

## Two new species and a new record of Bdellidae (Acari: Trombidiformes) from Syria

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**ABSTRACT** — Two new species of Bdellidae, *Cyta kreiteri* **n. sp.** and *Odontoscirus tixieri* **n. sp.** were collected from Latakia province, Syria. *Biscirus iranensis* Paktinat-Saeed and Bagheri is reported for the first time from Syria, and *Spinibdella cronini* (Baker and Balock) is re-studied.

**KEYWORDS** — Acari; Bdellidae; new species; systematics; predatory mites; Syria

**ZOOBANK** — [E6413221-E244-48D3-A76D-DF7793B86AAA](https://zoobank.org/E6413221-E244-48D3-A76D-DF7793B86AAA)

### INTRODUCTION

Currently, 77 mite species are known from Syria, including nine species of Bdellidae: *Bdella lattakia* Soliman and Zaher, *Biscirus silvaticus* (Kramer), *B. simplex* Soliman and Zaher, *Cyta coerulipes* (Dugès), *C. latirostris* (Hermann), *C. reticulata* Soliman and Zaher, *Neomolgus clypeatus* (Thor), *Spinibdella cronini* (Baker and Balock) and *Odontoscirus lapidaria* (Kramer) (Barbar 2016, 2017; Hernandez *et al.*, 2016; Zeity, 2017). Members of this family (278 valid species belong to 11 genera) have been described from all continents except Antarctica and considered as active running predators of small arthropods such as soft bodied insects, collembolans and mites (Gerson *et al.*, 2003; Hernandez *et al.*, 2016). In the present paper two new species are described and illustrated from Syria. Additional

bdellid species are also reported.

### MATERIALS AND METHODS

Bdellids were collected from leaves of *Solanum melongena* L. (Solanaceae), *Sarcopoterium spinosum* (L.) (Rosaceae) and from ground litter at Al-ya'robiyah (35°30'24"N, 35°48'33"E) and Borj-Islam (35°39'18"N, 35°46'30"E), Latakia province, Syria. Specimens were mounted on slides in Hoyer's medium and dried in an oven at 40°C for one week. Mites were identified using Hernandez *et al.*'s (2016) keys to world Bdellidae. Specimens were compared with original descriptions or re-descriptions of corresponding or related species. All measurements (measured with the aid of an ocular micrometer) are given in micrometers (µm) and the holotype measurements are followed by measurements of the

paratype (or the range of paratypes in parentheses). Leg length was measured from the proximal edge of the coxa to the distal end of the claw. Asymmetry in leg chaetotaxy in the same specimen, if present, is indicated in brackets.

The following abbreviations are consistent with *Hernandes et al.* (2016): *ad* = adoral seta; *pvs* = posterior subcapitulum ventral seta; *avs* = anterior subcapitulum ventral seta; *des* = dorsal end seta (palp); *ves* = ventral end seta (palp); *at* = anterior trichobothrium; *pt* = posterior trichobothrium; *lps* = lateral prodorsal seta; *mps* = median prodorsal seta; *T* = trichobothrium (leg); *sts* = simple tactile seta; *asl* = attenuate solenidion; *bsl* = blunt solenidion; *pe* = peg-like seta. Specimens were deposited in the Arthropod Collection of the Department of Plant Protection, Faculty of Agriculture, Albaath University, Homs, Syria.

## RESULTS

### SUBFAMILY CYTINAE Grandjean GENUS *Cyta* von Heyden

#### *Cyta kreiteri* n. sp.

Zoobank: [57D50C7B-69CD-4183-B051-83896DB5975E](https://doi.org/10.57505/57D50C7B-69CD-4183-B051-83896DB5975E)

Diagnosis (Figures 1–4). Coxae and subcapitulum without reticulations; subcapitulum with two pairs of prominent ventral setae; prodorsal seta *mps* not reaching the base of co-lateral *lps*; prodorsal setae *at*, *lps* and *mps* not longitudinally aligned; tibiae I and tarsus III each without trichobothria; coxae IV with 3 setae; trochanters I with 2 setae; basifemora III with 7 setae in female and 7 (9) in male; basifemora IV with 4 [5] setae in female and 4 setae in male; telofemora II, III and IV with 7–7–4[5] setae in female and 7–6–4 in male respectively; genu IV with 7 setae; trichobothrium present only on tibia IV.

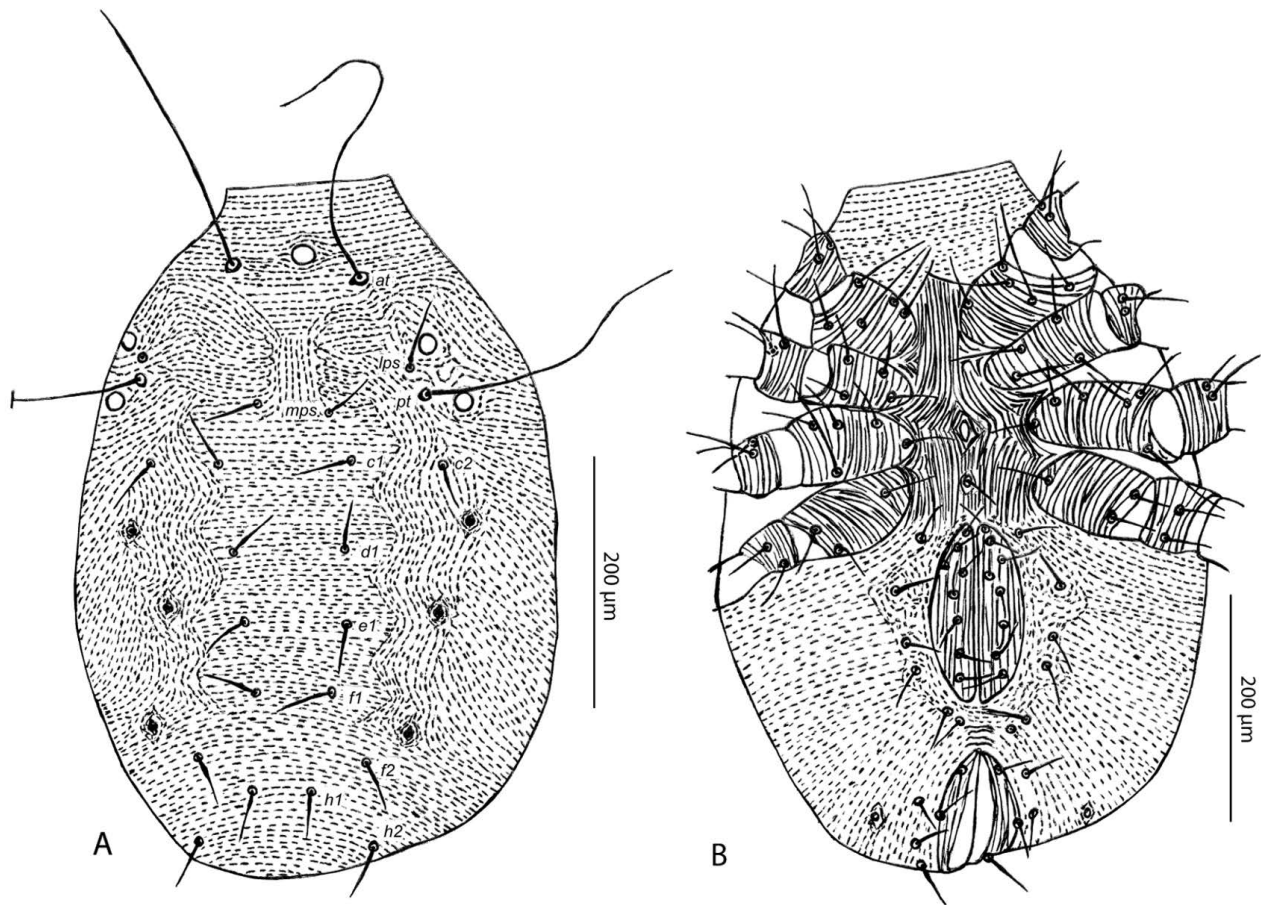
**Female (n = 3).** Color dark red in life. Body length (including gnathosoma) 712 (855–860), body length (excluding gnathosoma) 550 (695); width 342 (460–470).

