

Two new and a newly recorded species of the genus *Pergalumna* (Acari, Oribatida, Galumnidae) from China

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Original research

ABSTRACT

Two new species, *Pergalumna clava* n. sp. and *Pergalumna pilosus* n. sp., and a newly recorded species, *Pergalumna amamiensis* Aoki, 1984 of oribatid mites are described and illustrated from China. *Pergalumna clava* n. sp. is different from most known species of *Pergalumna* in the dorsosejugal suture complete; developed four pairs notogastral porose areas, *Aa* transverse irregular wedge; short interlamellar seta and bothridial seta clavate. *Pergalumna pilosus* n. sp. different from most known species of *Pergalumna* in the dorsosejugal suture complete; *Aa* porose area transverse irregular wedge; longer interlamellar barbed; median pore and postanal porose area present.

Keywords Acari; Galumnidae; taxonomy; morphology; China

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Introduction

Pergalumna was proposed by Grandjean, 1936 with *Oribata nervosa* Berlese, 1914 as type species. The genus is one of the largest genera of the family Galumnidae, which comprises two subgenera, 169 species and 14 subspecies, and collectively have a cosmopolitan distribution (Ermilov and Klimov, 2017; Subías, 2004, updated 2020). At present, 15 species and 4 subspecies of *Pergalumna* were recorded in China (Chen *et al.*, 2010; Zheng *et al.*, 2019; Subías, 2020).

During taxonomic identification of oribatid mites from China, we found two new species, *Pergalumna clava* n. sp. and *Pergalumna pilosus* n. sp. and a newly recorded species, *Pergalumna amamiensis* Aoki, 1984. The main goal of this study is to describe the new species, give a supplementary description to *Pergalumna amamiensis* and illustrate these species.

Material and methods

Samples, such as, deciduous leaves, moss, humus and grassland soil were collected by a soil-corer. Mites were extracted by using Tullgren-funnels, and then they were immersed in lactic acid and placed in DHG Series Heating and Drying Oven “DHG-9013A” at 50 °C for 8 to 72 hours, the time required varies depending on the size. Afterwards, the transparent mites were placed on a concave slide with glycerol for measurement and observation, which were made with a camera lucida using a Nikon digital microscope imaging system “NIKON NI-E+DS-RI2+NIS-AR”. All body measurements are presented in micrometers. The body length was measured in lateral view, from the tip of the rostrum to the posterior edge of the

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ventral plate, to avoid discrepancies caused by different degrees of notogastral distension. Notogastral width refers to the maximum width in dorsal aspect. Lengths of body setae were measured in lateral aspect. Formulas for leg setation are given in parentheses according to the sequence trochanter-femur-genu-tibia-tarsus (femulus included). Formulas for leg solenidia are given in square brackets according to the sequence genu-tibia-tarsus.

The specimen (for scanning electron microscopy) is treated to a fully dehydrated state and dried, specimens were coated film by used rotation gold-plated-palladium alloy membrane, observed under the JEOL JCM-6000 scanning electron microscopy.

General terminology used in this paper follows that of F. Grandjean (see Travé and Vachon, 1975 for a complete list of Grandjean's references, Norton & Behan-Pelletier, 2009 for overview, and Ermilov and Klimov, 2017 for a concise overview of the general morphology of Galumnoidea).

In the figures and text, the following abbreviations are used: rostral tooth (*rt*); lamellar line (*L*), sublamellar line (*S*), prodorsal leg niche (*N*); lateral ridges of prodorsum (*E*, *T*), rostral setae (*ro*), lamellar setae (*le*), interlamellar setae (*in*), bothridial setae (*bs*), dorsophragmata (*D*), prodorsal porose area (*Ad*), notogastral porose areas (*Aa*, *A1*, *A2*, *A3*), notogastral setae (*c*, *la*, *lm*, *lp*, *h*-, *p*-series), notogastral lyrifissure (*ia*, *im*, *ip*, *ih*, *ips*), opisthonotal gland openings (*gla*), median pore (*mp*), subcapitular setae (*a*, *h*, *m*), adoral setae (*or*), palp setae (*v*, *l*, *d*, *cm*, *acm*, *ul*, *sul*, *vt*, *lt*), palp and leg solenidium (ω), cheliceral setae (*cha*, *chb*), pedotecta I, II (Pd I, II), epimeral setae (*a*, *b*, *c*-series), discidium (*dis*), adanal and anal setae (*ad*, *an*-series), genital setae (*g*₁–*g*₆), aggenital setae (*ag*), adanal lyrifissure (*iad*), postanal porose (*Ap*), leg trochanter, femur, genu, tibia, tarsus, respectively (*Tr*, *Fe*, *Ge*, *Ti*, *Ta*), leg solenidia (σ , ϕ), leg femulus (ϵ), leg setae (*v*, *ev*, *bv*, *l*, *d*, *ft*, *tc*, *it*, *p*, *u*, *a*, *s*, *pv*, *pl*).

Results

Galumnidae Jacot, 1925

Pergalumna Grandjean, 1936

Pergalumna clava n. sp.

Zoobank: 6A6F527D-8E3E-4B0F-A13C-6AB896B8C83F

(Figures 1–4)

Diagnosis

Surface of notogaster smooth, prodorsum, pteromorphs outer edge and epimeral region with granules. Rostrum pointed. Lamellar and sublamellar lines present. Rostral and lamellar setae setiform, smooth. Interlamellar seta short, slightly barbed. Bothridial seta clavate, barbed head. Dorsosejugal porose areas and dorsosejugal suture present. Four pairs of notogastral porose areas developed, *Aa* transverse irregular wedge, *A1* rounded, *A2* and *A3* oval. Median pore area present. Postanal porose area transversely elongate oval.

Description

Measurements — Body length: 710 (holotype), 600–750 (53 paratypes); notogaster width: 540 (holotype), 450–570 (53 paratypes). No distinct differences between females and males in body size.

Integument — (Figures 1A–B, 2A–D, 4A–F). Body color brown to black. Prodorsum, pteromorphs outer edge and epimeral region with granules and striations, rest smooth.

Prodorsum — (Figures 1A, 2A, 2C, 4A–D). Rostrum pointed. Lamellar and sublamellar lines present, curving backwards at ventral end. Rostral *ro* (43–50) and lamellar *le* (78–86) setae setiform, smooth. Interlamellar seta *in* (23–30) short, setiform, slightly barbed. Bothridial seta *bs* (72–82) clavate, stalk smooth, head surface with slightly barbed and inside with particulate matter. Dorsosejugal porose area *Ad* (8–10 × 20–26) located transversely, elongate oval.

Notogaster — (Figures 1A, 2B, 2D, 4A). Dorsosejugal suture developed, complete. Notogaster rounded posteriorly. Notogastral setae represented by 10 pairs of alveoli or

