

Discovery of the genus *Eukoenia* (Palpigradi: Eukoeniidae) from China and description of a new species

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Abstract. A new species, *Eukoenia sinensis*, is described and illustrated from specimens collected in two forests in nearby islands in Guangdong Province, Southeast China. The genus *Eukoenia* is recorded for the first time from China and it represents the second palpigrade species reported for this country after *Koeleniodes madecassus* Rémy, 1950. The new species shares several morphological characters with other soil-dwelling *Eukoenia* species from Africa, Asia and South America. One of the distinctive characters of *E. sinensis* is the presence of 6 pairs of setae ($a_1, a_2, a_3, a_4 + s_1, s_2$) on opisthosomal sternites IV to VI, a character only shared with another five species. *Eukoenia sinensis* is most similar to specimens captured from Chile and identified by Dr. Bruno Condé as *Eukoenia* cf. *grassii*; several morphological and morphometric features allow to differentiate both species. From the other four species, two can be readily distinguished by their troglomorphic characters, and the other two are soil-dwelling species that show differences in the chaetotaxy of basitarsus IV, metapeltidium, deutotritosternum, opisthosomal tergites III–VI, as well as the number of teeth in the cheliceral fingers. In addition, *E. sinensis* is the first palpigrade to exhibit sexual dimorphism in the number of thick setae of coxa IV.

Keywords: Taxonomy, chaetotaxy, edaphic fauna.

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<http://zoobank.org/References/2F73BB81-D3C5-446B-B5C5-E9ABA53B4720>

Knowledge of the order Palpigradi is still fragmentary, both in ecological and taxonomic terms. There are 114 species described to date (112 extant and 2 fossil species) distributed across the world (Bu et al. 2019; Souza & Ferreira 2019, 2020). Despite the increased number of taxonomic studies in the last two decades that have resulted in the description of 33 new living species, these new reports are not equally distributed around the globe. They are mostly concentrated in the Americas and Europe (Mayoral & Barranco 2002, 2017a, 2017b; Montañó & Francke 2006; Montañó 2007, 2012; Christian 2009, 2014; Ferreira et al. 2011; Barranco & Mayoral 2014; Christian et al. 2014; Souza & Ferreira 2020). A couple of exceptions to this general trend are *E. maroccana* Barranco & Mayoral, 2007 described from Morocco and *E. guzikae* Barranco & Harvey, 2008 from Australia (Barranco & Mayoral 2007; Barranco & Harvey 2008). Thus, some areas that have proved to be rich in palpigrade biodiversity in the past are now without new descriptions or records for a long time. An example of this is the Asian continent in which 23 extant species (belonging to four different genera) have been recorded in 14 countries (Harvey 2003). Among them, Thailand and Indonesia have the most records with eight and seven species, respectively (Bu & Chen 2019). A description of a fossil species from Myanmar (Engel et al. 2016) and a recent new record of *Koeleniodes madecassus* Rémy, 1950 from China (Bu et al. 2019) started to change this scenario, bringing the Asian palpigrades back into focus again. In China, there are only three records of palpigrades: one immature female of *K. madecassus* (Condé 1997), an adult

female of *K. madecassus* (Bu et al. 2019) and an undetermined palpigrade (Tian et al. 2011). Therefore, there is a single species, *Koeleniodes madecassus*, reported from China so far (Condé 1997; Bu et al. 2019). Interestingly, the more common and worldwide distributed genus *Eukoenia* has not been reported from China.

Five palpigrades were recently captured in a series of field trips that aimed to characterize the soil arthropods in the forests of Guangdong Province in Southeast China. The specimens were captured on two islands, Wailingding Island and Guishan Island, which are situated less than 20 km apart. In this study, we describe and illustrate a new species of *Eukoenia* which represents the first record of this genus from China.

METHODS

The specimens were extracted using a Tullgren funnel, preserved in 75% ethanol, mounted *in toto* in Hoyer's solution and dried in an oven at 50°C. Observations, drawings and photographs were made using a phase contrast microscope (Leica DM 2500) equipped with a Leica DMC 4500 digital camera. The specimens are deposited in the collection of Shanghai Natural History Museum (SNHM). All measurements are given in micrometers. The terminology of the setae and body parts follows Condé (1977), Christian & Christophoryová (2013), Mayoral & Barranco (2013, 2017a), and Souza & Ferreira (2018). The description is based on the holotype followed by paratypes data in parenthesis.

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TAXONOMY

Family *Eukoenenidae* Petrunkevitch, 1955

Genus *Eukoenia* Börner, 1901

Type species.—*Koenenia mirabilis* Grassi & Calandruccio 1885, by monotypy.

Eukoenia sinensis sp. nov.

ZooBank Registration: urn:lsid:zoobank.org:act:E5A58921-2706-4BE9-AC91-B4AD9F38A493

(Figs. 1–37, Tables 1–2)

Material examined.—*Holotype*: CHINA: *Guangdong Province*: holotype ♂ Zhuhai City, Wailingding Island, extracted from soil samples collected in broad leaf forests (50–150 m a.s.l., 22°06'N, 114°02'E), 27 June 2018, Chengwang Huang (slide no. GD-WLD-PS2018004).

