

Contribution to the taxonomy of the *Rotundabaloghia* (*Circobaloghia*) mites (Acari: Uropodina: Rotundabaloghiidae)

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ABSTRACT

Four new *Rotundabaloghia* (*Circobaloghia*) species are described from South America and South-East Asia based on the collection of the Natural History Museum, London, UK. *Rotundabaloghia* (*Circobaloghia*) *salebroza* **sp. nov.** was collected in Malaysia, *Rotundabaloghia* (*Circobaloghia*) *bakerae* **sp. nov.** was found in Sarawak (Malaysia), *Rotundabaloghia* (*Circobaloghia*) *microseta* **sp. nov.** is described from Guyana and *Rotundabaloghia* (*Circobaloghia*) *peritremata* **sp. nov.** was reported from Borneo (Indonesia).

KEYWORDS

soil mites, taxonomy, tropical realms

INTRODUCTION

The *Rotundabaloghia* (*Circobaloghia*) is a widely distributed circumtropical group of the Uropodina mites within the family Rotundabaloghiidae [Kotschán, 2010](#). These mites can be found

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in the Neotropical, Afrotropical, and Oriental regions (Kontschán, 2010). They are well characterized by the homotrich dorsal setation, the absence of large cavities on the ventral shield, and the scutiform or linguliform female genital shield.

In 2008, the author spent ten days in the collection of the Natural History Museum, London, and found four new *Rotundabaloghia* (*Circobaloghia*) species in the unsorted soil samples, which are presented herein.

MATERIAL AND METHODS

The specimen examined were cleared in lactic acid for a week and afterwards, the specimens were investigated on half-covered deep slides with a Leica 1000 microscope. Drawings were made with the aid of a drawing tube on same microscope. The specimen is stored in 75% ethanol and deposited in the Natural History Museum, London.

Abbreviations: *v* = ventral setae, *st* = sternal setae, *ad* = adanal setae, *p* = pores, *lf* = lyriform fissures. All measurements and the scale bars of the figures are given in micrometres (μm).

All information on the original labels is presented between “ ” in the case of the type of materials.

DESCRIPTIONS OF THE NEW SPECIES

Rotundabaloghia salebrosa sp. nov.

(Figures 1–8)

Material examined. Holotype. Female, “Malaya, RA 24 ex. Soil., S Bulock Malaya, 1955–1956 (Avay)”. Paratypes. Three males locality and date same as holotype.

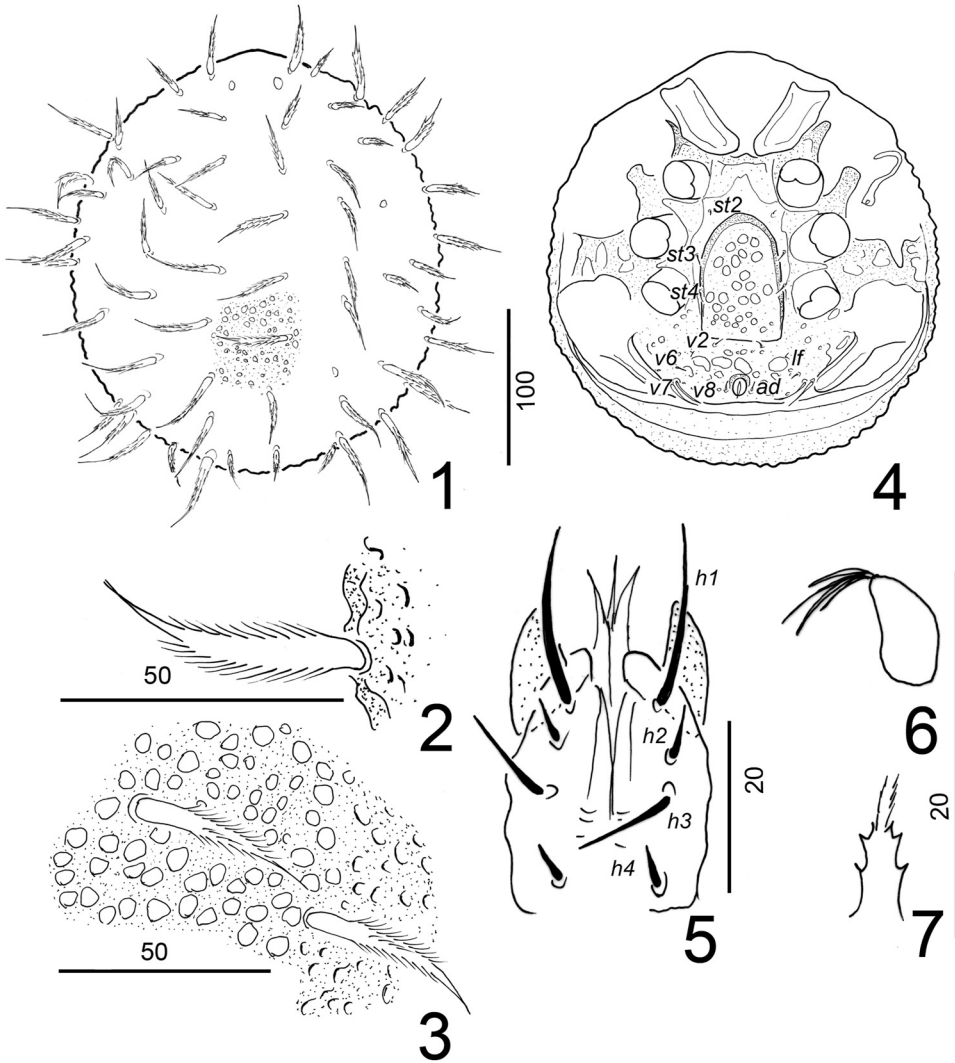
Description.

