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Some oribatid mites from Yemen (Acari: Oribatida) (Acarologica Genavensia LXXXVIII)

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Abstract – Twenty-three species are listed from Yemen, eight of them are new to science. One represents also a new genus: *Yemenobodes* gen. n. (Carabodidae). *Pilogalumna arabica* BAYOUMI et AL-KHALIFA, 1986 is partly redescribed and figured. The position of *Multioppia trembleyi* MAHUNKA 1977 is discussed, *Multioppia calcarata* MAHUNKA, 1992 = *Multioppia trembleyi* MAHUNKA, 1977 (syn. n.). With 35 figures.

INTRODUCTION

The fauna of the Arabian Peninsula is especially interesting from a zoogeographical point of view, since the general opinion is that the limit line between the Palaearctic and the Ethiopian Regions is more or less in the middle of this peninsula. This was the reason why I was happy to undertake the examination of a series of samples collected by Mr. A. VAN HARTEN in Yemen.

The fauna of the southern half of the peninsula is poorly known, and even the available data are rather unreliable. As far as I am aware only two species have been known from Yemen and even these are figured among Oribatids from Saudi Arabia published by BAYOUMI & AL-KHALIFA (1985). I had a total of fifteen samples with only a relatively small number of specimens. So far 23 species have been ascertained. One of them represents a new genus (*Yemenobodes* gen. n.) belonging to the family of Carabodidae. The specimens belonging to the genus *Zygoribatula* BERLESE, 1916 were dominant in this material. They are belonging to four species. In spite of the fact that a lot of species of this genus were heretofore known from comparatively nearby regions [e.g. GROEBLER (1993, 1994) and GROEBLER & KOK (1993) published some *Zygoribatula* species from South Africa] and some species are known to have large distribution areas, none of them was identical with

the earlier described species. See also the remarks after the description of the last newly described *Zygoribatula* species.

From zoogeographical point of view the Oribatida fauna of the peninsula is strongly mixed. Still we may not say that the southern territories, where Yemen lies, in fact belong to the Ethiopian region. There are numerous Palaearctic elements here, as for example *Cosmochthonius lanatus, Cryptacarus promecus, Dometorina plantivaga, Scheloribates fimbriatus, Haplozetes vindobonensis*. Naturally these species have a wide distribution in the Mediterranean region. Peculiarly enough, real Ethiopian elements are rather rare, like *Basilobelba retiaria* and *Multioppia trembleyi*, on the other hand, we find here circumtropical species in abundance. This latter group is represented by such species as *Microtritia tropica, Chaunoproctus pedestris, Rostrozetes ovulum, Lamellobates molecula, Paralamellobates misella* and *Galumna flabellifera*. This fenomenon is also well reflected by the new species, particularly their generic range. All in all this fauna may better be described as tropical, rather than Palaearctical.

The descriptions and the terminology applied in this contribution follow those of my previous papers (cf. MAHUNKA 1994).

Abbreviations of depositories: HNHM = Hungarian Natural History Museum, Budapest, followed by the inventory number of the specimens in the Collection of Arachnida; MHNG = Muséum d'Histoire naturelle, Geneva.

LIST OF LOCALITIES

S 47. Yemen: Socotra: Muomi, 15.IV.1993, leg. A. VAN HARTEN.
543. Yemen: Sana'a, under stone, 25.X.1991, leg. A. VAN HARTEN.
870. Yemen: Between Yarin and Ibb, Sumara Pass, 22.III.1992, leg. A. VAN HARTEN.
1773. Yemen: Sumara Pass, 13.III.1993, leg. A. VAN HARTEN.
1829. Yemen: Between Talz and At Turba, 14.III.1993, leg. A. VAN HARTEN.
2475. Yemen: Mabar, beaten from apple-tree, X.1993, leg. M. KNAPP.
2477. Yemen: Mabar, beaten from apple-tree, VII.1993, leg. M. KNAPP.
2480. Yemen: Mabar, beaten from apple-tree, VIII.1993, leg. M. KNAPP.
3524. Yemen: Sana'a from litter; 27.XII.1998, leg. A. VAN HARTEN.
3678. Yemen: Sana'a, in leaf-litter; IV.1998, leg. A. VAN HARTEN.
3684. Yemen: Khamis Bani Sa'd, in banana-stumps; 19.VI.1999, leg. A. VAN HARTEN.
3686. Yemen: Sana'a, in conifer-needles; 30.V.1999, leg. A. VAN HARTEN.
3746. Yemen: Khamis Bani Sa'd, in leaflitter in banana-plantation; 9.VI.1999, leg. A. VAN HARTEN.
3757. Yemen: Khamis Bani Sa'd, in leaflitter in banana-plantation; 23.VI.1999; leg. A. VAN HARTEN.
3884. Yemen: Ta'izz, in litter of *Nerium oleander*; 9–10.VIII.1999, leg. A. VAN HARTEN.
3988. Yemen: Khamis Bani Sa'd, in litter in banana-plantation; 31.VIII.1999, leg. A. VAN HARTEN.

LIST OF DETERMINED SPECIES

Cosmochthoniidae GRANDJEAN, 1947

Cosmochthonius lanatus (MICHAEL, 1885) – Locality: 3757: 1 specimen. Distribution: Holarctic. First record for Yemen.

Euphthiracaridae JACOT, 1930

Microtritia tropica MÄRKEL, 1964 – Locality: 870: 1 specimen. Distribution: Circumtropical. First record for Yemen.

Lohmanniidae BERLESE, 1916

Cryptacarus promecus GRANDJEAN, 1950 – Locality: 3746: 3 specimens. Distribution: Mediterranean Region, South Palaearctic. First record for Yemen.

Basilobelbidae BALOGH, 1961

Basilobelba retiaria (WARBURTON, 1912) – Localities: 3746: 1 specimen, 3757: 4 specimens. Distribution: Ethiopean region. First record for Yemen.

Carabodidae C. L. KOCH, 1837

Austrocarabodes latissimus sp. n. – Locality: 3884.
Yemenobodes improvisus gen. n., sp. n. – Locality: 543.

Oppiidae GRANDJEAN, 1951

Lasiobelba arabica sp. n. – Locality: 3757.
Multioppia trembleyi MAHUNKA, 1977 – Locality: 3686: 3 specimens. Distribution: Ethiopean Region. First record for Yemen.
Oppiella nova (OUDEMANS, 1902) – Locality: 3524: 4 specimens. Distribution: Cosmopolitan. First record for Yemen.

Chaunoproctidae BALOGH, 1961

Chaunoproctus pedestris (BERLESE, 1916) – Localities: 3757: 2 specimens, 3884: 6 specimens. Distribution: Circumtropical. First record for Yemen.

Mochlozetidae GRANDJEAN, 1960

Unguizetes yemenitica sp. n. – Locality: 1829.

Oribatulidae THOR, 1930

Zygoribatula globosa sp. n. – Localities: 1773, 1829, 2475.
Zygoribatula mabar sp. n. – Localities: 1773, 2477, 2480.
Zygoribatula socotrensis sp. n. – Locality: S 47.
Zygoribatula vanharteni sp. n. – Localities: 543, 1773.

Scheloribatidae GRANDJEAN, 1933

Dometorina plantivaga BERLESE, 1908 – Locality: S47: 1 specimen. Distribution: Palaearctic. First record for Yemen.

Scheloribates fimbriatus THOR, 1930 – Localities: 543: 1 specimen, 3988: 2 specimens. Distribution: Palaearctic. First record for Yemen.

Haplozetidae GRANDJEAN, 1936

Haplozetes vindobonensis (WILLMANN, 1935) – Locality 3757: 6 specimens. Distribution: Palaearctic. First record for Yemen.

