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Article

A second record of *Cryptognathus scutellatus* Summers & Chaudhri (Trombidiformes: Cryptognathidae)

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ABSTRACT
Cryptognathus scutellatus Summers & Chaudhri (Cryptognathidae) was known only from the holotype - an adult female collected from fleshy bracket fungus, Green Valley, Solano County, California, USA. Based on a recent faunistic study on raphignathoid mites of Sansa Gorge (Turkey), we found 14 females of *C. scutellatus* from litter and soil samples. This species was re-described and photographed here based on the Turkish specimens. This record confirms the presence and distinctiveness of *C. scutellatus*.

KEY WORDS: *Cryptognathus*; mite; Raphignathoidea; Sansa Gorge; soil; Turkey.

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INTRODUCTION

Members of the family Cryptognathidae Oudemans are found in edaphic habitats, especially moss-covered substrates and leaf litters, but also known from barks and lichens (Fan and Zhang 2005; Akyol and Koç 2010; Doustaresharaf *et al*. 2019; Doğan and Doğan 2020a, b). There have been a few reports of associations with some insects (Summers and Chaudhri 1965; Smiley and Moser 1968; Luxton 1973; Fan and Zhang 2005; Doğan 2008).

These mites are recognized by presence of a protective hood anterior of idiosoma and an extremely extensible gnathosomal base (Doğan 2008; Jafari *et al*. 2014; Sirinbeik Mohajer *et al*. 2014; Paktinat-Saeij *et al*. 2020).

This family consists of three genera: *Cryptognathus* Kramer, *Cryptofavognathus* Doğan & Dönel and *Favognathus* Luxton and sixty eight valid species described worldwide (Doustaresharaf *et al*. 2019; Porta 2019; Paktinat-Saeij *et al*. 2020; Doğan and Doğan 2020a, b). Until now, twenty two species of the genus *Cryptognathus* have been described in the world and five of them are known from Turkey: *Cryptognathus ayyildizi* Akyol & Koç, *C. kutahyaensis* Uluçay & Koç, *C. lagena* Kramer, *C. luteolus* Summers & Chaudhri and *C. ozkani* Doğan & Ayyıldız (Koç & Ayyıldız 1998; Doğan & Ayyıldız 2001; Akyol & Koç 2010; Uluçay & Koç 2013; Doğan 2007, 2008, 2019).

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During a faunistic study on raphignathoid mites of Sansa Gorge (Turkey), a newly recorded species, *Cryptognathus scutellatus* Summers & Chaudhri, was identified. This species is herein re-described and photographed based on the Turkish specimens. It is only known from USA; with this study, the second record of *C. scutellatus* is provided.

MATERIAL AND METHODS

Litter and soil samples were collected from in Sansa Gorge, Turkey. The mite specimens in the samples were extracted using Berlese-Tullgren funnels, were cleared in 60% lactic acid and mounted in Hoyer's medium on microscope slides. The specimens were examined and photographed under a Leica DM 4000B phase-contrast microscope. The terminology is based on Kethley (1990) and Grandjean (1944). All measurements are given in micrometres (µm). The mite materials were deposited in EBYU (Acarology Laboratory of Erzincan Binali Yıldırım University, Erzincan, Turkey).

RESULTS

Taxonomy

Family Cryptognathidae Oudemans

Genus *Cryptognathus* Kramer

Type species: *Cryptognathus lagena* Kramer

Cryptognathus scutellatus Summers & Chaudhri, 1965

Female (Figs. 1–5)

Body ovoid, length (including hood) 306-328, width 206–230.

Dorsum (Fig. 1) – Length of hood 51–60. Prodorsal hood with five or six dimples in each longitudinal row, anterior margin of the hood denticulate. Dorsal shield completely reticulated. Each polygonal cell of dorsal reticulum containing 12–30 small pores, all but 2–5 restricted to periphery. No striae on reticular ornamentations. A pair of eyes and a pair of postocular bodies between setae *sci* and *sce*. Dorsal shield with eleven pairs of simple setae. Lengths and distances between idiosomal setae as follows: *vi* 19–22, *ve* 20–22, *sci* 26–27, *sce* 26–27, c_1 26–28, d_1 27–28, e_1 25–27, e_2 27–29, f_1 22–26, h_1 23–25, h_2 18–21, *vi–vi* 38–44, *ve–ve* 41–48, *vi–ve* 11–13, *sci–sci* 65–68, *ve–sci* 9–10, *sce–sce* 118–123, *sci–sce* 30–34, c_1–c_1 73–77, c_1–d_1 41–44, d_1–d_1 103–107, e_2–e_2 106–114, d_1–e_1 45–50, d_1–e_2 57–61, e_1–e_1 72–77, e_2–e_1 22–23, f_1–f_1 35–36, e_1–f_1 54–60, e_2–f_1 45–46, f_1–h_1 30–32, f_1–h_2 38–42, h_1–h_1 20–21, h_2–h_2 65–70, h_1–h_2 20–26.

