

## The First Occurrence of the Uncommon Family Barbutiidae (Acari: Actinedida) in Turkey: *Barbutia anguineus* (Berlese)

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**Abstract:** A newly recorded mite species, *Barbutia anguineus* (Berlese), collected from Turkey is herein re-described and figured. This is the first record of the family Barbutiidae in Turkey.

**Key Words:** Acari, Barbutiidae, *Barbutia*, new record, Turkey

### Az Bulunan Barbutiidae Familyasının (Acari: Actinedida) Türkiye'deki İlk Bulgusu: *Barbutia anguineus* (Berlese)

**Özet:** Türkiye'den yeni kaydedilen *Barbutia anguineus* (Berlese) akar türünün deutonimf üzerinden tanımı yapılmış ve özgün şekilleri verilmiştir. Bu Barbutiidae familyasının da Türkiye'deki ilk kayıdır.

**Anahtar Sözcükler:** Acari, Barbutiidae, *Barbutia*, yeni kayıt, Türkiye

### Introduction

Barbutiidae is a small family that contains only 1 genus, *Barbutia* Oudemans, and 4 rare species: *B. anguineus* (Berlese), *B. australia* Fan, Walter & Proctor, *B. longinqua* Fan, Walter & Proctor, and *B. perretae* Robaux. This uncommon family is included in the superfamily Raphignathoidea Kramer (Acari: Actinedida). Although placed in Raphignathoidea, Barbutiidae has been considered a close relative of Anystoidea, Tetranychoida, and Paratydeoidea by some authors (Smith et al., 1998; Walter and Proctor, 2001). Fan et al. (2003) reviewed and discussed the systematic position of the family Barbutiidae, and they hypothesized that it is a lineage that fits between Tetranychoida and Raphignathoidea, and

that it may require molecular data and/or a better understanding of ontogenetic characters to resolve the systematic position of the family.

The superfamily Raphignathoidea comprises 11 families, 6 of which have been recorded from Turkey: Caligonellidae, Camerobiidae, Cryptognathidae, Eupalopsellidae, Raphignathidae, and Stigmaeidae (Doğan, 2006, 2007; Erman et al., 2007). This paper reports the presence of the seventh family, Barbutiidae. This family was not previously reported from Turkey, but now it is also part of the mite fauna of Turkey, with the re-description of *Barbutia anguineus* (Berlese) based on specimens collected from Turkey.

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## Materials and Methods

Mite collecting, slide mounting, and drawing methods are given in some detail by Doğan (2006), and Doğan and Ayyıldız (2003), and thus will not be repeated herein. The terminology is based on Grandjean (1944) and Kethley (1990). All measurements are given in micrometers ( $\mu\text{m}$ ). The range of measurements is given parenthetically; mean values are in front of parentheses. The examined materials are deposited in the Zoological Museum of Atatürk University, Erzurum, Turkey.

## Results and Discussion

Family: Barbutiidae Robaux, 1975

Type genus: *Barbutia* Oudemans, 1927.

Diagnosis: Adult.

Body elongated; dorsum without shields, with 2 eyes and 2 post-ocular bodies, dorsal body with 13 pairs of setae; ventral shield absent, with 3 pairs of setae; gnathosoma ventral with 1 pair of sub-capitular setae, 2 pairs of adoral setae, cheliceral bases fused, palptibial claw with a ventral tooth and similar in length to palptarsus; aggenital area with 3 pairs of aggenital setae, genital shields with 1 pair of genital setae; pseudanal opening with 3 pairs of setae; each leg claw has 2 pairs of tenent hairs, minute empodium with 3 pairs of tenent hairs (Fan et al., 2003).

*Barbutia anguineus* (Berlese)

*Stigmaeus* (*Macrostigmaeus*) *anguineus*, Berlese, 1910: 208.

*Macrostigmaeus anguineus* Oudemans, 1923: 146.

