



## A new zerconid mite (Mesostigmata: Zerconidae) from Southwestern Türkiye: *Zercon tripolisensis* sp. nov.

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**ABSTRACT:** Tripolis is one of the ancient cities in southwestern Türkiye. In a faunistic study of soil mites carried out here, a previously unknown species of the family Zerconidae was found in various plant litters and moss samples. Specimens of the new species were also found in two different locations except for their terra typica. All mature and immature stages of the new species, except for the larva, have been described and illustrated here. In addition, various data on the habitat preferences of the specimens found at the study sites were presented.

**Keywords:** Acari, Buldan, Denizli, description, new species, Tripolis

Zoobank: <https://zoobank.org/A3DFF0A3-A802-4FA4-8511-EB4201EF27B7>

### INTRODUCTION

Türkiye is one of the countries where the diversity of Zerconidae has been best studied compared to other Holarctic countries. So far, 135 species of Zerconidae have been recorded from the different areas of Türkiye (Urhan and Karaca, 2023a) and new data on zerconid species are being added, especially through local or provincial faunistic studies. Most studies focus on the taxonomy of species or genera not only in Türkiye but also in other zoogeographic areas of the Holarctic (Kaczmarek et al., 2020, 2021; Urhan et al., 2020a-c; Bulut et al., 2021; Karaca, 2021, Keçeci et al., 2021; Marchenko, 2021, 2022; Moghimi et al., 2021; Bilki et al., 2022; Mohammad-Doustaresharaf et al., 2023; Urhan and Karaca, 2023a-c).

Tripolis ancient city is located in the Buldan county of Denizli province in southwestern Türkiye. The average altitude of this area above sea level is 200 meters. Although some vertebrate and invertebrate specimens have already been collected and reported from here (Yavuz and Aytek, 2020), there has been no study on soil mites in the ancient city. In this context, various biological materials were collected to investigate the diversity of soil mites in the ancient city. It is found that many materials contained several specimens of a new *Zercon* species described herein.

### MATERIALS AND METHODS

Soil, litter and moss samples, which include specimens of zerconid mites, were collected from different habitats (Table 1) in the Tripolis Ancient City, vicinity of Yenicekent and Mahmutlu neighbourhoods, Buldan county of Denizli Province, between May 2018 and April 2019. The Garmin GPSmap 62s was used for taking information on sampling sites (coordinates and altitudes). All collected materials were carried to the acarology laboratory and later processed using a Berlese-Tullgren

funnel with 25-watt fluorescent bulbs for 3-5 days. Totally 195 samplings were made in the study area.

Standard methods were used for sorting, measuring and drawing processes (Bulut et al., 2021). Widely accepted terminologies were used in identification processes for the specimens (Lindquist and Evans, 1965; Johnston and Moraza, 1991; Lindquist and Moraza, 1998). The holotype and paratypes of the new species, as well as the other Zerconidae specimens examined in this study were deposited in the PAU (Acarology Laboratory of the Department of Biology, Faculty of Science and Arts, Pamukkale University, Denizli, Türkiye).

All measurements including scale bars of the figures were given as micrometers ( $\mu\text{m}$ ). Abbreviations of F, M, DN and PN were used for female, male, deutonymph and protonymph specimens, respectively.

### RESULTS

Two species of *Zercon* were identified after examination of collected Zerconidae specimens from the research area. The first of them is described here as a new species for science, *Zercon tripolisensis* sp. nov. The second is *Zercon colligans*, a well-known and widespread species in Türkiye. Both species are listed below. In addition, some information (number of specimens examined, Turkish and worldwide distribution, and habitat preferences of the specimens) is given about *Zercon colligans*. With the new species, the number of zerconid mites known from Türkiye has increased to 136.

Family Zerconidae Canestrini, 1891

Genus *Zercon* C. L. Koch, 1836

Type species: *Zercon triangularis* C. L. Koch, 1836

Posterior part of peritremal shield ends with a blunt tip at the lower part of coxa IV. Peritremal shield with two setae: *r1* is short and straight, and *r3* is elongated, straight or finely barbed. There is a wide gap between peritremal shield and lateral edge of podonotum. Adgenital shield present with 2–5 opening valves. There are 7–8 pairs of marginal setae (*S1* + *R1*–6 or *S1* + *R1*–7) on lateral edges of opisthonotum. There are one or two pairs of setae on the anterior part of ventroanal shield (setae *JV1* always present, seta *ZV1* present or absent).

