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New species of the genus *Rhinoseius* BAKER & YUNKER, 1964 (Acari: Mesostigmata: Ascidae) found in Colombia

by M. H. J. WIESE[1] and A. FAIN[2]

[1] Auwaldstraße 81, D-79110 Freiburg, Germany.
[2] Institut royal des Sciences naturelles de Belgique, rue Vautier 29, B-1040 Bruxelles.

Summary

Six new species of the genus Rhinoseius *BAKER & YUNKER, 1964 (Acari: Ascidae) are described from Colombia:* Rhinoseius ucumariensis *sp. n.*, Rh. pastorae *sp. n.*, Rh. nadachowskyi *sp. n.*, Rh. bellavistensis *sp. n.*, Rh. carlosalberti *sp. n. and* Rh. perezgloriae *sp. n.*

All these species were found in flowers visited by hummingbirds, except Rh. perezgloriae *sp. n. which was collected from the bill of a hummingbird.*

Résumé

Six nouvelles espèces du genre Rhinoseius *BAKER & YUNKER, 1964 sont décrites de Colombie:* Rhinoseius ucumariensis *sp. n.*, Rh. pastorae *sp. n.*, Rh. nadachowskyi *sp. n.*, Rh. bellavistensis *sp. n.*, Rh. carlosalberti *sp. n. et* Rh. perezgloriae *sp. n.*

Toutes ces espèces ont été récoltées dans des fleurs visitées par des colibris excepté une espèce, Rh. perezgloriae *sp. n. qui a été trouvée sur le bec d'un colibri.*

Introduction

Recently FAIN (1992) has examined and revised all 34 known species of the genus *Rhinoseius* BAKER & YUNKER, 1964 (Mesostigmata: Ascidae). These mites are reported to live in Neotropical flowers visited by hummingbirds (Aves: Trochilidae) and to be phoretic in the nares of hummingbirds (COLWELL, 1985; DOBKIN, 1990). Other flower mites of the family Ascidae phoretic on hummingbirds belong to the genera *Lasioseius* BERLESE, 1916 and *Proctolaelaps* BERLESE, 1923 (see FAIN *et al.* 1977; HYLAND *et al.* 1978; NAEEM *et al.* 1985; OHMER *et al.* 1991, OCONNOR *et al.* 1991).

FAIN (1992) argumented to divide the species of the genus *Rhinoseius* into the three groups "tiptoni", "ornatus" and "wetmorei". The main characters are for both sexes those of tectum, rows of denticles on coxa I and length of peritreme, for males the number of blunt ventral spines on tarsi II and III and for females the character of inseminating organs. Among the 34 species recorded in this genus six species of the "tiptoni" group, three species of the "ornatus" group and nine species of the "wetmorei" group were reported for Colombia (FAIN, 1992).

Material and methods

All specimens of the six new species described in this paper were collected from flowers or from the bills of hummingbirds in Colombia.

For the chaetotaxy of idiosomal setae we follow LINDQUIST & EVANS (1965). In the nomenclature of the other morphological characters we follow FAIN (1992).

All measurements are given in micrometers. Lengths and widths of the idiosoma and the shields are always the maximum measurements. If not contrarily advised measurements are given for all known types of the species.

All the material listed in FAIN (1992) and four paratypes of *Rhinoseius epoecus* COLWELL & NAEEM, 1979 were available for this study.

The holotype of *Rhinoseius perezgloriae* is deposited in the Alexander Koenig Zoological Research Institute and Zoological Museum (ZFMK), Bonn, Germany. The holotypes and allotypes of all other species are deposited in the Institut Royal des Sciences Naturelles, Bruxelles, Belgium. Paratypes will be deposited in both institutes.

Remarks on the leg chaetotaxy in the new species

Setation of the legs I-II-III-IV, respectively, is for all new species as follows: trochanter 6-5-5-5, femora 12-11-6-6, genua 13-11-9-9 and tibiae 13-10-(8 or 9)-(9 or 10).

Description of the new species

A. Species of the "tiptoni" group

1. *Rhinoseius ucumariensis* sp. n.

DIAGNOSIS - The female is unequivocally characterised by the combination of few dorsal opisthonotal setae, short dorsal setae in general, the bilobed genital shield and a small anal shield with length and width nearly equal. Male as *Rhinoseius rafinskii* MICHERDZINSKI & LUKOSCHUS, 1980 and *Rhinoseius tiptoni* BAKER & YUNKER, 1964 with fragmented ventrianal shield.

The males are as *Rh. rafinskii* characterized by a preterminal hook on spermatodactyl and two spines on femur II. It is distinguished from all

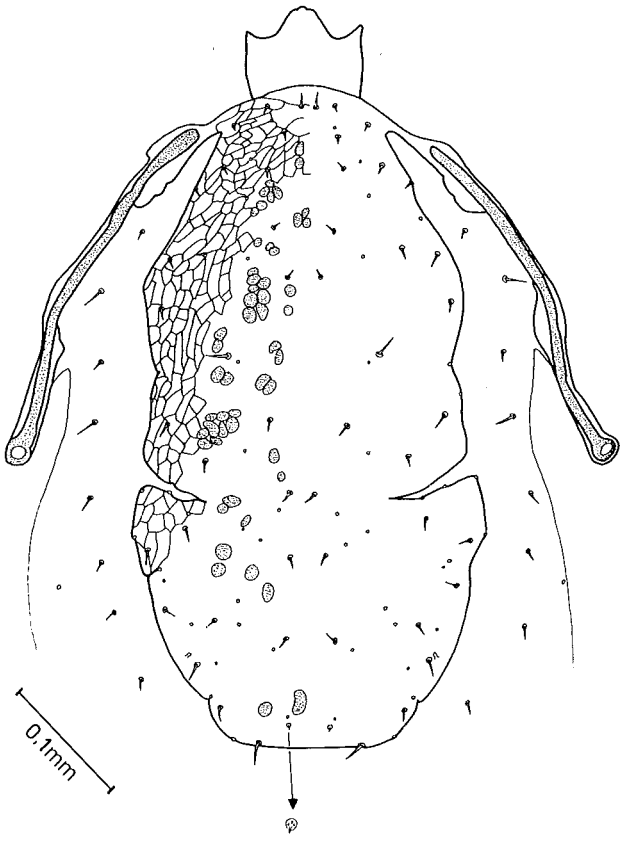


Fig. 1. *Rhinoseius ucumariensis* sp. n. female in dorsal view.

other species of the "tiptoni" group by the long setae *j1*, *j2*, all *s* and all *r* in combination with all the other setae nearly half to one third of their length in combination with the presence of a ventral spine on the palpal femur. There are no spinose opisthonotal setae on dorsal shield as in *Rh. rafinskii*.

This species is named after the wild-life reserve, where the mites were found.

Female (Figs 1, 2, 5a-d) - Dorsal shield of holotype 497 long and 242 wide. **Dorsum** - Length of dorsal shield varies between 467 and 518, width 247-273 in nine specimens. Dorsal shield of type B with lateral incisions but no suture. Striations only present in anterolateral part of podonotal shield. There are 16 pairs of setae on podonotal part of dorsal shield, *s5* and *r2* are absent. Opisthonotal part of dorsal shield with 11 pairs of setae, *J3*, *Z2*, *Z4* and *S5* are absent. Setae *z1* and *s1* 4-8 long and always shortest setae on podonotal part of dorsal shield. Setae *j1* 11-22 and *z5* 16-22 long and longest setae on podonotal part of dorsal shield. *Z5*

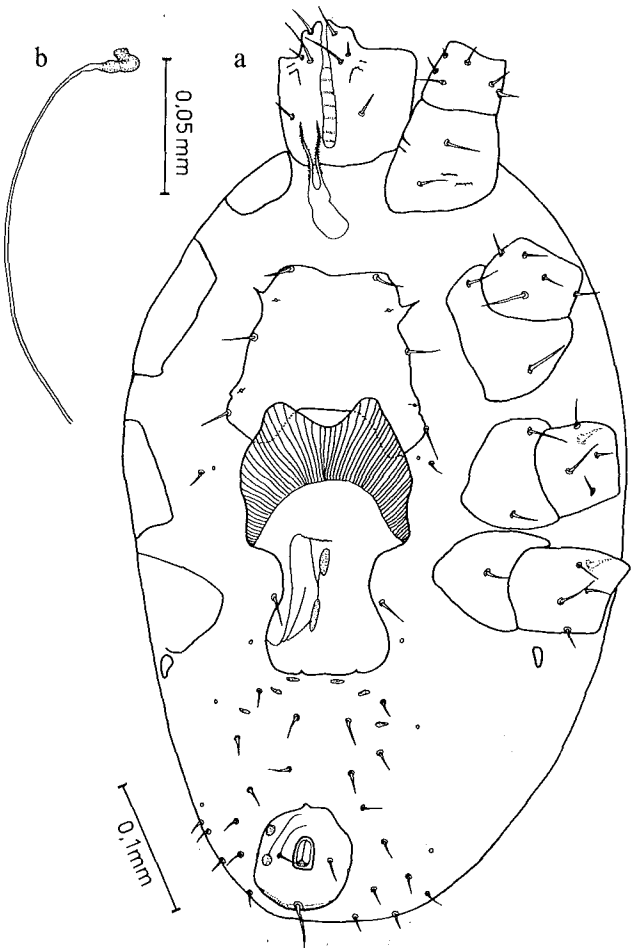


Fig. 2. *Rhinoseius ucumariensis* sp. n. female in ventral view (a), inseminating organ (b).

15-22 long and longest setae on opisthonotal part of dorsal shield. *J5* replaced by bundles of microspinules. Peritreme short, ending posterior to *s1* and thus not extending beyond coxa I; maximal width 11-13. VENTER - Sternal shield without anterior lobes. Genital shield anterior with two lobes. Lobes 22 long, distance between apices of lobes 62-65. Anal shield nearly without striation, 74-85 long and 68-78 wide. Postanal setae 29-35 long. Setae *Zv1* 18-22 long and always longest opisthogastric setae. Inseminating organ with long, thin and membranous adductor canal, maximal length 145. LEGS - Coxa I with various rows of denticles. Tibia III with 8 setae, tibia IV with 9 setae. GNATHOSOMA - Tectum rounded and 22-26 long. Chelicerae 86 long. Deutosternum with 7 transverse rows of five to seven denticles each.

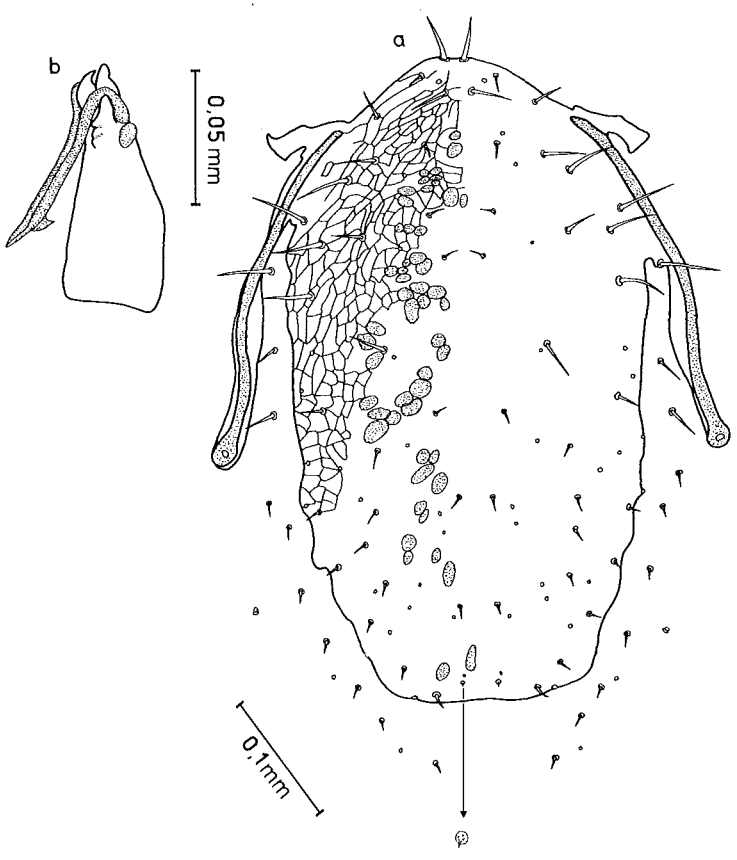


Fig. 3. *Rhinoseius ucumariensis* sp. n. male in dorsal view (a), spermatodactyl (b).

