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PSEUDOSCORPIONS FROM FLORIDA AND THE CARIBBEAN AREA. 7. FLORIDIAN DIPLOSPHYRONIDS¹

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ABSTRACT

Thirteen species of diplosphyronid pseudoscorpions are reported from Florida. These include 1 new genus and 5 new species, and 5 other species

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reported for the 1st time from the state. The new taxa are *Pachychitra floridensis*, n. sp., *Aphelolpium cayanum*, n. sp., *Planctolpium peninsulae*, n. sp., *P. suteri*, n. sp., and *Solinellus simberloffii*, n. gen. and n. sp. In addition, the adults of *Novohorus obscurus* (Banks) are described for the 1st time.

Among the accumulated pseudoscorpions in the Florida State Collection of Arthropods are many that are undescribed or have not yet been recorded from Florida. It is my intention ultimately to describe the new species and present records showing the distribution of all species in the state. This paper accomplishes that goal for the members of the suborder Diplosphyronida, insofar as they have been collected to date.

All types of new species are deposited in the Florida State Collection of Arthropods, Gainesville.

Suborder DIPLOSPHYRONIDA Chamberlin

Floridian pseudoscorpions in this suborder are distinguished by having the tarsi of all legs divided; thus, all legs have the same number of segments (6) beyond the coxa.

Family NEOBISIIDAE Chamberlin

This family is characterized by having the inner margin of the movable cheliceral finger distinctly dentate; only the fixed chelal finger with venom apparatus and tooth; and pleural membranes of the abdomen granulate.

Genus *Microbisium* Chamberlin

In this genus, the spinneret on the movable finger of the chelicera is in the form of a smoothly rounded knob.

A single species occurs in Florida and is fairly widespread.

Microbisium confusum Hoff

Microbisium confusum Hoff, 1946a: 496; 1949: 445-6; 1956: 160; 1958: 9; 1961: 431-3; Nelson, 1975: 280-1.

Of the 3 species of *Microbisium* currently recognized from the United States, *M. confusum* appears to be the only or the dominant form in the Southeast. The many specimens taken in Florida appear to belong to this species, as defined by Hoff (1946a, 1949, 1956, 1961). However, as the diagnostic characters of the 3 named species have never actually been clarified, it is possible that some species other than *M. confusum* (even a new species) might be present as well.

Specimens have been found in many kinds of litter in the following counties of Florida: Alachua, Columbia, Hernando, Highlands, Indian River, Jackson, Leon, Marion, Monroe, Seminole, and Wakulla.

Genus *Microcreagris* Balzan

Members of this genus usually have the spinneret on the movable cheliceral finger in the form of a long, branched process.

A single species is known from Florida, found only in the northwestern region (Liberty County).

Microcreagris atlantica Chamberlin

Microcreagris atlantica Chamberlin, 1930: 29-30; 1962: 338-40; Hoff, 1958: 11.

This species and the closely related *M. subatlantica* Chamberlin are known to be rather common in the southeastern states from North Carolina to Mississippi (most records unpublished). However, there are only 2 collections from Florida, both from Torreya State Park, Liberty County, where both adults and nymphal stages were found in pine litter. This is the southernmost record of any species of *Microcreagris* in America.

Family SYARINIDAE Chamberlin

Members of this family have the movable cheliceral finger toothed; only the fixed finger of the chela with venom apparatus and tooth; and the pleural membranes of the abdomen longitudinally, smoothly plicate.

Genus *Pachychitra* Chamberlin

In addition to the smooth pleural membranes, this genus has the spinneret in the form of a long, simple (unbranched) process on the movable cheliceral finger.

A single species is known from Florida, only on Big Pine Key.

Pachychitra floridensis Muchmore, NEW SPECIES

Figs. 1-6

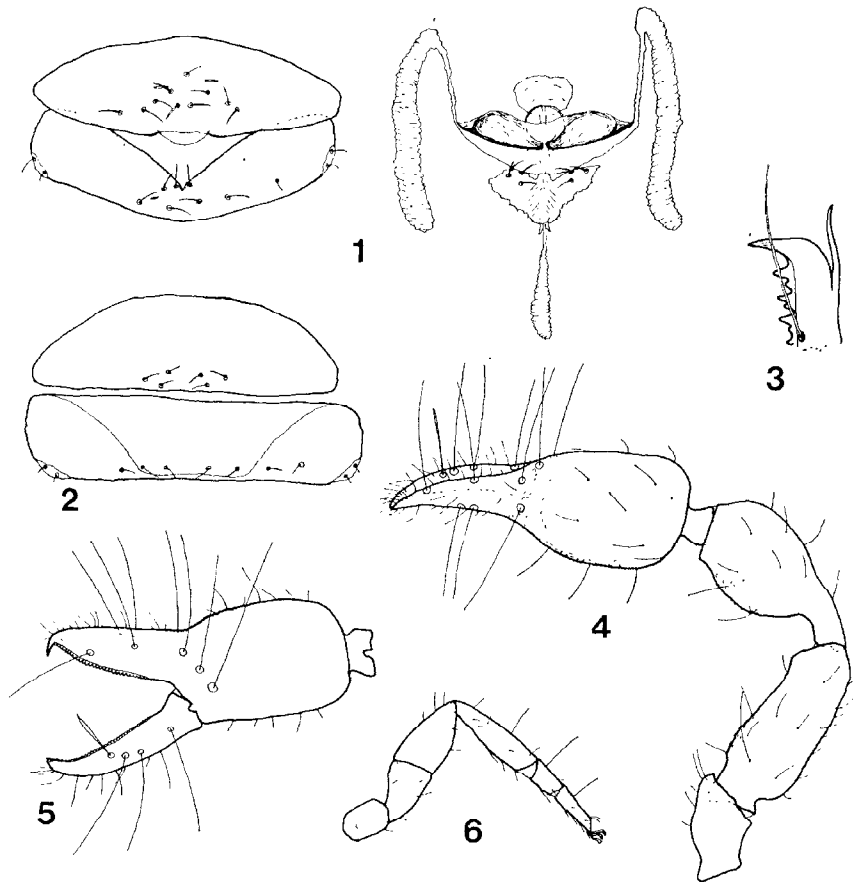
MATERIAL: Male holotype (WM 2897.03001) and 2 paratypes (♂ and ♀) from Watson Hammock, Big Pine Key, Monroe County, FL, 4-VIII-1971, by S. B. Peck.

DIAGNOSIS: A small species of *Pachychitra* with a long proximal seta in the cheliceral flagellum; distinctly smaller than *P. insularum* Hoff from Desecho Island and Puerto Rico, but larger than the very similar *P. truncata* Hoff from Jamaica; with palpal femur about 0.35 mm and chela 0.56 mm long.

DESCRIPTION: Sexes similar in form, but ♀ usually larger than ♂. Palps golden brown, other parts much lighter. Carapace smooth; epistome very small, rounded; no eyes present; with ca. 23 setae, 4 at anterior and 4 or 5 at posterior margin. Coxal area typical; palpal coxa with 2 long setae at apex.

Abdomen elongate; tergites and sternites entire, smooth; pleural membranes longitudinally striate. Tergal chaetotaxy of holotype ♂ 6:8:9:9:9:8:8:9:T1T2T1T:T1T1T1T:2; sternal chaetotaxy 9:[3-3]:(2) 3/7 (2):(2)7(2):10:9:11:11:11:T1T1T1T1T1T:TT:2; genital area as shown in Fig. 1. Anterior genital operculum of ♀ with 6 setae, and posterior operculum with 7 marginal setae (Fig. 2).

Chelicera ca. 1/2 as long as carapace; hand with 5 acuminate setae, all but *es* very long; flagellum apparently of 5 setae, of nearly equal lengths,



Figs. 1-6. *Pachychitra floridensis* Muchmore, new species. 1) ♂ genital opercula, and internal genitalia; 2) ♀ genital opercula; 3) Tip of movable cheliceral finger of ♂, showing galea; 4) Dorsal view of palp; 5) Lateral view of chela; 6) Leg IV.

and all serrate along 1 edge; fixed finger with 10 and movable finger with 7-9 small teeth; galea of ♂ a short stylet (Fig. 3), that of ♀ longer and more curved.