**Table 1.** Overview of the habitat preferences of *Zercon* species in the study area.

Habitat types	<i>Z. tripolisensis</i> sp. nov.	<i>Z. colligans</i> Berlese
<i>Anchusa azurea</i>	✓	✓
<i>Astragalus</i> sp.	✓	✓
<i>Cupressus sempervirens</i>	✓	✓
<i>Euphorbia kotschyana</i>	✓	✓
<i>Juniperus excelsa</i>	✓	✓
<i>Lolium perenne</i>	✓	✓
Moss (unspecified)	✓	✓
<i>Onopordum bracteatum</i>		✓
<i>Papaver rhoeas</i>	✓	
<i>Pinus brutia</i>	✓	✓
<i>Prunus amygdalus</i>		✓
<i>Pyrus elaeagrifolia</i>	✓	✓
<i>Quercus coccifera</i>	✓	✓
<i>Tragopogon dubius</i>	✓	✓
<i>Xanthium spinosum</i>	✓	✓

## Description of the new species

### *Zercon tripolisensis* sp. nov.

(Figures 1–7)

<https://zoobank.org/46BBE88F-8DF5-4F2A-A0B5-BA31446BD822>

Type material. Holotype (F), soil and litter samples under *Quercus coccifera* (Fagaceae), 38°2.812' N, 28°57.463' E, 815 m a.s.l., vicinity of neighborhood cemetery, Tripolis ancient city, Buldan county, Denizli province, Türkiye, 16 August 2018 (Fig. 1). Paratypes: 257 F, 119 M, 87 DN, 49 PN, same data as holotype. 10 females, 29 males, 14 DN, 16 PN: soil and litter samples under *Quercus coccifera* (Fagaceae), 38°2.226' N, 28°57.466' E, 546 m a.s.l., vicinity of neighborhood cemetery, 18 June 2018. 135 F, 41 M, 22 DN, 11 PN: soil, litter and moss samples under various plants (Table 1), 38°2.106' N, 28°57.965' E, 600 m a.s.l., entrance of ancient city, 18 July 2018. 98 F, 51 M, 44 DN, 19 PN: soil and litter samples under *Pyrus elaeagrifolia* (Rosaceae), 38°2.368' N, 28°56.960' E, 668 m

a.s.l., vicinity of ancient city walls, 17 September 2018. 192 F, 145 M, 56 DN, 25 PN: soil, litter and moss samples under various plants (Table 1), 38°2.324' N, 28°56.981' E, 651 m a.s.l., vicinity of ancient city bath, 18 October 2018. 155 F, 96 M, 50 DN, 32 PN: soil, litter and moss samples under various plants (Table 1), 38°2.670' N, 28°57.521' E, 620 m a.s.l., east side of ancient city, 15 November 2018. 47 F, 37 M, 11 DN, four PN: soil, litter and moss samples under *Lolium* sp. (Poaceae), 38°2.563' N, 28°56.913' E, 208 m a.s.l., vicinity of ancient city walls, 21 December 2018. 106 F, 86 M, 28 DN, 25 PN: soil, litter and moss samples under various plants (Table 1), 38°2.288' N, 28°57.287' E, 571 m a.s.l., vicinity of ancient city walls, 18 January 2019. 58 F, 49 M, 13 DN, 11 PN: soil, litter and moss samples under various plants (Table 1), 38°2.391' N, 28°56.947' E, 672 m a.s.l., vicinity of ancient theatre, 16 February 2019. 97 F, 122 M, 71 DN, 40 PN: soil, litter and moss samples under various plants (Table 1), 38°2.497' N, 28°56.794' E, 705 m a.s.l., vicinity of Hierapolis street, 21 March 2019. 27 F, 32 M, 71 DN: soil, litter and moss samples under various plants (Table 1), 38°2.698' N, 28°57.147' E, 862 m a.s.l., vicinity of necropolis areas, 15 April 2019. All samples were collected by Zhanerke Kassen from Tripolis ancient city. Seven F, four M, five DN, three PN: soil, litter and moss samples under *Quercus coccifera* (Fagaceae), 37°58.599' N, 28°48.411' E, 361 m a.s.l., vicinity of Kızıldere neighbourhood, Buharkent county, Aydın province, 2 February 2019, leg. Mehmet Karaca. One F: soil and litter samples under *Pinus brutia* (Pinaceae), 37°51.078' N, 28°52.953' E, 419 m a.s.l., vicinity Acidere place, Acipayam county, Denizli province, 12 February 2020, leg. Esat Enis Karnak.

