

NEW ORIBATID MITES OF THE GENERA *PERGALUMNA* AND *GALUMNELLA* (ACARI, ORIBATIDA, GALUMNOIDEA) FROM VIETNAM

S. G. Ermilov¹, A. E. Anichkin²

¹Nizhniy Novgorod Referral Center of the Federal service for Veterinary and Phytosanitary Inspection, Nizhniy Novgorod 603107, Russia; e-mail: ermilovacari@yandex.ru

²Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow 119071, Russia; Joint Russian-Vietnamese Research and Technological Center, Southern Branch, Ho Chi Minh, Vietnam

ABSTRACT: Three new species of oribatid mites of the superfamily Galumnoidea, *Pergalumna cattienica* sp. n., *P. yurtaevi* sp. n. and *Galumnella microporosa* sp. n., are described from Cat Tien National Park (southern Vietnam). Diagnostic keys to the Vietnamese species of *Pergalumna* and Asian of *Galumnella* are presented.

KEY WORDS: oribatid mites, new species, Galumnoidea, *Pergalumna*, *Galumnella*, key, Vietnam

INTRODUCTION

In the course of faunistic studies of the oribatid mites of Cat Tien National Park (southern Vietnam), we found three new species of the superfamily Galumnoidea, belonging to *Pergalumna* Grandjean, 1936 (Galumnidae) and *Galumnella* Berlese, 1916 (Galumnellidae).

The genus *Pergalumna* comprises 112 species, collectively with cosmopolitan distribution (except for Antarctica) (Subías 2004, online version 2011). Six species of this genus have been recorded from Vietnam: *P. altera* (Oudemans, 1915), *P. granulata* Balogh and Mahunka, 1967, *P. kotschyi* Mahunka, 1989, *P. magnipora* (Hammer, 1961), *P. margaritata* Mahunka, 1989, *P. punctulata* Balogh and Mahunka, 1967. Two new species are described below as *P. cattienica* sp. n. and *P. yurtaevi* sp. n.

The genus *Galumnella* comprises 18 species, distributed in Pantropical and Subtropical regions (Subías 2004, online version 2011). Only one species of *Galumnella* has been recorded from Vietnam, *G. cellularis* Balogh and Mahunka, 1967. We described below a new species, *G. microporosa* sp. n.

Diagnostic keys to the Vietnamese species of *Pergalumna* and Asian of *Galumnella* are presented.

MATERIALS AND METHODS

Collection localities and habitats of the new species are characterized in the “Material examined” sections.

Specimens were studied in lactic acid, mounted in temporary cavity slides for the duration of the study, then stored in 70% alcohol in tubes. All body measurements are presented in micrometers. Body length was measured in lateral view, from the tip of the rostrum to the posterior edge of the ventral plate,

to avoid discrepancies caused by different degrees of notogastral distension. Notogastral width refers to the maximum width in dorsal aspect. Length of body setae was measured in lateral aspect. Some paratypes of each species were dissected for detailed studies (gnathosoma, ovipositor, legs).

Formulae for leg setation are given in parentheses according to the sequence trochanter–femur–genu–tibia–tarsus (famulus included). Formulae for leg solenidia are given in square brackets according to the sequence genu–tibia–tarsus.

RESULTS

Pergalumna cattienica sp. n.

Figs. 1–21

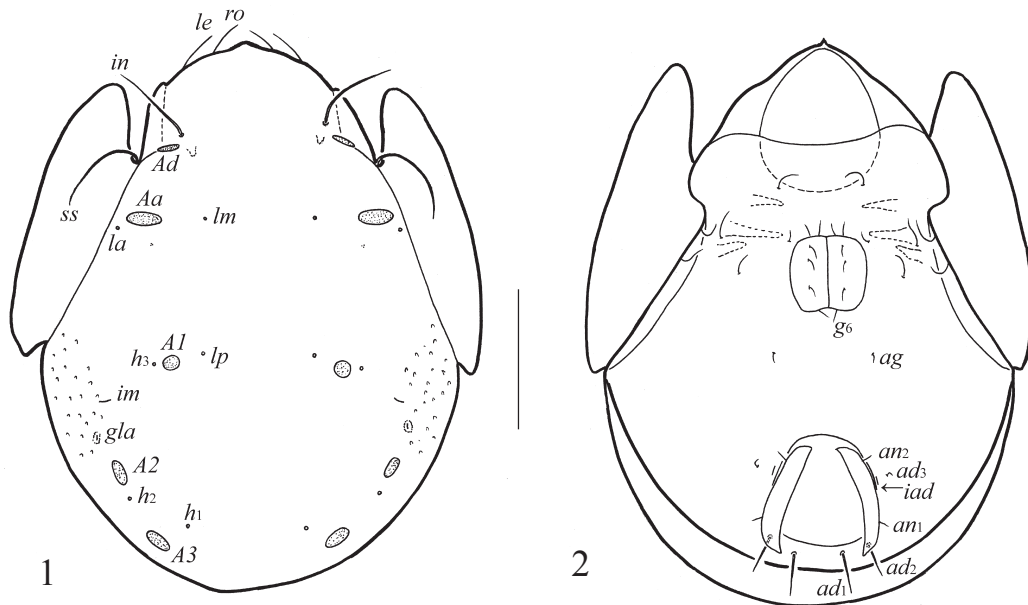
The diagnostic characters of the genus *Pergalumna*: lamellar and sublamellar lines well developed, parallel; lamellar setae inserted between lamellar lines; notogaster with areae porosae; ten pairs of alveoli or minute notogastral setae; adanal lyrifissures adjacent to anal plates; legs tridactylous.

Diagnosis. *Pergalumna cattienica* sp. n. is characterized by the combination of following character states. Body size 730–780 × 564–597; rostrum pointed; rostral, lamellar, interlamellar setae and sensilli setiform, barbed; dorsosejugal suture incomplete; surface of body smooth; four pairs of areae porosae; **postanal area porosa absent**; two pairs of adanal setae (ad_1 , ad_2) long.

