

A New Species and Two First Records of Eriophyoid Mites (Trombidiformis: Eriophyoidea: Eriophyidae), From Egypt

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ABSTRACT

A new vagrant eriophyoid mite species, *Aculus polygonumnis* sp. nov. collected from the weed *Polygonum salicifolium* Brouss. Ex Willd (Polygonaceae) was described and illustrated from Egypt. Redescription of two first record species, *Aceria salicina* (Nalepa, 1911), rec. n. collected from *Salix babylonica* L. and *S. mucronata* Thunb (Salicaceae), causing leaf rolling and buds, petiole bases, collected on malformed catkins; *Anthocoptes salicis* Nalepa, 1894, rec. n. collected from *S. babylonica* and *S. mucronata* (Salicaceae), vagrant on leaves. The genus *Anthocoptes* is recorded for the first time for the Egyptian fauna.

Key words: Eriophyidae, taxonomy, morphology, weeds, Polygonaceae, Salicaceae, *Anthocoptes*; *Aculus*.

INTRODUCTION

The fauna of eriophyoid mites in Egypt has been increasingly surveyed in recent years; Abou–Awad, 1976; Elhalawany, 2012 and Zaher, 1984 summarized 63 species to occur there. After that 16 new species and 11 new records were recently reported (Elhalawany, 2012, 2013, 2014, 2016a & b; Elhalawany and Ueckermann, 2015; Elhalawany *et al.*, 2014, 2015 a b and Halawa and Mohamed, 2015).

The genus *Aculus* was established by Keifer, 1959 based on the type species *Phyllocoptes ligustri* Keifer, 1938, characterized by body fusiform; scapular setae (*sc*) and tubercles on rear shield margin, directed posteriorly, frontal lobe broad and rounded, sometimes with 2–4 small spines or spinules projecting forward from under front edge; coxae I and coxae II, each with 3 setae; legs with usual segmentation and setae, empodium simple; opisthosomal annuli differential dorsoventrally. This genus consists of 248 species (Amrine *et al.* 2003). Only four species have been recorded in Egypt; *Aculus fockeui* (Nalepa & Trouessart, 1891) = *Aculus cornutus* (Banks, 1905) on *Prunus domestica* L., (Rosaceae); *Aculus malus* (Zaher & Abou–Awad, 1979), *Aculus schlehtendali* (Nalepa, 1890) on *Malus domestica* Borkh., (Rosaceae) and *Aculus zaheri* (Abou–Awad, 1979a) on *Solanum lycopersicum* L., (Solanaceae) (Zaher, 1984).

The genus *Anthocoptes* was established by Nalepa, 1892 based on the type species *Phyllocoptes loricatus* Nalepa 1889, characterized by body fusiform; scapular setae (*sc*) and tubercles on rear shield margin, directed posteriorly; frontal lobe present; coxae I and II, each with 3 setae; legs with usual segmentation and setae; opisthosoma with smooth broad dorsal annuli, abruptly contrasting with

narrow annuli beyond setae *f*. This genus includes of 50 species (Amrine *et al.*, 2003).

From 2012 to 2016, field surveys were conducted in Menofiya, Gharbia and Qalyubia Governorates (Egypt). A new species of *Aculus* on *Polygonum salicifolium* from Egypt was described and illustrated. Moreover, two first records of genera *Aceria* and *Anthocoptes* on *Salix babylonica* and *S. mucronata* were redescribed and illustrated in Egypt.

MATERIALS AND METHODS

Samples were collected from March 2014 to March 2016 from different localities at Menofiya, Gharbia and Qalyubia governorates, Egypt. Eriophyid specimens were collected from plants by direct examination under stereo–microscope. Specimens were slide mounted in Keifer’s F-medium according to protocol reported in Amrine and Manson (1996). Specimens were examined under a phase contrast microscope and drawings were scanned, digitised and elaborated using the Adobe Illustrator CS5 program. The morphological terminology used herein follows that of Lindquist (1996) and the generic classification and abbreviations follow Amrine *et al.* (2003). Specimens were measured following de Lillo *et al.* (2010). For each species, the holotype female measurement precedes the corresponding range for paratypes (given in parentheses). For male and immature stages, only the ranges are given. All measurements are given in micrometers (μm) and refer to the length of morphological traits unless otherwise specified. The count of ventral opisthosomal semiannuli starts from the first semiannulus after the coxae II. Dorsal opisthosomal semiannuli were counted from the first semiannulus behind the rear margin of the prodorsal shield. Host plant names and their synonymies are in accordance with the Plant List database (<http://www.theplantlist.org>).

RESULTS AND DISCUSSION

Subfamily Phyllocoptinae Nalepa, 1892

Tribe Anthocoptini Amrine & Stasny, 1994

Genus *Aculus* Keifer, 1959: 5–6.*Aculus polygonumnis* Elhalawany & El-Adl. (Figs 1–3)**Description:**

FEMALE (n=15). Body fusiform, 180 (160–190), including gnathosoma, 55 (53–60) thick, 64 (57–65) wide, light yellow.

Gnathosoma 25 (23–25), projecting obliquely down, pedipalp coxal setae (*ep*) 3 (2–3), dorsal pedipalp genual setae (*d*) 6 (5–7), cheliceral stylets 16 (16–18).

