

New Data on the Genus *Axonopsis* Piersig, 1893 (Acari: Hydrachnidia, Aturidae) in Turkey

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Abstract: New records of the water mites of the genus *Axonopsis* Piersig, 1893 (Acari: Hydrachnidia, Aturidae) from Siirt Province, Turkey, are presented in this paper. Two subgenera and three species are newly recorded to the Turkish fauna, i.e. *Axonopsis* (*Axonopsis*) *complanata* (Müller, 1776), *A. (Brachypodopsis) guadarramensis* Valdecasas, 1981 and *A. (Brachypodopsis) inferorum* Motaş & Tanasachi, 1947. In addition, two previously reported species from Turkey, *A. (Hexaxonopsis) serrata* Walter, 1928 and *A. (Navinaxonopsis) persica* Pešić, 2004 are also found in Siirt Province.

Keywords: Acari, Siirt Province, *Axonopsis*, new records, Turkey

Introduction

The following species of the genus *Axonopsis* Piersig, 1893 are known for the fauna of Turkey: *A. (Hexaxonopsis) romijni* Viets, 1923, *A. (Hexaxonopsis) serrata* Walter, 1928, *A. (Paraxonopsis) vietsi* Motaş & Tanasachi, 1947 and *A. (Navinaxonopsis) persica* Pešić, 2004. *Axonopsis romijni* was reported as *A. serrata* for Malatya Province (Pešić *et al.* 2006, Erman *et al.* 2010) but was later on attributed to this species (Esen *et al.* 2011). The other species, including *A. romijni*, were recorded in Bingöl Province (Esen *et al.* 2011).

During a survey of the water mite fauna in Siirt Province, Turkey, five species of the genus *Axonopsis* were collected, three of which are new records to the Turkish fauna. Descriptions of these species are given in the present paper.

Material and Methods

During field work, water mites were collected by hand netting, sorted from the living material on the spot, conserved in Koenike's fluid and dissected in an outside facility (*e.g.* Gerecke *et al.* 2007). The

specimens were deposited in the research collection of the Biology Department, Firat University, Elazığ, Turkey.

All measurements are given in micrometers. The following abbreviations are used: Ac = acetabulum; Cx-I = first coxae; dL = dorsal length; L = length; I-L-6 = first leg, sixth segment (tarsus); P-1 = palp, first segment; vL = ventral length; W = width.

Results

Family **Aturidae** Thor, 1900

Genus ***Axonopsis*** Piersig, 1893

Subgenus ***Axonopsis*** Piersig, 1893

Axonopsis (Axonopsis) complanata (Müller, 1776)

Material examined: Siirt Province, Kezer stream, 13.07.2012, 2 ♀♀.

Description

Female: Idiosoma oval, anterior margin straight, L/W 448/330, dorsal and ventral shield fused anteriorly, dorsal shield L/W 448/300 (Fig. 1A), ventral shield L/W 395/305, lateral margins of Cx-I-III without hook-like projections (Fig. 1B);

distance between IV-L insertions 180; genital field with four acetabula, suture line between genital field and ventral shield indistinct; distance between outer Ac L 122, gonopore W 30; gnathosomal bay L 120, gnathosoma vL 83. P-2 stout, with slightly convex ventral margin, P-4 relatively long, with two ventral setae at the same level, P-5 thin, relatively long and slightly curved. Palp (Fig. 1C) total L 194, dL: P-1 28, P-2 47, P-3 21, P-4 68, P-5 30; swimming setae on the leg segments: II-L-4, 1; III-L-4, 2; III-L-5, 3; IV-L-4, 2; IV-L-5, 3. dL of IV-L (Fig. 1D): 46-50-55-66-75-80.

Remarks: From Europe, only *Axonopsis complanata*, which belongs to the subgenus *Axonopsis* s. str. Piersig, 1893, is known.