Female. Length of idiosoma 270, width at level of coxae IV 240 ($n = 1$), color reddish-brown. Shape of idiosoma rounded.

Dorsal idiosoma (Fig. 1). Dorsal shield bears long (ca 40–43) and marginally pilose setae (Figs 2–3) and covered by small (ca 4–5 × 4–5) oval pits.

Ventral idiosoma (Fig. 4). Surface of sternal shield without sculptural pattern, three pairs of smooth and needle-like (ca 5–6 long) sternal setae presented, setae *st1* not visible on single female holotype. Setae *st2* situated at level of posterior margin of coxae II, *st3* at level of mid-coxae III, *st4* at level of mid-coxae IV. Setae *v2* and *v6* similar in shape and length to sternal setae. Setae *v2* situated close to posterior margin of genital shield, *v6* located close to setae *v7* and *v8*. Setae *v7* and *v8* smooth, needle-like and long (ca 23–24) and situated close to posterior end of pedofossae IV. Setae *ad* situated lateral to anal opening, needle-like and ca 6–7 long. One pair of lyriform fissures situated between *v2* and *v6*. Surface of ventral shield covered by large irregular and oval (ca 8–10 × 11–12) and small and oval (ca 4–5 × 4–5) pits. Stigmata situated between coxae II and III. Prestigmatid part of peritreme hook-shaped, poststigmatid part absent. Genital shield linguliform, 80 long and 43 wide, its surface covered by oval pits (ca 6–7 × 6–7), anterior margin rounded. Pedofossae deep and smooth, pedofossae IV with separate furrow for tarsi IV. Base of tritosternum narrow, laciniae subdivided into four smooth branches (Fig. 6).





Figs 1–7. *Rotundabaloghia salebrosa* sp. nov., female, holotype. 1. Dorsal view of idiosoma. 2. Dorsal setae. 3. Dorsal setae and sculptural pattern. 4. Ventral view of idiosoma. 5. Ventral view of gnathosoma. 6. Tritosternum. 7. Basal part of epistome

Gnathosoma (Fig. 5). Corniculi horn-like, internal malae smooth, and longer than corniculi. Hypostomal setae *h1* smooth and long (ca 20–21), *h2* and *h4* smooth and short (ca 5–6) *h3* smooth and ca 12–13 long. Base of epistome with serrated margin and pilose on its apical part (Fig. 7). Palp with smooth and needle-like setae. Chelicerae not clearly visible.

Legs. All legs with a pair of ambulacral claws and with smooth simple setae.



