Poronotic oribatids from Kenya (Acari Oribatida)

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A list of 11 newly collected and identified poronotic oribatids from Kenya is presented. Six of these represent new species or subspecies, belonging to the families Micreremidae, Oribatellidae, Oribatulidae, Haplozetidae and Scheloribatidae. The relationships of Semischeloribates Hammer 1973 are discussed.

KEY WORDS: Acari Oribatida Poronota, new taxa, new distributional data, taxonomic notes, Kenya.

INTRODUCTION

In 1983, we began research on Kenyan (and Tanzanian) Oribatida. Our revision of the mites of Kenya, which will be incorporated in a future book, has been the subject of many publications, e.g. MAHUNKA (2001, 2003), MAHUNKA & MAHUNKA-PAPP (1992, 2007). The aims of the studies were discussed the above-mentioned papers.

In the present study, we discuss 11 species belonging to the poronotic Oribatida. We describe 6 new species or subspecies, give new locality data for 5 species, and discuss taxonomic problems. The nomenclature and morphological terminology are the same as in our previous papers (e.g. MAHUNKA & MAHUNKA-PAPP 2007).
LIST OF COLLECTING SITES


LIST OF STUDIED SPECIES

Family Micreremidae Grandjean 1954

_Micreremus elongatus_ n. sp.

Family Scutoverticidae Grandjean 1954

_Scutovertex subspinipes_ Balogh 1959
Locality: Ke-77/66.

Family Phenopelopidae Petrunkevich 1955

_Eupelops forsslundi_ (Balogh 1959)
Locality: Ke-77/66.

Family Oribatellidae Jacot 1925

_Pseudotectoribates kittenbergeri striatus_ n. ssp.

Family Ceratozetidae Jacot 1925

_Africoribates undulatus_ Balogh 1959
Locality: Ke-77/66.

Family Tegoribatidae Grandjean 1954

_Hypozetes imitator_ Balogh 1959
Locality: Afr-950.

Family Oripodidae Jacot 1925

_Benoibates rugosus_ Mahunka 2001

Family Haplozetidae Grandjean 1936

_Vilhenabates reductus_ n. sp.
_Peloribates consectionus_ n. sp.

Family Scheloribatidae Grandjean 1936

_Scheloribates mahnerti_ n. sp.
_Semischeloribates reticulatus_ n. sp.
NOTES ON STUDIED SPECIES AND DESCRIPTION OF NEW TAXA

**Micreremus elongatus** n. sp.

**Diagnosis.** Rostral part broadly rounded. Prodorsum with quadrangular costula, bearing rostral setae anteriorly. Sensillus short, with large rounded head. Notogastral surface smooth anteriorly, distinctly polygonate posterior to this region. Fourteen pairs of bacilliform notogastral setae, lyrifissures im conspicuously long.


**Measurements.** Length of body: 312-330 μm, width of body: 137-145 μm.

**Prodorsum.** Wide, typical of the genus. Median part completely framed by distinct costula, with pair of short costulae running to bothridia. Some ridges also present on median part. Rostral setae curved medially, comparatively long, arising on costula medially (Fig. 1). Lamellar setae located medially on prodorsum, interlamellar setae inserted on posterior costula extending to bothridia. Rostral setae setiform, longer than other bacilliform prodorsal setae. Bothridium cup-shaped, peduncle of sensillus very short, barely longer than diameter of its round head.

**Notogaster.** Peculiarly narrow, dorsosejugal scissure convex and penetrating well into interbothridial region of prodorsum. Median part framed by roundish lath. Nearly entire surface of notogaster ornamented by distinct sculpture, only small anterior part smooth, much larger posterior part polygonate (Fig. 1). Fourteen pairs of short bacilliform notogastral setae, subequal in length. All setae shorter than lyrifissures im.

**Lateral part of podosoma.** Tutorium weak, barely noticeable. Pedotectum 1 comparatively large, pedotecta 2-3 small, rounded in lateral view. Exobothridial region framed posteriorly, its lateral part with weak sculpture. Anterolateral part of notogaster with divided sculpture, between polygonate surface narrow, longitudinal smooth field present (Fig. 3).

