

AMERICAN MUSEUM *Novitates*

PUBLISHED BY THE
AMERICAN MUSEUM
OF NATURAL HISTORY

CENTRAL PARK WEST AT 79TH STREET
NEW YORK, N.Y. 10024 U.S.A.

NUMBER 2691

JANUARY 29, 1980

NORMAN I. PLATNICK AND MOHAMMAD U. SHADAB

A Revision of the North American Spider Genera
Nodocion, *Litopyllus*, and *Synaphosus*
(Araneae, Gnaphosidae)

AMERICAN MUSEUM *Novitates*

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK, N.Y. 10024
Number 2691, pp. 1–26, figs. 1–52
January 29, 1980

A Revision of the North American Spider Genera *Nodocion*, *Litopyllus*, and *Synaphosus* (Araneae, Gnaphosidae)

NORMAN I. PLATNICK¹ AND MOHAMMAD U. SHADAB²

ABSTRACT

The North American *Nodocion* (six species), *Litopyllus* (three species), and *Synaphosus* (two species) are diagnosed and described. *Paramyrmecon* Bryant is newly synonymized with *Litopyllus*. *Nodocion realisticus* Chamberlin is transferred to *Litopyllus*. *Zelotes syntheticus* (Chamberlin), originally placed in *Nodocion*, and *Litopyllus paludis* Chamberlin and Gertsch are placed in the new genus *Synaphosus*. Nine specific names are newly synonymized: *N. atopophysis* (Chamberlin) and *N. arizonicus* (Chamberlin), both with *N. eclecticus* Chamberlin; *N. floris-*

santus (Chamberlin) and *N. carrvillus* (Chamberlin), both with *N. voluntarius* (Chamberlin); *N. deceptus* (Gertsch and Mulaik), *N. floridicolens* (Chamberlin), and *N. melanie* Levi, all with *N. floridanus* (Banks); and *L. ambiguus* Fox and *L. liber* Chamberlin and Gertsch, both with *L. temporarius* Chamberlin. The female of *S. paludis* (Chamberlin and Gertsch) and the males of *N. mateonus* Chamberlin, *N. rufithoracicus* Worley, *N. utus* (Chamberlin), and *L. cubanus* (Bryant) are described for the first time.

INTRODUCTION

This paper, the eleventh in a series on the spider family Gnaphosidae, contains revisions of the genera *Nodocion* and *Litopyllus*, both originally described by Chamberlin (1922), and of the new genus *Synaphosus*. With the exception of *Litopyllus cubanus* (Bryant), which occurs on Bimini and Cuba

as well as in southern Florida, all three genera appear to be exclusively North American.

The genus *Nodocion* has had a complicated nomenclatural history, caused primarily by Chamberlin's (1922) mistaken association of two species actually belonging to *Dras-*

¹ Associate Curator, Department of Entomology, American Museum of Natural History; Graduate Faculty in Biology, City College, City University of New York.

² Scientific Assistant, Department of Entomology, American Museum of Natural History.

syllus with the type species, *Nodocion mateonus* Chamberlin, and his subsequent (1936a) description of a second genus, *Liodrassus*, differing from *Nodocion* only in details of the male palp. As a result, the same species has often been described as a member of each genus; for example, Levi (1951) described a new species of *Nodocion*, carefully distinguishing it from the species previously described in that genus, which had already been described twice before in *Liodrassus*. Much of this confusion was eliminated when *Liodrassus* and *Nodocion* were synonymized by Ubick and Roth (1973), who also transferred five species previously misplaced in *Nodocion* to *Drassyllus*.

The species presently assigned to *Nodocion* fall into two species groups. In one group (containing *mateonus*, *rufithoracicus*, and *utus*) the male palp has a flattened, blade-shaped retrolateral tibial apophysis (as in fig. 2) and an unmodified femur, whereas in the other group (containing *eclecticus*, *voluntarius*, and *floridanus*) the male palp has a folded retrolateral tibial apophysis (as in fig. 14) and a conspicuous enlargement on the femur at about one-third of its length (figs. 31–33). Both types of retrolateral tibial apophysis and the femoral enlargement are unique to the species groups, which are therefore regarded as monophyletic. Although the type species of *Nodocion* and *Liodrassus* fall in the first and second groups, respectively, we follow Ubick and Roth (1973) in considering *Liodrassus* a synonym because no reliable characters have been found by which to distinguish the females of the two species groups.

The relationships of *Nodocion* are still unknown; its species resemble those of the Palearctic genus *Phaeocedus* in lacking teeth on the cheliceral margins and in having a low carina on the cheliceral promargin, the carapace relatively wide anteriorly, the posterior eye row weakly procurved, and the posterior median eyes large, angular, and approximate. Through the courtesy of Dr. Torbjörn Kronestedt of the Naturhistoriska Riksmuseet, Stockholm, we have been able to examine specimens of the type species,

Phaeocedus braccatus (L. Koch). The genitalia (illustrated in figs. 49–52 for comparative purposes) also resemble those of *Nodocion* in having a broad retrolateral tibial apophysis and a pair of median ducts between the spermathecae, and we considered the possibility that the American *Nodocion* might be congeneric with *P. braccatus*. However, the genitalia of *Nodocion* resemble those of some of the American species currently placed in *Poecilochroa* even more closely in having the cymbium excavated for the reception of the retrolateral tibial apophysis (as in figs. 9, 21) and the median apophysis twisted around the base of the embolus (as in figs. 1, 13). We have therefore chosen to retain the genus *Nodocion* until it can be determined which, if any, of these characters can be considered plesiomorphic for the large complex of genera grouped around *Herpyllus* and having similarly constructed male palpi and extremely simple epigyna.

The remaining two genera treated in the present paper are even more poorly known. The type species of *Litopyllus*, *L. temporarius* Chamberlin, is highly unusual among gnaphosids because of the simplicity of its male palp, which lacks a median apophysis and has distal elements consisting only of a short embolus and unsclerotized conductor (fig. 27). Aside from species considered synonyms of *L. temporarius* below, Ubick and Roth (1973) included only one other North American species, *L. paludis* Chamberlin and Gertsch, in the genus. However, Roth and Brown (1973), in a key to North American gnaphosid genera published at the same time, were compelled to key out *L. paludis* separately from *L. temporarius* and its synonyms, and to indicate that the palp of *L. paludis* is very different from that of *L. temporarius*. As discussed below, we believe that the affinities of *L. paludis* lie elsewhere. Roth and Brown (1973) also suggested that *Litopyllus* is a synonym of *Nodocion*, but the discovery of two additional species that resemble *L. temporarius* in genitalic details allows the rejection of that hypothesis. One of these species, originally described as *Nodocion realisticus* by Chamberlin (1922) and known only from females, cannot be placed

in *Nodocion* because of the presence of a tooth on the cheliceral retromargin and the lack of the large, globose spermathecae characteristic of that genus, but does resemble *L. temporarius* in having a *Drassodes*-like epigynum (fig. 34; specimens of *Litopyllus* are frequently misidentified as *Drassodes* in collections but lack the deeply notched trochanters typical of that genus). The other species, originally described by Bryant (1940) as the type species of a monotypic genus (*Paramyrmecon*) on the basis of a single female, has a similar epigynum (fig. 38); our discovery of the male corroborates the placement of the species in *Litopyllus*, as it also has a palp with a short terminal embolus, unsclerotized conductor, and no median apophysis (fig. 36).

Litopyllus paludis, on the other hand, has a radically different type of palp (figs. 44–46) in which a long embolus originates basally and is protected distally by the dorsal and ventral folds of an elaborately twisted median apophysis and a translucent distal conductor. This kind of palpal structure is found elsewhere among North American gnaphosids only in the species described as *Nodocion syntheticus* by Chamberlin (1924); in that species, the median apophysis is folded but not elaborately twisted and the translucent conductor is larger (fig. 40). Recognizing that the species was completely misplaced in *Nodocion*, Ubick and Roth (1973) transferred it to *Zelotes*. No species of *Zelotes*, however, has a palp even vaguely resembling that of *N. syntheticus*. Although Ubick and Roth (1973) provided no explanation for their transfer of the species, it was evidently based on a belief that *N. syntheticus* has a preening comb on metatarsus III, a feature characteristic of *Zelotes* and its close relatives. However, examination of specimens indicates that the structure involved is not composed of a transverse row of stiff setae situated at the distal tip of the metatarsus (as in *Zelotes*), but consists of a brush of setae originating at various points along the distal one-third of the segment. An even more conspicuous preening brush (but not comb) occurs on metatarsus III of *L. paludis* and of other gnaphosids (such as the

species here placed in *Litopyllus*) not closely related to *Zelotes*. Since *L. paludis* and *N. syntheticus* seem on the basis of palpal structure to be more closely related to each other than to species of any of the genera in which they have been placed, a new genus, *Synaphosus*, is described below to accommodate them.

The format of the descriptions and standard abbreviations of morphological terms follow those used by Platnick and Shadab (1975). Because of the rarity of many species in collections, complete locality data are provided for every specimen examined; unless one of the collections listed below is cited, all specimens mentioned are deposited in the American Museum of Natural History. We are indebted to Dr. B. J. Kaston of San Diego State University for reviewing a draft of the manuscript, to Mr. R. J. Koestler of the American Museum of Natural History for assistance with the scanning electron microscope, and to the curators and collectors listed below for the loan of specimens.

All measurements provided below are in millimeters.

ABBREVIATIONS

- AMNH, American Museum of Natural History
BJK, Dr. B. J. Kaston
BRV, Dr. B. R. Vogel
CAS, California Academy of Sciences, Dr. D. H. Kavanaugh
CDFA, California Department of Food and Agriculture, Ms. M. J. Moody
CNC, Canadian National Collection, Dr. C. D. Dondale
DEB, Mr. D. E. Bixler
EPC, Exline-Peck Collection, Dr. W. B. Peck
FSCA, Florida State Collection of Arthropods, Dr. H. V. Weems, Jr.
HKW, Dr. H. K. Wallace
JAB, Dr. J. A. Beatty
JSH, Mr. J. S. Heiss
MCZ, Museum of Comparative Zoology, Dr. H. W. Levi
MET, Mr. M. E. Thompson
NVH, Dr. N. V. Horner
OSU, Ohio State University, Dr. C. A. Triplehorn
REL, Dr. R. E. Leech
UCB, University of California at Berkeley, Dr. E. I. Schlinger

UCR, University of California at Riverside, Mr. S. I. Frommer
 USNM, National Museum of Natural History, Dr. R. E. Crabill, Jr.
 VDR, Mr. V. D. Roth
 WAS, Dr. W. A. Shear
 WES, Mr. W. E. Sedgwick
 WRI, Mr. W. R. Icenogle

NODOCION CHAMBERLIN

Nodocion Chamberlin, 1922, p. 154 (type species by original designation *Nodocion mateonus* Chamberlin). Roewer, 1954, p. 427. Bonnet, 1958, p. 3105.

Liodrassus Chamberlin, 1936a, p. 4 (type species by original designation *Liodrassus arizonicus* Chamberlin). Roewer, 1954, p. 424. Bonnet, 1957, p. 2545. First synonymized by Ubick and Roth, 1973, suppl. 3, p. 3.

DIAGNOSIS: *Nodocion* may be recognized most easily by genitalic characters: the cymbium is excavated to receive a broad retrolateral tibial apophysis (figs. 1, 2) and there is a pair of narrow median ducts between two globose spermathecae (fig. 4). Specimens may be distinguished from *Poecilochroa* by the unicolorous abdomen, from *Cesonia* by the subequal spacing of the posterior eyes, from *Synaphosus* by the short embolus and globose spermathecae, from *Litopyllus* by the bare cheliceral retromargin, and from *Herpyllus* by the cheliceral promargin bearing a carina not divided into distinct teeth.

DESCRIPTION: Total length 3.4–11.3. Carapace oval in dorsal view, widest between coxae II and III, abruptly narrowed at extreme anterior end, light brown, blackened between AME, with recumbent and erect black setae. Cephalic area slightly elevated; thoracic groove short, longitudinal. From front, anterior eye row straight, posterior row procurved; from above, anterior row recurved, posterior row straight. AME circular, dark; lateral eyes oval, light; PME angular, irregularly oval, light. Median eyes larger than laterals, PME usually largest. AME separated by roughly their diameter, by less than their radius from ALE; PME separated by their diameter or less, by less than their diameter from PLE; lateral eyes of each side separated by their diameter or

less. MOQ roughly square. Clypeal height usually equal to AME diameter. Chelicerae with bare retromargin and promarginal carina not divided into distinct teeth. Chelicerae and labium dark brown, endites and sternum light brown; endites long, laterally sinuous, obliquely depressed, with wide, deep excavations opposite labium and anteromedian distal scopulae; labium long, truncate distally; sternum long, narrow, rebordered. Leg formula 4123. Typical leg spination pattern (only surfaces bearing spines listed): femora: I, II d1-1-1, p0-0-1; III d1-1-1, r0-1-1; IV d1-1-1, p0-0-1, r0-0-1; patella III p0-1-0, r0-1-0; tibiae: I, II v0-0-1p; III p2-1-1, v2-2-2, r0-1-1; IV p1-1-1, v2-2-2, r0-1-1; metatarsi: II v2-0-0; III p1-2-2, v2-0-2, r0-1-2; IV p1-2-2, v2-2-2, r1-2-2. Legs uniformly light brown. Tarsi with scopulae, claw tufts, and two dentate claws. Trochanters slightly notched. Distal leg segments with dorsal trichobothria. Abdomen brownish gray dorsally with large orange anterior scutum in males; venter beige. Six spinnerets, anteriors long, sclerotized, separated by their width at base, with at least four spigots. Palp with short, curled embolus, hook-shaped median apophysis, and conspicuous membranous conductor (fig. 1). Retrolateral tibial apophysis large, broad, fitting into cymbial excavation (fig. 2). Epigynum usually with distinct anterior margin (fig. 3). Spermathecae globose, separated by narrow median ducts (fig. 4).

MISPLACED SPECIES: As argued in the Introduction, *Nodocion realisticus* Chamberlin (1924) belongs to *Litopyllus*.

UNCERTAIN NAME: The purportedly adult holotype of *Nodocion pragmaticus* Chamberlin (1924) is actually a penultimate female and cannot be identified to species; the name is therefore regarded as a *nomen dubium*.

KEY TO SPECIES OF *NODOCION*

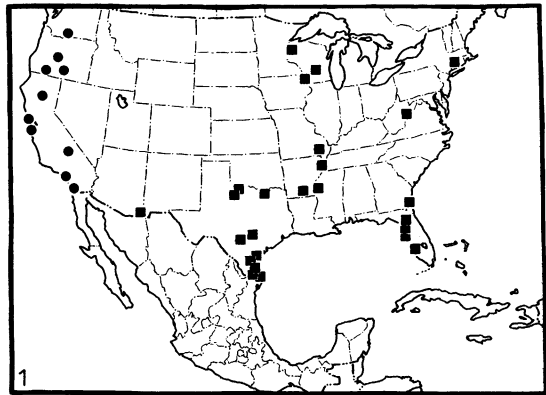
1. Males 2
 Females 7
2. Palpal femur with a conspicuous enlargement at one-third of its length (figs. 31–33); retrolateral tibial apophysis (RTA) folded (figs. 14, 18, 22) 3

- Palpal femur without an enlargement; RTA not folded but flattened and blade-shaped (figs. 2, 6, 10) 5
3. RTA with a pronounced, dorsally directed spur below its tip (fig. 14) *eclecticus*
RTA without a spur (figs. 18, 22) 4
4. Venter of abdomen with a conspicuous patch of short stiff setae in front of spinnerets (figs. 25, 26); enlargement on palpal femur relatively small (fig. 33) *floridanus*
Venter of abdomen without such a patch of setae; enlargement on palpal femur relatively large (fig. 32) *voluntarius*
5. RTA angled distally (figs. 2, 6) 6
RTA straight distally (fig. 10) *utus*
6. RTA with translucent dorsal flange relatively large (fig. 6); conductor relatively wide (fig. 5) *rufithoracicus*
RTA with translucent dorsal flange relatively small (fig. 2); conductor relatively narrow (fig. 1) *mateonus*
7. Epigynum with conspicuous anterior margin (figs. 3, 7, 15, 19, 23) 8
Epigynum without a conspicuous anterior margin, with angular posterolateral corners (fig. 11) *utus*
8. Anterior epigynal margin relatively narrow (figs. 15, 19) 9
Anterior epigynal margin relatively wide (figs. 3, 7, 23) 10
9. Anterior epigynal margin rounded (fig. 15) *eclecticus*
Anterior epigynal margin flattened (fig. 19) *voluntarius*
10. Venter of abdomen with a conspicuous patch of short stiff setae in front of spinnerets (figs. 25, 26); epigynum usually with lateral pair of projections (fig. 23) *floridanus*
Venter of abdomen without such a patch of setae; epigynum without lateral pair of projections (figs. 3, 7) 11
11. Median epigynal septum short, triangular; anterolateral epigynal corners pronounced (fig. 3) *mateonus*
Median epigynal septum long, columnar; anterolateral epigynal corners not pronounced (fig. 7) *rufithoracicus*

Nodocion mateonus Chamberlin

Figures 1–4; Map 1

Nodocion mateonus Chamberlin, 1922, p. 154 (female holotype from San Mateo, San Mateo County, California, in MCZ, examined). Roewer, 1954, p. 428. Bonnet, 1958, p. 3105. Ubick and Roth, 1973, p. 6.

