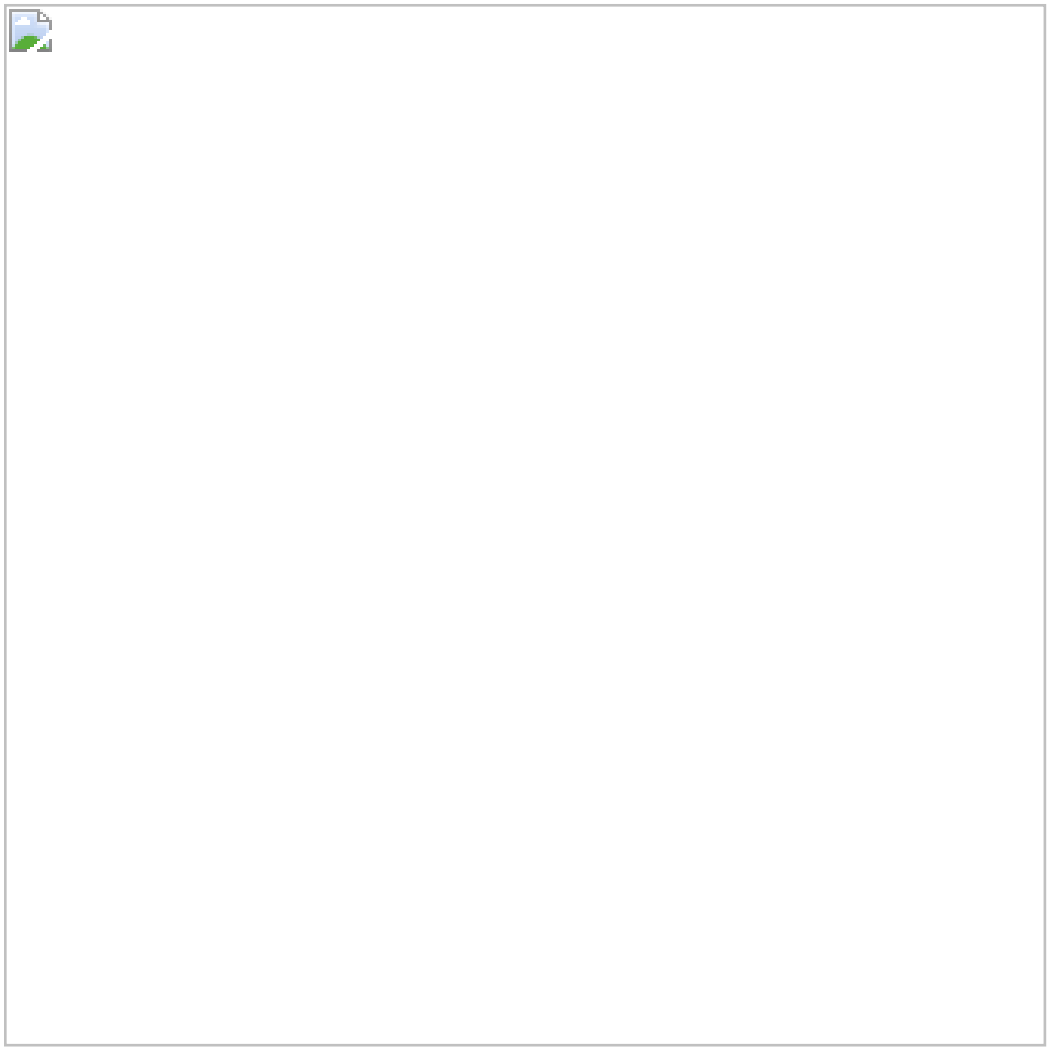

# Four new species of Tetra and Tetraspinus (Acari: Eriophyidae) from China

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# Four new species of *Tetra* and *Tetraspinus* (Acari: Eriophyidae) from China

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## Abstract

In this paper, four new species of the Eriophyidae are described and illustrated, namely *Tetra banqiaoensis* **sp. nov.** from *Populus* sp. (Salicaceae), *Tetra virga* **sp. nov.** from *Rhododendron irroratum* Franch. (Ericaceae), *Tetra ampelopsis* **sp. nov.** from *Ampelopsis* sp. (Vitaceae), *Tetraspinus lucida* **sp. nov.** from *Ligustrum lucidum* Ait. (Oleaceae). All are vagrants causing no apparent damage to their host plants.

**Key words:** Acari, plant feeding, Prostigmata, taxonomy

## Introduction

The genus *Tetra* was established by Keifer (Keifer 1944) based on the type species *Phyllocoptruta concava* Keifer, 1939. It can be differentiated from the other genera in the Anthocoptini by its prodorsal shield with frontal lobe and without spines projecting from anterior, scapular tubercles on rear margin, prominent scapular setae (usually directed divergently posterior) and without posterior plate; dorsal opisthosoma not flat, without thickened bands and with a wide middorsal longitudinal furrow; all coxal setae present; and legs with usual series of setae (Amrine *et al.* 2003). The genus *Tetraspinus* was established by Boczek (Boczek 1961) based on the type species *Tetraspinus lentus* Boczek, 1961. It can be differentiated from the genus *Tetra* by its prodorsal shield with two distinct spines projecting forward.

As of 2010, the genus *Tetra* holds 116 species and the genus *Tetraspinus* holds 9 species all over the world (Amrine & de Lillo, unpubl. databases). Some taxonomic studies of the genus *Tetra* from China were given (Xue *et al.* 2005, 2006, 2007), and the molecular data suggested that the genus *Tetra* is not a monophyletic genus (Li *et al.* 2014).

## Materials and methods

Eriophyoid mites were found on plants with the aid of hand-lens (30×) and together with part of host plants, were placed in labeled vials filled with 75% ethanol. Collection data were also recorded in a notebook and examples of host plant parts were kept in a plant specimen folder in a dry environment for further identification and reference. In laboratory the liquid contents were poored into a petri dish from the vials, then mite specimens were picked up using a fine pin and slide mounted using Keifer's Booster and modified Berlese medium (Amrine & Manson 1996). Specimens were examined with the aid of a Zeiss A2 (Germany) research microscope equipped with phase contrast (A-plan phase objectives: ×10/0.25, ×20/0.45; EC plan-NEOFLUAR phase objectives: ×40/0.75; ×100/1.3 oil immersion) and schematic drawings were made. Images were taken with the same microscope

(under 100× oil immersion with 10× eyepieces) using an Axio Cam MRc (Carl Zeiss) system, connected to a computer and using Axiovision image analysis software. Specimens were measured according to de Lillo *et al*. (2010). For each species, the holotype female measurement precedes the corresponding range for paratypes (given in parentheses). All measurements are in micrometres (μm) and are lengths when not otherwise specified. The morphological terminology follows Lindquist (1996) and Amrine *et al.* (2003) and the generic classification was made according to Amrine *et al*. (2003). All type specimens are deposited as slide mounted specimens in the Arthropod/Mite Collection of the Department of Entomology, Nanjing Agricultural University (NJAU), Jiangsu Province, China.

## Results

Family **Eriophyidae** Nalepa, 1898
Subfamily **Phyllocoptinae** Nalepa, 1892
Tribe **Anthocoptini** Amrine and Stasny, 1994
Genus ***Tetra*** Keifer, 1944

