

Two new species of Bdellidae (Acari: Prostigmata) from China

You-Fang Wu^a, Dao-Chao Jin^a, Tian-Ci Yi^a, Jian-Jun Guo^a

^a Institute of Entomology, Guizhou University; Guizhou Provincial Key Laboratory for Agricultural Pest Management of the Mountainous Region; Scientific Observing and Experimental Station of Crop Pests in Guiyang, Ministry of Agriculture and Rural Affairs of the P. R. China; Guiyang 550025. P. R. China.

Original research

ABSTRACT

Two new species of Bdellidae, collected from China, are described in this paper. *Odontoscirus anzhouensis* Wu & Guo **n. sp.** is described based on adult females, characterized by dorsal hypostomal setae (*DHS*) shorter than *vh*₃, and different leg chaetotaxy/solenidotaxy. *Cyta pseudokreiteri* Wu & Guo **n. sp.** is described based on adult females and larvae, characterized by movable digits smooth and fixed digits with one tooth; chelicera with continuous longitudinal striae; setal formula of telofemora I–IV 6–5(6)–5(6)–4.

Keywords *Odontoscirus*; *Cyta*; taxonomy; Predatory mites

Zoobank <http://zoobank.org/DCE89E5A-BA0C-4FCC-A77A-EF695B4C8D41>

Introduction

Bdellidae Dugès, 1834 are active predators of small arthropods which currently comprises five subfamilies, 11 genera and 283 valid species (Hernandes *et al.* 2016; Paktinat-Saej *et al.* 2016; Barbar *et al.* 2017; Eghbalian *et al.* 2017).

Odontoscirus Thor, 1913 is the biggest genus of Bdellidae, currently comprises 100 species, including several species previously treated in the genera *Bdellodes* Oudemans, *Hoploscirus* Thor, *Thoribdella* Grandjean, *Octobdellodes* Atyeo and *Biscirus* Thor (Hernandes *et al.* 2016; Paktinat-Saej *et al.* 2016; Barbar *et al.* 2017; Porta *et al.* 2020). The genus can be distinguished from other genera of the family mainly by subcapitulum with six pairs of ventral setae, trichobothrium present on tibiae II and each chelicera with at most two setae (Hernandes *et al.* 2016).

Cyta von Heyden, 1826 currently comprises 19 species, which can be distinguished from other genera of the family mainly by subcapitulum with two pairs of prominent ventral setae, trichobothrium absent from tarsus IV and cheliceral bases inflated (Hernandes *et al.* 2016; Barbar *et al.* 2017).

In this paper, two new species of *Odontoscirus* and *Cyta* are described from China.

Material and methods

Samples were collected from moss and rotten wood in Kanas National Nature Reserve in Buerjin County, Xinjiang Uygur Autonomous Region and Qianfo Town in Anzhou District, Mianyang City, Sichuan Province, P. R. China. Mites were extracted from the samples by using Berlese-Tullgren funnels, mounted on slides in Hoyer's medium (Krantz & Walter 2009), and examined under a Nikon Ni E microscope. Line drawings were prepared with the aid of a drawing tube attached to the microscope. All figures were edited with Adobe Photoshop CC 2018, and all measurements are given in micrometers (μm). The measurements outside of brackets are those of the holotype. The measurement method and setal nomenclature follows Paktinat-Saej *et al.* (2015).

Received 15 April 2021

Accepted 14 July 2021

Published 21 July 2021

Corresponding author

Jian-Jun Guo: jjguo@gzu.edu.cn

Academic editor

Faraji, Farid

[https://doi.org/](https://doi.org/10.24349/YNi9-m8W5)

10.24349/YNi9-m8W5

ISSN 0044-586X (print)

ISSN 2107-7207 (electronic)

© Copyright

Wu Y. *et al.*

Distributed under

Creative Commons CC-BY 4.0



Abbreviations: Prodorsal setae: anterior trichobothria (*at*), posterior trichobothria (*pt*), lateral proterosomal setae (*lps*), median proterosomal setae (*mps*). Hysterosomal setae: internal humerals (*c₁*), external humerals (*c₂*), internal dorsals (*d₁*), internal lumbals (*e₁*), internal sacrals (*f₁*), external sacrals (*f₂*), internal clunals (*h₁*), external clunals (*h₂*). Anal region: postanals (*ps*), anal setae (*ad*); Genital region: aggenital setae (*ag*), genital setae (*g*). Ventral hypostomal setae (*vh*). Dorsal hypostomal setae (*DHS*). Leg setae: simple tactile seta (*sts*) attenuate solenidion (*asl*), blunt-pointed rod-like solenidion (*bsl*), peg-like seta (*pe*), trichobothria (*T*). Palp setae: dorsal end seta (*DES*), and ventral end seta (*VES*). The nomenclature of immatures is the same as that applied to the adults.

Results

Family Bdellidae Dugès, 1834

Subfamily Odontoscirinae Grandjean, 1938

Genus *Odontoscirus* Thor, 1913

Odontoscirus anzhouensis Wu & Guo n. sp.

Zoobank: E46D3D6D-B385-4997-8DCD-499CA94EEB3B

Diagnosis

Subcapitulum with six pairs of ventral setae, each chelicera with two setae, proximal cheliceral seta reaching or surpassing the base of distal seta, cheliceral setae distant (distance between bases 1/5 of cheliceral length, or more), *lps* absent, *DHS* shorter than *vh₃*. setal formula of basifemora I–IV 11–10(11)–9–5 *sts*; telofemora I–IV 8–8–6–7 *sts*; genua I–IV 6 *sts*, 6 *asl*–6 *sts*, 3 *asl*–6 *sts*, 3 *asl*–6 *sts*, 3 *asl*; tibiae I–IV 9 *sts*, 4 *asl*, 1 *bsl*, 1 *peg*, 1 *T*–7(8) *sts*, 1 *asl*, 1 *bsl*, 1 *T*–9(8) *sts*, 1 *bsl*–9(10) *sts*, 1 *T*.

Description

Female — (n=3; Figures 1–3)

Body length (including gnathosoma) 1393 (1357–1516), idiosoma 1028 (1011–1159), body width 597 (584–597).

Gnathosoma — (Fig. 1). Gnathosoma length 365 (348–365), width 96 (83–101). Subcapitulum buccal cone without striae, broken striations at base, six pairs of ventral hypostomal setae (*vh_{1–6}*) and one pair of dorsal hypostomal setae (*DHS*) (Fig. 1A), *vh₁* 31 (29–32), *vh₂* 45 (45–46), *vh₃* 55 (55–60), *vh₄* 67 (67–82), *vh₅* 96 (96–110), *vh₆* 67 (67–75), *DHS* 19 (19–27); Cheliceral length 328 (314–328), width 58 (58–65), without striae, and two normal dorsal setae, fixed and movable digits smooth (Fig. 1B), proximal seta 120 (115–121), distal seta 92 (92–103), distance between proximal and distal setae 120 (109–120); palp five-segmented (Fig. 1C), total length 362 (339–362), trochanter 9 (9–15), basifemur 158 (134–158), telofemur 27 (27–31), genu 35 (25–35), tibiotarsus 134 (128–134), *VES* 160 (158–160), *DES* 208 (208–215), palp chaetotaxy: trochanter 0, basifemur 6 *sts*, telofemur 1 *sts*, genu 4 *sts*, tibiotarsus 6 *sts*, 1 *bsl*, two long terminal setae (*VES*, *DES*).

