

Three new species of Nothopodinae (Acari, Eriophyidae) from China

Guo-Quan WANG

Department of Entomology, China Agricultural University, Beijing 100193 (China)
Department of Plant Protection, Guangxi University,
Nanning, 530004, Guangxi (China)
wangguoquan0@163.com
wgq1230@yahoo.com.cn

Sui-Gai WEI

Department of Plant Protection, Guangxi University,
Nanning, 530004, Guangxi (China)
weisuirgai@tom.com

Ding YANG

Department of Entomology, China Agricultural University, Beijing 100193 (China)
dyangcau@126.com

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ABSTRACT

KEY WORDS

Eriophyoidea,
Kuangella,
Disella,
China,
taxonomy,
new species.

Three new species and illustrated, *Kuangella eurycorymbus* n. sp. infesting *Eurycorymbus cavaleriei* (Levl.) Rehd. & Hand. (Sapindaceae), *Disella eyrei* n. sp. infesting *Castanopsis eyrei* (Champ.) Tutch. (Fagaceae) and *Disella itea* n. sp. infesting *Itea chinensis* Hook. & Arn. var. *oblonga* (Hand.-Mazz.) Wu (Escalloniaceae) are described. The genus *Kuangella* Wei, 2002 is discussed in this paper.

RÉSUMÉ

MOTS CLÉS

Eriophyoidea,
Kuangella,
Disella,
Chine,
taxonomie,
espèces nouvelles.

Trois nouvelles espèces de Nothopodinae (Acari, Eriophyidae) originaires de Chine. Trois nouvelles espèces sont décrites et illustrées, *Kuangella eurycorymbus* n. sp. infestant *Eurycorymbus cavaleriei* (Levl.) Rehd. & Hand. (Sapindaceae), *Disella eyrei* n. sp. infestant *Castanopsis eyrei* (Champ.) Tutch. (Fagaceae) et *Disella itea* n. sp. infestant *Itea chinensis* Hook. & Arn. var. *oblonga* (Hand.-Mazz.) Wu (Escalloniaceae). Le genre *Kuangella* Wei, 2002 est également discuté.

INTRODUCTION

The subfamily Nothopodinae Keifer, 1956 is differentiated from most subfamilies of Eriophyidae Nalepa, 1898 by its tibiae being reduced or completely fused, and separated from Aberoptinae Keifer, 1966, another subfamily of Eriophyidae with tibiae reduced or completely fused, by the spatulate projections of tarsi absent (Amrine *et al.* 2003).

The genus *Kuangella* Wei, 2002 (Wei & Qin 2002) was compared with *Colopodacus* Keifer, 1960 by authors in original paper. However, *Kuangella* is more similar to *Apontella* Boczek & Nuzzaci, 1988, and separated from the latter by the following features: basal axes of prodorsal shield tubercles longitudinal, scapular setae directed laterally, tibiae completely fused with tarsi and opisthosoma with broad furrow (Boczek & Nuzzaci 1988). After the publication of *Revised Keys to World Genera of Eriophyoidea (Acari: Prostigmata)* (Amrine *et al.* 2003), two new genera were erected in Nothopodinae, namely *Neodisella* Li & Wei, 2006 and *Taicolopodacus* Huang & Wang, 2009. *Kuangella* is easily separated from *Neodisella* by the anterolateral setae on coxisternum I present and differentiated from *Taicolopodacus* by the placement of scapular setae, shape of dorsal opisthosoma and presence of genual setae of legs II (Li & Wei 2006; Huang & Wang 2009). Up to date, two species of *Kuangella* are described (Wei *et al.* 2002, 2009).

Herein, one new *Kuangella* species and two new *Disella* species are described and illustrated.

MATERIAL AND METHODS

Specimens were located with the aid of a magnifying glass on plant material in the field, and specimens were collected into and preserved in a sucrose-ethanol solution (75%). The mites were cleared in Nesbitt's solution and mounted in Heinze medium on glass slides at room temperature according to Kuang (1986). Specimens were measured following De Lillo *et al.* (2010). The morphological terminology and the generic classification follow Amrine *et al.* (2003).

Type specimens are deposited in the Department of Plant Protection, Guangxi University, Nanning

(DPPGXU) and Muséum national d'Histoire naturelle, Paris (MNHN). All measurement units are in micrometers (μm) and rounded off to the nearest full number, and are lengths when not specified. Specimens were examined with an Olympus CX41 microscope with phase contrast. The number of measured specimens is given in parentheses.

