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A Revision of the Spider Genus *Zorocrates* Simon (Araneae, Zorocratidae)

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ABSTRACT

The spider genus *Zorocrates* is revised, and comprises at least 31 species found from the southern United States south to Central America; it provides a notable example of the loss of a functional cribellum within a relatively small (but seemingly monophyletic) group of species. Two specific names are removed from synonymy: *Z. gnaphosoides* O. P.-Cambridge and *Z. mordax* O. P.-Cambridge (from *Z. fuscus* Simon and *Z. mistus* O. P.-Cambridge, respectively). Two other specific names are newly synonymized: *Z. isolatus* Gertsch and Davis, with *Z. unicolor* (Banks), and *Z. petersi* Kraus, with *Z. gnaphosoides* O. P.-Cambridge. Males are newly described for *Z. badius* Simon and *Z. pictus* Simon; females are newly described for *Z. karli* Gertsch and Riechert. Twenty new species are described from Texas and Mexico.

INTRODUCTION

The American spiders of the genus *Zorocrates* Simon (1888) are of considerable phylogenetic interest. They were originally described as members of the Old World family Zoropsidae. Lehtinen (1967) transferred the genus to the New World family Tenggellidae, but Griswold et al. (1999) revived the name Zorocratidae, first proposed by Dahl (1913:

21, just as an entry in a key couplet), to include the New World *Zorocrates* plus four Old World genera that had been placed by Lehtinen in the Miturgidae instead. Because the genus has never been revised, identification of the specimens used as exemplars in modern phylogenetic studies, such as those of Griswold (1993), Silva (2003), Raven and Stumkat (2005), and Griswold et al. (2005), has been problematic.

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Zorocrates species are also of phylogenetic interest because of the variation in their cribellar structure. The group has always been considered cribellate, but we describe below two new species from the Xilitla Plateau in San Luis Potosí that, despite having male and female genitalia indicating that they are well nested within the genus, are fully ecribellate. Although examples of cribellate and ecribellate sister genera have been noted over recent decades, loss of the cribellum within a single genus seems less common. Unsurprisingly, though, similar losses of the cribellum have apparently occurred within the Malagasy zorocratid fauna (C. Griswold, personal communication.).

In addition to the variation in cribellar structure, *Zorocrates* specimens have sometimes been difficult to place (at least in keys) because of their unusual tarsal configuration. Several authors (e.g., Gertsch and Riechert, 1976; Roth, 1985; Griswold and Ubick, 2001) have indicated that the unpaired tarsal claw is present only on the anterior pair of legs, and absent on the posterior three pairs. The tarsi are heavily scopulate and the tarsal claws are often obscured by the dense, distal scopular hairs; it is difficult to remove the scopular hairs without also damaging the claws. However, detailed examination of many specimens leads us to conclude that the unpaired claw is probably always present, although it is typically reduced to just a tiny projection (Griswold et al., 2005: fig. 146A). Roth (1993: 168) seemed to have reached the same conclusion, for he changed his earlier account to read “tarsi I 3-clawed, and II-IV 2-clawed, often with a minute third claw.” Because the third claw can be so easily overlooked, specimens have even been described as dionychans (see the note on *Chemmis unicolor* Banks, 1901, below).

The format of the descriptions follows that of Platnick (1999). Specimens have been examined from the collections of the American Museum of Natural History (AMNH), Natural History Museum, London (BMNH), California Academy of Sciences, San Francisco (CAS), David Bixler (CDB), Darrell Ubick (CDU), Centro de Investigaciones Biológicas del Noroeste, La Paz (CIBN), Joe Beatty (CJB), James Cokendolpher (CJC),

John A. Murphy (JAM), Museum of Comparative Zoology, Harvard University (MCZ), Muséum National d'Histoire Naturelle, Paris (MNHN), Natur-Museum Senckenberg (NMS), New Mexico State University, Las Cruces (NMSU), Texas A&M University, College Station (TAMU), University of California at Riverside (UCR), Universidad Nacional Autónoma de México (UNAM), and National Museum of Natural History, Smithsonian Institution (USNM).

RELATIONSHIPS

The relationships of *Zorocrates* remain ill-defined, as the most recent phylogenetic analyses have reached somewhat different conclusions. In the analysis by Silva (2003: fig. 6), *Zorocrates* clustered more closely with the cribellate, New World genus *Tengella* Dahl (1901) than with the other genera currently placed in the Zorocratidae, which in her taxon sampling were represented by *Uduba* Simon (1880), *Raecius* Simon (1892), and *Zorodictyna* Strand (1907). The fifth current zorocratid genus, *Campostichomma* Karsch (1891), was not included in her matrix.

In the analysis by Raven and Stumkat (2005), however, Griswold's (1993) grouping of *Zorocrates* with the other five genera was retrieved (with *Tengella* widely disparate, and a minor rearrangement involving *Zorodictyna*, which clustered not with *Raecius* but with the other three genera).

The most recent study, by Griswold et al. (2005), included as terminals *Tengella*, *Uduba*, and *Raecius*, as well as *Zorocrates*. Under implied weighting, *Zorocrates* clustered with *Tengella*, on the basis of deeply notched trochanters; this group was resolved as sister to a group including *Raecius*, *Uduba*, *Zoropsis*, and *Acanthoctenus* Keyserling (1877, a cribellate member of the family Ctenidae). Under equal weights, *Zorocrates* was placed at an unresolved node subtending all those taxa plus *Psechrus* Thorell (1878), the cribellate type genus of the family Psechridae.

These results are all equivocal, however, because almost all the characters involved show high degrees of homoplasy, and the clades resolved can therefore be perturbed easily by changes in the matrix or analytical methods

(e.g., character weighting). Similarly, the current limitation of the Zorocratidae by Griswold et al. (1999) was based on a phylogenetic analysis that included only the genera *Tengella*, *Uduba*, and *Raecius*. In that analysis, three characters supported the placement of *Uduba* and *Raecius* as sister taxa: the male tibial crack (a character discovered by Griswold, 1993: figs. 3, 4, that allows a distinctive form of leg breakage), clumped cribellar spigots, and a ventroapical apophysis on the male palpal tibia. Those same three characters were therefore cited by Griswold (2002: 118) as synapomorphies for the Zorocratidae.

Unfortunately, *Zorocrates* itself has none of those presumed apomorphies of the Zorocratidae. The tibial crack and ventroapical apophysis are absent (Silva, 2003: characters 93 and 4, respectively), and the cribellar spigots are uniformly distributed rather than clumped (Griswold et al., 2005: fig. 101B).

The association of *Zorocrates* with *Tengella* instead was similarly based only on three homoplasious characters (oval anterior lateral eyes, and the presumed loss of male tibial cracks, for Silva, 2003: characters 87 and 93, respectively; deep trochanteral notches, for Griswold et al., 2005: character 11). Anterior lateral eyes that are oval rather than round occur in most ctenids as well as these two genera, but the feature shows slightly less homoplasy than Silva (2003: appendix 2) indicated. Silva's matrix shows differences in this feature even within the clearly monophyletic group of North American genera currently placed in the Tengellidae, but our examination indicates that the anterior lateral eyes of *Anachemmis* Chamberlin (1919) are fully as oval as those of *Liocranoides* Keyserling (1881), *Titiotus* Simon (1897), and *Socalchemmis* Platnick and Ubick (2001).

Three family-group names have been based on these genera; in chronological order, they are Zoropsidae Bertkau (1882), Tengellidae Dahl (1908), and Zorocratidae Dahl (1913). Raven and Stumkat (2005) advocated expanding the concept of the Zoropsidae to re-include *Zorocrates* (and hence the Zorocratidae). Four characters support that node on their cladogram: the male tibial crack (presumptively lost in *Zorocrates*), a distally truncate (rather than elongated) cymbium, a male abdominal shield,

and anterior lateral eyes that are larger than the anterior medians. By the abdominal shield, those authors meant a sclerotized scute associated with the paired transverse sigilla found on the anterior face of the abdomen; such scuta also do not occur in *Zorocrates*, where the sigilla are no more conspicuous in males than in females. *Zorocrates* males also lack another character figuring in their revised familial diagnosis, a dense dorsal scopula on the palpal cymbium.

The results of Raven and Stumkat, and of Silva, are similar in positing that either *Zorocrates* (in the first case) or both *Zorocrates* and *Tengella* (in the second case) have lost grate-shaped tapeta in their posterior median eyes, and have reverted to the more plesiomorphic, canoe-shaped tapetum. Because of the weak support from only highly homoplasious characters, and the resultingly unstable results, Silva refrained from making nomenclatorial changes reflecting this hypothesis. That seems wise to us, and we similarly prefer to retain, at least temporarily, the family Zorocratidae, even though it may prove eventually to be a junior synonym of the Tengellidae, Zoropsidae, or both. That retention reflects the possibility that on-going analyses of family-level relationships across all spiders, currently being conducted under the Assembling the Tree of Life initiative, may still resolve the grate-shaped tapetum as a synapomorphy of a large group including the classical lycosoids plus the typical zoropsids but excluding both *Zorocrates* and *Tengella*. Those on-going analyses should include the ecribellate New Zealand genus *Uliodon* L. Koch (1873), males of which have a dense dorsal scopula on the palpal cymbium (although males of this genus have not yet been described in detail, they are coded in the matrix of Raven and Stumkat, 2005).

For our purposes here, the primary question is whether there is any evidence available that suggests what the sister group of *Zorocrates* might be. Of all the taxa considered in previous analyses, *Uduba* may be the best candidate, despite the geographic separation (*Uduba* is endemic to Madagascar). Both *Uduba* and *Raecius* have a probable homolog of the large tegular apophysis that occupies the bulk of the ventral surface of the male palp in *Zorocrates*;

in addition, *Uduba* males resemble those of *Zorocrates* in having the embolus originating on the dorsal surface of the palpal bulb, and extending behind the bulb for its length, rather than along its ventral surface. We suggest that this highly unusual embolar orientation, which renders most of the embolus invisible in ventral view, is a synapomorphy uniting *Zorocrates* and *Uduba*.

Although reduction in the size of the cribellum appears to have happened at least twice within *Zorocrates* (independently within the *alternatus* and *mistus* species groups), the total loss of cribellate spigots and the transformation of the cribellum into a fleshy colulus may have happened only once, if (as seems likely) the two new, fully ecribellate species described from the same area of San Luis Potosí are sister taxa. At least one additional parallel loss presumably occurred with the Malagasy *Uduba* fauna as well, as Griswold et al. (2005: 44) indicated that some of those species are also ecribellate.

Zorocrates Simon

Lycodrassus L. Koch, 1866: 2 (nomen nudum).

Zorocrates Simon, 1888: 211 (type species, by monotypy, *Zorocrates fuscus* Simon).

Satricum O. P.-Cambridge, 1892: 99 (type species, by monotypy, *Satricum gnaphosoides* O. P.-Cambridge). First synonymized by F. O. P.-Cambridge, 1902: 354.

DIAGNOSIS: The lack of male tibial cracks (subbasal suture zones on the male tibiae that enable a distinctive form of leg breakage) readily distinguishes *Zorocrates* from members of the four other genera, all from the Old World, that are currently assigned to the Zorocratidae, as well as from those of *Zoropsis* Simon, another Old World cribellate genus (which has been introduced into California; see Griswold and Ubick, 2001). Among New World cribellates, *Tengella* includes Neotropical species that construct large webs inhabited by numerous arthropod symbionts (Eberhard, Platnick, and Schuh, 1993). These much longer-legged web-builders are unlikely to be confused with *Zorocrates*, and can also be distinguished by their highly patterned carapace (Wolff, 1978: figs. 1, 2, 6), long and narrow median apophysis (Wolff,

1978: figs. 3, 7), and wide, protruding epigynal scape (Wolff, 1978: fig. 5). Specimens of *Zorocrates* are most easily recognized by the distinctive male genitalia; the bulk of the male palpal bulb is occupied, in ventral and retro-lateral views, by a large sclerite (figs. 2, 3; this is the “sclerotized tegular process” of Griswold, 1993: fig. 11 and Silva, 2003: fig. 13a). A possibly homologous process occurs in *Raecius* (see Griswold, 1993: figs. 25–27; 2002: figs. 22, 28, 30, 40, 45, 47, 51, 52) and *Uduba* (see Griswold et al., 2005: figs. 185C, 194B), but it is much smaller, and the enlarged process seems to be synapomorphic for *Zorocrates* (Griswold considered *Raecius* to be the sister group of the Malagasy genus *Zorodictyna*, not of *Zorocrates*).

DESCRIPTION: Medium to large spiders, total length of males 5–14, of females 5–17. Carapace oval, widest at rear of coxae II, abruptly narrowed at level of palpi to about half of maximum width; thoracic groove long, longitudinal, very deep; surface coated with short recumbent and fewer, longer, erect dark setae, erect setae most numerous in ocular area; eight eyes in two rows; from above, anterior row slightly recurved, posterior row slightly procurved; from front, anterior row slightly procurved, posterior row strongly procurved; anterior median eyes round, smallest; other eyes oval, subequal, with canoe-shaped tapeta; anterior median eyes separated by roughly their diameter, slightly closer to anterior laterals; posterior medians separated by roughly their diameter, farther from posterior laterals; lateral eyes of each side separated by less than their diameter; median ocular quadrangle wider in back than in front, wider in back than long; clypeal height about twice diameter of anterior median eyes, corners of clypeus with incised margins that overlie cheliceral boss; chilum weakly sclerotized, divided, composed of two triangular sclerites. Chelicerae vertical, anterior surface with few, erect setae; promargin with three teeth situated at proximal end of fang furrow, median tooth largest, almost fused to most distal tooth, retromargin with three larger, more distally situated teeth; very short, narrow, I-shaped posterior sclerite present, separating chelicerae at base. Labium short, distally invaginated at middle, reflexed at

almost 90% angle relative to sternum. Endites rectangular, distally slightly convergent, with anteromedian scopula and anterolateral serrula consisting of single row of teeth. Sternum rounded, without extensions to or between coxae, with erect setae; posterior margin not extending between coxae IV. Leg formula 4123. Typical leg spination pattern (only surfaces bearing spines listed): femora: I, II d1-1-1, p0-2-1, r1-2-1; III d1-1-1, p2-1-1, r1-2-1; IV d1-1-1, p2-1-1, r0-2-1; patellae: III p0-1-0, r0-1-0; IV p0-1-0; tibiae: I, II d0-0-1, p1-1-0, v4-3-2, r0-1-1; III d1-0-1, p1-0-1, v2-2-2, r0-0-1; IV d0-1-1, p1-0-1, v2-2-2, r1-0-1; metatarsi: I p1-0-1, v2-2-1r, r1-1-1; II p1-1-1, v2-2-2, r1-1-1; III p1-2-2, v2-2-2, r1-1-1; IV p1-1-2, v2-2-2, r1-2-2; tarsi with three claws, claw tufts absent but inferior claws typically obscured by dense scopular tips, superior claws with several subequal teeth, inferior claws tiny, unarmed; all tarsi with strong ventral scopulae; distal segments with trichobothria in three rows, bases ridged (Griswold et al., 2005: fig. 151E); tarsal organ capsulate, with oval opening (Griswold et al., 2005: fig. 151F); trochanters notched, posteriors more strongly so than anteriors; males without tibial crack; metatarsi without preening combs; cribellate species with dense calamistrum forming elongate oval on basal one-third of retrolateral surface of metatarsi IV. Abdomen without anterior or dorsal scutum; for detailed spinneret and spigot descriptions, see Griswold et al., 2005: 45–46, figs. 101–103; cribellum usually present but lost in some species. Male palp with relatively long patella, tibia relatively short, with single, distally situated retrolateral apophysis; cymbium without dense pad of short setae; subtegular and tegular interlocking processes reduced to extension on embolar base; median apophysis heavily sclerotized, embolus threadlike, originating on dorsal surface of bulb, cradled by subtegulum proximally, accompanied by long hyaline conductor distally; bulk of ventral surface of bulb occupied by large tegular apophysis. Female palp with long, dentate claw. Epigynum typically with strong midpiece and paired lateral margins.

SPECIES GROUPS: Five species groups are recognized below; because so many of the species are known from females only, the

monophyly of some of these groups is highly conjectural. The informal group names reflect their earliest described members.

THE *FUSCUS* GROUP

The species assigned to this group are united by the presence of large, excavated lateral pockets on the female epigynum. Five species clearly belong to this group; a sixth, *Z. mordax* (O. P.-Cambridge), is tentatively placed here, on the hypothesis that the peculiar posterolateral epigynal projections found in that species represent an autapomorphic modification of the excavated lateral pockets. The known males share a large, hook-shaped median apophysis.

Zorocrates fuscus Simon figures 1–5; map 1

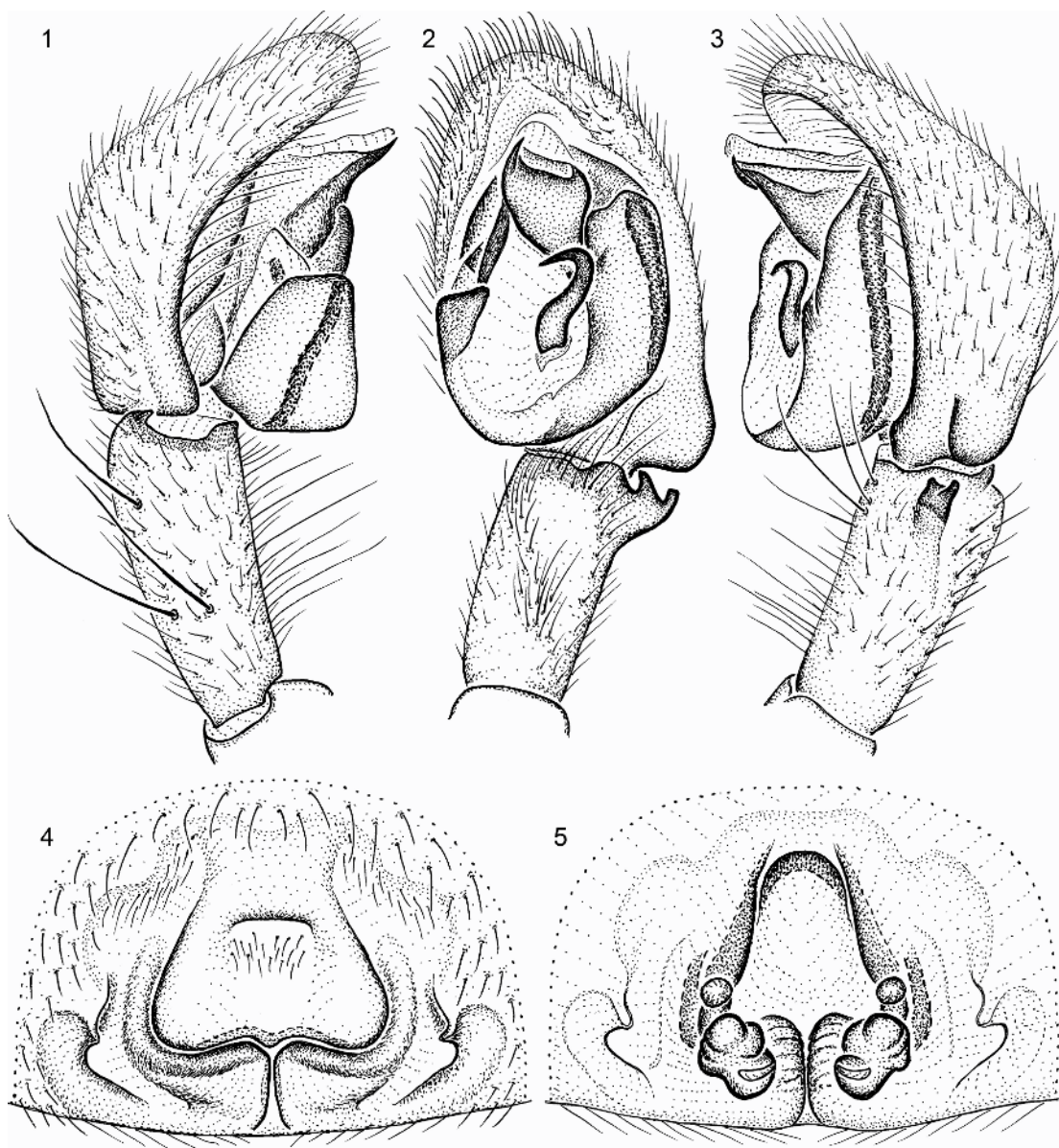
Zorocrates fusca Simon, 1888: 212 (two female syntypes from Guanajuato, Mexico, in MNHN, examined).

Zorocrates fuscus: Simon, 1892: 230 (emendation of gender).

Zorocrates cf. *guerrerensis*: Silva, 2003: 41, fig. 13a.

NOTE: In the original description, the type locality is presented only as “Mexique” but Simon later (1895b: 106) specified “Mexique central” and that later restriction corroborates the current label with the syntypes, which indicates that the specimens were collected in Guanajuato, Mexico, by Dugès.

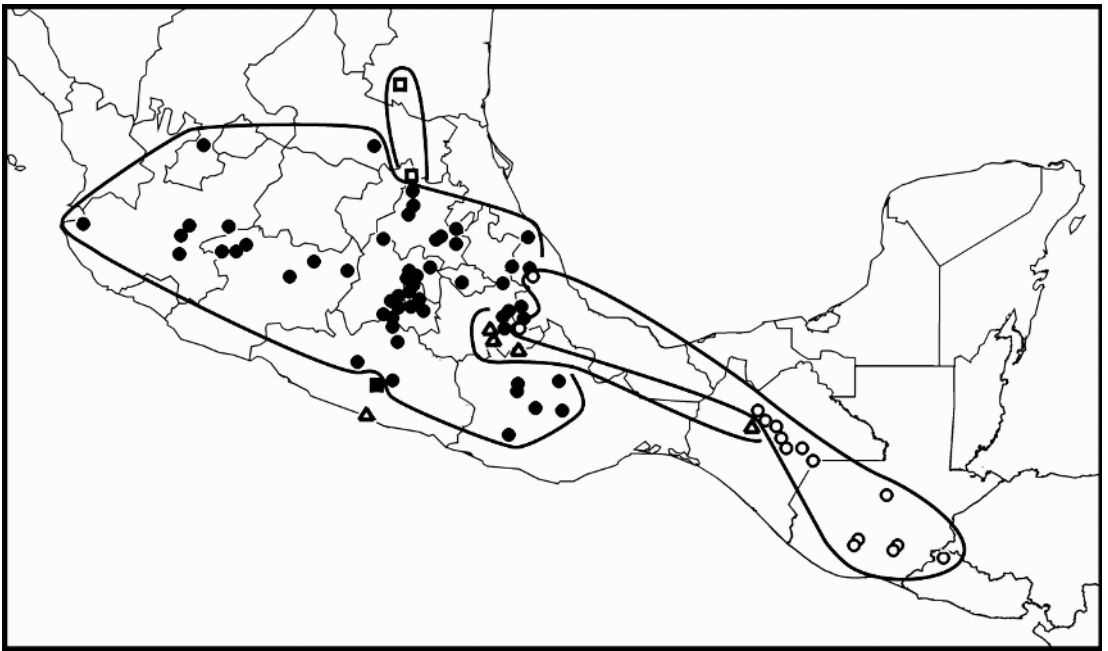
DIAGNOSIS: Males resembles those of *Z. unicolor* but have a longer, fingerlike (rather than ledge-shaped) proximal lobe on the retrolateral tibial apophysis, a distally rounded median apophysis (figs. 2, 3), and a ventrally shorter tegular apophysis; the median apophysis does have a small, subdistal denticle, but it is directed dorsally and is therefore easy to overlook in ventral view (the denticle is more prolaterally directed and conspicuous in males of *Z. unicolor*). Females also resemble those of *Z. unicolor* but have deeper epigynal pockets with smaller, more medially situated openings connected to anteriorly expanded margins that parallel a longitudinal ridge between the pocket and the epigynal midpiece (fig. 4).



Figs. 1–5. *Zorocrates fuscus* Simon. 1. Left male palp, prolateral view. 2. Same, ventral view. 3. Same, retrolateral view. 4. Epigynum, ventral view. 5. Same, dorsal view.

MALE: Total length 14. Carapace light brown with dusky triangular markings radiating from thoracic groove; abdomen gray, with lighter cardiac spot, posterior one-fifth with chevron pattern; femora light brown, more distal leg segments grading to brown on metatarsi and tarsi. Leg spination: femora: I

r1-1-2; II p0-1-2, r1-1-2; III p1-1-1; IV r0-0-2; patellae IV r0-1-0; tibiae III r1-0-1; metatarsi I p1-1-1, v2-2-0, r1-1-0. Cribellum present. Retrolateral tibial apophysis short, with fingerlike proximal lobe; median apophysis hook-shaped, distally rounded; tegular apophysis sharply pointed (figs. 1–3).



