

Two New Records of Water Mites (Hydrachnidia, Acari) for the Turkish Fauna: *Bandakia concreta* Thor 1903 and *Brachypoda mutila* Walter 1928

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Abstract: Male and female specimens of *Brachypoda mutila* and male specimens of *Bandakia concreta* collected from a seepage spring in West Anatolia are described. Their morphological features are compared with those of the most closely related species. Identification keys to the species known from the Palearctic of the genera *Bandakia* and *Brachypoda* are provided.

Key Words: Acari, Hydrachnidia, *Brachypoda*, *Bandakia*, Turkey

Türkiye Faunası İçin İki Yeni Su Kenesi (Hydrachnidia, Acari): *Bandakia concreta* Thor, 1913 ve *Brachypoda mutila* Walter, 1928

Özet: Batı Anadolu'nun yüksek kesimlerindeki kaynak sularından yakalanmış olan *Bandakia concreta*'nin erkekleri ile *Brachypoda mutila*'nin erkek ve dişilerinin tanımları yapılmıştır. İki türün morfolojik özellikleri yakın türlerin tanımları ile karşılaştırılmıştır. Ayrıca *Bandakia* ve *Brachypoda* cinslerinin Palearktik'ten bilinen türleri için teşhis anahtarları verilmiştir.

Anahtar Sözcükler: Acari, Hydrachnidia, *Brachypoda*, *Bandakia*, Türkiye

Introduction

The genus *Bandakia* is known from springs and both the surface and interstitial waters of streams. Species are widely distributed in Europe and North America and have also been reported from Japan, Malaysia, Java and Central America.

Members of the genus *Brachypoda* occur in lakes and in the surface and interstitial waters of streams. The genus is widely distributed in the Holarctic region and extends to the northern fringes of the Oriental and Neotropical regions (Cook, 1974).

Bandakia concreta and *Brachypoda mutila* are reported here for the first time from Turkey. Consequently, this study contributes to knowledge on Turkish fauna and presents useful data on faunal distribution.

Materials and Methods

Water mites were collected and preserved as described by Cook (1974). Figures were drawn and the dimensions were measured in micrometers.

Systematics

Key to Palearctic region species of the genus *Brachypoda* Lebert, 1879

1. PII with a projection on the ventral side.....2
- PII without a projection on the ventral side.....*Brachypoda japonica* Imamura, 1964
2. Genital acetabular bow-like.....4
- Genital acetabular triangular.....3
3. Genital field located near middle of body; coxae

extending well beyond body proper; Leg –IV/4 with 1 greatly thickened seta.....*Brachypoda versicolor* (Müller, 1776)

- Genital field located near posterior end of body; coxae not extending well beyond body proper; Leg–IV/4 with 3 short and stocky setae.....*Brachypoda mutila* Walter, 1928
- 4. Body with a distinct cauda.....*Brachypoda nipponica* Imamura, 1954
- Body without a distinct cauda.....5
- 5. Cheliceral claw bearing a hyalin projection on ventral position.....*Brachypoda celeripes* Viets, 1910.
- Cheliceral claw not bearing a hyalin projection on ventral position..*Brachypoda modesta* Koenike, 1911.

Family: Aturidae Thor, 1900

Subfamily: Axonopsinae, Viets, 1929

Genus: *Brachypoda* Lebert, 1879

Type species: *Brachypoda versicolor* (Müller, 1776)

Three 3 or 4 pairs genital acetabula present; male genital field subterminal or ventral; Leg–IV/4 and 6 of male exhibit a sexual dimorphism; no ridge on each side extending posteriorly from the insertions of the fourth legs in either sex; usually with a projection on the ventral side of PII; PIV with a dense ventral seta.

