

PHYTOSEIID MITES OF COLOMBIA (ACARINA:PHYTOSEIIDAE)¹

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—ABSTRACT—This is the second report of the phytoseiids of Colombia. A new genus and species, *Quadromalus colombiensis* and *Euseius ricinus* n. sp. are described, bringing the total to 17 species of phytoseiids for Colombia.—

—RESUMO—ACAROS FITOSEIDEOS DA COLOMBIA (ACARINA: PHYTOSEIIDAE). Este e o segundo relate sobre os acaros fitoseideos da Columbia. Um novo genero e duas novas especies sao descritas, *Quadromalus colombiensis* e *Euseius ricinus* sp. n., elevando para 17 o numero total de especies conhecidas.—

In 1972, Denmark and Muma reported 11 species of phytoseiids from Colombia. These species were: *Amblyseius anacardii* De Leon, *Amblyseius deleari* Muma and Denmark [a synonym of *A. herbicolus* (Chant)], *Euseius flechtmanni* Denmark and Muma [a synonym of *Euseius concordis* (Chant)], *Euseius paraguayensis* Denmark and Muma [a synonym of *Euseius alatus* De Leon], *Euseius naindaimei* (Chant and Baker), *Iphiseiodes zuluagai* Denmark and Muma, *Typhlodromips sinensis* Denmark and Muma, *Typhlodromalus peregrinus* (Muma), *Neoseiulus anonymus* Chant and Baker, *Diadromus regularis* (De Leon), and *Phytoseius purseglovei* De Leon.

The Centro Interamericano de Agricultura Tropical has been researching the ecology of mites associated with cassava, *Manihot esculenta* Crantz, (Guerrero, 1980; Guerrero and Bellotti, 1980), in order to evaluate the role they play and the possibility of utilizing the native predators in cassava pest management.

The phytoseiids are important predators of phytophagous mites. This paper reports on the phytoseiids found in Colombia by Dr. J. M. Guerrero in relation to ecological studies.

All measurements are in micra.

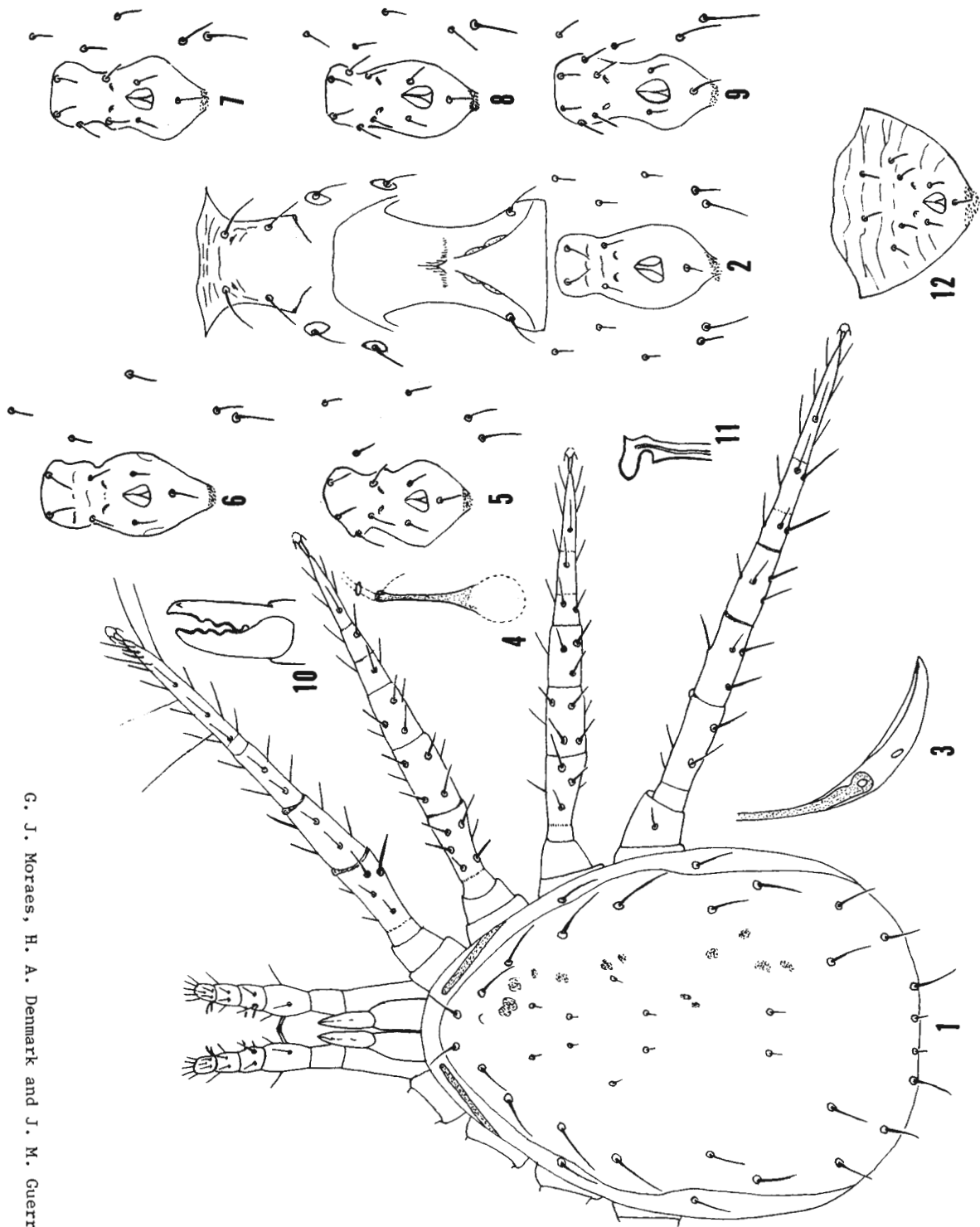
Quadromalus Moraes, Denmark and Guerrero, new genus