Rostrozetes ovulum (BERLESE, 1908) – Localities: 870: 2 specimens, 3684: 4 specimens, 3678: 2 specimens. Distribution: Circumtropical, it was reported from Saudi Arabia, first record for Yemen.

Austrachipteriidae LUXTON, 1985

Lamellobates molecula (BERLESE, 1916) – Locality: 3757: 3 specimens. Distribution: Circumtropical. First record for Yemen.

Paralamellaobates misella (BERLESE, 1910) – Localities: 3684: 3 specimens, 3757: 4 specimens. Distribution: Circumtropical. First record for Yemen.

Galumnidae JACOT, 1925

Galumna flabellifera HAMMER, 1958 – Localities: 3746: 3 specimens, 3757: 3 specimens, 3988: 2 specimens. Distribution: Circumtropical. First record for Yemen.

Pilogalumna arabica BAYOUMI et AL-KHALIFA, 1986 – Localities: 543: 15 specimens, 1773: 1 specimen. Distribution: Saudi Arabia. First record for Yemen.

DESCRIPTIONS OF NEW TAXA

Austrocarabodes latissimus sp. n.
(Figs 1–6)

Material examined – Holotype: Yemen 3884, 12 paratypes: from the same sample. Holotype and 7 paratypes deposited in the MHNG; 5 paratypes deposited in the HNHM (1642–PO–99).

Description – Measurements: Length: 607–778 μm, width: 412–559 μm.

Prodorsum: Rostrum wide, roundish in dorsal aspect, finely alveolate. Prodorsal surface covered by pustules. Lamellae narrow, well covering the lamellar part of prodorsum, their surface rugose. Rostral, lamellar and interlamellar setae dilated, lamellar setae phylliform with serrate margin (Fig. 5). Rostral setae arising on a transversal crest (Fig. 6), they have two, the much longer interlamellar setae one veil. Interlamellar setae arising medially, conspicuously near to each other. Sensilli short, their head enlarges like a brush, with thick spines on their dorsal surface (Fig. 3).

Lateral part of prodorsum: Tutorium well developed, without apex. Lateral surface of prodorsum ornamented by large alveoli. Sejugal region and the surface over the acetabula finely granulate. Pedotecta I large, finely alveolate.

Notogaster (Fig. 1): Evenly convex. Humeral part of notogaster slightly protruding. The surface of notogaster covered by pustules – excepting roundish, smooth fields around the insertion of the notogastral setae. All fourteen pairs of notogastral setae lanceolate (Fig. 4), with two veils on their dorsal surface. Among them four pairs are comparatively short, also phylliform, arising in posteromarginal position.

Ventral parts (Fig. 2): Setae *h* simple and short, originating near each other. Coxisternal region with partly hardly observable apodemes and epimeral borders. The posterior borders of the epimeral region indistinct, undulate. Between the epimeres a wide median field present, with a framed hollow in sejugal region. Epimeral surface with some sigilla. All epimeral setae very fine, simple. Setae *1c* arising far medially from pedotecta 1. Anogenital region with rough sculpture consisting of ribs and crests. Anogenital setal formula: 4 – 1 – 2 – 3. Genital and anal apertures located in normal position. Genital and aggenital setae simple, anal hardly, adanal ones well dilated, phylliform. Setae ad_1 in postanal, ad_2 in paraanal, setae ad_3 in preanal position. Lyrifissures well visible, located far from the anal opening, in front of setae ad_3.

Legs: Chaetotaxy of legs:

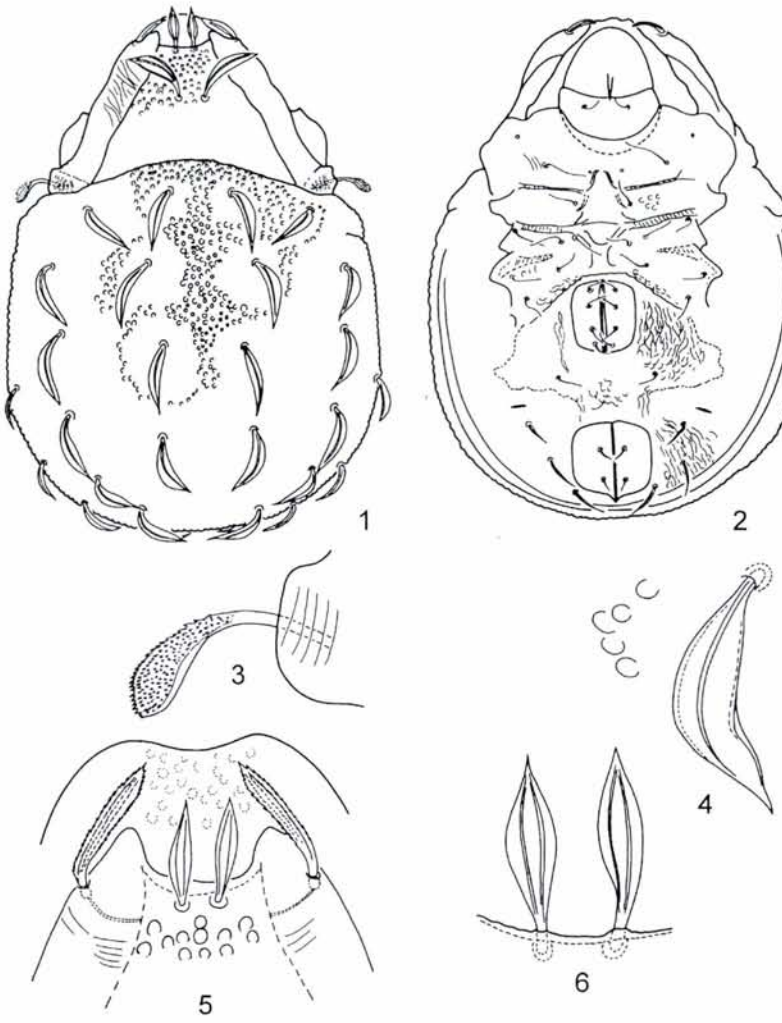
I: 1–4–3+1–4+2–15+2–1

IV: 1–2–2–2+1–1–12–1

Solenidium φ_2 stands far posteriorly from φ_1, φ_1 of tibia IV very short. Femora and trochanters of legs III and IV with blade–like ventral formation, ending in a distal spur. Setae *l''* of genu I–IV phylliform. Trochanter and femur of legs also bearing phylliform setae. Setae *p* and *u* of tarsi I-IV simple, setiform.

Remarks – On the basis of the habitus, the number and form of the notogastral setae, the new species well ranged into the genus *Austrocarabodes* HAMMER, 1966 (see MAHUNKA 1986). It is well distinguishable from all known species by the extremely wide habitus, by the form of the sensilli and especially by the smooth fields around the insertions of notogastral setae.

Etymology – It is named after the notogastral sculpture.



Figs 1–6. *Austrocarabodes latissimus* sp. n.: 1 = body in dorsal aspect, 2 = body in ventral aspect, 3 = sensillus, 4 = notogastral seta, 5 = rostral part of prodorsum in frontal aspect, 6 = rostral setae

Yemenobodes gen. n.

Diagnosis – Family Carabodidae. Whole body surface and legs, excepting tarsus and tibia covered by peculiarly thick, unremovable, cerotegument layer. Prodorsum with a strong transversal elevation, notogaster with a protruding, rounded median part. Sensillus falciform, with thick, serrate, velum-like lateral part. Ten pairs of minute notogastral setae present. Epimeral setal formula: 3 – 1 – 3 – 3. Anogenital setal formula: 4 – 1 – 2 – 3. Gnathosoma and legs typical for the family, setae *u* on tarsi II-IV thickened, blunt at tip.

Type species – Yemenobodes improvisus sp. n.