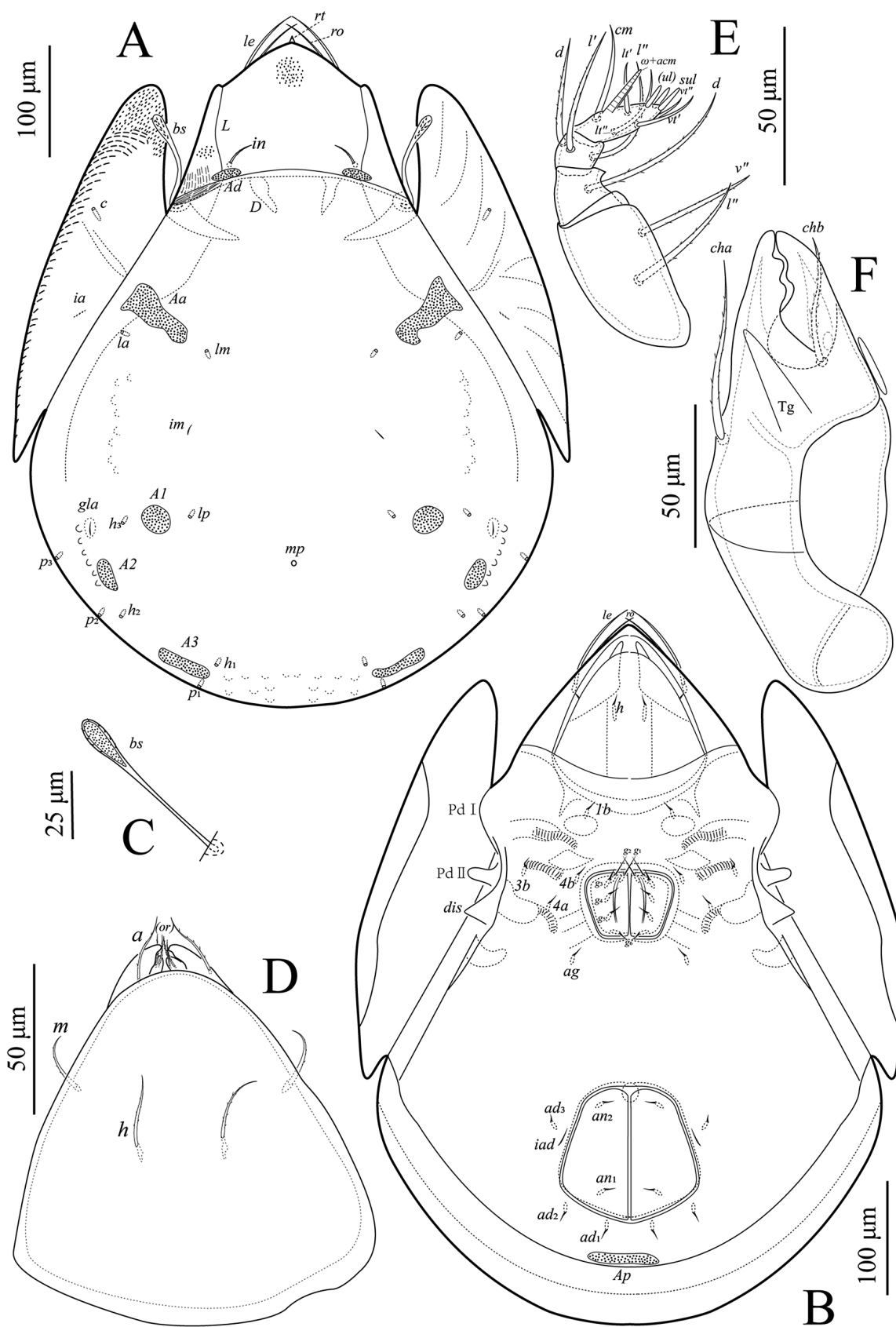


Figure 1 *Pergalumna clava* n. sp., adult: A – dorsal view; B – ventral view; C – bothridial seta; D – subcapitulum, ventral view; E – palp, left, antiaxial view; F – chelicera, left, antiaxial view.

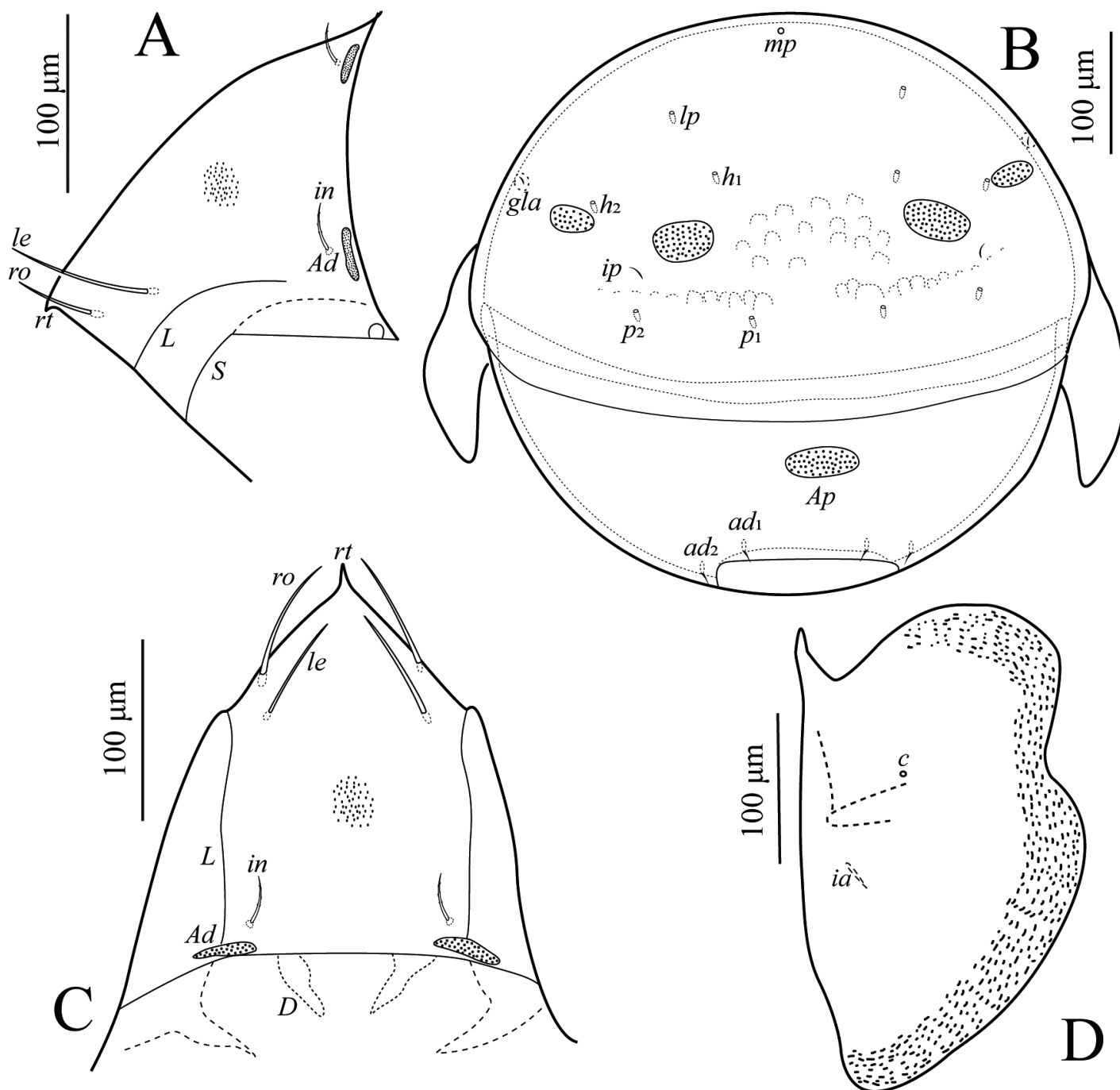


Figure 2 *Pergalumna clava* n. sp., adult: A – lateral view of prodorsum; B – posterior view; C – anterodorsal view of prodorsum; D – pteromorpha.

microsetae. With four pairs of notogastral porose areas, *Aa* (16–35 × 60–68) transverse irregular wedge, pointing mediad; *Al* (diameter 22–27) rounded; *A2* (10–14 × 26–30) and *A3* (8–12 × 43–48) oval. Median pore present in females and males, located posterior to imaginary line connecting porose areas *Al*. Lyrifissure *im* located medial to setal alveoli *lm* and *lp*. Opisthonotal gland *gla* openings located lateral to *Al*.

Gnathosoma — (Figures 1D–F, 4B). Subcapitulum size: 122–127 × 113–118, three pairs of setiform, slightly barbed, setae: *h* (20–24), *m* (18–22) and *a* (24–28). Two pairs of setiform,

smooth adoral setae or_1 (8–12) and or_2 (8–12). Length of palps 105–110. Palp with setation 0-2-1-3-9 (+ solenidion ω). Length of chelicerae 160–165. Cheliceral setae *cha* (60–65) and *chb* (43–48) setiform, barbed bilaterally. Trägårdh's organ (*Tg*) long, elongate triangular.

Epimeral and lateral podosomal regions — (Figures 1B, 4B). Epimeral region with granules and striations. Pedotecta I and II rounded in ventral view. Discidium triangular, circumpedal carina distinct. Epimeral setal formula: 1-0-1-2. Four pairs (*1a*, *3b*, *4a* and *4b*, 5–15) of epimeral setae setiform, thin, smooth.

Anogenital region — (Figures 1B, 2B, 4B, 4D–E). Six pairs of genital setae (g_1 – g_2 , 12–22; g_3 – g_6 , 2–12), setiform, short, smooth; g_1 and g_2 parallel to each other at anterior edges of genital plate, other four pairs represented by alveoli or microsetae, arranged vertically in middle of genital plates. One pair of aggenital seta (*ag*, 0–4) located close to genital aperture. Two pairs of anal and three pairs of adanal setae represented alveoli or microsetae. Adanal lyrifissures located close and lateral to anal plates. Adanal setae ad_1 and ad_2 located in postanal position, ad_3 anterolateral to *iad*. Distance between ad_1 – ad_2 distinctly shorter than that of ad_2 – ad_3 . Postanal porose area *Ap* (22–26 × 58–62) elongate oval.

Legs — (Figure 3) All legs tridactylous, median claw distinctly thicker than lateral claws. Formulas of leg setation and solenidia: I (1-4-3-4-20) [1-2-2], II (1-4-3-4-15) [1-1-2], III (1-2-1-3-15) [1-1-0], IV (1-2-2-3-12) [0-1-0]. Famulus on tarsi I inserted between solenidia ω_1 and ω_2 . Homology of setae and solenidia indicated in Table 1.