Paratypes: CHINA: *Guangdong Province*: 2 ♀, same data as holotype (slide nos. GD-WLD-PS2018001, GD-WLD-PS2018003); 1 ♂, same data as holotype (GD-WLD-PS2018005); 1 ♂ Zhuhai City, Guishan Island, extracted from soil samples collected in broad leaf forests, 60–120 m a.s.l., 22°08'31.35"N, 113°49'48.95"E, 29 June 2018, Chengwang Huang (slide no. GD-GS-PS2018002).

Diagnosis.—Frontal organ with two leaf-shaped and pointed branches, with fine reticulation; lateral organs each with three leaf-shaped blades with reticulation; 9 setae on deutotritosternum arranged as 3 + 6; 10 pairs of setae (15–24 long) on propeltidium; 3 pairs of setae on metapeltidium; cheliceral fingers with 9 teeth each; coxae II–IV with 5–5–3 (2) thick setae (specimen GD-WLD-PS2018002 with 6 setae on right side of coxa II, and 6 on left side of coxa III; the two females GD-WLD-PS2018001, GD-WLD-PS2018003 with 2 thick setae on both sides of coxa IV); basitarsus IV with 7 setae (*grt*, *gla*, *r*, 2 *esd*, 2 *esp*); opisthosomal tergite II with 7 dorsal setae, 1 middle seta inserted between two pairs of setae *t* and one seta *s*, tergites III–VI with three pairs of setae *t* between one setae *s* on each site; sternites IV–VI each with 6 pairs of setae (*a*₁, *a*₂, *a*₃, *a*₄ + *s*₁, *s*₂); segments VII–XII with 14 (14–15), 16 (16–18), 12 (14), 12 (11–12), 11 (12) setae, respectively.

Description.—Body length without flagellum 1030 long (paratypes 1020–1050) (Fig. 1). Color: white to pale–yellow in alcohol, except fingers of chelicera light brown in color.

Prosoma. Frontal organ 25 long, 10 wide, formed by two leaf-shaped branches with pointed apex and basally fused, fine reticulation present (Fig. 11). Lateral organ with three leaf-shaped blades (length 20, width 12), with distinct reticulation (Fig. 12). Propeltidium with 10 + 10 setae, 15–24 in length (Fig. 2). Setae *t*₁, *t*₂ and *t*₃ of metapeltidium 50–55, 60–65 and 35–42 long, respectively. Labrum with 5 + 5 short setae (13–15 long). Basal segment of chelicera 150–180 long (dorsal length) and 75–95 wide, with 6 proximal setae (*p*₆ the thickest and densely barbed, 65–70; *p*₄ thicker than the remaining setae and densely barbed in most of its length, 45–60) (Fig. 14); 3 distal setae smooth in their proximal third and with tiny projections in their distal part, truncated apically: *d*₃ longer (60–65) than *d*₁ (40) and *d*₂ (35–36) (Figs. 8, 13); and 1 apical pointed seta (40). Hand of chelicera length 110–120 (excluding fingers) and width 60–75, with 7 setae (Fig. 25). Fingers with 9 feather-shaped and serrated teeth (Figs. 7, 25). Deuto-tritosternum

with 9 setae (17–22) arranged in two rows: 3 anterior and 6 posterior (Fig. 3).

Coxal chaetotaxy. Pedipalp coxa with 19 setae (Fig. 15); coxa I with 15 setae (including two tiny microsetae) (Fig. 16); coxa II with 5 thick (specimen GD-WLD-PS2018002 with 6 thick setae on right side) and 10 ordinary setae (including two macrosetae) (Fig. 17); coxa III with 5 thick (specimen GD-WLD-PS2018002 with 6 thick setae on left side) and 7 normal setae, a long macroseta and a small seta (Fig. 18); coxa IV variable: 11 setae in males, 3 thick and 8 ordinary setae (Fig. 19), and 10 setae in females (Fig. 37): 2 thick and 8 ordinary setae.

Pedipalp. *tc* with 9n (Fig. 20); *fe* with 4n and 4m (Fig. 21); *ti* with 3n and 6m (Fig. 22); *bta*₁ with 1m and 2n; *bta*₂ with 5m and 1n (Fig. 23); *ta*₁ with 1n and 1m; *ta*₂ with 5m, 1n; *ta*₃ with 2*fs*, 2*r*, 6m and 11n (Fig. 24); claw, 10 long, with short pubescent unguiculus (5 μm).

Leg I. *tc* with 13n (including two small setae) (Fig. 26); *fe* with 9n (Fig. 27); *pa* with 8n, 1m and *tb* (Fig. 28); *ti* with 6n and 3m (Fig. 29); *bta*₁ with 2m, 2*tb*, 1*fs*; *bta*₂ with 3m, 1n, *fs*, 2*tb*; *bta*₃ with 1*r*, 1*grt* and 1 small seta (Fig. 30); *bta*₄ with 5m, *tb* and 1*fs*; *ta*₁ with 2*r*, *grt*, 2 microsetae; *ta*₂ with 5m, 1*tb* and 1*fs* (Fig. 31); *ta*₃ with 5*fs*, 2*r*, 1*cs*, 1*rs*, 11m and 5n (Fig. 32).