Brachypoda mutila Walter, 1928

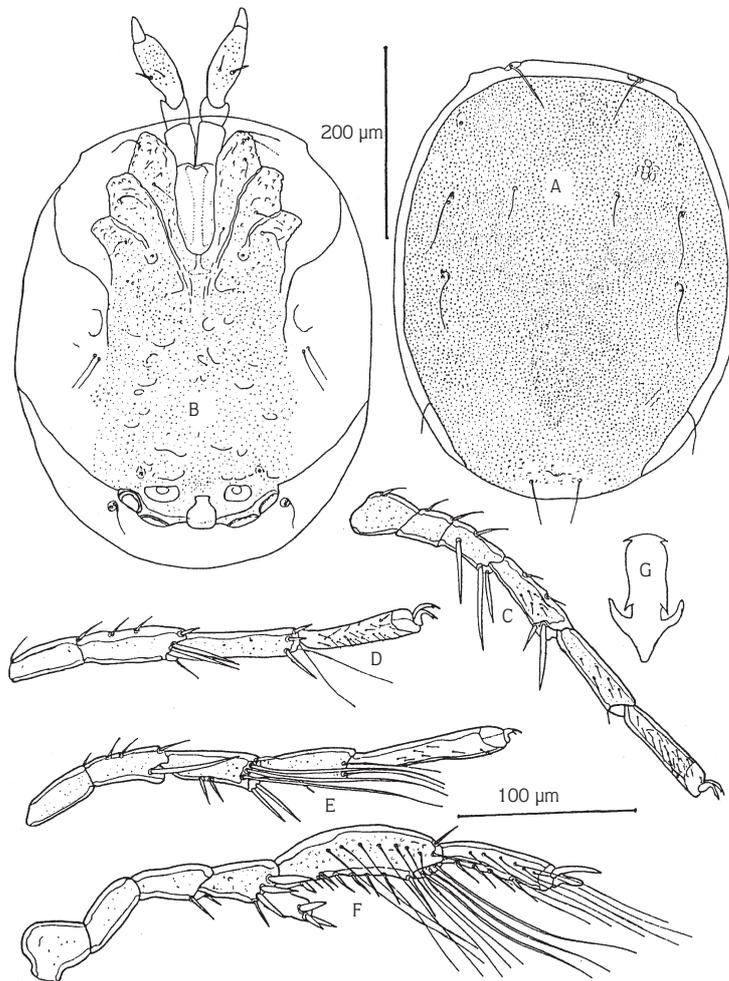


Figure 1. *Brachypoda mutila*: Male; A) Dorsal view, B) Ventral view, C) Leg-1, D) Leg-2, E) Leg-3, F) Leg-4, G) Ejaculatory complex