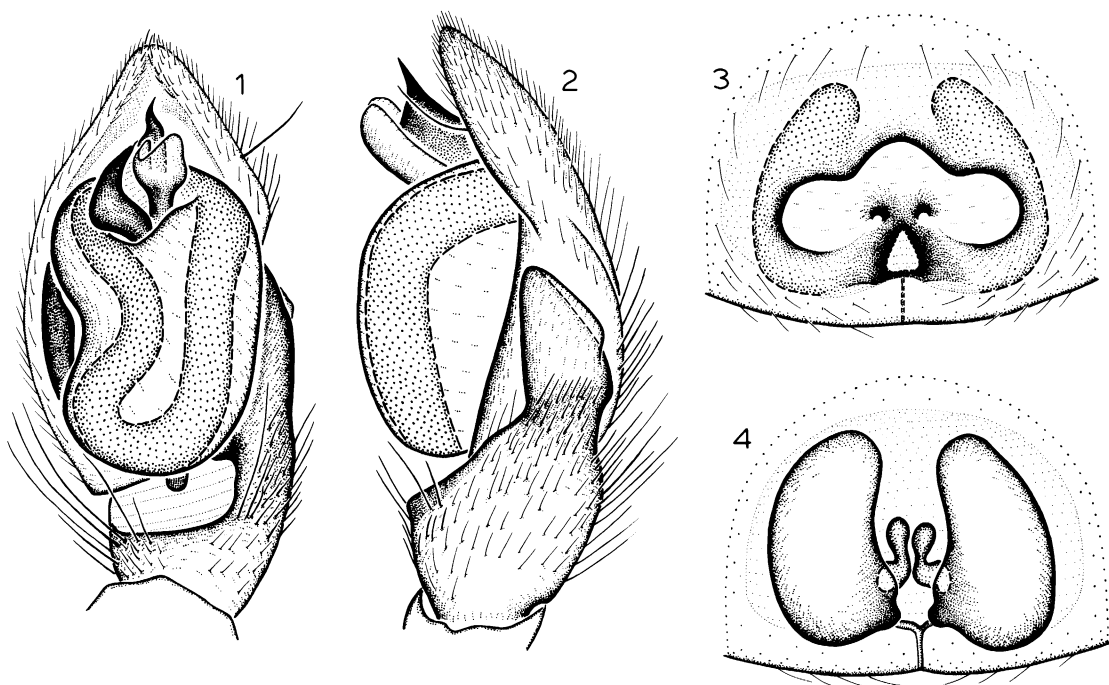


MAP 1. North America, showing distributions of *Nodocion mateonus* (circles) and *N. floridanus* (squares).

DIAGNOSIS: *Nodocion mateonus* is most closely related to *N. rufithoracicus*, as evidenced by their distally angled retrolateral tibial apophyses and broadly triangular epigynal atria; the two species may be distinguished by the characters listed in couplets 6 and 11 of the key.

MALE: Total length 4.57. Carapace 2.16 long, 1.57 wide. Femur II 1.53 long (one specimen). Eye sizes and interdistances: AME 0.09, ALE 0.09, PME 0.13, PLE 0.10; AME–AME 0.10, AME–ALE 0.04, PME–PME 0.06, PME–PLE 0.05, ALE–PLE 0.05. MOQ length 0.30, front width 0.29, back width 0.32. Palpal conductor relatively narrow (fig. 1). Retrolateral tibial apophysis with relatively small dorsal flange, directed anteroventrally (fig. 2). Leg spination: tibiae: II v0-1p-1p; III d1-0-0; metatarsi: I v1p-0-0; III r1-1-2.

FEMALE: Total length 7.27 ± 0.31 . Carapace 2.72 ± 0.24 long, 1.94 ± 0.19 wide. Femur II 1.68 ± 0.17 long. Eye sizes and interdistances: AME 0.11, ALE 0.10, PME 0.13, PLE 0.11; AME–AME 0.11, AME–ALE 0.04, PME–PME 0.07, PME–PLE 0.08, ALE–PLE 0.08. MOQ length 0.38, front width 0.33, back width 0.33. Epigynum with pronounced anterolateral corners and short, triangular median septum (figs. 3, 4). Leg spination: femur IV p0-0-0; tibiae: I v0-



FIGS. 1-4. *Nodocion mateonus* Chamberlin. 1. Palp, ventral view. 2. Palp, retrolateral view. 3. Epigynum, ventral view. 4. Epigynum, dorsal view.

0-0; III, IV v1p-2-2; metatarsi: II v1p-0-0; III p1-1-2.

MATERIAL EXAMINED: **United States:** *California:* Los Angeles Co.: Mt. Washington, Los Angeles, summer 1969, in swimming pool (G. Backer, Jr., CDFA), 1 ♀; San Pedro, July 23, 1931 (R. V. Chamberlin), 1 ♀. *Marin Co.:* ridge between San Anselmo and north San Rafael, Feb. 12, 1977 (L. G. Freihor, CAS), 1 ♀. *San Diego Co.:* Chula Vista, Apr. 6, 1968 (J. Y. Sandoval, BJK), 1 ♀; La Mesa, Apr. 14, 1965 (W. M. Pearce), 1 ♀. *San Mateo Co.:* San Mateo (R. V. Chamberlin, MCZ), 1 ♀ (holotype). *Shasta Co.:* Shasta, Aug. 25, 1931 (W. Ivie), 1 ♀. *Tulare Co.:* Cedar Grove, King's Canyon National Park, July 5, 1956 (W. J. Gertsch, V. Roth), 1 ♀. *Oregon:* Deschutes Co.: Redmond, May 4-19, 1939, emergence traps (J. Schuh, K. Gray), 1 ♂. Jackson Co.: Medford, July-Aug. 1949 (J. Thatcher), 1 ♀. Lake Co.: Albert Lake, July 2, 1961 (B. Malkin), 1 ♀.

Washington: Klictitat Co.: Spearfish, Aug. 3, 1954 (B. Malkin), 1 ♀.

DISTRIBUTION: Pacific coast (map 1).

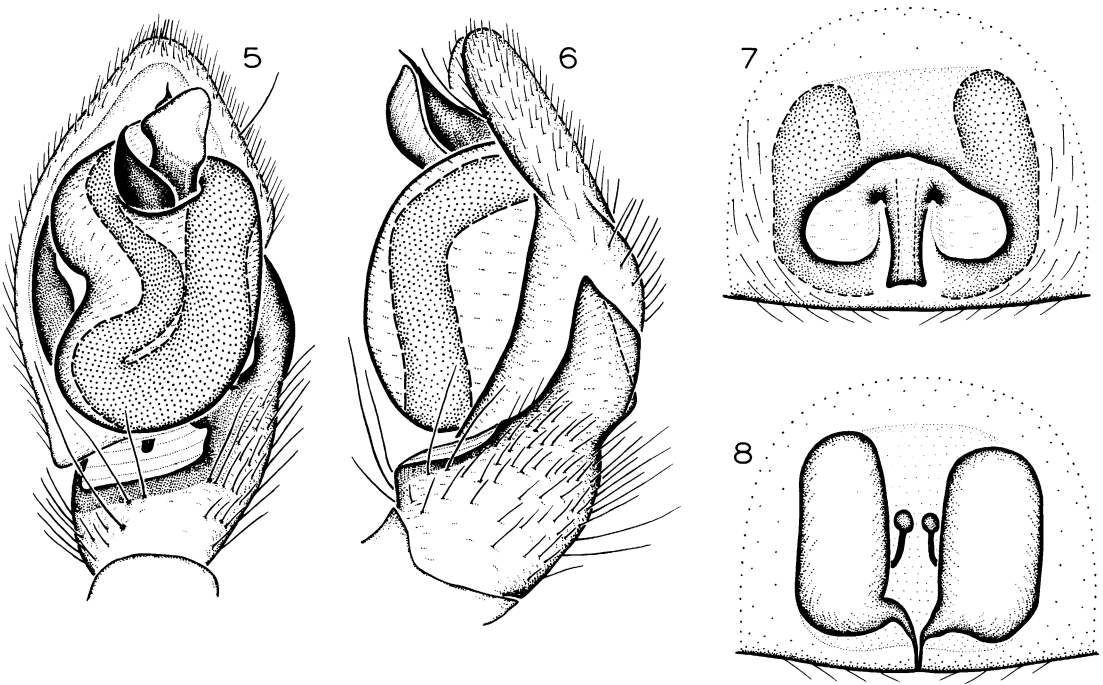
Nodocion rufithoracicus Worley
Figures 5-8; Map 2

Nodocion rufithoracica Worley, 1928, p. 620, fig. 3 (female holotype from Mitchell, Scotts Bluff County, Nebraska, in MCZ, examined). Roewer, 1954, p. 428 (*rufithorax*, *lapsus*).

Liodrassus petersoni Chamberlin and Gertsch, 1940, p. 7, fig. 8 (female holotype from Spearfish, Lawrence County, South Dakota, in AMNH, examined). Roewer, 1954, p. 424. First synonymized by Ubick and Roth, 1973, p. 6. *Nodocion rufithoracicus*: Bonnet, 1958, p. 3106. Ubick and Roth, 1973, p. 6.

DIAGNOSIS: *Nodocion rufithoracicus* is closest to *N. mateonus* but may be distinguished by the characters listed in couplets 6 and 11 of the key.

MALE: Total length 4.84 ± 0.56 . Cara-



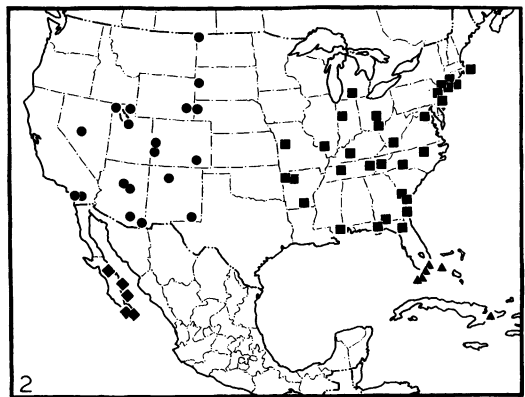
FIGS. 5-8. *Nodocion rufithoracicus* Worley. 5. Palp, ventral view. 6. Palp, retrolateral view. 7. Epigynum, ventral view. 8. Epigynum, dorsal view.

pace 2.24 ± 0.32 long, 1.63 ± 0.20 wide. Femur II 1.55 ± 0.19 long. Eye sizes and interdistances: AME 0.08, ALE 0.07, PME 0.12, PLE 0.09; AME-AME 0.09, AME-ALE 0.03, PME-PME 0.04, PME-PLE 0.03, ALE-PLE 0.06. MOQ length 0.25, front width 0.25, back width 0.28. Palpal conductor relatively wide (fig. 5). Retrolateral tibial apophysis with relatively large dorsal flange, directed anteroventrally (fig. 6). Leg spination: femora: III r0-0-1; IV p0-0-0; tibiae: III v1p-1p-2; IV p1-0-1; metatarsi: II v0-0-0; III p1-1-2, r1-1-2.

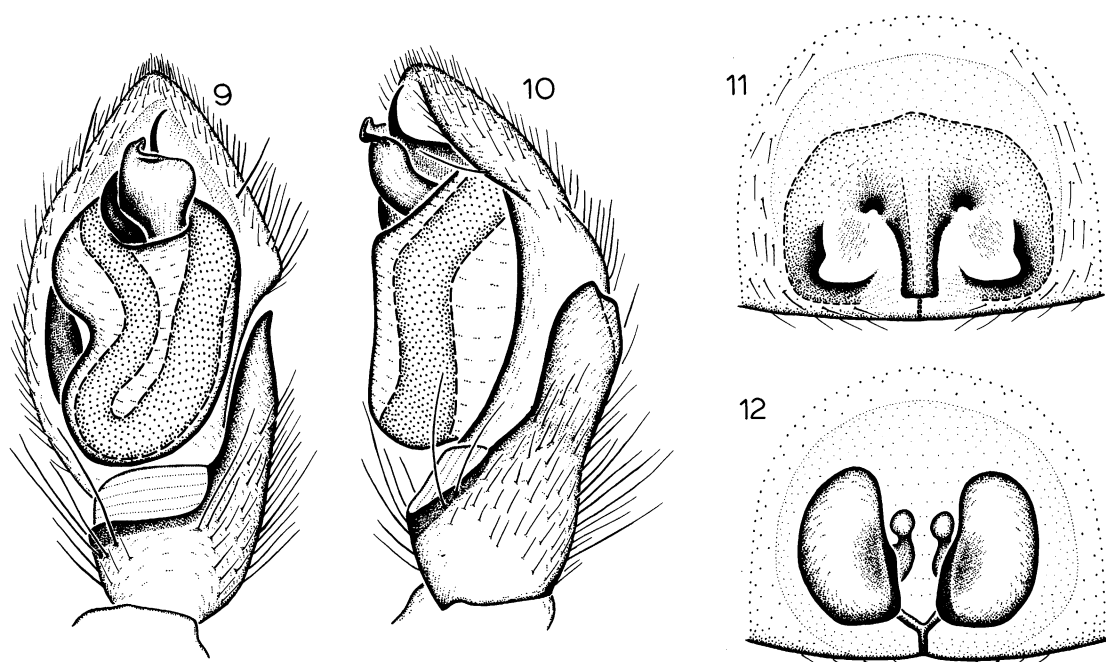
FEMALE: Total length 6.70 ± 1.42 . Carapace 2.64 ± 0.27 long, 1.86 ± 0.20 wide. Femur II 1.62 ± 0.17 long. Eye sizes and interdistances: AME 0.10, ALE 0.09, PME 0.13, PLE 0.08; AME-AME 0.10, AME-ALE 0.04, PME-PME 0.07, PME-PLE 0.07, ALE-PLE 0.08. MOQ length 0.30, front width 0.30, back width 0.33. Epigynum with sinuous posterolateral corners and long, columnar median septum (figs. 7, 8). Leg spi-

nation: femora: III r0-0-1; IV p0-0-0; tibiae: I v0-0-0; IV p1-0-1, v1p-2-2; metatarsi: II v1p-0-0; III r1-1-2.