Legs II and III. With nearly same chaetotaxy. *tc* with 3–4n (leg II) or 2–3n (leg III); *fe*, *pa* and *ti* each with 5n; *bta* with 7m, including one *grt* (with long basal spine); *ta* with *r*, *cs*, and 9n.

Leg IV. *tc* with 3–4n; *fe* with 3n; *pa* and *ti* each with 5n; *bta* with 7 setae; *ta*₁ with 5m; *ta*₂ with *cs* and 6–7n.

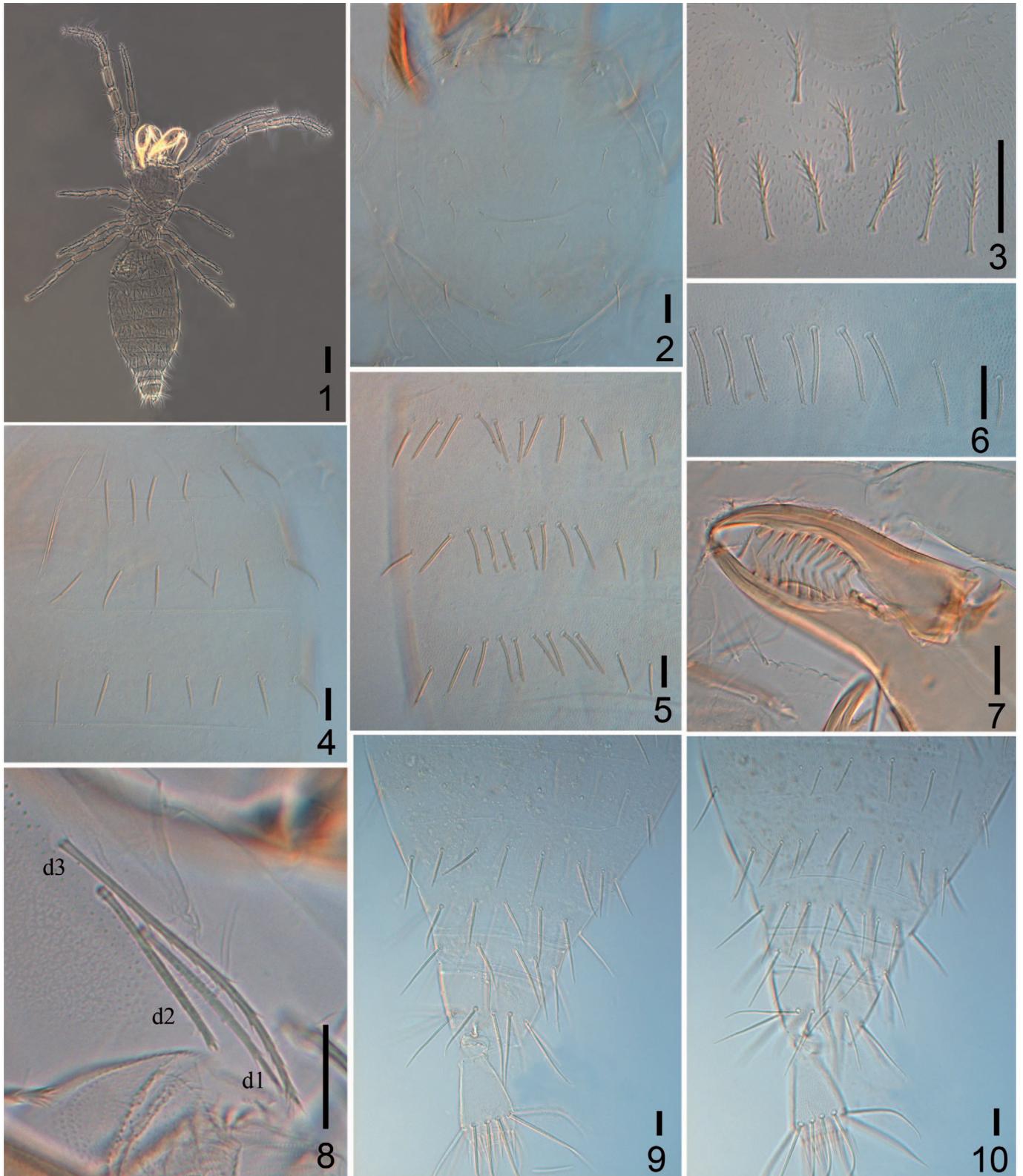
IVbta. 80–85 long, width 20–22, with 7 setae (*grt*, *gla*, *r*, 2 *esd* and 2 *esp*). Seta *r* inserted slightly proximal to the half of the segment (*dr*/ *IVbta* = 0.4); *gla* slightly proximal to *r*; *grt* proximal to *gla*, with one short spine and one lateral branch basally (6 long) (Fig. 33).

Opisthosoma. Tergite II with 7 dorsal setae (3 + 1 + 3): 2 pairs and one short middle setae (*t*₂, *t*₁, *t*, *t*₁, *t*₂) between a pair of slender setae (*s*). Tergites III–VI with 4 + 4 dorsal setae, three pairs of *t* setae (*t*₁, *t*₂, *t*₃) between a pair of slender setae (*s*) (Fig. 4). Sternite III with 2 + 2 setae (20 long). Sternites IV–VI each with 6 pairs of setae (*a*₁, *a*₂, *a*₃, *a*₄ + *s*₁, *s*₂) (Figs. 5, 6), setae *a*₁–*a*₄ thick (32–35), *s*₁ (30–32) longer than *s*₂ (20–22). Segments VII–XI with 14 (14–15), 16 (16–18), 12 (14), 12 (11–12), 11 (12) setae, respectively (Figs. 9, 10). Two dorsal setae (8 long) on the intermediate ring of the flagellum are slightly longer than the two ventral setae (5 long). Pubescence on opisthosomal segments IX–XI evenly short and dense.