Map 1. Records of the *Zorocrates fuscus* group (excluding *Z. unicolor*): *Z. fuscus* (dots), *Z. guerrensis* (triangles; suspect record from Panama not plotted), *Z. gnaphosoides* (circles), *Z. ocampo* (open squares), *Z. mordax* (filled square).

FEMALE: Total length 16. Coloration as in male. Leg spination: femora: I, II p0-1-1, r1-1-0; IV p2-0-1, r0-0-1; patellae IV p0-0-0, r0-1-0; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; IV r2-0-1; metatarsi: I p0-0-0, r0-0-0; II p0-0-0, r0-0-1; III p1-1-2, r1-1-2; IV v3-2-2. Cribellum present. Epigynal midpiece triangular, with transverse anterior ledge; lateral pockets present, with relatively small openings; spermathecae with short anterior lobes (figs. 4, 5).

MATERIAL EXAMINED: MEXICO: **Distrito Federal:** no specific locality, Sept. 1940 (F. Bonet, AMNH), 1♂, Oct. 20, 1942 (R. Ibarra H., AMNH), 1♂, Dec. 15, 1949 (AMNH), 1♂, May 1955 (AMNH), 1♀, Mar. 1956 (UNAM), 1♂, Sept. 2, 1958 (UNAM), 1♂, Nov. 1958 (UNAM), 1♂; Azcapotzalco, Oct. 27, 2002 (UNAM), 1♀; Col. Medellín, Oct. 31, 1941 (AMNH), 1♂; Contreras, Aug. 9, 1942, elev. 2800 m (C. Bolívar, AMNH), 1♀, Mar. 4, 1944 (M. Cardenas, AMNH), 1♀; Coyoacán, Sept. 1946, elev. 2300 m (H. Wagner, AMNH), 1♂, Nov. 1, 2000 (AMNH), 2♂; Cuauhtémoc, Mar. 2000, in house (UNAM), 1♀; Mexico City, Oct. 1945 (H. Wagner, AMNH), 1♂,

winter 1945–1946, in house (H. Wagner, AMNH), 1♂, Dec. 25, 1975, on building downtown (V. Roth, AMNH), 1♀; Miguel Hidalgo, Nov. 20, 2001, on patio (UNAM), 1♂; Pedregales, July–Aug. 1909, under stone (A. Petrunkevitch, AMNH), 1♀, Petregal [probably Pedregal], Oct. 2, 1947 (H. Wagner, AMNH), 1♂. **Guanajuato:** no specific locality (Dugès, MNHN AR230), 2♀ (syntypes). **Guerrero:** summit, 4 mi W Cacahuamilpa, 18°41'N, 99°34'W, Sept. 3, 1966 (J. W. Ivie, AMNH), 1♀; 3 mi N Chilpancingo, Nov. 18, 1946 (E. Ross, CAS), 1♀; 72.6 mi SE Ciudad Altamirano, 2.1 mi S Highway 51 on road to Apaxtla, Nov. 11, 1987, elev. 1520 m (V. Lee, CAS), 1♀; Taxco, Oct. 1945 (L. Isaacs, AMNH), 1♂, Apr. 1946 (L. Isaacs, AMNH), 1♂; 3 km SE Tuxpan, Nov. 3, 1976, elev. 1768 m (E. Ross, CAS), 1♂, 2♀. **Hidalgo:** Apulco, Oct. 6, 1947 (H. Wagner, AMNH), 2♀; El Tablón, 7 mi SE Zimapán, 20°40'N, 99°20'W, Aug. 19, 1964 (gJ., W. Ivie, AMNH), 3♂ (identified from scanning electron micrographs by M. Ramírez); 2 mi. NE Jacala, Sept. 1, 1946, elev. 1500 ft., pine-oak (C. Bogert,

AMNH), 1♀; Pachuca, Jan. 28, 1943 (AMNH), 1♀; Parque Nacional de El Chico, June 28, 1943, elev. 3100 m (C. Bolívar, F. Bonet, Osorio, Pelaez, AMNH), 1♀; Tasquillo, Tzindejeh, 20°33'N, 99°19'W, July 29, 1966 (J., W. Ivie, AMNH), 1♀; Tulancingo, 1957 (UNAM), 3♂. **Jalisco:** Jocotepec, July 31, 1965 (Conant, AMNH), 1♀; E end, Lago de Chapala, Nov. 30, 1948 (H. Leech, CAS), 2♀; W side, Laguna de Sayula, July 30, 1964 (W. Gertsch, J. Woods, AMNH), 2♀; 22.7 mi S Puerto Vallarta, Oct. 20, 1973 (S. Williams, C. Mullinex, CAS), 1♀; 3.5 mi S Zocoalco, Aug. 18, 1959 (C. Bogert, AMNH), 1♀. **México:** Aculco, Route 55 detour to San Joaquín, Oct. 13, 2001, disturbed pasture, elev. 2485 m (O. Francke, E. González, UNAM), 1♂; Malinalco, ruin, Oct. 25, 1973 (S. Williams, C. Mullinex, CAS), 2♀; Naucalpan, Nov. 27, 1997, in house (F. Alvarez, UNAM), 1♂; Reyes Iztacala, Oct. 25, 2001, in house (C. Durán, AMNH), 1♂; San Juan Teotihuacán, Nov. 4, 1939 (C. Bogert, H. Vokes, AMNH), 1♀; Tenancingo, Sept. 27–Oct. 7, 1946, elev. 2050 m (H. Wagner, AMNH), 2♂, 6♀; Tenango del Valle, Aug. 25–26, 1946, elev. 2400 m (H. Wagner, AMNH), 1♂; Teotihuacán ruins, Aug. 13, 1977, elev. 7400 ft (C. Griswold, T. Meikle, CAS), 1♀; Tonicato, Dec. 1, 1996 (UNAM), 1♂. **Michoacán:** Jiquilpan, 19°59'N, 102°41'W, May 9, 1963 (W. Gertsch, W. Ivie, AMNH), 3♀; Morelia, 19°40'N, 101°12'W, May 8, 1963 (W. Gertsch, W. Ivie, AMNH), 3♀; Pátzcuaro, Oct. 20–Nov. 13, 1955 (C. Bogert, AMNH), 1♀; 24 mi S Sahuayo on Highway 15 to Morelia, Oct. 23, 1973 (S. Williams, C. Mullinex, CAS), 1♀; 3 km E Tuxpan, Jan. 6, 1989, elev. 1825 m (E. Ross, R. Stecker, CAS), 2♀; Zamora, Aug. 1, 1956 (W. Gertsch, W. Ivie, AMNH), 1♀; Zitácuaro, Dec. 6, 1943, elev. 2000 m (C. Bolívar, AMNH), 1♀. **Morelos:** Cuernavaca, Apr. 1959 (N. Krauss, AMNH), 1♀; N Cuernavaca, 18°56'N, 99°14'W, May 6, 1963 (W. Gertsch, W. Ivie, AMNH), 3♀; Oaxtepec, May 17, 1942 (Correa, Cardenas, AMNH), 1♀; Tepoztlán, Dec. 3, 1947 (UNAM), 1♀. **Oaxaca:** 1.5 mi S Carrizal, July 25, 1963, elev. 9500 ft (G. Sluder, AMNH), 1♀; El Punto, road to Ixtlán de Juárez, Aug. 19, 1961 (C., M. Bogert, AMNH), 2♀; 5 mi NE Mitla, near “El Crucero” ruins, Aug. 27, 1963, on ridge, elev.

ca. 6800–7200 ft (M. Bogert, G. Sluder, N. Bucknall, AMNH), 1♀; Monte Alban, Dec. 11, 1943 (E. Ross, CAS), 1♀; 0.5 mi E Nochixtlán, 1 mi SE El Palmar, Dec. 11, 1948 (E. Ross, CAS), 1♀; 9 mi S Nochixtlán, 17°20'N, 97°12'W, May 1, 1963 (W. Gertsch, W. Ivie, AMNH), 1♀. **Puebla:** Acultzingo, July 4, 1963 (AMNH), 2♀; Ozumbilla, 18°37'N, 97°25'W, Apr. 25, 1963 (W. Gertsch, W. Ivie, AMNH), 1♀; Tehuacán, Nov. 8, 1939 (C. Bogert, H. Vokes, AMNH), 2♀; 3 mi NE Zacatepec on Route 140, June 30, 1963 (AMNH), 1♀. **San Luis Potosí:** Route 70, 70 mi W Valles, Feb. 19, 1970, under roadside stone (J. Cooke, AMNH), 1♀. **TLaxcala:** Tlaxcala, July 26, 1956 (W. Gertsch, V. Roth, AMNH), 1♀. **Veracruz:** Carrizal, Feb. 10, 1948 (H. Wagner, AMNH), 1♀; Jalapa (BMNH 1905.4.28.1341-1346), 1♀; Orizaba (Eislin, Vaslit, MCZ 56234), 1♀; Perote, June 30, 1946 (H. Wagner, AMNH), 1♀; Zongolica, Mar. 1983 (AMNH), 1♀. **Zacatecas:** 20 km E Tlatenango, Sept. 14, 1984 (W. Pulawski, CAS), 1♀.

DISTRIBUTION: Central and southern Mexico (map 1); one female supposedly taken at St. Ann's, Trinidad (Aug. 13, 1958, M. Nieves, AMNH) is presumed to be either mislabeled or introduced.

Zorocrates unicolor (Banks)

figures 6–10; map 2

Chemmis unicolor Banks, 1901: 583, f. 11 (female holotype from Santa Rita Mountains, Arizona, in USNM, examined).

Zorocrates fuscus (misidentification): F. O. P.-Cambridge, 1902: 354, pl. 33, figs. 8, 8a, 9, 9a–d.

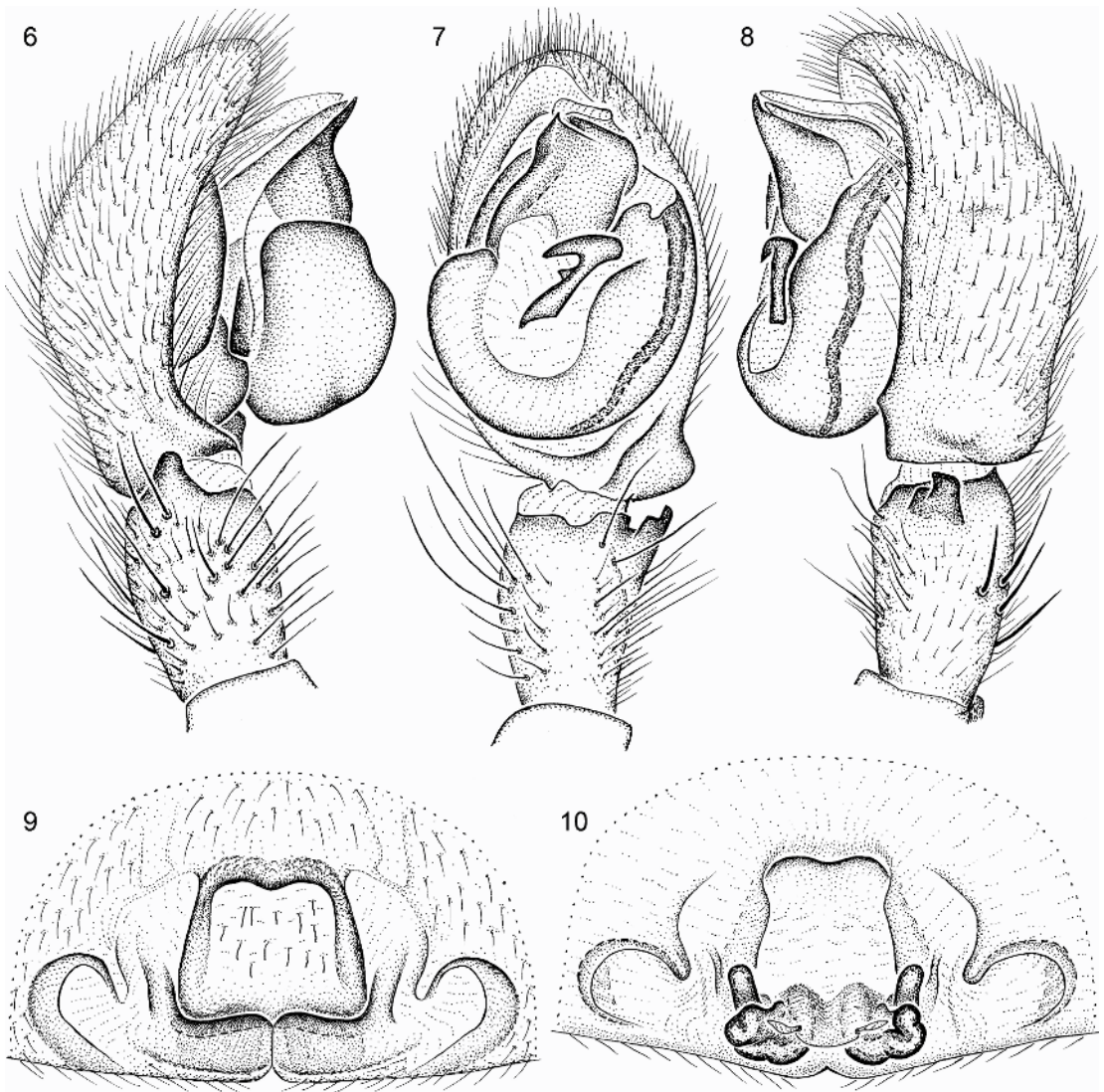
Zorocrates isolatus Gertsch and Davis, 1936: 16 (juvenile holotype from Chisos Mountains, Brewster County, Texas, in AMNH, examined).

NEW SYNONYMY.

Anachemmis unicolor: Roewer, 1955: 607.

Zorocrates unicolor: Lehtinen, 1967: 437, figs. 79, 82.

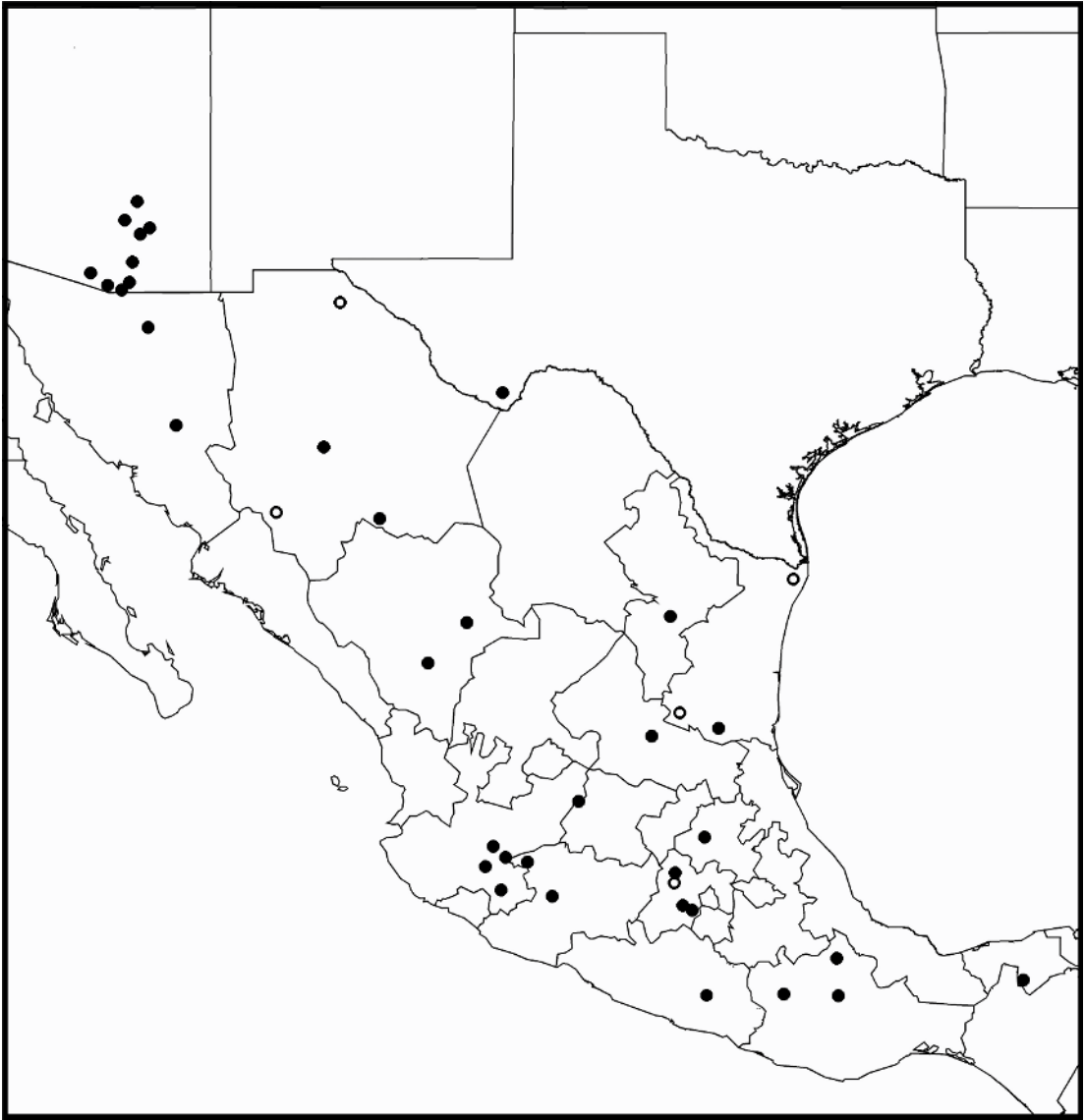
NOTE: Although cribellate, this species was originally described in the clubionid genus *Chemmis* Simon (1898, currently considered a junior synonym of the corinnid genus *Megalostrata* Karsch, 1880), and was subsequently transferred to the genus *Anachemmis* Chamberlin by Roewer (1955). Examination of the holotype female indicates that Banks' original placement, and Roewer's



Figs. 6–10. *Zorocrates unicolor* (Banks). 6. Left male palp, prolateral view. 7. Same, ventral view. 8. Same, retrolateral view. 9. Epigynum, ventral view. 10. Same, dorsal view.

transfer, are both incorrect. Banks noted that “In front of spinnerets is a curious truncate lip.” This apparently refers to the anterior edge of the cribellum, most of which is folded against the anterior lateral spinnerets and therefore not readily visible in ventral view. Had Banks noted the cribellum, he would presumably have placed the species in a cribellate family rather than the Clubionidae; the misplacement was no doubt abetted by the scopular setae obscuring the remnant of the

third claw and making the spider appear to be a dionychan. It seems that Lehtinen (1967) detected these misplacements, for he presented genitalic illustrations of the species under the combination *Zorocrates unicolor*; since Lehtinen did not mention the author or original combination of the name, the combination presented in his figure legend was enigmatic and appeared to be just a nomen nudum (Platnick, 2006). The species is here formally transferred to *Zorocrates*.



Map 2. Records of *Zorocrates unicolor*; open circles indicate uncertain localities.

DIAGNOSIS: Males resembles those of *Z. fuscus* but have a shorter, ledge-shaped (rather than fingerlike) proximal lobe on the retrolateral tibial apophysis, a distally widened median apophysis with a large, prolaterally directed denticle (figs. 7, 8), and a ventrally longer tegular apophysis. Females also resemble those of *Z. fuscus* but have much larger openings to the epigynal pockets (fig. 9).

MALE: Total length 12. Coloration as in *Z. fuscus*. Leg spination: femora: I d1-1-2; II p1-

1-2; metatarsi III r1-1-2. Cribellum present. Retrolateral tibial apophysis short, with distinctly ledge-shaped proximal lobe; median apophysis distally angular; tegular apophysis sharply pointed (figs. 6-8).

FEMALE: Total length 15. Coloration as in *Z. fuscus*. Leg spination: femora: I, II p0-1-1, r1-1-0; IV p0-1-1, r0-0-1; patellae: III r0-0-0; IV p0-0-0; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-0, r0-0-1; III p1-1-2, r1-2-2. Cribellum present. Epigynal

midpiece broadly triangular, lateral pockets large; spermathecae relatively wide (figs. 9, 10).

MATERIAL EXAMINED: UNITED STATES:

Arizona: *Graham Co.:* Redfield Canyon, Galiuro Mountains, Nov. 10, 1985 (V., B. Roth, CAS), 2♀. *Pima Co.:* Bog Springs Campground, Madera Canyon, Apr. 9, 1997, oak forest, under rocks at night (D. Ubick, CAS), 1♂, 4♀; Brown Canyon, Baboquivari Mountains, June 9, 1952 (W. Gertsch, M. Cazier, R. Schrammel, AMNH), 3♀; Madera Canyon, Santa Rita Mountains, Aug. 13, 1981, riparian forest, under rocks (D. Ubick, CDU), 2♂, 4♀, Apr. 9, 1997, oak forest, under rocks at night (D. Ubick, CDU), 3♀; Manning Ranch, 30 mi S Tucson, Mar. 26, 1935 (J. Griswold, MCZ 56222), 1♀; Redington, Feb. 1, 1977 (M. Keasey, AMNH), 1♂; Santa Rita Mountains, W on road 4041 to elev. 5670 ft, N on dirt road of elev. 5760 ft, collected Dec. 3, 1994, reared to maturity, on rocks in pine woods area (T. Prentice, UCR), 3♂, 2♀. *Pinal Co.:* Aravaipa Canyon, Apr. 11–13, 1977 (V. Roth, B. Schropfer, CAS), 1♂; Peppersauce Cave Canyon, Santa Catalina Mountains, Apr. 21, 1961 (W. Gertsch, AMNH), 3♀. *Santa Cruz Co.:* Big Rock Camp, Madera Canyon, 31°42'N, 110°52'W, Sept. 10, 1941 (W. Ivie, AMNH), 4♂, 7♀; Madera Canyon, Santa Rita Mountains, Feb.–Apr. 1931, elev. 5000 ft (Iorns, MCZ 56236), 1♂, June 7, 1952 (W. Gertsch, M. Cazier, R. Schrammel, AMNH), 3♀, Aug. 9, 1956 (W. Gertsch, V. Roth, AMNH), 2♀, Oct. 25, 1959 (AMNH), 1♀, Aug. 22, 1961, under rock (J. Beatty, CJB), 1♀, July 19, 1962 (W. Gertsch, AMNH), 1♀; 10 mi E Nogales, May 9, 1961 (W. Gertsch, AMNH), 1♀; Patagonia, Sept. 17, 1952 (B. Malkin, AMNH), 1♂; Roundup Camp, Madera Canyon, 31°42'N, 110°51'W, Sept. 9, 1941 (W. Ivie, AMNH), 2♂, 5♀; 4 mi SE Ruby, Sept. 5, 1950 (W. Gertsch, AMNH), 1♀; 15 mi SE Ruby, Sept. 6, 1950 (W. Gertsch, AMNH), 1♂; Summit Road, Atascosa Mountains, Jan. 28, 1961, elev. 3500 ft (D. Bixler, CDB), 1♀. **Texas:** *Brewster Co.:* The Basin, Chisos Mountains, Big Bend National Park, Aug. 1–10, 1937 (K. Schmidt, AMNH), 1♀, Aug. 2, 1938 (AMNH), 2♀, Sept. 28, 1950 (W. Gertsch, AMNH), 1♂, 3♀, May 24, 1965, elev. 5400 ft (K. Haller, AMNH), 1♀, Aug. 25, 1967, elev. 6000 ft (W. Gertsch, Hastings, AMNH), 1♂,

1♀ (identified from scanning electron micrographs by M. Ramírez); Juniper Flat, Basin area, Big Bend National Park, May 27, 1965, elev. ca. 5900 ft (K. Haller, AMNH), 1♀. **MEXICO:** no specific locality (BMNH), 1♂, 2♀. **Chihuahua:** Charcas, July 19, 1934, hillside (MCZ 56233), 4♀; 5 mi NW Clarines Mine, Santa Bárbara, Feb. 8, 1947, elev. 6800 ft (G. Bradt, AMNH), 1♀; 12 mi NW Gran Morelos, Aug. 15, 1950 (R. Smith, AMNH), 1♂; Santa Bárbara, Jan. 20, 1947, elev. 6200–6800 ft (G. Bradt, AMNH), 1♀. **Durango:** 10 mi W Durango, July 12, 1954 (E. Schlinger, AMNH), 1♀; 15 mi W Durango, Aug. 12, 1947 (W. Gertsch, AMNH), 1♀; Ojo de los Encinos, June 4–5, 1947 (G. Bradt, AMNH), 1♀; Palos Colorados, Aug. 5, 1947, elev. 8000 ft (W. Gertsch, AMNH), 1♀; Providencia, Aug. 24, 1947, elev. 7700 ft (A. Davis, AMNH), 1♂, 3♀; San José del Río, Aug. 1, 1947 (W. Gertsch, AMNH), 1♀. **Guanajuato:** 8.5 mi NW León, July 15, 1963 (AMNH), 1♀. **Guerrero:** Amula (H. Smith, BMNH 1905.4.28.1324–1328), 6♂, 23♀. **Hidalgo:** Ixmiquilpan (AMNH), 1♂. **Jalisco:** Jocotepec, July 24, 1965 (Conant, AMNH), 1♂; shore of Lago de Chapala at Jocotepec, July 13, 1965 (Conant, AMNH), 1♂; S side, Lago de Chapala, July 28, 1954 (W. Gertsch, AMNH), 1♀; W side, Laguna de Sayula, July 30, 1964 (W. Gertsch, J. Woods, AMNH), 1♂; 5 km SW Tecalitlán, Jan. 2, 1989, elev. 1200 m (E. Ross, R. Stecker, CAS), 1♀. **México:** 4–5 km from Atlacomulco, Oct. 13, 2001, elev. 2600 m (O. Francke, E. González, UNAM), 1♂; Malinalco, ruin, Oct. 25, 1973 (S. Williams, C. Mullinex, CAS), 2♂; Tenancingo, Sept. 27–Oct. 7, 1946, elev. 2050 m (H. Wagner, AMNH), 1♀, Oct. 1946 (H. Wagner, AMNH), 1♀. **Michoacán:** Cojumatlán, June 23, 1941 (A. Davis, AMNH), 1♀; 5 mi E Cojumatlán, Aug. 2, 1954 (W. Gertsch, AMNH), 2♀; Tancítaro, July–Aug. 1940, rotting *Agave* stumps, rocks in dry area, elev. 6500 ft (H. Hoogstraal, MCZ 56226, 56229–56231), 1♂, 13♀. **Nuevo León:** 3 mi S Galeana, May 22, 1973 (D. Rossman, AMNH), 1♀. **Oaxaca:** NE slope, Cerro San Felipe, Aug. 6, 1961, elev. 8200–9000 ft (M. Bogert, AMNH), 1♂; 1–5 mi NE El Punto, road to Ixtlán de Juárez, Sept. 3, 1961, elev. 7500 ft (C., M. Bogert, Miller, AMNH), 2♂; 4 mi SW San

Martín Huamelulpan, Tlaxiaco district, Aug. 26, 1966, elev. 7100 ft (C. Bogert, AMNH), 1♀. **San Luis Potosí:** Cerritos, Buenavista, 1942 (Ekthomb, AMNH), 1♀. **Sonora:** unnamed locality, ca. 28°55'N, 109°45'W, Sept. 18, 1982, pine forest (V. Roth, AMNH), 1♂; Sierra Manzanal, Aug. 1976 (V. Roth, CAS), 1♂, 1♀. **Tabasco:** Teapa (H. Smith, BMNH 1905.4.28.1319-1323), 6♂, 4♀. **Tamaulipas:** km 14, Highway 101, Feb. 22, 1973 (C. Soileau, AMNH), 1♂; 12 mi SW Mante, 22°36'N, 99°03'W, Apr. 18, 1963 (W. Gertsch, W. Ivie, AMNH), 2♀.