Dorsum — (Fig. 2A). Dorsum finely striated, prodorsum with oblique and transverse striae between *mps*, base of *mps* barbed; two pairs of lateral eyes, diameters of anterior one 26 (23–26), and posterior one 21 (18–21), and with longitudinal and oblique striae between anterior and posterior lateral eyes; Hysterosoma with transverse striae between setae *c₁*, *e₁*, *h₁* and *h₂*, striae longitudinal between *d₁*, *f₁*, striae obliquely longitudinal between setae *c₁* to *c₂*, and hysterosoma setae finely pilose. Hysterosomal region with three cupules (*ia*, *im* and *ip*) at level of setae *d₁*, *e₁* and *f₂*. Measurements of dorsal setae as follows: *at* lost, *pt* 48 (48–50), *mps* 206 (206–211), *c₁* 82 (80–82), *c₂* 79 (73–80), *d₁* 60 (60–64), *e₁* 60 (60–64), *f₁* 50 (50–60), *f₂* 48 (48–54), *h₁* 60 (56–60), *h₂* 51 (51–55).

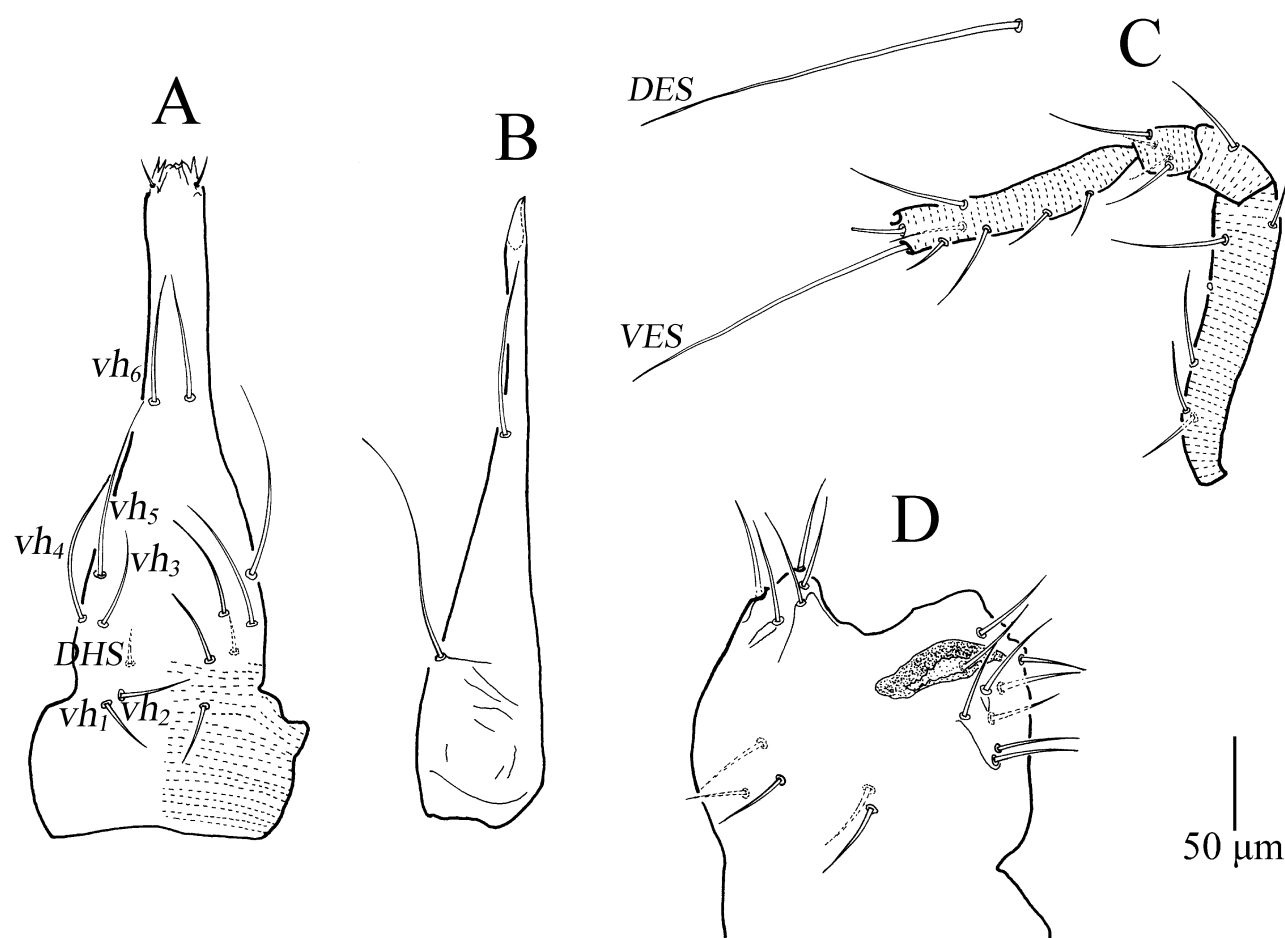


Figure 1 *Odontoscirus anzhouensis* Wu & Guo n. sp., female: A. Subcapitulum; B. Chelicera; C. Palp; D. Ovipositor.

Venter — (Fig. 2B). Venter with fine broken striae; area between coxae I–II and III–IV with fine longitudinal broken striae; aggenital region with three pairs of setae (ag_{I-3}); genital valves with seven pairs of setae (g_{I-7}); anal region with two pairs of postanals (ps_{I-2}).

Ovipositor — (Fig. 1D). Ovipositor U-shaped, and with 13 dorsal setae and six ventral setae.

Legs — (Figs. 3). Measurements of legs as follows: leg I 732 (638–732), leg II 705 (660–705), leg III 769 (769–775), leg IV 944 (879–944); Setal formula of leg segments as follows: coxae I–IV 4–3–4–2 sts; trochanters I–IV 1–1–1–1 sts; basifemora I–IV 11–10(11)–9–5 sts; telofemora I–IV 8–8–6–7 sts; genua I–IV 6 sts, 6 asl–6 sts, 3 asl–6 sts, 3 asl–6 sts, 3 asl; tibiae I–IV tibiae I–IV 9 sts, 4 asl, 1 bsl, 1 peg, 1 T–7(8) sts, 1 asl, 1 bsl, 1 T–9(8) sts, 1 bsl–9(10) sts, 1 T; tarsi I–IV 29 sts, 2 asl, 2 bsl, 1 peg–31 sts, 2 bsl, 1 asl, 1 peg–31 sts, 1 T–32 sts, 1 T.

Male and other developmental stages — Unknown.

Etymology

The new species name is derived from the type locality Anzhou District, Mianyang City, Sichuan Province, China.