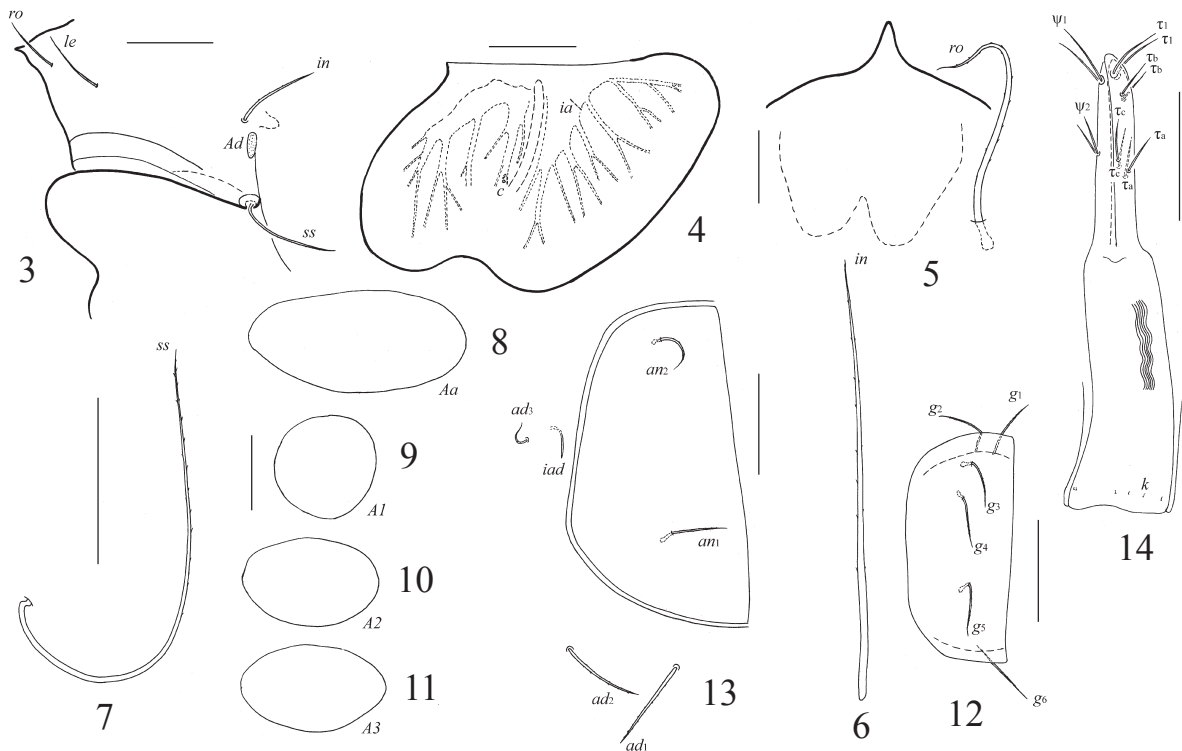
Description. Body length 730 (holotype), 763–780 (two paratypes); body width 564 (holotype), 581–597 (two paratypes).

Integument. Body color brown to dark brown. Surface of body smooth (dorso-lateral parts of notogaster with indistinct ornament).

Prodorsum (Figs. 1, 3, 5–7). Rostrum pointed in dorsal view. Lamellar line well developed, sublamellar line weakly developed. Rostral (65–73),



Figs 1–2. *Pergalumna cattienica* sp. n.: 1 — dorsal view, legs not shown; 2 — ventral view, legs and subcapitulum not shown. Scale bar 200 μ m.



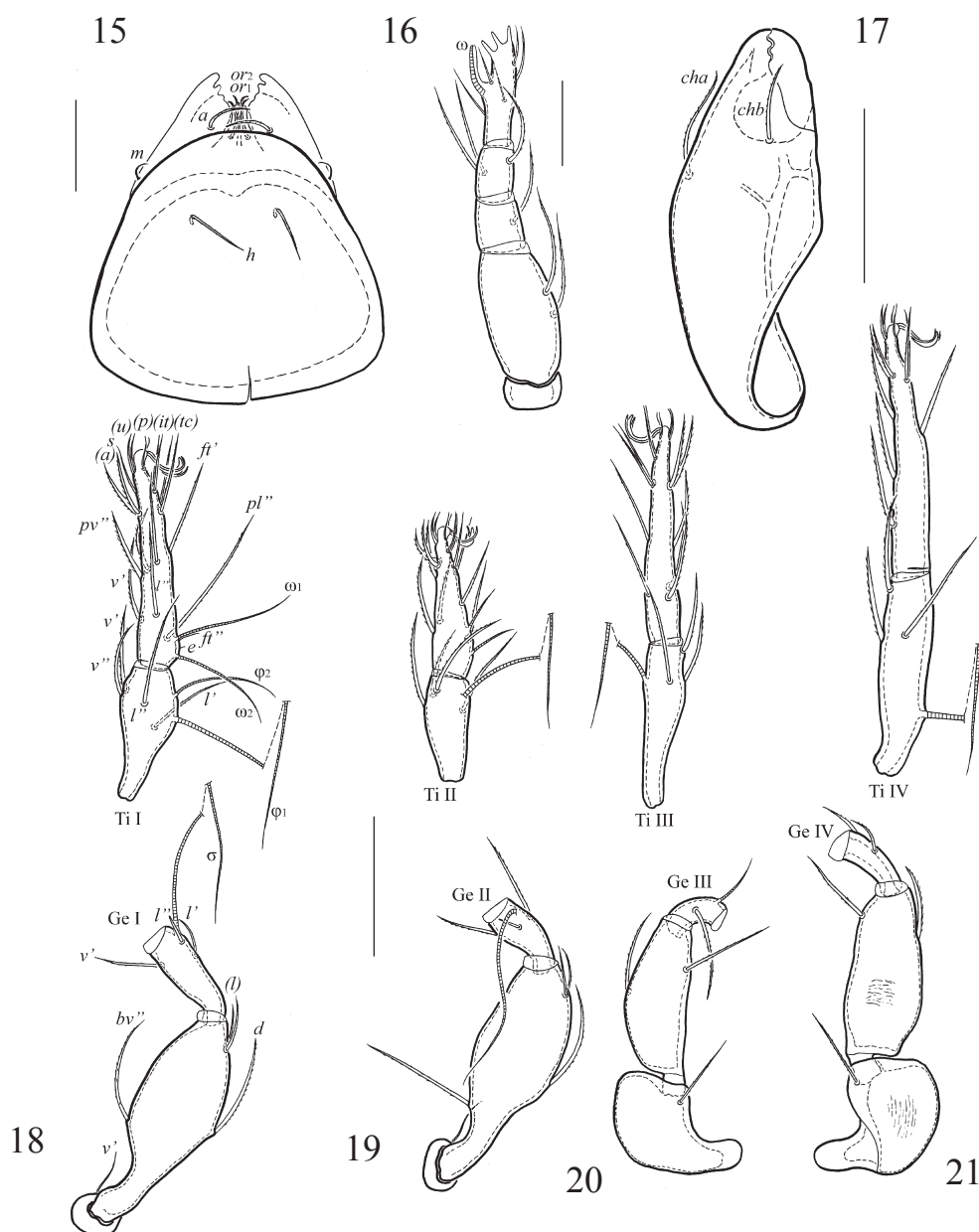
Figs 3–14. *Pergalumna cattienica* sp. n.: 3 — dorso-lateral view of prodorsum; 4 — pteromorpha; 5 — rostrum and rostral seta; 6 — interlamellar seta; 7 — sensillus; 8 — area porosa *Aa*; 9 — area porosa *A1*; 10 — area porosa *A2*; 11 — area porosa *A3*; 12 — genital plate, right; 13 — anal plate, right, and adanal setae; 14 — ovipositor. Scale bar (3, 4, 14) 100 μ m, scale bar (6, 7, 12, 13) 50 μ m, scale bar (5, 8–11) 20 μ m.

