

Description and redescription of Ethiopian Oribatids (Acari, Oribatida), II.

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Abstract—The Oribatid species from Angola and Congo are discussed, four of them are new to science. Six known species are redescribed and figured. With 45 figures.

In the preceding paper of this series the background and the purposes of the present study have been outlined. In this part it will be given first complementary diagnoses and redescriptions of six species described by BALOGH during the period 1958—1962, then the descriptions of four new species will be detailed.

The types are deposited in the Hungarian Natural History Museum, Budapest (HNHM), the Musée Royal de l'Afrique Centrale, Tervuren (MRAT) and the Museum d'Histoire naturelle, Genève (MHNG).

Brachyochthonius heterotrichus (BALOGH, 1963) comb. n.

Brachyochthonius heterotrichus BALOGH, 1963: 35, fig. 1.

Examined type specimen: Holotype: Ang. 16929: Galerie forestière de l'arrière-rive de la rive gauche de la chicapa. 7.26 S., 20.27 E., 20.IV.1962, leg. A. de Barros Machado et Ed. Luna de Carvalho. — Holotype deposited in the MRAT.

BALOGH in his original description did not mention and figure the anal region, therefore the ranging of the species among the Brachyochthoniids-genera was uncertain. I figure the above mentioned part herewith (Fig. 2). but during re-examination of the holotype a better illustration of the sculpture of the dorsal surface has also been prepared (Fig. 1). Border of fields on notogaster not smooth, but more or less waved. Anterior and posterior border of median fields weaker than lateral ones.

Mesoplophora africana BALOGH, 1958

Mesoplophora africana BALOGH, 1958: 32.

Examined type series: Holotype and 26 paratypes: Ang. 4117,8: Ruisseau Tchá-Muchito, sous-affl. de Cavuamba, Alto Cuilo, Cacolo, galerie forestière des sources du ruisseau, l. VI. 1954, leg. A. de Barros Machado. — Holotype and 12 paratypes in the MRAT, 12 paratypes (1088-PO-85) in the HNHM and 2 paratypes in the MHNG.

Other examined material: 10 specimens, Ang. 14614.16: Dundo: Galerie forestière R. Luachimo (7.21 S, 20. 50 E), 7.IV.1960, leg. A. de Barros Machado.

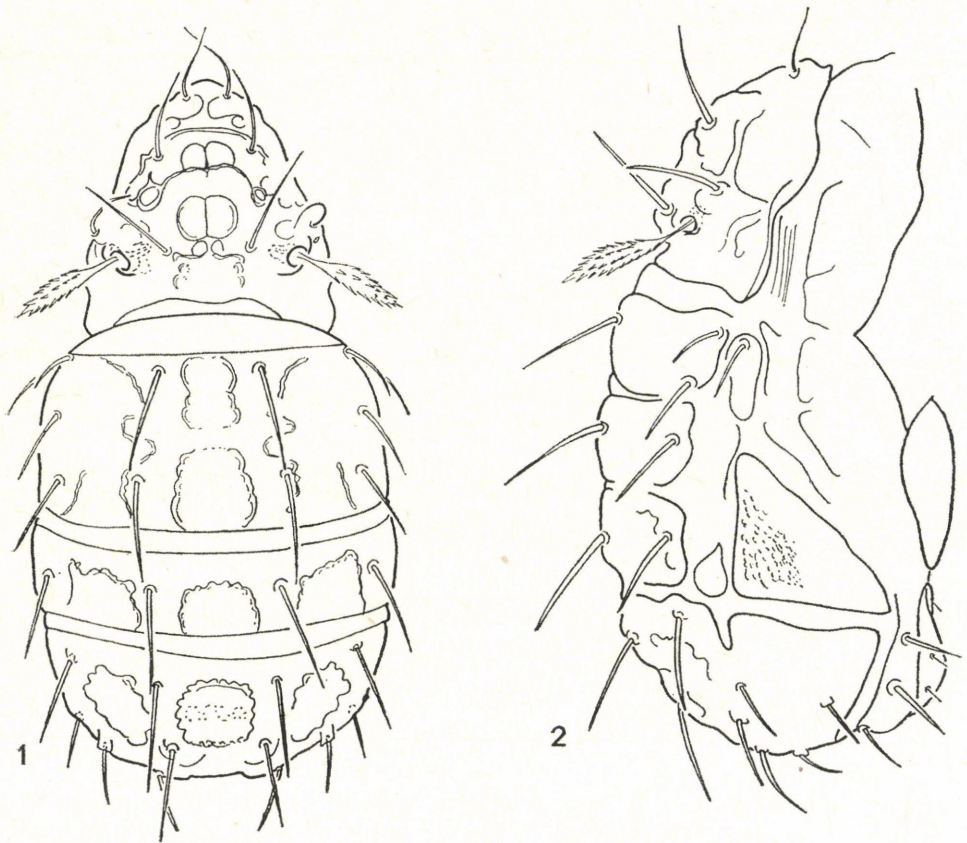
Measurements: Length of aspis: 191–208 μm , length of "notogaster": 227–304 μm , height of „notogaster": 127–156 μm .

Aspis: Lateral margin and lateral carina well observable, strongly converging and fused in front of rostral setae from lateral view (Fig. 3). Ratio of prodorsal setae: *in*/*le*/*ro*. All ciliate. Setae *ex* minute. Sensillus directed backwards, setiform, with 13–15 long spine.

"Notogaster": Cerotegument with fine irregular microsculpture. Eight pairs of strong, well ciliate notogastral setae present, no notable difference among them.

Gnathosoma: Rutellum narrow, oval setae strong, setae *or*₂ modified (Fig. 4).

Anogenital region: Anogenital setal formula: 7–1–2–(9). Aggenital setae very minute, hardly discernible. Genital plate divided by a transversal chitinous crest, one of the genital setae arising in front of the crest, 6 behind it (Fig. 5). Anal setae shorter than "ventral" ones (Fig. 6), among the latter one pair (*v*₈) much longer and stronger than the others. All "ventral" setae well ciliate.



Figs. 1-2. *Brachychochthonius heterotrichus* (BALOGH, 1963): 1=dorsal side, 2=lateral side

Phthiracarus angolensis sp. n.

Measurements: Length of aspis: 303-345 μm , length of notogaster: 598-673 μm , height of notogaster: 418-500 μm .