Material examined

Holotype (male), Mudanfeng National Nature Reserve (44°22' N, 129°53' E), Mudanjiang City, Heilongjiang Province, 20 Jul. 2010, Lixia Xie and Rong Huang, in soil. 53 paratypes: 8 (5 females 3 males) same data as holotype; 7 (5 females 2 males), Liangshui National Nature Reserve (47°9' N, 128°52' E), Yichun City, Heilongjiang Province, 25 Jul. 2010, Lixia Xie and Rong Huang, in soil; 38 (15 females 23 males), Baishilazi National Nature Reserve (40°56' N, 124°53' E), Dandong City, Liaoning Province, 3 Aug. 2010, Lixia Xie and Rong Huang, in soil.

Type deposition

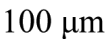
The holotype and 7 paratypes are deposited in the Institute of Entomology, Guizhou University, Guiyang, China (GUGC) (Zhang 2018). 46 paratypes are deposited in the Guizhou Provincial Center for Disease Control and Prevention, Guiyang, China.

Etymology

The name of the new species comes from the Latin word “*clava*” meaning “clavate” which means that the new species bothridial seta clavate.

Remarks

In having dorsosejugal suture complete; developed four pairs notogastral porose areas, *Aa* transverse irregular wedge; short interlamellar seta and bothridial seta clavate, *Pergalumna clava* **n. sp.** is morphologically similar to *Pergalumna akitaensis* Aoki, 1961 and *Pergalumna formicaria* Berlese, 1914, redescribed by Mahunka, 1992. Differs from *Pergalumna akitaensis* Aoki, 1961 by the following characteristics: (1) larger porose area *Aa* and *A3*; *Aa* and *A3* significantly larger than *A1* (versus smaller porose area *Aa*, *A1* and *A3*; and sizes not significantly different in *Pergalumna akitaensis*). (2) Median pore and postanal porose area present (versus median pore and postanal porose area absent). (3) Lyrifissure *im* located medial to *lm* and *lp* (versus lyrifissure *im* located closer to *lp* and distanced from *lm*). Differs from *Pergalumna formicaria* Berlese, 1914, by the following characteristics: (1) Rostral and lamellar setae smooth (versus rostral and lamellar setae slightly barbed in *Pergalumna formicaria*), (2) Prodorsum and pteromorphs with granules (prodorsum and pteromorphs smooth). (3) Lyrifissure *im* located medial to *lm* and *lp* (versus lyrifissure *im* closer to *A1* and distanced from *Aa*).



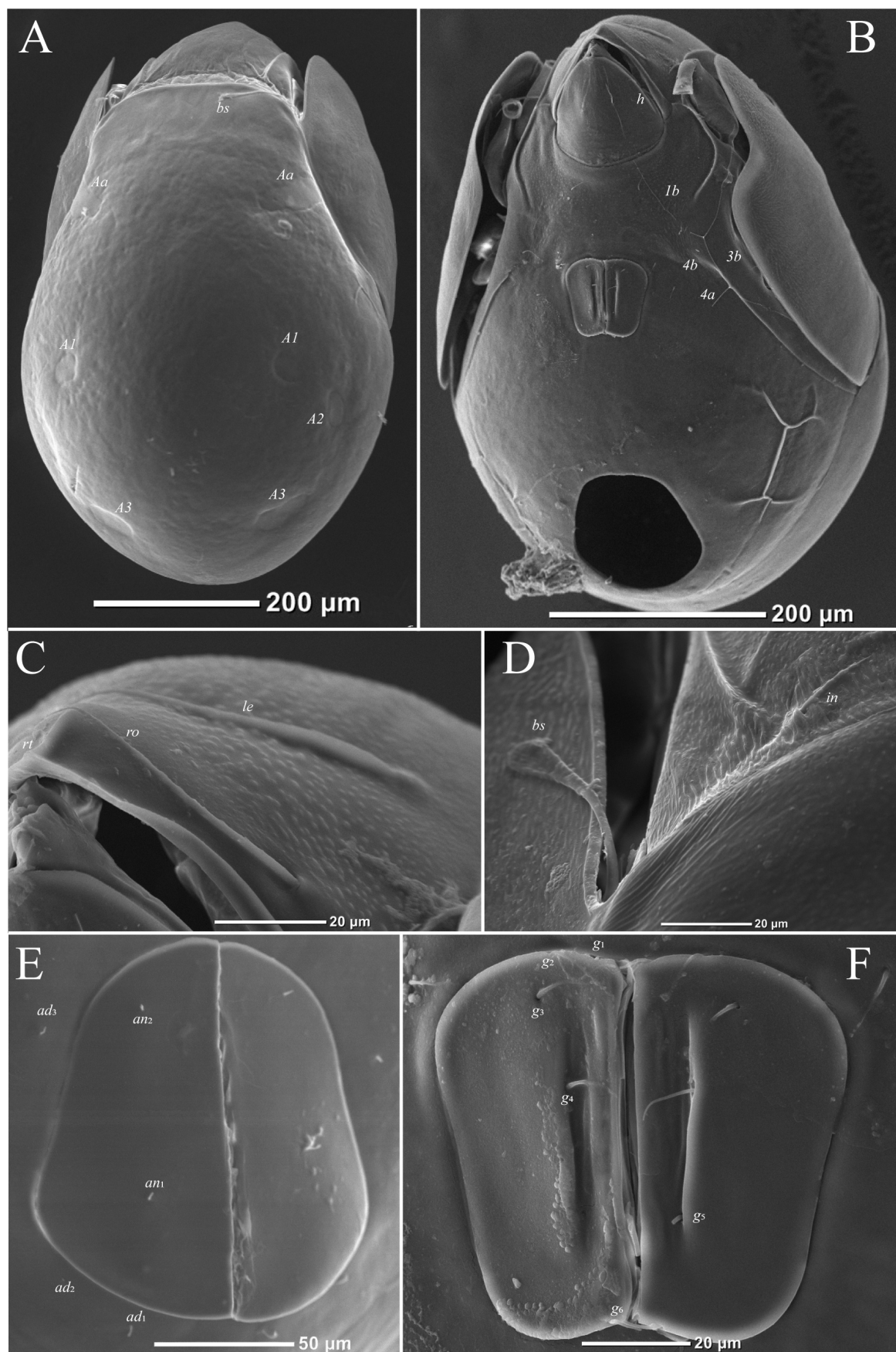


Figure 4 *Pergalumna clava* n. sp., SEM micrographs of adult, macerated in lactic acid, some cero-tegument removed, some of the setae are broken. adult: A – dorsal view; B – ventral view; C – rostral and lamellar setae; D – interlamellar and bothridial setae; E – anal plates; F – genital plates.

Pergalumna pilosus n. sp.

Zoobank: 6E649612-AD54-4A21-8C4A-769F9A25BD46

(Figures 5–8)

Diagnosis

Body surface smooth, pteromorphs outer edge short striae, middle part of genital plates with striate. Rostrum pointed. Lamellar and sublamellar lines present. Rostral, lamellar, interlamellar and bothridial setae developed, setiform, slightly barbed. Dorsosejugal porose areas and dorsosejugal suture present. Four pairs of notogastral porose areas, *Aa* transverse long wedge, *A1* rounded, *A2* and *A3* oval. Median pore and postanal porose area present.

Description

Measurements — Body length: 630 (holotype), 560–670 (26 paratypes); notogaster width: 450 (holotype), 400–480 (26 paratypes). No distinct differences between females and males in body size.

Integument — (Figures 5A–B, 6A, 6C–D, 8A–E). Body color brown to black. Body surface smooth, pteromorphs outer edge short striae, the middle part of genital plates with striate, the middle of pteromorphs bilobed.

Prodorsum — (Figures 5A, 6A–B, 8A, 8F). Rostrum pointed. Lamellar and sublamellar lines parallel, curving backwards at ventral end. Rostral *ro* (70–80) and lamellar setae *le* (95–105) setiform, barbed unilaterally. Interlamellar seta *in* (130–140) long, setiform, first half almost smooth and the second half has a few bilaterally slightly barbed. Bothridial seta *bs* (120–130) setiform, slightly barbed. Dorsosejugal porose areas *Ad* (9–13 × 30–33) located under anterior notogastral margin posterior to *in*, elongate oval.

Notogaster — (Figures 5A, 6A, 6C–B, 8A). Dorsosejugal suture developed, complete. Notogastral setae represented by 10 pairs of alveoli. Four pairs porose areas, *Aa* (10–46 × 100–103) located between *la* and *lm*, transverse long wedge; *A1* (diameter 25–30) rounded; *A2* (10–13 × 25–28) and *A3* (18–21 × 40–43) oval. Median pore present in females and males, located posterior to imaginary line connecting porose areas *A1*. Lyrifissure *im* located between alveoli *lm* and *lp*. Opisthonotal gland *gla* openings located posterolateral to *A1*, lateral to *h*₃.

