Acarologia is proudly non-profit, with no page charges and free open access

Please help us maintain this system by encouraging your institutes to subscribe to the print version of the journal and by sending us your high quality research on the Acari.

Subscriptions: Year 2021 (Volume 61): 450 €
http://www1.montpellier.inra.fr/CBGP/acarologia/subscribe.php

Previous volumes (2010-2020): 250 € / year (4 issues)
Acarologia, CBGP, CS 30016, 34988 MONTFERRIER-sur-LEZ Cedex, France
ISSN 0044-586X (print), ISSN 2107-7207 (electronic)

The digitalization of Acarologia papers prior to 2000 was supported by Agropolis Fondation under the reference ID 1500-024 through the « Investissements d’avenir » programme (Labex Agro: ANR-10-LABX-0001-01)

Acarologia is under free license and distributed under the terms of the Creative Commons-BY-NC-ND which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original author and source are credited.
TWO NEW MITES OF THE RARE FAMILIES BARBUTIIDAE
AND LINOTETRANIDAE (ACARI), FROM THE NAMIB DESERT

by Henri M. ANDRÉ *

INTRODUCTION

Although the peculiarity of the soil fauna of the Namib desert was stressed as early as 1977 by COINEAU and MASSOUD, and again outlined by COINEAU and SEELEY (1983), only a few mite species have been described from the Namib soils, Microcaeculus namibensis Piff, 1965, Namibacarus sabulosus Fain et al. 1993, and Neoteneriffiola coineaudi Judson, 1994. The two actinedid mites are surfaceldwellers and only the acarid Namibacarus sabulosus belongs to the interstitial fauna outlined by Y. COINEAU.

During a recent survey of the soil microfauna of the Namib desert (ANDRÉ, NOTI & JACOBSON, in prep.), two new mites belonging to the rare families Linotetranidae and Barbutiidae were collected. The family Linotetranidae, created by BAKER & PRITCHARD (1953), is monogeneric and comprises only three species, Linotetranus cylindricus Berlese, 1910, L. achrus Baker & Pritchard, 1953 and L. protrac-

tulus Athias-Henriot, 1961. The new species is therefore the fourth of the genus.

The family Barbutiidae is also monogeneric and was created by ROBAUX (1975). So far Barbutiidae have comprised only two species, Barbutia anguineus (Berlese, 1910) and B. perretae Robaux, 1975. As the chaetotaxy of the new species collected in the Namib desert differs greatly from that of Barbutia, a second genus is created and the family definition is modified to accommodate it.

The holotypes are deposited in the Musée royal de l’Afrique centrale, Tervuren.

BARBUTIIDAE

The genus Barbutia was proposed by Oudemans (1927) to accommodate Stigmaeus anguineus Berlese, 1910. It was later redefined by SUMMERS (1964)
Fig. 1: *Namibbarbutia seelyae* n. sp.
Lateral view. Leg chaetotaxy incomplete. Setal nomenclature follows Grandeau (1944). Equivalences with other authors are given in table 1 (p. 104).
and ROBAUX (1975). The latter described the second species of the genus, *Barbutia perretae* and created the new family Barbutiidae to accommodate these two species.

Using KETHLEY’S (1990) or KRANTZ’S (1978) keys to identify the new mite, I keyed out Barbutiidae in both cases. However, the new species does not conform to either the family description given by ROBAUX (1975), or the generic definition of the genus *Barbutia*. Consequently, I propose the creation of a new genus, *Namibarbutia*, and enlarge the family definition in such a way as to accommodate this genus.

**Barbutiidae Robaux, 1975**


**Barbutia Oudemans, 1927**


**Namibarbutia n. gen.**

*Type species: Namibarbutia seelyae n. sp.*

*Derivatio nominis:* The name results from the merging of Namib, the desert where the genus was first found, and *Barbutia*.


![Figure 2: Namibarbutia seelyae n. sp.](image)

A. Ventral view; B. Dorsal view.

**Namibarbutia seelyae n. sp.**

Body length : 396 μm. Body rather elongate, with long legs in comparison to *Barbutia* (Fig. 1). Stylophore with dorsal, short, cross-chambered peritremata (Fig. 3G). Integument of dorsal face entirely striated longitudinally, except behind setae b where striae are transverse (Fig. 2B). Same striation pattern on the ventral face except under the gnathosoma where a granular ornamentation is observed, and at the base of legs where smooth plates are located (Fig. 2A). Some dorsal setae are extremely long : he, la, and c. Genital aperture
Fig. 3: *Namibarbutia seelyae* n. sp.