Remarks – The single specimen was difficult to study, but it could not be placed in any of the heretofore known taxa (cf. MAHUNKA 1986). Other important feature: the position of setae c_2 (near to shoulder) and the five setae (da – h_3) on the median elevation of the notogaster.

Etymology – The new genus is named after the country where the type species has been found.

Yemenobodes improvisus sp. n.
(Figs 7–9)

Material examined – Holotype: Yemen 543: MHNG.

Description – Measurements: Length of body: 251 μm, width of body: 138 μm.

Integument: The cerotegument layer is partly thin (e.g. on prodorsum or leg joints, partly consisting of small granules (e.g. on the coxisternal region) and the small granules also compose larger pustules, which cover the notogaster and the main part of the ventral plate.

Prodorsum: Rostral apex and the lamellae typical for the family. A short, weak and simple tutorium also normal in size. Lamellar and rostral setae thin, simple, the preceding ones arising on the lamellar surface, latter ones (their alveoli) clearly in front of them. (Neither their shape nor their size could not been observed in detail). The elevated median part higher laterally and slightly lower medially, it appears as a well-sclerotised translamella. Basal part of prodorsum without any peculiar sculpture. Sensillus long, directed out- and downwards. Its shape well observable only in anterior or lateral (Fig. 9) aspect. It is likely that the asymmetrical, unilateral "velum" consists of very long, thick cilia, stuck together by the cerotegument layer.

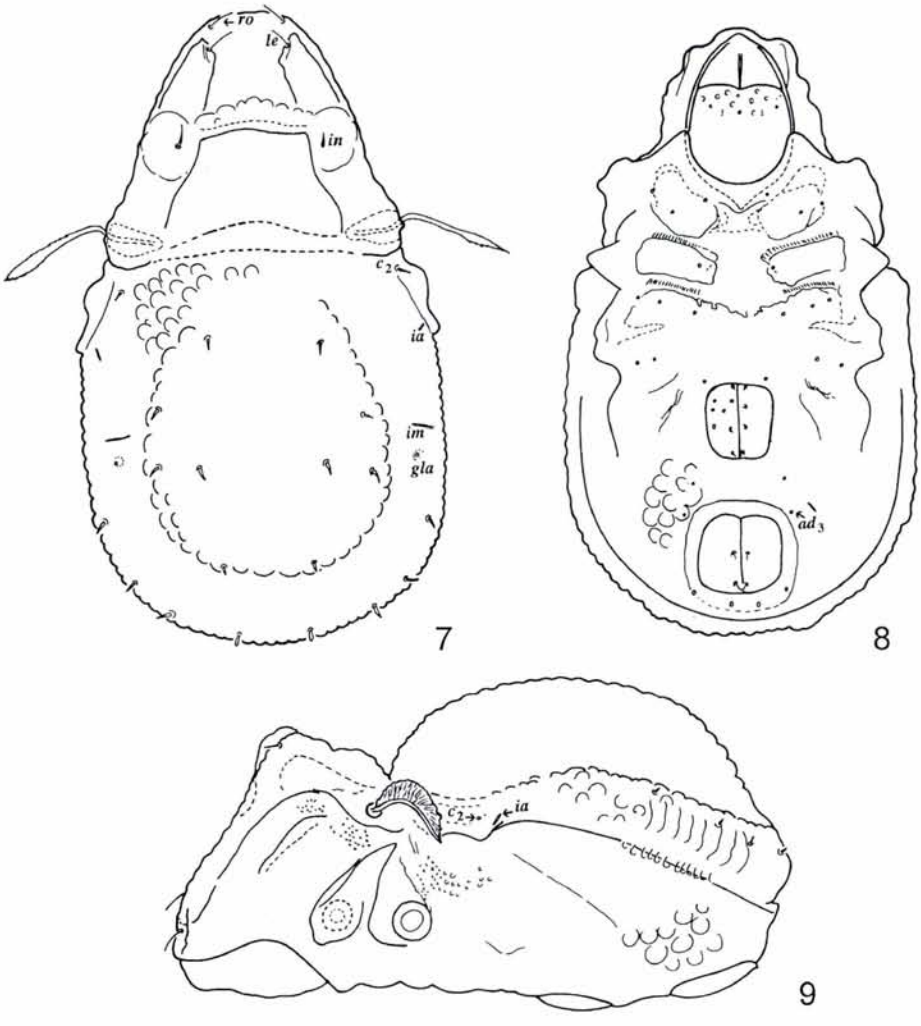
Notogaster: Dorsosejugal suture deep, its position hardly observable. Median protruding part well separated from the lateral "margin". Shoulder large, well protruding laterally. Ten pairs of minute, slightly dilated notogastral setae present hardly reaching over the cerotegument pustules (Fig. 7). One pair (c_3) arising on the inner margin of the shoulders. On the elevated median part 5 pairs are present, further 4 pairs of setae are in posteromarginal position.

Ventral regions (Fig. 8): Anterior third of mentum clearly foveolate. Apodemes and epimeral borders hardly visible. Epimeral setae minute or represented only by their alveoli. Genital plates also with some irregular foveolae, surface of anal plates smooth. Setae in the anogenital region also minute. Setae ad_1 and ad_3 slightly thickened. Lyrifissures *iad* hardly observable.

Legs: I was unable to study the single specimen in all its details. The habitus seems to be typical for the family. Solenidium φ_2 stands far behind φ_1, seta *l'* of genu I long, spiniform, seta *l''* short, phylliform. Claws normal.

Remarks – See the remarks after the diagnosis of the genus.

Etymology – Improvisus (Latin = unexpected).



Figs 7–9. *Yemenobodes improvisus* gen. n., sp. n.: 7 = body in dorsal aspect, 8 = body in ventral aspect, 9 = body in lateral aspect

Lasiobelba arabica sp. n.
(Figs 10–15)

Material examined – Holotype: Yemen 3757. Holotype: MHNG.

Description – Measurements: Length of body: 490 μm, width of body: 287 μm.

Prodorsum: Rostral part elongate, rostrum roundish. Prodorsal surface without well sclerotised costulae or crests, two pairs of sigilla present in the interbothridial region, some larger ones visible laterally. Behind the interbothridial sigilla an arched line is present. Bothridia relatively small, nearly quadrangular. All four pairs of prodorsal setae strong, setiform, distinctly ciliate. Rostral and lamellar setae thicker and more pilose than the others, interlamellar setae shortest and thinnest of all. Sensillus long, gradually dilated distally with a sharply end, but without typical clavate head. The distal part well pilose (Fig.10).

Notogaster: Roundish and well convex in lateral view. Ten pairs of notogastral setae present, setae c_2 short, simple, all others long, bearing some cilia. Setae *la* arising clearly in front of *lm* (Fig.10).

Lateral part of podosoma: Position of the acetabula of the legs is characteristic, acetabula III and IV located much above acetabula I–II. Exobothhridial region and a field between acetabula II and III well granulated. Pedotecta I large, their dorsal margin undulate, pedotecta II–III reduced, discidium long, with sharply pointed tip.

Ventral parts of the body (Fig. 11): Epimeral borders and apodemes excepting the longitudinal sternal border normally developed, the mentioned part slightly excavated and median epimeral borders removed from each other. Between them the parts of sternal apodeme well visible. Epimeral setal formula: 3 – 1 – 3 – 3. Among them setae *1a, 2a* and *3a* simple and short, all others well ciliate, setae *1c* located medially, far from the tectopedia I, on the margin of epimer I, shorter than setae *1b*. Setae *3c* and *4c* very long, the lattere arising close to the top of discidium. Anogenital setal formula: 5 – 1 – 2 – 3. Position of the aggenital setae normal, setae ad_3 in postanal position. Setae in this region mostly well ciliate, adanal ones thicker than the others.

Infracapitulum, chelicera and palps belonging to the normal type.