Flagellum. Only basal segment preserved in the two paratypes GD-WLD-PS2018001, GD-WLD-PS2018002: 75 long, 50 wide, with a whorl of 10 setae inserted on distal half of the segment and an apical whorl of cuticular spines (Figs. 9, 10).

Female genitalia. First lobe with 11 + 11 normal setae arranged in rows: 2 + 2, 2 + 2, 2 + 2, 1 + 1 and 4 + 4 distal setae (*a*₁ = 12–13, *a*₂ = 15–16, *a*₃ = 23–24, *a*₄ = 20–25) (Fig. 34). Second lobe with 3 + 3 apical setae (*x* = 23–27, *y* = 20–23, *z* = 23–26) (Fig. 35). Spermatheca clearly visible.

Male genitalia. First lobe with 13 + 13 setae (including 2 + 2 fusules in distal margin). Fusules relatively short, slightly conical in shape and with a median constriction. Second lobe



Figures 1–10.—*Eukoenia sinensis* sp. nov.: 1. Habitus, dorsal view. 2. Propeltidium. 3. Deuto-tritosternal setae. 4. Tergites II–IV. 5. Sternites IV–VI. 6. Chaetotaxy of sternite V. 7. Cheliceral fingers. 8. Distal setae (d_1 – d_3) on basal segment of the chelicera. 9. Opisthosomal segments VII–XI and basal segment of flagellum, dorsal view. 10. Opisthosomal segments VII–XI and basal segment of flagellum, ventral view. Scale bars: 100 μ m in Fig. 1, others 20 μ m.



Figures 11–19.—*Eukoenenia sinensis* sp. nov.: 11. Frontal organ. 12. Lateral organ. 13. Distal setae (d_1 – d_3) on basal segment of the chelicera. 14. Proximal setae (p_1 – p_6) on basal segment of the chelicera. 15. Coxa of right pedipalp. 16. Coxa of right leg I. 17. Coxa of right leg II. 18. Coxa of right leg III. 19. Coxa of right leg IV. Thickened setae on coxae II–IV are indicated by solid black arrows. Scale bars: 20 μ m.

subtriangular with blunt apex, with 5 + 5 setae. Third lobe subtriangular, with sharp acute apex, with 4 + 4 setae (Fig. 36).

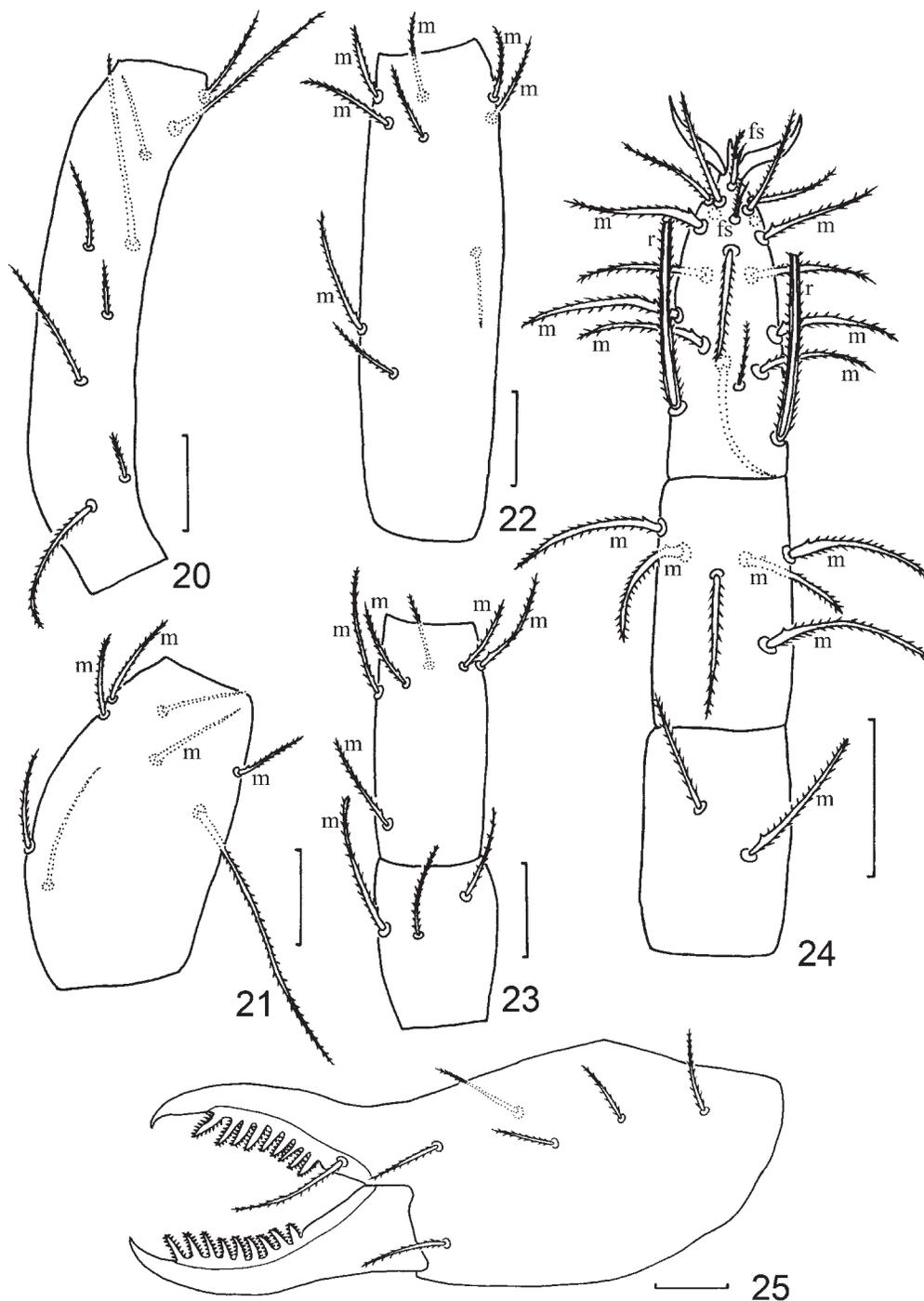
Measurements (in μ m) and ratios are available in Table 1. Chaetotaxic Variation is summarized in Table 2.