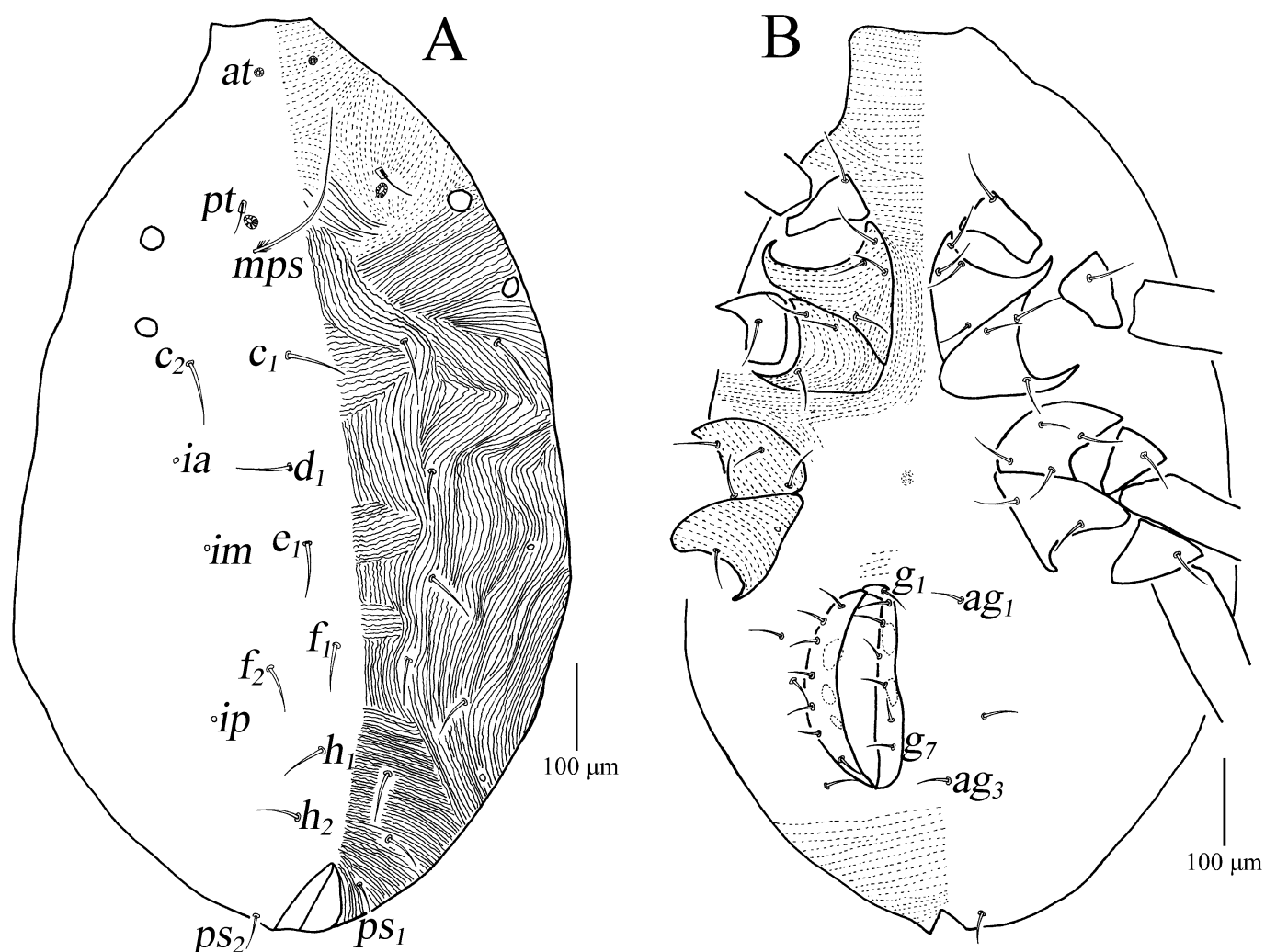


Figure 2 *Odontoscirus anzhouensis* Wu & Guo n. sp., female: A. Dorsal view of idiosoma, B. Ventral view of idiosoma.

Remarks

The new species resembles *O. communis* (Atyeo, 1960) and *O. australicus* (Womersley, 1933) by two cheliceral setae present; proximal cheliceral seta reaching or surpassing the base of distal seta, lateral prodorsal seta (*lps*) absent; coxae I–IV 4–3–4–2 *sts*, trochanter III with one seta. (Atyeo 1960; 1963). However, it is distinguished from *O. communis* by: (1) *DHS* much shorter than *vh*₃ in *O. anzhouensis* n. sp., but approximately equal in *O. communis*; (2) hysterosoma setae finely pilose in *O. anzhouensis* n. sp., but nude in *O. communis*; (3) anal region with two pairs of postanal in *O. anzhouensis* n. sp., but only one pair of postanal and two pairs of anals in *O. communis*; (4) basifemora I–IV 11–10(11)–9–5 *sts* in *O. anzhouensis* n. sp. but 13–12–8–4 in *O. communis*; (5) genua I–IV 6 *sts*, 6 *asl*–6 *sts*, 3 *asl*–6 *sts*, 3 *asl*–6 *sts*, 3 *asl* in *O. anzhouensis* n. sp. but 6 *sts*, 5 *asl*–5 *sts*, 4 *asl*–5 *sts*, 2 *asl*–5 *sts*, 2 *asl* in *O. communis*; *O. anzhouensis* n. sp. is distinguished from *O. australicus* by: (1) base of *mps* barbed in *O. anzhouensis* n. sp., but pilose in *O. australicus*; (2) basifemora I–IV 11–10(11)–9–5 *sts* in *O. anzhouensis* n. sp. but 14–12–11–4 in *O. australicus*; (3) genua I–IV 6 *sts*, 6 *asl*–6 *sts*, 3 *asl*–6 *sts*, 3 *asl*–6 *sts*, 3 *asl* in *O. anzhouensis* n. sp. but 6 *sts*, 8 *asl*–6 *sts*, 6 *asl*–6 *sts*, 3 *asl*–6 *sts*, 3

