REVISION OF THE GENUS *PROPRIOSEIUS* CHANT, 1957  
(ACARINA: PHYTOSEIIDAE)\(^1\)

H. A. DENMARK \(^2\) AND MARTIN H. MUMA \(^3\)

The genus *Proprioseius* was described by Chant (1957) for amblyseiine species with a single dorsal shield bearing 14 pairs of setae, many of which are slightly club-shaped and strongly serrate, seta \( D_4 \) (\( D_5 \) of authors) absent, seven lateral setae, and two median setae. The female has three pairs of setae on the sternal shield and three pairs of preanal setae on the ventrianal shield, in addition to the para- and postanal setae. The male has four pairs of preanal setae and a spur-shaped spermatodactyl. Chant (1957) stated that *Proprioseius* resembled the phytoseiid genera *Amblyseius* Berlese, 1914, *Phytoseiulus* Evans, 1952, *Phytoseius* Ribaga, 1902, and *Typhlodromus* Schueten, 1857. It is considered here to be most closely related to *Phytoseiulus*.

*Proprioseius meridionalis* Chant and *Proprioseius clancyi* Chant were first described in the genus, and *P. meridionalis* Chant was designated as the type of the genus (1957). De Leon (1959) described *Proprioseius mirandaii*. Muma (1961) placed *Typhlodromus audemansi* Chant in the genus *Proprioseius*. Chant (1965) placed *Proprioseius* in the genus *Amblyseius*. Chant and Baker (1965) included *Proprioseius* in the genus *Amblyseius*. We consider *Proprioseius* distinct from *Amblyseius* as *Amblysetus* does not have club-shaped setae; \( D_4 \) (\( D_5 \) of authors) is always present; legs I, II, III, and IV are provided with macrosetae; and the female ventrianal scutum is pentagonal. *Amblyseius* has leg 1 longer than leg IV. The chaetotactic nomenclature followed here is a modified Garman system (1948). The authors agree with Muma's setal designation (1961), with the exception of referring to the scapular setae (\( S_1 \) and \( S_5 \)) as sublateral, and \( D_1 \) and \( D_2 \) as verticals and clunals, respectively, after Pritchard and Baker (1962), and except in the case of median setae. That pair of setae forming the ectal angles of the so-called “dorsal hexagonal area” is designated as \( M_1 \). If a pair of setae on the posterior third of the body (\( M_2 \) of authors) lies mesad to marginal lateral setae, it is considered median; if a marginal lateral is not present, it is considered lateral.

The genus *Proprioseius* is recognized here for those amblyseiine species with a single dorsal shield bearing 14 pairs of setae, many of which may be slightly club-shaped and strongly serrate, seta \( D_4 \) (\( D_5 \) of authors) absent, eight lateral setae, and one median seta. The female has three pairs of setae on the ventrianal shield, in addition to the para- and postanal setae. There are no macrosetae on legs I-IV. Evans (1963) observed the chaetotaxy of the legs in the free-living Gamasina. The genual setal pattern on leg II reads 2 - 2 - 1 and leg III reads 2 - 2 - 1. The

\(^1\) Contribution No. 68, Entomology Section.  
\(^2\) Chief Entomologist, Florida Department of Agriculture, Division of Plant Industry, Entomology Section, Gainesville, Florida 32601.  
\(^3\) Entomologist, University of Florida, Citrus Experiment Station, Lake Alfred, Florida 33850.
position of the ventral setae on genu II is not constant but is indicated in the formula as occurring. Leg I, as in Phytoseiulus, is shorter than leg IV (Fig. 1).

Fig. 1. Female of Proprioseius meridionalis Chant showing comparative lengths of legs.

Although phytoseiids are usually considered to be predaceous on small arthropods, very little is known about the food habits of the species that belong to the genus Proprioseius. De Leon (1959) reported two specimens of P. mirandai were apparently taking sap from the leaf of a composite. Chant (1959), Chant and Fleschner (1960), Dosse (1961), McMurtry and Scriven (1966), and McMurtry and Johnson (1965) showed that species in other genera of phytoseiids can utilize pollen, honey dew, and plant juices as part of their diet.

