NEW PHYTOSEIIDAE (ACARINA: MESOSTIGMATA)
FROM FLORIDA

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Since the reorganization of the supraspecific classification of the Phytoseididae (Muma, 1961) several new species and one new genus of the family have been collected in Florida. These new forms are described and illustrated below. The types are deposited in the United States National Museum in Washington, D. C., and paratypes are in the University of Florida Collections in Gainesville, Florida, and the author's collection.

*Amblyseteius citri* new species

Figure 1, A-G.

**DIAGNOSIS:** This species is closely related to *A. lepidus* (Chant) from which it may be distinguished by the proportionately longer *S*₁ and large round metasternal scuta.

**FEMALE HOLOTYPE:** Dorsal scutum 0.33 mm. long and 0.20 mm. wide. Dorsal setae, except for *D*₁, minute; *D*₂, about five times length of other dorsals; *M*₁ and *M*₃ small, *M*₅ elongate and weakly plumose: *L*₁, *L*₄ and *L*₆ elongate; *L*₅ longest and weakly plumose, *L*₇ slightly smaller than *L*₆ and *L*₈ about two-thirds as long as *L*₇; *L*₉, *L*₁₀, *L*₁₁, *L*₁₂ and *L*₁₃ small with *L*₁₂ slightly longer than the others: scapular setae small with *S*₁ about as long as *D*₁ and *S*₂ about as long as *D*₅. Sternal scutum slightly wider than long and faintly reticulate. Ventrianal scutum pentagonal, slightly longer than wide, reticulate and with small widely spaced preanal pores lying between the widely spaced posterior preanal setae. Macrosetae on leg 4 longest on tarsus and shortest on tibia, leg 1, 2 and 3 without distinct macrosetae. Peritremes extending anteriorly between *D*₁. Spermathecae with cervix elongate and narrow tapering gradually from the mesial to the knobbed ectal artium.

**MALE ALLOTYPE:** Dorsal scutum 0.24 mm. long and 0.13 mm. wide. Dorsal, median and lateral setae as on holotype: scapular setae as on holotype except they are on dorsal scutum. Ventrianal scutum roughly triangular and reticulate with pores and setae as on holotype. Spermatophore bearer "T"-shaped with one arm much longer than other.

**TYPES:** Holotype, allotype and female paratypes from litter beneath citrus trees, July 18, 1960, at Sebring by Martin H. Muma. Male paratypes from citrus litter, January 27, 1960, at Sebring by Judith A. Murrell.

*Amblyseteius clausae* new species

Figure 2, A-I.

**DIAGNOSIS:** This species is closely related to *A. lepidus* (Chant) from which it may be distinguished by the proportionately longer *L*₇ and the remote preanal pores on the ventrianal scutum. The paratype from Titusville has an elongate vase-shaped cervix and a distinct atrium on the spermathecae.
FEMALE HOLOTYPE: Dorsal scutum 0.30 mm. long and 0.20 mm. wide. Dorsal setae except for D, minute, D, slightly larger than L, and about one-half the length of L; median setae minute except for M, which is elongate, weakly plumose and slightly smaller than L; L, L, and L, elongate with L, weakly plumose; L, about one-half as long as L, and L, about one-half as long as L; L, and L, small with L, slightly larger; L, L, and L, minute: scapular setae minute. Sternal scutum slightly wider than long and faintly reticulate, strongly so along the anterior margin. Ventrianal scutum roughly pentagonal, reticulate and with the preanal pores remote, lying nearly posterior to the widely separated posterior preanal setae. Macrosetae on leg 4 longest on genu and shortest on tarsus. Legs 2 and 3 with one short macroseta on genu. Leg 1 without distinct macrosetae. Peritremes extending anteriorly between D, Spermathecae with cervix flat and bowl-shaped and atrium indistinct.