Palps rather stout (Fig. 4); trochanter 1.7-1.9, femur 2.5-2.7, tibia 1.7-1.95, and chela (without pedicel) 2.6-2.7 as long as broad; hand 1.4-1.5 as long as deep; movable finger 0.9-1.0 as long as hand. Fixed chelal finger with 28-30 contiguous, marginal teeth, most with cusps pointing backward; movable finger with 36-37 marginal teeth, like those of fixed finger, but only distal 5-6 with cusps. Trichobothria of chela as shown in Fig. 5; in movable finger *t* is shorter than others, and lanceolate near tip, as illustrated.

Legs rather short and stout; leg IV with entire femur 3.0-3.1 and tibia 3.6-3.8 as long as deep (Fig. 6). Subterminal tarsal setae finely pinnate along ventral side; arolia longer than claws.

MEASUREMENTS (mm): Body length 1.6-1.78. Carapace length 0.40-0.435. Palpal trochanter 0.19-0.20 by 0.10-0.11; femur 0.33-0.36 by 0.13-0.135;

tibia 0.31-0.33 by 0.17-0.185; chela (without pedicel) 0.54-0.58 by 0.21-0.215; hand (without pedicel) 0.28-0.32 by 0.19-0.215; movable finger 0.27-0.29. Leg IV: entire femur 0.29-0.31 by 0.095-0.10; tibia 0.22-0.23 by 0.06-0.065; metatarsus 0.075-0.09 by 0.045; telotarsus 0.125 by 0.04.

ETYMOLOGY: The species is named for the state of Florida where it was discovered.

REMARKS: The lanceolate form of trichobothrium *t* in *Pachychitra* is recorded here for the 1st time. As all representatives of *Pachychitra* in my possession, from many localities in the West Indies, Mexico, and Central America show this feature clearly, it is undoubtedly a characteristic of the genus. Further, a survey of collections available to me reveals that the same differentiation of trichobothrium *t* may be found in representatives of *Vescichitra*, *Chitrella*, *Syarinus*, and *Ideobisium*, but not in any other diplosphyronid examined. Therefore, the feature may prove to be of taxonomic value at the family level as well.

Family OLPIIDAE Chamberlin

This family is characterized by having the inner margin of the movable cheliceral finger smooth or at most with a small, subapical lobe; venom apparatus and tooth in each of the chelal fingers; coxal area parallel-sided; and pleural membranes of abdomen smoothly and evenly plicate.

Genus *Olpiolum* Beier

Members of this genus can be recognized by the possession of 3 setae in the cheliceral flagellum, and by having the telofemur of leg I distinctly shorter than the basifemur.

A single species of this genus is known to occur on several of the Florida Keys.

Olpiolum monae (Hoff)

Fig. 7

Pachyolpium medium Hoff, 1945: 11-5. (Homonym of *Olpiolum medium* Beier, 1931)

Olpiolum monae, Hoff, 1964: 21-4.

This species, originally described from Mona Island (Hoff 1945), was later reported also from Jamaica (Hoff 1964). Ten specimens, from Big Pine Key, Key West, and Sugarloaf Key generally conform to the descriptions given by Hoff. If these are indeed conspecific, the species must have a wide range through the Greater Antilles.

It is likely that in the future the genitalia and the chaetotaxy of the genital opercula will prove to be important in the taxonomy of olpiid pseudoscorpions. Because there is no good description or illustration of the male genitalia of *Olpiolum* in the literature, these features are shown in Fig. 7.

Genus *Novohorus* Hoff

This genus is characterized by the possession of 3 setae in the cheliceral

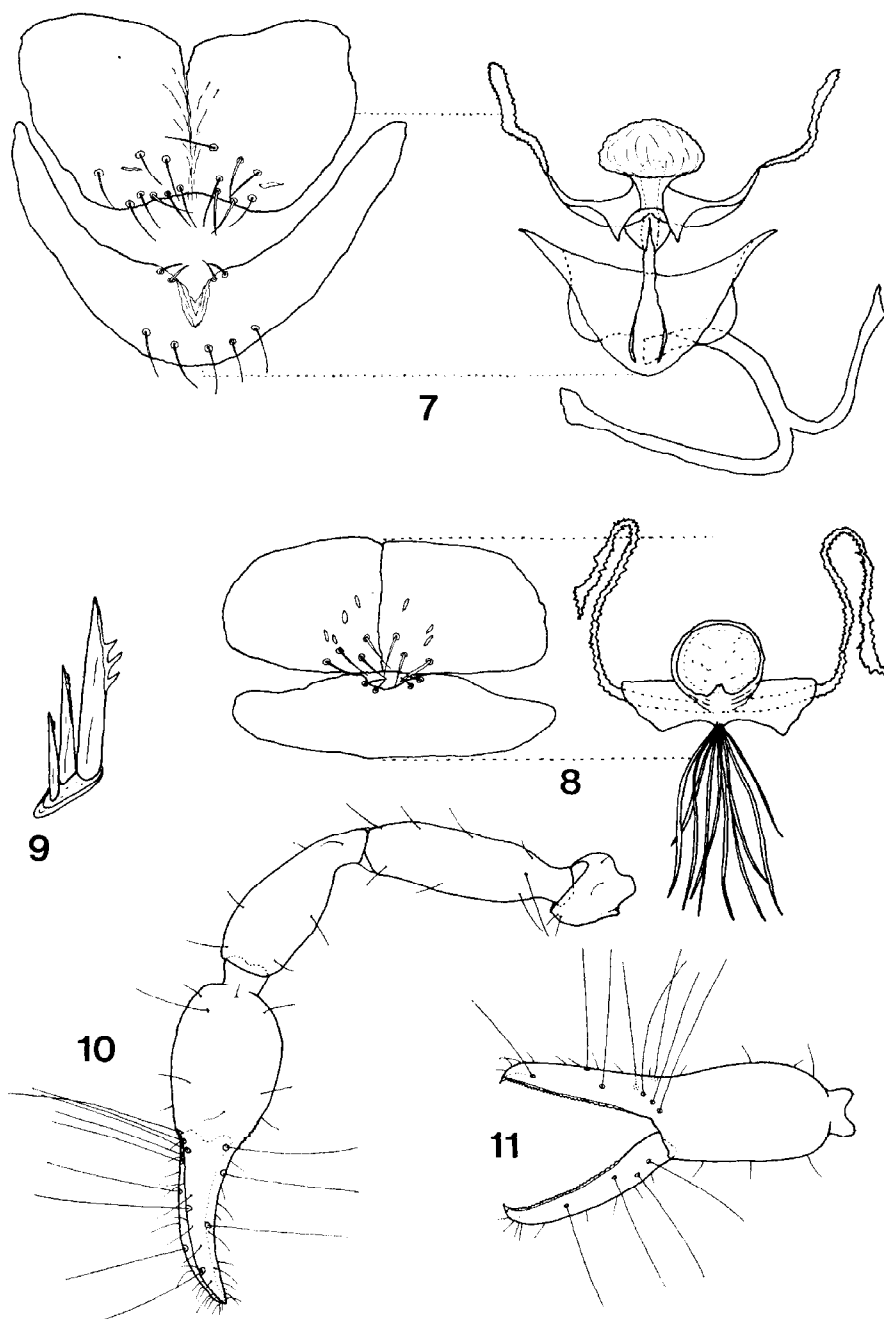


Fig. 7. *Olpiolum monae* (Hoff). ♂ genital opercula, and internal genitalia. Figs. 8-11. *Novohorus obscurus* (Banks). 8) ♂ genital opercula and internal genitalia; 9) Cheliceral flagellum; 10) Dorsal view of palp; 11) Lateral view of chela.

flagellum and by having the telofemur of leg I about equal in length to the basifemur.

One species is known from the central part of Florida.