**Dorsum** — (Figure 1A). Dorsal idiosoma with broken striae, central region of prodorsum (between

setae *at* and *mps*) with oblique and irregular striae. Prodorsum with five eyes, diameters of unpaired median eye 15 (18–20), anterior lateral eye 20 (22), and posterior lateral eye 22 (18), distance between two lateral eyes 40 (62), with oblique and irregular striae between each pair. Dorsal setae smooth to faintly serrate. Hysterosomal region with three pairs of cupules (*ia*, *im* and *ip*) at level of setae *d1*, *e1* and posterolateral to *f1*. Striae between setae *c1*, *d1*, *e1*, *f1*, *f2*, *h1*, and *h2* transverse, broken and become oblique and irregular laterally. Measurements of dorsal setae as follows: *at* 138 (150–195), *lps* 45 (52–58), *mps* 48 (48–53), *pt* 195 (200–230), *c1* 38 (42–52), *c2* 32 (37–47), *d1* 35 (43–47), *e1* 35 (40–43), *f1* 35 (38–52), *f2* 38 (48–58), *h1* 42 (35–48), *h2* 38 (35–55). Distance between dorsal setae: *at-at* 102 (110); *lps-lps* 215 (254–270); *at-lps* 84 (102–110); *pt-pt* 220 (265–275); *mps-pt* 75 (115–120); *mps-mps* 68 (85–115); *at-pt* 102 (128–135); *at-mps* 110 (100–135); *c1-c1* 102 (105–140); *c1-c2* 55 (80–87); *d1-d1* 88 (124–126); *e1-e1* 85 (112–122); *f1-f1* 50 (52–70); *f2-f2* 126 (104–156); *h1-h1* 50 (38–60); *c1-d1* 65 (80); *d1-e1* 56 (58–68); *e1-f1* 52 (65–75); *f1-h1* 68 (70–100); *h1-h2* 50 (62).

**Venter** — (Figure 1B). Anterior to coxa I with transverse broken striae; between coxae I–IV with continuous longitudinal striae except central area between coxae II and III with oblique and irregular striae; aggenital region surrounded with oblique and irregular striae; aggenital region with six pairs of setae (*ag1–6*) (seven pairs in one paratype female) and genital valves each with eight setae (*g1–8*) (nine pairs in one paratype female); anal region with three pairs of smooth para-anal setae (*ps1–3*), *ps1* 30 (30–38), *ps2* 30 (30–32) and *ps3* 37 (27–32); anal region at level of seta *ps2* with one pair of cupules; one unpaired seta anterior to genital opening.

**Gnathosoma** — (Figure 2). Subcapitulum with transverse striae at base and longitudinal anterior to setae *pvs*, 160 (162) long, width at base 120 (95–112), with two pairs of long ventral setae, *pvs* 73 (62–65), *avs* 30 (37–40); distance *pvs-avs* 52 (48–50); two pairs of short adoral setae near tip of subcapitulum, *ad1* 20 (20) and *ad2* 17 (17) (Figure 2A). Chelicerae inflated, 165 (175–190) long and 70 (75–80) wide, with two dorsal setae, proximal seta 60 (60

FIGURE 1: *Cyta kreiteri* n.sp. female: Dorsum (A); venter (B).

– 65), distal seta 23 (28 – 37), distance between proximal and distal setae 105 (100 – 112); movable digit with one tooth and fixed digit with two teeth; striation transverse and broken from cheliceral base to level of proximal seta and then longitudinal toward chelae (Figure 2A). Palp trochanter nude, basifemur with six setae; telofemur with one seta, genu with four setae; tibiotarsus with four setae, one solenidion and two long terminal setae, *des* and *ves* 132 (152 – 170) and 105 (112 – 130) respectively; measurements of palp segments as follows: trochanter 15 (20), basifemur 90 (118 – 120), telofemur 36 (45 – 50), genu 24 (25 – 27), tibiotarsus 68 (77 – 80) (Figure 2B).

Ovipositor — (Figure 3A). Ovipositor tube-shaped, with 10 dorsal setae and 7 ventral setae.

Legs — (Figure 4). Measurements of legs as follows: leg I 485 (550 – 575), leg II 440 (530 – 568), leg III 490 (500 – 600), leg IV 605 (612 – 680); setal formulae of leg segments as follows: coxae I–IV 5–4–6[5 setae on right coxa III of holotype; 4 setae on paratypes]–3; trochanters I–IV 2–2–2–2; basifemora I–IV 9–9[10 on right basifemur II of holotype]–7–4[5 setae on right basifemur IV of holotype]; telofemora I–IV 7–7–7–4 [5 setae on right telofemur IV of holotype]; genua I–IV 7*sts*,1*asl*–7*sts*,1*asl*–7*sts*,1*asl*–7*sts*; tibiae I–IV 9*sts*,3*asl*–9*sts*,1*asl*,1*bsl*–9*sts*,1*bsl*–8*sts*,1 *T*; tarsi I–IV 30*sts*,2*asl*,2*bsl*,1*pe*–27*sts*,1*bsl*,1*pe*–25*sts*–23*sts*,1*asl*; only tibia IV with a trichobothrium.

**Male (n = 2).** Similar to female. However, three differences were observed: basifemora III with 7 se-

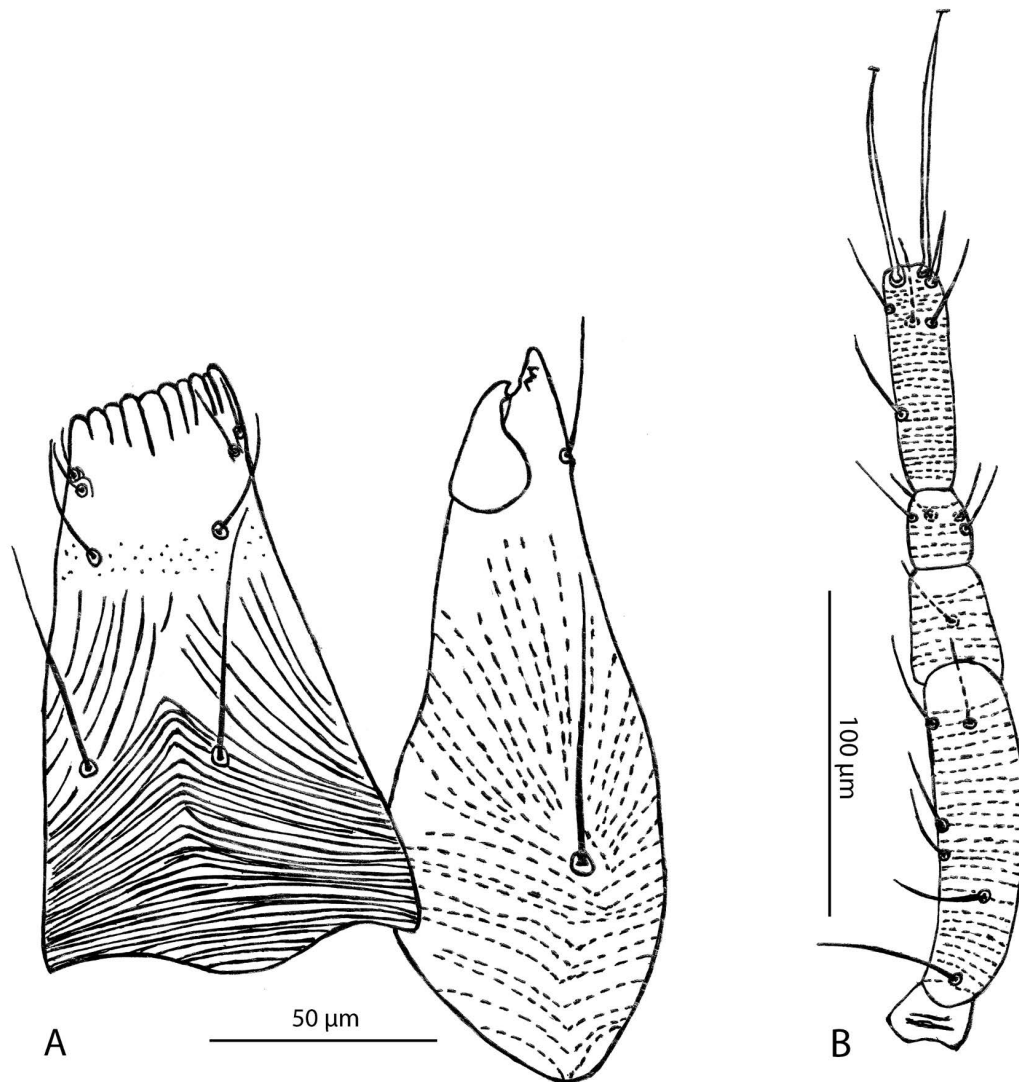


FIGURE 2: *Cyta kreiteri* n.sp. female gnathosoma: Subcapitulum and chelicerae (A); palp (B).

