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Authors: Yun Xu, and Zhi-Qiang Zhang
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New Zealand Tenuipalpidae (Acari: Trombidiformes): A new species of *Acaricis* from Cyperaceae and its ontogenetic patterns in chaetotaxy

YUN XU1 & ZHI-QIANG ZHANG2,3,4
1 Key Laboratory of Integrated Pest Management for Fujian-Taiwan Crops, Ministry of Agriculture; Fujian Provincial Key Laboratory of Insect Ecology; Fujian Agricultural and Forestry University, Fuzhou 350002, China
2 Landcare Research, Private Bag 92170, Auckland, New Zealand
3 Center for Biodiversity and Biosecurity, School of Biological Sciences, University of Auckland, Tamaki Campus, Auckland, New Zealand
4 Corresponding author: Zhi-Qiang Zhang: ZhangZ@landcareresearch.co.nz

Abstract

The genus *Acaricis* (Acari: Tenuipalpidae) was represented by two species from Australian sedges prior to this study. A new species, *Acaricis urigersoni* sp. nov., is here described and illustrated from leaves of *Gahnia lacera* (Cyperaceae) in Auckland, New Zealand. In this paper, we presented the ontogenetic changes in idiosomal and leg chaetotaxy from larva to adult. A key to the world species of *Acaricis* is also proposed.

Key words: Flat mite, false spider mite, new species, Cyperaceae, *Gahnia lacera*, ontogenetic changes

Introduction

The Tenuipalpidae, commonly known as false spider mites or flat mites, has been considered as an under-explored family of plant-feeding mites of great economic importance (Gerson 2008). Recent increase in the interest in these mites was attributed to their biosecurity importance (as invasive species as well as vectors of virus diseases) and their use as model organisms to explore basic evolutionary questions such as sex determination and microorganism-mite interactions (Zhang 2010). Recent counts of the number of described species included 891 species (Mesa et al. 2009) and 895 species (Zhang et al. 2011), with several new species being described every year. In New Zealand, Spain and Luxton (1971) listed 11 described species, Zhang and Rhode (2003) estimated 23 species, and most recently, Sirvid et al. (2010) included 27 species of the Tenuipalpidae in the *New Zealand Inventory of Biodiversity*. There have been few papers on the Tenuiplapidae of New Zealand in the last decade (Zhang & Fan 2004; Berry & Fan 2012). This paper represents one of a series of papers to describe new species of this family and revise poorly described species from New Zealand.

The genus *Acaricis* was erected by Beard and Gerson (2009) with only two species: the type species *Acaricis plana* collected on *Scleria sphacelata* from Queensland, and *Acaricis danutae* collected on *Carex* sp. from New South Wales, Australia. Both host plant species are of plant family Cyperaceae. Currently, only 9 species belonging to 5 genera of the Tenuipalpidae have been described from Cyperaceae in the world. Wang (1983) described a new species *Tenuipalpus obvelatus* on Cyperaceae from China. Beard, Fan and Walter (2005) reported a new genus *Prolixus* with two new species collected on Cyperaceae in Australia. Beard and Ochoa (2011) added two new...
genera *Gahniacarus* and *Cyperacarus* (each genus with two species from Australia) to the list. Prior to this study, *Acaricis* was believed to be endemic to Australia. In this paper, a new species, *Acaricis urigersoni* sp. nov., is described from *Gahnia lacera* (Cyperaceae) in New Zealand and its ontogenetic development in body and leg chaetotaxy is studied. A key to world species of *Acaricis* is also proposed.

**Material and methods**

Mites were mounted in Hoyer’s medium, and examined at 1000 times with a DIC Nikon E800 microscope. All measurements were made from slide-mounted specimens using a stage-calibrated ocular ruler and are given in micrometers (μm) (Zhang & Fan 2004). Measurements of the holotype are presented, followed by a range of paratypes in brackets. Setae were measured from the centre of the setal base to the tip of the seta; distances between setae were measured as the distance from the centre of one setal base to the other. Legs were measured from the basal end of trochanter to the distal end of tarsus. Terminology follows that applied to the Tetranychidae by Lindquist (1985).