Novohorus obscurus (Banks)

Olpium obscurum Banks, 1893: 65:

Novohorus obscurus, Muchmore 1971: 241-3.

Figs. 8-11

This species was 1st reported from Florida as *Olpium obscurum* Banks (1893). It was assigned to the genus *Novohorus* by the present author (1971), but its relation to other species in the genus could not be determined on the basis of the single specimen then available, a tritonymph. Since that time, additional specimens have been recognized in the collections of the FSCA. It is appropriate to present here a short description of adults in order to establish the identity of the species.

MATERIAL: About 35 specimens, including adults and nymphs from the following localities in central Florida: Highlands County, Archbold Biological Station; Indian River County, Sebastian; Marion County, Juniper Springs; Orange County, Vineland; Osceola County, Saint Cloud; Pinellas County, Indian Rocks; Polk County, Frostproof and Winter Haven. All were collected from sand pine (*Pinus clausa*) (Chapman) Vasey litter, except 1 from scrub oak litter; they were found in nearly every month of the year.

DESCRIPTION OF ADULTS: Male and ♀ generally similar, but ♀ a little larger and with slightly stouter appendages. Carapace and palps smoky brown in color, other appendages lighter, abdomen dark and mottled. Carapace with surface smooth; 4 corneate eyes present; usually 22-24 setae present, 4 at anterior and 2-4 at posterior margins. Tergites and sternites entire, surfaces smooth. Tergal chaetotaxy usually 2:4:4:4:4:4:4:4:T1TT1T:T1T3T1T:2. Sternal chaetotaxy of ♂ about 6:[2-2]:(0)4(0):(0)4(0):6:4:4:4:4:T1TT1T:2T2T2:2; setae T long and with very large areoles; genitalia as shown in Fig. 8. Female sternal chaetotaxy 6:(0)4(0):(0)4(0): etc.; internally, there is a small cribrate area at the middle of the anterior edge of the posterior operculum (under the anterior operculum), usually closely associated with a separate, larger, irregular, median cribriform plate, and flanked on each side by a small, lateral cribriform plate. Chelicera essentially as in tritonymph; galea of both ♂ and ♀ slender and trifid at tip, longer in ♀ than in ♂; serrula exterior with 18 plates; flagellum of 3 denticulate setae (Fig. 9), in which the denticulations are often small and nearly transparent, hence difficult to observe. Palps as shown in Figs. 10 and 11; trochanter 1.7-1.95, femur 3.0-3.45, tibia 2.2-2.7, and chela (without pedicel) 2.9-3.3 as long as broad; movable finger 1.0-1.15 as long as hand. Trichobothria on femur and chela as illustrated. Fixed finger with 28-34 marginal teeth, most with cusps but 3 proximal ones flattened; movable finger with similar teeth but 5-10 proximal ones flattened. Legs rather stout; leg I with basifemur and telofemur about equal in length; leg IV with entire femur 2.4-2.7 and tibia 3.0-3.5 as long as deep; arolia longer than claws.

MEASUREMENTS (mm): Body length 1.95-2.80. Carapace length 0.62-0.75. Chelicera 0.22-0.265 by 0.125-0.14. Palpal trochanter 0.31-0.38 by 0.165-

0.22; femur 0.54-0.665 by 0.165-0.215; tibia 0.50-0.62 by 0.19-0.26; chela (without pedicel) 0.87-1.065 by 0.27-0.36; hand (without pedicel) 0.43-0.53 by 0.26-0.34; finger 0.47-0.55 long; pedicel 0.07-0.10 long. Leg I: basifemur 0.19-0.235 by 0.11-0.13; telofemur 0.185-0.215 by 0.11-0.125. Leg IV: entire femur 0.53-0.63 by 0.21-0.265; tibia 0.35-0.42 by 0.11-0.14; metatarsus 0.13-0.18 by 0.065-0.09; telotarsus 0.13-0.17 by 0.06-0.075.

REMARKS: When the specimens from Florida are compared with the types of *Novohorus suffuscus* Hoff from Mona Island, certain differences are apparent; specifically, the former has distinctly larger and more slender appendages, has 4 rather than 2 setae on the 2nd abdominal tergite, and has 4 rather than 6 setae on most sternites. The 3 flagellar setae in many specimens of *N. obscurus* are all clearly denticulate; this differs from the smooth condition reported by Hoff for *N. suffuscus*, but the difference may be due to the difficulty of seeing the fine, hyaline denticulations. It is evident that the 2 species are distinct. However, this leaves in question the specimens reported from Jamaica by Hoff (1964). From the description given by Hoff, it seems unlikely that they represent *N. suffuscus*, as they are closer in most respects to *N. obscurus*. Whether they actually belong to the latter species or to a new species can only be determined after the distribution of the genus throughout the Caribbean area is known in more detail.

Genus *Aphelolpium* Hoff

This genus is characterized by having 2 setae in the cheliceral flagellum and the vestitural setae on body and palps long and conspicuous.

Heretofore, this genus has been known by a single species, *A. scitulum* Hoff, from Jamaica. However, it is actually widespread through the Caribbean area. This 2nd described species has been found only on Vaca Key.

Aphelolpium cayanum Muchmore, NEW SPECIES

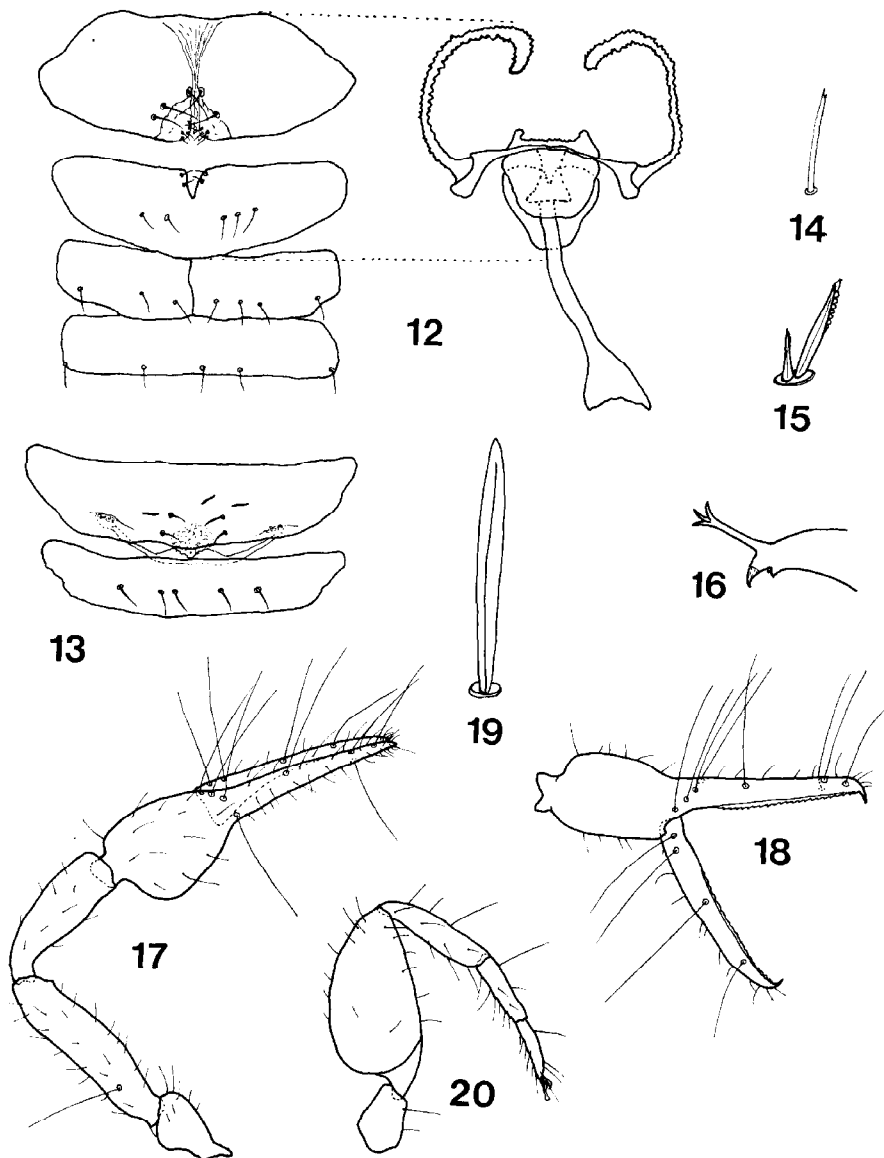
Figs. 12-20

MATERIAL: Holotype ♂ (WM 1456.01001) from palm and hardwood litter at Marathon, Vaca Key, Monroe County, FL, 15-III-1968, by S. B. Peck; 5 ♂ and 1 ♀ paratypes from same location, 17-III-1968 and 7-VIII-1971, also by S. B. Peck.