ABBREVIATIONS

DPPGXU Department of Plant Protection, Guangxi University, Nanning;
MNHN Muséum national d'Histoire naturelle, Paris.

SYSTEMATICS

Family ERIOPHYIDAE Nalepa, 1898
Subfamily NOTHOPODINAE Keifer, 1956

Genus *Kuangella* Wei, 2002

Kuangella Wei in Wei & Qin, 2002: 161–167.

TYPE SPECIES. — *Kuangella rhis* Wei & Qin, 2002.

Kuangella eurycorymbus n. sp.
(Fig. 1)

TYPE MATERIAL. — Holotype: Bubeng, Mengla County (21°30'N, 101°28'E), Yunnan Province, China, 28.XI.2007, from *Eurycorymbus cavaleriei* (Levl.) Rehd. & Hand. (Sapindaceae), Guo-Quan Wang, slide-mounted, ♀ (DPPGXU).

Paratypes: mounted on 7 slides, with the same data as holotype, 5 ♀♀ (DPPGXU), 2 ♀♀ (MNHN-Ac1179, Ac1180).

RELATION TO HOST. — The mites are vagrant on the undersurface of the leaves, no visible damage seen.

ETYMOLOGY. — The specific designation is derived from the generic name of the type host plant.

DIAGNOSIS. — Body fusiform, white, prodorsal shield with median and admedian lines complete, submedian lines connected basally forming U-shape; coxal plate with granules; tarsal empodium 5-rayed, tarsal solenidion knobbed; dorsal annuli smooth, ventral annuli with elongated microtubercles; setae h1 absent; female coverflap with granules.