***Tetra banqiaoensis* sp. nov.**
(Figs. 1–2)

**Description.** FEMALE (n=15): Body fusiform, 180 (170–210), 57 (55–60) wide, 50 (50–55) thick; light yellow. **Gnathosoma** 25 (24–25), projecting obliquely downwards, pedipalp coxal seta (*ep*) 3 (3–4), dorsal pedipalp genual seta (*d*) 6 (6–7), cheliceral stylets 20 (20–22). **Prodorsal shield** 40 (37–40), 51 (50–52) wide, median line absent, admedian and submedian lines connected by transverse lines at basal 1/3 and anterior 1/3, forming two large cells at each side, admedian lines connected by transverse lines at basal 1/3, admedian and submedian lines sinuous; frontal lobe 6 (5–6). Scapular tubercles 2 (2–3), on the rear shield margin, 30 (29–30) apart, scapular setae (*sc*) 37 (37–38), projecting posteriorly. **Coxigenital region** with 6 (6–7) semiannuli between coxae and genitalia. Coxal plates with short lines, anterolateral setae on coxisternum I (*1b*) 12 (10–12), 12 (11–12) apart, proximal setae on coxisternum I (*1a*) 22 (22–23), 10 (10–11) apart, proximal setae on coxisternum II (*2a*) 47 (47–50), 23 (23–24) apart. Prosternal apodeme 5 (5–6). **Leg I** 36 (33–36), femur 12 (11–13), basiventral femoral seta (*bv*) 13 (13–15); genu 5 (5–6), antaxial genual seta (*l″*) 24 (23–24); tibia 8 (8–9), paraxial tibial seta (*l′*) 8 (8–9), located at 1/4 from dorsal base; tarsus 8 (6–8), paraxia, fastigial, tarsal setae (*ft′*) 20 (18–20), antaxial, fastigial, tarsal setae (*ft″*) 24 (23–25), seta *u′* 5 (4–5); tarsal empodium (*em*) 4 (4–5), simple, 6-rayed; tarsal solenidion (ω) 6 (6–7), little knobbed. **Leg II** 30 (28–31), femur 10 (10–11), basiventral femoral seta (*bv*) 11 (10–12); genu 5 (4–5), antaxial genual seta (*l″*) 11 (9–11); tibia 7 (6–7); tarsus 7 (6–7), paraxia, fastigial, tarsal setae (*ft′*) 5 (5–6), antaxial, fastigial, tarsal setae (*ft″*) 24 (23–24), seta *u′* 4 (4–5); tarsal empodium (*em*) 5 (4–5), simple, 6-rayed; tarsal solenidion (ω) 8 (7–8), little knobbed. **Opisthosoma** dorsally with 33 (33–34) semiannuli, smooth, with a dorsal furrow, ventrally with 74 (73–74) semiannuli, with small and rounded microtubercles set on rear annular margins, last 8th–9th semiannuli with elongated and linear tubercles. Setae *c2* 33 (33–35) on ventral semiannulus 13 (13–15), 48 (48–53) apart; setae *d* 70 (65–72) on ventral semiannulus 26 (26–28), 38 (37–42) apart; setae *e* 36 (36–40) on ventral semiannulus 48 (47–48), 20 (18–22) apart, setae *f* 39 (39–40) on 6th (6th–7th) ventral semiannulus from rear, 21 (21–22) apart. Setae *h1* 3 (3–4), *h2* 120 (120–128). **Female genitalia** 21 (21–22), 11 (11–12) wide, coverflap with 12 (10–12) longitudinal ridges, setae *3a* 63 (62–65), 15 (15–16) apart.

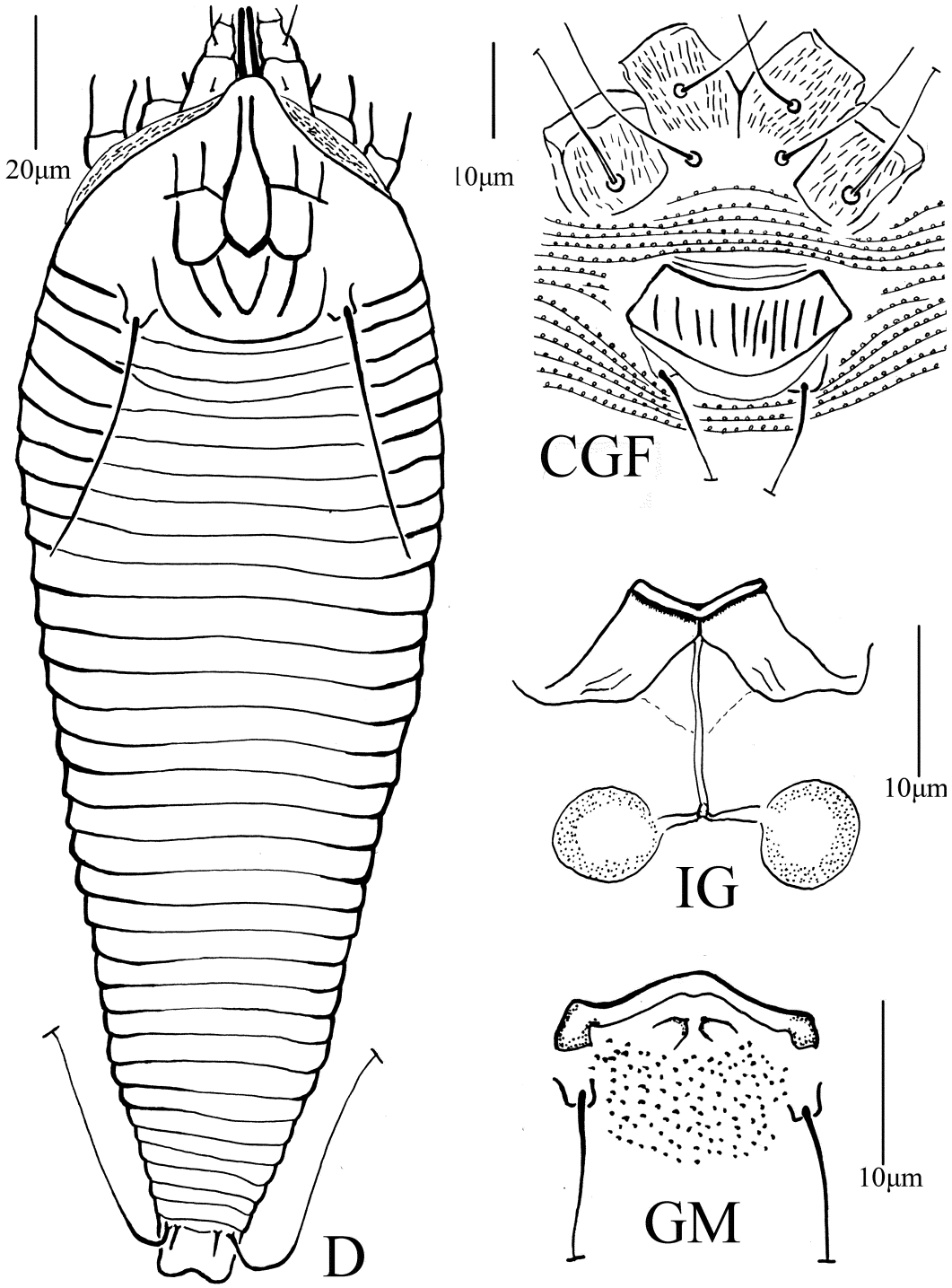


**FIGURE 1.** *Tetra banqiaoensis* **sp. nov.**: D. dorsal view of female; CGF. coxae and female genitalia; IG. female internal genitalia; GM. coxae and male genitalia.

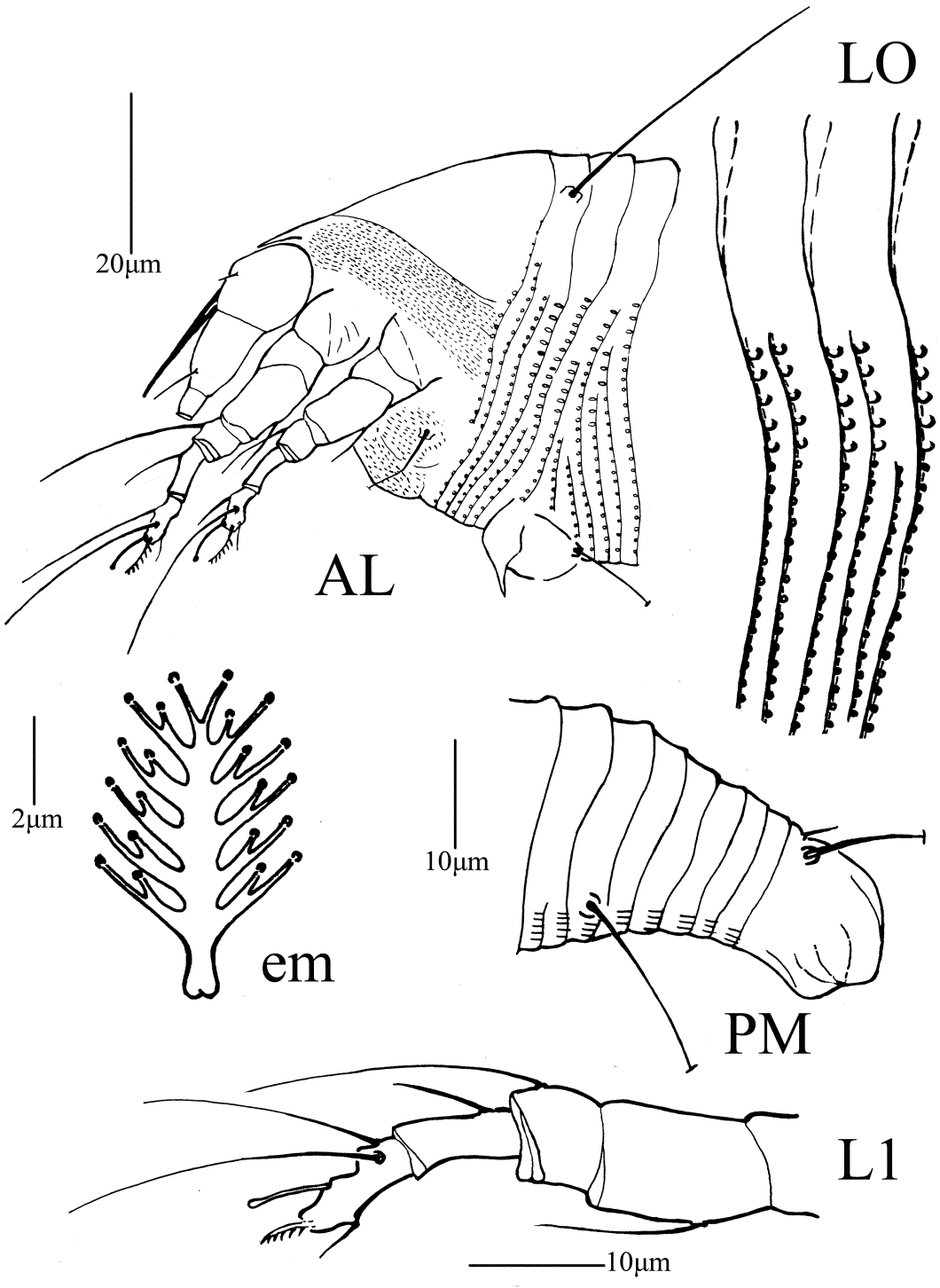


**FIGURE 2.** *Tetra banqiaoensis* **sp. nov.**: AL. Antero-lateral view of female; LO. lateral microtubercles; PM. Postero-lateral view of female; em. empodium; L1. leg I.