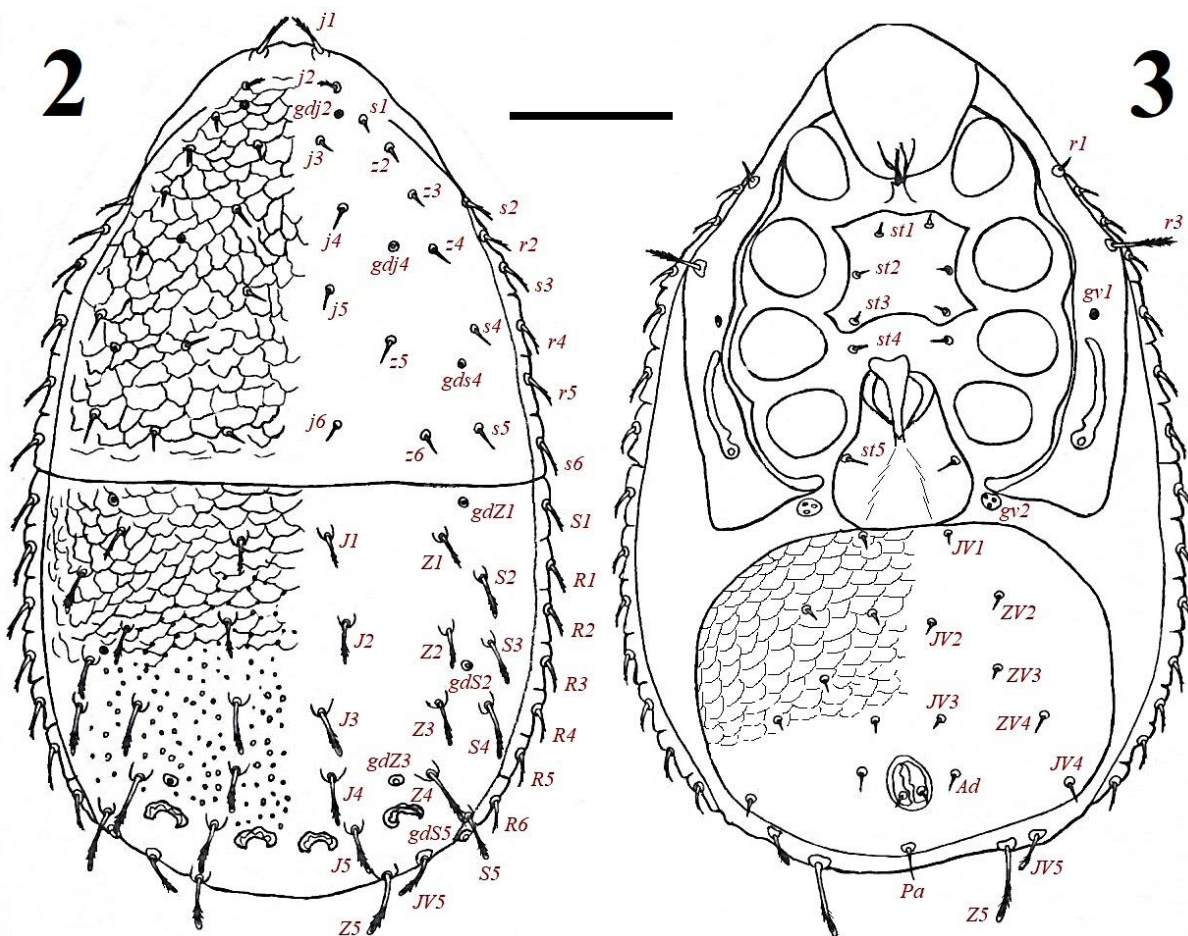
Diagnosis. Anterior margin of ventrianal shield with two setae (seta *JV1* present, seta *ZV1* absent). Most of podonotal setae short, smooth and needle-like (except seta *j1*–2 and marginal setae *s2*–3, *s6*, *r2* and *r4*–5). Setae *j1*–2 and all marginal setae on podonotum finely barbed. Most opisthonotal setae elongated, finely barbed with hyaline endings (except marginal setae). Pores *gdS2* located between setae *Z2* and *S3* or *Z2* and *S4*, *gdZ3* located between setae *J4* and *Z4*, closer to *Z4*. Dorsal cavities distinct and strongly developed. Podonotum and anterior margin of opisthonotum covered with tile-like patterns, mid-area to posterior margin of opisthonotum covered by irregular punctate patterns.

Female (Figs 2–3). Length (without gnathosoma) and width in holotype 468 and 302, respectively. Measurements of 10 paratypes: length 456–471, width 276–308.

Dorsal idiosoma (Fig. 2). Podonotal shields with 20 pairs of setae, including six pairs in *j* row (*j1*–6), five pairs in *z* row (*z2*–6), six pairs in *s* row (*s1*–6), and three pairs in *r* row (*r2* and *r4*–5). Setae *r1* and *r3* inserted ventrally, on peritrematal shields. Setae *j1*–2 and all marginal setae (*s2*–3, *s6*, *r2* and *r4*–5) finely barbed, remaining podonotal setae short, smooth and needle-like. Setae *j1* obviously longer than the others. None of podonotal setae reaching the margin of posterior part of podonotum. Podonotal shield covered with tile-like patterns.



**Figure 1.** General view from the type locality of *Zercon tripolisensis* sp. nov. Tripolis ancient city (Photograph was taken on 16 August 2018 by Z. Kassen).