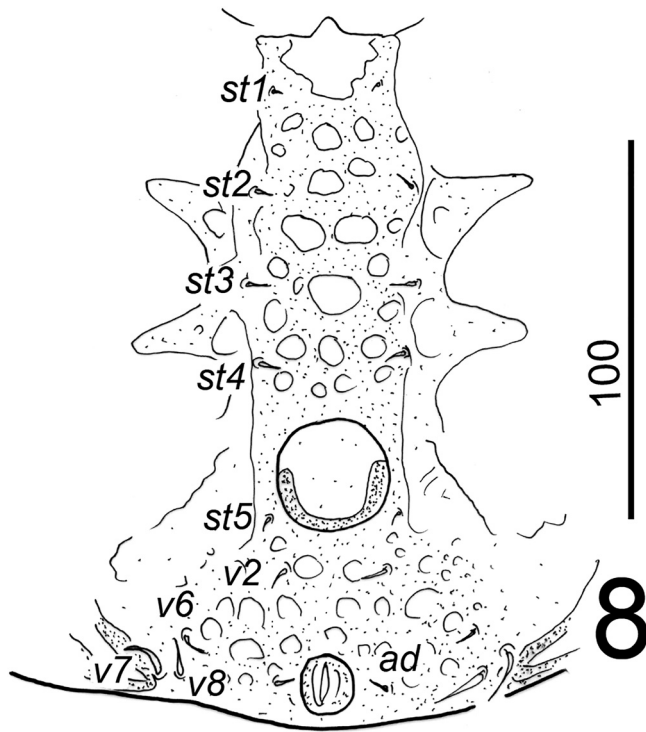


Fig. 8. *Rotundabaloghia salebrosa* sp. nov., male, paratype. Sternal and ventral regions

Male. Length of idiosoma 260–290, width at level of coxae IV 240–250 ($n = 3$), color reddish-brown. Shape of idiosoma rounded.

Dorsal idiosoma. Ornamentation and chaetotaxy of dorsal shield as for female.

Ventral idiosoma (Fig. 8). Five pairs of smooth and needle-like (ca 5–6 long) setae situated on sternal shield. Setae *st1*–*st4* situated anterior to genital opening, *st5* located close to posterior margin of genital shield, position of sternal setae presented on Fig. 8. Position, shape and length of setae *v2*, *v6*, *v7*, *v8* and *ad* as for female. Genital shield rounded (ca 25–27 long and ca 30–33 wide) and situated between coxae IV.

Gnathosoma. Same as in the females.

Larvae and nymphs are unknown.

Etymology. The name of the new species refers to the pit-form large ventral ornamentations.

Notes. The new species resembles resembling to two known Southern-East Asian *Rotundabaloghia* (*Circobaloghia*) species. The most important differences among the three species are presented in Table 1.



Table 1. The distinguishing characteristics among *R. portaligynella* Hirschmann, 1975, *R. rarosi* Hiramatsu & Hirschmann, 1992 (in Hirschmann and Hiramatsu, 1992) and *R. salebroso* sp. nov. (based on females)

	<i>R. portaligynella</i>	<i>R. rarosi</i>	<i>R. salebroso</i> sp. nov.
Surface of genital shield	with small oval pits	with large oval pits	with large oval pits
Surface of sternal shield	with oval pits	with oval pits	without sculptural pattern
Anterior process on the genital shield	present	absent	absent
Setae v_2	between the basis of genital shield and v_6	between the basis of genital shield and v_6	near the basis of genital shield
Setae v_6	close to v_7 and v_8	between v_2 and v_7	close to v_7 and v_8

***Rotundabaloghia bakerae* sp. nov.**

(Figures 9–14)

Material examined. *Holotype.* Female. “Sarawak, Mulu, leaf litter, between roots of rest tree, 29.IX.1977. leg. B. Bolton”. *Paratypes.* Five females “Sarawak, Mulu, leaf litter, between roots of rest tree, 29.IX.1977. leg. B. Bolton”. Five males and three females, “R.G.S. Exp. Mulu Sarawak, rain forest leaf litter from forest path, 24.IX.1977. leg. B. Bolton”.