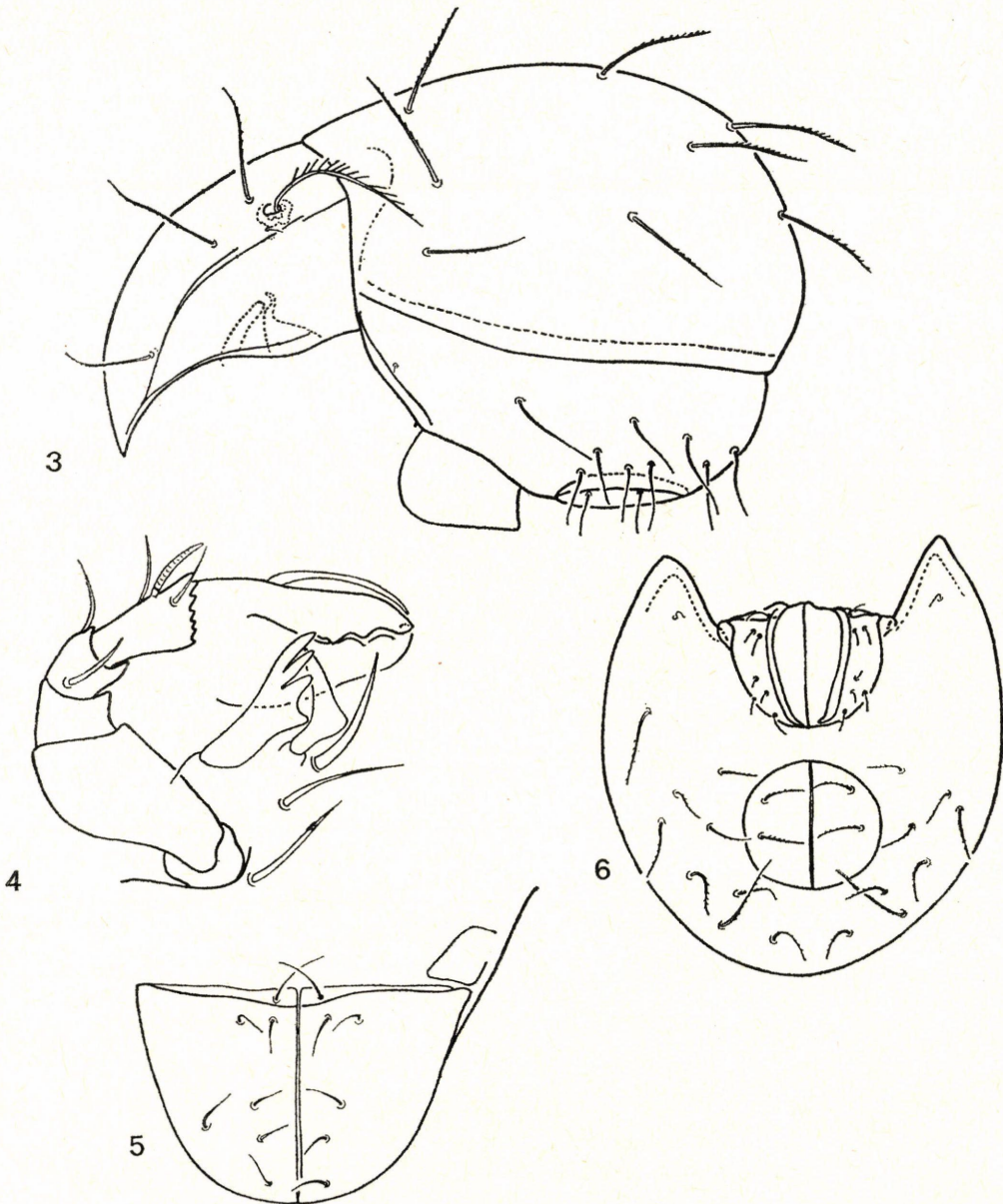
Aspis: Its outline continuously convex from lateral view (Fig. 7). One strong lateral carina present on each side. Rostral setae arising very near to each other, lamellar and interlamellar setae very long, but not reaching to insertion of rostral setae (Fig. 10), both pairs leaning over the dorsal surface. Sensillus (Fig. 8) long, slightly fusiform.

Notogaster: Fifteen pairs of very thin, filiform notogastral setae present, setae f_1 reduced. Two (*ia* and *im*) of lyrifissures observable.

Anogenital region: Four pairs of longer and 5 pairs of shorter genital setae, latter ones arising near by inner margin of plates (Fig. 9). Three pairs of valid and two pairs of reduced anoadanal setae present, an_1 and an_2 longer than ad_3 .

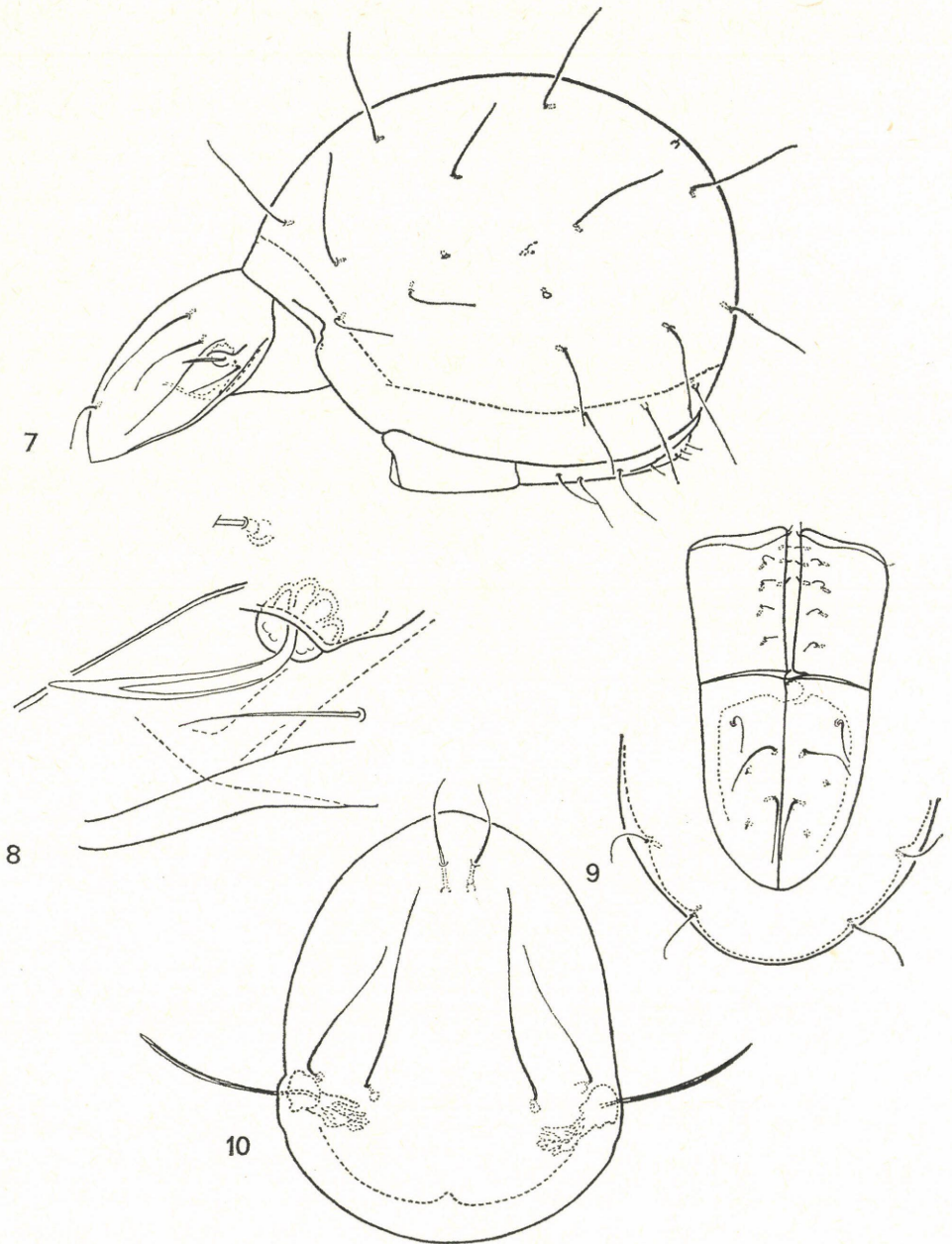
Legs: All legs monodactylous, claws with two conspicuously long teeth on its inner margin.

Material examined—**Holotype** (1089-H0.85): Environ Malange, forest litter and moss, 12. V. 1980, leg. Z. Szabó; 6 **paratypes**: from the same sample.—**Holotype** and 4 **paratypes** (1089-PO-85): deposited in the HHNM, 1 paratype in the MRAT and 1 paratype in the MHNG.



Figs. 3-6. *Mesoplophora africana* BALOGH, 1968: 3=body from lateral view, 4=gnathosoma, 5=genital plates, 6=anogenital region.

Remarks: The new species is well characterised by its long and slightly fusiform sensillus. On this ground it stands nearest to the Palaearctic species *P. lentulus* (C. L. KOCH, 1841), however the lamellar and interlamellar setae of the latter one is much shorter and the outline of its aspis is not continuously convex.



Figs. 7-10. *Phthiracarus angolensis* sp. n.: 7=lateral side, 8=trichobothrium, 9=anogenital region, 10=aspis

***Pseudonothrus hirtus* BALOGH, 1958**

Pseudonothrus hirtus BALOGH, 1958: 7.

Examined type series: Holotype and 10 paratypes: Ang. 4720.41: Lumeje II, bois humide sur la rive gauche de la Lumeje (Affl. du Zambeze) au N. de la station Sandando du C.F.B., Poste de Bussace (80 km à l'E de Vila Luse), 17.I.1955. leg. A. de Barros Machado. — Holotype and 4 paratypes in the MRAT, 5 paratypes (1090-PO-85) in the HNHM, 1 paratype in the MHNG.