lamellar (86–94), interlamellar (143–155) setae and sensilli (147–155) setiform, barbed. Exobothridial setae not observed. A pair of oval areas porosae *Ad* present posterior to interlamellar setae.

Notogaster (Figs. 1, 8–11). Dorsosejugal suture incomplete. Notogastral setae represented by 10 pairs of alveoli. Four pairs of areas porosae: *Aa*

transversely oriented, elongate oval, 45–61 \times 24–29; *A1* rounded, diameter 20–28; *A2* elongate oval, 32–36 \times 16–24; *A3* also elongate oval, 36–41 \times 20–24. Median pore absent. Pteromorphae with branched wrinkles.

Anogenital region (Figs. 2, 12–14). Postanal area porosa absent. Two pairs of anal (24–28),



Figs 15–21. *Pergalumna cattienica* sp. n.: 15 — subcapitulum; 16 — palp; 17 — chelicera; 18 — leg I, left, antiaxial view; 19 — leg II, left, antiaxial view; 20 — leg III, left, antiaxial view; 21 — leg IV, right, antiaxial view. Scale bar (15, 16) 50 μ m, scale bar (17–21) 100 μ m.

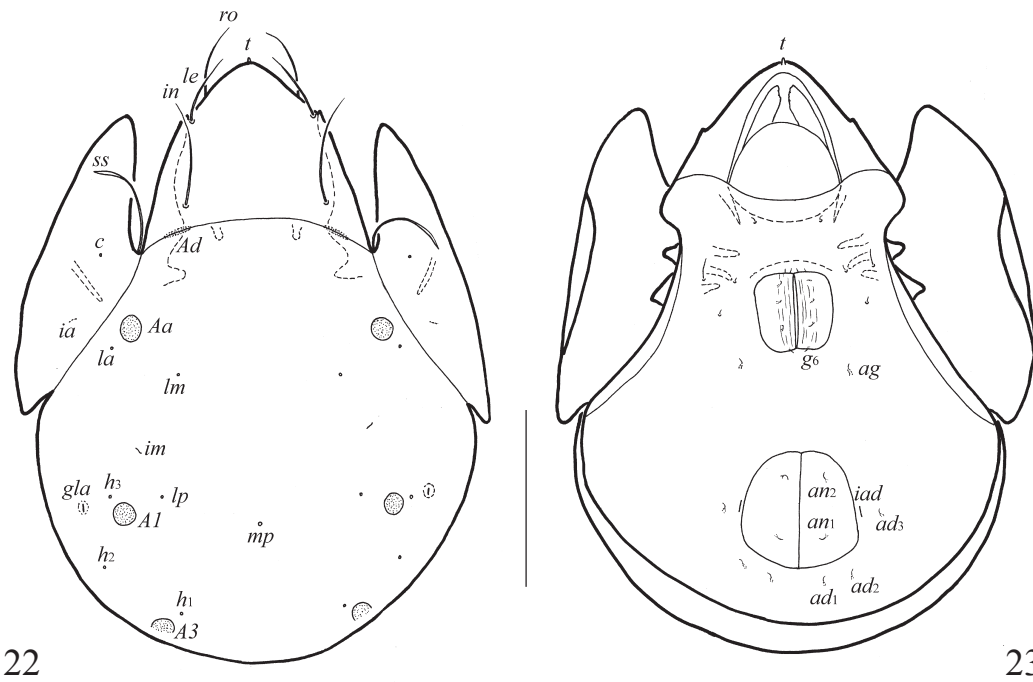
three pairs of adanal (ad_1 53–61, ad_2 49–57, ad_3 16), one pair of aggenital (20), six pairs of genital (28) setae setiform, slightly barbed. Anterior part of genital plates with two setae (g_1 , g_2). Ovipositor typical for Galumnoidea (see Ermilov 2010): elongate, narrow (356×65); length of lobes 151, length of cylindrical distal part 205; setae smooth, $\psi_1 \approx \tau_1$ (49) longer than $\psi_2 \approx \tau_a \approx \tau_b \approx \tau_c$ (32); coronal setae k very short (2–4).

Epimeral region (Fig. 2). Six pairs of setiform, slightly barbed epimeral setae observed. Epimeral setal formula: 1–0–3–2. Setae $3a$ shorter (28) than others (45–53).