**Ventral region** (Fig. 2). Infracapitulum foveolate, epimeral region weakly polygonate. Epimeral setal formula: 3-1-2-2. All setae well observable, setiform, thin. Apodemes and epimeral borders weakly developed, short, ending far from each other. Pedotecta 2-3 very narrow, discidium much larger and wide. Genital plates sparsely foveolate. Ventral plate with strong sculpture, consisting of small foveolae medially and short ridges postero-

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1 HNHM: deposited in the Hungarian Natural History Museum, Budapest, with identification number of the specimens in the Collection of Arachnida.
laterally. Surface of anal plate also wrinkled. Anogenital setal formula: 4-0-2-3. The position of adanal setae characteristic, setae $ad_1$ arising far posteriorly.

**Legs.** All legs tridactylous and all femora distinctly foveolate. Solenidia of legs III and IV arising on long apophysis, dilated and round distally.

**Remarks.** The new species is well characterised by the extremely long and narrow notogaster, the ornamentation of the body and the position of setae in the anogenital region. This combination of characters partly resembles *M. macrofissura* Hammer 1979; however, this species is much wider than the new species and has curved notogastral setae.

**Etymology.** Named after the peculiarly long and narrow notogaster.

Figs 1-3. — *Micreremus elongatus* n. sp. Fig. 1: body in dorsal view, Fig. 2: body in ventral view, Fig. 3: anterior part of prodorsum in lateral view.
Poronotic oribatids from Kenya

**Pseudotectoribates kittenbergeri striatus** n. ssp.


*Prodorsum.* Rostrum wide, with U-shaped incision (Fig. 7), with short, longitudinal crest observable posterior to incision. Lamellae large, typical in shape, but their apices short, directed laterally. Lamellar surface distinctly striate (Fig. 8), foveolae on them barely noticeable. Tutorium well developed. Rostral setae long, pilose. Lamellar and interlamellar setae smooth, slightly spiniform. Sensillus short, directed medially, head clavate. Bothridium deeply excavated.

*Notogaster* (Fig. 4). Dorsosejugal scissure convex medially, undulate laterally. Surface finely punctate. Pteromorphs triangular laterally. Anterior of notogaster with peculiar and distinct structure medially. Four pairs of small saccules with minute, round opening. Thirteen pairs simple, thin notogastral setae present, setae *p* shorter than the other setae.

*Lateral part of podosoma* (Fig. 6). Tutorium well developed, with long, spiniform apex, extending over insertion of rostral setae. Pedotectum 1 conspicuously large, its surface finely punctate and striate. Pedotecta 2-3 also well developed, custodium large.

*Ventral region* (Fig. 5). Infracapitulum distinctly punctate, epimeral region finely punctate. Epimeral setae — except setae *1c* — short, simple. Setae *1c* arising on basal margin of pedotectum 1. Ventral plate punctate or ornamented by small foveolae. Anogenital setal formula: 6-1-2-3. All setae simple, short, *ad*₁ and *ad*₂ in postanal position.

*Legs.* All legs tridactylous.

*Remarks.* The new subspecies characterized by the structure of the lamellar surface, the form of the lamellar apex and the length of the interlamellar setae. It resembles *P. kittenbergeri* (Balogh 1961), although the lamellar surface of *kittenbergeri* is less striate, slightly foveolate and the lamellar apices are longer and located medially distally on the lamellar surface. The interlamellar setae reaching the lamellar apices, much longer in *kittenbergeri* (Fig. 9) (see BOLGH 1959).
Etymology. Named after the distinct structure of the lamellar surface.

**Benoibates rugosus** Mahunka 2001

This species was described from forest vegetation the maritime territory of Kenya (near Mombasa). The specimen recently collected near Nairobi from forest litter is identical to the type specimen.

In the description of this species, it is stated that its closest relative is the type species of the genus (*Benoibates flagelliger* Balogh 1960). This proved to be a mistake, however, since *B. rugosus* is much closer to *B. marginata* Hammer 1973 from Samoa, from which it differs by much finer sculpture and much longer setae (e.g. the interlamellar setae).
Poronotic oribatids from Kenya

**Hypozetes imitator** Balogh 1959

In classifying the genus we accept the opinion of Behan-Pelletier (2001), who, besides the adults, also studied the immature stages. To us, the overlapping shape of the posterior part of the notogastral tectum and the presence of the apoanal porose area are quite conclusive.