Gnathosoma — (Figures 5C–E, 8D). Subcapitulum size: 161–166 × 153–158, three pairs of setiform, smooth, curved subcapitular setae: *h* (24–28), *m* (36–40) and *a* (32–36). Two pairs of setiform, smooth adoral setae *or*₁ (5–9) and *or*₂ (5–9). Length of palps 140–145. Palp with setation 0-2-1-3-9 (+ solenidion ω). Length of chelicerae 192–197. Cheliceral setae *cha* (73–78) and *chb* (50–55) setiform, barbed bilaterally. Trägårdh's organ long, elongate triangular.

Epimeral and lateral podosomal regions — (Figures 5B, 6A, 8B). Epimeres smooth. Pedotecta I and II rounded in ventral view. Discidium triangular, circumpedal carina distinct. Epimeral setal formula: 1-0-1-2. Four pairs (*1b*, *3b*, *4a* and *4b* (3–7) of epimeral setae setiform, thin, smooth.

Anogenital region — (Figures 5B, 6A, 6C, 8B, 8C, 8E). Middle part of genital plates with striate. Six pairs of genital setae (*g*₁–*g*₆, 10–15), anterior edges of genital plates with two pairs of setae. One pair of aggenital seta (*ag*, 4–8) located between genital and anal plates, closer to genital than to anal plates. Two pairs of anal and three pairs of adanal setae short, thin, smooth. Adanal lyrifissures located close and lateral to anal plates. Adanal setae *ad*₁ and *ad*₂ postanal, *ad*₃ located anterolateral to *iad*. Distance between *ad*₁–*ad*₂ distinctly shorter than that of *ad*₂–*ad*₃. Postanal porose area oval (15–20 × 60–65).

Legs — (Figure 7). All legs tridactylous, median claw distinctly thicker than lateral claws. Formulas of leg setation and solenidia: I (1-4-3-4-20) [1-2-2], II (1-4-3-4-15) [1-1-2], III (1-2-1-3-15) [1-1-0], IV (1-2-2-3-12) [0-1-0]. Famulus on tarsi I inserted between solenidia ω₁ and ω₂. Solenidion on tibiae IV inserted in anterior part of the segment. Homology of setae and solenidia indicated in Table 1.

Material examined

Holotype (male), Damingshan National Nature Reserve (23°30' N, 108°27' E), Nanning City, Guangxi Province, 16 May 2010, Rong Huang, in soil. 26 paratypes: 2 (1 female 1

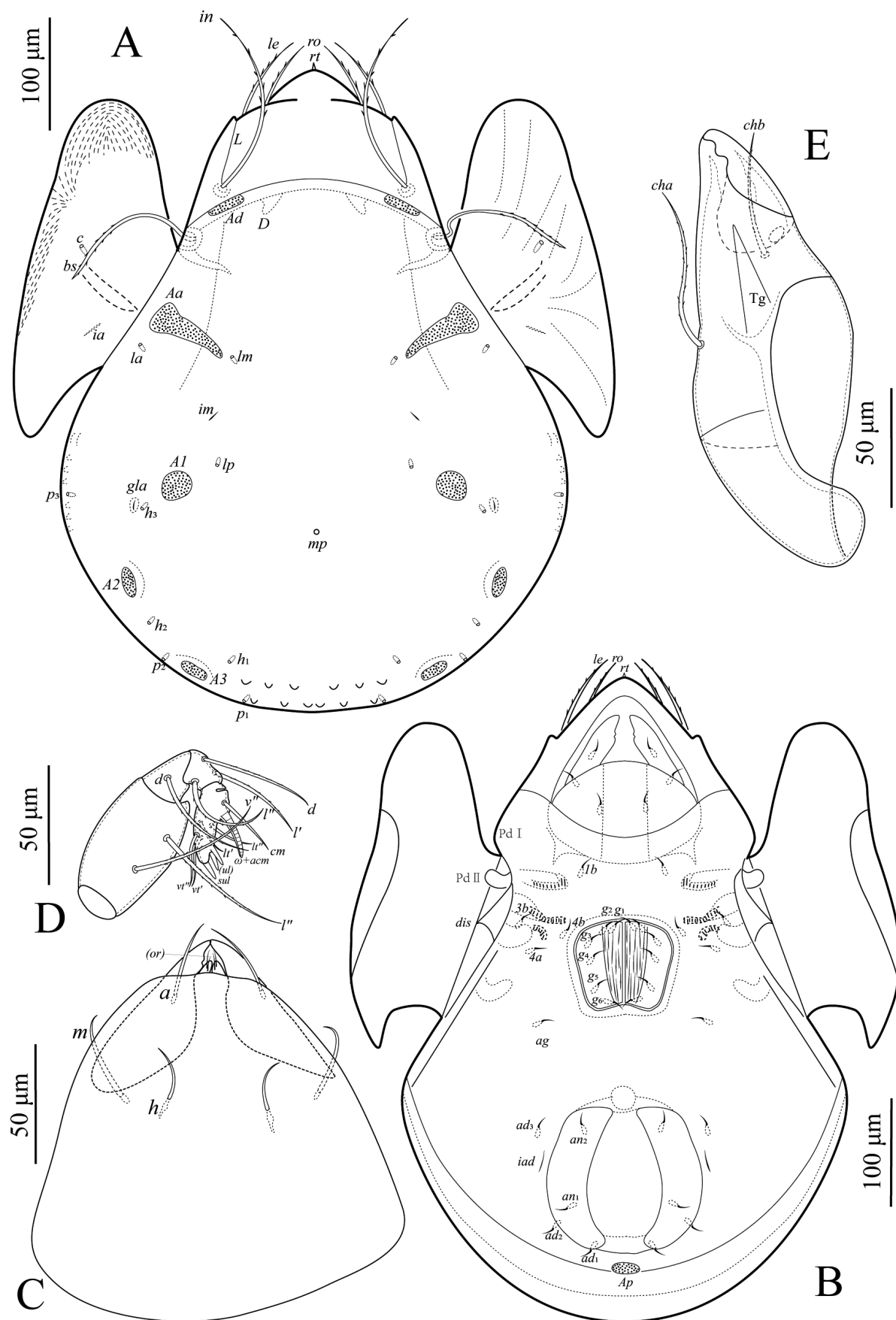


Figure 5 *Pergalumna pilosus* n. sp., adult: A – dorsal view; B – ventral view; C – subcapitulum, ventral view; D – palp, left, antiaxial view; E – chelicera, left, antiaxial view.