**Figures 2-3.** *Zercon tripolisensis* sp. nov. **2.** Dorsal view of female, **3.** Ventral view of female. Scale bar 100.

**Table 2.** Average lengths of opisthonotal setae and the distances between their insertions in *J*, *Z*, and *S* rows of *Zercon tripolisensis* sp. nov.

Setae	F	M	DN	PN	Setae	F	M	DN	PN	Seta	F	M	DN	PN
<b>J1</b>	20	12	7	8	<b>Z1</b>	20	12	10	10	<b>S1</b>	18	12	10	-
<b>J1-J2</b>	43	37	33	27	<b>Z1-Z2</b>	53	43	40	30	<b>S1-S2</b>	45	27	30	-
<b>J2</b>	22	14	8	5	<b>Z2</b>	22	14	10	6	<b>S2</b>	22	15	16	16
<b>J2-J3</b>	44	26	27	18	<b>Z2-Z3</b>	40	18	17	27	<b>S2-S3</b>	46	26	27	21
<b>J3</b>	28	16	9	5	<b>Z3</b>	30	23	24	18	<b>S3</b>	26	18	18	16
<b>J3-J4</b>	36	23	18	19	<b>Z3-Z4</b>	36	25	21	16	<b>S3-S4</b>	29	26	24	25
<b>J4</b>	29	14	10	5	<b>Z4</b>	38	37	42	40	<b>S4</b>	29	20	20	18
<b>J4-J5</b>	34	16	22	16	<b>Z4-Z5</b>	56	40	38	32	<b>S4-S5</b>	56	39	38	25
<b>J5</b>	29	11	9	4	<b>Z5</b>	32	34	46	45	<b>S5</b>	35	35	34	43

Opisthonotal shields with 21 pairs of setae, including five pairs in *J* row (*J1-5*), five pairs in *Z* row (*Z1-5*), five pairs in *S* row (*S1-5*), and six pairs in *R* row (*R1-6*). Most of opisthonotal setae elongated, finely barbed with hyaline endings (except marginal setae *S1* and *R1-6*). Setae *J1* and *Z1* similar in appearance and length, both of them finely barbed without hyaline endings. Setae *J2-5*, *Z2-5* and *S2-5* finely barbed with hyaline endings. In the marginal row, all setae finely barbed and shorter than the other opisthonotal setae. None of setae reaching the insertions of the following seta in *J*, *Z* and *S* rows. Setae *Z5* and *S5* reaching beyond margin of opisthonotum. The intervals between *Z5-Z5* 89-106 and *Z5-JV5* 24-31, respectively. Opisthonotal shield covered with tile-like patterns in anterior parts, remaining parts covered by irregular punctate patterns (Fig. 2).

Gland pores *gdj2* located on the line connecting setae *j2* and *j3*, closer to *j2*, *gdj4* located on the line connecting setae *j4* and *z4*, closer to *z4*, *gds4* located on the line connecting setae *s4* and *z6*, closer to *s4*, *gdZ1* located above the insertion of seta *Z1*, *gdS2* located on the line connecting setae *Z2* and *S3* or *Z2* and *S4*, closer to *S2*, *gdZ3* located on the line connecting setae *J4* and *Z4*, closer to *Z4*, *gdS5* located below the insertion of seta *S5* (Fig. 2). All podonotal and opisthonotal gland pores about the same size.