Venter (Figs 2–4) – Prosternal apron half-moon shaped. Venter of body incompletely covered with reticulations: the lateral sides of venter distinctive reticulated, but central reticulations indistinctive. Ventral surface striated and with pores, larger than those on dorsum. Venter bearing six pairs of setae (1*a*, 3*a*, 4*a*, $ag_{1\text{-}3}$), smaller than dorsal body setae (Fig. 2). Coxisternal region striated and with subcuticular reticulations under the striated integument (Fig. 3). Three pairs of genital setae ($g_{1\text{-}3}$) located outside of the genital shields. Anal shields located at the posterior end of the body, punctuated and bearing three pairs of setae ($ps_{1\text{-}3}$) (Fig. 4).

Legs – All legs with two claws and empodial raylets. Leg segments weakly punctated. Tubercles on the trochanters absent. Lengths of legs: leg I 206–223, leg II 160–175, leg III 166–176, leg IV 192–210. Setal formulae of legs: coxae 2–1–2–1, trochanters 1–1–2–1, femora 4–3–2–2, genua 5(+1κ)–4(+1κ)–2–3, tibiae 5(+1φ+1φρ)–5(+1φρ)–4(+1φρ)–3, tarsi 15(+1φρ+1ω)–11(+1φρ+1ω)–9(+1ω)–9(+1ω). The setae *tc* on tarsus II different in length. Tarsi III and IV with one proximoventral setae.

