Some cryptognathid mites (Acari: Cryptognathidae) from Kütahya Province (Turkey)

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Abstract

Six cryptognathid mites were collected from Kütahya Province. Of these, three species belong to the genus Cryptognathus Kramer, 1879 and three species to the genus Favognathus Luxton, 1973. A new species Cryptoganathus kutahyaensis sp. nov., and the male of Favognathus cucurbita Berlese, 1917, from Turkey, are described and illustrated. Keys to all the species of the genus Cryptognathus and the Favognathus species of the Kütahya Province are provided.

Key words: Acari, Cryptognathidae, Cryptognathus kutahyaensis sp. nov., new species, Turkey.

Introduction

Cryptognathids are small, scarlet-red or orange mites, their measurements are from 300 to 400 µm in length. The body is oval and lacks a suture between the propodosoma and the hysterosoma. The dorsal shield is reticulate or punctate (Baker & Wharton 1952; Krisper & Schneider 1998; Luxton 1993). Their mouth parts are often highly protruding (Luxton 1973). Members of the family are generally collected from soil, grass-covered soil, litter, mosses and lichens and they feed on algae, mosses and fungi (Koç & Ayyıldız 1998; Doğan & Ayyıldız 2004; Doğan 2008; Doğan & Dönel 2010; Dönel & Doğan 2011; Luxton 1993; Swift 1996; Swift & Goff 2001).

Cryptognathidae contains three genera: Cryptognathus Kramer, 1879, Favognathus Luxton, 1973 and Cryptofavognathus Doğan & Dönel, 2010. Nineteen species of genus Cryptognathus Kramer, 1879 have been so far recorded in the world and four of them are known from Turkey, namely, C. lagena Kramer, C. luteolus Summers & Chaudhri, C. ayyıldızı Akyol & Koç and C. ozkani Doğan & Ayyıldız (Koç & Ayyıldız 1998; Doğan 2008; Dönel & Doğan 2011).

The genus Favognathus Luxton is cosmopolitan in distribution. Up till now, the genus Favognathus comprises of 35 species occurring in all zoogeographical regions (Doğan 2008; Khanjani & Ueckermann 2008; Akyol 2011). To date, seven species of Favognathus – Favognathus acaciae Doğan & Ayyıldız, Favognathus amygdalus Doğan & Ayyıldız, Favognathus bafranus Doğan, Favognathus cucurbita (Berlese), Favognathus erzurumensis Doğan & Ayyıldız, Favognathus luxtoni Koç & Ayyıldız,
**Favognathus turcicus** Koç & Ayyıldız and *Favognathus izmirensis* Akyol – have been reported from Turkey (Koç & Ayyıldız 1999; Doğan & Ayyıldız 2002, 2004; Koç & Akyol 2004; Doğan 2008; Akyol 2011). The genus *Favognathus* is better known than *Cryptognathus*. The most recorded species in the former genus, *Favognathus cucurbita* (Berlese) was reported from the Palearctic, Ethiopian and Oriental regions (Doğan 2008).

In this paper a new species *Cryptognathus kutahyaensis* is described and the male of *Favognathus cucurbita* (Berlese, 1917), the type species of the genus, described for the first time. Keys to the all species of *Cryptognathus* and the *Favognathus* species of the Kütahya Province are also provided.

**Materials and Methods**

The litter, soil and moss samples taken from mixed habitats in Kütahya province (Turkey) were brought to the laboratory in nylon bags. Mites were extracted in Berlese funnels for five to seven days and preserved in 70% ethanol. Cryptognathid mites were collected from the samples under a stereomicroscope and mounted on slides in Hoyer’s medium. Their figures were drawn and measurements performed under a research microscope.

Dorsal setal and leg setal designations follow Kethley (1990) and Grandjean (1944), respectively. Chaetotaxy of leg segments is given with solenidia in parenthesis. All measurements are given in micrometers (µm).

Type material and all other specimens are deposited in the Zoological Museum of Celal Bayar University, Manisa, Turkey.

**Results**

Family: Cryptognathidae Oudemans, 1902
Type genus: *Cryptognathus* Kramer, 1879

**Key to the genera of Cryptognathidae (after Doğan & Dönel, 2010)**

1. Prosternal apron dimpled............................................... *Favognathus* Luxton, 1973
   - Prosternal apron not dimpled........................................... 2
2. Two pairs of genital setae............................... *Cryptofavognathus* Doğan & Dönel, 2010
   - Three pairs of genital setae........................................... *Cryptognathus* Kramer, 1879

**Genus Cryptognathus Kramer**
Type species: *Cryptognathus lagena* Kramer, 1879

**Diagnosis**

This genus is characterized by a transparent, crescent-shaped prosternal apron anterior of the ventral plate and 3 pairs of genital setae.

