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A Contribute to the knowledge on mite diversity in Turkey: *Cheylostigmaeus tarae* (Acari: Stigmaeidae)

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Abstract: During a faunal study on raphignathoid mites in Erzincan, two male mite specimens from litter and soil under *Cupressus* sp. and *Syringa* sp. were identified as *Cheylostigmaeus tarae* Khanjani. Description of this species was given here and its drawings and measurements were made. This is a newly recorded species for the Turkish fauna.

Keywords: Acari, Stigmaeidae, *Cheylostigmaeus*, new record, Turkey.

Introduction

Stigmaeidae Oudemans is a family within the superfamily Raphignathoidea. This family comprises 33 genera, including *Cheylostigmaeus* Willmann (Fan and Ueckermann, 2016; Fan et al., 2016; Dilkaraoğlu et al., 2016; Bingül et al., 2017). Members of this genus are found in all regions of the world except Antarctic (Fan and Zhang, 2005; Fan et al., 2016). By now, 34 species of the genus *Cheylostigmaeus* are known in the world (Doğan et al., 2015; Fan et al., 2016) with five species reported from Turkey (Erman et al., 2007; Doğan, 2007; Doğan et al., 2015). One more species, *C. tarae* Khanjani has been found for the first time in Erzincan (Turkey). In the present work, we aimed to contribute to the knowledge on mite diversity in Turkey.

Materials and Methods

Mite specimens were extracted from soil and litter by using Berlese funnels. The mites were cleared in 60% lactic acid and mounted in Hoyer's medium on microscope slides. The specimens were measured, drawn and identified by means of a Leica DM 4000B phase-contrast microscope under 40X and 100X magnification and equipped with a drawing tube. Dorsal idiosomal and leg setal designations follow Kethley (1990) and Grandjean (1944), respectively. All measurements are given in micrometers (µm) and refer to the length of the structure unless otherwise stated.

Results

Subclass Acari Leach, 1817

Superorder Acariformes Zakhvatkin, 1952

Order Trombidiformes Reuter, 1909

Suborder Prostigmata Kramer, 1877

Superfamily Raphignathoidea Kramer, 1877

Family Stigmaeidae Oudemans, 1931

Genus *Cheylostigmaeus* Willmann, 1951

Type species: *Cheylostigmaeus grandiceps* Willmann, 1951.

***Cheylostigmaeus tarae* Khanjani**

Cheylostigmaeus tarae Khanjani, 2014 in: Khanjani et al., 2014: 365; Fan et al., 2016: 54.

Male (n=2)

Idiosoma: Oval. Length of body (including gnathosoma) 346-354, width 170-188.

Gnathosoma: (Figs. 1A-B, 3B) 84-89, punctuated. Subcapitulum with two pairs of adoral setae (*ora*_{1,2}) and two pairs of subcapitular setae (*m*, *n*). Anterior subcapitular setae *m* inserted on small chitin ridges, but without lateral lamellae or projection. Dimensions and distance between subcapitular setae, *m* 22-23, *n* 16-21, *m-m* 23-23, *n-n* 27-28, *m-n* 23-23. Chelicerae 71 (68-73), slightly punctuated. Palpi 111-112, finely punctuated and slightly reticulated. An apophysis on palp femur present. Counts of setae and solenidia from palp trochanter to palp tarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 5 + 1 solenidion+ 1 trident eupathidion (Fig. 3B).