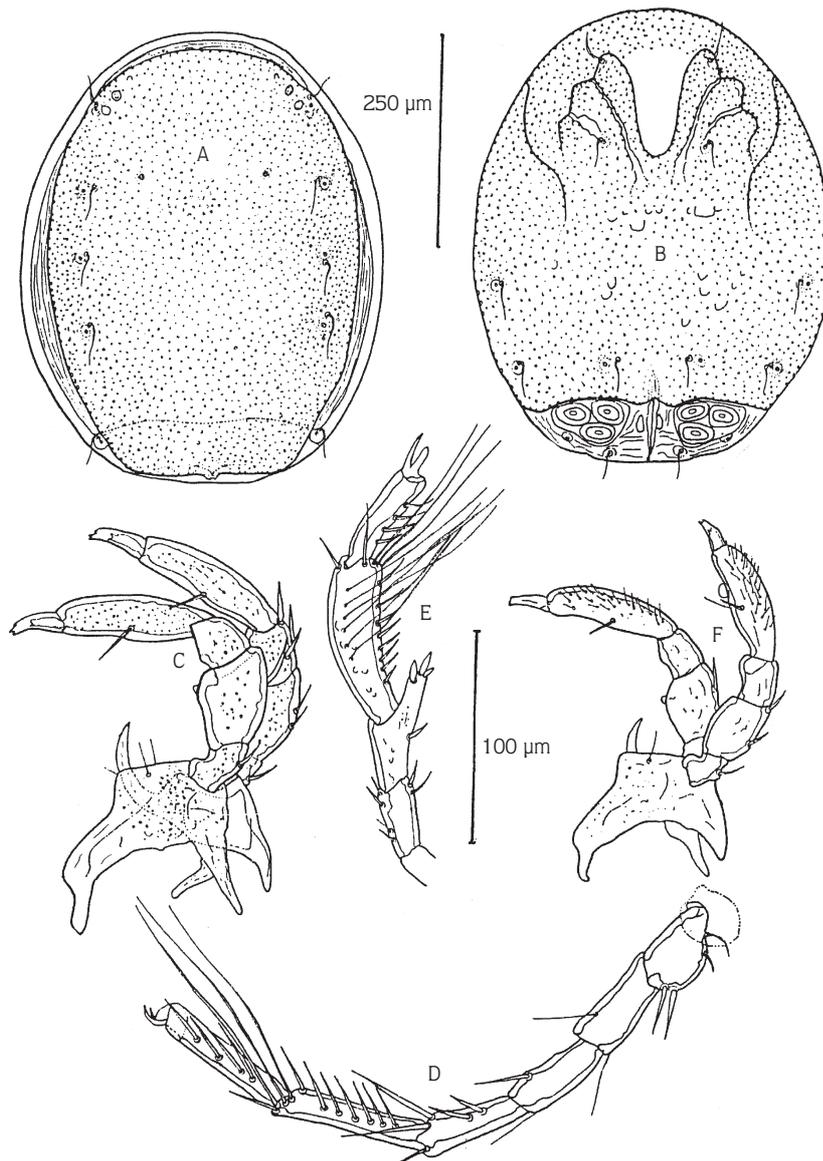


Figure 2. *Brachypoda mutila*: Female: A) Dorsal view, B) Ventral view, C) Gnathosoma lateral view, D) Leg-4. Male: E) Leg-4, F) Gnathosoma

Male: Body with pigmentation and projection on anterior side; dorsum with a large entire dorsal shield, 450 in length, 363 in width; dorsal shield bearing the postocularia and 4 pairs of glandularia; excretory pore located to the posterior of dorsum and to the anterior of glandularia IV. Distances between 2 eye pigments and preantenniformae setae are 138 and 133, respectively. Capitulum with a short rostrum, 98 in length; setae on capitulum small; ventral surface of PII with a ventral projecting and PIV with a heavy seta located on a tubercle; length of chelicera 120; tip of cheliceral claw is

inclined upward and long. Dorsal and ventral lengths with height of palpal segments: 30-45-33-92-25=225, 15-48-30-78-25=196, 22-35-28-28-10, respectively. Coxae not extending anterior margin beyond body and 218 in length; capitulum bay 110/43 in size; ejaculatory complex 133 in length; 3 pairs of genital acetabula; genital field located near posterior end of body; acetabular plates distinctly set off by prominent suture lines from remainder of ventral shield and the anterior 2 pairs of acetabula placed relatively close together on their respective sides. Acetabular plate 168/43 in size; no

apparent condyles associated with the openings for insertion of the fourth legs; Leg-IV/4-6 exhibits a sexual dimorphism; Leg -IV/4 with a pronounced distal protrusion bearing 3 long swimming hairs. Length of leg segments: Leg-I: 53-40-50-78-88-93= 352, Leg-II: 56-45-58-85-98-100= 442, Leg-III: 59-65-65-73-83-130= 470, Leg-IV: 55-55-56-65-138-100= 469. Leg-IV claws roughly and thick.

Material examined: Turkey, Taurus mountains, Isparta, a seepage spring into flowing Köprüçay Stream, 1280 m. 20.5.2000, 12♀♀, 18.6.2003, 1♂, 24♀♀.

Female: Dorsal shield with the excretory pore at posterior end; acetabular plate separated from the ventral shield; dorsal shield narrowed posteriorly; body 529 in length, 421 in width; dorsal shield 508/215 in size and bearing the postocularia and 4 pairs of glandularia; distances between 2 eye pigments and preantenniformae setae are 178 and 166, respectively. In the shape of gnathosoma, chelicera and palp segments, no differences between males and females were observed. Lengths of dorsal and ventral with height of palpal segments: 40-70-33-110-38= 291, 25-55-26-93-35= 234, 25-50-33-15, respectively. Chelicera 153 in length, capitulum 113 in length and capitular bay 126/50 in size. The anterior coxal group does not extend beyond to the body length. Tibiae II, III and IV swimming hairs: 2, 3, 3, respectively. Acetabular plate is 101 in length. Length of leg segments: Leg-I: 44-42-50-82-90-98= 406, Leg-II: 48-48-54-80-96-105= 431, Leg-III: 50-50-52-82-93-108= 435, Leg-IV: 60-58-63-73-103-98= 455.

