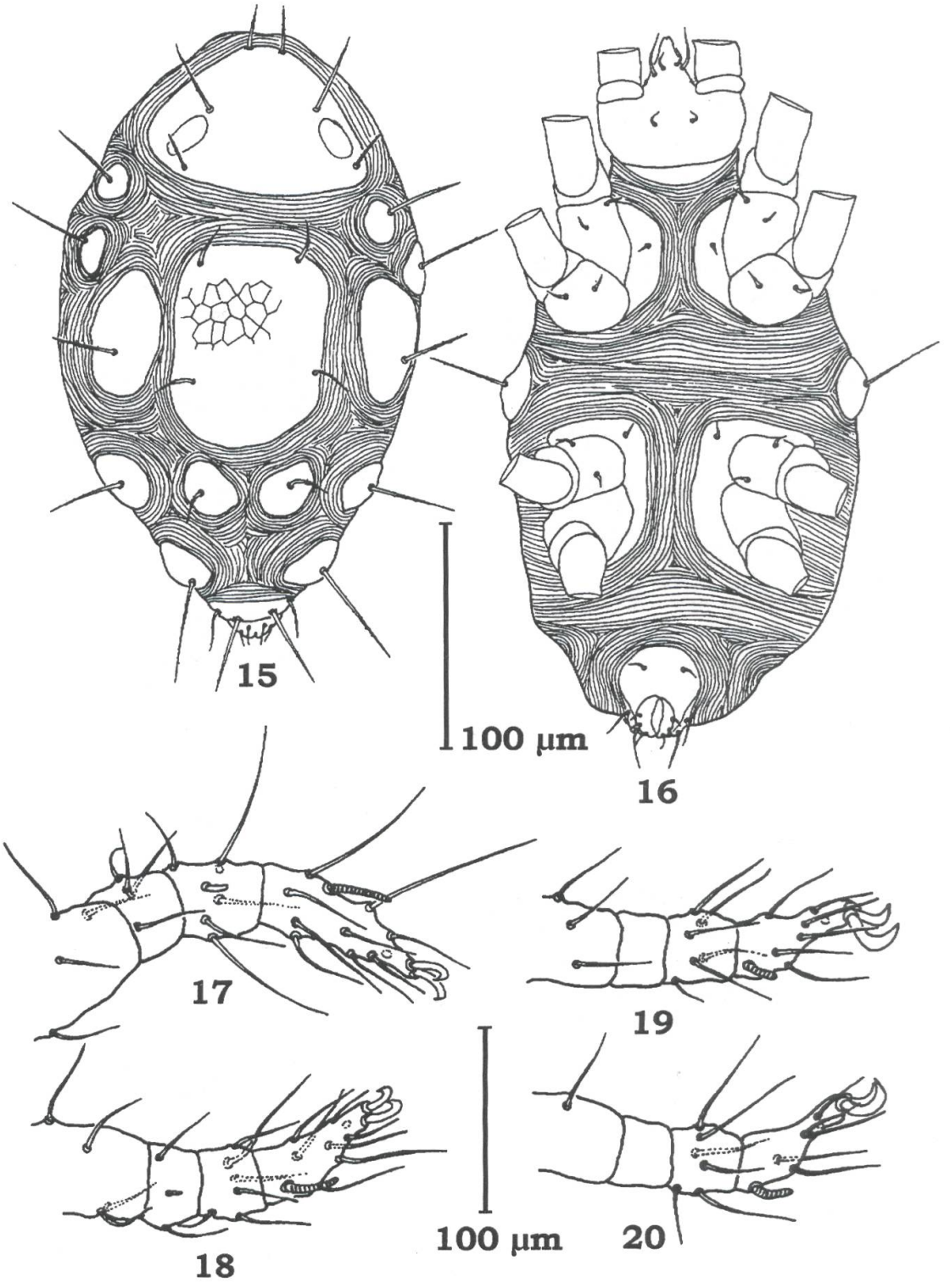
Gnathosoma **-** Length of gnathosoma 97, ventrally reticulated, with two pairs of adoral setae, two pairs of subcapitular setae, dimensions of subcapitular setae: *n*: 20, *m*:



FIGS 9-14.