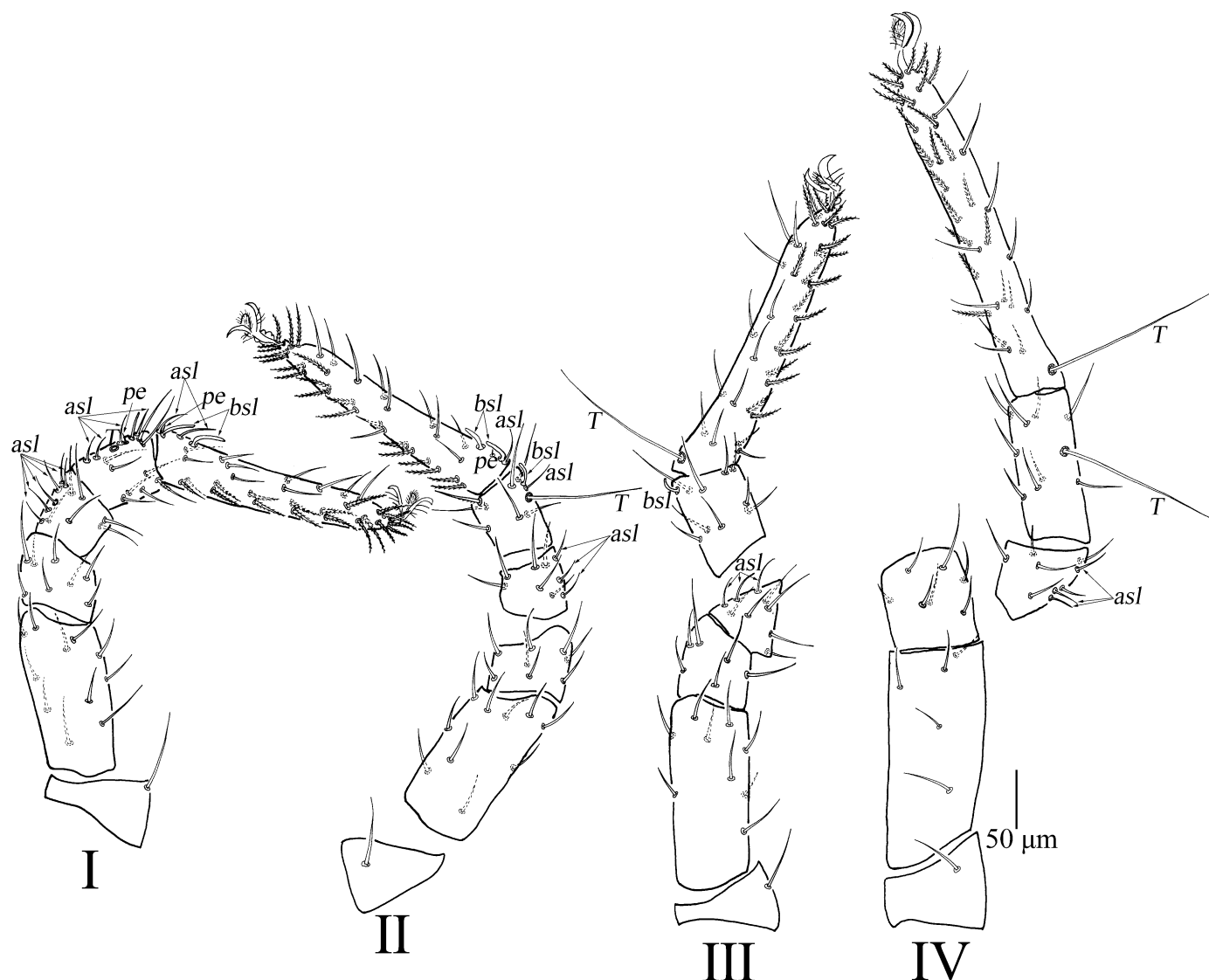


Figure 3 *Odontoscirus anzhouensis* Wu & Guo n. sp., female: Leg I; Leg II; Leg III; Leg IV.

asl in *O. australicus*; (4) tibiae I–IV 9 *sts*, 4 *asl*, 1 *bsl*, 1 *peg* 1 *T*–7(8) *sts*, 1 *asl*, 1 *bsl*, 1 *T*–9(8) *sts*, 1 *bsl*–9(10) *sts*, 1 *T* in *O. anzhouensis* n. sp. but 11 *sts*, 3 *asl*, 1 *bsl* 1 *peg*, 1 *T*–12 *sts*, 1 *asl*, 1 *bsl*, 1 *T*–13 *sts*, 1 *asl*–13 *sts*, 1 *T* in *O. australicus*.

Type material

Holotype female (No. SC–OD–201905140301) and two paratype females (No. SC–OD–201905140302; SC–OD–201905131401), collected from moss and fallen leaves, Qianfo Town, (31°41'28.62" N 104°16'43.32" E; 31°45'20.96" N 104°13'46.15" E; elevation 845, 2361 m) Anzhou District, Mianyang City, Sichuan Province, P. R. China, collected by Yun Long, 4–V–2019.

All types are deposited in the Institute of Entomology, Guizhou University, Guiyang, P. R. China (GUGC) (Zhang 2018).

Subfamily Cytinae Grandjean, 1938

Genus *Cyta* von Heyden, 1826

Cyta pseudokreiteri Wu & Guo n. sp.

Zoobank: 94262FFB-320A-4316-894D-D86DD16EAE1

Diagnosis

Subcapitulum with two pairs of prominent ventral setae; trichobothrium absent from tarsus IV; unpaired median eye present; coxae and subcapitulum without reticulations; prodorsal seta *mps* not reaching the base of co-lateral *lps*; tibiae I and tarsi III each without trichobothria; coxae IV with three setae, basifemora III–IV with 7–4 setae; movable digits smooth and fixed digits each with one tooth; chelicera with continuous longitudinal striae; setal formula of telofemora I–IV 6–5(6)–5(6)–4; genua I–IV 7 *sts*, 1 *asl*–7(6) *sts*, 1 *asl*–6 *sts*, 1 *asl*–5(6) *sts*.

Description

Female — (n=5; Figures 4–6)

Body length (including gnathosoma) 1118 (1095–1276), idiosoma 851 (844–1021), body width 563 (563–762).

Gnathosoma — (Fig. 4). Gnathosoma length 256 (233–286), width 124 (114–139). Subcapitulum striae weak, continuous transverse striae at base, buccal cone non striated, two pairs of ventral hypostomal setae (*vh*_{1–2}) (Fig. 4A), *vh*₁ 93 (80–93), *vh*₂ 49 (49–59); Cheliceral length 256 (233–286), width 124 (114–139), with weak continuous longitudinal striae, and two dorsal setae, movable digits smooth and fixed digits each with one tooth (Fig. 4B), proximal seta 89 (89–106), distal seta 44 (37–46), distance between proximal and distal setae 145 (145–155); palp five-segmented (Fig. 4C), total length 348 (317–356), trochanter 14 (14–28), basifemur 153 (130–157), telofemur 41 (41–52), genu 32 (32–41), tibiotarsus 86 (81–94), *VES* 176 (164–191), *DES* 247 (229–259), palp chaetotaxy: trochanter 0, basifemur 6 *sts*, telofemur 1 *sts*, genu 4 *sts*, tibiotarsus 4 *sts*, 1 *bsl*, two long terminal setae (*VES*, *DES*).

Dorsum — (Fig. 5A). Prodorsum median with continuous longitudinal striae, *at* to *mps* with continuous transverse striae; two pairs of lateral eyes and one unpaired median eye, diameters of anterior one 21 (21–25), and posterior one 19 (18–20), median eye 20 (17–20), with oblique striae between anterior and posterior lateral eyes; hysterosoma with broken transverse striae between setae *c*₁, *d*₁, *e*₁, *f*₂, *h*₂, while with continuous striae in laterally, and hysterosoma setae finely pilose; hysterosomal region with three cupules (*ia*, *im* and *ip*); Measurements of dorsal setae as follows: *at* 229 (229–272), *pt* 302 (302–317), *lps* 70 (70–79), *mps* 56 (56–69), *c*₁ 50 (50–62), *c*₂ 47 (47–59), *d*₁ 47 (47–60), *e*₁ 48 (47–61), *f*₁ 57 (49–57), *f*₂ 60 (58–62), *h*₁ 57 (57–69), *h*₂ 60 (52–66).

Venter — (Fig. 5B). Striae longitudinal between coxae I–II and III–IV, and oblique striae between coxae II–III; aggenital region with six or seven pairs of setae (*ag*_{I–6}(*7*)); genital valves with nine pairs of setae (*g*_{I–9}*); anal region with two pairs of anal setae (*ad*_{I–2}), three pairs of postanals (*ps*_{I–3}). **Ovipositor** — (Fig. 4D). Ovipositor tube-shaped, and with 11 dorsal setae and six ventral setae.

Legs — (Figs. 6). Measurements of legs as follows: leg I 637 (602–675), leg II 568 (553–615), leg III 636 (592–670), leg IV 751 (687–790). Setal formula of leg segments as follows: coxae I–IV 5–4–4–3 *sts*; trochanters I–IV 2–2–2–2 *sts*; basifemora I–IV 9–9(7)–8(7)–4 *sts*; telofemora I–IV 6–5(6)–5(6)–4 *sts*; genua I–IV 7 *sts*, 1 *asl*–7(6) *sts*, 1 *asl*–6 *sts*, 1 *asl*–5(6) *sts*; tibiae I–IV 9 *sts*, 1 *asl*, 2 *bsl*–9 *sts*, 2 *bsl*–9 *sts*, 1 *bsl*–8 *sts*, 1 *T*; tarsi I–IV 30 *sts*, 2 *asl*, 2 *bsl*, 1 *pe*–26 *sts*, 1 *bsl*, 1 *pe*–22 *sts*–22 *sts*, 1 *asl*.