Male (Figs 3, 4, 5e-h) - **Dorsum** - Dorsal shield of allotype 438 long and 276 wide and of type A without lateral incisions. Striations only present in anterolateral part of dorsal shield. Dorsal shield with 18 pairs of podonotal setae and 11 pairs of opisthonotal setae; *r2* and *r3* on podonotal shield. Setae *j1*, *j2*, *z3* respectively 35, 33, 17 long and with setae of *s*- and *r*-row longest dorsal setae. Shortest setae of *s*- and *r*-row are setae *s1* with 24 long and longest setae of these are *r3* with 46 long. All other setae of *j*- and *J*-row (except *J5*), *Z*-row (except *Z5*) and *S*-row are 9-13 long. Setae *Z5* 15 long. *J5* replaced by bundles of microspinules. Peritreme short, ending posterior *s1* and thus not extending beyond coxa I; maximal width 11-13. **Venter** - Distinct and separated ventral and anal shield. Between ventral shield and metapodal shields three pairs of small opisthogastric plates. Anal shield 74 long and 72 wide. **Legs** - Coxa I with various rows of denticles. On femur I two ventral spines 18 (proximal spine) and 20 (distal spine) long. On femur II two blunt, ventral spines 7,5 (proximal spine) and 9 (distal spine) long. Tarsus II with two spines,

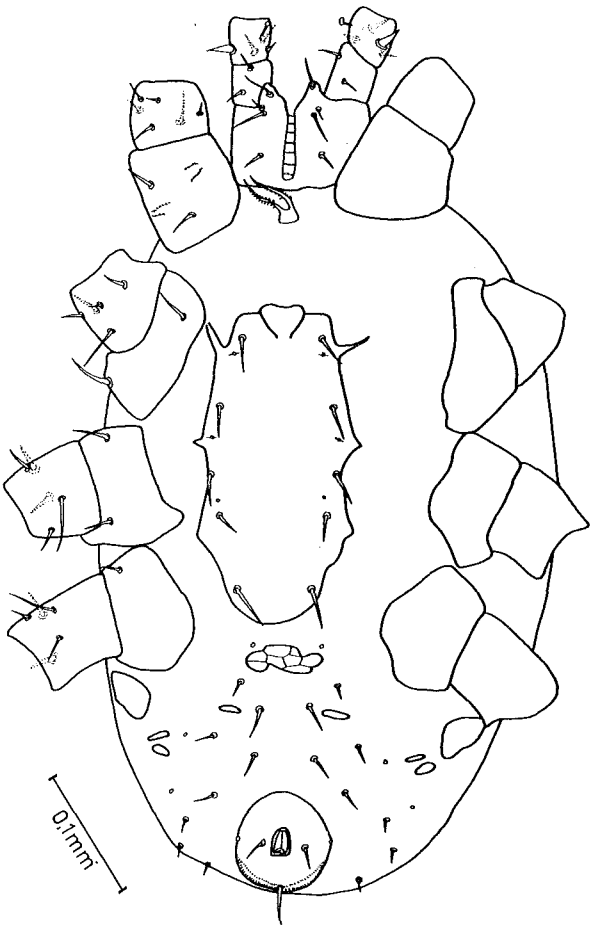


Fig. 4. *Rhinoseius ucumariensis* sp. n. male in ventral view.

tarsus III lacking spines. Tibia III with 8 setae, tibia IV with 9 setae. GNATHOSOMA - Tectum not visible. Chelicerae 95 long with fixed digit 22 and movable digit 17 long. Spermatodactyl 70 long with preterminal hook. Palpal femur with a ventral spine, 22 long. Deutosternum with 7 transverse rows of five to seven denticles each.

HOST AND LOCALITY - Cordilliera Central: Parque de Ucumari in valley of Rio Otun, Riseralda, Colombia. Altitude 2200 m above sea level near 'La Pastora'. One flower of *Gesneriaceae* spp., 20.VIII.1992 (holotype ♀, 7 paratype ♀♀ and allotype ♂), one flower of *Gesneriaceae* spp., 20.VIII.1992 (1 paratype ♀).

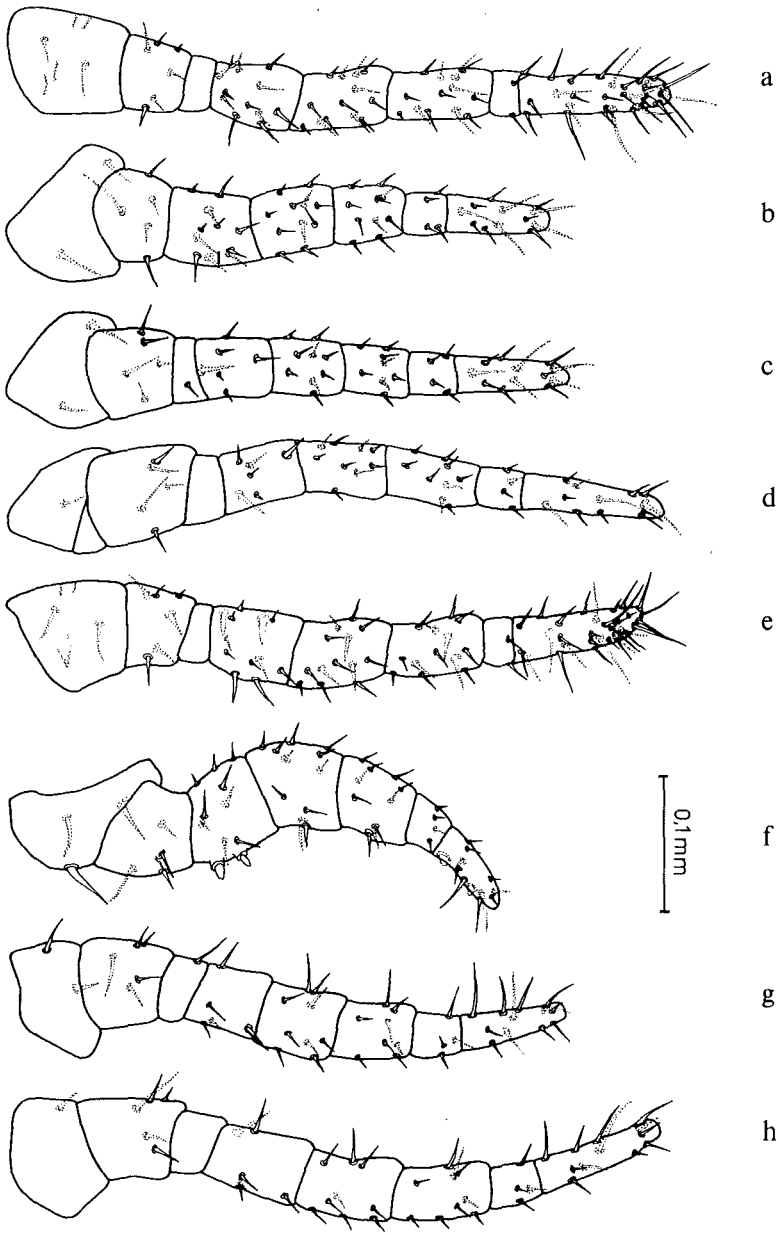


Fig. 5. *Rhinoseius ucumariensis* sp. n. legs I to IV in the female (a,b,c,d) and the male (e,f,g,h).

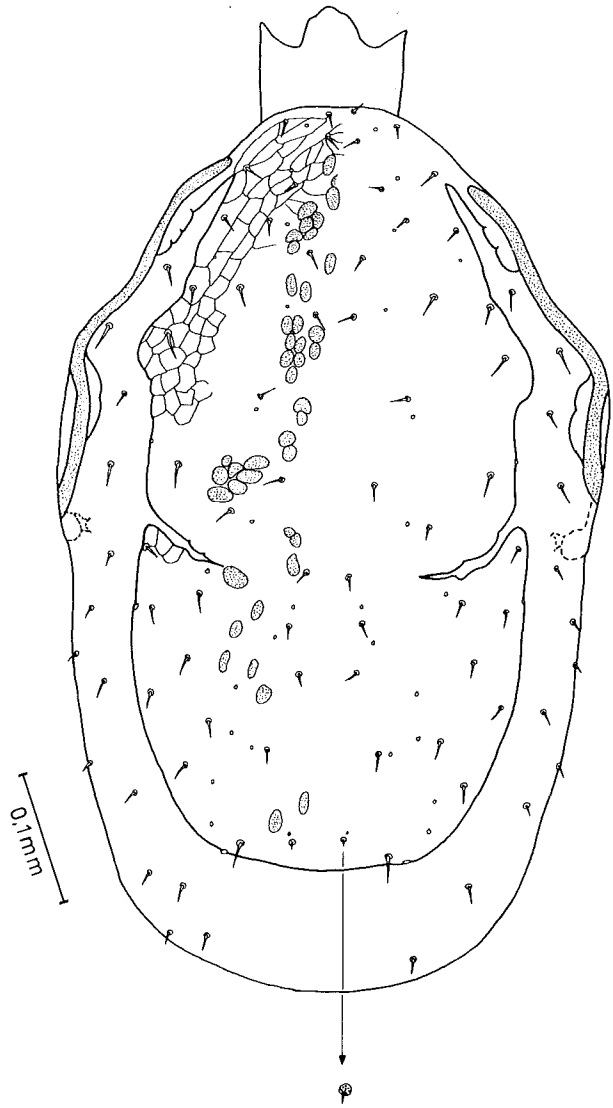


Fig. 6. *Rhinoseius pastorae* sp. n. female in dorsal view.

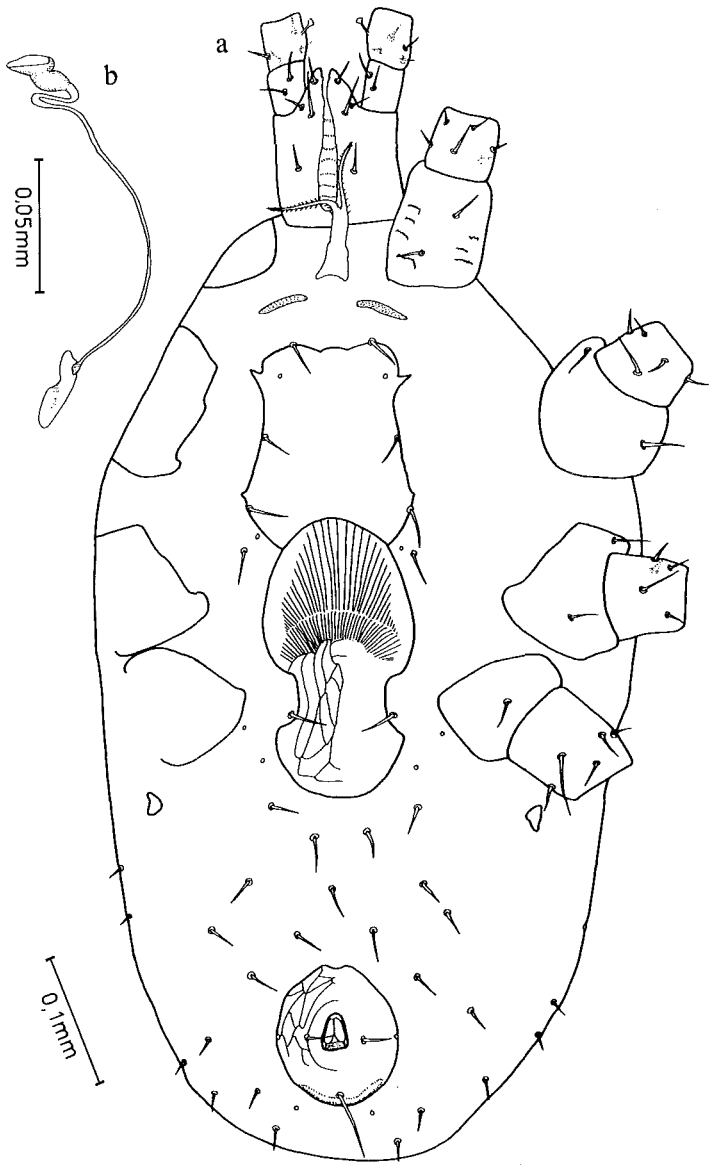


Fig. 7. *Rhinoseius pastorae* sp. n. female in ventral view (a), inseminating organ (b).