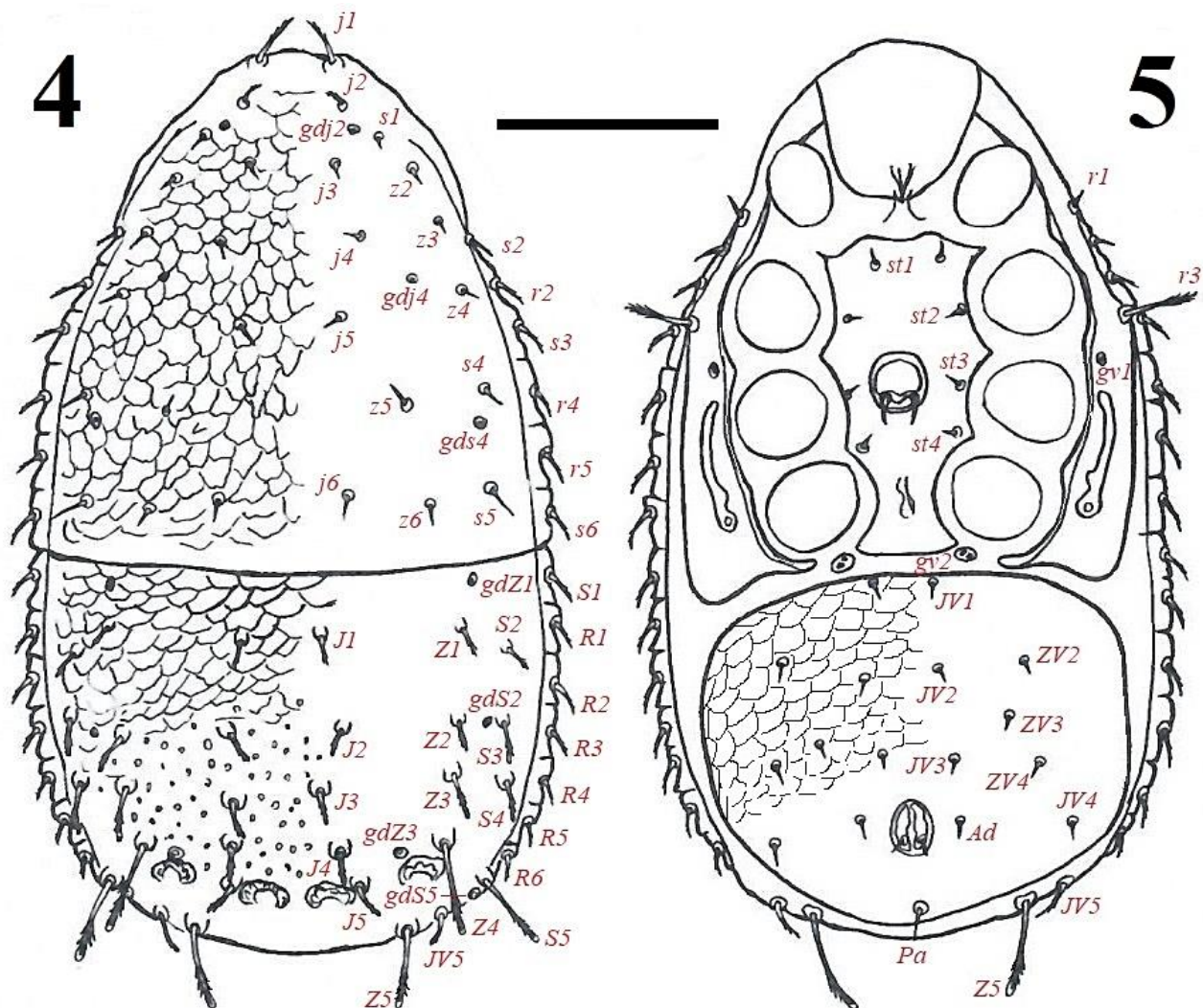
Ventral idiosoma (Fig. 3). Posterolateral tips of peritrematal shield reaching the level of setae *S1-R1*. Chaetotaxy and ornamentation of peritrematal shield characteristic for *Zercon* species. Peritrematal shield with two pairs of setae (*r1* and *r3*), *r1* short, smooth and needle-like, *r3* elongated and finely barbed without hyaline ending. Peritreme slightly twisted anteriorly, and gland pore *gv1* located closer to anterior part of peritreme. Sternal shield with three pairs of setae (*st1-3*). Epigynal shield with one pair of setae (*st5*). Seta *st4* located between posterior part of sternal shield and anterior part of epigynal shield. All the above-mentioned setae (*st1-5*) short, smooth and needle-like. Gland pore *gv2* present between posterolateral part of epigynal shield and anterior part of ventrianal shield. Anterior margin of ventrianal shield with one pair of setae (seta *JV1* present, seta *ZV1* absent). Ventrianal shield with nine pairs of short, smooth and needle-like setae (*JV1-5*, *ZV2-*

*4*, *Ad*), postanal longest, one pair of gland pores, and one single postanal seta (*Pa*). Seta *JV5* similar to opisthonotal setae *Z5* and *S5* in terms of shape, but shorter them. Gland pore *gv3* located closer to the insertions of adanal setae. Anterior part of ventrianal shield covered with squamous patterns, continuously extending the insertions of setae *JV3* and *ZV4* (Fig. 3).

Average lengths and distances of opisthonotal setae (*J*, *Z* and *S* rows) are given in Table 2 for F, M, DN and PN specimens of *Z. tripolisensis* sp. nov.

Male (Figs 4-5). Length and width of idiosoma 345-364 and 212-228, respectively (n=10). With an exception, chaetotaxy of idiosomal setae, location of gland pores on idiosoma and ornamentation of dorsal and ventral shields similar to those of females. Unlike female specimens, in which the opisthonotal seta *Z4* not reaching the beyond of opisthonotum, this seta reaching the beyond of opisthonotum in male specimens. Also, all podonotal and opisthonotal setae shorter than female specimens. Ventral idiosoma as in Figure 5. Distances between setae *Z5-Z5* 80-93 and *Z5-JV5* 13-19, respectively.

