

**A new species of zerconid mite, *Zercon istanbulensis* sp. nov.
(Acari, Mesostigmata, Zerconidae), from İstanbul Province of Turkey**

Elif Hilal DURAN*, Raşit URHAN

Department of Biology, Faculty of Arts and Sciences, Pamukkale University, Kınıklı, Denizli, Turkey

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Abstract: In the present study, a new species of zerconid mite, *Zercon istanbulensis* sp. nov., is described from İstanbul Province, Turkey. Description of the species is based on adults of both sexes and deutonymphs. Illustrations of the female, male, and deutonymph stage are also provided.

Key words: *Zercon istanbulensis* sp. nov., Acari, Zerconidae, new species, Turkey

Zerconid mites are crucial members of the soil fauna inhabiting various soil substrates. Out of 38 genera of Zerconidae described from the northern hemisphere, only 2 (*Prozercon* and *Zercon*) are known from Turkey. In previous studies, 60 species of the genus *Zercon* were recorded from Turkey (Urhan and Öztaş, 2013; Karaca and Urhan, 2014). Ujvári (2011) proposed the genus *Rafas*, which was defined by Błaszak (1979) on the basis of its divided sternal shield, as the junior synonym of *Prozercon* Sellnick, 1943. The family Zerconidae is estimated to comprise more than 300 species around the world. In Europe, with the exception of Turkey, systematic studies on the family Zerconidae such as those by Błaszak (1974), Mašán and Fendá (2004), Ivan and Călugăr (2004), and Ujvári et al. (2013) continue. The number of different species of the family Zerconidae known from Europe is approximately 200. As a contribution to the knowledge of the acarine fauna of Turkey, one new species, *Z. istanbulensis* sp. nov., is described herein on the basis of material collected during a systematic survey of zerconid mites in İstanbul Province (Turkey).

Soil and litter samples were taken from the forestlands of İstanbul Province, Turkey. These were placed in plastic bags and transferred to the laboratory. Samples were then placed in unified Berlese funnels, and mites were extracted for 5–7 days, according to the humidity of the samples. The specimens were fixed and preserved in 75% ethanol in glass bottles. They were placed in 60% lactic acid for clearing and mounted on microscope slides in glycerin medium. The examination and drawing of mites were carried out using

an Olympus BX50 microscope accompanied by a DP25 camera and drawing tube. Morphological terminology used in the descriptions follows that of Sellnick (1958), Halašková (1969), Błaszak (1974), and Mašán and Fendá (2004).

Family: Zerconidae Canestrini, 1891

Genus: *Zercon* Koch, 1836

Type-species: *Zercon triangularis* Koch, 1836

***Zercon istanbulensis* sp. nov.**

(Figures 1A and B; Figures 2A and 2B; Figure 3)

Materials: Holotype ♀. Turkey, İstanbul, Çatalca, Yaylacık-Aydınlar, 41°22.026'N, 28°12.899'E, 224 m, 25.11.2012. Samples from litter and soil under *Pinus* sp. Paratypes: 12 ♀♀, 5 ♂♂, and 12 DN; same data as holotype. Type specimens are deposited in the Department of Zoology of Pamukkale University, Denizli (Turkey).

Female (Figures 1A and 1B). Idiosoma (except gnathosoma) of 12 specimens: mean length 393–400 µm, mean width 310–313 µm.

All setae on podonotum except j_1 and r-setae short and smooth. Setae r_1 short and smooth, setae r_2 – r_6 long, with hyaline tips. Setae J_1 on opisthonotum short and smooth. J_2 long, with hyaline tips. Setae J_3 – J_5 long, hyaline-ended, and extending to the base of the next setae. Setae J_6 long, hyaline-ended, and sparsely spined. Distance between setae J_6 and J_6 93–101 µm. Setae Z_1 needle-like and short. Setae Z_2 long, with hyaline tips. Setae Z_3 – Z_4 long, hyaline-ended, and sparsely spined. Setae Z_4 longer than setae Z_3 . Setae Z_5 short and with hyaline tip. Distance between setae Z_5 and J_6 25–29 µm. Setae S_1 short and smooth. Setae