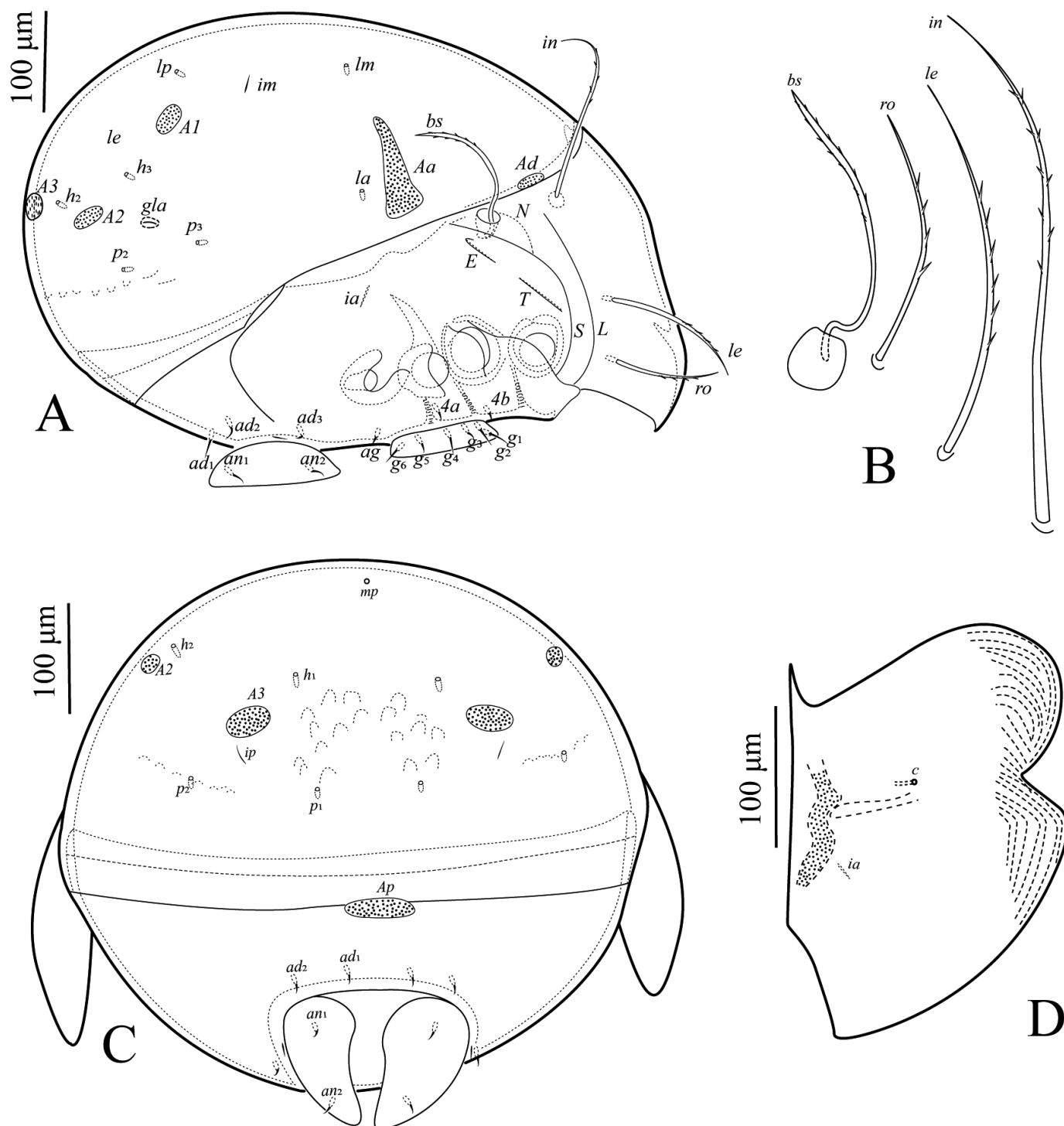


Figure 6 *Pergalumna pilosus* n. sp., adult: A – lateral view; B – prodorsum setae; C – posterior view; D – pteromorpha.

male) same data as holotype; 10 (3 females 7 males), Zhuque National Forest Park (33°47' N, 108°35' E), Xian City, Shanxi Province, 11 Jul. 2012, Wenqin Liang and Qiuxiao Tang, litter in the mixed forest; 11 (7 females 4 males), Wen county (33°3'25" N, 104°42'31" E, 1800 m), Longnan City, Gansu Province, 14 Aug. 2018, Guoru Ren and Maofa Yang, in soil; 3 (2 females 1 male), Gaolieshan National Nature Reserve (30°19'22" N, 119°26'44" E, 420 m),

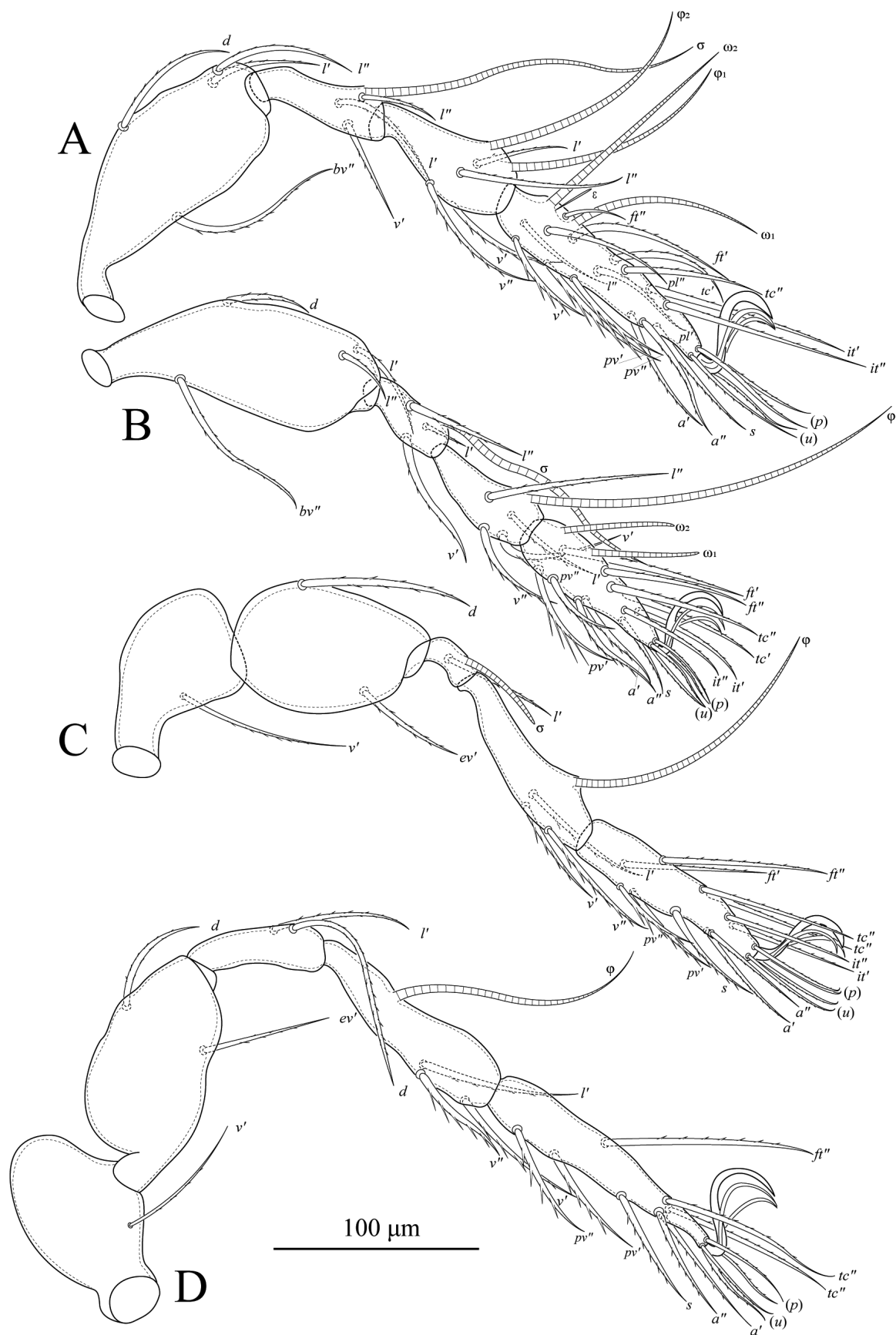


Figure 7 *Pergalumna pilosus* n. sp., adult: A – leg I, left, antiaxial view; B – leg II, left, antiaxial view; C – leg III, right, antiaxial view; D – leg IV, right, antiaxial view.

