

Article

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***Molothrognathus shirazicus*, a new species of Caligonellidae (Acari: Prostigmata) from Iran**

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Abstract

A new species of the genus *Molothrognathus*, *M. shirazicus* **sp. nov.** is described and illustrated based on the females collected from soil under desert poplar and oriental arborvitae in Shiraz, Fars province, Iran.

Key words: Bark; desert poplar; predatory mite; Shiraz; soil.

Introduction

Mites of the family Caligonellidae (Acari: Trombidiformes) are relatively small, free-living predatory mites that feed on small arthropods. They often live on tree bark, in litter, soil, mosses, storehouses and bird nests (Summers and Schlinger 1955; Meyer and Ueckermann 1989; Fan 2000). The genus *Molothrognathus* was described by Summers and Schlinger (1955) and its species are found in most parts of the world (Fan and Zhang 2005). To date, 10 species have been recorded and described from Iran, namely: *Molothrognathus azizi* Ueckermann & Khanjani, 2003; *M. bahariensis* Ueckermann & Khanjani, 2003; *M. fulgidus* Summers & Schlinger, 1955; *M. mehrnejadi* Liang & Zhang, 1997; *M. mikaeli* Bagheri & Ahaniazad, 2012; *M. minutus* Soliman, 1971; *M. phytocolus* Meyer & Ueckermann, 1989; *M. terrulentus* Meyer & Ueckermann, 1989; *M. tumipalpus* Meyer & Ueckermann, 1989 and *M. paratumipapus* Bagheri, Maleki & Changizi, 2013. In this paper, *M. shirazicus* **sp. nov.** is described from Fars province, Iran.

Materials and methods

Mites were collected from soil under desert poplar and oriental arborvitae, in Shiraz, Fars province and mounted directly in Hoyer's medium. The specimens were measured, identified and drawn by means of an Olympus BX₅₁ differential interference contrast (DIC) microscope under 1000X magnification and equipped with a drawing tube. Body length measurements represent the distance between setae v_1-h_1 ; width was measured above coxae III. Setae were measured from their insertions to their tips; distance between setae was measured as the distance between their insertions. Legs were measured from the base of the trochanter to the base of claws.

The terminology and abbreviations used in the description of the new species follows that of Lindquist (1985). All measurements are given in micrometers and the measurements of the paratype are given in parentheses.

Results

Family Caligonellidae Grandjean, 1944

Genus: *Molothrognathus* Summers & Schlinger, 1955

Type species: *Molothrognathus leptostylus* Summers & Schlinger, 1955.

Molothrognathus shirazicus sp. nov. (Figs. 1–9)

Diagnosis

Prodorsum with smooth shield medially; setae sc_2 longer than other dorsal setae; palp-tibia with three setae; tarsi II and IV with 10(+ ω) and 9 setae, respectively.

Material examined

Holotype female and three female paratypes collected from soil under desert poplar *Populus euphratica* Oliv. (Salicaceae) and oriental arborvitae, *Platycladus orientalis* (L.) (Cupressaceae), Shiraz (29° 45' N, 52° 65' E and altitude 1552 m a.s.l), Fars Province, Iran, 24 October 2014 and 18 March 2015, Samira Bakhshi. The holotype female and three female paratypes are deposited as slide-mounted specimens in the Collection of the Acarology Laboratory, University of Bu-Ali Sina, Hamadan, Iran.