Description.

Female. Length of idiosoma 330–340, width at level of coxae IV 330–340 ($n = 9$), color reddish-brown. Shape of idiosoma rounded.

Dorsal idiosoma (Fig. 9). Dorsal shield bears long (ca 31–34) and marginally pilose setae (Figs 10 and 11) and covered by small (ca $2-3 \times 2-3$) oval pits. One pair of lyriform fissures situated on central area of dorsal shield.

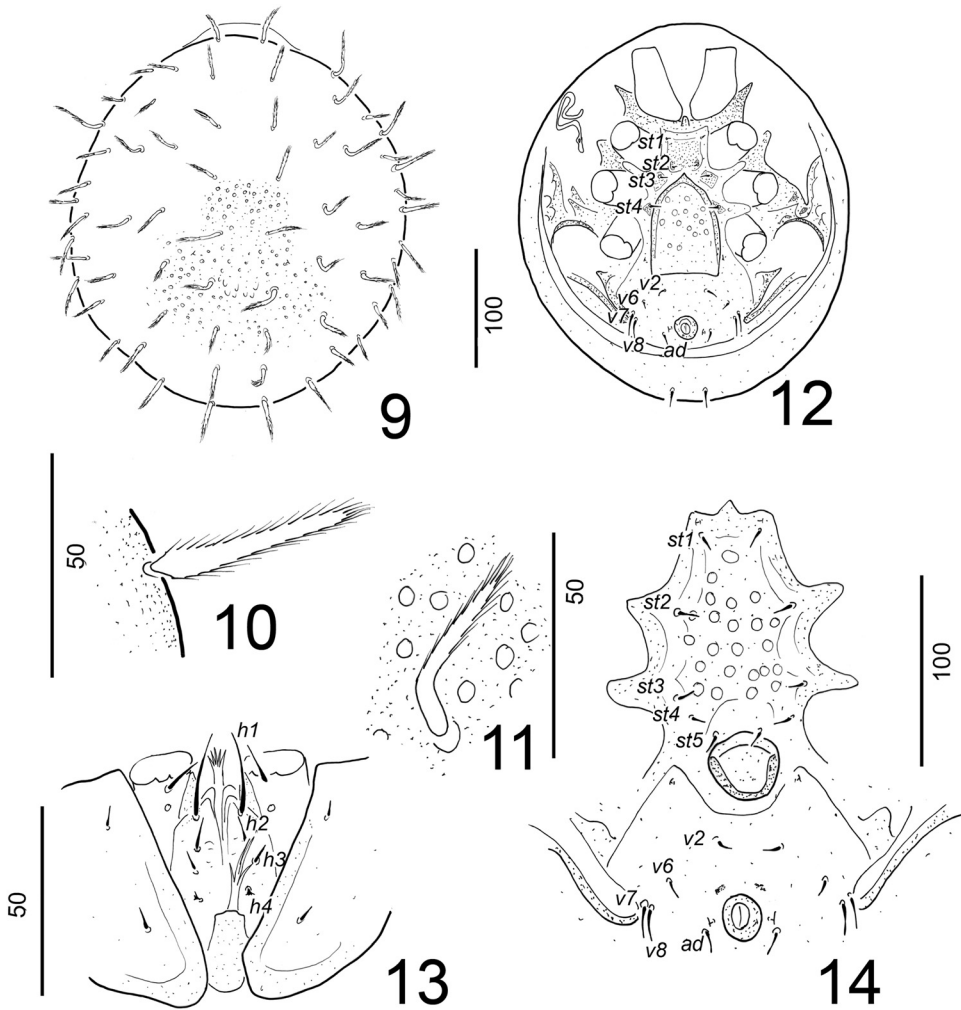
Ventral idiosoma (Fig. 12). Surface of sternal shield without sculptural pattern. All sternal setae smooth and needle-like, st_1 and st_2 short (ca 3–4), st_3 and st_4 long (ca 9–10). Sternal setae st_1 situated at level of anterior margin of coxae II, st_2 at level of posterior margin of coxae II, st_3 at level of anterior margin of coxae III, st_4 at level of posterior margin of coxae III. Setae st_1 and st_2 situated on large quadrangular shallow depression, st_3 and st_4 on a small and shallow depressions. Setae v_2 and v_6 similar in shape and length to st_3 and st_4 . Setae v_2 situated posterior to basal margin of genital shield, v_6 located between setae v_2 and v_7 . Setae v_7 and v_8 smooth, needle-like and long (ca 16–21) and situated close to posterior end of pedofossae IV. Setae ad situated lateral to anal opening, similar in shape and length to v_2 and v_6 . One pair of lyriform fissures situated lateral to anal opening. Surface of ventral shield smooth. Stigmata situated between coxae II and III. Prestigmatid part of peritreme R-shaped, poststigmatid part very short.