Gnathosoma (Figs. 15–17). Subcapitulum longer than wide: 180×168 . Hypostomal setae a , m , h

setiform, slightly barbed; h (41) and a (28) thickened, longer than m (20). Two pairs of setiform, thickened, curved distally, barbed adoral setae (24). Palp (length 147) with setation 0–2–1–3–9 (+1 ω). All setae (except on tarsus) barbed. Chelicera chelate-dentate (length 237). Cheliceral setae long, setiform, barbed: cha (65) longer, than chb (49).

Legs (Figs. 18–21). Formulae 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]; homology of setae and solenidia indicated in Table. Almost all setae well barbed, some ventral setae of tarsi and tibiae with long cilia. Solenidia ω_1 and ω_2 on tarsi II, σ on genua III straight or weakly curved, rod-like. Other solenidia



Figs 22–23. *Pergalumna yurtaevi* sp. n.: 22 — dorsal view, legs not shown; 23 — ventral view, legs, palps and subcapitular setae not shown. Scale bar 200 μ m.

Table
Leg setation and solenidia of *Pergalumna cattienica* sp. n. (same for *Pergalumna yurtaevi* sp. n. and *Galumnella microporosa* sp. n.)

Leg	Trochanter	Femur	Genu	Tibia	Tarsus
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'', e, 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)

Roman letters refer to normal setae (e — famulus), Greek letters refer to solenidia. One apostrophe (') marks setae on anterior and double apostrophe (') setae on posterior side of the given leg segment. Parentheses refer to a pair of setae.

long, setiform. Solenidia ϕ_1 on tibiae IV located in dorso-posterior part of leg segments.

Material examined. Holotype and two paratypes: Vietnam, 11°25'N, 107°25'E, Cat Tien National Park, 149 m a. s. l., in dark loamy soil of lagerstroemia forest, February – March 2009, collected by A.E. Anichkin.

Type deposition. The holotype is deposited in the collection of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia; one paratype is deposited in the collection of the Center for Biodiversity Resources Education and Development (CEBRED), Hanoi National University of Education, Hanoi, Vietnam; one paratype is in the personal collection of the first author.

Etymology. The specific name “*cattienica*” refers to the Cat Tien National Park, where the species was collected.

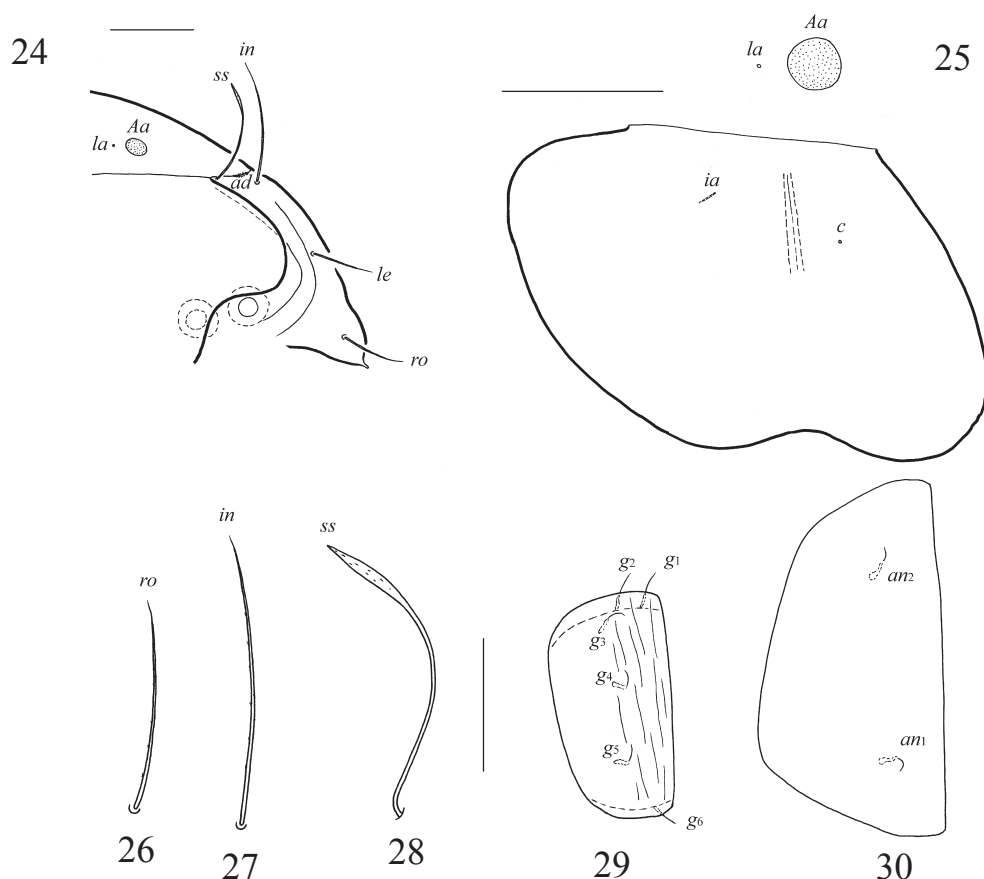
Remarks. In having the combination of a pointed rostrum, long interlamellar setae, setiform

sensilli, four pairs of areae porosae, incomplete dorsosejugal suture and long adanal setae, *P. cattienica* sp. n. is similar only to *P. hauseri* Mahunka, 1995 (see Mahunka 1995) from Malaysia, but differs by the smooth surfaces of notogaster and anogenital region (notogaster punctate and anogenital region striate around genital and anal plates in *P. hauseri*), long adanal setae ad_1 and ad_2 (only ad_1 long in *P. hauseri*).