Description

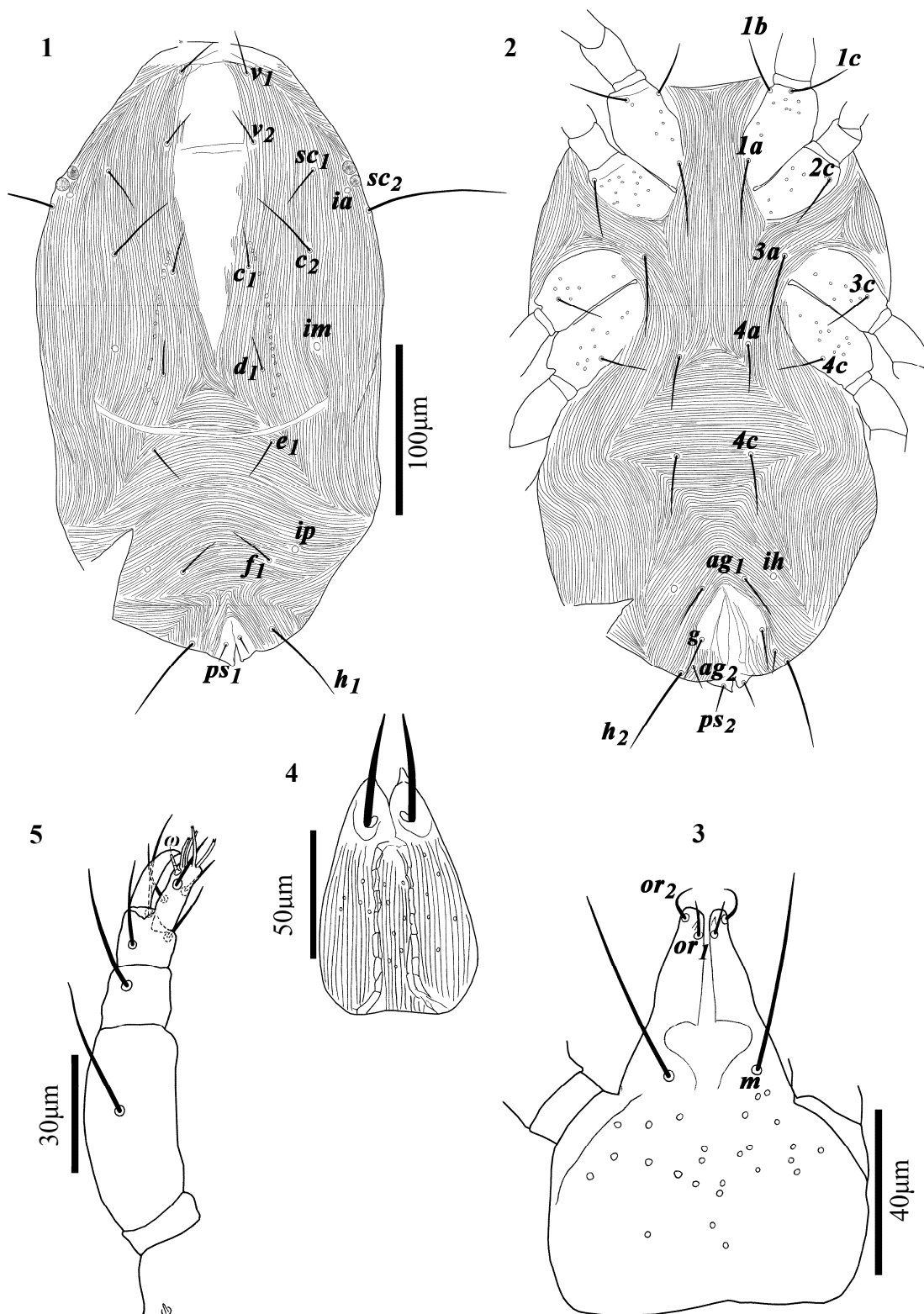
Female (n= 4) – Measurements of holotype with measurements of paratypes in parentheses: Length of body (v_1 - h_1) 335 (278); width 201 (120–136); leg I 245 (226–256); leg II 170 (158–188); leg III 211 (187–220); leg IV 234 (209–249).

Dorsum (Fig. 1) – Dorsum with simple striae; 3 pairs of cupules present, ia behind posterior eye, im laterad of the setae d and ip laterad of setae f ; prodorsum with smooth shield and two pair of eyes. All dorsal setae are simple. Lengths of dorsal setae as follows: v_1 25 (18–21), v_2 21 (16–23), sc_1 22 (16–22), sc_2 81 (79–86), c_1 19 (17–21), c_2 43 (40–51), d_1 20 (17–21), e_1 22 (20–25), f_1 27 (26–32), h_1 51 (45–56), h_2 48 (46–52). Distances between dorsal setae: v_1 - v_1 40 (29–45), v_2 - v_2 53 (40–54), sc_1 - sc_1 122 (95–129), sc_2 - sc_2 182 (120–136), c_1 - c_1 47 (31–39), c_2 - c_2 120 (103), d_1 - d_1 59 (44–59), e_1 - e_1 70 (59–76), f_1 - f_1 54 (36–58), h_1 - h_1 49 (35–55), h_2 - h_2 63 (45–47), v_1 - v_2 44 (40–41), v_2 - sc_1 38 (39–41), sc_1 - sc_2 39 (31–39), c_1 - c_2 37 (32–42), c_1 - d_1 61 (55–65), d_1 - e_1 44 (45–50), e_1 - f_1 73 (61–68), f_1 - h_1 43 (31–34).