Separation of the species within the genus is highly problematic, especially because even populations exhibit great variability. For example, the shape of the rostrum of the recently collected specimens is variable, the rostral apex and the tooth next to it display different shapes. Moreover, the thickness and form of the translamella are variable, as are the shape of the notogastral setae and the sensillus.

**Vilhenabates reductus** n. sp.

**Diagnosis.** Rostrum simple, round in dorsal aspect, nasiform in lateral view. Lamellae and sublamellae present, lamellar setae arising on lamellar surface. Tutorium also visible. Interlamellar setae short, shorter than the rostral and lamellar ones. Sensillus long, directed posteriorly, head lanceolate. Notogaster punctate and covered by small granules. Ten pairs of notogastral setae reduced, only setae 1 visible, all other setae represented by their alveoli. Sejugal porose area and 3 pairs of notogastral porose areas present. Anogenital setal formula 5-1-2-3. All legs monodactylous, tibia of leg II with an anterodorsal triangular apophysis. Femora blade-like ventrally.


**Measurements.** Length of body: 304 μm, width of body: 193 μm.

**Prodorsum.** Rostral apex narrowed anteriorly, nasiform in lateral aspect. Lamellae well developed. Sublamella short but present, without distal cusp, weak tutorium present, tutorial cusp observable (Fig. 15). Rostral and lamellar setae simple, former arising far from the lamellae or tutoria, lamellar setae positioned distally on end of lamellae. Interlamellar setae shorter than other prodorsal setae, characteristically bent inwards (Fig. 10). One pair of oval sejugal porose areas observable. Sensillus long, directed posteriorly, its head small and lanceolate, bearing comparatively long cilia.

**Notogaster.** Integument pitted, some small granules also present, mostly posteromarginally (Fig. 13), partly in laterodorsal position. Dorsosejugal scissure well developed, flatly arched. Pteromorphs movable, large, linguliform. Notogaster with only 3 pairs of small, round porose areas. Nine pairs of setal alveoli and one pair of short, fine notogastral setae (p1).

**Lateral part of podosoma** (Fig. 15). Exobothridial region without pattern. Pedotectum I narrow, Pedotectum II small. Exobothridial setae thin, comparatively long. Lamellar and humeral porose areas comparatively large.
Ventral regions (Fig. 12). All apodemes and epimeral borders — except sejugal apodemes — weakly developed. Epimeral surface ornamented by irregular alveoli. All epimeral setae very short, simple. Circumpedal carina strong, reaching lateral margin of ventral plate. Surface of this part of ventral plate also pitted. Anogenital setal formula: 5-1-2-3. All setae short, only two pairs of adanal setae longer, nearly as long as setae $p_1$. Setae $ad_3$ located very near the anterior corner of anal aperture.

Legs. All legs monodactylious. Anterodorsal margin of tibia II with sharply pointed, triangular apophysis (Figs 11, 14). Surface of femora partly rugose, with well-developed blade-like carina ventrally.

Remarks. The difference between the genera *Vilhenabates* Balogh 1958 and *Phalacrozetes* Aoki 1965 seems to be indistinct, with only the number of claws being different. Therefore, further studies of the type specimens are necessary. Nevertheless, the new species is well identifiable and characterised by the posteromarginal structure of the notogaster, the length of interlamellar setae, the length of the sensilli and 3 pairs of notogastral porose areas. On this basis, it is distinguished from all *Vilhenabates* and *Phalacrozetes* species. We were able to study some types of this species group. Thus, all legs of *P. similis* Mahunka 1988 are monodactylous. *V. simplex* Balogh 1970 really has 4 pairs of genital setae. The length and shape of the sensilli and the length of the interlamellar setae are different in all of the known species.

Etymology. The new species is named after the reduced fourth pair of notogastral porose areas.
**Peloribates connectionus** n. sp.

**Diagnosis.** Surface of whole body smooth, all setae long, distinctly ciliate. Lamellae short, divided in some parts. Tutorium long. Sensillus comparatively short, directed posteriorly, head lanceolate, bearing short cilia, arranged in longitudinal rows. All 14 pairs of notogastral setae equally and conspicuously long. Adanal setae short. All legs tridactylous.

**Material examined.** Holotype: Kenya, Nakuru district, Lac Naivasha, 08.11.1977. Leg. V. Mahnert & J.-L. Perret (G 77/66); 27 paratypes from the same sample. Holotype and 15 paratypes: MHNG, 12 paratypes (1715-PO-2006): HNHM.

