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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)

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A SECOND NEW MITE FROM THE LEAF-AXILS OF A BROMELIAD FROM COSTA RICA (RHIZOGLYPHINAES : ACARIDAE)

BY H. H. J. NESBITT

TAXONOMY ABSTRACT: *Naiaacus muertensis* nov. gen., nov. spec., taken from the water from a leaf-axil of a bromeliad, is described and figured.

TAXONOMIE RÉSUMÉ: *Naiaacus muertensis* nov. gen., nov. spec., obtenu de l’eau des axiles des feuilles d’une bromeliade, est décrit et dessiné.

Continuing my studies of the mites that inhabit such ecological niches as the water in pitcher plants or in plant leaf axils (see NESBITT, 1985) I was able to extract a sizeable population from the water in the leaf axil of a bromeliad growing in the central mountains (elevation 3 100 m. approx.) of Costa Rica. These mites do not appear to conform to any of the existing genera of the Rhizoglyphinae of the family Acaridae. As stated in a previous paper (1985) the usual groups of invertebrates accompanied these mites.

*Naiaacus* n. gen. 2

Body setae coarse and stiff and arranged in the typical rhizoglyphine pattern except that *ve*, *sci* and *dl* (HUGHES’ nomenclature) and GRANDJEAN’S organ $\Delta$ are missing. No trace of dorsal shields; epimera of legs III and IV fused medially; claws distinct, about one-third as long as the tarsus and surrounded by a reduced pretarsus (caroncle); [leg III of male ends in a large sickle-shaped claw]; adults small to medium sized (480-506 microns) 3. Type of genus *Naiaacus muertensis* n. sp.

*Naiaacus muertensis* n. sp.

Female (vide figs. 1, 2, 4, 6, 8 and 9). Exclusive of gnathosoma the holotype measures 480 long and 296 at the widest part of opisthosoma; the paratypes vary from 504 to 440 long by 300 to 240 wide. The dorsal setae are plain and stiff and their lengths, expressed as a fraction of the distance between the centres of setae *sce* 4 are as follows: *v* 1.75, *sce* 1.5, *he* 1.4, *lp* 1.4, *d3* 1.5 (tip passes posterior margin of opisthosoma by one-half of its length), *d* 4.75, *pal* 1.1, *sai* 1.6; the supra coxal seta is a minute peg; setae *sci*, *ve*, *d2* and GRANDJEAN’S organ $\Delta$ are missing. The opening of the bursa copulatrix is sclerotized and leads into a globular

1. Department of Biology, Carleton University, Ottawa, Canada.
2. *Naiaacus* a latinized form of the Greek adjective ναϊάκος (naiakos) meaning “of the Naiads”, Greek water nymphs.
3. All measurements are given in microns.
4. In this paper HUGHES (1976) nomenclature for body and leg setae will be followed.

_Acarologia_, t. XXXI, fasc. 1, 1990.
FIG. 1-9: *Naicus muertensis* n. gen., n. sp.

chamber from which the two oviducts arise. Vent­
trally (vide fig. 2) most of the small bristles are
present except for the para-anals (a 1-4). The anus
is terminal, its posterior lips project beyond the
margin of the opisthosoma as a triangular struc­
ture. Epimera I and II are normal, III and IV are
fused medially. The legs of this species are long,
relative to the body (legs I and II = 1.75 × sce-sce)
and exhibit a setal pattern reminiscent of the mites
of the genus Caloglyphus but show affinities with
the described species of Rhizoglyphus viz., the
position of the setae (or spine) ba just distad of the
solenidion (wl), on legs I and II (on leg II both
arise from the same “cushion” (vide fig. 1)); and
the reduction of phi cp on tibia IV of the male to a
smaller spine. The claws of all legs are single and
distinct, about one-third of the length of the shaft
of the tarsus, and surrounded by a very small
pretarsus or caroncle. In common with those acarid
mites that live in water the terminal tarsal setae are
whip-like, and as long as the tarsus; none of these
setae is falcate. The shears of the chelicerae (fig. 8)
are slight, barely toothed (and devoid of a conical
spur) . The chelicerae and pedipalps (figs. 8 and 9)
are enclosed in a “camerostome-like” cavity that
appears to be more overhung by the anterior part
of the propodosoma than in other acarids. It might
be noted that holotype possesses three large eggs
(measuring 144 × 80) that occupy most of the
opisthosoma posterad of the fused third and fourth
epimera.

Male (figs. 5, 3 and 7) : The allotype measures
440 by 236, the paratypes vary from 408 by 240 to
442 by 240. The dorsal setation is similar to that of
the female; ventrally (vide fig. 5) the anus is
subterminal and flanked by two round copulatory
suckers which are rimmed by a circle of “clear”
chitin; as in the female the mesial ends of epimera
III and IV are fused. The aedeagus is pointed and
flanked by two pairs of genital bollards. The
setation of the legs is as in the female except that
the tibial solenidion phi is spine-like. The termi­
nal claw of leg III is large and heavy and devoid of
a caruncle or pretarsus (vide fig. 3). As in the
female the terminal setae of all legs are long.

