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A Revision of the Spider Genera *Rachodrassus*, *Sosticus*, and *Scopodes* (Araneae, Gnaphosidae) in North America

NORMAN I. PLATNICK¹ AND MOHAMMAD U. SHADAB²

ABSTRACT

The North American *Rachodrassus* (three species), *Sosticus* (three species), and *Scopodes* (11 species) are diagnosed and described. *Drassyllochmmis* Gertsch and Davis is transferred from the Clubionidae and synonymized with *Rachodrassus*; *Sostogeus* Chamberlin and Gertsch is synonymized with *Sosticus*. A cladistic analysis of *Scopodes* is presented, and it is suggested that *Scopodes* and allied genera, together with the spiders currently placed in the Prodidomidae and Molycriniae (Clubionidae), form a monophyletic group characterized by a strongly procurved posterior eye row and enlarged anterior spinnerets. Seven new species are described: *Rachodrassus exlineae* from the southeastern United States,

Sosticus californicus from California, and *Scopodes kastoni*, *Scopodes bryantae*, *Scopodes rostratus*, *Scopodes santiago*, and *Scopodes tlacolula* from the southwestern United States and Mexico. *Echemus ochraceus* F. O. P.-Cambridge is transferred to *Scopodes*. *Scopodes pessimisticum* (Chamberlin) is synonymized with *Scopodes naturalisticum* (Chamberlin). The male of *Scopodes nesiotes* (Chamberlin) and the females of *Rachodrassus captiosus* (Gertsch and Davis), *Scopodes catharius* Chamberlin, *Scopodes cambridgei* (Gertsch and Davis), *Scopodes asceticum* (Chamberlin), and *Scopodes ochraceus* (F. O. P.-Cambridge) are described for the first time.

INTRODUCTION

The present paper, the sixth in a series on the spider family Gnaphosidae, is concerned with the genera *Rachodrassus*, *Sosticus*, and *Scopodes*. All three genera were established by Chamberlin (1922) for North American species and, with the exception of one Holarctic *Sosticus*, appear to be exclusively Nearctic. *Rachodrassus* and *Sosticus* seem to be closely related; the fourth tibia has two dorsal spines and the internal female geni-

talia are similar in both groups. *Scopodes* belongs to a different phyletic line entirely, but is included here because palpal similarities with *Sosticus* have caused occasional confusion between the two genera in some of the collections examined.

Rachodrassus was originally based on two species (subsequently synonymized by Exline, 1962) from the Mammoth Cave area in Ken-

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tucky; although additional specimens have been taken outside a cave in Missouri, there is no evidence that any members of the genus are actual troglophiles or troglobites. Because of erroneous familial placements, the genus has had a somewhat complicated history. Chamberlin and Woodbury (1929) described both sexes of *Rachodrassus flavus* from Utah, but Gertsch (1935) correctly transferred the species to *Agroeca* (Clubionidae); the species was erroneously retained in the Gnaphosidae by Ubick and Roth (1973). Similarly, Kaston (1938) described an *Agroeca ornata* male as *Rachodrassus monroensis* but subsequently corrected the error (Kaston, 1945). Thus, of the previously described forms, only the type species, *Rachodrassus echinus* Chamberlin, is still assigned to the genus, which is easily recognized by the doubly pointed median apophysis of males (fig. 3) and the flattened epigynal hood of females (fig. 5). Gertsch and Davis (1936) described as the type species of a new clubionid genus, *Drassyllochemmis*, a male from Texas with palpi (fig. 15) extremely similar to those of *R. echinus*. Those authors admitted that the anterior spinnerets of *Drassyllochemmis captiosus* are those of a gnaphosid, but excluded the species from the Gnaphosidae because of the high number of ventral spines on the first tibiae. As a new species described below is intermediate between *Rachodrassus* and *Drassyllochemmis* in the tibial spination, and as by their genitalia the three species form a compact and parapatric group, *Drassyllochemmis* is transferred to the Gnaphosidae and synonymized below with *Rachodrassus*.

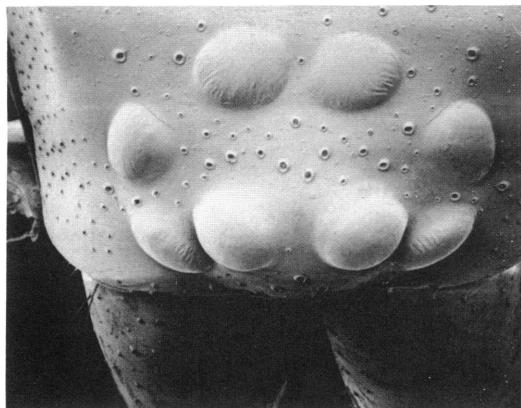
The species treated here as *Sosticus* have previously been placed in *Sosticus*, *Sostogeus*, and *Scotophaeus*. *Sostogeus* was established by Chamberlin and Gertsch (1940) for *Sostogeus zygethus*, a species later shown by Gertsch (in Lindroth, 1957) to be synonymous with the Eurasian *Scotophaeus loricatus* (L. Koch). Through the courtesy of Dr. Torbjörn Kronestedt of the Naturhistoriska Riksmuseet, Stockholm, and Dr. Åke Holm of the Zoologiska Institutionem, Uppsala, we have been able to study specimens of the type species of *Scotophaeus*, *Scotophaeus quadripunctatus* (Linnaeus); that species differs from *Sostogeus loricatus* by lacking dorsal spines on tibia IV, having

slightly notched trochanters, much denser tarsal scopulae, a much smaller median apophysis, the embolus originating at the middle rather than the base of the tegulum, and by lacking an epigynal scape. Thus, placement of *Sostogeus loricatus* in *Scotophaeus*, commonly done by even recent European workers (Holm, 1973), is unacceptable. However, Chamberlin and Gertsch (1940) distinguished *Sostogeus* from *Sosticus* only on the basis of minor differences in the relationships of the posterior eyes and in the dentition of the cheliceral retromargin. The close genitalic similarities (elongate, prolaterally situated embolus, enlarged median apophysis, and epigynum with scape) and the discovery of a new species in California intermediate between the two genera in cheliceral dentition indicate that *Sosticus* and *Sostogeus* are best considered synonymous.

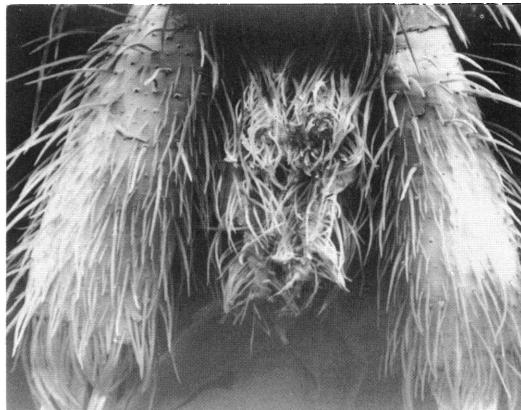
Study of *Scotophaeus quadripunctatus* has also allowed us to confirm that although some European species placed in the genus, notably *Scotophaeus blackwalli* (Thorell), may indeed belong to the American genus *Herpyllus*, the type species of the genus does not. Thus, European workers have been correct in ignoring Chamberlin's (1922) synonymy of *Scotophaeus* with *Herpyllus*.

Since the discovery of *Sosticus loricatus* in America, the species has generally been considered an introduction from Europe (Gertsch, in Lindroth, 1957), presumably because of its frequently synanthropic habits since many of the locality records (map 3) are hardly indicative of introductions. The fact that the species is often synanthropic in Europe (Valešová-Zdárková, 1966) and that all other *Sosticus* are known only from North America makes such a supposition indefensible.

The species treated here as *Scopodes* all have strongly procured posterior eye rows (fig. 1) and greatly enlarged anterior spinnerets (fig. 2) that can reach as much as one-third of the abdominal length. Simon (1893a) described as *Megamyrmection californicum* a juvenile from southern California which in those characters seemed close to the African genus *Megamyrmection*; additional American species of *Megamyrmection* were described by Chamberlin (1924) and Gertsch and Davis (1940). Chamberlin (1922) established *Scopodes* for a California



1



2

FIGS. 1, 2. *Scopodes catharius* Chamberlin. 1. Eyes, oblique anterior view, 110 \times . 2. Spinnerets, ventral view, 60 \times .

species differing from *Megamyrmection* in having a denticle on the cheliceral retromargin. As none of the African *Megamyrmection* seen have the large median apophysis or epigynal hood characteristic of the American species, we concur with Ubick and Roth's (1973) transfer of the American *Megamyrmection* to *Scopodes*. All the North American forms share a common genitalic plan, and the loss of the cheliceral tooth appears to be an apomorphic character occurring in only four of the 11 known species; the genus is apparently found only from southern California and western Texas south to Oaxaca, Mexico.

The known *Scopodes* fall into two species groups, with the *catharius* group (*catharius*, *kastoni*, *nesiotes*, *bryantae*, *naturalisticum*, and *cambridgei*) having a palpal conductor and distinct epigynal septum and the *ochraceus* group (*ochraceus*, *tlaolula*, *asceticum*, *santiago*, and *rostratus*) lacking those structures. The two groups are largely allopatric and overlap only in the Cape region of Baja California Sur, Mexico. The genus seems to be the sister group of the American species placed (perhaps erroneously) in *Echemus* and ranging to the south of *Scopodes* from Chiapas, Mexico, to Argentina; these species resemble *Scopodes* closely in ocular and spinneret characters but differ in the form of both the male and female genitalia.

A phylogeny (fig. 39) of the known *Scopodes* has been constructed by a cladistic analysis of

the characters listed in table 1. Character states shared with *Echemus* are presumed plesiomorphic (characters 1-3, 18), whereas character states restricted to a single species (characters 10-15, 19-21, 23, 24) or a single pair of sister species (characters 4-9, 16, 17, 22) are considered apomorphic.

The Australian species generally placed in the Molycrininae (Clubionidae) share the strongly procurved posterior eye row of *Scopodes* and its relatives, and have the anterior spinnerets even farther enlarged and often moved forward near the front of the abdomen. Lehtinen (1967, p. 291) pointed out that these genera "do not conform to any standards of definition of the family Clubionidae," and placed them as a subfamily of the Prodidomidae, which also have a very strongly procurved posterior eye row and enlarged anterior spinnerets. We concur with Lehtinen's association of the molycrinines and prodidomids, and suggest that both these groups are closely related to *Scopodes*, *Echemus*, *Megamyrmection*, and allied genera now placed in the Gnaphosidae. The combined grouping may be best considered, at least for the time being, as a subfamily of the Gnaphosidae for which the earliest family-group name is apparently Prodidominae.

The format of the descriptions and the standard abbreviations of morphological terms follow those used by Platnick and Shadab (1975). We are grateful to each of the curators and collectors

listed below for making available the relatively uncommon specimens used in this study. In view of the rarity of many species in collections, complete locality data and depositories are provided for every specimen examined. Scanning electron micrographs have been supplied where sufficient material was available, and were obtained with the assistance of Mr. Robert J. Koestler of the American Museum of Natural History. Special thanks go to Dr. Willis J. Gertsch for making many of the *Scopodes* specimens available for study.

Abbreviations

- AMNH, the American Museum of Natural History
- BMNH, British Museum (Natural History), Mr. F. R. Wanless
- CAJP, personal collection, Mr. A. J. Penniman
- CAS, California Academy of Sciences, Drs. R. X. Schick and P. H. Arnaud, Jr.
- CBJK, personal collection, Dr. B. J. Kaston
- CDEB, personal collection, Mr. D. E. Bixler
- CDU, personal collection, Mr. D. Ubick
- CHKW, personal collection, Dr. H. K. Wallace
- CJSB, personal collection, Mr. J. S. Heiss
- CKMH, personal collection, Ms. K. Menders Hebar
- CNC, Canadian National Collection, Dr. C. D. Dondale
- CVDR, personal collection, Mr. V. D. Roth
- CWAS, personal collection, Dr. W. A. Shear
- CWDF, personal collection, Dr. W. D. Fronk
- CWS, personal collection, Mr. W. Sedgwick
- EPC, Exline-Peck Collection, Dr. W. B. Peck
- FSCA, Florida State Collection of Arthropods, Dr. H. V. Weems, Jr.
- MCZ, Museum of Comparative Zoology, Dr. H. W. Levi
- UCR, University of California, Riverside, Dr. S. I. Frommer
- USNM, National Museum of Natural History, Smithsonian Institution, Dr. R. E. Crabbill, Jr.

RACHODRASSUS CHAMBERLIN

Rachodrassus Chamberlin, 1922, p. 160 (type species by original designation *Rachodrassus echinus* Chamberlin). Roewer, 1954, p. 406. Bonnet, 1958, p. 3845.

Drassyllochemmis Gertsch and Davis, 1940, p. 17

(type species by original designation *Drassyllochemmis captiosus* Gertsch and Davis). Roewer, 1954, p. 620. Bonnet, 1956, p. 1601. NEW SYNONYMY.

Diagnosis. *Rachodrassus* may be distinguished from the other Nearctic Gnaphosidae by the combined presence of two dorsal spines on tibia IV and a doubly pointed median apophysis on the male palpus (fig. 3) or a flattened epigynal hood (fig. 5).

Description. Total length 3.3-6.1 mm. Carapace oval in dorsal view, widest between coxae II and III, gradually narrowed anteriorly, light orangish brown, darkest posteriorly, with numerous recumbent black setae. Cephalic area moderately elevated; thoracic groove longitudinal. From front and above both eye rows slightly recurved. AME circular, other eyes oval. Lateral eyes larger than medians. AME separated by their diameter, by their radius from ALE; PME separated by roughly their diameter, by their diameter from PLE. Lateral eyes separated by roughly their radius. MOQ wider in back than in front, wider than long. Clypeal height greater than AME diameter. Chelicerae with two or three promarginal and two retromarginal teeth. Endites acuminate, labium rounded, sternum strongly rebordered. Leg formula 4123. Typical leg spination pattern (only surfaces bearing spines listed): femora: I d1-1-1, p0-0-1; II d1-1-1, p0-1-1, r0-1-0 in males, 0-0-0 in females; III d1-1-1, p0-1-1, r1-1-1 in males, 0-1-1 in females; IV d1-1-1, p0-1-1, r0-1-1 in males, 0-0-1 in females; patellae III, IV r0-1-0; tibiae: I p1-1-0, v2-4-2; II p1-1-1, v2-4-2, r1-0-0; III d1-0-0, p1-1-1, v2-2-2, r1-1-1; IV d1-1-0, p1-1-1, v2-2-2, r1-1-1; metatarsi: I, II v2-2-0; III p1-2-2, v2-2-2, r1-2-2; IV p2-2-2, v2-2-2, r1-2-2. Legs light brown. Tarsi with light scopulae and two dentate claws; claw tufts lacking. Trochanters slightly notched. Distal leg segments with dorsal trichobothria. Abdomen light gray, with dark chevron pattern, without distinct scutum. Six spinnerets, anteriors widely separated, with up to nine spigots. Palp with complicated embolus and proximally and distally pointed median apophysis (fig. 3). Retrolateral tibial apophysis single, simple (fig. 4). Epigynum with flattened anterior hood (fig. 5). Spermathecae each with membranous anterior lobes (fig. 6).

Synonymy. Both sexes of *Drassyllochermis captiosus* fit the generic diagnosis and description given above.

KEY TO SPECIES OF RACHODRASSUS

1. Male tibia I with five or more pairs of ventral spines; embolus with translucent pro-lateral flange (fig. 15); epigynal hood relatively small (fig. 17) *captiosus*
- Male tibia I with three or four pairs of ventral spines; embolus without translucent pro-lateral flange; epigynal hood relatively large (figs. 5, 13) 2
2. Male tibia I with four pairs of ventral spines; embolus not concave retrolaterally (figs. 4, 7); epigynal hood near posterior margin of epigynum (figs. 5, 8) *echinus*
- Male tibia I with three pairs of ventral spines; embolus concave retrolaterally (figs. 9, 12); epigynal hood far from posterior margin of epigynum (figs. 10, 13) *exlineae*

Rachodrassus echinus Chamberlin

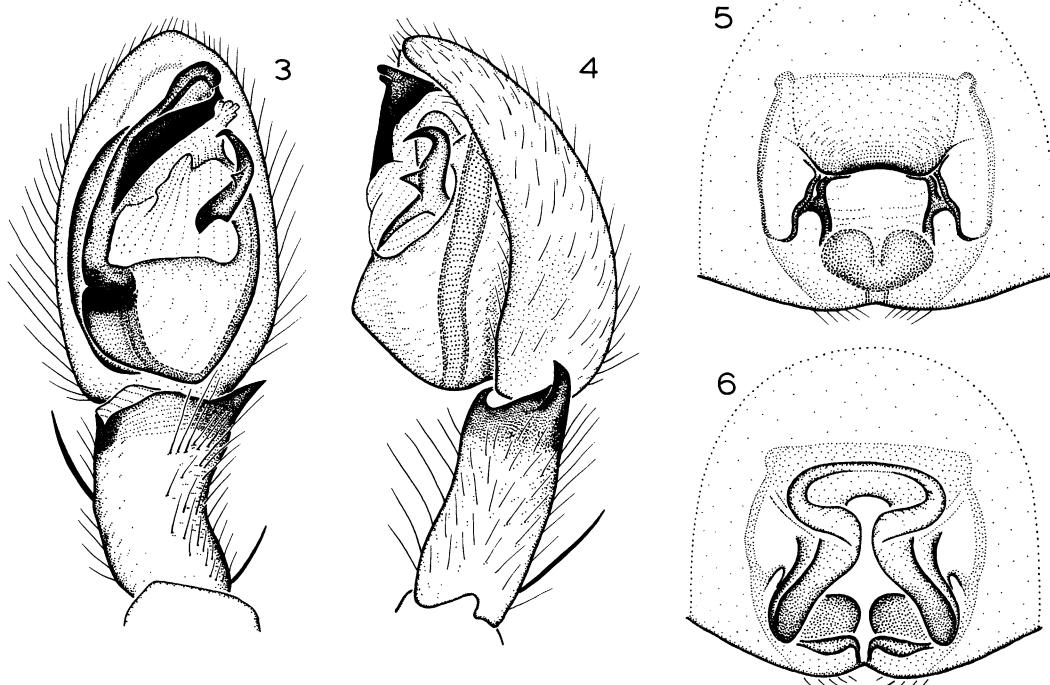
Figures 3-8; Map 1

Rachodrassus echinus Chamberlin, 1922, p. 160 (male holotype and female allotype from near Mammoth Cave, Edmonson County, Kentucky, in MCZ, examined). Roewer, 1954, p. 406. Bonnet, 1958, p. 3846.

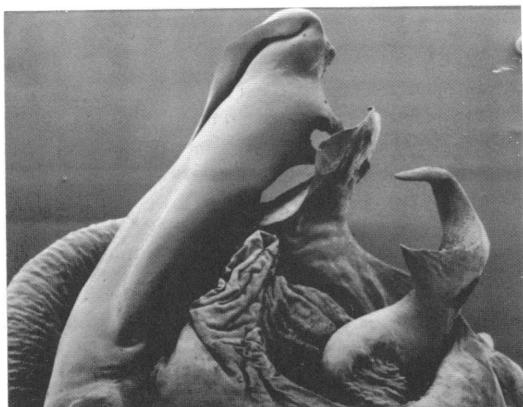
Rachodrassus chera Chamberlin, 1922, p. 161 (female holotype from near Mammoth Cave, Edmonson County, Kentucky, in MCZ, examined). Roewer, 1954, p. 406. Bonnet, 1958, p. 3846. First synonymized by Exline, 1962, p. 80.