Stigmaeus kamili sp. nov. (Male) - 9. Dorsal view, 10. Ventral view, 11. Leg I, 12. Leg II, 13. Leg III, 14. Leg IV.

27, distances between *n-n*: 23, *m-m*: 30, *n-m*: 20. Chelicerae 133 (including digits). Palpi 133, count of setae and solenidion on palpi (femur to tarsus): 3, 2, 2 + 1 well-developed main claw + 1 accessory claw, 5 + 1 ω + 1 tridentate eupathidium, main tibial claw as long as tarsus, palpal segments with reticulum incompletely developed.



FIGS 15-20.
Stigmaeus kamili sp. nov. (Protonymph) - 15. Dorsal view, 16. Ventral view, 17. Leg I, 18. Leg II, 19. Leg III, 20. Leg IV.

Dorsum - Dorsal shields covered with polygonal dimples enclosed by thick reticulum. Propodosomal shield with three pairs of setae and one pair of postocular bodies located between setae *ve* and *sci*. Eyes not evident. Seate *sce* placed on small auxiliary shields. Setae c_2 on humeral shields, situated laterally. Central shield with three pairs of

setae, c_1, d_1 and e_1. Marginal shields with setae d_2. Lateral zonal shields with setae e_2. Intercalary shields divided, with setae f_1. Suranal shield entire, with two pairs of setae, h_1 and h_2. Areas between shields covered with smooth striae. Dorsal body setae with thin hyaline sheath and faintly spinulate. Dimensions of setae as follows: *vi=ve*: 60, *sci*: 43, *sce*: 57, c_1=d_1=e_1: 50, c_2: 60, d_2=e_2: 53, f_1: 60, h_1=h_2: 67. Distance between setae: *vi-vi*: 25, *ve-ve*: 84, *vi-ve*: 50, *sci-sci*: 132, *ve-sci*: 55, c_1-c_1: 73, d_1-d_1: 109, c_1-d_1: 75, e_1-e_1: 69, d_1-e_1: 69, h_1-h_1: 42, h_2-h_2: 100, h_1-h_2: 25.

Venter - Endopodal shields reticulated, completely separated, and bearing setae *1a*, *3a* and *4a*. Surface on coxae reticulated. Paragenital shield reticulated, with three pairs of setae, spiniform and slightly spinulate, pg_1: 21, pg_2: 23, pg_3: 27. Anogenital covers with four pairs of setae, g_1: 20, g_2: 27, g_3: 40, g_4: 50, g_1 and g_2 spiniform and slightly spinulate, g_3 and g_4 similar to dorsal body setae.

Legs - Leg I 294, leg II 220, leg III 220, leg IV 267. Leg segments with fine reticulations incompletely developed. Number of setae (solenidia in parentheses) on leg segments as follows: tarsi 14(ω)-10(ω)-8(ω)-8(ω), tibiae 7(ϕ,ϕp)-6(ϕp)-6(ϕp)-6(ϕp), genua 4(*k*)-4(*k*)-1-1, femora 6-5-3-2, trochantera 1-1-2-1, coxae 2-2-2-2. Lengths of solenidia on tarsi: ω_1: 33, ω_2: 27, ω_3: 14, ω_4: 23. Lengths of solenidia on genua: k_1: 53, k_2: 7.

Male. ALLOTYPE - Length of body (excluding gnathosoma): 270, width: 160.

Gnathosoma - Length of gnathosoma 76, ventral surface with dimples, developed incompletely and faintly, with two pairs of adoral setae, two pairs of subcapitular setae, dimensions of subcapitular setae: *n*: 13, *m*: 20, distances between *n-n*: 17, *m-m*: 27, *n-m*: 14. Chelicerae 97 (including digits). Palpi 84, numbers of setae on palpal segments as in female.

Dorsum - General features of the setae and dorsal ornamentation as in female, but with some differences: faintly ornamented, propodosomal shield with setae *sce*, marginal shields fused to central shield, and with three pairs of setae, c_1, d_1 and d_2, median zonal shield entire with setae e_1. Dimensions of setae as follows: *vi=ve*: 37, *sci*: 23, *sce*: 37, c_1: 23, c_2: 37, d_1=e_1: 27, d_2: 37, e_2: 40, f_1: 42, h_1: 26, h_2: 40. Distance between setae: *vi-vi*: 20, *ve-ve*: 57, *vi-ve*: 30, *sci-sci*: 83, *sce-sce*: 113, *sci-sce*: 13, c_1-c_1: 47, d_1-d_1: 20, c_1-d_1: 55, c_1-d_2: 53, d_2-d_2: 127, d_1-d_2: 37, e_1-e_1: 30, h_1-h_1: 24, h_2-h_2: 50, h_1-h_2: 13.