Legs: Joints of all legs elongated. Tarsi of legs III and IV conspicuously long. Some setae on all legs, especially on trochanter, femora and genu well dilated, thick and spiniform, some of them also ciliate. Seta *l'* of genu IV much longer than the other setae. Setae *v"* short and plumose, seta *l'* much longer. Setae *v"* and *a"* on tarsi IV also plumose. Setae *p* on tarsi III and IV short, spiniform.

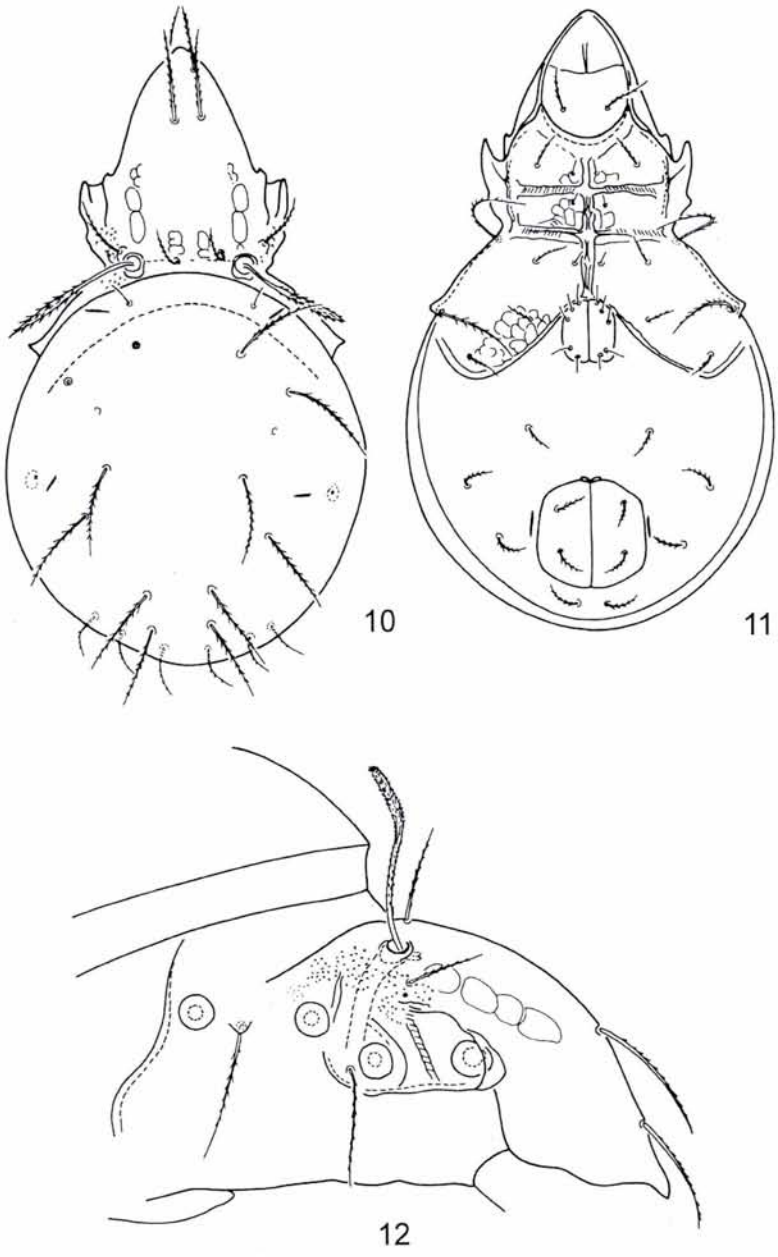
Legs setal formulae:

I: 1 – 5 – 2+1 – 4+2 – 20+2 – 1 (Fig. 13).

IV: 1 – 2 – 2 – 3+1 – 12 – 1 (Fig. 15).

Remarks – The new species is well characterised by the spiniform, dilated setae on the legs and the shape of the sensillus. This combination of characters was unknown in this genus.

Etymology – Named after its origin.



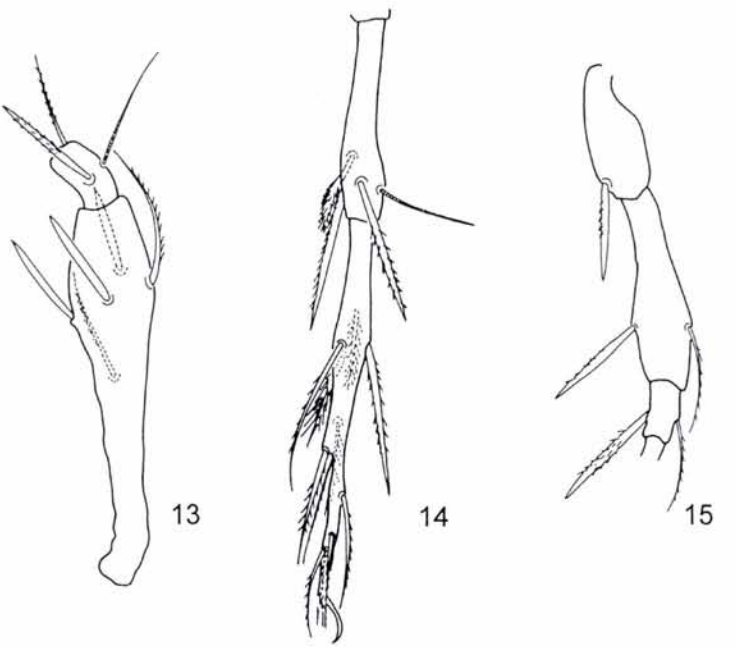
Figs 10–12. *Lasiobelba arabica* sp. n.: 10 = body in dorsal aspect, 11 = body in ventral aspect, 12 = podosoma in lateral aspect

Multioppia trembleyi MAHUNKA, 1977

The author described the species from the Seychelles (MAHUNKA 1977) as close relative of *M. wilsoni* AOKI, 1964 known from the Laysan Is. Later MAHUNKA (1992) also described a *Multioppia* species (*M. calcarata* MAHUNKA, 1992) from Senegal belonging in this relationship.

The discovery of a population in Yemen make it imperative to re-examine the real differences existing among these species. Thorough examination revealed that the species from Seychelles, Senegal and Yemen are identical, consequently, *M. calcarata* MAHUNKA, 1992 is a junior synonym of *M. trembleyi*. Supporting evidences are in the sharp and pointed anterior outgrowth of pedotecta I, the sharp pedotecta II–III, as well as further identities in the epimeral region, like the extremely strong pair of tubercula on the sejugal borders, and that the medial epimeral borders are somewhat removed from each other. The notogastral setae are strongly arched and bear 2–3 well visible cilia.

Whether *wilsoni* is also a synonym of *trembleyi* remains to be seen, although AOKI (1964) clearly states "notogastral setae smooth" and the species is figured



Figs 13–15. *Lasiobelba arabica* sp. n.: 13 = femur of leg I, 14 = tarsus and tibia of leg IV, 15 = trochanter, femur and tibia of leg IV

likewise. On the other hand, he does not mention one of the most important features, the calcar of pedotecta I, which is more than striking, though his figure suggests it. Final decision shall be made only after the examination of the type.

Zygoribatula globosa sp. n.
(Figs 16–18)

Material examined – Holotype: Yemen 2475, 2 paratypes: Yemen 1773, 2 paratypes: Yemen 1829. Holotype and 2 paratypes: MHNG, 2 paratypes: HNHM (1542-PO–1996).

Description – Measurements: Length of body: 426–527 μm, width of body: 326–387 μm.

Prodorsum: Rostrum elongated, with sharply elongated apex. Lamellae well developed, lamellar cusps absent, but theirt distal end with the translamella well protruding from the prodorsal surface (Fig. 18). Translamella not narrower than the dital part of lamellae. Rostral setae setiform, lamellar and interlamellar ones blunter at tip. Sensillus clavate, its head blunt. Exobothridial setae comparatively long, thinner than the other prodorsal setae.