Prodorsal shield 43 (40–46) including the frontal lobe, 55 (51–57) wide, sub-circular in anterior shape with a broad based frontal lobe, 7 (6–8) over gnathosomal base. Shield pattern of faint lines, without granules and short dashes, incomplete median line on the posterior one third, incomplete admedian lines sinuate on the posterior two thirds; median line connected and is apically connected with admedian lines, submedian lines absent. Tubercles *sc* on the rear shield margin, 35 (34–37) apart, setae *sc* 12 (10–14), directing backward.

Coxal plates smooth, anterolateral setae on coxisternum I (*lb*) 5 (5–6), 11 (10–12) apart, proximal setae on coxisternum I (*la*) 16 (16–18), 9 (9–10) apart, proximal setae on coxisternum II (*2a*) 25 (23–26), 24 (23–26) apart. Prosternal apodeme 9 (8–10). Legs — with all usual segments and setae present.

Leg I 30 (29–31), femur 9 (8–10), basiventral femoral setae (*bv*) 8 (7–9); genu 5 (5–6), antaxial genual setae *l''* 20 (18–21), tibia 7 (6–7), paraxial tibial setae (*l'*) 5 (4–6), located at 1/4 from dorsal base; tarsus 6 (5–6), fastigial, tarsal setae *ft'* 11 (11–13), antaxial, fastigial, tarsal setae *ft''* 18 (18–20), setae (*u'*) 3 (3–4); tarsal solenidion ω 5 (5–6) distally knobbed, empodium simple, 5 (4–5), 4-rayed.

Leg II 29 (27–30), femur 8 (7–8), basiventral femoral setae (*bv*) 8 (7–9); genu 5 (5–6), antaxial genual setae *l''* 6 (5–8), tibia 7 (6–7); tarsus 6 (5–7), fastigial, tarsal setae *ft'* 10 (9–12), antaxial, fastigial, tarsal setae *ft''* 17 (15–17), setae (*u'*) 3 (3–4); tarsal solenidion ω 5 (5–6) distally knobbed, empodium simple, 5 (4–5), 4-rayed.

Opisthosoma dorsally arched, with 28 (27–29) broad dorsal semiannuli, smooth, 62 (57–65) narrow ventral semiannuli and 6 (5–6) semiannuli between coxae and genital coverflap. Round microtubercles on the posterior margin of ventral semiannuli; last 6 (6–10) ventral semiannuli with elongated and linear

microtubercles. Setae *c2* 12 (10–15) on ventral semiannulus 11 (10–13), 48 (47–50) apart; setae *d* 40 (39–42) on ventral semiannulus 26 (24–27), 35 (33–36) apart; setae *e* 18 (16–20) on ventral semiannulus 42 (39–43), 18 (17–18) apart; setae *f* 19 (16–20) on ventral semiannulus 59 (52–60); 5 annuli after setae *f*. Setae *h2* 40 (38–45), *h1* 3.

Genital coverflap 18 (18–20), 22 (21–23) wide, with 12 (10–12) striae; setae *3a* 12 (12–14), 13 (12–14) apart.

MALE (n=7). Smaller than female, body fusiform, 158 (150–165), 55 (52–57) wide and 55 (50–56) thick. Gnathosoma 24 (23–25); setae (*ep*) 3 (3–4); setae (*d*) 6 (5–6); cheliceral stylets 16 (15–17).

Prodorsal shield 40 (39–42) including frontal lobe, 6 (5–7) and 48 (47–51) wide; shield design similar to female, scapular tubercles on rear margin, 33 (32–35) apart, scapular setae *sc* 11 (10–14), projecting divergent posteriorly.

Legs with all usual segments and setae present.

Leg I 26–28; femur 6–8, seta *bv* 6–7; genu 4–5, seta *l''* 15–18; tibia 5–6, seta *l'* 4–5; tarsus 5–6, setae: *ft'* 10–13, *ft''* 16–19, *u'* 3–4; solenidion (ω) 4–5; empodium simple *em* 5–6, with 4 paired rays.

Leg II 24–26; femur 6–7, *bv* 6–8; genu 3–4, *l''* 6–8; tibia 5–6; tarsus 5–6, *ft'* 7–9, *ft''* 15–18, *u'* 3–4; ω 5–6; *em* 4–5, with 4 paired rays.

Coxisternal plates smooth — Setae *lb* 5–6, 10–11 apart; *la* 15–17, 8–9 apart; *2a* 22–25, 22–24 apart.

Opisthosoma dorsally arched, with 25–27 broad dorsal semiannuli, smooth, 51–58 narrow ventral semiannuli and 6–8 semiannuli between coxae and genitalia. Round microtubercles on the posterior margin of ventral semiannuli. Setae *c2* 10–12 on ventral semiannulus 10–13, 46–48 apart; setae *d* 30–35 on ventral semiannulus 20–23, 28–30 apart; setae *e* 16–18 on ventral semiannulus 33–36, 17–18 apart; setae *f* 16–21 on ventral semiannulus 48–53 or 5th annuli from rear. Setae *h2* 38–45, *h1* 3.

Male genitalia 11 (10–11) and 14 (14–15) wide, setae *3a* 13 (12–13), 13 (13–14) apart.

NYMPH (n=4) Similar to the female, 125–140, 42–50 wide, 40–50 thick. Gnathosoma 17–18, chelicerae 13–16, setae *d* 3–4, simple.

Prodorsal shield 37–39, 43–45 wide, with faint short median line on the posterior one third. Tubercles of scapular setae *sc* 27–29 apart, setae *sc* 6–8. Coxisternal plates smooth. Setae *lb* 3–4, 11–12 apart; *la* 9–10, 8–9 apart; *2a* 13–15, 17–19 apart. Prosternal apodeme 4–5.