* Correspondence: elifhilalduran@hotmail.com

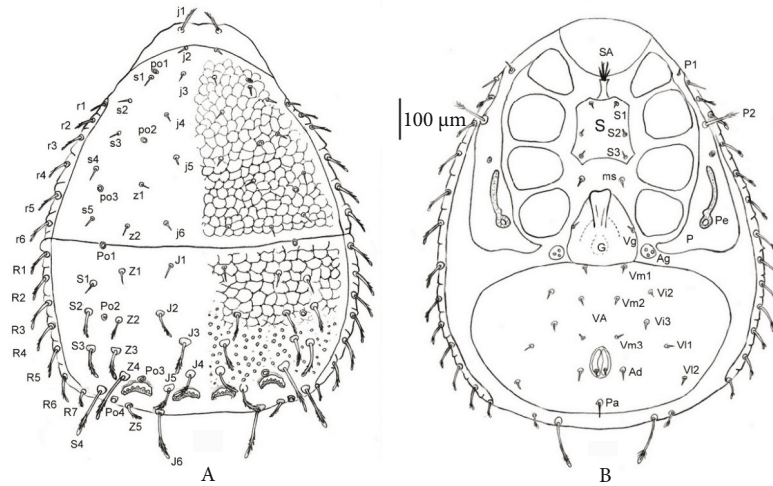


Figure 1. *Zercon istanbulensis* sp. nov. Female: A) Dorsal view, B) ventral view. SA: Sternaphophysis, S: sternal shield, G: genital shield, Ag: adgenital shield, P: perythreal shield, Pe: perythrem, VA: ventroanal shield, Vm: ventromedial setae, Vi: ventrointernal setae, Vl: ventrolateral setae, Ad: adanal setae, Pa: postanal setae, ms: metasternal setae, g: genital setae.

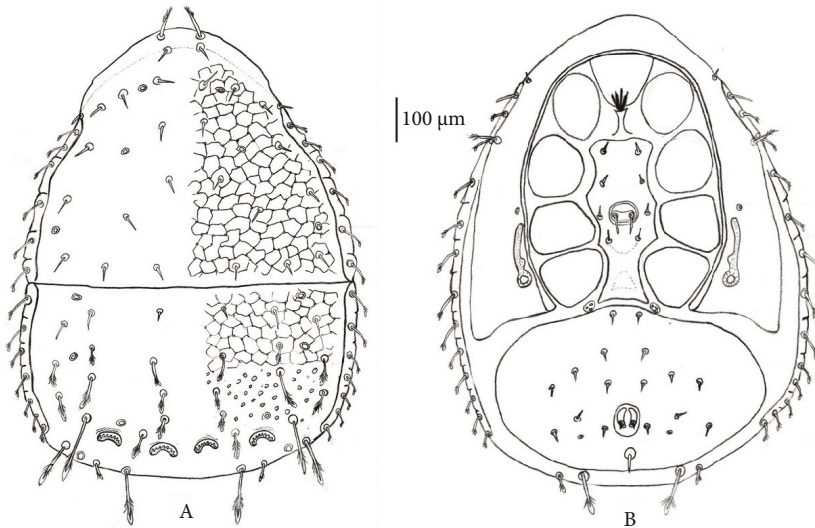


Figure 2. *Zercon istanbulensis* sp. nov. Male: A) Dorsal view, B) ventral view.

S_2 - S_4 hyaline-tipped and long. Seta S_4 longer than the other S -setae. Setae R_1 - R_6 long, sparsely barbed, and with hyaline tip. Seta R_7 short, sparsely barbed, and ending with hyaline tip. Lengths of the setae and distance between the setae of opisthonotum according to Table 1.

Pores po_1 on podonotum above the connecting line of setae j_1 - z_1 , closer to seta z_1 . Pores po_2 located on the connecting line of setae s_2 - j_5 . Pores po_3 located on the inner side of the connecting line of setae s_3 - s_4 . Pores Po_1 situated on the top side of the base of setae z_1 , pores Po_2

located on the connecting line of setae Z_2 - S_2 , pores Po_3 located on the connecting line of setae Z_4 - J_5 , closer to setae Z_4 and Po_4 placed on the connecting line of setae Z_5 - S_4 . Entire podonotum with an irregular tile-like pattern. Dorsal cavities distinct and well sclerotized, with axes parallel to the body axis. Shape and chaetotaxy of ventral shields, shape of peritremes are typical for genus *Zercon*. Adgenital shields present. Euanal setae present. On ventral shield two setae V_{m1} present (Figure 1B). Anterior margin of ventroanal shield with two setae.

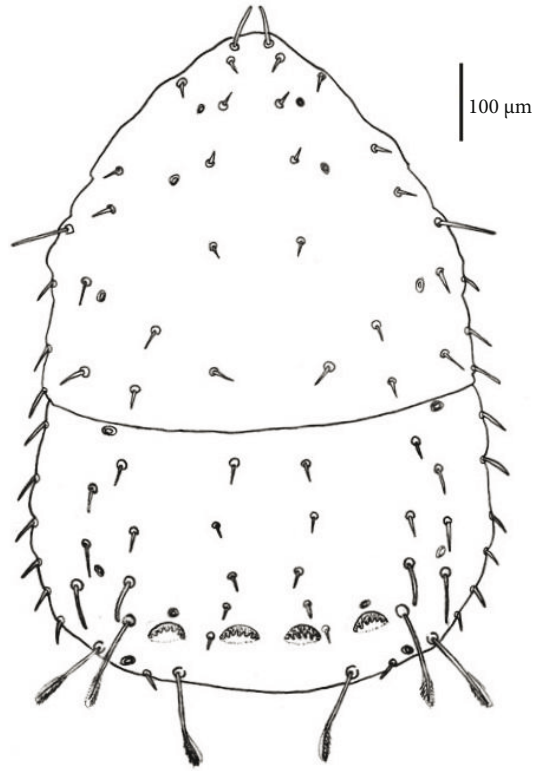


Figure 3. *Zercon istanbulensis* sp. nov. Deutonymph: Dorsal view.