Other examined material: 4 specimens: Ang. 17893: Fôret-galerie R. Luachimo, Route Turismo, 8.XI.1963, leg. Ed. Luna de Carvalho.

Measurements: Length: 506–527 μm , width: 250–292 μm .

Prodorsum: Rostral setae arising on smaller, lamellar one on larger tubercles. Prodorsal surface with one pair arched lateral and one pair converging median costula. One pair of large tubercles present basally at the insertions of the interlamellar setae. A group of areolae medially and some other ones basally present. Rostral setae normally ciliate, lamellar one tousled (Fig. 11). Interlamellar setae calyciform. Sensillus slightly dilate, distally clavate, this parts spiculate.

Notogaster: Its surface only partly ornamented by large alveoli (Fig. 11).

Coxisternal region: Epimeral setal formula: 3–1–3–3. Lateral setae (*lc*, *3c* and *4c*) plumose, all, other separately ciliate.

Anogenital region: Twelve pairs of genital setae present, all densely ciliate. Two pairs of anal setae smooth, three pairs of adanal ones sparsely ciliate, all latter setae basally slightly dilate (Fig. 12).

Legs: All legs tridactylous, all three claws nearly equal in length (Fig. 13).

Remarks: The situation of this genus is rather problematic. It seems conspecific with *Allonothrus* VAN DER HAMMEN, 1953. The only difference is that there are very long setae on the posterior end of the body, because the number of genital setae and claws vary between 7–13 or 1–3, respectively. Further studies on this group are necessary.

***Hermannia africana* (BALOGH, 1958), comb. n.**

Phyllhermannia africana BALOGH, 1958: 7.

Examined type series: Holotype and 2 paratypes: L. 17: Tanganyika, Mt. Oldeani, versant, Est, 2350–2500 m., 6/9.VI.1957, forêt de bambous, leg. P. Basilewsky et N. Leleup. — Holotype deposited in the MRAT, 2 paratypes (1096-PO-85) in the HNHM.

Other examined material: 10 specimens: Afr. 105: Tanzania, Mts. Kilimanjaro, Kibo, 3820 m, 1.VIII.1972. leg. T. Pócs. Extracting in Berlese funnel, the root system of tussocks of grass taken in semi-desert area.

Measurements: Length: 785–943- μm , width: 410–557 μm .

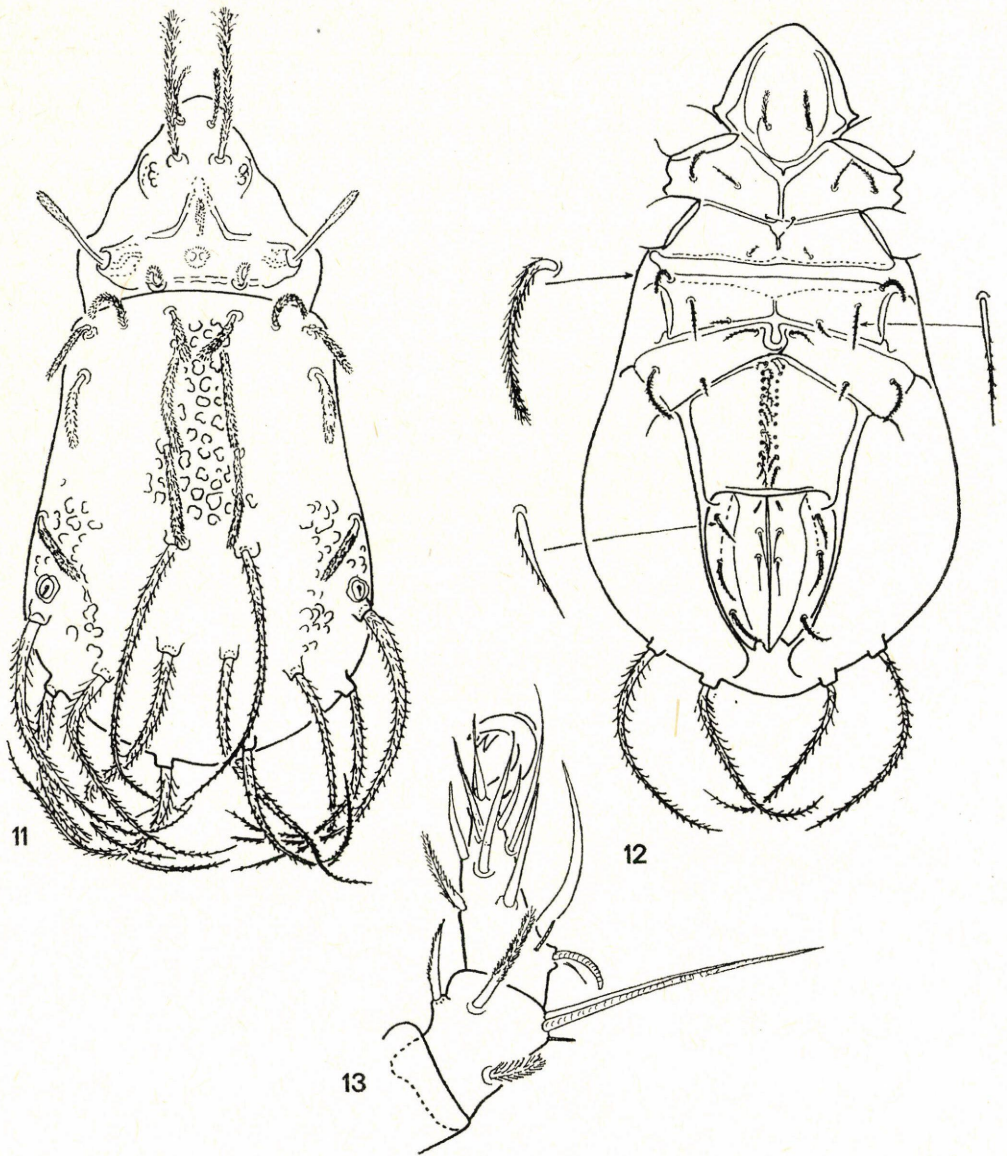
Prodorsum: Rostrum wide, rostral and lamellar setae originating near to each other, both pairs arising on tubercles or laths, ensiform. Interbothridial area without lamellae or costula but one pair well developed, nearly round tubercles and some granules beside them present basally. Interlamellar setae phylliform. Sensillus long, bacilliform, with roughened end. Posterolateral margin of prodorsum and a little area in front of acetabulum of leg I granulate (Fig. 14).

Notogaster: Surface of notogaster finely punctate, without ornamentation, but some irregular spots visible along lateral margin. Sixteen pairs of phylliform notogastral setae present, all finely roughened.