Leg I 20–22; femur 5–6, *bv* 4–6; genu 3–4, *l''* 10–12;

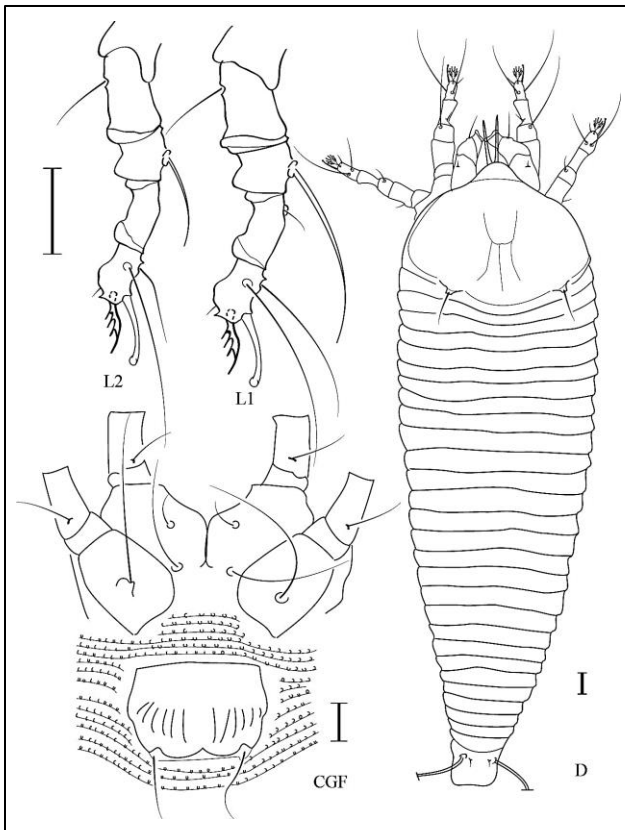


Fig. (1): *Aculus polygonummi* sp. nov.: D – dorsal view of mite; CGF – coxigenital region of female; L1– leg I; L2– leg2. Scale bar 10 μ m.

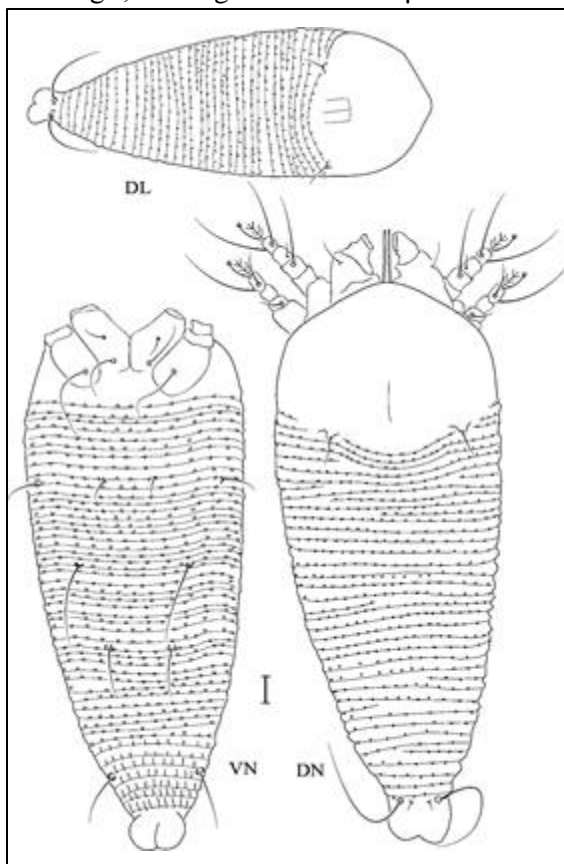


Fig. (3): *Aculus polygonummi* sp. nov.: DN – dorsal view of nymph; VN – ventral view of nymph; DL– dorsal view of larva. Scale bar 10 μ m.

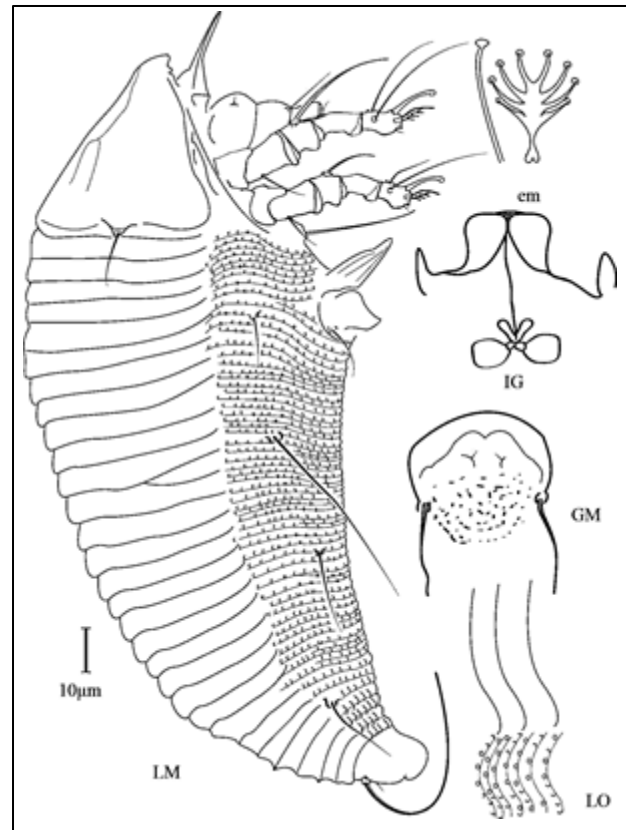


Fig. (2): *Aculus polygonummi* sp. nov.: LM – lateral view of mite; em– empodium; IG– internal female genitalia; GM – male genitalia; LO – lateral view of annuli. Scale bar 10 μ m for LM; 5 μ m for IG, GM; 2.5 μ m for em.

tibia 4–5, *l'* 3–4; tarsus 3–4, *ft'* 9–13, *ft''* 13–15; solenidion ω 4–5, knobbed; *em* 3–4, with 3 paired rays.