TYPE SPECIES—*Quadromalus colombiensis* Moraes, Denmark and Guerrero.

FEMALE—Moderate size species. Dorsal scutum 385 long and 252 wide at L₄.

Dorsum: Vertical and clunal setae present; verticals moderate setaceous, clunals tiny setaceous. Chaetotaxy = 4,3,8,2. Dorsal setae tiny setaceous. Median setae M₁ tiny setaceous, M₂ moderate setaceous, M₃ moderate setaceous. Lateral setae moderate setaceous. Sublateral setae on interscutal membrane moderate setaceous. Dorsal scutum smooth with muscle marks (mm).

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Figs. 1-12: Female *Quadromalus colombiensis* Moraes, Denmark and Guerrero n. sp.: 1. Dorsal and leg structure and setation, 2. Ventral scuta and setation, 3. Posterior peritremal and stigmatal development, 4. Spermathecal structures, 5-9. Variations in ventrianal scutum.

Venter: Chaetotaxy St 2, PAS 3, VL 4. Sternal scutum longer than wide, slightly creased with 2 pairs of pores, 2 pairs of moderate setaceous setae, and indistinct to trilobed posteriorly. Genital scutum smooth with slight crease on each side posteriorly, 1 pair of moderate setaceous, and about twice as wide as the ventrianal scutum. Ventrianal scutum vase-shaped, about one-third the width of the body, lightly creased with 2 to 3 pairs of preanal setae, and a pair of pores. Ventrolateral setae tiny to moderate setaceous and arranged in 2 rows beside the ventrianal scutum. Metasternal scuta present, irregular in shape with a moderate setaceous seta on each one. Metapodal scuta narrow and elongate. Peritreme normal in width (1 primary pore present) and extending beyond L₁; peritremal and stigmatal scuta fused, peritremal scutum extending as an ectal strip around leg IV.

Spermathecae: Tubular-fundibular; atrium indistinct nodular. Cervix 26 long.

Chelicerae: Moderate in size in relation to body size with 3 large denticles on the mf, and 3 large and 1 small denticule on the ff.