MALE (n=2): Body fusiform, 170–175, 50–51 wide, 50 thick; light yellow. **Gnathosoma** 24–25, projecting obliquely downwards, pedipalp coxal seta (*ep*) 3–4, dorsal pedipalp genual seta (*d*) 5–6, cheliceral stylets 19–20. **Prodorsal shield** 35–37, 40–42 wide, median line absent, admedian and submedian lines connected by transverse lines at basal 1/3 and anterior 1/3, forming two large cells at each side, admedian and submedian lines sinuous; anterior shield lobe broad 5–6. Scapular tubercles 2–3, set on the rear shield margin, 23–24 apart, scapular setae (*sc*) 18–20, projecting posteriorly. **Coxigenital region** with 8–9 semiannuli between coxae and genitalia. Coxal plates with short lines, anterolateral setae on coxisternum I (*1b*) 10–13, 10–12 apart, proximal setae on coxisternum I (*1a*) 17–19, 9–10 apart, proximal setae on coxisternum II (*2a*) 35–37, 18–20 apart. Prosternal apodeme 5–6. **Leg I** 35–37, femur 8–9, basiventral femoral seta (*bv*) 9–10; genu 4–5, antaxial genual seta (*l″*) 19–20; tibia 6–7, paraxial tibial seta (*l′*) 6–7, located at 1/4 from dorsal base; tarsus 6–7, paraxia, fastigial, tarsal setae (*ft′*) 15–18, antaxial, fastigial, tarsal setae (*ft″*) 22–25, seta *u′* 5–6; tarsal empodium (*em*) 5–6, simple, 6-rayed; tarsal solenidion (ω) 6–7, little knobbed. **Leg II** 31–33, femur 9–10, basiventral femoral seta (*bv*) 10–11; genu 5–6, antaxial genual seta (*l″*) 10–11; tibia 6–7; tarsus 5–6, paraxia, fastigial, tarsal setae (*ft′*) 5–6, antaxial, fastigial, tarsal setae (*ft″*) 20–22, seta *u′* 5–6; tarsal empodium (*em*) 5–6, simple, 6-rayed; tarsal solenidion (ω) 8–9, little knobbed. **Opisthosoma** dorsally with 28–30 semiannuli, with a dorsal furrow, ventrally with 61–63 semiannuli, with small and rounded microtubercles set on rear annular margins, last 8th–9th semiannuli with elongated and linear tubercles. Setae *c2* 27–30 on ventral semiannulus 12–13, 35–36 apart; setae *d* 54–57 on ventral semiannulus 22–24, 24–25 apart; setae *e* 27–28 on ventral semiannulus 38–40, 15–17 apart, setae *f* 32–35 on 6th ventral semiannulus from rear, 20–21 apart. Setae *h1* 3–4, *h2* 95–100. **Male genitalia** 15–16 wide, setae *3a* 38–40, 13–14 apart, with granules below eugenital setae.

**Type material. Holotype** female (slide number NJAUAcariEriYN59.1; marked Holotype), from *Populus sp.* (Salicaceae), Banqiao Town, Baoshan City, Yunnan Province, P.R. China, 25°07′22″N, 99°09′08″E, elevation 1473m, 7 August 2009, coll. Xiao-Feng Xue. **Paratypes** 14 females and 2 males on 16 microscope slides (slide number NJAUAcariEriYN59.2-59.17), with the same data as holotype.

**Relation to host.** Vagrant on lower part of the leaf surface. No damage to the host plant was observed.

**Etymology.** The specific designation *banqiaoensis* is derived from the place name of Banqiao Town, where the new species were collected; feminine in gender.

**Differential diagnosis**. This new species is similar to *Tetra smilaxis* Xue, Song & Hong, 2006, inhabiting *Smilax china* L. (Smilacaceae), but can be differentiated from the latter mainly by possessing: prodorsal shield with median lines absent (with median lines present in *T. smilaxis*); coxal plates with short lines (smooth in *T. smilaxis*); tarsal empodium 6-rayed (tarsal empodium 4-rayed in *T. smilaxis*).

***Tetra virga* sp. nov.**
(Figs. 3–4)

**Description.** FEMALE: (n=10). Body fusiform, 220 (180–220), 67 (62–67) wide, 55 (55–60) thick; light yellow. **Gnathosoma** 25 (23–25), projecting obliquely downwards, pedipalp coxal setae (*ep*) 2 (2–3), dorsal pedipalp genual setae (*d*) 7 (6–7), cheliceral stylets 20 (18–20). **Prodorsal shield** 45 (45–47), 55 (55–60) wide, median line present at basal 1/3, admedian sinuous, protruding at anterior 1/3, connected with submedian lines by a transverse line, forming one cell in the middle and three cells at each side; anterior shield lobe broad 13 (12–13). Scapular tubercles 2 (2–3), on rear shield

margin, 34 (34–35) apart, scapular setae (*sc*) 11 (11–12), projecting posteriorly. **Coxigenital region** with 10 (9–10) semiannuli between coxae and genitalia. Coxal plates with granules, anterolateral setae on coxisternum I (*1b*) 10 (10–11), 13 (13–14) apart, proximal setae on coxisternum I (*1a*) 35 (33–35), 7 (7–8) apart, proximal setae on coxisternum II (*2a*) 40 (37–40), 24 (24–25) apart. Prosternal apodeme 7 (6–7). **Leg I** 30 (30–31), femur 10 (9–10), basiventral femoral setae (*bv*) 11 (11–13); genu 4 (4–5), antaxial genual setae (*l″*) 23 (22–23); tibia 6 (6–7), paraxial tibial setae (*l′*) 6 (6–7), located at center; tarsus 6 (6–7), paraxia, fastigial, tarsal setae (*ft′*) 20 (20–22), antaxial, fastigial, tarsal setae (*ft″*) 24 (24–25), paraxial, unguinal, tarsal setae (*u′*) 5 (4–5); tarsal empodium (*em*) 6 (5–6), simple, 6-rayed; tarsal solenidion (ω) 7 (6–7), rod-like. **Leg II** 28 (27–28), femur 10 (9–10), basiventral femoral setae (*bv*) 12 (12–13); genu 4 (3–4), antaxial genual setae (*l″*) 12 (10–12); tibia 6 (6–7); tarsus 5 (5–6), paraxia, fastigial, tarsal setae (*ft′*) 8 (8–10), antaxial, fastigial, tarsal setae (*ft″*) 23 (22–24), paraxial, unguinal, tarsal setae (*u′*) 5 (5–6); tarsal empodium (*em*) 5 (5–6), simple, 6-rayed; tarsal solenidion (ω) 7 (6–7), rod-like. **Opisthosoma** dorsally with 38 (35–38) semiannuli, with elliptical microtubercles on the dorsal furrow, ventrally with 71 (68–71) semiannuli, with rounded microtubercles, last 6th (6th–7th) semiannuli with elongated and linear tubercles. Setae *c2* 37 (37–38) on ventral semiannulus 12 (12–13), 50 (50–55) apart; setae *d* 60 (60–65) on ventral semiannulus 26 (26–27), 33 (33–35) apart; setae *e* 38 (38–40) on ventral semiannulus 43 (43–45), 16 (16–17) apart, setae *f* 32 (30–32) on 6th ventral semiannulus from rear, 20 (20–21) apart. Setae *h1* 3 (3–4), *h2* 60 (60–70). **Female genitalia** 15 (14–15), 19 (19–20) wide, coverflap with 10 (8–10) longitudinal ridges, setae *3a* 19 (19–20), 18 (18–20) apart.