MATERIAL EXAMINED: **United States:**



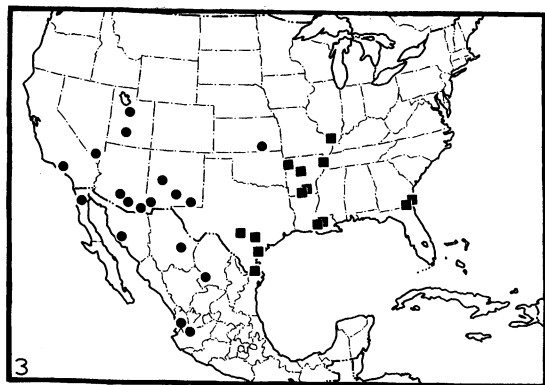
MAP 2. North America, showing distributions of *Nodocion rufithoracicus* (circles), *Litopyllus temporarius* (squares), *L. realisticus* (diamonds), and *L. cubanus* (triangles).



FIGS. 9-12. *Nodocion utus* (Chamberlin). 9. Palp, ventral view. 10. Palp, retrolateral view. 11. Epigynum, ventral view. 12. Epigynum, dorsal view.

Arizona: Cochise Co.: 3 mi. E Apache, Apr. 19, 1961, under ground trash (W. J. Gertsch), 1♀; Portal, Aug. 29, 1964 (W. J. Gertsch), 1♂. Coconino Co.: 10 mi. E Flagstaff, Aug. 18, 1965 (W. J. Gertsch), 1♀; Sitgreaves National Forest, May 14, 1969, elevation 7000

feet, on building (D. T. Jennings), 1♂. Pima Co.: Santa Catalina Mountains, Apr. 1937 (M. D. Porter, MCZ), 1♂. **California:** Orange Co.: Anaheim, July 1962 (F. W. Handsfield), 1♂. Riverside Co.: Whitewater Canyon, 10 mi. NE Whitewater, Apr. 30, 1972 (D. E. Bixler, DEB), 1♀. San Bernardino Co.: Cucamonga, Apr. 11, 1970 (D. Fleming, BJK), 1♂. **Colorado:** Mesa Co.: Fruita Reserve No. 2, May 22, 1963 (B. Vogel, C. J. McCoy, BRV), 1♂. Montrose Co.: Uncompaghere Plateau, 16 mi. SW Montrose, July 24-27, 1957 (F. and P. Rindge), 1♂. Otero Co.: Highway 109, July 5, 1966, 1♀. **Nebraska:** Scotts Bluff Co.: Mitchell, June 21, 1923 (L. G. Worley, MCZ), 1♀ (holotype); Scottsbluff, July 1, 1923, under dung (L. G. Worley, MCZ), 1♀. **Nevada:** Lander Co.: Kingston Camp, 30 mi. S Austin, July 16, 1966, elevation 7300 feet (F., P., and M. Rindge), 1♂. **New Mexico:** Eddy Co.: 6 mi. S Artesia, Apr. 26, 1969 (B. Vogel, BRV), 1♀. Los Alamos Co.: Los Alamos, May 13-16, 1977 (D. C. Lowrie), 1♂. **North Dakota:**



MAP 3. North America, showing distributions of *Nodocion utus* (circles) and *Synaphosus paludis* (squares).

Divide Co.: Fortuna, June 28, 1936 (J. Davis), 1♂, 1♀. *South Dakota*: Lawrence Co.: Spearfish, June 18, 1936 (Peterson), 1♀ (holotype). *Utah*: Box Elder Co.: Willard, May 18, 1935 (G. F. Knowlton, T. D. Thatcher), 1♀. Cache Co.: Green Canyon (Beedlow and Abraham), 2♂, 1♀. Salt Lake Co.: mouth of American Fork Canyon, May 12, 1934, sage brush (W. Ivie), 2♂; Mill Creek Canyon, 1910–1925 (R. V. Chamberlin), 1♀. *Wyoming*: Platte Co.: Wheatland, July 8, 1964 (R. E. Pfadt), 1♀.

DISTRIBUTION: Western United States (map 2).

Nodocion utus (Chamberlin)

Figures 9–12; Map 3

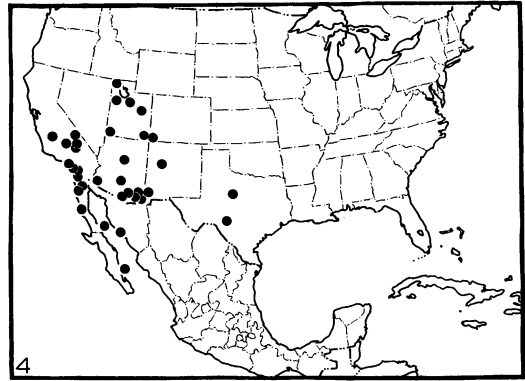
Liodrassus utus Chamberlin, 1936a, p. 7, fig. 10 (female holotype from Richfield, Sevier County, Utah, in AMNH, examined). Roewer, 1954, p. 424. Bonnet, 1957, p. 2545 (*utahensis*, unjustified emendation).

Nodocion utus: Ubick and Roth, 1973, p. 6.

DIAGNOSIS: *Nodocion utus* is most closely related to *N. mateonus* and *N. rufithoracicus*, as evidenced by their flattened, blade-shaped retrolateral tibial apophyses, but may be distinguished from them by the distally straight retrolateral tibial apophysis (fig. 10) and angular posterolateral epigynal corners (fig. 11).

MALE: Total length 4.10 ± 0.38 . Carapace 1.91 ± 0.23 long, 1.37 ± 0.13 wide. Femur II 1.28 ± 0.13 long. Eye sizes and interdistances: AME 0.11, ALE 0.10, PME 0.14, PLE 0.09; AME–AME 0.10, AME–ALE 0.03, PME–PME 0.05, PME–PLE 0.06, ALE–PLE 0.09. MOQ length 0.36, front width 0.32, back width 0.33. Palpal conductor relatively wide (fig. 9). Retrolateral tibial apophysis with relatively small dorsal flange, directed distally (fig. 10). Leg spination: tibiae: I, II v0-1p-1p; III v1p-2-2; metatarsus II v1p-0-0.

FEMALE: Total length 5.91 ± 0.85 . Carapace 2.36 ± 0.19 long, 1.63 ± 0.10 wide. Femur II 1.40 ± 0.11 long. Eye sizes and interdistances: AME 0.13, ALE 0.12, PME 0.15, PLE 0.10; AME–AME 0.11, AME–ALE 0.05, PME–PME 0.06, PME–PLE

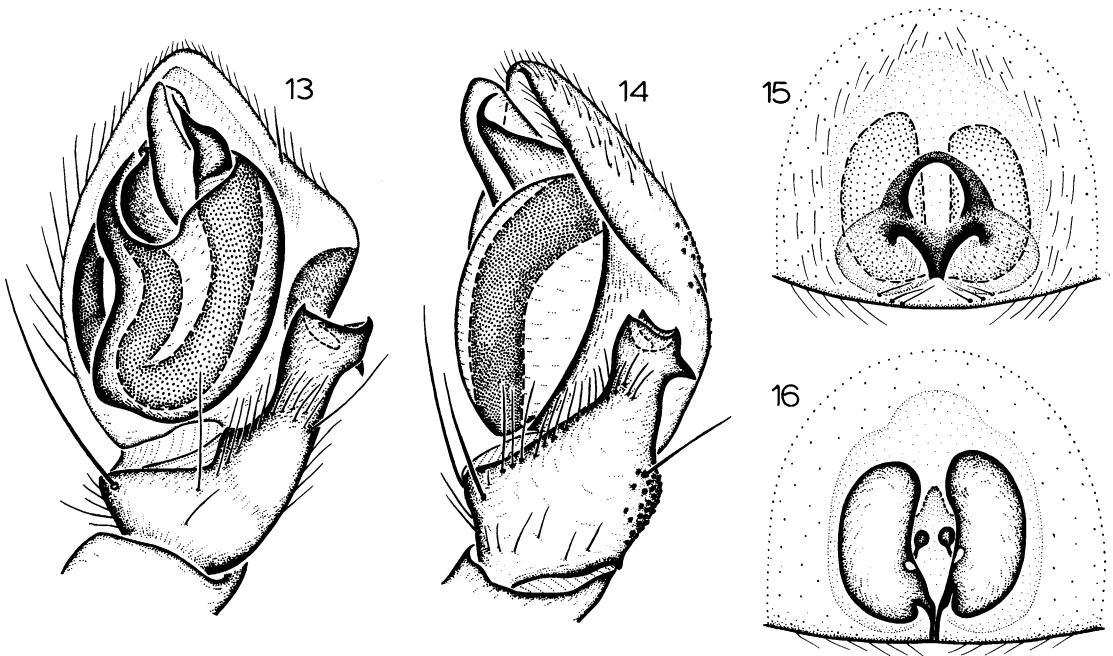


MAP 4. North America, showing distribution of *Nodocion eclecticus*.

0.09, ALE–PLE 0.07. MOQ length 0.40, front width 0.37, back width 0.36. Epigynum with reduced anterior margin and conspicuous, angular posterolateral corners (figs. 11, 12). Leg spination: tibia III v1p-2-2; metatarsi: II v1p-0-0; III r1-2-2.

MATERIAL EXAMINED: United States:

Arizona: Cochise Co.: Portal, July 9, 1970 (B. and C. Durden, BRV), 1♂; Sept. 2, 1964 (W. J. Gertsch), 1♀; July 1–Aug. 6, 1965–1967 (W. J. Gertsch), 17♂; 3 mi. E Portal, Sept. 8, 1971, pitfall trap (A. Jung, VDR), 1♂. Pima Co.: Tucson (O. Bryant), 1♂; July–Aug. 1935 (P. Steckler), 1♂. Pinal Co.: 30 mi. W Casa Grande, Mar. 27, 1940 (R. H. Crandall, MCZ), 1♀. *California*: Ventura Co.: Oxnard, June 23, 1952 (W. J. Gertsch), 2♂. *Kansas*: Cowley Co.: Winfield, 1♀. *Nevada*: Clark Co.: Las Vegas, Feb.–June 1945 (D. J. Zinn), 1♀. *New Mexico*: Eddy Co.: Whites City, July 8, 1954 (W. J. Gertsch), 1♂. Hidalgo Co.: Lordsburg, July 31–Aug. 31, 1972, yucca-ephedra (M. H. Muma, FSCA), 4♀. Otero Co.: Alamogordo, July 3–Aug. 1, 1972, pitfall trap in burrobrush and saltbush (M. H. Muma), 6♂, 3♀. Valencia Co.: Suwanee, Sept. 5, 1941 (W. Ivie), 1♀. *Utah*: Sevier Co.: Richfield, July–Aug. 1930 (W. J. Gertsch), 1♀ (holotype). Utah Co.: reservoir 3 mi. E Santaquin, June 6, 1934 (W. Ivie, H. Rasmussun), 2♂, 1♀; west side of Utah Lake, Sept. 2, 1941 (W. Ivie), 1♀. *Mexico*: *Baja California Norte*: Meling Ranch,



FIGS. 13–16. *Nodocion eclecticus* Chamberlin. 13. Palp, ventral view. 14. Palp, retrolateral view. 15. Epigynum, ventral view. 16. Epigynum, dorsal view.

San José, May 1–4, 1961 (W. J. Gertsch, V. Roth), 1♂. *Chihuahua*: Delicias, July 12, 1947, elevation 4150 feet (W. J. Gertsch), 1♂. *Coahuila*: San Pedro, Aug. 20, 1947 (W. J. Gertsch), 1♂. *Jalisco*: La Venta, July 28, 1964 (W. J. Gertsch, J. Woods), 1♀; near Tequila, Aug. 11, 1956 (W. J. Gertsch, V. Roth), 1♀. *Nayarit*: 35 mi. S Tepic, July 28, 1954 (W. J. Gertsch), 1♀. *Sonora*: 15 mi. S Hermosillo, May 19, 1963 (W. J. Gertsch, W. Ivie), 1♂.

DISTRIBUTION: Southwestern United States and northwestern Mexico (map 3).

Nodocion eclecticus Chamberlin

Figures 13–16, 31; Map 4

Nodocion eclecticus Chamberlin, 1924, p. 613, fig. 48 (male holotype from Guaymas, Sonora, Mexico, in CAS, examined). Roewer, 1954, p. 427 (*electicus*, *lapsus*). Bonnet, 1958, p. 3105. Ubick and Roth, 1973, p. 6 (*electicus*, *lapsus*). *Herpyllus atopophys* Chamberlin, in Chamberlin and Gertsch, 1928, p. 176 (male holotype from Valley City, San Juan County, Utah, in

AMNH, examined). Roewer, 1954, p. 422 (*atrophysis*, *lapsus*). Bonnet, 1957, p. 2171. Ubick and Roth, 1973, p. 4. **NEW SYNONYMY.**

Liodrassus arizonicus Chamberlin, 1936a, p. 4, figs. 4–6 (male holotype and female allotype from Scottsdale, Maricopa County, Arizona, in AMNH, examined). Roewer, 1954, p. 424. Bonnet, 1957, p. 2545. **NEW SYNONYMY.**

Liodrassus metalleus Chamberlin and Gertsch, 1940, p. 5, fig. 5 (female holotype from Ophir, Tooele County, Utah, in AMNH, examined). Roewer, 1954, p. 424. First synonymized with *arizonicus* by Ubick and Roth, 1973, p. 6.

Nodocion arizonicus: Ubick and Roth, 1973, p. 6.

Nodocion atopophys: Platnick and Shadab, 1977, p. 5.

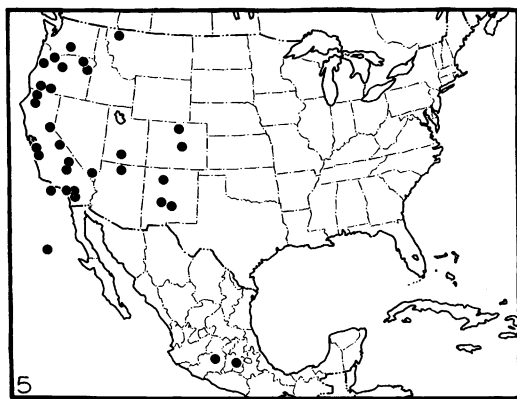
DIAGNOSIS: *Nodocion eclecticus* is most closely related to *N. voluntarius*, as evidenced by their sharply pointed dorsal folds of the retrolateral tibial apophysis and narrow anterior epigynal margins; the two species may be distinguished by the characters listed in couplets 3 and 9 of the key.

MALE: Total length 5.45 ± 0.56 . Carapace 2.54 ± 0.19 long, 1.74 ± 0.15 wide. Femur II 1.62 ± 0.13 long. Eye sizes and interdistances: AME 0.14, ALE 0.10, PME 0.13, PLE 0.13; AME-AME 0.10, AME-ALE 0.02, PME-PME 0.09, PME-PLE 0.08, ALE-PLE 0.08. MOQ length 0.38, front width 0.38, back width 0.35. Palpal femur with small enlargement (fig. 31). Conductor situated beside embolus (fig. 13). Retrolateral tibial apophysis with spur below tip (fig. 14). Leg spination: femur II p0-1-1; patella IV r0-1-0; tibiae: I v0-2-2; II v1r-2-2; III d1-0-0, v1p-2-2; metatarsi: I v2-0-0; III r1-2-2; IV r1-2-2.

FEMALE: Total length 8.45 ± 1.34 . Carapace 3.68 ± 0.44 long, 2.44 ± 0.29 wide. Femur II 2.13 ± 0.23 long. Eye sizes and interdistances: AME 0.13, ALE 0.12, PME 0.15, PLE 0.13; AME-AME 0.16, AME-ALE 0.06, PME-PME 0.16, PME-PLE 0.13, ALE-PLE 0.16. MOQ length 0.49, front width 0.41, back width 0.45. Epigynum with semicircular anterior margin (figs. 15, 16). Leg spination: femora I, II p0-1-1; tibiae: II v1p-1p-1p; III d1-0-0, r1-1-1; metatarsi: I v1p-0-0; III r1-1-2.