Genital shield linguliform, 80–88 long and 43–50 wide, its surface covered by oval pits (ca $5-6 \times 6-7$), anterior peaked. Pedofossae deep and smooth, pedofossae IV with separate furrow for tarsi IV. Base of tritosternum narrow, laciniae subdivided into four smooth branches (Fig. 13).

Gnathosoma (Fig. 13). Corniculi horn-like, internal malae smooth, and shorter than corniculi. Hypostomal setae h_1 smooth and long (ca 21–23), h_2 (8–10) and h_3 (6–7) smooth and short, h_4 trifurcated and ca 4–7 long. Base of epistome with serrated margin and pilose on its apical part. Palp with smooth and needle-like setae. Chelicerae not clearly visible.

Legs. All legs with a pair of ambulacral claws and with smooth simple setae.





Figs 9–14. *Rotundabaloghia bakerae* sp. nov., female, holotype. 9. Dorsal view of idiosoma. 10. Dorsal setae. 11. Dorsal setae and sculptural pattern. 12. Ventral view of idiosoma. 13. Ventral view of gnathosoma. 14. Sternal and ventral regions of male paratype

Male. Length of idiosoma 340–360, width at level of coxae IV 290–300 ($n = 5$), color reddish-brown. Shape of idiosoma rounded.

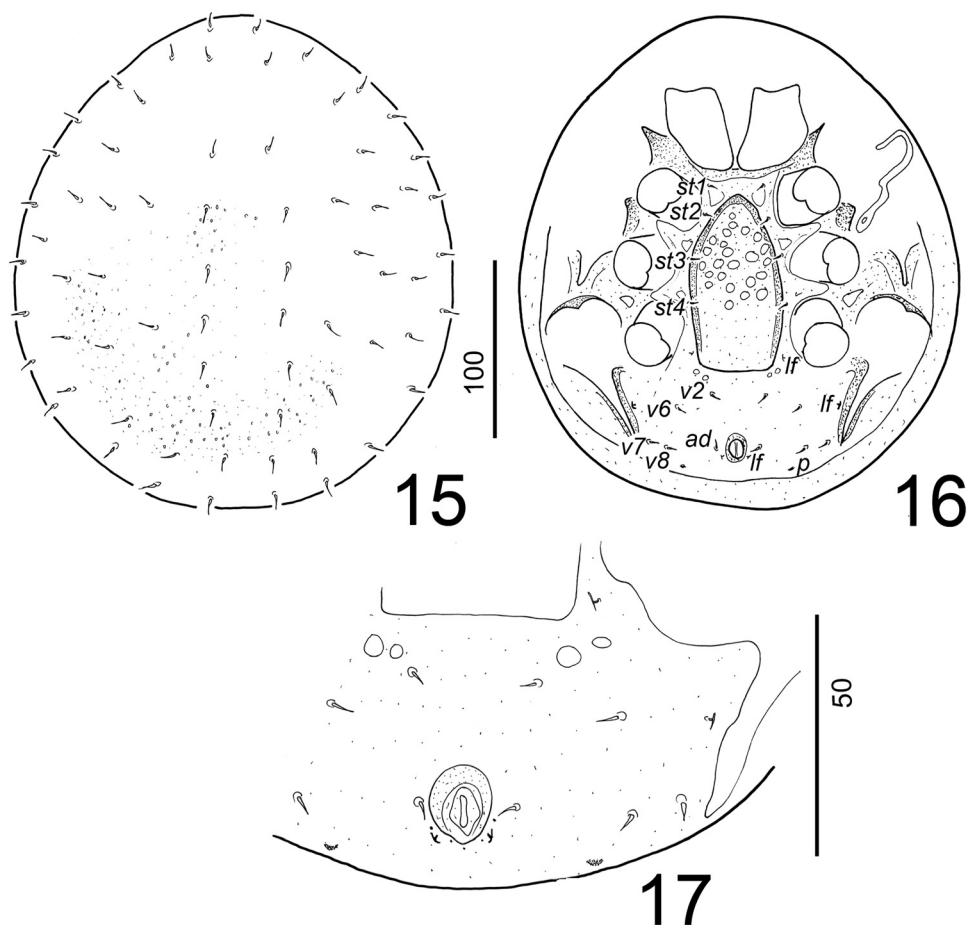
Dorsal idiosoma. Ornamentation and chaetotaxy of dorsal shield as for female.