MALE ALLOTYPE: Dorsal scutum 0.26 mm. long and 0.18 mm. wide. Dorsal median, lateral and scapular setae as on holotype. Ventrianal scutum roughly triangular with the anterior margin produced, reticulate and with the preanal pores and setae as on the holotype except the pores are indistinct. Spermatophore bearer "T"-shaped with one arm much longer than the other.

TYPES: Holotype and allotype from litter under Pinus clausa on March 18, 1959, nine and one-half miles east of St. Cloud by Martin H. Muma. Female paratype from P. clausa litter on February 5, 1960, at Titusville by Caroline L. Hewitt.

Amblysciulus macrosetae new species

Figure 5, A-F.

DIAGNOSIS: This species is easily distinguished by the number of macrosetae on leg 1.

FEMALE HOLOTYPE: Dorsal scutum 0.36 mm. long and 0.23 mm. wide. Dorsal setae, except for D, minute with D, slightly larger than the others; D, elongate about two-thirds as long as L; median setae minute except for M, which is elongate and weakly plumose: L, L, and L, elongate with L, less than one-half as long as L, and L, distinctly shorter than L,; L, L, L, L, and L, small to tiny, L, and L, tiny, L, and L, small with L, and L, sub-equal and slightly larger than L, scapular setae small. Sternal scutum slightly wider than long and distinctly lined near anterior margin. Ventrianal scutum pentagonal, weakly reticulate and with the preanal pores located behind and slightly mesad of the posterior preanal setae. Macrosetae of leg 4, elongate whip-like with that on the genu longest and that on the tarsus shortest: leg 3 with short, similarly proportioned macrosetae on the same segments as leg 4: leg 2 with a short macroseta on the genu: leg 1 with two macrosetae on genu, two on tibia and five or six on tarsus. Peritremes extending anteriorly between D, Spermathecae with a tubular tapering cervix, atrium obscured.

MALE ALLOTYPE: Dorsal Scutum 0.30 mm. long and 0.20 mm. wide. Dorsal, median, lateral and scapular setae as on holotype. Ventrianal scutum roughly triangular with anterior margin produced, reticulate, with preanal pores as on holotype and with four pairs of preanal setae. Spermatophore bearer obscured.

*Amblyseius gracilisetae* new species

Figure 3, A-E.

Diagnosis: This species is closely related to *macrostae* new species from which it may be distinguished by the number of macrosetae on legs 1 and 3 and the much greater length of Ls.

Female Holotype: Dorsal scutum 0.39 mm long and 0.30 mm wide. Dorsal setae, except for D1, minute; D1, elongate but slightly smaller than L1; median setae minute, except for M3 which is elongate, slender and weakly plumose; lateral setae minute except for L1, L4 and L6 which are elongate, L6 only one-fifth as long as L, and L4 only two-thirds as long as L; scapular setae minute. Sternal scutum slightly wider than long and reticulate. Ventrianal scutum pentagonal, reticulate and with preanal pores located close to the bases of and just posterior to the posterior preanal setae. Macrosetae of leg 4 elongate and whip-like and longest on genu and shortest on tarsus: leg 3 with macrosetae on genu and tibia: leg 2 with a macroseta on the genu: leg 1 with one macroseta on genu, two on tibia and two on tarsus. Peritremes extending anteriorly between D1. Spermathecae obscured.

Type: Holotype from mixed hardwood litter on May 22, 1958, at Moss Bluff by Judith A. Murrell.

*Amblyseius cannaensis* new species

Figure 4, A-II.

Diagnosis: This species is closely related to *A. roselli* (Chant) from which it differs by the presence of several pairs of pores on the dorsal scutum and widely spaced D1.