MATERIAL EXAMINED: **United States:** *Arizona:* Cochise Co.: Bowie, Oct.-Nov. 1972, 1♂; Cochise Stronghold, Dragoon Mountains, Aug. 29, 1951 (T. Cohn), 1♀; Little Sandwash, 1.6 mi. N junction of highways 181 and 186, Jan. 30, 1961 (M. Mortenson), 1♂; Painted Canyon Ranch, W Portal, July 4, 1954 (W. J. Gertsch), 1♀; Portal, May 24-Oct. 1, 1964-1973, some in house (W. J. Gertsch), 2♂, 7♀, July 13, 1967, cave entrance (V. Roth), 1♀, Aug. 5, 1972 (S. I. and S. L. Frommer, UCR), 1♀; near Portal (F. N. Young), 1♀, July 25, 1956, pack rat nest (F. N. Young), 1♀; 5 mi. W Portal, Sept. 4, 1963 (V. Roth), 1♀; Rock Creek Wash, 10.1 mi. S junction of highways 181 and 186, Jan. 30, 1961 (M. Mortenson), 1♂; Southwestern Research Station, Chiricahua Mountains, Mar. 27-Nov. 25, 1963-1974, elevation 5400 feet, some in house (V. Roth, AMNH, VDR), 2♂, 8♀, Oct.-Nov. 1955 (E. Ordway), 1♂, July 5, 1972 (J. A. Beatty, JAB), 1♂. Coconino Co.: San Francisco Peaks, July 6, 1935, elevation 10,000-12,000 feet,

near snow line (E. Sanders, MCZ), 1♀. Maricopa Co.: Mesa, July 16, 1940 (W. J. Gertsch, H. Stahnke), 1♀, Aug. 23, 1956 (V. Roth, MCZ), 1♀; Scottsdale, Dec. 30, 1902 (Britcher), 1♂, 1♀ (types). Pima Co.: Ajo Way, 5 mi. W Tucson, Jan. 20, 1960, in bird's nest (J. A. Beatty, JAB), 1♂; Rancho El Mirador, Baboquivari Mountains, Sept. 4, 1950 (W. J. Gertsch), 1♀; Tucson (O. Bryant), 1♀, Apr. 21, 1940 (R. H. Crandall), 1♂, Sept. 1940 (R. H. Crandall), 1♀. Yuma Co.: Yuma, June 25, 1971, in lab (V. Roth), 1♀. *California:* Fresno Co.: Coalinga, July 24, 1956 (R. O. Schuster), 1♀. Inyo Co.: Cartago, July 19, 1952 (M. Cazier, W. J. Gertsch, R. Schrammel), 1♂; 1-2 mi. W Lone Pine, Apr. 27, 1941 (W. M. Pearce), 1♀. Los Angeles Co.: 13 mi. N Castaic, July 8, 1964, on ground in chaparral, elevation 1000 m. (L. Pinter, MCZ), 1♀. Mono Co.: Chalfant, June 27, 1941 (W. M. Pearce), 1♀. Orange Co.: Anaheim, July 1962 (F. W. Handsfield), 1♂. Riverside Co.: Winchester, Nov. 14, 1968, pitfall (W. Icenogle, WRI), 1♀. San Diego Co.: La Cresta, July 4-11, 1947-1948 (W. M. Pearce), 2♀; San Diego, Aug. 1970, pitfall (B. J. Kaston, BJK), 1♀, June 1973, in house (B. J. Kaston, BJK), 1♂. Tulare Co.: Kaweah River, 5 mi. E Three Rivers, July 17, 1952, elevation 1258 feet (W. J. Gertsch), 1♀. *Colorado:* Montezuma Co.: Yucca House National Monument, June 15, 1936 (D. Henriques), 1♀. *New Mexico:* Bernalillo Co.: University of New Mexico Campus, Albuquerque (C. C. Hoff), 1♂. Hidalgo Co.: Lordsburg, Sept. 1, 1973, yucca-ephedra (M. H. Muma, FSCA), 1♀. *Texas:* Sutton Co.: no specific locality, Feb. 16, 1973, under rock pile, under bark (L. Pierce, T. C. Kaspar, NVH), 2♀. Taylor Co.: Abilene, summer 1944 (M. Willis), 1♀. *Utah:* Box Elder Co.: Promontory Point, June 1932 (R. V. Chamberlin), 1♀. Carbon Co.: Price, 1937 (R. Hardy), 1♂. San Juan Co.: Valley City, Apr. 19, 1928 (R. V. Chamberlin), 1♂ (holotype). Tooele Co.: Ophir, June 5, 1928 (G. Spendlove), 1♀ (holotype). Utah Co.: heron rookery, west side of Utah Lake, Mar. 3-Sept. 2, 1931-1941 (W. Ivie), 5♂, 7♀. Washington Co.: Zion National Park, July 4, 1931 (W. J. Gertsch), 1♂. *Mexico:* *Baja California*



MAP 5. North America, showing distribution of *Nodocion voluntarius*.

Norte: El Rosario, May 5, 1961, under reeds along lagoon (W. J. Gertsch, V. Roth), 1♂; Isla Raza, Mar. 15, 1971 (V. F. Lee, CAS), 1♀; 14 mi. N Laguna Hanson, May 30, 1960 (V. Roth), 1♂; Puerto Santo Tomás, June 14–15, 1956 (R. X. Schick), 1♀. **Baja California Sur:** navigation light, SW end of Isla Santa Catalina, May 21, 1970 (S. C. Williams, V. F. Lee, CAS), 1♀. **Sonora:** Guaymas, Apr. 14, 1921, under bark of mesquite (J. C. Chamberlin, CAS), 1♂ (holotype).

DISTRIBUTION: Southwestern United States and northwestern Mexico (map 4).

SYNONYMY: Chamberlin's redescrptions of this species were apparently due only to his placement of specimens in different genera, as no differences have been detected in the genitalia of the type specimens.

Nodocion voluntarius (Chamberlin)

Figures 17–20, 32; Map 5

Scotophaeus voluntarius Chamberlin, 1919, p. 5, pl. 2, fig. 3 (female holotype from Claremont, Los Angeles County, California, in MCZ, examined). Roewer, 1954, p. 437.

Herpyllus voluntarius: Chamberlin, 1922, p. 149. Bonnet, 1958, p. 2174.

Liodrassus florissantus Chamberlin, 1936a, p. 5, figs. 7–9 (male holotype from Florissant, Teller County, Colorado, in AMNH, examined). Roewer, 1954, p. 424. Bonnet, 1957, p. 2545 (*florissantinus*, unjustified emendation). **NEW SYNONYMY.**

Liodrassus carrvillus Chamberlin and Ivie, 1941,

p. 21, figs. 27–29 (male holotype from Carrville, Trinity County, California, in AMNH, examined). Roewer, 1954, p. 424. **NEW SYNONYMY.**

Nodocion voluntarius: Ubick and Roth, 1973, p. 6.

Nodocion florissantinus: Ubick and Roth, 1973, p. 6.

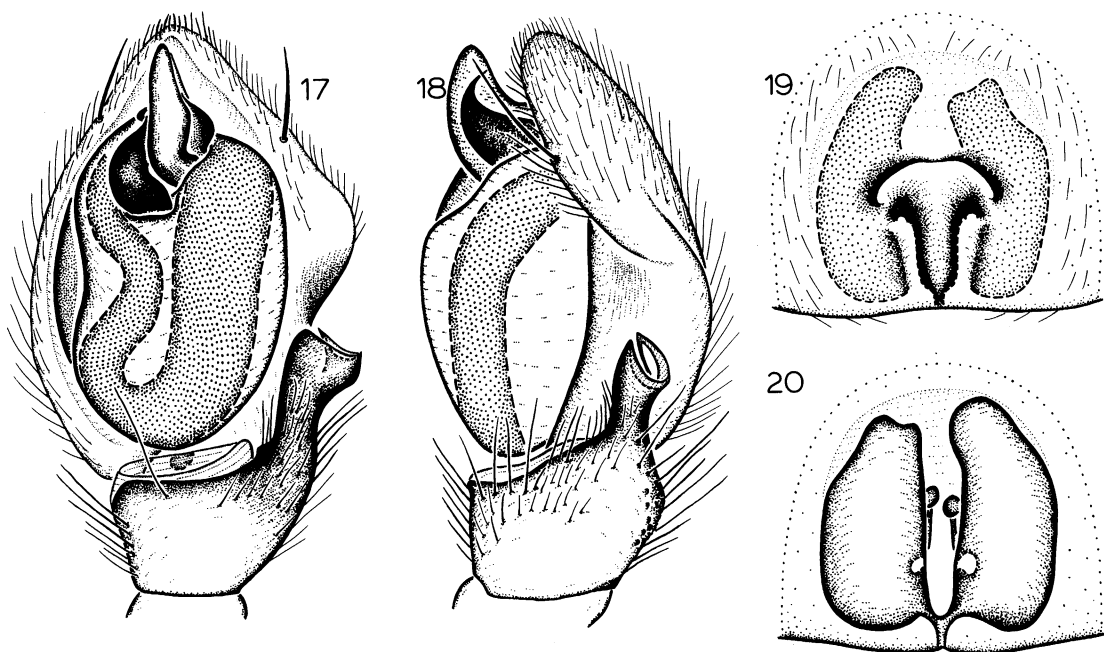
Nodocion carrvillus: Ubick and Roth, 1973, p. 6.

DIAGNOSIS: *Nodocion voluntarius* is closest to *N. eclecticus* but may be distinguished by the characters listed in couplets 3 and 9 of the key.

MALE: Total length 5.51 ± 0.48 . Carapace 2.60 ± 0.26 long, 1.80 ± 0.17 wide. Femur II 1.58 ± 0.18 long. Eye sizes and interdistances: AME 0.11, ALE 0.10, PME 0.12, PLE 0.12; AME–AME 0.11, AME–ALE 0.05, PME–PME 0.11, PME–PLE 0.08, ALE–PLE 0.09. MOQ length 0.38, front width 0.33, back width 0.35. Palpal femur with large enlargement (fig. 32). Embolus situated behind conductor (fig. 17). Retrolateral tibial apophysis without spur, with sharply pointed dorsal fold (fig. 18). Leg spination: femur II p0-1-1; patella III p0-0-0, r0-0-0; tibiae: I, II v0-0-2; III v1p-1p-2; IV p0-1-1, v1p-2-2; metatarsi: I v2-0-0; III p0-2-2; IV p0-2-2, r0-2-2.

FEMALE: Total length 6.87 ± 0.87 . Carapace 3.14 ± 0.39 long, 2.11 ± 0.29 wide. Femur II 1.70 ± 0.21 long. Eye sizes and interdistances: AME 0.11, ALE 0.10, PME 0.13, PLE 0.13; AME–AME 0.13, AME–ALE 0.05, PME–PME 0.13, PME–PLE 0.12, ALE–PLE 0.13. MOQ length 0.42, front width 0.35, back width 0.39. Epigynum with flattened but relatively narrow anterior margin (figs. 19, 20). Leg spination: femur IV p0-0-0; patella III p0-0-0; tibiae: I v0-0-0; III v1p-1p-2; IV p0-1-1, v1p-2-2; metatarsi: II v1p-0-0; III, IV p0-2-2, v2-1p-2.

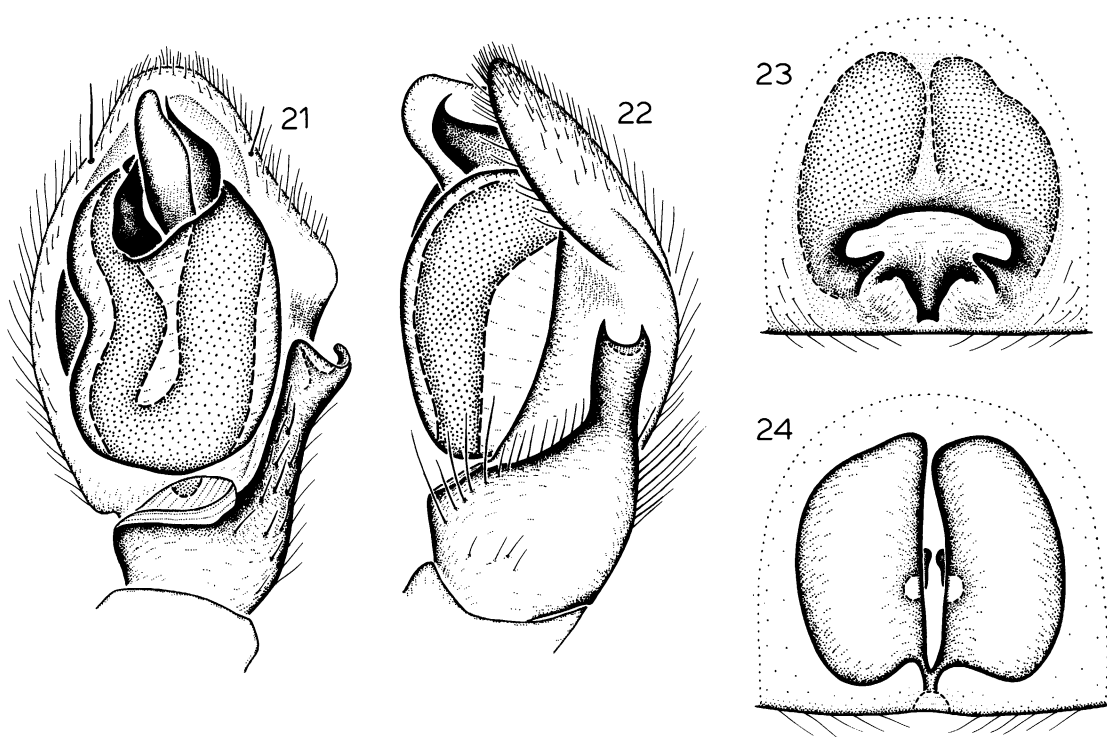
MATERIAL EXAMINED: United States: **Arizona:** Coconino Co.: 7 mi. E Jacob Lake, July 21–23, 1965, elevation 6800 feet (F., P., and M. Rindge), 1♀. **California:** Inyo Co.: Thompson Camp, Panamint Mountains, Apr. 16, 1974 (S. Micras, UCR), 1♀. Los Angeles Co.: Claremont (R. V. Chamberlin, MCZ), 1♀ (holotype); Dawson Saddle, San Gabriel Mountains, July 3, 1957, montane



FIGS. 17–20. *Nodocion voluntarius* (Chamberlin). 17. Palp, ventral view. 18. Palp, retrolateral view. 19. Epigynum, ventral view. 20. Epigynum, dorsal view.

forest (R. X. Schick), 1♀. Mono Co.: Montgomery Canyon, July 13, 1941 (W. M. Pearce), 1♀. Placer Co.: Silver Creek, Sept. 10, 1973, elevation 6200 feet, at light (E. I. Schlinger, UCB), 1♀; Tahoe City, July 8, 1956 (W. J. Gertsch, V. Roth), 1♀. Riverside Co.: Idyllwild, San Jacinto Mountains, June 17–18, 1952 (W. J. Gertsch), 2♂; 3 mi. N Idyllwild, July 1, 1956 (W. J. Gertsch, V. Roth), 1♀. San Benito Co.: Pinnacles National Monument, summer 1958 (Waver), 1♀, July 3, 1958 (W. J. Gertsch, V. Roth), 1♂. San Bernardino Co.: Mountain Home Creek, Aug. 13, 1959 (W. J. Gertsch, V. Roth), 1♀. Santa Clara Co.: Stanford (C. D. Duncan), 1♀. Siskiyou Co.: Bartle, July 21, 1941 (W. M. Pearce), 1♀; 18 mi. N Happy Camp, Aug. 22, 1959 (W. J. Gertsch, V. Roth), 1♀. Trinity Co.: Carrville, July 1934 (L. W. Saylor), 1♂ (holotype). Tulare Co.: Roads End, Kern River, Sequoia National Park, July 3, 1956 (W. J. Gertsch, V. Roth), 2♂. Ventura Co.: Anacapa, Channel Islands, July 18, 1968 (M. E. Thompson, MET), 1♀.