***Pergalumna yurtaevi* sp. n.**

Figs. 22–30

Diagnosis. *Pergalumna yurtaevi* sp. n. is characterized by the following combination of character states. Body size 664 \times 498; rostrum with small, conical tooth (t); rostral, lamellar and interlamellar setae setiform, slightly barbed; sensilli with long stalk and oblong, dilated, pointed head, which is covered by minute barbs; dorsosejugal suture complete; surface of body smooth;



Figs 24–30. *Pergalumna yurtaevi* sp. n.: 24 — lateral view of prodorsum; 25 — pteromorpha and area porosa *Aa*; 26 — rostral seta; 27 — interlamellar seta; 28 — sensillus; 29 — genital plate, right; 30 — anal plate, right. Scale bar (24, 25) 100 μ m, scale bar (26–30) 50 μ m.

three pairs of almost circular areae porosae, which approximately equal diameter; postanal area porosa absent; genital plates striate.

Description. Body length 664 (holotype); body width 498 (holotype).

Integument. Body brown. Surfaces of body smooth (dorso-lateral parts of notogaster with indistinct ornament). Genital plates striate.

Prodorsum (Figs. 22, 24, 26–28). Rostrum with small (8), conical tooth. Lamellar and sublammellar lines well developed. Rostral (86), lamellar (86) and interlamellar (164) setae setiform, slightly barbed. Sensilli (123) with long stalk (82) and oblong (41), dilated, pointed head, which is covered by minute barbs. Exobothridial setae not observed. A pair of weakly visible, oblong areae porosae *Ad* present posterior to interlamellar setae.

Notogaster (Figs. 22, 25). Dorsosejugal suture complete. Notogastral setae represented by 10 pairs of alveoli. Three pairs of almost circular areae porosae, which approximately equal in diameter (28). Median pore (*mp*) present.

Anogenital region (Figs. 23, 29–30). Postanal area porosa absent. Two pairs of anal, three pairs

of adanal, one pair of aggenital and six pairs of genital setae approximately equal in length (12), setiform, smooth. Anterior part of genital plates with two setae (g_1, g_2).

Epimeral region (Fig. 23). Only four pairs of setiform, smooth epimeral setae observed. Epimeral setal formula: 1–0–2–1. Seta *3c* longer (32) than other three pairs of setae (12).

Legs. Formulae 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]; homology of setae and solenidia indicated in Table. Morphology of setae and solenidia are similar to those of *Pergalumna cattienica* sp. n.

Material examined. Holotype: Vietnam, 11°25'N, 107°25'E, Cat Tien National Park, near Dong Nai river, 115 m a. s. l., on fern *Asplenium nidus* (3 m above ground) of bamboo forest, 24.05.2010, collected by V.A. Zryanin.

Type deposition. The holotype is deposited in the collection of Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia.

Etymology. The species is named in honor of the soil scientist Dr. Andrey A. Yurtaev (Nizhniy

Novgorod State Pedagogical University, Nizhniy Novgorod, Russia) for his constant support of the first author.

Remarks. In having the rostral tooth, long interlamellar setae, sensilli with dilated head, three pairs of rounded areae porosae, complete dorsosejugal suture, striate genital plates, *P. yurtaevi* sp. n. is similar to *P. rotunda* Starý, 2005 (see Starý 2005) from Japan, but differs from the latter by the smaller body size (664 × 498 in new species; 860 × 696 in *P. rotunda*), morphology of rostral, lamellar and interlamellar setae (barbed in new species; smooth in *P. rotunda*), lengths of interlamellar setae and sensilli (*in* longer than *ss*, 164 > 118, in new species; *in* shorter than *ss*, 101 < 130, in *P. rotunda*), morphology of head of the sensilli (head long, more slightly dilated in new species; head short, well dilated in *P. rotunda*), and the postanal area porosa (absent in new species; present in *P. rotunda*).

In having the pointed rostrum, long interlamellar setae, three pairs of areae porosae, complete dorsosejugal suture and striate genital plates, *P. yurtaevi* sp. n. is similar to *P. margaritata* Mahunka, 1989 (see Mahunka 1989) from Vietnam and *P. pseudomargaritata* Mahunka, 1994 (see Mahunka 1994) from Thailand, but differs from both by larger body size (664 × 498 in new species; 451–490 × 328–366 in *P. margaritata*, and 402–447 × 281–315 in *P. pseudomargaritata*) and sensilli with dilated head (sensilli setiform in both *P. margaritata* and *P. pseudomargaritata*).

**Key to Vietnamese species of genus
*Pergalumna***

- 1 Dorsosejugal suture complete 2
- Dorsosejugal suture incomplete 4
- 2 Notogaster with four pairs of areae porosae
..... *P. altera* (Oudemans)
- Notogaster with three pairs of areae porosae ... 3
- 3 Sensilli setiform *P. margaritata* Mahunka
- Sensilli with dilated head *P. yurtaevi* sp. n.
- 4 Notogaster tuberculate or punctate 5
- Notogaster smooth 6
- 5 Notogaster densely tuberculate
..... *P. granulata* Balogh and Mahunka
- Notogaster sparsely punctate
..... *P. punctulata* Balogh and Mahunka
- 6 Four pairs of areae porosae
..... *P. cattienica* sp. n.
- Three pairs of areae porosae 7
- 7 Sensilli smooth ... *P. magnipora capillaris* Aoki
- Sensilli barbed *P. kotschyi* Mahunka

***Galumnella microporosa* sp. n.**

Figs. 31–44

The diagnostic characters of the genus *Galumnella*: lamellar and sublamellar lines well-developed; notogaster with sculptured integument; notogaster with one pair of pores developed dorso-laterally or without pores; ten pairs of alveoli or minute notogastral setae; chelicerae styliform.

Diagnosis. *Galumnella microporosa* sp. n. is characterized by the combination of following character states. Body size 348–381 × 265–282; surface of body and pteromorphs with network pattern and very small foveae; rostrum protruding, rounded in dorsal view; rostral and lamellar setae short, thin; sensilli setiform, ciliate; interlamellar setae minute; ten pairs of minute notogastral setae; one pair of small pores developed dorso-laterally; postanal porose area rounded, very small; anterior part of genital plates with three setae.