Notogaster: Median part of dorsosejugal suture well arching anteriorly. Surface with indistinct, fine foveolae, sometimes this sculpture hardly discernible. Fourteen pairs of notogastral setae present, six pairs arising on the anterior half of the notogaster are bacilliform, and the median setae (*da, dm*) clearly longer than the other setae in the posterior half of the notogaster (Fig. 16). Among the porose areae *Aa* the largest, the others gradually becoming smaller posteriorly, A_1 are the smallest.

Lateral part of podosoma: Tutorium weak, short. Circumpedal carina strong, it is fused with a minitectum running from the sejugal region (Fig. 18).

Ventral regions: Surface with the same (foveolate) sculpture as notogaster. All setae in the coxisternal region and on the ventral plate short, fine, mostly ciliate (Fig. 17), setae *1c* the longest of all.

Remarks – The new species stands closest to *Zygoribatula robusta* GROEBLER, 1993. They may be distinguished from each other by the ratio of the prodorsal setae (*in* > *le* > *ro* in *robusta*), and c_1 much shorter than *la* or *da* (longer in *robusta*). Translamella also narrower than in *robusta*, figured by GOEBLER (Fig. 10).

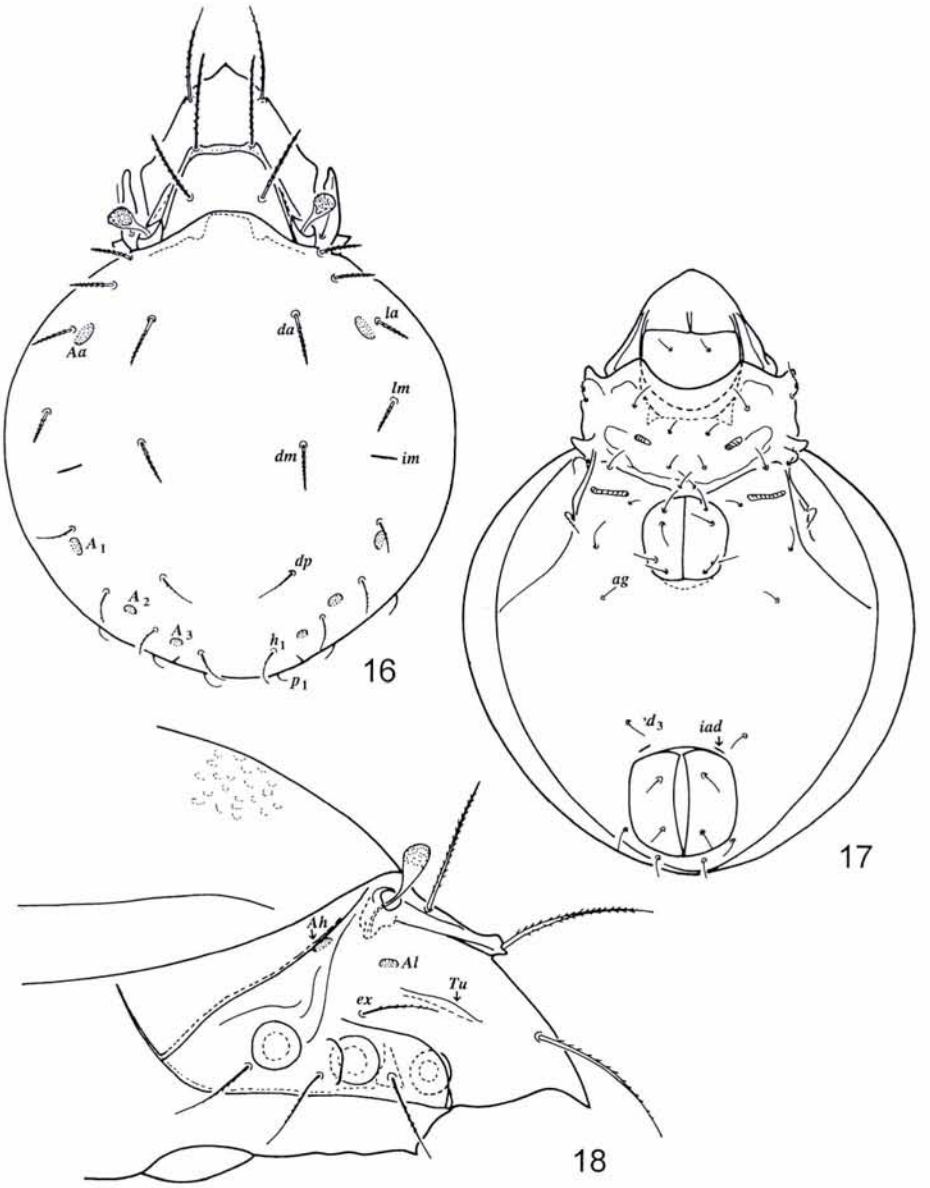
Etymology – The species is named after the form of its notogaster.

Zygoribatula mabar sp. n.
(Figs 19–21)

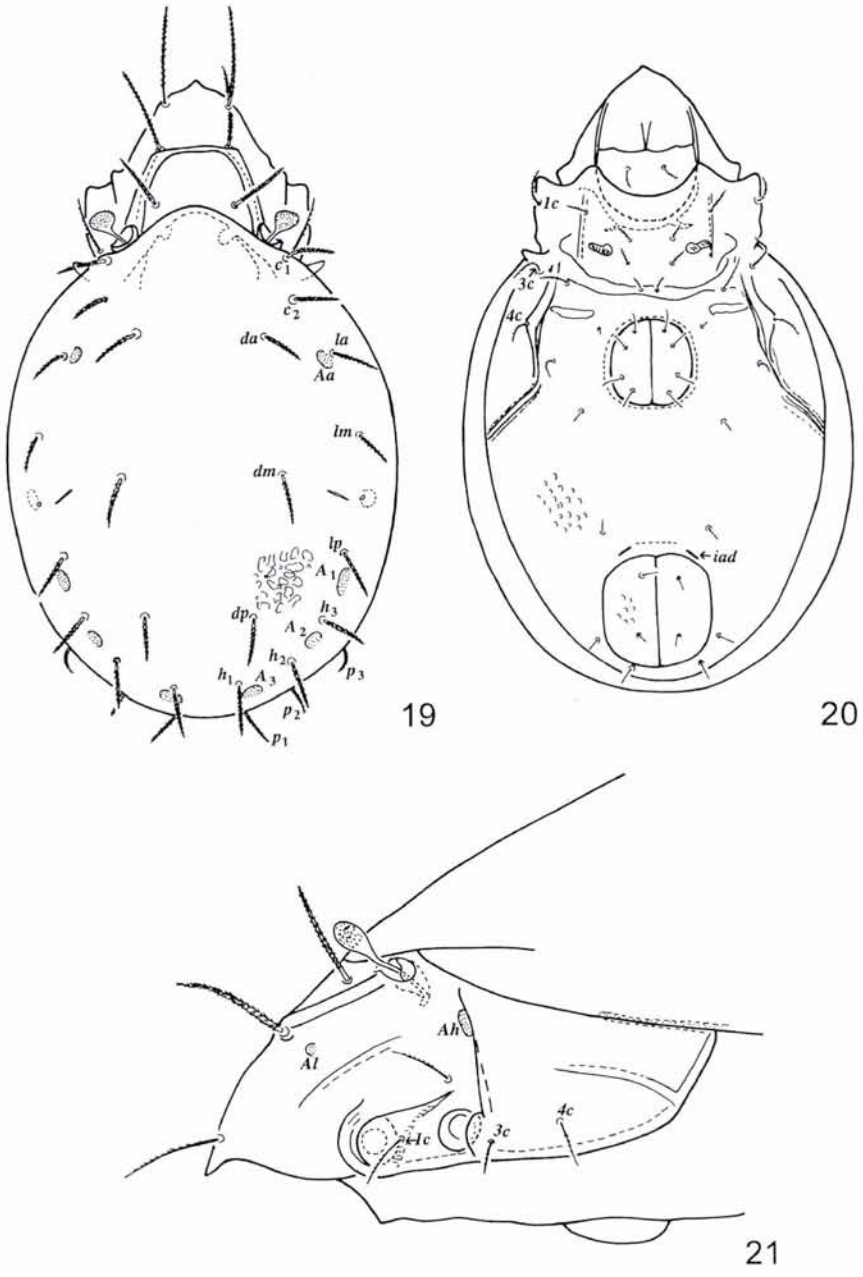
Material examined – Holotype: Yemen 2480, 4 paratypes from the same sample, 2 paratypes: Yemen 2477, 2 paratypes: Yemen 1773. Holotype and 5 paratypes: MHNG, 3 paratypes: HNHM (1543-PO–1996)