MALE: (n=2, dorsal view). Body fusiform, 180–190, 55–57 wide; light yellow. **Gnathosoma** 22, projecting obliquely downwards, pedipalp coxal setae (*ep*) 2, dorsal pedipalp genual setae (*d*) 6, cheliceral stylets 16–17. **Prodorsal shield** 45–46, 50–52 wide, median line present at basal 1/3, admedian sinuous, protruding at anterior 1/3, connected with submedian lines by a transverse line, forming one cell in the middle and three cells at each side; anterior shield lobe broad 10–11. Scapular tubercles on rear shield margin, 34–35 apart, scapular setae (*sc*) 10–11, projecting posteriorly. **Coxigenital region** with 8–9 semiannuli between coxae and genitalia. Coxal plates with granules, anterolateral setae on coxisternum I (*1b*) 8–9, 12–13 apart, proximal setae on coxisternum I (*1a*) 25–28, 6–7 apart, proximal setae on coxisternum II (*2a*) 35–38, 23–24 apart. Prosternal apodeme 6–7. **Leg I** 28–29, femur 8–9, basiventral femoral setae (*bv*) 13–15; genu 4–5, antaxial genual setae (*l″*) 18–20; tibia 6–7, paraxial tibial setae (*l′*) 5–6, located at center; tarsus 6–7, paraxia, fastigial, tarsal setae (*ft′*) 22–23, antaxial, fastigial, tarsal setae (*ft″*) 23–24, paraxial, unguinal, tarsal setae (*u′*) 3–4; tarsal empodium (*em*) 4–5, simple, 6-rayed, tarsal solenidion (ω) 5–6, rod-like. **Leg II** 24–25, femur 9, basiventral femoral setae (*bv*) 10; genu 3–4, antaxial genual setae (*l″*) 9–10; tibia 5–6; tarsus 5–6, paraxia, fastigial, tarsal setae (*ft′*) 7–8, antaxial, fastigial, tarsal setae (*ft″*) 20–22, paraxial, unguinal, tarsal setae (*u′*) 4–5; tarsal empodium (*em*) 5–6, simple, 6-rayed, tarsal solenidion (ω) 5–6, rod-like. **Opisthosoma** dorsally with 31–32 semiannuli, with elliptical microtubercles on the dorsal furrow, ventrally with 59–61 semiannuli, with rounded microtubercles, last 8th–9th semiannuli with elongated and linear tubercles. Setae *c2* 30–32 on ventral semiannulus 12–14, 45–47 apart; setae *d* 40–45 on ventral semiannulus 23–24, 27–28 apart; setae *e* 40–42 on ventral semiannulus 38–40, 16–17 apart, setae *f* 33–35 on 4th–5th ventral semiannulus from rear, 18–20 apart. Setae *h1* 3–4, *h2* 60–65. **Male genitalia** 17–18 wide, setae *3a* 24–25, 15–16 apart, with granules below eugenital setae.

**Type material. Holotype** female (slide number NJAUAcariEriYN278.1; marked Holotype), from *Rhododendron irroratum* Franch. (Ericaceae), Fugong County, Nujiang Lisu autonomous prefecture, Yunnan Province, P.R. China, 26°33′05″N, 98°55′08″E, elevation 2122m, 25 June 2013, coll. Xiao Han, Qiong Wang and Jing-Feng Guo. **Paratypes** 9 females and 2 males on 11 microscope slides (slide number NJAUAcariEriYN278.2–278.12), with the same data as holotype.

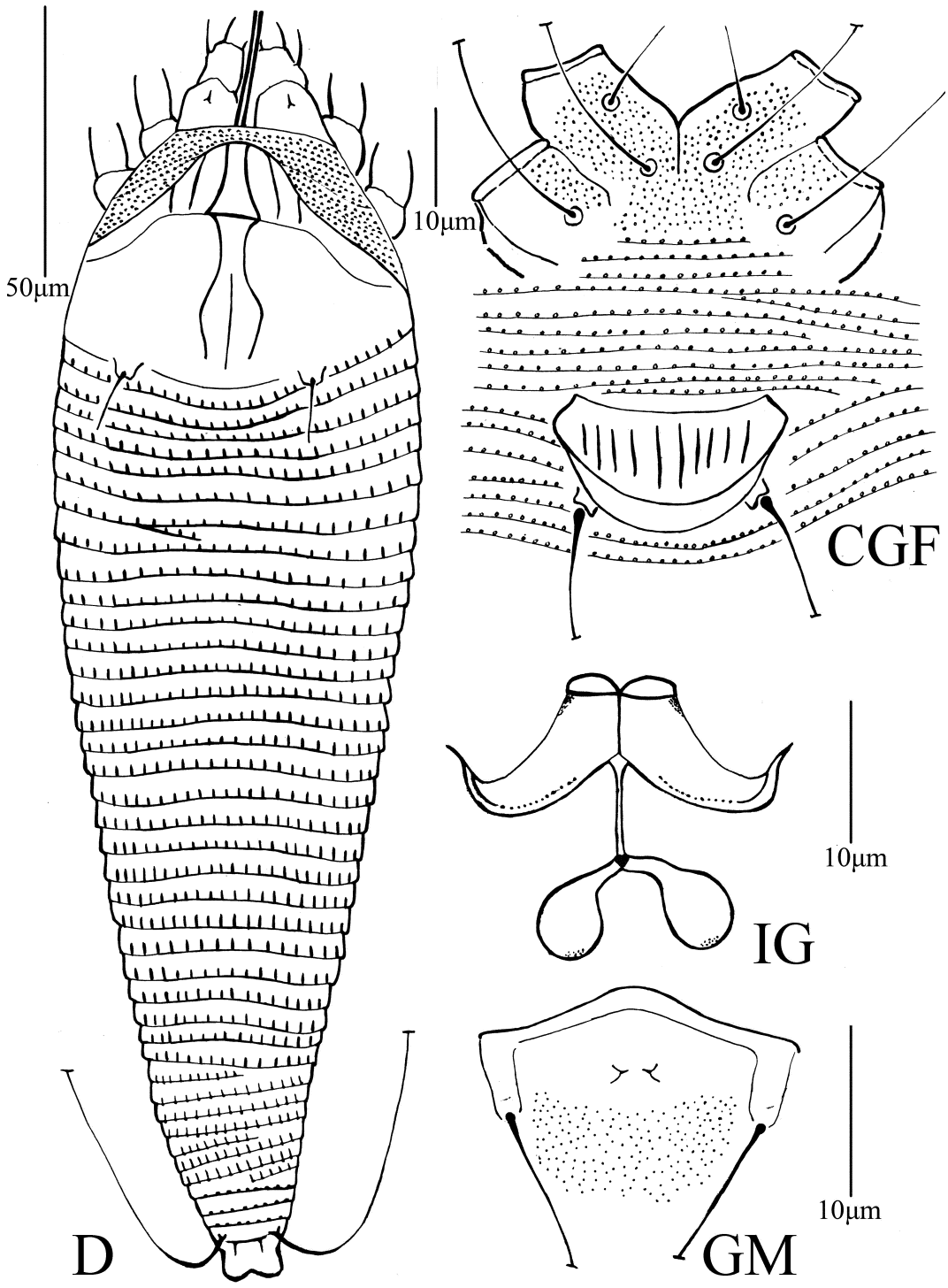


**FIGURE 3.** *Tetra virga* **sp. nov.**: D. dorsal view of female; CGF. coxae and female genitalia; IG. female internal genitalia; GM. coxae and male genitalia.