**Measurements.** Length of body: 521-566 μm, width of body: 379-412 μm.

**Prodorsum.** Body wide, strongly rounded and convex. Rostrum also convex laterally, slightly nasiform, without sharply pointed apex. Rostral part straight in dorsal view. Lamellae well discernible, apparently consisting of 3-4 parts (Fig. 20). Rostral, lamellar and interlamellar setae of the same shape, all thin, setiform, well ciliate, of different lengths (Fig. 16), setae ro<le=in. Exobothridial setae much shorter. Sensillus with long peduncle and lanceolate head, directed outwards and backwards, the head distinctly ciliate.

**Notogaster.** Pteromorphs triangular in dorsal view, linguliform in lateral view. Fourteen pairs of very long notogastral setae, similar to the prodorsal ones. All setae well ciliate. Setae da, dm and dp shortest, h₁ and h₂ longest of notogastral setae. Four pairs of large, distinct sacculi present, lyrifissures im located laterally.

**Lateral part of podosoma** (Fig. 20). Lamella short, much shorter than the distinct tutorium, which reaches the insertion of rostral setae. Porose area Ad and Al well developed and distinctly observable.

**Ventral region** (Fig. 17). Whole surface, smooth, except the discidium which has some longitudinal crests. No great difference between length of epimeral and anogenital setae. All setae distinctly ciliate, posterior two pairs of adanal setae arising peculiarly near the posterior margin of ventral plate. Lyrifissures iad short, close to anal plates.

**Legs.** All legs heterotridactylous. Femur blade-like ventrally (e.g. leg IV, Fig. 19). Femur of leg II with a small triangular expansion anterolaterally (Fig. 18).

**Remarks.** The new species belongs to the species group characterised by the clearly smooth surface of the body and the comparatively simple, setiform, well ciliate notogastral setae (“longisetosus group”). It is close to *P. longisetosus* (Willmann 1930), although, the form of the lamellae is unique to this genus.
Etymology. Named after the characteristically divided basal part of the lamellae.

Scheloribates mahnerti n. sp.

Diagnosis. Rostral apex nasiform. Lamellae narrow, prolamella well developed. Pair of curved, long translamellar lines present. Interlamellar setae conspicuously long, all prodorsal setae ciliate. Sensillus directed posteriorly, head lanceolate, sharply pointed, ciliate. Nine pairs of notogastral setal alveoli and one pair of minute posteromarginal setae ($p_{11}$).


Prodorsum. Rostral apex protruding, roundish, distinct from rest of rostrum. Rostral setae arising on prolamellae, laterally in dorsal aspect. Lamellae narrow, bearing rostral setae distally. Distinct, transverse line present (Fig. 21) anterior to lamellar setae. Translamellar lines curved inwards and posteriorly, long. Lamellar setae of normal length, only slightly longer than rostral setae. Interlamellar setae very long, fine and curved distally. All setae well ciliate. Sensillus long, directed outwards and posteriorly, head comparatively short, lanceolate, sharply pointed distally, covered by short cilia.

Notogaster. Very wide, nearly as long as wide. Dorsosejugal scissure conspicuously arched anteriorly, pteromorphs large (Fig. 21). Surface smooth. Ten pairs of setal alveoli visible, except the minute setae p1, all setae reduced. Four pairs of slit-like sacculi present, all well discernible.

Lateral part of podosoma (Fig. 23). Sublamellar and exobothridial region polygonate. Porose area Al small, round, exobothridial setae minute.

Ventral region (Fig. 22). Setae h of the hypostom thicker than the epimeral ones and well pilose. Epimeral setal formula 3-1-3-3. All setae thin and simple. Apodeme 2 and sejugal apodeme long, latter ending near genital apertures. Discidium large, circumpedal carina long, not reaching lateral border of the ventral plate. Some spots (sigillae) along carina. Anogenital surface smooth. Genital aperture small, much smaller than anal ones, situated far from each other. All setae short and simple, lyrifissures iad located at the anterior corner of anal apertures.

Legs. All tarsi hetero- and tridactylous. Ventral carina of femora II-IV roundish.

