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Three new Uropodina mites (Acari: Mesostigmata) from Singapore

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Abstract: Three new Uropodina mite species are described from Singapore. *Hutufeideria singaporensis* sp. nov. differs from the other *Hutufeideria* Hirschmann & Hiramatsu, 1977 species by the shape of the pygidial and genital shields and by the shape of sternal and dorsal setae. *Phymatodiscus insolitus* sp. nov. has a very specific character within the genus *Phymatodiscus* Berlese, 1917: the dorsal eye-like depressions are very small and hidden. The position and shape of ventral setae in the third species [*Rotundabaloghia (Circobaloghia) singaporica* sp. nov.] are unique within the subgenus *Circobaloghia* Kontschán, 2010b. New keys are given to all species of the genera *Hutufeideria* and *Phymatodiscus*, and a new key to the South-East Asian members of the subgenus *Rotundabaloghia (Circobaloghia).*

Keywords: South-East Asia - taxonomy - turtle-mites.

INTRODUCTION

Meyers *et al.* (2000) recognized 25 important global "biodiversity hotspots" which have high numbers of endemic species and are endangered by human impact on natural habitats. Four of these hotspots are found in South-East Asia, namely Indo-Burma (Myanmar, Laos, Cambodia, Thailand and Vietnam), Sundaland (Brunei, Malaysia and the western part of Indonesia), Wallacea (eastern part of Indonesia) and the Philippines. There the rates of endemism are about 30-60% in mammals, 10-40% in birds and 40-80% in reptiles and amphibians (Sodhi *et al.*, 2004). However, the invertebrate fauna of South-East Asia is still poorly investigated (De Jong, 2004), and one of the characteristic groups of tropical soil mites, the Uropodina, is almost unknown in this region. Only 1-10 species are recorded from most of these countries. The faunas of some better studied areas (Philippines and Java) counts to only ca 50 species, but there are several countries where the Uropodina fauna is completely unknown (Wiśniewski, 1993).

In the last decade some new genera (*Depressorotunda* Kontschán, 2010a; *Editella* Kontschán, 2011; *Sumatrella* Kontschán, 2015b; *Trachyibana* Kontschán, 2015c) were discovered and numerous new species were named and described from this region (see Kontschán, 2010a, b, 2011, 2015a, b, c; Kontschán & Kiss, 2015; Kontschán & Starý, 2011, 2012), but the knowledge of the Uropodina fauna of South-East Asia is far from complete, some regions are absolutely unknown. One of them is Singapore from where no species have been recorded so far.

In the last years the first author spent several days in the Arachnida collection of the Natural History Museum of Geneva, where he sorted out unidentified South-East Asian Uropodina. Here we present a new result of these visits: the descriptions of three new species from Singapore.

MATERIAL AND METHODS

Specimens were cleared in lactic acid and drawings were made with the aid of a drawing tube attached to a Leica DM 1000 compound microscope. All specimens are stored in ethanol and deposited in the Natural History Museum of Geneva (MHNG). The nomenclature of the ventral setation, the generic and subgeneric systems, and the diagnoses of these taxa follow Kontschán (2010a, 2011) and Kontschán & Starý (2011, 2012). The chelicerae of Uropodina are often hidden inside the body, and in that case they cannot be observed without breaking the specimens. To avoid such undue damage, we did not study this character, except if the chelicerae were seen outside the body. All measurements and the scales in the figures are given in micrometres (μm).

Abbreviations: ad = adanal setae, h = hypostomal setae, pa = postanal setae, St = sternal setae, V = ventral setae.

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TAXONOMY

Hutufeideria singaporensis sp. nov.

Figs 1-11

Holotype: MHNG, sample Bru-88/74; female; "Singapore, Sentosa Island (partie occidentale), Nature Wall, prélèvement de sol au pied d'*Elaeocarpus pedunculatus*, env. 60 m; 6.XII.1988"; leg. B. Hauser (Berlese à Genève).

Paratypes: MHNG; 4 females and 3 males; same data as for holotype. – MHNG, sample Bru-88/5; seven females; "Singapore, Island Country Club, situé entre Lower Peirce Resevoir et Windsor Park Estate, restes de forêt primaire entourés de forêt secondaire, prélèvement de sol au pied d'un grand arbre vivant, env. 60 m; 12.XI.1988"; leg. B. Hauser (Berlese à Bandar Seri Begawan, Brunei).

Diagnosis: Genital shield scutiform, its surface with reticulate sculptural pattern. St2 and St3 marginally serrate, other sternal setae smooth. Pygidial shield posteriorly fused to caudal part of marginal shield. Marginal setae finely pilose. The new species differs from the other known *Hutufeideria* species by the shape (scutiform) and the reticulate sculptural pattern of its genital shield in females and by the shape of the pygidial shield which is fused to the marginal shield.

Description of female: Length of idiosoma 580-720, width 400-430 (n=12). Its shape triangular, posterior margin rounded, color reddish brown.

Dorsal side of idiosoma (Fig. 1): Marginal and dorsal shields completely separated. Setae on dorsal shield wide, phylliform (about 48-50 long) (Figs 2-3). Dorsal shield with an elevated area in caudocentral region, posterior margin of elevated area triangular. Surface of central part of dorsal shield with irregular pits (Fig. 2). Lateral margins of dorsal shield undulate. Pygidial shield large, posteriorly fused to marginal shield. Pygidial shield without setae, but bearing a strongly sclerotized, U-shaped groove. Marginal shield without ornamentation and bearing finely pilose marginal setae (about 44-47 long) (Fig. 3).

Ventral side of idiosoma (Fig. 4): Sternal shield without sculptural pattern, but a small reticulate area presented around genital opening. Sternal setae St1 (about 8-10), St4 (about 14-15) and St5 (about 42-43 long) smooth, needle-like, St2 (about 23-25) and St3 (about 30-31 long) marginally serrate. St1 situated close to anterior margin of sternal shield, St2 at level of central area of coxae II, St3 at level of anterior margin of coxae III, St4 at level of central area of coxae III, St5 close to proximal edges of genital shield. Numerous long (about 42-55) and marginally pilose setae situated on ventral shield. Setae *ad* similar in shape to ventral setae, but shorter (about 35-40 long) and situated laterally to anal opening. One pair of lyrifissures situated posterior to St1. Stigmata situated close to coxae III. Prestigmatid part of peritremes M-shaped, poststigmatid part absent. Genital shield scutiform, its surface with reticulate sculptural pattern. Base of tritosternum narrow, tritosternal laciniae subdivided into four smooth, marginally pilose branches. Pedofossae deep, their surface smooth, separated furrows for tarsi IV absent.