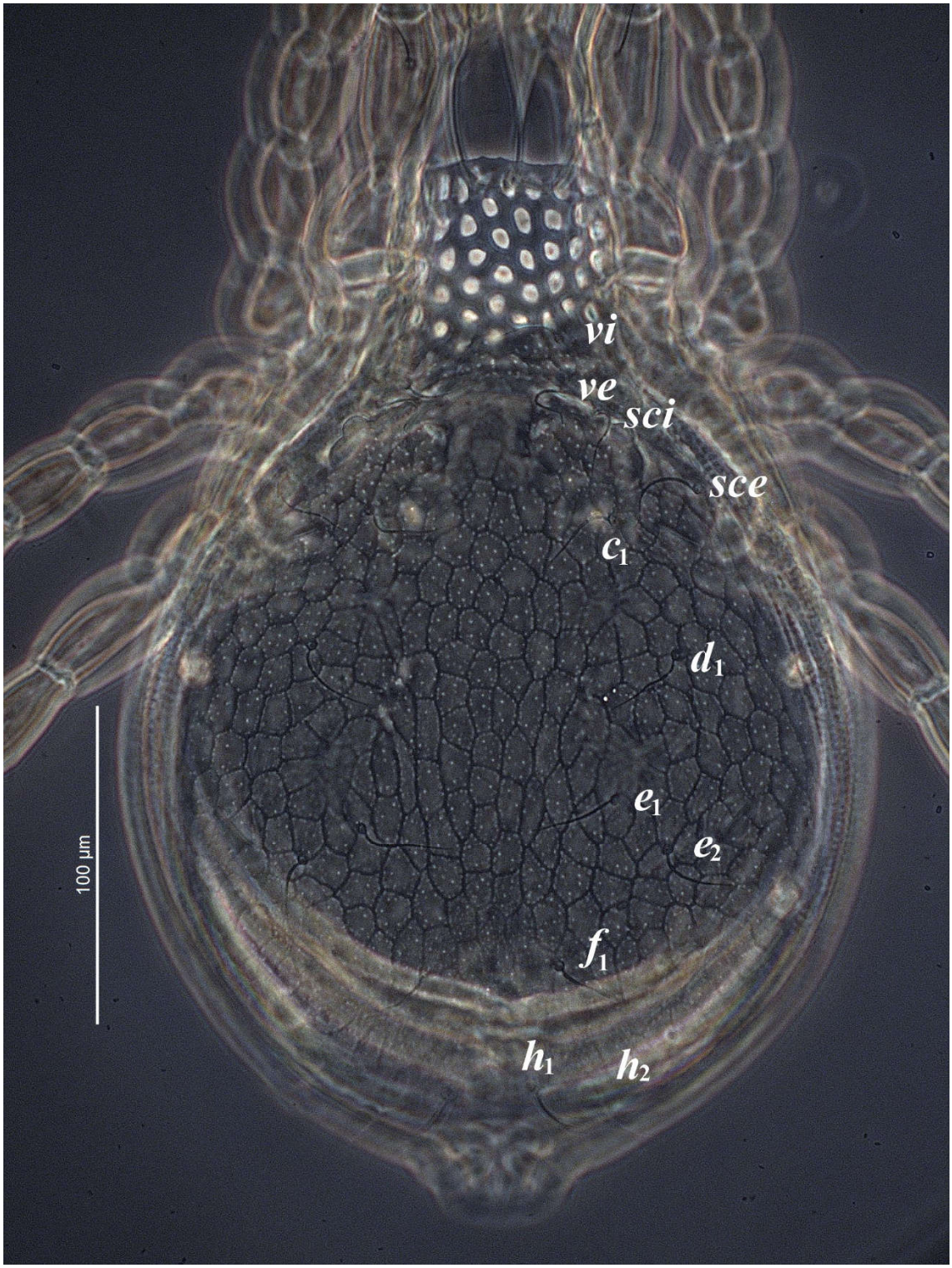

Figure 1. *Cryptognathus scutellatus* (Female) – Dorsal view of idiosoma.

Gnathosoma – Length of palp 93–98, length of chelicerae 81–85. Palp setal formula (from palptrochanter to palptarsi): 0 – 3 – 2 – 3+1 claw – 4+1ω+4 eupathidia. Palp supracoxal setae *elcp* nipple-like (Fig. 5A), tibial claw minute (Fig. 5B). Two pairs of adoral setae ($ro_{1,2}$) located on the anterior of the gnathosoma region and a pair of subcapitular setae (*m*) located on the posterior of the pharynx. Length of setae *m* 33–38, distance between the setae (*m*-*m*) 21–24.