**Family Tenuipalpidae Berlese, 1913**

**Genus *Acaricis* Beard & Gerson, 2009**

*Acaricis* Beard & Gerson, 2009: 2; Beard & Ochoa, 2011: 32.

*Type species:* *Acaricis plana* Beard & Gerson, 2009

**Diagnosis.** Body elongate, more than twice as long as wide; palpus usually 4-segmented. Prodorsum with a rostral shield and 2 or 3 pairs of setae (*sc*1 and *sc*2 or *v*2, *sc*1 and *sc*2); setae *sc*3 lanceolate. Opisthosoma with 9 pairs of dorsal setae; dorsosublateral setae absent; dorsocentral setae *c*1 absent, *d*1 and *e*1 present; humeral setae *c*3 and dorsolateral setae 6 pairs (*d*3, *e*3, *f*2, *f*3, *h*2 and *h*1); setae *h*2 long and attenuate. Genua IV nude.

The original concept of *Acaricis* was based on two Australian species (Beard & Gerson, 2009). The new species from New Zealand with new morphological features allows revision of the generic diagnosis as presented above.

*Acaricis urigersoni* sp. nov.

(Figs. 1–24)

**Diagnosis.** The adult female of *Acaricis urigersoni* sp. nov. is easily distinguishable from those of the two other species by the absence of the first pair of prodorsal setae *v*2, setae *sc*1 bifurcated, setae *e*3 lanceolate, cylinder-shaped spermathecal vesicle, and chaetotaxy (legs I–IV): femora 4-4-2-1, genua 2-2-0-0, tibiae 5-5-3-2.

The adult male of *Acaricis urigersoni* sp. nov. is differentiated from those of the two other species by the absence of the first pair of prodorsal setae *v*2, setae *e*3 lanceolate, setae 4a2 elongate and flagelliform, and Chaetotaxy (legs I–IV): femora 4-4-2-1, genua 2-2-0-0, tibiae 5-5-3-2, tarsi 7+2ω-7+2ω-5ω-5ω+ω.

**Type specimens. Holotype ♀. New Zealand.** Auckland, Kepa Reserve, 5 Aug, 2013, by Nicholas A. Martin, ex. *Gahnia lacera* (Cyperaceae). **Paratypes.** 6 females, 5 males, 7 deutonymphs, 4 protonymphs, 3 larvae, same data as holotype. 1 female, 1 male, 2 protonymphs, 3
larvae, Wenderholm Regional Park, Auckland, New Zealand, 27 Sep, 2013, ex. *Gahnia lacera* (Cyperaceae), by Nicholas A. Martin. 8 females, 4 males, 4 deutonymphs, 2 protonymphs, Kepa Reserve, Auckland, New Zealand, 9 Oct, 2013, ex. *Gahnia lacera* (Cyperaceae), by Nicholas A. Martin. The holotype and 39 paratypes (12 females, 8 males, 9 deutonymphs, 6 protonymphs, 4 larvae) will be deposited in the New Zealand Arthropod Collection, Landcare Research, Auckland, New Zealand (NZAC); 10 paratypes (2 females, 2 males, 2 deutonymphs, 2 protonymphs, and 2 larvae) will be deposited in the Natural History Museum, London (BMNH).

**FIGURE 1.** *Acaricis urigersoni* sp. nov. (adult female). A, dorsal view of idiosoma; B, ventral view of idiosoma.
FIGURE 2. *Acaricis urigersoni* sp. nov. (adult female). A, dorsal setae; B, ventral setae; C, chelicerae and collar.
FIGURE 3. Acaricis urigersoni sp. nov. (adult female). A, subcapitulum; B, genital-anal plate.
FIGURE 4. *Acaricis urigersoni* sp. nov. (adult female). A, leg I; B, leg II.
FIGURE 5. *Acaricis urigersoni* sp. nov. (adult female). A, leg III; B, leg IV.
Adult Female (n=5)

Gnathosoma. (Fig. 3A) Rostrum reaching proximal end of femur I, subcapitular setae m setiform, m=16–18 (18), m=m=16–18 (18). Palp 4-segmented, setal formula: 0, 0, 2, 2; tarsus with 2 eupathidia 4, 4.