Leg II 18–20; femur 5–6, *bv* 4–6; genu 3–4, *l''* 5–6; tibia 4–5; tarsus 3–4, *ft'* 5–6, *ft''* 10–14; ω 4–5, knobbed; *em* 3–4, with 3 paired rays.

Opisthosoma with 33–35 dorsal, 45–48 ventral annuli. Microtubercles fine points close to the rear annular margins dorsally and ventrally. Opisthosomal setae *c2* 10–12, on annulus 9–11, 39–40 apart; setae *d* 19–22, on annulus 18–21, 23–25 apart; *e* 11–12, on annulus 28–30, 13–14 apart; *f* 14–15, on annulus 40–42, or 5th from the rear, 18–19 apart. Opisthosomal setae *h2* 25–30, *h1* 2–3. Setae *3a* 10–11 apart, 5–6.

LARVA (n=3) Body vermiform, 100–113, 36–44 wide. Gnathosoma 15–18, chelicerae 11–13, setae *d* 3–4, simple.

Prodorsal shield 30–36, 30–48 wide, with faint short median and admedian lines on the posterior one third. Tubercles of scapular setae *sc* 21–26 apart, *sc* 4–7. Coxisternal plates smooth. Setae *1b* 3–4, 10–11 apart; *1a* 6–8, 6–7 apart; *2a* 13–15, 13–14 apart. Prosternal apodeme 4–5.

Leg I 13–18; **Leg II** 13–16.

Opisthosoma with 30–34 dorsal, 29–38 ventral annuli. Microtubercles fine points close to the rear annular margins dorsally and ventrally. Opisthosomal setae *c2* 9–10, on annulus 7–9, 35–37 apart; *d* 12–19, on annulus 12–18, 21–24 apart; *e* 9–12, on annulus 17–24, 12–13 apart; *f* 10–12, on annulus 25–34, or 5th from the rear, 15–16 apart. Opisthosomal setae *h2* 28–30, *h1* 2. Setae (*3a*) 8–9 apart, 4–5.

Type host plant: *Polygonum salicifolium* Brouss. Ex Willd (Polygonaceae).

Relation to host: Mites are vagrant on the undersurface of leaves, causing no apparent damage.

Etymology: The specific designation *polygonumnis* is from the generic name of the host plant, *Polygonum*.

Type locality: Qalyubia governorate, Egypt (30°15'50"N, 31°14'51"E); 15 August 2016, Collected by A. Elhalawany and F. El-Adl.

Type material: Holotype: single female on a microscope slide (**EGTERio108**), deposited in the mite reference collection of Fruit Trees Mites Department, Plant Protection Research Institute, Agricultural Research Centre, Dokki, Giza governorate. **Paratypes:** 30 females, 10 males, 5 nymphs and 4 larvae mounted on separate microscope slides. 5 female paratypes and 2 male paratypes on 2 slides, with the same data as holotype, deposited in the mite reference collection of Zoology and Agricultural Nematology Department, the Faculty of Agriculture, Cairo University, Giza governorate.

Differential diagnosis: When compared with other eriophyoid mite species found on plants of the family Polygonaceae, *A. polygonumnis* sp. nov. is most similar to *Aculus rumexis* Xue *et al.*, 2008 but differs by having: 4-rayed empodia (7-rayed in *A. rumexis*), the absence of (submedian lines on the prodorsal shield that converge towards the admedian lines on *A. rumexis*), scapular setae that are about 10–14µm long (about 21–25µm long on *A. rumexis*), coxal plates smooth (coxal plates with granules on *A. rumexis*). In addition, the new species is similar to *A. guilinensis* Kuang *et al.*, 2005 on *Wisteria sinensis* L. (Fabaceae), but can be differentiated by the coxal plates smooth (coxal plates with short lines in *A. guilinensis*), empodium 4-rayed (empodium 5-rayed in *A. guilinensis*), prodorsal shield without submedian lines (prodorsal shield with submedian lines in *A. guilinensis*). Moreover the new species is similar to *Aculus lalithi* Xue & Zhang, 2008, but can be differentiated from the latter by prodorsal shield with faint median and admedian lines (prodorsal shield smooth in *A. lalithi*); setae *h1* present (setae *h1* absent

in *A. lalithi*); the ventral semiannuli are more numerous (57–65 of the new species versus 45–46 of *A. lalithi*).

Subfamily: Eriophyinae Nalepa, 1898

Tribe: Aceriini Amrine & Stasny, 1994

Genus *Aceria* Keifer, 1944

***Aceria salicina* (Nalepa, 1911) (Figure 4)**

Synonyms

Phytoptus salicis Nalepa, 1891, 220 (No. 27), pl. 2, f. 6a.

Eriophyes salicis (Nalepa, 1892), in Nalepa, 1898: 13.

Eriophyes salicinus (Nalepa, 1910), in Nalepa, 1911: 220 (No. 27), pl. 2, fig. 6a.