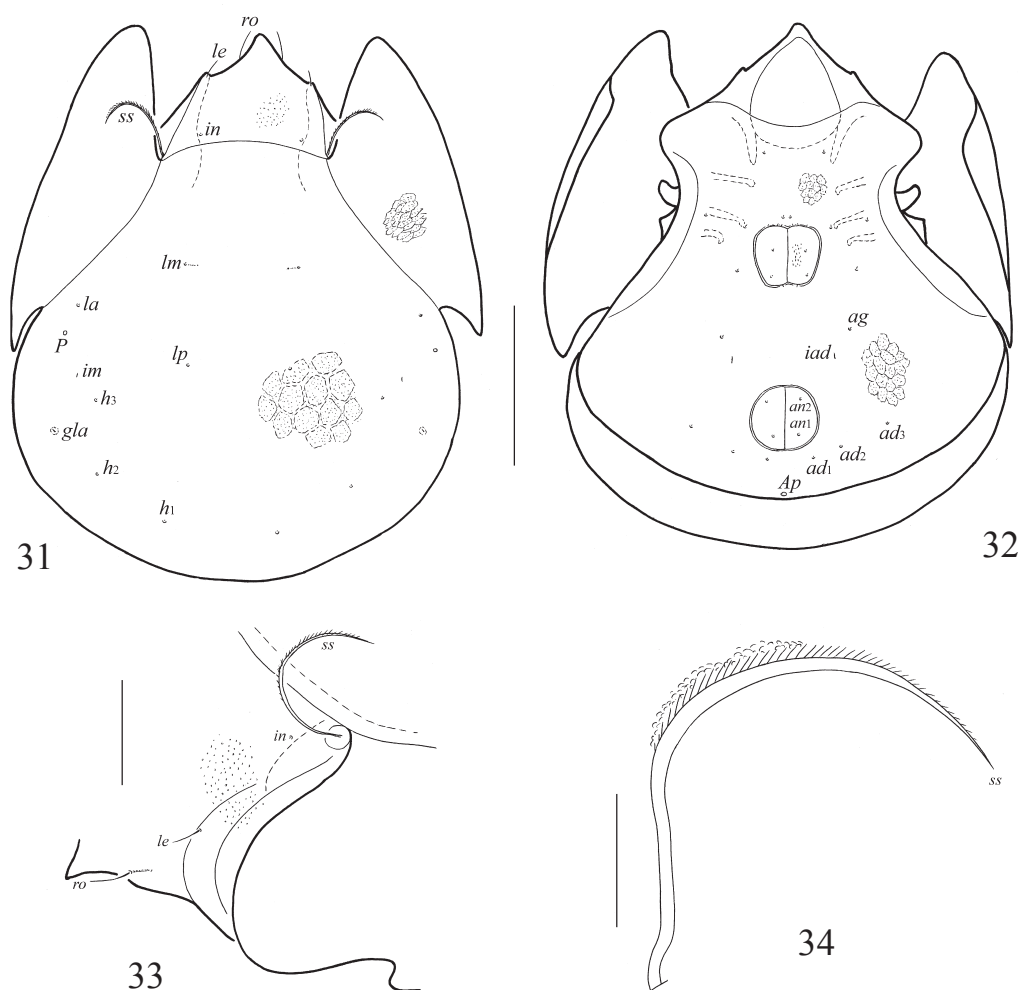
Description. Measurements. Body length 348 (holotype), 348–381 (seven paratypes); body width 265 (holotype), 265–282 (seven paratypes).

Integument. Body color brown. Surface of body and pteromorphs with network pattern (except prodorsum) and very small foveae (diameter less than one micrometer).

Prodorsum (Figs. 31, 33, 34). Rostrum conical, protruding, rounded in dorsal view. Sublamellar line well developed, parallel. Rostral (20) and lamellar (12–16) setae setiform, thin, smooth. Sensilli long (82–94), setiform, with numerous (more than 25) short cilia unilaterally. Interlamellar setae minute (1), visible only under high magnification (more than × 1000). Exobothridial setae and areae porosae *Ad* not observed.

Notogaster (Figs. 31, 35, 36). Dorsosejugal suture complete, slightly convex. Ten pairs of minute notogastral setae, (1), visible only under high magnification (more than × 1000). Lyrifissures *ia* on pteromorphs not observed. One pair of small pores developed dorso-laterally, in position of *Al*.

Anogenital region (Figs. 32, 37, 38). Postanal area porosa (*Ap*) rounded, very small (diameter 4). Two pairs of anal setae, three pairs of adanal setae and one pair of aggenital setae minute (1–2), visible only under high magnification. Six pairs of genital setae longer (4), thin, smooth. Anterior parts of genital plates with three setae. Lyrifissures *iad* in preanal position. Ovipositor typical for Galumnoidea (see Ermilov 2010): elongate narrow (138 × 36); length of lobes 61, length of cylindrical distal part (bDp) 77; setae setiform, smooth, ψ_1



Figs 31–34. *Galumnella microporosa* sp. n.: 31 — dorsal view; 32 — ventral view; gnathosoma and legs not shown; 33 — dorso-anteriorly view of prodorsum; 34 — sensillus. Scale bar (31, 32) 100 μ m, scale bar (33) 50 μ m, scale bar (34) 20 μ m.

$\approx \tau_1$ (32) longer than $\psi_2 \approx \tau_a \approx \tau_b \approx \tau_c$ (16); coronal setae *k* short (4).

Epimeral region (Fig. 32). Apodemes 1, 2, 3 and sejugal, and circumpedal carina well developed. Epimeral setal formula 1–0–3–1. Epimeral setae short (2–4), thin, smooth.

Gnathosoma (Figs. 40–42). Subcapitular mentum longer than wide (73 \times 57). Hypostomal setae *h* presented by alveoli. Palp (length 65) with setation 0–2–1–3–9(+1 ω). All setae (except distal setae on tarsus) barbed. Chelicera long (94–106) with 3–4 blunt teeth on fixed digit and very small teeth on movable digit.