Gnathosoma (Fig. 5): Corniculi horn-like, with an inner tooth, internal malae smooth and longer than corniculi. Hypostomal setae as follows: h1 long (about 100-103) and divided into one marginally serrate and two smooth branches. Setae h2 and h3 short (about 16-20), h2 smooth and robust, h3 apically serrate, h4 marginally serrate and short (about 23-25). Apical part of epistome marginally pilose. Palpal tochanter with two marginally serrate ventral setae, one short and the other long; femur of palp with a serrate lateral seta; other setae on palp smooth. Chelicera with sclerotized internal node; fixed and movable digits long and narrow, each bearing one tooth (Fig. 6).

Legs (Figs 7-10): Leg I without claws on tip of tarsus. All legs with marginally serrate setae and with needle-like setae; each femur bearing flap-like ventral process.

Description of male: Length of idiosoma 550-660, width 390-410 (n=3).

Dorsal side of idiosoma: Ornamentation and chaetotaxy of dorsal shield as in female.

Ventral side of idiosoma (Fig. 11): Four pairs of sternal setae situated anterior and one pair posterior to genital shield. St1 (about 30-32) marginally serrate, situated near anterior margin of sternal shield; St2 marginally pilose (about 39-40), at level of posterior margin of coxae II; St3 marginally serrate (about 27-30), at level of posterior margin of coxae III; St4 short (about 10-12) and spine-like, situated near anterior margin of genital shield; St5 (about 30-33) at level of posterior margin of genital shield. Surface of sternal shield smooth. Surface of ventral shield, and shape and size of ventral setae as in female. Genital shield oval, with some pits on its surface and situated between coxae IV.

Larva and nymphs unknown.

Etymology: The name of the new species, a latinized adjective, refers to the type locality.

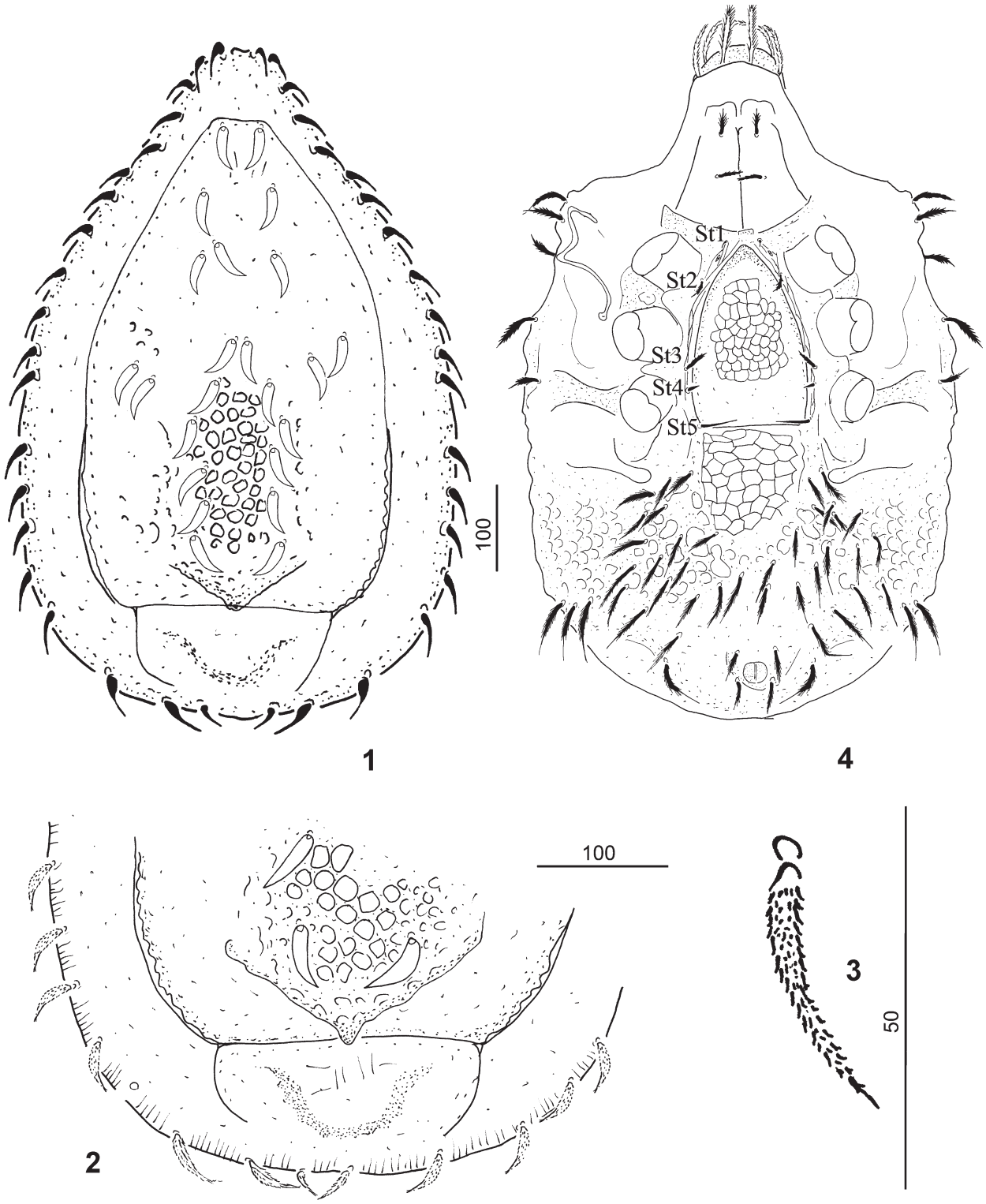
Phymatodiscus insolitus sp. nov.