Legs: Macrosetae chaetotaxy = 0,0,0,1. Genu II 2 - $\frac{2-2}{0}$ - 1; Genu III 1 - $\frac{2}{1}$ - $\frac{2}{0}$ - 1. Leg formula: 4123.

MALES—Similar to but slightly smaller than the female. Ventrianal scuta shield-shaped with a pair of preanal pores and 3 pairs of tiny, setaceous, preanal setae. Spermatodactyl with foot terminal, enlarged toe as in *Typhlodromalus* without lateral process.

DISCUSSION—This genus is closely related to *Typhlodromalus* Muma. It differs by having at least 4 extra long setaceous setae on tarsus I, the chelicerae are larger with 3 large denticles on the mf and 3 large and 1 small denticles on the ff. Macroseta on St IV only. The ventrianal scutum is unstable, but the typical one appears to have 3 pairs of preanal setae arranged similar to those in *Typhlodromalus* and as illustrated in Fig. 9.

Quadromalus contains only the type species and has been taken only on *Talinum paniculatum* (Jacq.) Gaertn., jewels-of-Opar. in Palmira, Colombia, South America.

Quadromalus colombiensis Moraes, Denmark and Guerrero, n. sp.
(Figs. 1-12)

DIAGNOSIS—*Quadromalus colombiensis* is similar to those mites in the *peregrinus* group in the genus *Typhlodromalus*, but does not have M₃ or L₈ serrate, only 1 macroseta on leg IV, chelicera medium size in relation to body size with only 3 to 4 denticles in ff and 3 on the mf. Leg I has at least 4 extra long setae on the tarsus.

FEMALE—Length 370 (361-385); width at L₄ 246 (239-255). Dorsum smooth with scattered muscle marks (mm), 17 pairs of setaceous setae. Measurements of setae: verticals 27 (23-31); D₁ 11 (10-13), D₂ 12 (11-13), D₃ 12 (10-14), D₄ 18 (17-19); clunals 11; L₁ 36 (33-40), L₂ 34 (31-36), L₃ 42 (39-46), L₄ 46 (42-48), L₅ 35 (34-35), L₆ 32 (30-33), L₇ 32 (24-34), L₈ 34 (31-39); M₁ 11 (10-13), M₂ 30 (29-32), M₃ 34 (30-36); anterior sublaterals 33 (30-34); posterior sublaterals 32 (31-35). Sternal scutum lightly creased, with 2 pairs of pores, and 2 pairs of setae. Ventrianal scutum lightly creased, with 2 to 3 pairs of preanal setae and a pair of elliptical pores. Peritreme extending forward beyond L₁. Chelicerae medium-sized with 3 large denticles on mf and 3 large and 1 small denticule on the ff. Leg formula 4123. Macroseta present on St IV 37 (34-39). Genu II 2 - $\frac{2-2}{0}$ - 1; Genu III 1 - $\frac{2}{1}$ - $\frac{2}{0}$ - 1. Spermatheca tubular-fundibular with atrium indistinct nodular.

MALE—Similar to but slightly smaller than the female. The ventrianal scutum is lightly creased, 3 pairs of preanal setae and a pair of elliptical pores. The spermatodactyl has foot terminal with enlarged toe as in *Typhlodromalus*.

TYPES—Female holotype and 3 paratypes, Colombia, Palmira, 6-II-1981, J.M. Guerrero on *Thalinum paniculatum* (Jacq.) Gaertn. are in the Centro de Pesquisa Agropecuaria do Tropic Semi-Arido Empresa Brasileira de Pesquisa Agropecuaria. Two paratypes with the same collection data are in the Florida State Collection of Arthropods, Gainesville, Florida.

Genus *Amblyseius* Berlese, 1914

Amblyseius Berlese, 1914:143. Type: *Zercon obtusus* Koch, 1839, by indication of Berlese, 1914.
Amblyseius, Muma, Denmark, and De Leon, 1970:62.