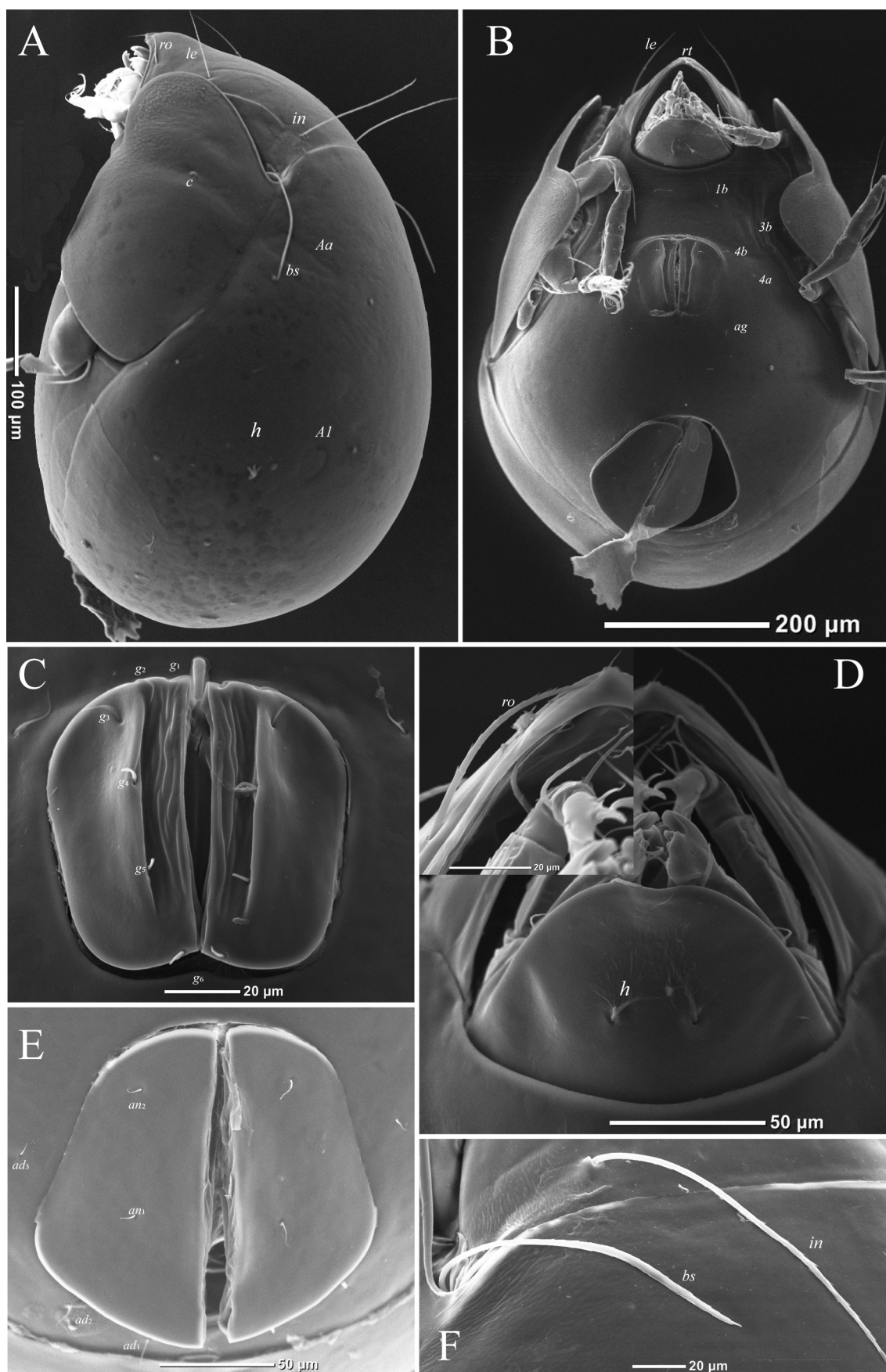


Figure 8 *Pergalumna pilosus* n. sp., adult: A – lateral view; B – ventral view; C – genital plates; D – subcapitulum and rostral setae; E – anal plates; F – interlamellar and bothridial setae.

Nanyang City, Henan Province, 21 Jul. 2018, Guoru Ren and Qianfen Zheng, in soil.

Type deposition

The holotype and 16 paratypes are deposited in the Institute of Entomology, Guizhou University, Guiyang, China (GUGC). 10 paratypes are deposited in the Guizhou Provincial Center for Disease Control and Prevention, Guiyang, China.

Etymology

The name of the new species comes from the Latin name “*pilosus*” meaning “*hairy*” which refers to the comparable long cilia on rostrum, lamellar and interlamellar setae of the new species.

Remarks

In having dorsosejugal suture complete; *Aa* porose area transverse irregular wedge; longer interlamellar barbed; median pore and postanal porose area present, *Pergalumna pilosus* n. sp. is morphologically similar to *Pergalumna variosculpturata* Mahunka and Mahunka-Papp, 1999 and *Pergalumna microtuberculata* Bayartogtokh and Akrami, 2014, but differs from the latter two species by the following characteristics: (1) Bothridial setae setiform (versus bothridial setae lanceolate, stalk slender and head slightly incrassate and speculate in latter two species). (2) Interlamellar setae very long (130–140); significantly longer than *le* and *ro* (versus interlamellar, lamellar and rostral setae are not much difference in length). (3) Epimeral region smooth (versus epimeral region with granules and striations).

Pergalumna amamiensis Aoki, 1984

(Figures 9–12)

Supplementary description

Measurements — Body length: 540–680; notogaster width: 390–490. No distinct differences between females and males in body size.

Integument — (Figures 9A–B, 10A, 10C–D, 12A–F). Body color brown to black. Body surface foveolate. Prodorsum, genital plates, epimeral and lateral podosomal regions large granules; pteromorphs outer edge and anal plates and the surrounding with granules.

Prodorsum — (Figures 9A, 10A–B, 12A, 12C–D). Rostrum pointed. Lamellar and sublamellar lines parallel, long, curving backwards at ventral end. Rostral *ro* (75–85) and lamellar setae *le* (100–110) setiform, barbed unilaterally. Interlamellar seta *in* (140–150) long, setiform, slightly barbed. Bothridial seta *bs* (120–130) lanceolate, stalk slender, head slightly incrassate and spiculate. Dorsosejugal porose areas (8–12 × 24–28) located under anterior notogastral margin posterior to *in*, elongate oval.

Notogaster — (Figures 9A, 10A, 10C–D, 12A, 12D). Dorsosejugal suture developed, complete. Notogastral setae represented by 10 pairs of alveoli. Four pairs porose areas, *Aa* (10–35 × 50–60) located above to *la*, transverse long wedge; *A1* (diameter 23–28) rounded; *A2* (17–22 × 25–28) oval; *A3* (diameter 23–28) rounded from posterior view. Median pore present in females and males, located middle to *A2*. Lyrifissure *im* located between alveoli *lm* and *lp*, closer to *lp* than *lm*. Opisthonotal gland *gla* openings located lateral to *A1*.

Gnathosoma — (Figures 9C–E, 12B). Subcapitulum size: 160–165 × 120–125, three pairs of setiform, smooth, curved subcapitular setae: *h* (18–22), *m* (28–32) and *a* (36–40). Two pairs of setiform, smooth adoral setae *or*₁ (11–13) and *or*₂ (11–13). Length of palps 120–130. Palp with setation 0-2-1-3-9 (+ solenidion ω). Length of chelicerae 190–200. Cheliceral setae *cha* (60–65) and *chb* (55–60) setiform, barbed bilaterally. Trägårdh’s organ long, elongate triangular.

Epimeral and lateral podosomal regions — (Figures 9B, 10B, 12B). Epimeres strong granules. Pedotecta I and II rounded in ventral view. Discidium triangular, circumpedial carina distinct. Epimeral setal formula: 1-0-1-2. Four pairs of epimeral setae setiform, thin, smooth *1b* (20–25), *3b* (25–30), *4a* (20–25) and *4b* (20–25).

Anogenital region — (Figures 9B, 10A, 10C, 12B, 12E–F). Middle part of genital plates with striate. Six pairs of genital setae (*g*₁–*g*₂, 25–30; *g*₃–*g*₆, 15–20), anterior edges of genital

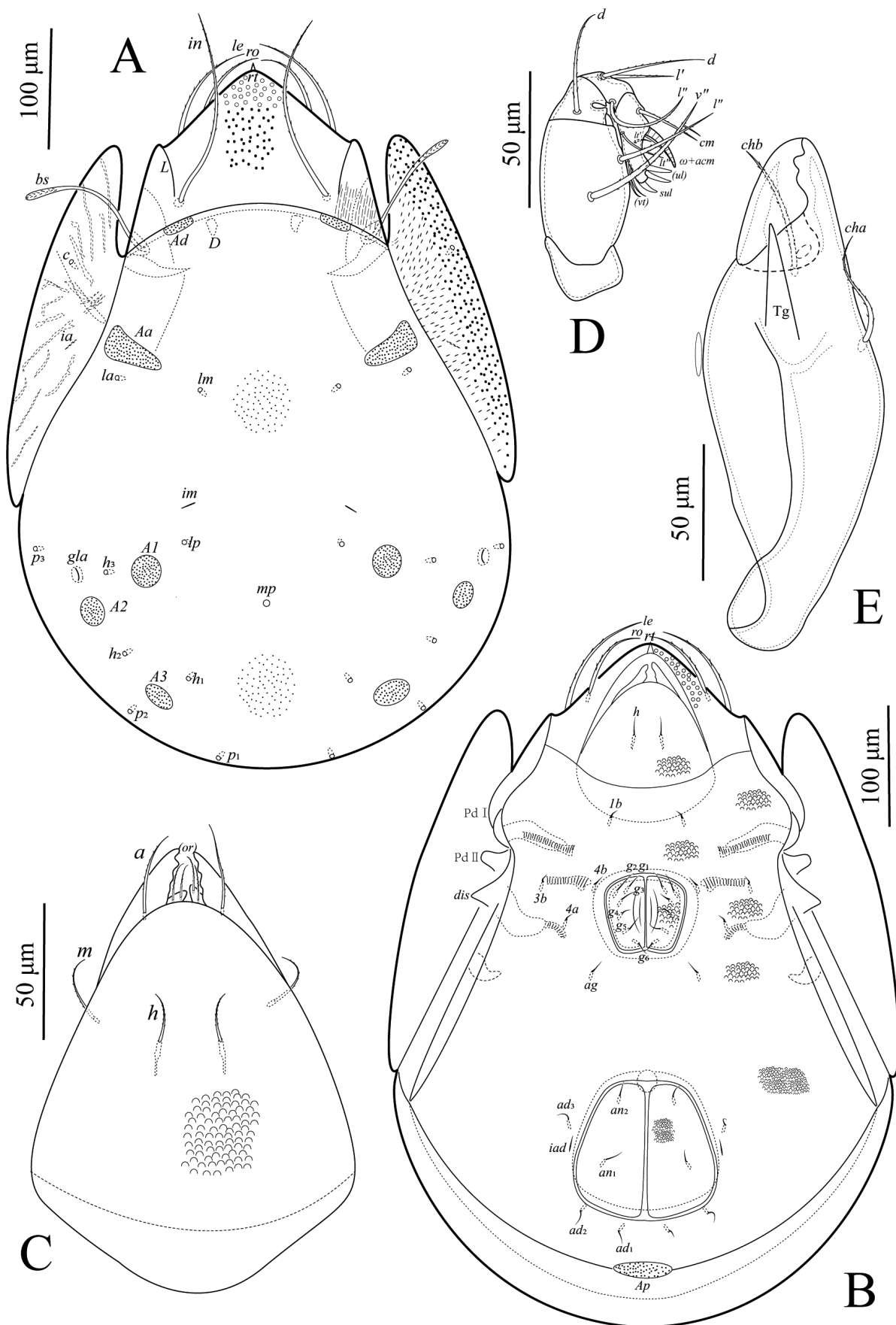


Figure 9 *Pergalumna amamiensis* Aoki, 1984, adult: A – dorsal view; B – ventral view; C – subcapitulum, ventral view; D – palp, left, antiaxial view; E – chelicera, right, antiaxial view.