Distribution.—*Eukoenenia sinensis* has only been recorded from Zhuhai City (Wailingding and Guishan Islands), Guangdong, China.

Etymology.—This new species is named after the country of origin, from the Latin adjective *sinensis*, meaning Chinese.

DISCUSSION

Eukoenenia sinensis shows several morphological characters commonly found in soil-dwelling palpigrales distributed across the world. For example, the presence of three blades

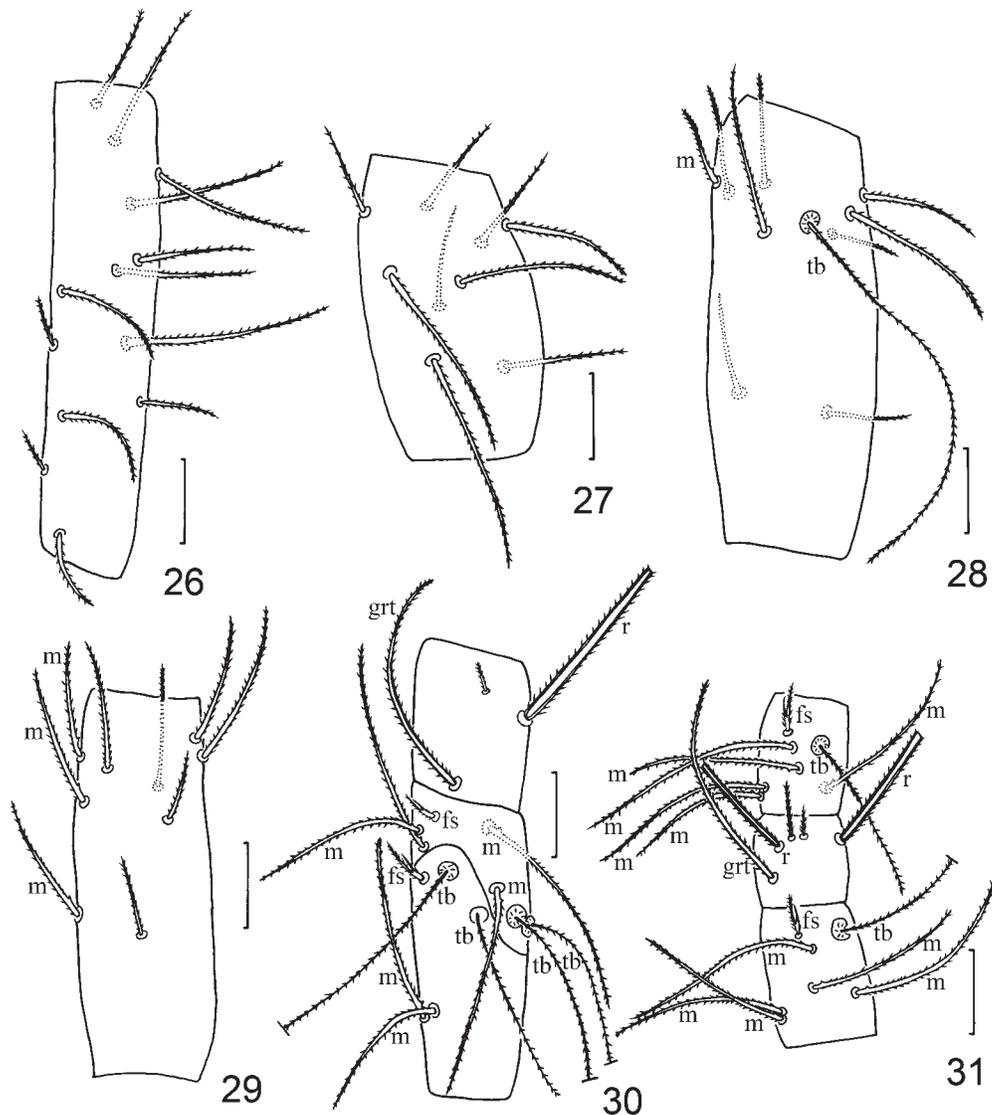


Figures 20–25.—*Eukoenenia sinensis* sp. nov.: 20. Trochanter of right pedipalp. 21. Femur of right pedipalp. 22. Tibia of right pedipalp. 23. Basitarsi 1–2 of right pedipalp. 24. Tarsi 1–3 of right pedipalp. 25. Hand of chelicera. Scale bars: 20 μ m.

on the lateral organs is shared with about 40% of the edaphic species of *Eukoenenia*.