DISTRIBUTION: Southern United States south to southern Mexico (map 2).

SYNONYMY: The redescription by Gertsch and Davis was presumably due to Banks' misplacement of the species in the Clunionidae.

Zorocrates guerrerensis Gertsch and Davis
figures 11–15; map 1

Zorocrates guerrerensis Gertsch and Davis, 1940: 2, figs. 9–11 (male holotype and female allotype from 12 miles north of Acapulco, Guerrero, Mexico, in AMNH, examined).

DIAGNOSIS: This species resembles *Z. gnaphosoides* in having very wide lateral pockets on the female epigynum; males differ in having a ledge on the retrolateral tibial apophysis and a short median apophysis (figs. 12, 13), females in having tightly coiled spermathecal lobes and prominent anterolateral blind ducts (fig. 15).

MALE: Total length 11. Coloration as in *Z. fuscus*. Leg spination: femora: II p1-1-2; III p0-2-1; IV p1-2-1; patellae IV r0-1-0; tibiae: I p1-1-1, r1-0-1; II v4-2-2; III, IV d1-1-1; metatarsi: I p1-1-0; II p1-1-2, v2-2-1r, r1-1-2; III r1-1-2; IV r0-2-2. Cribellum present. Retrolateral tibial apophysis wide, with proximal ledge; median apophysis very short, hook-shaped; tegular apophysis wide, sharply pointed (figs. 11–13).

FEMALE: Total length 13. Coloration as in *Z. fuscus*. Leg spination: femora: I p0-0-2, r1-1-0; II p0-1-2, r0-0-0; III p0-1-2, r0-2-1; IV p1-1-1, r0-0-1; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III d1-0-0, r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0. Cribellum present. Epigynal midpiece broadly triangular, lateral

pockets very widely separated; spermathecae forming tight mass of lobes (figs. 14, 15).

MATERIAL EXAMINED: **MEXICO:** **Chiapas:** San Cristóbal de las Casas (H. Smith, BMNH 1905.4.28.1309–1318), 2♀, Sept. 2, 1972, elev. 2164 m (C. Mullinex, CAS), 1♀. **Guerrero:** 12 mi N Acapulco, June 18, 1936 (L. Davis, AMNH), 1♂, 2♀ (including types). **Oaxaca:** 5.8 mi W Teotitlán, July 31, 1993 (AMNH), 1♂. **Puebla:** 0.5 mi W Cacaloapan on Highway 50, July 25, 1965, arid tropical scrub (R. Schick, D. Schroeder, AMNH), 1♀; Tehuacán, Nov. 8, 1939 (C. Bogert, H. Vokes, AMNH), 1♀, Oct. 17–24, 1944 (H. Wagner, AMNH), 1♂, 1♀, July 24, 1956 (W. Gertsch, V. Roth, AMNH), 3♀; 5 mi N Tehuacán, June 29, 1944 (A. Davis, AMNH), 1♀. **CENTRAL AMERICA:** no specific locality (Godman, Salvin, BMNH), 1♀. **PANAMA:** **Chiriquí:** Bugaba (Champion, BMNH 1905.4.28.1337–1340), 3♀.

DISTRIBUTION: Central and southern Mexico (map 1); possibly also south to Panama, but we regard the Panama record as suspect (other specimens supposedly from that site belong to species that are otherwise known only from Chiapas).

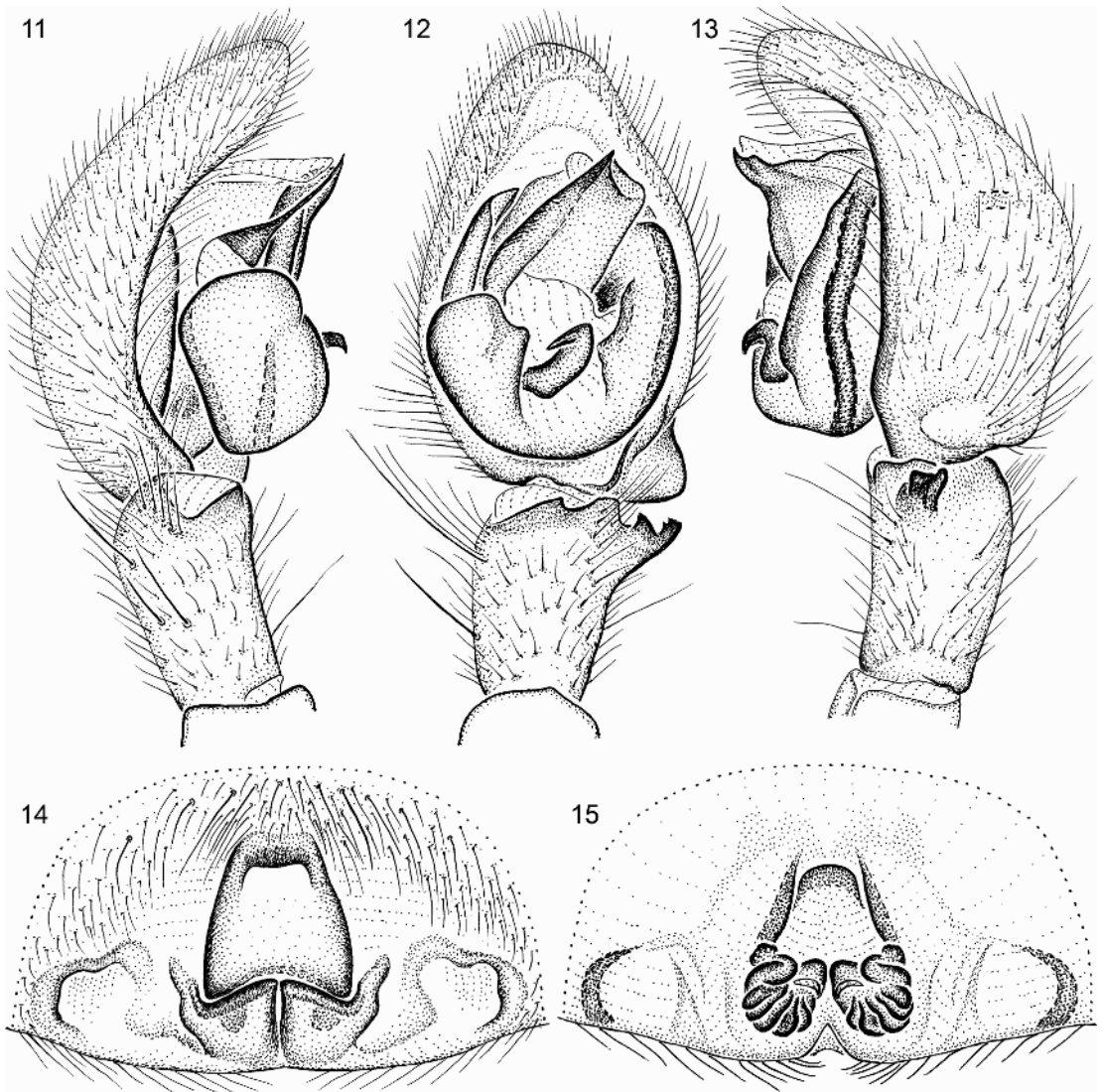
Zorocrates gnaphosoides (O. P.-Cambridge)
figures 16–20; map 1

Satricum gnaphosoides O. P.-Cambridge, 1892: 99, pl. 13, figs. 4a–e, 5a (one female and three male syntypes from Tactic, Guatemala, in BMNH, examined).

Zorocrates petersi Kraus, 1955: 79, fig. 226 (female holotype from El Salvador, in NMS, examined).
NEW SYNONYMY.

DIAGNOSIS: This species resembles *Z. guerrerensis* in having very wide lateral pockets on the female epigynum; males differ in lacking a ledge on the retrolateral tibial apophysis and have a longer median apophysis (figs. 17, 18), females in having enlarged, loosely coiled lateral spermathecal ducts (fig. 20).

MALE: Total length 14. Coloration as in *Z. fuscus*. Leg spination: femora: I, II p0-1-2, r1-1-2; III p1-1-2, r1-1-2; IV p1-1-2, r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, r1-0-1; II r1-0-1; III r1-0-1; metatarsi: I p1-1-1; II r1-1-0; III r1-1-2. Cribellum present. Retrolateral tibial apophysis relatively long, narrow, with-



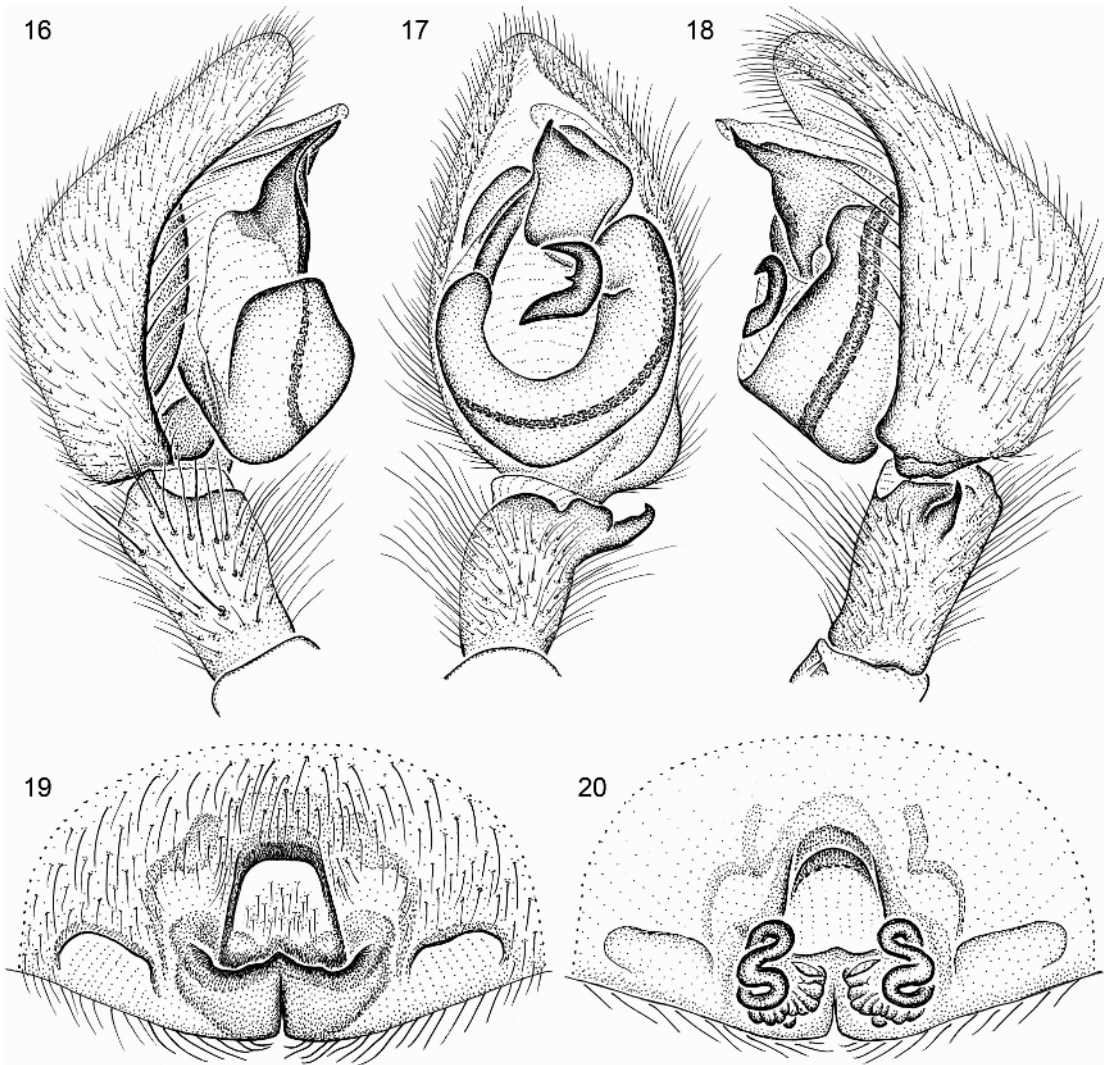
Figs. 11–15. *Zorocrates guerrensis* Gertsch and Davis. 11. Left male palp, prolateral view. 12. Same, ventral view. 13. Same, retrolateral view. 14. Epigynum, ventral view. 15. Same, dorsal view.

out ledge on proximal lobe; median apophysis hook-shaped, distally rounded, with large, prolaterally directed denticle; tegular apophysis narrow proximally (figs. 16–18).

FEMALE: Total length 16. Coloration as in *Z. fuscus*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III r1-1-1; IV p0-0-1, r0-0-1; patellae IV p0-0-0, r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-0-0, v3-3-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I p0-0-1, r0-0-1; II p0-0-1, v2-2-1r, r0-0-1;

III r1-1-2. Cribellum present. Epigynal mid-piece broadly triangular, short, lateral pockets very widely separated; spermathecae with large, loosely coiled lateral ducts (figs. 19, 20).

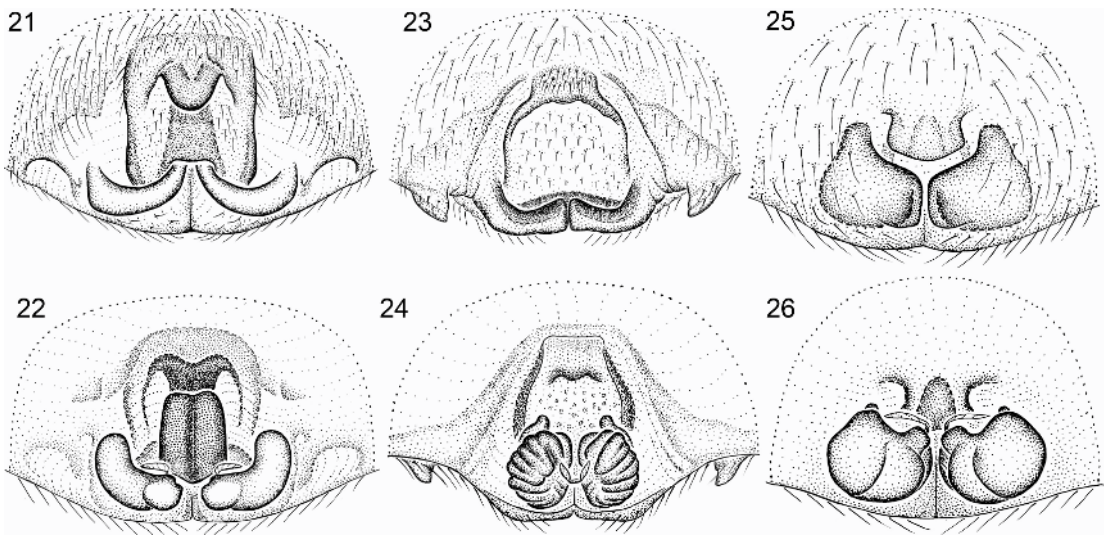
MATERIAL EXAMINED: MEXICO: **Chiapas:** 12 km NW Comitán, Aug. 30, 1976, elev. 1707 m (E. Ross, CAS), 1♀; Los Llanos, Aug. 29, 1972 (R. Mitchell, Russell, AMNH), 1♀ (identified from scanning electron micrographs by M. Ramírez); Ruina Chincultic, Lagunas de Montebello, 28 mi SE Comitán, Jan. 21, 1980



Figs. 16–20. *Zorocrates gnaphosoides* (O. P.-Cambridge). 16. Left male palp, prolateral view. 17. Same, ventral view. 18. Same, retrolateral view. 19. Epigynum, ventral view. 20. Same, dorsal view.

(B., V. Roth, AMNH), 1♀; 4 mi SE San Cristóbal, 16°42'N, 92°36'S, Aug. 23, 1966 (J., W. Ivie, AMNH), 1♀; San Cristóbal de las Casas (H. Smith, BMNH 1905.4.28.1309–1318), 1♂, Sept. 2, 1972, elev. 2164 m (C. Mullinex, CAS), 1♂, 2♀; 38 mi SE San Cristóbal de las Casas, near Palmira, Jan. 21, 1980 (V., B. Roth, CAS), 1♀; Sumidero del Camino, 10 mi NE Comitán, Aug. 22, 1967 (T. Evans, J. Reddell, J. Fish, AMNH), 1♀. **Puebla:** 5 km W Nicolás Bravo, Aug. 20, 1988 (S. Stockwell, AMNH), 1♀. **Veracruz:** Jalapa

(BMNH 1905.4.28.1341–1346), 1♀. **CENTRAL AMERICA:** no specific locality (Godman, Salvin, BMNH), 2♂. **GUATEMALA:** **Alta Verapaz:** Tactic (Sarg, BMNH 1905.4.28.1329–1336), 3♂, 1♀ (syntypes). **Chimaltenango:** Yepocapa, Oct. 8, 1944, elev. 1380 m (H. Elishewitz, AMNH), 3♂. **Jalapa:** Mataquesquintla, La Sierra, Sept. 5, 1982, in house (S. Fend, S. Renkes, CDU), 1♂; Mataquesquintla, El Carrizal, Oct. 1982 (S. Fend, S. Renkes, CDU), 1♂, 1♀. **Sacatepéquez:** Antigua, Oct. 1965 (N. Krauss, AMNH), 1♀;



Figs. 21–26. 21, 22. *Zorocrates ocampo*, new species. 23, 24. *Z. mordax* (O. P.-Cambridge). 25, 26. *Z. blas*, new species. 21, 23, 25. Epigynum, ventral view. 22, 24, 26. Same, dorsal view.

Volcán de Agua, near Santa María de Jesús, Dec. 1982, under rock (S. Fend, CDU), 1 ♀. EL SALVADOR: **Santa Ana:** Hacienda Las Brumas, Dec. 26, 1951, elev. 1830 m (H. Peters, NMS 8666), 1 ♀ (holotype); Hacienda Los Planes, Aug. 25, 1951, elev. 1800 m (A. Zilch, NMS 8230), 1 ♀ (paratype).

DISTRIBUTION: Central Mexico south to El Salvador (map 1).

SYNONYMY: Kraus (1955) provided no character to distinguish *Z. petersi* from *Z. gnaphosoides*, and there appear to be none.

***Zorocrates ocampo*, new species**
figures 21, 22; map 1

TYPE: Female holotype from Rancho de Corrales, Municipio de Ocampo, Tamaulipas, Mexico (Dec. 5, 1964; T. Raines), deposited in AMNH.

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

DIAGNOSIS: Females can easily be recognized by the projecting anteromedian lobe on the epigynum (fig. 21).

MALE: Unknown.

FEMALE: Total length 11. Coloration lighter than in *Z. fuscus*, most of abdominal dorsum with chevrons. Leg spination: femora: I p0-0-2, r0-0-0; II p0-0-1, r0-0-0; III r1-0-1; IV

p2-0-1, r0-0-1; patellae: III p0-0-0; IV r0-1-0; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-0, v2-2-3, r0-0-0; III r1-1-2; IV p1-2-2. Cribellum present. Epigynum with distinctive, tongue-shaped anteromedian lobe; spermathecae bent laterally (figs. 21, 22).

OTHER MATERIAL EXAMINED: MEXICO: **Querétaro:** 5 km NNW Laguna Colorada, July 21, 1973 (J. Reddell, J. Rowland, AMNH), 1 ♀.

DISTRIBUTION: Known only from Tamaulipas and Querétaro in northeastern Mexico (map 1).

***Zorocrates mordax* (O. P.-Cambridge)**
figures 23, 24; map 1

Rubrius mordax O. P.-Cambridge, 1898: 279, p. 37, fig. 1, 1a–e (female holotype from Omiltemi, Guerrero, Mexico, in BMNH, examined).

Zorocrates mistus F. O. P.-Cambridge, 1902: 354 (synonymy, here rejected).

DIAGNOSIS: Females of this distinctive species can easily be recognized by the posterolateral epigynal projections (fig. 23).

MALE: Unknown.

FEMALE: Total length 12. Coloration as in *Z. fuscus*. Leg spination: femora: I p0-0-2, r0-

0-0; II d1-0-1, p0-0-1, r0-0-0; III r1-1-1; IV d1-1-0, p1-1-1, r0-0-1; patellae IV p0-0-0, r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II p0-0-0, p0-0-1, v2-1r-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I p0-0-1, r0-0-1; II p0-0-1, r0-0-0; III r1-2-2. Cribellum small but present. Lateral edges of epigynum produced into distinct projections; spermathecae compact (figs. 23, 24).

MATERIAL EXAMINED: MEXICO: **Guerrero:** Omiltemi, elev. 7000–9000 ft (H. Smith, BMNH 1895.4.28.1341–1346), 1 ♀ (holotype).

DISTRIBUTION: Known only from Guerrero, Mexico (map 1).

THE *BADIUS* GROUP

The six species assigned to this group are united by the presence of a narrow epigynal septum surrounded posteriorly by a pair of elevated lateral margins. Males are known for only four of the species, but they share a median apophysis that is elongated and obliquely oriented.

Zorocrates badius Simon figures 27–31; map 3

Zorocrates badius Simon, 1895a: 134 (female holotype from Baja California, Mexico, in MNHN, examined). – Lehtinen, 1967: 437, fig. 74.

Zorocrates sp.: Griswold, 1993: 5, figs. 11, 12, 17, 18.

