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Water mites of the genus *Torrenticola* Piersig (Acari: Hydrachnidia, Torrenticolidae) from Iran

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Five water mite species of the genus *Torrenticola* Piersig (Acari: Hydrachnidia, Torrenticolidae) are reported from Iran. T. *disabatinola* and *T. persica* are described as new to science; first description are given of the female of *T. saboorii* Pesic & Asadi, 2002; new records are given for *T. nana* Di Sabatino & Gerecke, 2003, and *T.* cf. *jasminae* Bader, 1988.

Keywords : Acari, Iran, *Torrenticola*, taxonomy, running waters.

Introduction

At present, six species of the genus *Torrenticola* Piersig are known from Iran (Bader 1988, Bader & Sepasgozarian, 1987, Pesic & Asadi 2002, Asadi et al. 2003): *Torrenticola baueri* Bader & Sepasgozarian, 1987, *Torrenticola saboorii* Pesic & Asadi, 2002, *Torrenticola nana* Di Sabatino & Gerecke, 2003, *Torrenticola jasminae* Bader 1988, *Torrenticola ramini* Bader, 1988, and *Torrenticola wiljae* Bader, 1988. During a survey of the freshwater fauna of Iran, several species of the water mite genus *Torrenticola* Piersig were collected, including a two new species. The aim of this paper is to contribute elements for an extended revision of the diversity, distribution and ecology of torrenticolid water mites in the Middle East area.

Material and Methods

Water mites were collected by hand netting, sorted on the spot from the living material, conserved in Koenike's fluid and dissected as described elsewhere (e.g. Gerecke 1991). Slide-mounted specimens and material preserved in fluid is lodged in the collection of the first author. The holotypes and paratypes of the new species are deposited in the Museum of the Natural History of Podgorica (Crna Gora), further paratypes will be deposited in the zoological museum, College of Agriculture of Tehran University in Karaj (Iran). In the section « New records » collecting site abbreviations derive from the geographical database Pesic.

The composition of the material is given as: (males/females/deutonymphs), and the following abbreviations are used: I-L-6 = Leg 1, sixth segment, P-1 = palp, first segment, Cx-1 = first coxae, L = length, W = width, H = height, n = number of specimens examined. All measurements are given in (m.

Results

Genus *Torrenticola* Piersig, 1896

Subgenus *Torrenticola* Piersig, 1896

Torrenticola disabatinola Pesic sp. nov.

(Fig. 1A-E)

Type material: Holotype: female, dissected and slide mounted in Hoyer's fluid. Iran: IR6 Mazandaran Province, Elburs Mt., the hygropetric stream near Kandelous (on Kojor road), T=14^0, 2000 m asl., 18.07.2003, leg. Pesic, Asadi, Saboori & Akrami. Paratypes: one female, same data as holotype, dissected and slide mounted in Hoyer's fluid.

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Diagnosis: Females: median suture of Cx-2+3 completely reduced, gnathosoma with strongly dorsally curved and upturned rostrum, genital field large, P-4 lacking a mediodistal peg-like seta.

Description: Female (measurements of paratype are given in parentheses): Idiosoma (Fig. 1B) L 867 (858), W 750 (742), dorsal shield (Fig. 1A) L 794 (754), W 563 (566), L/W ratio 1.41 (1.33); dorsal plate L 754 (717); shoulder plate L/W 213/88 (227/92), L/W ratio 2.42 (2.47); frontal plate L/W 150/71 (146/67), L/W ratio 2.1 (2.2); shoulder/frontal plate L ratio 1.42 (1.55); gnathosomal bay L 204 (200), Cx-1 L 348 (333), median L 142 (133), Cx-2+3 not in touch medially; genital field large and pentagon-shaped, 213 (204) in length, 192 (186) in width, L/W ratio 1.1 (1.1); distance genital field-excretory pore 244 (233), genital field-caudal body margin 325 (333); gnathosoma (Fig. 1C) ventral L 450 (435), distally with strongly dorsally curved and upturned rostrum; chelicera (Fig. 1E) L 486 (504), L/H ratio (8.69), cheliceral claw L 110 (114), basal segment/claw L ratio 3.83 (3.69); palp (Fig. 1C,D) total L 459 (476) dorsal length of palp segments: P-1 54 (60), P-2 154 (159), P-3 77 (80), P-4 147 (142), P-5 27 (26); relative length (in parentheses % of total length) of palp segments: P-1 11.8 (12.8), P-2 33.6 (34.0), P-3 16.8 (17.1), P-4 32.0 (30.4), P-5 5.9 (5.6) P-2/P-4 ratio 1.05 (1.12); P-4 lacking a mediodistal peg-like seta, ventral protuberances forming unique tip bearing one long and two short hairs.