Distribution: Germany, Hungary, Italy, British Isles, Latvia, Lithuania, Bulgaria, Poland, Russia, Switzerland, the Netherlands, the Czech Republic (VIETS 1956, PEŠIĆ *et al.* 2010, SMIT, GERECKE 2010).

New to the Turkish fauna.

Subgenus *Brachypodopsis* Piersig, 1903

Axonopsis (Brachypodopsis) gadarramensis Valdecasas, 1981

Material examined: Siirt Province, Ağaçlıpınar stream, 13.07.2012, 2 ♀♀; *ibid.* 16.09.2012, 2 ♂.

Description

Male: Idiosoma oval, L/W 370/320, dorsal shield L/W 355/294; lateral margins of Cx-I-III without hook-like projections; genital field wider than long, with three pairs of acetabula; Ac arranged in a triangle (Fig. 2A), distance between outer Ac L 128; two pairs of glandularia located between insertions of the fourth legs and genital field; distance between IV-L insertions 165; gonopore W 21; gnathosomal bay L 100, gnathosoma vL 70. P-2 thick, ventral margin convex, P-4 enlarged near insertion of a pair of hair-like setae (Fig. 2B). Palp total L 187, dL: P-1 30, P-2 42, P-3 30, P-4 64, P-5 21. Swimming setae on the leg segments: III-L-4, 2; III-L-5, 4; IV-L-4, 2; IV-L-5, 3. dL of IV-L: 47-60-60-75-80-82.

Female: Similar to the male except for the genital field (Fig. 2C, D); idiosoma L/W 390/328, dorsal shield L/W 380/298; Ac arranged in a triangle, distance between outer Ac L 132, distance between IV-L insertions 172; gonopore W 49; gnathosomal bay L 110, gnathosoma vL 73. Palps without sexual dimorphism. Palp total L 190, dL: P-1 30, P-2 43, P-3 30, P-4 65, P-5 22. Swimming setae on the leg segments as in the male; dL of IV-L: 49-66-62-70-80-82.

Remarks: Since the original description of this species from central Spain (VALDECASAS 1981), the

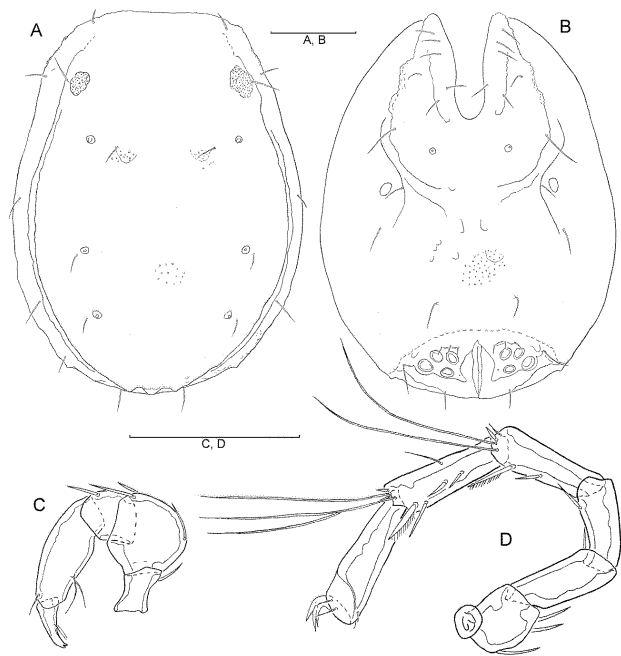


Fig. 1. *Axonopsis complanata*, female: A = idiosoma, dorsal view; B = idiosoma, ventral view; C = palp, medial view; D = IV-L (Scale bars = 100 μ m)

second record has been published from Greece by PEŠIĆ, GERECKE (2003). The record from the present study confirms a much more extended distribution of *A. gadarramensis* in the Mediterranean area. The Turkish specimens are in close agreement with the original description of this species. Our specimens also show a general conformity with the specimens from Greece (the measurements from PEŠIĆ, GERECKE (2003) are given in parentheses) except in their smaller dimensions (dorsal shield L/W 400/303) and larger distance between outer edges of most lateral pair of acetabula in the male (distance between outer Ac L 122). Furthermore, the Turkish specimens are different in the slightly developed cauda in males. This difference is most probably due to geographical variability.