DIAGNOSIS: Similar to *A. scitulum* Hoff but slightly smaller (length of ♂ palpal femur 0.55 mm or less), and with fewer teeth on movable chelal finger (19 or fewer in ♂).

DESCRIPTION: Male and ♀ much alike, but ♀ noticeably larger and stouter. Carapace and palps golden brown, other parts lighter. Carapace longer than broad; anterior margin slightly indented in center; surface roughened by numerous tiny granules; with 4 prominent, corneate eyes; with about 30 setae, 6 at anterior and 4 at posterior margin. Coxal area without special features.

Abdomen elongate; tergites undivided; most sternites undivided, but in ♂ anterior genital operculum distinctly divided, posterior operculum apparently undivided, and sternite 4 barely divided, and in ♀ both anterior and posterior genital opercula barely divided; surfaces smooth; pleural membranes longitudinally striate. Tergal chaetotaxy of holotype 4:4:6:6:7:



Figs. 12-20. *Aphelolpium cayannum* Muchmore, new species. 12) ♂ genital opercula and sternites 4 and 5, and internal genitalia; 13) ♀ genital opercula; 14) Seta from 11th tergite; 15) Cheliceral flagellum; 16) Tip of movable cheliceral finger, showing galea; 17) Dorsal view of palp; 18) Lateral view of chela; 19) Sword-shaped seta from chelal finger; 20) Leg IV.

6:6:6:1T6T1:T6T:2T4T2:2; others similar but with as many as 8 setae on some central tergites. Sternal chaetotaxy of holotype ♂ 5/9:[2-2]:(0)5(0):(0)6(0):7:5:5:8:10:2T3T2:1TT1:2; others similar but varied; genitalia of ♂ as shown in Fig. 12; sternal chaetotaxy of ♀ 4:(0)5(0):(0)8(0): etc. (Fig. 13). Tactile setae (T) long and with conspicuous, enlarged areoles; some, but not all, of the other setae of tergites and sternites 9-11 are

shortened, heavy, and forked or toothed at tips (Fig. 14); the last 2 setae of the sternal chaetotaxy are not on the anal plate as is usual among pseudoscorpions, but rather are found on the 11th sternite or on the interscutal membrane between the 11th and 12th.

Chelicera about $1/3$ as long as carapace; hand with 5 acuminate setae, *b* shortest and *es* very long; flagellum of 2 unequal, serrate setae (Fig. 15); fixed finger with 2 tiny and 3 medium-sized teeth; movable finger having a subapical lobe with a lateral denticle; galea slender and with 3 small terminal rami (Fig. 16); serrula exterior of 17 blades.

Palp moderately long and slender, femur about equal to and chela about 1.5 times as long as carapace. Proportions of segments as shown in Fig. 17; femur 3.75-4.2, tibia 2.75-3.15, and chela (without pedicel) 3.1-3.75 as long as broad; hand 1.3-1.4 as long as deep; movable finger 1.63-1.74 as long as hand. Femur with trichobothrium in proximal $1/3$. Trichobothria of chela as shown in Fig. 18. On the chelal fingers are a number of short sword-shaped setae (Fig. 19) which are probably sensory in function; fixed finger with a row dorsally, a row laterally and a few medially at the distal end; movable finger with a row laterally and a short row medially; each seta oriented with "blade" parallel to long axis of finger. Movable finger with 18-21 low, retrorse marginal teeth, becoming much flattened and acuspid toward base of finger; fixed finger with 24-28 sturdy, retrorse teeth, most with cusps. Venom ducts of both fingers long; nodus ramosus in fixed finger proximal to trichobothrium *ist*, that in movable finger proximal to *t*.

Legs typical; leg I with basifemur twice as long as telofemur; leg IV with entire femur stout, about 2.1 as long as deep (Fig. 20). Arolia entire, longer than claws.

MEASUREMENTS (mm): Ranges for the 6 ♂♂ given 1st, followed in parentheses by the figures for ♀. Body length 1.81-1.97 (2.50). Carapace length 0.53-0.57 (0.63). Chelicera 0.19-0.21 (0.23) by 0.105-0.125 (0.13). Palpal femur 0.51-0.55 (0.58) by 0.125-0.135 (0.155); tibia 0.39-0.43 (0.44) by 0.13-0.145 (0.16); chela (without pedicel) 0.79-0.865 (0.96) by 0.23-0.26 (0.31); hand (without pedicel) 0.30-0.32 (0.37) by 0.22-0.24 (0.29); pedicel about 0.06 (0.07) long; movable finger 0.50-0.54 (0.61) long. Leg I: basifemur 0.24-0.265 (0.29) long; telofemur 0.12-0.13 (0.15) long. Leg IV: entire femur 0.50-0.55 (0.58) by 0.235-0.26 (0.245).

ETYMOLOGY: The species is named for the Florida Keys, where it is found.

REMARKS: The sword-shaped setae on the chelal fingers were 1st seen in *A. cayanum* but have also been observed in other forms from the West Indies, including *A. scitulum* the type species of the genus. Similar, but somewhat different, setae can be found in other olpiid pseudoscorpions (see below for *Planctolpium*); this includes *Hesperolpium slevini* (Chamberlin), where the unique group of spatulate setae on the movable chelal finger lies within a row of short, dagger-shaped setae. This observation tends to strengthen the relationship between *Aphelolpium* and *Hesperolpium*, which have been placed together in the tribe *Hesperolpini* by Hoff (1964).

The heavy, terminally forked setae of posterior tergites and sternites apparently are unique to *Aphelolpium* among the family Olpiidae, though shortened, heavy, clavate setae may be found on the abdomens of some Garypidae.

Genus *Planctolpium* Hoff

Members of this genus have 2 setae in the cheliceral flagellum, and the vestitural setae on the body and palps are very short and inconspicuous.

This genus has been known by a single species, *Planctolpium arboreum* Hoff (1964) from Jamaica and the Dominican Republic (Beier 1976) and Yucatan (Muchmore 1977). It is probably widespread through the Caribbean area. Two new species have been recognized in Florida, 1 from the central peninsula and 1 from the western region.