*Barbutia anguineus*, Oudemans, 1927: 266; Summers, 1964: 191; Wood, 1973: 89; Wainshtein and Kuznetsov, 1978: 166; Robaux, 1975: 480; Fan et al., 2003: 110.

### Deutonymph Female

(Figures 1-13)

Body elongate, 337 (325-350) long, 103 (100-105) wide.

Dorsum: Integument of dorsum faintly striated, except for punctuation along sejugal furrow. Shields not

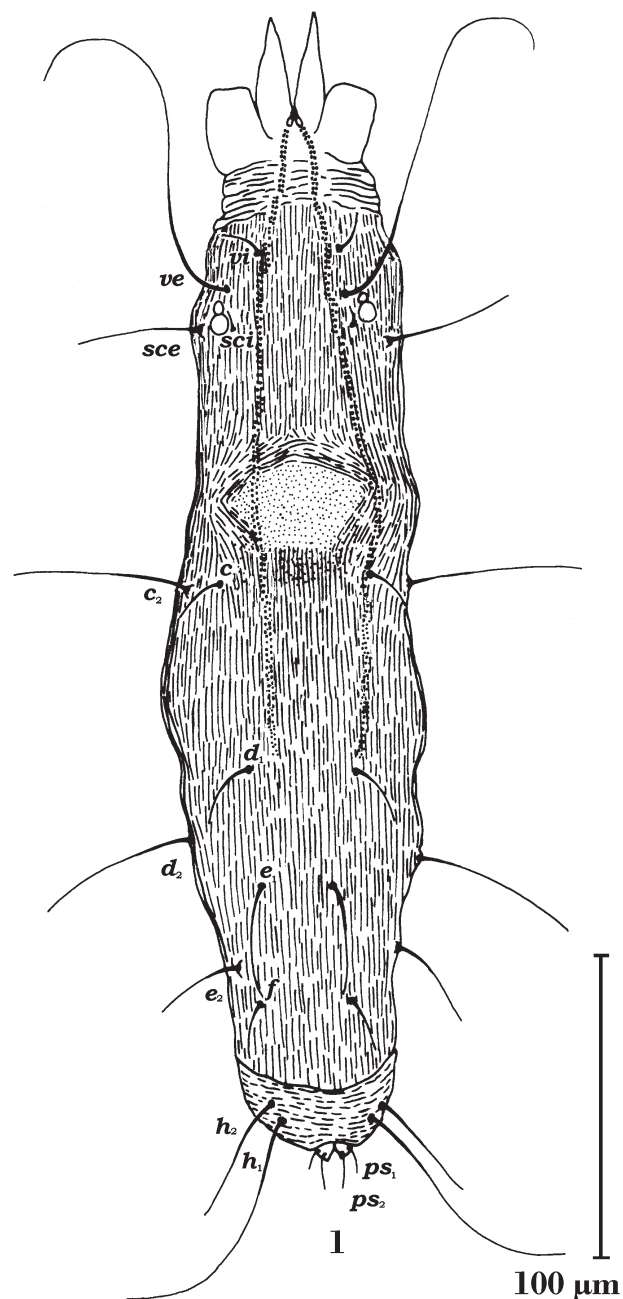


Figure 1. *Barbutia anguineus* (Deutonymph female): Dorsal view.

evident. Eyes and post-ocular bodies present, eyes 6 (4-8) and post-ocular bodies 9 (8-10) in diameter. Thirteen pairs of dorsal body setae smooth and slender. Setae *ve* extremely long, more than 2 times the length of *sce*, extending beyond bases of setae *c*<sub>1</sub>; *sci* less than half of *e*<sub>1</sub>