2. *Rhinoseius pastorae* sp. n.

DIAGNOSIS - The females are as *Rhinoseius tiptoni* and *Rh. ucumariensis* sp. n. characterized by the combination of a long and distally rounded tectum, short dorsal setae and coxa IV without a ventral spur. The female

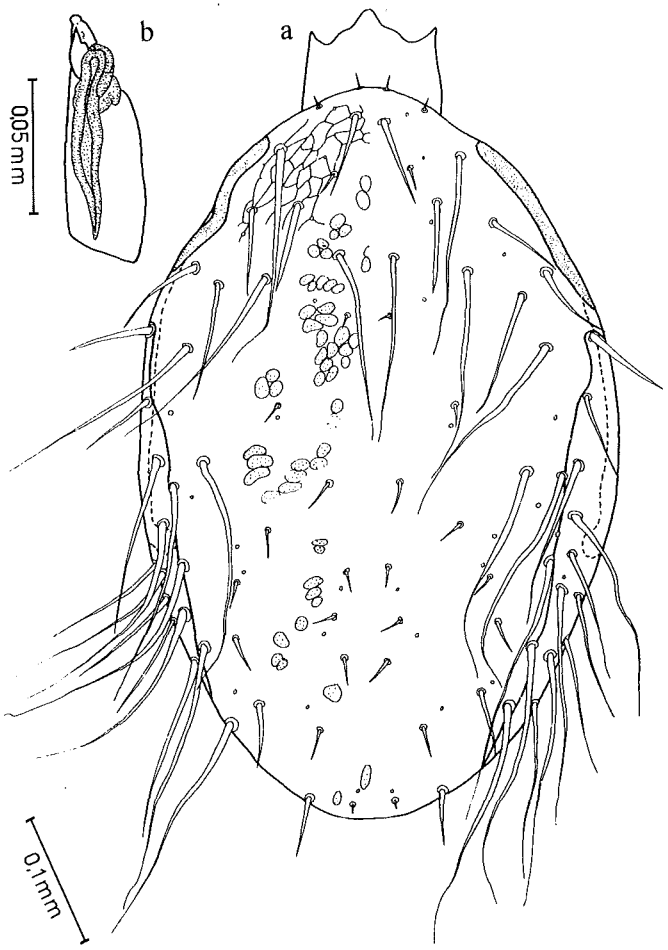


Fig. 8. *Rhinoseius pastorae* sp. n. male in dorsal view (a), spermatodactyl (b).

is distinguished from both species by the typical inseminating organ with a prominent coxal opening and the subcircular shape (from *Rh. tiptoni*) and the greater size (from *Rh. ucumariensis*) of the anal shield. Also the dorsal setae are less unequal as in these species.

The males are as *Rh. rafinskii*, *Rh. tiptoni* and *Rh. ucumariensis* sp. n. characterized by a fragmented ventrianal shield. It is distinguished from these species by the unique length of dorsal setae. From *Rh. tiptoni* it is distinguished also by its longer spermatodactyl and from the other species by the dorsal setae, which are not spinose and by the absence of a preterminal hook on the spermatodactyl.

This species is named after the locality where the specimens were found.

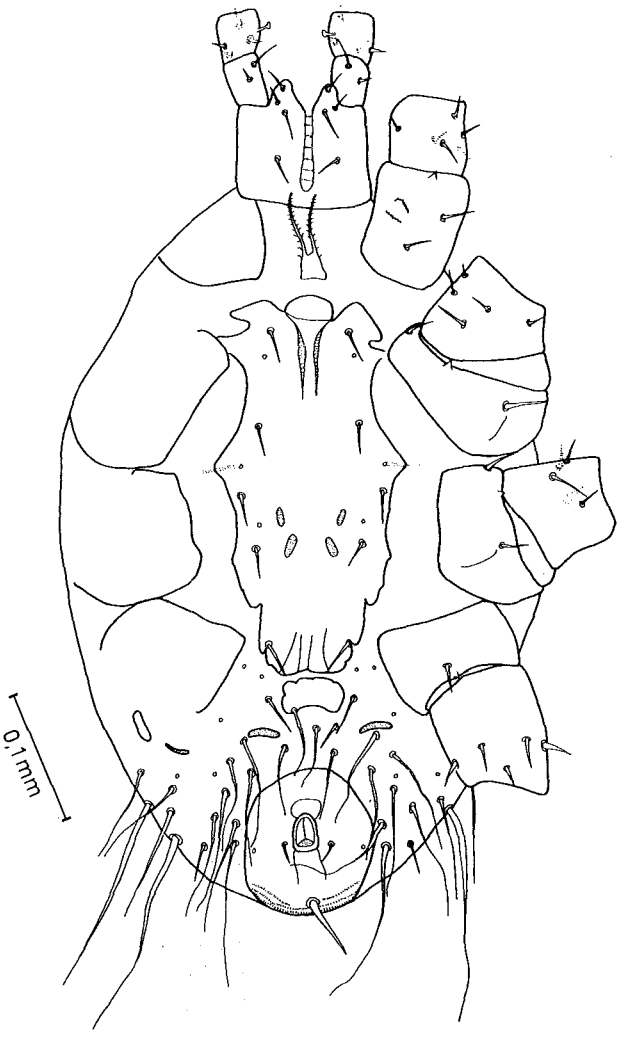


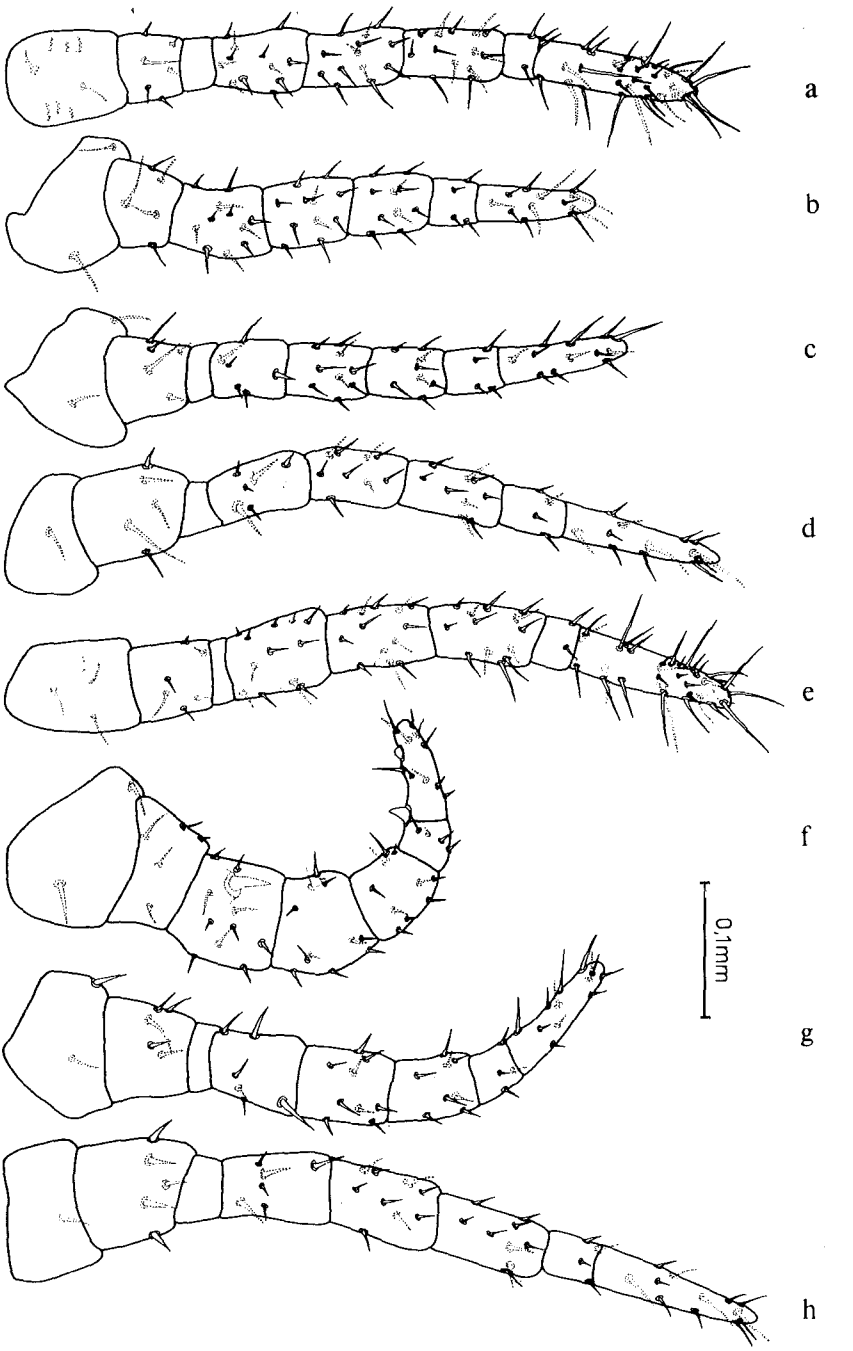
Fig. 9. *Rhinoseius pastorae* sp. n. male in ventral view.

Female (Figs 6, 7, 10a-d) - Idiosoma of holotype 697 long and 414 wide. **Dorsum** - Length of dorsal shield varies between 548 and 580, width 276-310 in 8 specimens. Dorsal shield of type B with lateral incisions but no suture. With only few anterolateral striations on podonotal shield. There are 16 pairs of podonotal setae on dorsal shield, setae *s5* are absent and no setae of *r*-row on shield. Dorsal shield with 13 pairs of opisthonotal setae, *Z4* and *S5* are absent. Setae *J5* replaced by bundles of microspinules. Setae *j1* 11-17 long and with *z1* shortest setae on podonotal part of dorsal shield. On opisthonotal part of dorsal shield the shortest

setae are *J1* and *Z1* with lengths of 9-11. *Z5* 20-30 long and longest setae on opisthonotal part of dorsal shield. Peritreme reaching setae *s1* but ending beyond coxa I. **Venter** - Sternal shield without anterior lobes. Anal shield subcircular 87-111 long and 68-96 wide. Postanal setae are longest ventral setae with lengths of 41-52. Setae *Jv1* 28-32 are longest opisthogastric setae. Odd number of opisthogastric setae, one unpair seta placed in the center between paired setae *Jv1* and *Jv2*. In one specimen an additional seta inserts near one of the setae *Jv4*. Inseminating organ with adductor canal thin and membranous, 150 long. Coxal opening of inseminating organ 17 long and 8 wide. **Leg** - Coxa I with various rows of denticles. Tibia III with 8 setae, tibia IV with 9 setae. **Gnathosoma** - Tectum rounded and 29-34 long. Chelicerae 97 long. Deutosternum with 7 transverse rows of five to seven denticles each.