Description – Measurements: Length of body: 472–507 μm, width of body: 276–312 μm.

Prodorsum: Rostrum sharply pointed, its apex slightly elongate. Lamellae wide, translamella narrower, a small cusp exists, bearing lamellar setae. Rostral, lamellar and interlamellar setae equally distinctly barbed and no difference in size. Sensillus short, its head oval (Fig. 19).



Figs 16–18. *Zygoribatula globosa* sp. n.: 16 = body in dorsal aspect, 17 = body in ventral aspect, 18 = podosoma in lateral aspect



Figs 19–21. *Zygoribatula mabar* sp. n.: 19 = body in dorsal aspect, 20 = body in ventral aspect, 21 = podosoma in lateral aspect

Notogaster: Dorsosejugal suture strongly arching anteriorly. Notogastral surface ornamented by irregular, hardly observable wrinkles. Fourteen pairs of notogastral setae equal in length and size present, all well barbed. Among the porose areae A_1 the largest, the other three pairs nearly equal in size.

Lateral part of podosoma (Fig. 21): Tutorium well discernible. Sublamellar porose area indistinct. Circumpedal carina very strong and thick connected with the lateral minitectum, which is clearly visible longitudinally.

Ventral regions (Fig. 20): Anterior part of epimeral region sligthly polygonate, other surface well foveolate. This sculpture visible also on the anal plates. Epimeral setae conspicuously short but well ciliate.

Remarks – The new species is well characterised by the peculiar sculpture of the notogaster, the ratio of the porose areae but mainly by the very strong, unique circumpedal carina.

Etymology – The species is named after the collecting site, City of Mabar.

Zygoribatula socotrensis sp. n.
(Figs 22–24)

Material examined – Holotype: S 47, 1 paratype from the same sample. Holotype: MHNG, paratype (1544-PO–1996): HNHM.

Description – Measurements: Length of body: 416–442 μm, width of body: 276–297 μm.

Prodorsum: Rostrum widely rounded. Lamellae and translamella well developed, wide. Distal end of lamellae and translamella highly protruding from the notogastral surface, lamellar setae arising from this anterior margin. Rostral, lamellar and interlamellar setae distinctly barbed.

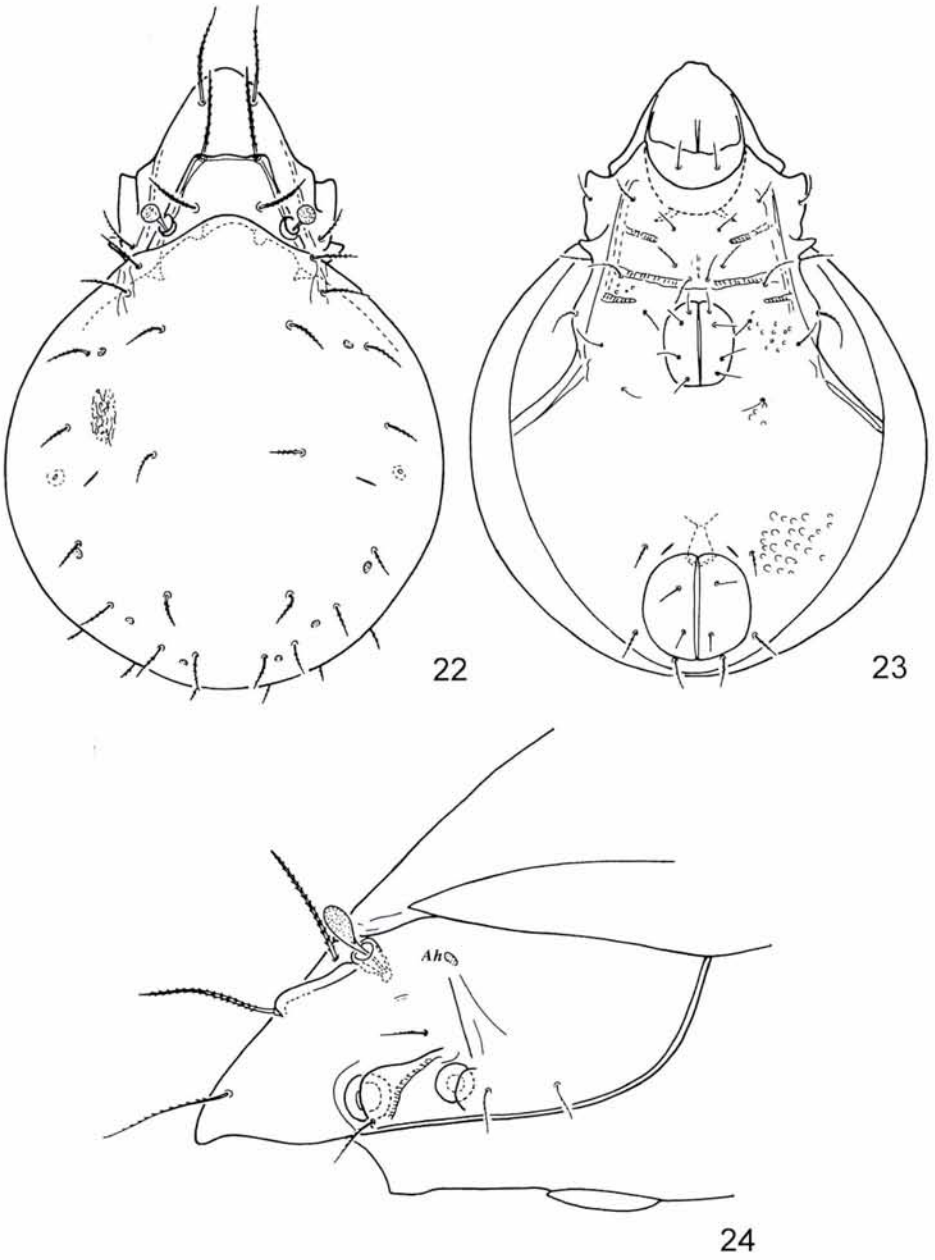
Notogaster: Surface with very fine, indistinct sculpture, it consists of irregular small rugae. Some stronger, longitudinal wrinkles observable in the humeral region. All fourteen pairs of notogastral setae nearly equal in length and size. Porose areae small, nearly round, no essential difference among them (Fig. 22).

Lateral part of podosoma (Fig. 24): Tutorium hardly observable, indistinct. Sublamellar porose area absent. Circumpedal carina very strong, thick, it runs to the mental tectum anteriorly reaching to the lateral margin of the ventral plate.

Ventral regions (Fig. 23): Epimeral region sparsely foveolate, ventral plate densely foveolate, trough foveolae fine and indistinct, sometimes hardly observable. Epimeral setae and the setae on the ventral, genital and aggenital plates nearly equal in length, genital and anal plates smooth.