Male: unknown.

Discussion: *T. disabatinola* sp. nov. differs from all other species of the subgenus Torrenticola, in the combination of dorsally strongly curved and upturned gnathosomal rostrum, a completely reduced median suture of Cx-2+3, and a P-4 lacking a mediodistal peg-like seta.

Etymology: The species is named after Dr. Antonio Di Sabatino (L'Aquila, Italy), in appreciation of his studies concerning the *Torrenticola* species.

Distribution: Iran; only known from the locus typicus.

***Torrenticola saboorii* Pesic & Asadi, 2002**

(Fig. 2A-C)

Material examined: Iran: IR16 Kerman Province, stream in village Sirch, 50 km E from Kerman (ca. 30.12N 57.33E), 24.07.2003, leg. Pesic (1/0/0); IR23 Kerman Province, ca. 60 km SW Kerman, SW Bardsir, Bid Khan stream near Bid Khan village (ca. 29.50N 56.24E), 26.07.2003, leg. Pesic (6/29/0); IR24 Kerman Province, stream in Simk village, 27.07.2003, leg. Pesic (7/7/0); IR25 Kerman Province, Vamegh Abad stream near Vamegh Abad village, 27.07.2003, leg. Pesic (5/13/0); IR31 Chahar Mahal and Bakhtiari Province, Omid Abad stream near Eisa Abad (After Fill Abad to Kuhrang), 01.08.2003, leg. Pesic (12/6/0).

Description. Females (based on two specimens from IR23): Idiosoma (Fig. 2B) L 867-950, W 667-717, dorsal shield (Fig. 2A) L 726-821, W 454-500, L/W ratio 1.45-1.8; dorsal plate L 692-771; shoulder plate L/W 220-233/83-92, L/W ratio 2.53-2.65; frontal plate L/W 142-154/60-71, L/W ratio 2.2-2.37; shoulder/frontal plate L ratio 1.51-1.55; gnathosomal bay L 163-175, Cx-1 L 332-363, median L 167-188, Cx-2+3 median L 38-42; ratio Cx-1 L/Cx-2+3 median L 7.9-9.6, Cx-1 median L/Cx-2+3 median L 3.98-4.95; genital field (Fig. 2B) L/W 179-188/176-185, L/W ratio 1.02; distance genital field-excretory pore 225-263, genital field-caudal body margin 329-375; gnathosoma (Fig. 2C) ventral L 333-360; chelicera L 379-413, basal segment/claw L ratio 5.2-5.7; palp (Fig. 2C) total L 342-368, dorsal length and relative length (in parentheses % of total length) of palp segments: P-1 37-40 (10.8-10.9), P-2 108-119 (31.6-32.3), P-3 66-71 (19.3), P-4 110-115 (31.3-32.2), P-5 21-23 (6.1-6.3); P-2/P-4 ratio 0.98-1.03; ventral protuberances on P-4 forming unique tip bearing one long and two short hairs.

Remarks: This is the second record of the species after the orginal description, and the first discovery of the female. Males of this species are characterized by the considerably extended ventral plate, by a long suture line of Cx-2+3 (183-196, n=5) and a medium sized genital field (L/W 140-158/105-113, n=5).

Distribution: Iran.