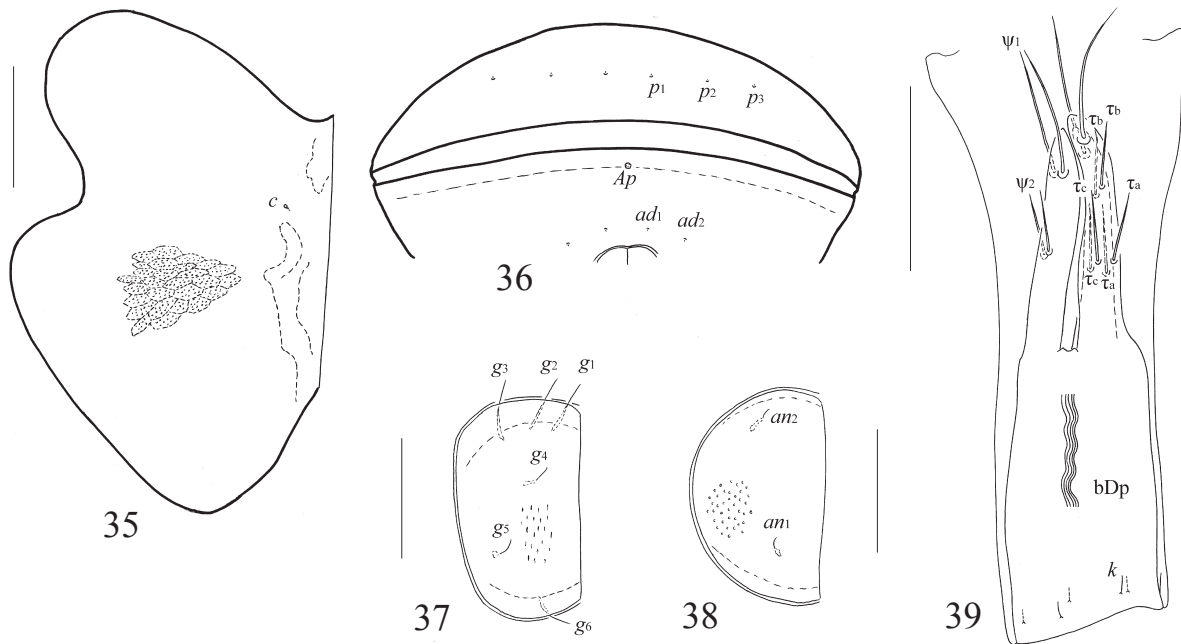
Legs (Figs. 43, 44). Formulae of leg setation and solenidia: I (1–4–3–4–20) [1–2–2], II (1–4–3–4–15) [1–1–2], III (1–2–1–3–15) [1–1–0], IV (1–2–2–3–12) [0–1–0]; homology of setae and solenidia indicated in Table. Almost all setae barbed, some ventral setae of tarsi and tibiae with long cilia. Famulus short, blunt distally. Solenidia ω_1 and ω_2 on tarsi II and σ on genua III rod-like; other solenidia rather long, setiform.

Material examined. Holotype and seven paratypes: Cat Tien National Park, in southern Vietnam, 11°26' N, 107°25' E, approximately 145 m a. s. l., in dark loamy soil of *Lagerstroemia* forest, 20 November 2006, collected by A.E. Anichkin.

Type deposition. The holotype is deposited in the collection of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia; four paratypes are deposited in the collection of the Center for Biodiversity Resources Education and Development (CEBRED), Hanoi National University of Education, Vietnam; three paratypes are in the personal collection of the first author.

Etymology. The specific name “*microporosa*” refers to very small postanal area porosa.

Remarks. Having a clear network pattern on the notogaster, *Galumnella microporosa* sp. n. is similar to *G. angustifrons* Aoki, 1970 (see Aoki 1970) from the Oriental region, *G. cellularis* Balogh and Mahunka, 1967 (see Balogh and Mahunka 1967) from Vietnam, *G. geographica* Mahunka,



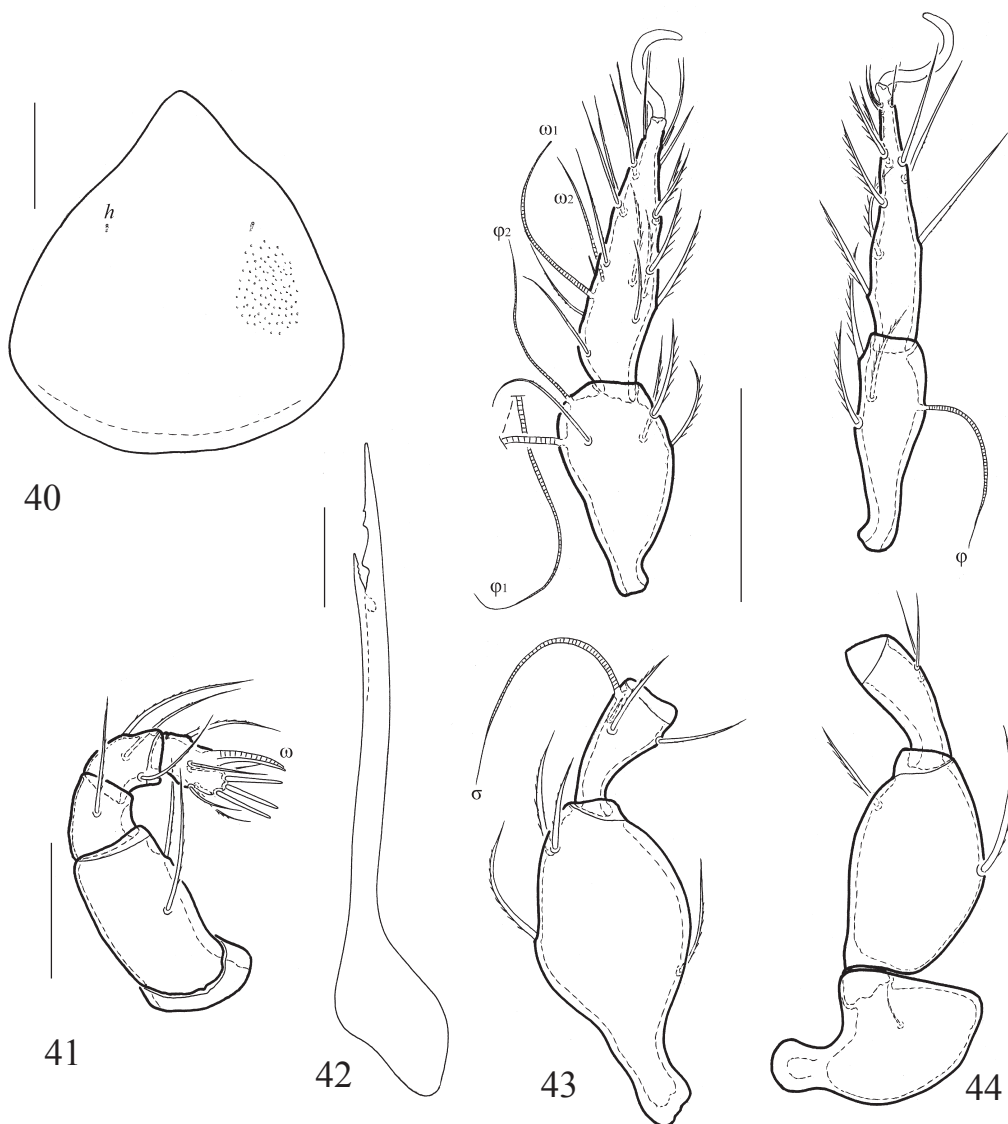
Figs 35–39. *Galumnella microporosa* sp. n.: 35 — pteromorpha; 36 — caudal view; 37 — genital plate, right; 38 — anal plate, right; 39 — ovipositor. Scale bar (35, 39) 50 μm, scale bar (36) 100 μm, scale bar (37, 38) 20 μm.