Venter - Endopodal shields completely separated, dimpled faintly and bearing setae *1a*, *3a* and *4a*. Surface on coxae and paragenital shield with dimples, incompletely and faintly developed. Paragenital shield with three pairs of setae, pg_1: 13, pg_2: 17, pg_3: 23. Anogenital covers bearing three pairs of minute setae.

Legs - Leg I 210, leg II 193, leg III 173, leg IV 180. Number of setae (solenidia in parentheses) on leg segments as follows: tarsi 15(ω,ω♂)-11(ω,ω♂)-9(ω,ω♂)-9(ω,ω♂), tibiae 7(ϕ,ϕp)-6(ϕp)-6(ϕp)-6(ϕp), genua 4(*k*)-4(*k*)-1-1, femora 6-5-3-2, trochantera 1-1-2-1, coxae 2-2-2-2. All tarsi bearing additional and long solenidion ω♂.

Type materials - Holotype female, allotype male, three paratype females and one protonymph from soil in hollow of *Salix* sp., Pasinler, Erzurum, 24. X. 1999; two paratype females from decayed bark of *Salix* sp., Askale, Erzurum, 26. VI. 2000; six paratype females and one partype male from grassy soil and grass litter, Sorgun, Köse, Gümüshane, 04. VI. 2002.

Etymology - This species is named for Dr. Kamil Koç, Celal Bayar University, Manisa, Turkey.

Remarks - This new species resembles *S. scaber* Summers, 1962 in that central shield with three pairs of setae, genua 4-4-1-1 and long solenidion *k* on genu I. However it can be separated from the latter by the dorsal setae with thin hyaline sheath and setae d_1 not reach the base of e_1.

Storchia Oudemans, 1923

Type species - *Caligonus robustus* Berlese, 1885.

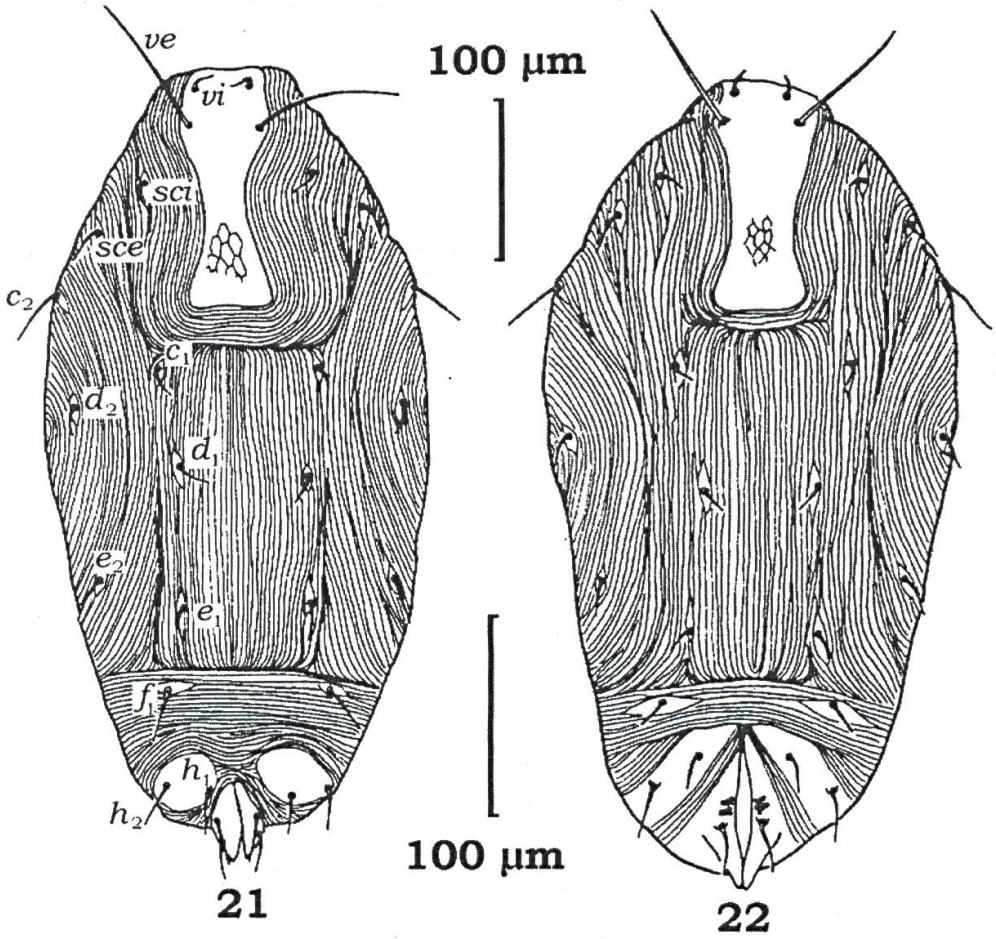
Idisoma slender, propodosoma with a narrow, elongated propodosomal shield, hysterosoma with one pairs suranal shields, dorsum with thirteen or fourteen pairs of dorsal body setae, no obvious eyes, chelicerae seperated, palpal tarsus with four setae, one solenidion, one spine and three eupathidia, hypognathum with two pairs of setae.