Planctolpium peninsulae Muchmore, NEW SPECIES

Figs. 21-7

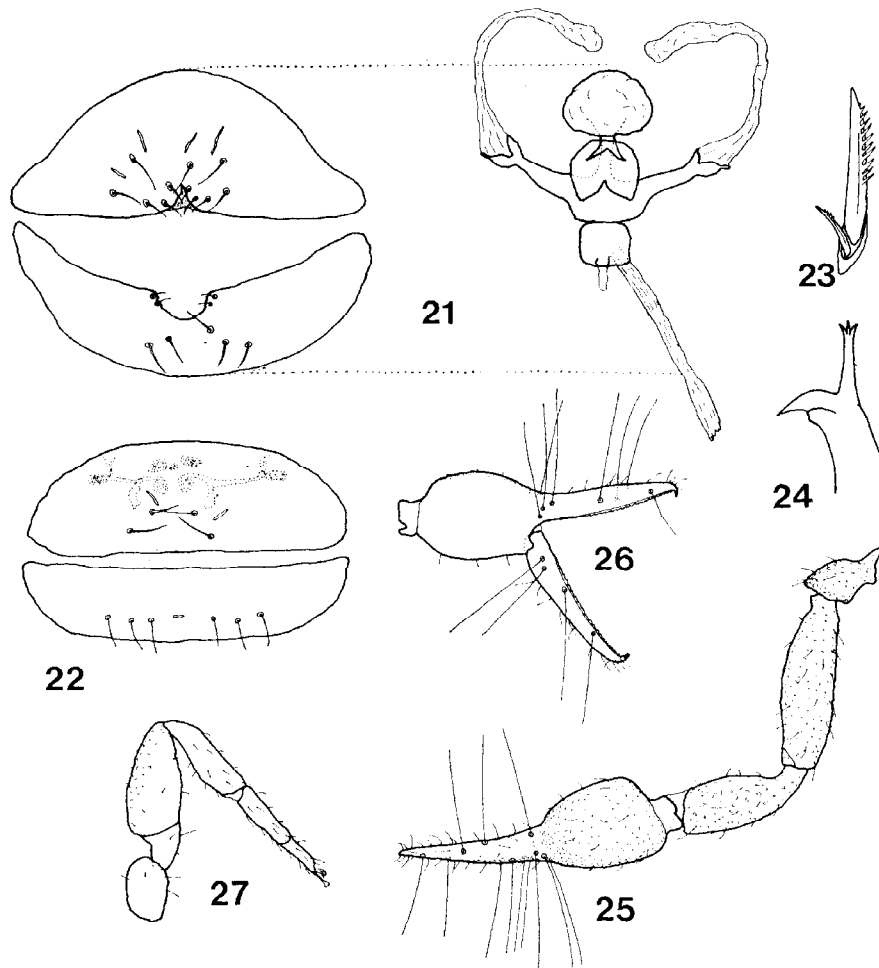
MATERIAL: Holotype ♂ (WM 3243.01001) and numerous paratypes (♂ ♂, ♀ ♀, and nymphs) from sand pine litter and can traps under sand pine at Winter Haven, Polk County, FL, by M. H. Muma, K. J. Stone, and others; these were collected during 1967-1970, in every month of the year. Many other specimens from the following localities; Alachua County, Gainesville; Hernando County; Highlands County, Archbold Biological Station; Indian River County, Sebastian; Lake County, Lake Griffin State Park; Marion County, Oklawaha River; Orange County, Vineland; Osceola County, Kissimmee and Saint Cloud; Polk County, Lake Alfred, Frostproof, and Waverly. Most of these were also taken from sand pine litter, but some were found in slash pine-turkey oak litter, under *Cladonia* lichen, and behind sabal palmetto leaf sheath.

DIAGNOSIS: Similar to *P. arboreum* from Jamaica, but with much darker palps and ♂ galea trifold at tip rather than terminally simple and acute.

DESCRIPTION: Male and ♀ similar though females slightly larger. Carapace light brown, palps darker gray-brown, other parts lighter. Carapace widened posteriorly, slightly longer than posterior breadth; surface heavily granulate; anterior margin indented at center; an indistinct, shallow, transverse furrow near posterior margin; 4 large, corneate eyes present; with 40 or more very small, acute setae, 4 at anterior and 6 at posterior margins. Coxal area essentially parallel-sided; chaetotaxy without special features.

Abdomen rather broad; tergites undivided; most sternites undivided, but in ♂ anterior genital operculum clearly divided, posterior operculum and 4th sternite faintly divided, and in ♀ anterior operculum faintly divided. Surfaces of tergites granulate and with scale-like markings; sternites smooth; pleural membranes with longitudinal, wavy striations. Setae on tergites very small and inconspicuous, those on sternites considerably larger, all acute; tergal chaetotaxy of ♂ holotype 5:6:6:7:7:8:8:8:6:1T4T1:1T4T1:2, others similar but varied; sternal chaetotaxy of holotype 5/6:[2-2]:(0)5(0):(0)6(0):8:6:7:7:6:2T1T2:1T1:2, others similar; genital operculum of ♂ shown in Fig. 21; sternal chaetotaxy of ♀ 4:(0)6(0):(0)6(0): etc.; tactile setae (T) long and most with very large, conspicuous areoles. Internal genitalia of ♂ as in Fig. 21; cribriform plates of ♀ shown in Fig. 22. Distinct stigmatic helices are present at ends of tracheae.

Chelicera ca. 1/3 as long as carapace; hand with 5 acuminate setae, *b* shortest and *es* very long; flagellum of 2 unequal setae, the larger distinctly dentate, the smaller appearing dentate only in favorable orientation (Fig.



Figs. 21-7. *Planctolpium peninsulae* Muchmore, new species. 21) ♂ genital opercula and internal genitalia; 22) ♀ genital opercula; 23) Cheliceral flagellum; 24) Tip of movable cheliceral finger, showing galea; 25) Dorsal view of palp; 26) Lateral view of chela; 27) Leg IV.

13); fixed finger with 2 tiny and 4 small marginal teeth; movable finger with subapical lobe prominent and terminally divided; galea of both ♂ and ♀ slender and with 3 small, terminal rami (Fig. 24); serrula exterior of about 18 blades.

Palp generally slender, but hand of chela noticeably expanded basally (Fig. 25); femur 0.80-0.89 and chela 1.23-1.35 as long as carapace; femur 3.1-3.5, tibia 2.5-2.9, and chela (without pedicel) 2.75-3.25 as long as broad; hand 1.2-1.4 as long as deep; movable finger 1.25-1.4 as long as hand. Femur without a trichobothrium on dorsum. Trichobothria of chela as in Fig. 26. On chelal fingers are a number of short, sword-shaped setae (as in *Aphelolpium*; see Fig. 19), arranged in 2 rows on the fixed finger and in a single irregular row on movable finger; each seta with "blade" parallel to long axis of finger. Movable finger with 17-20 poorly developed marginal

teeth, only the distal 5-6 with distinct cusps, the others low and rounded; fixed finger with 23-29 well developed, retrorse teeth, most with prominent cusps. Venom ducts in both chelal fingers relatively long; nodus ramosus just proximal to *t* in the movable finger and to *it* in the fixed finger.

Legs typical of the Olpiidae; leg I with basifemur about twice as long as telofemur; leg IV (Fig. 27) with entire femur rather stout, 2.35-2.65 as long as deep. Arolia entire, longer than claws.

MEASUREMENTS (mm): Ranges for 6 ♂ given 1st, followed in parentheses by ranges for 7 ♀. Body length 1.50-1.61 (1.68-1.91). Carapace length 0.48-0.51 (0.54-0.57). Chelicera 0.15-0.16 (0.185-0.19) by 0.085-0.095 (0.11-0.125). Palpal femur 0.39-0.435 (0.465-0.49) by 0.12-0.13 (0.14-0.15); tibia 0.31-0.36 (0.355-0.39) by 0.12-0.125 (0.14-0.15); chela (without pedicel) 0.60-0.635 (0.68-0.74) by 0.20-0.22 (0.235-0.26); hand (without pedicel) 0.26-0.28 (0.31-0.33) by 0.195-0.215 (0.22-0.26); pedicel about 0.05 long; movable finger 0.34-0.38 (0.385-0.43) long. Leg I: basifemur 0.185-0.19 (0.215-0.23) long; telofemur 0.10-0.11 (0.12-0.13) long. Leg IV: entire femur 0.33-0.36 (0.40-0.435) by 0.13-0.15 (0.155-0.185).

ETYMOLOGY: The species is named *peninsulae* because of its distribution on the peninsula of Florida.

REMARKS: This species is similar to *Planctolpium arboreum* in most respects and is certainly congeneric with it. *Planctolpium peninsulae* can, therefore, be considered a valid representative of the genus *Planctolpium* Hoff. Because *P. peninsulae* is clearly a member of the family Olpiidae, *Planctolpium* must be placed in that family rather than in the Garypidae as Hoff maintained (1964: 40) and as Beier (1976: 46) and Muchmore (1977: 76) have tacitly agreed. Detailed evidence follows.