Figs 12-22

Holotype: MHNG, sample Bru-88/5; female; "Singapore, Island Country Club, situé entre Lower Peirce Resevoir et Windsor Park Estate, restes de forêt primaire entourés de forêt secondaire, prélèvement de sol au pied d'un grand arbre vivant, env. 60 m; 12.XI.1988"; leg. B. Hauser (Berlese à Bandar Seri Begawan, Brunei).

Paratypes: MHNG; two females; locality and date same as for holotype.

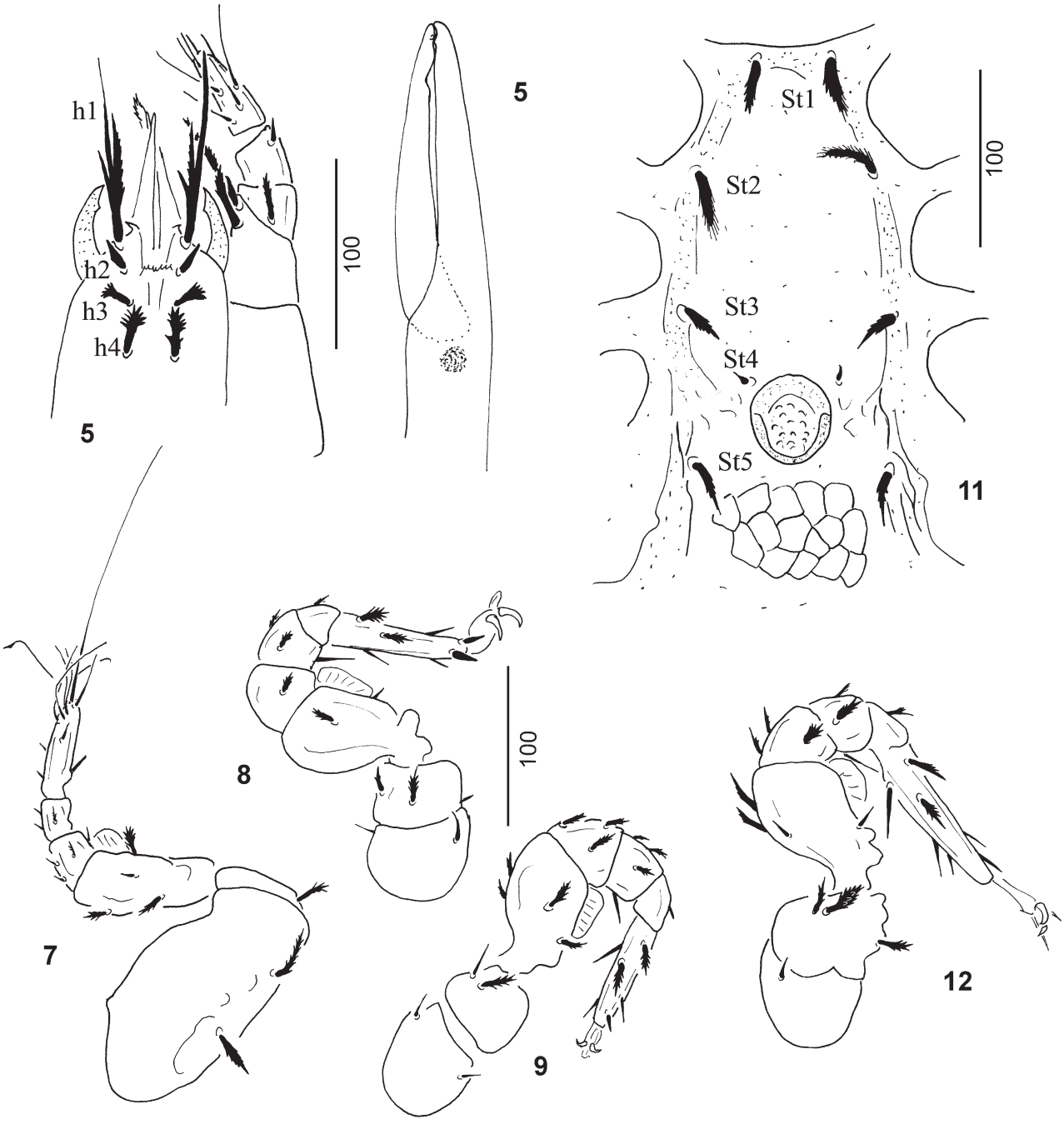
Diagnosis: Eye-like transversal furrows small and partly covered by dorsal shield. Four pairs of marginally serrate setae situated in caudo-central part of dorsal shield. Genital shield of females scutiform, ventral setae posterior to genital shield short and needle-like. Five (*P. aoki* Hiramatsu, 1985; *P. haradai* Hiramatsu, 1985; *P. kuni* Kontschán & Starỳ, 2011; *P. malayicus* Kontschán & Starỳ, 2012 and *P. oculatus* Hirschmann



Figs 1-4. *Hututeideria singaporensis* sp. nov., female holotype. (1) Body in dorsal view. (2) Caudal area of dorsal idiosoma, dorsal view. (3) Marginal seta. (4) Body in ventral view.

in Hirschmann & Hiramatsu, 1977) of the described *Phymatodiscus* species have one pair of deep, eye-like, transversal furrows bordered with long setae on level of coxae IV, but in the new species these furrows are small and not bordered with long setae.