Diagnosis. *Rachodrassus echinus* is most closely related to *R. exlineae* but may be distinguished by the distally arched, not prolaterally concave embolus (figs. 3, 7) and by the epigynal hood being relatively near the posterior margin of the epigynum (figs. 5, 8).

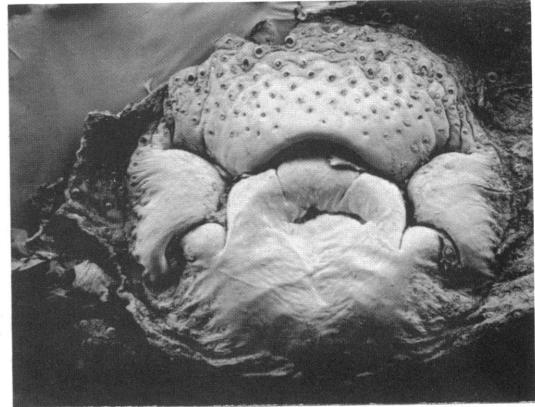
Male. Total length 4.84 ± 0.36 mm. Carapace 2.18 ± 0.20 mm. long, 1.73 ± 0.11 mm. wide.



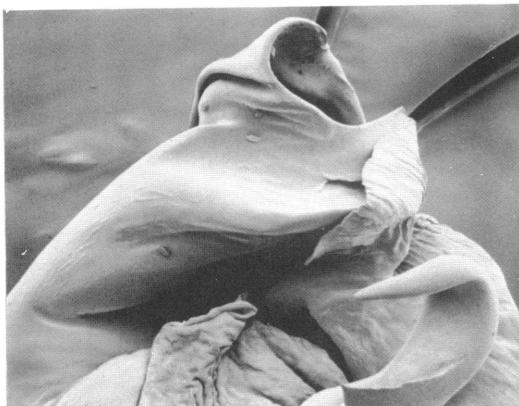
FIGS. 3-6. *Rachodrassus echinus* Chamberlin. 3. Palp, ventral view. 4. Palp, retrolateral view. 5. Epigynum, ventral view. 6. Vulva, dorsal view.



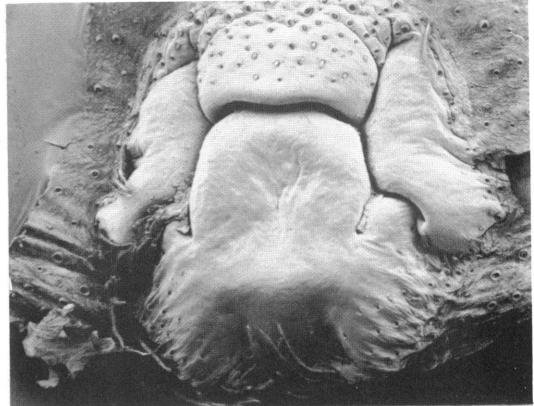
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8



9



10

FIGS. 7-10. 7, 8. *Rachodrassus echinus* Chamberlin. 7. Embolar region of palp, ventral view, 220 \times . 8. Epigynum, ventral view, 130 \times . 9, 10. *R. exlineae*, new species. 9. Embolar region of palp, ventral view, 220 \times . 10. Epigynum, ventral view, 130 \times .

Femur II 1.65 ± 0.08 mm. long (20 specimens examined). Eye sizes and interdistances (mm.): AME 0.06, ALE 0.11, PME 0.10, PLE 0.10; AME-AME 0.06, AME-ALE 0.02, PME-PME 0.07, PME-PLE 0.09, ALE-PLE 0.04. MOQ length 0.18 mm., front width 0.19 mm., back width 0.27 mm. Embolus distally arched, ventrally heavily sclerotized (figs. 3, 7). Retrolateral tibial apophysis short, angular (fig. 4). Leg spination: tibiae: I r1-0-0; IV r1-2-1.

Female. Total length 5.32 ± 0.53 mm. Carapace 2.32 ± 0.17 mm. long, 1.78 ± 0.13 mm. wide. Femur II 1.56 ± 0.10 mm. long (32 specimens examined). Eye sizes and interdistances (mm.): AME 0.07, ALE 0.12, PME 0.09, PLE 0.10;

AME-AME 0.07, AME-ALE 0.03, PME-PME 0.10, PME-PLE 0.13, ALE-PLE 0.05. MOQ length 0.23 mm., front width 0.21 mm., back width 0.28 mm. Epigynal hood near posterior margin of epigynum (figs. 5, 8). Anterior spermathecal lobes originating near base of spermathecae (fig. 6). Leg spination: femora I, II d1-1-0; tibiae: I v2-4-1p; II p1-1-0, r0-0-0; IV r1-2-1.

Material Examined. United States: Alabama: Clay Co.: Cheaha State Park, June, 1940 (A. F. Archer, AMNH), 1♀. Coosa Co.: Hatchet Creek, June, 1940 (A. F. Archer, AMNH), 1♀. Jackson Co.: Blowing Cave, near Garth, Feb. 29, 1940 (Jones, Archer, AMNH), 1♂. Madison Co.: Monte

Sano, summer, 1940 (A. F. Archer, AMNH), 1♀; Dec., 1940 (A. F. Archer, AMNH), 1♀. *Arkansas*: Washington Co.: Cove Creek, numerous collections, Apr. 28-June 1, 1961-1962, pitfall traps in leaf litter (O., M. Hite, EPC, AMNH), 15♂; Sept.-Feb., 1955-1956, elevation 1000 feet (M. Hite, MCZ), 3♀; Feb. 27-June 12, 1961-1963, under rocks on hillside, pitfall traps in leaf litter (O., M. Hite, EPC), 10♀. *Kentucky*: Edmonson Co.: Mammoth Cave National Park, Aug. 25-26, 1961 (N. Causey, MCZ), 1♀. Madison Co.: 1½ mi. W Richmond, Oct. 14, 1965 (B. A. Branson, MCZ), 2♀. *Mississippi*: Marshall Co.: Holly Springs, July 14, 1910 (R. V. Chamberlin, AMNH), 1♀. *Tennessee*: Obion Co.: hills E Walnut Log, Aug. 19, 1940 (M. V. Parker, AMNH), 1♀. Roane Co.: Kingston, July 15, 1933 (W. J. Gertsch, AMNH), 2♀. *Virginia*: Giles Co.: Mountain Lake (AMNH), 3♀; Poor Man's Mountain (AMNH), 1♀. *West Virginia*: Raleigh Co.: Grandview State Park, Sept. 23, 1967 (W. A. Shear, CWAS), 1♀. Summers Co.: Bluestone State Park, Mar. 12, 1966 (W. A. Shear, CWAS), 1♂; Mar. 27, 1968 (W. A. Shear,

CWAS), 1♀; Lick Creek, Nov. 27, 1966 (W. A. Shear, CWAS), 1♂.

Distribution. Southeastern United States (map 1).

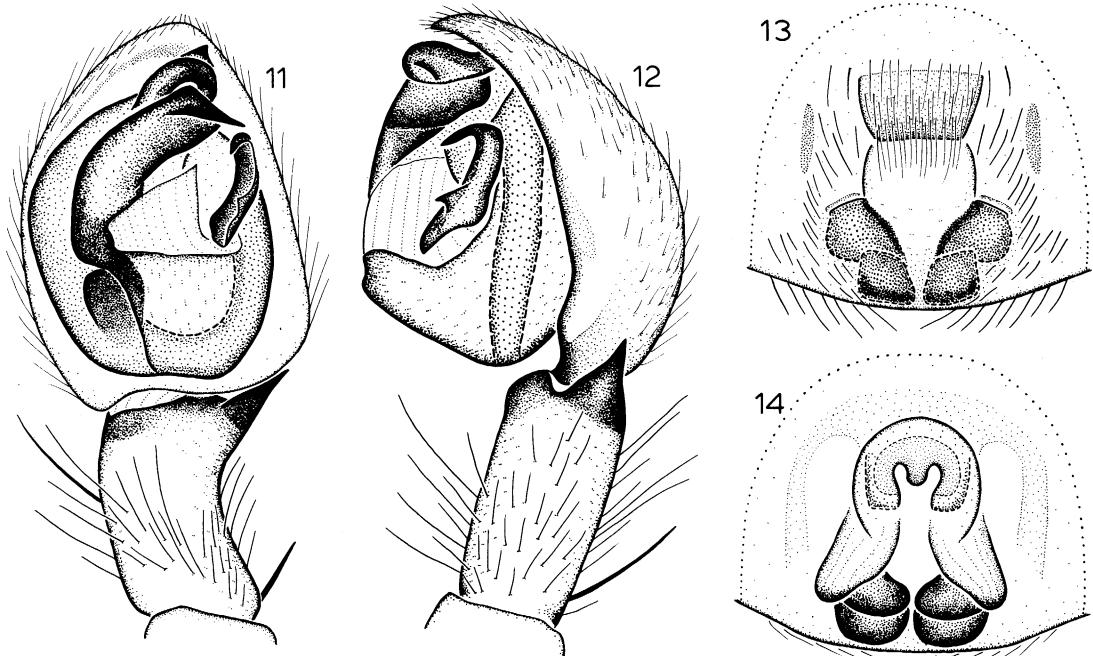
Rachodrassus exlineae, new species

Figures 9-14; Map 1

Types. Male holotype from 1.7 miles south of Lapile, Union County, Arkansas (May 27, 1974; J. S. Heiss) and female paratype from 0.6 mile south of Lapile, Union County, Arkansas (July 3, 1974; J. S. Heiss), deposited in AMNH courtesy of Mr. Heiss.

Etymology. The specific name is a patronym in honor of the late Harriet Exline, who first recognized the species as new.

Diagnosis. *Rachodrassus exlineae* is closest to *R. echinus* but may be distinguished by the dorsoventrally expanded, retrolaterally concave embolus (figs. 9, 11, 12) and by the epigynal hood being far from the posterior margin of the epigynum (figs. 10, 13).

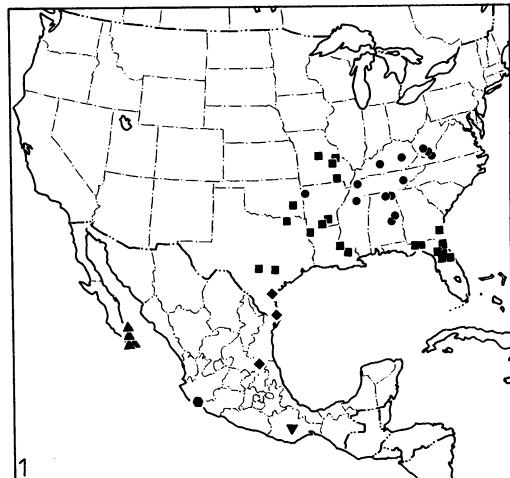


FIGS. 11-14. *Rachodrassus exlineae*, new species. 11. Palp, ventral view. 12. Palp, retrolateral view. 13. Epigynum, ventral view. 14. Vulva, dorsal view.

Male. Total length 4.58 ± 0.25 mm. Carapace 2.08 ± 0.13 mm. long, 1.68 ± 0.12 mm. wide. Femur II 1.55 ± 0.10 mm. long (34 specimens examined). Eye sizes and interdistances (mm.): AME 0.06, ALE 0.11, PME 0.10, PLE 0.11; AME-AME 0.06, AME-ALE 0.03, PME-PME 0.08, PME-PLE 0.10, ALE-PLE 0.04. MOQ length 0.23 mm., front width 0.19 mm., back width 0.27 mm. Embolus expanded dorsoventrally, with large retrolateral depression (figs. 9, 11). Retrolateral tibial apophysis triangular (fig. 12). Leg spination: femur I p0-1-2; tibiae: I v2-2-2; II p1-1-0, v2-2-0, r0-0-0; IV r1-1-1.

Female. Total length 5.23 ± 0.95 mm. Carapace 2.19 ± 0.22 mm. long, 1.69 ± 0.17 mm. wide. Femur II 1.39 ± 0.11 mm. long (28 specimens examined). Eye sizes and interdistances (mm.): AME 0.07, ALE 0.09, PME 0.10, PLE 0.08; AME-AME 0.07, AME-ALE 0.03, PME-PME 0.07, PME-PLE 0.12, ALE-PLE 0.07. MOQ length 0.20 mm., front width 0.21 mm., back width 0.27 mm. Epigynal hood situated far from posterior margin of epigynum (figs. 10, 13). Anterior spermathecal lobes originating above base of spermathecae (fig. 14). Leg spination: femur I d1-1-0, p0-0-2; tibiae: I p0-0-0, v2-2-0; II p0-0-0, v1r-2-1p, r0-0-0; IV r1-1-1.

Material Examined. United States: *Arkansas*: Bradley Co.: Sumpter, May 31-Aug. 30, 1963-1964, pitfall traps in pine-oak forest (Leslie, EPC), 17♂, 4♀. Union Co.: 1.7 mi. S Lapile, May 27, 1974, pitfall trap (J. S. Heiss, CJSB), 3♂; 3.1 mi. W Shuler, Aug. 12, 1974, pitfall trap (J. S. Heiss, CJSB), 1♀. *Florida*: Alachua Co., May 2, 1936 (H. K. Wallace, MCZ), 1♀; Gainesville, May 16, 1926 (Leonard, AMNH), 1♀. Duval Co.: N Amelia City, Dec. 8, 1962 (W. Ivie, AMNH), 1♀. Jefferson Co.: Big Bend Horticulture Laboratory, May 15-June 6, 1969, pitfall in pecans (CHKW), 1♂, 3♀. Leon Co.: Tall Timbers Research Station, Apr. 6-9, 1968 (A. M. Chickering, MCZ), 1♀; June 1, 1969 (W. W. Baker, E. V. Komarek, FSCA), 4♂; May 11-18, 1970, pitfall trap (D. L. Harris, CHKW), 5♂. Marion Co.: Juniper Springs, July 25, 1960, in *Pinus clausa* (H. A. Denmark, FSCA), 1♀. Putnam Co., June 2, 1947 (H. K. Wallace, AMNH), 1♀. Volusia Co.: Orange City, Dec. 9, 1962 (W. Ivie, AMNH), 1♀. *Georgia*: Glynn Co.: St. Simon, May 29, 1974 (W. Sedgwick, CWS), 1♀. *Louisiana*: Caddo Par.: Shreveport, Mar. 24, 1962 (N.



MAP 1. North America, showing distribution of *Rachodrassus echinus* (circles), *R. exlineae* (squares), *R. captiosus* (diamonds), *Scopodes santiago* (hexagon), *S. asceticum* (upright triangles), and *S. tlacolula* (inverted triangle).

Causey, MCZ), 1♀. St. Helena Par.: Greensburg, Mar. 19, 1936 (AMNH), 1♀. *Mississippi*: Wilkinson Co.: Centreville, Jan.-July, 1944 (A. F. Archer, AMNH), 1♀. *Missouri*: Cole Co.: Jefferson City, May 10, 1961 (Dowdy, EPC), 1♀. Jefferson Co.: outside Pleasant Valley Cave, June 10-24, 1965, carrion trap (S. Peck, AMNH), 2♂. Ripley Co.: Doniphan, Sept. 30, 1941 (AMNH), 1♀. *Washington* Co.: Washington State Park, May 16, 1943 (C., M. Goodnight, AMNH), 1♀. *Oklahoma*: Pittsburg Co.: Arrowhead State Park, July 17, 1966 (J., W. Ivie, AMNH), 1♀. *Texas*: Caldwell Co.: 4 mi. N Lockhart, Apr. 13, 1963 (W. J. Gertsch, W. Ivie, AMNH), 1♂. Grayson Co.: Sherman, May, 1966 (K. W. Haller, AMNH), 1♀. Kerr Co.: Raven Ranch, Aug.-Dec., 1939 (D., S. Mulaik, AMNH), 3♀.

Distribution. Southeastern United States (map 1).

Rachodrassus captiosus (Gertsch and Davis),
new combination
Figures 15-18; Map 1

Drassyllochemmis captiosus Gertsch and Davis, 1936, p. 17, fig. 34 (male holotype from Cameron County, Texas, in AMNH, examined). Roewer, 1954, p. 620. Bonnet, 1956, p. 1601.

Diagnosis. *Rachodrassus captiosus* is a distinctive species easily recognizable by the translucent prolateral flange on the embolus (fig. 15) and the relatively small epigynal hood (fig. 17).

Male. Total length 3.35, 4.07 mm. Carapace 1.55, 1.91 mm. long, 1.24, 1.58 mm. wide. Femur II 1.08, 1.22 mm. long (two specimens). Eye sizes and interdistances (mm.): AME 0.03, ALE 0.06, PME 0.06, PLE 0.05; AME-AME 0.04, AME-ALE 0.03, PME-PME 0.08, PME-PLE 0.06, ALE-PLE 0.03. MOQ length 0.14 mm., front width 0.10 mm., back width 0.20 mm. Embolus with translucent prolateral flange (fig. 15). Retrolateral tibial apophysis gently curved (fig. 16). Leg spination: femur I p0-1-2, r0-1-0; tibiae: I p1-1-1, v4-4-2, r1-1-1; II, IV r1-1-1; metatarsi I, II p0-1-0, r0-1-0.

Female. Total length 3.10, 4.36 mm. Carapace 1.33, 1.79 mm. long, 1.06, 1.26 mm. wide. Femur II 0.83, 1.08 mm. long (two specimens). Eye sizes and interdistances (mm.): AME 0.03, ALE 0.05, PME 0.05, PLE 0.05; AME-AME 0.04, AME-ALE 0.03, PME-PME 0.07, PME-PLE 0.07, ALE-PLE 0.04. MOQ length 0.14 mm.,

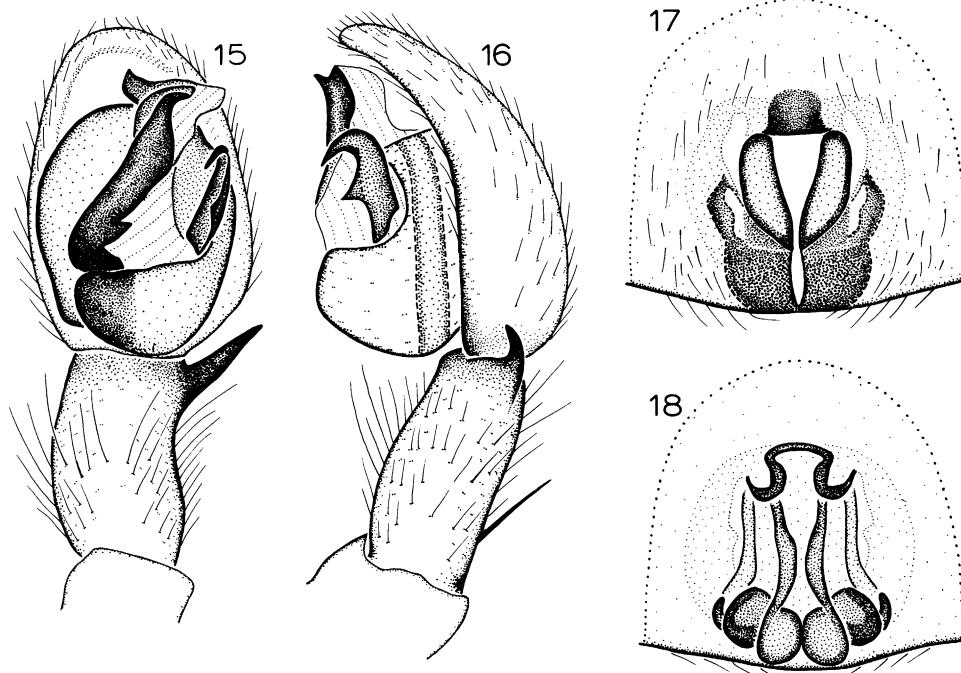
front width 0.10 mm., back width 0.16 mm. Epigynal hood relatively small (fig. 17). Anterior spermathecal lobes elongate (fig. 18). Leg spination: femur II d1-1-0, p0-0-1; tibiae: I p0-0-0, v4-4-0; II v2-3-0; IV r1-1-1.