Venter (Fig. 2) – Ventral cuticle striated; striae between coxae longitudinal and between setae $4a$ and $4c$ with transverse striae, endopodal shields absent. Lengths of setae: $1a$ 40 (32–40), $1b$ 32 (27–30), $1c$ 34 (26–35), $2b$ 29 (22–30), $3a$ 44 (38–45), $3b$ 27 (23–31), $4a$ 27 (23–28), $4b$ 25 (24–26), $4c$ 32 (25–35), ag_1 22 (19–23), ag_2 14 (10–12), g 22 (15–20), ps_1 13 (10–13), ps_2 12 (10–13). Two pairs of aggenital setae, genital shields with one pair of setae; Cupules ih located lateral of setae ag_1 . Anal shields with two pairs of setae (ps_{1-2}).

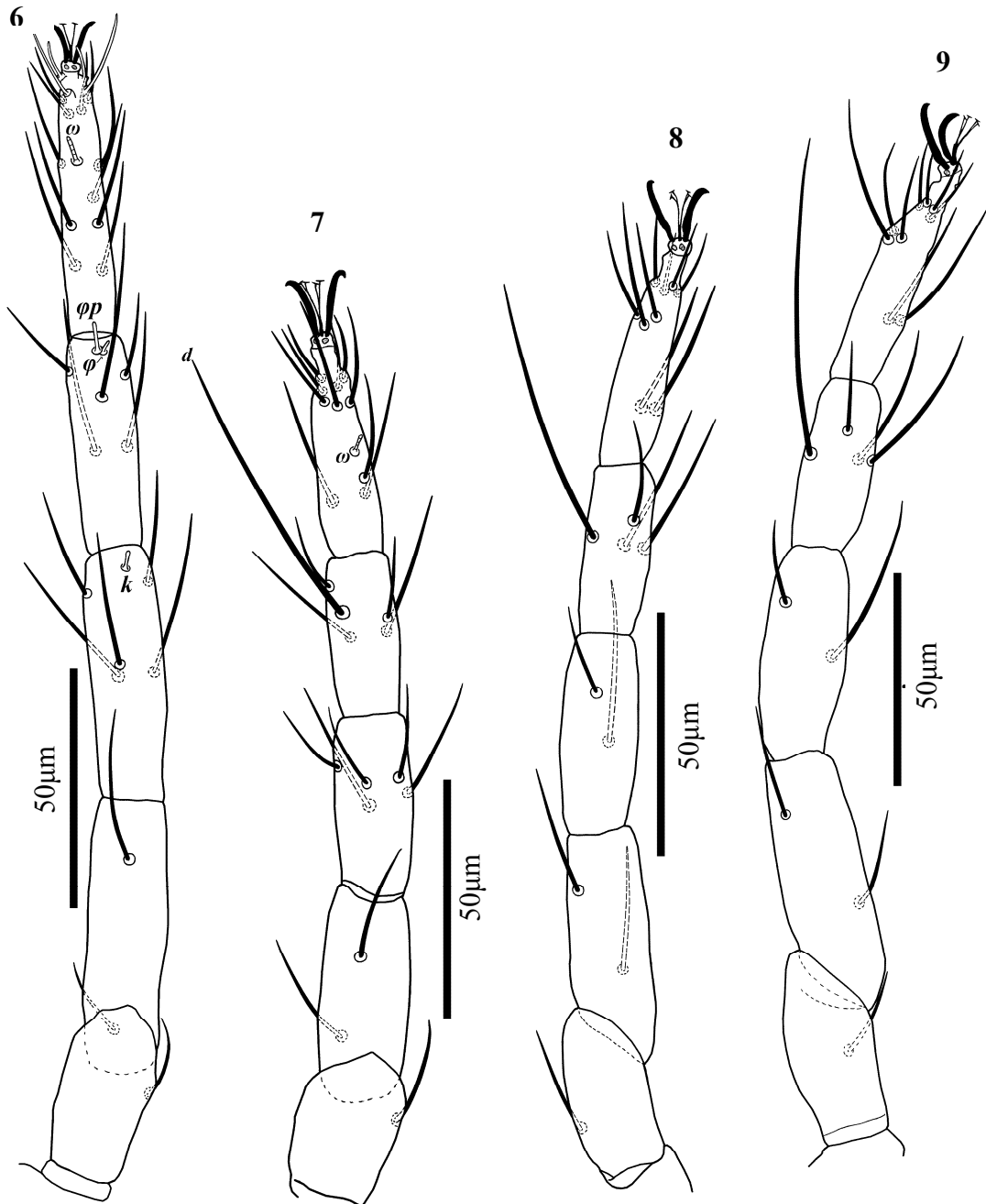
Gnathosoma (Figs. 3–5) – Subcapitulum with one pair of subcapitular setae, m 48 (45–50), two pairs of adoral setae or_1 8 (8–9), or_2 8 (8) (Fig. 3). Chelicerae 78 (68–78) almost as long as movable digit 39 (38–45) (Fig. 4). Palp five segmented, palp tarsus