Ventral idiosoma (Fig. 14). Five pairs of smooth and needle-like (ca 9–11 long) setae situated on sternal shield. Setae *st1*–*st5* situated anterior to genital opening, position of male sternal setae illustrated in Fig. 14. Position, shape and length of setae *v2*, *v6*, *v7*, *v8* and *ad* as for female.

Genital shield rounded, a little trapezoid (35–37 long and 33–35 wide) and situated between coxae IV.

Gnathosoma. Same as in the females.





Figs 15–17. *Rotundabaloghia microseta* sp. nov., female, holotype. 15. Dorsal view of idiosoma. 16. Ventral view of idiosoma. 17. Ventral setae

Larvae and nymphs are unknown.

Etymology. This species is dedicated to Dr Anne Baker, excellent acarologist, who was the host of the author in London.

Notes. The shallow depressions on the sternal shield, the R-shaped peritreme and the alveolar ornamentation of the genital shield are unique character combination of this subgenus in the species of South-East Asia.

Rotundabaloghia microseta sp. nov.

(Figures 15–17)

Material examined. *Holotype.* Female “Brit Guiana, litter in trees Trauraculli, Abary river, 2.II.1961. leg. T.Clay”.



Description.

Female. Length of idiosoma 270, width at level of coxae IV 240 ($n = 1$), color reddish-brown. Shape of idiosoma rounded.

Dorsal idiosoma (Fig. 15). Dorsal shield bears short (ca 8–10), smooth and needle-like setae (Figs 10 and 11) and covered by small (ca $2\text{--}3 \times 2\text{--}3$) oval pits.

Ventral idiosoma (Fig. 16). Surface of sternal shield without sculptural pattern. All sternal setae (ca 5–7), smooth and needle-like. Sternal setae *st1* situated at level of anterior margin of coxae II, *st2* at level of mid-coxae II, *st3* at level of mid-coxae III, *st4* at level of posterior margin of coxae III. Three shallow and small irregular depressions situated between *st1* and *st2*, *st2* and *st3*, and *st3* and *st4*. Ventral setae similar in shape and length to sternal setae. Setae *v2* situated posterior to basal margin of genital shield, *v6* located between setae *v2* and *v7*. Setae *v7* and *v8* and situated close to posterior end of pedofossae IV. Setae *ad* situated lateral to anal opening, similar in shape and length to ventral setae. One pair of lyriform fissures situated lateral to basal edges of genital shield, one pair close to pedofossae IV. One pair of poroids close to posterior margin of ventral shield. Surface of ventral shield smooth, only two pairs of oval pits situated close to basal edge of genital shield. anal opening (Fig. 17). Stigmata situated between coxae II and III. Prestigmatid part of peritreme hook-shaped, poststigmatid part absent.

Genital shield scutiform, 98 long and 52 wide, its surface covered by oval pits (ca $5\text{--}6 \times 6\text{--}7$). Pedofossae deep and smooth, pedofossae IV with separate furrow for tarsi IV.

Gnathosoma and tritosternum not visible, covered by coxae I.

Legs. All legs with a pair of ambulacral claws and with smooth simple setae.

Male, larvae and nymphs are unknown.