Material Examined. Mexico: San Luis Potosí: Ciudad de Valles, July 19, 1956 (W. J. Gertsch, V. Roth, AMNH), 1♀. United States: Texas: Cameron Co.: La Gringa Resaca, Sept. 19, 1937 (L. I. Davis, AMNH), 1♀. San Patricio Co.: 8 mi. NE Sinton, Sept., 1960 (H. E. Laughlin, AMNH), 1♂.

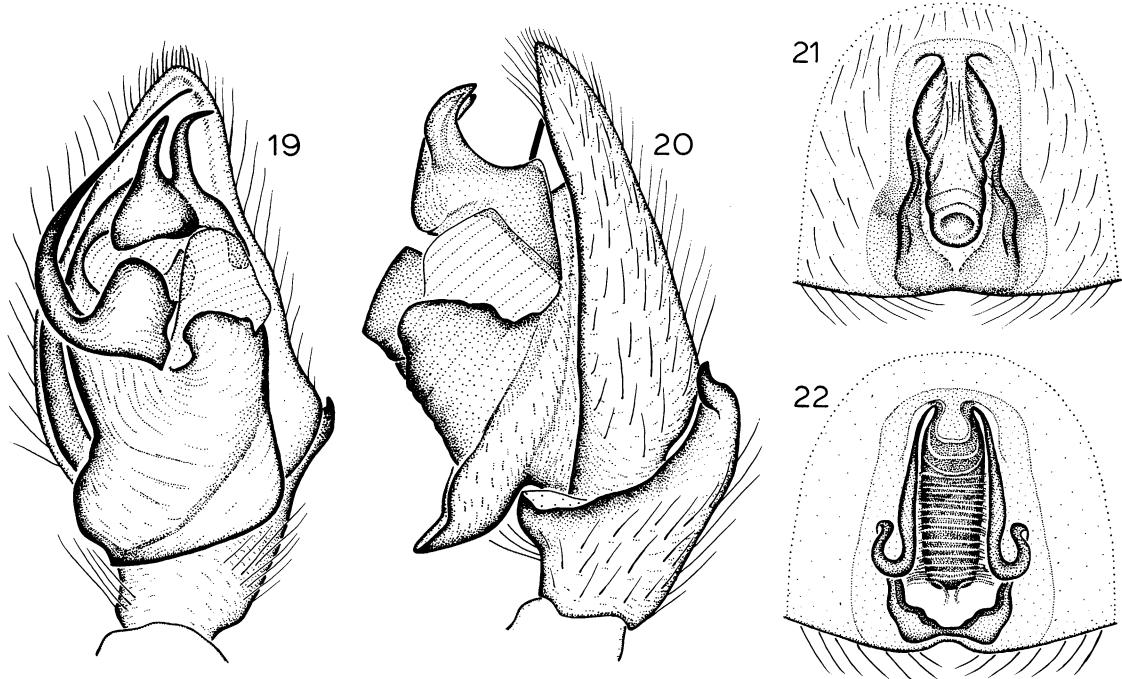
Distribution. Southern Texas and northeastern Mexico (map 1).

SOSTICUS CHAMBERLIN

Sosticus Chamberlin, 1922, p. 160 (type species by original designation *Sosticus continentalis* Chamberlin [=*Sosticus insularis* (Banks)]. Roewer, 1954, p. 441. Bonnet, 1958, p. 4093. *Sostogeus* Chamberlin and Gertsch, 1940, p. 1 (type species by original designation *Sostogeus zygethus* Chamberlin and Gertsch



Figs. 15-18. *Rachodrassus captiosus* (Gertsch and Davis). 15. Palp, ventral view. 16. Palp, retrolateral view. 17. Epigynum, ventral view. 18. Vulva, dorsal view.



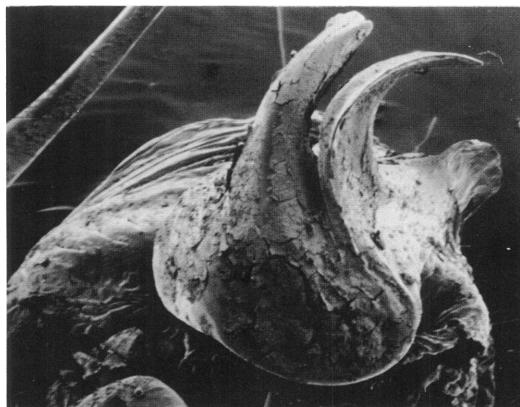
FIGS. 19-22. *Sosticus insularis* (Banks). 19. Palp, ventral view. 20. Palp, retrolateral view. 21. Epigynum, ventral view. 22. Vulva, dorsal view.

[=*Sosticus loricatus* (L. Koch)]. Roewer, 1954, p. 441. NEW SYNONYMY.

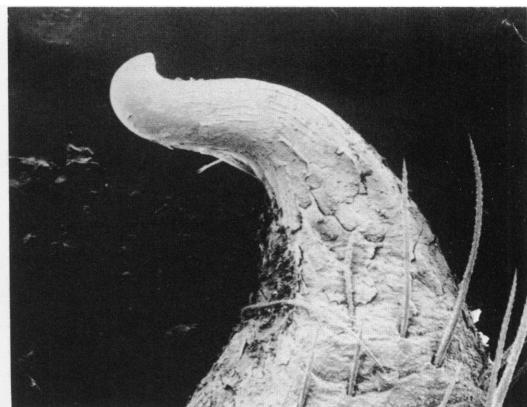
Diagnosis. *Sosticus* may be distinguished from the other Nearctic Gnaphosidae by the combined presence of two dorsal spines on tibia IV and an enlarged median apophysis on the male palpus (fig. 19) or an epigynal scape (fig. 21).

Description. Total length 4.1-11.1 mm. Carapace rounded in dorsal view, widest behind coxae II, gradually narrowed anteriorly, brown, darkest at borders and ocular area, with recumbent black setae. Cephalic area not elevated; thoracic groove long, longitudinal. From front, anterior eye row slightly procurved, posterior row procurved; from above, anterior row recurved, posterior row straight. AME circular, PME irregularly triangular, lateral eyes oval. AME diurnal, other eyes nocturnal. Lateral eyes larger than medians. AME separated by roughly their diameter, almost contiguous with ALE; PME separated by roughly their radius, further from laterals. Lateral eyes separated by roughly their radius. MOQ roughly square. Clypeal height greater than AME diam-

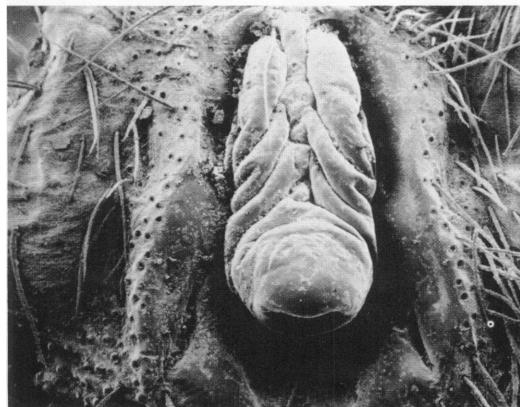
eter. Chelicerae with three promarginal and one or two retromarginal teeth. Endites with anterior third narrowed, widely separated at tip; labium relatively large; sternum strongly rebordered. Leg formula 4123. Typical leg spination pattern (only surfaces bearing spines listed): femora: I d1-1-0, p0-0-1; II d1-1-0, p0-1-1; III, IV d1-1-1, p0-1-1, r0-1-1; patellae: III p0-1-0, r0-1-0; IV r0-1-0; tibiae: I v2-2-2 in males, 0-0-0 in females; II v1r-2-2 in males, 0-0-0 in females; III d1-1-0, p1-1-1, v2-2-2, r1-1-1; IV d1-1-0, p2-1-1, v2-2-2, r2-1-2; metatarsi: I, II v2-2-0; III p1-2-2, v2-2-1r, r1-2-2; IV p1-2-2, v2-2-1p, r2-2-2. Metatarsi and tarsi different in coloration from femora, patellae, and tibiae, with light scopulae. Tarsi with two dentate claws and protruding onychium; claw tufts lacking. Trochanters unnotched. Metatarsal preening comb reduced to fine series of hairs. Abdomen dark gray dorsally with large brown anterior scutum in males; venter light gray. Six spinnerets, anteriors widely separated, with six to nine spigots. Palp with elongate, basally originating embolus and enlarged median



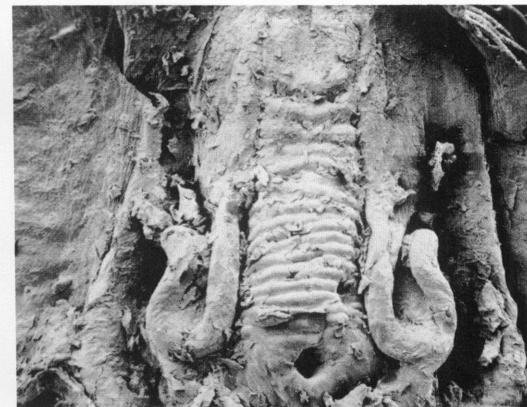
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26

FIGS. 23-26. *Sosticus insularis* (Banks). 23. Median apophysis, ventral view, 200 \times . 24. Retrolateral tibial apophysis, lateral view, 200 \times . 25. Epigynum, ventral view, 100 \times . 26. Vulva, dorsal view, 100 \times .

apophysis (fig. 19). Retrolateral tibial apophysis simple, elongate, or bifid. Epigynum with scape (fig. 21). Spermathecae with membranous anterior lobes (fig. 20).

Synonymy. Both sexes of *Sostogeus loricatus* fit the generic diagnosis and description given above. As the male of *Sosticus californicus*, new species, has two teeth on the cheliceral retromargin (as in *Sosticus*) but the female has only one tooth (as in *Sostogeus*), that character cannot be used to support separation of the genera.

KEY TO SPECIES OF *SOSTICUS*

1. Large median apophysis of males bifid (figs. 19, 23, 27); epigynal scape relatively large (figs. 21, 25, 29) 2

Large median apophysis of males not bifid (figs. 31, 35); epigynal scape relatively small (figs. 33, 37) *loricatus*

2. Prongs of median apophysis approximate (figs. 19, 23); epigynal scape widened anteriorly (figs. 21, 25) *insularis*
- Prongs of median apophysis widely separated (fig. 27); epigynal scape uniform in width throughout (fig. 29) *californicus*

Sosticus insularis (Banks)

Figures 19-26; Map 2

Prosthesima insularis Banks, 1895, p. 78 (female holotype from Sea Cliff, Long Island, Nassau County, New York, in MCZ, examined).

Melanophora insularis: Comstock, 1903, p. 18.

Herpyllus insularis: Banks, 1910, p. 8.

Sosticus insularis: Chamberlin, 1922, p. 160.
Roewer, 1954, p. 441. Bonnet, 1958, p. 4094.

Sosticus continentalis Chamberlin, 1922, p. 160
(female holotype from Dallas County, Iowa,
in MCZ, examined). Roewer, 1954, p. 441.
Bonnet, 1958, p. 4093. First synonymized by
Ubick and Roth, 1973, p. 7.

Sosticus projectus Fox, 1938, p. 236, pl. 1, figs.
3, 5 (female holotype and male allotype from
Indiana, no specific locality, in USNM, exam-
ined). Roewer, 1954, p. 441. Bonnet, 1958, p.
4094. First synonymized by Ubick and Roth,
1973, p. 7.

Diagnosis. *Sosticus insularis* is closest to *S. californicus* but may be distinguished by the approximate prongs of the median apophysis (figs. 19, 23) and the anteriorly widened epigynal scape (figs. 21, 25).

Male. Total length 5.23 ± 0.63 mm. Carapace 2.49 ± 0.20 mm. long, 1.98 ± 0.17 mm. wide. Femur II 1.69 ± 0.13 mm. long (13 specimens examined). Eye sizes and interdistances (mm.): AME 0.09, ALE 0.11, PME 0.10, PLE 0.11; AME-AME 0.08, AME-ALE 0.02, PME-PME 0.06, PME-PLE 0.08, ALE-PLE 0.03. MOQ length 0.28 mm., front width 0.26 mm., back width 0.26 mm. Median apophysis with closely spaced prongs (figs. 19, 23). Retrolateral tibial apophysis sinuous (figs. 20, 24). Leg spination: patella III p0-0-0.

Female. Total length 6.61 ± 0.87 mm. Carapace 2.86 ± 0.45 mm. long, 2.21 ± 0.35 mm. wide. Femur II 1.87 ± 0.27 mm. long (19 specimens examined). Eye sizes and interdistances (mm.): AME 0.11, ALE 0.12, PME 0.09, PLE 0.12; AME-AME 0.06, AME-ALE 0.02, PME-PME 0.10, PME-PLE 0.11, ALE-PLE 0.05. MOQ length 0.35 mm., front width 0.27 mm., back width 0.28 mm. Epigynal scape large, anteriorly widened (figs. 21, 25). Anterior spermathecal lobes separated by striated ridges (figs. 22, 26). Leg spination: patella III p0-0-0; metatarsi: I v2-0-0; III r2-2-2.

Material Examined. Canada: Ontario: Schomberg, Aug., 1926 (T. B. Kurata, AMNH), 1♂, 1♀. United States: Connecticut: Fairfield Co.: Redding, July 4, 1943 (R. H. Crandall, AMNH), 1♀. Georgia: Screven Co.: Sylvania, May 30, 1974 (W. Sedgwick, CWS), 1♀. Illinois: Cook Co.: Chicago (AMNH), 1♀. Indiana: no specific locality (AMNH), 1♂, 1♀. Iowa: Dubuque Co.,

Apr.-June, 1961, in basement (G. Kaufmann, MCZ), 1♀. Michigan: Cheboygan Co., Aug. 4, 1946 (A. M. Chickering, MCZ), 1♀. Livingston Co.: E. S. George Reserve, June 11-July 2, 1954 (H. K. Wallace, CHKW), 2♂, 2♀. Marquette Co., July 13, 1948 (A. M. Chickering, MCZ), 1♂. Missouri: Johnson Co.: Warrensburg, June 22-25, 1962, in house (W. Peck, EPC), 1♀. Ohio: Cham-
paign Co.: Cedar Bog, June 8, 1974 (K. Menders, CKMH), 1♂. Franklin Co.: Sharon Woods Metro-
politan Park, June 12-July 10, 1973, pitfall trap
(A. J. Penniman, CAJP), 2♂. Knox Co.: Gambier,
Aug., 1907 (J. A. Nelson, AMNH), 1♀. Okla-
homa: Comanche Co.: Wichita Mountains, 1928
(N. M. Newport, MCZ), 1♀. Pennsylvania: Berks
Co.: Virginville, summer, 1966 (P. Vaurie,
AMNH), 1♂. Texas: Dallas Co.: Elm Fork of
Trinity River, near Carrollton, Apr. 20, 1940,
under bark (H. Knutson, MCZ), 1♀. West Virgin-
ia: Mercer Co.: 2 mi. S Athens, June 14, 1966
(W. A. Shear, CWAS), 1♂. Wisconsin: Crawford
Co.: Eastman, May-June, 1949 (L. Fisher,
AMNH), 1♂, 1♀; Prairie du Chien, June, 1949 (L.
Smethurst, MCZ), 1♂. Fond du Lac Co.: Ripon,
Sept., 1949, found imbedded in honey (R.
Sleeter, AMNH), 1♀. Grant Co.: Glen Haven,
1953 (Breuer, MCZ), 1♀.

Distribution. Eastern North America (map 2).

Sosticus californicus, new species

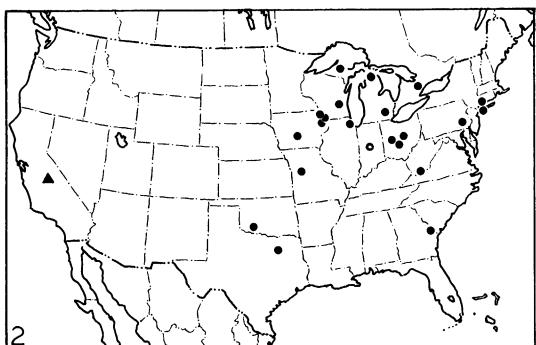
Figures 27-30; Map 2

Types. Male holotype and female paratype from North Fork, Madera County, California (July 9, 1958; W. J. Gertsch and V. Roth), deposited in AMNH.

Etymology. The specific name is derived from the type locality.

Diagnosis. *Sosticus californicus* is closest to *S. insularis* but may be distinguished by the widely separated prongs of the median apophysis (fig. 27) and the uniformly wide epigynal scape (fig. 29).

Male. Total length 5.02 mm. Carapace 2.59 mm. long, 2.02 mm. wide. Femur II 1.69 mm. long (holotype). Eye sizes and interdistances (mm.): AME 0.07, ALE 0.10, PME 0.11, PLE 0.12; AME-AME 0.08, AME-ALE 0.02, PME-PME 0.05, PME-PLE 0.06, ALE-PLE 0.04. MOQ length 0.30 mm., front width 0.22 mm., back width 0.27 mm. Median apophysis with



MAP 2. North America, showing distribution of *Sosticus insularis* (circles; open symbol indicates state record only) and *S. californicus* (triangle).

widely separated prongs (fig. 27). Retrolateral tibial apophysis enormously elongated (fig. 28). Leg spination: patella IV p0-1-0; tibiae: I v1r-2-2; IV p2-1-0, r2-1-0.

Female. Total length 5.44 mm. Carapace 2.59 mm. long, 2.05 mm. wide. Femur II 1.66 mm. long (paratype). Eye sizes and interdistances (mm.): AME 0.10, ALE 0.12, PME 0.12, PLE 0.12; AME-AME 0.07, AME-ALE 0.12, PME-PME 0.06, PME-PLE 0.06, ALE-PLE 0.03. MOQ length 0.29 mm., front width 0.27 mm., back width 0.30 mm. Epigynal scape of uniform width throughout its length (fig. 29). Anterior spermathecal lobes sinuous (fig. 30). Leg spination: femora: II p0-0-1; III d1-0-0; IV d1-1-0; tibia IV p1-1-1, r1-1-1; metatarsi: I v0-0-0; II v2-0-0.