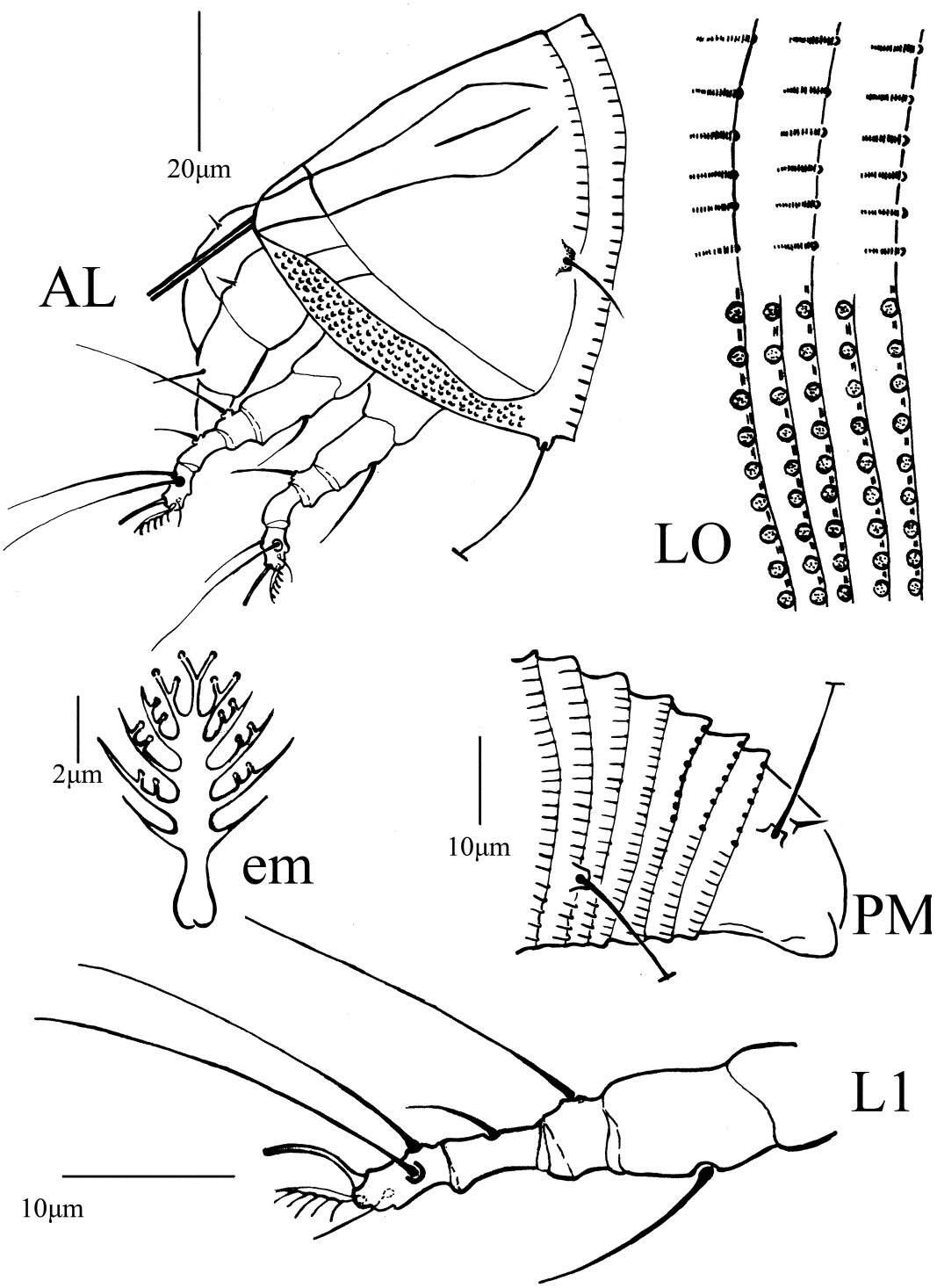


**FIGURE 4.** *Tetra virga* **sp. nov.**: AL. Antero-lateral view of female; LO. lateral microtubercles; PM. Postero-lateral view of female; em. empodium; L1. leg I.

**Relation to host.** This species is vagrant on lower part of the leaf surface. No damage to the host plant was observed.

**Etymology.** The specific designation *virga* is from the character of tarsal solenidion (ω), a curved structure, *virga* in Latin; feminine in gender.

**Differential diagnosis**. This new species is similar to *Tetra angelica* Xue, Guo & Hong, 2013, inhabiting *Angelica* sp. (Apiaceae), but can be differentiated from the latter by having: median and submedian lines incomplete, admedian complete (a prodorsal shield design with incomplete admedian lines in *T. angelica*); tarsal solenidion (ω) is rod-like (tarsal solenidion (ω) is knobbed in *T. angelica*) and the number of the rays of the empodia is 6 (the number of the rays of the empodia is 4 in *T. angelica*).

***Tetra ampelopsis* sp. nov.**
(Figs. 5–6)

**Description.** FEMALE: (n=13). Body fusiform, 225 (217–226), 61 (61–64) wide, 75 (69–75) thick; light yellow. **Gnathosoma** 20 (19–20), projecting obliquely downwards, pedipalp coxal setae (*ep*) 2 (2–3), dorsal pedipalp genual setae (*d*) 8 (8–10), cheliceral stylets 16 (13–16). **Prodorsal shield** 51 (51–53), 56 (55–58) wide, covered with tiny granules, median line present at anterior 1/4 and basal 1/2, connected with admedian and submedian lines by transverse lines, forming six cells; anterior shield lobe broad 8 (6–8). Scapular tubercles 2 (2–3), on rear shield margin, 30 (29–30) apart, scapular setae (*sc*) 20 (18–20), projecting posteriorly. **Coxigenital region** with 7 (7–8) semiannuli between coxae and genitalia. Coxal plates with granules, anterolateral setae on coxisternum I (*1b*) 12 (11–12), 14 (13–14) apart, anterolernum I (*1a*) 18 (17–18), 8 (7–9) apart, proximal setae on coxisternum II (*2a*) 47 (47–50), 23 (23–24) apart. Prosternal apodeme 11 (11–13). **Leg I** 40 (37–40), femur 12 (11–12), basiventral femoral setae (*bv*) 12 (11–12); genu 5 (5–6), antaxial genual setae (*l''*) 22 (22–24); tibia 11 (10–11), paraxial tibial setae (*l'*) 5 (5–6), located at 1/3 from dorsal base; tarsus 7 (7–8), paraxia, fastigial, tarsal setae (*ft'*) 18 (18–20), antaxial, fastigial, tarsal setae (*ft''*) 21 (21–24), paraxial, unguinal, tarsal setae (*u'*) 5 (4–5); tarsal empodium (*em*) 5 (4–5), simple, 4-rayed; tarsal solenidion (ω) 7 (6–7), knobbed. **Leg II** 33 (33–36), femur 11 (10–12), basiventral femoral setae (*bv*) 11 (11–12); genu 5 (4–5), antaxial genual setae (*l''*) 11 (10–11); tibia 9 (9–10); tarsus 7 (6–7), paraxia, fastigial, tarsal setae (*ft'*) 4 (4–6), antaxial, fastigial, tarsal setae (*ft''*) 20 (20–22), paraxial, unguinal, tarsal setae (*u'*) 4 (3–4); tarsal empodium (*em*) 5 (5–6), simple, 4-rayed; tarsal solenidion (ω) 6 (6–7), knobbed. **Opisthosoma** dorsally with 29 (27–30) semiannuli, with elliptical microtubercles on the dorsal furrow, ventrally with 74 (69–74) semiannuli, with rounded microtubercles, last 7th–8th semiannuli with elongated and linear tubercles. Setae *c2* 30 (27–30) on ventral semiannulus 13 (13–15), 50 (47–52) apart; setae *d* 47 (44–50) on ventral semiannulus 28 (27–29), 28 (28–30) apart; setae *e* 20 (18–20) on ventral semiannulus 48 (47–49), 15 (15–16) apart, setae *f* 30 (28–32) on 6th (5th–6th) ventral semiannulus from rear, 23 (22–24) apart. Setae *h1* 2 (2–3), *h2* 73 (72–75). **Female genitalia** 15 (15–16), 19 (19–21) wide, coverflap with 9 (8–9) longitudinal ridges, setae *3a* 16 (15–17), 15 (14–16) apart.

MALE: (n=2, dorsal view). Body fusiform, 209–210, 59–60 wide; light yellow. **Gnathosoma** 19–20, projecting obliquely downwards, pedipalp coxal setae (*ep*) 2–3, dorsal pedipalp genual setae (*d*) 9–10, cheliceral stylets 13–14. **Prodorsal shield** 42–45, 50–53 wide, covered with tiny granules, median line present at anterior 1/4 and basal 1/2, connected with admedian and submedian lines by transverse lines, forming six cells; anterior shield lobe broad 7–8. Scapular tubercles on rear shield margin, 26–28 apart, scapular setae (*sc*) 10–12, projecting posteriorly. **Coxigenital region** with 6–7 semiannuli between coxae and genitalia. Coxal plates with granules, anterolateral setae on coxisternum I (*1b*) 9–10, 12–13 apart, proximal setae on coxisternum I (*1a*) 14–15, 7–8 apart,