**Key to the known female species of Cryptognathus**

1. Dorsal and ventral shield without reticulations............ *C. attenuatus* Luxton, 1993
   - Dorsal shield with reticulations........................................ 2
2. Ventral shield partly or completely reticulated ........................................ 3
   - Ventral shield without reticulations .................................... 14
3. Peg-like sensillum *k* present on genu II ........................................ 4
   - Peg-like sensillum *k* absent on genu II .................................. 12
4. Two proximoventral setae on tarsi III and IV ................................................................. C. imbricatus Summers & Chaudri, 1965
- One proximoventral seta on tarsi III and IV ................................................................. 5
5. Front margin of hood smooth ......................................................................................... 6
- Front margin of hood denticulate ...................................................................................... 8
6. Ventral punctuation extensive ......................................................................................... 7
- Ventral punctuation restricted to certain narrow zones .................................................. C. lateropunctatus Luxton, 1973
7. Tarsi III and IV without solenidia ................................................................. C. incertus Robaux, 1975
- Tarsi III and IV each with a solenidion ............................................................... C. lagena Kramer, 1879
8. Sternocoxal area striate .................................................................................................. 9
- Sternocoxal area smooth ............................................................................................... 11
9. Dorsal setae very small (less than 10 µm in length) .... C. australiensis Hirst, 1926
- Dorsal setae longer (10 µm or longer than 10 µm in length) ...................................... 10
10. Ventral reticulations marginally ................................................................. C. summersi Robaux, 1975
- Dorsal and ventral shields completely reticulate (similarly ornamented) .................. C. wooodi Luxton, 1973
11. Each cell of dorsal reticulum with about 17-25 small pores, but 2-3 restricted to periphery .......................................................... C. scutellatus Summers & Chaudri, 1965
- Each cell of dorsal reticulum with numerous pores, 35-50 per cell, about 8-22 centrally................................................................. C. luteolus Summers & Chaudri, 1965
12. Addorsal setae tc on tarsus II dissimilar ... C. aureatus Summers & Chaudri, 1965
- Addorsal setae tc on tarsus II similar ............................................................... 13
13. Cells on dorsal reticulum preponderantly longer than wide, some almost twice as long as wide, chelicerae short (av. 79 µm) .......................................................... C. cucullus Summers & Chaudri, 1965
- Cells on dorsal reticulum preponderantly isodiametric, chelicerae long (av. 133 µm) ................................................................. C. ultrasorstratus Summers & Chaudri, 1965
14. Front margin of hood smooth ....................................................................................... 15
- Front margin of hood denticulate or rough ...................................................................... 16
15. Ventral hysterosoma without pores behind coxae IV; tarsi III and IV without solenidia ........................................................................................................... C. striatus Luxton, 1973
- Ventral hysterosoma with pores behind coxae IV and extending to level of anterior rim of genital valves, and with a patch of pores between 3a and 4a; tarsi III and IV each with a solenidion................................................................. C. vulgaris Luxton, 1973
16. Two proximoventral setae on tarsi III and IV .............................................................. C. kutahyaensis sp. nov.
- One proximoventral seta on tarsi III and IV ................................................................. 17
17. Ventral punctuation extensive ....................................................................................... 18
- Ventral punctuation restricted to certain narrow zones .... C. eurytopus Luxton, 1973
18. Addorsal setae tc on tarsus II dissimilar ....................................................................... 19
- Addorsal setae tc on tarsus II similar.............. C. ozkani Doğan & Ayyildiz, 2001
19. Dorsal shield partly reticulated ..................................................................................... 20
- Dorsal shield completely reticulated ............................................................................... 20

Cryptognathus lagena Kramer, 1879

Material examined
Thirty-eight females, Kocayayla Mountain, Domaniç, Kütahya, 29° 52' 34,16" N, 29° 39' 02" E, 1280 m, from soil and litter under Pinus nigra and Carpinus sp.,