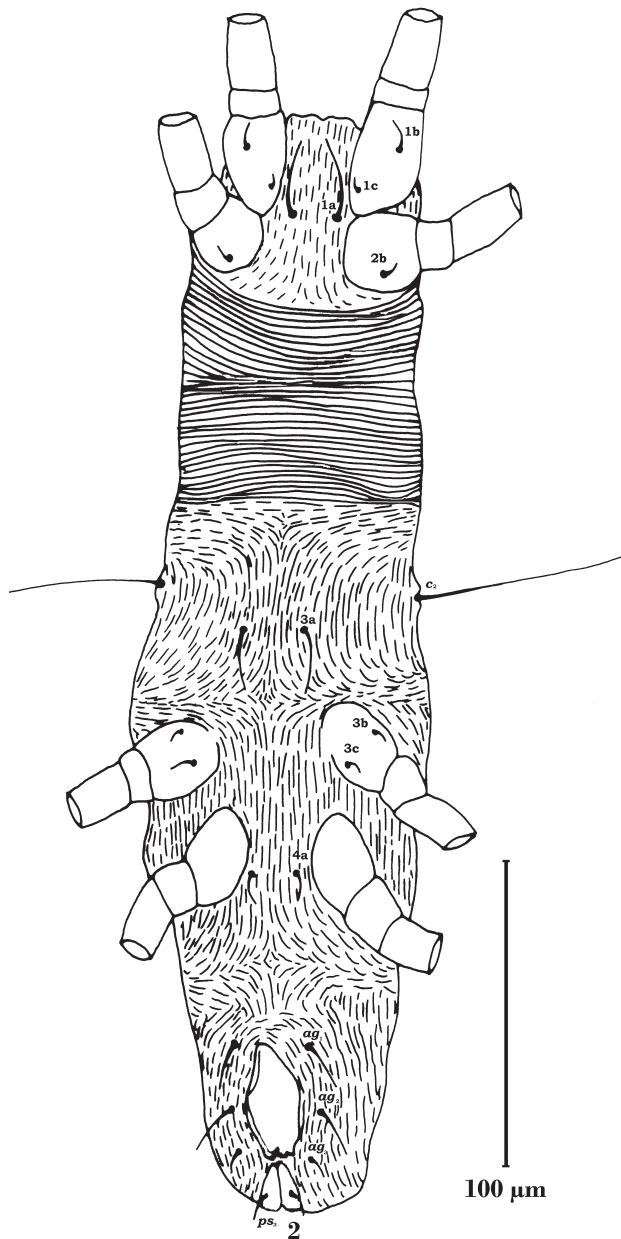


Figure 2. *Barbutia anguineus* (Deutonymph female): Ventral view.

and  $f_1$ . Length of setae as follows:  $vi$ : 15 (14-15);  $ve$ : 141 (130-150);  $sci$ : 8 (6-8);  $sce$ : 68 (61-75);  $c_1$ : 22 (20-25);  $c_2$ : 52 (50-55);  $d_1$ : 26 (24-30);  $d_2$ : 55 (50-65);  $e_1$ : 26 (20-30);  $e_2$ : 23 (20-26);  $f_1$ : 24 (20-28);  $h_1$ : 110 (100-115);  $h_2$ : 74 (65-80);  $vi-vi$ : 20 (18-21);  $ve-ve$ : 40 (35-42);  $vi-ve$ : 15 (13-16);  $sce-sce$ : 92 (82-96);  $ve-c_1$ : 104

(100-108);  $c_1-c_1$ : 92 (84-95);  $c_1-c_2$ : 18 (15-20);  $d_2-d_2$ : 80 (75-82);  $c_1-d_1$ : 67 (60-70);  $c_1-d_2$ : 89 (84-90);  $d_1-d_1$ : 42 (38-45);  $d_1-d_2$ : 34 (30-36);  $e_2-e_2$ : 52 (48-55);  $d_2-e_2$ : 46 (40-50);  $d_1-e_1$ : 47 (40-50);  $d_1-e_2$ : 70 (65-73);  $e_1-e_1$ : 22 (20-24);  $e_2-e_1$ : 21 (18-23);  $f_1-f_1$ : 20 (18-21);  $e_1-f_1$ : 19 (16-20);  $e_2-f_1$ : 20 (18-22);  $f_1-h_1$ : 32 (30-34);  $f_1-h_2$ : 34 (30-36);  $h_1-h_1$ : 40 (35-42);  $h_2-h_2$ : 23 (20-25);  $h_1-h_2$ : 10 (8-12).