Male (Figures 2A and 2B). Idiosoma (except gnathosoma) of 5 specimens: length 310 μm , width 235 μm .

Dorsal side, ventral side, and sculpture of podonotum and opisthonotum basically similar to that of female. Distance between J_6 and J_6 80–85 μm , distance between

Z_5 and J_6 18–22 μm . Length of the setae and the distance between the setae on opisthonotum shown in Table 1.

Deutonymph (Figure 3). Length of idiosoma of 12 deutonymphs 260–311 μm , width 147–231 μm .

Setae j_1 on podonotum long and hyaline-tipped, all of the remaining setae short and smooth. Setae J_1 – J_5 , Z_1 , Z_2 on

Table 1. Length of opisthonotal setae and the distances between their bases in J-, Z-, and S-rows of female specimens of *Zercon istanbulensis* sp. nov. (values as means, in micrometers; F: female, M: male, DN: deutonymph).

Seta	F	M	DN	Seta	F	M	DN	Seta	F	M	DN
J_1	10–11	9–10	8–10	Z_1	10–11	11–13	10–12	S_1	17–19	14–15	11–13
J_1 – J_2	45–47	32–34	26–28	Z_1 – Z_2	42–44	20–22	32–34	S_1 – S_2	31–32	27–29	24–26
J_2	7–9	11–13	6–8	Z_2	14–16	10–12	7–9	S_2	26–28	15–17	15–19
J_2 – J_3	33–36	23–25	24–26	Z_2 – Z_3	29–31	19–21	21–23	S_2 – S_3	33–35	18–20	25–27
J_3	21–23	19–21	5–7	Z_3	33–36	20–22	18–20	S_3	25–28	18–19	22–24
J_3 – J_4	22–24	16–18	18–20	Z_3 – Z_4	28–39	28–30	15–17	S_3 – S_4	54–56	36–38	29–31
J_4	34–36	18–20	4–6	Z_4	42–45	44–46	39–41	S_4	44–47	38–40	37–39
J_4 – J_5	27–29	19–21	12–14	Z_4 – Z_5	50–51	31–33	24–26				
J_5	29–30	11–13	6–8	Z_5	10–12	10–12	7–9				
J_5 – J_6	34–37	28–31	22–24								
J_6	44–46	38–40	40–42								

Table 2. Distinctive characters of *Zercon istanbulensis* sp. nov., *Z. cretensis*, *Z. laczii*, and *Z. marinae*.

	<i>Z. istanbulensis</i> sp. nov.	<i>Z. cretensis</i>	<i>Z. laczii</i>	<i>Z. marinae</i>
Setae S ₂	Long and hyaline-tipped	Long and barely pilose	Long and smooth	Stouter and provided with barbs and hyaline sheaths
Setae J ₅	Reaching bases of setae J ₆	Reaching bases of setae J ₆	Not reaching bases of setae J ₆	Not reaching bases of setae J ₆
Setae S ₃	Not reaching beyond the margins of opisthonotum	Reaching beyond the margins of opisthonotum	Reaching beyond the margins of opisthonotum	Not reaching beyond the margins of opisthonotum
R-setae	Sparsely barbed, long and hyaline-tipped	R1–R3 plumose, R4–R7 smooth	All apically pilose	Finely barbed distally
Length of setae S ₂ –S ₃	Approximately similar	S ₃ > S ₂	S ₃ > S ₂	S ₃ > S ₂
Setae Z ₂	Hyaline tipped	Smooth	Smooth	Smooth
Setae J ₂	Hyaline tipped	Smooth	Smooth	Smooth

opisthonotum short and smooth. Setae j₆ long, sparsely spined, and with hyaline tip. Setae S₁ and S₂ long and needle-like. Seta S₃ not extending beyond margins of opisthonotum. Distance between J₆ and J₆ 60–68 µm. Setae Z₃ shorter than Z₄. Setae Z₄ elongate, reaching beyond posterior margin of opisthonotum. Seta Z₅ smooth. Distance between Z₅ and J₆ 15–20 µm. Pores Po₁ situated above insertions of setae Z₁, pores Po₂ below the connecting line of setae Z₃–S₂, pores Po₃ on the connecting line of setae J₄–Z₄, pores Po₄ on the connecting line of setae S₄–Z₅. Length of the setae and the distance between the setae on opisthonotum shown in Table 1.

Habitat. This species is found in moss, litter, and soil under *Pinus* sp., *P. brutia*, *Quercus* sp., *Q. frainetto*, *Q. robur*, *Rosa* sp., *Morus* sp., and *Juniperus communis*. This species is not bound to a plant.

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Etymology. The species name ‘istanbulensis’ refers to the type locality.

Due to the idiosomal chaetotaxy that we seek, the new species is similar to the following species: *Z. cretensis* Ujvári, 2008; *Z. laczii* Ujvári, 2010; and *Z. marinae* Ivan & Călugăr, 2004, especially due to the situation of setae S₃, J₂, and Z₂ on the opisthonotum and the lengths of setae S₂–S₃. Distinguishing features among these three species are given in Table 2.

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