Idiosoma. (Figs. 1A, 2A, 20A, 21A) 445–470 (470) long, 195–205 (200) wide. Rostral shield pitted. Idiosoma widest at posterior margin of propodosoma, narrowing abruptly at base of opisthosoma, then expanding posteriorly. PRODORSUM covered with weak longitudinal sculpturing and faint broad band of transverse striations between setae sc1 and d1 (Figs. 1A, 20A); bearing 2 pairs of setae (sc1 and sc2), setae sc1 bifurcated, sc2 lanceolate, barbed; lengths: sc1 5–6 (5), sc2 31–36 (35); distances: sc1–sc1 56–65, sc1–sc2 34–38, sc2–sc2 155–165 (155). HYSTEROSOMA smooth, covered with oblique and longitudinal wrinkles as shown in Fig. 21A, a pair of distinct pores anterior to e1; with 1 pair of humeral setae c3, 2 pairs of dorsocentral setae d1 and e1, and 6 pairs of dorsolateral setae. Setae c3, d1, d2 and e1 setiform, dorsolateral setae e2, f2, f3 and h1 lanceolate, barbed, and h2 elongate, ending in a minute club. Lengths: d1 4–6 (4), e1 4, e2 4, d2 3–4 (3), e3 15–20 (20), f2 23–25 (25), f3 23–25 (25), h2 117–142 (117), h1 21–25 (21); distances: d1–d1 24–28 (24), e1–e1 10–20 (17), c3–c3 160–170 (165), d3–d3 120–130 (125), d3–e3 110–130 (125), e3–e3 120–135 (125), e1–f2 23–24 (24), f2–f2 115–125 (115), f2–f3 19–22 (21), f3–f3 95–105 (95), f3–h3 21–27 (22), h2–h2 13–14 (13), h1–h1 33–42 (34).

Venter. (Figs.1B, 2B, 3B, 22A, 23A, B) Venter with few broken oblique striae laterally and fine transverse striations between coxae II and IV. All coxal setae setiform. Setae 1a and posterior medioventral setae 4a1 and 4a2 flagelliform, anterior medioventral setae 3a setiform; setae 4a1 and 4a2 subequal, more than 8 times as long as 3a (Fig. 2B). Lengths: 1a 130–145 (135), 1b 10–11 (11), 1c 10–12 (11), 1d 17–19 (18), 2c 18–20 (18), 3a 13–15 (13), 3b 16–20 (18), 4a1 120–130 (125), 4a2 115–125 (115), 4b 15–20 (18). Dances: 1a–1a 25–33 (30), 3a–3a 30–32 (30), 4a1–4a1 9–13 (9), 4a1–4a2 11–15 (12), 4a2–4a2 29–39 (29). Genital and ventral plates with flaps of cuticle as shown in Fig. 1B, bearing 1 pair of aggenital setae ag and 2 pairs of genital setae (g1 and g2), setiform; setae g1 and g2 subequal. Anal plate with 2 pairs of pseudanal setae (ps1 and ps2). Seta length: ag 13–16 (14), g1 15–18 (16), g2 15–18 (16), ps1 12–14 (12), ps2 10–10 (12). Dances: ag–ag 22–28 (22), g1–g1 20–29 (24), g1–g2 10–12 (11), g2–g2 40–44 (40), ps1–ps2 36–37 (37).

Spermatheca. (Figs. 3B, 22A, 23B) A short, narrow, unsclerotised tube extending from genital opening (mesad setae ps2) and ending in a cylinder-shaped vesicle.

Legs. (Figs. 4, 5) Lengths of legs I–IV: 125–135 (130), 100–110 (105), 82–87 (85), 80–84 (84). Chaetotaxy: coxae 2-2-1-1; trochanters 1-1-1-0; femora 4-4-2-1; genua 2-2-0-0, tibiae 5-5-3-2, tarsi 7+7+7+7. Most dorsal and lateral setae on femora, genua and tibiae lanceolate, lateral setae 1′ on tibiae pectinate; ventral setae bv on femur I pectinate and on femur II lanceolate; setae ev′ on femur III setiform; ventral setae v pectinate. Setae f′′ on tarsi I–II and f′′ζ on tarsi III–IV flagelliform; unguinal setae u pectinate and equal in length; proral setae p′ζ and p′′ζ eupathidial; tectal setae tc setiform except on tarsus IV pectinate. Lengths of solenidia: I ω′′ 4–5 (4), II ω′′ 4–5 (4). Claws developed with tenent hairs on each side.