Remarks – The new species is well characterised by the peculiar sculpture of the notogaster, the equally small and round porose areae and by the very thick and long circumpedal carina. On the basis of these main features the new species is well distinguishable from all its congeners.

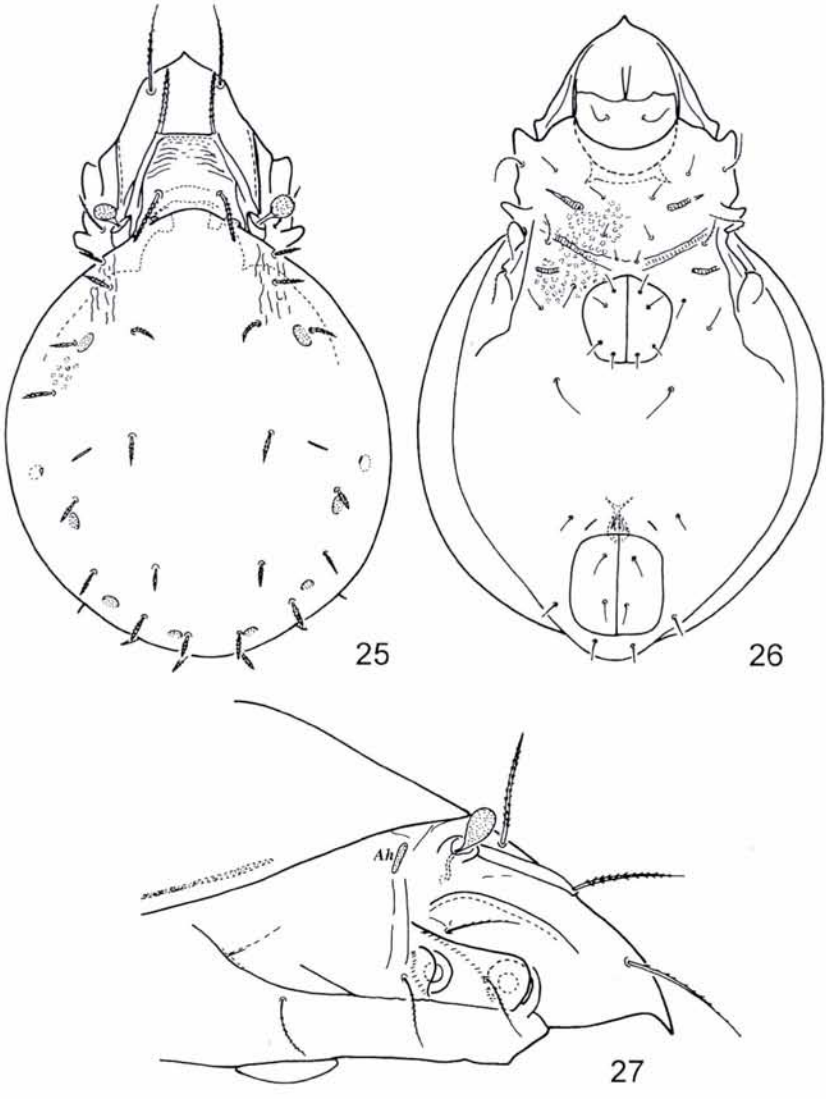
Etymology – The species is named after the Socotra Island.



Figs 22–24. *Zygoribatula socotrensis* sp. n.: 22 = body in dorsal aspect, 23 = body in ventral aspect, 24 = podosoma in lateral aspect

Zygoribatula vanharteni sp. n.
(Figs 25–27)

Material examined – Holotype: Yemen 1773, 4 paratypes from the same sample, 2 paratypes: Yemen 543. Holotype and 2 paratypes: MHNG, 2 paratypes: HNHM (1545-PO–96).



Figs 25–27. *Zygoribatula vanharteni* sp. n.: 25 = body in dorsal aspect, 26 = body in ventral aspect, 27 = podosoma in lateral aspect

Description – Measurements: Length of body: 436–502 μm, width of body: 276–317 μm.

Prodorsum: Rostral apex pointed at tip, elongated (well observable in lateral aspect). Lamellae conspicuously converging toward each other, these and especially the translamella very narrow. Between the lamellae some fine, arched transversal lines visible (Fig. 25). Rostral setae setiform, rarely ciliate, lamellar and interlamellar ones blunter at tip and distinctly barbed. Sensillus short, with rounded head. Its surface spiculate.

Notogaster: Dorsosejugal suture gradually arched medially. Sejugal porose area large. Notogastral surface ornamented by fine, indistinct foveolae and some longitudinal wrinkles in the humeral region. All the fourteen pairs of notogastral setae short, slightly dilated, distinctly barbed and no essential difference among their size and length. Among the four pairs of porose areae *Aa* the largest, and becoming gradually smaller toward the posterior end of body.

Lateral part of podosoma (Fig. 27): Tutorium long, but weakly developed. Sublamellar porose area absent, circumpedal carina weakly developed. Only a short part of the longitudinal minitectum observable.

Ventral regions (Fig. 26): Well foveolate (this sculpture is the strongest among the presently described Zygoribatula species). The surface of genital and anal plates smooth.

Remarks – The new species stands closest to *Zygoribatula pennata* GROEBLER, 1993. It is distinguished from the latter by the sharply pointed rostral apex (rounded in *pennata*) and the shape of the lamellae, and the sculpture in the interlamellar region.

Etymology – I dedicate the new species in recognition of the collector Mr. A. VAN HARTEN, for his valuable material.

Unguizetes yemenitica sp. n.
(Figs 28–31)

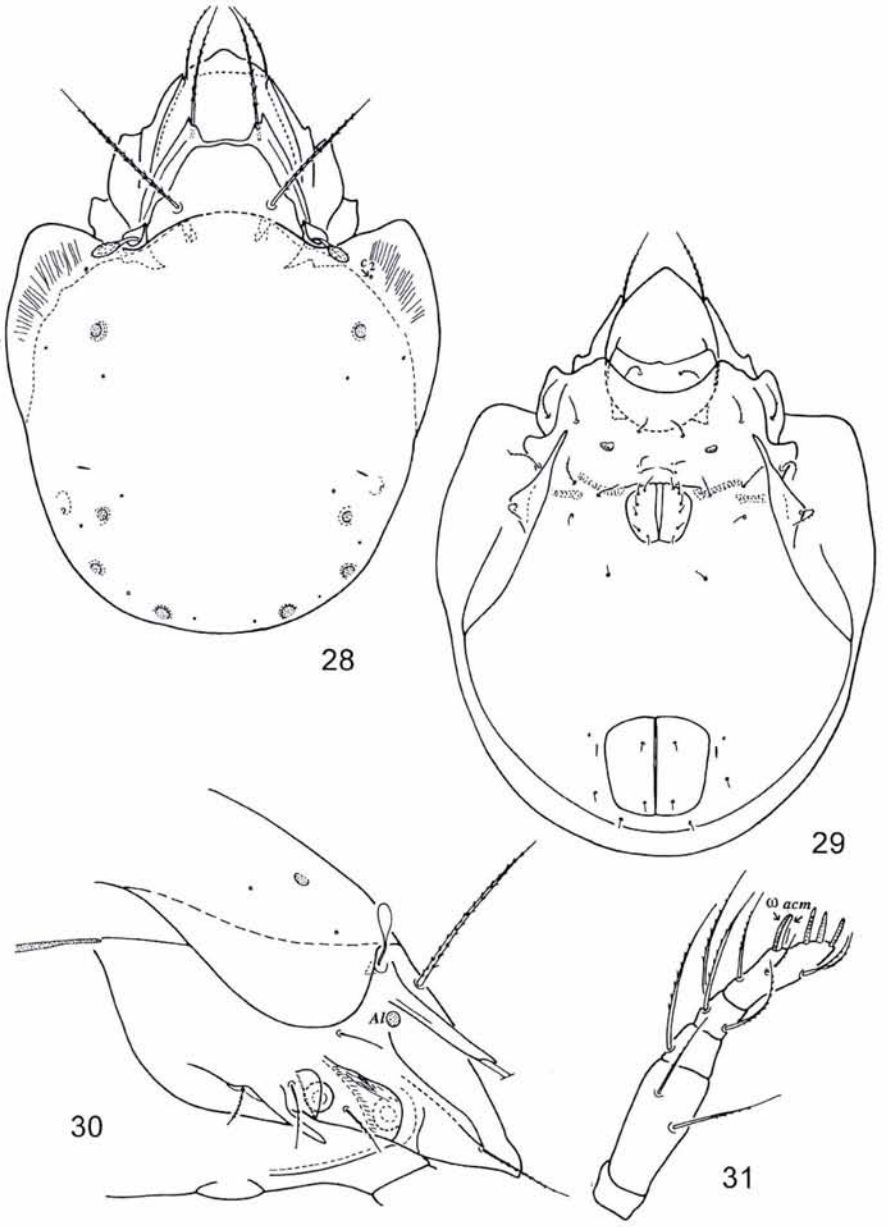
Material examined – Holotype: Yemen 1829, 2 paratypes from the same sample. Holotype and 1 paratype: MHNG, 1 paratype: HNHM (1554-PO–1996).