Distribution: Spain and Greece (PEŠIĆ, GERECKE 2003).

New to the Turkish fauna.

Axonopsis (Brachypodopsis) inferorum Motaş & Tanasachi, 1947

Material examined: Siirt Province, Ağaçlıpınar stream, 16.09.2012, 1 ♂.

Description

Male: Idiosoma oval, with straight frontal margin, L/W 447/341, dorsal shield elongate, L/W 430/308; only one pair of glandularia on the ventral surface between IV-L insertions and genital field (Fig. 3A); distance between outer Ac L 148, distance

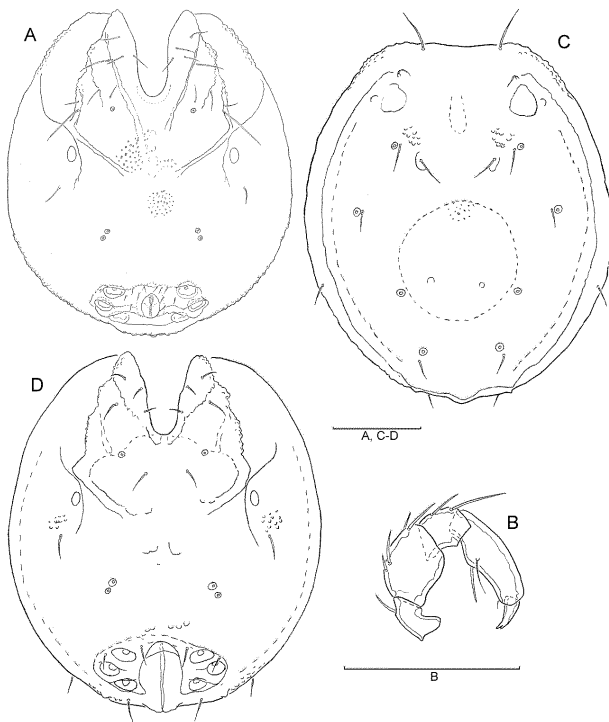


Fig. 2. *Axonopsis guadarramensis*, (A-B = male, C-D = female): A, D = idiosoma, ventral view; B = palp, medial view; C = idiosoma, dorsal view (Scale bars = 100 μ m)

between IV-L insertions 175; gonopore W 30; gnathosomal bay L 111, gnathosoma vL 100. P-2 ventral margin straight; P-3 shorter than P-2, with slightly concave ventral margin; P-4 relatively long, with strong convex ventral margin and pointed distal end, bearing two thin subequal ventral setae (Fig. 3B). Palp total L 176, dL: P-1 30, P-2 48, P-3 20, P-4 57, P-5 21. Legs without swimming setae. dL of IV-L: 65-62-66-75-88-94.

Remarks: The indistinct suture line between the ventral shield and genital field, the one dorsodistal seta on P-3 longer than dorsoproximal seta, and the dorsal length of this segment make the single male specimen from Turkey to meet the description of *A. inferorum*. The single male from Siirt Province differs from the original description and *A. caucasicus* in the slightly elongated idiosoma. However, the genital field of our specimen has only 10-12 pairs of setae which is characteristic of *A. caucasicus* Tuzovskij, 2011. Both species are similar in most characters, in particular the shape of the palp, with both ventral setae of P-4 inserting in the distal half, the pointed distal end of the segment, location of acetabula and legs without swimming setae. In the original description, TUZOVSKIJ (2011) considered the indistinct suture line between the ventral shield and genital field, reduced number of setae on the genital field, and the length of dorsodistal seta on P-3