tae (9 setae on right leg of one male) oppose to 7 setae in female; telofemora III with 6 setae oppose to 7 in female; and tibia IV with 10 setae instead of 9 in female. Color dark red in life. Body length (including gnathosoma) 710 – 805, body length (excluding gnathosoma) 550 – 642; width 356 – 412.

Dorsum — Unpaired median eye 18, anterior lateral eye 20 – 24, and posterior lateral eye 22 in diameter, distance between two lateral eyes 45. Measurements of dorsal setae as follows: *at* 150 – 187, *lps* 45 – 62, *mps* 48 – 60, *pt* 200 – 220, *c1* 38 – 52, *c2* 35 – 52, *d1* 38 – 52, *e1* 38 – 50, *f1* 38 – 52, *f2* 40 – 56, *h1* 40 –

50, *h2* 40 – 50. Distance between dorsal setae: *at-at* 90 – 105; *lps-lps* 196 – 240; *at-lps* 88 – 112; *pt-pt* 210 – 254; *mps-pt* 75 – 80; *mps-mps* 80 – 90; *at-pt* 105 – 135; *at-mps* 105 – 122; *c1-c1* 100 – 132; *c1-c2* 55 – 60; *d1-d1* 95 – 112; *e1-e1* 105 – 112; *f1-f1* 55; *f2-f2* 110 – 130; *h1-h1* 32 – 50; *c1-d1* 62 – 65; *d1-e1* 66 – 68; *e1-f1* 66 – 75; *f1-h1* 76; *h1-h2* 58 – 60.

Venter — Aggenital region with six pairs of setae (*ag1-6*) and genital valves each with eight setae (*g1-8*); anal region with three pairs of smooth paranal setae (*ps1-3*), *ps1* 28 – 37, *ps2* 30 – 35 and *ps3* 30 – 35 long. Other parts like female.

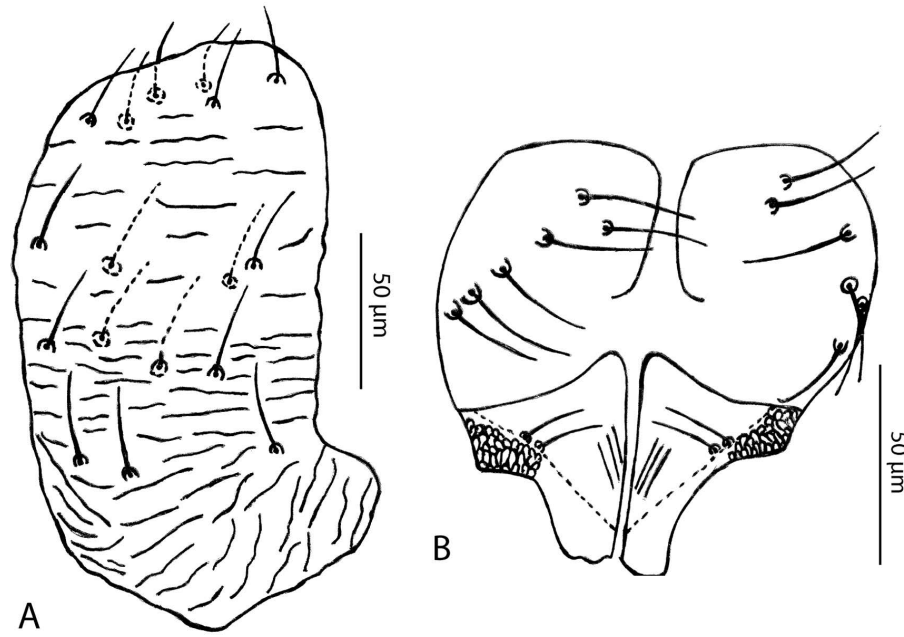


FIGURE 3: *Cyta kreiteri* n.sp.: Female ovipositor (A); male amphiod sclerite (B).

Gnathosoma — Subcapitulum 163 – 165 long, width at base 100 – 122 with two pairs of long ventral setae, *pvs* 70 – 82, *avs* 32 – 38; distance *pvs*–*avs* 45 – 50; two pairs of short adoral setae near tip of subcapitulum, *ad1* 20 and *ad2* 17. Chelicerae 152 – 170 long and 65 – 77 wide, with two dorsal setae, proximal seta 52 – 75 and distal seta 25 – 27, distance between proximal and distal setae 90 – 110; movable digit with one tooth and fixed digit with two teeth. Palp trochanter nude, basifemur with six setae; telofemur with one seta, genu with four setae; tibiotarsus with four setae, one solenidion and two long terminal setae, *des* and *ves* 138 – 170 and 112 – 140, respectively; measurements of palp segments as follows: trochanter 12, basifemur 90 – 136, telofemur 40, genu 25, tibiotarsus 68 – 70.

Genitalia — (Figure 3B). Amphiod sclerite with eight pairs of setae.

Legs — Measurements of legs as follows: legs I 485 – 520, legs II 430 – 482, legs III 480 – 566, legs IV 560 – 615; setal formulae of leg segments as follows: coxae I–IV 5–4–4–3; trochanters I–IV 2–2–2–2; basifemora I–IV 9–9–7 [9 setae on right basifemora III of one male]–4; telofemora I–IV 7–7–6–4; genua I–IV 7*sts*, 1*asl*–7*sts*, 1*asl*–7*sts*, 1*asl*–7*sts*; tibiae I–IV

9*sts*, 3*asl*–9*sts*, 1*asl*, 1*bsl*–9*sts*, 1*bsl*–9*sts*, 1*T*; tarsi I–IV 30*sts*, 2*asl*, 2*bsl*, 1*pe*–27*sts*, 1*bsl*, 1*pe*–25*sts*–23*sts*, 1*asl*; only tibia IV with a trichobothrium.

Remarks — *Cyta kreiteri* n. sp. is similar to *C. latirostris* (Hermann, 1804) [re-described by Atyeo (1960)] and *C. kurdistanicus* Eghbalian *et al.* (2014) by having coxae and subcapitulum without reticulations; prodorsal seta *mps* not reaching the base of co-lateral *lps*; tibiae I and tarsus III each without trichobothria; only tibia IV with a trichobothrium.

However, it differs from *C. latirostris* by having: (1) coxa IV with three setae in *C. kreiteri* instead of two in *C. latirostris*; (2) telofemur III of female with seven setae in *C. kreiteri* but 4–6 setae in *C. latirostris*; (3) genu IV with seven setae in *C. kreiteri* but six setae in *C. latirostris*; (4) tibiae IV of male with 10 setae (including trichobothrium) in *C. kreiteri* but 9 setae in *C. latirostris*; (5) total number of setae on tarsi I–IV 35–29–25–24 in *C. kreiteri* but 34–25–23–17 in *C. latirostris*; (6) ovipositor with 17 setae in *C. kreiteri* but 20 in *C. latirostris*.