Venter: Ventral surface striated. Ventral shield absent. Ventral setae  $1a$  close to coxae I,  $3a$  situated in front of coxae III, and  $4a$  situated on membrane between coxae IV. Measurements of the setae:  $1a$ : 33 (30-35);  $3a$ : 25 (20-28);  $4a$ : 11 (10-12). Genital and anal openings separate, genital shields without setae, aggenital area with 3 pairs of setae.  $ag_1$ : 13 (10-15);  $ag_2$ : 30 (25-35);  $ag_3$ : 10 (8-12). Pseudanal opening with 3 pairs of setae ( $ps_{1-3}$ ).

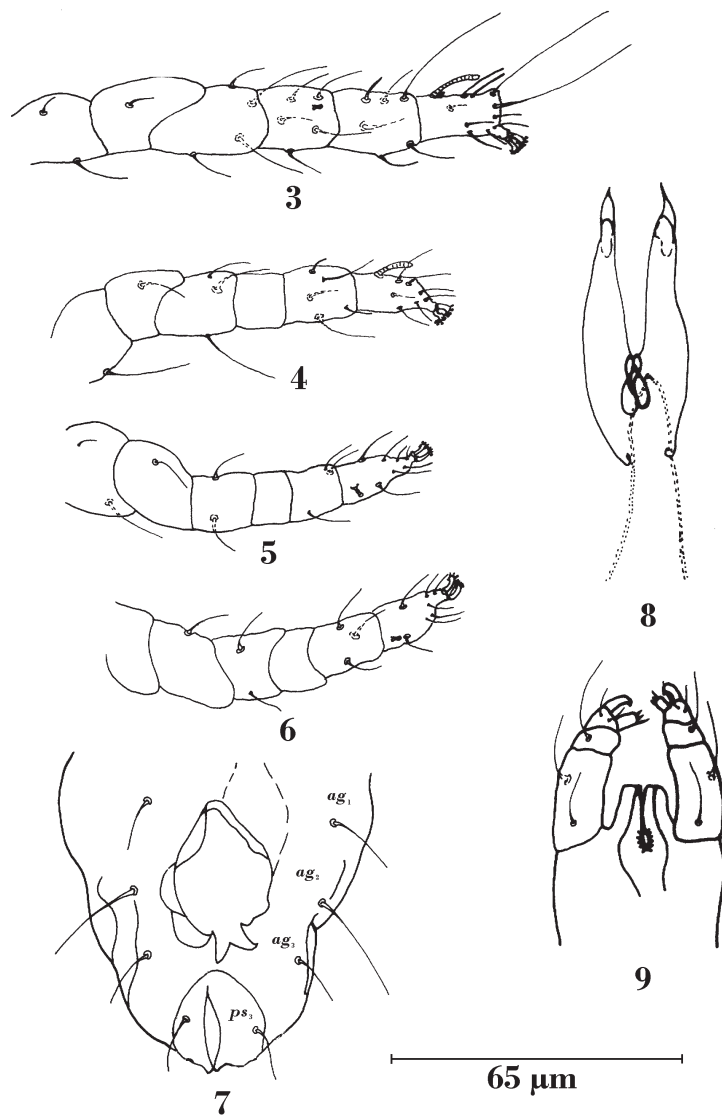
Legs: Leg I: 91 (86-95); leg II: 68 (60-72); leg III: 70 (65-76); leg IV: 75 (69-80). Chaetotaxy of leg segments as follows (solenidia in parentheses): Coxae, 2-1-2-0; trochanters, 1-1-1-1; femora, 4-3-2-2; genua, 6( $\kappa$ )-0-0-0; tibiae, 6( $\phi$ )-5( $\phi$ )-3-3; tarsi, 12(2 $\omega$ )-8( $\omega$ )-8( $\omega$ )-8( $\omega$ ).

