

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

BY H. H. J. NESBITT¹

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

TAXONOMIE RÉSUMÉ : *Naiacus 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 oecological 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.

Naiacus n. gen.²

Body setae coarse and stiff and arranged in the typical rhizoglyphine pattern except that *ve*, *sci* and *d1* (HUGHES' nomenclature) and GRANDJEAN's organ Δ 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 *Naiacus muertensis* n. sp.

Naiacus 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 Δ are missing. The opening of the bursa copulatrix is sclerotized and leads into a globular

1. Department of Biology, Carleton University, Ottawa, Canada.

2. *Naiacus* a latinized form of the Greek adjective ναιακος (*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.

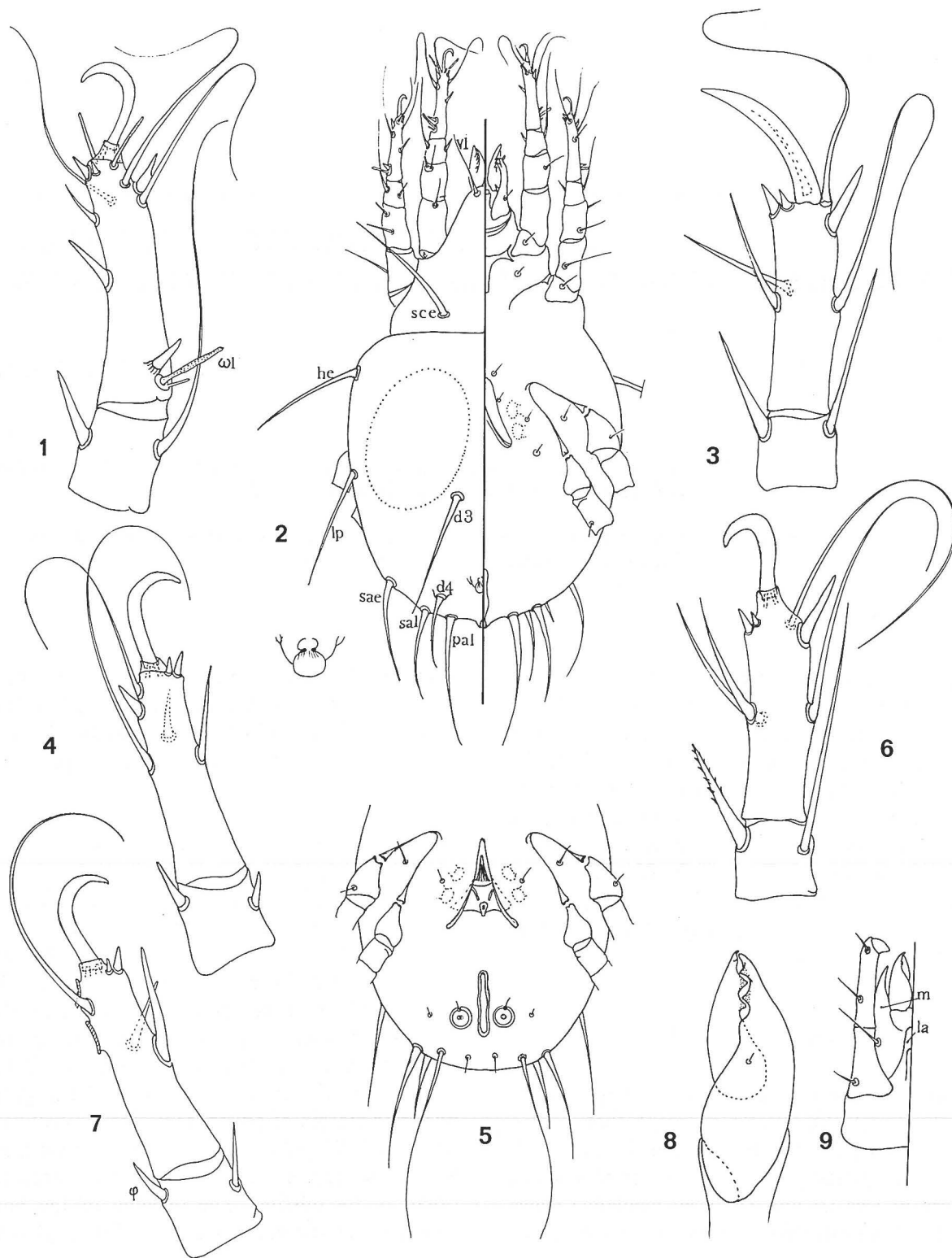


FIG. 1-9 : *Naiacus muertensis* n. gen., n. sp.

1. — Tarsus I of the female ; 2. — Dorsum on left & venter on right of female includes enlargement of bursa copulatrix ; 3. — Tarsus III of male ; 4. — Tarsus IV female ; 5. — Ventral surface, male ; 6. — Tarsus III, female ; 7. — Tarsus IV, male ; 8. — Chelicera of female ; 9. — Pedipalps of female ; m — mala, la — labrum.

chamber from which the two oviducts arise. Ventrally (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 structure. 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 = $1.75 \times \text{sce-sce}$) 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 ($\omega 1$), on legs I and II (on leg II both arise from the same "cushion" (vide fig. 1)); and the reduction of ϕ 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 caruncle. 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 ϕ is spine-like. The terminal 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 collected 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 malae 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 ($\omega 1$) near the base of tarsi I and II; paired solenidion $\zeta 1$ and $\zeta 2$ 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 Δ 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* (Samšičák)¹ *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 *Bromeliaglyphus* Nesbitt but in these genera the length and thickness of the tarsi and the disposition of the body setae readily set them apart.

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1. I cannot accept SAMŠIČÁK'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 Diacotricha Oudemans, 1906" and states: "Next to the *Tyroglyphidae* and *Rhizoglyphidae* are to be placed in genera *Garsaultia* Oudms 1916 and *Sancassania* Oudms 1916 based on hypopi".