A. — Distal part of leg I (paraxial view) with an insert of the duplex (dd-dd) (antiaxial view); B. — Tarsus and tibia II with an insert of the triplet (tc-tc-ft) (antiaxial view); C. — Tarsus and tibia IV (antiaxial view); D. — Apotele IV; E. — Palp (antiaxial view); F. — Tip of the palparsus (antiaxial view); G. — Neostigma with cross-chambered peritremata (antiaxial view through the stylophore).
ventral. Two pairs of pseudanal setae and three pairs of aggenital setae. Leg chaetotaxy and solenidiotaxy (Fig. 3): I 16(1)-6(1)-6-2-1; II 10(1)-5-5-2-0; III 9-4-2-2-1; IV 9-4-2-2-1. On tarsus I, setae (tc) and (p) are eupathidial and located on a tubercle (Fig. 3A). Famulus k’ distal on genu I, as in Stigmaeidae. Tibia I with a duplex, (dd-p) located distally, just in front of d, a thin seta with small root (eupathidial?) (Fig. 3A). On tarsus I, setae (tc) and (p) are eupathidial and located on a tubercle (Fig. 3A). Tibia I with a duplex, (dd-cp) located distally, just in front of d, a thin seta with small root (eupathidial?) (Fig. 3A). Famulus k’ distal on genu I, as in Stigmaeidae. Tarsi II to IV with a triplet of dorsal setae, composed of a median thin seta with a small root (eupathidial?) and two "normal" lateral setae (Fig. 3B). Palp chaetotaxy and solenidiotaxy: 0-1-1-4-7(1), ba apparently being absent. Supracoxal setae are recessed (Fig. 3E).

**Derivatio nominis:** The new species is named for Dr M. K. SEELY, Director of the Desert Ecological Research Unit in Gobabeb since many years.

Holotype: 1 female, Namib desert, gravel plain near Mirabeb (Plot no. 31), under *Stipagrostis ciliata* (perennial form), depth -5 cm, 14 June 1993, after watering.

---

**Key to Barbutiidae**

1. — Two pairs of eyes, anal aperture ventral, genua II to IV nude, claws with two pairs of short, capitate tenent hairs .............................................. 2
   — No eyes, anal aperture dorsal, genua II to IV with at least one seta, claws simple ........................................... *Namibbarbutia seelyae* n. sp.

2. — Seta be very long, much longer than the other prodorsal setae (230 μm, reaching base of leg IV), tarsus I with 10 setae. ............................................. *Barbutia anguineus* Berlese sensu Robaux (1975)
   — Seta be of same length as seta de, tarsus I with 7 or 8 setae. ............................................. *Barbutia perretae* Robaux, 1975

---

**LINOTETRANIDAE**

*Linotetranus mirabebebensis* n. sp.

With a body length of 390 μm, the Namibian species is the smallest of all *Linotetranus* described. The habitus (Fig. 4) of the new species is close to that of *L. cylindricus*, redescribed by Baker & Pritchard (1953): the dorsal striation pattern is composed of three major areas separated by two furrows; the relief of each area is made up of knobs, delimited by a network of fine, anastomosing, longitudinal lines. The ventral face is composed of four major areas made up of knobs, whose form varies (Fig. 4B). Prodorsum with four pairs of setae, the first pair slightly serrate, the second pair short and not reaching the bases of the third and fourth pairs. Opisthosoma with 18 pairs of setae, some of them very long. Two pairs of aggenital setae; three pairs of genitals, located on two genital plates; three pairs of pseudanal setae, located on the terminal anal lips (Fig. 5A, B). Ovipositor eversible as in Tetranychidae (Fig. 5A, C). Whip-like stylets (Fig. 5D). Palp chaetotaxy: 0-1-0-2-6, with a calcar on tibia and three terminal eupathidia (Fig. 5F), this species is unique among *Linotetranus* in the absence of a dorsal seta on the palp genu. Supracoxal setae normal (not recessed as Namibbarbutia). Leg chaetotaxy: I 11(2)-5(1)-5-5-1; II 7(1)-4-2-3-1; III 4-4-1-2-1; IV 4-4-0-1-0. The new species differs from *protractulus* in having four setae on tibia III instead of three. Eupathidia on tarsus I: te” and (p). Tectals, prorals and solenidia of tarsus I are located on tubercles (Fig. 5H). Ambulacrum composed of two claws and an empodium with tenent hairs (Fig. 5E).