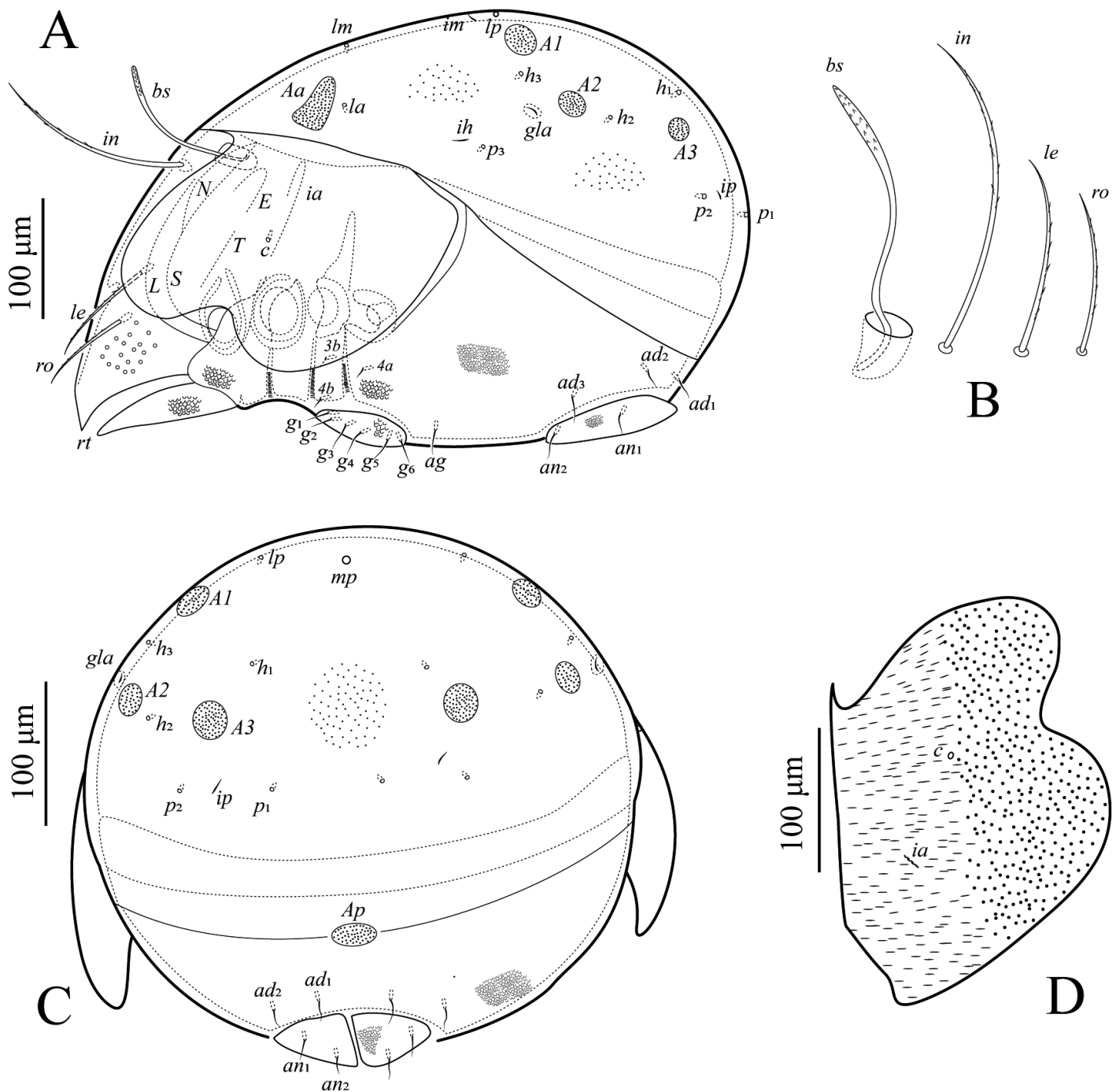


Figure 10 *Pergalumna amamiensis* Aoki, 1984, adult: A – lateral view; B – prodorsum setae; C – posterior view; D – pteromorpha.

plates with two pairs of setae. One pair of aggenital setae (*ag*, 10–15) located between genital and anal plates, closer to genital than to anal plates. Two pairs of anal (*an*₁–*an*₂, 10–15) and three pairs of adanal setae (*ad*₁–*ad*₃, 10–20), all short, thin, smooth. Adanal lyrifissures located close and lateral to anal plates. Adanal setae *ad*₁ and *ad*₂ postanal, *ad*₃ located anterolateral to *iad*. Distance *ad*₁–*ad*₂ distinctly shorter than *ad*₂–*ad*₃. Postanal porose area oval (13–18 × 28–33).

Legs — (Figure 11). All legs tridactylous, median claw distinctly thicker than lateral

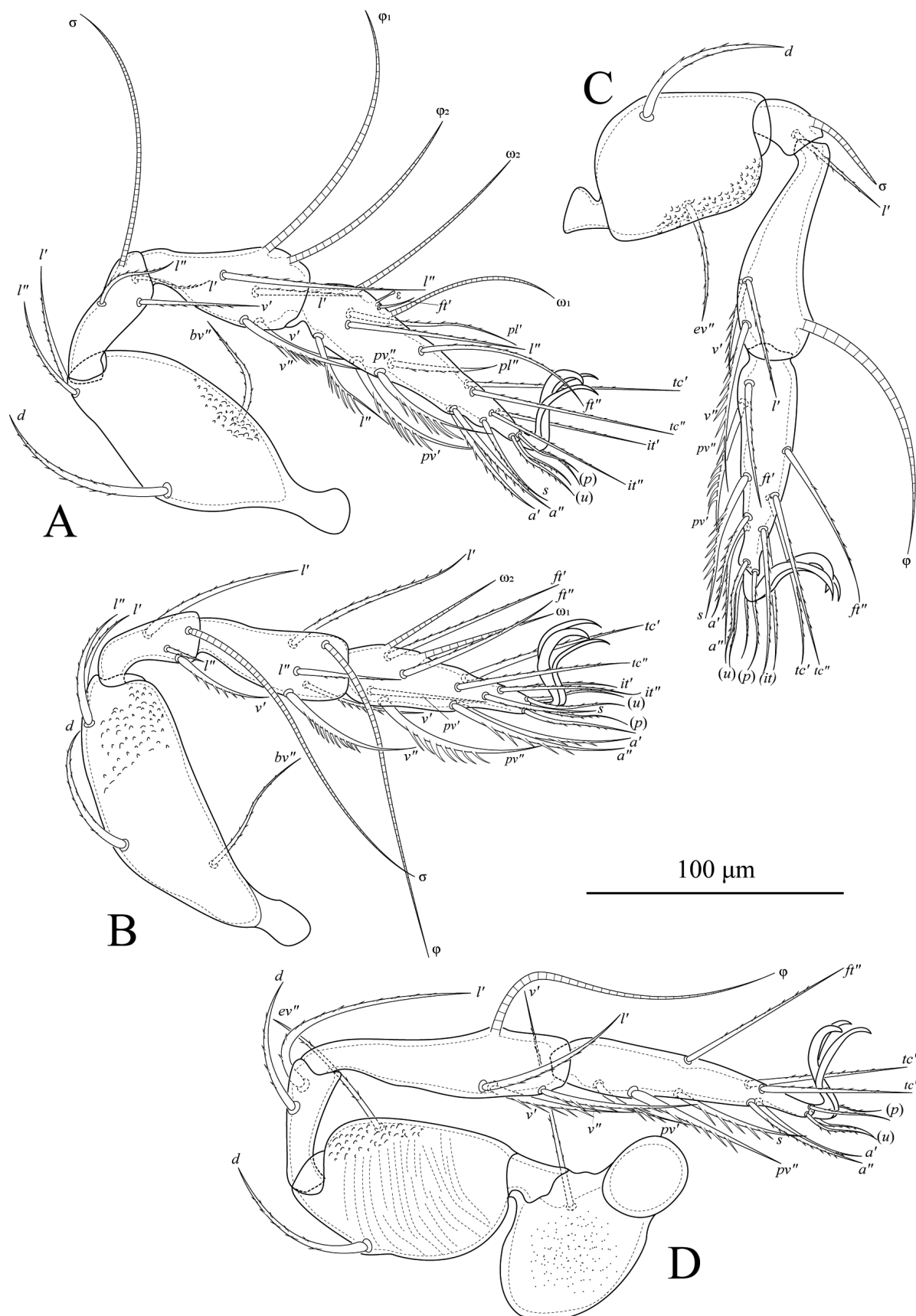


Figure 11 *Pergalumna amamiensis* Aoki, 1984, adult: A – leg I, right, antiaxial view; B – leg II, right, antiaxial view; C – leg III, left, antiaxial view; D – leg IV, left, antiaxial view.