DIAGNOSIS: Males resemble those of *Z. pictus* in having a distally coiled embolus, but have a distally wider retrolateral tibial apophysis (figs. 28, 29); females also resemble those of *Z. pictus* but have a larger epigynal septum (fig. 30).

MALE: Total length 11. Coloration as in *Z. fuscus* except abdominal dorsum lighter, chevroned throughout its length. Leg spination: femora: I p0-0-2, r0-2-2; II p0-1-2, r0-2-2; III r0-2-1; IV r0-0-2; patellae IV r0-1-0; tibiae: I d0-0-0, p0-1-0; II r1-0-1; III v2-1p-2, r1-0-1; IV r1-1-1; metatarsi: I p1-1-2, r0-1-0; II r0-1-1; III r1-2-2; IV p1-1-2, r1-1-2. Cribellum present. Distal half of retrolateral tibial apophysis much wider than proximal half; median apophysis greatly elongated, oriented obliquely; tegular apophysis massive (figs. 27–29).

FEMALE: Total length 16. Coloration as in male. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II p0-1-1, r0-0-0; III p1-1-2, r1-1-2; IV p1-1-2, r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-0-1, v4-2-2, r0-0-0; III v2-1p-2, r1-0-1; IV d1-1-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-1, r0-0-0; III r1-2-2. Cribellum present. Epigynal septum relatively long, with elevated anterior hood; spermathecal ducts wide (figs. 30, 31).

MATERIAL EXAMINED: MEXICO: Baja California (no specific locality): (Marx, MNHN AR234), 1 ♀ (holotype). **Baja California Sur:** Cañón de la Zorra, Palo Extraño, Jan. 13, 1988, elev. 1630 m (B., V. Roth, M. Jiménez, CIBN), 1 ♂, El Taste (Eisen, Vaslit, MCZ 56223), 1 ♂, 1 ♀; La Chuparosa (Eisen, Vaslit, MCZ 56235), 2 ♀; La Laguna, Sierra Laguna, Oct. 14, 1941 (E. Ross, R. Bohart, AMNH), 1 ♀, same (CAS), 1 ♀; La Laguna, Sierra Victoria, Oct. 20–23, 1968, elev. 5500 ft (E. Sleeper, F. Moore, CAS), 1 ♂, 2 ♀; La Laguna, 17 air mi ENE Todos Santos, Sierra Laguna, Dec. 12–18, 1979, elev. 6000 ft (J. Doyen, W. Tschinkel, CAS), 2 ♀, same (C. Griswold, CAS), 1 ♂, 7 ♀, same, dug from burrow (C. Griswold, CAS), 1 ♀, same, under debris (P. Rude, CAS), 1 ♂, 1 ♀; Sierra de La Laguna, Nov. 1, 1987, elev. 1240 m (M. Jiménez, CAS), 4 ♂, 3 ♀; Valle de La Laguna, Sierra de La Laguna, Jan. 16, 1988, elev. 1830 m (M. Jiménez, S. Guzmán, CIBN), 1 ♂, 4 ♀; SE Valle Perdido, June 8–9, 1973 (E. Sleeper, CAS), 1 ♀.

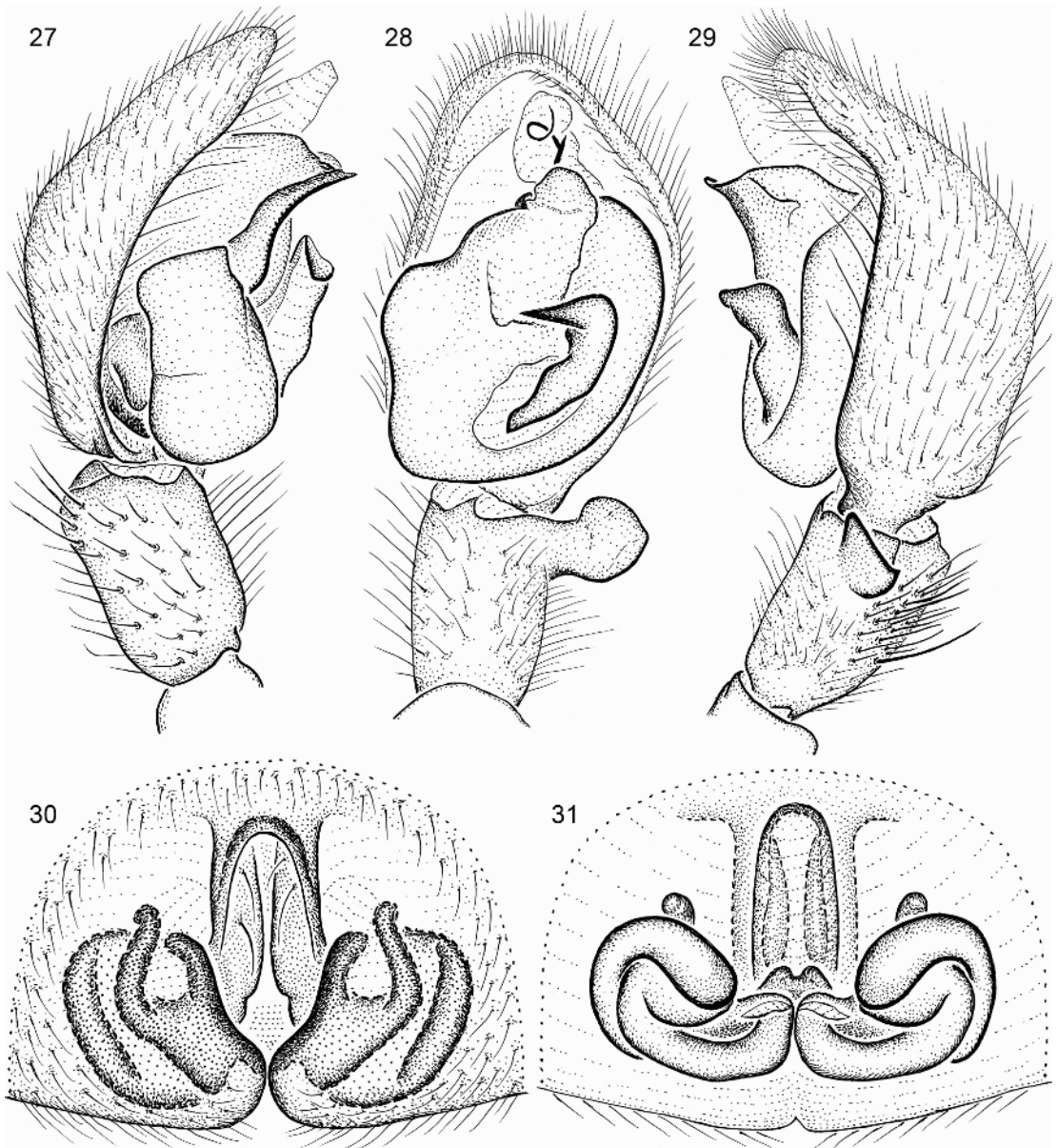
DISTRIBUTION: Known only from Baja California Sur (map 3).

Zorocrates pictus Simon figures 32–36; map 3

Zorocrates pictus Simon, 1895b: 107 (female holotype from Baja California, should be in MNHN, lost).

NOTE: The only specimen currently in the vial that should contain the type of this species is a misplaced crab spider. We use the name here for the only species other than *Z. badius* that is known from Baja California.

DIAGNOSIS: Specimens resemble those of *Z. badius* but can be distinguished by the distally narrower retrolateral tibial apophysis

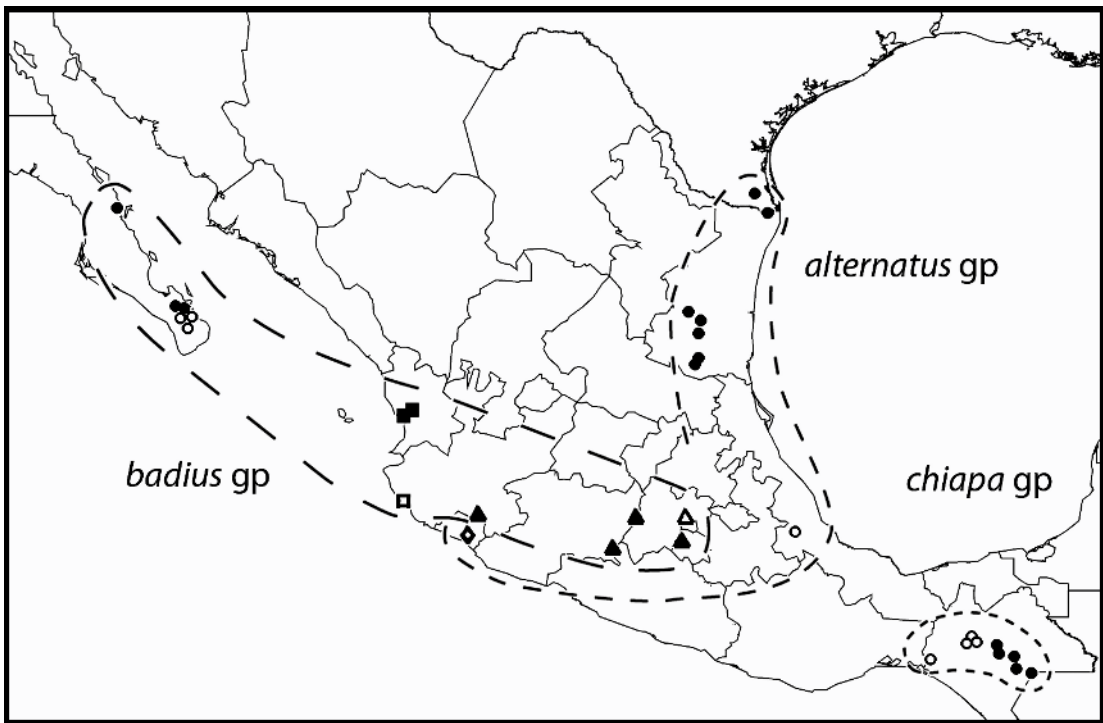


Figs. 27–31. *Zorocrates badius* Simon. 27. Left male palp, prolateral view. 28. Same, ventral view. 29. Same, retrolateral view. 30. Epigynum, ventral view. 31. Same, dorsal view.

of males (figs. 33, 34) and the smaller epigynal midpiece of females (fig. 35).

MALE: Total length 8. Coloration as in *Z. badius*. Leg spination: femora: I p0-1-2, r1-1-2; II p0-0-1, r0-0-1; III p0-1-1; IV r0-1-2; patellae IV r0-1-0; tibiae: I d0-0-0, p0-1-0, r0-0-0; II d0-0-0, p0-1-1, v4-2-2, r0-0-0; III r1-0-1; IV d1-1-

1; metatarsi: I p0-1-0, r0-1-0; II p1-1-2, r0-0-0; III r1-1-2. Cribellum present. Retrolateral tibial apophysis long, not widened distally, with low proximal ledge; median apophysis elongated, oriented obliquely, widened at middle; tegular apophysis laterally flattened (figs. 32–34).



Map 3. Records of the *Zorocrates alternatus*, *badius*, and *chiapa* groups. *Z. alternatus* group: *Z. alternatus* (dots), *Z. huatusco* (circle), *Z. colima* (diamond). *Z. badius* group: *Z. pictus* (dots), *Z. badius* (circles), *Z. blas* (filled squares), *Z. chamela* (open square), *Z. bosencheve* (filled triangles), *Z. contreras* (open triangle). *Z. chiapa* group: *Z. chiapa* (circles), *Z. chamula* (dots).

FEMALE: Total length 10. Coloration as in male. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p0-1-2, r0-1-1; IV p2-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-1-0, v3-2-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-1, v2-2-2, r0-0-0; III r1-2-2. Cribellum present. Epigynal septum relatively short, without elevated anterior hood; spermathecal ducts wide (figs. 35, 36).

MATERIAL EXAMINED: MEXICO: **Baja California Sur:** Chuenque, 13.4 mi S Loreto, Jan. 2, 1982 (matured June 13, 1982), thorn forest, under rocks at base of cliff (D. Ubick, CDU), 1♂, Jan. 13, 1982 (matured Jan. 30, 1982), same, 1♂; El Triunfo, S La Paz, Mar. 23–28, 1965 (matured in lab) (V. Roth, AMNH), 1♂, 1♀; San Antonio, Jan. 5, 1982 (matured May 5, May 29, 1982), thorn forest, under rocks (D. Ubick, CDU), 2♀.

DISTRIBUTION: Known only from Baja California Sur (map 3).

Zorocrates blas, new species
figures 25, 26; map 3

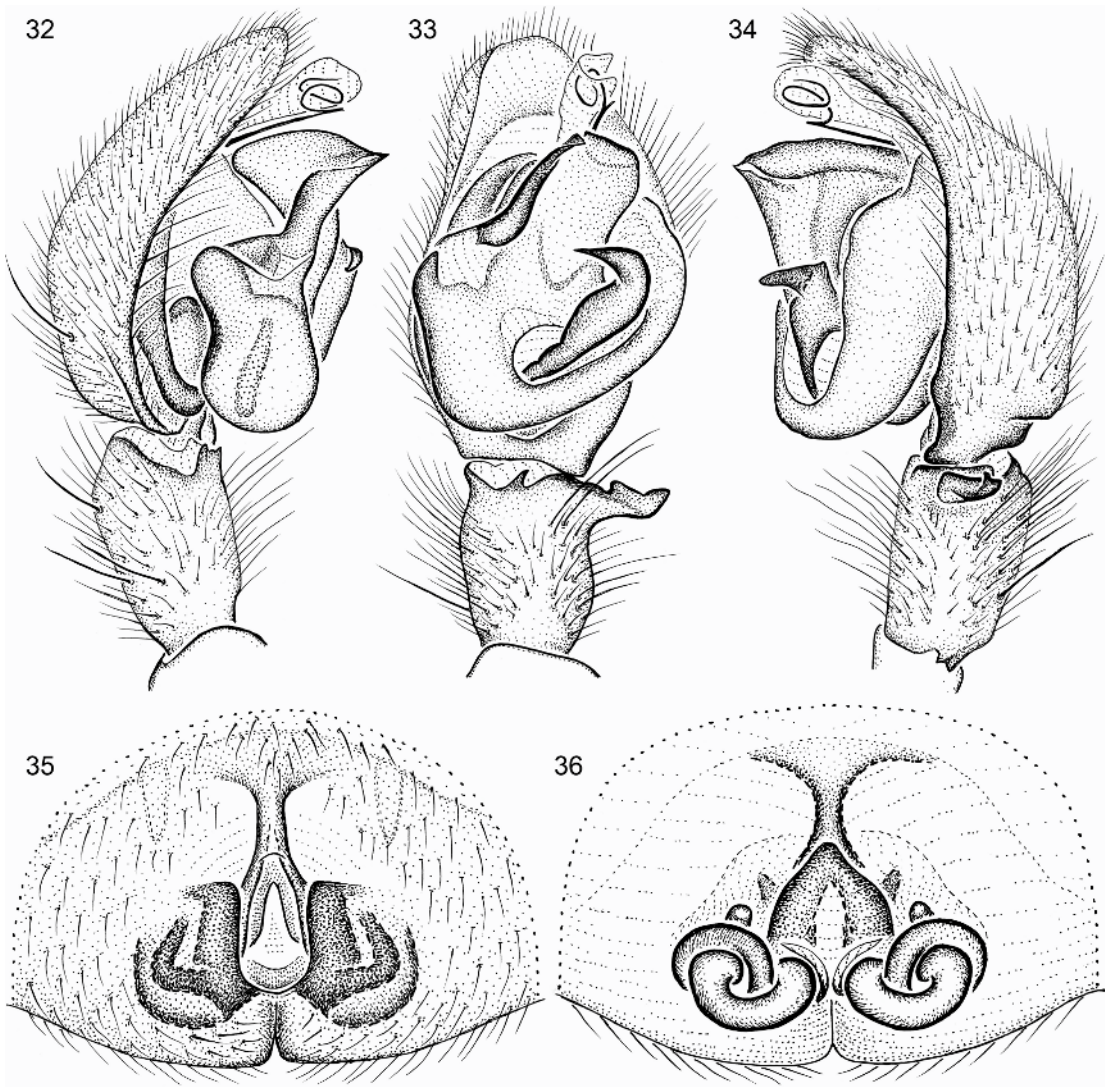
TYPE: Female holotype taken 7 miles east of San Blas, Nayarit, Mexico (July 27, 1964; W. Gertsch, J. Woods), deposited in AMNH.

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

DIAGNOSIS: Males of this small species are unknown; females can easily be recognized by the short epigynal midpiece and widely separated lateral epigynal margins (fig. 25).

MALE: Unknown.

FEMALE: Total length 5. Coloration as in *Z. badius* but dusky markings on carapace forming two longitudinal paramedian bands. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p0-1-1, r0-1-1; IV d1-1-0, p0-0-1, r0-0-1; patellae IV p0-0-0, r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-0-1, v1-2-2; III r1-0-1; IV d1-1-1; metatarsi: I



Figs. 32–36. *Zorocrates pictus* Simon. 32. Left male palp, prolateral view. 33. Same, ventral view. 34. Same, retrolateral view. 35. Epigynum, ventral view. 36. Same, dorsal view.

d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-0-1, r0-0-0; III p2-1-2, r1-2-2; IV r0-2-2. Cribellum present. Median epigynal septum relatively short, wide, lateral epigynal margins relatively widely separated; spermathecal ducts forming rounded clumps (figs. 25, 26).

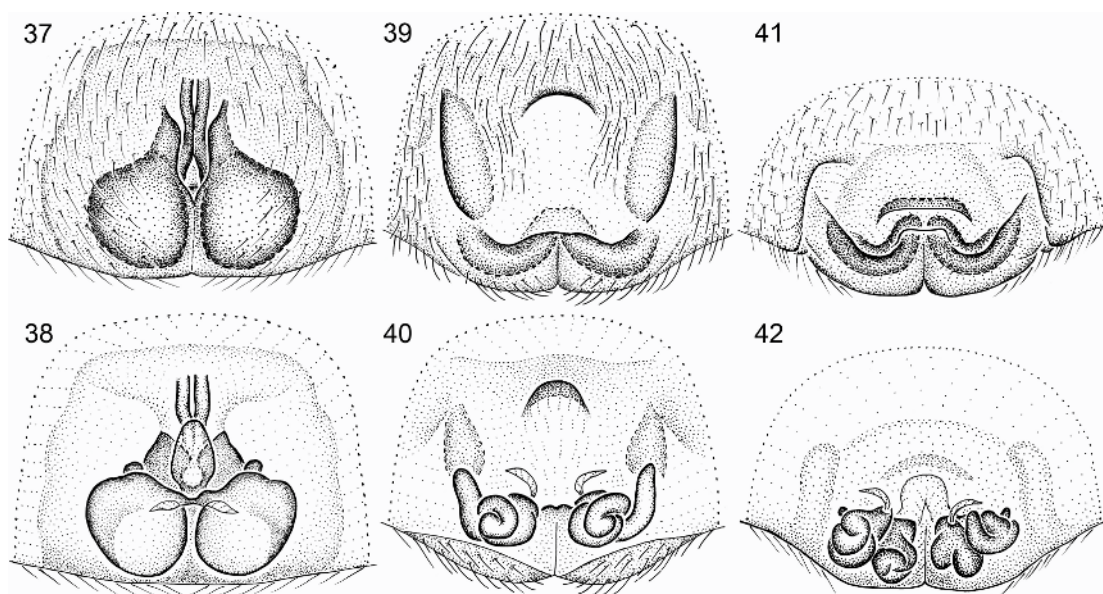
OTHER MATERIAL EXAMINED: MEXICO: **Nayarit:** La Libertad, Aug. 6, 1947 (C.. M. Goodnight, B. Malkin, AMNH), 1♀; San Blas, Aug. 6, 1947 (C.. M. Goodnight, B.

Malkin, AMNH), 1♀; 7 mi E San Blas, July 27, 1964 (W. Gertsch, J. Woods, AMNH), 1♀.

DISTRIBUTION: Known only from Nayarit, Mexico (map 3).

Zorocrates chamela, new species
figures 37, 38; map 3

TYPE: Female holotype from a Berlese sample of forest litter taken at an elevation



Figs. 37–42. 37, 38. *Zorocrates chamela*, new species. 39, 40. *Z. huatusco*, new species. 41, 42. *Z. colima*, new species. 37, 39, 41. Epigynum, ventral view. 38, 40, 42. Same, dorsal view.

of 150–300 feet at the UNAM field station at Chamela, Rt. 20, km 59, north of Barra de Navidad, Jalisco, Mexico (Apr. 4–7, 1985; R. Schuh, B. Massie), deposited in AMNH.

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

DIAGNOSIS: Males of this small species are also unknown, but females can easily be recognized by the narrow median epigynal septum (fig. 37).

MALE: Unknown.

FEMALE: Total length 6. Coloration as in *Z. badius*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p0-1-1, r0-0-1; IV p0-0-1, r0-0-1; patellae IV p0-0-0, r0-1-0; tibiae: I d0-0-0, p0-0-0, v4-2-2, r0-0-0; II d0-0-0, p1-0-1, v2-1p-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-1, r0-0-0; III r1-2-2; IV p1-2-2. Cribellum present. Median epigynal septum narrow, surrounded by elevated lateral margins for most of its length; spermathecal ducts largely fused (figs. 37, 38).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Jalisco, Mexico (map 3).

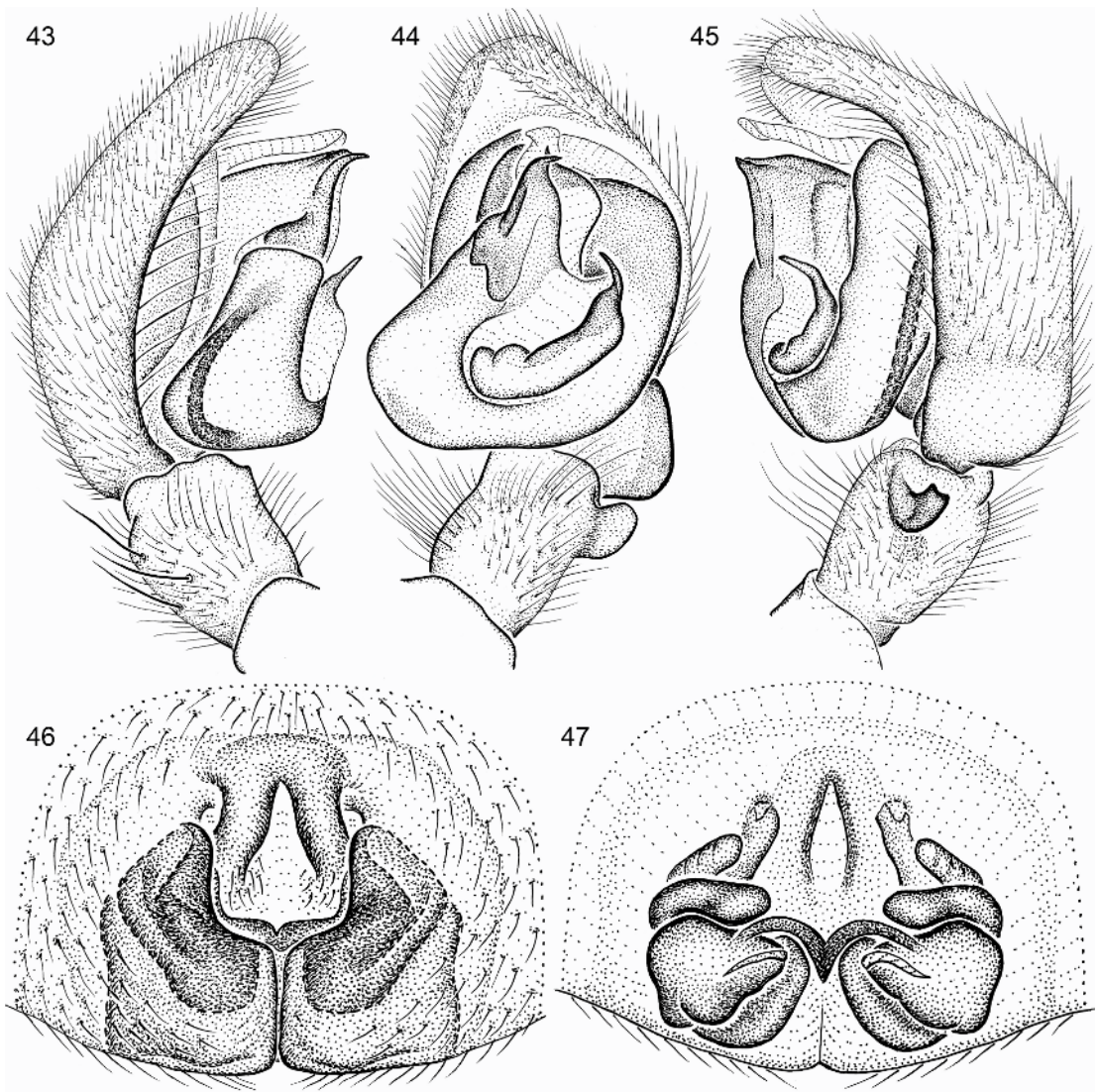
Zorocrates bosencheve, new species
figures 43–47; map 3

TYPE: Female holotype from Parque Nacional Bosencheve, Michoacán, Mexico (Sept. 4, 1966; J., W. Ivie), deposited in AMNH.