***Torrenticola nana* Di Sabatino & Gerecke, 2003**

Material examined: Iran: IR43 Fars Province, Tang Boragh stream, 2 km from Tang Boragh village (near Eghlid city), 06.08.2003, leg. Pesic (0/2/0)

Records from the study area: Kohpaye stream (Kerman Province) - Asadi et al. (2003).

Distribution: Iran, Israel.

Subgenus *Megapalpis* Halbert, 1944

***Torrenticola persica* Pesic sp. nov.**

(Fig. 3A-E)

Type material: Holotype: female, dissected and slide mounted in Hoyer's fluid. Iran: IR47 Tehran Province, Sijan stream in Sijan village (under Dareh Bridge), 14.08.2003, leg. Pesic & Saboori.

Diagnosis: Female: Idiosoma elongated (dorsal shield L/W ratio 1.6), relatively short cheliceral claw (basal segment/claw L ratio 5.66), P-2 lacking a ven-

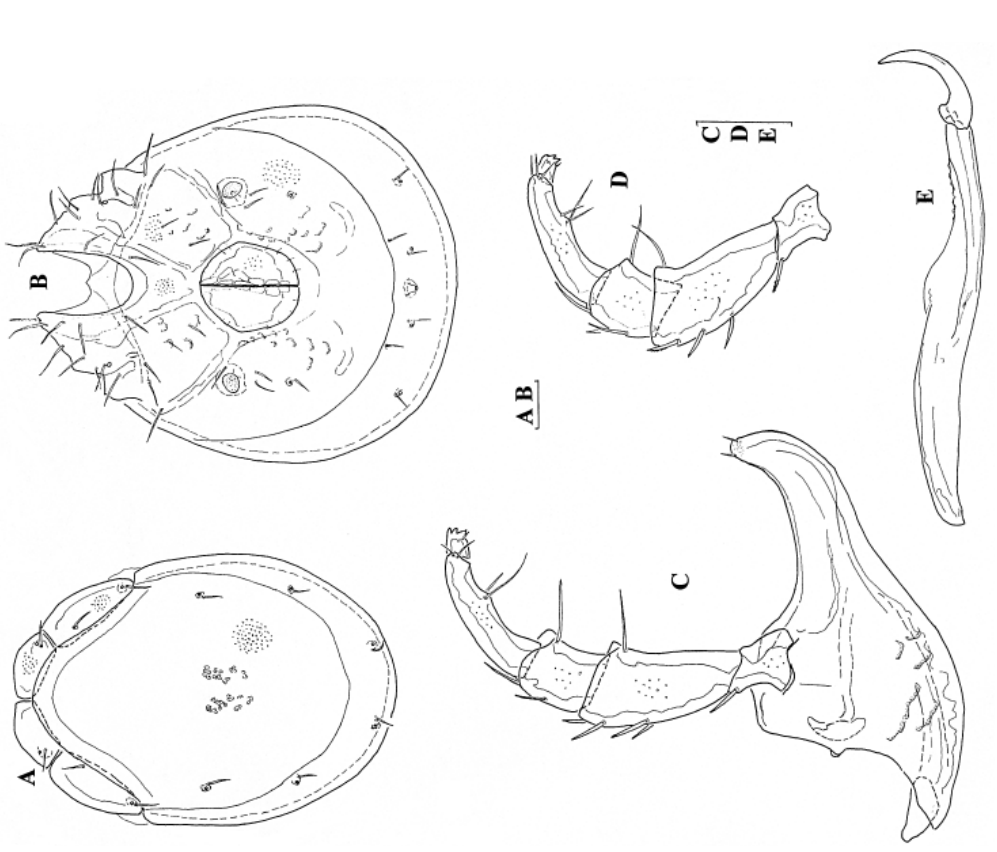

Fig. 1. *Torrenticola disabatinola* Pesic sp. nov., female: A = dorsal shield; B = idiosoma, ventral view; C = gnathosoma with right palp; D = palp, medial view; E = chelicera. Bars = 0.1 mm.