P. anthurus was taken on post oak, Quercus stellata, with Phytoseius n. spp. and Phytoseiulus macropilis Banks. The mites were collected with a modified Berlese funnel and the feeding habits were not observed. An unidentified tetranychid mite was also taken with the phytoseiids on post oak. Since some phytoseiids are known to feed on tetranychids, it is possible that one or all of the phytoseiids were feeding on the unidentified tetranychid.
Repeated laboratory attempts to rear *P. meridionalis* on leaf hairs on a legume, a mullen, and a composite failed. The species also failed to reproduce or survive more than nine days on six-spotted mite, *Eotetranychus sexmaulatus* (Riley), citrus rust mite, *Phyllocoptus oleivora* (Ashmead), and the timid mite, *Tetranychus tumidus* Banks. In the field it is frequently found alone on hairy plant leaves and has been collected from tetranychid colonies on croton.

The five known species were described and illustrated with the aid of a phase-contrast microscope at 800 magnifications for the dorsal and ventral shields and 1200 magnifications for the spermatheca. All measurements are in microns.

**Key to females of *Proprioseius* Chant**

1. \(L_4, L_6\) and \(L_8\) serrate but not clavate; \(S_2\) simple................................. 2
2. \(L_4\), \(L_6\) and \(L_8\) serrate and clavate; \(S_2\) serrate...................... 3
3. \(L_4\) 1/3 scutal width; \(L_6\) sometimes simple; Florida (Fig. 4)..............

**Proprioseius oudemansi** (Chant)

**(Fig. 2)**

*Typhlodromus* (*Amblyseius*) *oudemansi* Chant, 1959: 100-101; Fig. 238-239.
*Proprioseius oudemansi* (Chant), Muma, 1961: 277.
*Phytoseiusculus* (*Proprioseius*) *oudemansi* (Chant), Wainstein, 1962: 5-30; Fig. 12.

**Diagnosis:** *Proprioseius oudemansi* (Chant) differs from all species except *P. mirandai* in having \(S_1\) smooth most of the time and \(S_2\) smooth. It also resembles *P. mirandai* in lacking clavate setae. \(L_4, L_6,\) and \(L_8\) are much shorter than those on *P. mirandai*.

**Female:** Length 286\(\mu\); width at \(L_4\) 165\(\mu\). Dorsal shield sclerotized, rugose, with 14 pairs of setae; eight pairs of lateral setae, one pair of median setae, three pairs of dorsal setae, verticals, and clunals. Setae \(D_1, D_2, D_3, M_1, L_4, L_5,\) posterior and anterior sublaterals, and clunals smooth; all other setae serrate. Measurements of setae are: verticals 25\(\mu\), \(D_1 16\mu, D_2 13\mu, D_3 15\mu, M_1 11\mu, L_1 22\mu, L_2 24\mu, L_3 19\mu, L_4 36\mu, L_5 20\mu, L_6 39\mu, L_7 19\mu, L_8 57\mu,\) anterior sublaterals 29\(\mu,\) and posterior sublaterals 21\(\mu.\) Peritremes extend to verticals. Sternal plate wider than long, smooth, with three pairs of setae. Genital shield broad, truncate, and one pair of setae. Ventrianal shield longer than wide, smooth, with three
pairs of preanal setae. Four pairs of setae on the posteroventral integument surround the ventrianal shield; ventrocaudal pair 47μ long, thick, and serrate. One pair of elongate metapodal plates. Spermatheca saucer-shaped with short atrium; major duct broad.

Fig. 2. Female holotype, Proprionocia oudemansi Chant. A. Dorsal scutum. B. Ventrianal scutum. C. Spermatheca. D. Male ventrianal scutum. E. Spermatodactyl.

**Male:** The male is similar to the female, but the setae are correspondingly shorter. The foot of the spermatodactyl is about half as long as the shaft. The ventrianal shield is smooth and has four pairs of preanal setae.