Key to Palearctic region species of the genus *Bandakia* Thor, 1913

1. Third coxae without suture lines extending anteriorly-posteriorly immediately lateral to the gland openings of the third coxae..... *Bandakia bieberi* Bader, 1978
- Third coxae with suture lines extending anteriorly-posteriorly immediately lateral to the gland openings of the third coxae.....2
2. PII without a projection on the ventral side.....3
- PII with a projection on the ventral side.....4
3. Palp stocky; PIV without a triangular projection, its base large on distoventral side*Bandakia speciosa* Schwoerbel, 1961

- Palp slender; PIV without ventral setal tubercles...
.....*Bandakia japonica* Imamura, 1965
- 4. PII without ventral setal tubercles on distoventral side; PIV bears a small projection extended frontward*Bandakia corsica* Viets, 1936
- PII without ventral setal tubercles; PIV bears a small projection extended downwa.....*Bandakia concreta* Viets, 1953

Family: Anisitsiellidae Koenike, 1910

Subfamily: Anisitsiellinae Koenike, 1910

Genus: *Bandakia* Thor, 1913

Type species: *Bandakia concreta* Thor, 1913

Complete dorsal and ventral shields typically present, but with suture lines extending laterally from region of second coxae; dorsal furrow narrow; genital field extending well posterior to the posterior end of the fourth coxae; insertions of the fourth legs circular and lying lateral to the genital field; gland openings of the third coxae anteromedial in position and flanked by a suture line extending between anterior and posterior sutures of third coxae; 3 pairs of genital acetabula; palp 5 segmented; swimming hairs absent.

Bandakia concreta Thor, 1913

Male: Body 525/394 in size; dorsal furrow narrow; dorsal shield length 491, width 325; dorsal shield bearing the postocularia and 3 pairs of glandularia; glandularia platelets in dorsal furrow small. Distances between 2 eye pigments and preantenniformae setae are 172 and 145, respectively. Capitulum length 118; chelicera length 158; palp stocky; a well developed ventral seta on PII; PIV short and with ventral setal tubercles. Dorsal and ventral lengths with height of palpal segments: 23-83-24-50-32= 212, 18-43-23-36-21= 141, 26-63-43-26-13, respectively. Ventral shield 391 in length, 312 in width; anterior end of ventral shield somewhat truncate; third coxae with suture lines extending antero-posteriorly immediately lateral to the glands openings of the third coxae; fourth coxae approximately rectangular; genital field extending well posterior to the posterior end of the fourth coxae; 3 pairs of genital acetabula; genital flaps 88 in length, 83 in width; insertions of the fourth legs circular and lying lateral to the genital field; swimming hairs absent. Length of leg segments: Leg I: 40-42-50-57-73-112= 374, Leg II: 42-42-53-62-80-115= 394, Leg III: 42-42-53-68-88-108= 401, Leg IV: 58-48-62-88-88-100= 444.