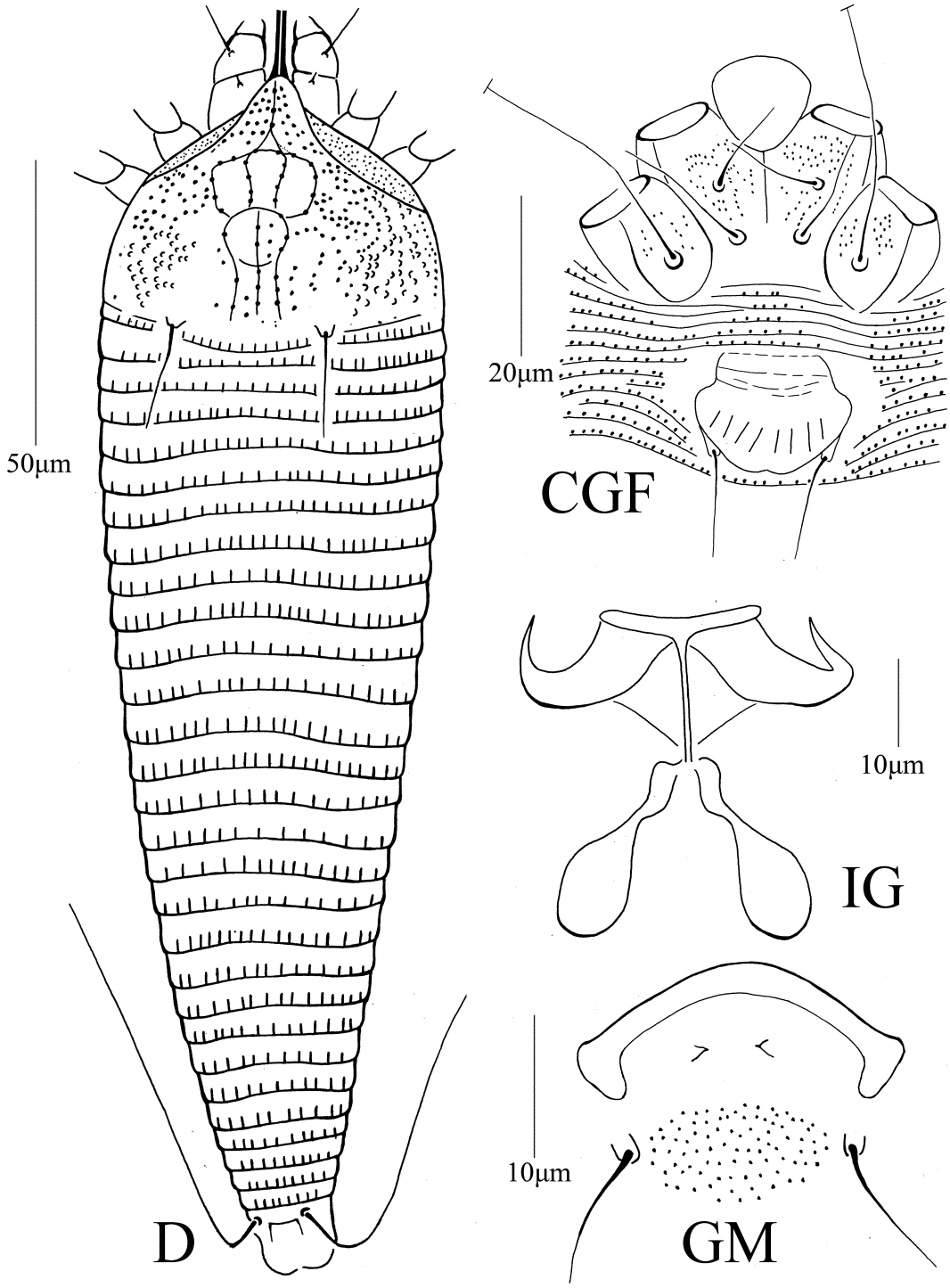


**FIGURE 5.** *Tetra ampelopsis* **sp. nov.**: D. dorsal view of female; CGF. coxae and female genitalia; IG. female internal genitalia; GM. coxae and male genitalia.

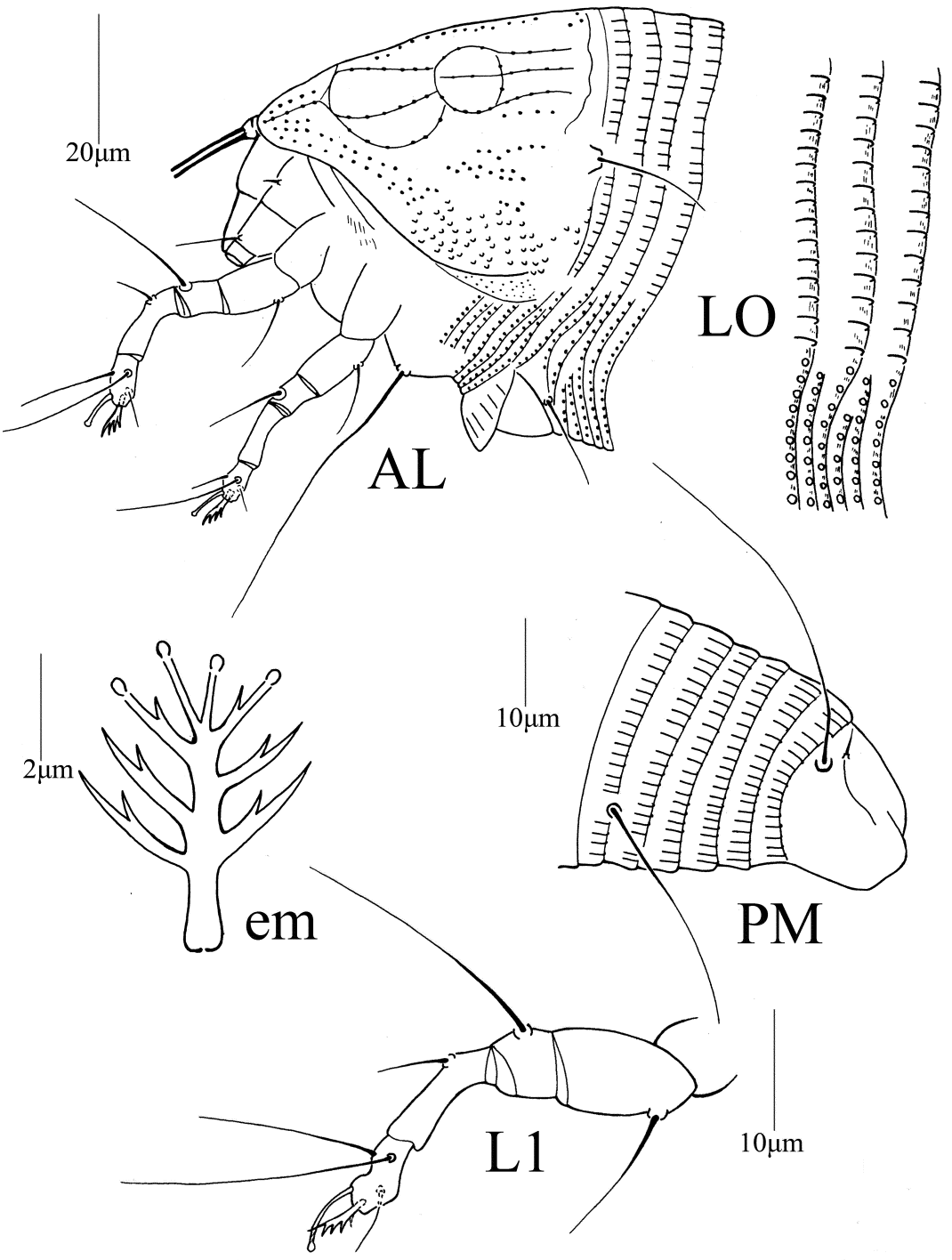


**FIGURE 6.** *Tetra ampelopsis* **sp. nov.**: AL. Antero-lateral view of female; LO. lateral microtubercles; PM. Postero-lateral view of female; em. empodium; L1. leg I.

proximal setae on coxisternum II (*2a*) 33–35, 21–23 apart. Prosternal apodeme 11–12. **Leg I** 35–37, femur 10–12, basiventral femoral setae (*bv*) 10–12; genu 4–5, antaxial genual setae (*l″*) 20–22; tibia 10–11, paraxial tibial setae (*l′*) 5–6, located at 1/3 from dorsal base; tarsus 6–7, paraxia, fastigial, tarsal setae (*ft′*) 19–20, antaxial, fastigial, tarsal setae (*ft″*) 22–24, paraxial, unguinal, tarsal setae (*u′*) 4–5; tarsal empodium (*em*) 4–5, simple, 4-rayed, tarsal solenidion (ω) 6–7, knobbed. **Leg II** 34–36, femur 10–11, basiventral femoral setae (*bv*) 10–11; genu 4–5, antaxial genual setae (*l″*) 10–11; tibia 9–10; tarsus 6–7, paraxia, fastigial, tarsal setae (*ft′*) 5–6, antaxial, fastigial, tarsal setae (*ft″*) 19–20, paraxial, unguinal, tarsal setae (*u′*) 3–4; tarsal empodium (*em*) 4–5, simple, 4-rayed, tarsal solenidion (ω) 6–7, knobbed. **Opisthosoma** dorsally with 28–30 semiannuli, with elliptical microtubercles on the dorsal furrow, ventrally with 69–70 semiannuli, with rounded microtubercles, last 7th–8th semiannuli with elongated and linear tubercles. Setae *c2* 22–24 on ventral semiannulus 14–15, 48–50 apart; setae *d* 44–45 on ventral semiannulus 27–28, 30–31 apart; setae *e* 18–19 on ventral semiannulus 46–47, 15–16 apart, setae *f* 27–28 on 5th ventral semiannulus from rear, 23–25 apart. Setae *h1* 2–3, *h2* 70–73. **Male genitalia** 20–21 wide, setae *3a* 11–12, 15–16 apart, with granules below eugenital setae.