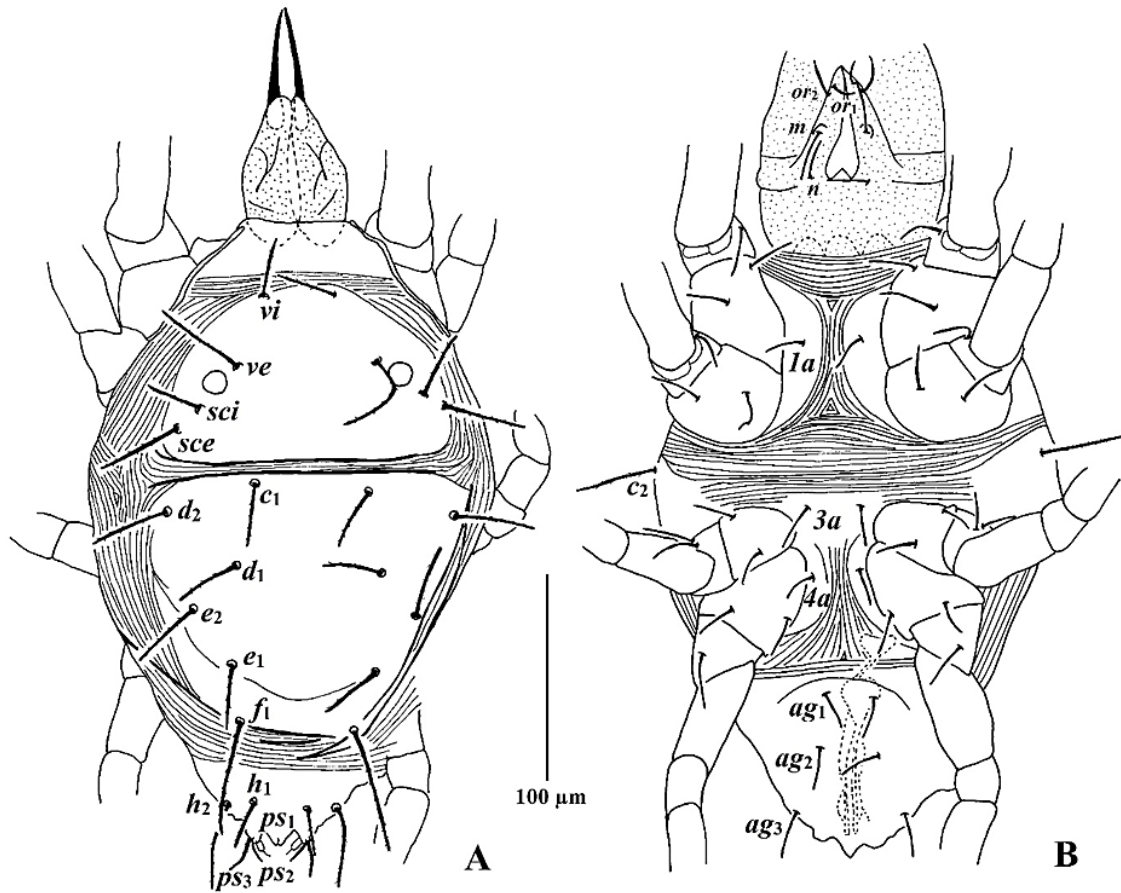


Figure 1. *Cheylostigmaeus tarae* (Male) – A. Dorsum of body, B. Venter of body.