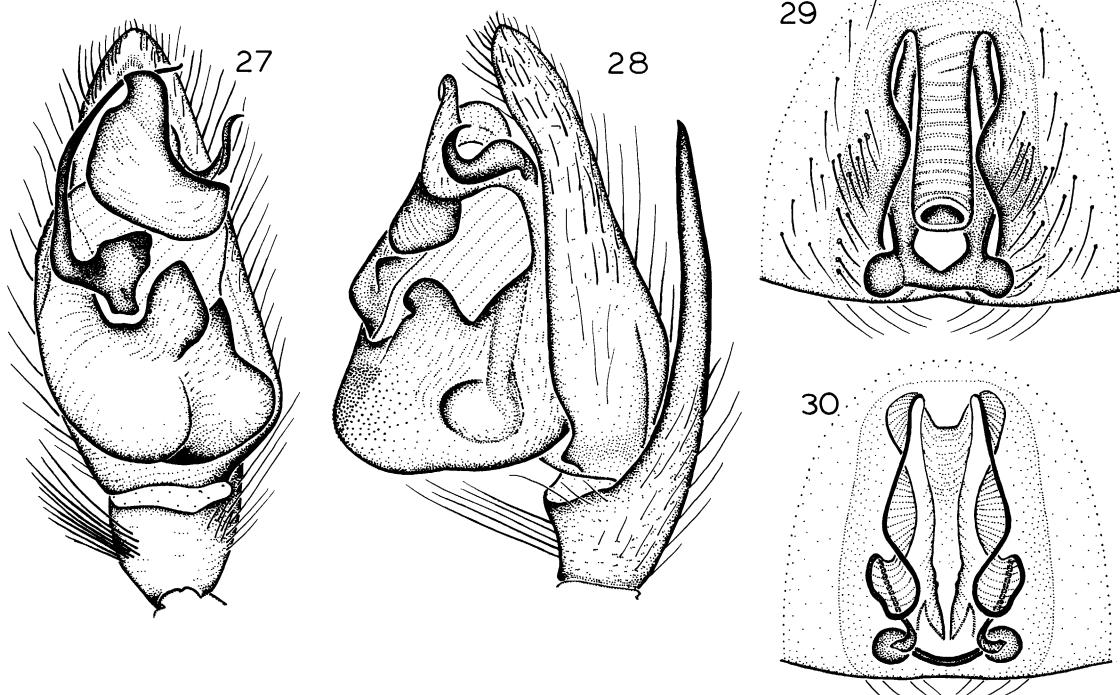
Material Examined. Only the types.

Distribution. California (map 2).

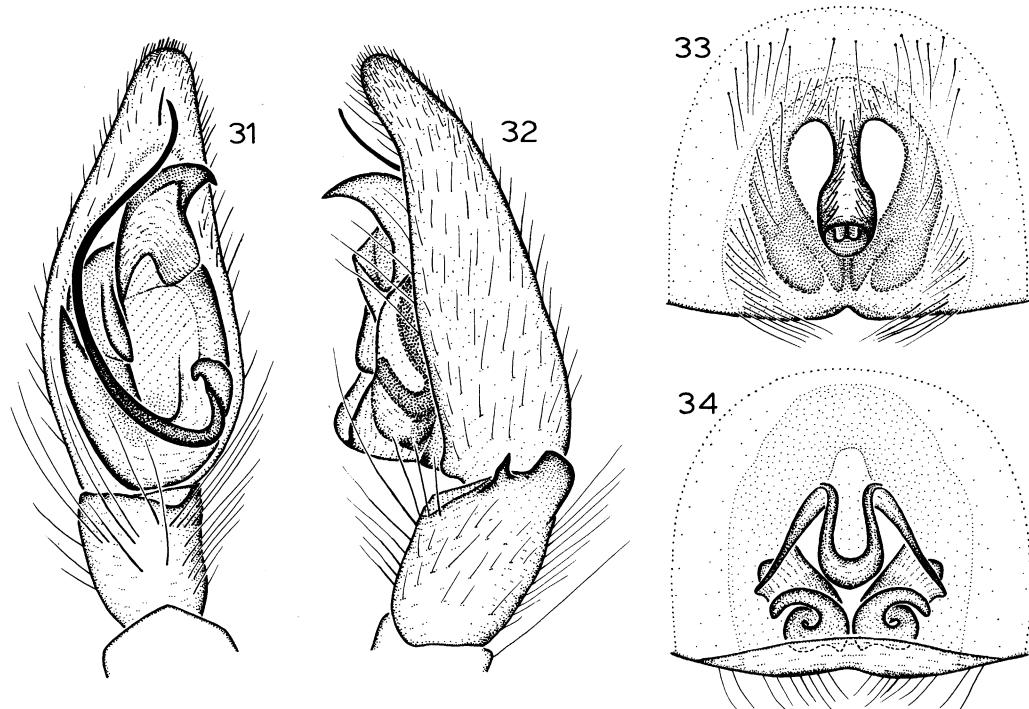
Sosticus loricatus (L. Koch), new combination

Figures 31-38; Map 3

Drassus loricatus L. Koch, 1866, p. 131, pl. 5, figs. 82-84 (male and female syntypes from Europe, not in BMNH, lost).



FIGS. 27-30. *Sosticus californicus*, new species. 27. Palp, ventral view. 28. Palp, retrolateral view. 29. Epigynum, ventral view. 30. Vulva, dorsal view.



FIGS. 31-34. *Sosticus loricatus* (L. Koch). 31. Palp, ventral view. 32. Palp, retrolateral view. 33. Epigynum, ventral view. 34. Vulva, dorsal view.

Scotophaeus loricatus: Simon, 1893b, p. 371.
Roewer, 1954, p. 434. Bonnet, 1958, p. 3968.

Sostogeus zygethus Chamberlin and Gertsch, 1940, p. 1, figs. 1-4 (male holotype from Brookings, Brookings County, South Dakota and female allotype from near Chicago, Cook County, Illinois, in AMNH, examined).
Roewer, 1954, p. 441.

Sostogeus loricatus: Gertsch, in Lindroth, 1957, p. 104.

Note: We have not checked the Eurasian synonyms of this Holarctic species; a complete synonymy can be found in Bonnet (1958).

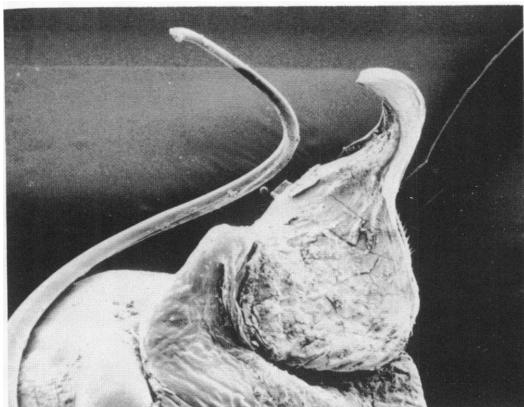
Diagnosis. *Sosticus loricatus* is a distinctive species easily recognizable by the bifid retrolateral tibial apophysis (figs. 32, 36) and small epigynal scape (figs. 33, 37).

Male. Total length 6.66 ± 0.79 mm. Carapace 3.17 ± 0.41 mm. long, 2.40 ± 0.30 mm. wide. Femur II 2.20 ± 0.25 mm. long (12 specimens examined). Eye sizes and interdistances (mm.): AME 0.09, ALE 0.10, PME 0.13, PLE 0.12;

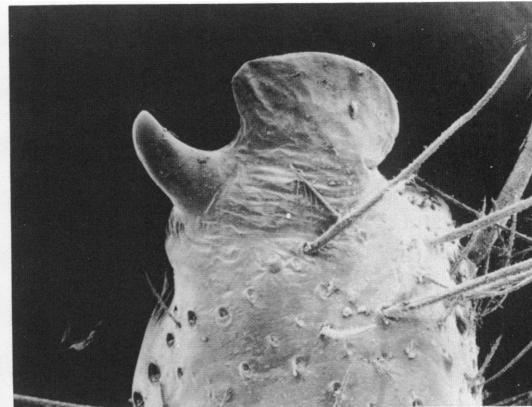
AME-AME 0.10, AME-ALE 0.02, PME-PME 0.04, PME-PLE 0.06, ALE-PLE 0.08. MOQ length 0.36 mm., front width 0.28 mm., back width 0.30 mm. Median apophysis not bifid (figs. 31, 35). Retrolateral tibial apophysis bifid (figs. 32, 36). Leg spination: femur I p0-1-1; tibiae: II p0-0-1; III d1-0-0, p2-1-1, r2-1-1; IV r1-1-2; metatarsi III, IV r2-1-2.

Female. Total length 9.15 ± 1.29 mm. Carapace 3.91 ± 0.47 mm. long, 2.92 ± 0.32 mm. wide. Femur II 2.54 ± 0.34 mm. long (12 specimens examined). Eye sizes and interdistances (mm.): AME 0.10, ALE 0.14, PME 0.15, PLE 0.14; AME-AME 0.13, AME-ALE 0.04, PME-PME 0.06, PME-PLE 0.15, ALE-PLE 0.10. MOQ length 0.45 mm., front width 0.32 mm., back width 0.36 mm. Epigynum with small, posteriorly expanded scape (figs. 33, 37). Spermathecae coiled (figs. 34, 38). Leg spination: tibiae: I d1-0-0, p2-1-1; IV r2-0-2; metatarsi: I v1p-0-0; II v2-1p-0; III r2-1-2.

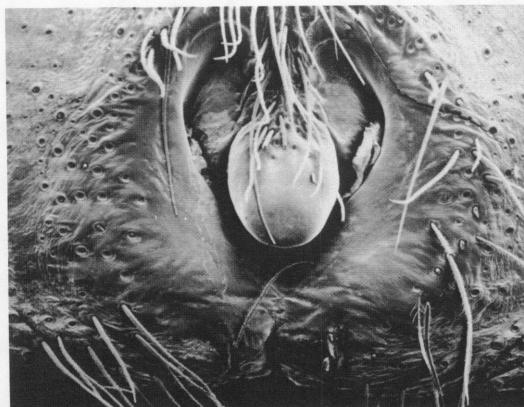
Material Examined. Canada: Ontario: Ottawa,



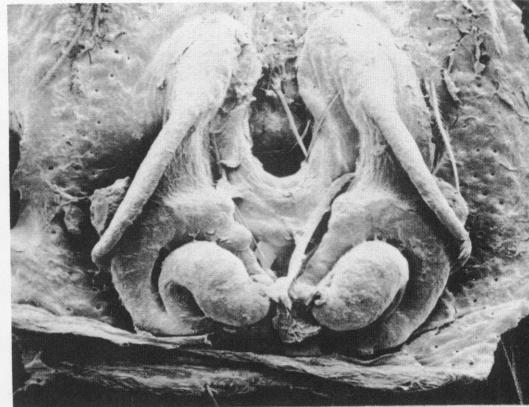
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36



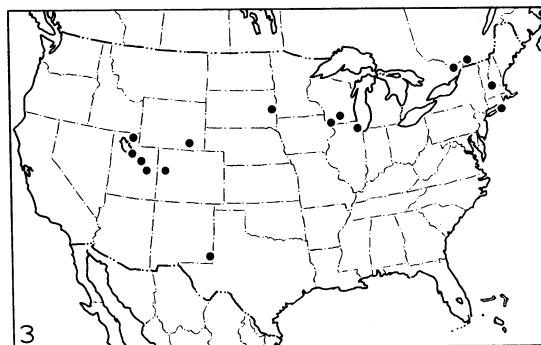
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38

FIGS. 35-38. *Sosticus loricatus* (L. Koch). 35. Median apophysis, ventral view, 200 \times . 36. Retrolateral tibial apophysis, lateral view, 200 \times . 37. Epigynum, ventral view, 100 \times . 38. Vulva, dorsal view, 100 \times .

Mar. 13, 1966, in bathroom (L. K. Smith, CNC), 1♀; July 17, 1972, in house (C. K. Starr, CNC), 1♀. *Quebec*: Montreal, Aug., 1961 (H. Bailey, CNC), 1♂. Sainte-Anne, Jan., 1958, in building (CNC), 1♂, 1♀. *United States*: *Colorado*: Mesa Co.: Palisade, June 15, 1959 (Anderson, AMNH), 1♀. *New Hampshire*: Cheshire Co.: Surry, in house, Apr.-June, 1967-1970 (A. M. Chickering, MCZ), 4♂, 1♀. *New Mexico*: Lea Co.: Hobbs, Sept., 1950 (Rowley, EPC), 1♀. *New York*: Suffolk Co.: Orient, Long Island, at light (R. Latham, AMNH), 1♀. *Utah*: Cache Co.: Logan, Aug. 10, 1936 (G. F. Knowlton, AMNH), 1♂. Carbon Co.: Price, Aug., 1939 (H. Higgins, AMNH), 1♀. *Emery Co.*: Green River, summer,



MAP 3. North America, showing distribution of *Sosticus loricatus*.

TABLE 1
Characters Used in Figure 39

Character	Plesiomorphic State	Apomorphic State
1. Epigynal septum	Absent	Present
2. Palpal conductor	Present	Absent
3. Denticle on cheliceral retromargin	Present	Absent
4. Epigynal atrium	Small, rounded	Large, squared
5. Palpal conductor	Behind embolus	Beside embolus
6. Translucent flange of embolus	Absent	Present
7. Base of median apophysis	Unsclerotized	Sclerotized
8. Male tibia I and II prolateral spines	Absent	Present
9. Prolateral bulge on median apophysis	Absent	Present
10. Tip of median apophysis	Gradually narrowed	Abruptly narrowed
11. Translucent flange of median apophysis	Absent	Present
12. Embolus	Free from tegulum	Appressed to tegulum
13. Embolus	Wide at base	Narrow at base
14. Median apophysis	Wide	Narrow
15. Tip of median apophysis	Narrow	Wide
16. Epigynal atrium	Rounded	Transverse
17. Female femur II prolateral spines	Two	One
18. Dorsal ducts of spermathecae	Absent	Present
19. Posterior tip of epigynal atrium	Open	Fused
20. Basal spermathecal ducts	Straight	Coiled
21. Posterior margin of epigynal atrium	Straight	Lobed
22. Dorsal ducts of spermathecae	Transverse	Longitudinal
23. Epigynal hood	Produced posteriorly	Not produced posteriorly
24. Basal spermathecal ducts	Folded	Twisted

1941 (H. Higgins, AMNH), 1♀. Salt Lake Co.: City Creek Canyon, Sept., 1947 (W. Ivie, AMNH), 1♂. *Wisconsin*: Dane Co.: Madison, July, 1946 (AMNH), 1♀. Grant Co.: Glen Haven, June, 1949 (R. Breuer, AMNH), 1♂. *Wyoming*: Albany Co.: Laramie, July 9, 1949 (S. Meyers, AMNH), 1♀; May 26, 1964, in house (W. D. Fronk, CWDF), 1♂; Nov. 8, 1964 (L. J. Stevens, CWDF), 1♂.

Distribution. Holarctic, including central North America (map 3).

SCOPODES CHAMBERLIN

Scopodes Chamberlin, 1922, p. 156 (type species by original designation *Scopodes catharius* Chamberlin). Roewer, 1954, p. 432. Bonnet, 1958, p. 3956.

Diagnosis. *Scopodes* may be distinguished from the other Nearctic Gnaphosidae by the strongly procurred posterior eye row (fig. 1) and enlarged, elongated anterior spinnerets (fig. 2).

Description. Total length 3.2-9.8 mm. Carapace oval in dorsal view, widest between coxae II and III, gradually narrowed anteriorly, light orangish brown, darkest anteriorly, with erect and recumbent black setae. Cephalic area not elevated; thoracic groove longitudinal. From front, both eye rows strongly procurred; from above, anterior eye row straight to procurred, posterior row strongly procurred. AME circular, PME irregularly oval, lateral eyes oval. AME diurnal, others nocturnal. PME usually largest. AME separated by roughly their diameter, by less than their radius from ALE; PME separated by their radius, by roughly their diameter from PLE. Lateral eyes separated by roughly their radius. MOQ roughly square. Clypeal height greater than AME diameter. Chelicerae with two promarginal and one or no (*cambridgei*, *naturalisticum*, *bryantae*, *nesiotes*) teeth. Endites long, inclined, obliquely depressed; labium truncate anteriorly; sternum rounded, rebordered, with sclerotized extensions to coxae. Leg formula 4123. Typical

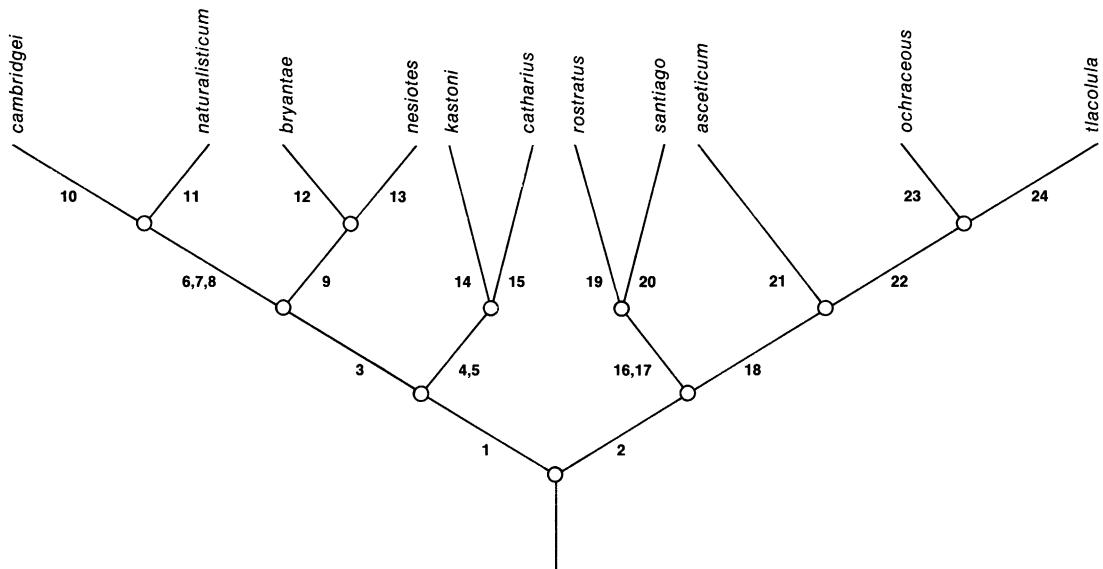


FIG. 39. Cladogram of *Scopodes*. Numbers refer to the acquisition of apomorphic character states listed in table 1.