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11.09.2010; two females, Küçükköy, Domanıç, 39° 45' 60" N, 29° 33' 23" E, 809 m, from soil under Phaseolus vulgaris, Zea mays, Beta vulgaris and Solanum lycopersicum, 11.09.2010; one female, Küçükköy, Domanıç, 39° 45' 60" N, 29° 33' 23" E, 809 m, from grass-covered soil under Prunus persica and Juglans regia, 11.09.2010; one female, Radar region, Kütahya, 39° 24' 14" N, 29° 52' 35" E, 1751 m, from soil and litter under Juniperus sp., 18.10.2010; ten females, Köpenez Village, Gediz, 39° 07' 34" N, 29° 15' 43" E, 890 m, soil and moss on the rocks and bark, 23.04.2011; forty-eight females, Saraycık, Altıntaş, 38° 00' 25" N, 29° 46' 42" E, 1450 m, from soil and litter under Juniperus sp., 29.07.2011; three females, Kurtdere, Hisarcık, 38° 11' 36" N, 29° 10' 03" E, 952 m, from soil and moss under Quercus sp., 13.08.2011; thirty females, Değirmendere, Şaphane, 39° 03' 50" N, 29° 12' 41" E, 1430 m, from soil and litter under Corylus sp., 25.09.2011; two females, Değirmendere, Şaphane, 39° 03' 50" N, 29° 12' 41" E, 1430 m, from soil and litter under Pinus nigra and Quercus sp., 25.09.2011; one female, Hisarcık, 39° 13' 05" N, 29° 11' 05" E, 925 m, from soil and litter under Pinus nigra, 22.10.2011; one female, Safaköy, Domanıç, 39° 51' 24" N, 29° 40' 14" E 1340 m, from soil and litter under Carpinus sp., 28.04.1012; one female, Kocayayla, Domanıç, 39° 51' 49" N, 29° 39' 06" E 1402 m, from soil and litter under Carpinus sp., 28.04.1012; thirteen females, Kocayayla, Domanıç, 39° 51' 49" N, 29° 39' 06" E 1402 m, from soil and litter under Carpinus sp., 28.04.2012; three females, Murat Mountain, Gediz, 38° 57' 58" N, 29° 38' 07" E 1522 m, Juniperus sp., 01.05.2012; one female, Murat Mountain, Gediz, 38° 58' 08" N, 29° 37' 41" E 1383 m, from soil and litter under Pinus sp., 01.05.2012.

Distribution


Remarks

This species was determined by Kramer (1879) in Germany.
Palp setal formula (from femur to tarsus) of samples from Afyonkarahisar: 3-2-3+1claw-4+4 eupathidia and of samples from Kelkit Valley 3-2-4-4+1ω+4 eupathidia. In our samples the palp setal formula was found as 3-2-4-4(exexcept ω)+4.
Chaetotaxy (including solenidion) of tarsi in samples of Afyonkarahisar 16-12-10-10 in samples of Kelkit Valley 14-13-10-10 and in samples of Artvin 12-12-12-12. In our samples it was 16-14-10-10.
Our specimens closely resemble the other specimens of this species in general features.
The male of this species described by Koç & Ayyıldız (1998) from was not found during this study.

Cryptognathus kutahyaensis sp. nov. (Figs. 1–9)

Female
Length of idiosoma (including hood and anal covers) 380 μm, width 225 μm.
Gnathosoma: Gnathosoma extrudable from under hood. Length of palpi 88, length of chelicerae 102. Subcapitulum with a pair of long setae (m) and 2 pairs of rostral setae
Palp setal formula (from femur to tarsus): 3-2-3+1claw-4+1ω+4 eupathidia.

Dorsum (Fig. 1): Anterior margin of hood with Denticulated. Length of hood 62, 5 dimples in each longitudinal row, dorsal shield with 11 pairs of setae, one pair of simple eyes and one pair of postocular bodies laterally between setae sci and sce. Dorsal shield reticulated. Polygonal cells with 35-55 pores in each dimple. One pore larger and more distinct than others. Dimensions of dorsal setae as follows: vi 22, ve 22, sci 32, sce 43, c1 40, d1 26, e1 40, e2 35, f1 33, h1 32, h2 20. Distances between setae: vi-vi 50, vi-ve 10, ve-ve 40, ve-sci 13, sci-sci 67, sci-c1 35, sce-sce 140, c1-c1 92, c1-d1 70, d1-d1 122, d1-e1 55, e1-e1 87, e1-e2 15, e2-e2 110, e1-f1 55, f1-f1 50, f1-h1 35, h1-h1 15, h1-h2 30, h2-h2 75.

Figure 1–2. Cryptognathus kutahyaensis sp. nov. (Female). 1. Dorsal view of idiosoma; 2. Ventral view of idiosoma.

Venter (Fig. 2): Venter smooth entirely pores. Sternocoxal area with faint longitudinal striae and pores. Prosternal apron hyaline, front margin deeply concave. Venter with four pairs of setae (1a, 3a, 4a, 4c); three pairs of genital setae (ps1-3) set adjacent to genital valves; two pairs of aggenital setae (ag1-2) and; anal opening terminal, with three pairs of pseudanal setae.