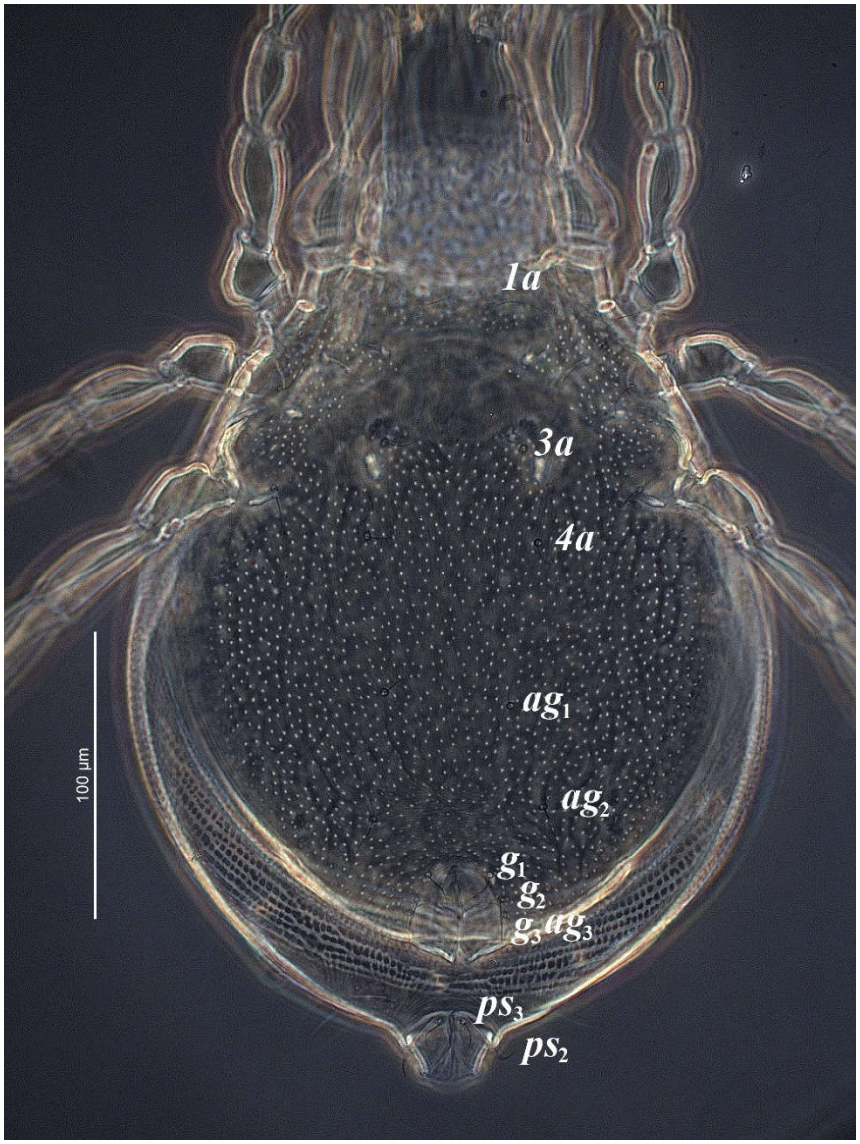

Figure 2. *Cryptognathus scutellatus* (Female) – Ventral view of idiosoma.

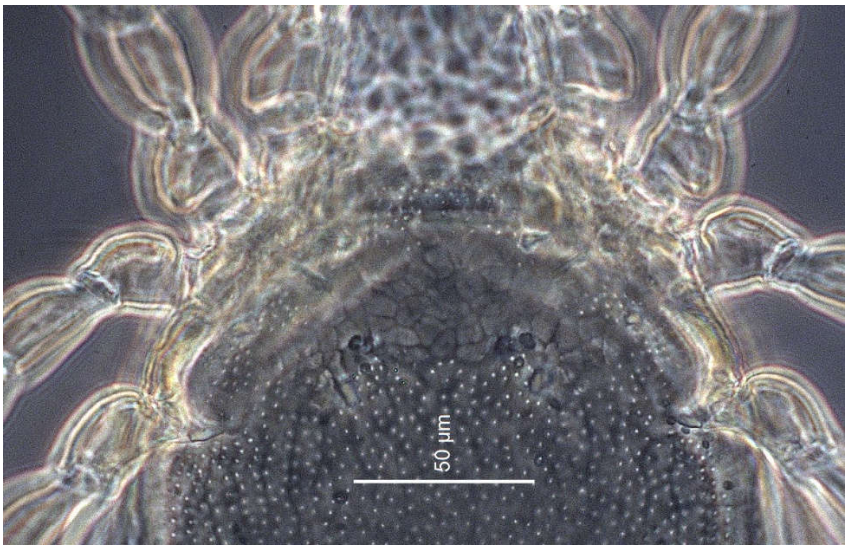

Figure 3. *Cryptognathus scutellatus* (Female) – Coxisternal region.

Male and immature stages – Unknown.

Specimens examined – 1♀ from mixed litter and soil under *Quercus* sp. and *Juniperus* sp., 39° 33' 22.0" N, 40° 03' 55.8" E, 1443 m a.sl., 18 April 2020, Sansa Gorge, Turkey; 13♀♀ from litter and soil under *Astragalus* sp., the same data with previous locality.

Distribution – former records: USA (Summers and Chaudhri 1965).

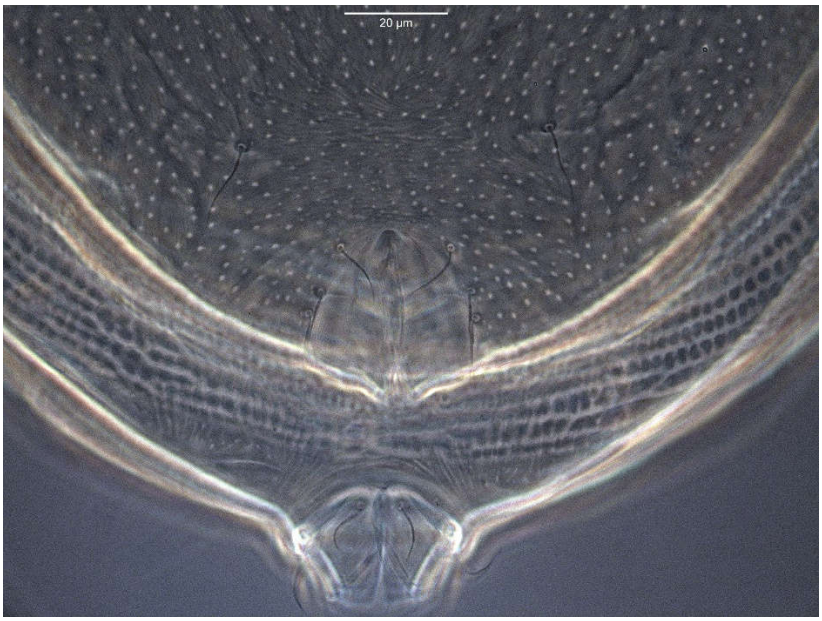

Figure 4. *Cryptognathus scutellatus* (Female) – Genital and anal shields.

