

Contribution to the Quadropiidae (Acari, Oribatida) Fauna of Turkey

Şule BARAN¹, Nusret AYYILDIZ²

¹Atatürk University, Kazım Karabekir Education Faculty, Department of Biology, 25240 Erzurum - TURKEY

²Erciyes University, Faculty of Arts and Science, Department of Biology, 38039 Kayseri - TURKEY

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Abstract: Descriptions of a newly recorded Quadropiidae (Ohkubo, 1995), *Quadropia (Coronoquadropia) paolii* (Woas, 1986), for the Turkish fauna and a previously known species, *Quadropia quadricarinata* (Michael, 1885), are examined using scanning electron microscopy and their distributions are presented.

Key Words: Acari, Oribatida, Quadropiidae, *Coronoquadropia*, *Quadropia*, new record, SEM, Turkey

Türkiye Quadropiidae (Acari, Oribatida) Faunasına Katkılar

Özet: Türkiye faunası için yeni kayıt olan *Quadropia (Coronoquadropia) paolii* (Woas, 1986) ve daha önce bilinen *Quadropia quadricarinata* (Michael, 1885)'nin tanımları Taramalı Elektron Mikroskobu (SEM) kullanılarak gözden geçirilmiş ve dağılımları verilmiştir.

Anahtar Sözcükler: Acari, Oribatida, *Quadropiidae*, *Coronoquadropia*, *Quadropia*, yeni kayıt, SEM, Türkiye

Introduction

The family Quadropiidae Balogh, 1983 is represented by 3 genera and 1 subgenus (Subias, 2004). The genus *Quadropia* was described by Jacot with *Notaspis quadricarinata* Michael, 1885 as the type species in 1939. It is recognized by trapeziform costulae and strongly developed crista extending to the posterior (Balogh, 1983). Members of the subgenus *Quadropia (Coronoquadropia)* can be recognized by having a frontal appendage that appears in front of the translamella (Ohkubo, 1995). Knowledge of the Quadropiidae fauna of Turkey is very limited. The genus *Quadropia* is represented in Turkey by 2 species: *Quadropia quadricarinata* and *Quadropia (Coronoquadropia) erzurumensis* (Gültekin and Özkan, 1999; Baran and Ayyıldız, 2007).

The present paper includes supplementary descriptions of a new record and a previously known species belonging to the family Quadropiidae.

Materials and Methods

The mites in soil and litter samples taken from Erzurum province were extracted using a Berlese funnel.

Then they were fixed and stored in 70% ethanol. Mites were gathered from the samples under a stereomicroscope and mounted on slides in modified Hoyer's medium and 35% lactic acid. The drawings were made with the aid of a camera lucida attached to a compound microscope. Photographs were taken by SEM (with EDX and WDX Spectrometry) in Erciyes University Technology Research and Developing Center. The preparation procedure for SEM follows Behan-Pelletier and Walter (2007).

The terminology used here is that of Ohkubo (1995) and Minguez et al. (1985). All measurements are given in micrometers (µm). Examined specimens are deposited in the Zoological Museum of Atatürk University, Erzurum, Turkey.

Results

Family: Quadropiidae Balogh, 1983

Genus: *Quadropia* Jacot, 1939

Type species: *Notaspis quadricarinata* Michael, 1885

Costulae trapeziform. Sensillus capitate with short stalk. Rostrum broad and not incised. Crista strongly

developed, extending posteriorly at least to 1/3 to 2/3 of notogastral length. Setae c_2 present. Nine pairs of notogastral setae present. Five pairs of genital setae present. Setae ad_1 in postanal, ad_3 in adanal position (Balogh, 1983).

Quadroppia quadricarinata (Michael, 1885)

(Figures 1 and 2)

Dimensions: length 214 (200-230), width 122 (110-133) (n = 31).

Prodorsum: Rostrum wide, rounded, rostral setae smooth and pointed at the tip, originated laterally and elbowed. Lamellar setae (*le*) smooth and finer than the rostral (*ro*) and interlamellar setae (*in*). Sensillus (*ss*) upright aciculate and capituli covered in small spicules. Costulae strongly developed, costulae and transcostulae robust, encircling bothridia posteriorly. Frontal connection part of costulae and transcostulae straight and from the dorsal view (Figures 1a and 2b) it is connected but from the frontal view it is separated (Figure 2c). Inside of each frontal corner of the junction of costulae and transcostulae a cavity present and the surface of these corners rough. Between costulae a square swelling present.