Description – Measurements: Length of body: 625–676 μm, width of body: 460–552 μm.

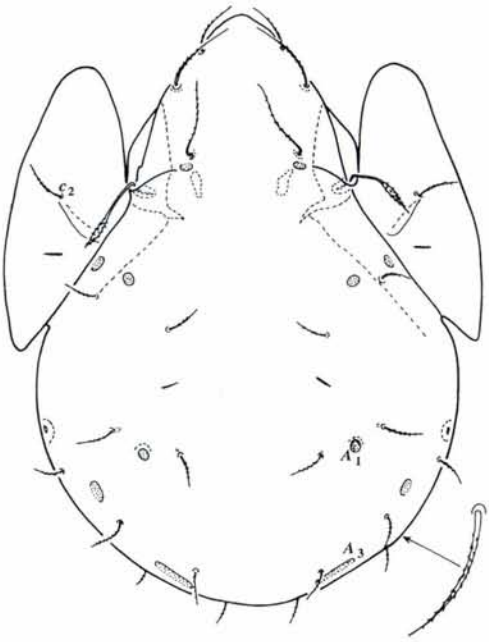
Prodorsum: Rostral apex slightly conical. Lamellae typical for the genus, with well developed cusps. Only the outer apices developed, inner margin rounded. Translamella thin, arched medially. Ratio of prodorsal setae *ex ro* < *le* < *in*, all setiform, finely ciliate. Sensillus small, characteristically bent outwards and backwards, its head well barbed.

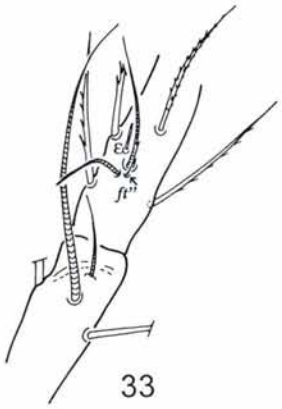
Notogaster: Dorsosejugal suture strongly narrowed or interrupted medially, but in this part a weaker line always observable. Pteromorphae well protruding anteriorly (in dorsal aspect), its outline arched as high as the arch of the dorsosejugal suture (Fig. 28). Surface displaying radiate lines. Notogastral surface smooth, with four pairs of round porose areae and ten pairs of setal alveoli present. Areae porosae A_1 located comparatively laterally. The insertion of setae *lm* present always behind the porose area *Aa*.

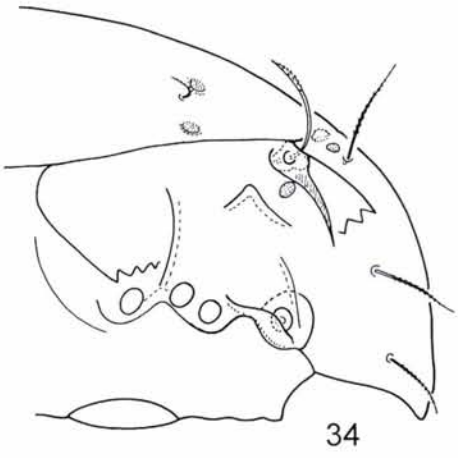
Lateral part of podosoma (Fig. 30): Tutorium with sharp apex, rostral setae arising close to it. Pedotecta I, II-III and discidium large. Cusps strong, long, reaching over the pedotecta II-III. Pedotectal carina does not reach to the ventral margin. Along the lateral margin of the ventral plate a narrow band of porose areae observable.

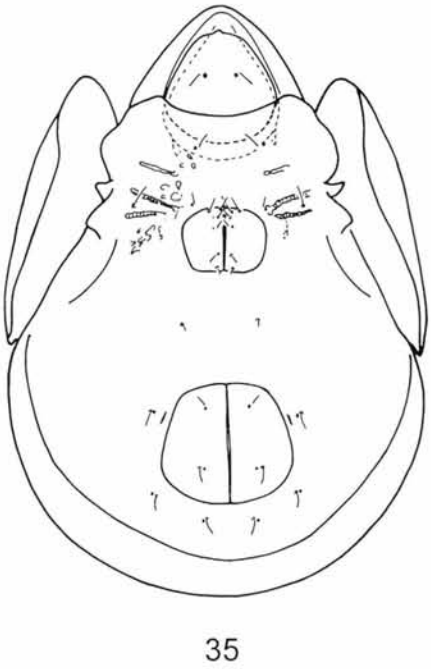


Figs 28–31. *Unguizetes yemenitica* sp. n.: 28 = body in dorsal aspect, 29 = body in ventral aspect, 30 = podosoma in lateral aspect, 31 = palp









Figs 32–35. *Pilogalumna arabica* BAYOUMI et AL-KHALIFA, 1986: 32 = body in dorsal aspect, 33 = solenidial group of leg I, 34 = body in ventral aspect, 35 = podosoma in lateral aspect

Ventral regions (Fig. 29): The surface of this region without any peculiar sculpture. Apodemes short, epimeral borders hardly observable. All epimeral setae ciliate and well observable. Anogenital setal formula: 6–1–2–3. Genital setae ordered in longitudinal, arching rows. Setae in anal and adanal regions much shorter than the epimeral or genital setae.

Legs: All legs tridactylous, heterodactyly observable. The surface of the claws finely serrate. φ*1* and φ2 arising on a common tubercle.

Remarks – The research results on this genus and species were contributed by WALLWORK (1965). The new species may well be differentiated from all these, especially by the lack of rostral tooth, the presence of *dsj*, the position of setae *lm* and that of area porosa *A1*. BAYOUMI & AL-KHALIFA (1985) published the presence of *U. reticulatus* WALLWORK, 1965 in Saudi Arabia. It might well be that our data refer to this species, however, the published figure is so primitive and full of errors that identification is impossible.

Etymology – The species is named after its origin.

Pilogalumna arabica BAYOUMI et AL-KHALIFA, 1986 (Figs 32–35)

On the basis of some main features (ratio of prodorsal setae, form and position of porose area, measurements, etc.) the newly collected series of a *Pilogalumna* species is identifiable with the original description (BAYOUMI & AL-KHALIFA 1986) and the figures of *Pilogalumna arabica*. The drawings given by the authors are primitive and full of errors. On this ground, I give some new figures of this interesting species (Figs 32–35).

* * *

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