**Derivatio nominis:** The name of the new species is derived from Mirabeb, a granite inselberg rising out of the gravel plain, near which it was found.

Holotype: 1 female, Namib desert, gravel plain near Mirabeb (Plot no. 31), under *Stipagrostis ciliata* (perennial form), depth -5 cm, 14 June 1993, after watering.

---

**Key to Linotetranidae**

1. — 17 pairs of dorsal setae on the opisthosoma (seta no. 15 absent) ............................................. *Linotetranus achrous* Baker & Pritchard, 1953
   — 18 pairs of dorsal setae on the opisthosoma .... 2

2. — Prodorsal seta 1 distinctly pinnate, prodorsal seta 2 as long as setae 3 and 4, dorsal seta of genu I strongly serrate... *L. protractulus* Athias-Henriot, 1961
Fig. 4: *Linotetranus mirabebensis* n. sp.

A. — Dorsal view; B. — Ventral view. Leg chaetotaxy not drawn.
Fig. 5: *Linotetranus mirabebensis* n. sp.

A. — Ti p of opisthosoma, with ovipositor everted (lateral view); B. — Idem with the ovipositor inside; C. — Ovipositor everted (ventral view); D. — Gnathosoma in lateral view; E. — Apotele IV in dorsal view, F. — Palp in dorsal view (calcar stippled); G. — Tarsus and tibia IV in dorsal view; H. — Distal part of leg I (antiaxial view).
— Prodorsal seta 1 slightly serrate, prodorsal seta 2 much shorter than setae 3 and 4 (Fig. 5D), dorsal seta of genu I nearly smooth 3

— No dorsal seta on palp genu, seta ag1 short (not reaching the anal lips — Fig. 5B), small species (ca 400 μm) L. mirabebensis n. sp.

— Dorsal seta on palp genu, seta ag1 long (reaching the anal lips), larger species (ca 500 μm) L. cylindricus Berlese sensu Baker & Pritchard, 1953

Discusssion

Systematics

The status of the genus Barbutia and that of the family Barbutiidae were discussed in detail by Summers (1964) and Robaux (1975). The presence of tenent hairs on claws in Barbutia is unique among Raphignathoidea and both authors concluded that this character indicated that the genus should be accommodated somewhere between the Raphignathoidea and Tetranychidae. Obviously, the new species fills-in part the gap between Barbutia and other Raphignathoidea, especially Stigmaeidae. On the other hand, Namibarbutia also exhibits remarkable characters, such as the duplex (dd-р) on tibia I and the recessed supracoxal setae. I do not propose any change at the familial level. I just note that the introductory remark of Summers (1966) still holds : “The recognition of families and genera of raphignathoids is difficult because no one since Oudemans (1927) has attempted to inventory and systematize this group of mites.”

Species identification in Linotetranus meets with some problems. Officially, there are only three species. However, I doubt that the species identified as L. cylindricus by Baker and Pritchard (1953) and collected from Utah is the same as that found by Berlese in Italy. As already suggested by these authors, it is possible that the genus Linotetranus contains a number of species that resemble each other very closely and that the Utah specimens are specifically distinct from the type from Italy. The problem will persist as long as Berlese’s types will be prevented from a serious study and made unavailable to systematists.

| Table 1: Chaetotaxic equivalences from different descriptions of Raphignathoidea. |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| ae | ae | ae | ae | ae | ae | ae | ae | vi | vi |
| be | be | be | be | be | be | be | be | ve | ve |
| ce | ce | pm | — | ce | — | ce | ce | sel | — |
| de | de | ce | ce | ce | de | de | de | see | de |
| a | a | a | a | a | a | c1 | a |  |
| he | he | he | he | he | he | he | he | c2 | he |
| b | b | b | b | b | b | b | b | d1 | b |
| la | la | la | la | la | la | la | la | d2 | la |
| c | c | c | c | c | c | c | e1 | c |  |
| bm | lm | lm | lm | lm | lm | lm | lm | e2 | bm |
| d | d | l1 | l1 | l1 | l1 | d | d | f1 | d |
| br | — | — | — | — | — | — | f2 | — |  |
| e1 | e1 | e | e | e | e | e | e | h1 | e |
| e2 | e2 | le | le | le | le | le | le | h2 | le |
| pm | pm | ps | ps | ps | ps | ps | ps | pm | pm |
| pm | pm | ps | ps | ps | ps | pm | pm | pm | pm |
| pm | pm | ps | ps | ps | pm | pm | pm | pm | pm |
| t | t | ? | pb | pb | pb | ag | t | ag | ag |
| u | u | ? | pb | pb | pb | pb | u | ag | ag |
| v | v | ? | pb | pb | pb | pb | v | ag | ag |
| w | w | — | — | — | — | — | — | — | — |
| s1 | s1 | s1 | s1 | s1 | s1 | s1 | s1 | s1 | s1 |
| s2 | s2 | — | — | — | — | — | — | s2 | s2 |
| s3 | s3 | — | — | — | — | — | — | s3 | s3 |