*Cyta kreiteri* differs from *C. kurdistanicus* by having: (1) trochanter I with two setae in *C. kreiteri* instead of one in *C. kurdistanicus*; (2) basifemur II, III and IV with 9[10]–7–4[5] setae in *C. kreiteri* but 8–5–3

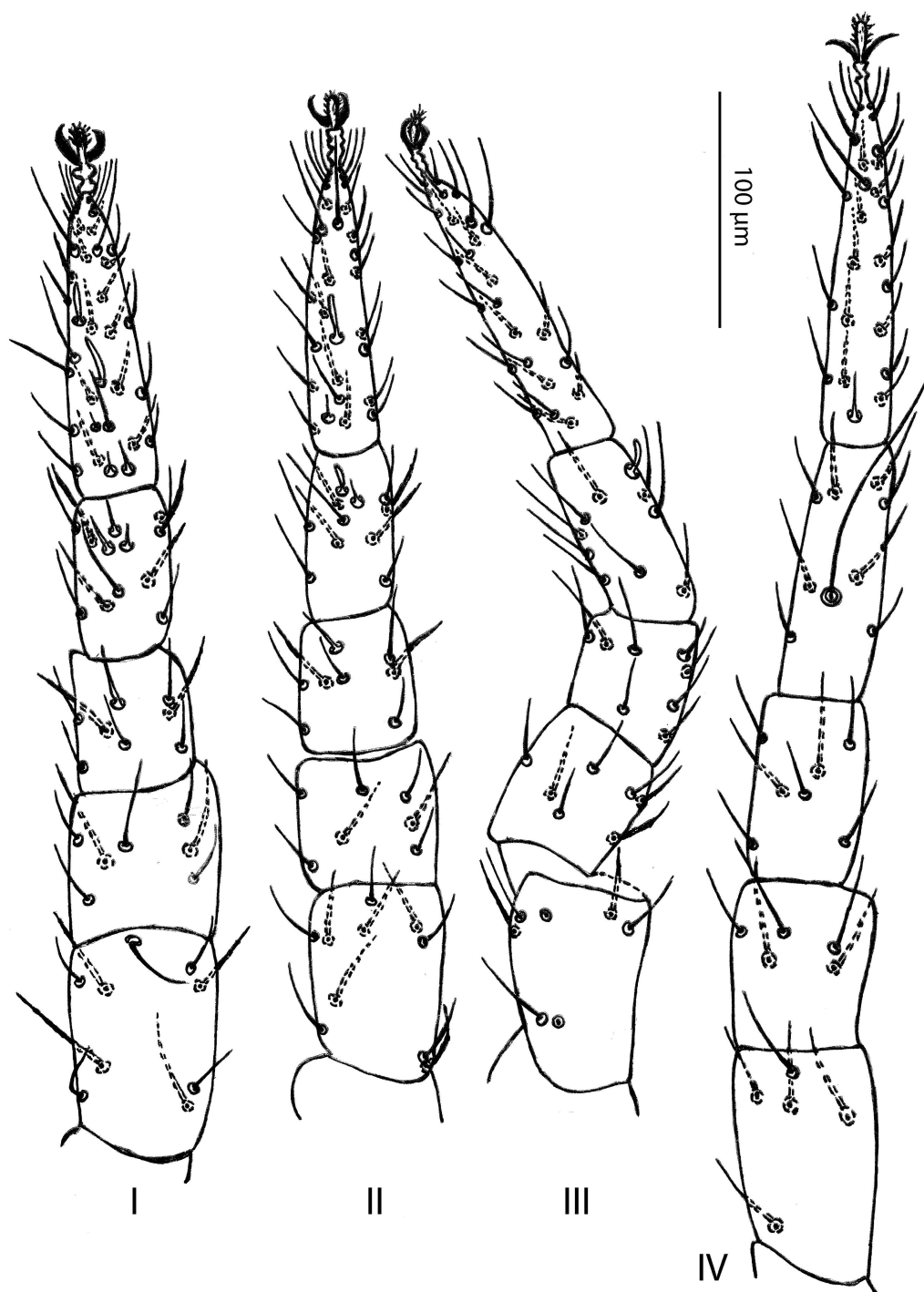
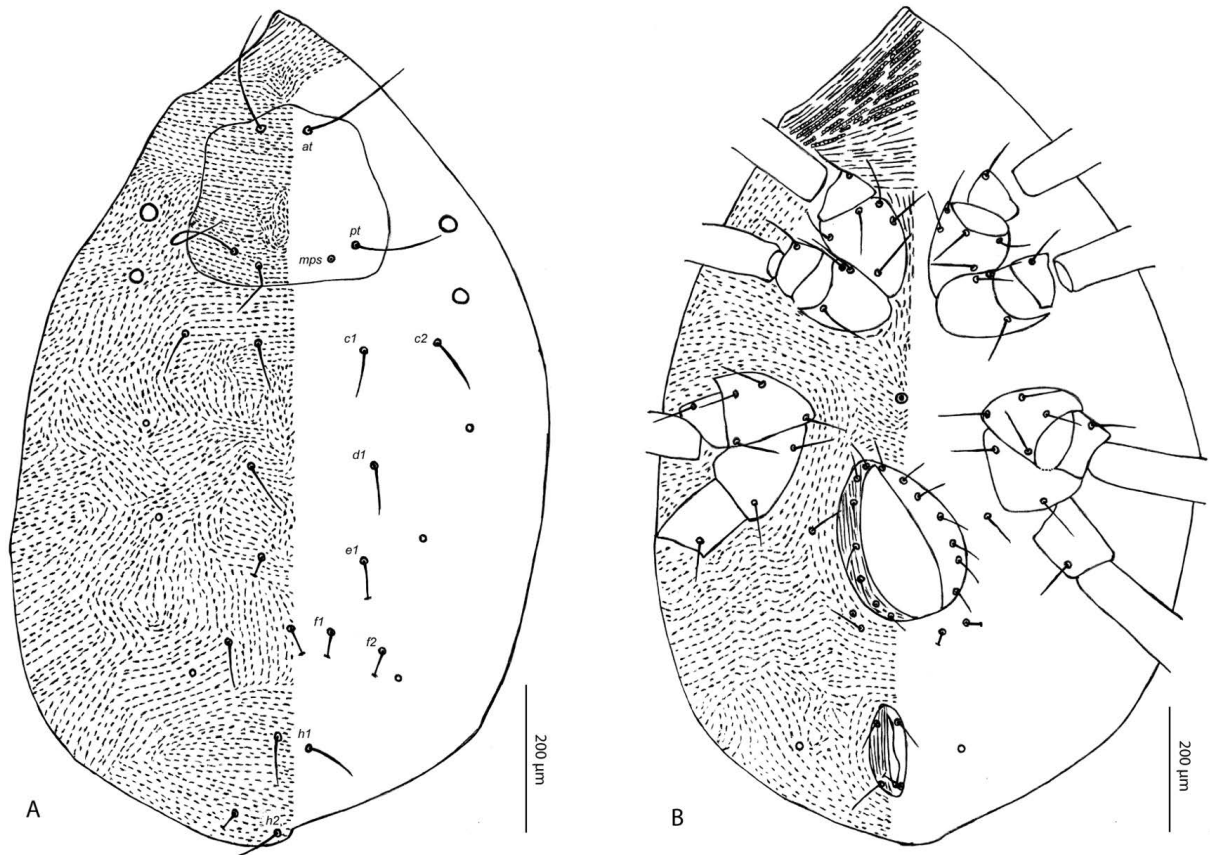


FIGURE 4: *Cyta kreiteri* n.sp. female: Basifemur, telofemur, genu, tibia and tarsus of legs I–IV.