Male (Figs 8, 9, 10e-h) - Idiosoma of allotype 587 long and 397 wide. **Dorsum** - Length of dorsal shield varies between 562 and 598, width 291-353 in 13 specimens. Dorsal shield of type A without lateral incisions. Striations only present in most anterior part of podonotal shield. On dorsal shield 18 or 19 pairs of podonotal setae, depending on whether setae *r3* are on or off the shield. There are 12 pairs of opisthonotal setae on dorsal shield, *Z4*, *S1* and *S5* are absent. Setae *j1*, *j3*, *j5*, *j6*, *z1*, *J1* 11-15 and setae *J2* and *J3* 16-24 long. Setae *J4* 22-28 and *Z5* 35-61 long. Setae *j2*, *z2* and *r3* 46-76 long and always of same length in each specimen. Among the specimens all the other setae vary extremely in length from 40 to over 200. For instance are setae *j4* 41-189, *s1* 59-196 and *R4* 85-203 long. Peritreme reaching setae *s1* but ending beyond coxa I. **Venter** - Distinct and separated ventral and anal shields. Between ventral and metapodal shields one or two pairs of small opisthogastric plates. Metapodal shields elongate and weakly sklerotized. Anal shield 106-117 long and 88-95 wide. Setae *Jv4* and *Jv5* 71-100 long and longest opisthogastric setae. Setae *Jv1* and *Zv1* 27-51 long and shortest opisthogastric setae. Odd number of opisthogastric setae, one unpair seta placed in the center between paired setae *Jv1* and *Jv2*. **Legs** - Coxa I with various rows of denticles. On femur II and on genu II one blunt, ventral spine each. Most prominent spine on femur II and 31-35 long and 11-14 wide. Tarsus II with two spines, tarsus III lacking spines. Tibia III with 8 setae, tibia IV with 9 setae. **Gnathosoma** - Tectum rounded and 32-34 long. Chelicerae 92 long with fixed digit 24 and movable digit 18 long. Spermatodactyl 71 long. Deutosternum with 7 transverse rows of five to seven denticles each.

Fig. 10. *Rhinoseius pastorae* sp. n. legs I to IV in the female (a,b,c,d) and the male (e,f,g,h).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HOST AND LOCALITY - Cordilliera Central: Parque de Ucumari in valley of Rio Otun, Riseralda, Colombia. Altitude 2200 m above sea level near 'La Pastora'. One flower of *Bromeliaceae* spp., 19.VIII.1992 (holotype ♀, allotype ♂, 2 paratype ♀♀ and 8 paratype ♂♂, 6 deutonymphs, 4 protonymphs and 2 larvae), other flower of same plant (1 paratype ♀, 4 paratype ♂♂, 2 deutonymphs), two flowers of one other plant same species, 20.VIII.1992 (1 paratype female each), same plant but other flower (2 paratype ♀♀ and 2 deutonymphs).

3. *Rhinoseius nadachowskyi* sp. n.

DIAGNOSIS - Only known from two males. The males of this species are similar only to *Rhinoseius rafinskii* with respect to the fragmented ventrianal shield in combination with a transverse row of spinelike setae on posteromedian third of dorsal shield and a preterminal hook on spermatodactyl. It is distinguished from *Rh. rafinskii* by the greater number of dorsal spinelike setae (five pairs in the new species) and their arrangement in a straight line. Further it is distinguished by the femur II, on which two spines insert and the smaller ventral shield (in *Rh. rafinskii* 135 long and 84 wide; from original drawing), on which maximal 2 pairs of setae insert.

This species is named after the Colombian biologist Erika Nadachowsky.

MALE (Figs 11-12) - Idiosoma of holotype 505 long and 315 wide. DORSUM - Length of dorsal shield varies between 467 and 478, width 280-287 in two specimens. Dorsal shield of type A without lateral incisions, bearing in posteromedian third a transverse row of 5 pairs of strong spines. Striations present in anterolateral and lateral part of dorsal shield. On dorsal shield 17 pairs of podonotal setae, *z1*, *s5* and *r2* are absent. There are 13 pairs of opisthonotal setae on dorsal shield, *Z5* and *S5* are absent. Setae *j1* 26-28 and setae *j2* 37 long. Setae *j3* to *j6*, *z5*, *z6*, *J1* and *Z1* 15-22 long and nearly of same length. Other setae on podonotal shield more than one third longer than these setae with *r3* longest setae and lengths 35-43. Opisthonotal spinelike setae 44-70 long, always the central pair being the longest, they are followed in length by the most peripheric pair. Peritreme short not reaching anterior *j4* and 7 wide. VENTER - Distinct and separated ventral and anal shield with ventral shield tending to fragmentation. Ventral shield 42 long and 88 wide with distinct striations, one or two pairs of setae insert on this shield. Anal shield 75 long and 77-80 wide. Posterior opisthogastric setae strong. LEGS - Coxa I with various rows of denticles. Femur II with three ventral spines. Femur I, genu II, tibia II and tarsus II with two ventral spines each. Most prominent spine on femur II, 31-35 long and 11-14 wide. Tarsus III lacking spines. Tibia III with 8 setae, tibia IV with 9 setae. GNATHOSOMA - Tectum rounded and only 5 long. Chelicerae 90 long with fixed digit 25 and movable digit 20 long. Spermatodactyl 68 long with a preterminal hook. Deutosternum with 7 transverse rows of five to seven denticles each.

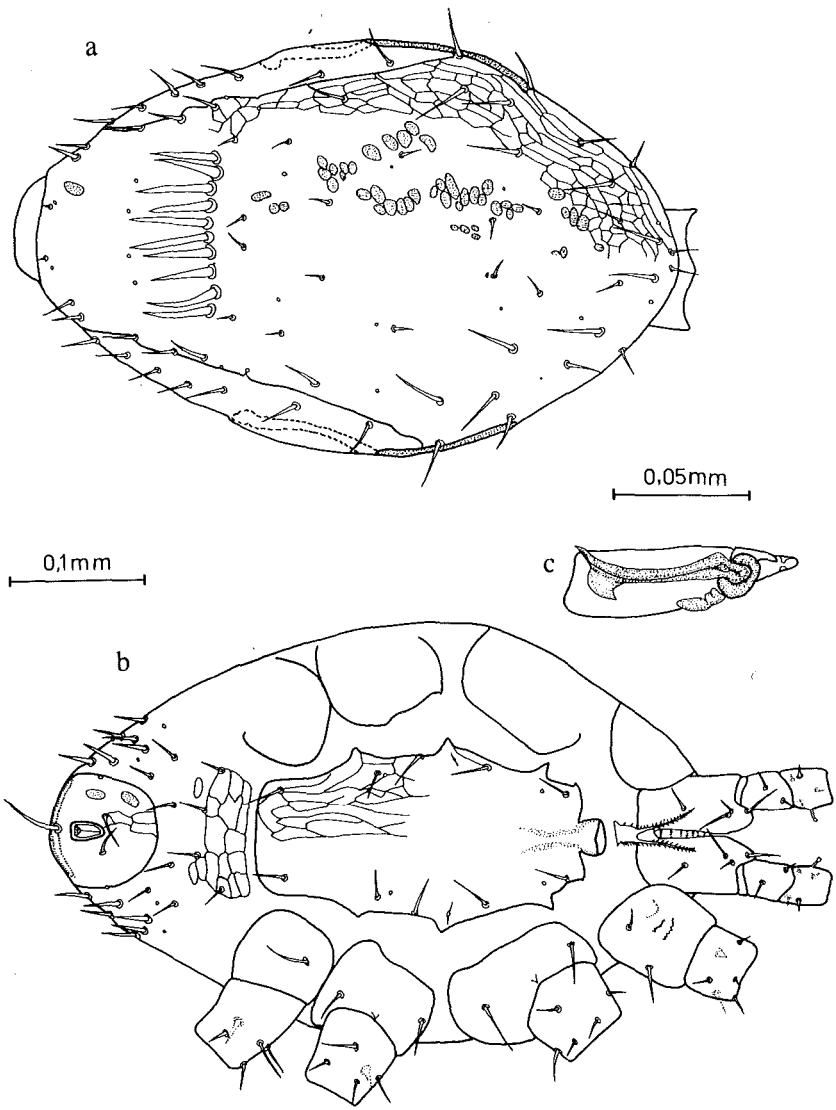

Fig. 11. *Rhinoseius nadachowskyi* sp. n. male in dorsal view (a) and in ventral view (b), spermatodactyl (c).

HOST AND LOCALITY - Cordilliera Central: Parque de Ucumari in valley of Rio Otun, Riseralda, Colombia. Altitude 2200 m above sea level near 'La Pastora'. One flower of *Ericaceae* spp., 20.VIII.1992 (holotype) and other flower of same plant (1 paratype).

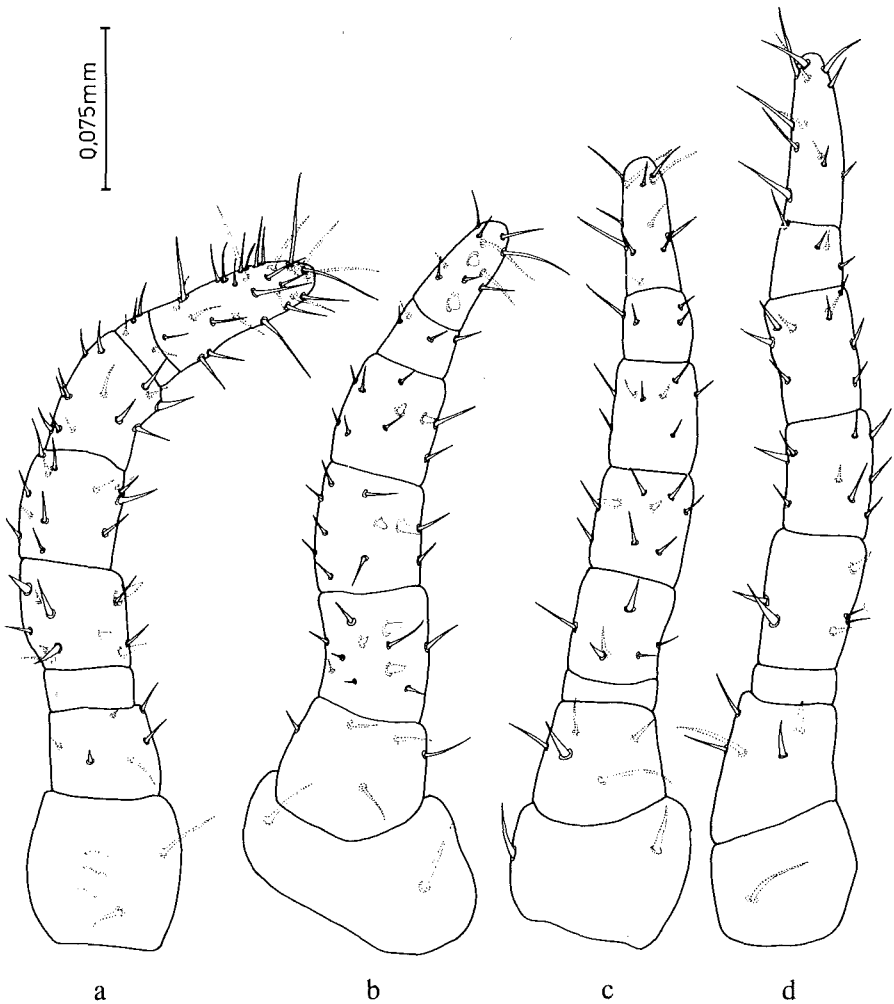

Fig. 12. *Rhinoseius nadachowskyi* sp. n. legs I to IV in the male (a,b,c,d).