Legs (Fig. 3-6): Length of legs I-IV (from base of femur to tip of tarsal claw): 202, 150, 157, 185, respectively. Number of setae on leg segments I-IV (sensillae in parentheses): coxae 2-1-2-1, trochanter 1-1-2-1, femora 4-3-2-2, genua 6(k)-5(k)-2-
3, tibiae 7(φ, φp)–6(φp)–5(φp)–3, tarsi 16(ω, φp)–13(ω, φp)–10(ω)–11(ω). Each leg tarsus with two claws and an empodium, addorsal setae tc of tarsi II similar; genua I and II with setae k. Two proximoventral setae on tarsi III and IV.

Male and other immature stages: Unknown.

Table 1. Differences between *Cryptognathus kutahyaensis* sp. nov. and other species of *Cryptognathus*

<table>
<thead>
<tr>
<th>Species</th>
<th>Peglike sensillum k on genu II</th>
<th>Peglike sensillum k on tarsus II</th>
<th>Reticulation on venter</th>
<th>Reticulation on sternum</th>
<th>Front margin of hood</th>
<th>Similarity between adorsal setae on tarsus II</th>
<th>Striation on sternocoxal area</th>
<th>Proximal ventral seta on tarsus III and IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Cryptognathus lagena</em> Kramer, 1879</td>
<td>+</td>
<td>+</td>
<td>smooth</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><em>Cryptognathus attenuatus</em> Luxton, 1993</td>
<td>+</td>
<td>-</td>
<td>smooth</td>
<td>?</td>
<td>?</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus ayyildizi</em> Akyol, Koç 2008</td>
<td>+</td>
<td>-</td>
<td>denticles</td>
<td>-</td>
<td>+</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus aureatus</em> Summers &amp; Chaudhri, 1965</td>
<td>-</td>
<td>+</td>
<td>smooth</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus australiensis</em> Hirst, 1926</td>
<td>+</td>
<td>+</td>
<td>denticles</td>
<td>-</td>
<td>+</td>
<td>1</td>
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<td></td>
</tr>
<tr>
<td><em>Cryptognathus cucullus</em> Summers &amp; Chaudhri, 1965</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>1</td>
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<tr>
<td><em>Cryptognathus eurytopus</em> Luxton, 1973</td>
<td>+</td>
<td>-</td>
<td>denticles</td>
<td>-</td>
<td>?</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td><em>Cryptognathus imbricatus</em> Summers &amp; Chaudhri, 1965</td>
<td>+</td>
<td>-</td>
<td>denticles</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td><em>Cryptognathus incertus</em> Robaux, 1975</td>
<td>+</td>
<td>+</td>
<td>smooth</td>
<td>?</td>
<td>+</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus lateropunctatus</em> Luxton, 1973</td>
<td>+</td>
<td>smooth</td>
<td>-</td>
<td>?</td>
<td>?</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus luteolus</em> Summers &amp; Chaudhri, 1965</td>
<td>+</td>
<td>denticles</td>
<td>-</td>
<td>?</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td><em>Cryptognathus ozkani</em> Doğan &amp; Ayyildiz, 2001</td>
<td>+</td>
<td>rough</td>
<td>+</td>
<td>+</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus scutellatus</em> Summers &amp; Chaudhri, 1965</td>
<td>+</td>
<td>-</td>
<td>denticles</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus striatus</em> Luxton, 1973</td>
<td>+</td>
<td>-</td>
<td>smooth</td>
<td>-</td>
<td>+</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus summersi</em> Robaux, 1975</td>
<td>+</td>
<td>+</td>
<td>denticles</td>
<td>-</td>
<td>+</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus tenuis</em> Luxton, 1973</td>
<td>+</td>
<td>-</td>
<td>denticles</td>
<td>-</td>
<td>+</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus ultrarosstratus</em> Summers &amp; Chaudhri, 1965</td>
<td>-</td>
<td>+</td>
<td>?</td>
<td>+</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus vulgaris</em> Luxton, 1973</td>
<td>+</td>
<td>-</td>
<td>smooth</td>
<td>-</td>
<td>+</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus woodi</em> Luxton, 1973</td>
<td>+</td>
<td>+</td>
<td>denticles</td>
<td>-</td>
<td>+</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cryptognathus kutahyaensis</em> sp. nov.</td>
<td>+</td>
<td>-</td>
<td>denticles</td>
<td>+</td>
<td>+</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

+ present/yes, - absent/no, ? / unknown.
**Etymology**

The name *kutahyaensis* refers to the type locality, Kütahya.

**Type Material**

Holotype female from litter, grass-covered soil under *Rubus canescens*, Eğdemir, Simav, Kütahya, 39°18'37" N, 28°58'28" E, 699 m, Turkey, 13.08.2011.