Notogaster: Notogastral cristae square, each bearing a seta. Nine pairs of notogastral setae present and the setae fine and curved at the tip. Inner and outer borders of cristae short. Lateral furrows lying to the back and at the back U shaped (Figures 1a and 2a).

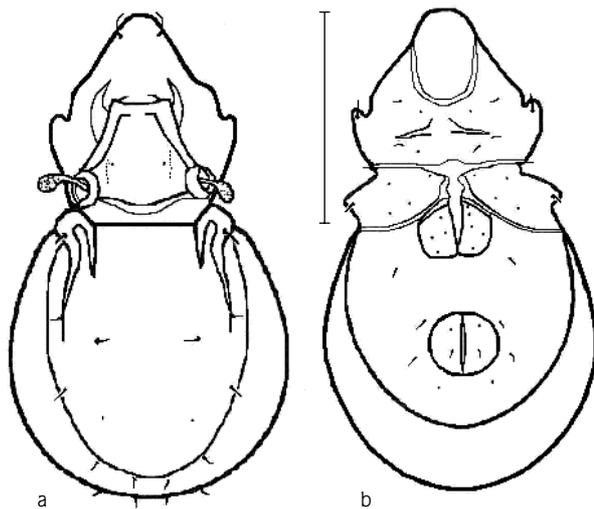


Figure 1. *Quadroppia quadricarinata* -a. Dorsal view; -b. Ventral view.

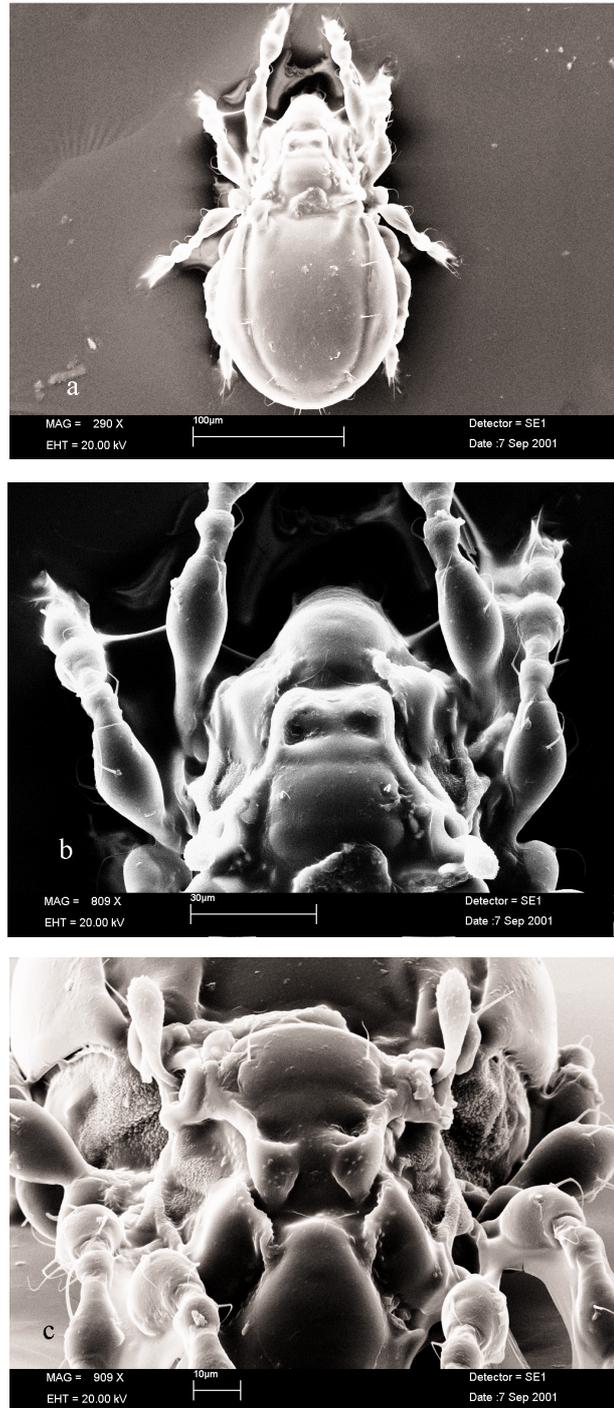


Figure 2. SEM photographs of *Quadroppia quadricarinata*. -a. Dorsal view; -b. Dorsal view of prodorsum; -c. Frontal view of prodorsum.

Ventral side: The chitinous region between epimera I triangular. The region between epimera III+IV wavy and a hollow present between them. Genital plate does not touch apodema 3+4. Five pairs of genital setae present.

One pair aggenital, 2 pairs anal, and 3 pairs of adanal setae present. Fissure *iad* not present (Figure 1b).

