

## RE-DESCRIPTION OF *URODIASPIS TECTA* (KRAMER, 1876) (ACARINA: MESOSTIGMATA: UROPODINA)

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ABSTRACT: *Urodiaspis tecta* (Kramer, 1876) is redescribed and illustrated, based on the protonymph, deutonymph and on adult female specimens collected from Erzincan, Erzurum and Gümüşhane, Turkey. The genus has been recorded for the first time from Asian continent.

KEY WORDS: Acari, Uropodina, *Urodiaspis tecta*, redescription, Turkey.

Berlese created the genus *Urodiaspis* in 1916, with the type species *Urodiaspis (Diurodinychus) tecta* (Kramer, 1876). This genus has been studied by some authors since Berlese, and recently reviewed by Hirschmann (1984a). According to Hirschmann and Wiśniewski (1993), and Wiśniewski (1993) the genus is represented in the world with 21 species. Hirschmann (1984a) and his co-worker Wiśniewski (1993) divided the genus *Urodiaspis* into six species-groups for easy identification and he could not group some species and gave them the title "*Nicht eingeordnet*". Some species in this category have carried features of an independent genus, and the genus needs a serious revision (Athias-Binche & Błoszyk, 1985).

Species of the genus *Urodiaspis* live in litter, soil substrates, moss, decaying woods, rotten leaves, humus and heterogeneous decomposed organic materials of various types of broad-leaved deciduous or coniferous forests (also in tropical forest). Occasionally, they colonise specific subcorticolous habitats, nest of vertebrates (Aves, Mammalia), ants and bumble-bees (Hymenoptera: Formicoidea, Apoidea). They can also penetrate into cultivated landscape habitats (orchards, gardens and other degraded or agricultural stands in non-forested areas) (Hirschmann & Wiśniewski, 1993; Karg, 1989; Maśán, 2001).

Some uropodina specimens were collected from soil and litter under evergreen and deciduous trees, decayed and decaying woods, from the bark of trees and nests of ants at Gümüşhane and Erzincan provinces in Turkey. Among this material, *Urodiaspis tecta* is new for the Turkish and Asian fauna. Epigynium of Turkish specimens with web-like ornaments and with epistome having reduced middle apical branch. These characters were not recorded from European relatives of the species so far (Hirschmann & Zirngiebl-Nicol, 1965, 1967; Zirngiebl-Nicol, 1972, 1973; Hirschmann, 1972a, 1972b, 1979, 1984a, 1984b;

Hiramatsu, 1979; Wiśniewski, 1984; Hirschmann & Wisniewski, 1993; Wisniewski & Hirschmann, 1993).

Chaetotactic symbols are mainly adapted from Hirschmann and Zirngiebl-Nicol (1965), Karg (1989), and also from Evans (1957, 1972, 1992), Krantz (1978) and Evans and Till (1979). Specimen collection, extraction, preservation and preparation for examination were given by Bal and Özkan (2005). Specimens are mounted in Hoyer's medium and examined with a Nikon E-600 compound microscope equipped with differential interference contrast and phase contrast systems. All measurements are given in micrometers ( $\mu\text{m}$ ). Materials are deposited in the Bal's mite collection, and in the Atatürk University Zoology Museum (AUZM).

### ***Urodiaspis* Berlese, 1916**

**Re-description.** Dorsum with a solid or partly fused post-dorsal plate, idiosoma longer than wider. Dorsal plate connected anteriorly with marginal plate; with simple, acuminate, serrate or scimitar-shaped setae. Chelicera with small nodus; fixed digit with hyaline helmet-like ending and tip inclined downward; sensillum distale, proximale and ventrale on fixus digit present, sensillum distale situated on venter; cavicula fixi short and with or without serrula denticulata; movable digit with sensillum mobile and shorter than fixed digit; condylus cudgel-like and in moderate length. Corniculi horn-like, laciniae long, narrow and sharpened. Protosternum denticulated or smooth and with denticles at lateral edges. Deutosternum fused, with 3–5 rows of denticles in females, double rows in males; hypostomal setae C1 and C2 smooth and needle-like, C3 and C4 denticulated, C2 shortest, occasionally thickened and thorn-like, C1 and C3 longest, C4 in moderate length. Epistome narrowed, lancet-like, distally with 1–3 pointed tips and laterally with denticulated margins. Basal part of tritosternum vase- or sack-like, without or with small denticles anteriorly; lacinia 3-branched, denticulated middle branch longer than denticulate or smooth lateral branches (Hirschmann and Wiśniewski, 1993).