Planctolpium peninsulae may be compared with *Aphelolpium cayanum* (see above), a good member of the family Olpiidae, subfamily Olpiinae, tribe Hesperolpiini. The 2 are similar in very many important characters, including the following:

- coxal area parallel-sided
- cheliceral flagellum of 2 serrate setae
- stigmatic helices distinct
- tergites and sternites mostly entire
- details of ♂ and ♀ genital opercula
- details of ♂ internal genitalia
- chaetotaxy of posterior tergites and sternites, with specialized tactile setae
- galea trifold at tip
- shape of anterior margin of carapace
- sword-shaped setae on chelal fingers
- arolia longer than claws.

Though *Planctolpium* has in common with garypids a triangular carapace and inconspicuous dorsal and palpal setae, it differs notably from *Garypus* and its allies in having the coxal area parallel-sided, the tergites and sternites entire, a flagellum of only 2 setae, and distinct stigmatic helices. Among the accepted garypids it appears most like *Geogarypus*, which has always been recognized as atypical in several respects. It is likely that a thorough revision of the Olpiidae and Garypidae is needed.

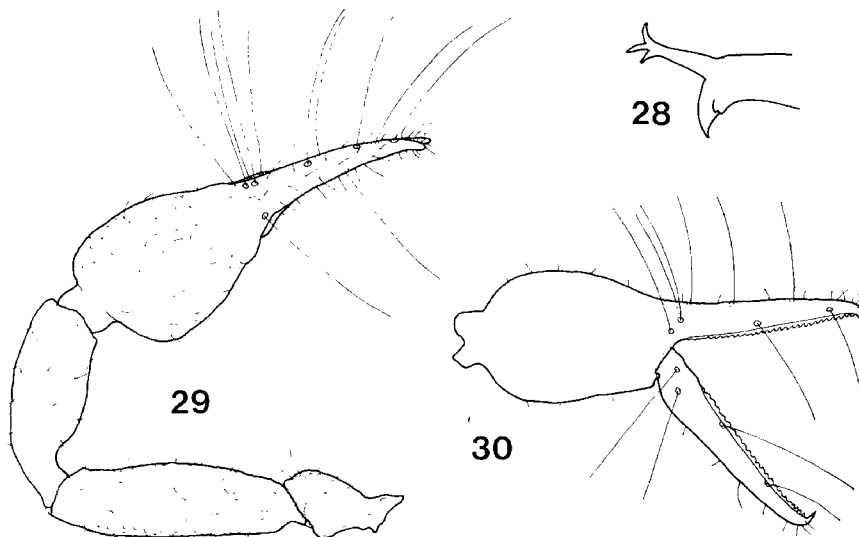
Planctolpium suteri Muchmore, NEW SPECIES

Figs. 28-30

MATERIAL: Holotype ♀ (WM 438.02001) and 4 ♀ paratypes from crotches in pine trees on Dauphin Island, Mobile County, AL, 10-IX-1959, by Walter R. Suter. One ♂, considered conspecific, from under a piece of pine bark on ground in Liberty County, FL, about 20 miles west of Tallahassee, by the author.

DIAGNOSIS: Similar to *P. peninsulae* but lighter in color; larger (palpal femur greater than 0.5 mm in length) and with more slender palpal femur ($l/w = 3.45-3.7$).

DESCRIPTION: Male and ♀ similar, though ♀ slightly larger. Like *P. peninsulae* (see above) in most respects, but with the following details. Carapace and palps rich golden brown, other parts tan. Carapace with about 50 setae, 4 at anterior and 6 at posterior margin. Abdominal tergites and most sternites entire; genital opercula and 4th sternite weakly divided in both sexes. Tergal chaetotaxy of holotype 6:6:8:8:8:8:8:8:7:1T4T1:1T6T1:2; sternal chaetotaxy 4:(0)5(0):(0)6(0):8:8:9:8:9:1T2T1:1TT1:2 (paratypes generally similar); sternal chaetotaxy of ♂ 4/6:[2-2]:(0)6(0):(0)8(0):8:8; etc.; tactile setae (T) long and most with very large, conspicuous areoles. Smaller seta of cheliceral flagellum not showing dentations in any of the specimens examined; galea of both sexes with 3 terminal rami (Fig. 28). Palp as in Figs. 29 and 30. Femur 0.9-0.95 and chela 1.3-1.45 as long as carapace; femur 3.4-3.7, tibia 2.7-2.9, and chela (without pedicel) 2.6-2.9 times as long as broad; hand 1.3-1.4 as long as deep; movable finger 1.2-1.35 as long as hand. Movable finger with 20-23 and fixed finger with 30-35 marginal teeth. Leg IV with entire femur 2.65-2.8 times as long as deep.



Figs. 28-30. *Planctolpium suteri* Muchmore, new species. 28) Tip of movable cheliceral finger, showing galea; 29) Dorsal view of palp; 30) Lateral view of chela.

MEASUREMENTS (mm): Ranges for the 4 ♀♀, followed in parentheses by figures for the ♂. Body length 1.55-1.9 (1.85). Carapace length 0.58-0.605 (0.59). Chelicera 0.185-0.215 (0.19) by 0.10-0.125 (0.11). Palpal femur 0.525-0.585 (0.52) by 0.155-0.17 (0.14); tibia 0.435-0.465 (0.41) by 0.16 (0.155); chela (without pedicel) 0.815-0.88 (0.75) by 0.30-0.32 (0.26); hand (without pedicel) 0.38-0.415 (0.33) by 0.295-0.30 (0.245); movable finger 0.46-0.495 (0.45) long. Leg I: basifemur 0.235-0.26 (0.215) long; telofemur 0.13-0.15 (0.12) long.

ETYMOLOGY: The new species is named for Walter R. Suter, who collected the 1st known specimens.

REMARKS: This species is likely distributed along the coast of the Gulf of Mexico.

Genus *Serianus* Chamberlin

In this genus the arolia at the tips of the tarsi are distinctly divided (bifurcate), and the palpal chela has the full complement of trichobothria, i.e., 8 on the fixed finger and 4 on the movable finger.

The genus is distributed around the world in tropical and subtropical areas. There appear to be at least 2 species in Florida.

Serianus gratus Hoff

Serianus gratus Hoff, 1964: 36-9.

Several specimens separated from palm and hardwood litter on Vaca, Largo, No Name, and Upper Matacumbe Keys conform to the description of *S. gratus* from Jamaica. This species also has been reported from Belize (Muchmore 1977); it may be widely distributed through the Caribbean area.

Serianus carolinensis Muchmore

Fig. 31

Serianus carolinensis Muchmore, 1968: 145-50.

Specimens apparently belonging to *S. carolinensis* have been collected mainly from pine litter in Dade, Indian River, Marion, Polk, St. Johns, and Wakulla County. These generally conform to the original description of the species based on North Carolina material, though there are some variations in details of chaetotaxy and the cheliceral galea. Further study may reveal the presence of another distinct species here.

Because the internal genitalia of the ♂♂ is becoming more and more important in the taxonomy of olpiid pseudoscorpions, it is considered appropriate to illustrate those of *S. carolinensis* here (Fig. 31).

Genus *Aldabrinus* Chamberlin

Species of this genus may be recognized by the grossly heavy palpal chela and by the occurrence of only 2 trichobothria on the movable chelal finger.

Aldabrinus floridanus Muchmore

Fig. 32

Aldabrinus floridanus Muchmore, 1974: 4-6.

No further specimens of this species have been collected since the original report. It has been found only on Key Largo.

The ♂ genitalia were not figured in the original description. For the sake of comparison, they are shown here (Fig. 32). They bear considerable resemblance to those of *Solinellus simberloffii*, n. sp., as described below (Fig. 35).

Solinellus Muchmore, NEW GENUS

Type species: *Solinellus simberloffii* Muchmore, NEW SPECIES.