Legs: All tarsi monodactylous.

Material examined: 3 specimens from soil and litter under oak tree, Uzunoluk, Oltu, Erzurum, Turkey (40°30' N, 42°00' E), 9.10.1999; 3 specimens from moss on soil, Hınıs, Erzurum, Turkey (39°15' N, 41°45' E), 19.05.2000; 9 specimens from moss on soil, Olur, Erzurum, Turkey (40°45' N, 42°00' E), 31.5.2000; 16 specimens on moss on rock, Karayazi, Erzurum, Turkey (39°42' N, 42°09' E), 08.06.2000. Materials deposited at the Zoological Museum of Atatürk University, Erzurum, Turkey.

Distribution: Holarctic, China and Madagascar (Subaís, 2007).

Family: Quadropiidae Balogh, 1983

Subgenus: *Coronoquadropia* Ohkubo, 1995

Type species: *Quadropia (Coronoquadropia) parallela* (Ohkubo, 1995)

Quadropia (Coronoquadropia) paolii (Woas, 1986)

(Figures 3 and 4)

Dimensions: length 203 (180-217), width 111 (100-117) (n = 2).

Prodorsum: Rostrum wide, rounded, a longitudinal cylindrical and ringed (or segmented) frontal appendage with 6 segments present on rostral region. Frontal appendage becomes narrower in the middle (Figures 4b, c). Rostral setae rather short, smooth and straight. All prodorsomal setae short. Sensillus upright, aciculate and surface of capituli covered in small spicules. Costulae robust and encircling bothridia posteriorly. Costulae posteriorly close to each other and at the tip and square. There is no connection between these structures. Between costulae a circular swelling present (Figure 4b).

Notogaster: Notogastral cristae square, each bearing a seta. Nine pairs of minute and straight setae present. The inner border of notogastral cristae lying to the middle of

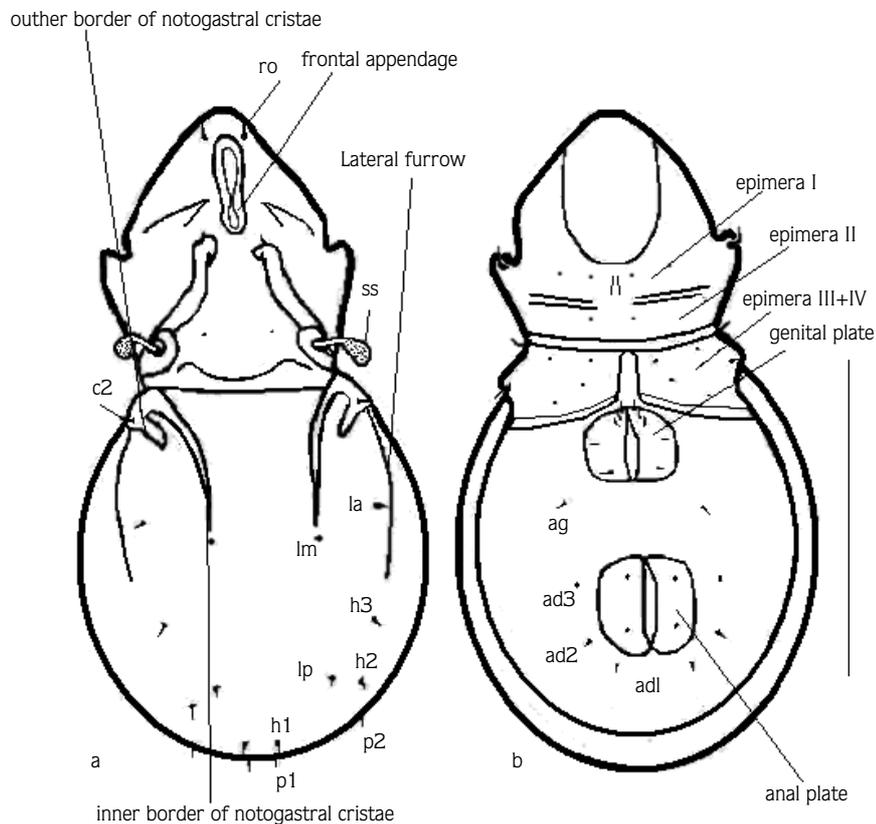


Figure 3. *Coronoquadropia paolii* -a. Dorsal view; - b. Ventral view.

notogaster, but the outer border short. Lateral furrows lying to 1/3 of notogaster (Figures 3a, 4a).