Male (n=5)

Gnathosoma. (Fig. 7C) Rostrum reaching proximal end of femur I, and rostral shield pitted, subcapitular setae m setiform, m=14–18, m=m=14–18. Palp 4-segmented, setal formula: 0, 0, 2, 2; tibia with 2 bare setae, tarsus with 2 eupathidia, lengths 3–4, 3–4.

Idiosoma. (Figs. 6A, 7A, 20B, 21B) 325–340 long, 140–155 wide. Rostral shield pitted. Idiosoma widest at posterior margin of propodosoma, narrowing abruptly at base of opisthosoma, then expanding posteriorly. PRODORSUM covered with faint broad band of transverse striations between setae sc1 and d1 (Figs. 6A, 20B); bearing 2 pairs of setae (sc1 and sc2), setae sc1 setiform, sc2 lanceolate, barbed; lengths: sc1 4–5, sc2 25–30; distances: sc1–sc1 56–65, sc1–sc2 34–38, sc2–sc2 155–165.
HYSTEROSOMA divided into metapodosoma and opisthosoma by narrow band of horizontal striations (Figs. 6A, 21B); with 1 pair of humeral setae c₃, 2 pairs of dorsocentral setae d₁ and e₁, and 6 pairs of dorsolateral setae. Setae c₃, d₁, d₃ and e₁ setiform, dorsolateral setae e₃, f₂, f₃ and h₁ lanceolate, barbed, and h₂ elongate, ending in a minute club. Lengths: d₁ 3–4, e₁ 3–4, c₃ 3–4, d₃ 3–4, e₃ 7–10, f₂ 18–19, f₃ 19–21, h₂ 117–122, h₁ 18–21; distances: d₁–d₁ 15–22, e₁–e₁ 10–13, c₃–c₃ 120–130, d₃–d₃ 80–91, d₃–e₃ 90–100, e₃–e₃ 70–81, e₃–f₂ 15–20, f₂–f₂ 70–82, f₂–f₃ 12–18, f₃–f₃ 66–78, f₂–h₂ 12–18, h₂–h₂ 45–53, h₂–h₁ 10, h₁–h₁ 24–36.

FIGURE 6. Acaricis urigersoni sp. nov. (adult male). A, dorsal view of idiosoma; B, ventral view of idiosoma.
FIGURE 7. Acaricis urigersoni sp. nov. (adult male). A, dorsal setae; B, ventral setae; C, subcapitulum; D, chelicerae and collar.
FIGURE 9. *Acaricis urigersoni* sp. nov. (adult male). A, leg I; B, leg II.
FIGURE 10. *Acaricis urigersoni* sp. nov. (adult male). A, leg III; B, leg IV.
Venter. (Figs. 6B, 7B, 8A, 22B, 23D) Venter with fine transverse striation between coxae II and IV, longitudinal striations in the genital area. All coxal setae setiform. Setae 1a and posterior medioventral setae 4a1 and 4a2 flagelliform, anterior medioventral setae 3a setiform; setae 4a1 and 4a2 subequal, more than 9 times as long as 3a (Fig. 7B). Lengths: 1a 135–150, 1b 10–11, 1c 9–12, 2b 15–20, 2c 16–20, 3a 10–12, 3b 18–20, 4a1 100–110, 4a2 105–110, 4b 14–17. Distances: 1a–1a 25–30, 3a–3a 23–28, 4a1–4a1 9–11, 4a1–4a2 8–10, 4a2–4a2 25–30. Genital and ventral plates with an aedeagus and seminal vesicle, bearing one pair of aggenital setae ag and 2 pairs of gential setae (g1 and g2), setiform; setae g1 and g2 subequal. Anal plate with 2 pairs of pseudanal setae (ps1 and ps2). Seta lengths: ag 15–18, g1 27–29, g2 27–30, ps1 11–12, ps2 7–8. Distances: ag–ag 11–18, g1–g1 15–19, g1–g2 10–11, g2–g2 35–38, ps1–ps2 7–14.