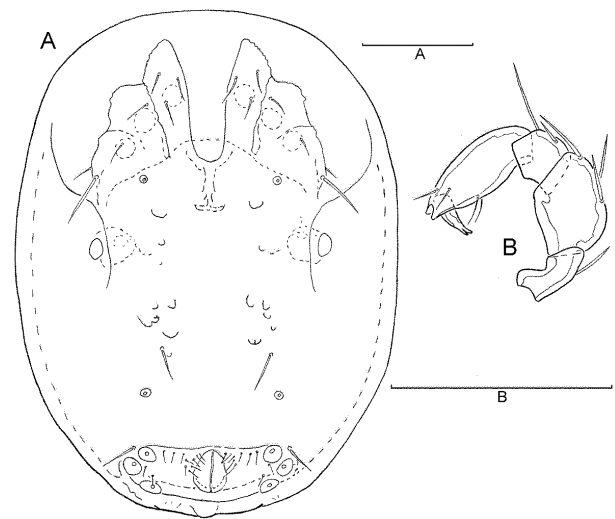


Fig. 3. *Axonopsis inferorum*, male: A = idiosoma, ventral view; B = palp, medial view (Scale bars = 100 μ m)

as diagnostic for *A. caucasicus*. However, the aforementioned characters are known to vary and they are regarded to be of minor taxonomic importance in the genus *Axonopsis* (ESEN *et al.* 2011). Therefore, more extensive variability studies could eventually demonstrate the synonymy of *A. caucasicus* with *A. inferorum*.

Distribution: France, Germany, Italy, Montenegro and Romania (PEŠIĆ, GERECKE 2003).

New to the Turkish fauna.

Subgenus *Hexaxonopsis* K. Viets, 1926

Axonopsis (Hexaxonopsis) serrata Walter, 1928

New records: Siirt Province, Başur stream, 18.05.2012, 4 ♂♂, 1 ♀; *ibid.* 22.06.2012, 5 ♂♂, 13 ♀♀; *ibid.* 13.07.2012, 2 ♂♂, 5 ♀♀; *ibid.* 15.09.2012, 7 ♂♂, 12 ♀♀; İkişler village, stream, 15.09.2012, 9 ♂♂, 21 ♀♀; Kezer stream, 23.06.2012, 2 ♂♂, 6 ♀♀; *ibid.* 13.07.2012, 2 ♂♂, 1 ♀.

Records from Turkey: Bingöl Province (ESEN *et al.* 2011).

Distribution: Central and southern parts of the western Palaearctic (PEŠIĆ *et al.* 2010).

Subgenus *Navinaxonopsis* COOK, 1967

Axonopsis (Navinaxonopsis) persica PEŠIĆ, 2004

New records: Siirt Province, Kezer stream, 18.05.2012, 1 ♀.

Records from Turkey: Bingöl Province (ESEN *et al.* 2011).

Distribution: Iran and Turkey (PEŠIĆ *et al.* 2006, ESEN *et al.* 2011).

Discussion

In this study, the water mites of the genus *Axonopsis* from Siirt Province were collected in 2012. Five species were identified and they belonged to the subgenera *Axonopsis* s. str., *Brachypodopsis*, *Hexaxonopsis* and *Navinaxonopsis*. The subgenera *Axonopsis* s. str. and *Brachypodopsis* are newly recorded subgenera for the Turkish fauna. Further research should be

conducted for better understanding the diversity of the water mites throughout Turkey.

Acknowledgements: This study was supported under FF-12-15 projects, Firat University, Elazığ. We are very thankful to Prof. Dr. Vladimir Pešić (Montenegro) for the identification of *Axonopsis complanata* and *A. guadarramensis*. We are also indebted to two anonymous referees for their careful work and valuable suggestions.

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Received: 23.01.2014
Accepted: 01.09.2014