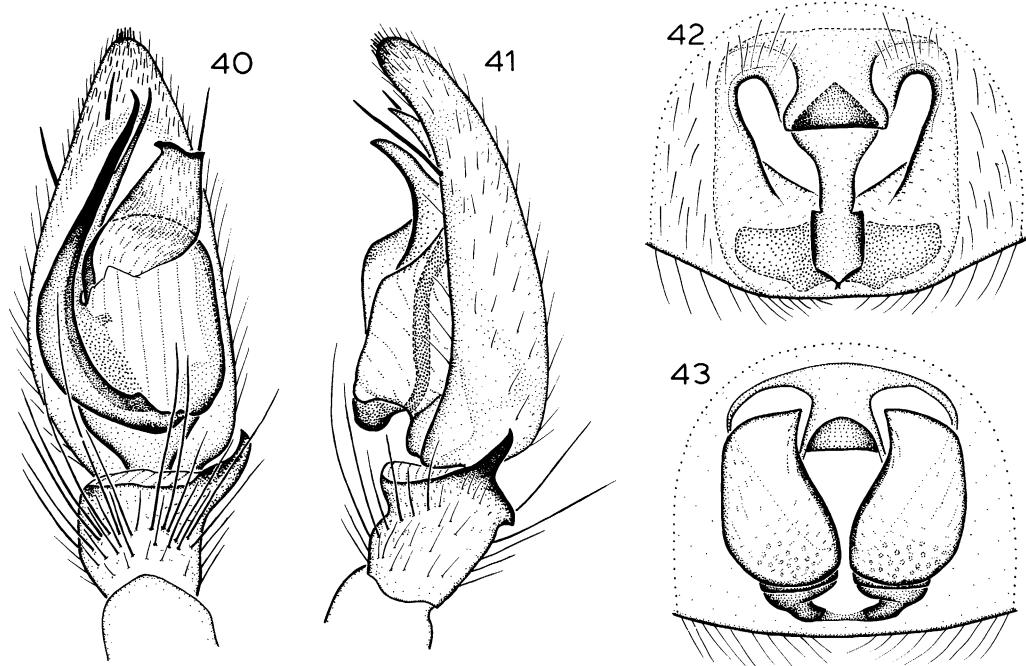
leg spination pattern (only surfaces bearing spines listed): femora: I, II d1-1-1, p0-1-1, r0-1-0; III, IV d1-1-1, p0-1-1, r0-1-1; patellae: III p0-1-0, r0-1-0; IV r0-1-0; tibiae: I, II v2-2-1p; III d1-0-0, p1-1-1, v2-2-2, r0-1-1; IV d1-0-0, p1-1-1, v2-2-2, r1-1-1; metatarsi: I, II v2-0-0; III p1-2-2, v2-2-2, r1-1-2; IV p1-2-2, v2-2-2, r1-2-2. Legs orangish brown, darkest dorsally. Anterior metatarsi and all tarsi scopulate. Tarsi with two dentate claws and claw tufts. Trochanters slightly notched. Metatarsal preening comb lacking. Abdomen brownish gray with reduced scutum in males. Six spinnerets, anteriors enlarged, elongated, with six to eight long spigots and one short ventral tubule. Palp with elongate, basally originating embolus, enlarged median apophysis, and often membranous conductor (fig. 40). Retrolateral tibial apophysis with ventral and dorsal points (fig. 41). Epigynum with large hood, atrium, and often distinct septum (fig. 42). Spermathecae with basal ducts, anterior lobes, and sometimes dorsal ducts (fig. 43).

Uncertain Name. Simon (1893a) described as *Megamyrmecon californicum* a juvenile female from California belonging to *Scopodes*. As there are four species of the genus known from southern California and there is no way to determine

which of the four Simon had, the name is considered a *nomen dubium*.

KEY TO SPECIES OF *SCOPODES*

1. Palp with conductor (as in fig. 40), sometimes hidden behind enlarged median apophysis (as in fig. 72); epigynal atrium divided by distinct septum (as in fig. 42)
 - 2
 - Palp without conductor (as in fig. 88); epigynal atrium not divided by distinct septum (as in fig. 78) 7
2. Palpal conductor situated beside median apophysis (figs. 40, 48); epigynal atrium squared (figs. 42, 50) 3
 - Palpal conductor situated behind median apophysis (as in fig. 72); epigynal atrium rounded (as in fig. 54) 4
3. Median apophysis relatively wide (figs. 40, 44); epigynal hood situated near anterior margin of atrium (figs. 42, 45). . *catharius*
 - Median apophysis relatively narrow (figs. 46, 48); epigynal hood situated near posterior margin of atrium (figs. 47, 50). . *kastoni*
4. Embolus with translucent flange (figs. 53, 61); epigyna as in figs. 54, 62 5
 - Embolus without translucent flange (figs. 65, 73); epigyna as in figs. 66, 74 6
5. Median apophysis gradually narrowed distally



FIGS. 40-43. *Scopodes catharius* Chamberlin. 40. Palp, ventral view. 41. Palp, retrolateral view. 42. Epigynum, ventral view. 43. Vulva, dorsal view.

- (figs. 52, 56); epigynal septum relatively small (figs. 54, 57) *naturalisticum*
Median apophysis abruptly narrowed distally (figs. 58, 60); epigynal septum relatively large (figs. 59, 62) *cambridgei*
6. Median apophysis straight (figs. 64, 68); epigynal atrium relatively large (figs. 66, 69) *nesiotae*
Median apophysis curved (figs. 70, 72); epigynal atrium relatively small (figs. 71, 74) *bryantae*
7. Males 8
Females 10
8. Median apophysis with distinct retrolateral hook (figs. 76, 84) 9
Median apophysis without distinct retrolateral hook (fig. 88) *ochraceus*
9. Median apophysis widest basally (fig. 76) *rostratus*
Median apophysis widest medially (fig. 84) *asceticum*
10. Epigynal atrium transverse (figs. 78, 80); femur II with one prolateral spine . . 11
Epigynal atrium not transverse (figs. 82, 86, 90); femur II with two prolateral spines 12

11. Epigynal atrium relatively large (fig. 78) *rostratus*
Epigynal atrium relatively small (fig. 80) *santiago*
12. Posterior margin of epigynal atrium lobed (fig. 86) *asceticum*
Posterior margin of epigynal atrium not lobed (figs. 82, 90) 13
13. Epigynal hood protruding into atrium (fig. 82) *tlacolula*
Epigynal hood not protruding into atrium (fig. 90) *ochraceus*

Scopodes catharius Chamberlin
Figures 1, 2, 40-45; Map 4

Scopodes catharius Chamberlin, 1922, p. 156
(male holotype from Claremont, Los Angeles County, California, in MCZ, examined).
Roewer, 1954, p. 432. Bonnet, 1958, p. 3956.

Diagnosis. *Scopodes catharius* is closest to *S. kastoni* but may be distinguished by the much wider median apophysis (figs. 40, 44) and the more anteriorly situated epigynal hood (figs. 42, 45).

Male. Total length 4.66-6.52 mm. Carapace 2.20-2.92 mm. long, 1.79-2.30 mm. wide. Femur II 1.91-2.30 mm. long (nine specimens). Eye sizes and interdistances (mm.): AME 0.10, ALE 0.12, PME 0.12, PLE 0.10; AME-AME 0.08, AME-ALE 0.03, PME-PME 0.06, PME-PLE 0.09, ALE-PLE 0.04. MOQ length 0.30 mm., front width 0.28 mm., back width 0.30 mm. Palpal conductor beside relatively wide median apophysis (figs. 40, 44). Retrolateral tibial apophysis curved at tip (fig. 41). Leg spination: tibiae: I v2-2-0; II v1r-2-1p; III r1-1-1.

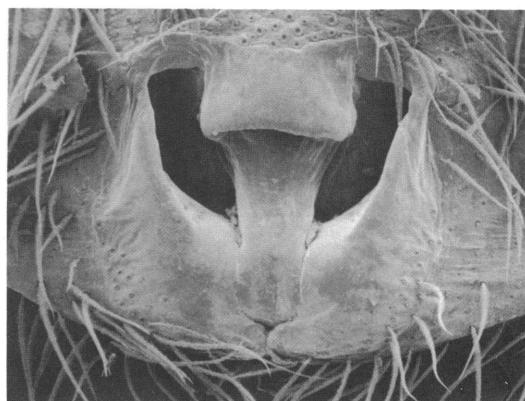
Female. Total length 5.72-7.65 mm. Carapace 2.26-3.46 mm. long, 1.73-2.64 mm. wide. Femur II 1.94-2.74 mm. long (nine specimens). Eye sizes and interdistances (mm.): AME 0.09, ALE

0.12, PME 0.12, PLE 0.11; AME-AME 0.07, AME-ALE 0.03, PME-PME 0.04, PME-PLE 0.07, ALE-PLE 0.05. MOQ length 0.32 mm., front width 0.26 mm., back width 0.28 mm. Epigynal hood near anterior margin of squared atrium (figs. 42, 45). Anterior spermathecal lobes uniform in width throughout (fig. 43). Leg spination: femur I p0-0-1, r0-0-0; tibiae I, II v1p-1p-1p; metatarsus I v1p-0-0.

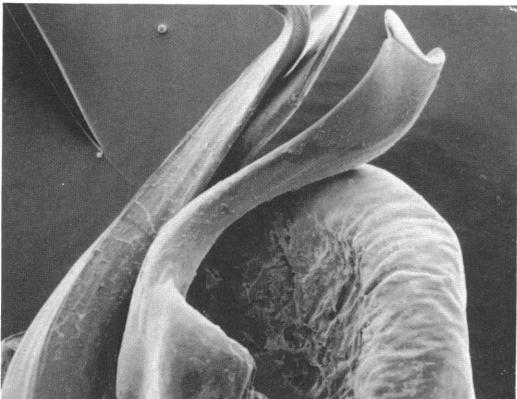
Material Examined. United States: California: Inyo Co.: 1-2 mi. W Lone Pine, Apr. 27, 1960 (W. J. Gertsch, W. Ivie, R. Schrammel, AMNH), 3♂, 2♀. Kern Co.: 6 mi. NW Mojave, Apr. 29, 1960 (W. J. Gertsch, W. Ivie, R. Schrammel, AMNH), 1♀. Orange Co.: Anaheim, July, 1962, in building (F. W. Handsfield, Jr., AMNH), 1♂,



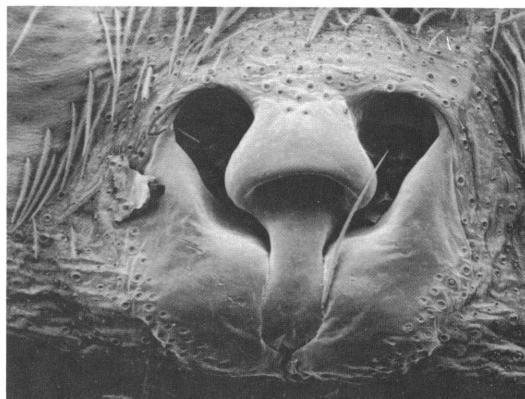
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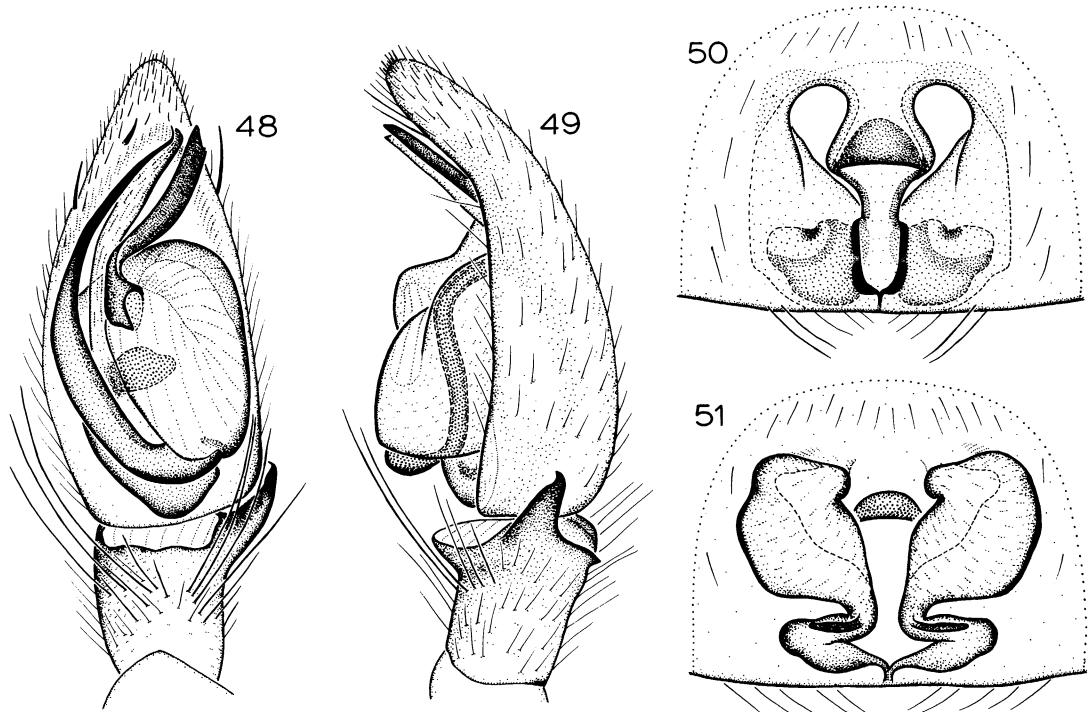


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47

FIGS. 44-47. 44, 45. *Scopodes catharius* Chamberlin. 44. Median apophysis, ventral view, 200 \times . 45. Epigynum, ventral view, 100 \times . 46, 47. *S. kastoni*, new species. 46. Median apophysis, ventral view, 200 \times . 47. Epigynum, ventral view, 100 \times .



FIGS. 48-51. *Scopodes kastoni*, new species. 48. Palp, ventral view. 49. Palp, retrolateral view. 50. Epigynum, ventral view. 51. Vulva, dorsal view.

1♀. Riverside Co.: Fulmor Lake, San Jacinto Mountains, 1969 (D. E. Bixler, CDEB), 1♀; Winchester, May 31, 1967, in wood pile (W. Icenogle, AMNH), 1♂; July 18, 1967, in building (W. Icenogle, CDEB), 1♂; Sept. 2-6, 1967, pitfall trap (W. Icenogle, CDEB), 1♂, 1♀; Aug. 22, 1968, pitfall trap (W. Icenogle, CDEB), 1♀; Sept. 13, 1969, in building (W. Icenogle, AMNH), 1♀; June 4, 1970, in building (W. Icenogle, CDEB), 1♀. San Diego Co.: Mt. Palomar, June 30, 1956, elevation 3000-5000 feet (W. J. Gertsch, V. Roth, AMNH), 1♂.

Distribution. Southern California (map 4).

Note: Mr. Wendell R. Icenogle reports (*in litt.*) having observed specimens of this species feeding on other spiders of the families Gnaphosidae, Lycosidae, and Agelenidae.

Scopodes kastoni, new species
Figures 46-51; Map 4

Types. Male holotype and female paratype from pitfall trap in chaparral, San Diego, San

Diego County, California (September, 1970; B. J. Kaston), deposited in AMNH courtesy of Dr. Kaston.

Etymology. The specific name is a patronym in honor of Dr. B. J. Kaston, who collected the type specimens, in recognition of his numerous contributions to American arachnology.

Diagnosis. *Scopodes kastoni* is closest to *S. catharius* but may be distinguished by the much narrower median apophysis (figs. 46, 48) and the more posteriorly situated epigynal hood (figs. 47, 50).

Male. Total length 5.24 ± 0.67 mm. Carapace 2.32 ± 0.32 mm. long, 1.79 ± 0.28 mm. wide. Femur II 1.88 ± 0.25 mm. long (15 specimens examined). Eye sizes and interdistances (mm.): AME 0.11, ALE 0.12, PME 0.10, PLE 0.12; AME-AME 0.09, AME-ALE 0.03, PME-PME 0.05, PME-PLE 0.10, ALE-PLE 0.07. MOQ length 0.39 mm., front width 0.30 mm., back width 0.26 mm. Palpal conductor beside relatively narrow median apophysis (figs. 46, 48).

Retrolateral tibial apophysis narrowed below tip (fig. 49). Leg spination: tibia II v1r-2-1p.

Female. Total length 7.45 ± 0.89 mm. Carapace 2.74 ± 0.37 mm. long, 2.16 ± 0.32 mm. wide. Femur II 2.17 ± 0.30 mm. long (13 specimens examined). Eye sizes and interdistances (mm.): AME 0.12, ALE 0.13, PME 0.12, PLE 0.14; AME-AME 0.12, AME-ALE 0.03, PME-PME 0.09, PME-PLE 0.14, ALE-PLE 0.07. MOQ length 0.36 mm., front width 0.36 mm., back width 0.33 mm. Epigynal hood situated near posterior margin of squared atrium (figs. 47, 50). Anterior spermathecal lobes narrowed anteriorly, especially in specimen from Baja California Norte (fig. 51). Leg spination: tibia I v2-1p-1p; metatarsus I v1p-0-0.

Material Examined. Mexico: Baja California Norte: Meling Ranch, 5 mi. E San José, May 1-4, 1961 (W. J. Gertsch, V. Roth, AMNH), 1♀. United States: California: San Diego Co.: La Cresta, May 31, 1948 (W. M. Pearce, AMNH), 1♂, 2♀; San Diego, Aug. 3, 1967 (J. Y. Sandoval, CBJK), 1♂; May 24, 1970, in house (B. J.

Kaston, CBJK), 1♂; numerous collections, June-Feb., 1970-1972, pitfall traps in chaparral (B. J. Kaston, CBJK, AMNH), 11♂, 9♀.

Distribution. Southern California and northern Baja California Norte (map 4).

Scopodes naturalisticum (Chamberlin)

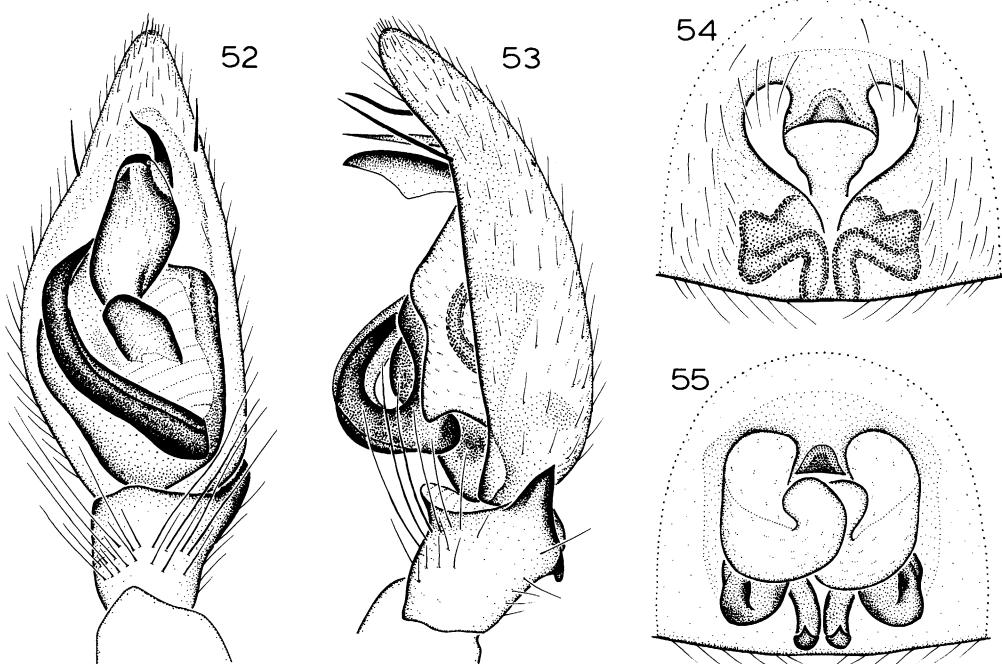
Figures 52-57; Map 4

Megamyrmecon naturalisticum Chamberlin, 1924, p. 617, figs. 54, 55 (male holotype and female allotype from Isla San Luis, Baja California Norte, Mexico, in CAS, examined). Roewer, 1954, p. 427. Bonnet, 1957, p. 2751.