Larvae — (n=6; Figures 7–8)

Body length (including gnathosoma) 512–568, idiosoma 422–468, body width 292–349.

Dorsum — (Fig. 7A). Dorsum with broken striae; Two pairs of lateral eyes, diameters of anterior one 10–14, and posterior one 7–10, median eye 8–10; hysterosoma setae finely

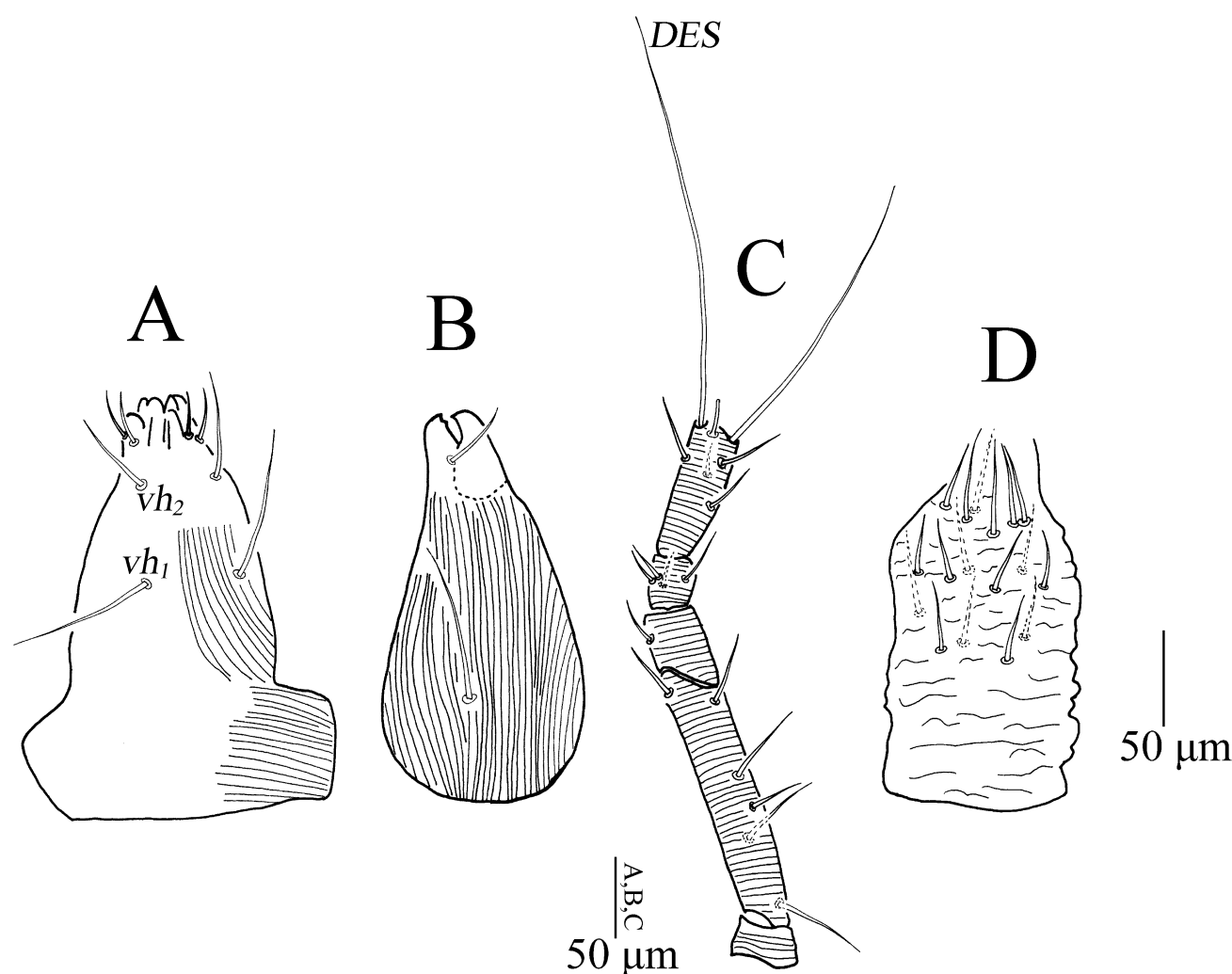


Figure 4 *Cyta pseudokreiteri* Wu & Guo n. sp., female: A. Subcapitulum; B. Chelicera; C. Palp; D. Ovipositor.

pilose; Hysterosomal region with three cupules (*ia*, *im* and *ip*); Measurements of dorsal setae as follows: *at* 115–120, *pt* 151–154, *lps* 25–30, *mps* 25–28, *c*₁ 27–30, *c*₂ 21–24, *d*₁ 27–33, *e*₁ 30–36, *f*₁ 37–44, *f*₂ 41–49, *h*₁ 37–49, *h*₂ 41–51.

Venter — (Fig. 7B). Resembling female, but all regions with broken striae; without genital valves, genital and aggenital setae; anal region with three pairs of postanals (*ps*_{1–3}), no anal setae.

Gnathosoma — (Fig. 8A, B, C). Gnathosoma length 233–286, width 114–139. Subcapitulum striae more remarkable than those of female, broken transverse striae at base, buccal cone non striated, two pairs of ventral hypostomal setae (vh_{1-2}) (Fig. 8A), vh_1 26–34, vh_2 15–22; Cheliceral length 89–100, width 42–52, with broken longitudinal striae, and two dorsal setae, fixed and movable digits smooth (Fig. 8B), proximal setae 42–55, distal seta 16–18, distance between proximal and distal setae 53–58; Palp five-segmented (Fig. 8C), total length 125–132, trochanter 9–13, basifemur 35–47, telofemur 17–23, genu 16–19, tibiotarsus 32–34, *VES* 63–69, *DES* 84–93, palp chaetotaxy: trochanter 0, basifemur 1 *sts*, telofemur 1 *sts*, genu 4 *sts*, tibiotarsus 4 *sts*, 1 *bsl*, two long terminal setae (*VES*, *DES*).