Aedeagus. (Figs. 8, 22B, 23D) A narrow, elongate, sclerotised aedeagus tapering to a point posteriorly (at genital opening); membranous duct running from sclerotised aedeagus to flared, lightly sclerotised, cone-shaped cup distally, appearing to open into a soft membranous vesicle.

Legs. (Figs. 9, 10) Lengths of legs I–IV: 110–120, 90–96, 72–85, 72–83. Chaetotaxy: coxae 2–2–1–1; trochanters 1–1–1–1; femora 4–4–2–1; genua 2–2–0–0, tibiae 5–5–3–2, tarsi 7+ω 4–5–7. Most dorsal and lateral setae on femora, genua and tibiae lanceolate, lateral setae barbed, and with 2 pairs of pseudanal setae (ps1 and ps2). Seta lengths: ag 135–150, g1 135–150, g2 100–110, g2 100–110, g1 115–125, ps1 105–110, ps2 81–85. Leg setae: femur I pectinate and on femur II lanceolate; seta ev′ on femur II lanceolate; seta ev″ on femur III setiform; ventral seta v pectinate except on trochanter II setiform. Setae ft′ on tarsi I–II and ft′′ on tarsi III–IV flagelliform; unguinal setae ω setiform and equal in length; proral setae p′ζ and p′′ζ eupathidial; tectal setae tc setiform except tc′ on tarsi I and II bifurcated. Lengths of solenidia: I ω′ 8–9, ω″ 6–8, II ω′ 7–8, ω″ 6, III ω′ 7, IV ω′ 7. Claws developed with tenent hairs on each side.

Deutonymph (n=5)

Gnathosoma. (Fig. 12A) Rostrum reaching proximal end of femur I, subcapitular seta m setiform, m=13–15, m–m=13–15. Palp 4-segmented, setal formula: 0, 0, 2, 2; tibia with 2 bare setae, tarsus with 2 eupathidia 3–4, 3–4.

Idiosoma. (Figs. 11A, 12C, 20C, 21C) 310–365 long, 140–160 wide. Rostral shield pitted. Idiosoma widest at posterior margin of propodosoma, narrowing abruptly at base of opisthosoma, then expanding posteriorly. PRODORSUM covered with faint band of transverse striations between setae sc1 and d1 (Figs. 11A, 20C), bearing 2 pairs of setae, setae sc1 bifurcated, sc2 lanceolate, barbed; lengths: sc1 3, sc2 21–28; distances: sc1–sc1 56–63, sc1–sc2 32–39, sc2–sc2 115–130. HYSTEROSOMA smooth, covered with oblique and longitudinal wrinkles as shown in Fig. 11A. Setae c3, d3, d4 and e1 setiform, subequal, dorsolateral setae e3, f2, f3 and h1 lanceolate, barbed, and h2 elongate, ending in minute club. Lengths: d1 2–3, e1 2–4, c3 2–3, d3 2–3, e3 5–7, f2 12–16, f3 12–17, h3 86–105, h1 12–17; distances: d1–d1 15–21, e1–e1 6–10, c3–c3 110–125, d3–d3 81–100, d4–e3 57–86, e5–e5 73–95, e5–f2 11–16, f2–f2 72–95, f2–f3 11–16, f3–f3 60–85, f3–h2 12–20, h2–h3 40–51, h2–h1 10–13, h1–h1 19–26.

Venter. (Figs. 11B, 12C, 14C, 22C) Venter with fine transverse striations between coxae II and IV. All coxal setae setiform. Setae 1a and posterior medioventral setae 4a1 flagelliform, anterior medioventral setae 3a setiform; setae 4a1 about 6 times as long as 3a (Fig. 12C). Lengths: la 125–140, lb 8–10, lc 8–10, 2b 9–13, 2c 11–14, 3a 10–14, 3b 14–16, 4a1 79–90, 4b 12–13. Distances: la–la 21–23, 3a–3a 21–24, 4a1–4a1 12–19. Genital and ventral plates with oblique cuticles anterior to ag and transverse cuticles between ag and g1, and oblique striations lateral seta g1 as shown in Fig. 22C, bearing one pair of aggenital setae ag and one pair of gential setae g1, setiform. Anal plate with 2 pairs of pseudanal setae (ps1 and ps2). Seta lengths: ag 10–14, g1 11–14, ps1 8–9, ps2 5–7. Distances: ag–ag 14–23, g1–g1 13–23, ps1–ps2 18–30.