**Remarks**

This new species differs from all the other species of this genus in the following combination character: Two proximoventral setae on tarsi III and IV; peg-like sensillum *k* on genu I and II; addorsal setae *tc* on tarsus II similar; front margin of hood denticulate; ventral shield without striae or reticulations, only punctations (Table 1).

**Cryptognathus ayyildizi** Akyol & Koç, 2010

**Material examined**

Two female, Simav, Kütahya, 39° 09' 22" N, 29° 04' 34" E, 1373 m, from soil and litter under *Quercus* sp., 21.11.2010; one female, Hamurköy, Dumlupınar, 38° 56' 38" N, 30° 07' 25" E 1225 m, soil and litter under *Quercus* sp., 07.06.2012.

**Distribution**

Turkey (Afyonkarahisar) (Akyol & Koç 2010).

**Remarks**

In type specimens 19-27 pores are present in each polygonal cells of dorsum and tarsus of leg I with 15 (*φp, ω*) setae (Akyol & Koç 2008). However, in our samples 6-15 pores are present and tarsus of leg I with 16 (*φp, ω*) setae. Our specimens closely resemble type specimen in general features.

**Genus Favognathus Luxton**

**Type species**: *Cryptognathus cucurbita* Berlese, 1917

**Diagnosis**

This genus is defined as follows: Prosternal apron ventrally at base of gnathosoma, wedge-shaped and dimpled and two pairs of genital setae present.

**Key to species of Favognathus from the Kütahya Province**

1. Dorsal shield completely or partly reticulated......................................................... 2
   – Dorsal shield not reticulated, covered with pores............................... *F. kamili* Dönel, 2010
2. Dorsum with rosette patterns ..................... *F. amygdalus* Doğan and Ayyıldız, 2004
   – Dorsum without rosette patterns ........................................ *F. cucurbita* (Berlese, 1917)