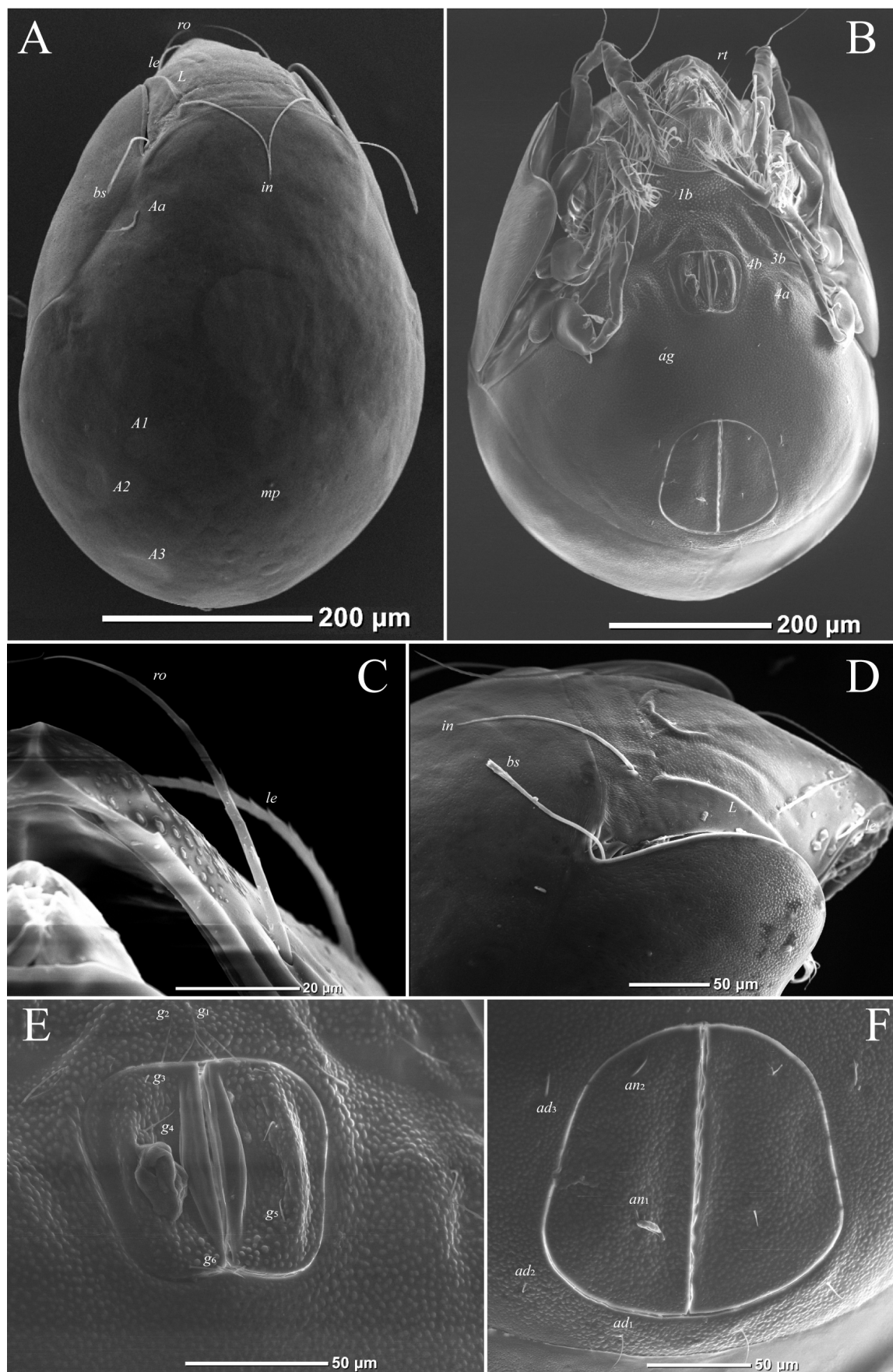


Figure 12 *Pergalumna amamiensis* Aoki, 1984, adult: A – dorsal view; B – ventral view; C – rostral and lamellar setae; D – detail of prodorsum in lateral view; E – genital plates; F – anal plates.

Table 1 Leg setation and solenidia of adult *Pergalumna clava* n. sp., *Pergalumna pilosus* n. sp. and *Pergalumna amamiensis* Aoki, 1984.

Leg	Tr	Fe	Ge	Ti	Ta
I	v'	d, (l), bv''	(l), v', σ	(l), (v), φ ₁ , φ ₂	(ft), (tc), (it), (p), (u), (a), s, (pv), v', (pl), l'', ε, ω ₁ , ω ₂
II	v'	d, (l), bv''	(l), v', σ	(l), (v), φ	(ft), (tc), (it), (p), (u), (a), s, (pv), ω ₁ , ω ₂
III	v'	d, ev'	l', σ	l', (v), φ	(ft), (tc), (it), (p), (u), (a), s, (pv)
IV	v'	d, ev'	d, l'	l', (v), φ	ft'', (tc), (p), (u), (a), s, (pv)

Note: Roman letters refer to normal setae, Greek letters to solenidia (except ε = famulus). Single prime (') marks setae on the anterior and double prime (") setae on the posterior side of a given leg segment. Parentheses refer to a pair of setae. Tr – trochanter, Fe – femur, Ge – genu, Ti – Tibia, Ta – tarsus.

claws. Formulas of leg setation and solenidia: I (1-4-3-4-20) [1-2-2], II (1-4-3-4-15) [1-1-2], III (1-2-1-3-15) [1-1-0], IV (1-2-2-3-12) [0-1-0]. Famulus on tarsi I inserted between solenidia ω₁ and ω₂. Solenidion on tibiae IV inserted in anterior part of the segment. Homology of setae and solenidia indicated in Table 1.

Material examined

15 females 11 males, Tianmushan National Nature Reserve (30°20'4" N, 119°26'18" E, 810 m), Hangzhou City, Zhejiang Province, 27 Jul. 2018, Guoru Ren and Qianfen Zheng, in moss. 2 females 1 male, Gujingyuan National Nature Reserve (31°3'7"N, 116°30'7" E, 450 m), Haozhou City, Anhui Province, 25 Jul. 2018, Guoru Ren and Qianfen Zheng, in deciduous leaves.

Specimen deposition

26 samples are deposited in the Institute of Entomology, Guizhou University, Guiyang, China (GUGC). 3 specimens are deposited in the Guizhou Provincial Center for Disease Control and Prevention, Guiyang, China.

Remarks

This species was originally described by Aoki (1984) from Japan, but the original description was brief and not completely illustrated, so we gave a supplementary description and illustrations. Apart from the lacking characteristics, the Chinese specimens differ from the Japanese specimens by the rostral, lamellar, interlamellar and bothridial setae which are slightly barbed. Hence, based on these supplementary data, the main characters of *P. amamiensis* are: body size: 540–680×390–490, body surface densely foveolate granules; rostrum pointed; lamellar and sublamellar lines present; rostral, lamellar and interlamellar setae developed, setiform, slightly barbed; bothridial setae spindle-shaped, stalk slender and head slightly incrassate and spiculate; dorsosejugal porose areas and dorsosejugal suture present; four pairs of notogastral porose areas, Aa transversely wedge-shaped, A1 rounded, A2 and A3 oval; median pore and postanal porose area present; epimeral setal formula 1-0-1-2; ventral setae, genital setae, epimeral setae, anogenital and adanal setae represented by microsetae; all legs tridactylous, leg setae not modified.

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