FIGURE 5: *Odontoscirus tixieri* n.sp. female: Dorsum (A); venter (B).

setae in *C. kurdistanicus*; (3) telofemur II, III and IV with 7–7–4[5] setae in *C. kreiteri* but 6–6–3 setae in *C. kurdistanicus*; (4) genu I, III and IV with 8–8–7 setae in *C. kreiteri* but 7–7–6 setae in *C. kurdistanicus*; (5) tibiae II and III with 11–10 setae in *C. kreiteri* but 10–9 setae in *C. kurdistanicus*; (6) total number of setae on tarsi I–III is 35–29–25 in *C. kreiteri* but 33–28–22 in *C. kurdistanicus*; (7) diameter of eyes of *C. kreiteri* 2.0–2.5 times longer than those in *C. kurdistanicus* [unpaired median eye 15 (18 – 20), anterior lateral eye 20 (22), and posterior lateral eye 22 (18) in *C. kreiteri* opposite to 6 (5 – 6), 8 (8 – 9) and 7 (7 – 8) in *C. kurdistanicus*]; (8) ovipositor with 17 setae in *C. kreiteri* but 20 in *C. kurdistanicus*.

Type material — One holotype female and two paratypes (one female and one male) were collected from *S. melongena* leaves planted in an open field at Al-ya'robiyah (35°30'24"N, 35°48'33"E), Latakia Province, Syria, 17 April 2016, (Coll. Barbar, Z.).

Two paratypes (one female and one male) were collected from soil litter in the same locality, 7 April 2017 (Coll. Barbar, Z.).

Etymology — This species was named for Prof. Serge Kreiter of Montpellier SupAgro, UMR CBGP (SupAgro/CIRAD/INRA/IRD), Montpellier, France, in recognition of his contribution to Acarology.

#### SUBFAMILY ODONTOSCIRINAE Grandjean GENUS *Odontoscirus* Thor

##### *Odontoscirus tixieri* n. sp.

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Diagnosis (Figures 5–8) — Two cheliceral setae present; proximal cheliceral seta not reaching the base of distal seta; lateral prodorsal seta (*lps*) absent; proximal cheliceral seta longer than 1/3 the length of distal seta; palp tibiotarsus with 10 setae

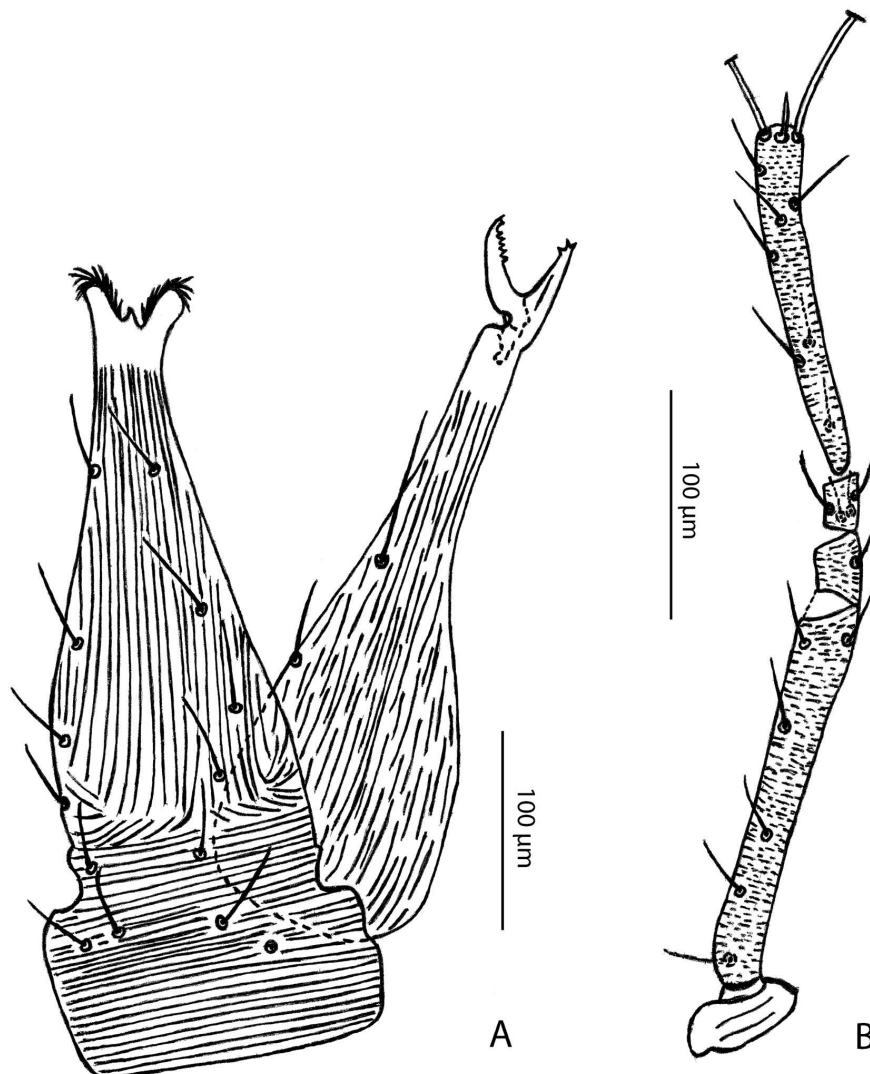


FIGURE 6: *Odontoscirus tixieri* n.sp. female gnathosoma: Subcapitulum and chelicerae (A); palp (B).

(including *des*, *ves*); setal formula of coxae I–IV 5-3-4-2; trochanters I–IV 1-1-1-1; basifemora I–IV 13(15)-14(15)-8(9)-3; telofemora I–IV 7-8(9)-6-6(7); movable digit with six to seven teeth and fixed digit with two teeth.

**Female (n = 2).** Color pale orange in life. Gnathosoma, legs and propodosoma well sclerotized. Body length (including gnathosoma) 1590 (1500), body length (excluding gnathosoma) 1265 (1162); width 625 (634).

Dorsum — (Figure 5A). Dorsal idiosoma with broken striae, central region of prodorsum (anterio-

median to setae *mps*) with oblique and irregular striae. Prodorsum with four eyes, diameter of anterior lateral eye 26 (26), and posterior lateral eye 20 (20), distance between two lateral eyes 62 (76), with oblique and irregular striae between each pair. Dorsal setae smooth to faintly serrate. Hysterosomal region with three pairs of cupules (*ia*, *im* and *ip*) at level of setae *d1*, *e1* and *f1*. Hysterosomal striae transverse broken and sometimes oblique and irregular. Measurements of dorsal setae as follows: *at* 125 (120), *mps* 80 (broken), *pt* 127 (125), *c1* 62 (58), *c2* 68 (68), *d1* 62 (broken), *e1* broken (62), *f1* broken (50),



*f2* 55 (52), *h1* 55 (55), *h2* 55 (60). Distance between dorsal setae: *at-at* 62 (60); *pt-pt* 155 (157); *mps-pt* 38 (37); *mps-mps* 98 (100); *at-pt* 160 (162); *at-mps* 170 (177); *c1-c1* 142 (175); *c1-c2* 90 (87); *d1-d1* 162 (205); *e1-e1* 137 (162); *f1-f1* 48 (78); *f2-f2* 180 (240); *h1-h1* 50 (64); *c1-d1* 155 (160); *d1-e1* 120 (112); *e1-f1* 115 (112); *f1-h1* 136 (145); *h1-h2* 112 (100).

Venter — (Figure 5B). Anterior to coxa I with transverse broken striae, some striae with lobes; between coxae I–II with longitudinal broken striae and oblique, irregular posteriorly; aggenital region with three pairs of setae (*ag1*–3) and genital valves each with seven setae (*g1*–7); anal region without para-anal setae, with two pairs of anal setae and with one pair of cupules; one unpaired pore-like structure anterior to genital opening.

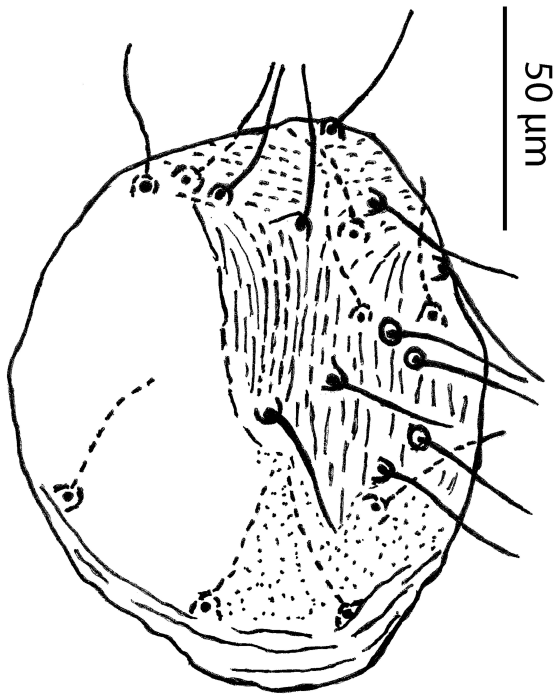


FIGURE 7: *Odontoscirus tixieri* n.sp.: Female ovipositor.