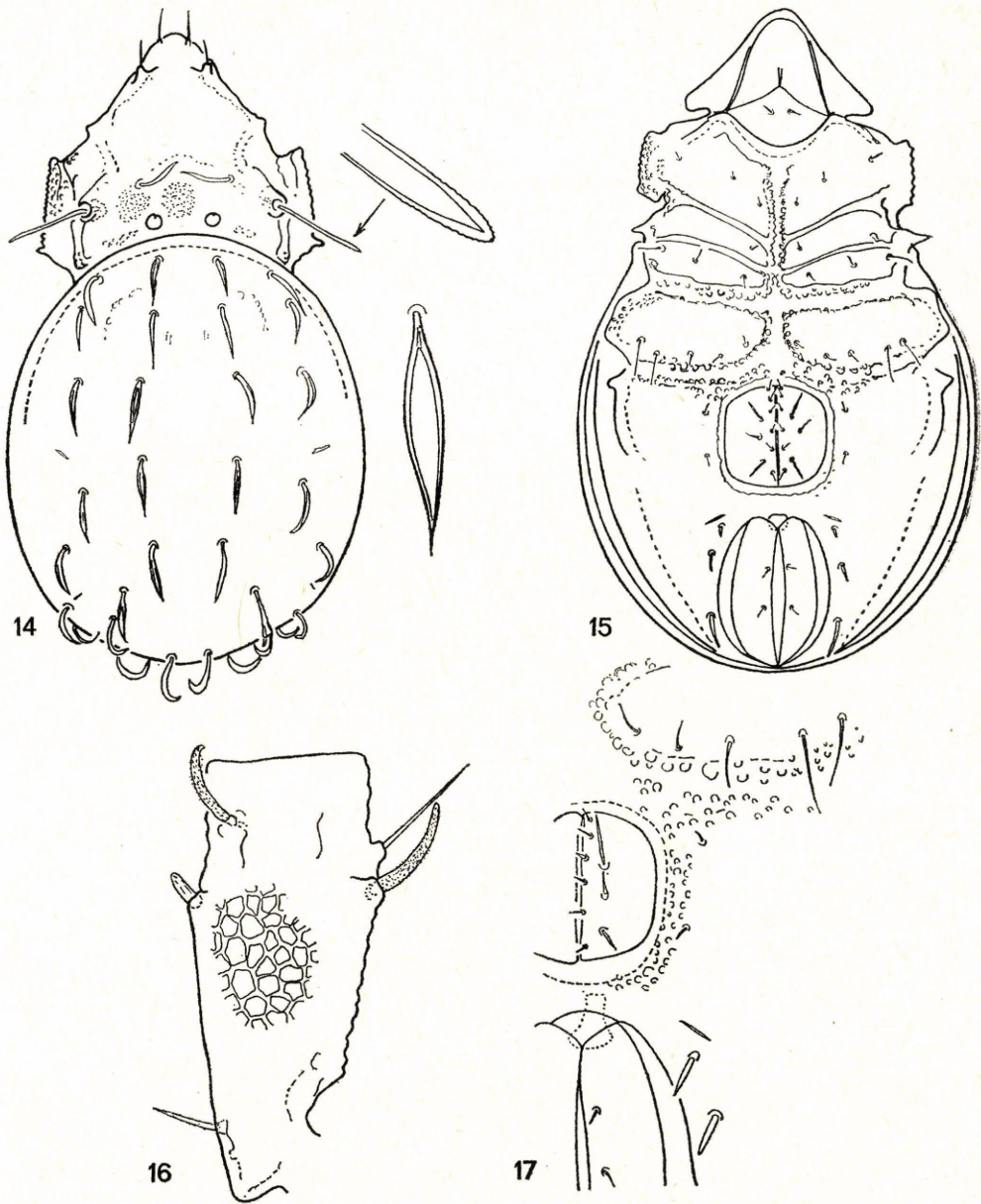
Coxisternal region: Epimeral setal formula 3–1–3–5. All setae thin and simple, setae *3c*, *4d* and *4e* much longer than the others. Epimeral surface punctate but all pedotecta and lateral part of epimeres granulate. Also granules and tubercles visible along the epimeral borders — with exception of *bo* 1 and *bo* 2 (Fig. 15).

Anogenital region: Anogenital setal formulas 9–2–2–3. Three pairs of genital setae in lateral position much longer than the others on the inner margin. Genital aperture framed by a tectum and some granules also visible along it (Fig. 17). Lyrifissures *iad* situated laterally, nearly transversal in position. Setae *ad*₁ much longer than *ad*₂ and *ad*₃.

Legs: Surface of femur, genu and tibia of all legs reticulated, tarsus smooth. Chaetotaxy of femur I as shown Fig. 16.



Figs. 11-13. *Pseudonothrus hirtus* BALOGH, 1958: 11 =dorsal side, 12 =ventral side, 13 =leg I



Figs. 14-17. *Hermannia africana* (BALOGH, 1958): 14=dorsal side, 15=ventral side, 16=genu of leg I, 17=anogenital region

Cultroribula tropica BALOGH, 1958

Cultroribula tropica BALOGH, 1958: 24.

Examined type series: Holotype and 6 paratypes: Ang. 4117.8: Ruisseau Tchá-Michito, sous-affl. de la Cavuemba, Alto Cufle, Cacolo, galerie forestière des sources ruisseau. 1. VI. 1954. leg. A. de Barros Machado. — Holotype and 2 paratypes deposited in the MRAT, 3 paratypes (1091-PO-85) in the HNHM and 1 paratype in the MHNG.

Other examined material: 6 specimens: Ang. 16845: Dundo: Galérie forestiere R. Casulo, affl. riv. g. du R. Luachimo (7.32 S, 20. 52 E), 30. I. 1962, leg. Ed. Luna de Carvalho; 8 specimens: Ang. 17893: Forêt-galerie R. Luachimo, Route Turisme, 8. XI. 1963, leg. Ed. Luna de Carvalho, Embeehure R. Mussungue.

Measurements: Length: 228–240 μm , width: 152–160 μm .

Prodorsum: Rostrum with a deep incision medially. Rostral setae strong, originating on dorsal surface. Lamellae slightly diverging, their cusps well separate. Lamellar setae longer, interlamellar setae shorter and thinner than the rostral ones. Latter glabrous, both other pairs ciliate. Tutorium (Fig. 20) short, basally wide and anteriorly narrowed, without cusps. Sensillus lanceolate, with some fine cilia on its surface.

Notogaster: Dorsosejugal suture straight. Notogaster behind humeral area lacking (Fig. 18). Ten pairs of notogastral setae present, setae *ta* longer than the others.

Lateral region of podosoma: Pedotecta I rounded and wide posteriorly and also anteriorly, with a very strong basal tectum. Pedotecta II and discidium small. Circumpedal carina running nearly to margin of ventral plate. Lesser part of this region below acetabulum of legs III and IV granulate (Fig. 20).

Coxisternal region: Apodeme II short, sejugal and IV long, composing transversal bands. Apodeme III lacking. Epimeral borders only partly developed, so epimer I fused with II, and same with epimer III and IV. Epimeral setal formula: 3-1-3-3 (Fig. 19). Setae *1b*, *3b* and *4b* slightly longer than the others. Surface with irregular reticulation.

Anogenital region: Genital and anal plates very large, their borders touching medially. Surface of the genital plates with irregular spots. Anogenital setal formula: 6-1-2-3. Aggenital setae in aggenital position.

Legs: All legs monodactylous.

Oppia gibbosa sp. n.

Measurements: Length: 772–891 μm , width: 410–456 μm .

Prodorsum: Rostrum elongated, nasiform from lateral view (Fig. 25). Rostral setae arising dorsally comparatively nearly near to each other. All prodorsal setae long, setiform, their ratio: *in* > *le* > *ex* > *ro*. Sensillus (Fig. 23) slightly fusiform, spiculate. Exobothridial area well granulate.