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

DIAGNOSIS: Males and females have not been collected together, but are tentatively matched here on the basis of their mutual similarities to the other members of this species group. Males can easily be recognized by the short, thumb-shaped retrolateral tibial apophysis and the elongated tip of the median apophysis (figs. 44, 45), females by the posteriorly widened median epigynal septum (fig. 46).

MALE: Total length 9. Coloration as in *Z. badius*. Leg spination: femora: I, II p0-1-2, r1-1-2; III r0-1-2; IV r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, p1-1-1, v2-4-2, r0-1-1; II d0-0-0, p1-0-1, v2-4-2, r0-1-1; III r1-0-1; IV r1-1-1; metatarsi: I p0-1-0, v2-2-2, r0-0-0; II p1-0-1, r0-1-1; III r1-2-2; IV p1-2-2. Cribellum pres-



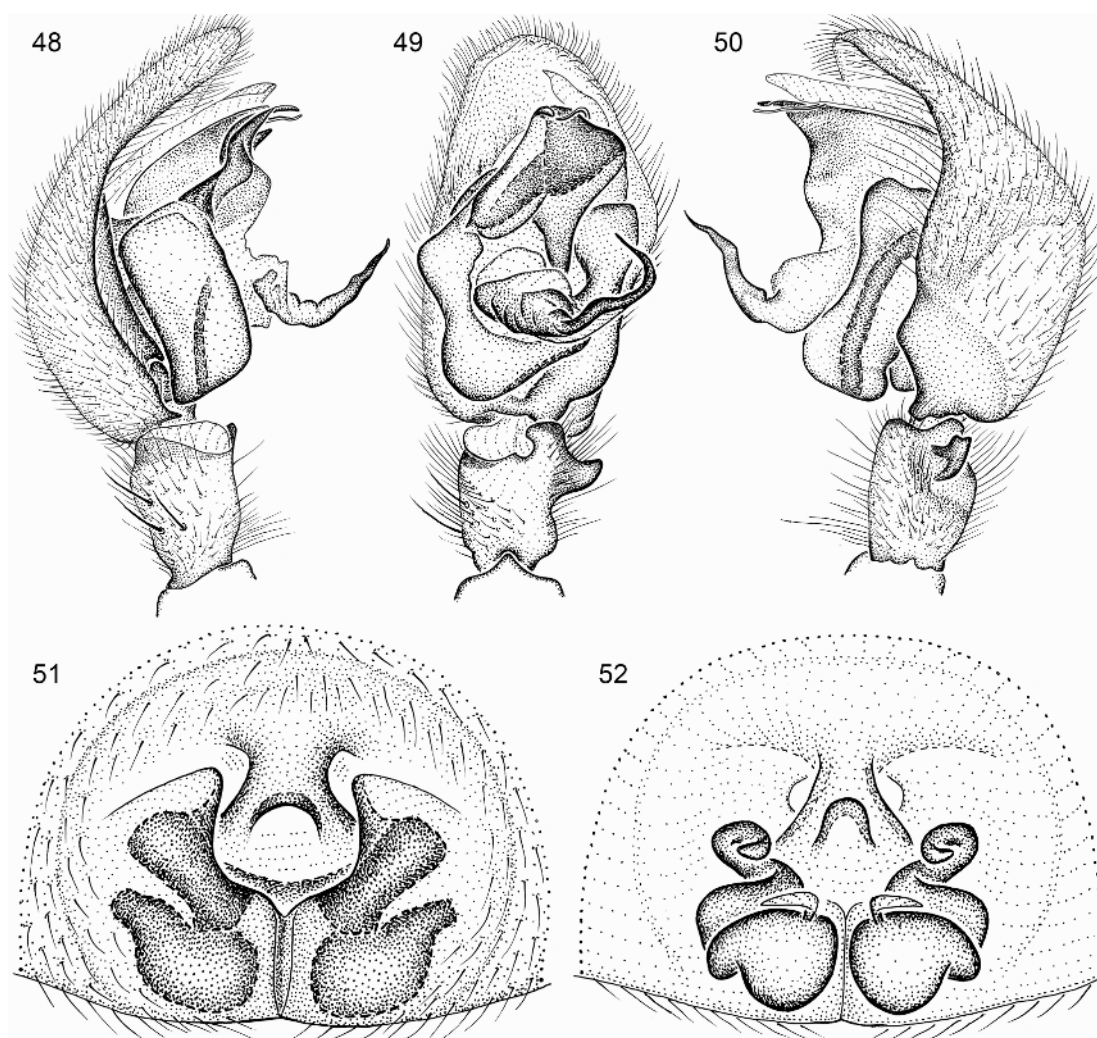
Figs. 43–47. *Zorocrates bosenchave*, new species. 43. Left male palp, prolateral view. 44. Same, ventral view. 45. Same, retrolateral view. 46. Epigynum, ventral view. 47. Same, dorsal view.

ent. Retrolateral tibial apophysis short, thick, thumb-shaped; median apophysis elongated, with greatly elongated tip; tegular apophysis with sinuous prolateral margin (figs. 43–45).

FEMALE: Total length 9. Coloration as in male. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p0-1-1, r0-1-1; IV p0-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-1-0, v4-2-2, r0-0-0; III r1-0-1; IV d1-1-1, r2-0-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-1,

r0-0-0; III r1-2-2. Cribellum present. Median epigynal septum wider posteriorly than anteriorly, lateral margins extending about half its length; spermathecal ducts anteriorly transverse (figs. 46, 47).

OTHER MATERIAL EXAMINED: MEXICO: **Colima:** Nevado de Colima, Jan. 20, 1943 (F. Bonet, AMNH), 1 ♂. **Michoacán (?)**: “3 mi. west of Guerrero line”, July 14 (AMNH), 1 ♀. **Morelos:** Zempoala, May 31, 1942, elev. 2800 m (C. Bolivar, AMNH), 1 ♀.



Figs. 48–52. *Zorocrates contreras*, new species. 48. Left male palp, prolateral view. 49. Same, ventral view. 50. Same, retrolateral view. 51. Epigynum, ventral view. 52. Same, dorsal view.

DISTRIBUTION: Known only from western and central Mexico (map 3).

Zorocrates contreras, new species
figures 48–52; map 3

TYPE: Female holotype from Contreras, Distrito Federal, Mexico (Mar. 4, 1944; M. Cardenas), deposited in AMNH.

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

DIAGNOSIS: Males and females have not been collected together, but are tentatively matched here on the basis of their mutual similarities to the other members of this species group. Males can easily be recognized by the greatly elongated tip of the median apophysis (figs. 49, 50), females by the relatively short epigynal septum and anteriorly twisted spermathecal ducts (figs. 51, 52).

MALE: Total length 9. Coloration as in *Z. blas*. Leg spination: femora: I p0-0-2, r0-2-2; II

p0-1-1, r0-1-1; III p0-1-2, r0-2-1; IV r0-1-1; patellae IV r0-1-0; tibiae: d0-0-0, p0-0-0, r0-0-1; II d0-0-0, p0-1-1, v4-2-2; III r1-0-1; IV d1-1-1, v2-3-2; metatarsi: I p0-1-1, v2-2-2, r0-1-0; II r0-1-0; III r1-2-2; IV v2-3-2. Cribellum present. Retrolateral tibial apophysis thumb-shaped; median apophysis elongated, with greatly elongated tip bent at right angle; tegular apophysis with excavated prolateral surface (figs. 48–50).

FEMALE: Total length 9. Coloration as in *Z. blas*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p0-1-2, r0-1-1; IV p0-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2. Cribellum present. Median epigynal septum relatively short, wide, almost entirely enclosed by lateral epigynal margins; spermathecae with anteriorly extended, twisted ducts (figs. 51, 52).

OTHER MATERIAL EXAMINED: MEXICO: **México:** Villa del Carbón, Apr. 19, 1999, pitfall, elev. 25 m (F. Medina, UNAM), 1 ♂, May 27, 1999, pitfalls, elev. 0–95 m (F. Medina, UNAM), 4 ♂.

DISTRIBUTION: Known only from central Mexico (map 3).

THE *ALTERNATUS* GROUP

It is possible that the remaining species form a monophyletic group, united by having the lateral epigynal margins displaced and forming a pair of transversely oriented, almost cup-shape ledges surrounding the posterior margins of the median septum. Alternatively, it is possible that the species of the *fuscus* group share this character as well, if their lateral epigynal pockets are not homologous to the lateral epigynal margins of other species. In either case, the remaining species seem to fall into three groups, with disparate forms of the male palpal median apophysis (although many species are known from females only, and their placement is therefore tentative). Of the known males, that of *Z. alternatus* Gertsch and Davis is singular in retaining a plesiomorphic form of the median apophysis, as just a small hook-shaped sclerite, and two new species known from females only have a similarly widened epigynal arrangement and are

therefore tentatively associated with *Z. alternatus* here.

Zorocrates alternatus Gertsch and Davis figures 53–57; map 3

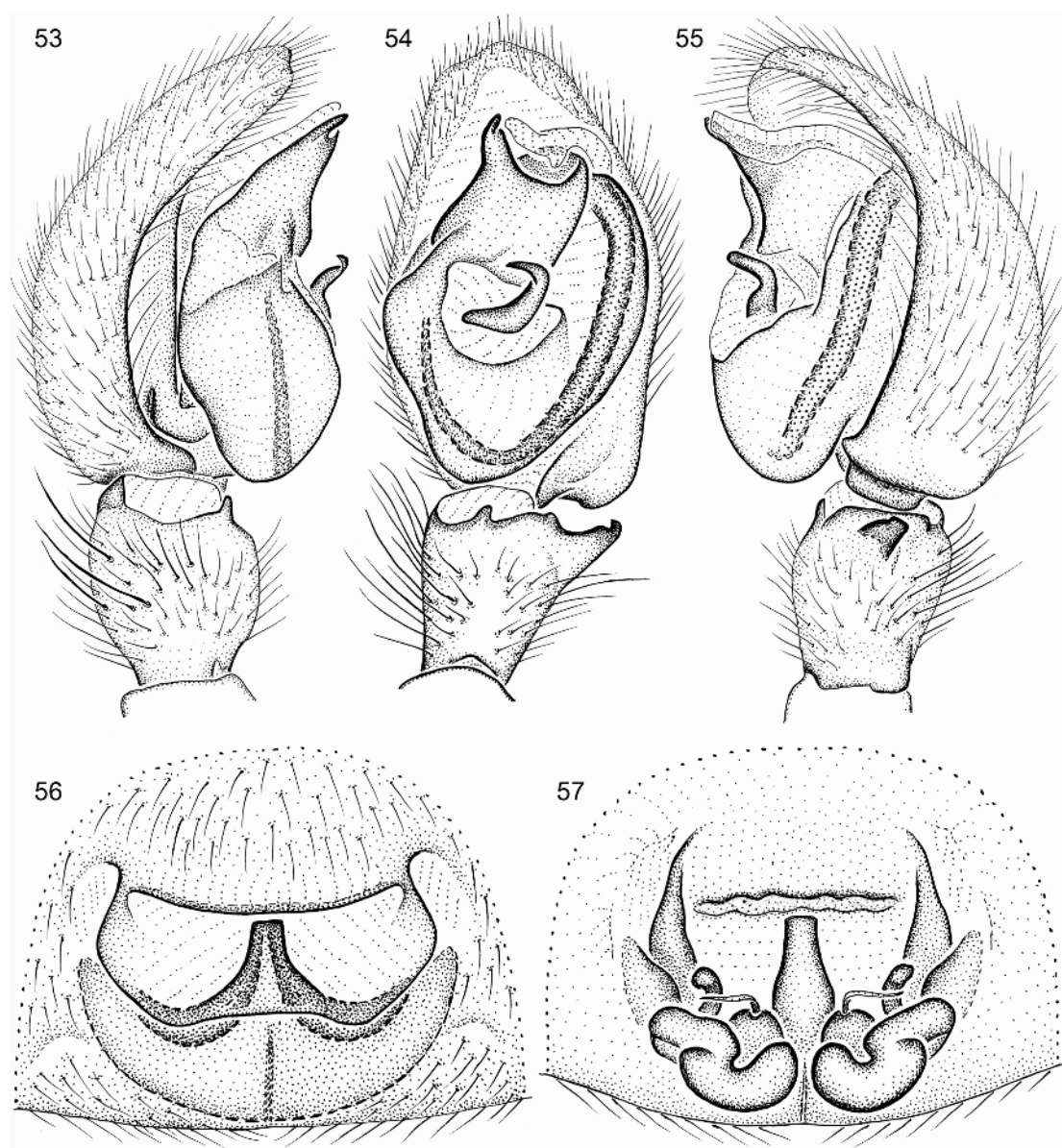
Zorocrates alternatus Gertsch and Davis, 1936: 14, figs. 18, 19 (male holotype and female allotype from Cameron Co., Texas, in AMNH, examined).

DIAGNOSIS: Males resemble those of *fuscus* group species in having a relatively unmodified median apophysis, but are much smaller and have both the median apophysis and the retrolateral tibial apophysis proportionately smaller than in those species (figs. 54, 55). Females can easily be recognized by the greatly widened anterior epigynal margin (fig. 56).

MALE: Total length 5. Coloration as in *Z. badius*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II p0-0-1, r0-0-1; III p0-1-1, r0-2-1; IV p0-1-1, r0-1-1; patellae IV p0-0-0, r0-1-0; tibiae: I d0-0-0, p0-0-1, v4-2-2, r0-0-0; II d0-0-0, p0-1-1, v2-1r-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I p0-1-1, v2-2-2; II p0-1-1, 0-1-0; III r1-2-2. Cribellum present. Retrolateral tibial apophysis short, straight, with hooked tip; median apophysis small, hook-shaped; tegular apophysis distally narrowed (figs. 53–55).

FEMALE: Total length 6. Coloration as in male. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III, IV p0-0-1, r0-0-1; patellae IV p0-0-0, r0-1-0; tibiae: I d0-0-0, p0-0-0, v4-2-2, r0-0-0; II d0-0-0, p0-0-0, v2-1r-2, r0-0-0; III r1-0-1; IV d1-1-1, r1-1-1; metatarsi: I, II p0-0-1, r0-0-0; III 1-2-2. Cribellum present. Epigynum with wide anterior margin extending nearly its full width; spermathecae with paramedian anterior extensions reaching almost to anterior margin (figs. 56, 57).

MATERIAL EXAMINED: UNITED STATES: **Texas:** *Cameron Co.:* E Harlingen, Jan.–Mar. 1936 (L. Davis, AMNH), 2 ♂, 2 ♀ (including types); Palm Grove, Brownsville, May 26, 1936 (S. Bishop, AMNH), 1 ♀, Nov. 16, 1941 (B. Price, E. Bossom, AMNH), 1 ♂; southmost Texas, Dec. 29, 1949 (S. Mulaik, AMNH), 4 ♂, 6 ♀. **MEXICO:** **Tamaulipas:** Arroyo de la Santa Juana, 17 mi S Victoria



Figs. 53–57. *Zorocrates alternatus* Gertsch and Davis. 53. Left male palp, prolateral view. 54. Same, ventral view. 55. Same, retrolateral view. 56. Epigynum, ventral view. 57. Same, dorsal view.

(AMNH), 1 ♀; Mante, Dec. 30, 1943, palmetto forest (AMNH), 1 ♀; 10 mi S Mante, Dec. 29, 1947 (AMNH), 1 ♀; Victoria, from pack rat nest (H. Wallace, AMNH), 2 ♂, 1 ♀, Dec. 30, 1943, scrub (AMNH), 1 ♀; 25 mi S Victoria, Dec. 28, 1947 (AMNH), 1 ♂, 1 ♀.

DISTRIBUTION: Known only from southern Texas and adjacent Tamaulipas (map 3).

Zorocrates huatusco, new species
figures 39, 40; map 3

TYPE: Female holotype taken in cloud forest litter at an elevation of 1040 m at a site 7 km east of Huatusco, Veracruz, Mexico (June 22, 1983; R. Anderson, S. Peck), deposited in AMNH.

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

DIAGNOSIS: Males are unknown, but females of this distinctive species can easily be recognized by the reduced cribellum, the wide anterior epigynal margin that is unconnected to any median epigynal septum (fig. 39), and the widely separated lateral epigynal ducts (fig. 40).

MALE: Unknown.

FEMALE: Total length 11. Coloration as in *Z. blas*. Leg spination: femora: I d0-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-1; III, IV p0-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p0-0-1, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2. Cribellum reduced, with spinning field restricted to pair of tiny triangles smaller than spinning fields of anterior lateral spinnerets. Anterior epigynal margin wide, recurved; lateral epigynal ducts longitudinal, widely separated (figs. 39, 40).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Veracruz, Mexico (map 3).

Zorocrates colima, new species
figures 41, 42; map 3

TYPE: Female holotype from 10 miles south of Colima, Colima, Mexico (Aug. 1, 1954; W. Gertsch), deposited in AMNH.

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

DIAGNOSIS: Males are unknown, but females can easily be recognized by the wide anterior epigynal margin that is situated just slightly in advance of the posterior epigynal margins (fig. 41).

MALE: Unknown.

FEMALE: Total length 9. Coloration as in *Z. blas*. Leg spination: femora: I p0-0-2, r0-0-0; II p0-1-1, r0-0-0; III p0-2-1, r0-1-1; IV p0-0-1, r0-0-0; patellae IV p0-0-0, r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-0-1, v2-1r-0, r0-0-0; III r1-0-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2. Cribellum present. Anterior epigynal margin wide, situated at about half length of epigynum; spermathecae with paramedian anterior extensions (figs. 41, 42).

OTHER MATERIAL EXAMINED: MEXICO: **Colima:** 8 mi SW Colima, 19°10'N, 103°45'W, May 10, 1963 (W. Gertsch, W. Ivie, AMNH), 1♀.

DISTRIBUTION: Known only from Colima, Mexico (map 3).

THE *CHIAPA* GROUP

The two new species assigned to this group represent the largest and most southern of the remaining species, are known only from Chiapas, Mexico, and share a darkened abdominal dorsum with a longitudinal median pale band formed of fused chevrons. The males share a bizarrely modified median apophysis, with divergent prolateral and retrolateral projections as well as a third, smaller projection between those two. In both cases, the tip of the tegular apophysis is also bifid. Associations with the females are tentative in each case; females of one species have a strongly protuberant anterior epigynal margin. Females here assigned to the other species, *Z. chamula*, have a bizarre epigynum, in which the protuberant anterior epigynal margin appears to have become elongated into a scape-like structure extending almost the entire length of the epigynum (unlike a true scape, however, the extension is fused to the remainder of the epigynum).

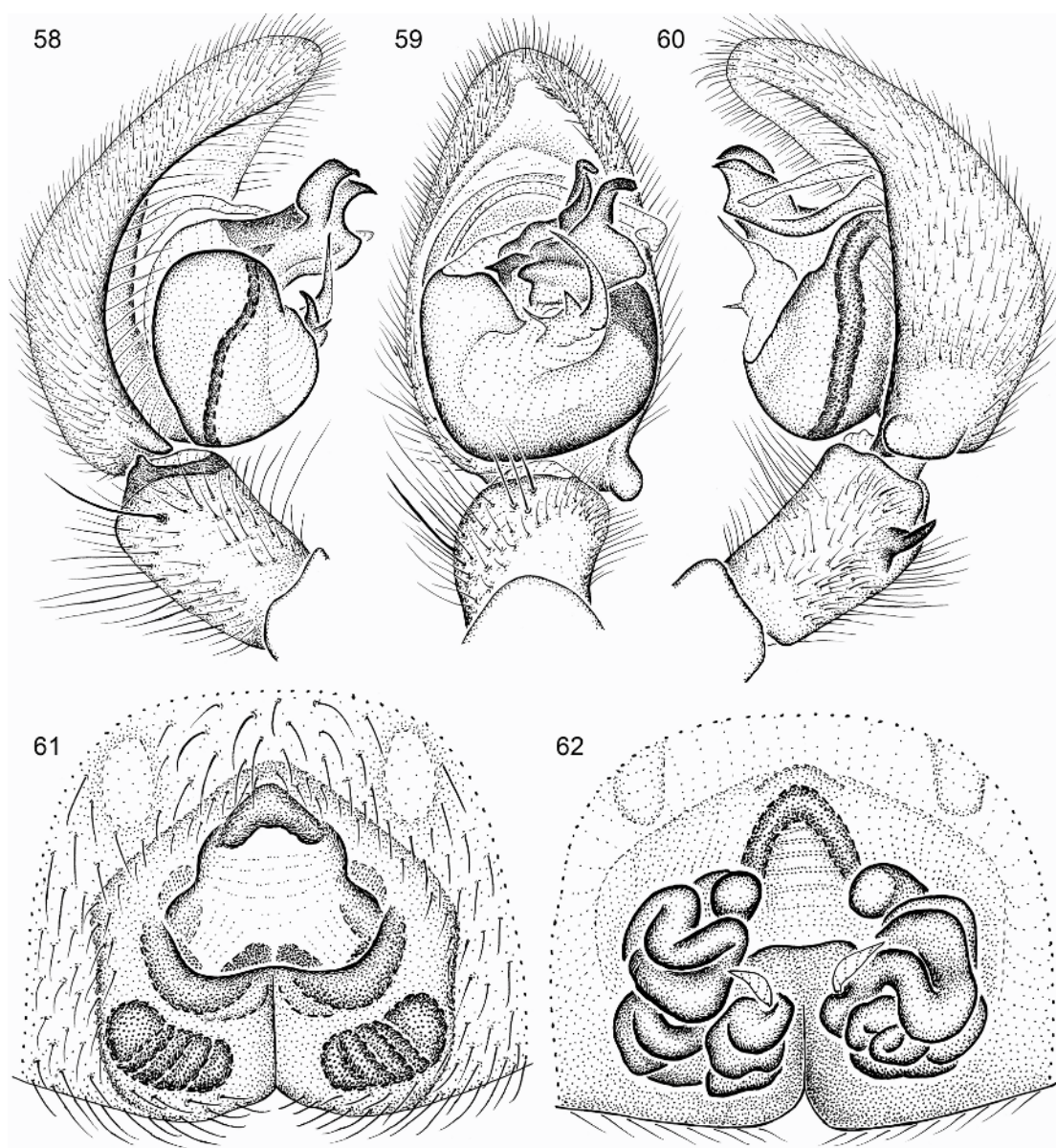
Zorocrates chiapa, new species
figures 58–62; map 3

TYPE: Female holotype from a hillside 5 miles northeast of Chiapa, 16°45'N, 92°58'W, Chiapas, Mexico (Aug. 26, 1966; J., W. Ivie), deposited in AMNH.

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

DIAGNOSIS: Males and females have not been collected together and are only tentatively matched here; males can easily be recognized by their trifold, only lightly sclerotized median apophysis and the bifid tip of the tegular apophysis (figs. 58–60), females by the protuberant anterior epigynal margin overlying an anteromedian depression (fig. 61).

MALE: Total length 12. Coloration as in *Z. fuscus* except abdominal dorsum with median longitudinal pale stripe formed of fused



Figs. 58–62. *Zorocrates chiapa*, new species. 58. Left male palp, prolateral view. 59. Same, ventral view. 60. Same, retrolateral view. 61. Epigynum, ventral view. 62. Same, dorsal view.

chevrons. Leg spination: femora: I p0-0-2; II p0-1-1; IV p2-2-1, r0-0-2; patellae IV r0-1-0; tibiae: I d0-0-0, p1-1-1, v4-2-2; II d0-0-0, p1-1-1, v4-2-2, r1-0-1; III r1-0-1; IV d1-1-1; metatarsi: I p1-1-1, v2-2-2. Cribellum present. Retrolateral tibial apophysis small, abruptly bent at about half its length; median apoph-

ysis almost hyaline, with three prongs; tegular apophysis distally bifid (figs. 58–60).