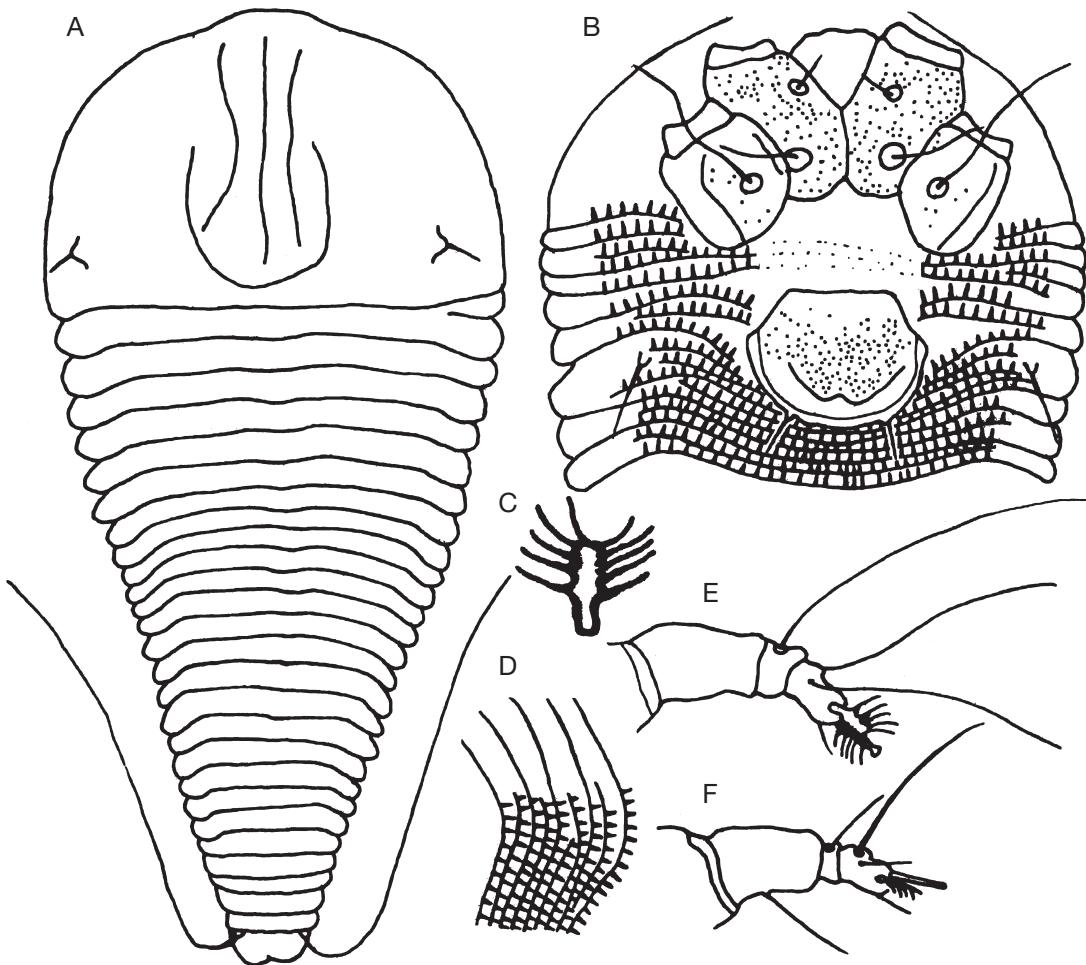


FIG. 1. — *Kuangella eurycorymbus* n. sp.: A, dorsal aspect of female; B, coxigenital area of female; C, empodium (enlarged); D, lateral view of annuli (enlarged); E, leg I; F, leg II. Scale bars: A, B, D, 44 µm; C, 12 µm; E, F, 27 µm.

DESCRIPTION

Female ($n = 8$). Male not seen.

Body (Fig. 1A)

Fusiform, white, 133 (128-137), 60 (58-64) wide.

Gnathosoma

22 (22-23), obliquely downward; dorsal pedipalp genual setae (*d*) 3 (3-4), pedipalp coxal setae (*ep*) 2 (2-3); cheliceral stylets 21 (20-21).

Prodorsal shield (Fig. 1A)

46 (44-47), 60 (58-62) wide, frontal lobe small; median and admedian lines complete, submedian lines connected basally forming U-shape. Scapular tubercles placed near lateral margin, 52 (50-54) apart, scapular setae (*sc*) directed laterally, 10 (9-10).

Coxae (Fig. 1B)

Internal sternal apodeme present, coxisternal plates sculptured with granules; anterolateral setae on coxisternum I (*1b*) 4 (3-4), 14 (13-14) apart; proximal setae on coxisternum I (*1a*) 10 (8-11), 13 (12-14)

apart; proximal setae on coxisternum II (*2a*) 27 (25-30), 27 (26-28) apart. Coxal-genital annuli faint.

Legs (Fig. 1E, F)

Tibiae fused with tarsi. Legs I 24 (23-26), trochanter 2 (2), femur 12 (12-13), basiventral femoral setae (*bv*) absent; genu 3 (2-3), antaxial genual setae (*l''*) 30 (25-32); tarsus 7 (7-8), paraxial fastigial tarsal setae (*ft'*) 20 (18-22), antaxial fastigial tarsal setae (*ft''*) 20 (18-24), paraxial unguinal tarsal setae (*u'*) 5 (5); tarsal empodium (Fig. 1C) entire, 6 (6-7), 5-rayed, tarsal solenidion laterally, 5 (5-6), knobbed. Legs II 27 (25-28), trochanter 2 (2), femur 10 (10-11), basiventral femoral setae (*bv*) 12 (11-14); genu 3 (2-3), antaxial genual setae (*l''*) 10 (8-11); tarsus 6 (6-7), paraxial fastigial tarsal setae (*ft'*) 21 (18-23), antaxial fastigial tarsal setae (*ft''*) 5 (5-6), paraxial unguinal tarsal setae (*u'*) 5 (5); tarsal empodium entire, 5 (5-6), 5-rayed, tarsal solenidion 8 (7-8), knobbed.

Opisthosoma (Fig. 1A, D)

Dorsum with broad furrow, dorsal annuli 26 (26-27), smooth; ventral annuli 49, with elongated microtubercles; setae *c2* 20 (18-23), on ventral annulus 8th; setae *d43* (38-50), 31 (30-32) apart, on ventral annulus 18th; setae *e18* (15-23), 14 (14-15) apart, on ventral annulus 30th; setae *f15* (13-18), 17 (16-17) apart, on 6th ventral annulus from rear; setae *h1* absent, setae *h2* 72 (65-83).

Female genitalia (Fig. 1B)

16 (15-16), 25 (25-26) wide, coverflap sculptured with granules, proximal setae on coxisternum III (*3a*) 3 (3-4), 20 (19-20) apart.