### ***Urodiaspis tecta* (Figs. 1–6)**

**Examined materials:** 2♀♀ found in soil and litter under pine trees (*Pinus sylvestris*), Erzincan province, Ahmediye village (39° 86' N, 39° 36' E), altitude 1858 m, 9.V.2001; 3♀♀ found under bark of decaying stump of *Quercus infectoria*, same locality and date; 2♀♀, same locality, 17.III.2000; litter from deciduous forest with *Populus tremula*, *Quercus infectoria*, *Quercus petraea*, 1♀, 1 DN, 1 PN, Gümüşhane province, Yeniyoğ village (39° 90' N, 39° 38' E), altitude 218 m, 4.VI.2005; moss and litter under *Carpinus betulus*, 1♀, Erzurum, İspir,

Mescitli village, Mescit Mountains (40° 23' N, 40° 66' E), altitude 2238 m, 21.VII.2000; soil and litter under *Juniperus communis*, 1♀, Erzurum, İspir, south of Bademli village, Petekli forests (40° 41' N, 40° 93' E), altitude 2102, 31.V.2000; litter and soil from forest basin, 1♀, Erzurum, Olur, Dağtarlaları region (40° 85' N, 42° 07' E), altitude 1613 m, 31.V.2000.

**Re-description. Female.** Idiosoma oval, 740 long, 580 wide and egg-like. Body well sclerotized and brown. Marginal plate surrounding dorsal and post-dorsal plates. Dorsal plate differentiated from post-dorsal and marginal plate, all dorsal body setae short, thorn-like, not reaching insertions of following setae. Dorsal, marginal and post-dorsal plates with 40–50, 29 and 3 setae pairs, respectively. Some medially situated dorsal setae unpaired. Marginal setae short, smooth and simple. I4 setae on post-dorsal plate longer and thicker than all other dorsal body setae. Other post-dorsal setae I5 and Z5 small. Punctuation of plates faint and dense (Fig. 1).

Sternal, ventrianal and endopodal plates densely ornamented with small subcircular depressions. Also, all ventral regions of idiosoma with polygonal pattern and fine punctations. Peritreme with a hook-like bend in anterior section and tip directed interiorly; posterior tip directed exteriorly and ended at level of coxae III (Fig. 2). Epistom half-moon-like; anterior margin densely roughed in camerostome, surface with small bright pores. Genital plate finely punctated, ornamented with polygonal pattern, iron-shaped, anteriorly concave, smooth in the posterior part and situated between coxae II–IV; 212 long and 130 wide. Setae *v1* just behind of coxae I, *v2* at level of coxae II, *v3* between coxae II–III, *v4* between coxae III–IV and *v5* near posterior end of genital plate. Metapodal line absent. A distinctive ring-like sclerotization behind of pedofossae IV present. 2x-setae present. Adgenital setae *1a–1a'* and postanal seta *U* smooth, long and thickened.

Hypostomal laciniae extremely long, narrow, sharply pointed, third of the lower part jagged; *C2* short, smooth, adjacent to *C3*; *C3* a little longer than smooth *C1*, 3 1/2x*C2* long, with 4 denticles at one-side; *C4* is shorter than *C2* = 1 1/2x*C2* long; setae *C3* and *C4* branched; setae *C2* smooth ant not reach base of *C1* (Fig. 3C). Chelicerae with a small nodus (Fig. 3A). Corniculus horn-like. Hypostome articulated between *C3–C4* (Fig. 3C). Epistome lancet-like, anterior part two long branches, with margins denticulate, third middle branch fairly reduced (Fig. 3B). Tritosternum cup-shaped basally, its lacinia with three branches and branches with fine spines (Fig. 3D).

All pedofossae well developed. Coxae I broad, and hide tritosternum and gnathosomal apparatus (Fig. 2). All legs terminating with a pulvillus and two claws, tarsi on all legs bear a pairs of digits at tip of ambulacral prolongation; setae on legs thorn-like. All femora bearing a membraneous flap (Fig. 4).