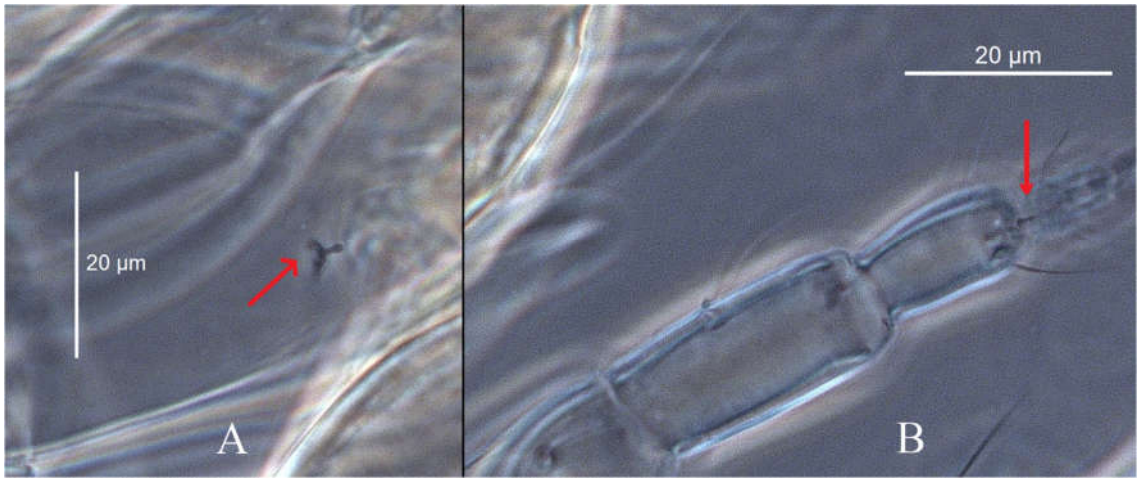

Figure 5. *Cryptognathus scutellatus* (Female) – A. Palp supracoxal seta, B. Palpal tibial claw.

Remarks

Cryptognathus scutellatus Summers & Chaudhri resembles *C. ultrarostratus* Summers & Chaudhri and *C. aureatus* Summers & Chaudhri (Summers & Chaudhri 1965) by the similar dorsal ornamentation: dorsal shield completely reticulate, each cell of dorsal reticulum with small pores, all but 2–5 restricted to periphery. However, it can be easily separated from them by the presence of solenidion κ on genu II.

Crypthognathus scutellatus and *C. summersi* Robaux are also closely related species (Summers & Chaudhri 1965; Robaux 1975) in having dorsal ornamentation different from that of the venter: dorsal shield completely, ventral shield incompletely reticulate. However; *C. summersi* differs from *C. scutellatus* by the lacking each one seta on trochanter III and femur I and by the missing of solenidion φρ on tibia III.

Crypthognathus scutellatus was recorded for the first time in this study except for the type locality Green Valley, Solano County, California, USA. The morphological features of the examined specimens are similar to those of the type specimen; differently, ventral surface and coxisternal region in the Turkish specimens are striated (Figs. 2, 4).

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دومین گزارش *Cryptognathus scutellatus* Summers & Chaudhri (Trombidiformes: Cryptognathidae)

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چکیده

گونهٔ *Cryptognathus scutellatus* Summers & Chaudhri (Cryptognathidae) تنها از روی هولوتایپ- ماده بالغ جمعآوری شده از قارچ طاقچهای گوشتی، درهٔ سبز، شهرستان سولانو، کالیفرنیا، ایالات متحدهٔ امریکا- شناخته شده است. بنابر بررسی اخیر فون کنههای رافیگناتوئید سانسا گرجه (ترکیه)، ۱۴ مادهٔ *C. scutellatus* از نمونههای لاشبرگ و خاک جمعآوری شد. بر اساس نمونههای ترکیه، این گونه بازتوصیف و عکسبرداری شد. این گزارش حضور و متمایز بودن گونهٔ *C. scutellatus* را تایید میکند.

واژگان کلیدی: *Cryptognathus*؛ کنه؛ بالاخانوادهٔ Raphignathoidea؛ سانسا گرجه؛ ترکیه.

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