DIAGNOSIS: With the general characters of the family Olpiidae, subfamily Garypininae. Similar to *Solinus*, but with only 5 trichobothria on the chelal hand and fixed finger, rather than 8.

DESCRIPTION: Carapace longer than broad, anterior margin smoothly curved, posterior margin straight; only anterior 4/5 strongly sclerotized; 4 corneate eyes; 16 vestitural setae, 4 at anterior and 2 at posterior margin.

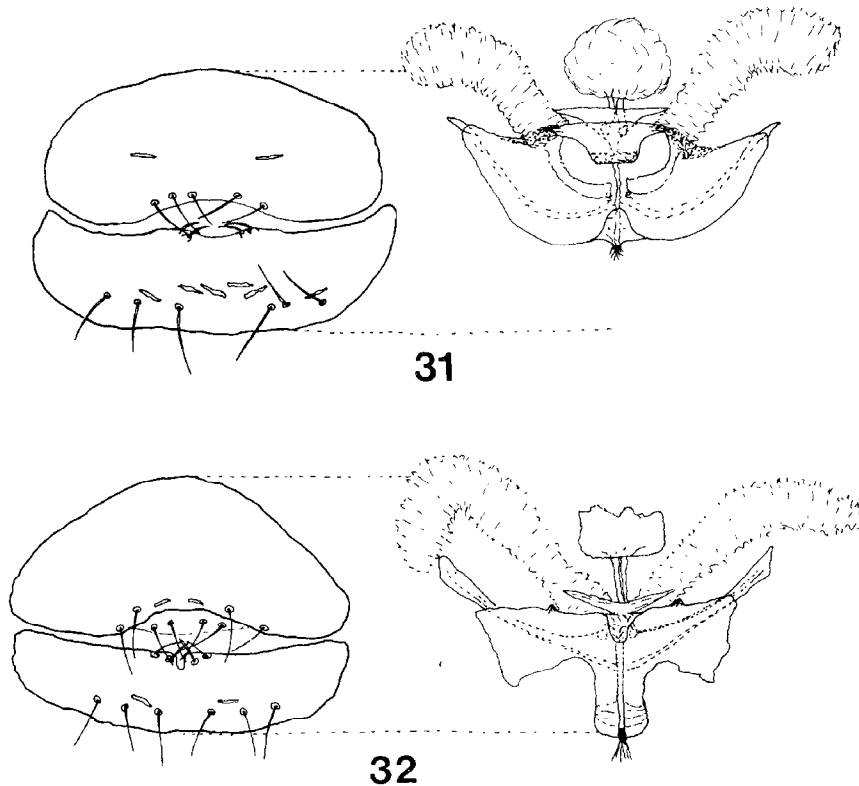


Fig. 31. *Serianus carolinensis* Muchmore. ♂ genital opercula and internal genitalia. Fig. 32. *Aldabrinus floridanus* Muchmore. ♂ genital opercula and internal genitalia.

Tergites and sternites mostly divided, not completely sclerotized; chaetotaxy of anterior tergites 4:2:4:4:4:6:- : 10th and 11th tergites and sternites with long tactile setae; sternites 6-8 with median pairs of sensory setae, those of ♂ moderate in size and clavate at tip, but those of ♀ tiny and acuminate. Chelicera hand with 5 acuminate setae, *es* very long; flagellum of 3 or 4 setae, the distal 1 dentate in outer 1/2; no lamina exterior evident; galea of ♀ with long lateral ramus near middle, the main stalk terminally bifid, that of ♂ smaller, with 1 small basal ramus and 2 small rami just distal to middle. Palp robust; femur with a trichobothrium on dorsum proximal to middle; movable chelal finger with only 2 trichobothria (*sb* and *b*?), fixed finger with only 5 trichobothria (*et*, *esb*, *ist*, *isb* and *ib*?); marginal teeth of fingers well developed. Telfemur of leg I longer than basifemur, the joint between the 2 not movable. Metatarsus of leg IV with a very long tactile seta. Arolia divided, longer than claws.

ETYMOLOGY: The name is a diminutive based upon *Solinus*.

REMARKS: The new genus is closely related to *Solinus*, the nearest known species of which is in southwestern United States, but is easily distinguished from that genus by the occurrence of only 5 trichobothria on the fixed finger and chelal hand, rather than the normal complement of 8.

Solinellus simberloffii Muchmore, NEW SPECIES

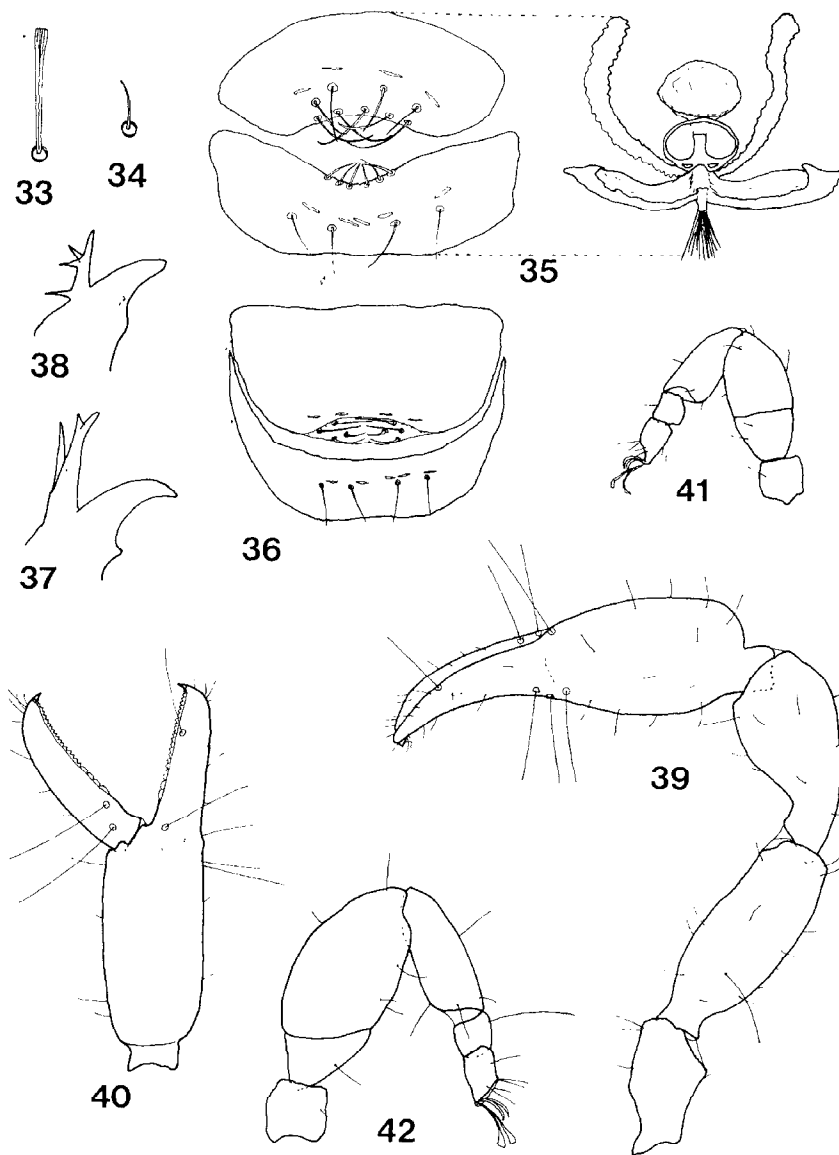
Figs. 33-42

MATERIAL: Holotype ♂ (WM 1987.01001) and 1 ♂, 5 ♀, and 2 nymphal paratypes from under the bark of red mangroves at Mud Keys, Monroe County, FL, 4-VII-1969, by D. S. Simberloff. Other specimens were taken from similar situations on several nearby keys.

Description (based upon 2 ♂♂ and 8 ♀♀ mounted on slides): Males and ♀♀ similar except for sexual characters. Most parts light brown. Carapace longer than broad; anterior margin smoothly curved, posterior margin straight; only anterior 4/5 of carapace strongly sclerotized; with 4 corneate eyes. Carapacial chaetotaxy 4-4-4-2-2 = 16. Coxal area narrowed posteriorly, widest across 2nd pedal segment.

