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Original article (Orijinal araştırma)

A newly recorded mite species for Turkey: *Eryngiopus siculus* Vacante and Gerson (Prostigmata: Stigmaeidae)

Türkiye için yeni bir akar tür kaydı: *Eryngiopus siculus* Vacante and Gerson (Prostigmata: Stigmaeidae)

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Summary

Eryngiopus siculus Vacante & Gerson, 1987 (Prostigmata: Stigmaeidae) is newly discovered from Turkey and described here. The specimen was collected from eggplants *Solanum melongena* L. (Solanaceae) leaves infested with *Tetranychus urticae* Koch (Prostigmata: Tetranychidae) in Perşembe district, Ordu.

Keywords: Eggplant, predatory mite, Stigmaeidae, *Eryngiopus*, new record, Turkey

Özet

Eryngiopus siculus Vacante & Gerson, 1987 (Prostigmata: Stigmaeidae) Türkiye'de yeni bulunmuş ve burada tanımlanmıştır. Tür, Ordu'nun Perşembe ilçesinden, *Tetranychus urticae* Koch (Prostigmata: Tetranychidae) ile bulaşık patlıcan *Solanum melongena* L. (Solanaceae) yapraklarından toplanmıştır.

Anahtar sözcükler: Patlıcan, predatör akar, Stigmaeidae, *Eryngiopus*, yeni kayıt, Türkiye

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Introduction

The Raphignathoidea Kramer, 1877 is one of the oldest groups of the Acari and comprises 11 families (Fan & Zhang, 2005; Jafari et al., 2014). Stigmaeidae, a family within the superfamily Raphignathoidea, is the second most frequent predatory mite family found on plants after the Phytoseiidae (Santos & Laing, 1985; Khanjani & Ueckermann, 2002; Fan & Zhang, 2005; Jafari et al., 2014). Currently, Stigmaeidae comprises a total of 32 valid genera and more than 550 species in the world (Dilkaraoğlu et al., 2015; Doğan et al., 2015a,c). Until now, 11 genera including *Eryngiopus* have been reported from Stigmaeidae in Turkey (Doğan et al., 2015a; Uluçay, 2015). 32 species belonging to the genus *Eryngiopus* have been given from the world (Fan, 2005; Jafari et al., 2014; Khanjani et al., 2014a,b; Doğan et al., 2015b; Maake et al., 2015). Three of them are recorded from Turkey: *Eryngiopus tauricus* Kuznetzov from İstanbul (Yeşilayer & Çobanoğlu, 2013), *E. coheni* Vacante and Gerson, from Kütahya (Uluçay, 2015) and *E. anatolicus* Doğan, Dilkaraoğlu and Fan from Gümüşhane (Doğan et al., 2015b). This paper reports the fourth species, *E. siculus* Vacante and Gerson as a new record of stigmaeid mites from Ordu, Turkey. This species is here in described and illustrated. A key to the species of *Eryngiopus* known from Turkey is also provided.

Material and Method

Leaf samples were collected from the Perşembe district, Ordu Province in the Black Sea Region of Turkey. Details of geographical coordinates were recorded using a GPS mobile device. The samples were placed in plastic bags, labelled, and transferred to the laboratory. The mites were collected with a 00 paint brush under a Leica S8 APO stereomicroscope from the leaves. The specimens were preserved in vials containing 70% ethanol. *Eryngiopus* specimen was cleared in Lacto-phenol fluid and mounted in a drop of Hoyer's medium on microscope slides and dried in an oven at 50°C. The mite specimen was identified with the aid of a Leica DM 4000 B phase contrast microscope. All of the measurements are given in micrometers (µm). The material is deposited in the Acarology Laboratory of Ordu University, Ordu, Turkey.