Storchia robustus (Berlese, 1885) (Figs 21-22)

This cosmopolitan species is characterized by a reticulated propodosomal shield, fourteen pairs of setae on dorsum, three pairs of setae on genital shields almost equal in length, one seta on trochanter III.

Examined materials - One female from grassy soil, Çat, Erzurum, 27. V. 2000; five females and four males from litter under *Pinus sylvestris*, Olur, Erzurum, 31. V. 2000; one female from litter under *Populus* sp., Pasinler, Erzurum, 03. VII. 2000; two females from litter under *Salix* sp., Hınıs, Erzurum, 04. VI. 2001; twenty females, five males, ten deutonymphs and five protonymphs from moss and grassy soil on the stone, Tortum, Erzurum, 20. VIII. 2001; one female from litter under the mixed forest, Oltu, Erzurum, 25. IX. 2001; five females, five deutonymphs and one protonymph from soil and litter under *Quercus* sp., Karaçubuk Village, Adaklı, Bingöl, 30. IX. 2001; one female from moss, Köprüköy Village, Maçka, Trabzon, 15. XII. 2001; thirty eight females, ten males, nine deutonymphs, two protonymphs and one larva from grassy soil under an apple tree, Oltu, Erzurum, 23. V. 2002; two females, two males and two deutonymphs from soil under *Astragalus* sp., Eleşkirt, Agrı, 20 XII. 2002.

Distribution - USA, China, Japan, Pakistan, New Zealand, Solomon Islands, Namibia, South Africa, France, Italy, Sweden, former USSR, Iran and Turkey (Grandjean, 1944; Meyer & Ryke, 1960; Wood, 1967, 1971, 1973; Meyer, 1969; Vainstein & Kuznetzov, 1978; Chaudhri, *et al.*, 1979; Ueckermann & Meyer, 1987; Meyer & Ueckermann, 1989; Swift, 1996; Koç & Ayyıldız, 1997; Fan & Yan, 1997; Khaustov & Kuznetzov, 1997; Khanjani & Ueckermann, 2002).



FIGS 21-22.
Storchia robustus - 21. Dorsal view of female, 22. Dorsal view of male.

RÉSUMÉ

STIGMAEUS KAMILI, UNE NOUVELLE ESPÈCE DU GENRE *STIGMAEUS* (ACARI: STIGMAEIDAE) DE TURQUIE ET NOUVELLES DONNÉES SUR D'AUTRES ACARIENS

Une nouvelle espèce, *Stigmaeus kamili* de Turquie est décrite et illustrée par la femelle, le mâle et la protonymphe. *Stigmaeus pilatus* Kurnetzov, 1978, qui est nouvelle pour la faune turque est également décrite, ainsi que *Storchia robustus* (Berlese, 1885) est signalé dans de nouvelles localités.

Mots-clés: Acari, Stigmaeidae, *Stigmaeus*, *Storchia*, nouvelles espèce, Turquie.

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