Aceria salicina (Nalepa, 1889), in Roivainen, 1949: 23.

Eriophyes (Aceria) salicinus (Nalepa, 1910), in Liro & Roivainen, 1951: 42, 107 (fig. 57–5).

Aceria salicina (Nalepa, 1910), in Davis *et al.* 1982: 96.

Aceria salicinus (Nalepa, 1911), in Amrine & Stasny, 1994.

Aceria salicina (Nalepa, 1911), in Denizhan, 2011a: 157.

Aceria salicina (Nalepa, 1911), in de Lillo, 1988: 22, figs 7–8.

Aceria salicina (Nalepa, 1911), in Denizhan *et al.*, 2015: 26.

Redescription:

FEMALE (n=10). Body vermiform, 235 (230–263), including gnathosoma, 55 (53–60) thick, 63 (57–65) wide, light yellow in colour.

Gnathosoma 29 (28–31), projecting obliquely down, pedipalp setae *ep* 3 (3–4), setae *d* 5 (5–6), cheliceral stylets 20 (18–21).

Prodorsal shield 32 (30–36) included the frontal lobe, 55 (51–57) wide, subcircular in anterior shape with a short, flexible distally rounded frontal lobe, 3 (2–3), over gnathosomal base. Shield pattern of lines, with heavily granules and short dashes laterally; complete median, admedian, first submedian lines, second submedian line sinuate on the anterior half. Tubercles *sc* on the rear shield margin, 29 (26–30) apart, setae *sc* 30 (28–32), directed divergently back reaching 10–12th annulus from prodorsal shield.

Coxal plates with granules, Setae *1b* 6 (6–7), 11 (10–11) apart, *1a* 16 (16–18), 7 (7–8) apart, *2a* 33 (30–35), 22 (21–23) apart. Prosternal apodeme 11 (10–12).

Legs with all usual segments and setae present.

Leg I 32 (32–34), femur 9 (8–10), setae *bv* 10 (10–11); genu 6 (6–7), setae *l''* 23 (21–25), tibia 8 (7–10),

setae *l'* 7 (6–7), located at 1/3 from dorsal base; tarsus 7 (6–8), setae *ft'* 12 (11–15), *ft''* 22 (21–24), setae *u'* 3 (3–4); tarsal solenidion ω 7 (7–8) distally Knobbed, empodium simple *em*, 6 (5–6), 6-rayed.

Leg II 30 (29–32), femur 8 (8–9), *bv* 9 (8–10); genu 5 (5–6), *l''* 11 (10–12), tibia 7 (6–7); tarsus 6 (5–7), *ft'* 8 (8–10), setae *ft''* 20 (18–22), *u'* 4 (3–4); ω 7 (7–8) distally Knobbed, *em* 6 (5–6), 6-rayed.

Opisthosoma dorsally arched, with 75 (70–80) dorsal semiannuli, 73 (71–77) ventral semiannuli, and 6 (5–6) semiannuli between coxae and genital coverflap. Microtubercles elliptical on the posterior margin of dorsal semiannuli, oval on the posterior margin of ventral semiannuli; last 10 (10–15) ventral semiannuli with elongated and linear microtubercles. Setae *c* 2 18 (16–20) on ventral semiannulus 12 (10–12), 48 (47–49) apart; setae (*d*) 46 (45–48) on ventral semiannulus 26 (25–27), 40 (40–41) apart; setae *e* 18 (17–19) on ventral semiannulus 43 (43–47), 25 (24–26) apart; setae *f* 25 (25–29) on ventral semiannulus 68 (67–72) or on 6th annuli from rear. Setae *h* 2 83 (74–86), *h* 1 5 (4–6).

Genital coverflap 16 (15–16), 20 (19–22) wide, with 10 longitudinal striae plus 3 to 4 transverse line dashes; setae *3a* 12 (12–14), 13 (12–14) apart.

MALE (n=6). Smaller than female, body vermiform, 210 (197–225), 48 (45–50) wide, and 46 (45–48) thick. Gnathosoma 26 (26–28); setae *ep* 3 (3–4); setae *d* 6 (5–6); cheliceral stylets 16 (15–17).

Prodorsal shield 34 (33–35) including frontal lobe, 32 (30–36) wide; shield design similar to female, scapular tubercles on rear margin, 25 (25–27) apart, scapular setae *sc* 25 (24–28), projecting divergent posteriorly.

Legs with all usual segments and setae present.

Leg I 29–30; femur 7–8, *bv* 9–10; genu 5–6, *l''* 19–22; tibia 6–7, *l'* 5–6; tarsus 5–6, *ft'* 12–15, *ft''* 18–21, (*u'*) 3–4; solenidion ω 7–8; empodium simple *em* 5–6, with 6 paired rays.

Leg II 28–30; femur 8–9, *bv* 9–10; genu 4–5, *l''* 8–10; tibia 6–7; tarsus 5–6, *ft'* 7–10, *ft''* 16–19, *u'* 3–4; ω 7–8; *em* 5–6, with 5 paired rays.

Coxisternal plates granules — Setae *1b* 5–6, 8–9 apart; *1a* 13–17, 6–7 apart; *2a* 30–32, 19–20 apart.

Opisthosoma with 68–71 semiannuli, and 5–6 semiannuli between coxae and genitalia. Setae *c* 2 15–17 on ventral semiannulus 10–11, 46–48 apart; setae *d* 32–35 on ventral semiannulus 21–23, 37–38 apart; setae *e* 13–17 on ventral semiannulus 37–38, 22–23 apart; setae *f* 22–25 on ventral semiannulus 62–66 or 6th annuli from rear. Setae *h* 2 55–70, (*h* 1) 4–5.