**Type material. Holotype** female (slide number NJAUAcariEriHN175.1; marked Holotype), from *Ampelopsis* sp. (Vitaceae), Yuelu Mountain, Changsha City, Hunan Province, P.R. China, 28°11′39″N, 112°56′08″E, elevation 236m, 21 September 2013, coll. Qiong Wang and Jing-Feng Guo. **Paratypes** 12 females and 2 males on 14 microscope slides (slide number NJAUAcariEriHN175.2–NJAUAcariEriHN175.15), with the same data as holotype.

**Relation to host.** This species is vagrant on lower part of the leaf surface. No damage to the host plant was observed.

**Etymology.** The specific designation *ampelopsis* is from the generic name of the host, *ampelopsis*; feminine in gender.

**Differential diagnosis**. This new species is similar to *Tetra heilongjiangensis* Kuang, 1995, inhabiting *Rhamnus davurica* Pall. (Rhamnaceae), but can be differentiated from the latter by having: the design of prodorsal shield covered with granules (a prodorsal shield design with no granules in *T. heilongjiangensis*); coxal plates with granules (coxal plates with short lines in *T. heilongjiangensis*) and dorsal semiannuli with elliptical microtubercles (dorsal semiannuli smooth in *T. heilongjiangensis*).

Family **Eriophyidae** Nalepa, 1898
Subfamily **Phyllocoptinae** Nalepa, 1892
Tribe **Anthocoptini** Amrine and Stasny, 1994
Genus ***Tetraspinus*** Boczek, 1961

***Tetraspinus lucida* sp. nov.**
(Figs. 7–8)

**Description.** FEMALE: (n=15). Body fusiform, 250 (210–260), 70 (70–90) wide, 75 (75–80) thick; light yellow. **Gnathosoma** 25 (25–27), projecting obliquely downwards, pedipalp coxal setae (*ep*) 2 (2–3), dorsal pedipalp genual setae (*d*) 8 (8–9), cheliceral stylets 20 (20–22). **Prodorsal shield** 48 (47–50), 70 (70–72) wide, median present at anterior 1/3 (faint) and basal 1/3, admedian and submedian lines complete, all lines connected by three transverse lines, forming network, with granules outside the lines; anterior shield lobe 10 (10–11), anteriorly with two distinct spines projecting forward. Scapular tubercles 2 (2–3), on rear shield margin, 34 (34–35) apart, scapular setae (*sc*) 10 (10–11), projecting posteriorly. **Coxigenital region** with 11 (10–12) semiannuli

between coxae and genitalia. Coxal plates with lines and granules, anterolateral setae on coxisternum I (*1b*) 7 (7–8), 13 (13–14) apart, proximal setae on coxisternum I (*1a*) 20 (18–20), 10 (10–11) apart, proximal setae on coxisternum II (*2a*) 20 (20–21), 27 (27–28) apart. Prosternal apodeme 7 (7–8). **Leg I** 30 (30–31), femur 10 (10–11), basiventral femoral setae (*bv*) 12 (12–13); genu 5 (5–6), antaxial genual setae (*l″*) 30 (26–30); tibia 6 (6–7), paraxial tibial setae (*l′*) 6 (6–7), located at 1/3 from dorsal base; tarsus 7 (6–7), paraxia, fastigial, tarsal setae (*ft′*) 20 (20–22), antaxial, fastigial, tarsal setae (*ft″*) 24 (22–24), paraxial, unguinal, tarsal setae (*u′*) 5 (4–5); tarsal empodium (*em*) 5 (4–5), simple, 4-rayed; tarsal solenidion (ω) 7 (6–7), knobbed. **Leg II** 28 (27–28), femur 10 (10–11), basiventral femoral setae (*bv*) 11 (11–13); genu 5 (5–6), antaxial genual setae (*l″*) 12 (10–12); tibia 6 (6–7); tarsus 6 (6–7), paraxia, fastigial, tarsal setae (*ft′*) 5 (5–6), antaxial, fastigial, tarsal setae (*ft″*) 24 (22–24), paraxial, unguinal, tarsal setae (*u′*) 5 (5–6); tarsal empodium (*em*) 5 (5–6), simple, 4-rayed; tarsal solenidion (ω) 8 (7–8), knobbed. **Opisthosoma** dorsally with 33 (32–34) semiannuli, with elliptical microtubercles on the dorsal furrow, ventrally with 79 (78–79) semiannuli, with rounded microtubercles, last 8th–9th semiannuli with elongated and linear tubercles. Setae *c2* 34 (33–35) on ventral semiannulus 14 (14–15), 60 (58–63) apart; setae *d* 70 (70–75) on ventral semiannulus 29 (29–30), 40 (37–42) apart; setae *e* 26 (26–27) on ventral semiannulus 52 (52–54), 20 (17–20) apart, setae *f* 32 (30–35) on 5th ventral semiannulus from rear, 28 (28–30) apart. Setae *h1* 3 (3–4), *h2* 110 (110–120). **Female genitalia** 15 (14–15), 25 (25–27) wide, coverflap with 12 (10–12) longitudinal ridges, setae *3a* 15 (15–16), 19 (19–20) apart.

MALE: (n=3). Body fusiform, 220–230, 56–60 wide, 60–65 wide; light yellow. **Gnathosoma** 24–25, projecting obliquely downwards, pedipalp coxal setae (*ep*) 2–3, dorsal pedipalp genual setae (*d*) 8–9, cheliceral stylets 20–22. **Prodorsal shield** 45–48, 60–65 wide, median present at anterior 1/3 (faint) and basal 1/3, admedian and submedian lines complete, all lines connected by three transverse lines, forming network, with granules outside the lines; anterior shield lobe 8–9, anteriorly with two distinct spines projecting forward. Scapular tubercles on rear shield margin, 29–30 apart, scapular setae (*sc*) 9–10, projecting posteriorly. **Coxigenital region** with 9–10 semiannuli between coxae and genitalia. Coxal plates with lines and granules, anterolateral setae on coxisternum I (*1b*) 7–8, 11–12 apart, proximal setae on coxisternum I (*1a*) 18–20, 8–10 apart, proximal setae on coxisternum II (*2a*) 18–20, 23–25 apart. Prosternal apodeme 7–8. **Leg I** 29–30, femur 9–10, basiventral femoral setae (*bv*) 11–12; genu 4–5, antaxial genual setae (*l″*) 22–25; tibia 7–8, paraxial tibial setae (*l′*) 5–6, located at 1/3 from dorsal base; tarsus 5–6, paraxia, fastigial, tarsal setae (*ft′*) 19–21, antaxial, fastigial, tarsal setae (*ft″*) 22–24, paraxial, unguinal, tarsal setae (*u′*) 4–5; tarsal empodium (*em*) 4–5, simple, 4-rayed; tarsal solenidion (ω) 5–6, knobbed. **Leg II** 27–28, femur 9–10, basiventral femoral setae (*bv*) 11–13; genu 4–5, antaxial genual setae (*l″*) 10–11; tibia 6–7; tarsus 5–6, paraxia, fastigial, tarsal setae (*ft′*) 5–6, antaxial, fastigial, tarsal setae (*ft″*) 22–24, paraxial, unguinal, tarsal setae (*u′*) 4–5; tarsal empodium (*em*) 4–5, simple, 4-rayed; tarsal solenidion (ω) 6–7, knobbed. **Opisthosoma** dorsally with 28–30 semiannuli, with elliptical microtubercles on the dorsal furrow, ventrally with 66–67 semiannuli, with rounded microtubercles, last 8th–9th semiannuli with elongated and linear tubercles. Setae *c2* 30–32 on ventral semiannulus 10–12, 50–55 apart; setae *d* 60–65 on ventral semiannulus 24–26, 30–32 apart; setae *e* 20–22 on ventral semiannulus 42–44, 15–16 apart, setae *f* 28–30 on 5th ventral semiannulus from rear, 20–23 apart. Setae *h1* 3–4, *h2* 100–110. **Male genitalia** 17–18 wide, setae *3a* 17–18, 15–16 apart, with granules below eugenital setae.

**Type material. Holotype** female (slide number NJAUAcariEriYN253.1; marked Holotype), from *Ligustrum lucidum* Ait. (Oleaceae), Fugong County, Nujiang Lisu autonomous prefecture, Yunnan Province, P.R. China, 26°54′06″N, 98°51′31″E, elevation 2138m, 24 June 2013, coll. Xiao Han, Qiong Wang and Jing-Feng Guo. **Paratypes** 14 females and 3 males on 17 microscope slides (slide number NJAUAcariEri YN253.2–253.18), with the same data as holotype.