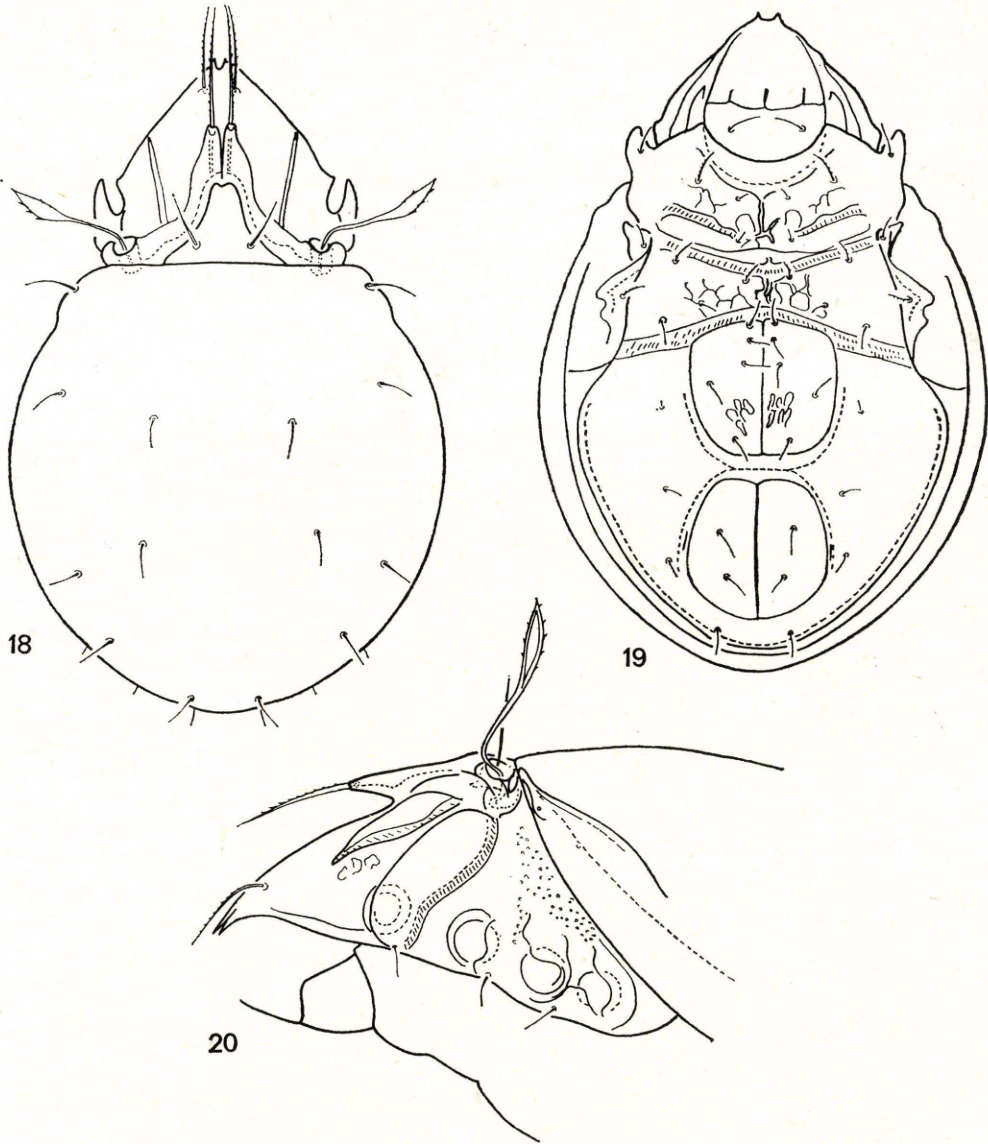
Notogaster (Fig. 21): Very highly convex (Fig. 24). Setae *ta* represented only by their alveoli, nine pairs of true notogastral setae present. Five pairs of them (*te*, *ti*, *ms* and *r*₁) very long, nearly equal in length, *r*₂ and *r*₃ much shorter, but *p*₁–*p*₃ minute. With the exception of the latter ones—all well ciliate.

Lateral part of podosoma: Pedotecta I very large, auriculate (Fig. 25), with sharp apex from dorsal or ventral view. Circumpedal carina well developed, ventrally originating from acetabulum III. Pedotecta II very small, discidium thin, without sharp spur posteriorly, it well observable only from dorsal view. The greatest part of this region, also the inner surface of pedotecta I well granulate.

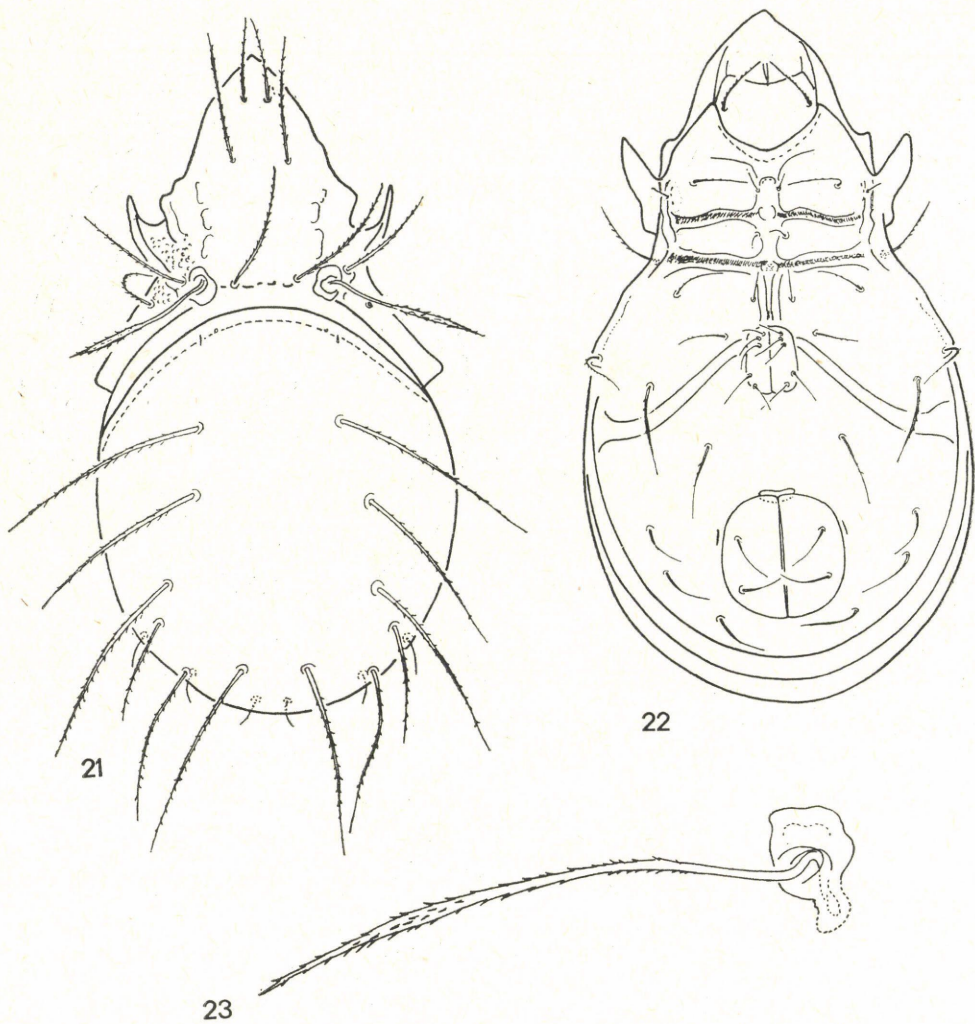
Coxisternal region: Mentotectum with strong triangular corner laterally. Apodeme II and sejugal one very long, they touching medially, *ap*. III and IV absent. Epimeral border well developed, epimeres 2 and epimeres 3–4 not touching medially. Epimeral border IV complete, strongly arched far posteriorly, to the acetabulum of legs IV (Fig. 22).

Anogenital region: Genital apertura much smaller than the anal one. Anogenital setal formula: 5-1-2-3. Aggenital setae longer than adanal or anal ones. All latter ones nearly equal in length. Pori *iad* located near to anal opening.

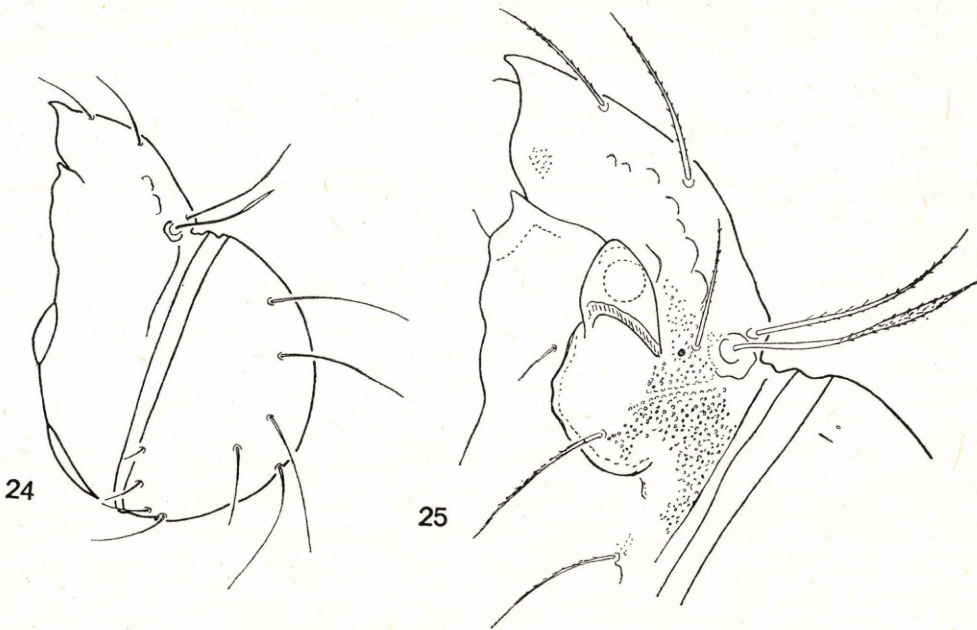
Material examined: Holotype (1092-HO-85): Environ Melange, forest litter and moss. 12.V.1980. leg. Z. Szabó. 9 paratypes: from the same sample; 3 paratypes: Ang. 4117.8: Ruisseau Tchá-Muchito, sous affl. de la Cavuemba, Alte Cufle, Cacolo, galerie forestière des sources du ruisseau, 1.VI.54, leg. A. de Barros Machado. — Holotype and 6 paratypes (1092-PO-85) deposited in the HNHM, 5 paratypes in the MRAT and 1 paratype MHNG.