Deutonymph (Fig. 6). Length and width of idiosoma 326-350 and 228-238, respectively (n=10). Dorsal cavities uniform, equal in size, saddle-like and weakly sclerotised. Podonotal setae *j1*, *s3* and *s6* finely barbed, all the others short, smooth and needle-like. Only gland pore *gds4* visible on podonotum, located on the line connecting setae *z6* and *s4*, closer to *s4*. On opisthonotum, setae *J1-5*, *Z1-2* and *R3-6* short, smooth and needle-like. Setae *Z3-5* and *S3-5* finely barbed with hyaline endings. Remaining marginal setae (*S1* and *R1-2*) finely barbed without hyaline endings. Seta *Z3* reaching the insertion of seta *Z4*. Setae *Z4-5* and *S5* elongated, all of them reaching beyond margin of opisthonotum. Setae *S3* and *S4* similar in appearance and length. Four pairs of gland pores visible on opisthonotum, *gdZ1* located above the insertion of seta *Z1*, *gdS2* located on the line connecting setae *Z2* and *S3*, closer to *S3*, *gdZ3* located on the line connecting setae *J4* and *Z4*, *gdS5* located below the insertion of seta *S5*. The intervals between *Z5-Z5* 84-95 and *Z5-JV5* 12-18, respectively. Podonotum covered by irregular tile-like patterns, opisthonotum with irregular punctate patterns (Fig. 6).



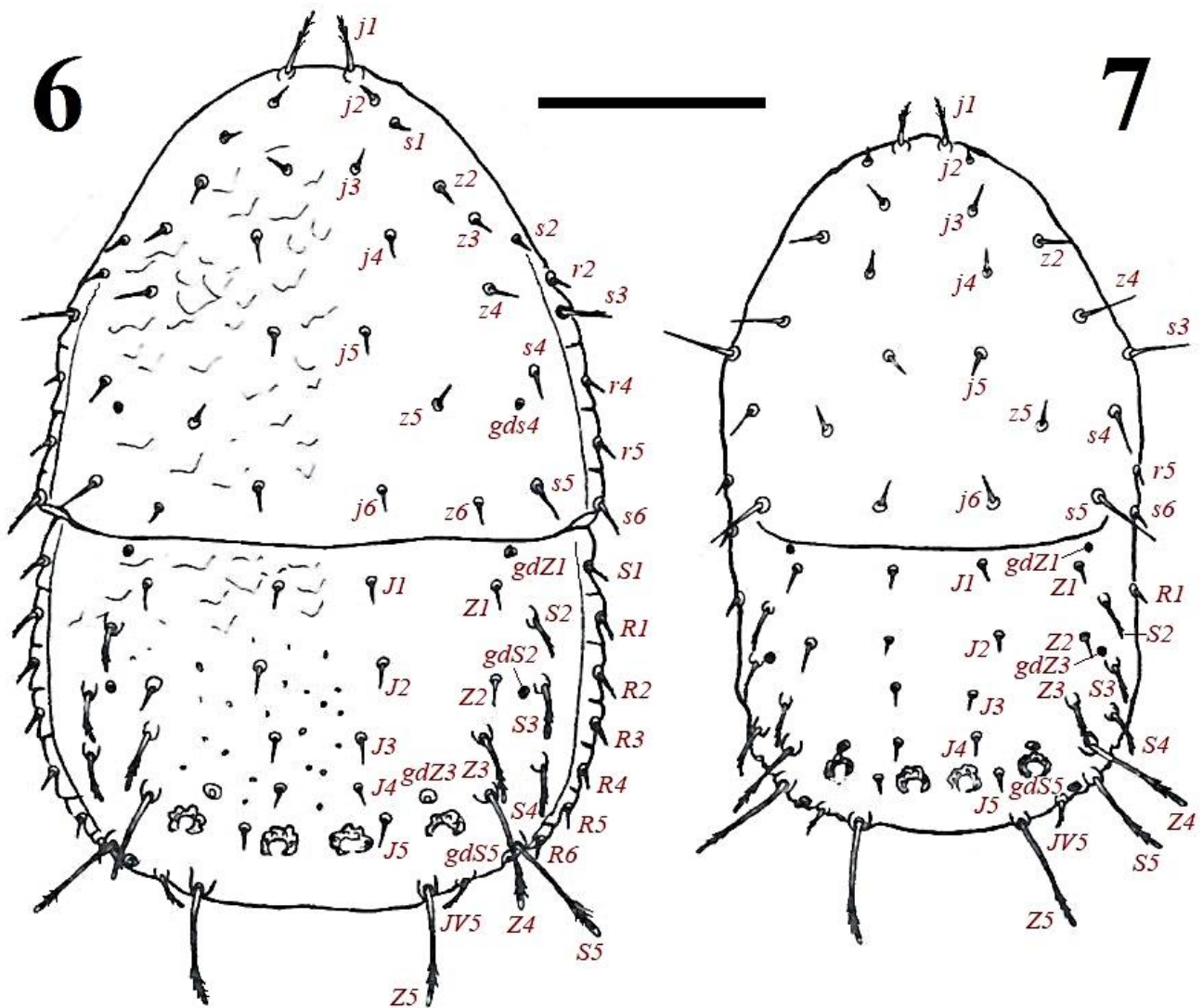
**Figures 4-5.** *Zercon tripolisensis* sp. nov. 4. Dorsal view of male, 5. Ventral view of male. Scale bar 100.