The illustration is of the holotype borrowed from Dr. D. A. Chant, Department of Biological Control, University of California, Riverside, California.
Localities and Type Material: Holotype female (no. 6862, Canadian National Collection) and two additional females were collected at the Field Station of the Belleville Laboratory, Ontario, Canada, 27 August 1956 (D. A. Chant and N. H. Anderson), on Rubus sp.; three females with the same collection data as the above are on an extended loan to Dr. D. A. Chant; seven females were collected from grass at Cabin John, Maryland, 7 May 1951 (E. W. Baker), on grass and are in the U. S. National Museum; two males and two females were collected at Deep Creek Lake, Maryland, 7 July 1962 (M. H. Muma), from butternut; five males, six females, and one nymph were collected at Deep Creek Lake, Maryland, 20 July 1962 (M. H. Muma), from butternut; three males and one female were collected at Erwin, Tennessee, 30 August 1960 (D. De Leon), from Rubus sp.

This mite was named in honor of the late Dr. A. C. Oudemans, the Dutch acarologist, who was an early worker with the family Phytoseiidae.

Proprioseius mirandai De Leon

(Fig. 3)

Proprioseius mirandai De Leon, 1959: 149-150; Fig. 1-2.
Phytoseiulus (Proprioseius) mirandai (De Leon), Wainstein, 1962: 17.
Amblyseius (Proprioseius) mirandai (De Leon), Pritchard and Baker, 1962: 295.
Amblyseius mirandai (De Leon), Chant and Baker, 1965: 20; Fig. 112-114.

Diagnosis: Proprioseius mirandai De Leon differs from the other four known species in having L14, L2, and L6 much longer. It resembles P. oude-mans in lacking clavate setae and in having S2 simple.

Female: Length 283 µ; width at L4 142 µ. Dorsal shield well sclerotized, rugose, with 14 pairs of setae: eight pairs of lateral setae, one pair of median setae, three pairs of dorsal setae, verticals, and clunals. Setae D1, D2, D3, M1, L2, L5, verticals, and clunals smooth; all other setae serrate. Measurements of setae are: verticals 25 µ, D1 6 µ, D2 7 µ, D3 8 µ, M1 6 µ, clunals 6 µ, L1 17 µ, L2 18 µ, L3 20 µ, L4 86 µ, L5 17 µ, L6 91 µ, L7 20 µ, L8 110 µ, anterior sublateral 31 µ, and posterior sublateral 15 µ. Peritremes extend to verticals. Sternal plate wider than long, smooth, with three pairs of setae. Genital shield broad, truncate, and one pair of setae. Ventrianal shield longer than wide, smooth, with three pairs of preanal setae. Four pairs of setae on the posteroventral integument surround the ventrianal shield; ventrocaudal pair 68 µ long, thick, and serrate. One pair of elongate metapodal plates. Spermatheca saucer-shaped with short atrium; major duct indistinct.

Male: Resembles female with the same setal pattern, but correspondingly shorter. The foot of the spermatodactyl is approximately as long as the shaft. The ventrianal shield is slightly creased and has four pairs of preanal setae.

The illustration is of a paratype borrowed from Dr. Donald De Leon, Erwin, Tennessee, with the following data: Tepic, Nayarit, Mexico, 29 Mar. 1957 (Don De Leon), on Lippia umbellata.
Fig. 3. Female paratype, Proprioseius mirandai De Leon. A. Dorsal scutum. B. Ventrianal scutum. C. Spermatheca.

Localities and Type Material: Holotype female was collected at Tepic, Nayarit, Mexico, 25 Mar. 1957 (D. De Leon), from Lippia umbellata. Paratypes: One female, same data as holotype; one male, San Blas, Nayarit, Mexico, 6 Apr. 1957 (D. De Leon), from agualama; one male and one female, Veracruz, Veracruz, Mexico, 25 Dec. 1956 (D. De Leon), from Guazuma tomentosa; two females, Cordoba, Veracruz, Mexico, 25 Dec. 1956 (D. De Leon), from Croton draco. Additional specimens were collected by De Leon at Cordoba, Mexico, from Hamelia patens; at Matias Romero, Oaxaca, Mexico, from composite, 30 Jan. 1957; and at San Blas, Nayarit, Mexico, 31 Mar. 1957, from Polygonum sp. Chant and Baker (1965) report this species from the following localities: “Leaf,” Lake Yojoa, Honduras, 6 Mar. 1959 (J. G. Matthesse); “bush,” Quemado, Honduras, 28 Dec. 1958 (J. G. Matthesse); leaves of Guazuma ulmifolia, La Calera, Managua, Nicaragua, 8 Apr. 1959 (E. W. Baker); Compositae, Mico Quemado, Honduras, 7 Dec. 1958 (J. G. Matthesse); and Terminalia catapa leaf, San Marco, Nicaragua, 9 Apr. 1959 (E. W. Baker).