Figs. 18–20. *Cultroribula tropica* BALOGH, 1958: 18 = dorsal side, 19 = ventral side, 20 = prodorsum from lateral view.



Figs. 21-23. *Oppia gibbosa* sp. n.: 21=dorsal side, 22=ventral side, 23=sensillus



Figs. 24-25. *Oppia gibbosa* sp. n.: 24=habitus of the body, 25=prodorsum from lateral view

Remarks: The new species is well characterized by the very large, auriculate pedotecta I. On this ground it may be unambiguously distinguished from all known *Oppiidae* taxa.

***Rhynchoribates excelsior* sp. n.**

Measurements: Length: 713-852 μm , width: 460-582 μm .

Prodorsum: Rostrum conical, behind the cuspis its margin serrated by 6-7 small teeth on each side (Fig. 29). Rostral setae arising dorsally, straight. Prodorsal surface ornamented by typical formation of tubercles and laths (Fig. 26). One unpaired lath also present in rostral region. Lamellae well developed, they connected to each other by a sharp median unpaired cuspis. Lamellar setae setiform, curved, interlamellar setae erect and dilated proximally. Sensillus long, thin, S-shaped, with a thin velum. Bothridium funnel-shaped.

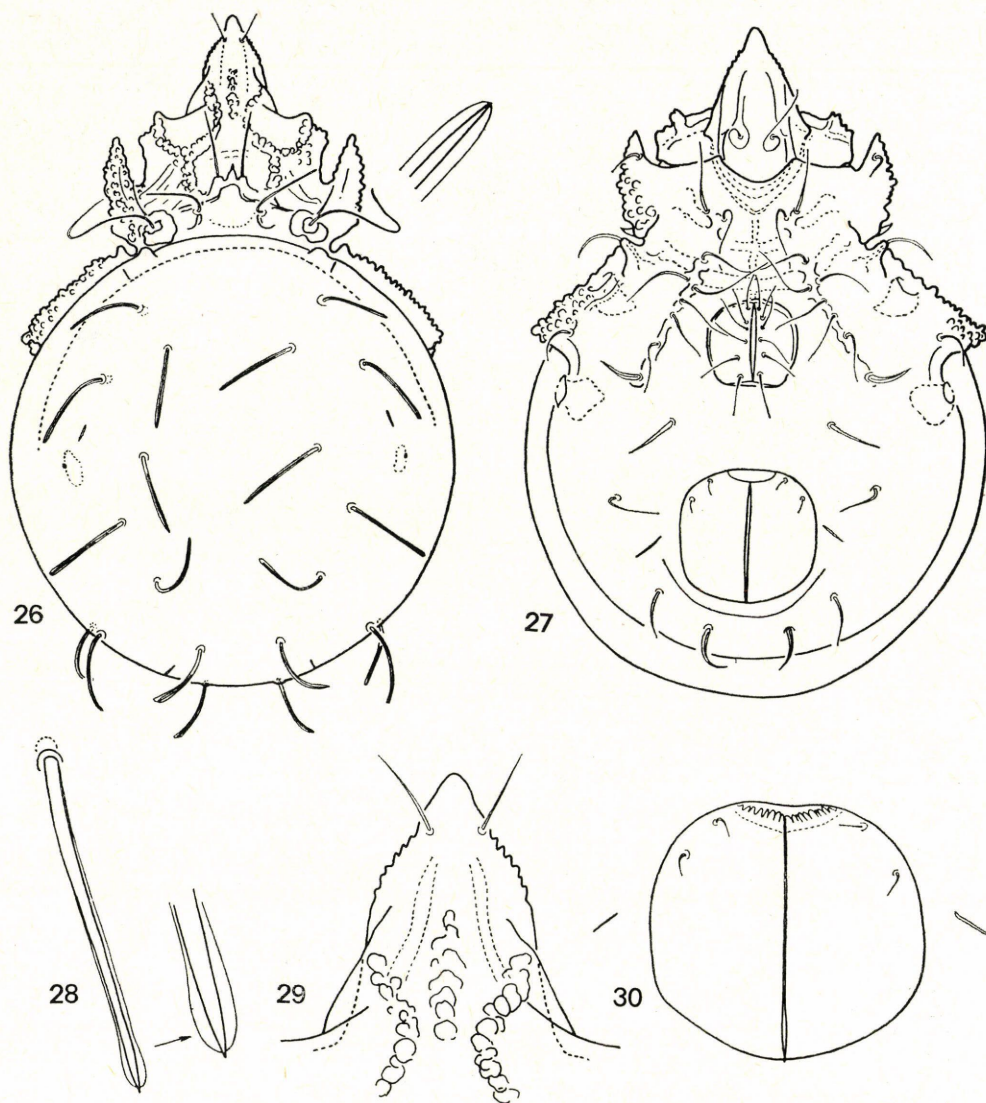
Notogaster: Dorsosejugal suture straight medially, with one pair of tubercles laterally. Ten pairs of typical notogastral setae (Fig. 28) present, dilated proximally with sharp spur medially.

Lateral part of podosoma: A longitudinal well-framed areae along the acetabules of all legs pustulate, but sejugal region smooth, only one pair of large tubercles visible in opposite position (Fig. 31). Surface of pedotecta also pustulate.

Gnathosoma: Suctorial labiogenal articulation as in the type species of the genus. Setae very long, flagellate. Femur of palps with two very long and strong seta.

Coxisternal region: Pustules of pedotecta 1 spreading to lateral part of epimeres 1 and 2. Apodemes hardly visible, thin and fine. On the surface a pair of strong longitudinal carina present, epimeral setae with exception of setae *1c*, *3c* and *4c* arising on or along them! Last pair of this series sword-shaped. These setae long and flagellate, but some of them dilate and sword-shaped basally, much longer than setae *1c*, *3c* and *4c*. Setae *3c* arising on a strong tubercle, *4c* on the discidium. Epimeral setal formula: 3-1-3-5.

Anogenital region: Anogenital setal formula: 6-1-2-3. Genital setae very long, setae *ag* and *ad* slightly dilate, sword-shaped. Both pairs of anal setae originating on anterolateral margin of anal plates (Fig. 27).