REMARKS

The new species is close to *K. theae* Wei, Wang & Li, 2009, but can be separated from the latter by the median and submedian lines present, prodorsal shield not sculptured with granules, empodium 5-rayed and infesting *Eurycorymbus cavalieriei* (Sapindaceae); in *K. theae*, the median and submedian lines absent, prodorsal shield sculptured with granules, empodium 6-rayed and infesting *Sageretia thea* (Osbeck) Johnst (Rhamnaceae) (Wei et al. 2009). The new species is differentiated from another species, *Kuangella rhis* Wei & Qin, 2002, as follows: the submedian lines

connected basally forming U-shape, coxisternal plates and female coverflap sculptured with granules and tarsal solenidion placed laterally, knobbed; in *K. rhis*, submedian lines faint and accompanied with many granules, coxisternal plates and female coverflap smooth and tarsal solenidion placed normal, unknobbed (Wei & Qin 2002).

Genus *Disella* Newkirk & Keifer, 1975

Disella Newkirk & Keifer, 1975: 562-587.

TYPE SPECIES. — *Floracarus ilicis* Keifer, 1965.

Disella eyrei n. sp. (Fig. 2)

TYPE MATERIAL. — Holotype: Fengyangshan National Nature Reserve, Longquan City (27°53'N, 119°11'E), Zhejiang Province, China, 28.VII.2007, from *Castanopsis eyrei* (Champ.) Tutch. (Fagaceae), Guo-Quan Wang, slide-mounted, ♀ (DPPGXU).

Paratypes: mounted on 8 slides, with the same data as holotype, 2 ♀♀, 3 ♂♂ (DPPGXU); 2 ♀♀, 1 ♂ (MNHN-Ac1181, Ac1182, Ac1183).

RELATION TO HOST. — The mites are vagrant on the undersurface of the leaves, no visible damage seen.

ETYMOLOGY. — The specific designation is derived from the specific name of the type host plant.

DIAGNOSIS. — Body fusiform, brown; prodorsal shield with median, admedian lines and submedian lines complete connected with three transverse lines forming four rows of cells; coxal plate I with short lines; tarsal empodium 4-rayed, tarsal solenidion knobbed; dorsal annuli smooth, ventral annuli with elongated microtubercles; setae *h1* absent; female coverflap with basal irregular short lines.

FEMALE DESCRIPTION (n = 5)

Body (Fig. 2A)

Fusiform, brown, 172 (162-178), 72 (70-76) wide, 35 (31-38) thick.

Gnathosoma

24 (22-25), obliquely downward; dorsal pedipalp genual setae (d) 5 (5-6), pedipalp coxal setae (ep) 4 (4-5); cheliceral stylets 19 (18-21).