pectinate setiform, lateral setae $l'$ on tibiae I and II setiform. Ventral seta $bv''$ on femur I setiform and on femur II lanceolate; ventral seta $v$ and $ev'$ setiform. Setae $ft''$ on tarsi I–II and $ft'ζ$ on tarsi III–IV flagelliform; unguinal setae $u$ setiform and equal in length; proral setae $p'ζ$ and $p''ζ$ eupathidial; tectal setae $tc$ setiform. Lengths of solenidia: I $ω'' 4$, II $ω'' 4$. Claws developed with tenent hairs on each side.

**FIGURE 11.** *Acaricis urigersoni* sp. nov. (deutonymph). A, dorsal view of idiosoma; B, ventral view of idiosoma.
FIGURE 12. *Acaricis urigersoni* sp. nov. (deutonymph). A, subcapitulum; B, ventral view of idiosoma; C, dorsal view of idiosoma; D, chelicerae and collar.
FIGURE 13. *Acaricis urigersoni* sp. nov. (deutonymph). A, leg I; B, leg II.
FIGURE 14. *Acaris urigersoni* sp. nov. (deutonymph). A, leg III; B, leg IV; C, genital-anal plate.
Protonymph (n=4)

Gnathosoma. (Fig. 16D) Rostrum reaching proximal end of femur I, and rostral shield pitted, subcapitular seta m setiform, m=14–16, m–m=14–16. Palp 4-segmented, setal formula: 0, 0, 2, 2; tibia with 2 bare setae, tarsus with 2 eupathidia 3–4, 3–4.

FIGURE 15. Acaricis urigersoni sp. nov. (protonymph). A, dorsal view of idiosoma; B, ventral view of idiosoma.
FIGURE 16. *Acaricis urigersoni* sp. nov. (protonymph). A, ventral setae; B, dorsal setae; C, chelicerae and collar; D, subcapitulum; E, genital-anal plate.
Idiosoma. (Figs. 15A, 16B, 20D, 21D) 279–305 long, 120–130 wide. Rostral shield pitted. Idiosoma widest at posterior margin of propodosoma, narrowing abruptly at base of opisthosoma, then expanding posteriorly. PRODORSUM covered with faint broad band of transverse striations between setae $sc_1$ and $d_1$ (Figs. 16B), bearing 2 pairs of setae, setae $sc_1$ setiform, $sc_2$ lanceolate, barbed; lengths: $sc_1$ 3, $sc_2$ 20–21; distances: $sc_1$–$sc_1$ 45–57, $sc_1$–$sc_2$ 28–33, $sc_2$–$sc_2$ 105–115. HYSTEROSOMA smooth (Figs. 15A, 21D), with 1 pair of humeral seta $c_3$, 2 pairs of dorsocentral setae $d_1$ and $e_1$, and 6 pairs of dorsolateral setae. Setae $c_3$, $d_1$, $d_3$ and $e_1$ setiform, subequal,
dorsolateral setae e₁, f₂, f₃ and h₁ lanceolate, barbed, and h₂ elongate, ending in minute club. Lengths: d₁ 2, e₁ 2–4, c₃ 2, d₂ 2, e₃ 3–5, f₂ 9–13, f₃ 10–12, h₂ 68–82, h₁ 9–11; distances: d₁–d₁ 15–
24, e₁–e₁ 6–9, c₃–c₃ 93–99, d₂–d₂ 68–75, d₃–e₃ 55–58, e₁–e₃ 63–73, e₂–f₂ 8–15, f₂–f₂ 59–66, f₃–f₃ 
9–13, f₃–h₂ 46–54, f₃–h₂ 8–14, h₂–h₂ 29–37, h₂–h₁ 9–10, h₁–h₁ 11–20.