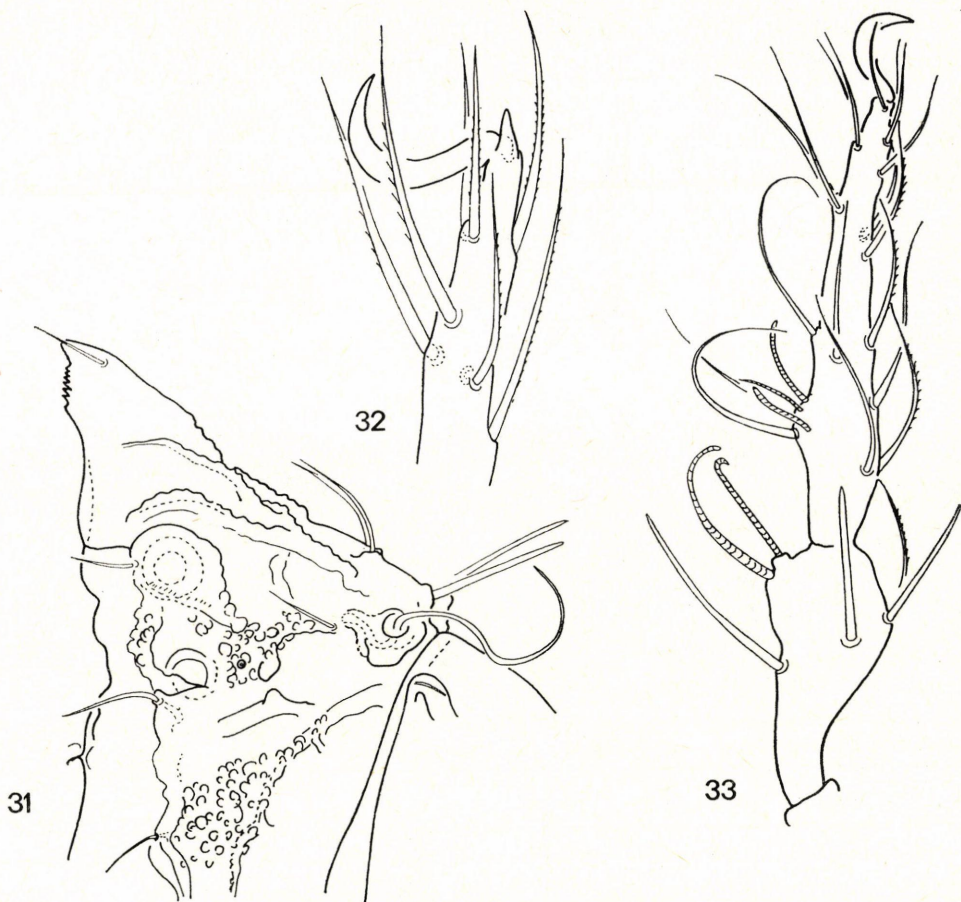


Figs. 26–30. *Rhynchoribates excelsior* sp. n.: 26 = dorsal side, 27 = ventral side, 28 = notogastral seta, 29 = rostrum, 30 = anal plate S

Legs: All legs with one claw. Setae p' and p'' on tarsus I setiform (Fig. 33), on tarsi II–IV short, spiniform (Fig. 32). Solenidium ψ_2 of tibia I originating on a separate tubercle.

Material examined: H o l o t y p e and 203 paratypes: Ang. 14614–46: Dundo: foret R. Luachichimo (7. 21. S, 20. 50 E), 7.IV.1960, leg. A. de Barros Machado. — Holotype and 100 paratypes deposited in the MRAT, 100 paratypes (1093–PO–85) in the HNHM and 3 paratypes in the MHNG.

R e m a r k s : See the key after *Rhynchoribates obtusus* sp. n.



Figs. 31-33. *Rhynchoribates excelsior* sp. n.: 31=prodorsum from lateral view, 32=tarsus of the leg N, 33=leg T

***Rhynchoribates obtusus* sp. n.**

Measurements: Length: 934-1025 μm , width: 643-697 μm .

Prodorsum: Rostral apex comparatively short, rounded, 3-4 marginal teeth originating very near to it (Fig. 38). Rostral and lamellar setae short, thin, interlamellar setae very long, several times longer than the lamellar ones, and longer than setae *ta* or *te*, their shape similar to those of the latter ones. Sensillus S-shaped, thin, finely roughened. Lamellae connected to each other and a complicated lath-system connecting with them. Lateral surface of prodorsum pustulate, other surface finely granulate. Some well-developed typical costula present, but unpaired median one absent (Fig. 14).

Notogaster: Dorsosejugal suture waved medially, a pair of strong, conical tubercles laterally (Fig. 34). Ten pairs of notogastral setae different of length (Figs. 35-36), their end with serrate velum. Setae p_3-p_1 much shorter than the others, the ratio among them: $p_1 \rangle p_2 \rangle p_3$.

Lateral part of podosoma: circumpedial area well framed, pustulate, pustules reaching to epimeral surface (Fig. 39).

Coxisternal region: Mentotectum strong, followed in longitudinal crests posteriorly. Two pairs of strongly chitinised condyles present on 2nd and sejugal apodemes. Apodemes thin, but connected to each other, sternal one also observable. Epimeral setal formula: 3-1-3-5,

epimeral setae partly setiform, partly sword-shaped, median setae much longer than lateral (*Ic*, *3c*, *4c*) ones. Setae *3c* originating on large tubercles. Longitudinal carina absent, however setae *3a*, *4a*, *4b* and *4c* arising along a pair of longitudinal but from each other diverging lines (Fig. 37).

Anogenital region: Anogenital setal formula as 6-1-2-3. Genital setae long and thin, anal ones minute, aggenital and adanal setae sword-shaped. Behind anal aperture a well-developed crista present. Lyrifissures *iad* originating far from the anal plates. Some foveolae visible between the anal and genital apertures.

Legs: All legs monodactylous. Setae *p'* and *p''* on tarsi modified, long on the first leg, spini-form on legs II-IV. All trochanter and femur areolate.

Material examined Holotype and 25 paratypes: Ang. 14614-46: Dundo: Galerie forestiere R. Luachimo (7.21 S, 20. 50 E), 7. IV. 1960, leg. A. de Barros Machado. — Holotype and 12 paratypes deposited in the MRAT, 12 paratypes (1094-PO-85) in the HNHM and 1 paratype in the MHNG.