B. Species of the "ornatus" group

1. *Rhinoseius bellavistensis* sp. n.

DIAGNOSIS - The female is only known from holotype. In respect to the dorsal shield it has a short tectum, a long and wide peritreme and a relatively wide anal shield. It is distinguished from all species of the "ornatus" group (*sensu* FAIN, 1992) by the combination of short tectum, generally long and unequal dorsal setae, a wide dorsal shield of type C, weakly developed sternal lobes, the genital shield, which is not widened posterior to the genital setae, coxa II to IV with a boss each and no ventral setae on

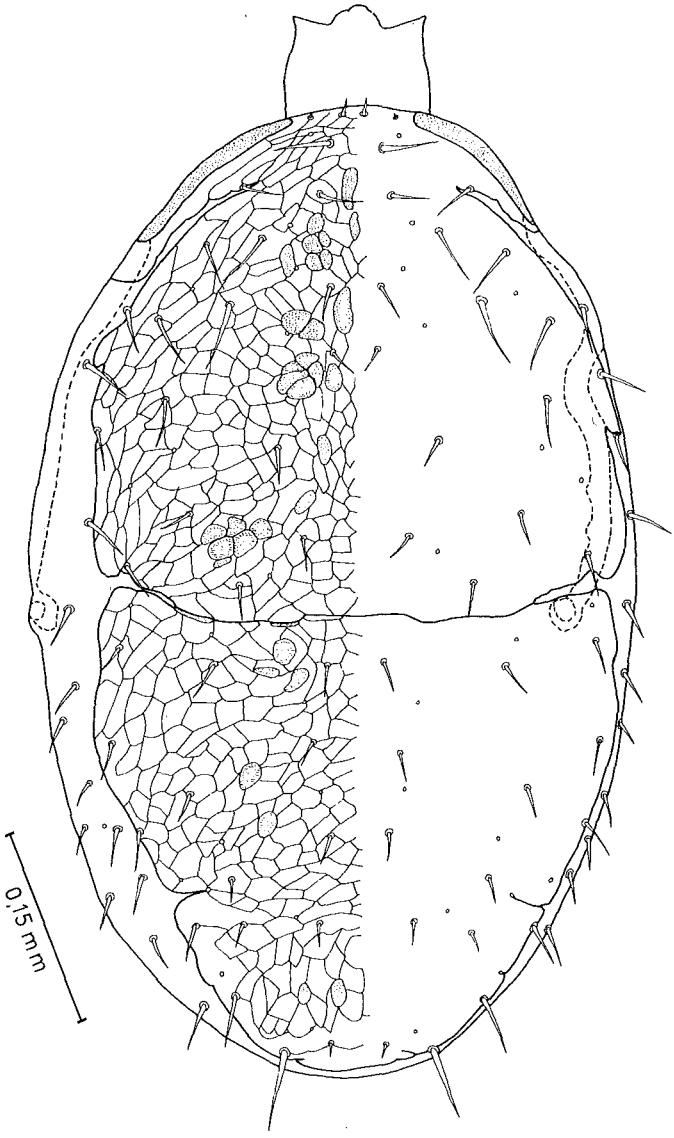

Fig. 13. *Rhinoseius bellavistensis* sp. n. female in dorsal view.

platelets. By its dorsal shield of type C and the relatively short tectum the female is close to *Rh. epoecus* but differs from this species by a wider dorsal shield, the longer and more unequal dorsal and ventral setae and the greater length and width of peritreme. Further it is distinguished by the lack of the opisthogastric setae laterad to the genital shield and the metapodal shields, which are distally rounded (posterior tapering in *Rh. epoecus*).

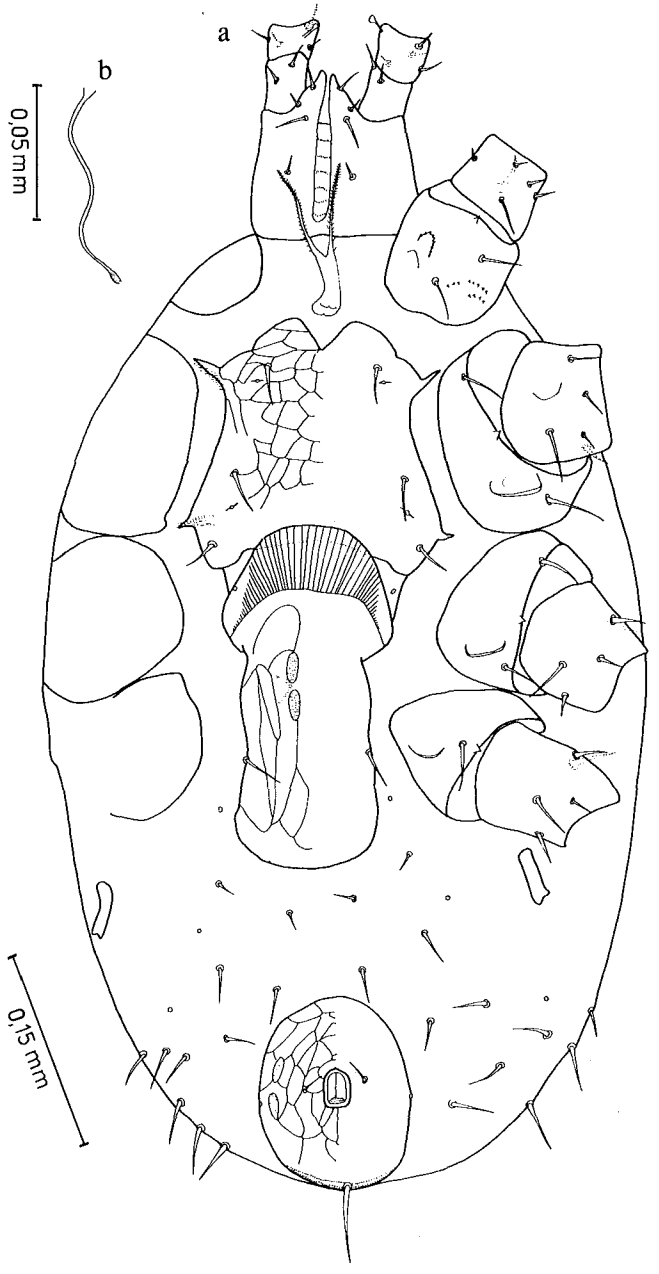

Fig. 14. *Rhinoseius bellavistensis* sp.n. female in ventral view (a), inseminating organ (b).

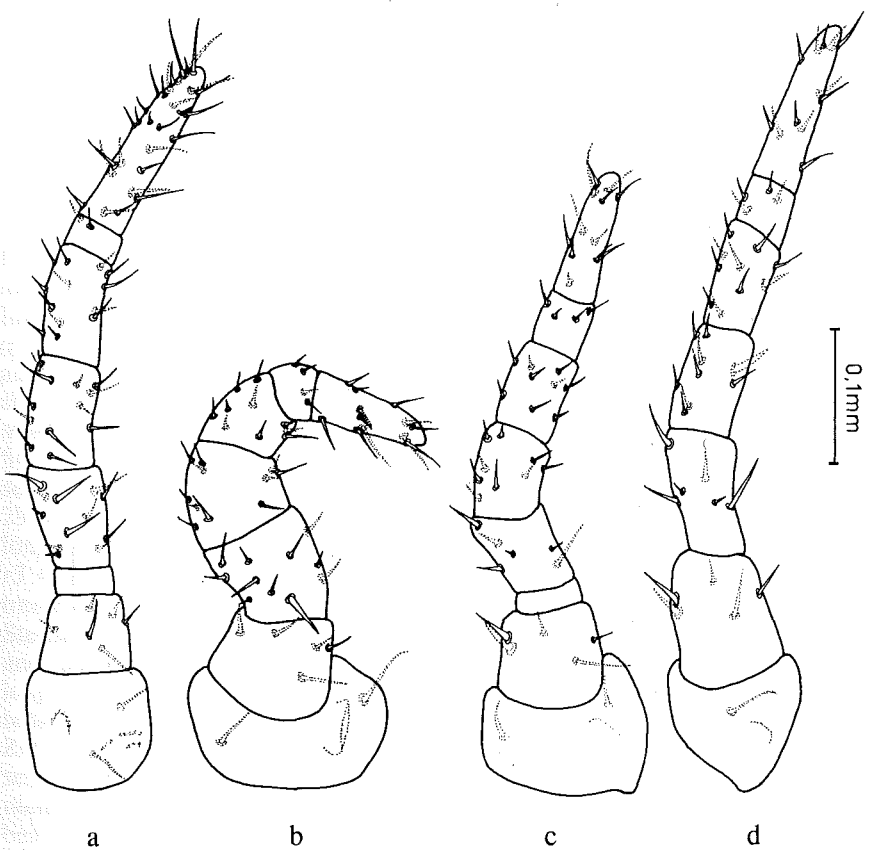

Fig. 15. *Rhinoseius bellavistensis* sp. n. legs I to IV in the female (a,b,c,d).

The male is close to *Rhinoseius colwelli* HUNTER, 1972 in its heteromorphic forms by the tibia II bearing a blunt, ventral spine and the spermatodactyl bearing an appendix (which was also observed in the available male paratype of *Rhinoseius ornatus* FAIN & HYLAND, 1980 but not in other species of the "ornatus" group including *Rh. epoecus*). It is distinguished from *Rh. colwelli* by the long setae *j1*, *j2* and *z1*, a wide peritreme (not wider than 12 in *Rh. colwelli*), a dorsal shield of type B, metapodal shields which are 1,4 times longer than wide (1,9 in *Rh. colwelli*), the setae *Zv1*, which are on the ventrianal shield, the size of the ventrianal shield (in *Rh. colwelli* not wider than 93 along its anterior border), a relatively longer tectum (not longer than 58 in *Rh. colwelli*) and its characteristic fixed digit of the chelicerae (no distal 'neck' in *Rh. colwelli*).