Results

Family: Stigmaeidae Oudemans, 1931

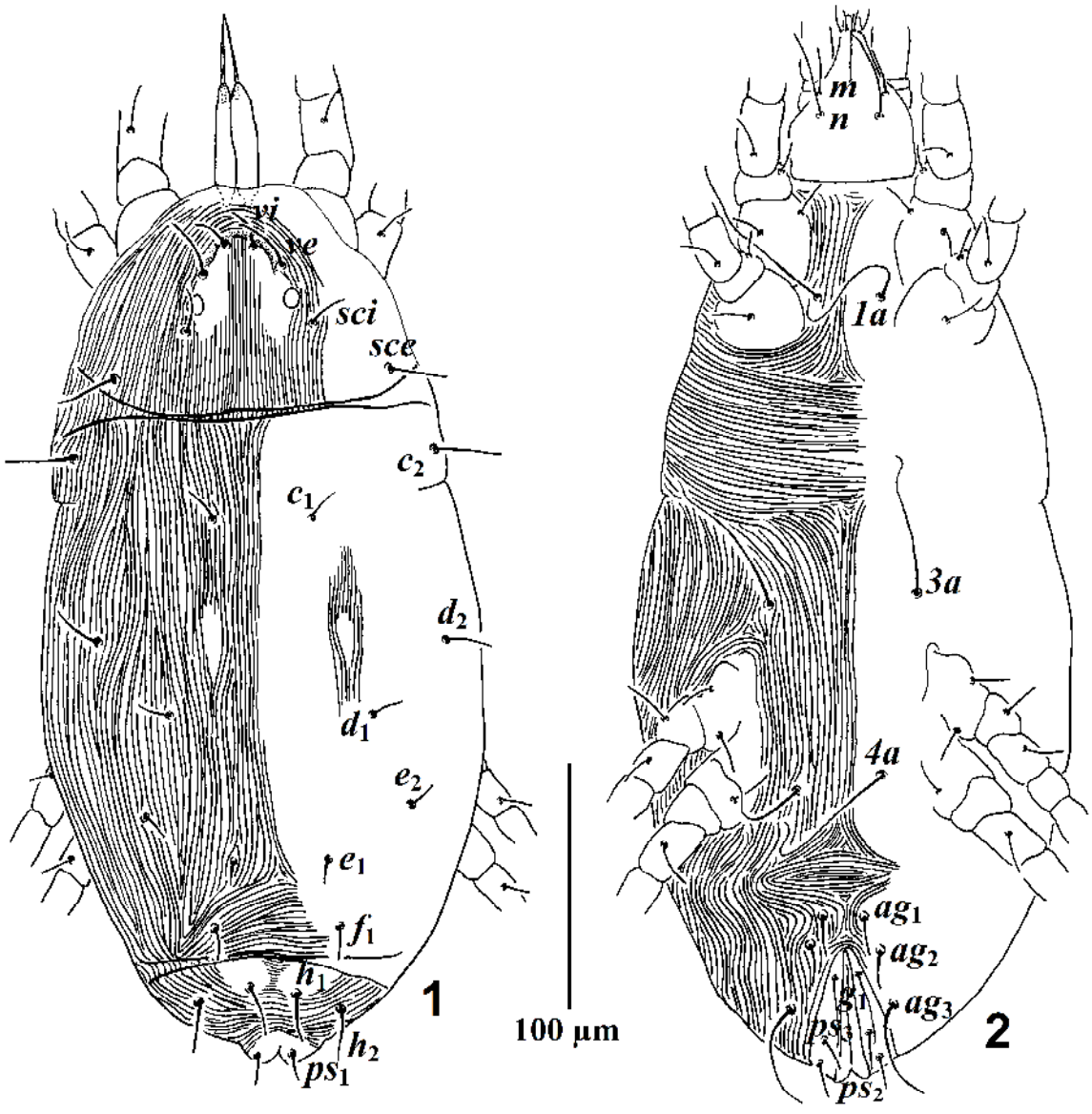
Genus: *Eryngiopus* Summers, 1964

Members of *Eryngiopus* can be defined by having the following characters: idiosoma narrowly to broadly oval in outline; chelicerae separate; palptibial claw subequal to palptarsus, seta *l'* of palptibia not modified or spine-like; terminal eupathidia on palptarsus mostly fused and split into 2 or 3 vestigial prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 1, 3 + 1 claw, 4 + 1ω + 1 subterminal spine-like eupathidium (*acm*) + 3 eupathidia (mostly fused); subcapitulum with 2 pairs of subcapitular setae; prodorsum mainly striated, prodorsal shield reduced to one small shield or one pair of platelets, which bears 2 or 3 pairs of setae, *sce* present or absent; eyes present, postocular bodies absent; dorsal hysterosomal area mainly striated, with one pair of minute platelets anteromediad of *d*1, humeral shields minute or vestigial, dorsolateral, with setae c_2; intercalary shields divided (if present) and each bearing one seta (f_1). Suranal shield divided or entire, with 2 pairs of setae (h_1 and h_2), h_3 absent; coxisternal shields present or absent; ventral opisthosoma with 2 or 3 pairs of aggenital setae; genitoanal valves with 1 pair of genital setae and 3 pairs of pseudanal setae; leg tarsal claws robust; empodial shafts branching into tenent hairs (Fan & Zhang, 2005; Doğan et al., 2015b).