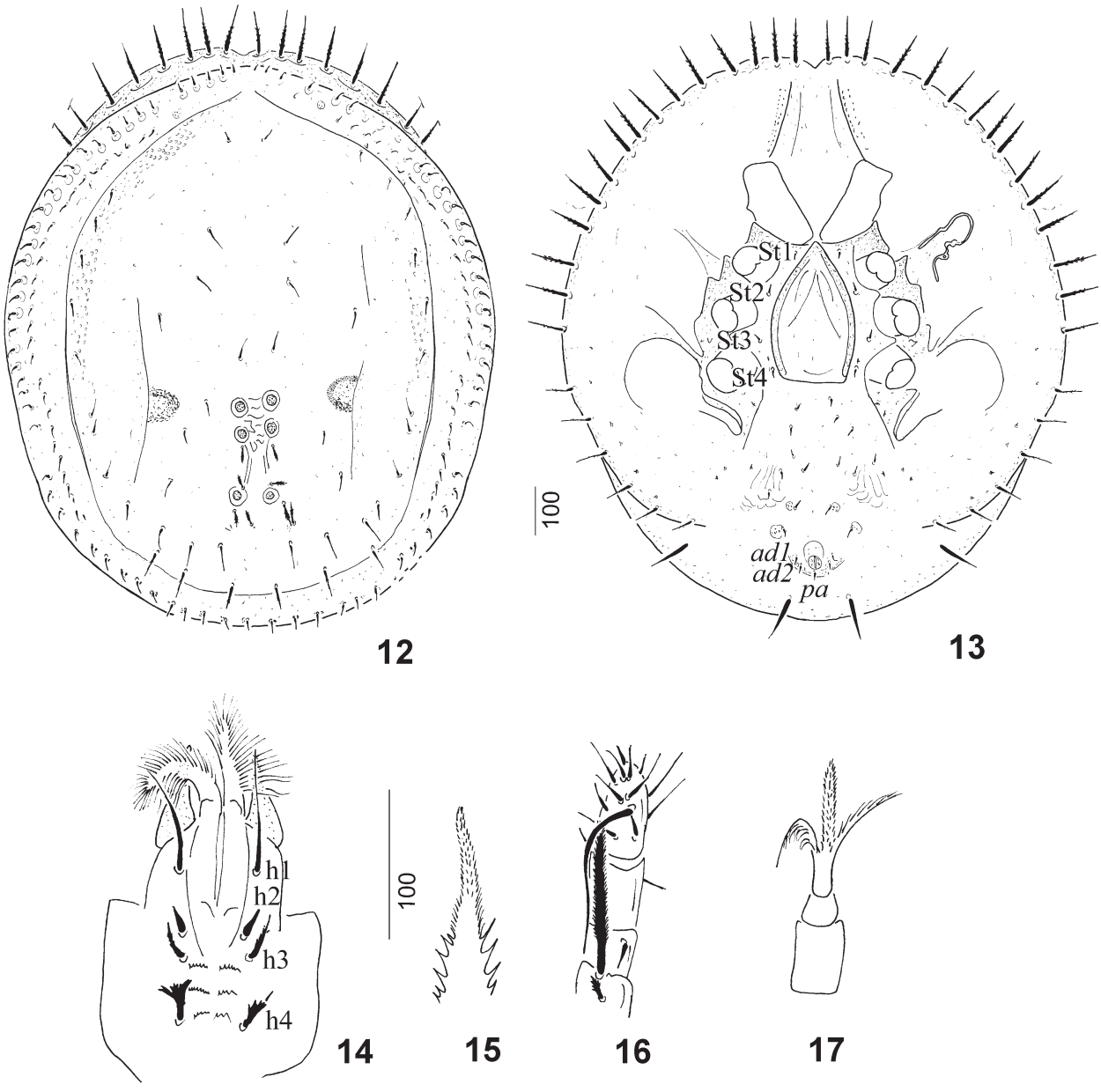
Description of female: Length of idiosoma 1100-1120, width 933-1000 (n=3). Shape of idiosoma circular, posterior margin rounded, color reddish brown.
Dorsal side of idiosoma (Fig. 12): Marginal and dorsal shields fused anteriorly. Margins of dorsal shield with small oval pits (Fig. 18), majority of dorsal setae short, smooth and needle-like (about 27-34 long), some setae on margins of dorsal shield marginally pilose (Fig. 18). Three pairs of short, pilose and three pairs of longer (about 50-55), smooth setae situated close to caudal margin of dorsal shield. One pair of small eye-like transversal furrows situated at level of coxae IV, between and posterior to furrows with three pairs of apodemes.



Figs 5-11. *Hutufeideria singaporensis* sp. nov., female holotype (5-10) and male paratype (11). (5) Ventral view of gnathosoma and left palp. (6) Lateral view of chelicera. (7) Ventral view of leg I. (8) Ventral view of leg II. (9) Ventral view of leg III. (10) Ventral view of leg IV. (11) Intercoxal area.

Two pairs of marginally serrate setae (about 33-34 long) visible between second and third apodemes, and other two pairs of similar setae (about 42-44 long) posterior to third apodeme. Marginal shield with two rows of smooth and needle-like setae (about 20-27 long), first row situated on small platelet, second row without platelets. Pores placed close to each marginal seta (Fig. 18).

Ventral side of idiosoma (Fig. 13): Sternal and ventral shields without ornamentation, only two large apodemes visible at level of metapodal line. Four pairs of sternal setae smooth and needle-like (about 13-17 long), setae St1 situated close to anterior margins of sternal shield, St2 at level of anterior margins of coxae III, St3 at level of anterior margin of coxae IV, St4 at level of posterior margins of coxae IV. St5 absent. Six pairs of ventral setae smooth and needle-like (about 14-17 long), other two pairs of ventral setae similar in shape and length to others but raised on small platelets. Two pairs of long (about 88-90 long) and robust setae situated on caudal margin, and numerous long (about 64-67 long) and marginally pilose setae present on margins of ventral idiosoma. Numerous pores situated close to pilose marginal setae, and one pair of lyrifissures posterior to end of pedofossae IV. Adanal and postanal setae very short (about 14-18 long) and placed around genital opening. Stigmata situated between coxae II and III. Prestigmatid part of peritremes



Figs 12-17. *Phymatodiscus insolitus* sp. nov., female holotype. (12) Body in dorsal view. (13) Body in ventral view. (14) Ventral view of gnathosoma. (15) Epistome. (16) Ventral view of palp. (17) Tritosternum.