Gnathosoma — (Figure 6). Subcapitulum with transverse striae at basal third and rest longitudinal, 325 (337) long, width at base 128 (140), with six or seven pairs of ventral setae (asymmetry present in the same specimen); adoral setae not visible (Figure 6A). Chelicerae 305 (365) long and 95 (88) wide,

with two dorsal setae, proximal seta 45 (42) and distal seta 60 (75), distance between proximal and distal setae 65 – 68; movable digit with six to seven teeth and fixed digit with two teeth; striation longitudinal and broken (Figure 6A). Palp trochanter nude, basifemur with six setae; telofemur with one seta, genu with four setae; tibiotarsus with ten setae: 7 *sts*, one terminal solenidion and two long terminal setae, *des* 152 (160) and *ves* 145 (158); measurements of palp segments as follows: trochanter 15 (18), basifemur 190 (210), telofemur 32 (35), genu 24 (26), tibiotarsus 172 (190) (Figure 6B).

Ovipositor — (Figure 7). Ovipositor with 20 (20) setae.

Legs — (Figure 8). Measurements of legs as follows: leg I 805 (805), leg II 715 (790), leg III 792 (890), leg IV 1110 (1150); setal formulae of leg segments as follows: coxae I–IV 5-3-4-2; trochanters I–IV 1-1-1-1; basifemora I–IV 13(15)-14(15)-8(9)-3; telofemora I–IV 7-8(9)-6-6(7); genua I–IV 7(6)*sts*, 6*asl*–6*sts*, 4*asl*–6*sts*, 3*asl*–6*sts*, 3*asl*; tibiae I–IV 12(13)*sts*, 4*asl*, 1*bsl*, 1*pe*, 1*T*–12*sts*(10), 2*bsl*, 1*T*–12(11)*sts*, 1*bsl*–12(13)*sts*, 1*T*; tarsi I–IV 34*sts*, 2*asl*, 2*bsl*, 1*pe*–32*sts*, 1*asl*, 2*bsl*, 1*pe*–35*sts*, 1*T*–31*sts*, 1*T*.

Remarks — *Odontoscirus tixieri* n. sp. is similar to *O. dubitatus* (Womersley, 1933), *O. asiaticus* (Kuznetsov and Barilo, 1984) and *O. alpinus* (Atyeo, 1960) by having two cheliceral setae; proximal cheliceral seta not reaching the base of distal seta; lateral prodorsal seta (*lps*) absent; proximal cheliceral seta longer than 1/3 the length of distal seta.

However, it differs from *O. dubitatus* [re-described by Atyeo, 1963] by having: (1) coxae II and III setal formula 3–4 in *O. tixieri* instead of 4–5 in *O. dubitatus*, respectively; (2) basifemora III and IV setal formula 8(9)–3 in *O. tixieri* instead of 10–8 in *O. dubitatus*; (3) telofemur III with 6*sts* in *O. tixieri* and 7*sts* in *O. dubitatus*; (4) genu I with 6*asl* in *O. tixieri* and 5*asl* in *O. dubitatus*; (5) tibiae I and III with 4*asl*, 1*bsl*–1*bsl* in *O. tixieri* and 3*asl*–1*asl* in *O. dubitatus*, respectively; (6) palp basifemur with six setae in *O. tixieri* but with nine setae in *O. dubitatus* (as illustrated by Atyeo, 1963) (7) chelicerae striated in *O. tixieri* and nonstriated in *O. dubitatus*.

*Odontoscirus tixieri* n. sp. differs from *O. asiaticus* by having (1) palp tibiotarsus with 10 setae in *O.*

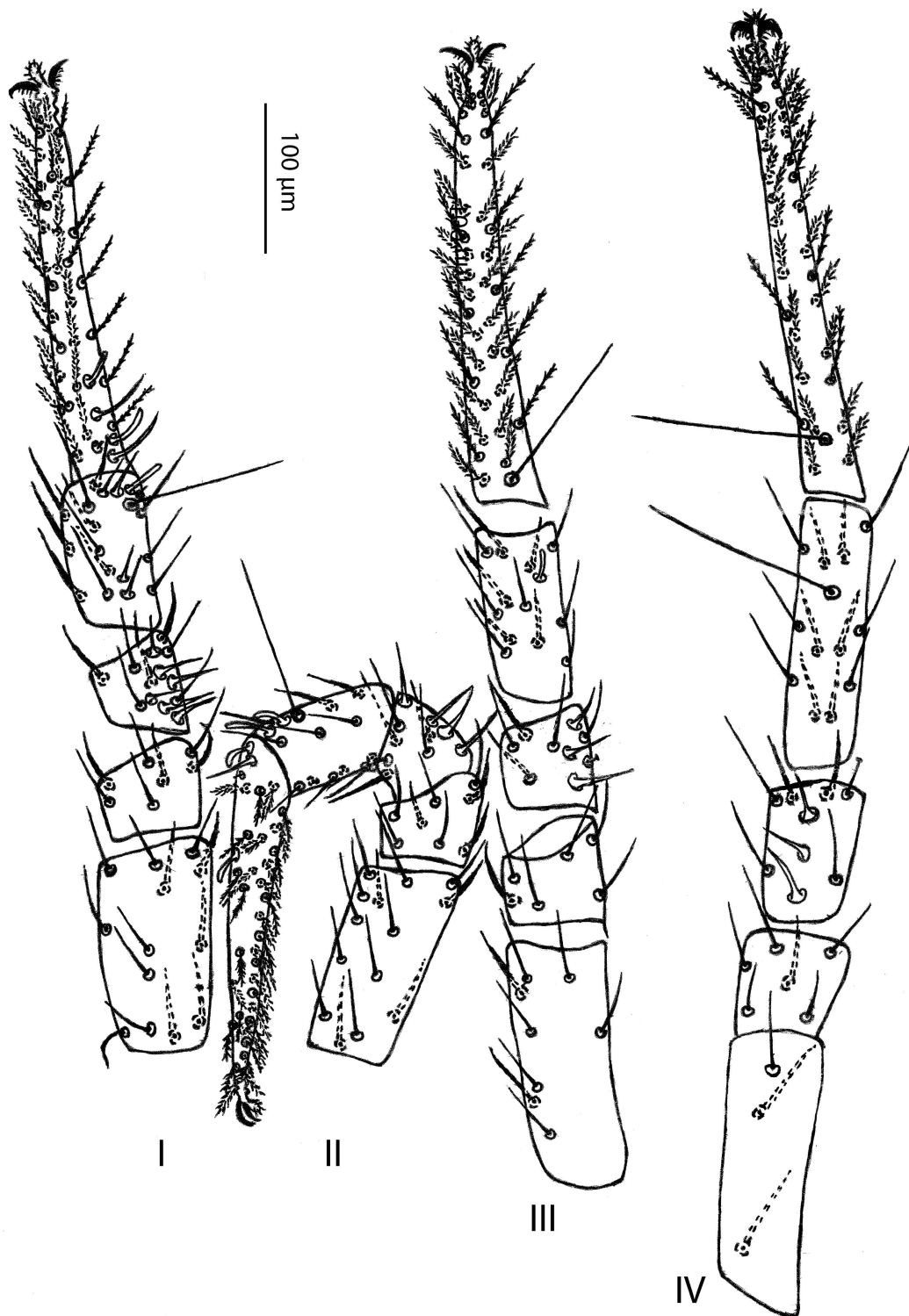


FIGURE 8: *Odontoscirus tixieri* n.sp. female: Basifemur, telofemur, genu, tibia and tarsus of legs I–IV.