Protonymph (Fig. 7). Length and width of idiosoma 263–278 and 153–169, respectively (n=10). Features of dorsal cavities as in deutonymph specimens. All podonotal setae smooth and needle-like (except seta *j1*). Seta *j1* finely barbed. All gland pores invisible on podonotum. On opisthonotum, setae *J1*–*J5*, *Z1*–*Z2* and *R1* short, smooth and needle-like. Setae *Z3*–*Z5* and *S2*–*S5* finely barbed with hyaline endings. Remaining marginal setae (*S1* and *R2*–*6*) invisible. Seta *Z3* reaching the insertion of seta *Z4*. Setae *Z4*–*Z5* and *S5* as in deutonymph specimens, all of them elongated and reaching beyond margin of opisthonotum. Setae *Z3* and *S2*–*4* similar in appearance and length. Four pairs of gland pores visible on opisthonotum, *gdZ1* located above the insertion of seta *Z1*, *gdS2* located on the line connecting setae *Z2* and *S3*, *gdZ3* located on the line connecting setae *J4* and *Z4*, *gdS5* located below the insertion of seta *S5*. The intervals between *Z5*–*Z5* 56–71 and *Z5*–*JV5* 11–19, respectively. There is no pattern in both podonotum and opisthonotum (Fig. 7).

Larva. Not found.

**Etymology.** The specific epithet '*tripolisensis*' refers to the ancient city of Tripolis (Buldan County, Denizli province) where the new species was collected.

**Remarks.** *Z. tripolisensis* sp. nov. is quite similar to *Z. colligans* Berlese, 1920, *Z. kallimcii* Urhan, 2010 and *Z. turcicus* Urhan and Ayyıldız, 1994. These species have common morphological features as follows: most of podonotal setae short, smooth and needle-like, most of marginal setae both podonotum and opisthonotum finely barbed without hyaline endings, none of podonotal setae reaching the margin or beyond to posterior part of opisthonotum, opisthonotal setae *J1* and *Z1* smooth and needle-like (except *Z. tripolisensis* sp. nov.), opisthonotal setae *J3*–*J5* and *Z3*–*Z5* finely barbed with hyaline endings, gland pore *gdS2* located closer to the insertions of setae *Z2*–*3* or *S2*–*3*, gland pore *gdZ3* located between *J* and *Z* setal rows, none of setae in *Z* and *S* rows reaching the insertions of the following setae in the same rows, dorsal cavities equal in size and parallel to transverse axis. On the other hand, the morphological distinguishing characters of these four species are given in Table 3, where all species are compared in terms of shapes of some setae on the podonotal and opisthonotal regions. Opisthonotal seta *JV5* is finely barbed with hyaline ending in *Z. tripolisensis* sp. nov. as well as *Z. kallimci*, but this seta is finely barbed without hyaline ending in *Z. colligans* and *Z. turcicus*. Compared with the other species in Table 3, presence of finely barbed without hyaline endings setae *J1* and *Z1* is an important distinguishing character for *Z. tripolisensis* sp. nov.



Figures 6-7. Dorsal views of immature stages of *Zercon dilekicus* sp. nov. 6. Deutonymph, 7. Protonymph. Scale bar 100.

#### Additional materials

##### *Zercon colligans* Berlese, 1920

Materials examined: 421 F, 342 M, 192 DN, 109 PN: soil, litter and moss samples under various plants (Table 1), 38°2.812' N, 28°57.463' E, 815 m a.s.l., vicinity of neighborhood cemetery, 16 August 2018. 518 F, 291 M, 96 DN, 98 PN: soil, litter and moss samples under various plants (Table 1), 38°2.670' N, 28°57.521' E, 620 m a.s.l., east side of the ancient city, 15 November 2018. 52 F, nine M, four DN, two PN: soil, litter and moss samples under various plants (Table 1), 38°2.537' N, 28°57.343' E, 750 m a.s.l., vicinity of fortification wall of the ancient city, 15 April 2019.