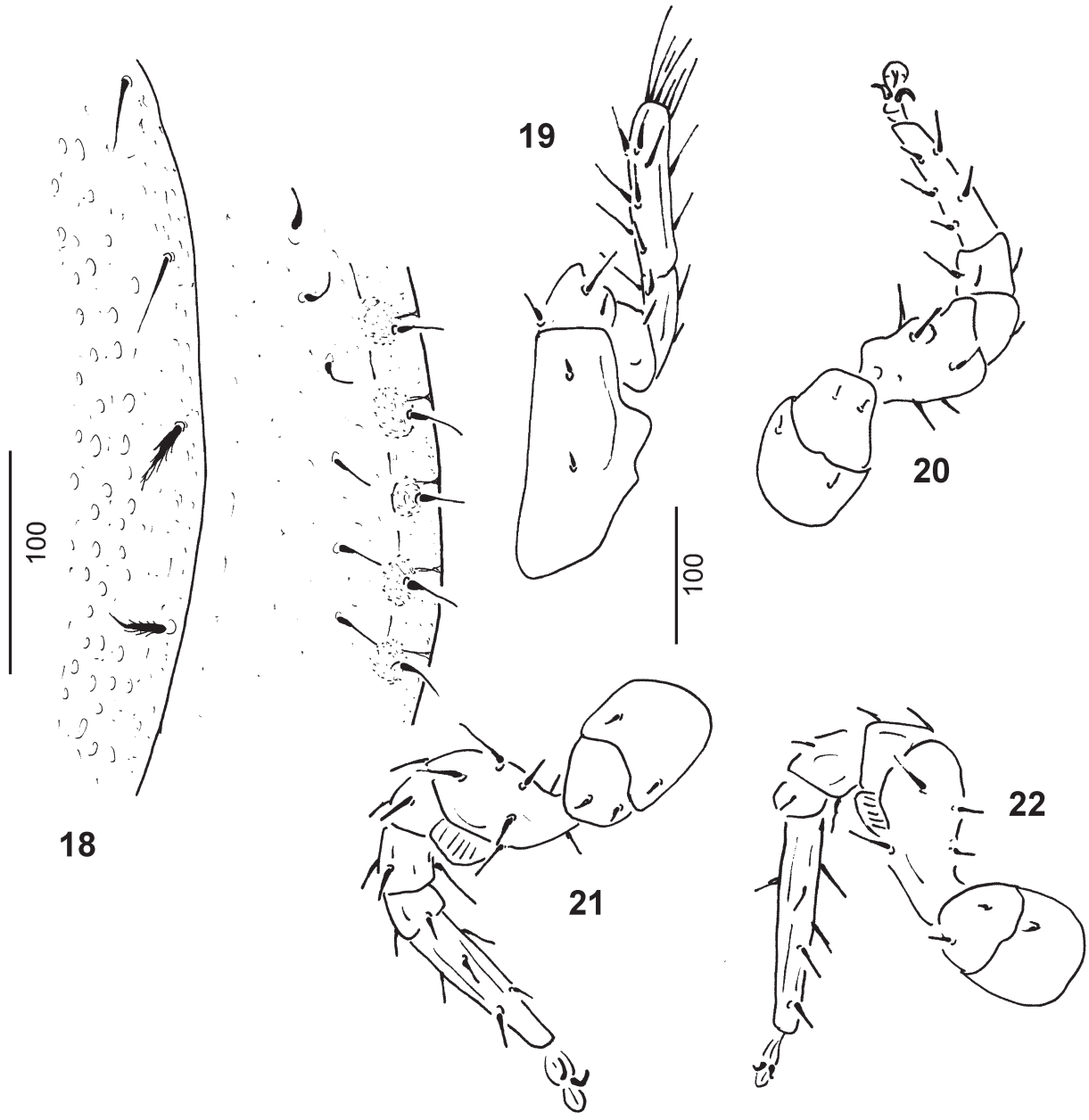
hook-shaped, poststigmatid part short. Genital shield scutiform, anteriorly pointed, with smooth surface. Base of tritosternum (Fig. 17) narrow, tritosternal laciniae pilose and divided into three branches. Pedofossae deep, their surface smooth, separated furrows for tarsi IV present.

Gnathosoma (Fig. 14): Corniculi horn-like, internal malae longer than corniculi and marginally pilose. Hypostomal setae as follows: h1 long (about 80-85), smooth and needle-like, situated posterior to basal line of corniculi; h2 short (about 19-20), smooth and robust; h3 long (about 29-31) and marginally serrate; h4 long (about 26-28) and apically serrate. Anterior part of epistome slightly pilose, proximal part serrate (Fig. 15). Palp with smooth setae except for one short and one extremely long serrate seta on ventral part of palpal trochanter (Fig. 16). Chelicerae not clearly visible.

Legs (Figs 19-22): Claws absence from tip of leg I, all legs bearing smooth and needle-like setae.

Male, larva and nymphs unknown.

Etymology: The name of the new species refers to the unusual (= "insolitus" in Latin) shape and position of its eye-like transversal furrows.



Figs 18-22. *Phymatodiscus insolitus* sp. nov., female holotype. (18) Setae and ornamentation on dorsal and marginal shields. (19) Ventral view of leg I. (20) Ventral view of leg II. (21) Ventral view of leg III. (22) Ventral view of leg IV.

***Rotundabaloghia (Circobaloghia) singaporica* sp. nov.**
Figs 23-33

Holotype: MHNG, sample Bru-88/5; female; "Singapore, Island Country Club, situé entre Lower Peirce Resevoir et Windsor Park Estate, restes de forêt primaire entourés de forêt secondaire, prélèvement de sol au pied d'un grand arbre vivant, env. 60 m; 12.XI.1988"; leg. B. Hauser (Berlese à Bandar Seri Begawan, Brunei).