Notes. The short smooth and needle-like dorsal and ventral setae, oval pits on scutiform female genital shield and the smooth ventral shield are unique character combination within the subgenus *Circobaloghia*.

***Rotundabaloghia peritremata* sp. nov.**

(Figures 18–22)

Material examined. Holotype. Female. “Soil samples, Roy. Soc. N. Borneo Exp. GP, Leg. Askew 1964, B180”. Paratypes. Six females and five males, locality and date same as holotype.

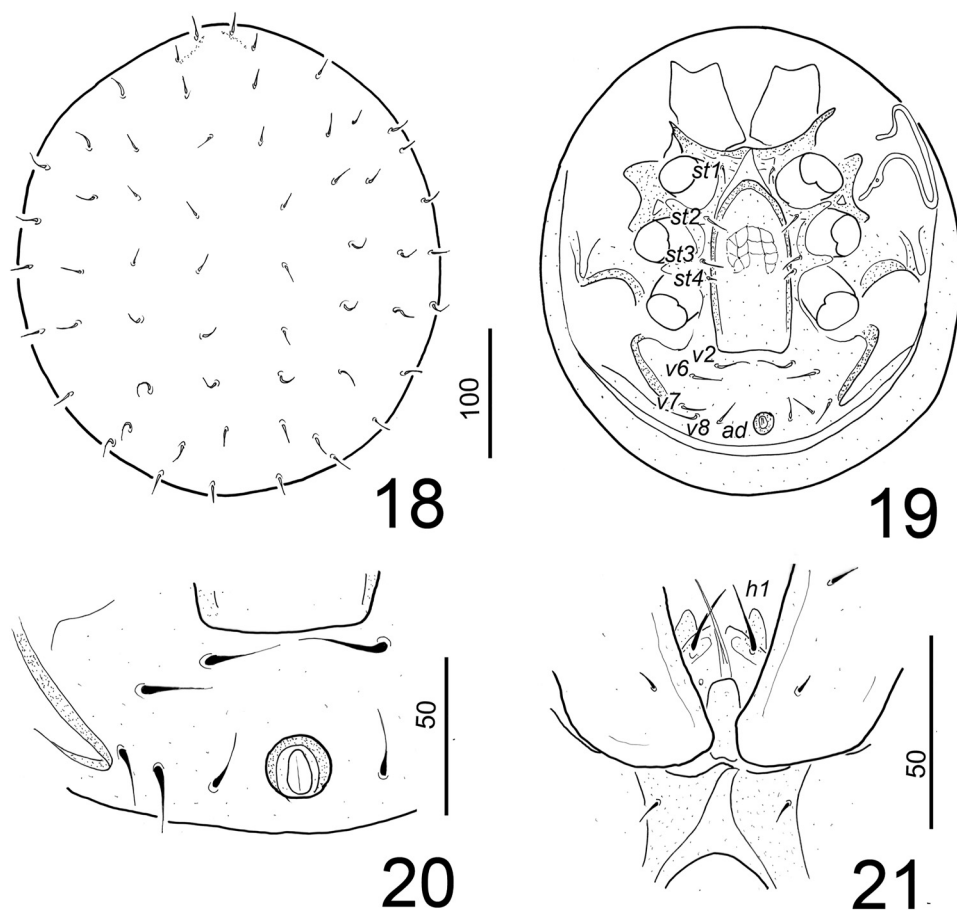
Description.

Female. Length of idiosoma 340–350, width at level of coxae IV 290–310 ($n = 7$), color reddish-brown. Shape of idiosoma rounded.

Dorsal idiosoma (Fig. 18). Dorsal shield bears short (ca 10–12) smooth setae. Dorsal shield without sculptural pattern.