The presence of 9 cheliceral teeth, 10 pairs of propeltidial setae, 3 pairs of metapeltidial setae, 9 deutrotritosternal setae arranged in two rows, 7 setae on basitarsus IV, 11 pairs of setae on the first lobe of the female genitalia, male genital formula 13/5/4, fusules conical in shape, and four pairs of setae on opisthosomal tergites III–VI is shared with at least four other species: *E. lawrencei* Rémy, 1957 from Africa, and

E. ferratilis Souza & Ferreira, 2011, *E. potiguar* Ferreira et al., 2011, and *E. cf. grassii* from South America (Condé 1981a; Souza & Ferreira 2011; Ferreira et al. 2011). The Asian species *E. lienhardi* Condé, 1989, and *E. singhi* Condé, 1989 also share this set of characters. These species are only known from females. *Eukoenenia paulinae* Condé, 1994, from Indonesia, also shares most of these features, except for the number of setae on the first lobe of the female genitalia; the male is unknown.



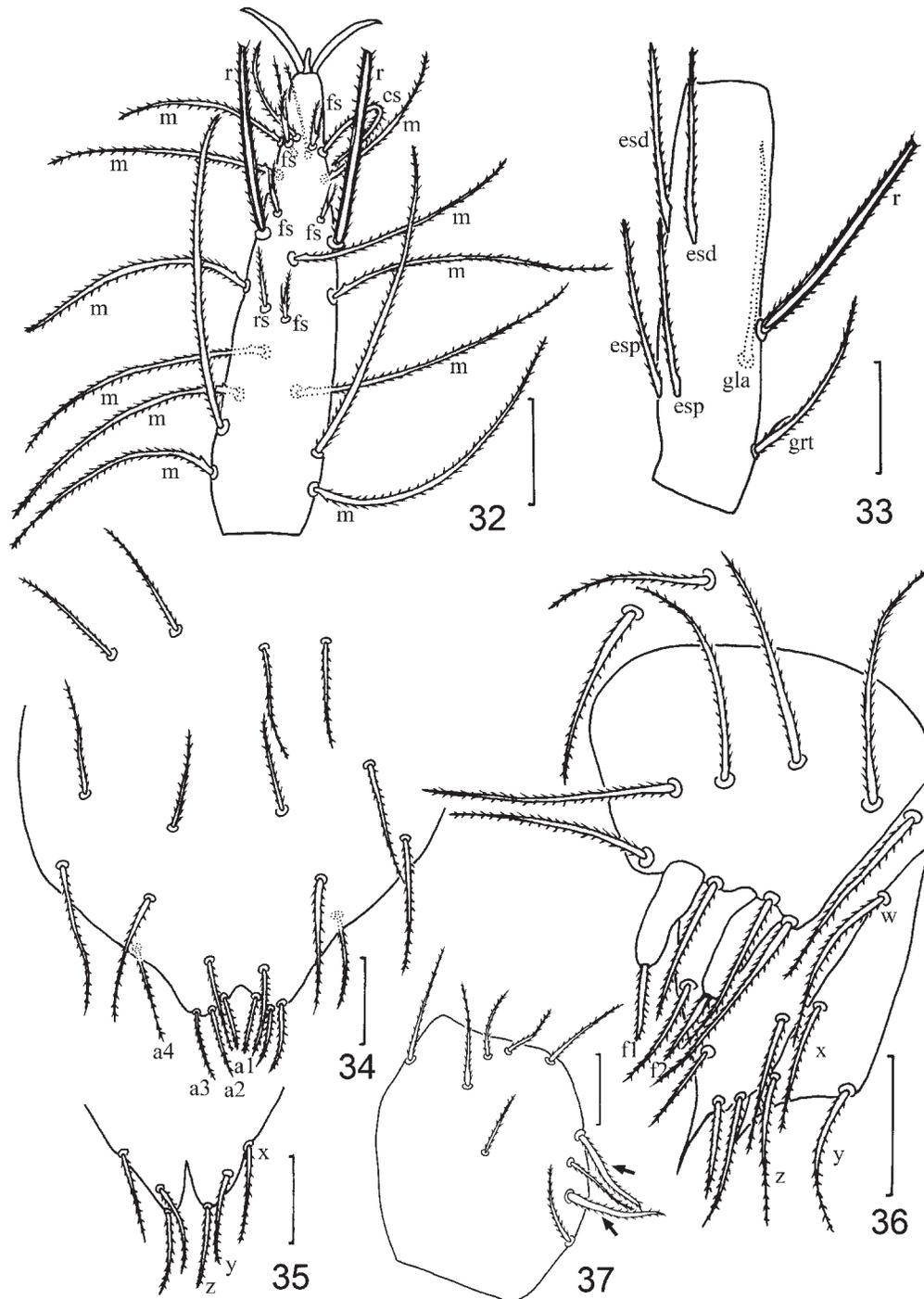
Figures 26–31.—*Eukoenia sinensis* sp. nov.: 26. Trochanter of right leg I. 27. Femur of right leg I. 28. Patella of right leg I. 29. Tibia of right leg I. 30. Basitarsi 1–3 of right leg I. 31. Basitarsus 4 – tarsus 2 of right leg I. Scale bars: 20 μ m.