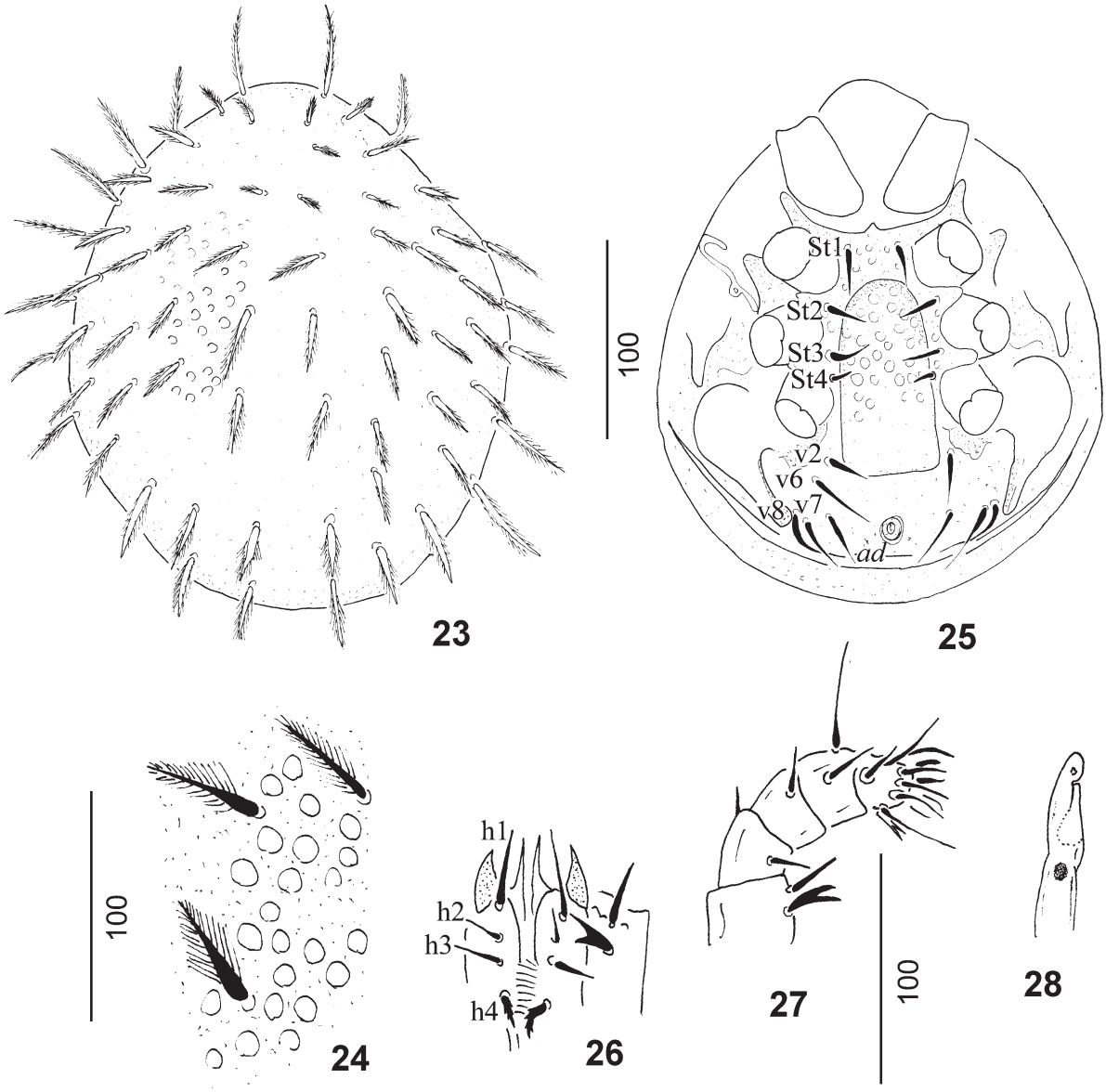
Paratypes: MHNG; four females and three males; locality and date same as for holotype.

Diagnosis: Dorsal shield bearing marginally pilose setae and ornamented with oval pits. Genital shield of female long and linguliform. Sternal setae St1-St3 long, St4 short, ventral setae v2, v6, v7, v8 and *ad* long. Position of ventral setae unique within subgenus *Circobaloghia.*

Description of female: Length of idiosoma 260, width 220 (n=2). Shape circular, posterior margin rounded, color reddish brown.

Dorsal side of idiosoma (Fig. 23): Marginal and dorsal shields completely fused, surface with small oval pits (Fig. 24). Dorsal setae long (about 31-39) and marginally pilose (Fig. 24).

Ventral side of idiosoma (Fig. 25): Sternal shield with some oval pits in anterior area. All sternal setae smooth, needle-like, St1, St2 and St3 long (about 22-25), St4



Figs 23-28. *Rotundabaloghia (Circobaloghia) singaporica* sp. nov., female holotype. (23) Body in dorsal view. (24) Setae and ornamentation on dorsal shield. (25) Body in ventral view. (26) Ventral view of gnathosoma. (27) Lateral view of palp. (28) Lateral view of chelicera.

short (about 7-8). St1 situated close to anterior margin of sternal shield, St2 at level of anterior margins of coxae II, St3 at level of posterior margins of coxae III, St4 close to St3. Ventral setae smooth, long (about 22-29) and needle-like. V2 placed close to basal edges of genital shield, V7 and V8 close to posterior end of pedofossae IV. V6 situated between V7 and V2, setae *ad* at level of anal opening and between anal opening and V7. One pair of lyrifissures situated close to anal opening. Ventral shield without sculptural pattern. Stigmata situated between coxae II and III. Prestigmatid part of peritremes hook-shaped, poststigmatid part short. Genital shield long and linguliform, surface with pits, its apical margin rounded. Tritosternum narrow at base, tritosternal laciniae divided into four branches. Pedofossae deep, their surface smooth, separated furrows for tarsi IV present.