with three simple setae, one solenidion (ω 8–10) and four terminal eupathidia; palp tibia with three setae, one well developed claw; Palp genu and palp femur with one dorsal seta (Fig. 5). Peritremes as depicted in Fig. 4.



Figures 1–5. *Molothrognathus shirazicus* sp. nov. (female) – 1. Dorsal view of idiosoma; 2. Ventral view of idiosoma; 3. Subcapitulum; 4. Chelicerae; 5. Palp.

Legs (Figs. 6–9) – Lengths: leg I 245 (219–236); leg II 170 (158–188); leg III 211 (187–227); leg IV 234 (220–249); setal formulae of Leg segments (solenidia in parentheses and not included in setal counts) as follows: coxae 2+1(*elcp*)–1–1–1; trochanters 1–1–1–1; femora 2–2–2–2; genua 5(+ κ)–5–2–2; tibiae 5(+ ϕ , + ϕp)–5–4–4; tarsi 15(+ ω)–10(+ ω)–9–9. Lengths of solenidia: I ω 7 (6–7), II ω 4 (3–4), I ϕp 6 (5–8), I ϕ 3 (2–3), I κ 4(4).



Figures 6–9. *Molothrognathus shirazicus* sp. nov. (female) – 6. Leg I; 7. Leg II; 8. Leg III; 9. Leg IV.

Male and immature stages – Unknown.

Etymology

The new species is named after locality Shiraz, from where the type specimens were collected.

Remarks

The new species *Molothrognathus shirazicus* **sp. nov.** resembles *M. mehrnejadi* Liang and Zhang, 1997 in having: 1. prodorsum bears a shield, 2. the same dorsal setae in lengths, 3. the same genual and tibial setae formulae. However it differs from the latter in: prodorsum with smooth shield medially in the new species instead of weaker striae on the latter; tarsi II and IV with 10(ω) and 9 setae, respectively in *M. shirazicus* **sp. nov.** instead of 9(ω) and 10 in *M. mehrnejadi* and palp tibia with three setae in the new species instead of four setae in *M. mehrnejadi*. The new species also resembles *M. terrulentus* Meyer and Ueckermann, 1989, in having median prodorsal shield and the same legs setal formula. However, *M. shirazicus* differs from the latter in: median prodorsal shield smooth instead of with broken striae in *M. terrulentus*, setae c_2 40–51 instead of 63–72 in *M. terrulentus*.

Also the new species resembles *M. crucis* Summers & Schlinger, 1955, in having smooth median prodorsal shield and femur IV with 2 setae. However, *M. shirazicus* differs from the latter in: setae c_2 almost 2.5 times longer than setae c_1 (c_2/c_1 2.42–2.50) instead of c_2 almost as long as c_1 (c_2/c_1 1.14) in *M. crucis*; setae ag_2 present in new species instead of absent in *M. crucis* and setae sc_2 79–86 in *M. shirazicus* **sp. nov.** instead of 63 in *M. crucis*.

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Caligonellidae گونه جدیدی از خانواده *Molothrognathus shirazicus***(Acari, Prostigmata)** از ایران

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چکیده

گونه جدیدی از جنس *Molothrognathus shirazicus sp. nov.* بر اساس ماده‌های جمع‌آوری شده از خاک زیر درخت پده و کاج شرقی در شیراز، استان فارس، ایران توصیف و ترسیم شده است.

واژگان کلیدی: پوسته، پده؛ کنه شکارگر؛ شیراز؛ خاک.

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