Amblyseius chiapensis De Leon

Amblyseius chiapensis De Leon, 1961:85; Denmark and Muma, 1973:247.

This species was found in Marsella (Risaralda), July 1980 on *Matisia cordata* Humb. and Bonpl. associated with an eriophyid *Phytoptus matisiae* K. This species had been found only in Mexico and Brazil.

Genus *Iphiseiodes* De Leon, 1966

Iphiseiodes De Leon, 1966:84, Fig. 104-105. Type: *Sejus quadripilis* Banks, 1905, by subsequent designation of De Leon, 1966.

Iphiseiodes De Leon, Muma, Denmark; and De Leon, 1970: 70.

Iphiseiodes zuluagai Denmark and Muma

Iphiseiodes zuluagai Denmark and Muma, 1972:23; Denmark and Muma, 1973:251; Denmark and Muma, 1975:287.

This species was first reported from Colombia on *Citrus sinensis* (L.) Osbeck and *Passiflora edulis* Sims. In this study it was found on *Manihot esculenta* Crantz associated with the green cassava mite *Mononychellus tanajoa* (Bondar). It has also been reported from Brazil and Puerto Rico.

Genus *Typhlodromalus* Muma, 1961

Amblyseius (Typhlodromalus) Muma, 1961:288.

Typhlodromalus, De Leon, 1966:87. Type: *Typhlodromus peregrinus* Muma, 1955, by original designation of Muma, 1961.

Typhlodromalus Muma; Muma, Denmark, and De Leon, 1970:86.

Typhlodromalus limonicus (Garman and McGregor)

Amblyseius limonicus Garman and McGregor, 1956:11; Schuster and Pritchard, 1963:227.

Typhlodromus (Amblyseius) limonicus, Chant, 1959:96.

Amblyseius (Typhlodromalus) rapax De Leon, 1965:125.

Typhlodromalus limonicus, Muma, Denmark, and De Leon, 1970:90.

This species was reported from Cali (Valle) in January, September, and December 1979, May 1980, and February 1981 on *M. esculenta*. Mondomito (Cauca), in February 1981, on *M. esculenta*. It is a common species frequently found associated with *M. tanajoa*. *T. limonicus* has been reported from North America, Mexico, Central America, Caribbean area, Brazil, Hawaii, and New Zealand.

Genus *Euseius* Wainstein, 1962

Euseius Wainstein, 1962:15. Type: *Seiulus finlandicus* Oud., 1915, by designation, Wainstein, 1962.
Euseius, Muma, Denmark, and De Leon, 1970:92.

Euseius concordis (Chant)

Typhlodromus (Amblyseius) concordis Chant, 1959:69.

Amblyseius concordis, Chant and Baker, 1965:22.

Euseius flechtmanni Denmark and Muma, 1970:223; 1972:20; 1973:261, new synonym.

Euseius concordis, Denmark and Muma, 1973:264.

This species was found in Palmira (Valle), September 1980, on *Talinum paniculatum* associated with a rust disease. It has been reported from Argentina, Brazil, Paraguay, Colombia, Nicaragua, and El Salvador.

Euseius sibelius De Leon

Amblyseius (Typhlodromalus) sibelius De Leon, 1962:21.

Euseius subalatus De Leon, 1965:127.

Euseius sibelius, Muma, Denmark, and De Leon, 1970:98; Denmark and Muma, 1973:262.

Specimens were found in Cali (Valle) in April 1980, on guava *Psidium guajava* L. associated with an unidentified eriophyid mite. It has been reported from the southeastern United States, Puerto Rico and Brazil.

Euseius ricinus Moraes, Denmark and Guerrero, n. sp.

(Figs. 13-16)

DIAGNOSIS—*Euseius ricinus* is similar to *Euseius ovalis* (Evans) but differs in having a lightly reticulated dorsal scutum as opposed to a smooth one in *ovalis*; vertical seta 19 in *ricinus* as opposed to 32 in *ovalis*; spermatheca short saccular in *ricinus* as opposed to short fundibular in *ovalis*.