Gnathosoma: Palp 46 (40-50) long, palptibial claw with a ventral tooth. Chelicera (including moveable digit) 52 (50-55) long, cheliceral fixed digits reduced and movable digits small.

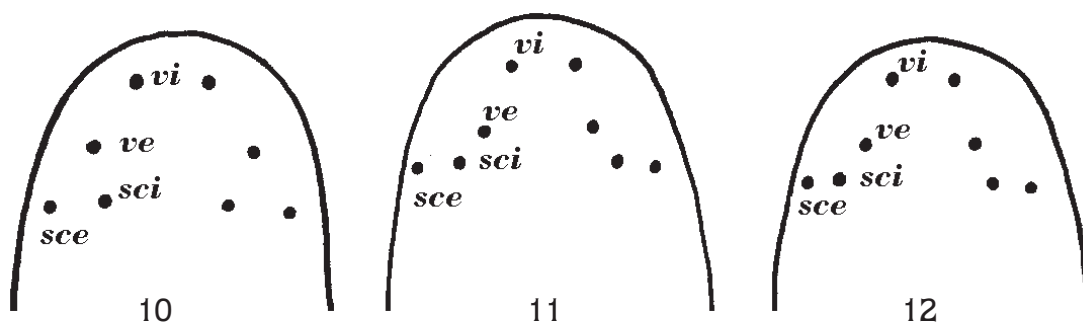
Adult Female: Unknown.

Adult Male: Not determined.

Materials examined: Four deutonymph females from litter under a stone, lat 40°16'52N, long 39°38'20E, 1824 m, Köse Mountain, Gümüşhane, 21. IX. 2007. One deutonymph female from soil and litter under *Unobrychis* sp., lat 40°16'17N, long 39°35'30E, 1892 m, Subaşı, Köse, Gümüşhane, 26. X. 2007. Five deutonymph females from moss on decayed pine bark, lat 40°16'51N, long 39°38'21E, 1815 m, Köse Mountain, Gümüşhane, 23. XI. 2007. Three deutonymph females from litter and lichen under *Pinus* sp., lat 40°16'29N, long 39°38'00E, 1803 m, Köse Mountain, Gümüşhane, 23. XI. 2007. Twelve deutonymph females from moss on soil and stone, lat 40°15'43N, long 38° 50'44E, 1756 m, Çamoluk, Gümüşhane, 24. XI. 2007.



Figures 3-9. *Barbutia anguineus* (Deutonymph female): (3) Leg I, (4) leg II, (5) leg III, (6) leg IV, (7) ventral view of genital and anal regions, (8) dorsal view of chelicerae, and (9) ventral view of gnathosoma and palpi.



Figures 10-12. Schemes of vertical and scapular setae of *Barbutia anguineus* (Deutonymph female): (10) The Turkish specimen, (11) Summers' specimen, and (12) Robaux's specimen.



Figure 13. *Barbutia anguineus* (Deutonymph female): Dorsal view.

Distribution: Italy, former USSR, USA (Berlese, 1910; Summers, 1964; Robaux, 1975, Wainshtein and Kuznetsov, 1978; Fan et al., 2003), and Turkey (this paper).

Remarks: This species can be distinguished from others by the following characters: Dorsal body setae *ve* long, more than 2 length of *sce*, extending beyond the bases of  $c_1$ ; *vi* about 2 length of *sci*;  $c_1$  about half of  $c_2$ ;  $d_1$ ,  $e_1$ , and  $f_1$  subequal. General features and details of leg chaetotaxy of the Turkish specimens are as in the others, except that schemes of vertical and scapular setae in the Turkish specimens are different from those reported by Summers (1964) and Robaux (1975) (Figures 10-12). This species is a new record for the Turkish fauna.

### Acknowledgement

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