Venter. (Figs. 15B, 16A, E, 22D) Venter similar to deutonymph. All coxal setae setiform. Setae 
1a flagelliform and anterior medioventral setae 3a setiform (Fig. 16A). Lengths: 1a 98–105, 1b 8– 
10, 1c 8–9, 2c 11–12, 3a 9–10, 3b 11–14. Distances: 1a–1a 19–22, 3a–3a 21–25. Similar to 
deutonymph, bearing one pair of aggenital setae ag, setiform. Anal plate with 2 pairs of pseudanal 
17.

Legs. (Fig. 17) Lengths of legs I–IV: 67–74, 55–62, 48–50, 41–44. Chaetotaxy: coxae 2-1-1-0; 
trochanterers 0-0-1-0; femora 3-3-2-1; genua 1-1-0-0, tibiae 7+ω–7–ω–5-3. Dorsal setae 
on femora, genua and tibiae lanceolate; ventral seta bv” on femur I setiform and on femur II 
lanceolate; lateral setae l’ on tibiae I and II setiform and l’’ on tibiae I and II lanceolate; ventral seta 
v setiform. Setae fr’’ on tarsi I–II and fr’’ on tarsi III–IV flagelliform; unguinal seta u and tectal seta 
tc setiform; proral setae p’’ and p”’ eupathidial. Lengths of solenidia: I ω” 3, II ω” 3. Claws 
developed with tenent hairs on each side.

 Larva (n=5)

Gnathosoma. (Fig. 19D) Rostrum reaching middle of femur I, subcapitular seta m setiform, 
m=14–17, m–m=14–17. Palp 4-segmented, setal formula: 0, 0, 2, 2; tibia with 2 bare setae, tarsus 
with 2 eupathidial 3–4, 3–4.

Idiosoma. (Figs. 18A,19F, 20E, 21E) 240–275 long, 85–110 wide. PRODORSUM covered 
with faint broad band of transverse striations between setae sc₁ and d₁ (Figs. 18A, 20E), bearing 2 
pairs of setae, setae sc₁ setiform, sc₂ lanceolate, barbed; lengths: sc₁ 2–4, sc₂ 12–16; distances: sc₁– 
sc₁ 45–47, sc₁–sc₂ 20–25, sc₂–sc₂ 82–96. HYSTERO S O M A smooth (Figs. 18A, 21E), with 1 pair 
of humeral seta c₃, 2 pairs of dorsocentral setae d₁ and e₁, and 6 pairs of dorsolateral setae. Setae c₃, 
d₁, d₂, e₁ and e₃ setiform, subequal, dorsolateral setae f₂, f₃ and h₁ lanceolate, barbed, and h₂ 
elongate, ending in minute club. Lengths: d₁ 3–4, e₁ 2, c₂ 2, d₂ 2, e₃ 4, f₂ 8–9, f₃ 8–9, h₂ 89–98, h₁ 8; 
distances: d₁–d₁ 15–18, e₁–e₁ 6–8, c₃–c₃ 70–82, d₂–d₂ 45–53, d₃–e₃ 35–43, e₁–e₃ 50–60, e₃–f₂ 7–9, 
f₂–f₂ 45–55, f₃–f₃ 7–8, f₃–f₃ 34–44, f₃–h₂ 8–10, h₂–h₂ 22–27, h₂–h₁ 7–8, h₁–h₁ 8–11.

Venter. (Figs. 18B, 19E, 22E) Venter similar to deutonymph. All coxal setae setiform. Setae 1a 
flagelliform and anterior medioventral setae 3a setiform (Fig. 19E). Lengths: 1a 82–93, 1b 7–8, 3a 

trochanterers 0-0-0; femora 3-3-2; genua 1-1-0, tibiae 5-5-3, tarsi 5+ω–5–ω–3. Most dorsal setae on 
femora, genua and tibiae lanceolate except on tibiae I and II nude. Ventral setae bv” on femora and 
lateral seta l’ on tibiae setiform; lateral seta l’’ on tibiae I and II lanceolate; ventral seta v setiform. 
Setae fr’’ on tarsi I–II and fr’’ on tarsi III flagelliform; unguinal seta u and tectal seta tc setiform; 
proral setae p’’ and p”’ eupathidial. Lengths of solenidia: I ω” 2, II ω” 2. Claws developed with 
tenent hairs on each side.