Colorado: Larimer Co.: Owl Canyon, Sept. 30, 1961 (B. Vogel, BRV), 1♀. Teller Co.: Florissant, July 2, 1908 (F. E. Lutz), 1♂ (holotype). *Montana*: Flathead Co.: Bigfork, Aug. 23–24, 1957, elevation 3000 feet, under stones and logs in field (H. and L. Levi, MCZ), 1♀. *Nevada*: Clark Co.: Lee Canyon, Charleston Mountains, July 21, 1952 (M. Cazier, W. J. Gertsch, R. Schrammel), 1♀. *New Mexico*: Lincoln Co.: Cedar Creek Camp, 2 mi. N Ruidosa, July 6, 1961, elevation 7000 feet (F., P., and J. Rindge), 1♀. Los Alamos Co.: Mortland Canyon, Los Alamos, June 28–July 1, 1976, pitfall (D. C. Lowrie), 1♂. Socorro Co.: Bear Trap Camp, 28 mi. SW Magdalena, July 24, 1964, elevation 8500 feet (F., P., and M. Rindge), 1♂. *Oregon*: Baker Co.: 8 mi. SW Unity, Aug. 2, 1968, elevation 4450 feet (R. E. Leech, REL), 1♀. Benton Co.: Corvallis, Sept. 1, 1947, on cement wall (V. Roth), 1♀. Jackson Co.: no specific locality, Aug.–Nov. 1934 (F. Lawrence), 1♂; Ashland, Aug. 1949 (J. C. Exline, EPC), 1♀. Jefferson Co.: Riverside



FIGS. 21–24. *Nodocion floridanus* (Banks). 21. Palp, ventral view. 22. Palp, retrolateral view. 23. Epigynum, ventral view. 24. Epigynum, dorsal view.

Forest Camp, head of Metolius River, June 5, 1969 (CNC), 1♀. Klamath Co.: Keno, Aug. 4, 1968, elevation 4240 feet, rotten logs (R. E. Leech, REL), 1♀. Multnomah Co.: Portland, June 15, 1955 (M. Pierson), 1♂. Umatilla Co.: Emigrant Springs State Park, May 19, 1938 (Hatch, EPC), 1♂. *Utah*: Garfield Co.: Red Canyon Camp, 11 mi. SE Panguitch, June 29, 1963, elevation 7100 feet (F., P., and M. Rindge), 1♂. *Washington*: Yakima Co.: 10 mi. E Rimrock, Sept. 13, 1965 (J. and W. Ivie), 1♀. *Mexico*: *Baja California Norte*: east base of Red Cinder Cone, Isla de Guadalupe, June 22, 1976 (V. F. Lee, CAS), 1♂, 1♀. *Distrito Federal*: Mexico City, Apr. 1941 (H. Wagner), 1♂; San Ángel, Sept. 10–17, 1943, 1♂. *Michoacán*: Morelia, Jan. 13, 1951, rotting pine log (C. F. Dowling, Jr.), 1♀.

DISTRIBUTION: Western United States south to central Mexico (map 5).

SYNONYMY: Simultaneous collection of both sexes indicates that *florissantus* is the male of *voluntarius*; Chamberlin and Ivie (1941) provided no characters by which to distinguish *carrvillus* from *florissantus*, and there appear to be none.

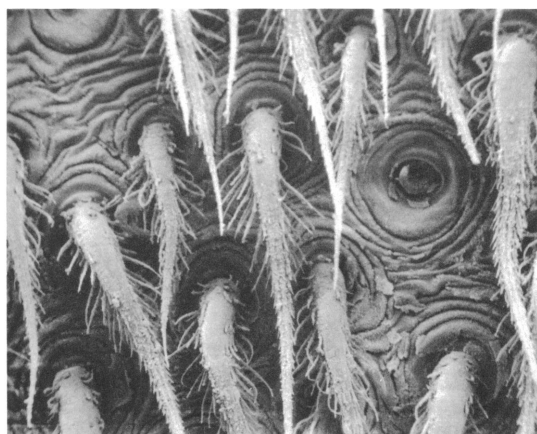
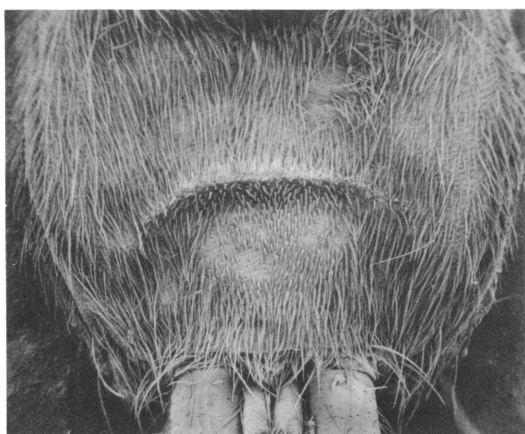
Nodocion floridanus (Banks)

Figures 21–26, 33; Map 1

Prothesima floridana Banks, 1896, p. 61 (female holotype from Punta Gorda, Charlotte County, Florida, in MCZ, examined).

Herpyllus floridanus: Banks, 1910, p. 8. Bryant, 1935, p. 74, pl. 5, fig. 3. Roewer, 1954, p. 422. Bonnet, 1957, p. 2173. Ubick and Roth, 1973, p. 5.

Liodrassus deceptus Gertsch and Mulaik, 1936, p. 12, figs. 22–24 (male holotype from 15 miles southwest of Harlingen, Cameron County, Texas, in AMNH, examined). Roewer, 1954, p. 424. Bonnet, 1957, p. 2545. **NEW SYNONYMY.**



FIGS. 25, 26. *Nodocion floridanus* (Banks), abdomen, ventral view, showing patch of short setae in front of spinnerets. 25. Left, 50 $\times$. 26. Right, 1000 $\times$.

Liodrassus floridicolens Chamberlin, 1936b, p. 3, fig. 16 (female holotype from Alachua County, Florida, in AMNH, examined). Roewer, 1954, p. 424. Bonnet, 1957, p. 2545. NEW SYNONYMY.

Nodocion melanie Levi, 1951, p. 23, figs. 20–22 (male holotype from near Hill's Lake, Wautoma, Waushara County, Wisconsin, in AMNH, examined). Roewer, 1954, p. 428. Ubick and Roth, 1973, p. 6. NEW SYNONYMY.

Nodocion deceptus: Ubick and Roth, 1973, p. 6.

Nodocion floridicolens: Ubick and Roth, 1973, p. 6.

Nodocion floridanus: Platnick and Shadab, 1977, p. 6.

DIAGNOSIS: *Nodocion floridanus* is most closely related to *N. eclecticus* and *N. voluntarius*, as evidenced by their folded retrolateral tibial apophyses and enlarged palpal femora, but may be distinguished from them by the conspicuous patch of short, stiff setae situated on the venter of the abdomen in front of the spinnerets (figs. 25, 26).

MALE: Total length 4.96 ± 0.62 . Carapace 2.31 ± 0.26 long, 1.61 ± 0.19 wide. Femur II 1.38 ± 0.19 long. Eye sizes and interdistances: AME 0.09, ALE 0.09, PME 0.10, PLE 0.10; AME–AME 0.09, AME–ALE 0.03, PME–PME 0.07, PME–PLE 0.06, ALE–PLE 0.06. MOQ length 0.32, front width 0.27, back width 0.28. Palpal femur with small enlargement (fig. 33). Em-

bolus situated behind long conductor (fig. 21). Retrolateral tibial apophysis without spur, with distally rounded dorsal fold (fig. 22). Leg spination: femur IV p0-0-0; patella III p0-0-0; tibiae: I, II v0-0-2; IV p1-0-1; metatarsi: I v2-0-0; III p0-1-2; IV p0-1-2, r0-2-2.

FEMALE: Total length 6.96 ± 1.50 . Carapace 2.84 ± 0.40 long, 1.92 ± 0.22 wide. Femur II 1.56 ± 0.23 long. Eye sizes and interdistances: AME 0.14, ALE 0.10, PME 0.13, PLE 0.12; AME–AME 0.09, AME–ALE 0.03, PME–PME 0.11, PME–PLE 0.08, ALE–PLE 0.10. MOQ length 0.43, front width 0.37, back width 0.36. Epigynum with wide anterior margin and pair of posterolateral projections (figs. 23, 24) which are rarely reduced to simple margins. Leg spination: femur II p0-1-1; patella III p0-0-0; tibiae: I, II v0-1p-1p; III v1p-2-2; IV p1-0-1, v1p-2-2; metatarsi: I v2-0-0; III p0-2-2; IV p0-2-2, r0-2-2.

MATERIAL EXAMINED: **United States:** *Arizona:* Cochise Co.: 1 mi. S Portal, May 26, 1967, cactus wren nest in mesquite (V. Roth, VDR), 2♀. *Arkansas:* Calhoun Co.: no specific locality, Apr. 21, 1965, on pine (Wingfield, EPC), 1♀. *Mississippi Co.:* no specific locality, June 16–23, 1966 (EPC), 1♂. *Connecticut:* Hartford Co.: New Britain, June 14, 1954, in house (B. J. Kaston),

1♂. *Florida*: Alachua Co.: no specific locality, Apr. 5, 1934 (H. K. Wallace), 1♀ (holotype); Lake Lochloosa, Feb. 1, 1964, under bark of dead tree (K. J. Stone, FSCA), 1♀. Charlotte Co.: Punta Gorda (MCZ), 1♀ (holotype). Citrus Co.: no specific locality, Apr. 11, 1953 (H. K. Wallace, HKW), 1♂. Pinellas Co.: Largo, Mar. 25, 1964, under bark (H. W. Levi, MCZ), 1♀. *Georgia*: Glynn Co.: Jekyll Island, May 25, 1974 (W. Sedgwick, WES), 1♂; St. Simon's Island, May 29, 1974 (W. Sedgwick, WES), 1♀. *Mississippi*: Bolivar Co.: Camp Shelley (A. F. Archer), 1♂, 1♀. *Missouri*: Wayne Co.: Williamsville, June 1970, malaise trap (J. T. Becker, REL), 1♂. *Texas*: Baylor Co.: Wichita River, 6 mi. N Mabelle, Apr. 30, 1969, tamarisk bower (B. Vogel, BRV), 2♂. Cameron Co.: 15 mi. SW Harlingen, Nov. 18, 1934 (S. Mulaik), 1♂ (holotype). Grayson Co.: 6 mi. N Denison, Oct. 20, 1963, 1♀. Hidalgo Co.: Bentsen-Rio Grande Valley State Park, near Mission, June 29, 1962 (J. A. Beatty, JAB), 1♀, June 16, 1963 (J. A. Beatty, JAB), 1♂; Edinburg, Oct.–May 2, 1934–1935 (S. Mulaik), 2♀; Monte Alto, Oct. 31, 1951 (W. S. Creighton), 1♂; Weslaco, 1♀. Jim Wells Co.: Alice, May 15–30, 1961 (R. O. Albert, MCZ), 1♀. Kenedy Co.: Sarita, Jan. 12, 1971, 1♀. Kerr Co.: Kerrville, Dec. 10, 1954 (K. W. Haller), 1♂. San Patricio Co.: Lake Corpus Christi State Park, June 28, 1962 (J. A. Beatty, JAB), 1♀; 8 mi. NE Sinton, Aug. 12, 1964 (J. and W. Ivie), 1♀. Travis Co.: Austin, Aug. 1909 (R. V. Chamberlin, MCZ), 1♀. Wichita Co.: Cross Tanks, Nov. 7, 1976, under bark (J. Cokendloper, NVH), 1♂; Lake Wichita, May 27, 1967, wasp nest (R. Carpenter, NVH), 1♂. *West Virginia*: Pocahontas Co.: Minnehaha Springs, July 1947 (K. W. Haller), 1♀. *Wisconsin*: Crawford Co.: Prairie du Chien, Aug. 1949 (L. Smethurst), 1♀. Washburn Co.: Spooner Station, Aug. 1, 1956, wasp nest (J. T. Medler, MCZ), 2♀. Waushara Co.: near Hill's Lake, Wautoma, June 1949 (R. Hunt), 1♂ (holotype).

DISTRIBUTION: Eastern United States west to southeastern Arizona (map 1).

VARIATION AND SYNONYMY: The descriptions of this species as *deceptus* and

melanie are due to the placement of specimens in different genera; however, Chamberlin (1936b) provided no characters by which to distinguish *floridicolens* from *deceptus*, and there appear to be none. We have no doubt about the synonymy of *deceptus*, *floridicolens*, and *melanie* with each other, but some females from Florida and Georgia (including the holotype of *floridanus*) differ from those found elsewhere in having the posterior edge of the posterolateral epigynal projections reduced, resulting in a simple posterior epigynal margin on each side (as figured by Bryant, 1935). Because these specimens have the unique patch of setae on the abdominal venter (figs. 25, 26), because the epigynal differences are scarcely more pronounced than normal individual variation within *Nodocion* species, and because no differences have been detected in the single male available from Florida, we regard these specimens as conspecific. If it should prove necessary to separate two species in the future, the names for the main and southeastern forms would be *deceptus* and *floridanus*, respectively.

LITOPYLLUS CHAMBERLIN

Litopyllus Chamberlin, 1922, p. 155 (type species by original designation *Litopyllus temporarius* Chamberlin). Roewer, 1954, p. 425. Bonnet, 1957, p. 2562.

Paramyrmecion Bryant, 1940, p. 394 (type species by original designation *Paramyrmecion cubanum* Bryant). Roewer, 1954, p. 428. NEW SYNONYMY.

DIAGNOSIS: *Litopyllus* may be most easily recognized by genitalic characters: the palp lacks a median apophysis and has only a short, curved embolus and small, unsclerotized distal conductor (fig. 27) and the spermathecae are bipartite (fig. 30). The only genus with which *Litopyllus* is likely to be confused is *Drassodes*, which differs in having deeply notched trochanters. Specimens of *Litopyllus* may be distinguished from *Poecilochroa* by the unicolorous abdomen, from *Cesonia* by the subequal spacing of the posterior eyes, from *Synaphosus* by the short embolus and simple spermathecae, from *No-*

*doci*on by the presence of a retromarginal cheliceral tooth, and from *Herpyllus* by the cheliceral promargin bearing a carina not divided into distinct teeth.

DESCRIPTION: Total length 2.0–8.3. Carapace oval in dorsal view, widest between coxae II and III, abruptly narrowed at front of coxae I, light brown, with numerous thin dark setae. Cephalic area not elevated; thoracic groove longitudinal. From front, both eye rows procurved; from above, anterior row recurved, posterior row procurved. AME circular, dark; other eyes oval, light. PME largest, other eyes subequal. AME separated by their diameter or less, by their radius or less from ALE; PME separated by their radius or less, by their radius or more from PLE; lateral eyes of each side separated by their diameter or less. MOQ roughly square. Clypeal height at least equal to AME diameter. Chelicerae with single retromarginal tooth and promarginal carina not divided into distinct teeth. Mouthparts and sternum light brown; endites sinuous, with deep oblique depression at middle and distal scopulae; labium broadly triangular; sternum rebordered, with extensions to and between coxae. Leg formula 4123. Typical leg spination pattern (only surfaces bearing spines listed): femora: I, II d1-1-1, p0-0-1; III d1-1-1, p0-1-1, r0-1-1; IV d1-1-1; p0-0-1, r0-0-1; patellae III, IV r0-1-0; tibiae: I v1p-1p-1p; II 0-1p-1p; III d1-0-0, p2-1-1, v1p-2-2, r0-1-1; IV p1-1-1, v1p-2-2, r1-1-1; metatarsi: I, II v1p-0-0; III p1-2-2, v2-0-1p, r1-1-2; IV p1-2-2, v2-2-1p, r1-2-2. Legs light brown, metatarsi darkest. Metatarsi I and II and all tarsi scopulate; tarsi with two dentate claws and claw tufts. Trochanters very slightly notched. Metatarsi and tarsi with dorsal trichobothria. Metatarsi III and IV with ventrodistal preening brush, most highly developed in females. Abdomen brownish gray dorsally with large orange anterior scutum in males; venter pale brown. Six spinnerets, medians slightly advanced anteriorly. Palp with short, curved embolus, small conductor, and no median apophysis (fig. 27). Retrolateral tibial apophysis variable in length. Epigynum with paired openings and posterior margins (fig. 29). Spermathecae bipartite (fig. 30).