FEMALE: Total length 17. Coloration as in male. Leg spination: femora: I p0-0-2, r0-1-1; II p0-1-2, r1-0-0; IV p2-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p1-0-1, v4-2-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I p0-0-0, v2-

2-2, r0-0-0; II p0-0-1, r0-0-0. Cribellum present. Anterior epigynal margin protuberant, elevated over anteromedian depression; spermathecae with anterior, medially directed blind lobes (figs. 61, 62).

OTHER MATERIAL EXAMINED: MEXICO: **Chiapas:** 15 mi NW Arriaga, 16°25'N, 94°01'W, Aug. 27, 1966 (J., W. Ivie, AMNH), 2♀; Parque Nacional Sumidero, June 1, 1990, elev. 1000 m (H., A. Howden, AMNH), 3♂; Tuxtla Gutiérrez, Oct. 1, 1984 (J. Welch, CJC), 1♀.

DISTRIBUTION: Known only from Chiapas, Mexico (map 3).

Zorocrates chamula, new species
figures 63–67; map 3

TYPE: Female holotype from an elevation of 2530 m at Laguna Chamula, microwave tower between Comitán and Amatenango del Valle, Chiapas, Mexico (Aug. 20, 1972; C. Mullinex, K. Lucas), deposited in CAS.

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

DIAGNOSIS: Males and females have not been collected together and are only tentatively matched here; males can easily be recognized by the pick-shaped median apophysis (fig. 64), females by the large anterior epigynal protuberance (fig. 66).

MALE: Total length 13. Coloration as in *Z. chiapa*. Leg spination: femora: I p0-0-2, r1-1-2; II p1-1-1, r3-2-2; III p1-1-2, r1-1-2; IV p1-1-1, r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, r1-0-1; II d0-0-0, p1-1-1, v4-2-2, r1-0-1; III r1-0-1; IV d1-1-1; metatarsi: I p0-1-1, v2-2-2, r0-1-0; II p0-1-1; IV r0-2-2. Cribellum present. Retrolateral tibial apophysis small, sharply pointed; median apophysis pick-shaped, with two long and one shorter projection; tegular apophysis distally bifid (figs. 63–65).

FEMALE: Total length 13. Coloration as in male except abdominal dorsum with median longitudinal stripe reduced to rows of paired pale spots. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-1-1, r1-1-0; III p0-1-1, r0-1-1; IV d1-1-0, p0-0-1, r0-0-1; patellae III, IV p0-0-0, r0-0-0; tibiae: I d0-0-0, p0-0-0, v2-4-2, r0-0-0; II d0-0-0, p0-0-1, v2-4-2, r0-0-0; III d1-1-0, r1-0-1; IV d1-0-0; metatarsi: I p0-0-1, v2-2-2, r0-0-0; II p1-0-1, v2-2-2, r0-0-1; III

r1-1-2; IV v3-2-2. Cribellum present. Anterior epigynal margin prolonged as posteriorly expanded projection; spermathecae ovoid (figs. 66, 67).

OTHER MATERIAL EXAMINED: MEXICO: **Chiapas:** Comitán, Sept. 9, 1960 (UNAM), 1♂; Cruz Quemada, near Amatenango, July 24, 1950 m (C., M. Goodnight, AMNH), 1♂; Lagos de Montebello, Sept. 4, 1972 (C. Mullinex, K. Lucas, CAS), 1♂; Laguna Chamula, microwave tower between Comitán and Amatenango del Valle, Aug. 20, 1972, elev. 2530 m (C. Mullinex, K. Lucas, CAS), 1♀; 17 km SE San Cristóbal de las Casas, Sept. 2, 1972, elev. 2164 m (C. Mullinex, CAS), 8♀.

DISTRIBUTION: Known only from Chiapas, Mexico (map 3).

THE *MISTUS* GROUP

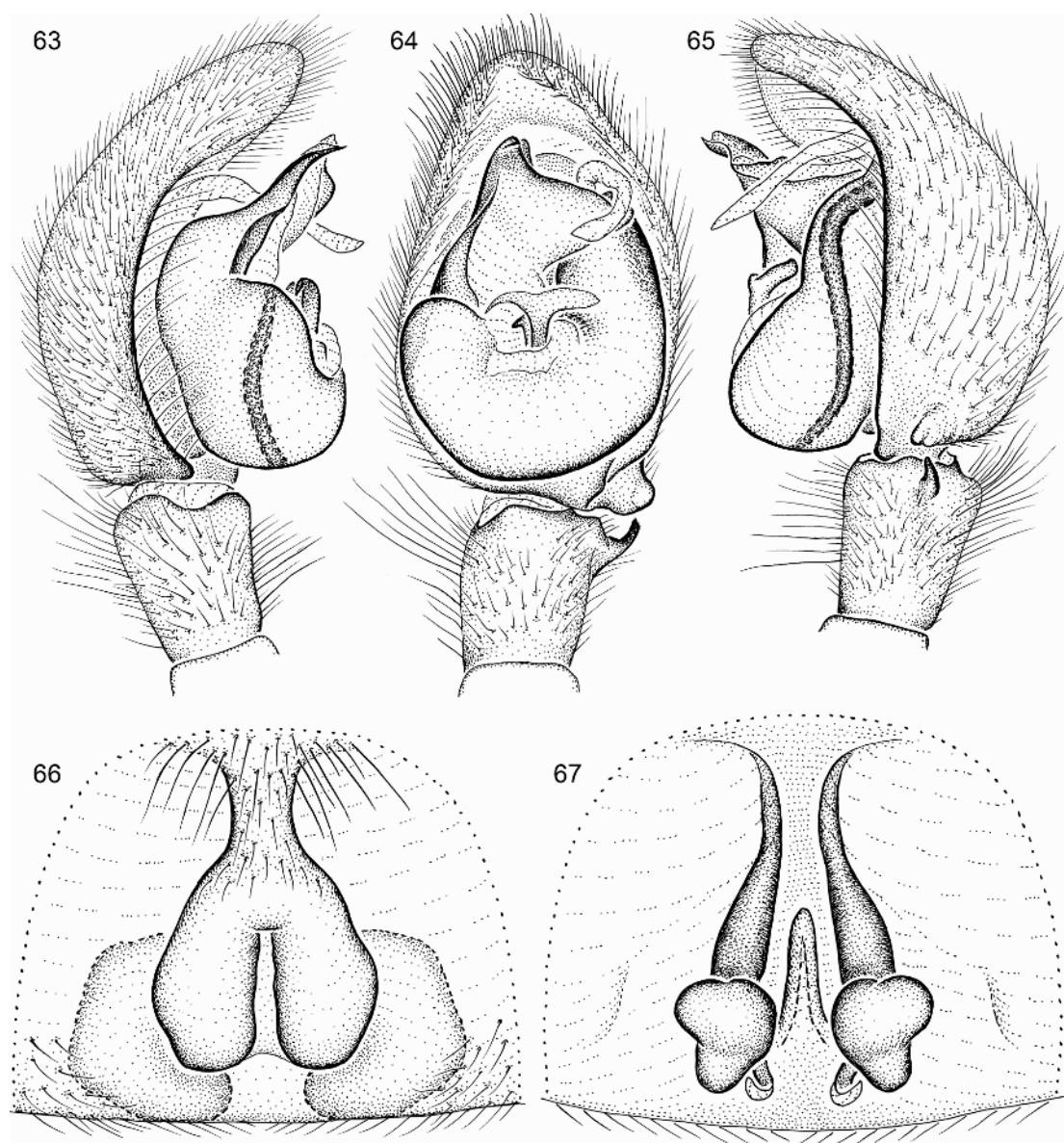
The remaining species seem to represent a single group. All the known males share a flattened and platelike median apophysis, often bizarrely modified in various ways. The females have pronounced posterior epigynal margins.

Zorocrates mistus O. P.-Cambridge
figures 68–72; map 4

Zorocrates mistus O. P.-Cambridge, 1896: 176, pl. 21, figs. 9, 9a–g, 10, 10a (one female and two male syntypes from Omiltemi, Guerrero, Mexico, in BMNH, examined). – F. O. P.-Cambridge, 1902: 354, pl. 33, figs. 10, 10a, 11.

DIAGNOSIS: Males can easily be recognized by the huge, recurved median apophysis with a pronounced, prolaterally directed extension (fig. 69), females by the relatively narrow anterior epigynal margin, posteriorly expanded epigynal midpiece, and wide posterior epigynal margins (fig. 71).

MALE: Total length 8. Coloration as in *Z. fuscus*. Leg spination: femora: I p0-0-2, r1-1-1; II p0-1-1, r1-1-2; III p0-2-1; IV p0-1-2, r0-0-2; patellae IV r0-1-0; tibiae: I d0-0-0, p0-0-1, v4-2-2, r0-0-0; II d0-0-0, p0-1-1, v4-2-2, r0-0-0; III r1-0-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-1, r0-0-0; III r1-2-2; IV p1-2-2. Cribellum possibly reduced but present. Retrolateral tibial apophysis relatively wide, prolaterally

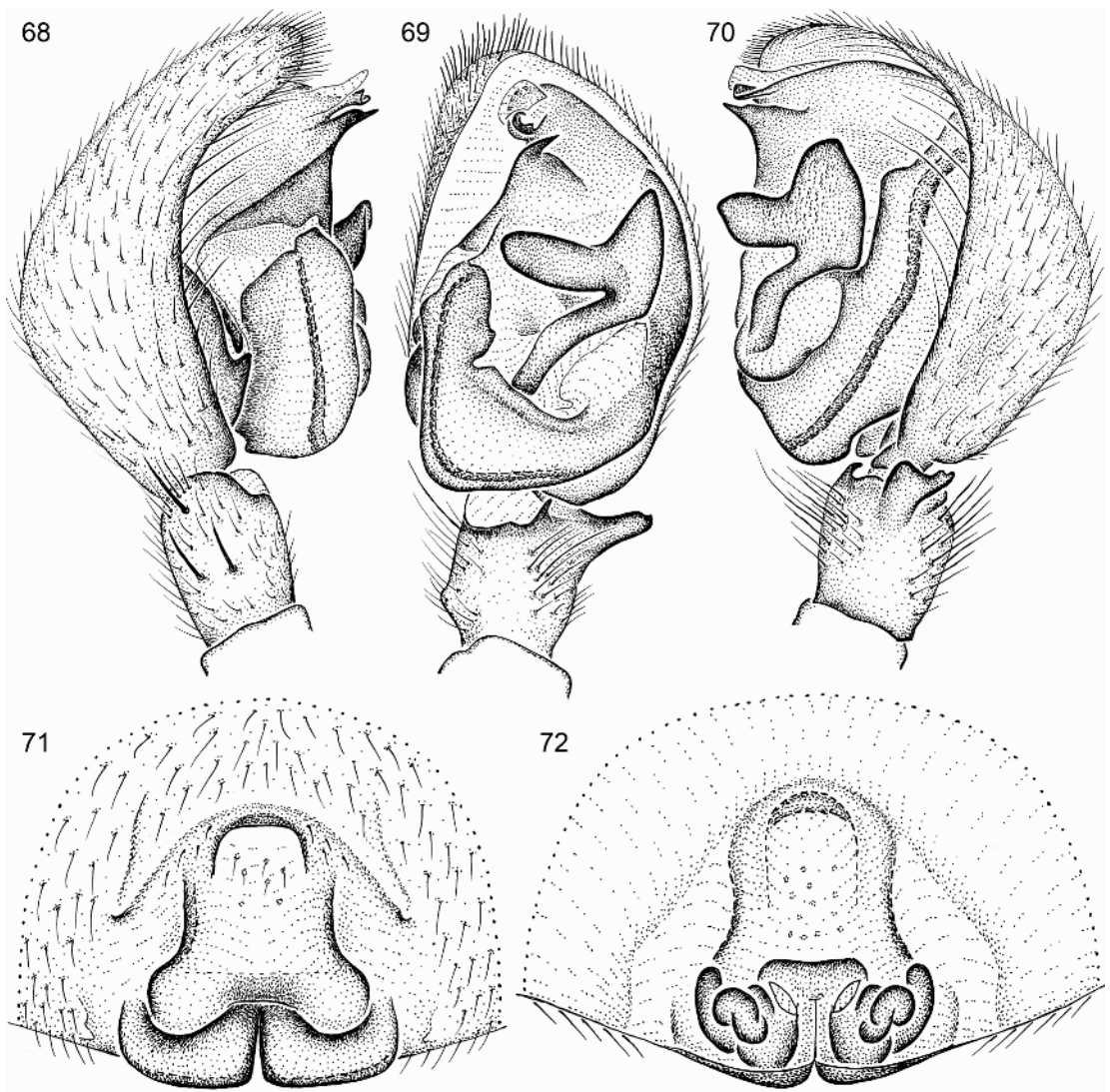


Figs. 63–67. *Zorocrates chamula*, new species. 63. Left male palp, prolateral view. 64. Same, ventral view. 65. Same, retrolateral view. 66. Epigynum, ventral view. 67. Same, dorsal view.

incised near tip; median apophysis occupying over half of bulbal length and width, with prolaterally directed extension; tegular apophysis tall retrolaterally, short prolaterally (figs. 68–70).

FEMALE: Total length 9. Coloration as in male. Leg spination mostly unknown (most

legs detached, mixed with those of one male syntype), only right leg I still attached, with femur d1-1-0, p0-0-2, tibia d0-0-0, p0-0-0, v4-2-2, r0-0-0, metatarsus p0-0-0, v2-2-2, r0-0-0. Cribellum present. Anterior epigynal margin relatively narrow, recurved, midpiece expanded prolaterally, posterior margins protuber-



Figs. 68–72. *Zorocrates mistus* O. P.-Cambridge. 68. Left male palp, prolateral view. 69. Same, ventral view. 70. Same, retrolateral view. 71. Epigynum, ventral view. 72. Same, dorsal view.

ant; spermathecae with anteriorly directed lateral ducts (figs. 71, 72).

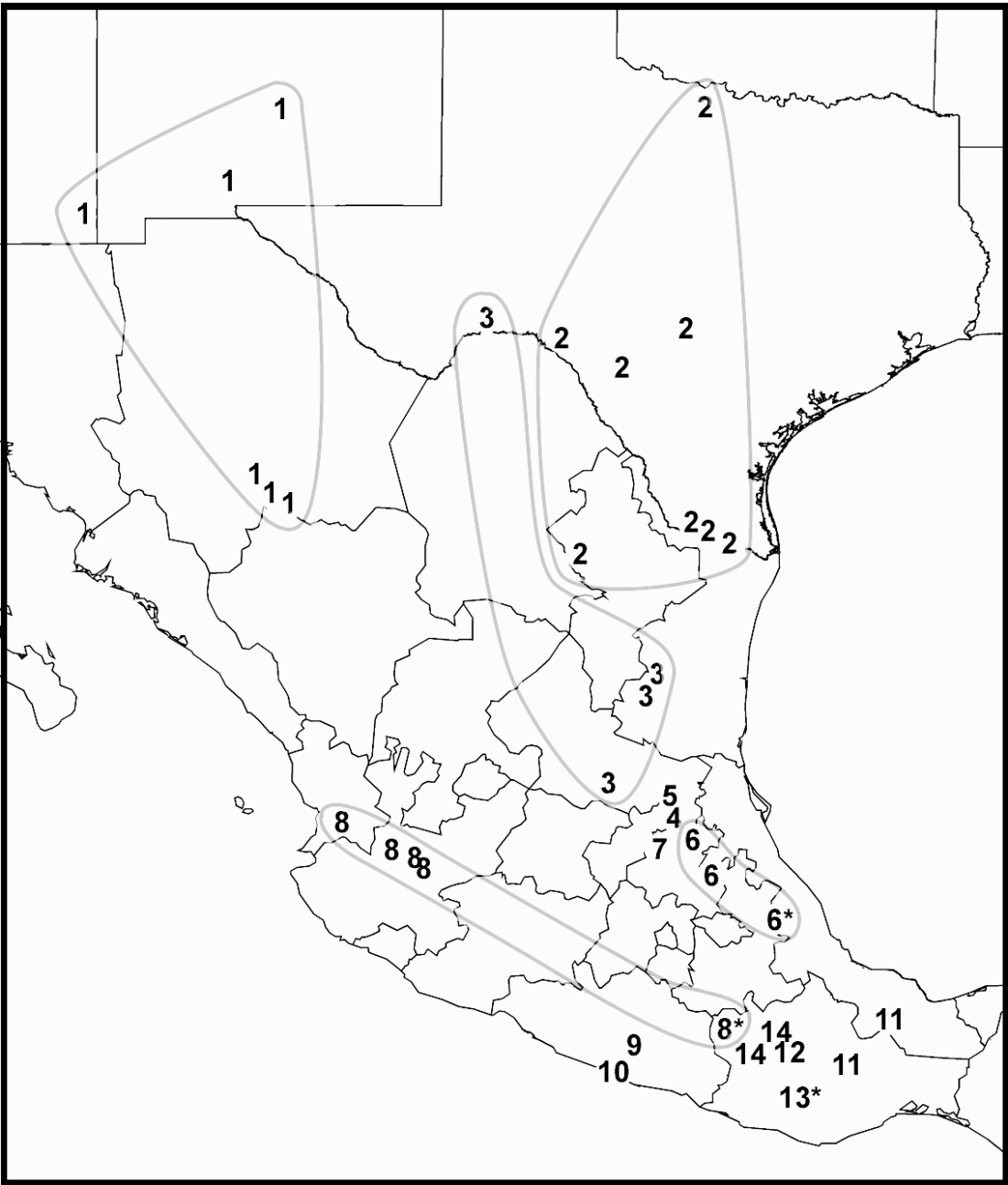
MATERIAL EXAMINED: MEXICO: **Guerre-ro:** Omiltemi, elev. 7000–9000 ft (H. Smith, BMNH 1895.4.28.1341–1346), 2♂, 1♀ (syn-types).

DISTRIBUTION: Known only from Guerrero, Mexico (map 4).

Zorocrates terrell, new species
figures 73–77; map 4

TYPE: Female holotype from 10 miles southeast of Sanderson, Terrell Co., Texas, deposited in AMNH.

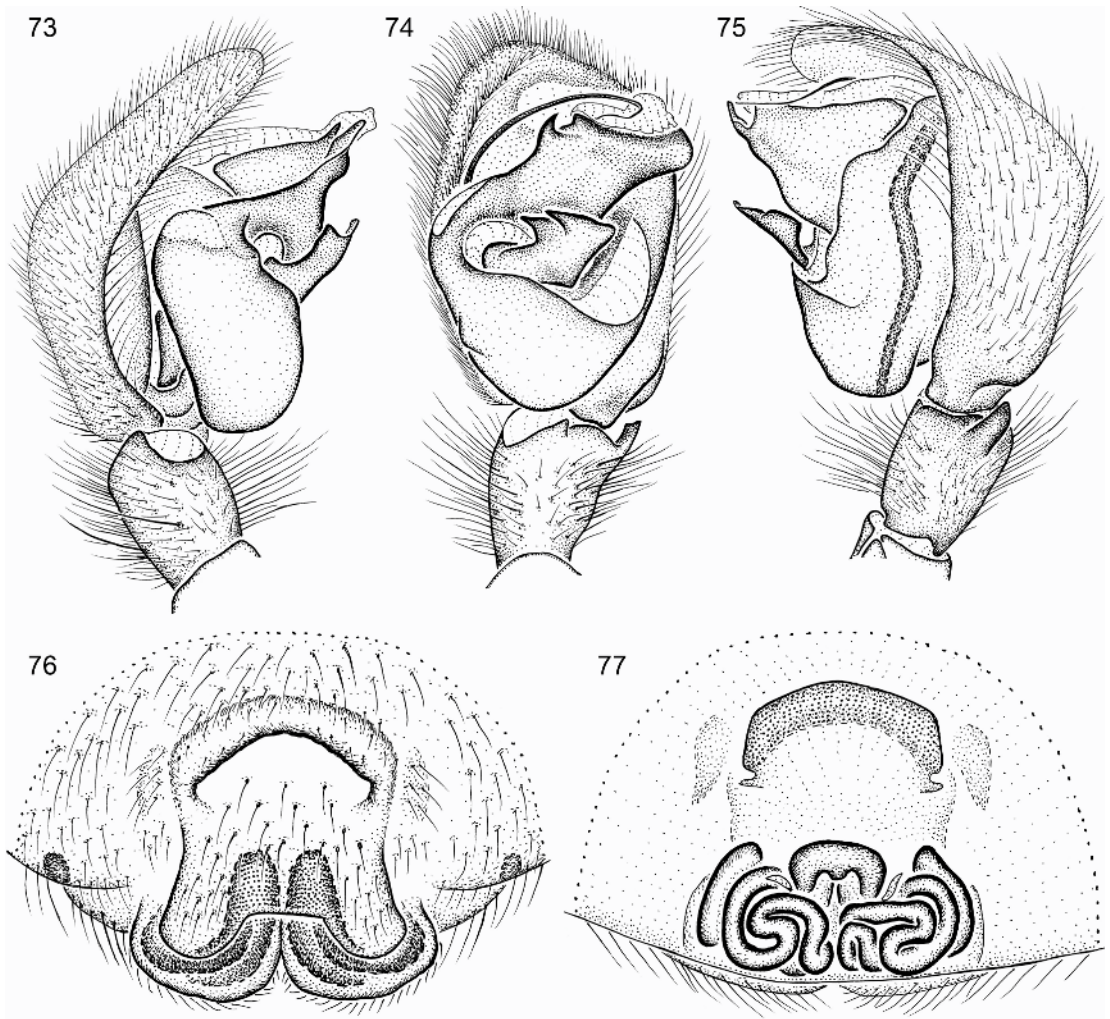
ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.



Map 4. Records of the *Zorocrates mistus* group: *Z. karli* (1), *Z. aemulus* (2), *Z. terrell* (3), *Z. xilitla* (4), *Z. potosi* (5), *Z. apulco* (6), *Z. sotano* (7), *Z. tequila* (8), *Z. mistus* (9), *Z. pie* (10), *Z. soledad* (11), *Z. nochix* (12), *Z. oaxaca* (13), *Z. yolo* (14). Asterisks indicate uncertain localities.

DIAGNOSIS: Males and females have not been collected together but are tentatively matched here on the basis of geography and their mutual similarity to *Z. mistus*; males can

easily be recognized by the two prolaterally directed projections on the median apophysis (fig. 74), females by the very wide anterior epigynal margin (fig. 76).



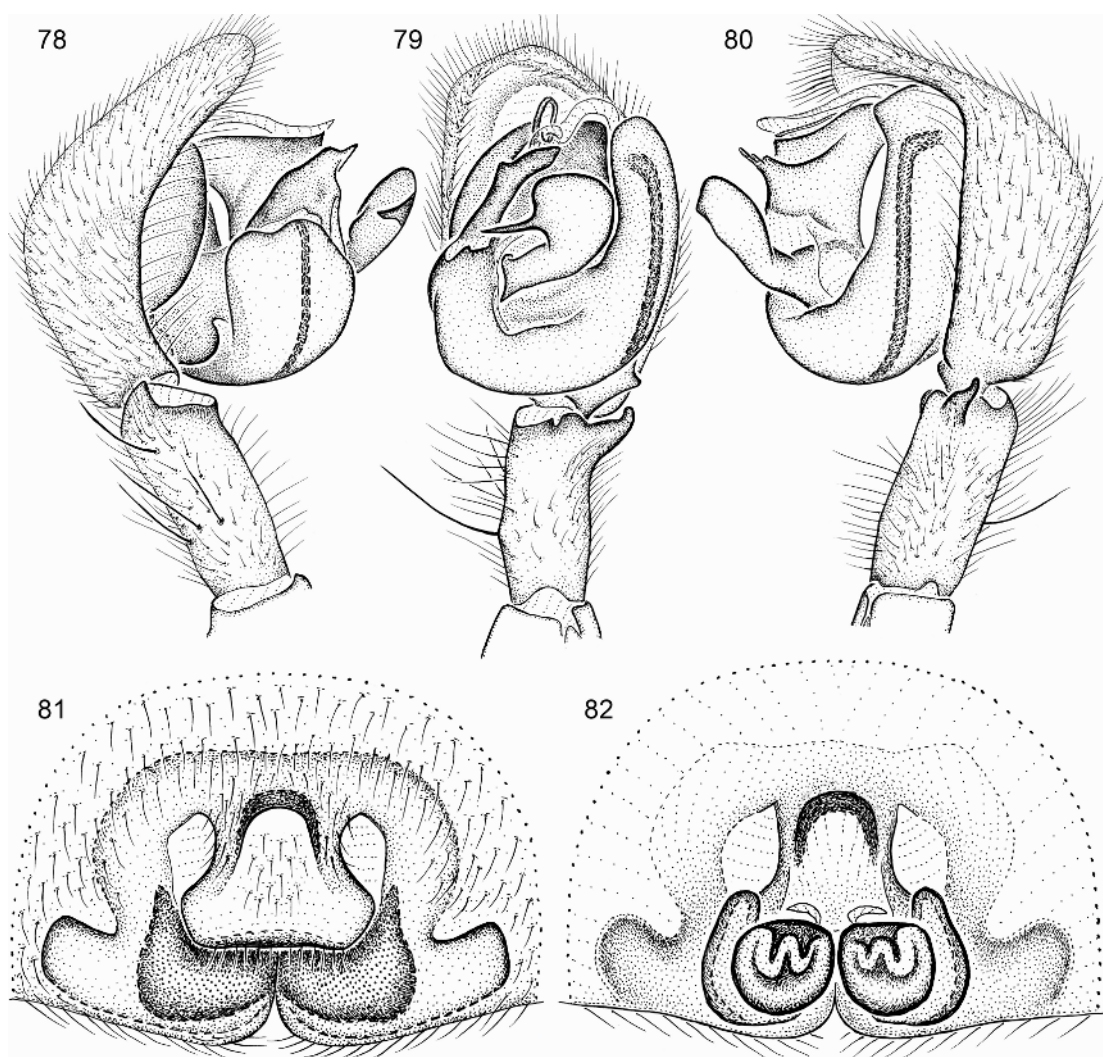
Figs. 73–77. *Zorocrates terrell*, new species. 73. Left male palp, prolateral view. 74. Same, ventral view. 75. Same, retrolateral view. 76. Epigynum, ventral view. 77. Same, dorsal view.