Discussion: De Leon (1959) stated that two specimens appeared to be sucking sap from a composite leaf and may not be predaceous.
Denmark: Revision of Proprioseius

The mite is named for Dr. Faustino Miranda of the Instituto de Biología, Mexico, Distrito Federal.

**Proprioseius meridionalis** Chant

(Fig. 1, 4)

*Proprioseius meridionalis* Chant, 1957: 358; Fig. 1-3.  
*Proprioseius meridionalis* Chant, De Leon, 1959: 149.  
*Proprioseius meridionalis* Chant, Chant, 1959: 111; Fig. 267-268.  
*Proprioseius meridionalis* Chant, Muma, 1961: 277; Fig. 11, 19, and 20.  
*Phytoseiulus (Proprioseius) meridionalis* (Chant), Wainstein, 1962: 5-30; Fig. 9.  

**Diagnosis:** *Proprioseius meridionalis* Chant seems to be more closely related to *Proprioseius mirandai* De Leon but differs by the shorter and more club-shaped *L*₄, *L*₀, and *L*₄. *S*₁ and *S*₂ are both serrate on this species. *L*₃ may be serrate or simple.


**Male:** Dorsal shield rugose with same setal pattern as female, but correspondingly shorter. Spermatodactyl with stout shaft about twice as long as foot. Ventralanal plate creased with four pairs of preanal setae.

The illustration is of the holotype borrowed from Dr. D. A. Chant, University of California, Riverside, California.

**Localities and Type Material:** Holotype female collected at Homestead, Florida, 20 Oct. 1948 (O. D. Link), from Psychotria bahamensis; one female and two males were collected with the holotype; one female at Bronson, Fla., 21 Sep. 1954 (H. M. Van Pelt), from Rhododendron sp.; Gileghist County, Fla., 8 Sep. 1954 (H. M. Van Pelt), from Callicarpa americana; De Leon Springs, Fla., 21 May 1959 (C. O. Yuulsey), from Vitis sp.; Alachua County, Fla., 6 Aug. 1961 (H. A. Denmark), from Aronia arbifolia; Gold Head Branch State Park, Clay County, Fla., 9 Aug. 1962 (H. A. Denmark), from Quercus virginiana; Holly Hill, Fla., 17 July 1963 (J. N. Pott), from Diospyros virginiana; Lake County, Fla., 26 Aug. 1961 (H. A. Denmark), from Mikania batatifolia; Welaka, Fla., 26 Apr. 1961 (H. A. Denmark, from Quercus virginiana; De Land, Fla., 3 Feb. 1965 (C. R. Roberto), from Evirobrya japonica; Land O'Lakes, Pasco County, Fla., 20 Apr. 1961 (M. H. Muma), from Virginia creeper, Parthenocissus quin-

Proprioseius anthurus, new species

(Fig. 5)

Diagnosis: Proprioseius anthurus new species is closely related to Proprioseius elaneyi Chant, but differs by having $L_1$ as long or longer than $L_9$, and $L_6$ much shorter than $L_5$.