1995 (see Mahunka 1995) from Borneo, *G. nipponica* Suzuki and Aoki, 1970 (see Suzuki and Aoki 1970) from the Oriental region and the oriental Palearctic, *G. okinawana* Aoki, 2009 (see Aoki 2009) from Japan, *G. punctipennis* Balogh, 1960 (see Balogh 1960) from Congo, *G. rugosa* Balogh, 1960 (see Balogh 1960) from Congo, *G. rugosula* Balogh, 1960 (see Balogh 1960) from Congo, *G. woschitzi* Balogh, 1970 (see Balogh 1970) from New Guinea. *G. microporosa* sp. n. differs from: *G. angustifrons* by the smaller body length (348–381 vs. 415–460 in *G. angustifrons*), pteromorphs with network pattern (without network pattern in *G. angustifrons*), prodorsum and pteromorphs without rugosity (with rugosity in *G. angustifrons*). *G. microporosa* sp. n. is different from *G. cellularis* by the larger body length (348–381 vs. 275 in *G. cellularis*), sensilli setiform (dilated distally in *G. cellularis*), lamellar setae well developed (absent in *G. cellularis*), foveae very small (larger in *G. cellularis*). The new species is distinguishable from *G. geographica* by the absence of network pattern on the prodorsum (present in *G. geographica*), monodactylous legs (tridactylous legs in *G. geographica*). The new species is differentiates from *G. nipponica* by the smaller body length (348–381 vs. 430 in *G. nipponica*), pteromorphs with network pattern (without network pattern in *G. nipponica*), lamellar setae well-developed, setiform (minute in *G. nipponica*). *G. microporosa* sp. n. also differs from *G. okinawana* by the larger body length (348–381 vs. 280–300 in *G. okinawana*), sensilli setiform (dilat-

ed distally in *G. okinawana*), lamellar setae well-developed (absent in *G. okinawana*), pteromorphs with network pattern (without network pattern in *G. okinawana*). From *G. punctipennis* the new species distinguished by the larger body length (348–381 vs. 240–260 in *G. punctipennis*), rostral setae well-developed (invisible in *G. punctipennis*); pteromorphs with network pattern (without network pattern in *G. punctipennis*). It differs from *G. rugosa* by the rostral and lamellar setae being well-developed (absent in *G. rugosa*); pteromorphs with network pattern (without network pattern in *G. rugosa*); from *G. rugosula* by the larger body length (348–381 vs. 242 in *G. rugosula*), rostral and lamellar setae well-developed (invisible in *G. rugosula*), pteromorphs with network pattern (without network pattern in *G. rugosula*). At last, *G. microporosa* sp. n. distinguishes from *G. woschitzi* larger body length (348–381 vs. 299 in *G. woschitzi*), sensilli setiform (slightly dilated distally in *G. woschitzi*), lamellar setae well-developed (absent in *G. woschitzi*), pteromorphs with network pattern (without network pattern in *G. woschitzi*). At present seven species of *Galumnella* have been recorded from Asian region: *G. angustifrons*, *G. cellularis*, *G. geographica*, *G. indica* Balakrishnan, 1989 from India, *G. nipponica*, *G. okinawana*, *G. woschitzi*.

Key to Asian species of *Galumnella*

- 1 Notogaster without network pattern *G. indica* Balakrishnan
- Notogaster with network pattern 2



Figs 40–44. *Galumnella microporosa* sp. n.: 40 — subcapitular mentum; 41 — palp; 42 — chelicera; 43 — leg I, without trochanter, left, paraxial view; 44 — leg IV, left, paraxial view. Scale bar (40–42) 20 μm, scale bar (43, 44) 50 μm.

2 Prodorsum with network pattern
 *G. geographica* Mahunka
 — Prodorsum without network pattern 3
 3 Pteromorphs with network pattern 4
 — Pteromorphs without network pattern 5
 4 Sensilli setiform *G. microporosa* sp. n.
 — Sensilli with dilated head medio-distally
 *G. cellularis* Balogh and Mahunka
 5 Anterior half of prodorsum and marginal area of
 pteromorphs with irregular rugae
 *G. angustifrons* Aoki
 — Anterior half of prodorsum and marginal area
 of pteromorphs without irregular rugae 6
 6 Sensilli strongly lanceolate, slightly barbed dis-
 tally *G. okinawana* Aoki
 — Sensilli slightly lanceolate, strongly barbed
 medio-distally 7

7 Lamellar and interlamellar setae short
 *G. nipponica* Suzuki and Aoki
 — Lamellar and interlamellar setae represented by
 their alveoli *G. woschitzi* Balogh

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