**Favognathus kamili** Dönel & Doğan, 2011

**Material Examined**

One female, Cevizderesi, Emet, Kütahya 39° 25' 10" N, 29° 18' 60" E, 1088 m, from soil and litter under *Juniperus* sp. and *Mrytus* sp., 14 08 2010; three females, Muhacir Village, Domaniç, 39° 30' 18" E, 1088 m, from soil and litter under *Populus* sp., 11.09.2010; four females, Kocayayla Mountain, Çatalalıç locality, Domaniç, 39° 52'
31° N, 29° 39' 08" E, 1251 m, from soil and litter under *Pinus nigra* and *Rosa canina*, 11.09.2010; one female, Radar locality, Kütahya, 39° 24' 10" N, 29° 52' 37" E, 1704 m, from soil and litter under *Cirsium arvense*, 18.10.2010; two females, Simav, 39° 05' 11" N, 28° 57' 59" E, 883 m, from soil and litter under *Juniperus* sp., 21.11.2010; two females, Mecidiye Village, Altuntaş, 38° 59' 32" N, 30° 07' 02" E, 1063 m, from soil and litter under *Astragalus* sp., 17.01.2011; four females, Kutluhallar Village, Hisarcık, 39° 12' 32" N, 29° 13' 03" E, 953 m, from soil and litter under *Juniperus* sp., 17.03.2011; four females, Hamamköy, Hisarcık, 39° 13' 01" N, 29° 16' 12" E, 850 m, from soil and litter under *Myrtus communis*, 17.03.2011; five females, Hamamköy, Hisarcık, 39° 13' 01" N, 29° 16' 12" E, 850 m, from soil and litter under *Quercus* sp. 17.03.2011; one female, Şaphane, 39° 00' 44" N, 29° 12' 53" E, 933 m, from soil and litter under *Prunus avium*, 23.04.2011; six females, Pazarlar, 38° 59' 04" N, 29° 07' 11" E, 909 m, from soil and litter under *Juglans regia* and *Prunus persica*, 23.04.2011; two females, Yağmurlu, Tavşanlı, 39° 28' 04" N, 29° 36' 09" E, 862 m, from soil and litter under *Quercus* sp., 21.05.2011; three females, Esatlar, Emet, 39° 20' 11" N, 29° 36' 51" E, 1011 m, from soil and litter under *Verbascum* sp., 21.05.2011; ten females, Esatlar, Emet, 39° 20' 11" N, 29° 36' 51" E, 1011 m, from soil and litter under *Pinus* sp. and *Juniperus* sp., 21.05.2011; five females, Esatlar, Emet, 39° 20' 11" N, 29° 36' 51" E, 1011 m, from soil and litter under *Pinus* sp. and *Juniperus* sp., 21.05.2011; three females, Afsar Village, Çavdarhisar, 39° 12' 59" N, 29° 42' 48" E, 1040 m, from soil, litter and moss under *Juniperus* sp., 21.05.2011; one female, Aizanoi, Çavdarhisar, 39° 12' 53" N, 29° 35' 58" E, 1009 m, from soil and litter under *Pinus* sp., 21.05.2011; two females, Sarayköy, Aslanapa, 39° 20' 53" N, 29° 41' 35" E, 1317 m, from litter under *Pinus* sp. and bark, 25.06.2011; five females, Altuntaş, 39° 02' 55" N, 30° 04' 52" E, 1045 m, from soil and litter under *Juniperus* sp., 29.07.2011; six females, Pınarcık, Altuntaş, 39° 02' 00" N, 30° 59' 54" E, 1041 m, from soil and litter under *Cupressus* sp., 29.07.2011; four females, Sararıköy, Altuntaş, 38° 00' 09" N, 29° 49' 21" E, 1290 m, from soil and litter under *Pinus* sp., 29.07.2011; five females, Hamzabey, Simav, 39° 13' 45" N, 28° 57' 11" E, 752 m, from soil and litter under *Pinus* sp., 13.08.2011; three females, Gilmanlar, Simav, 39° 25' 58" N, 29° 01' 32" E, 966 m, from soil and litter under *Quercus* sp., 13.08.2011; ten females, Yakuplar, Pazarlar, 38° 56' 37" N, 29° 08' 31" E, 948 m, from soil and litter under *Quercus* sp., 25.09.2011; four females, Sofular, Pazarlar, 38° 57' 13" N, 29° 09' 51" E, 976 m, from soil and litter under *Malus domestica*, 25.09.2011; ten females, Soğuksu, Gediz, 39° 07' 37" N, 29° 18' 56" E, 972 m, from soil and litter under *Astragalus* sp., 21.10.2011; four females, Espey, Emet, 39° 21' 28" N, 29° 16' 10" E, 946 m, from soil and litter under *Pinus* sp., 22.10.2011; thirteen females, Kutluhallar, Hisarcık, 39° 12' 34" N, 29° 13' 03" E, 963 m, from soil and litter under *Myrtus* sp., 22.10.2011; six females, Kutluhallar Hisarcık, 39° 11' 49" N, 29° 13' 04" E, 1091 m, from soil and litter under *Quercus* sp., 22.10.2011; tree females, Dereli, Emet, 39° 27' 33" N, 29° 15' 56" E, 671 m, from soil and litter under *Pinus* sp. 12.11.2011; 11 females, Köprücek, Emet, 39° 20' 20" N, 29° 17' 35" E, 997 m, from soil and litter under *Quercus* sp., 12.11.2011; five females, Soğuksu, Gediz, 39° 07' 37" N, 29° 19' 02" E, 978 m, from soil and litter under *Juniperus* sp., 13.11.2011; three females, Akçaköy, Tavşanlı, 39° 25' 53" N, 29° 36' 15" E, 960 m, from soil and litter under *Juniperus* sp., 19.12.2011; one female, Balıköy, Tavşanlı, 39° 31' 41" N, 29° 06' 50" E, 444 m, from soil and litter under *Juniperus* sp., 17.12.2011; two females, Akpinar, Kütahya, 39° 34' 13" N, 30° 07' 16" E 937 m, from soil and litter under *Juniperus* sp., 31.03.2012; two females, Türkmen Mountain, Kütahya, 39° 24' 41" N, 30° 18' 38" E 1426 m, from soil and litter under *Pinus* sp., 31.03.2012; six females, Sakaçiftliği, Kütahya, 39° 21' 31" N,
30° 09' 44" E 981 m, from soil and litter under *Pinus* sp., 31.03.2012; six females, Murat Mountain, Gediz, 38° 57' 34" N, 29° 37' 43" E 1518 m, from soil and litter under *Apiaceae* sp. and *Urtica* sp., 01.05.2012; four females, Akçaalan, Gediz, 39° 04' 46" N, 29° 23' 58" E 946 m, from soil and litter under *Anthemis* sp., 01.05.2012; six females, Dumlupinar, 39° 50' 35" N, 29° 57' 53" E 1246 m, from soil and litter under *Rosa canina* and *Cupressus* sp., 07.06.2012; four females, Dumlupinar, 38° 51' 01" N, 30° 01' 03" E 1219 m, from soil and litter under *Juniperus* sp. and *Pinus* sp., 07.06.2012; two females, Yayla Village, Altıntaş, 38° 57' 29" N, 30° 07' 05" E 1225 m, from soil and litter under *Cupressus* sp., 07.06.2012.