***Eryngiopus siculus* Vacante & Gerson**

Description (Female)

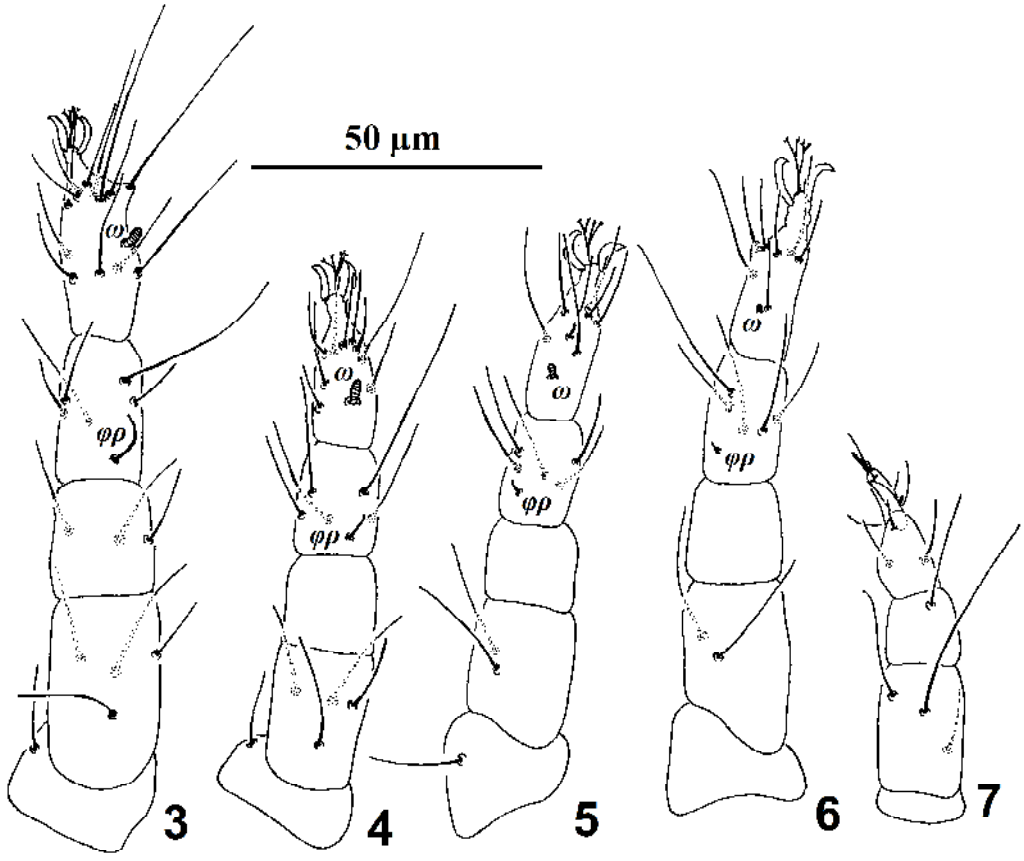
Length of idiosoma 320, width of body 158.



Figures 1-2. *Eryngiopus siculus* (female) – 1, Dorsum of body; 2, Venter of body.

Idiosomal dorsum (Figure 1) – Integument longitudinally striated except in the shields. Propodosomal shield divided into two minute platelets by longitudinal striae. Propodosomal shield without pattern, bearing two pairs of setae (*vi*, *ve*) and one pair of eyes. *sci* and *sce* on striated cuticle. Eyes 7 in diameter. Post-ocular bodies absent. Dorsal hysterosomal area mainly striated, with one pair of minute, smooth and non-setose platelets at level of d_2. Setae c_1, c_2, d_1, d_2, e_1, e_2, f_1 on striated cuticle. Suranal shield smooth, divided, two pairs of suranal setae ($h_{1,2}$), h_2 outside of the shield, h_3 absent. All dorsal setae smooth. Length and distance of dorsal setae as follows: *vi*: 12, *ve*: 20, *sci*: 14, *sce*: 21, c_1: 11, c_2: 23, d_1: 12, d_2: 17, e_1: 9, e_2: 10, f_1: 13, h_1: 17, h_2: 21, *vi-vi*: 7, *ve-ve*: 24, *vi-ve*: 11, *sci-sci*: 44, *ve-sci*: 18, *sce-sce*: 98, *sci-sce*: 28, c_1-c_1: 33, d_2-d_2: 124, c_1-d_1: 70, c_1-d_2: 57, d_1-d_1: 70, d_2-d_1: 35, e_2-e_2: 94, d_2-e_2: 62, d_1- e_1: 53, d_1-e_2: 33, e_1-e_1: 33, e_2-e_1: 34, f_1-f_1: 44, e_1-f_1: 21, e_2-f_1: 47, f_1-h_1: 26, f_1-h_2: 25, h_1-h_1: 15, h_2-h_2: 48, h_1-h_2: 14.

Idiosomal venter (Figure 2) – Coxisternal and humeral shields absent. Ventral setae *1a*, *3a*, *4a* on the striated integument. Lengths and distance between these setae as follows: *1a*: 64, *3a*: 59, *4a*: 42, *1a-1a*: 19, *3a-3a*: 53, *4a-4a*: 31. Ventral opisthosoma with 3 pairs of aggenital setae, aggenital shield absent. Setae ag_3 about twice as long as $ag_{1,2}$. Genital and anal shields contiguous, bearing one pair of genital (g_1) and three pairs of pseudanal setae (ps_{1-3}). Genital setae slender and pass ps_3 base. Length of anogenital setae as follows: ag_1: 14, ag_2: 13, ag_3: 32, g_1: 23, ps_1: 13, ps_2: 11, ps_3: 13.