FEMALE—Length 341; width at L₄ 243. Dorsum lightly reticulated with several small pores, scattered muscle marks (mm), 17 pairs of setaceous setae except L₈ is slightly plumose. Measurements of setae: Verticals 19; D₁ 9, D₂ 8, D₃ 8, D₄ 11; clunals 4; L₁ 22, L₂ 13, L₃ 13, L₄ 20, L₅ 16, L₆ 14, L₇ 12, L₈ 52; M₁ 11, M₂ 8, M₃ 9; anterior sublaterals 16, posterior sublaterals 12. Sternal scutum lightly creased, with 2 pairs of pores, and 3 pairs of setae. Ventrianal scutum smooth, with a pair of elliptical pores, and 3 pairs of preanal setae. Peritreme extending forward to L₁. Chelicerae small in relation to body size. Leg formula 4123. Macroseta present on Sge IV 37, Sti IV 27, St IV 58, Genu II 2 - $\frac{2-2}{1}$ - 1. Spermatheca short saccular with nodular atrium.

MALE—Unknown.

TYPE—Female holotype, Colombia, Anolaima (Cundinamarca), 15 X 1980, Ingeborg Zenner-Polania on *Ricinus communis* L. is in the Florida State Collection of Arthropods, Gainesville. This mite was collected while surveying for predators of spider mites, *Tetranychus* spp.

Genus *Neoseiulus* Hughes, 1948

Neoseiulus Hughes, 1948:141; De Leon, 1965:23; Muma and Denmark, 1968:235.

Type: *Neoseiulus barkeri* Hughes, 1948 by original designation.

Typhlodromalus (Typhlodromopsis) De Leon, 1959:113 (in part).

Cydnodromus Muma, 1961:290; Muma, 1967:273.

Neoseiulus anonymus Chant and Baker

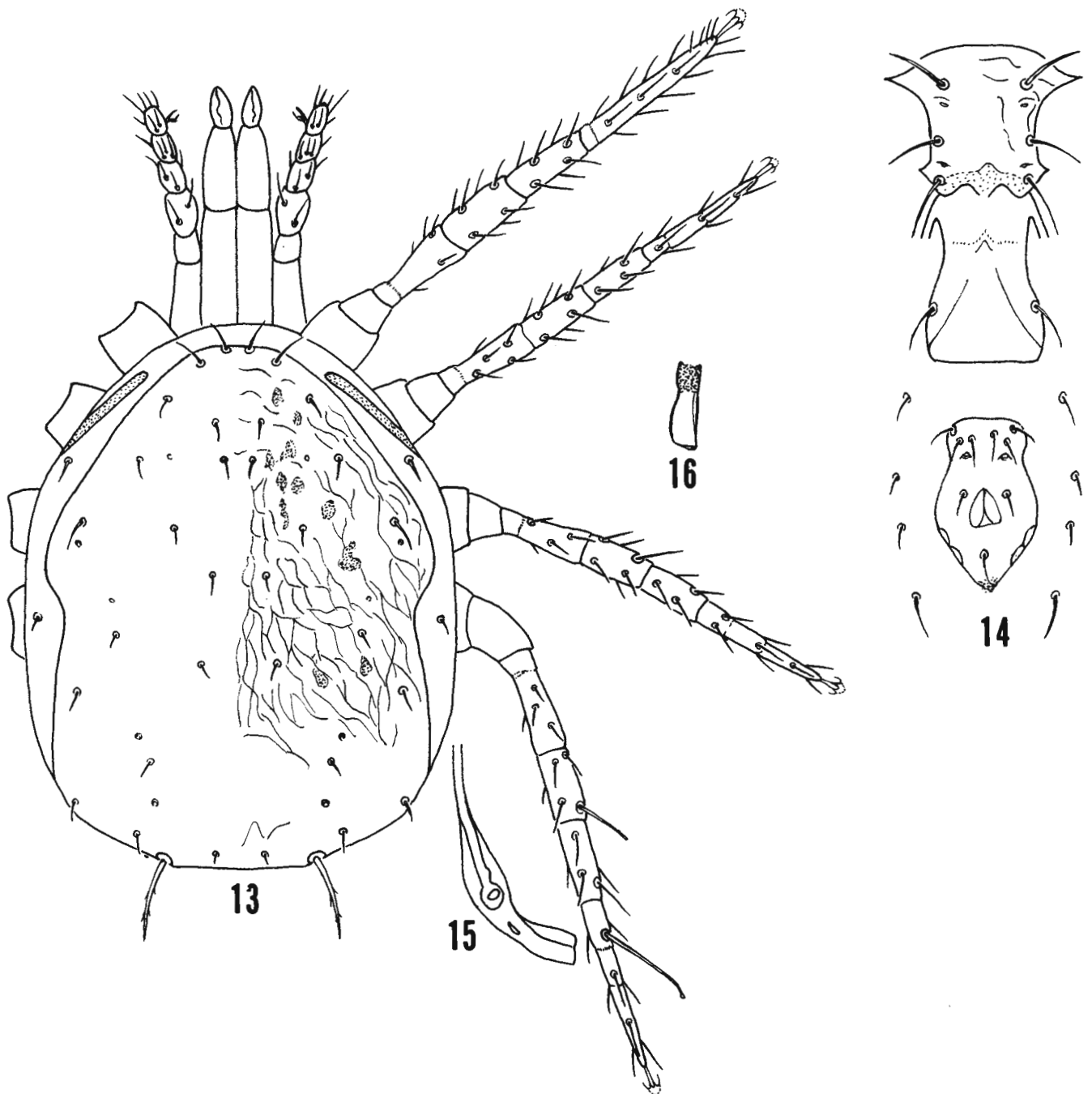
Amblyseius anonymus Chant and Baker, 1965:21.