Ventral side: The chitinous region between epimera I board. The region between epimera III+IV separated by parallel lines. Five pairs of genital setae present. One pair aggenital, 2 pairs anal, and 3 pairs of adanal setae present. Fissure *iad* not present (Figure 3b).

Legs: All tarsi monodactylous.

Material examined: 2 specimens soil and litter under oak tree, Uzunoluk, Oltu, Erzurum, Turkey (40°30' N, 42°00' E), 9.10.1999.

Distribution: Germany and Switzerland (Woas, 1986; Mahunka and Mahunka-Papp, 2000).

Discussion and Conclusion

The subgenus *Coronoquadropia* was erected by Ohkubo in 1995 as a new genus and represented by 17 species and 1 subspecies, but according to Subías and Arillo (2001) the distinction, being based on only one character, namely the presence or absence of a frontal appendage, was not enough to set up a new genus. Then Subías (2004) considered *Coronoquadropia* as a subgenus. Some of the species belonging to this subgenus were considered synonyms of others by Subías (2004) and so the number of species was reduced to 13.

Quadropia (*Coronoquadropia*) *paolii* was also considered a synonym of *Quadropia* (*Coronoquadropia*) *monstruosa* (Hammer, 1979) by Subías (2004).

However, we think that *Quadropia* (*Coronoquadropia*) *paolii* is an independent species. *Quadropia* (*Coronoquadropia*) *paolii* differs from *Quadropia* (*Coronoquadropia*) *monstruosa* by

- having a medially narrowing, longitudinal cylindrical, and ringed frontal appendage (Figures 4b, 4c)
- inner border of notogastral cristae lying to the setae *lm* (Figures 3a, 4a)

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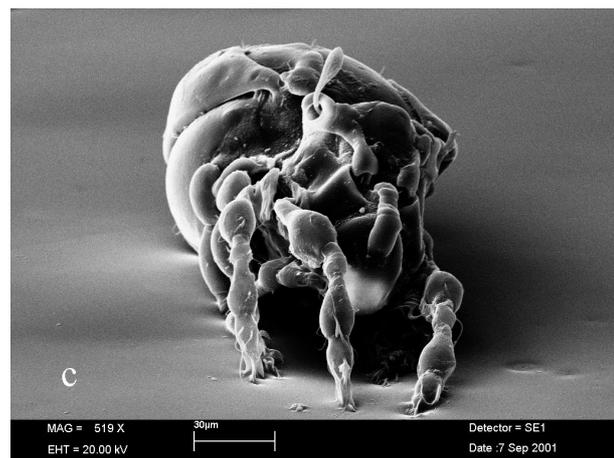
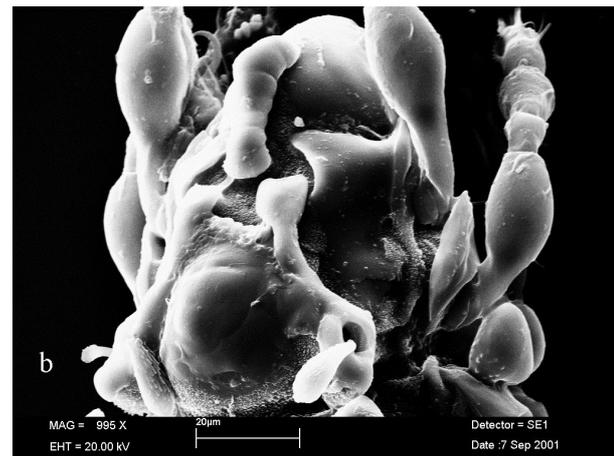
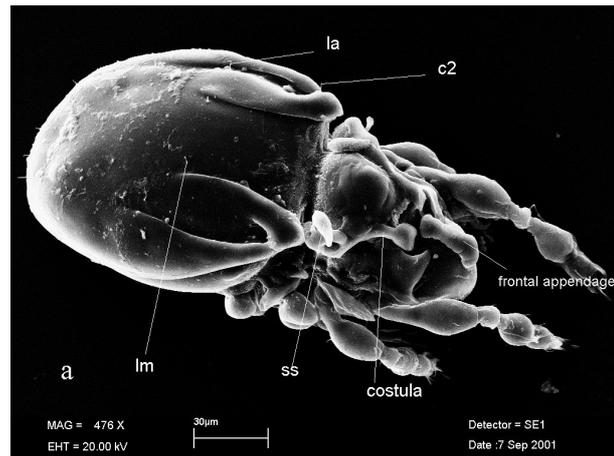


Figure 4. SEM photographs of *Coronoquadropia paolii*. -a. Dorsal view, -b. Dorsal view of prodorsum; -c. Frontal view of prodorsum.

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