### **Deutonymph**

Idiosoma 640 long, 520 wide. All idiosomal plates with micropores; all dorsal and ventral setae thorn-like. Sternal plate anvil-like, 280 long and 140 wide and bearing five pairs of setae (*v1-v5*). Setae *x1*, *x2*, *V2*, *V3*, *V4*, *V6* and *V8* on ventrianal plate, but *V7* pair arising from soft membranous integument out of ventrianal plate. Ventrianal plate boat in shape, 280 long and 140 wide, and postanal seta *U* present. Distance between coxae II, III and IV: 93, 152 and 130, respectively. Metapodal plate IV with web-like ornaments finely punctated. A pair of lyrifissures occurring close to setae *v1*. Coxae I large, placed close to each other; pedofossae distinct. Ventrianal plate with a pair of lyrifissures close to anus laterally. Anterior prolongation of peritreme twisted, long and directed interiorly, its posterior part short, directed backward (Fig. 5).

### **Protonymph**

Idiosoma 487 long, 370 wide; podonotal plate spear-like, 330 long and 290 wide. Five pairs of mediodorsal setae (*i2-5*, *z2*) on the plate. Lateral plates (158 long and 63 wide) tri-cornered and with micropores. Pygidial plate three cornered, 47 long and 173 wide. Seven pairs of setae arising laterally on the anterior half of the idiosoma (*i1*, *s1,2*, *s5-7*, *z1*), and setae *II-3* and *Z1* located on lateral plates. Setae *I4* longer and stouter than all other dorsal setae. All dorsal setae needle-like, smooth and slender (Fig. 6A).

Sternal plate 145 long and 85 wide, and with three pairs of short and straight setae. Anal plate widely oval, 52 long and 180 wide. Peritremes located at the level of coxae II–III, both prestigmatic sections turned externally. Setae *v5*, *V2*, *V6* and *V8* straight, needle-like and on soft membrane; *V4* robust and situated on anal plate, postanal seta *U* short and thorn-like. Inguinal plates with micropores and not bearing setae, located behind coxae IV. Coxae I large, placed close to each other; pedofossae distinct and well developed. Hypostomal setae, epistome, tritosternum, chelicerae and palps resembling those of female (Fig. 6B).

**Larva:** Unknown

### **Distribution:**

Europe (Austria, Belgium, Czech republic, England, France, Germany, Hungary, Ireland, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Ukraine)

The species is new record for Turkey.

### **Remarks:**

*Urodiaspis tecta* with widely rounded idiosoma, 6-setal postdorsum, increased number of marginal setae, strongly sclerotized form in metapodal regions, endopodal lines, adjacent *v1* setae and without

metapodal lines, together with another species *Urodiaspis stammeri* Hirschmann et Zirngiebl-Nicol 1969. *Urodiaspis tecta* is common in European countries and is known a continent endemic peculiar to European countries. Species is very tolerant to different microhabitats (grass, forest basin, humus, litter, moss and insect gallery). Turkish specimens have very similar morphological characters with Europeans specimens, but all ventral plates with web-like ornaments, and tectum split into 2 branches, middle part extremely reduced, useful diagnostic characters for the Turkish specimens. Turkish specimens resemble closely European specimens in all other features.

In the closely related species, *U. stammeri*, scabellum in the middle with funnel-like form, its lateral margins and widened exopodal plates abutting each other and forming “*joint coupling*”, whole anterior margin of scabellum delicately serrated; in *U. tecta* scabellum in the middle without funnel-like form, exopodal plates not abutting to free lateral margins of scabellum, anterior margin of scabellum delicately serrated only in the middle part.

### Abbreviations

*Cl-4*: hypostomal setae; DN: deutonymph; *i-I*: dorsocentral setae series; Per: peritrema; PN: protonymph; *r-R*: marginal setae series; *s-S*: lateral setae series; Stg: stigma; *U*: postanal seta; *v-V*: ventral setae series; *z-Z*: mediolateral setae series.