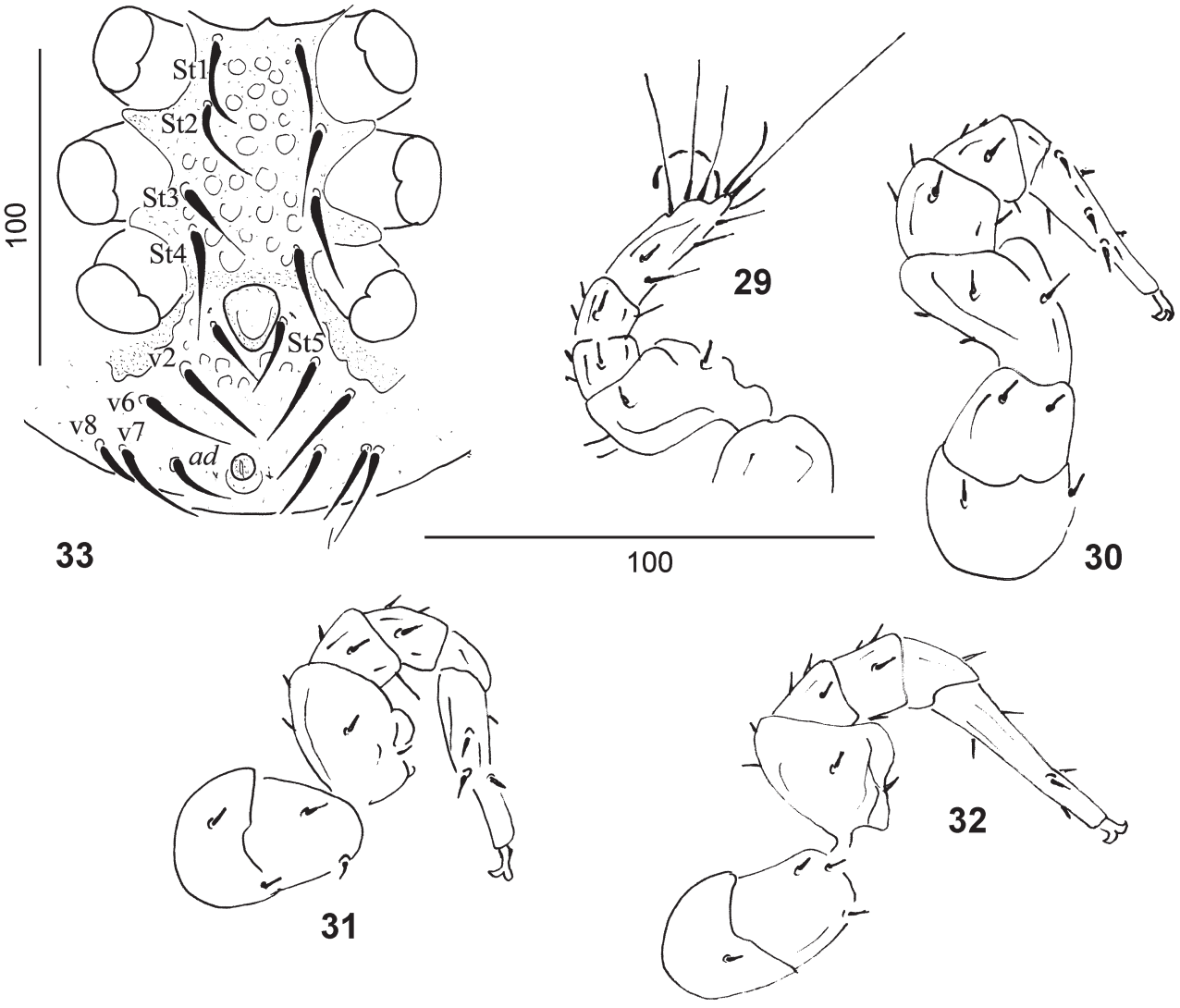
Gnathosoma (Fig. 26): Corniculi horn-like, internal malae as long as corniculi and smooth. Hypostomal setae as follows: h1 long (about 33-35), smooth and needle-like; h2 and h3 needle-like and shorter (about 16-21); h4 short and marginally serrate (about 14-15 μm). Palpal setae needle-like and smooth, except for a bifurcated seta on ventral side of palpal trochanter. Apical part of epistome weakly pilose. Fixed digit of chelicera long, apically rounded and bearing a lateral pit-like sensory organ. Movable digit shorter, both digit without tooth. Internal sclerotized node present (Fig. 28).

Legs (Figs 29-32): First leg without ambulacral claws; all setae on legs smooth and needle-like.

Description of male: Length of idiosoma 370-410, width 340-370 (n=5).

Dorsal side of idiosoma: Ornamentation and chaetotaxy of dorsal shield as in female.

Ventral side of idiosoma (Fig. 33): Four pairs of sternal



Figs 29-33. *Rotundabaloghia (Circobaloghia) singaporica* sp. nov., female holotype (29-32), male paratype (33). (29) Lateral view of leg I. (30) Lateral view of leg II. (31) Lateral view of leg III. (32) Lateral view of leg IV. (33) Intercoxal area.

setae situated anterior to and one pair posterior to genital shield, these setae smooth, needle-like and long (22-25 long). St1 situated near anterior margin of sternal shield, St2 at level of posterior margin of coxae II, St3 at level of central area of coxae III, St4 at level of anterior margin of coxae IV, St5 near posterior margin of genital shield. One pair of lyrifissures situated near St5 on sternal shield. Surface of sternal shield with numerous oval pits anterior and posterior to genital shield. Surface of ventral shield, and shape and size of ventral setae as in female. Genital shield egg-like and situated between coxae IV.
Larva and nymphs unknown.

Etymology: The name of the new species refers to the island where types were collected.

ZOOGEOGRAPHICAL NOTES

Two of the herein described three new species belong to genera (*Phymatodiscus* and *Hutufeideria*) which are endemic to South-East Asia and Australasia. With the new species, thirteen *Phymatodiscus* species are recorded from Java, Borneo, New Guinea, Vietnam and Malaysia (Wiśniewski, 1993; Kontschán & Starỳ, 2011; Kontschán & Starỳ, 2012). Some years ago Vázquez & Klompen (2007) listed five *Phymatodiscus* species without identification to species level from the Neotropical region, but until today these species are not yet described and named. The Neotropical record can point to an interesting amphi-Pacific distribution type, or it could only be the result of misidentification. The genus *Hutufeideria* is distributed in South-East Asia and Australasia; species were described from Australia, Indonesia (Borneo), Japan, New Guinea and Thailand (Kontschán, 2011). The third genus is different in zoogeographical respect. Members of the subgenus *Rotundabaloghia (Circobaloghia)* occur in all tropical regions of the world (Kontschán, 2010b).

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ANNEX: Updated species identification keys for the genera *Hutufeideria, Phymatodiscus,* and the South-East Asian members of the subgenus *Rotundabaloghia* (*Circobaloghia*).