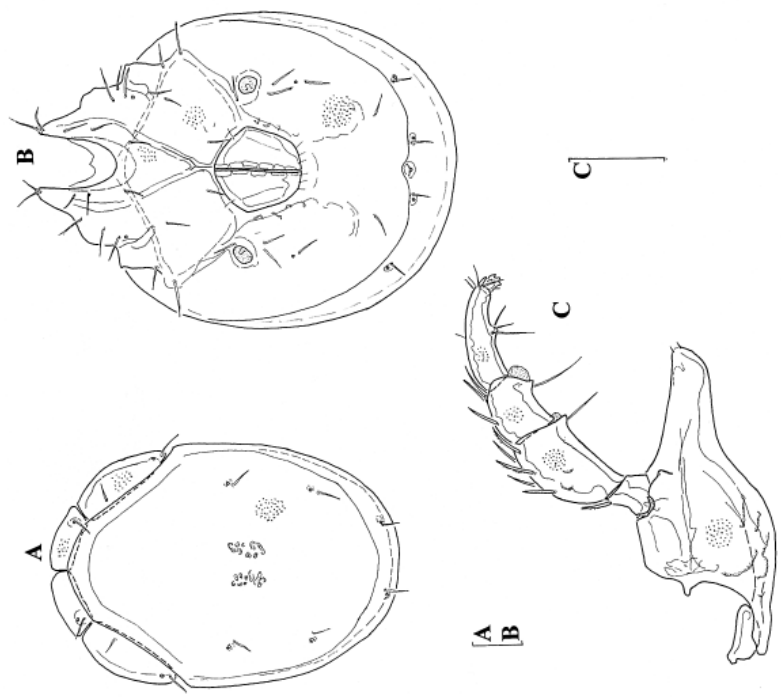

Fig.2. *Torrenticola saboorii* Pesic & Asadi, 2002, female from IR23: A = dorsal shield; B = idiosoma, ventral view; C = gnathosoma with right palp. Bars = 0.1 mm.

tral tubercle, excretory pore fused with the area of primary sclerotization.

Description: Female: Idiosoma (Fig. 3B) L 878, W 575, dorsal shield (Fig. 3A) L 758, W 475, L/W ratio 1.6; dorsal plate L 708; shoulder plate L/W 204/67, L/W ratio 3.04; frontal plate L/W 139/69, L/W ratio 2.01; shoulder/frontal plate L ratio 1.47; gnathosomal bay L 156, Cx-1 L 292, median L 133, Cx-2+3 median L 58; ratio Cx-1 L/Cx-2+3 median L 5.03, Cx-1 median L/Cx-2+3 median L 2.3; genital field L/W 183/166, L/W ratio 1.1; distance genital field-excretory pore 244, genital field-caudal body margin 367; excretory pore fused with the area of primary sclerotization; gnathosoma (Fig. 3D) with a long, dorsally curved rostrum, ventral L 388; chelicera (Fig. 3E) L 408, L/H ratio 20.8, basal segment/claw L ratio 5.66; palp (Fig. 3C, D) total L 371, dorsal length and relative length (in parentheses % of total length) of palp segments: P-1 59 (15.9), P-2 144 (38.8), P-3 58 (15.6), P-4 87 (23.5), P-53 23 (6.2); P-2/P-4 ratio 1.65.

Male: unknown.

Discussion : *T. persica* sp. nov. can be easily distinguished from all other Palaearctic species of the subgenus *Megapalpis*, on the basis of a excretory pore fused with the area of primary sclerotization. *T. persica* sp. nov. differs from *T. thori* Halbert, 1944 in a much less developed cheliceral claw. *T. persica* sp. nov. differs from the three additional Palaearctic species of the subgenus *Megapalpis* lacking a ventral tubercle on P-2 (*T. tenuirostris* Viets, 1936, *T. fagei* E. Angelier, 1949 and *T. remyi* E. Angelier, 1949), in the combination of an elongated idiosoma, a relatively short cheliceral claw, and a different ratio P-2/P-4 (see : Di Sabatino et al. 2003).