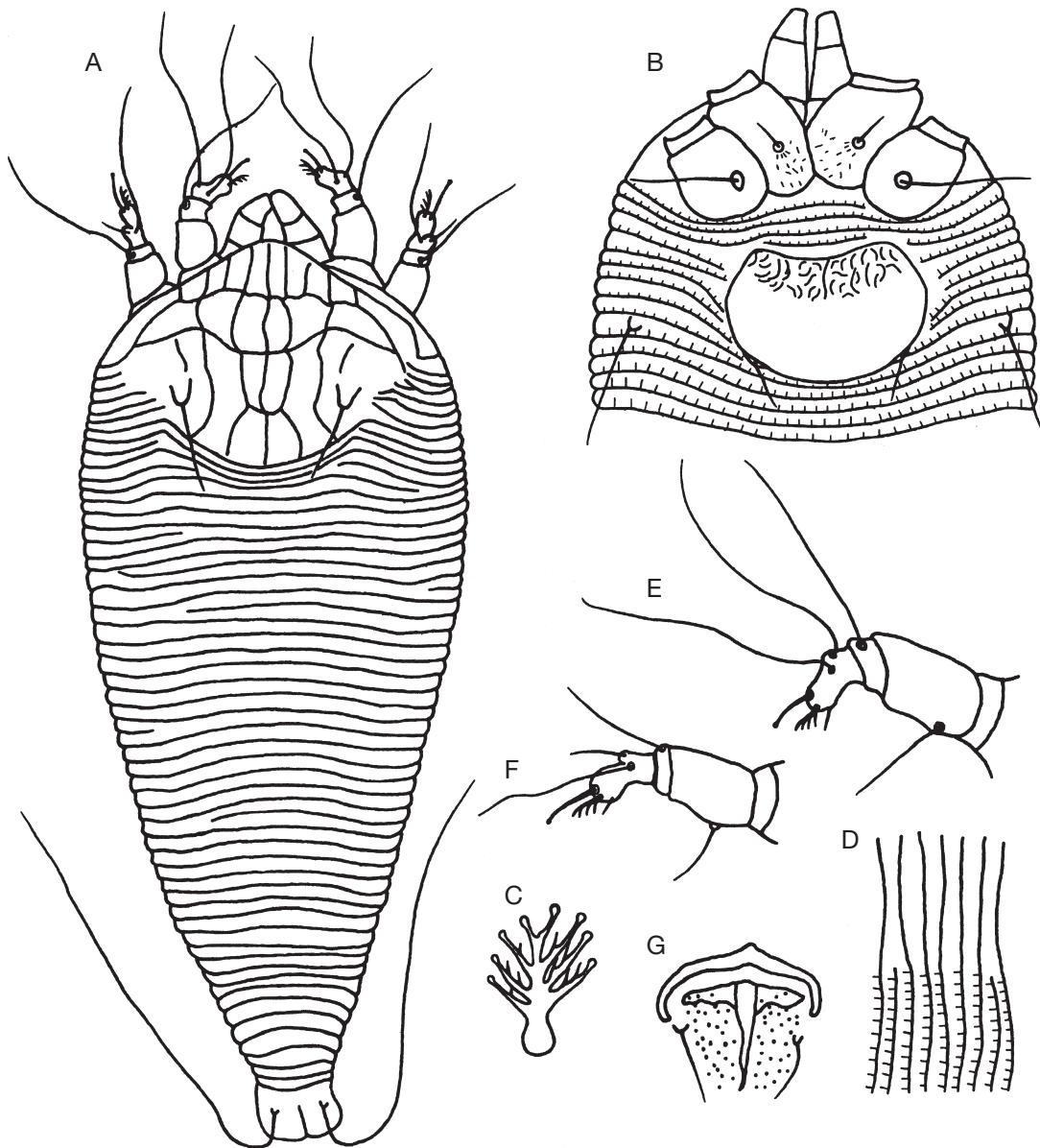


FIG. 2. — *Disella eyrei* n. sp.: A, dorsal aspect of female; B, coxigenital area of female; C, empodium (enlarged); D, lateral view of annuli (enlarged); E, leg I; F, leg II; G, male genitalia. Scale bar: A, B, D, G, 44 µm; C, 10 µm; E, F, 26 µm.

Prodorsal shield (Fig. 2A)

40 (38-43), 58 (55-60) wide, frontal lobe present; median, admedian and submedian lines complete, connected with three transverse lines at $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ from anterior, 1st and 2nd anterior transverse lines connect shield margin, 3rd transverse line

short, connect admedian lines; median, admedian and transverse lines forming four rows of cells, 8, 6, 2, 2 from anterior, respectively. Scapular tubercles placed ahead of rear margin, 32 (31-33) apart, scapular setae (*sc*) directed upward, 12 (10-13).

Coxae (Fig. 2B)

Internal sternal apodeme present, coxisternal plate I sculptured with short lines, coxisternal plate II smooth; anterolateral setae on coxisternum I (*1b*) absent; proximal setae on coxisternum I (*1a*) 6 (5-7), 12 (12-13) apart; proximal setae on coxisternum II (*2a*) 20 (18-24), 28 (26-29) apart. Coxal-genital annuli 4.

Legs (Fig. 2E, F)

Tibiae fused with tarsi. Legs I 27 (26-28), trochanter 2 (2-3), femur 11 (10-11), basiventral femoral setae (*bv*) 7 (7-8); genu 4 (4-5), antaxial genual setae (*l''*) 25 (22-29); tarsus 10 (10-11), paraxial fastigial tarsal setae (*ft'*) 17 (15-18), antaxial fastigial tarsal setae (*ft''*) 20 (18-22), paraxial uguinal tarsal setae (*u'*) 4 (3-4); tarsal empodium (Fig. 2c) entire, 4 (4-5), 4-rayed, tarsal solenidion 5 (5-6), knobbed. Legs II 23 (22-25), trochanter 2 (2-3), femur 9 (9-10), basiventral femoral setae (*bv*) 10 (10-11); genu 3 (3-4), antaxial genual setae (*l''*) 12 (10-13); tarsus 9 (8-9), paraxial fastigial tarsal setae (*ft'*) 22 (21-23), antaxial fastigial tarsal setae (*ft''*) 5 (5-6), paraxial uguinal tarsal setae (*u'*) 4 (3-4); tarsal empodium entire, 4 (3-4), 4-rayed, tarsal solenidion 8 (7-8), knobbed.