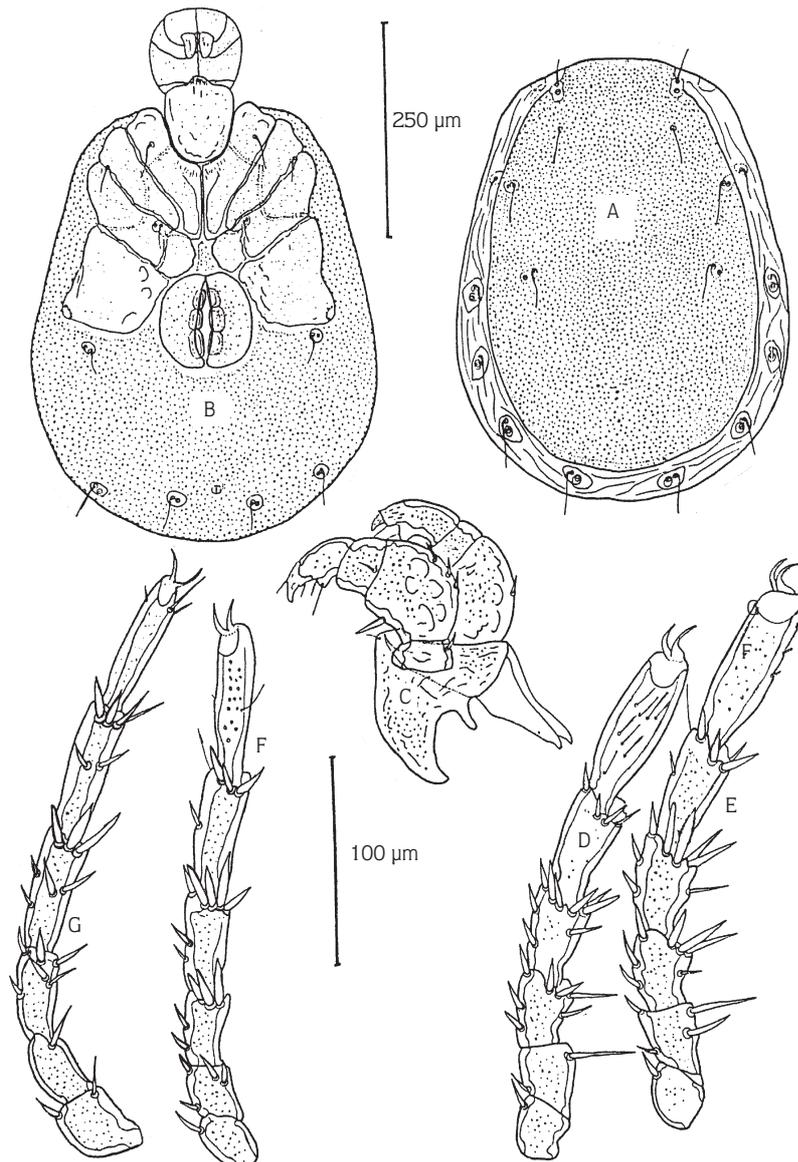


Figure 3. *Brachypoda concreta*: Male; A) Dorsal view, B) Ventral view, C) Gnathosoma lateral view, D) Leg-1, E) Leg-2, F) Leg-3, G) Leg-4

Material examined: Turkey, Taurus mountains, Isparta, a seepage spring into flowing Köprüçay Stream, 1280 m. 18.6.2003, 1♂.

Results and Discussion

Six species of the genus *Brachypoda* (*B. versicolor* Müller, 1776; *B. celeripes* Viets, 1910; *B. modesta* Koenike, 1911; *B. japonica* Imamura, 1965; *B. nipponica* Imamura, 1954; *B. mutila* Walter 1928) are known from

Palaearctic region (Bader, 1994; Imamura, 1954).

Brachypoda mutila resembles *Brachypoda versicolor* in having a triangular genital acetabular and in the shape and position of the distoventral projection of PII. However, *B. mutila* differs from other species by the genital field located near the posterior end of body, coxae extending well beyond the body proper and tip of Leg-IV/4 with 3 stocky setae and swimming hairs. *Brachypoda mutila* is known from North Africa.

Five species of the genus *Bandakia* are known from the Palearctic region (Viets, 1956; Viets, 1987). *B. concreta* and *B. speciosa* have been described from Germany, *B. corsica* from Corsica (France), *B. bieberi* from Switzerland and *B. japonica* from Japan (Viets 1936, 1953; Schwoerbel, 1961; Imamura, 1964). The females of *B. corsica*, *B. speciosa* and *B. japonica* have not been described so far. Other species of the genus *Bandakia* are known from Java (Indonesia) and North America (Cook, 1974; Viets, 1987). It seems likely that the genus *Bandakia* is more widely distributed than currently known.

Bandakia concreta differs from closely related species by its PII without a projection on the ventral side but with a thickened seta and by a projecting and extended PIV. Furthermore, *B. concreta* is distinguished by its rectangular gnathosoma base, infracapitulum without extended projections on the lateral sides and a tubercles curved frontward on the ventral side of the PIV from *B. speciosa*; by its stocky palp and lack of ventral setal tubercles of the PIV from *B. japonica*. (Viets 1935, 1936, 1953; Schwoerbel, 1961; Szalay, 1964; Imamura, 1965; Cook, 1974).

The genera *Bandakia* and *Brachyopoda* are reported here for the first time from Turkey.

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