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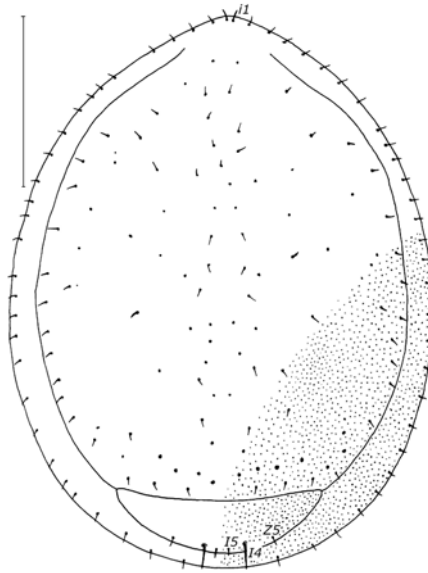
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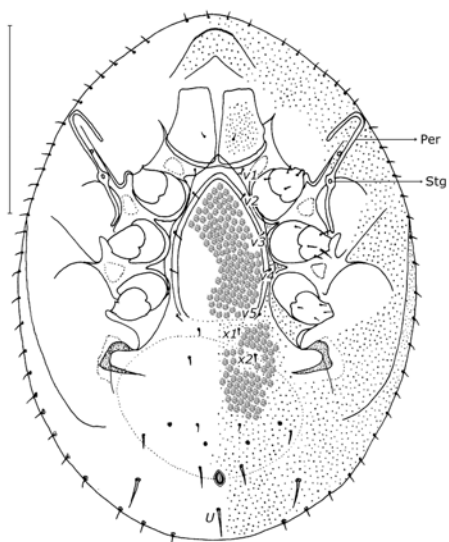
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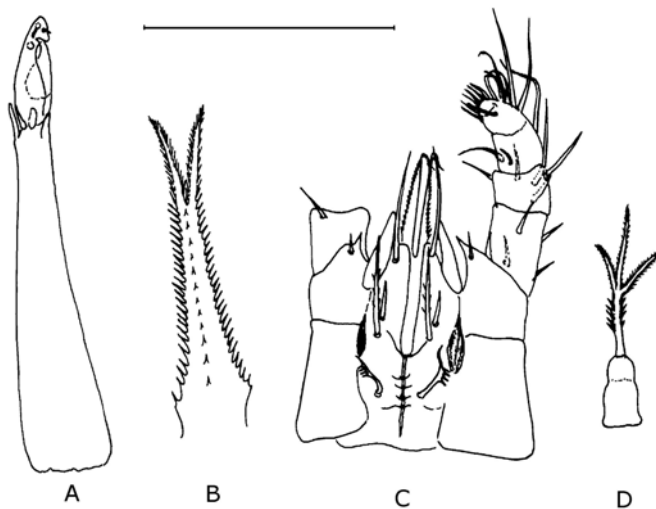
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**Fig. 1.** *Urodiaspis tecta* (female): Dorsal view. Scale: 200  $\mu$ m.