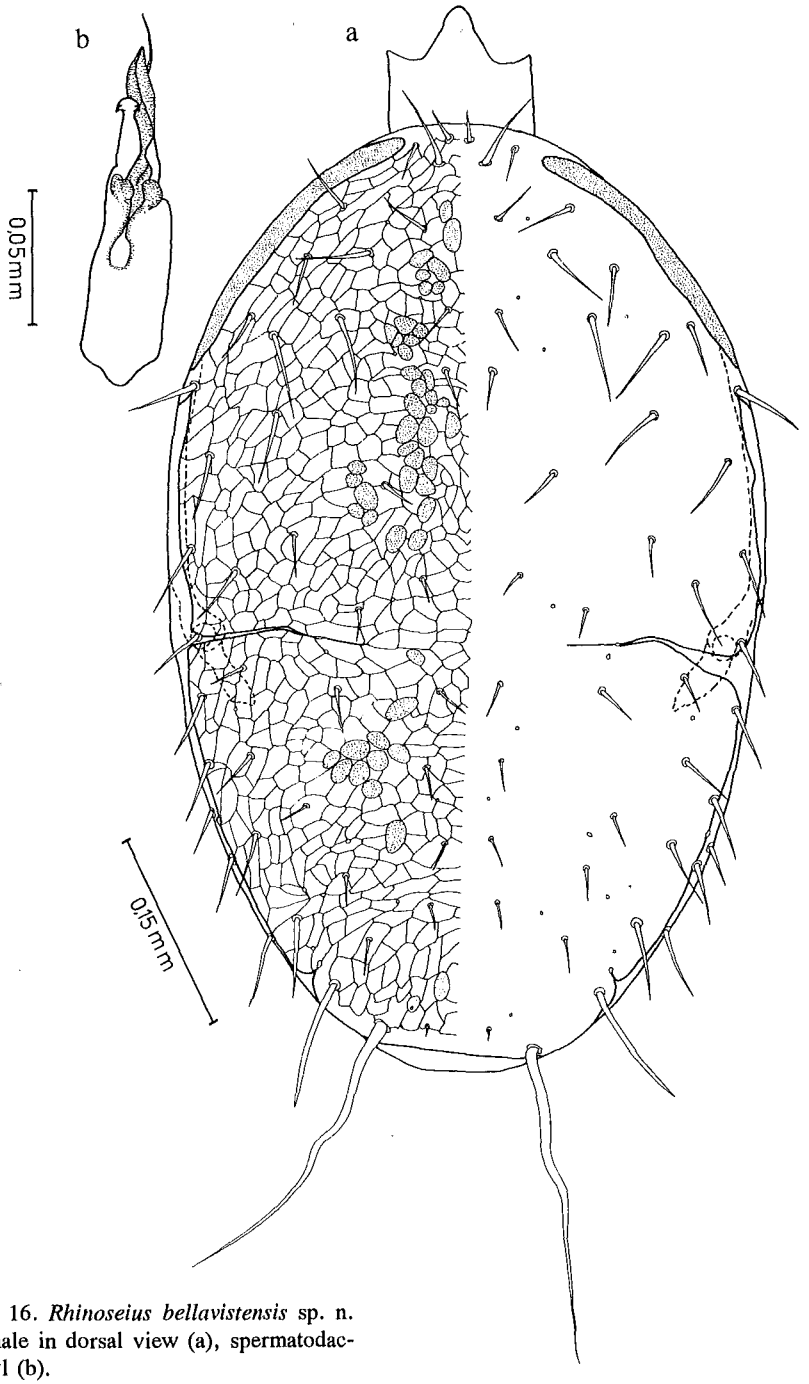

Fig. 16. *Rhinoseius bellavistensis* sp. n. male in dorsal view (a), spermatodactyl (b).

In males of *Rh. bellavistensis* sp. n. heteromorphism is observed as in *Rh. colwelli*, *Rh. epoecus* and in *Rhinoseius braziliensis* BAKER & YUNKER, 1964 (heteromorphism reported by FLECHTMANN & JOHNSTON, 1978). In the heteromorphism of the *Rh. bellavistensis* sp. n. the following characters are involved: the size of the idiosoma, the length of mainly the podonotal setae, the length of setae of *S*- and *R*-rows, the size of leg II and the size of ventrianal shield.

FEMALE (Figs 13-15) - Idiosoma of holotype 740 long and 469 wide. **DORSUM** -Dorsal shield 735 long and 410 wide and of type C, with lateral incisions connected by a superficial line (suture). With distinct network of lines covering the whole surface of dorsal shield. There are 17 to 19 pairs of setae on podonotal part of dorsal shield, depending on whether setae *r2* and *r4* are on or off the shield. There are 4 pairs of *r*-setae anterior to shield incisions. Opisthonotal part of dorsal shield bearing 15 pairs of setae. Setae *Z5* 56 and setae *S5* 44 long and longest dorsal setae. Setae *z4* 54 long and longest podonotal setae. Setae *j1* 17 long and after minute setae *z1* shortest podonotal setae. Setae *j2*, *j3* and *j4* to *j6* 51, 37 and 29-31 long respectively. Setae *z2* and *z4* 52-54 and setae *z5* and *z6* 30 long. All setae of *s*-row longer than 36 and setae *r2-r6* longer than 32 with *r3* 43 long and longest setae of this row. Setae of *R*-row 31-38 long. Peritremes long, reaching near setae *z1* and 19 wide in maximum. **VENTER** - Sternal shield with weak lobes. In anterocentral part of sternal shield and anal shield as on genital shield bearing network of lines. Anal shield 139 long and 115 wide. Genital shield not widened posterior to the genital setae. Metapodal plates elongate, 39 long and 9 wide. Setae *Jv1*, *Jv3* and *Zv1* 23-25 long and shortest opisthogastric setae. All other opisthogastric setae 33-38 long. Inseminating organ with adductor canal 78 long, thin and membranous. Sclerotized maturation pouch not observed. **LEGS** - Coxa I bearing several rows of denticles. Coxa II to coxa IV with a boss each. Tibia III with 9 setae and tibia IV with 10 setae. **GNATHOSOMA** - Tectum 20 long and narrowly arched with rounded apex. Chelicerae 98 long. Deutosternum with 7 transverse rows of five to seven denticles each.

MALE (Figs 16-18) - Idiosoma in allotype 704 long and 449 wide. **DORSUM** - Length of dorsal shield varies between 700 and 846, width 445-540 in three specimens. Dorsal shield of type B with lateral incisions which are not connected by a superficial line (suture). With distinct network of lines covering the whole surface of dorsal shield. There are 22 pairs of setae on podonotal part of dorsal shield, all setae of *r*-row on the shield. On opisthonotal part of dorsal shield 17 pairs of setae, setae *R1* and *R2* are on the shield. Setae *j1*, *z1* and *j2* are 28, 28-35 and 59-63 long respectively. Setae *z2* and *s1* vary from 39 to 89, they are of nearly the same length in each specimen. Setae *j3* to *j6*, *z5* and *z6* 31-37 long. Other podonotal setae 59-70 long. Setae *J4* 24 and *J3* 26-28 long. Setae *Z2*, *Z3* and *Z4* 28-30, *J1* and *J2* 30-33 long and *Z1* as *S1* 33 long. Other setae *S1* to *S4* and *R1* to *R4* 50-65, *S5* 100-113 and *Z5* 240-269 long. Peritremes close to *z2* but may be shorter and ending between *s1* and *z1*. Maximal width of peritremes over 16. **VENTER** - Ventrianal shield and metapodal shields with dis-

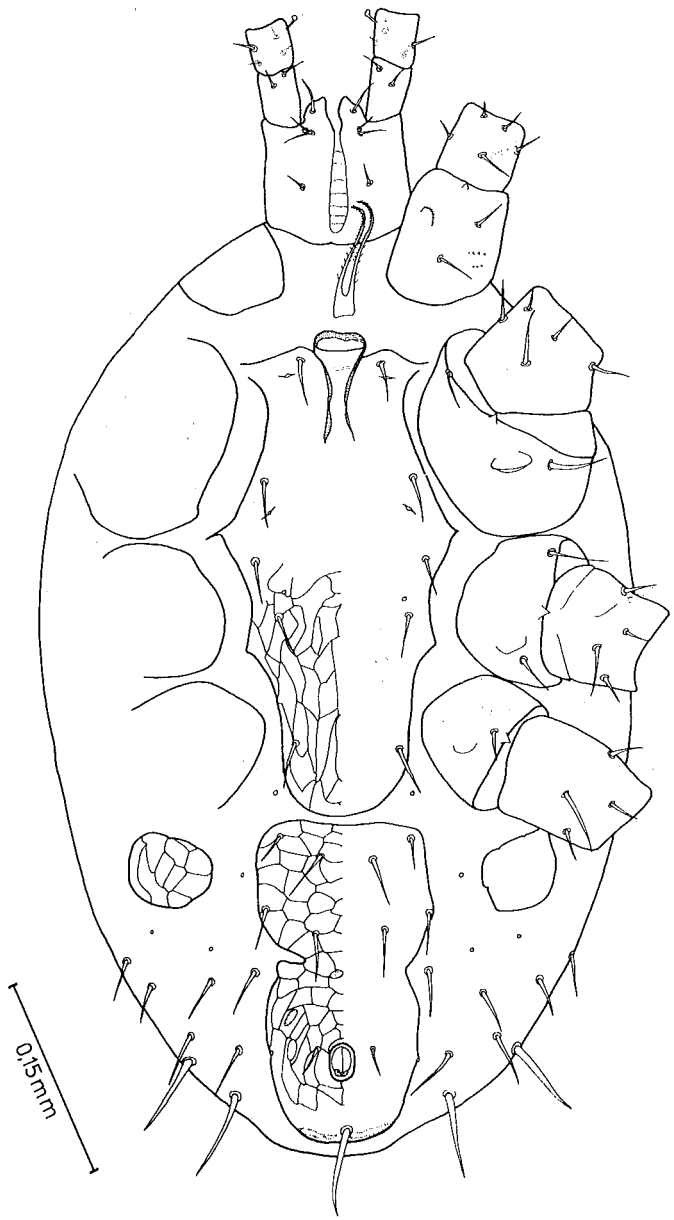

Fig. 17. *Rhinoseius bellavistensis* sp. n. male in ventral view.

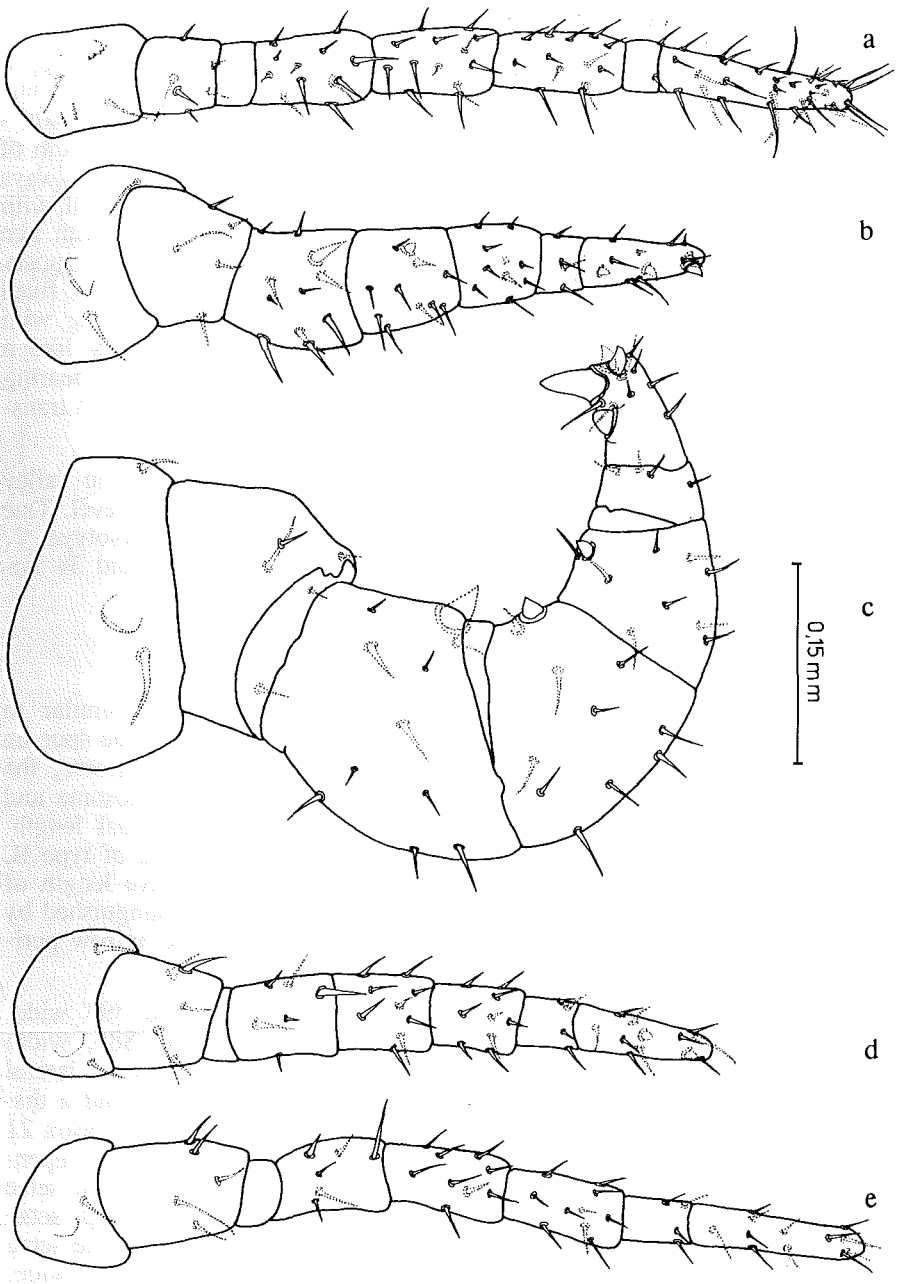

Fig. 18. *Rhinoseius bellavistensis* sp. n. legs I to IV in the male: leg I, III & IV (a,d,e), leg II in homeomorphic (b) and leg II in heteromorphic type (c).