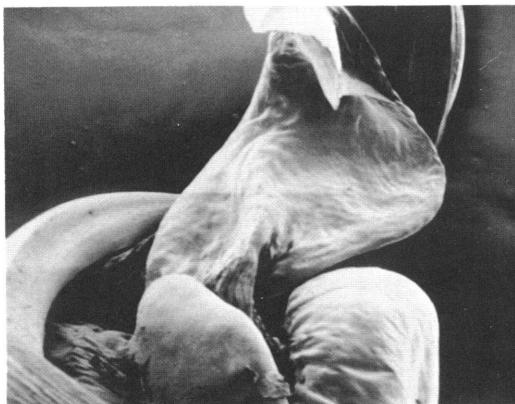
Megamyrmecon pessimisticum Chamberlin, 1924, p. 616, fig. 53 (male holotype from Palm Wells, Bahía de Los Ángeles, Baja California Norte, Mexico, in CAS, examined). Roewer, 1954, p. 427. Bonnet, 1957, p. 2752.
NEW SYNONYMY.

Scopodes naturalisticum: Ubick and Roth, 1973, p. 7.

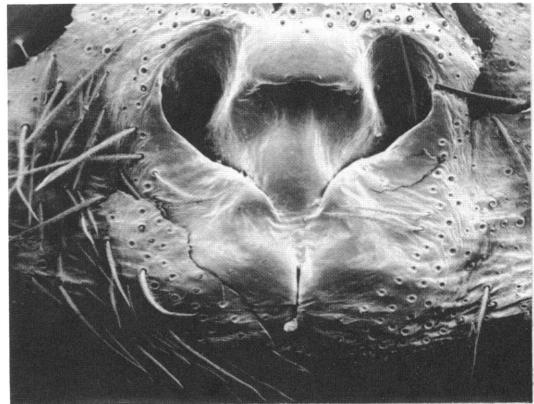
Scopodes pessimisticum: Ubick and Roth, 1973, p. 7.



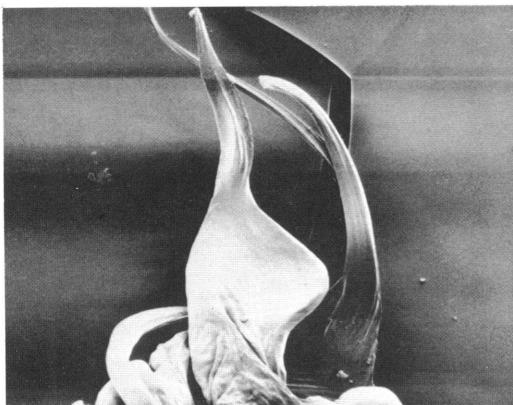
FIGS. 52-55. *Scopodes naturalisticum*, new species. 52. Palp, ventral view. 53. Palp, retrolateral view. 54. Epigynum, ventral view. 55. Vulva, dorsal view.



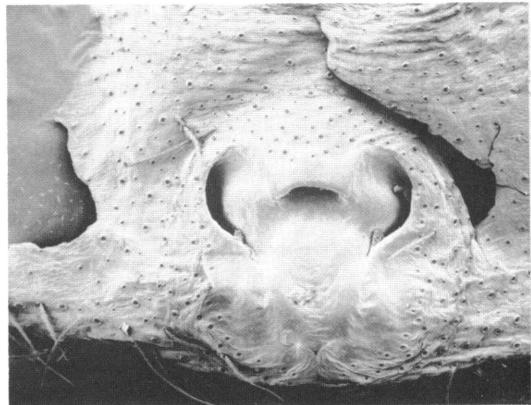
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57



58



59

FIGS. 56-59. 56, 57. *Scopodes naturalisticum* (Chamberlin). 56. Median apophysis, ventral view, 200X. 57. Epigynum, ventral view, 100X. 58, 59. *S. cambridgei* (Gertsch and Davis). 58. Median apophysis, ventral view, 200X. 59. Epigynum, ventral view, 100X.

Diagnosis. *Scopodes naturalisticum* is closest to *S. cambridgei* but may be distinguished by the gradually narrowed tip of the median apophysis (figs. 52, 56) and the much smaller epigynal septum (figs. 54, 57).

Male. Total length 5.03 ± 0.59 mm. Carapace 2.26 ± 0.22 mm. long, 1.71 ± 0.17 mm. wide. Femur II 1.89 ± 0.15 mm. long (52 specimens examined). Eye sizes and interdistances (mm.): AME 0.10, ALE 0.11, PME 0.14, PLE 0.12; AME-AME 0.11, AME-ALE 0.03, PME-PME 0.05, PME-PLE 0.11, ALE-PLE 0.05. MOQ length 0.35 mm., front width 0.31 mm., back width 0.33 mm. Embolus with translucent

flange, median apophysis gradually narrowed distally (figs. 52, 56). Retrolateral tibial apophysis short, triangular (fig. 53). Leg spination: femur I p0-0-1; tibiae: I p1-0-0, v2-2-2; II p0-0-1, v2-2-2, IV d1-1-0; metatarsi: I v2-1-p0; II v2-2-0.

Female. Total length 5.82 ± 1.03 mm. Carapace 2.40 ± 0.26 mm. long, 1.74 ± 0.20 mm. wide. Femur II 1.83 ± 0.25 mm. long (20 specimens examined). Eye sizes and interdistances (mm.): AME 0.10, ALE 0.11, PME 0.11, PLE 0.10; AME-AME 0.09, AME-ALE 0.03, PME-PME 0.06, PME-PLE 0.12, ALE-PLE 0.05. MOQ length 0.34 mm., front width 0.28 mm., back

width 0.28 mm. Epigynal septum relatively small (figs. 54, 57). Basal spermathecal ducts bent (figs. 54, 55). Leg spination: femora: I p0-0-1, r0-0-0; IV r0-0-1; metatarsi I, II v2-1p-0.

Material Examined. Mexico: *Baja California Norte*: Isla San Luis, Apr. 28, 1921 (J. C. Chamberlin, MCZ), 1♂; foothills, Sierra San Pedro Martir, 3.1 mi. NE Rancho El Burro, June 16, 1973 (S. C. Williams, K. B. Blair, CAS), 1♂. *Sonora*: S end Río Sonoya near Gulf of California, Nov. 26, 1959 (V. Roth, AMNH), 1♀; 23 mi. E San Luis, Dec. 4, 1955 (V. Roth, AMNH), 1♂. United States: *Arizona*: Maricopa Co.: Phoenix, May, 1930 (R. H. Crandall, AMNH), 1♀. Pima Co.: Organ Pipe Cactus National Monument, June 10, 1952 (M. Cazier, W. J. Gertsch, R. Schrammel, AMNH), 1♂; Papago Well, Feb. 20, 1958 (V. Roth, AMNH), 1♂. Yuma Co.: near Castle Dome Peak, Nov. 6, 1955 (V. Roth, CVDR), 1♂; Fortuna Mine, Feb. 7, 1960 (V. Roth, AMNH), 1♂; Horse Tanks, 60 mi. N Yuma, Mar. 18, 1960 (D. Muse, AMNH), 1♂. *California*: Imperial Co.: 3 mi. W O'Gilby, Apr. 9, 1959, on sand dunes (V. Roth, D. Muse, AMNH), 1♂. Riverside Co.: Coachella Valley, Mar., 1953 (R. X. Schick, AMNH), 1♂; Deep Canyon, June 10, 1968 (D. E. Bixler, CDEB), 1♂; 3.5 mi. S Palm Desert, Apr. 14-21, 1973 (K. L. Andrews, UCR), 1♂. San Bernardino Co.: Baker, Mar. 26, 1941 (MCZ), 1♂; Afton Canyon, Cady Mountains, May 4, 1969, under rock on open desert (D. E. Bixler, CDEB), 1♂; 5 mi. E Lucerne Valley, Apr. 19, 1960 (W. J. Gertsch, W. Ivie, R. Schrammel, AMNH), 1♂; Pisgah Lava Flow, numerous collections, Mar. 28-Aug. 30, 1959-1960 (B. Banta, CAS, CDU), 3♂, 5♀; Twentynine Palms, numerous collections, Mar.-Aug., Dec., 1944-1945 (J. H. Branch, AMNH), 20♂, 5♀; Yucca Valley, Apr. 15, 1961 (V. Roth, AMNH), 1♀; 5 mi. N Yucca Valley, Apr. 19, 1960 (W. J. Gertsch, W. Ivie, R. Schrammel, AMNH), 2♂. San Diego Co.: Clark Lake, Anza-Borrego Desert State Park, Mar. 29, 1960, under board, dry lake (D. Merkel, V. Roth, AMNH), 1♂; Mountain Springs, near Desert View Tower, Mar. 29, 1960 (W. J. Gertsch, W. Ivie, R. Schrammel, AMNH), 1♂; E end Sentenac Canyon, Apr. 13, 1957, creosote bush scrub (R. X. Schick, AMNH), 1♀. Nevada: Nye Co.: Mercury, numerous collections, Mar. 29-Aug. 15, 1960-1961 (AMNH),

7♂, 4♀. Pershing Co.: Lovelock, May 4, 1941 (MCZ), 1♀.

Distribution. California and Nevada south to Baja California Norte and Sonora (map 4).

Synonymy. No genitalic differences were detected between the holotypes of *pessimisticum* and *naturalisticum*; Chamberlin's choice of name for the former species may well reflect this. As first revisers we choose the latter name since both sexes were included in the original description.

Scopodes cambridgei (Gertsch and Davis)
Figures 58-63; Map 5

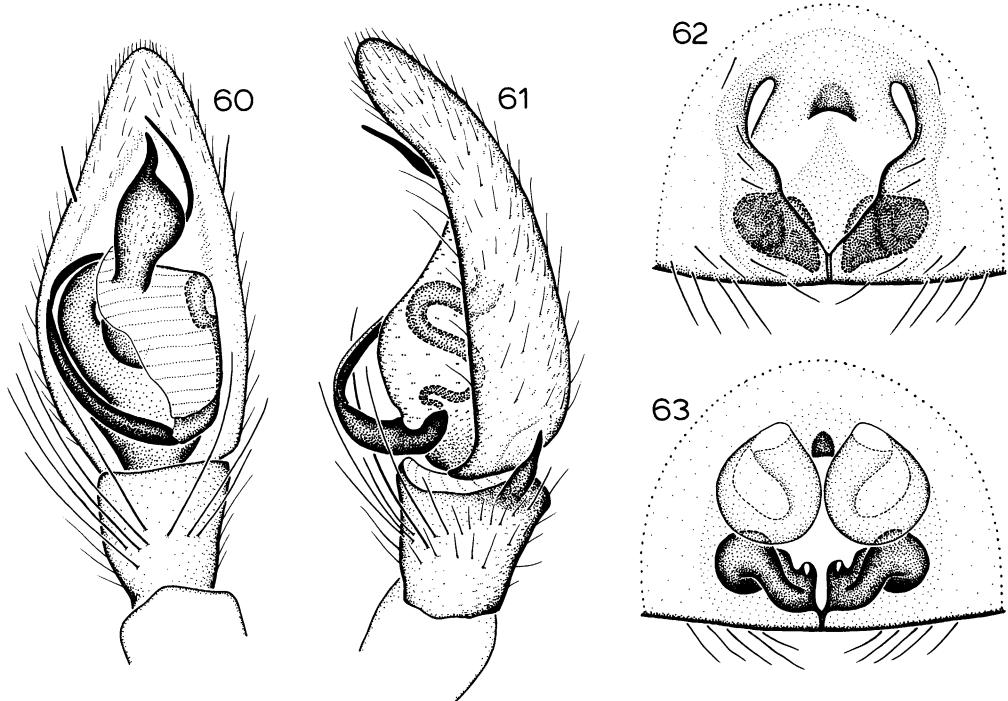
Megamyrmeicum cambridgei Gertsch and Davis, 1940, p. 11, figs. 3, 4 (male holotype from 1 mile west of Lerdo, Durango, Mexico, in AMNH, examined). Roewer, 1954, p. 426.

Scopodes cambridgei: Ubick and Roth, 1973, suppl. 4, p. 2.

Diagnosis. *Scopodes cambridgei* is closest to *S. naturalisticum* but may be distinguished by the abruptly narrowed tip of the median apophysis (figs. 58, 60) and the enlarged epigynal septum (figs. 59, 62).

Male. Total length 4.03-4.79 mm. Carapace 1.62-1.96 mm. long, 1.22-1.44 mm. wide. Femur II 1.22-1.55 mm. long (four specimens). Eye sizes and interdistances (mm.): AME 0.09, ALE 0.09, PME 0.11, PLE 0.10; AME-AME 0.08, AME-ALE 0.03, PME-PME 0.04, PME-PLE 0.11, ALE-PLE 0.05. MOQ length 0.30 mm., front width 0.26 mm., back width 0.27 mm. Embolus with translucent flange, median apophysis abruptly narrowed distally (figs. 58, 60). Retro-lateral tibial apophysis narrow, elongate (fig. 61). Leg spination: femur I p0-0-1, r0-0-0; tibiae: I p1-0-0; II p0-0-1, v2-2-2; III r1-1-1; metatarsi I, II v2-1p-0.

Female. Total length 4.43-5.87 mm. Carapace 1.80-2.05 mm. long, 1.26-1.55 mm. wide. Femur II 1.22-1.51 mm. long (eight specimens). Eye sizes and interdistances (mm.): AME 0.11, ALE 0.11, PME 0.12, PLE 0.10; AME-AME 0.06, AME-ALE 0.03, PME-PME 0.04, PME-PLE 0.09, ALE-PLE 0.04. MOQ length 0.28 mm., front width 0.27 mm., back width 0.27 mm. Epigynal septum enlarged, nearly filling atrium (figs. 59, 62). Basal spermathecal ducts sinuous (fig. 63).



FIGS. 60-63. *Scopodes cambridgei* (Gertsch and Davis). 60. Palp, ventral view. 61. Palp, retrolateral view. 62. Epigynum, ventral view. 63. Vulva, dorsal view.

Leg spination: femora: I p0-0-1, r0-0-0; IV r0-0-1; tibia I v2-2-0; metatarsi I, II v2-1p-0.

Material Examined. Mexico: Chihuahua: 22 mi. N Parral, July 17, 1956 (W. J. Gertsch, V. Roth, AMNH), 2♀; Salaises, July 22, 1965 (J. Reddell, J. Fish, AMNH), 1♀; 5 km. W Salaises, Feb. 25, 1965 (J. Reddell, W. Bell, AMNH), 1♂. Coahuila: 20 mi. E Saltillo, July 18, 1956 (W. J. Gertsch, V. Roth, AMNH), 1♂, 2♀. United States: Texas: Hudspeth Co., Aug. 16, 1935 (S. Mulaik, AMNH), 1♀. Terrell Co.: Sanderson, May 26, 1952 (M. Cazier, W. J. Gertsch, R. Schrammel, AMNH), 1♂, 1♀. Val Verde Co.: Del Rio (AMNH), 1♀.

Distribution. Western Texas and northern Mexico (map 5).

Scopodes nesiotes (Chamberlin)
Figures 64-69; Map 5

Megamyrmecion nesiotes Chamberlin, 1924, p. 618, fig. 56 (female holotype from Isla

Danzante Primero, Baja California Sur, Mexico, in CAS, examined). Roewer, 1954, p. 427. Bonnet, 1957, p. 2752.

Scopodes nesiotes: Ubick and Roth, 1973, suppl. 4, p. 2.

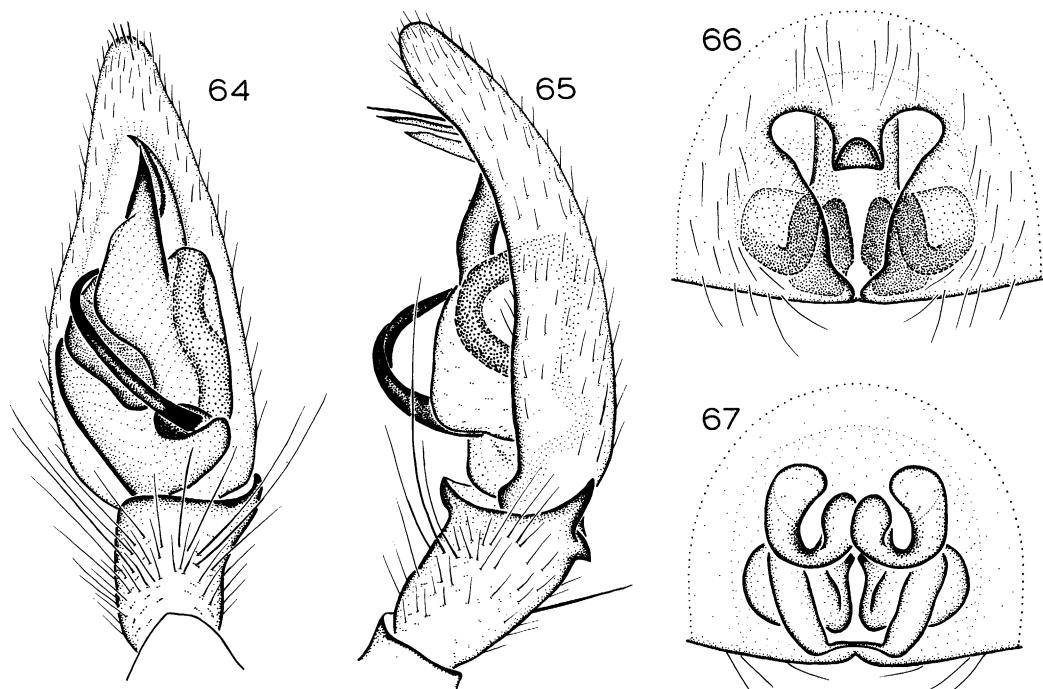
Diagnosis. *Scopodes nesiotes* is closest to *S. bryantae* but may be distinguished by the straight median apophysis (figs. 64, 68) and the relatively large epigynal atrium (figs. 66, 69).

Male. Total length 4.74 ± 0.76 mm. Carapace 2.15 ± 0.30 mm. long, 1.74 ± 0.25 mm. wide. Femur II 2.32 ± 0.29 mm. long (19 specimens examined). Eye sizes and interdistances (mm.): AME 0.09, ALE 0.10, PME 0.10, PLE 0.09; AME-AME 0.09, AME-ALE 0.04, PME-PME 0.05, PME-PLE 0.08, ALE-PLE 0.03. MOQ length 0.24 mm., front width 0.27 mm., back width 0.25 mm. Embolus strongly elevated, median apophysis with straight sides (figs. 64, 68). Retrolateral tibial apophysis curved toward cymbium (fig. 65). Leg spination: patella IV r0-0-0; metatarsus III v2-1p-2.

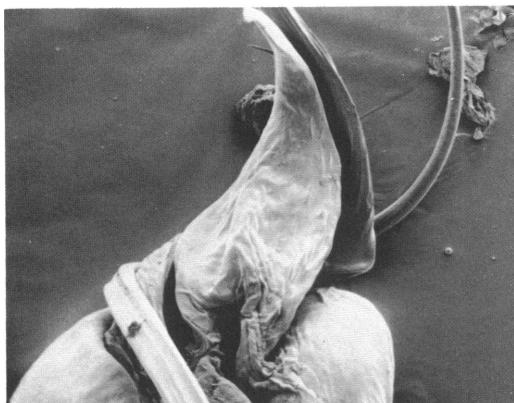
Female. Total length 6.30 ± 0.88 mm. Carapace 2.63 ± 0.36 mm. long, 2.19 ± 0.28 mm. wide. Femur II 2.66 ± 0.48 mm. long (34 specimens examined). Eye sizes and interdistances (mm.): AME 0.14, ALE 0.14, PME 0.15, PLE 0.16; AME-AME 0.11, AME-ALE 0.04, PME-PME 0.06, PME-PLE 0.12, ALE-PLE 0.03. MOQ length 0.43 mm., front width 0.40 mm., back width 0.36 mm. Epigynal atrium relatively large, wide posteriorly (figs. 66, 69). Basal spermathecal ducts lobed (fig. 67). Leg spination: femora I, II r0-1-1; patella IV p0-1-0; tibiae: I v2-2-0; IV d1-0-1; metatarsi I, II v1p-0-0.