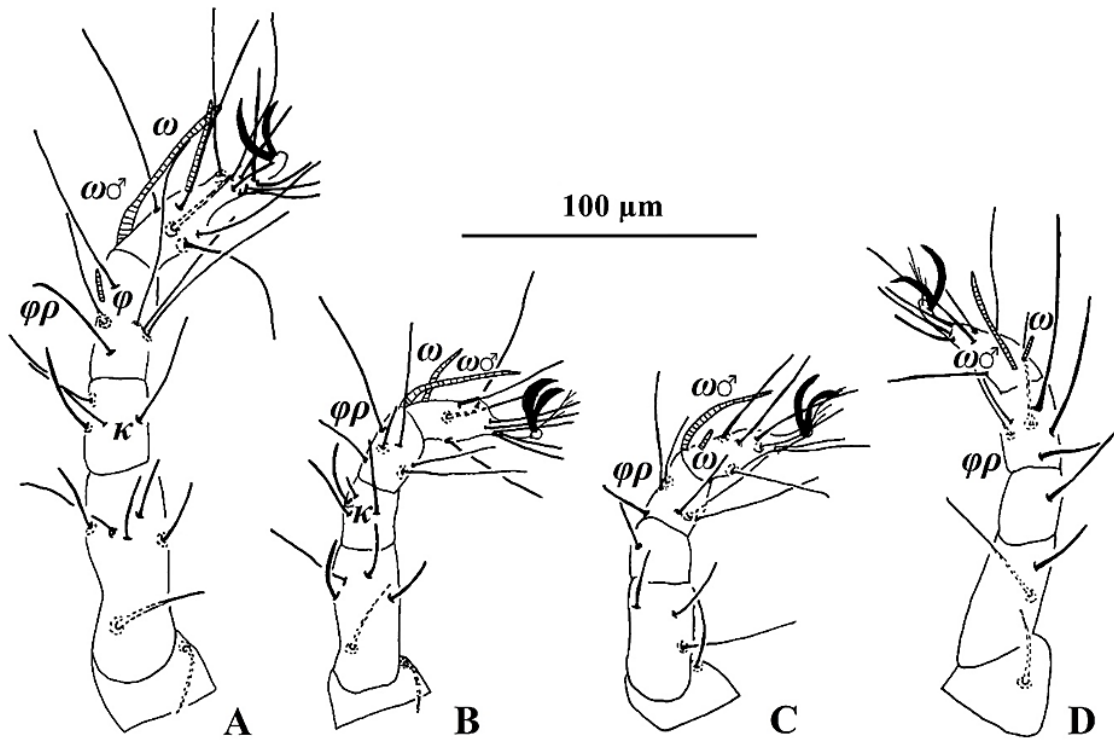


Figure 2. *Cheylostigmaeus tarae* (Male) – A. Leg I, B. Leg II, C. Leg III, D. Leg IV.

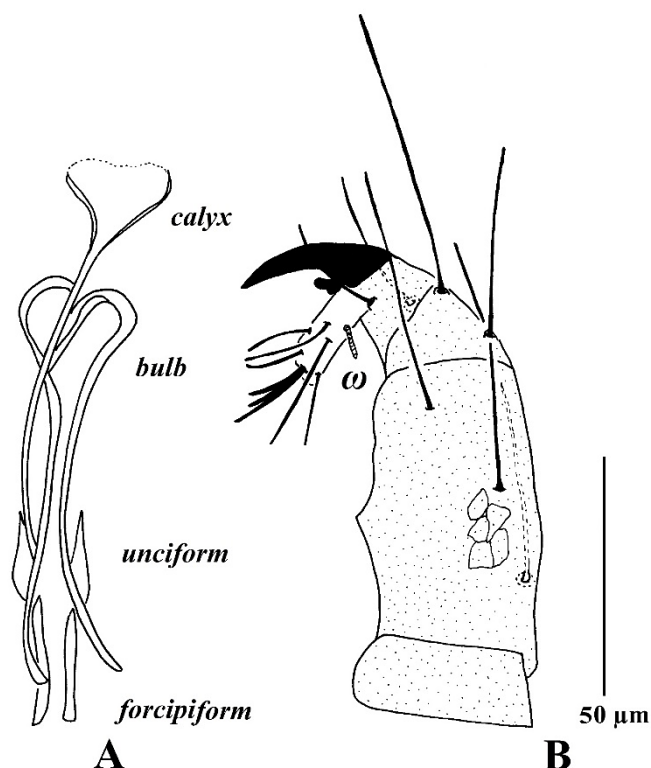


Figure 3. *Cheylostigmaeus tarae* (Male) – A. Aedeagus, B. Palp.

Dorsum: (Fig. 1A) Idiosomal shields without ornamentations. Prodorsal shield with four pairs of setae (*vi*, *ve*, *sci*, *sce*) and a pair of eyes between *ve* and *sci*. Hysterosomal shield with six pairs of setae (*c*₁, *d*₁, *d*₂, *e*₁, *e*₂, *f*₁). Suranal shield with two pairs of setae (*h*_{1,2}). Dorsal body setae slightly serrated, not sheathed distally except *f*₁. Lengths and distances of idiosomal setae as follows: *vi* 29-30, *ve* 43-44, *sci* 27-31, *sce* 32-39, *c*₁ 29-30, *c*₂ 31-40, *d*₁ 31-31, *d*₂ 33-38, *e*₁ 31-31, *e*₂ 35-37, *f*₁ 50-53, *h*₁ 20-20, *h*₂ 37-40, *vi-vi* 34-37, *ve-ve* 66-75, *vi-ve* 37-38, *sci-sci* 105-115, *ve-sci* 26-27, *c*_{1-c}₁ 54-68, *c*_{2-c}₂ 164-184, *c*_{1-c}₂ 48-57, *d*_{2-d}₂ 136-144, *c*_{1-d}₁ 38-42, *c*_{1-d}₂ 42-43, *d*_{1-d}₁ 69-78, *d*_{2-d}₁ 41-45, *e*_{2-e}₂ 105-110, *d*_{2-e}₂ 50-53, *d*_{1-e}₁ 42-45, *d*_{1-e}₂ 28-29, *e*_{1-e}₁ 67-69, *e*_{2-e}₁ 29-30, *f*_{1-f}₁ 53-56, *e*_{1-f}₁ 26-27, *e*_{2-f}₁ 53-56, *f*_{1-h}₁ 34-35, *f*_{1-h}₂ 35-35, *h*_{1-h}₁ 23-32, *h*_{2-h}₂ 52-52, *h*_{1-h}₂ 12-14.