tinct network of lines. Metapodal shields 70-100 long and 59-83 wide, not more than 1,4 times longer than wide. Ventrianal shield 236-309 long, in maximum 137-170 wide, on its anterior border 130-144 wide and narrowed near setae *Jv3*. Setae *Zv1* insert on the ventrianal shield. LEGS - Coxa I with several rows of denticles. Coxa II to IV with bosses. Width of femur II 95 in homeomorphic and 200 in heteromorphic male, always bearing one spine 27-43 long and 12-23 wide. Genu II and tibia II with one distinct spine each. Tarsus II with four spines and tarsus III with two blunt spines. Tibia III with 9 setae and tibia IV with 10 setae. GNATHOSOMA - Tectum 67 long and rounded. Chelicerae 114-137 long with fixed digit 44-47 and movable digit 33 long. Spermatodactyl 71-76 long with long appendix 39 long. Fixed digit narrowed towards the apex like a 'neck', then distally dilated 'headlike'. The 'head' is rounded, bearing lateral a triangular prolongation on each side. Deutosternum with 7 transverse rows of five to seven denticles each.

HOST AND LOCALITY - Cordilliera Central: Parque de Ucumari in valley of Rio Otun, Riseralda, Colombia. Altitude 1900 m above sea level. One plant of *Gesneriaceae* spp. with six flowers, 19.VIII.1992 (holotype ♀, allotype ♂, 2 paratype ♂♂, 4 deutonymphs, 61 protonymphs and 34 larvae).

2. *Rhinoseius carlosalberti* sp. n.

DIAGNOSIS - Only known from four males. The species is similar to *Rhinoseius colwelli* and *Rh. bellavistensis* sp. n. in tectum and one spur on tibia II. It is distinguished from both species by the long peritreme, the coxa IV not bearing a ventral boss and by its large size of idiosoma and leg II in combination with most dorsal setae short and of equal length. Further it is distinguished from *Rh. colwelli* by a dorsal shield of type B, the setae *Zv1* inserting on the ventrianal shield and the relative length of metapodal shields. From *Rh. bellavistensis* sp. n. it is also distinguished by the setae *r5* and *r6* not inserting on the podonotal shield, the narrow peritreme and the larger metapodal and ventrianal shields.

MALE (Figs 19-21) - Idiosoma of holotype 897 long and 593 wide. DORSUM - Length of dorsal shield varies between 802 and 886, width 474-532 in four specimens. Dorsal shield of type B with weak lateral incisions which are not connected by a superficial line (suture) and a distinct network of lines covering the whole surface of the shield. It bears 21 pairs of podonotal setae and 16 to 19 pairs of opisthonotal setae, depending on how many setae of *R*-row insert on the shield. Idiosomal setae 17-30 long and of nearly the same lengths in each specimen except setae *z4* and *Z5* which are 50-57 and 74-102 long respectively and minute setae *J5*. Peritreme reaching between setae *z1* and *j1* and in maximum 11 wide. VENTER - Ventrianal shield and metapodal shields with distinct network of lines. Metapodal shields 92-120 long, 59-83 wide and not more than 1,5 times longer than wide. Ventrianal shield 296-333 long, 139-161 wide and narrowed near setae *Jv2*. Setae *Zv1* on the ventrianal shield. Ventral setae

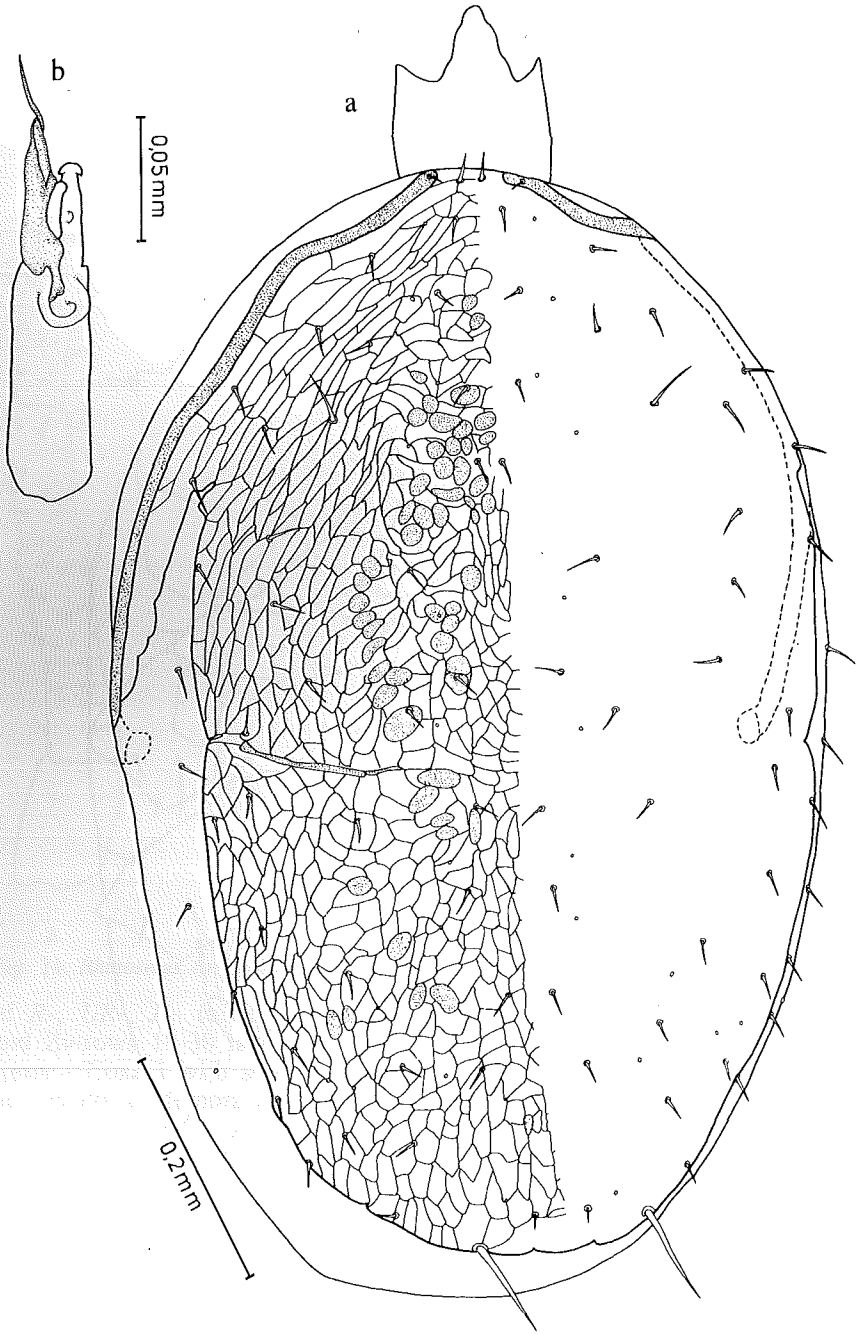

Fig. 19. *Rhinoseius carlosalberti* sp. n. male in dorsal view (a), spermatodactyl (b).

Fig. 20. *Rhinoseius carlosalberti* sp. n. male in ventral view.

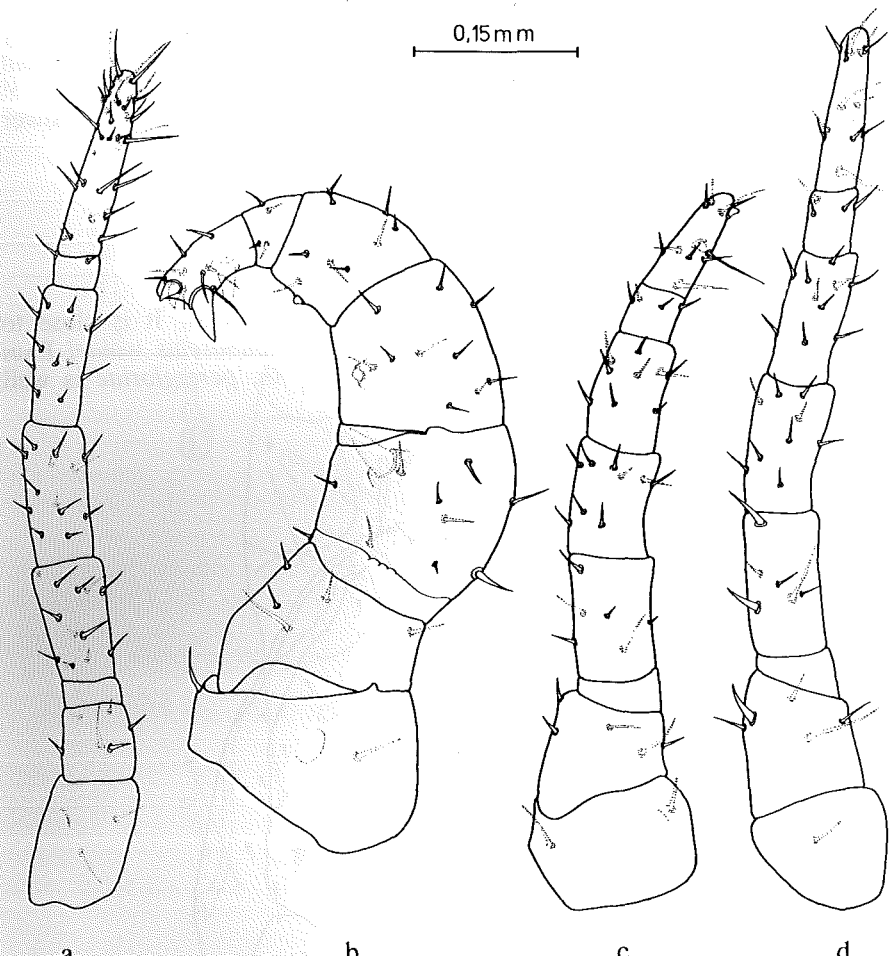

Fig. 21. *Rhinoseius carlosalberti* sp. n. legs I to IV in the male (a,b,c,d).

of *R-*, *UR-*, *Jv-* (except *Jv1*, which is in some specimen slightly longer) and *Zv*-rows 18-30 long and of nearly the same length in each specimen. LEGS - Coxa I with several rows of denticles. Coxae II and III with bosses. Width of femora II 159-189, always with one spine which is 56 long and proximally 26 wide. Tarsus II with four spines, tarsus III with two blunt spines. Genu II and tibia II with one blunt spine each. Tibia III with 9 setae and tibia IV with 10 setae. GNATHOSOMA - Tectum 73 long and rounded. Chelicerae 136 long with fixed digit 44 and movable digit 34 long. Spermatodactyl 85 long with long appendix 34 long. Fixed digit not narrowed towards the apex like a 'neck', but distal with a rounded 'head', bearing lateral a triangular prolongation on each side. Deutosternum with 7 transverse rows of five to seven denticles each.