Remarks. We do not examine the validity of the other “scheloribatids” taxa here, so the validity of the genus Megascheloribates Lee & Pajak 1990 is considered unstable in relation to this species. Since the new species is well characterised by the translamellar lines, the form of the sensillus, the reduced notogastral setae and the number of claws, we refer it to the genus Scheloribates Berlese 1908. The new species differs from known “Megascheloribates”, the species group of “africanus Wallwork 1964” and any other species displaying the above combination of characters by the shape of its sensillus, the length and ratio of the setae, and the course of the translamellar lines.

Etymology. We dedicate the new species to our friend, Dr V. Mahnert, former director of the Musée d’Histoire Naturelle, who has always supported...
our research work in the institute and has regularly collected mite material all over the world including the present species.

**Semischeloribates** Hammer 1973

The *Scheloribates* species, described from Tahiti (*Sch. imperfectus* Hammer 1972), all occur in Pacific localities (Hammer 1973). On this basis, Hammer (1973) established this new genus within Scheloribatidae. In our opinion, the separation of the genus was justified, since the specific character,
Poronotic oribatids from Kenya

the reduced prolamella, is a sound feature. Of course, more discussion is needed on whether the taxon is a genus or only a subgenus, but the same holds true for various synonymies proposed by Subías (2004). We believe that the recently collected African species is correctly included in the genus Semischeloribates.

Semischeloribates reticulatus n. sp.

**Diagnosis.** Rostrum conical. Prolamella very short, translamellar lines well developed, fused medially, forming a deep median hollow. All prodorsal setae short, ciliate. Peduncle of sensillus short, directed outwards, head fusiform, ciliate. Nine pairs of notogastral setal alveoli and one pair of true setae (p₁) visible. A characteristic polygonate sculpture present in sejugal region. Sejugal and apodemes 3 fused with each other. All legs heterotridactylous.

**Material examined.** Holotype: Kenya, Muguga, near Nairobi, experimental forest station, 04.08.2004. Leg. Cs. Csuzdi (Afr. 978); 12 paratypes from the same sample. Holotype (1718-HO-2006) and 10 paratypes (1718-PO-2006): HNHM, 2 paratypes: MHNG.

**Measurements.** Length of body: 485-568 μm, width of body: 346-454 μm.

**Prodorsum.** Rostral apex protruding, roundish. Rostral setae arising on lateral surface, far from the prolamellae. Lamellae narrow, bearing rostral setae distally. Prolamella narrowing distally and curved inwards (Fig. 24). Distinct, transverse line present in front of them. Translamellar lines curved inwards and posteriorly, touching medially and forming deep hollow (Fig. 27). Lamellar setae of normal length, with fine, setiform end. Interlamellar setae similar in length, but blunt at tip. All setae well ciliate. Sensillus short, directed outwards, its head also short, slightly lanceolate, covered by short cilia (Fig. 25).

**Notogaster.** Very wide, nearly as long as width. Pteromorphs protruding anteriorly, narrow and long posteriorly. Dorsosejugal suture weakly arched anteriorly. Surface smooth. Nine pairs of setal alveoli and one pair of minute posterior setae p₁. Four pairs of slit-like sacculi present, S₃ and S₄ hardly discernible.

**Lateral part of podosoma.** Sublamellar and exobothridial region polygonate. Lamellar porose area small, oval, exobothridial setae minute (Fig. 29).

**Ventral regions.** Sejugal region ornamented by a characteristic polygonal sculpture, its anterior part consisting of quadrangular fields, arranged in two rows (Fig. 28). Sejugal apodema long, fused with ap. 3. Both reaching the genital aperture (Fig. 26). Epimeral setal formula 3-1-3-3. All setae thin and simple. Discidium narrow, circumpedal carina comparatively short, ending far from lateral border of ventral plate. Anogenital surface smooth. Geni-
tal aperture small, much smaller than anal one, situated far from each other. All setae short and simple, lyrifissures iad located at the anterior corner of anal apertures.

Figs 21-23. — *Scheloribates maherti* n. sp. Fig. 21: body in dorsal view, Fig. 22: body in ventral view, Fig. 23: anterior part of prodorsum in lateral view.
Legs. All tarsi tri- and heterodactylous. Ventral blades of femora II-IV simple.

Remarks. The new species fits well within the genus Semischeloribates Hammer 1973, and it is the first Ethiopean species. It is well distinguished from the type species and from all the species belonging to this family by the characteristic sculpture of the sejugal region and the interlamellar formation of the prodorsum.

Etymology. The new species is named after its conspicuous epimeral pattern.
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