Ventral idiosoma (Fig. 19). Surface of sternal shield without sculptural pattern. All sternal setae smooth and needle-like, *st1*, *st2* and *st3* long (ca 14–17), *st4* short (ca 8–9). Sternal setae *st1* situated at level of anterior margin of coxae II, *st2* at level of posterior margin of coxae II, *st3* at level of posterior margin of coxae III, *st4* at level of mid-coxae IV. Ventral setae long (ca 20–22) and smooth. Setae *v2* situated close to basal edges of genital shield, *v6* located close to *v2*. Setae *v7* and *v8* situated close to posterior end of pedofossae IV. Setae *ad* situated lateral to anal opening, similar in shape and length to ventral setae. Surface of ventral shield smooth (Fig. 20). Stigmata situated between coxae II and III. Prestigmatid part of peritreme longa and mushroom-shaped, poststigmatid part very short.





Figs 18–21. *Rotundabaloghia peritremata* sp. nov., female, holotype. 18. Dorsal view of idiosoma. 19. Ventral view of idiosoma. 20. Ventral setae. 21. Ventral view of gnathosoma

Genital shield linguliform, 125–131 long and 55–61 wide, its surface covered by web-like sculptural pattern, anterior margin peaked. Pedofossae deep and smooth, pedofossae IV with separate furrow for tarsi IV. Base of tritosternum narrow, laciniae subdivided into four smooth branches (Fig. 21).

Gnathosoma (Fig. 21). Corniculi horn-like, internal malae smooth, and shorter than corniculi. Hypostomal setae *h1* smooth and long (ca 21–23), other part of gnathosoma not clearly visible.

Legs. All legs with a pair of ambulacral claws and with smooth simple setae.

Male. Length of idiosoma 330–350, width at level of coxae IV 290–310 ($n = 5$), color reddish-brown.

Dorsal idiosoma. Ornamentation and chaetotaxy of dorsal shield as for female.



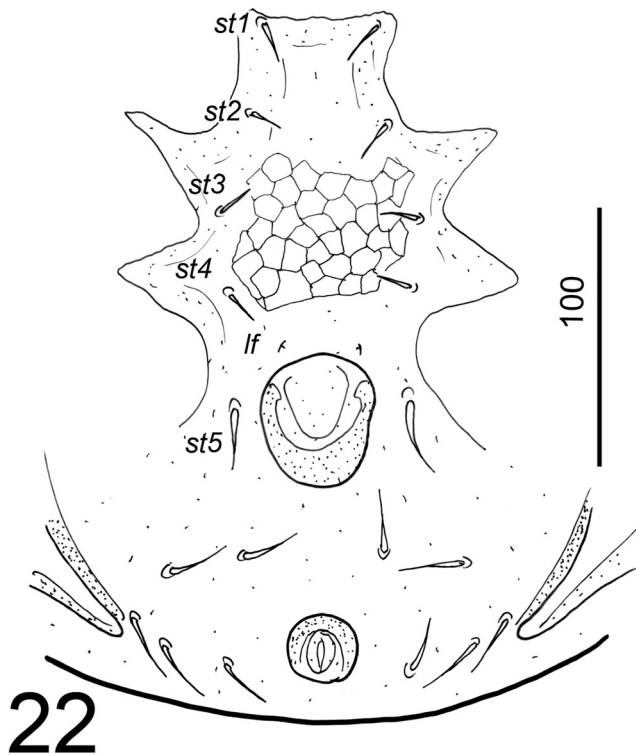


Fig. 22. *Rotundabaloghia peritremata* sp. nov., male, paratype. Sternal and ventral regions

Ventral idiosoma (Fig. 22). Five pairs of smooth and needle-like, *st1*–*st4* ca 15–17 long and situated anterior to genital opening, *st5* ca 24–27 and inserted lateral to anal opening. Surface of sternal shield with web-like sculptural pattern. One pair of lyriform fissures situated close to anterolateral margin of genital opening. Position, shape and length of setae *v2*, *v6*, *v7*, *v8* and *ad* as for female. Genital shield rounded, a little trapezoid (48–52 long and 41–43 wide) and situated between coxae IV.

Gnathosoma. Same as in the females.

Larvae and nymphs are unknown.

Etymology. The name of the new species refers to characteristic mushroom-form peritreme.

Notes. The characteristic-form of peritreme and the reticulate ornamentation on the genital shield of female and sternal shield of male are unique combination in the species of this sub-genus in South-East Asia.

Conflict of interest: JK is a member of the Editorial Board of the journal and was not involved in the review process in any capacity.



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