MISPLACED SPECIES: *Litopyllus inconspicuus* Bryant (1940), described on the basis of a female from Cuba, does not fit the generic diagnosis given above and is here excluded from the genus. Correct placement of the species must await revisions of the West Indian gnaphosid fauna and (hopefully) discovery of the male.

SYNONYMY: The epigynum of *Paramyrmeleon cubanum* fits the diagnosis of *Litopyllus* given above, and its placement in this genus is confirmed by the palpal structure of the newly discovered male.

KEY TO SPECIES OF *LITOPYLLUS*

1. Males 2
Females 3
2. Retrolateral tibial apophysis relatively short (fig. 28) *temporarius*
Retrolateral tibial apophysis relatively long (fig. 37) *cubanus*
3. Posterior lobes of spermathecae much larger than anterior lobes (fig. 39) *cubanus*
Posterior lobes of spermathecae smaller than anterior lobes (figs. 30, 35) 4
4. Anterior lobes of spermathecae much larger than posterior lobes (fig. 30) .. *temporarius*
Anterior lobes of spermathecae not much larger than posterior lobes (fig. 35) .. *realisticus*

Litopyllus temporarius Chamberlin

Figures 27–30; Map 2

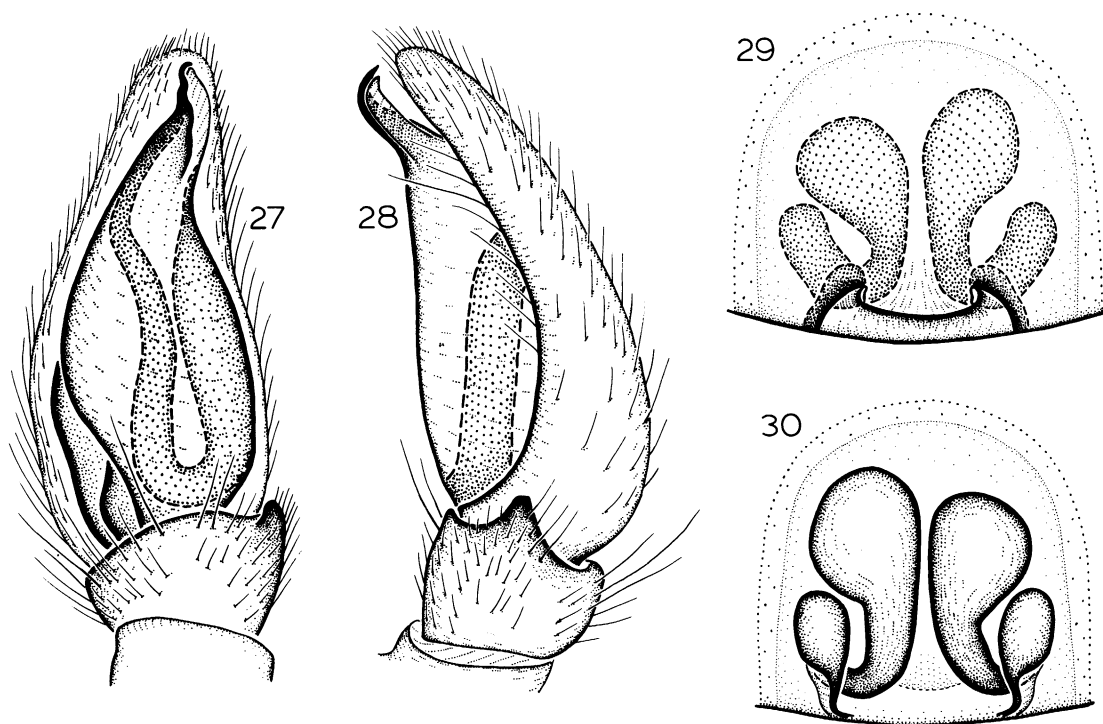
Prothesima lutea Barrows, 1919, p. 356, figs. 5a, 5b (male holotype from Sugar Grove, Fairfield County, Ohio, in OSU, examined). Preoccupied by *Prothesima lutea* F. O. P.-Cambridge 1899.

Litopyllus temporarius Chamberlin, 1922, p. 155 (male holotype from near Mammoth Cave, Edmonson County, Kentucky, in MCZ, examined). Roewer, 1954, p. 425. Bonnet, 1957, p. 2562. Ubick and Roth, 1973, p. 5.

Litopyllus rupicolens Chamberlin, 1922, p. 155 (two male syntypes from Sea Cliff, Long Island, Nassau County, New York, in MCZ, examined). Roewer, 1954, p. 425. Bonnet, 1957, p. 2562. First synonymized with *temporarius* by Ubick and Roth, 1973, p. 5.

Litopyllus luteus: Chamberlin, 1922, p. 155. Bonnet, 1957, p. 2562.

Litopyllus ambiguus Fox, 1938, p. 235, pl. 1, fig. 4 (male holotype supposedly from New Mexi-



FIGS. 27-30. *Litopyllus temporarius* Chamberlin. 27. Palp, ventral view. 28. Palp, retrolateral view. 29. Epigynum, ventral view. 30. Epigynum, dorsal view.

co, no specific locality, probably mislabeled, in USNM, examined). Roewer, 1954, p. 425. Bonnet, 1957, p. 2562. Ubick and Roth, 1973, p. 5. **NEW SYNONYMY.**

Litopyllus liber Chamberlin and Gertsch, 1940, p. 2, figs. 11, 12 (male holotype from Liberty County, Florida, in AMNH, examined). Roewer, 1954, p. 425. Ubick and Roth, 1973, p. 5. **NEW SYNONYMY.**

Litopyllus barrowsi Roewer, 1951, p. 443 (*nomen novum* for *Prothesima lutea* Barrows).

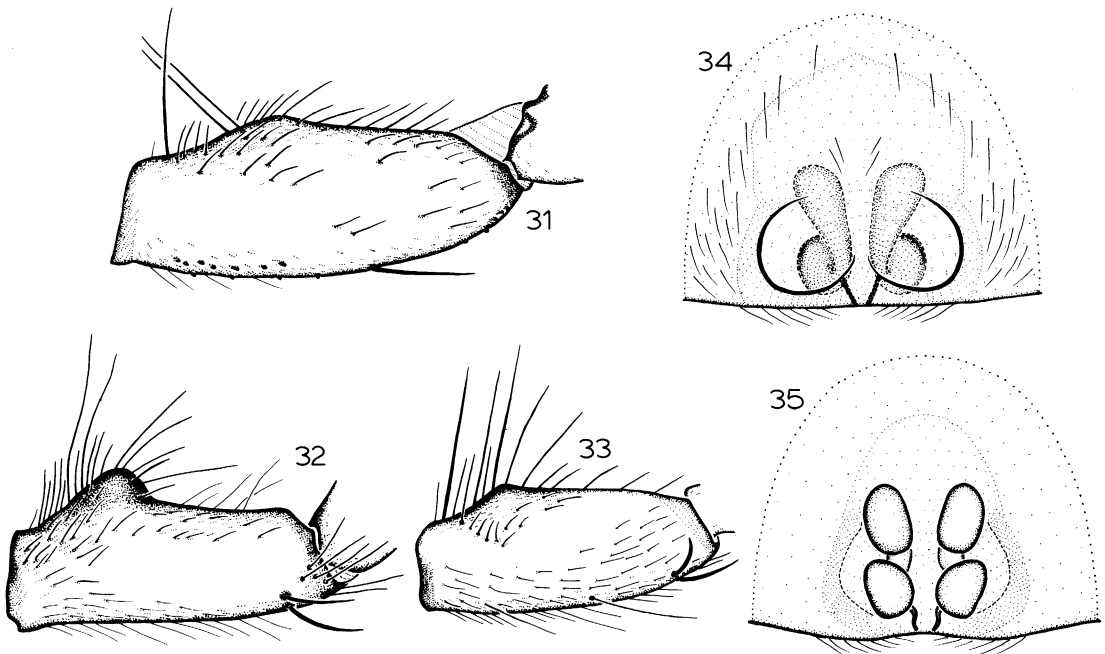
DIAGNOSIS: Males of *L. temporarius* may be recognized by their short retrolateral tibial apophysis (fig. 28), females by their large anterior spermathecal lobes (fig. 30).

MALE: Total length 4.63 ± 0.60 . Carapace 2.33 ± 0.29 long, 1.71 ± 0.22 wide. Femur II 1.56 ± 0.20 long. Eye sizes and interdistances: AME 0.12, ALE 0.11, PME 0.13, PLE 0.11; AME-AME 0.06, AME-ALE 0.02, PME-PME 0.03, PME-PLE 0.06, ALE-PLE 0.03. MOQ length 0.26,

front width 0.30, back width 0.29. Embolus directed retrolaterally (fig. 27). Retrolateral tibial apophysis short (fig. 28). Leg spination: tibiae: III p2-2-1; IV d1-0-0.

FEMALE: Total length 6.05 ± 1.05 . Carapace 2.62 ± 0.19 long, 1.89 ± 0.14 wide. Femur II 1.63 ± 0.11 long. Eye sizes and interdistances: AME 0.11, ALE 0.12, PME 0.13, PLE 0.12; AME-AME 0.10, AME-ALE 0.03, PME-PME 0.06, PME-PLE 0.10, ALE-PLE 0.05. MOQ length 0.38, front width 0.32, back width 0.32. Epigynum with short posterior lobe (fig. 29); spermathecae with large anterior lobes (fig. 30). Leg spination: femur IV p0-1-1; tibia II p0-0-0; metatarsus I v0-0-0.

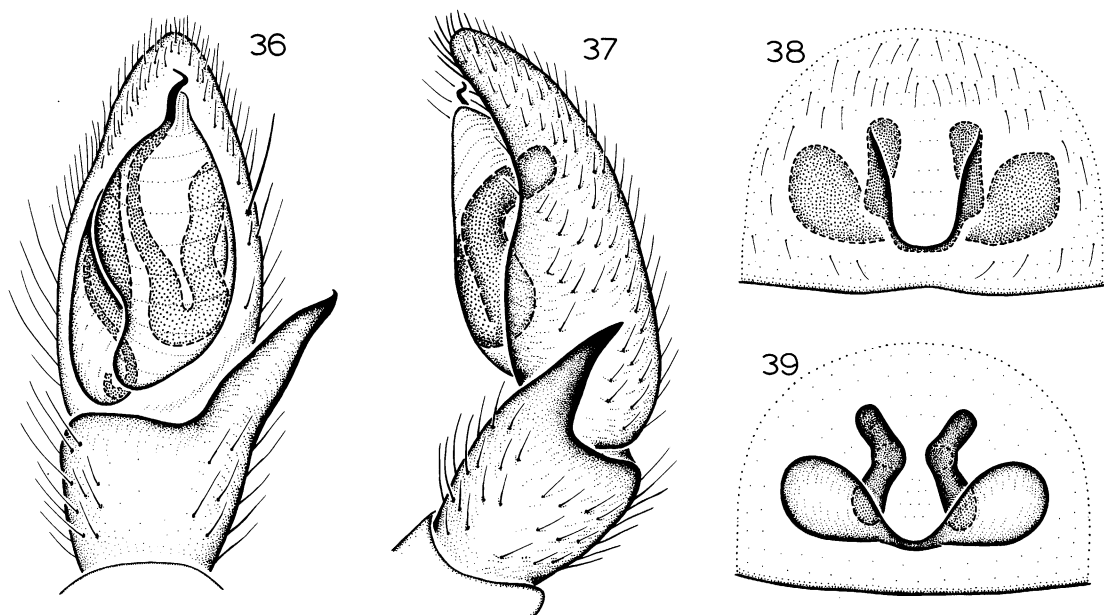
MATERIAL EXAMINED: **United States:** **Arkansas:** Bradley Co.: no specific locality, July 31, 1963 (Leslie, EPC), 1 ♀. Newton Co.: 4 mi. S Mt. Judea, June 1-Aug. 8, 1974, pitfall (J. S. Heiss, JSH), 1 ♂, 2 ♀. Washington Co.: Cove Creek, July 27, 1962, pitfall in



FIGS. 31-35. 31-33. Palpal femur, lateral view. 31. *Nodocion eclecticus* Chamberlin. 32. *N. volutarius* (Chamberlin). 33. *N. floridanus* (Banks). 34, 35. *Litopyllus realisticus* (Chamberlin), epigynum. 34. Ventral view. 35. Dorsal view.

leaf litter (O. and M. Hite, EPC), 2♀; Fayetteville, June 1, 1961, at light (W. Whitcomb, EPC), 1♂. *Connecticut*: Fairfield Co.: Norwalk, May 23-30, 1933 (W. J. Gertsch), 1♀. New Haven Co.: Kettletown State Park, June 14, 1964 (J. and W. Ivie), 1♂, 1♀. *Florida*: Alachua Co.: Gainesville, May 5, 1952 (B. Theuer, HKW), 1♀. Liberty Co.: no specific locality, Apr. 17, 1936 (H. K. Wallace), 1♂ (holotype). *Georgia*: Chatham Co.: 3 mi. SE Savannah, May 3, 1943 (W. Ivie), 1♀. Glynn Co.: St. Simon's Island, May 27, 1974 (W. Sedgwick, WES), 1♀. Screven Co.: 4 mi. NE Sylvania, Apr. 9, 1943 (W. Ivie), 1♀. Thomas Co.: Millpond Plantation, Thomasville, Aug. 4, 1968 (W. Sedgwick), 1♀. *Illinois*: Jackson Co.: Carbondale, Aug. 29, 1967 (J. M. Nelson, JAB), 1♀. *Indiana*: Tippecanoe Co.: Lafayette, 1958-1959, oak-hickory climax forest (E. Gasdorf), 1♀. *Kentucky*: Edmonson Co.: near Mammoth Cave, May 1874 (Sanborn, MCZ), 1♂ (holotype). *Maryland*: Prince Georges Co.: College

Park, Mar. 9-30, 1942-1943, sifting moist leaves (M. H. Muma, AMNH, FSCA), 3♀. *Massachusetts*: Barnstable Co.: Woods Hole, 1910, 1♀. *Michigan*: Calhoun Co.: Ott Biological Preserve, Oct. 1947 (A. M. Chickering, MCZ), 2♀. *Mississippi*: Jackson Co.: Gulf Hills, Ocean Springs, June 1-July 12, 1961, in or near cottage (N. Causey, MCZ), 2♂, 1♀. *Missouri*: Johnson Co.: Knob Noster State Park, Apr. 30, 1964, under stone (W. Peck, EPC), 1♂; Warrensburg, May 6-Aug. 11, 1961-1964, in house or on wooded terrace (W. Peck, EPC), 4♂, 3♀. *New Jersey*: Burlington Co.: Bass River State Forest, May 10, 1964 (J. and W. Ivie), 1♀. Hunterdon Co.: Lambertville, Aug. 1953 (W. Ivie), 1♂, 2♀. *New York*: Nassau Co.: Sea Cliff, Long Island (N. Banks, MCZ), 2♀ (syntypes). Rockland Co.: Lake Sebago, near Sloatsburg, Oct. 8, 1933 (W. J. Gertsch), 1♀; Torne Mountain, Suffern, May 27, 1939 (W. J. Gertsch), 2♀. *Suffolk Co.*: Sound Beach, Long Island, June 16,



FIGS. 36–39. *Litopyllus cubanus* (Bryant). 36. Palp, ventral view. 37. Palp, retrolateral view. 38. Epigynum, ventral view. 39. Epigynum, dorsal view.