When considering only a subset of characters listed above, the new species also shows some similarity with species from Madagascar carrying three blades on the lateral organs, and 7–10 deutotritosternal setae arranged in two rows: *E. delphini* (Rémy, 1950) (number of setae on third lobe of male genitalia not confirmed by the author; described as “at least three setae”), *E. ankaratrensis* Rémy, 1959, females of *E. antanosa* (Rémy, 1950) and *E. bara* (Rémy, 1950), and males of *E. lauteli* (Rémy, 1950) and *E. fossati* Rémy, 1959. The chaetotaxy of the opisthosomal tergites, propeltidium, metapeltidium and IVbta could not be compared since they were not described for these species by Rémy (1950, 1959).

Regardless of the similarities highlighted above, *E. sinensis* can be readily separated from most aforementioned species (except *E. cf. grassii* from Chile, discussed later) by the presence of 6 pairs of opisthosomal setae ($a_1, a_2, a_3, a_4 + s_1, s_2$) on sternites IV–VI. In this regard, the new species only relates to another 4 species: *E. florencae* (Rucker, 1903) (Cosmopol-

itan), *E. patrizii* (Condé, 1956) (Sardinia and Spain), *E. lanai* Christian et al., 2014 (Italy), and *E. hanseni* (Silvestri, 1913) (Mexico) (Rucker 1903; Silvestri 1913; Condé 1956, 1974, 1993; Montaña 2012; Christian & Christophoryová 2013; Barranco & Mayoral 2014; Christian et al. 2014). For this character, some intraspecific variation was reported for the species *E. lanai* and *E. hanseni*, and few specimens have three pairs of *a* setae (instead of four) on some of these sternites (Montaña 2012; Christian et al. 2014). *Eukoenia hanseni* typically carry ($a_1, a_2, a_3 + s_1, s_2$) on sternites VI, a difference with *Eukoenia sinensis*.

Most of these species show clear differences in other characters when compared to the new Chinese specimens. *Eukoenia patrizii* (L = 1600–1850; B = 470–479; IVbta = 264–268) and *E. lanai* (L = 2100–2170; B = 456–476; IVbta = 177–202) are larger troglobitic palpigrades and can be separated from the new species by the body size and other morphometric data (L = 1020–1120; B = 240–252; IVbta = 78–



Figures 32–37.—*Eukoenenia sinensis* sp. nov.: 32. Tarsus 3 of right leg I. 33. Right basitarsus IV. 34. First genital lobe of female. 35. Second genital lobe of female. 36. Male genitalia. 37. Coxa of left leg IV (female paratype GD-WLD-PS2018003). Scale bars: 20 μ m.

85) (Condé 1956, 1993; Barranco & Mayoral 2014; Christian et al. 2014).

In addition to the sternal chaetotaxy, the new species shares with the cosmopolitan species *E. florenciae*, already recorded from Nepal (Condé 1979, 1981b), and *E. hanseni* from Mexico the presence of 3 blades on the lateral organs and 10 pairs of propeltidial setae. *Eukoenenia sinensis* differs from these two species by the number of setae on IVbta (7 vs. 6),

metapeltidium (3 vs. 2 pairs), deutotritosternum (9 vs. 5), and opisthosomal tergites III–VI ($6t + 2s$ vs. $4t + 2s$), as well as by the number of teeth on the chelicera (9 vs. 8) and the thick setae coxal formula (described only for *E. florenciae*) in females (5–5–2 vs. 4–4–2) (Rucker 1903; Silvestri 1913; Montaña 2012; Christian & Christophoryová 2013).

Eukoenenia sinensis shows great resemblance to the Chilean specimens described by Condé (1974) that he tentatively

Table 1.—Measurements (in μm) and ratios for *Eukoenia sinensis* sp. nov. and *Eukoenia* cf. *grassii* (data for latter extracted from Condé 1974 from three females and one male). H, indicates the holotype and P, the paratypes.