Female Holotype: Dorsal scutum 0.33 mm long and 0.24 mm wide and heavily scerotized. Dorsal setae small to minute, except for D1; D2 and D, minute, D and D, small; D4 about one-half length of L1; median setae M1, minute; M2 short about equal to L,; M3 elongate, longest setae on scutum and weakly plumose: lateral setae L1, L4 and L6 elongate with L6 weakly plumose; L2 about two-thirds the length of L4; L4 slightly longer than L6 but shorter than M3; L5 about two-thirds as long as L,; L6, L8 and L1 short and progressively slightly smaller from L6 to L1; scapular setae small with S, slightly larger. Sternal scutum reticulate and about one-third wider than long. Ventrianal scutum roughly pentagonal, reticulate and with the elliptical preanal pores located medially just posterior to the posterior preanal setae. Macrosetae on leg 4 longest on tarsus and shortest on tibia: legs 1, 2 and 3 without distinguishable macrosetae. Peritremes extending anteriorly between D1. Spermathecae with cervix short and vase-shaped, atrium small and elliptical.

Male Allotype: Dorsal scutum 0.28 mm long and 0.20 mm wide. Dorsal, median, lateral and scapular setae as on holotype. Ventrianal scutum roughly triangular with anterior margin produced, reticulate and with preanal pores and setae as on holotype. Spermatophore bearer "T"-shaped with both arms elongate, one about twice the length of the other.

**Amblyseius ippiformis** new species

Figure 6, A-G.

DIAGNOSIS: This species is easily identified by its heavy sclerotization, minute dorsal, median and lateral setae, and large, nearly equal sized metapodal scuta.

**FEMALE HOLOTYPE:** Dorsal scutum 0.45 mm. long and 0.41 mm. wide, heavily sclerotized and reticulate. Dorsal setae minute; D, small, about one-third as long as L1; median setae M, and M2 minute; M3 elongate, smooth and distinctly longer than L3: lateral setae L4, L5, and L6 elongate and smooth with L6 longest and L5 shortest; L7, L8, L9 and L10 minute with L8 about three times the length of L6; (scapular setae S1 and S2 distinguishable but tiny), about equal to L6. Sternal scutum about one-third wider than long and reticulate. Ventrianal scutum roughly pentagonal in shape with rounded sides, reticulate and with the preanal pores adjacent and located between the posterior preanal setae. Macrosetae on leg 4 short, that on tarsus longest, that on tibia shortest. Peritremes large, extending anteriorly almost to the level of D4. Spermathecae with a short tubular gradually tapered cervix and an indistinct atrium.

**TYPE:** Holotype from citrus litter, January 19, 1960, in Turnbull Hammock north of Mims by Judith A. Murrell.

**Amblyseius (Amblyseius) hystrix** new species

Figure 7, A-H.

DIAGNOSIS: This is a typical *Amblyseius* but closely agrees with the descriptions and figures of *Amblyseius grandis* (Berlese) of authors except that species reportedly lacks the minute L8, L9 and S3 of this species. Should *grandis* prove to be a typical *Amblyseius* this species may be synonymous.

**FEMALE HOLOTYPE:** Dorsal scutum 0.42 mm. long and 0.38 mm. wide and heavily sclerotized. Dorsal setae, except for D4, minute; D5 about two-thirds as long as L1; median setae minute, except for M3 which are elongate and smooth: L8, L7, and L6 elongate and smooth; L9 less than one-third as long as L6; L10 slightly shorter than L9 which is about as long as M3; L7, L8, L9, L10, and L11 minute; scapular setae minute. Sternal scutum nearly twice as wide as long. Ventrianal scutum pentagonal, reticulate and with the preanal pores located medial and just posterior to the posterior preanal setae. Macrosetae on leg 4 short, longest on tarsus and shortest on tibia. Peritremes extending anteriorly nearly to D4, spermathecae with a short, tubular, gradually tapered cervix and an indistinct atrium.

**MALE ALLOTYPE:** Dorsal scutum 0.30 mm. long and 0.23 mm. wide. Dorsal, median, lateral and scapular setae same as on holotype, except L9 and L10 are slightly larger than other minute setae. Ventrianal scutum roughly triangular, produced anteriorly, rounded on the sides, reticulate
and with pores and preanal setae as on holotype. Spermatophore bearer "L"-shaped with the distal end of arm bent caudally into a tiny spur.