HOST AND LOCALITY - Cordilliera Central: Parque de Ucumari in valley of Rio Otun, Riseralda, Colombia. Altitude 2200 m above sea level. From flower of *Gesneriaceae* spp. 20.VIII.1992 (holotype ♂), one flower of other species *Gesneriaceae* spp. 20.VIII.1992 (1 paratype ♂), one flower of *Bromeliaceae* spp. 19.VIII.1992 (2 paratype ♂♂).

C. Species of the "wetmorei" group

1. *Rhinoseius perezgloriae* sp. n.

DIAGNOSIS - Only the female is known of this species. It is close to *Rhinoseius fairchildi* BAKER & YUNKER, 1964 and *Rhinoseius waidei* FAIN & HYLAND, 1980 by the minute setae *j1* and *z1*. *Rh. perezgloriae* is well

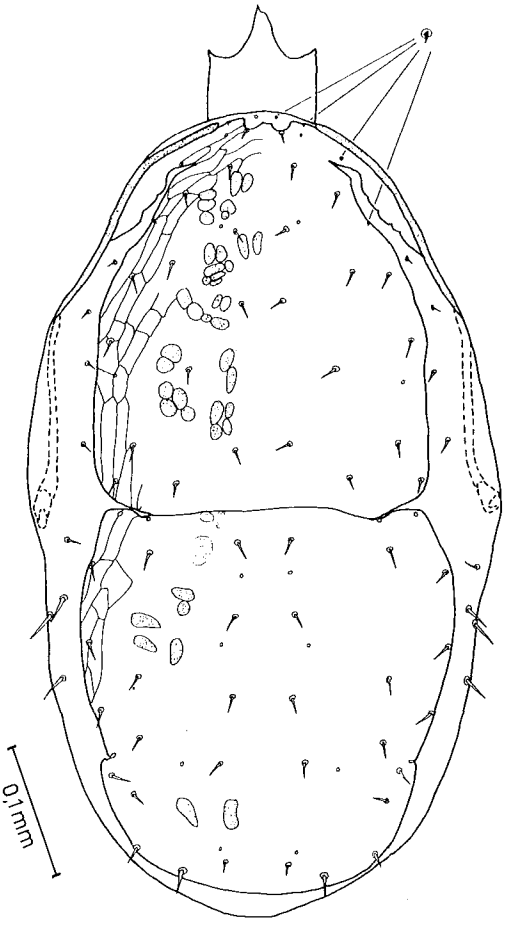

Fig. 22. *Rhinoseius perezgloriae* sp. n. female in dorsal view.

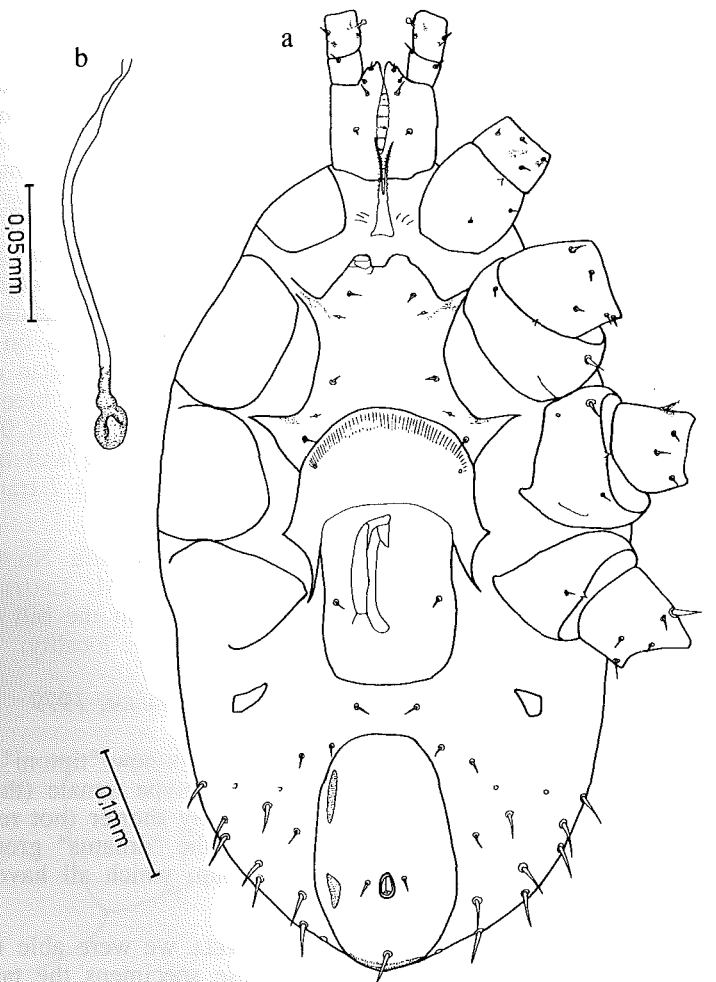

Fig. 23. *Rhinoseius perezgloriae* sp. n. female in ventral view (a), inseminating organ (b).

characterized by the shape of the anterior border of the dorsal shield, the minute setae *s1* and *s2*, its generally short setae of dorsum and venter, the large and elongate anal shield, various small conical spines among the general short setae on extremities and a row of three small, conical dorsal spines on genu and tibia IV each.

FEMALE (Figs 22-24) - Idiosoma of holotype 593 long and 359 wide. DORSUM - Dorsal shield in three specimens between 583 and 613 long, 276-298 wide and of type C. Only few striations present in anterolateral part of dorsal shield podonotal and opisthonotal. On dorsal shield 16 pairs of podonotal setae. Setae *j1*, *z1*, *s1* and *s2* minute, the setae *j1* anterior to

podonotal shield. There are 15 pairs of setae on opisthonotal part of dorsal shield. All setae on dorsal shield 8-14 long and of nearly same length in each specimen except minute podonotal setae, short setae *J5*, longer setae of *S*-row (13-15 long) and setae *Z5* (14-17 long and longest setae on dorsal shield). Setae of *R*-row 23-26 long and longest dorsal setae. Peritreme not reaching setae *z1*. VENTER - Setae on sternal shield and opisthogastric setae *Jv1*, *Jv2*, *Jv3* and *Zv1* 11-13 long. Other opisthogastric setae 22-26 long with *Jv5* longest setae. Setae *Zv2* absent. Sternal shield with weak anterior lobes. Anal shield 170-185 long and 109-117 wide, without striations. Inseminating organ with adductor canal 80 long and 4 wide, with distinct maturation pouch 16 long and 11 wide. LEGS - No denticles on coxa I, setae on coxa I minute. Various small, conical spines on dorsal surface of femur, genu, tibia and tarsus I, III and IV. All setae on trochanter to tibia of all legs short, not longer than 13. A row of three small, conical dorsal spines on genu and tibia IV each. Tibia III with 9 setae, tibia IV with 10 setae. GNATHOSOMA - Tectum 30-34 long and tapering into a point apically. Chelicerae 71 long. Deutosternum with 7 transverse rows of five to seven denticles each.

HOST AND LOCALITY - From the bill of *Eutoxeres aquila* No.49/337, 19.IV.1991 (holotype and 1 paratype ♀), collected by M. LEUTFELD in Bajo Anchicayá Dpto. Valle del Cauca, Colombia. From the bill of *Eutoxeres aquila* No. 808, 8.III.1992 (1 paratype ♀) in same locality.

Remarks on Rhinoseius epoecus *COLWELL & NAEEM, 1979*

FAIN (1992), tentatively included *Rh. epoecus* in his new "tiptoni" group on the basis of the length of peritreme in the holotype female (the male being not available at that moment) which is slightly shorter (not reaching beyond the middle of coxa I) than in species of the "ornatus" group and resembles more the species of the "tiptoni" group, which all have short peritremes.

Through the courtesy of Professor R.K. COLWELL we were able to examine 4 paratype males of *Rh. epoecus*. In these specimens the tarsus II bears 4 blunt spines and the tarsus III 2 blunt spines, which corresponds exactly with the situation we find in all the males of the "ornatus" group. We think, therefore, that *Rh. epoecus* belongs to the "ornatus" group. The character of the peritreme therefore appears less reliable than other characters in separating the "tiptoni" from the "ornatus" group.

Another character which confirms the closer relationship existing between *Rh. epoecus* and the "ornatus" group is the chaetotaxy of the legs III and IV. In all the species of the "ornatus" that we have examined, and that is also true for *Rh. epoecus*, the tibiae III bears 9 setae and the tibia IV 10 setae, while in all the species of the "tiptoni" group that we have examined these tibiae bear 8 and 9 setae respectively.

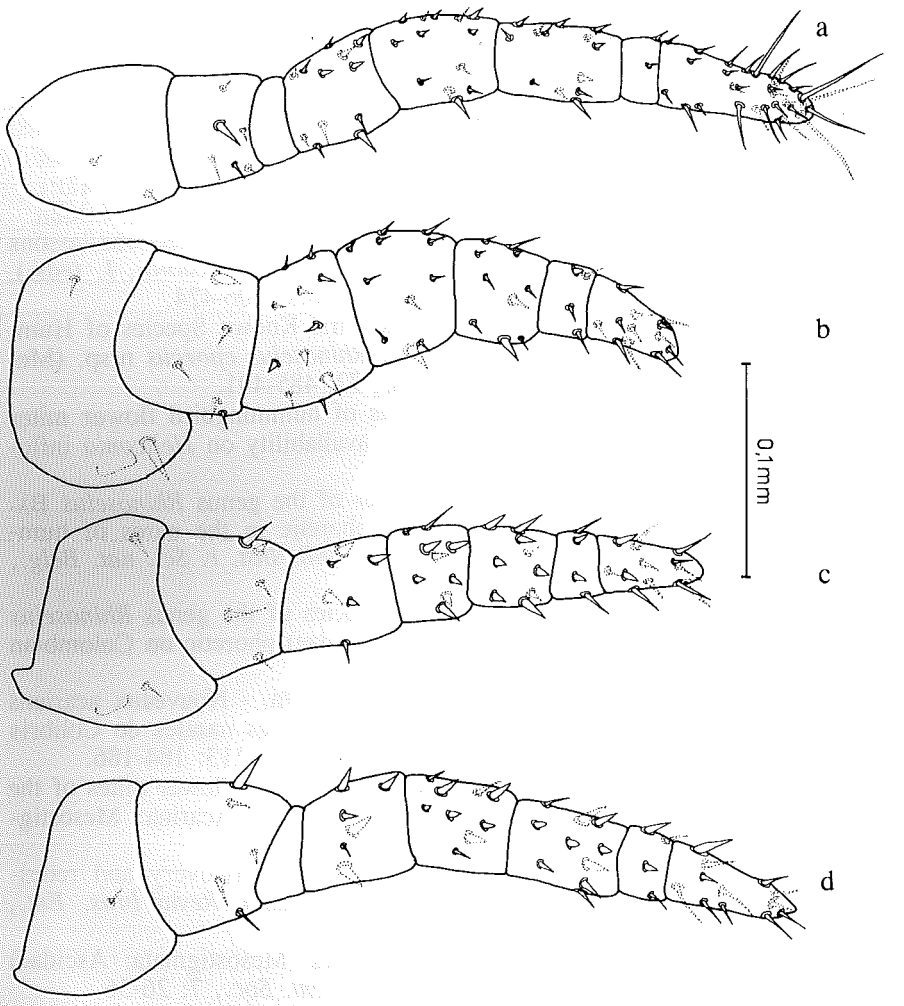

Fig. 24. *Rhinoseius perezgloriae* sp. n. legs I to IV in the female (a,b,c,d).

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