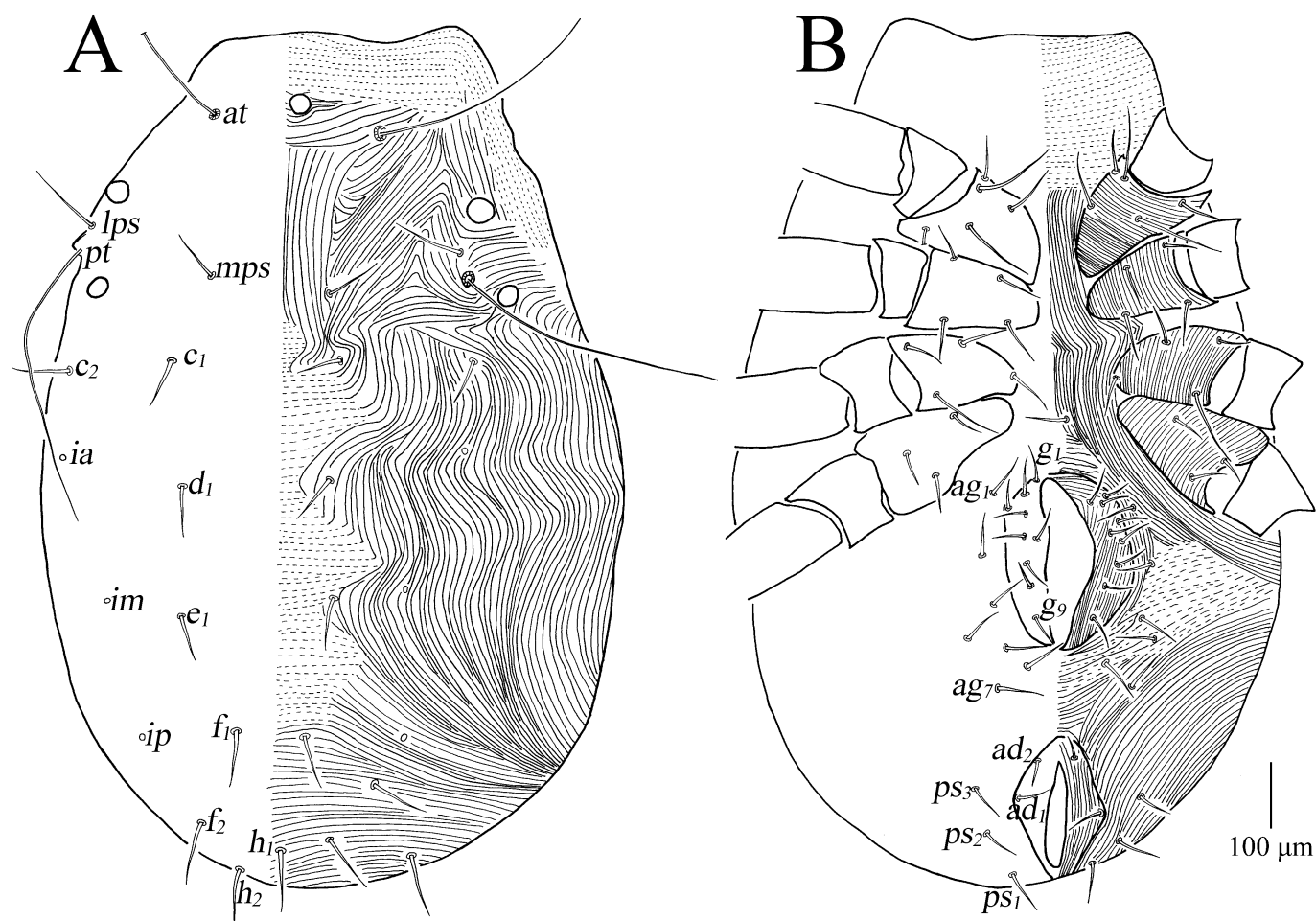


Figure 5 *Cyta pseudokreiteri* Wu & Guo n. sp., female: A. Dorsal view of idiosoma, B. Ventral view of idiosoma.

Legs — (Figs. 8D). Measurements of legs as follows: leg I 230–303, leg II 199–271, leg III 233–317; Setal formula of leg segments as follows: coxae I–III 3–1–2 sts; trochanters I–III 1–1–1 sts; basifemora I–III 7–6–5 sts; genua I–III 5 sts, 1 asl–6 sts–5 sts tibiae I–III 5 sts, 1 asl, 2 bsl–5 sts, 2 bsl–5 sts, 1 bsl; tarsi I–III 15 sts, 2 asl, 1 bsl–13 sts, 1 bsl, 1 pe–13 sts.

Male and other developmental stages — Unknown.

Etymology

The new species name is derived from its similarity to *C. kreiteri* Barbar & Ueckermann, 2017.

Remarks

The new species resembles *C. kreiteri* (Barbar & Ueckermann 2017) by having coxae and subcapitulum without reticulations; prodorsal seta *mps* not reaching the base of lateral *lps*; tibiae I and tarsi III each without trichobothria; coxae IV with three setae, basifemora III–IV with 7(8)–4 setae. However, it is distinguished from *C. kreiteri* by having: (1) Hysterosoma with broken transverse striae between setae *c*₁, *d*₁, *e*₁, *f*₂, *h*₂, while with continuous striae in laterally in *C. pseudokreiteri* n. sp., but dorsal idiosoma with broken striae in *C. kreiteri*; (2) movable digits smooth and fixed digits each with one tooth in *C. pseudokreiteri* n. sp., but movable digits with one tooth and fixed digits each with two teeth in *C. kreiteri*; (3) Chelicera with continuous longitudinal striae in *C. pseudokreiteri* n. sp., but striation transverse and