Opisthosoma (Fig. 2A, D)

Dorsum with short median ridge, dorsal annuli 54 (54-55), smooth; ventral annuli 58, with elongated microtubercles; setae *c2* 23 (21-25), on ventral annulus 10th; setae *d40* (36-43), 41 (39-43) apart, on ventral annulus 18th; setae *e6* (6-7), 21 (20-23) apart, on ventral annulus 28th; setae *f20* (20-21), 22 (22-23) apart, on 8th ventral annulus from rear; setae *h1* absent, setae *h2* 60 (52-65).

Female genitalia (Fig. 2B)

18 (15-22), 30 (28-33) wide, coverflap sculptured with basal irregular short lines, proximal setae on coxisternum III (*3a*) 8 (7-8), 22 (21-23) apart.

MALE DESCRIPTION (n = 4)

Body

Fusiform, brown, 100-150, 50-65 wide.

Prodorsal shield

33, 47 (45-50) wide, frontal lobe present; median, admedian and submedian lines complete, connected with three transverse lines at $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ from anterior; 1st and 2nd anterior transverse lines connect shield margin, 3rd transverse line short, connect admedian lines; median, admedian and transverse lines forming four rows of cells, 8, 6, 2, 2 from anterior, respectively. Scapular tubercles placed ahead rear margin, 29 (28-30) apart, scapular setae (*sc*) directed upward, 10.

Coxae

Internal sternal apodeme present, coxisternal plates sculptured with short lines; anterolateral setae on coxisternum I (*1b*) absent; proximal setae on coxisternum I (*1a*) 5 (5-6), 9 (9-10) apart; proximal setae on coxisternum II (*2a*) 18 (17-20), 25 (24-27) apart. Coxal-genital annuli 4.

Legs

Tibiae fused with tarsi. Legs I 24 (22-26), trochanter 2 (2-3), femur 9 (9-10), basiventral femoral setae (*bv*) 7 (6-8); genu 3 (3-4), antaxial genual setae (*l''*) 25 (23-27); tarsus 8 (8-9), paraxial fastigial tarsal setae (*ft'*) 14 (13-16), antaxial fastigial tarsal setae (*ft''*) 19 (18-21), paraxial uguinal tarsal setae (*u'*) (3-4); tarsal empodium entire, 4 (4-5), 4-rayed, tarsal solenidion 4 (4-5), knobbed. Legs II 21 (19-23), trochanter 2 (2-3), femur 8 (8-9), basiventral femoral setae (*bv*) 11 (10-12); genu 3 (3-4), antaxial genual setae (*l''*) 10 (8-12); tarsus 6 (6-7), paraxial fastigial tarsal setae (*ft'*) 17 (15-20), antaxial fastigial tarsal setae (*ft''*) 5 (5-6), paraxial uguinal tarsal setae (*u'*) 3 (3-4); tarsal empodium entire, 3 (3-4), 4-rayed, tarsal solenidion 6 (6-7), knobbed.

Opisthosoma

Dorsum with short median ridge, dorsal annuli 52, smooth; ventral annuli 57, with elongated microtubercles; setae *c2* 21 (21-22), on ventral annulus 10th; setae *d35* (33-38), 38 (37-39) apart, on ventral annulus 18th; setae *e6*, 18 apart, on ventral annulus 28th; setae *f17*, 19 apart, on 8th ventral annulus from rear; setae *h1* absent, setae *h2* 50 (45-56).

Male genitalia (Fig. 2G)

17 (16-19) wide, proximal setae on coxisternum III (3a) 7 (7-8), 11 (11-12) apart.

REMARKS

The new species is close to *D. cylindrokeluphae* Wei, Xie & Chen, 2006, but can be separated from the latter by the submedian lines complete, setae *h1* absent and infesting *Castanopsis eyrei* (Fagaceae); in *D. cylindrokeluphae*, submedian lines incomplete, setae *h1* present and infesting *Cylindrokelupha robinsonii* (Gagnep.) Kosterm (Leguminosae) (Wei et al. 2006). The species is differentiated from *Disella itea* n. sp. as follows: anterior prodorsal shield with first eight cells and second six cells, submedian lines complete and basal female coverflap with short irregular lines; in *D. itea* n. sp., anterior prodorsal shield with first and second two cells, submedian lines absent and female coverflap with granules.