1919 (Leonard and Crosby), 1♂. *North Carolina*: Durham Co.: Duke Forest, Durham, May 14, 1935 (A. M. Chickering, MCZ), 1♀; May 21, 1964, oak forest litter (J. W. Berry, JAB), 1♀; NE of Highway 751 at Mud Creek, June 4, 1964, pitfall, bottomland pines (J. W. Berry, JAB), 1♂. *Mencklenburg Co.*: Davidson, May 16–22, 1954 (E. E. Barnes), 1♂. *Ohio*: Fairfield Co.: Sugar Grove, Aug. 1915 (OSU), 1♂ (holotype). *Jackson Co.*: no specific locality, Sept. 1, 1935 (OSU), 1♀. *Tennessee*: Benton Co.: no specific locality, July 15, 1952 (T. J. Walker, Jr.), 1♀. *Roane Co.*: Harriman, July 11, 1933 (W. Ivie), 1♀; Kingston, July 12, 1933 (W. J. Gertsch), 1♀. *Sevier Co.*: trail to Laurel Falls, Great Smoky Mountain National Park, Sept. 19, 1937 (OSU), 1♀. *Virginia*: Fairfax Co.: Great Falls, June (MCZ), 1♀. *West Virginia*: Mercer Co.: 2 mi. S Athens, July 1, 1967 (W. A. Shear, WAS), 1♀; Brush Creek Falls, 3 mi. N Athens, June 13, 1971, Berlese sample of litter at cliff base (W. A. Shear, MCZ), 1♀.

DISTRIBUTION: Eastern United States

(map 2). The holotype of *ambiguus*, purportedly from New Mexico, is from the notoriously mislabeled Marx collection and is probably from the southeast.

SYNONYMY: Fox (1938) provided no characters by which to distinguish *ambiguus* from *temporarius*, and there appear to be none. We have been unable to corroborate Chamberlin and Gertsch's (1940, p. 4) statement that the holotype of *liber* "is distinct in the embolus which is longer and more strongly curved."

Litopyllus realisticus (Chamberlin),
new combination
Figures 34, 35; Map 2

Nodocion realisticus Chamberlin, 1924, p. 613, fig. 49 (female holotype from Mulejé, Baja California Sur, Mexico, in CAS, examined). Roewer, 1954, p. 428. Bonnet, 1958, p. 3106. Ubick and Roth, 1973, suppl. 4, p. 2.

DIAGNOSIS: Females of *L. realisticus* may be recognized by the large, semicircular posterior epigynal margins (fig. 34).

MALE: Unknown.

FEMALE: Total length 5.83–7.67. Carapace 2.63–2.99 long, 1.87–2.08 wide. Femur II 1.48–1.66 long (five specimens). Eye sizes and interdistances: AME 0.11, ALE 0.11, PME 0.13, PLE 0.11; AME–AME 0.12, AME–ALE 0.07, PME–PME 0.07, PME–PLE 0.21, ALE–PLE 0.11. MOQ length 0.44, front width 0.34, back width 0.32. Epigynum with large, rounded posterior margins (fig. 34). Spermathecal lobes subequal in size (fig. 35). Leg spination: patella III p0-1-0; tibiae: I v0-1p-1p; IV r0-1-1; metatarsi: III v2-0-2; IV v2-2-2.

MATERIAL EXAMINED: **Mexico:** *Baja California Sur*: 3 mi. S Colonia Calles, Feb. 5, 1966 (V. Roth), 1♀; Puerto Ballandra, Isla Carmen, Mar. 28, 1953 (B. Firstman), 1♀; Isla San José, June 10, 1921 (J. C. Chamberlin, MCZ), 1♀; Mulejé, May 14, 1921 (J. C. Chamberlin, CAS), 1♀ (holotype); 17 mi. N San José del Cabo, Feb. 9, 1966 (V. Roth), 1♀.

DISTRIBUTION: Known only from Baja California Sur, Mexico, and nearby islands of the Gulf of California (map 2).

Litopyllus cubanus (Bryant),
new combination

Figures 36–39; Map 2

Paramyrmecion cubanum Bryant, 1940, p. 395, figs. 173, 175 (female holotype from Soledad, Oriente, Cuba, in MCZ, examined). Roewer, 1954, p. 428.

DIAGNOSIS: Males of *L. cubanus* may be recognized by their long retrolateral tibial apophysis (fig. 37), females by their small anterior spermathecal lobes (fig. 39).

MALE: Total length 2.02–2.84. Carapace 1.08–1.24 long, 0.83–0.96 wide. Femur II 0.58–0.81 long (five specimens). Eye sizes and interdistances: AME 0.05, ALE 0.05, PME 0.09, PLE 0.06; AME–AME 0.06, AME–ALE 0.01, PME–PME 0.03, PME–PLE 0.03, ALE–PLE 0.04. MOQ length 0.20, front width 0.16, back width 0.21. Embolus directed prolaterally (fig. 36). Retrolateral tibial apophysis relatively long (fig. 37). Leg spination: femora: I, II d1-1-0; IV p0-0-0; patella IV r0-0-0; tibiae: I v0-0-2; II, III

v1p-1p-2; IV p1-0-1, r0-1-1; metatarsi: I, II v2-0-0; III p0-2-2, v1p-0-0, r0-1-2; IV v1p-2-1p, r0-2-2.

FEMALE: Total length 3.64–4.79. Carapace 1.48–1.78 long, 1.06–1.29 wide. Femur II 0.83–0.97 long (four specimens). Eye sizes and interdistances: AME 0.07, ALE 0.06, PME 0.07, PLE 0.07; AME–AME 0.07, AME–ALE 0.02, PME–PME 0.06, PME–PLE 0.05, ALE–PLE 0.04. MOQ length 0.24, front width 0.21, back width 0.21. Epigynum with distinct paramedian margins (fig. 38), spermathecae with small anterior lobes (fig. 39). Leg spination: femora I, II d1-1-0; patella IV r0-0-0; tibiae: I, II v0-0-1p; IV p1-0-1, r1-0-1; metatarsi: III p0-2-2, v2-0-2, r0-1-2; IV r0-2-2.

MATERIAL EXAMINED: **Bahama Islands:** South Bimini, June 1951 (M. A. Cazier, C. and P. Vaurie), 1♂. **Cuba:** *Oriente:* Soledad, Aug. 12, 1931 (N. Banks, MCZ), 1♀ (holotype). **United States:** *Florida:* Dade Co.: Perrine, Nov. 25, 1952 (A. M. Nadler), 1♂. Monroe Co.: east end, Big Pine Key, Dec. 13, 1962 (W. Ivie), 1♀; Flamingo Prairie, Everglades National Park, Nov. 26–Dec. 1, 1961 (A. M. Nadler), 1♀; 2 mi. SE Marathon, Dec. 15, 1962 (W. Ivie), 3♂, 1♀.

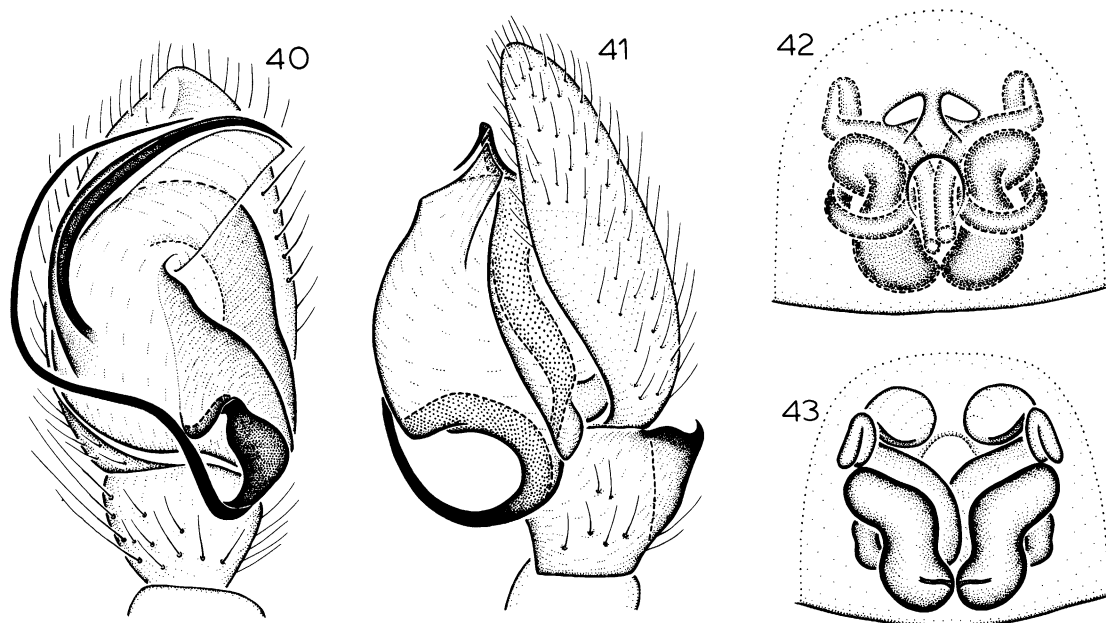
DISTRIBUTION: Southern Florida, Bimini, and Cuba (map 2).

SYNAPHOSUS, NEW GENUS

TYPE SPECIES: *Nodocion syntheticus* Chamberlin (1924).

ETYMOLOGY: The generic name is an arbitrary combination of letters considered masculine in gender.

DIAGNOSIS: *Synaphosus* may be recognized most easily by genitalic characters: the embolus is long and distally supported (in the resting position) by a folded median apophysis (figs. 40, 46) and the spermathecae are elaborately twisted (figs. 43, 48). Specimens may be distinguished from the other North American gnaphosid genera as follows: from *Gnaphosa*, *Callilepis*, and *Eilica* by lacking a retromarginal cheliceral keel or lamina, from *Haplodrassus*, *Orodorassus*, *Rachodorassus*, *Herpyllus*, *Cesonia*, *Nodocion*, *Litopyllus*, and *Poecilochroa* by the long em-



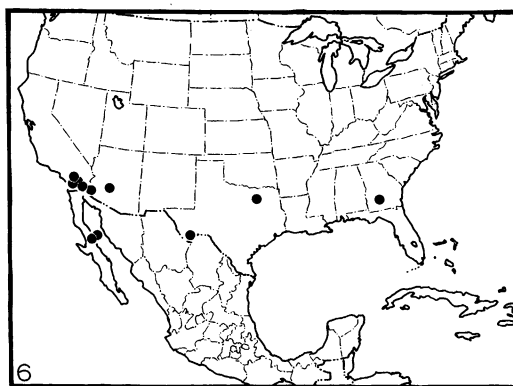
FIGS. 40–43. *Synphosus syntheticus* (Chamberlin). 40. Palp, ventral view. 41. Palp, retrolateral view. 42. Epigynum, ventral view. 43. Epigynum, dorsal view.

bolus and twisted spermathecae, from *Drassodes* by the unnotched trochanters, from *Tivodrassus* by the anterior eyes being subequal in size, from *Sosticus* by the folded median apophysis and lack of an epigynal scape, from *Scopodes* and *Neozimiris* by having the posterior eye row straight or only slightly procurved, from *Scotophaeus* by the folded median apophysis and lack of lateral epigynal margins, and from *Drassyllus* and *Zelotes* by the presence of a metatarsal preening brush (but not a preening comb).

DESCRIPTION: Total length 1.8–6.5. Carapace oval in dorsal view, truncated anteriorly and posteriorly, widest behind coxae II, pale brown, with long dark recumbent setae. Cephalic area not elevated; thoracic groove longitudinal (reduced in *S. syntheticus*). From front, both eye rows slightly procurved; from above, anterior row recurved, posterior row straight or slightly procurved. AME circular, dark; other eyes oval, light. PME largest, AME smallest, lateral eyes subequal. AME separated by roughly their

diameter, almost touching ALE; PME separated by their radius or less, by their radius or less from PLE; lateral eyes of each side separated by roughly their radius. MOQ roughly square. Clypeal height equal to or slightly greater than AME diameter. Chelicerae with two or three tiny promarginal teeth and one or no retromarginal denticles. Mouthparts and sternum pale yellow-brown; endites convergent, obliquely depressed, with weak distal scopulae; labium elongate, truncated distally; sternum broad anteriorly, with stiff setae at margins, rebordered, with extensions to and between coxae. Leg formula 4123. Typical leg spination pattern (only surfaces bearing spines listed): femora: I, II d1-1-0, p0-0-1; III d1-1-1, p0-1-1, r0-1-1; IV d1-1-1, p0-1-1, r0-0-1; patella III r0-1-0; tibiae: II v1r-1r-2; III d1-0-0, p1-1-1, v2-2-2, r0-1-1; IV d1-0-0, p2-1-1, v2-2-2, r1-1-1; metatarsi: I v2-2-0; II v2-0-0; III p1-2-2, v2-2-1p, r1-1-2; IV p1-2-2, v2-2-1p, r1-2-2. Tarsi without scopulae, with or without (*S. syntheticus*) claw tufts, with two dentate claws.

Trochanters not notched. Distal leg segments with long dorsal trichobothria. Metatarsi III with distal preening brush; tarsi IV with elongated claws. Abdomen dirty white with yellow anterior scutum in males, sometimes with faint chevron pattern posteriorly (*S. syntheticus*); venter paler. Six spinnerets, anteriors long, sclerotized, separated by more than their diameter at base, with up to 12 spigots. Palp with long embolus, folded median apophysis, and membranous conductor (fig. 40). Retrolateral tibial apophysis short, of variable width. Epigynum with anterior margins (fig. 42). Spermathecae elaborately twisted (fig. 43).



MAP 6. North America, showing distribution of *Synaphosus syntheticus*.

Synaphosus syntheticus (Chamberlin),
new combination

Figures 40–43; Map 6

Nodocion syntheticus Chamberlin, 1924, p. 614, figs. 50, 51 (female holotype and male allotype from Isla Raza, Baja California Norte, Mexico, in CAS, examined). Roewer, 1954, p. 428. Bonnet, 1958, p. 3106.

Zelotes syntheticus: Ubick and Roth, 1973, p. 8.

DIAGNOSIS: Males of *S. syntheticus* may be recognized by their twisted embolus (fig. 40), females by the pair of median spermathecal ducts (fig. 42).