Types : Holotype female in water from the leaf
axil of an undetermined bromeliad from Cerro de
la Muerte, Costa Rica, 3 100 m. elevation. Col.
H. H. J. NESBITT — 2-ii-80. Deposited in Canadian
National Collection, Ottawa, Canada, No. 20803.
Allotype : same data. Paratypes 28 specimens same
data. Tritonymphs : same data. This species has
been given the specific name muertensis a latinized
corruption of its place of origin.

Tritonymphs : The average size of the six col­
lected is 400 by 241. Their setation is similar in
length and disposition to that of the female.

Hypopus : None in the population studied.

DISCUSSION

The nature of the claw of leg III raises the
question as to whether the males in the population
found might be the heteromorphic form. I am
inclined to discount this because when this form of
male is present in the different species of either
Caloglyphus or Rhizoglyphus they are burlier than
the homomorphs, have longer dorsal setae and the
third leg is heavier overall and tapers to a point. In
the species being described the males are all slighter
than the females, have setae of similar length and
leg III is similar to that of the female except for the
distinctive terminal claw. The eggs are, relative to
the size of the body, much larger and fewer in
number (the holotype only has three, the paratypes
one to three) than in the representatives of the
genera mentioned above. Lastly the male of the
pedipalps are relatively larger and distinctly lanci­
form (vide fig. 9).

From the above description it is obvious that the
suitable taxonomic position for the proposed genus
would be in the Acaridae and, because of the
nature and position of the seta ba of tarsus I, in the
Subfamily Rhizoglyphinae. A detailed study of this
family indicates that, with few exceptions such as
the genus Thyreophagus, it is morphologically a
remarkably uniform homogenous assemblage of
species. In the Acaridae sensu stricto, the dorsal
setae of the body are arranged in a fairly consistent
pattern of four longitudinal rows, two lateral, ve,
sce, h1, la, lp, sae, two mesial, vi, sci, d1, d2, d3, and
d4 (in some of the Rhizoglyphinae some of the
central setae may be missing; the Acaridinae are
much more consistent); a clavate solenidion omega 1 (ω1) near the base of tarsi I and II; paired solenidion ω1 and ω2 distally on genua I and II (except in Schwiebea); a fleshy pretarsus (caroncle) about the base of the claw of all legs; a pair of para-anal copulatory suckers in the male (except in Caloglyphus anomalus Nes.); two suckers on the tarsus of leg IV of the male; the epimera of legs III and IV are free from each other mesially (except in N. muertensis n. sp.); and a variously sclerotized propodosomal shield. GRANDJEAN's organ ~ is found in nearly all species and varies from a mere flap of tissue to a free-standing pectinate distinct horn-like process in most species of the genus Caloglyphus. With the above in mind it would appear that the proposed genus is somewhat close to, but decidedly distinct from, the Caloglyphus/Rhizoglyphus group of genera. In many details such as the general facies and terminal setation of the tarsi it is similar to the species of Caloglyphus Berlese (= Sancassania (Samšiňák) Eberhardia Oudemans (= Acotyledon Oudemans and Cosmoglyphus Oudemans) and Murodania Kugoh. In Caloglyphus (sensu stricto) many of the tarsal setae are about one-half of the tarsus in length and falcate; in M. hosoyae Kugoh only one is so modified and in Eberhardia none; in Naiacus the same setae are equal in length to the tarsus and plain. The proposed genus differs from all those just cited in the nature and disposition of the dorsal setae of the body, stiff and bristle-like rather than whip-like as in the other genera and in the absence of Grandjean's organ Δ. As mentioned above the thorn-like nature and position of seta ba of tarsi I and II aligns it with Rhizoglyphus Claparède and Bromelioglyphus Nesbitt but in these genera the length and thickness of the tarsi and the disposition of the body setae readily set them apart.

REFERENCES


Paru en Mai 1990.

1. I cannot accept Samšiňák's (1960) view that the genus Caloglyphus Berlese is a synonym of Sancassania Oudemans 1916. The type of the latter, in the Rijksmuseum van Natuurlijke Historie, Leiden, as are Oudemans's drawings, indicates that it is possibly either a species of Rhizoglyphus or Caloglyphus but as no reliable method has been proposed as yet for the separation and identification of the hypopoda of these two genera, I believe it is better considered a nomen dubium. Oudemans (1924) had difficulty including it in his "Analytical key for the classification of the families of the Diaclotricha Oudemans, 1906" and states: "Next to the Tyroglyphidae and Rhizoglyphidae are to be placed in genera Garsaultia Oudns 1916 and Sancassania Oudns 1916 based on hypopi."