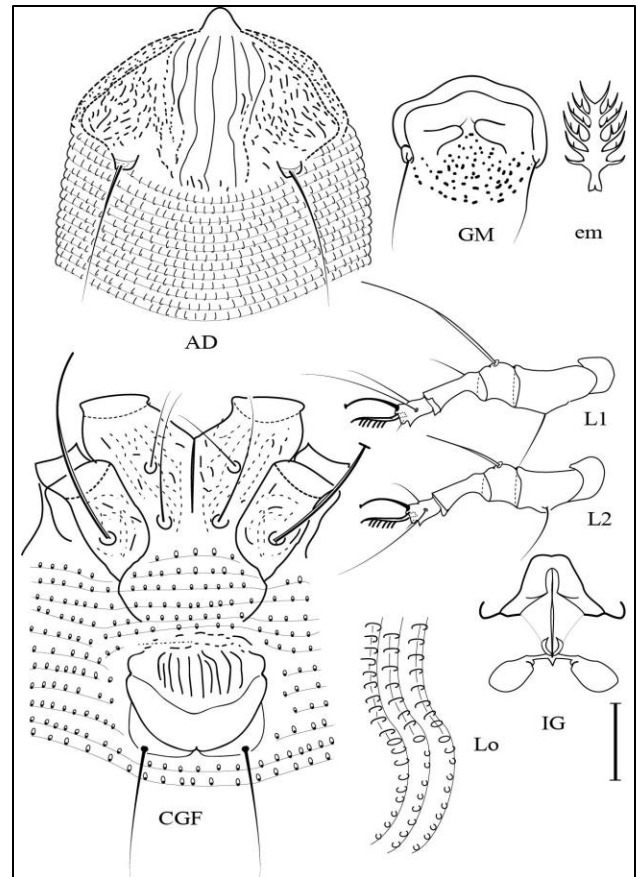


Fig. (4): *Aceria salicina* (Nalepa, 1911): AD – prodorsal shield of female; CGF – coxigenital region of female; em– empodium; GM – male genitalia; L1– leg I; L2– leg 2. IG– internal female genitalia; Lo – lateral view of annuli. Scale bar 10 μ m for AD, CGF, Leg1, Leg2, GM; 5 μ m for em.

Male genitalia 15–18, and 18–19 wide, setae *3a* 10–13, 14–15 apart.

Type data. *Salix alba* L. (Salicaceae).

Host plant from Egypt: *Salix babylonica* L. and *S. mucronata* Thunb.

Geographic distribution: Finland; Germany; Hungary; Italy; Kirgizia; Portugal; Sweden; Yugoslavia; Turkey (Amrine & Stasny, 1994).

Relation to the host plant: This species causes leaf nodules and it was also found inside witches' brooms. In Egypt, the mites cause leaf rolling and buds, petiole bases, collected on malformed catkins associated with *Stenacis palomaris* Keifer, 1970 on male trees of *S. alba* and *S. mucronata*, also associated with *Anthocoptes salicis* (Nalepa, 1894) on *S. babylonica*.

Material examined: Five females and one male (slide no. NJAUAcariEriEgypt43) from *S. babylonica*, Egypt, Qalyubia governorate, 30°15'57"N 31°13'6"E, on 27 June, 2012; deposited in the Arthropod/Mite Collection of the Department of

Entomology, Nanjing Agricultural University, Jiangsu Province, China. Seven females and three males on four slides (slide no. EGTERio43) from *S. mucronata*, Qalubia governorate, on 15 May 2014, deposited in the mite reference collection of Fruit Trees Mites Department, Plant Protection Research Institute, Agricultural Research Centre, Dokki, Giza governorate. Three slides (no. AcY:13/373) from *S. babylonica*, Egypt, Menofiya governorate, 30°33'54"N 31°9'28"E, on 3 July, 2013; deposited in the National Collection of Arachnida, ARC-PPRI, Biosystematics, Pretoria, South Africa. Four slides, deposited in Department of Soil, Plant and Food Sciences (Di.S.S.P.A.), section of Entomology and Zoology, University of Bari Aldo Moro, Bari, Italy (dr. de Lillo). Two slides, from *S. alba*, Gharbia governorate, 30°41'N, 31°10'E. on 20 May 2016, deposited in the mite reference collection of Zoology and Agricultural Nematology Department, the Faculty of Agriculture, Cairo University, Giza governorate; all collected by A. Elhalawany.

Remarks: This is the first record of *A. salicina* from Egypt.

Subfamily: Phyllocoptinae Nalepa, 1892

Tribe: Anthoceptini Amrine and Stasny, 1994

***Anthoceptes salicis* Nalepa, 1894 (Figure 5)**

Phyllocoptes salicis Nalepa, 1893, in Nalepa 1890: 213.

Anthoceptes salicis (Nalepa, 1893), in Nalepa 1893: 284.

Anthoceptes salicis Nalepa, 1894, 317–318, pl. 3, figs 9–10.

Anthoceptes salicis Nalepa, 1894, in Roivainen 1953, 28–29, figure 27.

Anthoceptes salicis Nalepa, 1894, in de Lillo 1988, 26, figs 15–16.

Anthoceptes salicis Nalepa, 1894, in Amrine & Stasny 1994: 141.