Etymology: The species is named for its occurrence in Iran (Persia).

Distribution: Iran; only known from the locus typicus.

***Torrenticola* cf. *jasminae* Bader, 1988**

(Fig. A-D)

Material examined: Iran: IR25 Kerman Province, Vamegh Abad stream near Vamegh Abad village, 27.07.2003, leg. Pesic (0/1/0).

Description: Female: Idiosoma (Fig. 4B) L 803, W 583, dorsal shield (Fig. 4A) L 708, W 442; dorsal plate L 667 (L/W ratio 1.51); shoulder plate L/W 193/67, L/W ratio 2.9; frontal plate L/W 138/58, L/W ratio 2.3; shoulder/frontal plate L ratio 1.4; gnathosomal bay L 146, Cx-1 L 279, median L 133, Cx-2+3 median L 58; ratio Cx-1 L/Cx-2+3 median L 4.8, Cx-1 median L/Cx-2+3 median L 2.3; genital field (Fig. 4B) L/W 171/150, L/W ratio 1.1; distance genital field-excretory pore 221, genital field-caudal body margin 317; gnathosoma (Fig. 4C) ventral L413; chelicera (Fig. 4D) L 436, cheliceral basal segment L 398, cheliceral claw L 67, H 25 (basal segment/claw L ratio 5.96, L/H ratio 17.4); palp (Fig. 4C) total L 404, dorsal length and relative length (in parentheses % of total length) of palp segments: P-1 64 (15.8), P-2 154 (38.1), P-3 63 (15.6), P-4 94 (23.3), P-5 29 (7.2); P-2/P-4 ratio 1.64; ventral seta of P-2 inserted on a well developed ventral projection.

Remarks: After the original description from the Elburs Mt. (Bader 1988), based on a single male, only one further record of *T. jasminae* has been published from Israel (Di Sabatino et al. 2003) based on a single female. Our female differs from specimens from Israel which are suspected to represent the female sex of *T. jasminae* (in parentheses [from Di Sabatino et al. 2003]) due to a relatively longer cheliceral claw with a 5.96 (6.5) basal segment/claw ratio and a L ratio P-2/P-4 of 1.64 (1.9). For the time being they all should be considered as representants of *T. jasminae*, in this concept a species with a considerable variability range. However, the attribution of the populations from Israel and Kerman Province to the species should be verified by studies on male specimens from these populations and females from the Elburs Mountain.

Distribution: Iran, Israel.

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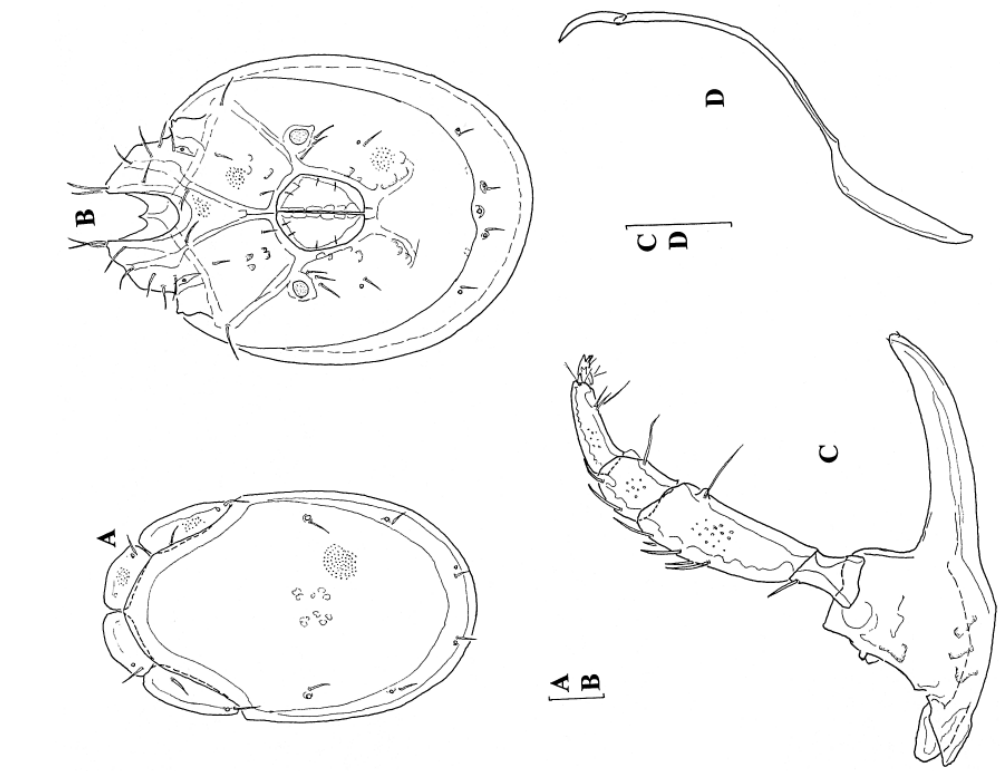