*tixieri* but with 9 setae in *O. asiaticus* (setal counts include *des*, *ves*); (2) coxa II with 3 setae in *O. tixieri* but with 2 setae in *O. asiaticus*; (3) basifemora I–III setal formula 13(15)–14(15)–8(9) in *O. tixieri* but 11–12–6 in *O. asiaticus*; (4) telofemur II with 8(9) setae in *O. tixieri* but with 7 setae in *O. asiaticus*; (5) genu I and IV setal formula 7(6)*sts*,6*asl*–6*sts*,3*asl* in *O. tixieri* but 5*sts*,5*asl*–6*sts*,2*asl* in *O. asiaticus*.

*Odontoscirus tixieri* n. sp. is very close to *O. alpinus* but differs from this species by having (1) palp tibiotarsus with 10 setae in *O. tixieri* but with 9 setae in *O. alpinus* (setal counts include *des*, *ves*); (2) basifemora I and II 13(15)–14(15) respectively in *O. tixieri* but 11–13 in *O. alpinus*; (3) telofemur III with 6 setae in *O. tixieri* but with 7 setae in *O. alpinus*; (4) movable digit with 6–7 teeth and fixed digit with two teeth in *O. tixieri* but movable digit 4–5 teeth and fixed digit with one tooth in *O. alpinus*; (5) cheliceral striation longitudinal and broken in *O. tixieri* but reticulated in *O. alpinus*.

Type material — One holotype female and one paratype female were collected from soil litter at Al-ya'robiyah (35°30'24"N, 35°48'33"E), Latakia Province, Syria, 5 April 2017 and 9 April 2017 (Coll. Barbar, Z.).

Etymology — This species was named for Prof. Marie-Stéphane Tixier of Montpellier SupAgro, UMR CBGP, Montpellier, France, in recognition of her contribution to Acarology.

#### SUBFAMILY SPINIBDELLINAE Grandjean GENUS *Biscirus* Thor

##### *Biscirus iranensis* Paktinat-Saeed and Bagheri, 2015

Male (n= 2). Color dark red in life. Body length (including gnathosoma) 1185 – 1500, body length (excluding gnathosoma) 815 – 1050; width 530 – 680.

Dorsum — Prodorsum with an oval unpaired median eye present anteriorly on propodosoma just posterior to the base of chelicerae, its diameter 35 – 45; central region of prodorsum with regular transverse broken striae; striae oblique irregular and broken between setae *mps*, and oblique irregular laterally. Anterior lateral eye 22, and posterior lateral eye 20 – 25 in diameter, distance between an-

terior and posterior lateral eyes 12 – 15. Dorsal setae faintly serrate. Hysterosomal region with three pairs of cupules (*ia*, *im* and *ip*) at level of setae *d*, *e* and *f1*. Striae between setae *c1*, *d1*, *e1*, *f1*, *f2*, *h1* and *h2* transverse and become oblique and irregular laterally. Measurements of dorsal setae as follows: *at* 180, *mps* 62, *pt* 185 – 187, *c1* 50, *c2* 50, *d1* 55, *e1* 55, *f1* 68, *f2* 58, *h1* 65, *h2* 65. Distance between dorsal setae: *at*–*at* 70 – 87; *pt*–*pt* 230 – 260; *mps*–*pt* 90 – 108; *mps*–*mps* 50 – 55; *at*–*pt* 175 – 185; *at*–*mps* 152 – 162; *c1*–*c1* 88; *c1*–*c2* 142 – 162; *d1*–*d1* 120 – 140; *e1*–*e1* 105 – 140; *f1*–*f1* 65 – 75; *f2*–*f2* 138 – 142; *h1*–*h1* 35; *c1*–*d1* 128 – 168; *d1*–*e1* 132 – 165; *e1*–*f1* 100 – 160; *f1*–*h1* 40.

Venter — Between coxae I–IV with continuous longitudinal striae except central area between coxae II and III with oblique and irregular striae; aggenital and anal regions surrounded with oblique and irregular striae; aggenital region with 12 pairs of setae and genital valves each with 15–16 setae; anal region with three pairs of para-anal setae (*ps1*–3).

Gnathosoma — Subcapitulum with transverse striae at basal part and longitudinal forward, 375 – 450 long, width at base 130 – 138, with two pairs of long ventral setae, *pvs* 108 – 110, *avs* 63 – 65; distance *pvs*–*avs* 100 – 135; two pairs of short adoral setae near tip of subcapitulum, *ad1* 20 and *ad2* 18. Chelicerae with longitudinal striae, 330 – 380 long and 40 – 50 wide, with two dorsal setae, proximal seta 60 and distal seta 40 – 48, distance between proximal and distal setae 110 – 125; movable digit with two denticles, fixed digit without teeth and shorter than movable digit. Palp tibiotarsus with 1*sts*, 1 solenidion and two long terminal setae, *des* and *ves* 250 and 180 respectively; trochanter nude, basifemur with two setae; telofemur with one seta, genu with two setae; measurements of palp segments as follows: trochanter 10 – 12, basifemur 230, telofemur 35, genu 68, tibiotarsus 145.

Genitalia — Amphiod sclerite with 9–10 pairs of simple setae.

Legs — Measurements of legs as follows: legs I 655 – 837, legs II 650 – 805, legs III 720 – 915, legs IV 840 – 1080; setal formulae of leg segments as follows: coxae I–IV 4–3–5–4; trochanters I–IV 1–1–1–1; basifemora I–IV 10–10(9)–8–4; telofemora

I–IV 5–5–4–4; genua I–IV 5*sts*, 4*asl*–5*sts*, 1*asl*–5*sts*, 1*asl*–4*sts*, 1*asl*; tibiae I–IV 11(13)*sts*, 4(3)*asl*, 1*bsl*, 1*pe*, 1*T*–12*sts*, 1*asl*, 1*bsl*–10(11)*sts*, 1*asl*–11(12)*sts*, 1*T*; tarsi I–IV 27(29)*sts*, 2*asl*, 2*bsl*, 1*pe*–28(29)*sts*, 2*bsl*–27(28)*sts*, 1*T*–24(26)*sts*, 1*asl*, 1*T*.

Remarks — This is the first record of this species from Syria and the first international record. It was recorded for the first time from Iran (Paktinat-Saeed *et al.*, 2015a). The Syrian *B. iranensis* specimens are similar to the Iranian specimens, except for a few small morphological differences, namely: (1) cheliceral setae separated by distance 2.60 – 2.75 times length of distal seta in Syrian specimens but this distance equal to 1.8 – 2.1 times length of distal seta in Iranian specimens (Paktinat-Saeed, Personal communication by Edward A. Ueckermann); (2) tarsi II with 27(29) *sts* setae in Syrian specimens against 30 *sts* in Iranian specimens; (3) coxae III with 5 setae in Syrian specimens rather than to 6(7) setae in Iranian specimens (Paktinat-Saeed *et al.*, 2015a).

The two specimens were collected from soil litter at Al-ya'robiyah (35°30'24"N, 35°48'33"E), Latakia Province, Syria, 17 April 2016 and 7 April 2017.

## GENUS *Spinibdella* Thor

### *Spinibdella cronini* (Baker and Balock, 1944)

Male (n = 2; Figure 9). Color red in life. Body length (including gnathosoma) 735 – 738, body length (excluding gnathosoma) 532 – 535; width (275 – 295).