Etymology. The species is named after Prof Uri Gerson, who is an acarologist from Israel and 
has made significant contributions to the systematics and biology of the Tenuipalpidae.

Remarks. In live specimens, the body of this new species looks glossy with a translucent 
appearance, and is yellow-greenish with a series of minute black spots; legs I–II are obviously 
orange, and legs III–IV are pale orange; the eyes are red (Fig. 24). In one adult male, one dorsolateral 
setae h₂ was duplicated (h₂ and h₂x in Fig. 23C), and shortened by three times; the other seta h₂ was 
normal.
FIGURE 18. *Acaricis urigersoni* sp. nov. (larva). A, dorsal view of idiosoma; B, ventral view of idiosoma.
FIGURE 19. Acaricis urigersoni sp. nov. (larva). A, leg I; B, leg II; C, leg III; D, subcapitulum; E, ventral setae; F, dorsal setae.
FIGURE 20. Acaricis urigersoni sp. nov. (prodorsum). A, female; B, male; C, deutonymph; D, protonymph; E, larva.
FIGURE 21. _Acaricis urigersoni_ sp. nov. (hysterosoma). A, female; B, male; C, deutonymph; D, protonymph; E, larva.
FIGURE 22. Acaricis urigersoni sp. nov. (genital-anal plate). A, female; B, male; C, deutonymph; D, protonymph; E, larva.
FIGURE 23. *Acaricis urigersoni* sp. nov. (adult). A, female genital plate; B, spermatheca; C, hysterosoma with 2 h₂; D, Aedeagus.
The ontogeny of *Acaricis* was reported by Beard and Gerson (2009). Based on the observation of *Acaricis plana* and *Acaricis urigersoni* sp. nov., the dorsal idiosomal setae (*sc1, sc2, d1, e1, c3, d3, e3, f2, f3, h2 and h1*) and pseudanal setae (*ps1* and *ps2*) are present throughout all stages.
TABLE 1. Ontogeny of leg chaetotaxy in *Acaricis plana* (Ap) and *A. urigersoni* (Au). Setae are indicated where they are first added. Setae in parentheses represent pairs. Hyphen indicates no additions.

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<td>(u), p_\omega, p_\omega', f''_\omega, \omega''</td>
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* Leg IV absent in larva.
Ventral setae 1c, 2c and 3b are added in the protonymph, 2b, 4a1 and 4b added in the deutonymph, and 4a2 added in the adult. Aggenital seta ag emerges in the protonymph; the first pair of genital setae g1 are formed in the deutonymph and the second pair appear in the adult. The palpal chaetotaxy (0, 0, 2, 2) remains unchanged from larva to adult. The changes in the chaetotaxy of leg segments are listed in Table 1. All dorsal setae d of legs lanceolate except on tibiae I and II in larva nude; ventral setae v in larva, protonymph and deutonymph setiform, in female pectinate, in male on leg I–II pectinate and on leg III–IV setiform; ventral seta ev′ setiform; ventral seta bv′ in adult pectinate and in all immature stages setiform; lateral setae l′′ in adult lanceolate, in larva, protonymph and deutonymph lanceolate except on genua I in deutonymph pectinate; unguinal seta u setiform in immature stages and pectinate in adult; tectal seta tc setiform and prorals setae p′ζ and p′′ζ eupathidial.

Key to species of Acaricis (based on adult females)

1. Setae v2 absent; sc1 bifurcate; e3 lanceolate; spermathecal vesicle cylinder-shaped; femora 4-4-2-1; genua 2-2-0-0; tibiae 5-5-3-2 .................... A. urigersoni sp. nov.
   - Setae v2 present; sc1 setiform; e3 setiform or barbed; spermathecal vesicle dome-shaped; femora 4-4-2-2; genua 2-2-1-0; tibiae 5-5-3-3 ........................................ 2

2. Setae e3 setiform, sc2 lanceolate; dorsal seta d on femur III lanceolate ......... A. plana Beard & Gerson
   - Setae e3 barbed, sc2 short and barbed; dorsal seta d on femur III short and stout ........................................ A. danutae Beard & Gerson

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