Neoseiulus anonymus, Denmark and Muma, 1973:265.

This is a very common species in Colombia. It was found in Cali (Valle), July 1977, November 1979, August 1980, on *M. esculenta*; Cali Golodrinás (Valle del Cauca), June 1980, on *M. esculenta*; Fonseca (Guajira), November 1980, on *M. esculenta*. *N. anonymus* was always found either in association with *M. tanajoa*, *Tetranychus urticae* Koch, *Tetranychus cinnabarinus* (Boisduval) or *Mononychellus caribbeanae* (McGregor). *N. anonymus* has been reported from Honduras, Colombia, and Brazil.

Genus *Galendromus* Muma

Galendromus Muma, 1961:298; Muma, 1963:16. Type: *Typhlodromus floridanus* Muma, 1955, by designation, Muma, 1961.



Figs. 13-16: Female *Euseius ricinus* Moraes, Denmark and Guerrero n. sp.: 13. Dorsal and leg structure and setation, 14. Ventral scuta and setation, 15. Posterior peritremal and stigmatal development, 16. Spermathecal structure.

Galendromus (Galendromus) annectens De Leon

Typhlodromus annectens De Leon, 1958:75.

Galendromus annectens, Muma, 1961:298;; Muma, 1963:20; Muma, Denmark and De Leon, 1970:135; Denmark and Muma, 1973:274.

This species was found in Fonseca (Guajira) May 1980, on *M. esculenta* associated with *M. caribbeanae* and *M. tanajoa*. It has been reported from the southeastern United States, Mexico, Puerto Rico, and Brazil.

Galendromus (Galendromus) longipilis (Nesbitt)

Typhlodromus longipilis Nesbitt, 1951:26.

Typhlodromus (Typhlodromus) longipilis Cunliffe and Baker, 1953:17; Chant, 1959:59.

Galendromus longipilis, Muma, 1961:298; 1963:24.

Specimens of this species were found in Fonseca (Guajira) in March 1981, on *M. esculenta*, associated with *M. caribbeanae*. *G.(G) longipilis* has also been reported from Canada, United States, Honduras, Costa Rica, Galapagos Islands, Holland, Bulgaria and Ukraina.

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