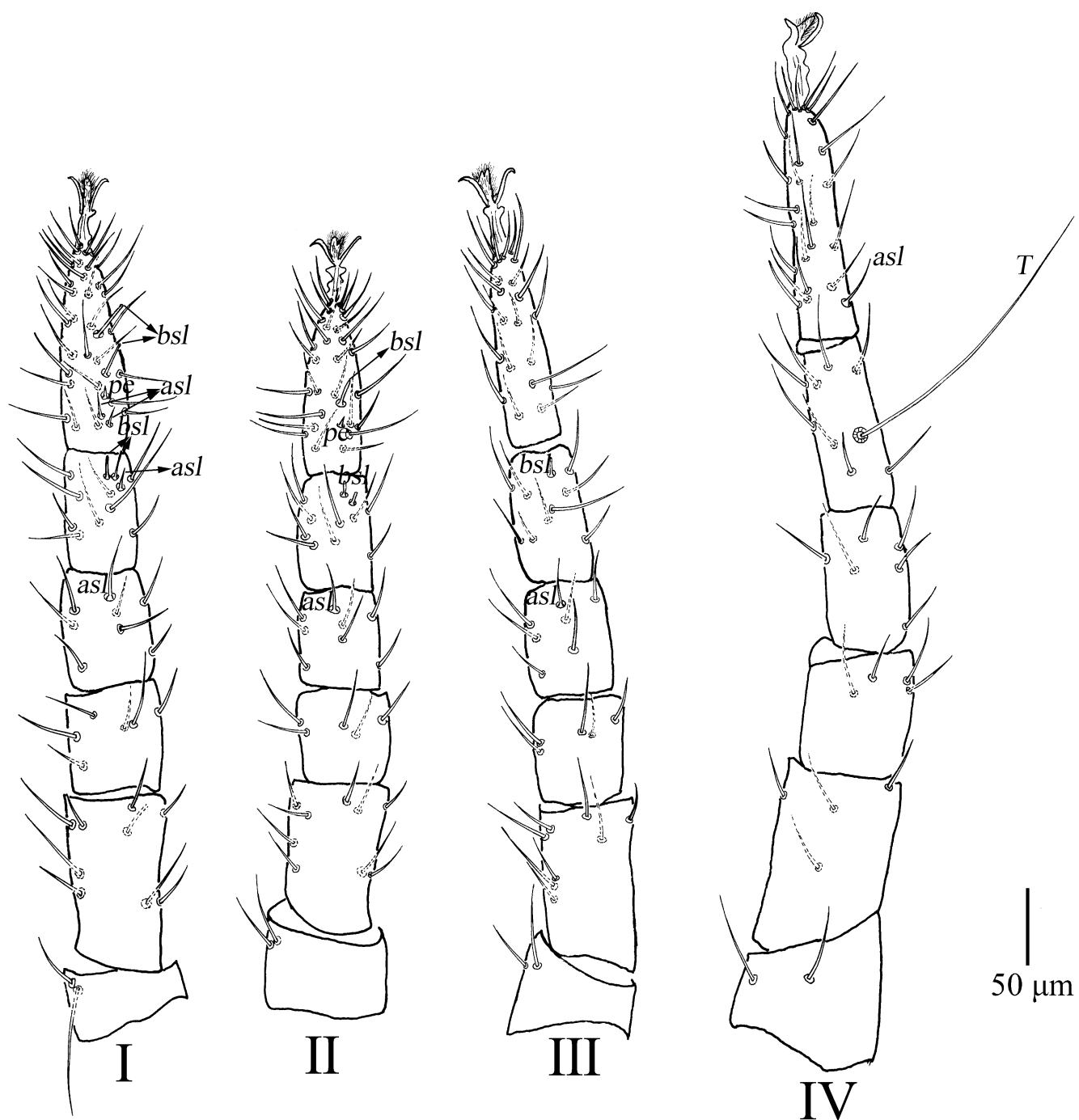


Figure 6 *Cyta pseudokreiteri* Wu & Guo n. sp., female: Leg I; Leg II; Leg III; Leg IV.

broken from cheliceral base to level of proximal seta and then longitudinal toward chelae in *kreiteri* (4) Setal formula of telofemora I–IV 6–5(6)–5(6)–4 in *C. pseudokreiteri* n. sp., but 7–7–7–4 in *C. kreiteri*; (5) Setal formula of tibiae I–IV 9 sts, 1 asl, 2 bsl–9 sts, 2 bsl–9 sts, 1 bsl–8 sts, 1 T in *C. pseudokreiteri* n. sp., but tibiae I–IV 9 sts, 3 asl–9 sts, 1 asl, 1 bsl–9 sts, 1 bsl–8 sts, 1 T.

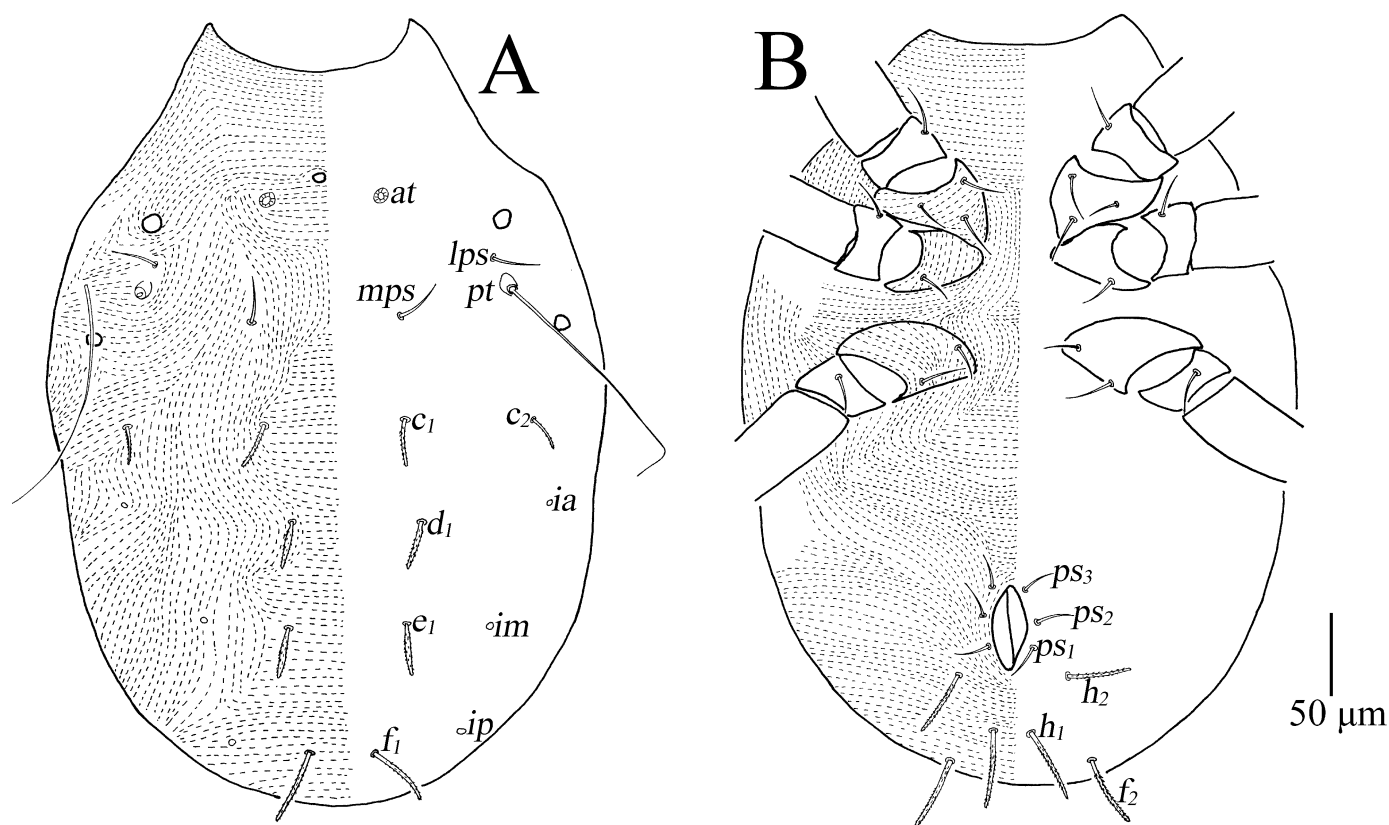


Figure 7 *Cyta pseudokreiteri* Wu & Guo n. sp., larva: A. Dorsal view of idiosoma, B. Ventral view of idiosoma.

Type material

Holotype female (No. XJ-CY-201907080101-I), four paratype females (No. XJ-CY-201907070201-I; XJ-CY-201907070202-I; XJ-CY-201907071001-I; XJ-CY-201907071002-I), six larvae (No. XJ-CY-201907070201-V; XJ-CY-201907071001-V-XJ-CY-201907071003-V; XJ-CY-201907071101-V; XJ-CY-201907080501-V), were collected from moss and rotten wood, Kanas National Nature Reserve (48°38'1.54" N 86°42'42.61" E; 48°42'22.59" N 87°2'0.92"E; 48°31'51.87" N 87°25'36.80" E; elevation 1377, 1406, 1514 m) Buerjin County, Xinjiang Uygur Autonomous Region, P. R. China, collected by Jian-Xin Chen, 4–VII–2019.

All types are deposited in the Institute of Entomology, Guizhou University, Guiyang, P. R. China (GUGC).

Discussion

The Bdellidae currently comprises four subfamilies, seven genera and 26 valid species in China based on limited studies in a few provinces (Lin & Zhang 2010). Considering the diverse environmental types in China, many more species are expected to be present in China. Therefore, more works are still needed to discover the mite fauna of Bdellidae in China.