Material Examined. Mexico: *Baja California Norte*: Bahía de Los Ángeles, Jan. 15, 1965 (V. Roth, AMNH), 1♀; Cerrito Blanco, Feb. 25, 1966 (V. Roth, AMNH), 1♂; Hamilton Ranch, Colonia Guerrero, May 5, 1961 (W. J. Gertsch, V. Roth, AMNH), 1♀; El Rosario, May, 5, 1961, under reeds along lagoon (W. J. Gertsch, V. Roth, AMNH), 1♂, 3♀; 6 mi. E El Rosario, Jan. 10, 1965 (V. Roth, AMNH), 2♂; Isla Cedros, Mar.

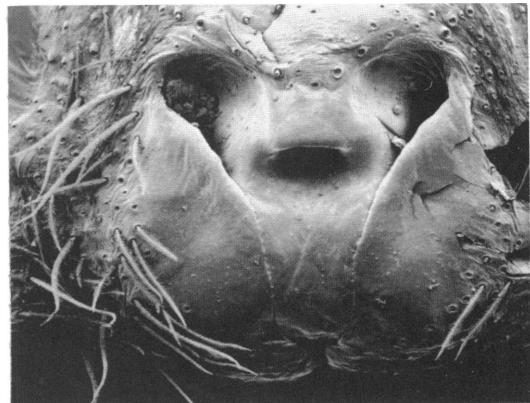
10, 1945 (B. F. Osorio-Tafall, AMNH), 1♀; 8 mi. N Laguna Chapala, Apr. 16, 1965 (D. Q. Cavagnaro; C. E., E. S. Ross; V. L. Vesterby, CAS), 1♀; 11 mi. SW Punta Prieta, Apr. 15, 1969, elevation 200 feet (S. C. Williams, CAS), 1♀; 5 mi. E San José, May 1, 1961 (W. J. Gertsch, V. Roth, AMNH), 1♂; 1♀; San Telmo, May 3, 1961 (W. J. Gertsch, V. Roth, AMNH), 1♂, 3♀. *Baja California Sur*: Cabo San Lucas, Feb. 5-8, 1966 (V. Roth, AMNH), 2♀; 8 mi. S El Crucero, Feb. 12, 1966 (V. Roth, AMNH), 1♂, 1♀; Isla San Diego, June 11, 1921 (J. C. Chamberlin, MCZ), 1♀; Isla Santa Catalina, June 12, 1921 (J. C. Chamberlin, CAS), 1♀; La Paz, Feb. 1-3, 1965 (V. Roth, AMNH), 1♂; Mulejé, Jan. 26, 1965 (V. Roth, AMNH), 2♂; Puerto Escondido, May 29, 1921 (MCZ), 1♀; 5 mi. N San Ignacio, Jan. 26, 1965 (V. Roth, AMNH), 1♀; San José de Comondú, Feb. 15, 1962 (V. Roth, AMNH), 2♀; 4.7 mi. NE San José de Comondú, Feb. 16, 1966 (V. Roth, AMNH), 1♀. United States: Arizona: Maricopa Co.: Mesa, July, 1940 (W. J. Gertsch, AMNH),



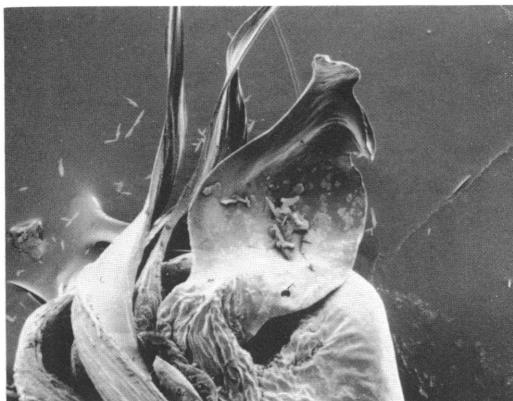
FIGS. 64-67. *Scopodes nesiotus* (Chamberlin). 64. Palp, ventral view. 65. Palp, retrolateral view. 66. Epigynum, ventral view. 67. Vulva, dorsal view.



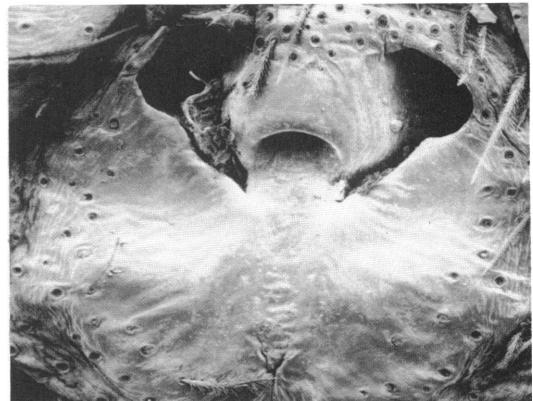
68



69



70



71

FIGS. 68-71. 68, 69. *Scopodes nesiotes* (Chamberlin). 68. Median apophysis, ventral view, 200 \times . 69. Epigynum, ventral view, 100 \times . 70, 71. *S. bryantae*, new species. 70. Median apophysis, ventral view, 200 \times . 71. Epigynum, ventral view, 200 \times .

5♀; Phoenix, summer, 1959 (AMNH), 1♂; junction of Verde and Salt Rivers, Apr. 9, 1935 (W. Ivie, AMNH), 1♀. Pima Co.: Tucson Mountain Park, July 4-8, 1967, elevation 2600 feet, saguaro-palo verde association (D. E. Bixler, CDEB), 1♂. Pinal Co.: 30 mi. W Casa Grande, Mar. 27, 1940 (R. H. Crandall, AMNH), 1♀; 7 mi. SW Superior, May 14, 1940, elevation 3000 feet (D. C. Lowrie, AMNH), 1♂, 1♀. Yuma Co.: Martinez Lake, Apr. 3, 1960 (V. Roth, CVDR), 1♀. California: Riverside Co.: Deep Canyon, Aug. 15, 1968 (D. E. Bixler, CDEB), 1♂; San Jacinto Mountains, Sept. 25, 1968 (D. E. Bixler, CDEB), 1♂; Snow Creek Canyon, May 4, 1957, creosote

bush (R. X. Schick, AMNH), 1♂. San Bernardino Co.: Pisgah Lava Flow, May 27-Apr. 14, 1959 (B. Banta, CAS), 2♂, 1♀. San Diego Co.: Borrego Campground, Anza-Borrego Desert State Park, May 27, 1958 (D. E. Merkel, AMNH), 1♀.

Distribution. California, Arizona, and Baja California (map 5).

***Scopodes bryantae*, new species**
Figures 70-75; Map 4

Types. Male holotype and female paratype from pitfall trap in saguaro-palo verde association, elevation 2600 feet, Tucson Mountains,

Pima County, Arizona (June 20-30, 1967, male, June 8-11, 1967, female; D. E. Bixler), deposited in AMNH courtesy of Mr. Bixler.

Etymology. The specific name is a patronym in honor of the late Elizabeth Bryant, who first recognized the species as new.

Diagnosis. *Scopodes bryantae* is closest to *S. nesiotus* but may be distinguished by the sinuous median apophysis (figs. 70, 72) and relatively small epigynal atrium (figs. 71, 74).

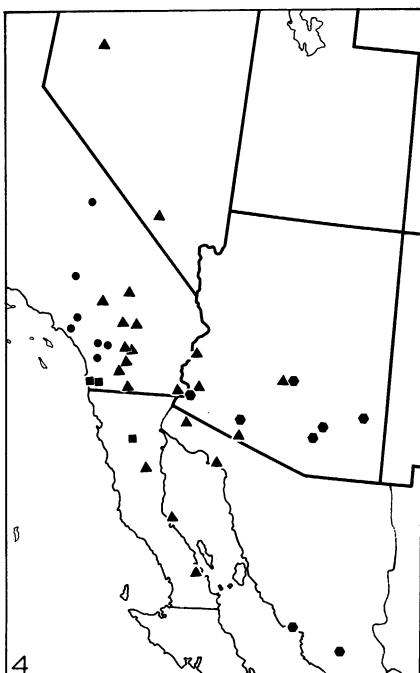
Male. Total length 3.38-4.39 mm. Carapace 1.48-2.11 mm. long, 1.01-1.51 mm. wide. Femur II 1.15-1.44 mm. long (nine specimens). Eye sizes and interdistances (mm.): AME 0.09, ALE 0.09, PME 0.12, PLE 0.09; AME-AME 0.06, AME-ALE 0.03, PME-PME 0.03, PME-PLE 0.06, ALE-PLE 0.03. MOQ length 0.26 mm., front width 0.24 mm., back width 0.27 mm. Embolus appressed to prolaternal side of tegulum; median apophysis sinuous (figs. 70, 72). Retrolateral tibial apophysis wide at base (fig. 73). Leg spina-

tion: femora: I p0-0-1, r0-0-0; II r0-0-0; IV p0-0-1, r0-0-1; tibia IV p0-1-1, r0-1-1; metatarsi I, II v2-1p-0.

Female. Total length 5.24 ± 0.78 mm. Carapace 2.08 ± 0.17 mm. long, 1.55 ± 0.12 mm. wide. Femur II 1.51 ± 0.15 mm. long (10 specimens). Eye sizes and interdistances (mm.): AME 0.09, ALE 0.09, PME 0.12, PLE 0.10; AME-AME 0.08, AME-ALE 0.03, PME-PME 0.03, PME-PLE 0.08, ALE-PLE 0.04. MOQ length 0.31 mm., front width 0.26 mm., back width 0.27 mm. Epigynal atrium relatively small, narrow posteriorly (figs. 71, 74). Anterior spermathecal lobes curved (fig. 75). Leg spination: femora: I p0-0-1, r0-0-0; IV p0-0-1, r0-0-1; tibiae: I v1p-2-0; II v1r-2-1p; III v1p-2-2; metatarsi I, II v2-p-0.

Material Examined. Mexico: Sonora: Guaymas, Sept. 13, 1966, on beach (J., W. Ivie, AMNH), 1♂; 30 mi. N Navajoa, Feb. 5, 1965 (V. Roth, AMNH), 2♂. United States: Arizona: Graham Co.: Solomon, July 9, 1939 (D., S. Mulaik, AMNH), 1♀. Maricopa Co.: Phoenix, Aug., 1964, desert (W. Eberhard, MCZ), 1♀; 30 mi. E Phoenix, Aug. 20, 1965, desert (W. Eberhard, MCZ), 1♀. Pima Co.: Ajo Mountains, Mar. 14, 1968, elevation 1800 feet (D. E. Bixler, CDEB), 1♀; Santa Catalina Mountains, Nov. 4, 1967, elevation 3000 feet (D. E. Bixler, CDEB), 1♀; Tucson, Mar. 7, 1935 (O. Bryant, AMNH), 1♂, 1♀; July 5, 1954 (W. J. Gertsch, AMNH), 2♀; ½ mi. E Tucson, Feb., 1935 (A. Griswold, MCZ), 1♂. Yuma Co.: near Gila Valley, July 23, 1958, poplar duff (V. Roth, AMNH), 3♀; Mittry Lake, Mar. 3, 1957 (V. Roth, CVDR), 1♀.

Distribution. Arizona and Sonora (map 4).



MAP 4. Southwestern United States and Mexico, showing distribution of *Scopodes catharius* (circles), *S. kastoni* (squares), *S. naturalisticum* (triangles), and *S. bryantae* (hexagons).

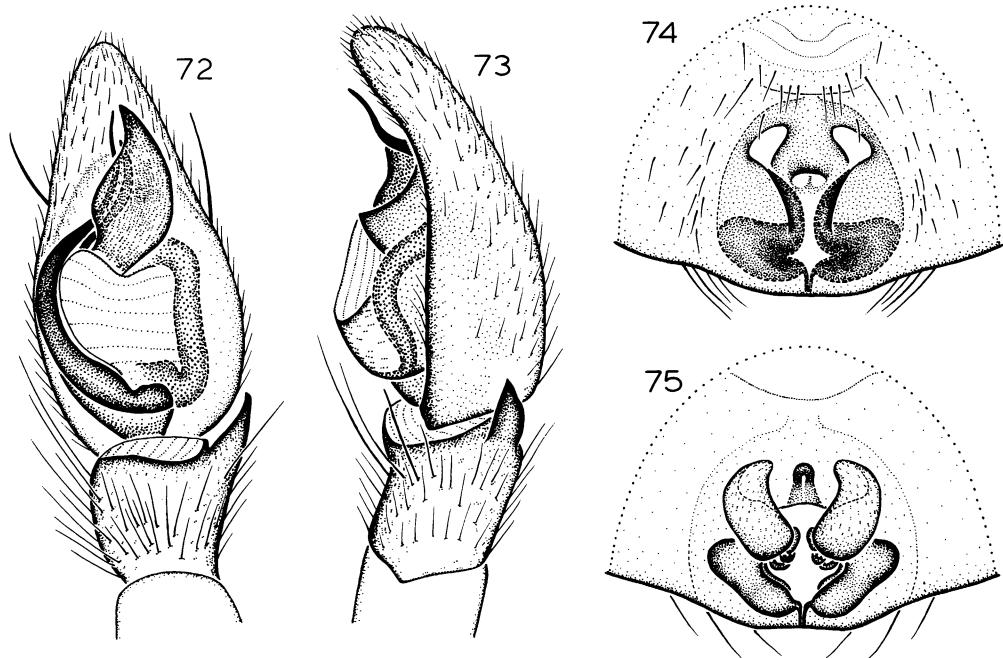
Scopodes rostratus, new species

Figures 76-79; Map 5

Types. Male holotype from Jilotepec, Oaxaca, Mexico (January 8, 1948; T. MacDougall) and female paratype from 3 miles west of Tehuantepec, Oaxaca, Mexico (April 28, 1963; W. J. Gertsch and W. Ivie), deposited in AMNH.

Etymology. The specific name is from the Latin *rostratus* (beaked), referring to the shape of the median apophysis.

Diagnosis. *Scopodes rostratus* is closest to *S. santiago*; although males of the latter species are unknown, those of the former may be recognized



Figs. 72-75. *Scopodes bryantae*, new species. 72. Palp, ventral view. 73. Palp, retrolateral view. 74. Epigynum, ventral view. 75. Vulva, dorsal view.

by the long retrolateral beak on the median apophysis (fig. 76). Females of *S. rostratus* may be distinguished by their much wider epigynal atrium (fig. 78).

Male. Total length 4.82 mm. Carapace 2.24 mm. long, 1.79 mm. wide. Femur II 1.62 mm. long (holotype). Eye sizes and interdistances (mm.): AME 0.10, ALE 0.09, PME 0.12, PLE 0.12; AME-AME 0.11, AME-ALE 0.03, PME-PME 0.05, PME-PLE 0.11, ALE-PLE 0.05. MOQ length 0.40 mm., front width 0.31 mm., back width 0.30 mm. Median apophysis with retrolaterally directed beak (fig. 76). Retrolateral tibial apophysis short, rounded (fig. 77). Leg spination: femora: I d1-1-0, p0-0-1, r0-0-0; II r0-0-0; IV r0-0-1; tibiae: I v0-0-0; II v0-1p-1p; III v2-1p-2; metatarsus II v2-1p-0.

Female. Total length 4.07 mm. Carapace 1.87 mm. long, 1.44 mm. wide. Femur II 1.30 mm. long (paratype). Eye sizes and interdistances (mm.): AME 0.11, ALE 0.12, PME 0.12, PLE 0.10; AME-AME 0.06, AME-ALE 0.03, PME-PME 0.04, PME-PLE 0.08, ALE-PLE 0.04. MOQ length 0.30 mm., front width 0.29 mm., back

width 0.27 mm. Epigynal atrium wide, transverse (fig. 78). Anterior spermathecal lobes rounded (fig. 79). Leg spination: femora: I, II p0-0-1, r0-0-0; IV p0-0-1, r0-0-1; tibiae: I v0-0-0; II v0-1p-0; III v1p-2-2; metatarsus I v1p-0-0.

Material Examined. Only the types

Distribution. Oaxaca, Mexico (map 5).

Scopodes santiago, new species

Figures 80, 81; Map 1

Type. Female holotype from Santiago, Colima, Mexico (May 11, 1963; W. J. Gertsch and W. Ivie), deposited in AMNH.

Etymology. The specific name is a noun in apposition taken from the type locality.

Diagnosis. *Scopodes santiago* is closest to *S. rostratus* but may be distinguished by the much smaller epigynal atrium (fig. 80).

Male. Unknown.

Female. Total length 5.11 mm. Carapace 1.80 mm. long, 1.37 mm. wide. Femur II 1.19 mm. long (holotype). Eye sizes and interdistances (mm.): AME 0.09, ALE 0.11, PME 0.10, PLE

0.10; AME-AME 0.06, AME-ALE 0.03, PME-PME 0.06, PME-PLE 0.08, ALE-PLE 0.03. MOQ length 0.29 mm., front width 0.24 mm., back width 0.27 mm. Epigynal atrium small, T-shaped (fig. 80). Spermathecal ducts coiled (fig. 81). Leg spination (right and left leg I missing): femora: II d1-1-0, p0-0-1, r0-0-0; IV d1-1-0, p0-0-1, r0-0-1; tibiae: II v0-1p-0; III v1p-2-2; IV d0-0-0, p1-0-1; metatarsus II v1p-0-0.

Material Examined. Only the holotype.

Distribution. Colima, Mexico (map 1).

Scopodes asceticum (Chamberlin)

Figures 84-87; Map 1

Megamyrmecon asceticum Chamberlin, 1924, p. 615, fig. 52 (male holotype from La Chuparosa, Baja California Sur, Mexico, in MCZ, examined). Roewer, 1954, p. 426. Bonnet, 1957, p. 2751.

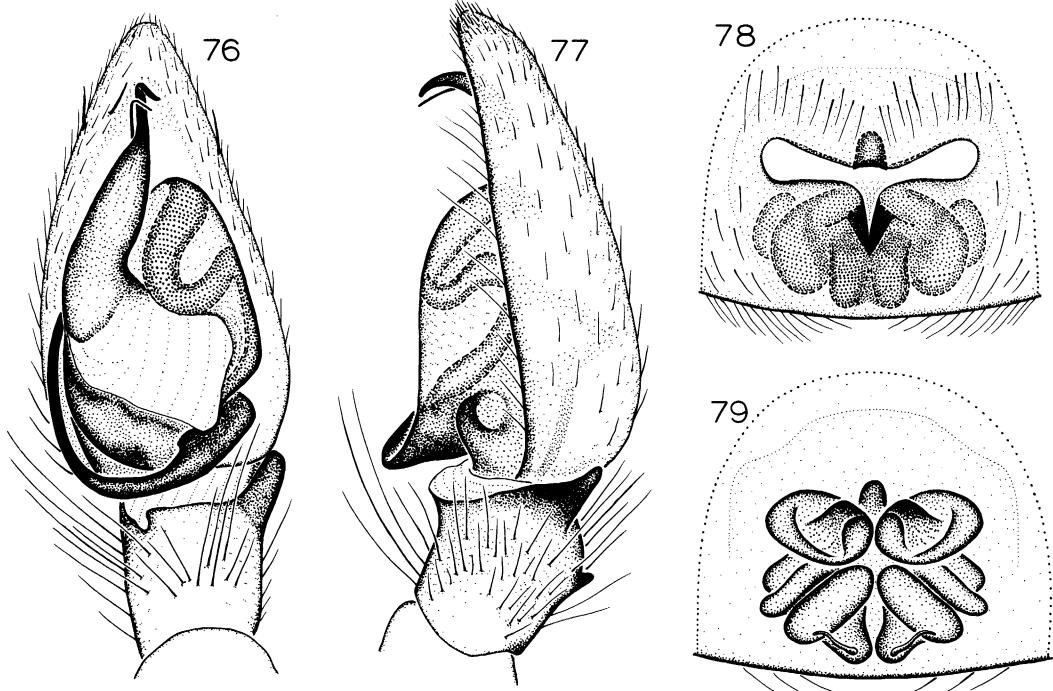
Scopodes asceticum: Ubick and Roth, 1973, suppl. 4, p. 2.