1. Key to the females of *Hutufeideria* species (modified after Kontschán, 2011)

1	dorsal shield ornamented	2
–	dorsal shield without ornamentation	9
2	ventral shield smooth	3
–	ventral shield with ornamentation	5
3	dorsal shield with small oval pits (diameter about 5-7); ventral setae smooth	*H. alata* Kontschán, 2011
–	dorsal shield with large oval pits (diameter about 15-16); ventral setae pilose	4
4	central region of dorsal shield raised; all dorsal setae pilose	*H. haradai* Hiramatsu, 1983
–	central region of dorsal shield not raised; some dorsal setae smooth, others pilose	*H. virtuosa* Hiramatsu, 1983
5	dorsal setae needle-like; dorsal and ventral shields ornamented with small oval pits (diameter about 7-8)	6
–	dorsal setae wide; dorsal and ventral shields ornamented with irregular pits or with web-like sculptural pattern	7
6	dorsal and adanal setae smooth	*H. feiderisimilis* Hiramatsu, 1981
–	dorsal and adanal setae pilose	*H. feideri* Hirschmann & Hiramatsu, 1977
7	genital shield scutiform	*Hutufeideria singaporensis* sp. nov.
–	genital shield linguliform	8
8	ventral shield with web-like sculptural pattern	*H. thailandica* Kontschán, 2011
–	ventral shield with irregular arrangement of pits (diameter about 9-12)	*H. phuketensis* Kontschán, 2011
9	dorsal setae in row j short (tips of j setae only reaching insertion of the following setae in the series)	10
–	dorsal setae in row j long (j setae projecting beyond insertion of the following setae in the series by half their length)	11
10	dorsal setae in row j smooth; surface of genital shield smooth	*H. aoki* Hiramatsu, 1979
–	dorsal setae in row j pilose; genital shield with oval pits	*H. hutuae* Hirschmann & Hiramatsu, 1977
11	setae j4 marginally pilose; adanal setae smooth	12
–	setae j4 marginally smooth; adanal setae pilose	13
12	strongly sclerotised grooves on dorsal shield present; genital shield scutiform	*H. hirschmannisimilis* Hiramatsu, 1980
–	strongly sclerotised grooves on dorsal shield absent; genital shield linguliform	*Hutufeideria hirschmannoides* Kontschán, 2011
13	St1 setae as long as other sternal setae; setae j3 reaching insertion of j4	*H. hirschmanni* Hiramatsu, 1978
–	St1 longer than other sternal setae (1: 0.5); setae j3 not reaching insertion of j4	*H. deliciosa* Hiramatsu, 1978

2. Key to the *Phymatodiscus* species with eye-like transversal furrows (based on Hirschmann & Hiramatsu, 1977; Hiramatsu, 1985 and Kontschán & Starý, 2011, 2012)

1 surface of female genital shield smooth 2
– surface of female genital shield ornamented 4
2 lengths of dorsal setae uniform....*P. aoki* Hiramatsu, 1985
– lengths of dorsal setae diverse 3
3 eye-like transversal furrows large, visible and bordered with long setae....*P. haradai* Hiramatsu, 1985
– eye-like transversal furrows small, hidden and not bordered with setae....*P. insolitus* sp. nov.
4 length of dorsal setae uniform, surface of female genital shield with web-like pattern....
....*P. oculatus* Hirschmann, 1977
– length of dorsal setae diverse, surface of female genital shield with oval pits....5
5 setae h1 marginally serrate, setae on margin of eye-like transversal furrows smooth ....
.... *P. kuni* Kontschán & Starỳ, 2011
– setae h1 smooth, setae on margin of eye-like transversal furrows marginally pilose ....
....*P. malayicus* Kontschán & Starỳ, 2012

3. Key to the South-East Asian species of *Rotundabaloghia (Circobaloghia)* (modified after Kontschán, 2010b)

1 setae St1 bulbiform....*R. (C.) tobiasi* Kontschán, 2014
– setae St1 needle-like 2
2 V8 setae pilose....3
– V8 setae smooth....4
3 V7 setae pilose....*R. (C.) heterospinosa* Hirschmann, 1975
– V7 setae smooth....*R. (C.) zicsii* Hirschmann, 1975
4 V7 longer than V6, V2 and *ad*....5
– V7 not longer than other ventral setae....8
5 V6 two times shorter than V7 and V8 6
– V6 three times shorter than V7 and V8 7
6 V7 and V8 situated close to each other ....*R. (C.) foraminosa* Hiramatsu, 1983
– V7 and V8 far from each other....*R. (C.) javaensis* Kontschán & Kiss, 2015
7 St3 longer than other sternal setae....*R. (C.) portaligynella* Hirschmann, 1975
– St3 as long as other sternal setae ....*R. (C.) polygonalis* Hirschmann in Hirschmann & Hiramatsu, 1992
8 genital shield without ornamentation 9
– genital shield ornamented....11
9 sternal setae smooth and needle-like, genital shield linguliform....10
– St2-St5 bulbiform, genital shield oval....*R. (C.) reticulata* Hiramatsu, 1983
10 V7 and additional sternal setae present ....*R. (C.) tenera* Hiramatsu, 1983
– V7 and additional sternal setae absent....*R. (C.) levigata* Hiramatsu, 1983
11 genital shield of female with alveolar ornamentation 12
– genital shield of female dotted....14
12 sternal shield without ornamentation....
....*R. (C.) garciai* Hiramatsu & Hirschmann in Hirschmann & Hiramatsu, 1992
– sternal shield with alveolar ornamentation....13
13 St1-St3 and ventral setae shorter than half of the distances between St1-St2 and St2-St3 ....
.... *R. (C.) rarosi* Hiramatsu & Hirschmann in Hirschmann & Hiramatsu, 1992
– St1-St3 and ventral setae longer than half of the distances between St1-St2 and St2-St3 ....
.... *R. (C.) singaporica* sp. nov.
14 additional St5 and St6 situated on level of coxae IV....*R. (C.) haradai* Hiramatsu, 1983
– additional St5 and St6 situated in posterior region of genital shield....
....*R. (C.) haradaisimilis* Hiramatsu & Hirschmann in Hirschmann & Hiramatsu, 1992