	<i>E. sinensis</i> sp. nov.					<i>E. cf. grassii</i> adults —
	P, female PS2018001	P, male PS2018002	P, female PS2018003	H, male PS2018004	P, male PS2018005	
L	1020	1030	1050	1030	1120	860–1130
B	250	250	240	240	252	—
Seg.	180	140	160	165	150	—
Pcx	95	95	100	95	100	—
Ptc	120	115	115	108	110	—
Pfe	80	80	80	80	85	—
Pti	115	115	115	115	108	55–71
Pbta1	40	35	38	40	35	21–29
Pbta2	55	57	50	55	52	25–32
Pta1	30	30	32	32	30	17–22
Pta2	33	35	30	35	32	19–25
Pta3	45	45	45	45	45	32–38
Icx	102	100	105	100	100	—
Itc	115	120	120	120	125	—
Ife	85	80	80	85	85	—
Ipa	113	115	110	112	115	—
Iti	97	100	83	96	100	51–70
Ibta1+2	75	80	76	75	80	44–54
Ibta3	37	38	40	40	40	19–28
Ibta3-dr	25	25	24	23	25	—
Ibta3-r	46	52	48	50	50	—
Ibta3-a	25	28	34	28	36	—
Ibta3-grt	65	70	55	65	65	—
Ibta3-dgrt	8	5	5	6	6	—
Ibta3/a	1.48	1.35	1.18	1.4	1.1	—
r/Ibta3	1.24	1.37	1.2	1.3	1.3	—
dr/Ibta3	0.95	0.66	0.6	0.6	0.6	—
grt/Ibta3	1.76	1.84	1.38	1.6	1.6	—
dgrt/Ibta3	0.22	0.13	0.13	0.15	0.15	—
Ibta4	35	36	35	35	40	24–29
Ita1	20	25	23	22	23	15–17
Ita2	28	32	28	28	30	19–21
Ita3	85	93	90	90	90	58–75
IVcx	70	70	70	70	75	—
IVtc	80	80	70	80	75	—
IVfe	80	80	80	80	82	—
IVpa	90	90	85	90	95	—
IVti	95	105	100	100	100	61–82
IVbta	78	85	80	82	82	49–65
IVbta-a	22	20	20	21	22	—
IVbta-dr	32	36	33	35	35	—
IVbta-r	46	48	48	50	50	—
IVbta-gla	44	50	48	46	45	—
IV-grt	37	37	42	35	35	—
IV-dgrt	10	15	13	11	12	—
IV-dgla	26	25	25	28	27	—
IV-esp	34	38	36	36	36	—
IV-desp	13	15	15	15	15	—
IV-esd	45	37	45	36	36	—
IV-desd	48	51	49	50	50	—
IVbta/a	3.5	4.25	4	3.9	3.7	—
IVbta/r	1.7	1.77	1.67	1.6	1.6	—
dr/IVbta	0.41	0.42	0.41	0.4	0.4	—
IVta1	42	40	37	40	38	22–32
IVta2	49	50	50	50	50	33–41
IVbta/ti	0.82	0.81	0.8	0.8	0.82	0.79–0.82
B/IVbta	3.2	2.94	3	2.9	3.1	—

Table 2.—Number of thick setae on coxae II–IV (*ts cx* II–IV) and number of setae on opisthosomal segments VII–XI of *Eukoenia sinensis* sp. nov. H, indicates the holotype and P, the paratypes.

	PS2018001 P, female	PS2018003 P, female	PS2018002 P, male	PS2018004 H, male	PS2018005 P, male
<i>ts cx</i> II–IV	5–5–2	5–5–2	5(6)–5(6)–3	5–5–3	5–5–3
seg. VII	15	15	15	14	14
seg. VIII	16	16	18	16	16
seg. IX	14	14	14	12	14
seg. X	11	12	12	12	12
seg. XI	11	12	11	11	11

assigned to *Eukoenia* cf. *grassii*. In addition to the chaetotaxy of sternites IV–VI and the set of character states already mentioned, they have in common the presence of three blades on lateral organs. The new species can be differentiated from *E. cf. grassii* by the shape of the third lobe of male genitalia at its distal position (sharp, pointed vs. bifid) and by the number of setae on opisthosomal tergite II (8 vs. 7 setae). Also, the new species seems to have a much longer palp, leg I, and leg IV when compared with *Eukoenia* cf. *grassii* (Table 1), ie. Pti (108–115 vs. 55–71), Iti (83–100 vs. 51–70), IVbta (78–85 vs. 49–65) (Condé 1974). Since the description of *E. grassii* (Hansen, 1901) from Paraguay is very simple and based on a single female adult, it is difficult to make detailed comparisons with this species. Nevertheless, it is possible to distinguish this species from *E. sinensis* by the number of thick setae on sternite VI (3 vs. 4 pairs) and by the placement of the *r* seta on basitarsus IV (near the base vs. near the middle) (Hansen 1901; Condé 1974).

Interestingly, *E. sinensis* seems to show a sexual dimorphism in the number of thick setae of coxa IV. Whereas the males have 3 thick setae (and 8n) in this coxa, females only have 2 thick setae (and 8n) (Table 2). The reduction in the number of these setae is consistent in both females studied, and on both sides of these specimens. This seems to be the first clear case of dimorphism in the number of thick setae on coxae reported for any species of palpigrade. There are two other cases in which a different number of thick setae were reported in coxae II (*E. potiguar*) and III (*E. sagarana* Souza & Ferreira, 2012) of males and females (Ferreira et al. 2011; Souza & Ferreira 2012). In these species, the number of normal setae also varies, therefore it is not clear if these are teratological or dimorphism cases. Future studies of more specimens of the new species, as well as other new future species, will elucidate whether this is a unique case of sexual dimorphism or common among palpigrade species, or maybe a teratological case.

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