Figures 3-7. *Eryngiopus siculus* (female) – 3, Leg I; 4, Leg II; 5, Leg III; 6, Leg IV; 7, Palp.

Legs (Figures 3-6) – Length of legs (from base of trochanter to tip of tarsal claws): Leg 1: 115, Leg 2: 82, Leg 3: 90, Leg 4: 100. Setal formula of leg segments as follows: coxae 2–1–2–1, trochanter: 1–1–1–0, femora: 4–4–2–2, genua: 3–0–0–0, tibiae: 5(+1φρ)–5(+1φρ)–5(+1φρ)–5(+1φρ), tarsi: 13(+1ω)–9(+1ω)–7(+1ω)–7(+1ω). Each tarsus with one solenidion ω; ωII the longest.

Gnathosoma – 58 long. Chelicerae 68 long. Palp 58 long. Palp five segmented. Counts of setae and solenidia from palptrochanter to palptarsus: 0–3–1–2 + 1 tibial claw + 1 accessory claw- 5 + 1 ω + 1 eupathidion (Figure 7). The length of subcapitular setae *n* is twice times the length of subcapitular setae *m.* Length and distance of subcapitular setae; *m*: 14, *n*: 28, *m-m*: 21, *n-n*: 19, *m-n*: 3.

Male and immature stages – Unknown.

Material examined: Ordu, Perşembe, 27.IX.2013, 41°1'7.35"N 37°49'36.92"E, 4m asl, 1♀, on eggplant [*Solanum melongena* L. (Solanaceae)].

Remarks

Eryngiopus siculus was firstly described by Vacante & Gerson (1987) in Italy, mentioned by Matioli et al. (2002) and recorded from Iran by Ranjbar-Varandi et al. (2014). This species has not been previously reported from Turkey, but now is known to be a part of the mite fauna of Turkey.

Eryngiopus siculus is very similar to *E. placidus* described and illustrated by Kuznetsov (1977) in having the same propodosomal shield shape and leg setation. It can be distinguished from the later by presence of one pair of suranal setae (h_1) on the plates and setae h_1 is on a separate shield while h_2 is on the striated integument.

In the type specimen, length of body is 390/190, subcapitular setae *n* is three times as long as the seta *m* (*m*: 20, *n*: 62), there are forked terminal eupathidium on palp tarsus and genu I bears solenidion κ (Vacante and Gerson, 1987). The Turkish specimen is smaller (320/158), seta *n* is two times as long as the seta *m* (*m*: 14, *n*: 28), forked structure of eupathidium can't be distinguished and κ solenidion on genua I is absent. Except these differences, the Turkish specimen resembles with the type specimen.

Some members of genus *Eryngiopus* were found in association with scale insects and spider mites (Fan & Zhang, 2005; Khanjani et al., 2014a,b). *E. siculus* was collected from under shield of *Aspidiotus nerii* Bouché 1833 (Hemiptera: Diaspididae) on lemon [*Citrus lemon* L. (Rutaceae)] leaf in Italy (Vacante & Gerson, 1987). In this study, the species was collected from eggplant leaves infested with *Tetranychus urticae* Koch (Prostigmata: Tetranychidae). The other Turkish species of the genus were also obtained from *Cupressus arizonica* Greene (Cupressaceae) leaves (Yeşilayer & Çobanoğlu, 2013), litter and soil under *Juniperus* sp. (Cupressaceae), *Cupressus* sp. (Cupressaceae), and *Pinus* sp. (Pinaceae) (Uluçay, 2015) and litter under *Astragalus* sp. (Fabaceae) (Doğan et al., 2015b).

Key to species of the genus *Eryngiopus* Summers from Turkey (females)

1- Terminal palpal eupathidion forked, coxae 2-1-2-1 2

- Terminal palpal eupathidion simple, coxae 1-1-2-1 ..... *E. tauricus* Kuznetzov

2- Propodosomal and suranal shields entire; trochanters 1-1-1-1 3

- Propodosomal and suranal shields divided, trochanters 1-1-1-0 ..... *E. siculus* Vacante & Gerson

3- Propodosomal shield bearing two pairs of setae (*vi*, *ve*), *sci* on striated integument.....
.....*E. coheni* Vacante & Gerson

- Propodosomal shield bearing three pairs of setae (*vi*, *ve*, *sci*).....
.....*E. anatolicus* Doğan, Dilkaraoğlu & Fan

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