Diagnosis. *Scopodes asceticum* is a distinctive

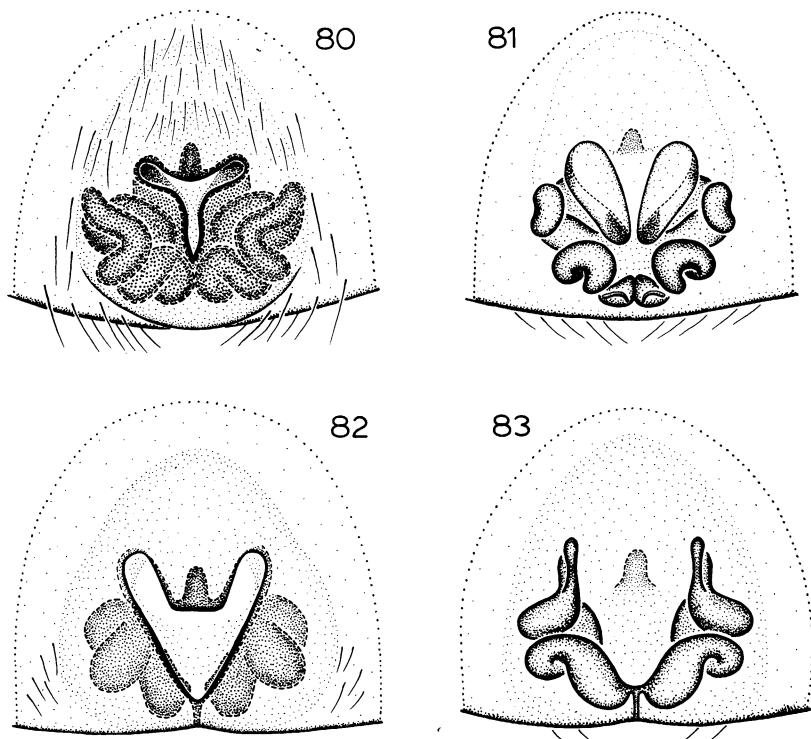
species easily recognizable by the twisted median apophysis (fig. 84) and lobed posterior margin of the epigynal atrium (fig. 86).

Male. Total length 6.48-8.78 mm. Carapace 2.99-4.03 mm. long, 2.52-3.23 mm. wide. Femur II 2.43-3.49 mm. long (seven specimens). Eye sizes and interdistances (mm.): AME 0.15, ALE 0.18, PME 0.17, PLE 0.15; AME-AME 0.12, AME-ALE 0.03, PME-PME 0.09, PME-PLE 0.12, ALE-PLE 0.10. MOQ length 0.51 mm., front width 0.43 mm., back width 0.43 mm. Median apophysis large, twisted (fig. 84). Retrolateral tibial apophysis large, triangular (fig. 85). Leg spination: patella IV p0-1-0; tibiae: I v1p-1p-1p; II v1p-2-1p.

Female. Total length 9.76 mm. Carapace 3.96 mm. long, 3.24 mm. wide. Femur II 3.09 mm. long (one specimen). Eye sizes and interdistances (mm.): AME 0.14, ALE 0.15, PME 0.14, PLE 0.15; AME-AME 0.12, AME-ALE 0.15, PME-PME 0.13, PME-PLE 0.16; ALE-PLE 0.11. MOQ length 0.44 mm., front width 0.40 mm., back width 0.41 mm. Posterior margin of epigynal



FIGS. 76-79. *Scopodes rostratus*, new species. 76. Palp, ventral view. 77. Palp, retrolateral view. 78. Epigynum, ventral view. 79. Vulva, dorsal view.



FIGS. 80-83. 80, 81. *Scopodes santiago*, new species. 80. Epigynum, ventral view. 81. Vulva, dorsal view. 82, 83. *S. tlacolula*, new species. 82. Epigynum, ventral view. 83. Vulva, dorsal view.

atrium lobed (fig. 86). Spermathecae with transverse dorsal ducts (fig. 87). Leg spination: patella IV p0-1-0; tibiae I, II v2-1p-1p; metatarsus II v1p-0-0.

Material Examined. Mexico: Baja California Sur: Boca de La Sierra, Feb. 10, 1966 (V. Roth, AMNH), 2♂, 1♀; 3 mi. S Colonia Calles, Feb. 5, 1966 (V. Roth, AMNH), 1♂; Isla del Espíritu Santo, Mar. 23, 1953 (Figg, Hoblyn, AMNH), 1♂; La Paz, Feb. 1-3, 1965 (V. Roth, AMNH), 1♂; La Ribera, Feb. 10, 1966 (V. Roth, AMNH), 1♂.

Distribution. Baja California Sur, Mexico (map 1).

Scopodes ochraceus (F. O. P.-Cambridge),
new combination
Figures 88-91; Map 5

Echemus ochraceus F. O. P.-Cambridge, 1899, p. 59, pl. 4, fig. 11 (male holotype from Amula,

Guerrero, Mexico, in BMNH, examined). Roewer, 1954, p. 420. Bonnet, 1956, p. 1645.

Diagnosis. *Scopodes ochraceus* is closest to *S. tlacolula*; males of the latter species are unknown, but those of the former may be recognized by the small, straight median apophysis (fig. 88). Females of *S. ochraceus* may be distinguished by the epigynal hood not protruding into the epigynal atrium (fig. 90).

Male. Total length 4.99-7.31 mm. Carapace 2.16-3.13 mm. long, 1.55-2.56 mm. wide. Femur II 1.92-2.81 mm. long (seven specimens). Eye sizes and interdistances (mm.): AME 0.10, ALE 0.11, PME 0.12, PLE 0.13; AME-AME 0.09, AME-ALE 0.02, PME-PME 0.06, PME-PLE 0.08, ALE-PLE 0.04. MOQ length 0.34 mm., front width 0.29 mm., back width 0.31 mm. Median apophysis straight, parallel to embolus (fig. 88). Dorsal point of retrolateral tibial apophysis pronounced (fig. 89). Leg spination: femora: I

r0-0-0; IV p0-0-1; tibiae: I v1p-2-1p; II v1p-1p-1p; metatarsus IV r1-1-2.

Female. Total length 6.85-9.47 mm. Carapace 2.81-3.13 mm. long, 2.25-2.50 mm. wide. Femur II 2.25-2.48 mm. long (five specimens). Eye sizes and interdistances (mm.): AME 0.11, ALE 0.14, PME 0.14, PLE 0.14; AME-AME 0.11, AME-ALE 0.14, PME-PME 0.09, PME-PLE 0.11, ALE-PLE 0.06. MOQ length 0.42 mm., front width 0.33 mm., back width 0.36 mm. Epigynal hood fused to anterior margin of atrium (fig. 90). Spermathecae with longitudinal dorsal ducts (fig. 91). Leg spination: patella IV p0-1-0; tibiae: I v2-1p-0; II v2-1p-1p; metatarsus I v1p-0-0.

Material Examined. Mexico: Guerrero: Atlaca, Jan. 13, 1941 (F. Bonet, AMNH), 1♀; 3 mi. N Chilpancingo, Nov. 18, 1946 (E. S. Ross, AMNH), 1♀; Taxco, Jan.-Apr., 1946 (L. Isaacs, AMNH), 1♂, 3♀. Morelos: Cuautla, Dec. 6, 1943 (M. Cardenas, AMNH), 1♂. Puebla: Tlacotepec, July 25, 1956 (W. J. Gertsch, V. Roth, AMNH), 4♂.

Distribution. Central Mexico (map 5).

Scopodes tlacolula, new species

Figures 82, 83; Map 1

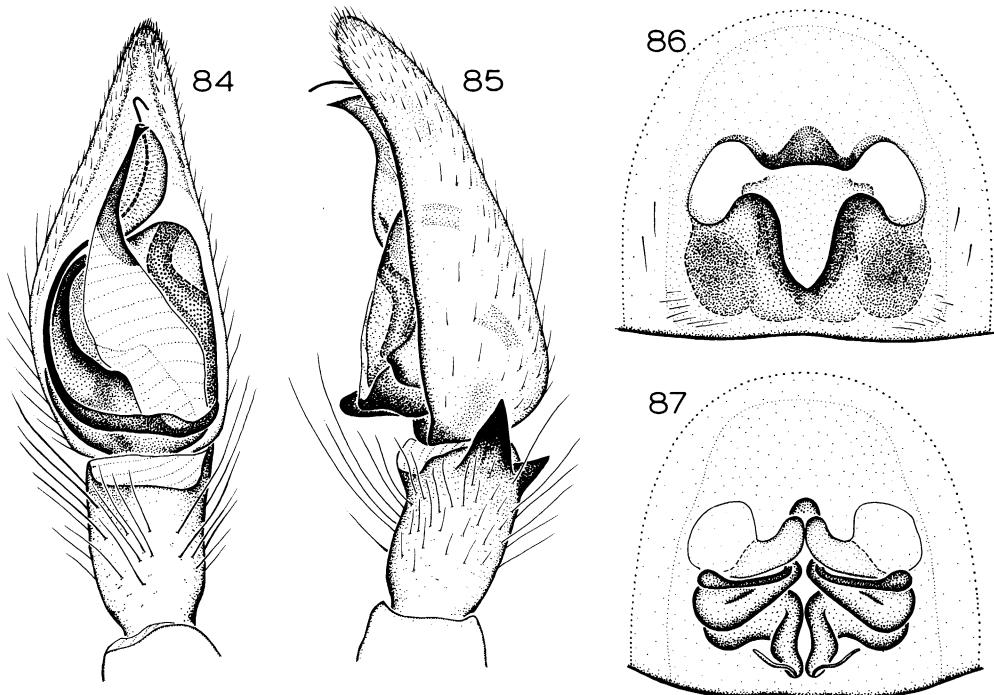
Type. Female holotype from under a cliff, Tlacolula, Oaxaca, Mexico (April 30, 1963; W. J. Gertsch and W. Ivie), deposited in AMNH.

Etymology. The specific name is a noun in apposition taken from the type locality.

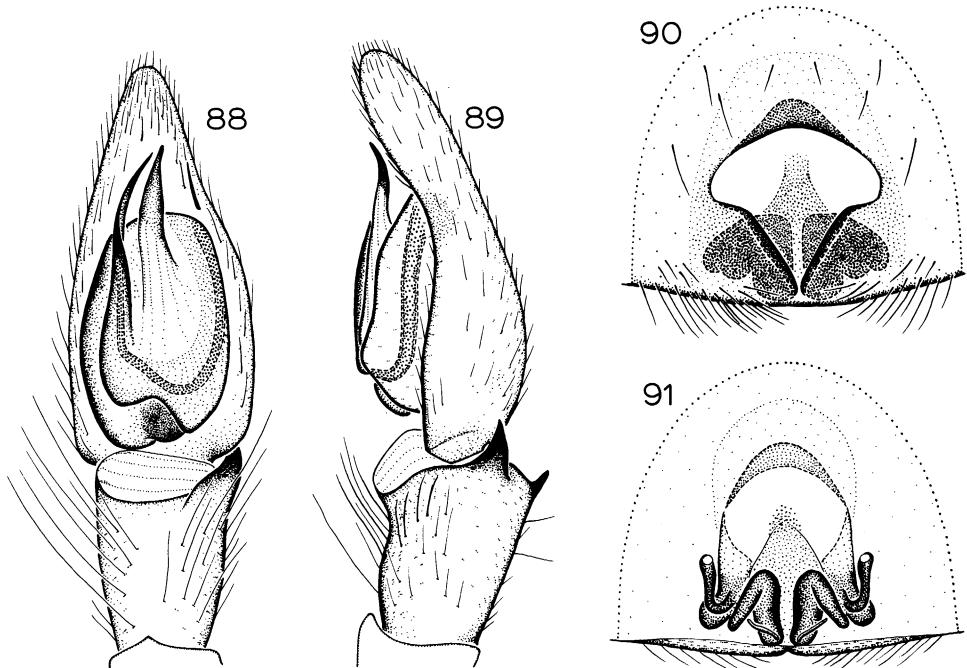
Diagnosis. *Scopodes tlacolula* is closest to *S. ochraceus* but may be distinguished by the epigynal hood protruding into the epigynal atrium (fig. 82).

Male. Unknown.

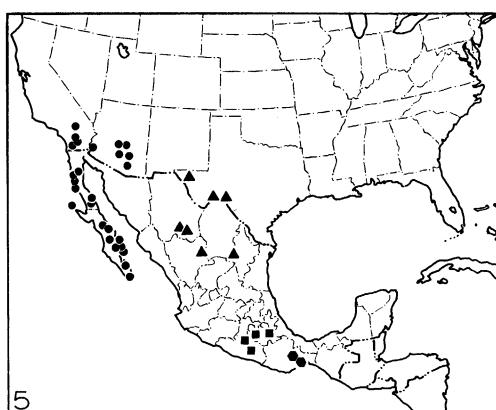
Female. Total length 7.31 mm. Carapace 2.65 mm. long, 2.05 mm. wide. Femur II 2.03 mm. long (holotype). Eye sizes and interdistances (mm.): AME 0.12, ALE 0.14, PME 0.11, PLE 0.14; AME-AME 0.11, AME-ALE 0.03, PME-PME 0.09, PME-PLE 0.12, ALE-PLE 0.07. MOQ length 0.39 mm., front width 0.36 mm., back



FIGS. 84-87. *Scopodes asceticum* (Chamberlin). 84. Palp, ventral view. 85. Palp, retrolateral view. 86. Epigynum, ventral view. 87. Vulva, dorsal view.



FIGS. 88-91. *Scopodes ochraceus* (F. O. P.-Cambridge). 88. Palp, ventral view. 89. Palp, retrolateral view. 90. Epigynum, ventral view. 91. Vulva, dorsal view.



MAP 5. Southwestern United States and Mexico, showing distribution of *Scopodes nesiotes* (circles), *S. cambridgei* (triangles), *S. ochraceus* (squares), and *S. rostratus* (hexagons).

width 0.31 mm. Epigynal hood protruding into epigynal atrium (fig. 82). Spermathecae with longitudinal dorsal ducts (fig. 83). Leg spination:

femur I r0-0-0; patella IV p0-1-0; tibiae: I v1p-1p-0; II v1p-2-1p.

Material Examined. Only the holotype.

Distribution. Oaxaca, Mexico (map 1).

LITERATURE CITED

Banks, Nathan

1895. A list of spiders of Long Island, with descriptions of new species. Jour. New York Ent. Soc., vol. 3, pp. 76-93.

1910. Catalogue of Nearctic spiders. Bull. U. S. Natl. Mus., vol. 72, pp. 1-80.

Bonnet, Pierre

1956. Bibliographia araneorum. Toulouse, vol. 2, pt. 2, pp. 919-1926.

1957. Bibliographia araneorum. Toulouse, vol. 2, pt. 3, pp. 1927-3026.

1958. Bibliographia araneorum. Toulouse, vol. 2, pt. 4, pp. 3027-4230.

Cambridge, Frederick Octavius Pickard-

1899. Arachnida-Araneida. In Godman, F. D., and O. Salvin, Biologia Centrali-Americanica. London, vol. 2, pp. 41-88, pls. 3-6.

- Chamberlin, Ralph V.
- 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 Academy Sci., ser. 4, vol. 12, pp. 561-694, figs. 1-140.
- Chamberlin, Ralph V., and Willis J. Gertsch
- 1940. Descriptions of new Gnaphosidae from the United States. Amer. Mus. Novitates, no. 1068, pp. 1-19, figs. 1-34.
- Chamberlin, Ralph V., and A. M. Woodbury
- 1929. Notes on the spiders of Washington County, Utah. Proc. Biol. Soc. Washington, vol. 42, pp. 131-142, pls. 1, 2.
- Comstock, John Henry
- 1903. A classification of North American spiders. New York, 56 pp.
- Exline, Harriet
- 1962. Two gnaphosid spiders from Arkansas. Proc. California Acad. Sci., ser. 4, vol. 32, pp. 79-85, figs. 1-12.
- 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.
- 1935. New American spiders with notes on other species. Amer. Mus. Novitates, no. 805, pp. 1-24, figs. 1-60.
- Gertsch, Willis J., and L. Irby Davis
- 1936. New spiders from Texas. Amer. Mus. Novitates, no. 881, pp. 1-21, figs. 1-35.
 - 1940. Report on a collection of spiders from Mexico. III. *Ibid.*, no. 1069, pp. 1-22, figs. 1-35.
- Holm, Åke
- 1973. On the spiders collected during the Swedish expeditions to Novaya Zemlya and Yenisey in 1875 and 1876. Zool. Scripta, vol. 2, pp. 71-110, figs. 1-117.
- Kaston, Benjamin J.
- 1938. New spiders from New England with notes on other species. Bull. Brooklyn Ent. Soc., vol. 33, pp. 173-189, figs. 1-17.
1945. New spiders in the group Dionycha with notes on other species. Amer. Mus. Novitates, no. 1290, pp. 1-25, figs. 1-85.
- Koch, Ludwig
- 1866. Die Arachniden-Familie der Drassiden. Nürnberg, 304 pp., 12 pls.
- Lehtinen, Pekka T.
- 1967. Classification of the cribellate spiders and some allied families. Ann. Zool. Fennici, vol. 4, pp. 199-468, figs. 1-524, tables 1-53.
- Lindroth, Carl H.
- 1957. The faunal connections between Europe and North America. New York, 344 pp.
- 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.
- Roewer, Carl F.
- 1954. Katalog der Araneae. Brussels, vol. 2, pt. 1, 923 pp.
- Simon, Eugène
- 1893a. Etudes arachnologiques. 25^e Mémoire. XL. Descriptions d'espèces et de genres nouveaux de l'ordre des Araneae. Ann. Soc. Ent. France, vol. 62, pp. 299-330, pl. 7.
 - 1893b. Histoire naturelle des Araignées. Paris, vol. 1, pt. 2, pp. 257-488, figs. 216-490.
- Ubick, Darrell, and Vincent D. Roth
- 1973. Nearctic Gnaphosidae including species from adjacent Mexican states. Amer. Arachnology, no. 9, suppl. 2, pp. 1-12; suppl. 3, pp. 1-6 (index); suppl. 4, pp. 1-3 (Mexican species).
- Valešová-Zdárková, Eva
- 1966. Synanthrope Spinnen in der Tschechoslowakei. Senckenbergiana Biol., vol. 47, pp. 73-75.