The ratio length-width

The two new species present a peculiarity already observed in true sand mites such as Nematalyccidae: their elongate shape (Coineau et al., 1978). Even
if the two species are not vermiform as *Gordialycus tuzetae*, the ratio length-width (L/W) is high (3.5 and 4.2). Compared to ratios observed in other actinedid mites (table 2), these values are remarkable. Of special interest is the contrast between sabulicolous species running at the surface and others crawling deep into the sand. For instance, *Microcaeculus sabulicola*, a sabulicolous caeculid, is fundamentally a surface-dweller even if it is able to sink into the sand; the same probably applies to *Neoteneriffiola coineaui* which was found under marble stones in sandy soils. Both species have a L/W ratio closer to that of epigeal forms than that of euedaphic species. Even if an elongate shape is found in many other mites, such as Eriophyoidea for instance, the ecological meaning of such an adaptation in euedaphic sand mites needs more investigation.

**Table 2**: Ratio body length/maximum width (L/W) in different Actinedida (adults only).

<table>
<thead>
<tr>
<th>Species</th>
<th>L/W</th>
<th>habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Gordialycus tuzetae</em></td>
<td>57.7</td>
<td>S Eu</td>
</tr>
<tr>
<td><em>Nematalycus nematoides</em></td>
<td>43.0</td>
<td>S Eu</td>
</tr>
<tr>
<td><em>Psammobates delamarei</em></td>
<td>7.6</td>
<td>S Eu</td>
</tr>
<tr>
<td><em>Linotetranus mirabilis</em></td>
<td>4.2</td>
<td>G Eu</td>
</tr>
<tr>
<td><em>Nambarbisia seeyae</em></td>
<td>3.5</td>
<td>G Eu</td>
</tr>
<tr>
<td><em>Microscamnus littoralis</em></td>
<td>3.4</td>
<td>S Eu</td>
</tr>
<tr>
<td><em>Microcaeculus sabulicola</em></td>
<td>1.9</td>
<td>S Su</td>
</tr>
<tr>
<td><em>Neoteneriffiola coineaui</em></td>
<td>1.7</td>
<td>S Su</td>
</tr>
<tr>
<td><em>Tetranychus urticae</em></td>
<td>1.7</td>
<td>F Ep</td>
</tr>
<tr>
<td><em>Metaloryya armaghensis</em></td>
<td>1.6</td>
<td>B Ep</td>
</tr>
</tbody>
</table>

**REFERENCES**


Oregon State university Book Store, Corvallis, USA.

Oudemans (A. C.), 1927. — Acarologischen Aanteekning
ningen LXXXVIII. — Ent. Berichten, 7 : 257-263.

PIFFL (E.), 1965. — Microcaeculus namibensis nov. sp. Ein
Vertreter der Caeculiden (Arachnoida, Acarina) aus

ROBAUX (P.), 1975. — Observations sur quelques Actine-
dida (= Prostigmates) du sol d'Amérique du Nord. V.
Barbutiidae, une nouvelle famille d'Acariens (Acari :
Raphignathoidae) et description d'une nouvelle famille
appartenant au genre Barbutia. — Acarologia, 17 :
480-488.

SUMMERS (F. M.), 1960. — Eupalopsis and eupalopsellid
mites (Acarina : Stigmaeidae, Eupalopsellidae). — Fl.
Entomol. 43 : 119-138.

SUMMERS (F. M.), 1964. — Three uncommon genera of
the mite family Stigmaeidae (Acarina). — Acarologia,
8 : 226-229.

SUMMERS (F. M.), 1966. — Genera of the mite family
Stigmaeidae (Acari, Prostigmata). — Acarologia, 8 :
230-250.

WOOD (T. G.), 1967. — New Zealand mites of the family
Stigmaeidae (Acari, Prostigmata). — Trans. r. Soc. N.
Z., Zool. 9 : 83-139.