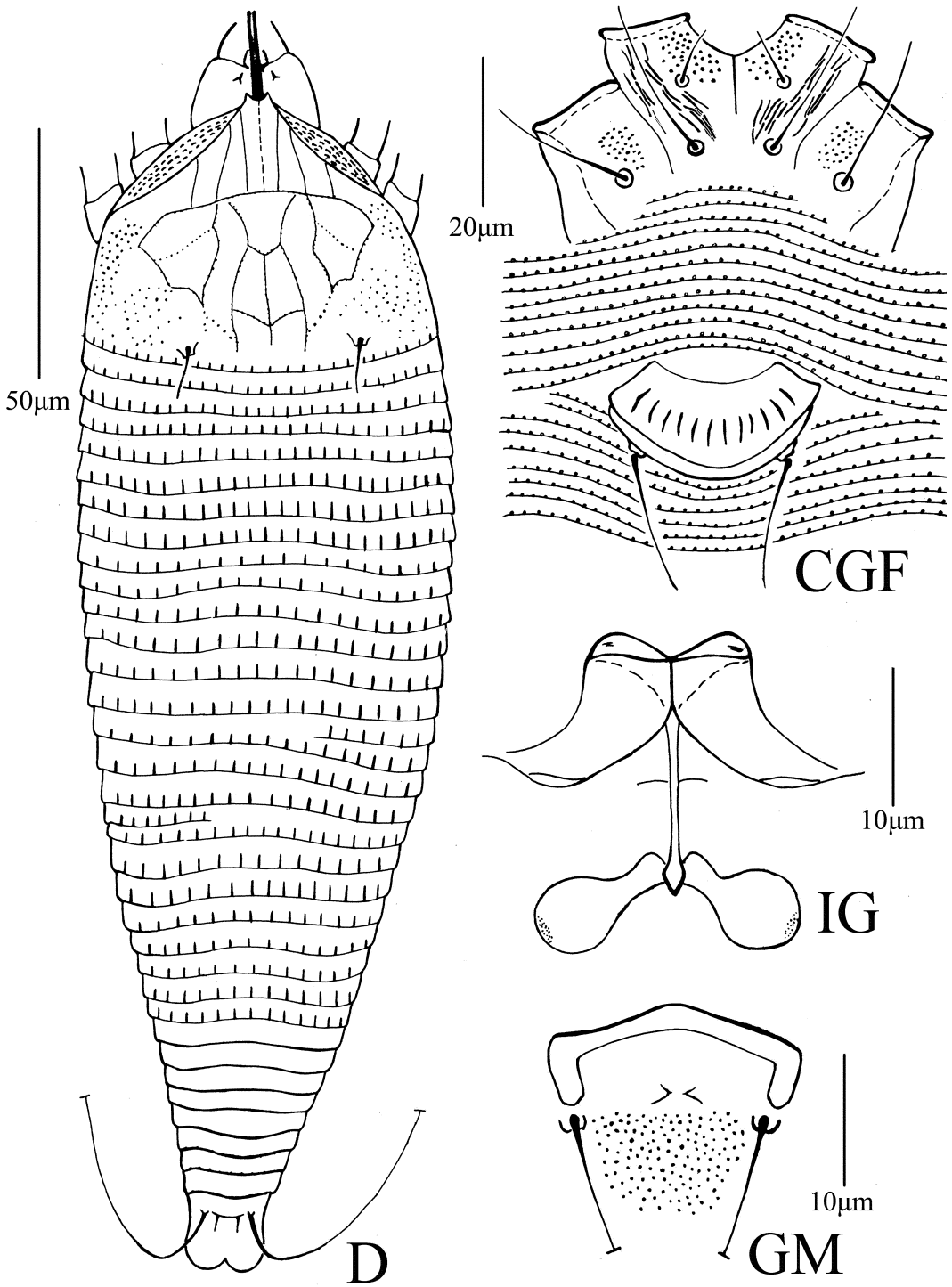


**FIGURE 7.** *Tetraspinus lucida* **sp. nov.**: D. dorsal view of female; CGF. coxae and female genitalia; IG. female internal genitalia; GM. coxae and male genitalia.

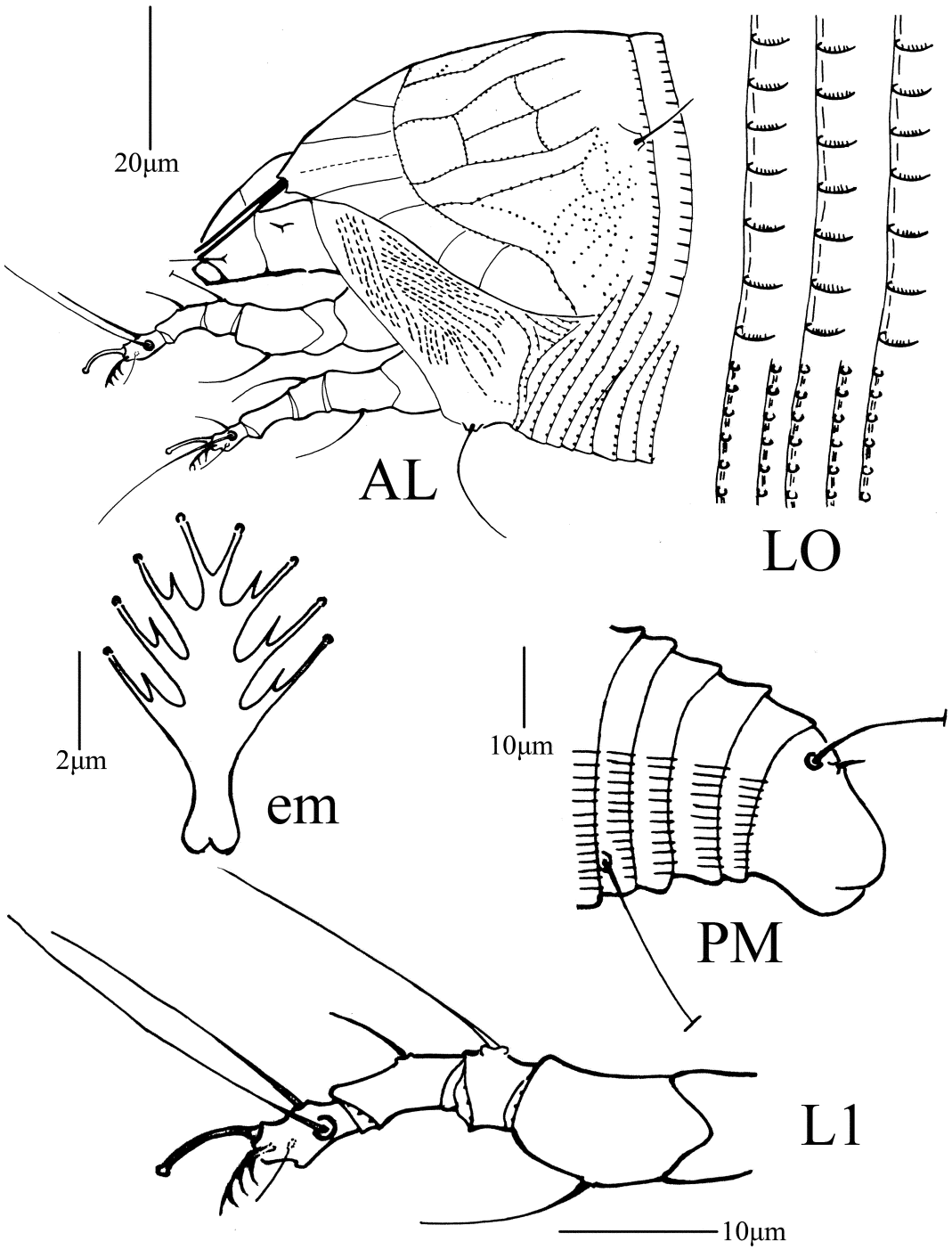


**FIGURE 8.** *Tetraspinus lucida* sp. nov.: AL. Antero-lateral view of female; LO. lateral microtubercles; PM. Postero-lateral view of female; em. empodium; L1. leg I.

**Relation to host.** This species is vagrant on lower part of the leaf surface. No damage to the host plant was observed.

**Etymology.** The specific designation *lucida* is derived from the specific name of the host plant, *lucidum*; feminine in gender.

**Differential diagnosis**. This new species is similar to *Tetraspinus syringae* Lin & Kuang, 2001, inhabiting *Syringa oblata* Lindl. (Oleaceae), but can be differentiated from the latter by having: the design of prodorsal shield with admedian and submedian lines complete (a prodorsal shield design with no submedian lines in *T. syringae*); coxal plates with lines and granules (coxal plates with short lines in *T. syringae*) and dorsal semiannuli with elliptical microtubercles (dorsal semiannuli smooth in *T. syringae*).


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