**Types:** Holotype and ten female paratypes from palmetto leaves January 29, 1961, at Highlands Hammock State Park by Martin H. Muma, allotype from citrus litter, April 25, 1961, at Kissimmee by Judith A. Murrell.

![Diagram of Cydnodromus](image)

Figure 10. *Cydnodromus planatus* new species, A. tip of spermatophore bearer, B. spermathecum. Figure 11. *Cydnodromus gracilis* new species, A. tip of spermatophore bearer, B. spermathecum. Figure 12. *Amblyseius* (*Typhlodromopsis*) *deleoni* new species, A. chelicera, B. tip of spermatophore bearer. Figure 13. *Phytoseius floridanus* new species, A. dorsal scutum, B. tip of spermatophore bearer, C. ventrianal scutum.

*Amblyseius* (*Typhlodromopsis*) *deleoni* new species

**Diagnosis:** This species is very closely related to *A. (T.) simplicissimus* De Leon from which it differs in the form of spermatophore bearer; *simplicissimus* has no spur on the arm of the "L" and the apex is bent caudally at the tip.

**Male Holotype:** Dorsal scutum 0.27 mm. long and 0.17 mm. wide. Dorsal setae small; D₁ slightly more than one-half as long as L₁; median setae M₁ tiny; M₂ small; M₃ elongate but only slightly more than one-half as long as L₃; lateral setae L₄ and L₅ sub-equal and about one-half as long as L₆; L₇, L₈, and L₉ small and sub-equal with L₁₀ slightly larger and L₁₁ distinctly smaller: scapular setae small, sub-equal and located on the dorsal scutum. Ventrianal scutum roughly triangular, produced anteriorly, rounded on sides reticulate and with pores situated immediately behind the mesally located posterior preanal setae. Macrosetae on leg 4 short, longest on tarsus and shortest on tibia. Peritremes extending anteriorly just to the level of D₁. Spermatophore bearer "L"-shaped with a blunt spur on the ectal margin of the arm and a rounded tip on the arm.

**Type:** Holotype from citrus leaf, January 16, 1961, in Turnbull Hammock north of Mims by Judith A. Murrell.
Paraamblyseius new genus

Figure 8, A-E.

Description: Six pairs of dorsal setae, three pairs of median setae, eight pairs of lateral setae all short and simple, two pairs of scapular setae on interocular membrane, three pairs of sternal setae, and four pairs of preanal setae on a massive ventral scutum. Fourth leg without macrosetae.

Diagnosis: This genus is easily distinguished by its small size, and the possession of a massive pair of metapodal scuta.

Type species: Paraamblyseius lunatus new species.

Paraamblyseius lunatus new species

Female Holotype: Dorsal scutum 0.29 mm. long and 0.29 mm. wide, heavily sclerotized and covered with thin lunate areas that increase in size marginally. Dorsal, median and lateral setae sub-equal in size and gradually increasing in size from front to back except D1 and D6, which are one-third to one-half the length of the others. Scapular setae, S1 and S2, about equal to D3 and D4 in size. Sternal scutum nearly three times as wide as long and reticulate. Ventral scutum large and pentagonal in shape with all angles obtuse, reticulate and with lunate thin areas, and with preanal setae. Legs without distinguishable macrosetae. Peritremes extending anteriorly nearly to D6. Spermathecae obscured.


Cydnodromus marinellus new species

Figure 9, A-H.

Diagnosis: This species is closely related to C. marinellus (Willmann) as interpreted by Chant (1959) but differs by lacking distinct macrosetae on leg 4 and in the more anterior position of the preanal pores on the ventral scutum. There is variation in the size and distinctness of the pores on the dorsal scutum on different specimens that otherwise are morphologically identical.