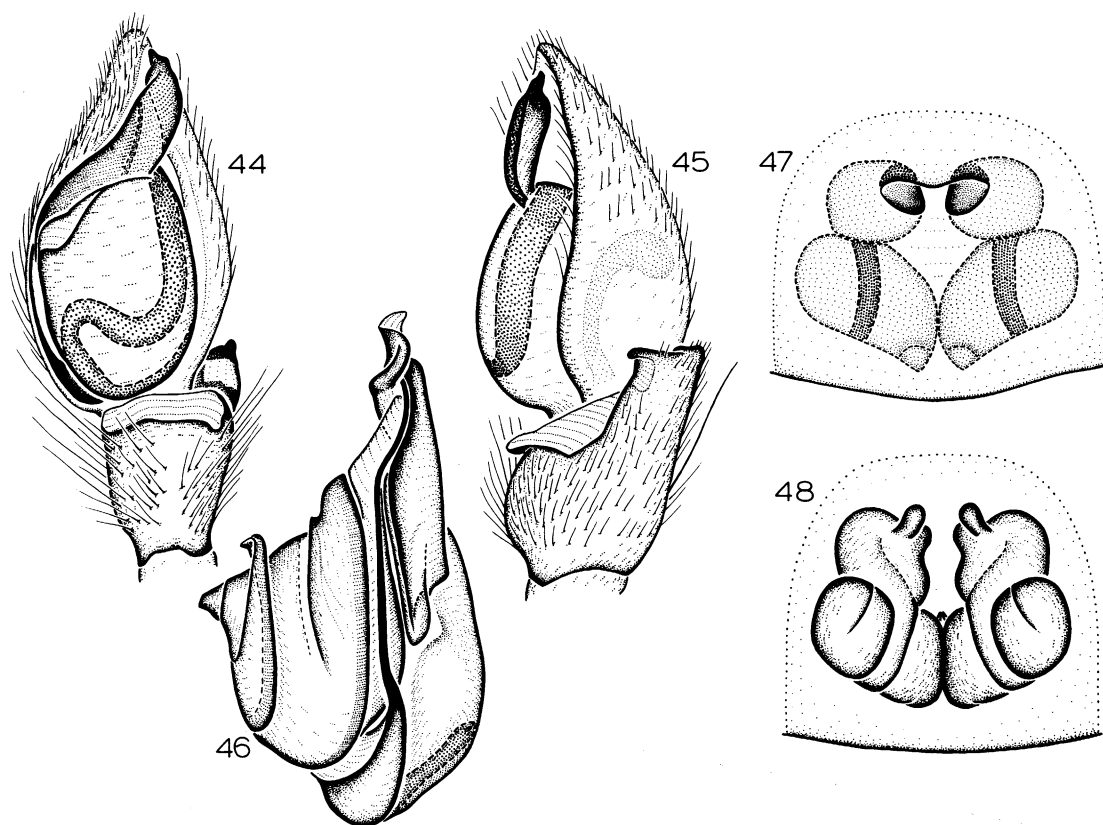
MALE: Total length 1.80–2.41. Carapace 0.90–1.12 long, 0.61–0.85 wide. Femur II 0.50–0.60 long (four specimens). Eye sizes and interdistances: AME 0.04, ALE 0.05, PME 0.06, PLE 0.05; AME–AME 0.05, AME–ALE 0.01, PME–PME 0.03, PME–PLE 0.03, ALE–PLE 0.02. MOQ length 0.14, front width 0.13, back width 0.14. Embolus originating on retrolateral side, twisted (fig. 40). Retrolateral tibial apophysis small, hook-shaped (fig. 41). Leg spination: tibiae: I v2-1r-2; III p2-1-1, r1-1-1; IV r2-2-1; metatarsus II v2-2-0; tarsus IV r0-1-0.

FEMALE: Total length 2.70 ± 0.19 . Carapace 1.10 ± 0.07 long, 0.82 ± 0.06 wide. Femur II 0.59 ± 0.04 long. Eye sizes and interdistances: AME 0.04, ALE 0.06, PME 0.08, PLE 0.06; AME–AME 0.05, AME–ALE 0.01, PME–PME 0.03, PME–PLE 0.04, ALE–PLE 0.03. MOQ length 0.15,

front width 0.13, back width 0.18. Epigynum with anterior bridge (fig. 42); spermathecae with narrow anterior lobes (fig. 43). Leg spination: femur IV p0-0-1; tibiae: II v0-0-0; III p1-1-1, v1p-2-2; IV r2-1-1; metatarsi: I v2-0-0; II v2-1p-0; III v2-1r-1r; IV v2-2-1r; tarsus IV r0-1-0.

MATERIAL EXAMINED: **United States:** **Arizona:** Maricopa Co.: Litchfield Park, Dec. 26, 1940 (S. and D. Mulaik), 1 ♀. Yuma Co.: N Gila Valley, Jan. 1, 1958, poplar duff (V. Roth), 1 ♀. **California:** Imperial Co.: 7 mi. W El Centro, Mar. 14, 1941 (W. Ivie), 1 ♀; Fish Spring, northwest end, Salton Sea, Nov. 12, 1973, under boards (V. Roth), 2 ♀. Riverside Co.: Indian Wells, Apr. 1938 (Bogert), 1 ♂. San Diego Co.: Anza-Borrego Desert State Park, May 2, 1958 (D. E. Merkel), 1 ♀. **Georgia:** Turner Co.: Ashburn, Apr. 9, 1968, peanut shelling plant (J. A. Payne, EPC), 1 ♂. **Texas:** Brewster Co.: Boquillas Picnic Area, Big Bend National Park, May 24–25, 1967, rock and adobe houses, salt cedar, cottonwood, and mesquite litter (E. Sabath, MCZ), 1 ♂, 5 ♀. Dallas Co.: mule barn, Southern Methodist University, Aug. 9, 1936 (MCZ), 5 ♀. **Mexico:** **Baja California Norte:** Isla Raza, Apr. 21, 1921 (J. C. Chamberlin, CAS, MCZ, AMNH), 1 ♂, 6 ♀; beach at Palm Wells, June 25–27, 1921 (CAS), 1 ♀.

DISTRIBUTION: Southern California and Baja California Norte east to Georgia (map 6).



FIGS. 44-48. *Synaphosus paludis* (Chamberlin and Gertsch). 44. Palp, ventral view. 45. Palp, retrolateral view. 46. Palpal bulb, cymbium removed, prolateral view. 47. Epigynum, ventral view. 48. Epigynum, dorsal view.

Synaphosus paludis
(Chamberlin and Gertsch),
new combination
Figures 44-48; Map 3

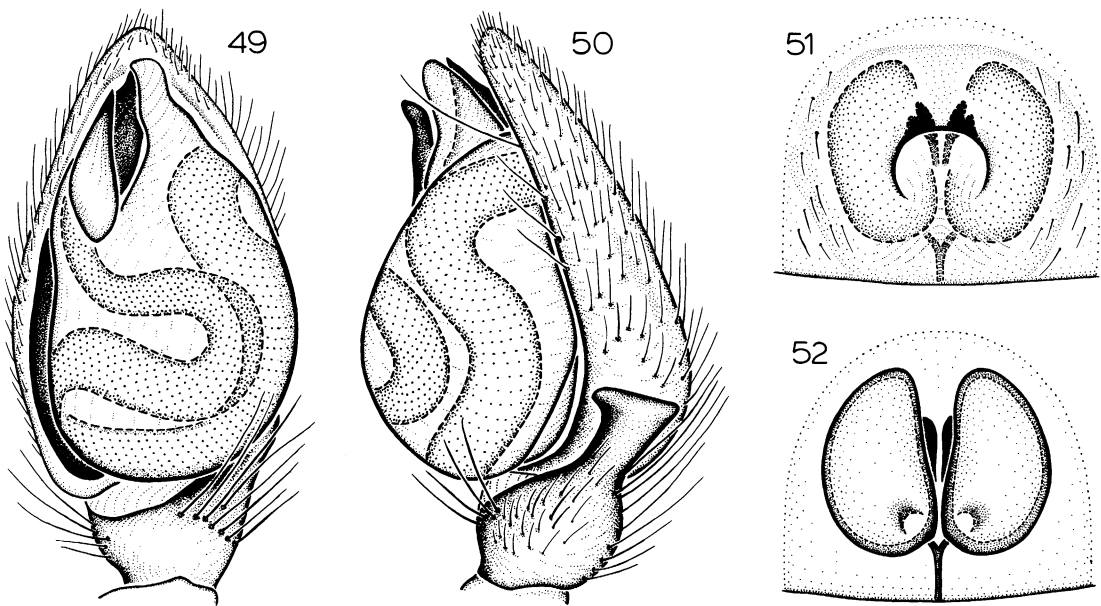
Litopyllus paludis Chamberlin and Gertsch, 1940, p. 4, figs. 22, 23 (male holotype from Okefenokee Swamp, Charlton County, Georgia, in AMNH, examined). Roewer, 1954, p. 425. Ubick and Roth, 1973, p. 5.

DIAGNOSIS: Males of *S. paludis* may be recognized by their large, twisted median apophysis (figs. 44, 46), females by their massive, twisted spermathecae (fig. 48).

MALE: Total length 4.61 ± 0.61 . Carapace 2.06 ± 0.25 long, 1.53 ± 0.20 wide. Femur II 1.36 ± 0.16 long. Eye sizes and interdistances: AME 0.11, ALE 0.12, PME

0.15, PLE 0.13; AME-AME 0.08, AME-ALE 0.02, PME-PME 0.04, PME-PLE 0.06, ALE-PLE 0.06. MOQ length 0.36, front width 0.30, back width 0.34. Median apophysis large, folded, twisted distally (figs. 44, 46). Retrolateral tibial apophysis short, wide (fig. 45). Leg spination: femora: I d1-1-1; II p0-1-1; IV r0-1-1; patellae: III p0-1-0; IV p0-1-0, r0-1-0; tibiae: II p0-1-0, v1r-2-1p; III r1-1-1; IV d1-1-0, p1-1-1; metatarsi: I v1p-0-0; III v2-1p-2.

FEMALE: Total length 5.31 ± 0.82 . Carapace 2.12 ± 0.31 long, 1.59 ± 0.26 wide. Femur II 1.38 ± 0.24 long. Eye sizes and interdistances: AME 0.10, ALE 0.11, PME 0.15, PLE 0.12; AME-AME 0.08, AME-ALE 0.04, PME-PME 0.03, PME-PLE 0.05, ALE-PLE 0.06. MOQ length 0.32,



FIGS. 49–52. *Phaeocedus braccatus* (L. Koch). 49. Palp, ventral view. 50. Palp, retrolateral view. 51. Epigynum, ventral view. 52. Epigynum, dorsal view.

front width 0.27, back width 0.32. Epigynum with small anterior margin (fig. 47): spermathecae massive, twisted (fig. 48). Leg spination: femora: I d1-1-1; II d1-1-1, p0-1-1; IV r0-1-1; patellae: III p0-1-0; IV p0-1-0, r0-1-0; tibiae: II p0-0-1, v0-0-1p; IV d1-0-1, p1-1-1; metatarsi: I v0-0-0; III v2-1p-0.

MATERIAL EXAMINED: **United States:** *Arkansas:* Bradley Co.: Sumpter, June 28, 1964, 1♀. Conway Co.: no specific locality, June 12–Aug. 14, 1960–1964, pitfalls in cotton, soybeans, pasture (EPC, AMNH), 2♂, 6♀. *Mississippi Co.:* no specific locality, June 16–23, 1966 (EPC), 1♀. *Union Co.:* 1.7 mi. S Lapile, June 4, 1974, pitfall (J. S. Heiss, JSH), 1♂; 3.5 mi. E New Holly, June 4, 1974, pitfall (J. S. Heiss, JSH), 1♀; 5.4 mi. N New London, Aug. 12, 1974, pitfall (J. S. Heiss, JSH), 1♂, 1♀. *Washington Co.:* Cove Creek Valley, 15 mi. W Prairie Grove, Boston Mountains, July 11–24, 1956, elevation 1000 feet (M. Hite, MCZ), 1♂. *Georgia:* Charlton Co.: Billy's Island, Okefenokee Swamp, June 14, 1912, sifting in hammock, 1♂ (holotype). Glynn Co.: St. Simon's Is-

land, May 29, 1974 (W. Sedgwick, WES), 1♂. *Illinois:* Jackson Co.: Carbondale, May 6, 1971, under rotten log (R. Crowell, JAB), 1♀. *Louisiana:* East Baton Rouge Par.: Baton Rouge, July 1958, 1♂, 1♀, June 21, 1963 (EPC), 2♂. Iberville Par.: Saint Gabriel, Aug. 10–Sept. 21, 1972–1975, pitfall, Bermuda grass pasture (F. W. Howard), 2♂. *Texas:* Gonzales Co.: Palmetto State Park, June 14–17, 1969, carrion in palm thicket (S. and J. Peck), 2♂, 1♀. Hidalgo Co.: Edinburg, Mar. 1936 (S. Mulaik), 1♂. Kerr Co.: Raven, June 1941 (S. Mulaik), 1♂. San Patricio Co.: 8 mi. NE Sinton, Apr. 28–July 6, 1960 (H. E. Laughlin), 5♂.

DISTRIBUTION: Southeastern United States (map 3).

LITERATURE CITED

- Banks, Nathan
 1896. New North American spiders and mites. *Trans. Amer. Ent. Soc.*, vol. 23, pp. 57–77.
 1910. Catalogue of Nearctic spiders. *Bull. U. S. Natl. Mus.*, vol. 72, pp. 1–80.

- Barrows, William Morton
1919. New spiders from Ohio. *Ohio Jour. Sci.*, vol. 19, pp. 355–360, pl. 15.
- Bonnet, Pierre
1957. *Bibliographia araneorum*. Toulouse, vol. 2, pt. 3, pp. 1927–3026.
1958. *Bibliographia araneorum*. Toulouse, vol. 2, pt. 4, pp. 3027–4230.
- Bryant, Elizabeth B.
1935. A few southern spiders. *Psyche*, vol. 42, pp. 73–83, figs. 1–12.
1940. Cuban spiders in the Museum of Comparative Zoology. *Bull. Mus. Comp. Zool.*, vol. 86, pp. 247–554, figs. 1–297.
- Chamberlin, Ralph V.
1919. New Californian spiders. *Pomona College Jour. Ent. Zool.*, vol. 12, no. 1, pp. 1–17, pls. 1–6.
1922. The North American spiders of the family Gnaphosidae. *Proc. Biol. Soc. Washington*, vol. 35, pp. 145–172.
1924. The spider fauna of the shores and islands of the Gulf of California. *Proc. California Acad. Sci.*, ser. 4, vol. 12, pp. 561–694, figs. 1–140.
1936a. Records of North American Gnaphosidae with descriptions of new species. *Amer. Mus. Novitates*, no. 841, pp. 1–30, figs. 1–45.
1936b. Further records and descriptions of North American Gnaphosidae. *Ibid.*, no. 853, pp. 1–25, figs. 1–47.
- Chamberlin, Ralph V., and Willis J. Gertsch
1928. Notes on spiders from southeastern Utah. *Proc. Biol. Soc. Washington*, vol. 41, pp. 175–187.
1940. Descriptions of new Gnaphosidae from the United States. *Amer. Mus. Novitates*, no. 1068, pp. 1–19, figs. 1–34.
- Chamberlin, Ralph V., and Wilton Ivie
1941. Spiders collected by L. W. Saylor and others, mostly in California. *Bull. Univ. Utah*, vol. 31, no. 8, pp. 1–49, figs. 1–61.
- Fox, Irving
1938. Notes on North American spiders of the families Gnaphosidae, Anyphaenidae, and Clubionidae. *Iowa State College Jour. Sci.*, vol. 38, pp. 227–243, pls. 1, 2.
- Gertsch, Willis J., and S. Mulaik
1936. Diagnoses of new southern spiders. *Amer. Mus. Novitates*, no. 851, pp. 1–21, figs. 1–32.
- Levi, Herbert W.
1951. New and rare spiders from Wisconsin and adjacent states. *Amer. Mus. Novitates*, no. 1501, pp. 1–41, figs. 1–47.
- Platnick, Norman I., and Mohammad U. Shadab
1975. A revision of the spider genus *Gnaphosa* (Araneae, Gnaphosidae) in America. *Bull. Amer. Mus. Nat. Hist.*, vol. 155, pp. 1–66, figs. 1–150, maps 1–15.
1977. A revision of the spider genera *Herpyllus* and *Scotophaeus* (Araneae, Gnaphosidae) in North America. *Ibid.*, vol. 159, pp. 1–44, figs. 1–130, maps 1–9.
- Roewer, Carl F.
1951. Neue Namen einiger Araneen-Arten. *Abhandl. Nat. Ver. Bremen*, vol. 32, pp. 437–456.
1954. *Katalog der Araneae*. Brussels, vol. 2, pt. 1, 923 pp.
- Roth, Vincent D., and Wynne Brown
1973. Illustrated key to Nearctic Gnaphosidae. *Amer. Arachnol.*, no. 9, suppl. 1, pp. 1–5, figs. 1–25.
- Ubick, Darrell, and Vincent D. Roth
1973. Nearctic Gnaphosidae including species from adjacent Mexican states. *Amer. Arachnol.*, no. 9, suppl. 2, pp. 1–12; suppl. 3, pp. 1–6 (index); suppl. 4, pp. 1–3 (Mexican species).
- Worley, Leonard G.
1928. New Nebraska spiders. *Ann. Ent. Soc. Amer.*, vol. 21, pp. 619–622, figs. 1–6.