KEY FOR THE ETHIOPIAN *RHYNCHORIBATES* GRANDJEAN, 1929, SPECIES

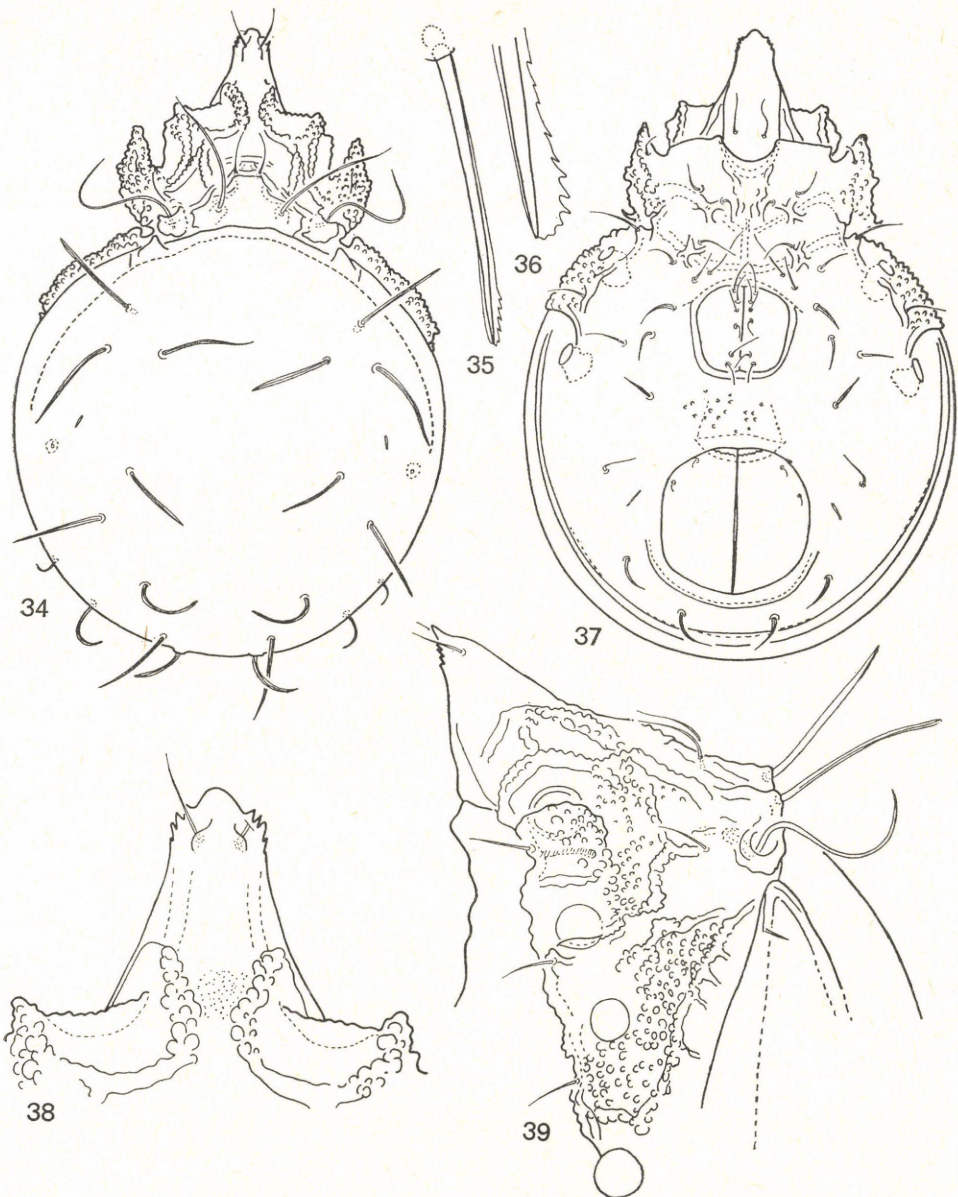
- 1 (6) Rostrum incised.
- 2 (3) Rostrum with two incisions **radula** MAHUNKA, 1983
- 3 (2) Rostrum with one incision.
- 4 (5) Lamellar setae long, straight, nearly as long as sensillus **montanus** BALOGH, 1962
- 5 (4) Lamellar setae short, bended inwards, much shorter than sensillus **subaequalis** BALOGH, 1962
- 6 (1) Rostrum without incision.
- 7 (8) Rostrum very long, narrow, anterior part longer than denticulate part **acutus** BALOGH, 1958
- 8 (7) Rostrum shorter and gradually narrowed anteriorly, its anterior part shorter than denticulate part.
- 9 (10) Lamellar setae long, more than twice longer than rostral one and only slightly shorter than interlamellar setae. A median unpaired costula present on anterior surface of prodorsum **excelsior** sp. n.
- 10 (11) Lamellar setae short, not or slightly longer than rostral one and more than twice as long as interlamellar setae. A median unpaired costula absent.
- 11 (12) Interlamellar setae very long, reaching out to anterior transversal margin of prodorsum. Rostral apex widely rounded **obtusius** sp. n.
- 12 (11) Interlamellar setae short, ending far from anterior transversal margin of prodorsum. Rostral apex acute.
- 13 (14) Lamellar setae arising on a semicircular chitinous costula. Prodorsal tubercles confluent arranged in rows **robinsoni** BALOGH, 1962
- 14 (13) Lamellar setae arising on a nearly straight chitinous costula. Prodorsal tubercles separate from each other **serratus** BALOGH, 1958

Scapheremaeus cornutus BALOGH, 1958

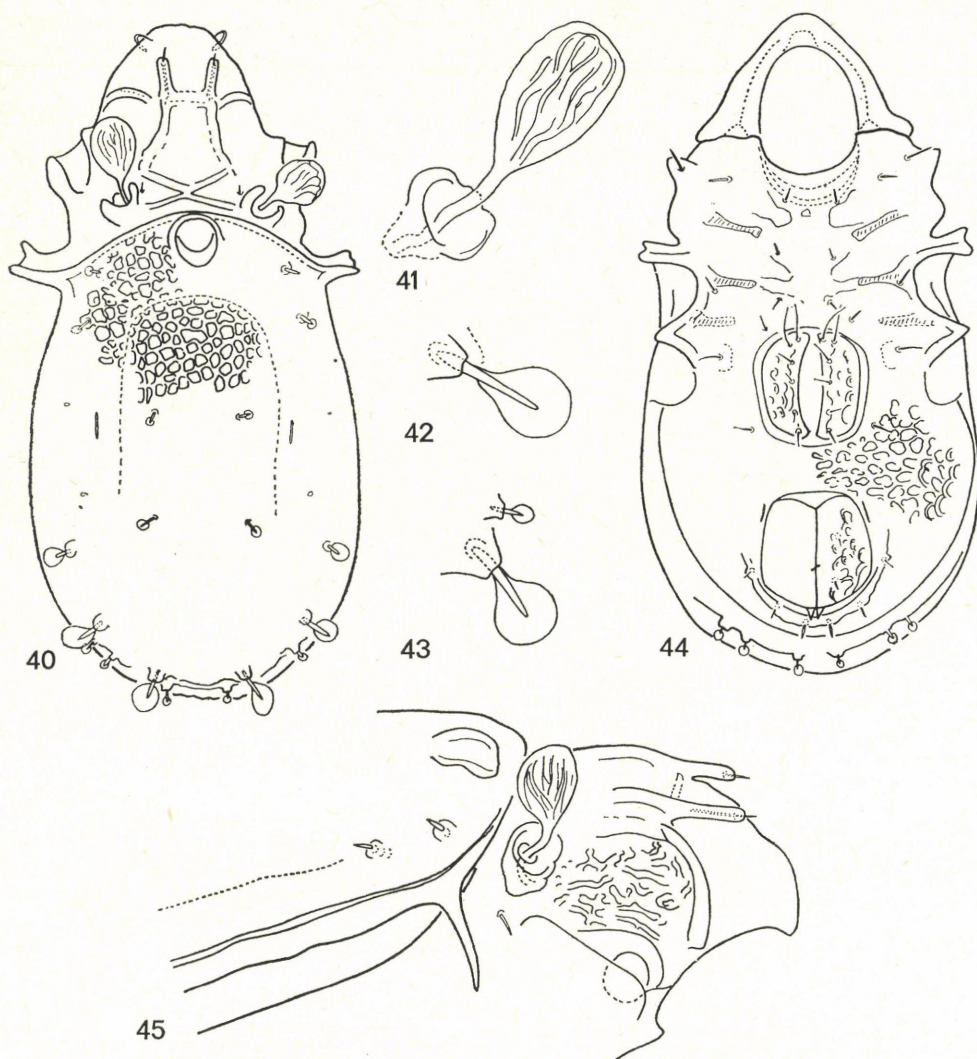
Scapheremaeus cornutus BALOGH, 1958

Examined type specimen: 1 paratype (?holotype destroyed): Ang. 4385.45: Riv. Cuile, galerie forestière des sources, Alto Chicapa, 17.VIII.1954, leg. A. de Barros Machado. — Paratype (1095-PO-85) deposited in the HNHM.

Measurements: Length: 328 µm, width: 168 µm.



Figs. 34-39. *Rhynchoribates obtusus* sp. n.: 34-dorsal side, 35-notogastral seta, 36=end of the notogastral seta, 37=ventral side, 38=rostrum, 39=prodorsum from lateral view



Figs. 40-45. *Scapheremaeus cornutus* BALOGH, 1958: 40=dorsal side, 41=sensillus, 42-43=notogastral setae, 44=ventral side, 45=prodorsum from lateral view

Prodorsum: Rostrum rounded, rostral setae long, but thick long free lamellar cusps present, spiniform lamellar setae arising on their cusps. Translamella absent, but a transversal band visible, laterally bended (Fig. 40). An x-shaped laths basally observable. Exobothridial region rugose, interlamellar region with a weak polygonal reticulation. Sensillus (Fig. 41) phylliform, flabellate, its surface rugose.

Notogaster: Humeral projection very long, narrow, bended ventrally. Whole notogastral surface polygonate, inner surface not or partly separate. Ten pairs of characteristic notogastral setae composed of a stick-shape peduncle and a rounded or pear-shaped head (Figs. 42-43) present. Three pairs of larger and seven pairs of smaller setae present (Fig. 40).

Coxisternal region: Apodemes II, IV and the sejugal ones nearly equal in length. Epimeral beorers hardly observable. Epimeral setal formula: 3-1-2-2.

Anogenital region: Surface areolate (Fig. 44). Anogenital setal formula: 6-1-2-3. Genital setae very long, thin, anal and adanal setae short, spiniform, ad_1 slightly dilate, fusiform.

Legs: All legs tridactylous. Femur of leg I and II with a well framed, narrow, longitudinal, porose area.

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