Fig. 4. *Torrenticola* cf. *jasminae* Bader, 1988, female: A = dorsal shield; B = idiosoma, ventral view; C = gnathosoma with right palp; E = chelicera. Bars = 0.1 mm.

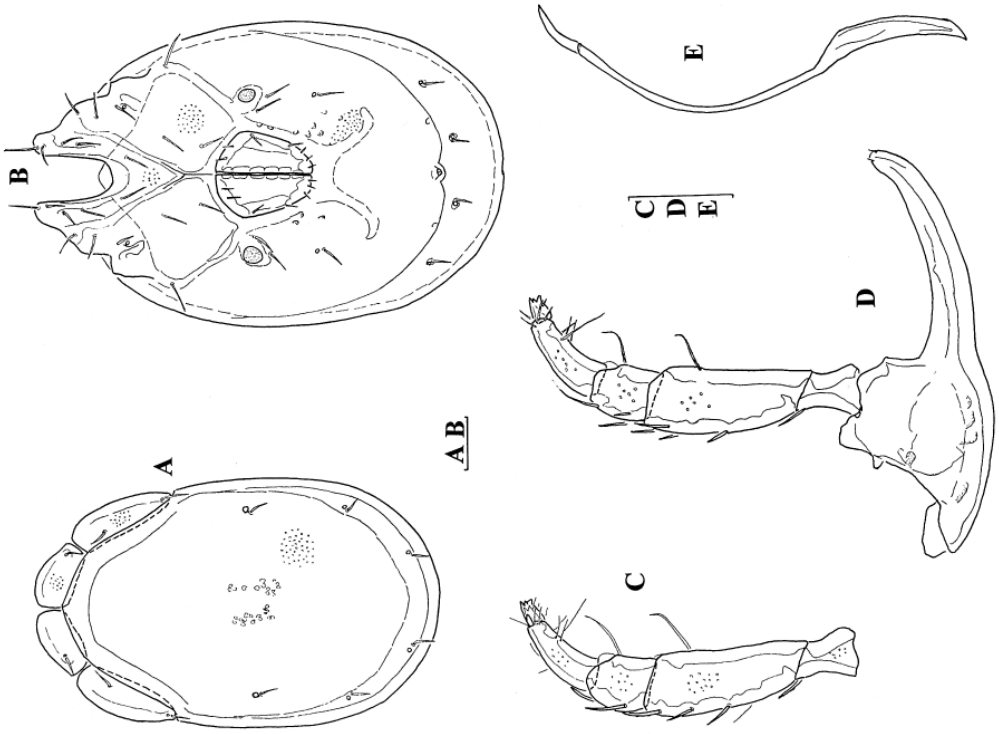

Fig. 3. *Torrenticola persica* Pesic sp. nov., female: A = dorsal shield; B = idiosoma, ventral view; C = gnathosoma with right palp; D = palp, medial view; E = chelicera. Bars = 0.1 mm.

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