Female: Length 294µ, width at $L_9$ 152µ. Dorsal shield well sclerotized, rugose, with 14 pairs of setae: eight pairs of lateral setae, one pair

---

Fig. 5. Female holotype, Proprioseius anthurus n. sp. A. Dorsal scutum. B. Ventrianal scutum. C. Spermatheca. D. Male ventrianal scutum. E. Spermatodactyl.
of median setae, three pairs of dorsal setae, verticals, and clunals. Setae D1, D2, D3, M1, and L1 smooth; all other setae serrate. Measurements of setae are: verticals 24 µ, D1 11 µ, D2 8 µ, D3 14 µ, clunals 13 µ, M1 9 µ, L1 20 µ, L2 20 µ, L3 17 µ, L4 28 µ, L5 19 µ, L6 33 µ, L7 24 µ, L8 60 µ, anterior sublateral 22 µ, and posterior sublateral 22 µ. Peritremes extend to the verticals. Sternal plate wider than long, smooth, with three pairs of setae. Genital shield broad, truncate, with one pair of setae. Ventrianal shield longer than wide, slightly creased, with three pairs of preanal setae. Four pairs of setae on the posteroventral integument surround the ventrianal shield; ventrocaudal pair 44 µ long, thick, and serrate. One pair of elongate metapodal plates. Spermatheca cup-shaped with short atrium; major duct indistinct.

Male: Dorsal shield rugose with same setal pattern as female but correspondingly shorter. Spermatodactyl with stout shaft approximately one and one-half times longer than foot. Ventrianal plate slightly creased with four pairs of preanal setae.

The illustration is of the holotype.

Locality and Type Material: Holotype female collected in Levy County, Fla. (2 miles south of Junction US 19 and State 121), 30 Apr. 1965 (H. A. Denman), on Quercus stellata; Type no. 3155 U.S. National Museum. Paratypes: A second female was collected with the holotype; three females and three males were collected from the same location on 10 Apr. 1965; two females were collected in Marion County, Fla., 18 Oct. 1965 (H. A. Denman), on Quercus stellata margaretta.

Propioseiurus clancyi Chant
(Fig. 6)

Propioseiurus clancyi Chant, 1957: 358, 360; Fig. 4-5.
Propioseiurus clancyi Chant, de Leon, 1959: 140.
Propioseiurus clancyi Chant, Chant, 1959: 112; Fig. 269, 279.
Phytoseiulus (Propioseiurus) clancyi (Chant), Wainstein, 1962: 5-30; Fig. 7.

Diagnosis: Propioseiurus clancyi Chant is closely related to Propioseiurus anthurus new species but differs in having L1 shorter than L2 and L3 only slightly smaller than L4.

Female: Length 294 µ; width at L4 142 µ. Dorsal shield well sclerotized with 14 pairs of setae: eight pairs of lateral setae, one pair of median setae, three pairs of dorsal setae, verticals, and clunals. Setae D1, D2, D3, M1, and L1 smooth; all other setae serrate. Measurements of setae are: verticals 19 µ, D1 13 µ, D2 15 µ, D3 13 µ, M1 9 µ, clunals 13 µ, L1 11 µ, L2 16 µ, L3 17 µ, L4 25 µ, L5 24 µ, L6 54 µ, L7 20 µ, L8 58 µ, anterior sublateral 19 µ, and posterior sublateral 18 µ. Peritremes extend to the verticals. Sternal plate wider than long, smooth, with three pairs of setae. Genital shield broad, truncate, with one pair of setae. Ventrianal shield longer than wide, smooth, with three pairs of preanal setae. Four pairs of setae on the posteroventral integument surround the ventrianal shield; ventrocaudal pair 33 µ long, thick, and serrate. Spermatheca tumbler-shaped with short atrium; major duct indistinct.
Fig. 6. Female holotype, *Proprioseius clancyi* Chant. A. Dorsal scutum. B. Ventrial scutum. C. Spermatheca.

*Male:* Dorsal shield rugose with same setal pattern as female, but correspondingly shorter. The foot of the spermatodactyl is about two-thirds as long as the shaft. The ventrial shield is slightly creased and has four pairs of preanal setae.

The illustration is of the holotype borrowed from Dr. D. A. Chant, University of California, Riverside, California.

*Locality and Type Material:* Holotype female was collected at Kearneysville, West Virginia, 7 Aug. 1958 (D. W. Clancy), from *Rubus* sp.; five females and one male were collected with the holotype.

This species was named in honor of Dr. D. W. Clancy, the collector.

**Literature Cited**