Venter: (Fig. 1B) Humeral shields smooth, with setae *c*₂, similar to other dorsal setae. The coxisternal shields divided, without patterns and bearing three pairs of setae (*1a*, *3a*, *4a*). Lengths and distances between setae: *1a* 17-20, *3a* 17-18, *4a* 17-17, *1a-1a* 27-32, *3a-3a* 27-32, *4a-4a* 22-25. Aggenital shield smooth and bearing three pairs of setae (*ag*₁₋₃). Anogenital covers located at the posterior

end of the body and bearing three pairs of pseudanal setae (*ps*₁₋₃). Setae *ps*₃ slightly serrated but, others smooth. Lengths of aggenital and pseudanal setae: *ag*₁ 17-18, *ag*₂ 18-?, *ag*₃ 22-23, *ps*₁ 2-3, *ps*₂ 6-8, *ps*₃ 12-15.

Aedeagus: (Fig. 3A) Calyx coupe shaped. Bulb present. Two pairs of mating extension (shaft), unciform extension short, directed anteriorly and slightly widened at lower edges. The forcipiform extension short and directed posteriorly.

Legs: (Fig. 2) Leg I 200-?, leg II 130-175, leg III 119-132, leg IV 168-170. Counts of setae and solenidia on legs I-IV coxae 2-2-2-2, trochanters 1-1-2-1, femora 6-5-3-2, genua 3(+1κ)-3(+1κ)-1-1, tibiae 5(+1φ+1φp)-5(+1φp)-5(+1φp)-5(+1φp), tarsi 13(+1ω+1ωσ)-9(+1ω+1ωσ)-7(+1ω+1ωσ)-7(+1ω+1ωσ).

Specimens examined:

TURKEY: 1 ♂ from soil and litter under *Cupressus* sp., Erzincan, alt. 1217 m, 27 November 2015; 1 ♂ from soil under *Syringa* sp., alt. 1176 m, 03 January 2016, Erzincan.

Remarks: Recognition of *Cheylostigmaeus* species depends largely on various features of males which are unusual in Stigmaeidae where females are usually used for purposes of identification. Up to now 34 species belonging to the genus *Cheylostigmaeus* are known in the world, five of which, *C. californicus*, *C. salinus*, *C. salmani*, *C. urhani* and *C. variatus*, were recorded from Turkey (Erman et al., 2007; Doğan, 2007; Doğan et al., 2015; Fan et al., 2016). An additional species, *Cheylostigmaeus tarae* Khanjani, ex litter and soil from Erzincan, is herein described and illustrated. This species was only given before from the type locality Iran (Khanjani et al., 2014). This is the second report of the species for now.

This species is distinguished from all congeners by idiosomal shields without ornamentations, dorsal body setae with minute spinules, subcapitulum without lateral lamellae or projection, leg tarsus I with 13(+1ω+1ωσ) setae, leg genu II with κ solenidion, anogenital region smooth and shape of the aedeagus. Generally, the Turkish specimens are similar to the type specimens except for the fact that the body smaller, palpi covered with fine punctuations, an apophysis on palp femur present, idiosomal setae without hyaline sheath distally except *f*₁ and *ps*₃ faintly spinulate.

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