Dorsum — Central region of prodorsum (between setae *at* and *mps*) with longitudinal striae (Figure 9A). Setae *lps* equidistant from setae *at* and *pt*. Prodorsum with five eyes, diameters of unpaired median eye 18 – 20 (Figure 9A), anterior lateral eye 15 – 12, and posterior lateral eye 10 – 14, distance between two lateral eyes 17 – 20. Dorsal setae smooth. Hysterosomal region with three pairs of cupules (*ia*, *im* and *ip*) at level of setae *d1*, *e1* and posterolateral to *f1*. Striae between setae *c1*, *d1*, *e1*, *f1*, *f2*, *h1* and *h2* transverse continuous and become oblique and irregular laterally. Measurements of dorsal setae as follows: *at* 130 – 138, *lps* 43 – 47, *mps* 52 – broken, *pt* 175 – 188, *c1* 50 – broken, *c2* 50 – 53, *d1* 46 – 50, *e1* 50 – 53, *f1* 54 – broken, *f2* 45 – 50, *h1* 55 – broken, *h2* 43 – 45. Distance between dorsal setae:

*at*–*at* 43 – 48; *lps*–*lps* 102 – 105; *at*–*lps* 44 – 45; *pt*–*pt* 118 – 120; *mps*–*pt* 25; *mps*–*mps* 68 – 70; *at*–*pt* 85 – 90; *lps*–*pt* 42 – 45; *at*–*mps* 83 – 85; *c1*–*c1* 92 – 92; *c1*–*c2* 43 – 48; *d1*–*d1* 85 – 90; *e1*–*e1* 83 – 85; *f1*–*f1* 50 – 52; *f2*–*f2* 92 – 107; *h1*–*h1* 27 – 30; *c1*–*d1* 70 – 73; *d1*–*e1* 65 – 68; *e1*–*f1* 67 – 68; *f1*–*h1* 45 – 48; *h1*–*h2* 30 – 35.

Venter — Anterior to coxa I with transverse striae; between coxae I–IV with continuous longitudinal striae except central area between coxae II and III with faintly transverse striae; aggenital region surrounded with oblique and irregular striae; aggenital region with 22 pairs of setae and genital valves each with 13–16 setae; anal region with one pairs of smooth anal setae, two pairs of para-anal setae and one pair of cupules; one unpaired seta anterior to genital opening.

Gnathosoma — Subcapitulum with transverse striae at base and longitudinal toward the lips 200 long, width at base 80 – 86, with two pairs of long ventral setae, *pvs* 40 – 43, *avs* 35; distance *pvs*–*avs* 45; two pairs of short adoral setae near tip of subcapitulum, *ad1* 10 and *ad2* 10. Chelicerae 173 – 177 long and 20 – 26 wide, with two dorsal setae, proximal seta 48 – 50 and distal seta 38 – 43, distance between proximal and distal setae 60; movable and fixed digits straight; a small seta (5) seems present at the basal part of the digits in one specimen (Figure 9B); chelicerae striation longitudinal. Palp tibiotarsus with four setae, one solenidion and two long terminal setae, *des* and *ves* 180 – 185 and 110 – 112, respectively; trochanter nude, basifemur with seven setae; telofemur with one seta, genu with four setae; measurements of palp segments as follows: trochanter 10 – 12, basifemur 112, telofemur 20 – 23, genu 18, tibiotarsus 32 – 35.

Genitalia — Amphiod sclerite with nine pairs of setae.

Legs — Measurements of legs as follows: leg I 310 – 333, leg II 300 – 338, leg III 350 – 375, leg IV 420 – 440; setal formulae of leg segments as follows (asymmetry in leg chaetotaxy in the same specimen is indicated in brackets): coxae I–IV 7[8,9]–6[7,8]–6[7]–6[5]; trochanters I–IV 1–1–2–1; basifemora I–IV 7[6]–7[6]–5–3; telofemora I–IV 5–5–4–4; genua I–IV 5–5–5–6; tibiae I–IV 11(12)*sts*, 1 *asl*, 1*pe*, 1*T*–10*sts*, 1*bsl*–10(11)*sts*, 1*asl*–13(14)*sts*,

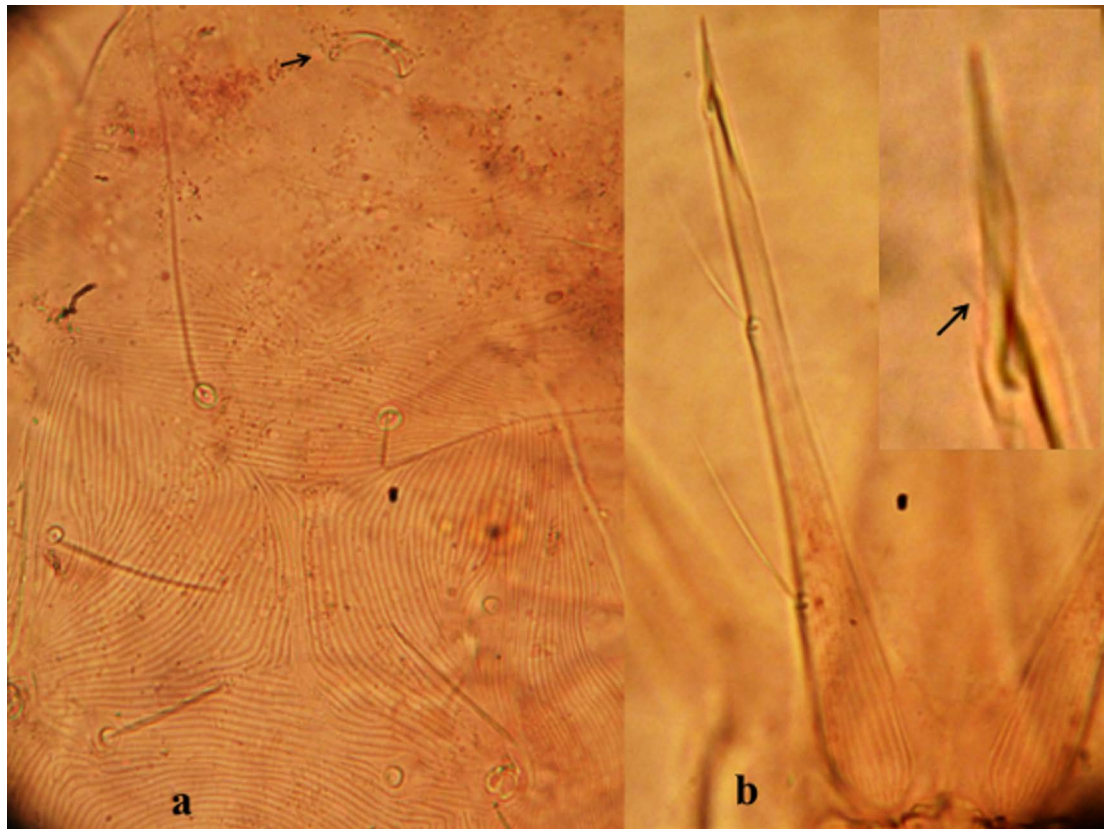


FIGURE 9: *Spinibdella cronini* male: Prodorsum (with unpaired median eye) (a) and chelicerae (small seta at the basal part of the cheliceral digits) (b).

1T; tarsi I–IV 22sts, 2bsl–20sts, 2bsl–22(23)sts, 1T–23(24)sts, 1T.

**Remarks** — The Syrian males are identical to females described by Atyeo (1960) and Paktinat-Saeiej *et al.* (2015b) and also to a description of the male amphiod sclerite by Wallace and Mahon (1972) except for the presence of a small seta at the basal part of the cheliceral digits in one Syrian specimen. According to the key of *Spinibdella* (Hernandes *et al.*, 2016), unpaired median eye was considered absent based on data available from literature. However, this eye is probably present according to pictures made by Hernandez of the type specimens of this species deposited at USNM (Personal communication by Edward A. Ueckermann, 2017). We decided not to depict this species as the Syrian specimens were not adequate for his purpose but included photos of a few distinguishing characters of this species, e.g. median eye, striae in the center of the prodor-

sum and chelicerae.

Two males and one female (in bad shape) of this species were collected from soil litter at Al-ya'robiyah (35°30'24"N, 35°48'33"E.), Latakia Province, Syria, 5 April 2017 and 9 April 2017; one nymph was collected from *S. spinosum* at Borj-Islam (35°39'18"N, 35°46'30"E.), Latakia Province, Syria, 25.V.2016. This species has been already reported from Syria (Hernandes *et al.*, 2016).

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