Disella itea n. sp.
(Fig. 3)

TYPE MATERIAL. — **Holotype:** Qingliangfeng National Nature Reserve, Lin'an City ($30^{\circ}10'N$, $119^{\circ}07'E$), Zhejiang Province, China, 23.VII.2007, from *Itea chinensis* Hook. & Arn. var. *oblonga* (Hand.-Mazz.) Wu (Escalloniaceae), coll. Guo-Quan Wang, slide-mounted, ♀ (DPPGXU).

Paratypes: mounted on 8 slides, with the same data as holotype, 4 ♀♀ (DPPGXU); 3 ♀♀ (MNHN-Ac1184, Ac1185).

RELATION TO HOST. — The mites are vagrant on the undersurface of the leaves, no visible damage seen.

ETYMOLOGY. — The specific designation is derived from the generic name of the type host plant.

DIAGNOSIS. — Body fusiform, white; prodorsal shield with median and admedian lines complete, submedian lines absent. Three transverse lines connect median and admedian lines forming two rows of cells; coxal plate I with granules; tarsal empodium 4-rayed, tarsal solenidion knobbed; dorsal annuli smooth, ventral annuli with elongated microtubercles; setae *h1* absent; female coverflap with granules.

DESCRIPTION

Female (n = 8). Male not seen.

Body (Fig. 3A)

Fusiform, white, 162 (138-175), 52 (40-63) wide, 39 (35-44) thick.

Gnathosoma

25 (23-28), obliquely downward; dorsal pedipalp genual setae (*d*) 4, pedipalp coxal setae (*ep*) 3; cheliceral stylets 26.

Prodorsal shield (Fig. 3A)

40 (38-43), 55 (52-60) wide, frontal lobe present; median and admedian lines complete, submedian lines absent; three transverse lines at $\frac{1}{5}$, $\frac{1}{2}$, $\frac{2}{5}$ from anterior, 1st transverse lines long, 2nd and 3rd transverse line short, forming two rows of cells. Scapular tubercles placed ahead rear margin, 26 (24-28) apart, scapular setae (*sc*) directed up and backward, 14 (13-15).

Coxae (Fig. 3B)

Internal sternal apodeme present, coxisternal plates I sculptured with granules; anterolateral setae on coxisternum I (*1b*) absent; proximal setae on coxisternum I (*1a*) 9 (9-10), 8 (8-9) apart; proximal setae on coxisternum II (*2a*) 33 (30-35), 22 (21-23) apart. Coxal-genital annuli 3.

Legs (Fig. 3E, F)

Tibiae fused with tarsi. Legs I 25 (22-26), trochanter 2, femur 11 (9-12), basiventral femoral setae (*bv*) 5 (5); genu 4 (3-4), antaxial genual setae (*l''*) 24 (24-25); tarsus 8 (8), paraxial fastigial tarsal setae (*ft'*) 20 (18-23), antaxial fastigial tarsal setae (*ft''*) 19 (18-20), paraxial unguinal tarsal setae (*u'*) 4 (4); tarsal empodium (Fig. 3C) entire, 5 (5), 4-rayed, tarsal solenidion laterally, 5 (5), knobbed. Legs II 18 (15-20), trochanter 2 (1-2), femur 8 (7-9), basiventral femoral setae (*bv*) 14 (13-15); genu 2 (2-3), antaxial genual setae (*l''*) 7 (6-8); tarsus 6 (5-6), paraxial fastigial tarsal setae (*ft'*) 20 (20), antaxial fastigial tarsal setae (*ft''*) 5 (5-6), paraxial unguinal tarsal setae (*u'*) 5 (4-6); tarsal empodium entire, 4 (4-5), 4-rayed, tarsal solenidion 6 (5-6), knobbed.