Anthoceptes salicis Nalepa, 1894, in Denizhan 2011b: 623.

Redescription:

FEMALE (n=15). Body fusiform, 210 (188–247), including gnathosoma, 55 (50–62) wide, 55 (50–58) thick, light yellow in colour.

Gnathosoma 28 (25–30), projecting obliquely down, pedipalp coxal setae *ep* 3 (3–4), dorsal pedipalp genual setae *d* 5 (5–6), cheliceral stylets 20 (18–21).

Prodorsal shield 39 (37–40) including the frontal lobe, 40 (39–41) wide, broad sub-triangular in anterior shape with a broad based and distally rounded frontal lobe, 10 (9–12) over gnathosomal base. Shield pattern of faint curved submedian lines on posterior half to two third of prodorsal shield,

without granules and short dashes; absent median and admedian lines. Tubercles *sc* on the rear shield margin, 25 (24–30) apart, setae *sc* 39 (37–40), directed divergently back reaching 3–5th annulus from prodorsal shield.

Coxal plates with few granules, setae *1b* 8 (7–8), 11 (10–12) apart, setae *1a* 19 (18–20), 7 (7–8) apart, setae *2a* 34 (30–35), 20 (19–20) apart. Prosternal apodeme 8 (7–8).

Legs with all usual segments and setae present.

Leg I 34 (30–35), femur 8 (8–9), setae *bv* 10 (9–10); genu 5 (5–6), setae *l''* 23 (21–25), tibia 8 (7–9), setae *l' 5* (5–6), located at 1/4 from dorsal base; tarsus 7 (6–8), *ft'* 17 (14–18), setae *ft''* 23 (22–24), setae *u' 3* (2–3); tarsal solenidion ω 7 (7–8) distally Knobbed, empodium simple *em* 6 (5–6), 4-rayed.

Leg II 32 (29–32), femur 9 (8–9), *bv* 9 (8–10); genu 5 (5–6), *l''* 11 (10–12), tibia 7 (7–8); tarsus 6 (6–7), *ft'* 8 (7–9), *ft''* 22 (20–24), *u' 3* (2–3); ω 7 (7–8) distally Knobbed, *em* 6 (5–6), 4-rayed.

Opisthosoma with 18 (14–21) smooth broad dorsal annuli, abruptly contrasting with narrow annuli beyond setae *f*, 65 (60–67) narrow and microtuberculated ventral semiannuli, and 3 distal subequal annuli, and 6 (5–6) semiannuli between coxae and genital coverflap. Small and rounded microtubercles on the ventral side on the rear margin of semiannuli. Last 3 annuli with elongated and linear tubercles; last 5 (5–7) ventral semiannuli with elongated and linear microtubercles. Setae *c2* 15 (12–17) on ventral semiannulus 14 (12–14), 50 (48–52) apart; setae *d* 45 (40–55) on ventral semiannulus 28 (25–28), 45 (41–47) apart; setae *e* 12 (10–14) on ventral semiannulus 42 (38–43), 25 (22–26) apart; setae *f* 25 (23–27) on ventral semiannulus 60 (58–62) or on 5th annuli from rear. Setae *h2* 70 (65–75), *h1* 4 (4–5).

Genital coverflap 15 (14–15), 20 (19–21) wide, with 10 longitudinal striae plus 4 transverse line dashes; setae *3a* 15 (12–16), 14 (14–16) apart.

MALE (n=4). Smaller than female, body fusiform, 157 (150–162) including gnathosoma, 47 (44–50) wide, and 44 (43–48) thick. Gnathosoma 27 (26–30); setae *ep* 3 (3–4); setae *d* 5 (5–6); cheliceral stylets 17 (15–18).

Prodorsal shield 34 (33–36) including frontal lobe, 7(6–8), 35 (33–38) wide; shield design similar to female, scapular tubercles on rear margin, 22 (21–23) apart, scapular setae *sc* 27 (26–32), projecting divergent posteriorly.

Legs with all usual segments and setae present.