Female Holotype: Dorsal scutum 0.33 mm. long and 0.18 mm. wide, weakly sclerotized and provided with scattered irregular ovate thin areas. Dorsal, median and lateral setae short, slender and sub-equal in size and gradually increasing in size from front to back except for D1 and D6 which are distinctly shorter: scapular Setae S1 and S2 slightly smaller than other setae. Sternal scutum distinctly longer than wide. Ventral scutum roughly pentagonal in shape, weakly creased and with preanal pores located behind and nearly as widely spaced as the posterior preanal setae. Legs without distinct macrosetae. Peritremes extending anteriorly nearly to the level of D6. Spermathecae with cervix funnel-shaped at mesal end, abruptly tapered to a slender tube and terminating ectally in a swollen ovate atrium.

Male Allotype: Dorsal scutum 0.27 mm. long and 0.17 mm. wide. Setae as in holotype except that S1 and S2 are on dorsal scutum. Structure
as in holotype except on pair of pores just posterior to L₁ are greatly enlarged and "C"-shaped. Spermatophore bearer "L"-shaped, with a sharp process opposing the arm and with the blunt apex of the arm bent sharply forward.

**Types:** Holotype from citrus litter, April 6, 1960, at Minneola by Judith A. Murrell. Allotype and male and female paratypes from citrus litter, February 18, 1961, at Lake Alfred by Mary Louise Green. Male and female paratypes from morning glory leaves, July 11, 1960, at Weirsdale by Martin H. Muma.

**Cydnodromus planatus** new species

Figure 10, A-B.

**Female Holotype:** Dorsal scutum 0.84 mm. long and 0.19 mm. wide. Setation and structure nearly identical to that of *C. marinellus* new species. Distinguishable differences are the presence of a single basal macroseta on the tarsus of leg 4 and a constriction of the cervix of the spermatheca just mesad of the lobate atrium.

**Male Allotype:** Dorsal scutum 0.27 mm. long and 0.14 mm. wide. Setation and structure nearly identical to that of *C. marinellus* new species. In this species the spermatophore bearer has the arm of the "L" short and thick and the opposing process indistinct, and the tarsus of leg 4 bears a distinct macroseta.


**Cydnodromus gracilis** new species

Figure 11, A-B.

**Female Holotype:** Dorsal scutum 0.33 mm. long and 0.18 mm. wide. Setation and structure as in *marinellus* new species except this species has the spermathecae with a bowl-shaped cervix connected by a short tube to the swollen atrium.

**Male Holotype:** Dorsal scutum 0.28 mm. long and 0.17 mm. wide. Setation and structure as in *marinellus* new species except this species has the spermatophore bearer bent apically in an obtuse angle and rounded at the tip.

**Types:** Holotype and allotype from citrus litter, April 11, 1960, at Sebring by Judith A. Murrell.

**Phytoseius floridanus** new species

Figure 13, A-C.

**Diagnosis:** This species is easily distinguished by the large pores associated with M₁.

**Male Holotype:** Dorsal scutum 0.25 mm. long and 0.10 mm. wide, weakly sclerotized and with a large pair circular pores posterior to M₁. Dorsal setae small with D₁ smallest, then D₅ and D₆, D₄, D₃, and D₂ re-
spectively: M, tiny; lateral setae small to elongate with L₄ shortest then
L₁, L₂, L₃, L₄, L₅, and L₆ respectively; L₆ to L₁ weakly plumose; scapular
setae S₁ elongate and S₂ small, S₃ about as long as D₁, and S₄ about as long
as D₆. Ventral anal scutum roughly triangular, produced anteriorly, with
rounded sides and three pairs of preanal pores. Leg 4 with a single basal
macroseta on the tarsus. Spermatophore bearer with three processes, two
short and spiny-like, the third longer and lobate apically.

Type: Holotype from a chestnut oak leaf, August 3, 1960, two miles
south of Otter Creek by Martin H. Muma.

Literature Cited

Bionomics of seven species in southeastern England. Part II. A
taxonomic review of the family Phytoseiidae, with descriptions of 38

Muma, Martin H. 1961. Subfamilies, genera and species of Phytoseiidae
figs. 1-56.

Butterflies of the American Tropics. The Genus *Anaea* Lepidop-
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