Short description: Anterior margin of ventrianal shield with one pair of setae (seta *JV1* present, seta *ZV1* absent). On podonotum, setae *j1*, *r4-5* and *s6* finely barbed without hyaline endings, remaining podonotal setae smooth and needle-like. On opisthonotum, setae *J1-2*, *Z1-2* and *S2* smooth and needle-like, *S1* and *R1-6* finely barbed without hyaline endings, *J3-5*, *Z3-5* and *S3-5* elongated, finely barbed with hyaline endings, longer than other opisthonotal setae. Seta *JV5* similar in length and

shape to marginal *R* setae. Only setae *Z5* and *S5* reaching to beyond of opisthonotum. Pores *gdS2* located between setae *J2* and *S3*, *gdZ3* located between setae *J4* and *Z4*. Dorsal cavities distinct and strongly developed. Podonotum and anterior margin of opisthonotum covered with tile-like patterns, mid-area to posterior margin of opisthonotum covered by irregular punctate patterns.

Distribution in Türkiye: Afyonkarahisar, Artvin, Aydın, Balıkesir, Çanakkale, Denizli, Edirne, Erzurum, Giresun, İstanbul, İzmir, Kırklareli, Kütahya, Manisa, Muğla, Tekirdağ, Uşak (Urhan and Karaca, 2022, 2023a-c).

Known distribution: Austria, France, Iran, Ireland, Italy, Russia, Sweden, Swiss, Türkiye (Urhan and Karaca, 2023a).

#### Habitat preferences of *Zercon* species in the study area

Samplings for *Zercon* species were carried out in 195 different localities and the following 18 habitat types, mostly herbaceous plant species, were noted: bugloss (*Anchusa azurea*), wormwood (*Artemisia annua*), milkvetch (*Astragalus* sp.), cypress (*Cupressus sempervirens*), spurge (*Euphorbia kotschyana*), fumewort

**Table 3.** Morphological distinguishing characters between *Zercon tripolisensis* sp. nov. and closer species within the same genus.

Characters	<i>Z. tripolisensis</i> sp. nov.	<i>Z. colligans</i>	<i>Z. kallimcii</i>	<i>Z. turcicus</i>
Podonotal seta <i>j2</i>	finely barbed	smooth	finely barbed	finely barbed
Opisthonotal setae <i>J1</i> and <i>Z1</i>	finely barbed	smooth	smooth	smooth
Opisthonotal setae <i>J2</i> and <i>Z2</i>	elongated, finely barbed with hyaline endings	short, smooth	elongated, finely barbed with hyaline endings	short, smooth
Opisthonotal seta <i>S2</i>	elongated, finely barbed with hyaline ending	short, smooth	elongated, finely barbed with hyaline ending	short, finely barbed without hyaline ending
Opisthonotal seta <i>S4</i>	not reaching to margin of opisthonotum	not reaching to margin of opisthonotum	reaching to beyond of opisthonotum	reaching to beyond of opisthonotum
Anterior margin of ventrianal shield	with two setae	with two setae	with four setae	with four setae
Seta <i>JV5</i> on ventrianal shield	with hyaline ending	without hyaline ending	with hyaline ending	without hyaline ending

(*Fumaria densiflora*), broom (*Genista anatolica*), Greek juniper (*Juniperus excelsa*), perennial ryegrass (*Lolium perenne*), moss (unspecified), cottonthistle (*Onopordum bracteatum*), common poppy (*Papaver rhoeas*), Turkish pine (*Pinus brutia*), almond (*Prunus amygdalus*), oleaster-leaved pear (*Pyrus elaeagrifolia*), kermes oak (*Quercus coccifera*), yellow salsify (*Tragopogon dubius*) and spiny cocklebur (*Xanthium spinosum*). Habitat preferences of *Zercon* species were marked in Table 1. According to Table 1, specimens of *Z. tripolisensis* sp. nov. and *Z. colligans* were found in 13 and 14 different habitat types, respectively. Although two different zerconid species were found due to the partially limited study area, there are many dates in the literature on *Z. colligans* individuals with broad habitat tolerance (Bulut et al., 2021; Karaca, 2021; Bilki et al., 2022; Urhan and Karaca, 2023). On the other hand, only individuals of a single zerconid were found in the habitats of cottonthistle, common poppy and almond. In addition, no individuals of any zerconid species were found in the habitats wormwood, fumewort and broom.

#### Authors' contributions

**Raşit Urhan:** Methodology, project administration, supervision, identification, illustration, preservation (supporting), data acquisition (equal), data analysis/interpretation (equal), critical revision of manuscript (equal), final approval and accountability (equal). **Mehmet Karaca:** Conception/design of study, collection of specimens (supporting), data analysis/interpretation (equal), drafting manuscript, critical revision of manuscript (equal), final approval and accountability (equal). **Zhanerke Kassen:** Collection of specimens (lead), data acquisition (equal), data analysis/interpretation (equal), preservation (lead).

#### Statement of ethics approval

Not applicable.

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#### Conflict of interest

Authors declared no conflict of interest.

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