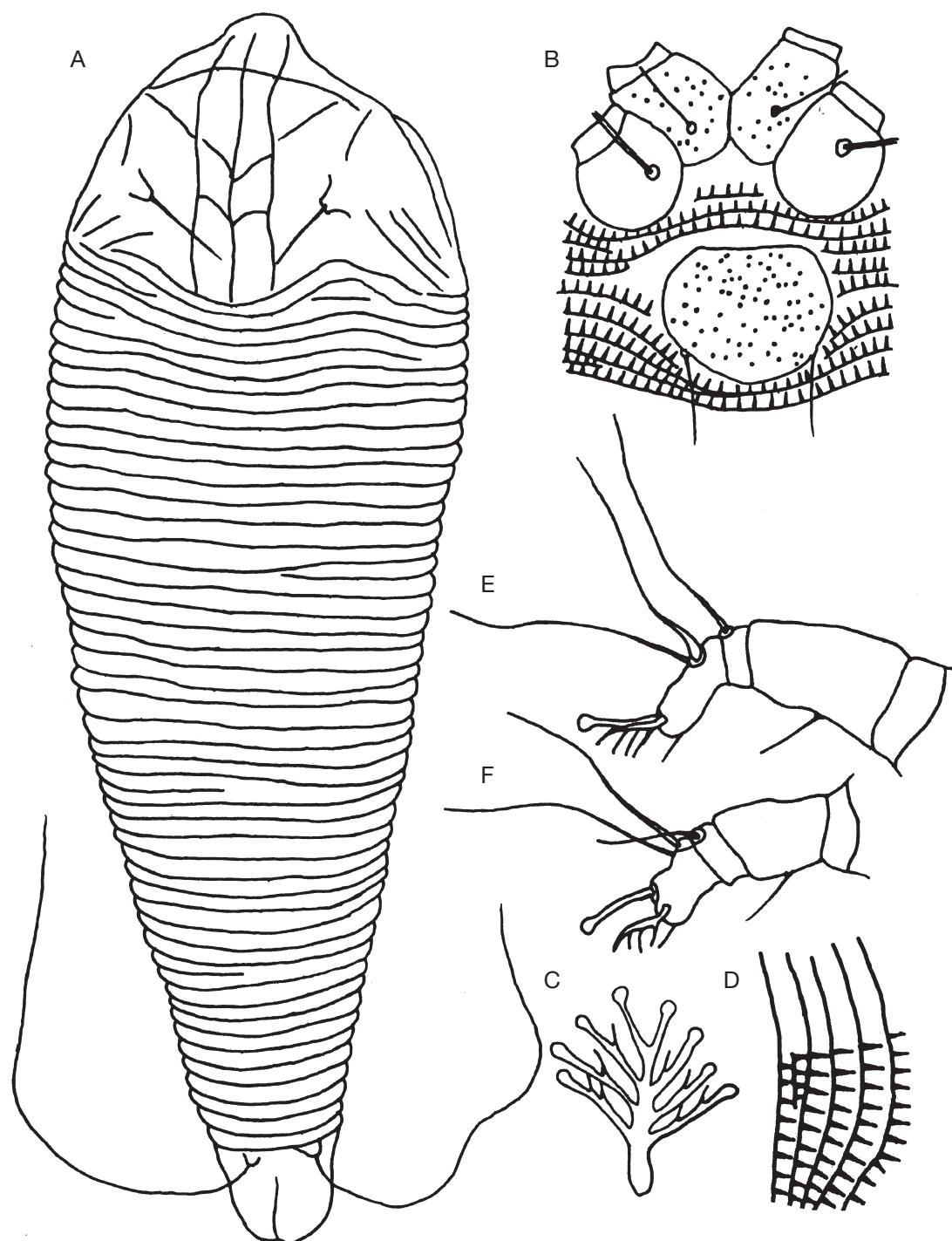


FIG. 3. — *Disella itea* n. sp.: A, dorsal aspect of female; B, coxigenital area of female; C, empodium (enlarged); D, lateral view of annuli (enlarged); E, leg I; F, leg II. Scale bar: A, B, D, 42 µm; C, 8 µm; E, F, 21 µm.

Opisthosoma (Fig. 3A, D)

Dorsum with short median ridge, dorsal annuli 48, smooth; ventral annuli 58, with elongated microtubercles; setae *c2* 20 (20), on ventral annulus 7th; setae *d4* 3 (42-45), 38 (38-39) apart, on ventral annulus 20th; setae *e14* (13-15), 18 (17-19) apart, on ventral annulus 34th; setae *f16* (15-17), 16 (15-17) apart, on 7th ventral annulus from rear; setae *h1* absent, setae *h2* 45 (45).

Female genitalia (Fig. 3B)

22 (22), 22 (22) wide, coverflap sculptured with granules, proximal setae on coxisternum III (3a) 5 (5), 17 (17) apart.

REMARKS

The new species is close to *D. biaristatume* Wang, Li & Wei, 2007, but can be separated from the latter by the coxisternal plates and female coverflap sculptured with granules, ventral annuli with elongated microtubercles and tarsal empodium 4-rayed; in *D. biaristatume*, coxisternal plates and female coverflap smooth, ventral annuli with rounded microtubercles and tarsal empodium 3-rayed (Wang et al. 2007).

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