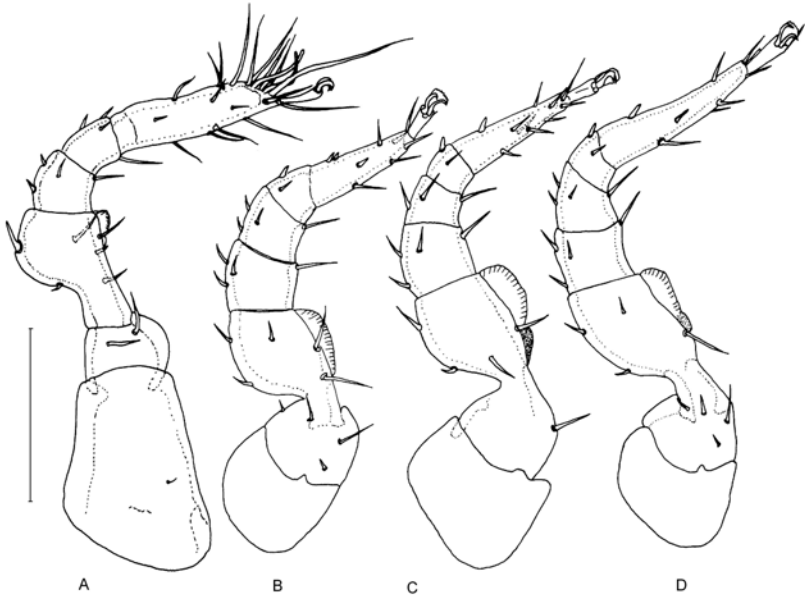


**Fig. 2.** *Urodiaspis tecta* (female): Ventral view. Scale: 200  $\mu$ m.

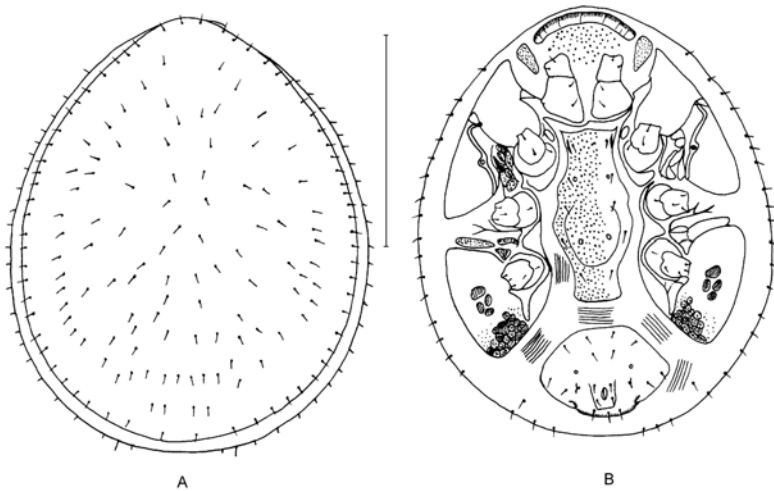


**Fig. 3.** *Urodiaspis tecta* (female): A – chelicera, B – epistome, C – venter of gnathosoma with palp, D – tritosternum. Scale: 100  $\mu$ m.

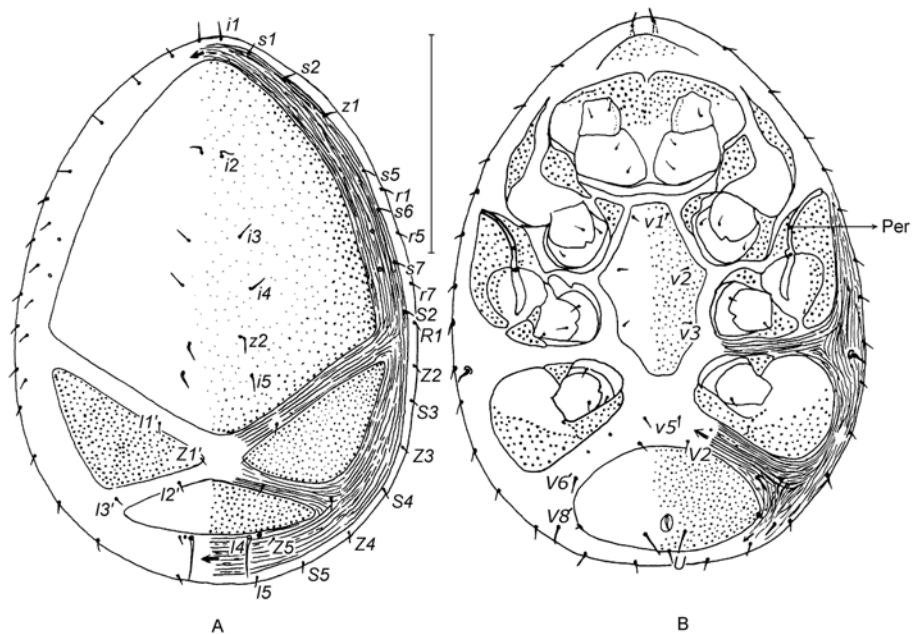




**Fig. 4.** *Urodiaspis tecta* (female): A – leg I, B – leg II, C – leg III, D – leg IV. Scale: 100  $\mu\text{m}$ .



**Fig. 5.** *Urodiaspis tecta* (deutonymph): A – dorsal view, B – ventral view. Scale: 200  $\mu\text{m}$ .



**Fig. 6.** *Urodiaspis tecta* (protonymph): A – dorsal view, B – ventral view. Scale: 200  $\mu$ m.