**Distribution**


**Remarks**

Prosternal apron in the samples of Arvin, Erzincan and Erzurum with 14-18 dimples (Koç 1995; Koç & Ayyıldız 1999); prosternal apron in the samples of Afyonkarahısar with 15 dimples (Akyol 2007). In our samples the number of dimples is 15 – 22.

**Favognathus amygdalus** Doğan & Ayyıldız, 2004

**Material examined**

One female and one male, Kızıldere, Emet, Kütahya, 39° 20' 16" N, 29° 17' 39" E, 987 m, from soil and litter under *Quercus* sp. and *Pinus nigra*, 13.08.2010; one male, Eynal, Simav, 39° 07' 23" N, 29° 59' 29" E, 800 m, from soil and litter under *Malva* sp., 21.11.2010; one female, Simav, 39° 09' 22" N, 29° 04' 34" E, 1373 m, from soil and litter under, *Myrtus communis*, 21.11.2010; one male and two females, Eynal, Simav, 39° 07' 23" N, 29° 59' 28" E, 801 m, from soil and litter under *Rubus canescens*, 13.08.2011; two males, Yeşilova, Simav, 39° 07' 44" N, 29° 58' 12" E, 797 m, from soil and litter under *Juglans regia*, 13.08.2011; one male and one female, Örencik, Simav, 39° 26' 54" N, 29° 04' 15" E, 961 m, from soil and litter under *Pinus* sp., 13.08.2011; one male, Çivçekorusu, Emet, 39° 18' 57" N, 29° 16' 57" E, 1002 m, from soil and litter under *Pinus* sp., 04.11.2011; one female, Çivçekorusu, Emet, 39° 18' 49" N, 29° 17' 01" E, 1015 m, from soil and litter under *Pinus* sp. and *Juniperus* sp., 04.11.2011; one male, Çivçekorusu, Emet, 39° 18' 47" N, 29° 16' 60" E, 1013 m, from soil and litter under *Pinus* sp. and *Juniperus* sp., 14.09.2011; one male, Köpenez, Şaphane, 39° 07' 31" N, 29° 15' 31" E, 901, from soil and litter under *Juniperus* sp. and *Quercus* sp., 25.09.2011; one female, Kıpenez, Şaphane, 39° 06' 35" N, 29° 13' 51" E, 969 m, from soil and litter under *Pinus* sp. and *Pteridium* sp., 25.09.2011; one female, İlica, Şaphane, 38° 56' 38" N, 29° 15' 15" E, 731 m, from soil and litter under *Pinus* sp. and *Juniperus* sp., 25.09.2011; one female, Gediz, 38° 50' 14" N, 29° 16' 12" E, 622 m, from soil and litter under *Pinus* sp., 21.10.2011; one female, Kızılçukur, Hisarcık, 39° 09' 39" N, 29° 12' 03" E, 1403 m, from soil and litter under *Astragalus* sp., 22.10.2011; one female, Hisarcık, 39° 12' 18" N, 29° 10' 30" E, 980 m, from soil and litter under *Pinus* sp., 22.10.2011.

**Distribution**

Turkey (Adana, Afyonkarahısar, Erzurum, Gümüşhane, İzmir, İzmit and Yozgat) (Doğan & Ayyıldız 2004; Akyol 2007; Doğan 2007, 2008; Erman et al. 2007; Dönel
Remarks

Prosternal apron in the samples of type specimen with 14 dimples (Doğan & Ayyıldız 2004). Prosternal apron in the samples of Kelkit Valley with 11 – 14 (Dönel 2010). However, our samples with 13 – 17.

Boundaries of the cells in the rosette in males not evident (Doğan 2008). In samples of Kelkit Valley and of our samples, boundaries of the cells in the rosette evident (Dönel 2010).

*Favognathus cucurbita* Berlese, 1917 (Figures 10–19)

**Male**

Length of idiosoma (including hood and anal covers) 262(250-280), width 160(133–177).

*Gnathosoma* (Fig. 18): Gnathosoma extrudable from under hood. Length of palpi 76 (63-80), length of chelicerae 94 (80-112). Subcapitulum with a pair of long setae (m) and 2 pairs of pilose adoral setae (ad1–2). Palp setal formula (from femur to tarsus): 3-2-3-4+1ω+4 eupathidia.