Abdomen long ovate; tergites 1-10 and sternites 4-10 divided, most not completely sclerotized, surfaces smooth; pleural membranes with wavy longitudinal striations. Tergal chaetotaxy usually about 4:2:4:4:4:6:6:7:6: T2T2T2T:T2T:2. Sternal chaetotaxy of ♂ 9:[3-3]:(2)4(2):(2)4(2):6:3SS3:3SS3:3SS3:6:T2T2T2T:T1T2T1T:2; ♀ sterna similar except that genital opercula have 8:(2)4(2); the sensory setae (S) lie at the medial edges of the sternal halves and are sexually dimorphic—in the ♂ they are as long as the vestitural setae but clavate at tip (Fig. 33), while in the ♀ they are very small and acuminate (Fig. 34). Genitalia of ♂ shown in Fig. 35; genital opercula of ♀ as in Fig. 36.

Chelicera typical for the family; about 1/3 as long as carapace; hand with 5 acuminate setae, *es* very long; flagellum of 3 or 4 setae (sometimes 2 small basal setae can be distinguished, other times only 1), the distal seta dentate in its outer 1/2; no lamina exterior evident; serrula exterior of 14 or 15 blades; galea of ♀ with a long lateral ramus near middle, the main stalk terminally bifid (Fig. 37); galea of ♂ smaller, with 1 small basal ramus and 2 small rami just distal to middle (Fig. 38); subapical lobe of movable finger poorly developed; fixed finger with 5-6 small marginal teeth.



Figs. 33-42. *Solinellus simberloffii* Muchmore, new genus and new species. 33) Sternal sensory seta of ♂; 34) Sternal sensory seta of ♀; 35) ♂ genital opercula and internal genitalia; 36) ♀ genital opercula; 37) Cheliceral galea of ♀; 38) Cheliceral galea of ♂; 39) Dorsal view of palp; 40) Lateral view of chela; 41) Leg I; 42) Leg IV.

Palp rather robust (Fig. 39), of garypinine facies; femur 2.5-2.85, tibia 1.85-2.05, and chela (without pedicel) 2.9-3.2 times as long as broad; hand (without pedicel) 1.65-1.9 times as long as deep; movable finger 0.81-0.91 as long as hand. All surfaces smooth. Femur with a dorsal trichobothrium in proximal 1/2. Movable finger of chela with only 2 trichobothria (Fig. 40),

presumably *sb* and *b*; fixed finger and hand with only 5 trichobothria, presumably *et*, *esb*, *ist*, *isb*, and *ib*; all but *et* located on the proximal portions of the fingers. Movable finger with 17-22 and fixed finger with 16-22 marginal teeth, all but the most proximal ones cusped.

Legs stout (Figs. 41 and 42). Arolia bifid and longer than claws. Leg I with telofemur about 1.6 times as long as basifemur, the joint between the 2 segments apparently immobile. Leg IV with entire femur 2.1-2.3 times as long as deep; tibia with a tactile seta at about middle, and metatarsus with a very long tactile seta proximally.

MEASUREMENTS (mm): Body length 1.55-1.98. Carapace length 0.37-0.43. Chelicera 0.12-0.13 long. Palpal femur 0.26-0.295 by 0.095-0.11; tibia 0.23-0.26 by 0.12-0.13; chela (without pedicel) 0.42-0.47 by 0.135-0.155; hand (without pedicel) 0.22-0.265 by 0.12-0.15; pedicel about 0.04 long; movable finger 0.20-0.22 long. Leg I: basifemur 0.055-0.065 long; telofemur 0.095-0.105 long. Leg IV: entire femur 0.26-0.295 by 0.155-0.13; tibia 0.16-0.185 by 0.065-0.075.

ETYMOLOGY: The species is named for Daniel Simberloff, who collected most of the specimens.

REMARKS: So far as is known, the medial sensory setae on sternites 6-8 are unique in being morphologically different from adjacent setae and in being sexually dimorphic. Other garypinine pseudoscorpions (as *Serianus* Chamberlin, *Nelsoninus* Beier, *Hemisolinus* Beier, *Galapagodinus* Beier, and *Aldabrinus* Chamberlin) have similarly situated setae, but these are no different from the vestitural setae except, perhaps, in size.

Family GARYPIDAE Hansen

Members of this family have the inner margin of the movable cheliceral finger smooth or at most with a small, subapical lobe; venom apparatus and tooth in each chelal finger; coxal area distinctly widened posteriorly; and the pleural membranes rugose or granulostriate.

Genus *Garypus* L. Koch

The only genus of the family represented in Florida, these animals are usually large and live in debris at the seashore.

One species is known from Florida.

Garypus floridensis Banks

Garypus floridensis Banks, 1895: 9; Hoff, 1946b: 195-8; Hummelinck, 1948: 45-6.

The only known material of this species are a ♂, a ♀, and a small nymph found "under driftwood, ocean beach, near St. Lucie, Indian River, Florida, April 19, 1880." by H. G. Hubbard. Banks described the species only very briefly; Hoff later described the adult types in great detail; Hummelinck compared this species with others known from the Caribbean region.

Though no other specimens have been collected, it seems likely that the animals are present in the debris on many Florida beaches, but that they are simply not noticed or collected because of their secretive habits.

KEY TO FLORIDIAN PSEUDOSCORPIONS OF THE SUBORDER DIPLOSPHYRONIDA

- 1. Movable finger of chelicera with at least part of inner margin toothed; subterminal setae of pedal tarsi forked or dentate 2
- 1'. Movable finger of chelicera not toothed, but usually with a small subapical lobe; subterminal tarsal setae simple 4
- 2. Pleural membranes of abdomen granulate 3
- 2'. Pleural membranes of abdomen smoothly striate
..... *Pachychitra floridensis* Muchmore, n. sp.
- 3. Spinneret on chelicera a smoothly rounded knob
..... *Microbisium confusum* Hoff
- 3'. Spinneret on chelicera a branched process
..... *Microcreagris atlantica* Chamberlin
- 4. Coxal area parallel-sided; pleural membranes of abdomen smoothly striate 5
- 4'. Coxal area posteriorly widened; pleural membranes of abdomen rugose or granulo-striate *Garypus floridensis* Banks
- 5. Arolia of pedal tarsi not divided 6
- 5'. Arolia of pedal tarsi divided 10
- 6. Cheliceral flagellum with 3 setae 7
- 6'. Cheliceral flagellum with 2 setae 8
- 7. Leg I with telofemur distinctly shorter than basifemur
..... *Olpiolum monae* (Hoff)
- 7'. Leg I with telofemur about equal to basifemur
..... *Novohorus obscurus* (Banks)
- 8. Vestitural setae long and conspicuous
..... *Aphelolpium cayanum* Muchmore, n. sp.
- 8'. Vestitural setae short and inconspicuous
..... (*Planctolpium*) 9
- 9. Smaller species (palpal femur less than 0.45 mm in length); dark in color *P. peninsulae* Muchmore, n. sp.
- 9'. Larger species (palpal femur more than 0.5 mm in length); lighter in color *P. suteri* Muchmore, n. sp.
- 10. Movable chelal finger with 4 trichobothria (*Serianus*) 11
- 10'. Movable chelal finger with 2 trichobothria 12
- 11. Lateral branch of cheliceral galea arising near or distal to midpoint and 1/3 or less the length of galea *S. gratus* Hoff
- 11'. Lateral branch of cheliceral galea arising at or proximal to midpoint and 1/2 or more the length of galea
..... *S. carolinensis* Muchmore
- 12. Hand of palpal chela very heavy; fixed chelal finger with 7 trichobothria *Aldabrinus floridanus* Muchmore
- 12'. Hand of palpal chela normal; fixed chelal finger with 5 trichobothria *Solinellus simberloffii* Muchmore, n. sp.

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