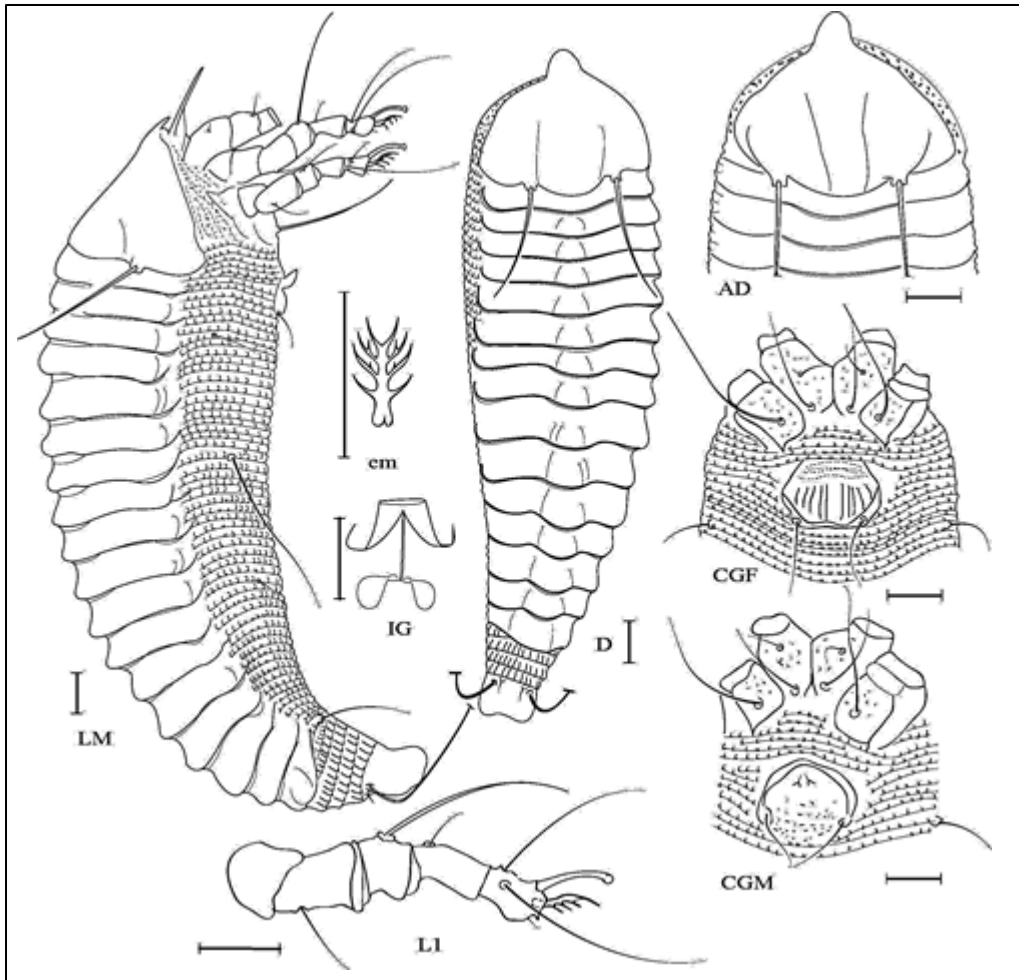


Fig. (5): *Anthocptes salicis* Nalepa, 1894: D – dorsal view of mite; AD– prodorsal shield; CGF – coxigenital region of female; CGM– coxigenital of male; LM– lateral view of mite; L1– leg I; IG – internal female genitalia; em– empodium. Scale bar 10 μ m.

Leg I 29–33; femur 8–9, seta *bv* 9–10; genu 5–6, seta *l''* 18–23; tibia 6–8, seta *l'* 5–6; tarsus 6–8, setae: *ft'* 12–15, *ft''* 18–22, *u'* 3–4; solenidion *w* 7–8, knobbed; empodium simple *em* 5–6, with 4 paired rays.

Leg II 28–31; femur 8–9, *bv* 9–10; genu 4–5, *l''* 10–12; tibia 6–7; tarsus 5–7, Setae *ft'* 7–9, *ft''* 15–18, *u'* 3–4; *w* 7–8, knobbed; *em* 5–6, with 4 paired rays.

Coxisternal plates with few granules — Setae (*Ib*) 6–8, 10–11 apart; setae (*Ia*) 14–17, 6–7 apart; setae (*2a*) 22–26, 19–20 apart.

Opisthosoma with 12–14 smooth broad dorsal annuli, abruptly contrasting with narrow annuli beyond setae *f*, 56–60 narrow and microtuberculated ventral semiannuli, and 3 distal subequal annuli, and 6–7 semiannuli between coxae and genitalia. Setae *c2* 15–18 on ventral semiannulus 10–12, 41–45 apart; setae *d* 32–36 on ventral semiannulus 22–23, 30–35 apart; setae *e* 10–12 on ventral semiannulus 35–36, 17–19 apart; setae *f* 20–23 on ventral semiannulus 63–57 or 5th annuli from rear, 16–17 apart. Setae *h2*

55–65, *h1* 4–5.

Male genitalia 12–13, and 17–18 wide, with granules, setae *3a* 10–12, 13–15 apart.

Type data: *Salix purpurea* L. (Salicaceae); type locality not stated by the author. Amrine and Stasny (1994) listed this as Austria followed by a question mark. Other hosts, *Salix alba*, *S. caprea*, *S. daphnoides* L., *S. purpurea* L., *S. viminalis*

Host plant from Egypt: *Salix babylonica* L.

Geographic distribution: Finland; France; Germany; Hungary; Italy; Turkey (Amrine & Stasny, 1994)

Relation to the host plant: Vagrant. In Egypt, this mite is inclined in deformed buds, flowers and witches' brooms which are induced by *Aceria salicina* on *S. babylonica* and *S. mucronata*.

Material examined: Twenty females and three males on twenty slides (slide no. NJAUAcariEriEgypt41.1–20) from *S. babylonica*, Egypt, Qalyubia

governorate, 30°14'25"N 31°15'57"E, on 15 May, 2013; deposited in the Arthropod/Mite Collection of the Department of Entomology, Nanjing Agricultural University, Jiangsu Province, China. Ten females and five males on four slides (slide no. EGTErio39) from *S. babylonica*, Qalyubia governorate, on 20 June 2015, deposited in the mite reference collection of Fruit Trees Mites Department, Plant Protection Research Institute, Agricultural Research Centre, Dokii, Giza governorate. Four slides, deposited in Department of Soil, Plant and Food Sciences (Di.S.S.P.A.), section of Entomology and Zoology, University of Bari Aldo Moro, Bari, Italy (dr. de Lillo). Two slides, from *S. alba*, Gharbia governorate, 30°41'N, 31°10'E. on 20 May 2016, deposited in the mite reference collection of Zoology and Agricultural Nematology Department, the Faculty of Agriculture, Cairo University, Giza governorate; all collected by A. Elhalawany.

Remarks: This is the first record of *A. salicis* from Egypt.

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