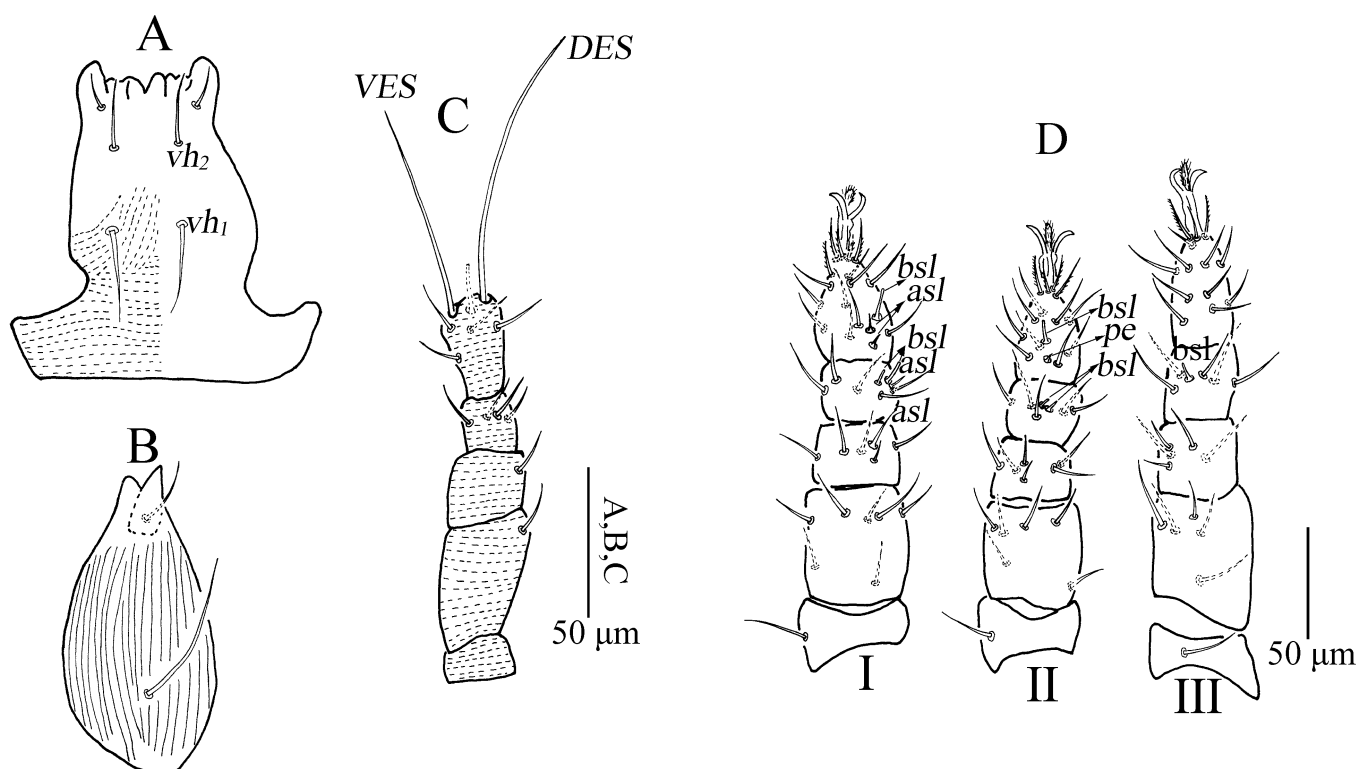


Figure 8 *Cyta pseudokreiteri* Wu & Guo n. sp., larva: A. Subcapitulum; B. Chelicera; C. Palp; D. Leg I; Leg II; Leg III; Leg IV.

Acknowledgements

Thanks to Jian-Xin Chen and Yun Long for collecting samples for the study. This work was supported by the National Natural Science Foundation of China (31772421, 31750002). Graduate Education Innovation Project of Guizhou Province (Qian Jiao He YJSCXJH [2020] 072). Guizhou Science and Technology Project No. Qiankehe Pingtai Rencai [2017] 5788.

References

- Atyeo W.T. 1960. A revision of the family Bdellidae in North and Central America (Acarina: Prostigmata). University of Kansas Science Bulletin, 40, 345–499.
- Atyeo, W.T. 1963. The Bdellidae (Acarina) of the Australian Realm. Part I: New Zealand, Campbell Island, and the Auckland Islands. pp. 113–166; Part II: Australia and Tasmania. pp. 167–210. Bulletin of the University of Nebraska State Museum, 4 (8), 113–210.
- Barbar Z., Ueckermann E.A. 2017. Two new species and a new record of Bdellidae (Acari: Trombidiformes) from Syria. Acarologia, 57(4): 1089–1102. <https://doi.org/10.24349/acarologia/20174221>
- Dugès A. 1834. Recherches sur l'ordre des Acariens en générale et la famille des Trombidieésen particulier. Annales des Sciences Naturelles, 2: 5–46.
- Eghbalian A.H., Khanjjani M., Ueckermann E.A. 2017. Two new species of *Spinibdella* and *Odontoscirus* (Acari: Prostigmata: Bdellidae) from Western Iran. Acarologia, 57(4): 779–789. <https://doi.org/10.24349/acarologia/20174193>
- Grandjean F. 1938. Observations sur les Bdelles (Acariens). Annales de la Société Entomologique de France, 107: 1–24.
- Hernandes F.A., Skvarla M.J., Fisher J.R., Dowling A.P.G., Ochoa R., Ueckermann E.A., Bauchan G.R. 2016. Catalogue of snout mites (Acariformes: Bdellidae) of the world. Zootaxa, 4152(1): 001–083. <https://doi.org/10.11646/zootaxa.4152.1.1>
- Krantz G.W., Walter D.E. 2009. Collecting, rearing, and preparing specimens. In: Krantz, G.W. & Walter, D.E. (Eds). A Manual of Acarology. Third Edition. Texas Tech University Press, pp. 83–94.
- Lin, J.Z. & Zhang, Z.Q. 2010. Bdelloidea of China: a review of progress of systematics and biology, with a checklist of species. Zoosymposia, 4, 42–50. <https://doi.org/10.11646/zoosymposia.4.1.3>

- Paktinat-Saeed S., Bagheri M., Saboori A., Seilsepour N., Ueckermann E.A. 2015. A new snout mite, *Spinibdella tabarii* sp. nov. (Trombidiformes: Bdellidae) from Iran, with a summary of *Spinibdella* distributions worldwide. Syst. Appl. Acarol., 20(6): 693–706. <https://doi.org/10.11158/saa.20.6.11>
- Paktinat-Saeed S., Bagheri M., Hernandez F.A. 2016. A new species and a record of Bdellidae (Acari: Trombidiformes: Bdelloidea) from Iran. Syst. Appl. Acarol., 21(10): 1346–1354. <http://doi.org/10.11158/saa.21.10.5>
- Porta A.O., Proud D.N., Michalik P., Hernandez F.A. 2020. Notes on fossil Bdelloidea 1: the first snout mite (Acariiformes: Bdellidae: Odontoscirinae) from the Cretaceous amber of Myanmar. Syst. Appl. Acarol., 25(10): 1754–1764. <https://doi.org/10.11158/saa.25.10.4>
- Thor S. 1913. *Biscirus* genus novum: eine neue Bdelliden-Gattung und zwei neue Untergattungen. Zool. Anz., 42:28–30.
- von Heyden C. 1826. Versuch einer systematischen eintheilung der Acariden. In: Isis von Oken, 18(6): 608–613
- Zhang Z.Q. 2018. Repositories for mite and tick specimens: acronyms and their nomenclature. Syst. Appl. Acarol., 23(12): 2432–2446. <https://doi.org/10.11158/saa.23.12.12>