MALE: Total length 8. Coloration as in *Z. badius*. Leg spination: femora: I p0-0-2, r1-1-2; II p0-1-1; III r2-1-1; IV r0-1-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p0-1-1, v4-2-2; III r1-0-1; IV d1-1-1; metatarsi: I p1-1-1, v2-2-2, r0-1-0; II r0-1-1; III r1-1-2. Cribellum slightly reduced but present. Retrolateral tibial apophysis directed distally; median apophysis with two angular, prolaterally directed projections; tegular apophysis with prolateral hook at tip (figs. 73–75).

FEMALE: Total length 11. Coloration as in male. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III d1-1-0, p0-

1-2, r0-2-1; IV r0-0-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2. Cribellum present. Anterior epigynal margin almost as wide as midpiece, midpiece widened posteriorly, posterior margins produced anteriorly at midline; spermathecae with anteriorly directed lateral ducts (figs. 76, 77).

OTHER MATERIAL EXAMINED: MEXICO: **San Luis Potosí:** Route 70, 70 mi W Valles, Feb. 19, 1970, under roadside stone (J. Cooke, AMNH), 1♀; 2 mi E Santo Domingo, June 6, 1941 (A., L. Davis, AMNH), 1♀. **Tamaulipas:**



Figs. 78–82. *Zorocrates xilitla*, new species. 78. Left male palp, prolateral view. 79. Same, ventral view. 80. Same, retrolateral view. 81. Epigynum, ventral view. 82. Same, dorsal view.

Los San Pedro, Apr. 13, 1982 (P., T. Sprouse, AMNH), 1♀; Sótano de la Cuchilla, 2 km N Conrado Castillo, May 1980 (T. Treacy, P. Sprouse, L. Wilk, L. Clarfield, AMNH), 1♂.

DISTRIBUTION: Southern Texas and north-eastern Mexico (map 4).

Zorocrates xilitla, new species
figures 78–82; map 4

TYPE: Female holotype taken in a flight intercept trap at an elevation of 1700 m in

a pine-oak forest 40 km west of Xilitla, San Luis Potosí, Mexico (June 12–Aug. 6, 1983; S., J. Peck), deposited in AMNH.

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

DIAGNOSIS: The lack of a cribellum separates this species from all others except *Z. potosi*, from which it can be distinguished by the larger median apophysis of males (fig. 79) and the anteriorly narrower epigynum of females (fig. 81).

MALE: Total length 9. Coloration as in *Z. fuscus*. Leg spination: femora: I p0-0-2, r0-1-1;

II p0-1-1, r1-1-1; III r1-1-1; IV p1-1-1, r0-0-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p0-1-1, v4-4-2, r0-1-0; III r1-0-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-0, r0-1-0; III r1-2-2. Cribellum absent, represented only by small, fleshy, setose colulus. Retrolateral tibial apophysis strong, straight; median apophysis greatly expanded distally, with prolaterally directed, sharp projection; tegular apophysis short, with distinct prolateral prong (figs. 78–80).

FEMALE: Total length 10. Coloration as in male. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II p0-0-1, r0-0-0; III p0-2-2, r1-1-1; IV p2-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p0-0-0, v4-4-2, r0-0-0; III r1-0-1; IV d1-0-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2. Cribellum absent, represented only by small, fleshy, setose colulus. Epigynum with wide, rectangular posterolateral sclerotizations, lateral margins of midpiece excavated; spermathecae with anteriorly directed lateral ducts (figs. 81, 82).

OTHER MATERIAL EXAMINED: Four males taken with the holotype (AMNH).

DISTRIBUTION: Known only from San Luis Potosí, Mexico (map 4).

Zorocrates potosi, new species
figures 83–87; map 4

TYPE: Female holotype taken in the entrance sink of the Cueva de los Viet Cong on the Xilitla Plateau, San Luis Potosí, Mexico (Apr. 1, 1980; T. Treacy), deposited in AMNH.

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

DIAGNOSIS: The lack of a cribellum separates this species from all others except *Z. xilitla*, from which it can be distinguished by the smaller median apophysis of males (fig. 84) and the anteriorly wider epigynum of females (fig. 86).

MALE: Total length 11. Coloration as in *Z. fuscus*. Leg spination: femora: I p0-0-2, r2-0-1; II p0-1-1, r0-2-1; III r1-1-1; IV p2-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, p0-1-0, v4-4-2, r0-0-0; II d0-0-0, p0-1-0, v4-4-2, r0-1-0; III r1-0-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2; IV v3-2-2. Cribellum absent,

represented only by small, fleshy, setose colulus. Retrolateral tibial apophysis strong, recurved at tip; median apophysis greatly expanded at midlength by prolaterally directed, sharp projection; tegular apophysis distally bifid (figs. 83–85).

FEMALE: Total length 12. Coloration as in male. Leg spination: femora: I p0-0-2, r0-0-0; II p0-0-1, r0-0-0; III r1-1-1; IV d1-0-1, p2-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p0-0-0, v4-4-2, r0-0-0; III r1-0-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2; IV v3-2-2. Cribellum absent, represented only by small, fleshy, setose colulus. Epigynum with narrow, triangular posterolateral sclerotizations, lateral margins of midpiece excavated, accompanied laterally by unsclerotized patches; spermathecae with anteromedially directed lateral ducts (figs. 86, 87).

OTHER MATERIAL EXAMINED: One male and one female taken with the holotype (AMNH).

DISTRIBUTION: Known only from San Luis Potosí, Mexico (map 4).

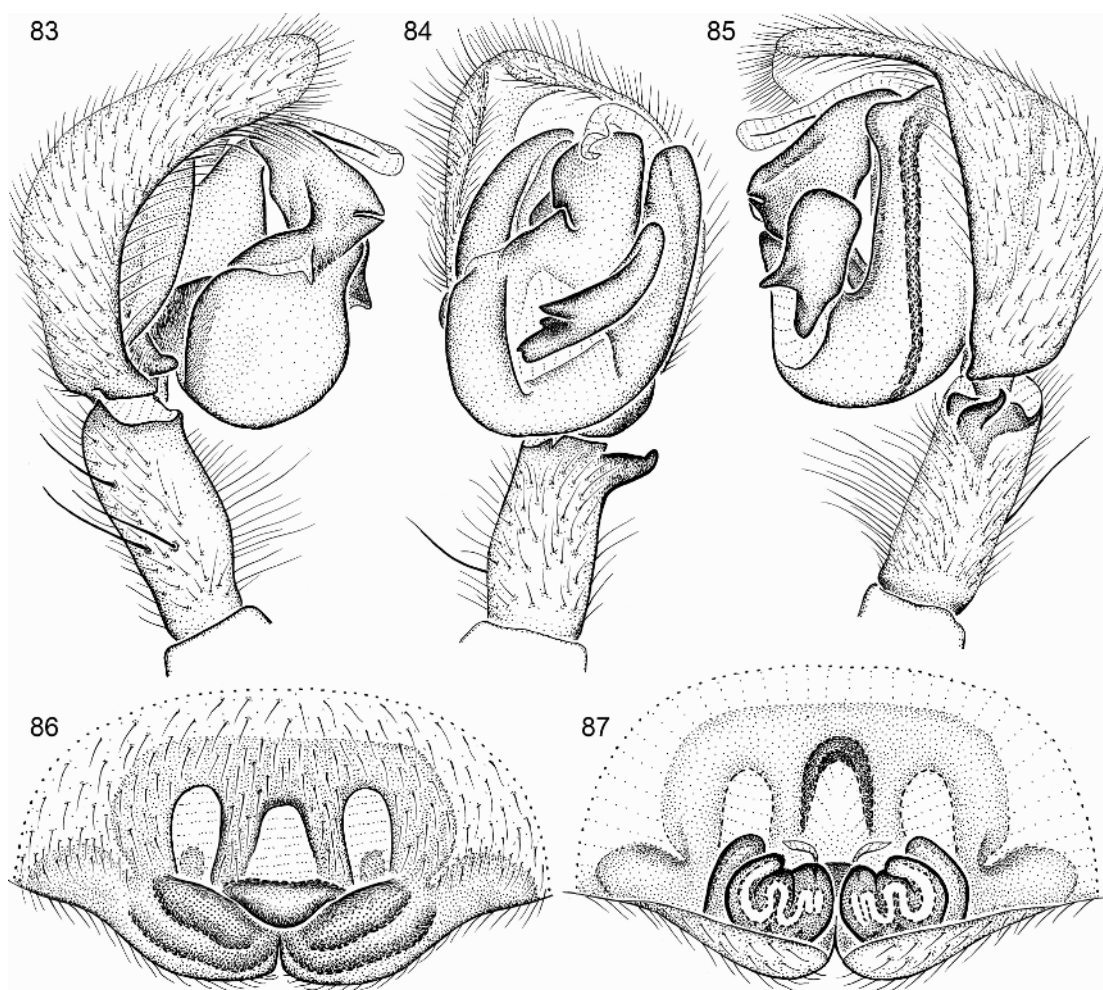
Zorocrates apulco, new species
figures 88–92; map 4

TYPE: Female holotype taken at Apulco, Hidalgo, Mexico (Apr. 14–16, 1946; H. Wagner), deposited in AMNH.

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

DIAGNOSIS: Males can easily be recognized by the long, distally bent median apophysis (fig. 89), females by the angular anterior epigynal margin and procurved posterior epigynal margins (fig. 91).

MALE: Total length 7. Coloration as in *Z. blas*. Leg spination: femora: I p0-0-2, r0-1-1; II d1-1-0, p0-0-1, r0-2-1; III p0-1-1, r0-2-1; IV p0-1-1, r0-0-2; patellae IV r0-1-0; tibiae: I d0-0-0, p0-1-0, v4-4-2; II d0-0-0, p1-0-0; III r1-0-1; IV d1-0-1; metatarsi: I p0-1-1, v2-2-2, r0-1-0; II p0-1-1, r0-1-1; III r1-2-2. Cribellum small but apparently present. Retrolateral tibial apophysis short, recurved at tip; median apophysis greatly elongated, bent at right angle near tip, with small, proximally directed projection; tegular apophysis distally invaginated (figs. 88–90).



Figs. 83–87. *Zorocrates potosi*, new species. 83. Left male palp, prolateral view. 84. Same, ventral view. 85. Same, retrolateral view. 86. Epigynum, ventral view. 87. Same, dorsal view.

FEMALE: Total length 10. Coloration as in male. Leg spination: femora: I p0-0-2, r0-0-0; II p0-0-1, r0-0-0; III p0-1-1, r0-1-1; IV p0-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p1-0-0, v4-2-2, r0-0-0; III r1-0-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p1-0-0, r0-0-0; III r1-2-2. Cribellum small but apparently present. Anterior epigynal margin angular, posterior margins forming w-shaped figure capped by narrow transverse ridge; spermathecae highly coiled, without conspicuous, lateral blind ducts (figs. 91, 92).

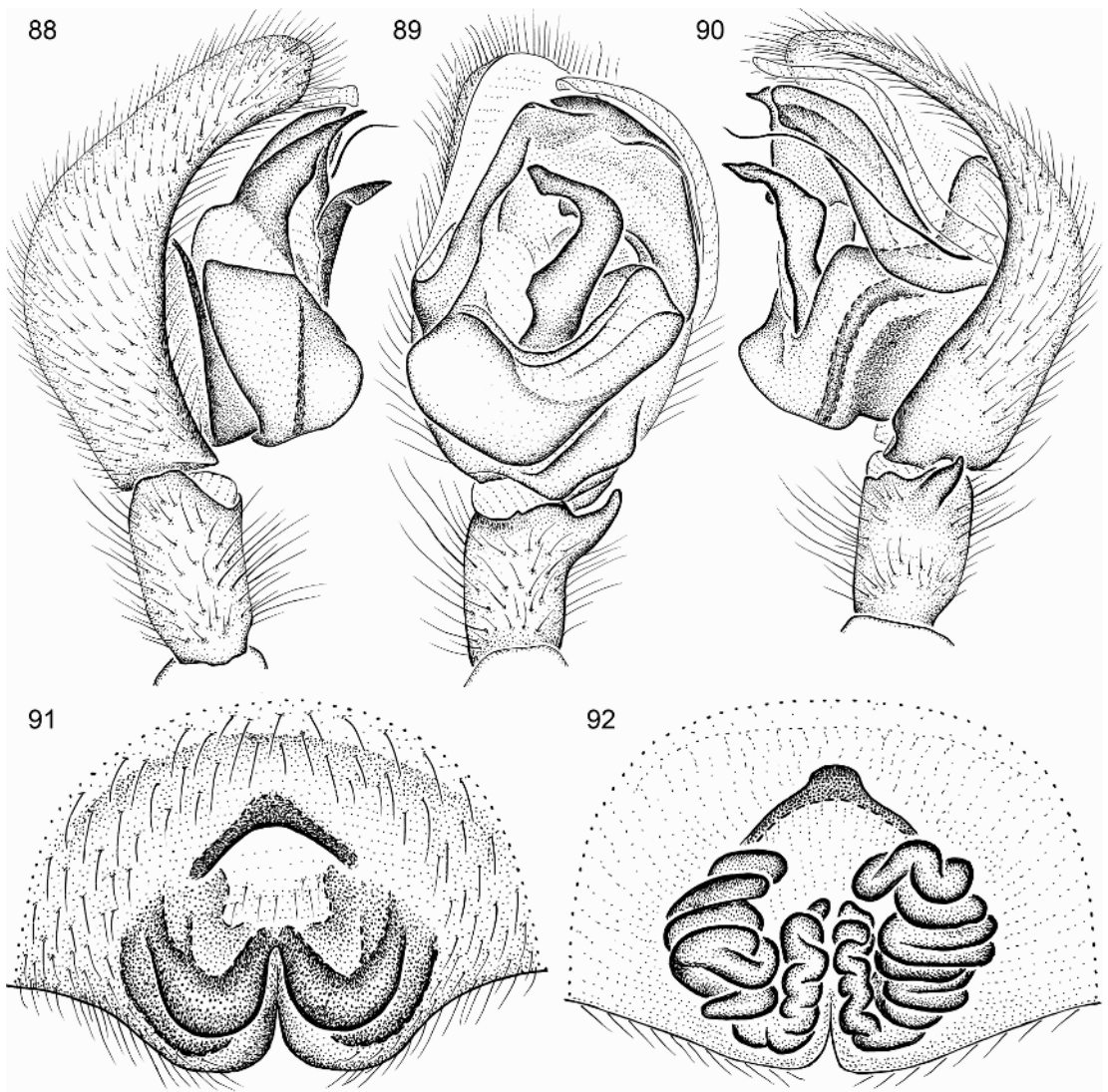
OTHER MATERIAL EXAMINED: MEXICO: **Hidalgo:** Apulco, Apr. 14–16, 1946 (H. Wagner, AMNH), 2♂; Tlanchinol, 43 km

SW Huejutla, June 14–Aug. 4, 1983, flight intercept trap, cloud forest, elev. 1500 m (S., J. Peck, AMNH), 1♂. **Veracruz:** 2 mi W La Joyita on Highway 140, Aug. 22, 1977, elev. 2230 m (E. Schlinger, CAS), 1♀.

DISTRIBUTION: Known only from Hidalgo and Veracruz, Mexico (map 4).

Zorocrates soledad, new species
figures 93–97; map 4

TYPE: Female holotype from Soledad Atzompa, Veracruz, Mexico (Jan. 5–6, 1974; J. Reddell, X. Lopez), deposited in AMNH.



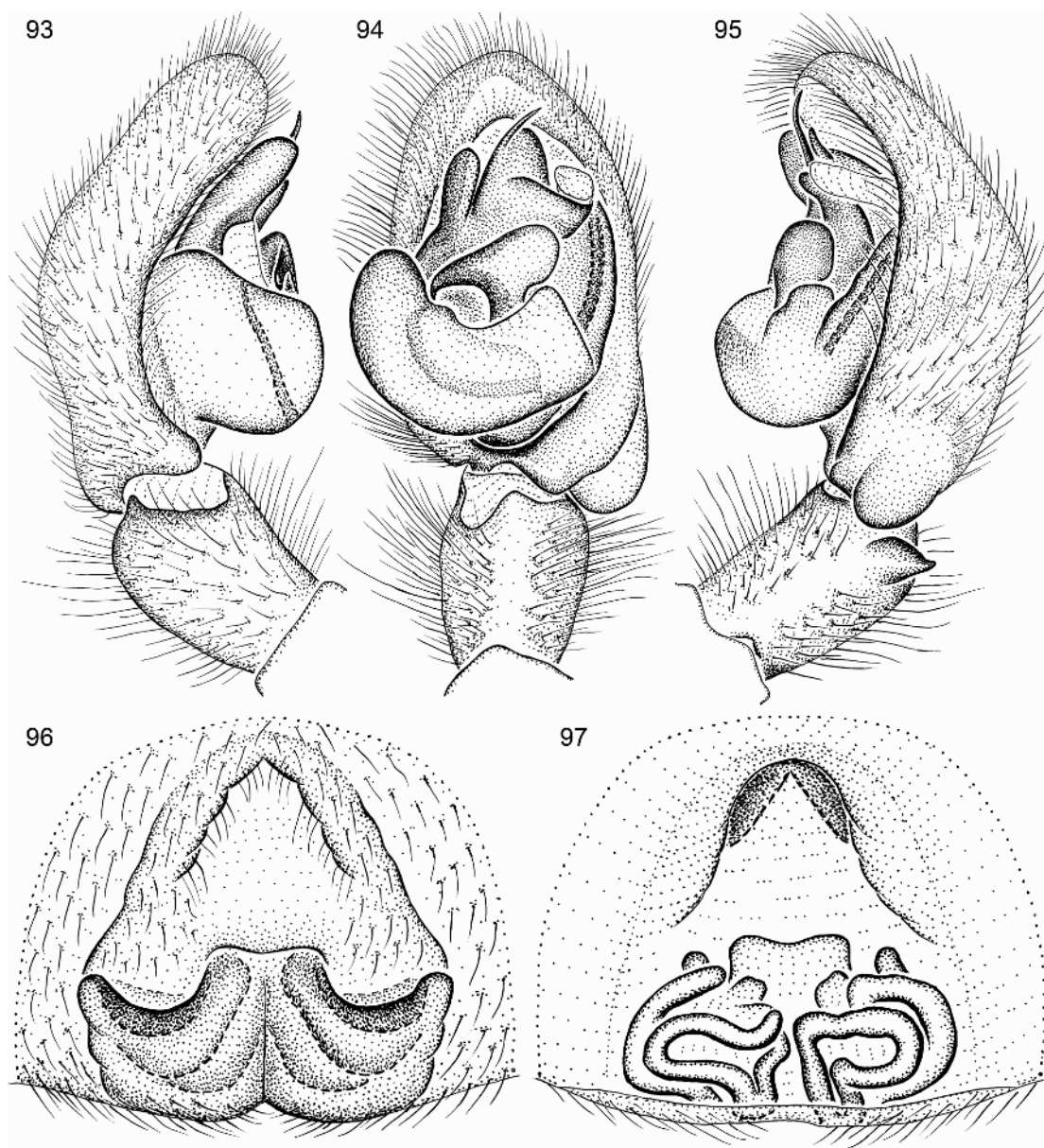
Figs. 88–92. *Zorocrates apulco*, new species. 88. Left male palp, prolateral view. 89. Same, ventral view. 90. Same, retrolateral view. 91. Epigynum, ventral view. 92. Same, dorsal view.

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

DIAGNOSIS: Males and females have not been collected together, but are tentatively matched here on the basis of their respective similarities to *Z. apulco*; males can easily be recognized by blade-shaped retrolateral tibial apophysis (fig. 95) and distally widened median apophysis (fig. 94), females by the wide epigynal midpiece subtended by w-shaped

posterior epigynal margins (fig. 96) and the loosely coiled spermathecal ducts (fig. 97).

MALE: Total length 10. Coloration as in *Z. blas*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p1-1-1, r0-0-1; IV d1-1-0, p0-1-0, r0-0-1; patellae III p0-0-0; IV r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-1-1, v3-2-2, r0-0-0; III r1-0-1; metatarsi: I, II p0-0-1, v2-2-2, r0-0-0. Cribellum present. Retrolateral tibial apoph-

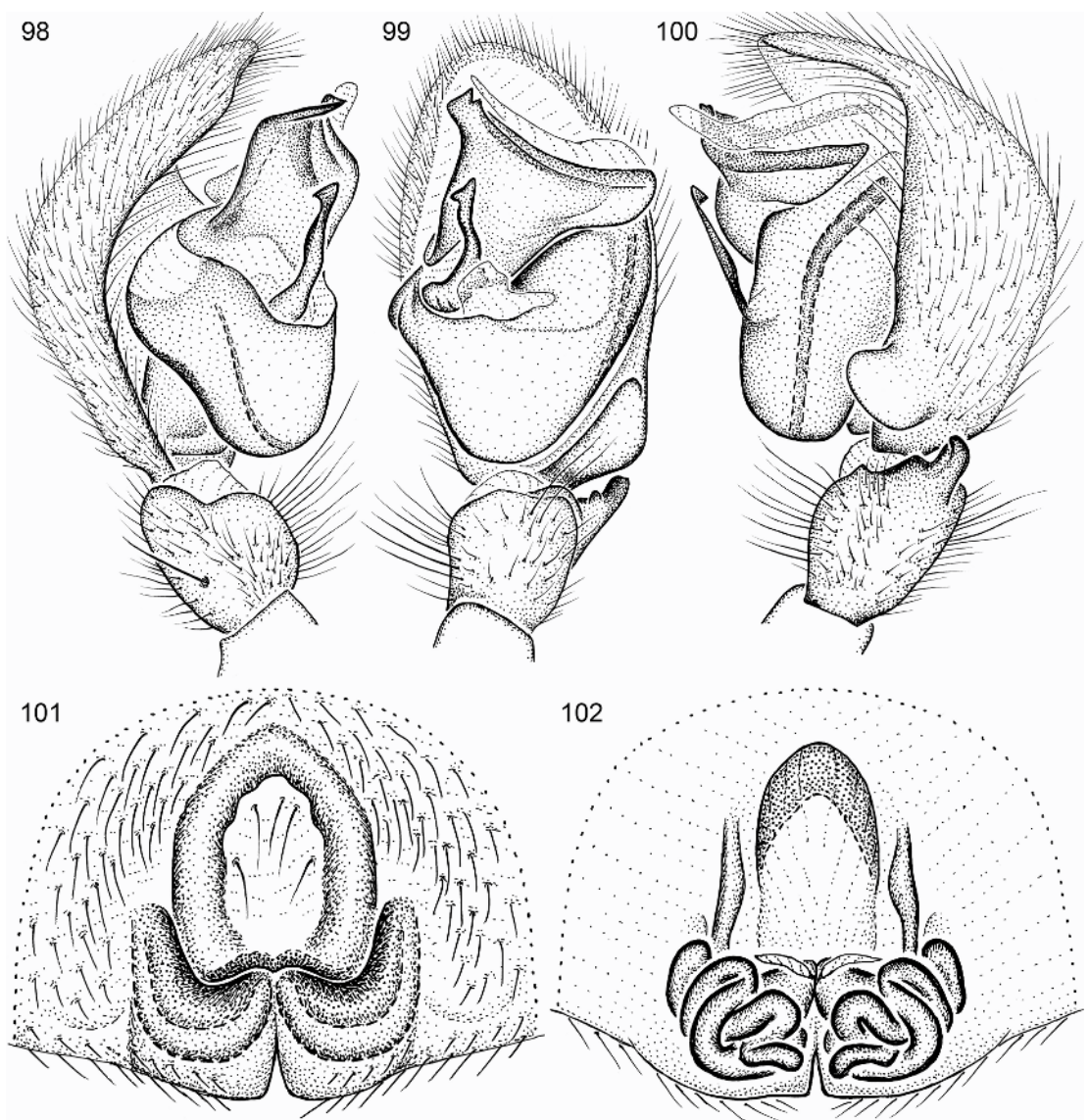


Figs. 93–97. *Zorocrates soledad*, new species. 93. Left male palp, prolateral view. 94. Same, ventral view. 95. Same, retrolateral view. 96. Epigynum, ventral view. 97. Same, dorsal view.

ysis flattened, blade-shaped; median apophysis greatly widened, with prolateral hook; tegular apophysis trifold (figs. 93–95).