*Dorsum* (Fig. 10): Length of hood 57 (45–67), anterior margin of hood smooth and with five or seven dimples in each longitudinal row. Dorsum covered with punctations and faint striae. Dorsal shield with 11 pairs of simple setae. One pair of simple eyes and one pair of postocular bodies laterally between setae sce and c2. Setae fi, h1 and h2 are situated near each other and shorter than other dorsal setae. Dimensions of dorsal setae as follows: vi 21, ve 22, sci 23, sce 27, c1 26, di 26, e1 22, e2 22, f1 10, h1 9, h2 9. Distances between setae: vi–vi 35, vi–ve 8, ve–ve 31, ve–sci 7, sci–sci 43, sci–c1 23, sce–sce 87, c1–sce 13, c1–c1 57, c1–di 40, di–ei 94, di–ei 38, e1–ei 67, e1–e2 20, e2–e2 97, e1–f1 43, f1–f1 25, f1–h1 10, h1–h1 33, h1–h2 6, h2–h2 21.

*Venter* (Fig. 11): Prosternal apron wedge shaped with 17-20 dimples. Venter with same ornamentation as dorsum. No stria and punctations in coxisternal area. Six pair of ventral setae (1a, 3a, 4a, 4c, ag1, ag2). Aedeagus evident.

*Legs* (Fig. 12-16): Addorsal setae tc of tarsus II dissimilar. Genu I and II each with peg-like sensillum k. Length of legs I–IV (from base of femur to tip of tarsal claw): 202, 150, 157, 185, respectively. Setal formula of leg I–IV coxae 2–1–2–1, trochanter 1–1–2–1, femora 4–3–2–2, genua 6(k)–5(k)–2–3, tibiae 7(φ, ωp)-6(φp)-5(φp)-3, tarsi 16(ω, ωp)-14(ω, ωp)-10(ω)-10(ω). All tarsi with ω solenidia.

**Material examined**

Nine males from soil, litter and grass-covered soil were collected in Kütahya. Localities: Twelve females, three males, Simav, 39° 05' 11" N, 28° 57' 59" E, 883 m, from soil and litter under *Rosa canina*, 21.11.2010; one male, Altıntaş, 38° 00' 25" N, 29° 46' 42" E, 1450 m, from soil and litter under *Myrtus* sp., 29.07. 2011; one male, Hisarcık, 38° 11' 36" N, 29° 10' 03" E, 952 m, from soil and litter under *Pinus* sp., 13.08.2011; forty-two females, one male, Simav, 39° 09' 21" N, 28° 57' 45" E, 806 m, from soil, grass-covered soil and litter under *Cedrus* sp. 13.08.2011; four females, one male, Emet, 39° 18' 49" N, 29° 17' 01" E, 1015 m, from soil and litter under *Juniperus* sp. and *Pinus* sp., 04.09.2011; twenty-seven females, one male, Şaphane, 38° 58' 12" N, 29° 11' 11" E, 837 m, from soil and litter under *Crataegus* sp. and *Quercus* sp., 25.09.2011; one male Pazarlar, 39° 00'
17° N, 29°08' 46" E, 998 m, from soil and litter under Quercus sp., 25.09.2011.


Distribution
China, Ireland, Italy, Latvia, Sardinia Island, Somalia and Turkey (Afyonkarahisar, Artvin, Elaziğ, Erzincan, Erzurum, Istanbul, Kelkit Valley, Kırıkkale and Sinop) (Berlese

Remarks

Favognathus cucurbita was originally described from mosses on Sardine Island by Berlese (1917). Luxton and Lee (1969) re-described this species. This species can be defined as follows: dorsum and venter partly reticulated; no porous areas in sternocoxal area, anterior margin of the hood smooth and with five or seven dimples in each longitudinal row; prosternal apron wedge shaped with 17–20 dimples. Adult male of this species is described here for the first time. The males can be distinguished from females by the following features: body is smaller (262/160); aedeagus is evident; f1, h1 and h2 closely associated and these setae are shorter than the others; all tarsi with solenidia which are twice longer than the female solenidia.

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References


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برخی از کنه‌های کریپتوگنتید (ترکیب) (Acari: Cryptognathidae) استان کوتاهیا (ترکیب)

اسماعیل اولکای و کمیل کچ

چکیده

شش گونه کنّه کریپتوگنتید از استان کوّتاهیا جمع‌آوری شدند. از میان آنها، سه گونه به جنس Favognathus Luxton, 1973 و سه گونه به جنس Cryptognathus Kramer, 1879 تعلق دارند. گونه جدید Favognathus cucurbita و نر گونه Cryptogannathus kutahyaensis sp. nov. از ترکیه توصیف و ترسیم می‌شوند. کلید گونه‌های جنس Cryptognathus جهان و استان کوّتاهیا ارائه شده است. گونه جدید, Cryptognathus kutahyaensis sp. nov. . Cryptognathidae. وازگان کلیدی: زیررده کنّه‌ها.

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