FEMALE: Total length 11. Coloration as in male. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-1-1, r0-0-0; III p0-1-2, r1-1-2; IV p2-0-1, r0-0-1; patellae IV r0-1-0;

tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; IV r1-1-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2. Cribellum present. Anterior epigynal margin angular; midpiece abruptly narrowed anteriorly; posterior margins forming w-shaped figure; spermathecal ducts loosely coiled (figs. 96, 97).



Figs. 98–102. *Zorocrates karli* Gertsch and Riechert. **98.** Left male palp, prolateral view. **99.** Same, ventral view. **100.** Same, retrolateral view. **101.** Epigynum, ventral view. **102.** Same, dorsal view.

OTHER MATERIAL EXAMINED: MEXICO:
Oaxaca: Cerro Pelón, Apr. 1962 (W. Miller, AMNH), 1♂. **Veracruz:** Soledad Atzompa, Jan. 5–6, 1974 (J. Reddell, X. Lopez, AMNH), 2♀.

DISTRIBUTION: Known only from Veracruz and Oaxaca, Mexico (map 4).

Zorocrates karli Gertsch and Riechert
 figures 98–102; map 4

Zorocrates karli Gertsch and Riechert, 1976: 9, figs. 5, 6 (male holotype from Lincon Co., New Mexico, in AMNH, examined).

DIAGNOSIS: Males and females have not been taken together but are tentatively matched here on the basis of geography, coloration, and their respective similarities to other members of the *mistus* group. Males can easily be recognized by their long, narrow median apophysis (figs. 98–100), females by the arched anterior epigynal margin (fig. 101).

MALE: Total length 11. Coloration as in *Z. fuscus* except abdominal dorsum mostly pale white, with paramedian darker markings. Leg spination: femora: I p0-0-2, r0-1-0; II p0-1-1, r0-1-0; IV p2-0-2, r0-0-2; patellae IV p0-0-0; tibiae: I d0-0-0, p0-0-0, r0-0-1; II d0-0-0, p1-0-0, r0-1-0; III d0-1-1, r1-0-1; IV d1-1-1; metatarsi: I p0-0-0, v2-2-2, r0-1-0; II p0-1-0, r0-1-0; III r1-2-2. Cribellum present. Retrolateral tibial apophysis directed anteriorly, expanded at tip; median apophysis greatly elongated, sinuous, expanded at tip; tegular apophysis greatly widened (figs. 98–100).

FEMALE: Total length 10. Coloration as in male. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p0-1-2, r0-1-2; IV d1-1-0, p0-0-1, r0-0-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2; IV v3-2-2. Cribellum present. Anterior epigynal margin arched, midpiece only slightly widened posteriorly; lateral epigynal ducts relatively small (figs. 101, 102).

MATERIAL EXAMINED: UNITED STATES: **Arizona:** *Cochise Co.:* Paradise, Aug. 7, 1973, roadside scrub, elev. 1000 m (J. Murphy, JAM), 1♂. **New Mexico:** *Dona Ana Co.:* Jornada Experimental Range, Oct. 14, 1999, pitfall (D. Hu, AMNH), 2♂, Oct. 16, 1999, pitfall (D. Hu, NMSU), 2♂, Oct. 21, 1999, pitfall (D. Hu, AMNH), 2♂. *Lincoln Co.:* Malpais Lava Beds, Carrizozo, Sept. 21, 1972 (B. Firstman, AMNH), 1♂ (holotype). **MEXICO:** *Chihuahua:* Clarines Mine, 4 mi SW Santa Bárbara, Feb. 5, 1947, elev. 6700 ft (G. Bradt, AMNH), 1♀; 5 mi NE Clarines Mine, Santa Bárbara, Feb. 8, 1947, elev. 6800 ft (G. Bradt, AMNH), 1♀; 1 mi E La Sauceda, July 21, 1947, elev. 7000 ft (W. Gertsch, AMNH), 1♀; San Rafael, Jan. 25, 1947, elev. 6200 ft (G. Bradt, AMNH), 1♀; SW Santa Bárbara, Jan. 26, 1957, elev. 8400 ft (G. Bradt, AMNH), 1♀; Valle de Olivos, July

20, 1947, elev. 5500 ft (W. Gertsch, AMNH), 1♀.

DISTRIBUTION: Known only from southeastern Arizona, New Mexico, and Chihuahua (map 4).

Zorocrates aemulus Gertsch
figures 103–107; map 4

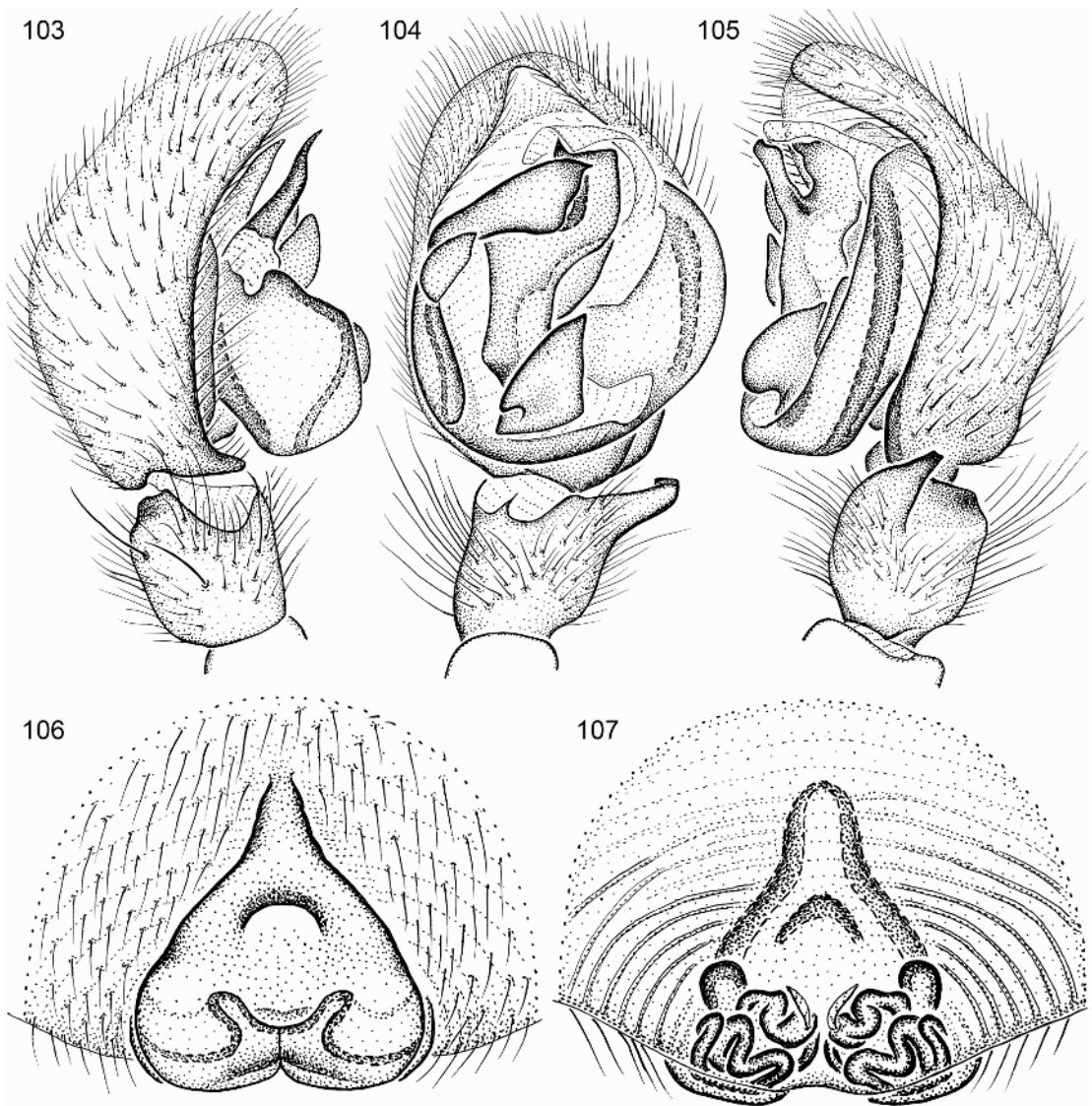
Zorocrates aemulus Gertsch, 1935: 23, figs. 31, 32 (male holotype and female allotype from Starr Co., Texas, in AMNH, examined).

DIAGNOSIS: Males of this distinctive, small species can easily be recognized by the triangular median apophysis (fig. 104), females by the triangular epigynum (fig. 106).

MALE: Total length 6. Coloration as in *Z. karli*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p1-1-1, r1-1-1; IV p0-2-1, r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, p0-0-0, v4-2-2, r0-0-0; II d0-0-0, p0-0-1, v4-2-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-1, v2-2-2, r0-0-0; III r1-2-2. Cribellum present. Retrolateral tibial apophysis relatively narrow; median apophysis triangular; tegular apophysis deeply bifid (figs. 103–105).

FEMALE: Total length 8. Coloration as in male. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-2; II d1-1-0, p0-0-1, r0-0-0; III p0-1-2, r0-1-2; IV d1-1-0, p0-1-0, r0-0-1; patellae IV r0-1-0; tibiae: I d0-0-0, p0-0-0, v4-2-2, r0-0-0; II d0-0-0, p0-0-0, v2-1r-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-1, v2-2-2, r0-0-0; III r1-2-2; IV p1-2-2. Cribellum present. Epigynum with elevated, triangular midpiece, strongly narrowed anteriorly; spermathecal bulbs situated laterally (figs. 106, 107).

MATERIAL EXAMINED: UNITED STATES: **Texas:** *Hidalgo Co.:* 30 mi W Edinburg, Nov. 24, 1934 (S. Mulaik, Rutherford, Welch, AMNH), 3♂, 4♀, same (MCZ 56228), 1♂, 1♀; 30 mi SE Edinburg, Nov. 24, 1934 (S. Mulaik, Rutherford, Welch, AMNH), 1♂, 2♀; Weslaco, May 8, 1987, pitfall in woods (D. Dean, TAMU), 1♂. *Kerr Co.:* Raven Ranch, Aug. 1939 (D. Mulaik, AMNH), 3♀. *Starr Co.:* 0.5 mi E Rio Grande City, Nov. 11, 1934, brick yard (S. Mulaik, AMNH), 1♂, 1♀ (types); 5 mi E Rio Grande City, Jan. 21, 1939 (S. Mulaik, AMNH), 1♂, 2♀. *Uvalde Co.:*



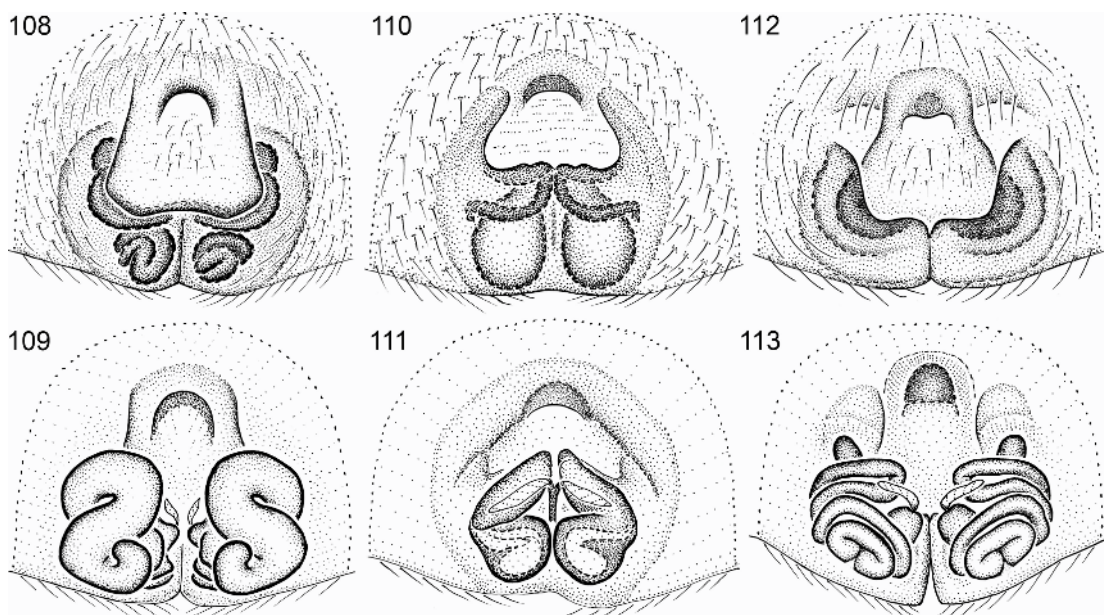
Figs. 103–107. *Zorocrates aemulus* Gertsch. **103.** Left male palp, prolateral view. **104.** Same, ventral view. **105.** Same, retrolateral view. **106.** Epigynum, ventral view. **107.** Same, dorsal view.

Burial Cave, 2.5 mi S Indian Creek Cave, Feb. 1, 1963, at bottom of 40 ft entrance drop (J. Reddell, AMNH), 1♂. *Val Verde Co.*: Wren Cave, 36 mi N Del Rio, Apr. 9, 1968 (J. Reddell, T. Mollhagen, AMNH), 2♂. *Wichita Co.*: Midwestern State University Farm, Oct. 9, 1976, under rock (J. Cokendolpher, AMNH), 1♀. **MEXICO: Nuevo León:** Chipinque, Feb. 25, 1964, open woods, under stones (W. Peck, CAS), 1♀.

DISTRIBUTION: Known only from Texas and adjacent Nuevo León (map 4).

***Zorocrates tequila*, new species**
figures 108, 109; map 4

TYPE: Female holotype taken near Tequila, Jalisco, Mexico (Aug. 11, 1956; W. Gertsch, V. Roth), deposited in AMNH.



Figs. 108–113. 108, 109. *Zorocrates tequila*, new species. 110, 111. *Z. pie*, new species. 112, 113. *Z. nochix*, new species. 108, 110, 112. Epigynum, ventral view. 109, 111, 113. Same, dorsal view.

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

DIAGNOSIS: Males are unknown; females can be recognized by the relatively small epigynal midpiece and the relatively wide spermathecal ducts (figs. 108, 109).

MALE: Unknown.

FEMALE: Total length 6. Coloration as in *Z. blas*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p0-0-1, r0-0-1; IV d1-1-0, p0-0-0, r0-0-1; patellae IV p0-0-0, r0-1-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-0-1, v2-1r-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-1, r0-0-0; III r1-2-2. Cribellum present. Anterior epigynal margin semicircular, midpiece relatively small, wider posteriorly than anteriorly; spermathecal ducts very wide, s-shaped (figs. 108, 109).

OTHER MATERIAL EXAMINED: MEXICO: **Jalisco:** 4 mi SW Guadalajara, June 20, 1941 (L. Davis, AMNH), 1♀; 8–12 mi W Guadalajara, July 31, 1964 (W. Gertsch, J. Woods, AMNH), 3♀. **Nayarit:** 10 mi SE Tepic, Aug. 27, 1965 (W. Gertsch, R. Hastings, AMNH), 1♀. **Oaxaca:** Pico San Felipe, Sept. 11, 1945, elev. 2200–3000 m (H. Wagner, AMNH), 2♀.

DISTRIBUTION: Known only from Jalisco, Nayarit, and Oaxaca, Mexico (map 4).

Zorocrates pie, new species
figures 110, 111; map 4

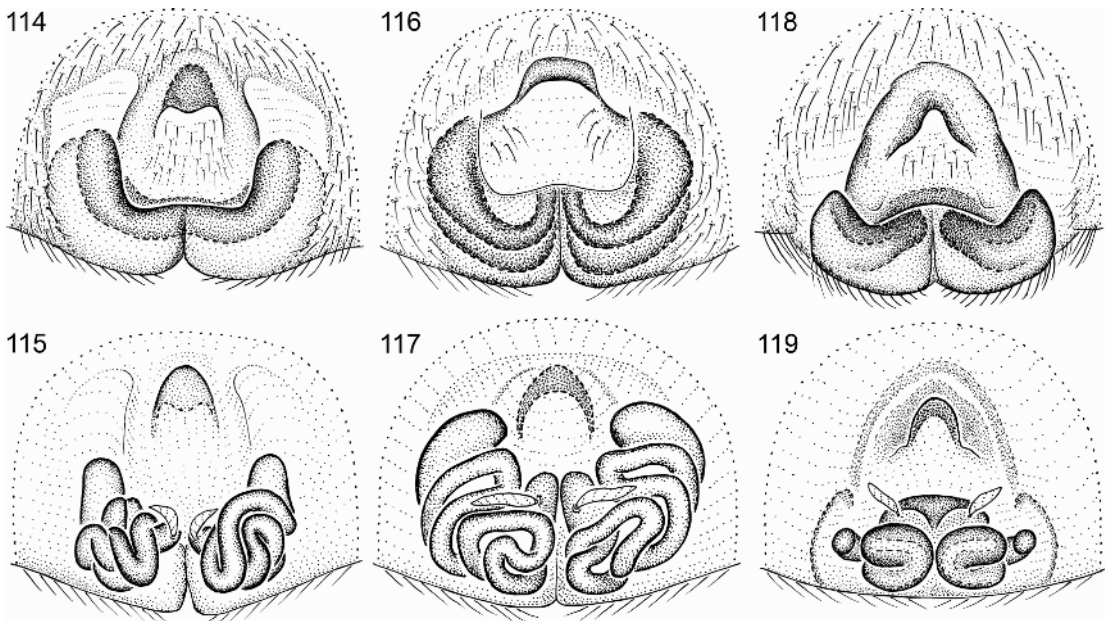
TYPE: Female holotype from Pie de la Cuesta, 8 miles west of Acapulco, Guerrero, Mexico (June 29, 1941; L. Davis), deposited in AMNH.

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

DIAGNOSIS: Males are unknown; females resemble those of *Z. tequila* in having a relatively small epigynal midpiece, but differ in having more compact, anteriorly converging spermathecae (figs. 110, 111).

MALE: Unknown.

FEMALE: Total length 5. Coloration as in *Z. blas*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p0-1-1, r0-0-1; IV p0-0-1, r0-0-1; patellae IV p0-0-0; tibiae: I d0-0-0, p0-0-0, r0-0-0; II d0-0-0, p0-0-1, v2-1r-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-1, r0-0-0; III r1-2-2; IV v3-2-2. Cribellum present. Anterior epigynal margin and midpiece



Figs. 114–119. 114, 115. *Zorocrates oaxaca*, new species. 116, 117. *Z. sotano*, new species. 118, 119. *Z. yolo*, new species. 114, 116, 118. Epigynum, ventral view. 115, 117, 119. Same, dorsal view.

relatively small, occupying only anterior one-third of epigynal length; spermathecae anteriorly convergent (figs. 110, 111).

OTHER MATERIAL EXAMINED: One female taken with the holotype (AMNH).

DISTRIBUTION: Known only from Guerrero, Mexico (map 4).

***Zorocrates nochix*, new species**
figures 112, 113; map 4

TYPE: Female holotype from 9 mi SE Nochixtlán, Oaxaca, Mexico, 17°20'N, 97°12'W (May 1, 1963; W. Gertsch, W. Ivie), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition shortened from the type locality.

DIAGNOSIS: Males are unknown; females resemble those of *Z. karli* but have a more triangular epigynal midpiece and spermathecae with an anterolateral pair of thumb-shaped blind duct endings (figs. 112, 113).

MALE: Unknown.

FEMALE: Total length 6. Coloration as in *Z. blas*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-0-1, r0-0-0; III p0-1-2, r0-1-1; IV p0-0-1, r0-0-1; patellae IV p0-0-0,

r0-1-0; tibiae: I d0-0-0, p0-0-0, v4-2-2, r0-0-0; II d0-0-0, p0-0-1, v4-2-2, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2; IV v3-2-2. Cribellum present. Anterior epigynal margin situated within narrowed, neck-shaped portion of midpiece, posterolateral epigynal margins pronounced; spermathecae ducts relatively narrow, convoluted, with thumb-shaped anterolateral blind ends (figs. 112, 113).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Oaxaca, Mexico (map 4).

***Zorocrates oaxaca*, new species**
figures 114, 115; map 4

TYPE: Female holotype from Oaxaca, Mexico (Feb. 6, 1939), deposited in AMNH.

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

DIAGNOSIS: Males are unknown; females resemble those of *Z. karli* and *Z. nochixtlán* but have a medially produced anterior epigynal margin and much larger anterolateral epigynal ducts (figs. 114, 115).

MALE: Unknown.

FEMALE: Total length 9. Coloration as in *Z. fuscus*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II p0-1-1, r0-0-0; IV p0-1-1, r0-0-1; patellae IV r0-1-0; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2. Cribellum present. Anterior epigynal margin produced posteriorly at midline, posterolateral epigynal margins pronounced; spermathecal ducts convoluted, with enlarged anterolateral blind ends (figs. 114, 115).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Oaxaca, Mexico (map 4).

***Zorocrates sotano*, new species**
figures 116, 117; map 4

TYPE: Female holotype from Ejido de El Sótano, Hidalgo, Mexico (Mar. 24-25, 1981; J. Reddell), deposited in AMNH.

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

DIAGNOSIS: Males are unknown; females resemble those of *Z. oaxaca* but have the epigynal midpiece more abruptly narrowed anteriorly and greatly expanded posteriorly, and have larger, more convergent anterolateral spermathecal duct ends (figs. 116, 117).

MALE: Unknown.

FEMALE: Total length 9. Coloration as in *Z. blas*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II p0-0-1, r0-0-0; III p0-1-1, r0-1-1; IV p0-0-1, r0-0-1; patella IV p0-0-0, r0-1-0; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I p0-0-0, v2-2-2, r0-0-0; II p0-0-1, r0-0-0; III r1-2-2. Cribellum present. Anterior epigynal margin semicircular, midpiece narrowed anteriorly, widened posteriorly; spermathecal ducts with large, convergent anterolateral blind ends (figs. 116, 117).

OTHER MATERIAL EXAMINED: One female taken with the holotype (AMNH).

DISTRIBUTION: Known only from Hidalgo, Mexico (map 4).

***Zorocrates yolo*, new species**
figures 118, 119; map 4

TYPE: Female holotype from 26 km southwest of Yolomécatl, Oaxaca, Mexico (Aug. 8, 1988; S. Stockwell), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition shortened from the type locality.

DIAGNOSIS: Males are unknown, but females of this distinctive species can easily be recognized by the anteriorly narrowed anterior epigynal margin, posteriorly protuberant posterolateral epigynal margins, and short spermathecal ducts (figs. 118, 119).

MALE: Unknown.

FEMALE: Total length 11. Coloration as in *Z. fuscus*. Leg spination: femora: I d1-1-0, p0-0-2, r0-0-0; II d1-1-0, p0-1-1, r0-0-0; IV d1-1-0, p0-0-1, r0-0-1; patellae IV p0-0-0, r0-1-0; tibiae: I, II d0-0-0, p0-0-0, r0-0-0; III r1-0-1; IV d1-1-1; metatarsi: I, II p0-0-0, v2-2-2, r0-0-0; III r1-2-2; IV p1-2-2. Cribellum present. Anterior epigynal margin anteriorly narrowed, appearing notched, posterolateral epigynal margin protruding posteriorly; spermathecae short, compact (figs. 118, 119).

OTHER MATERIAL EXAMINED: MEXICO: **Oaxaca:** 14 km S Nochixtlán, Aug. 24, 1976, elev. 2134 m (E. Ross, CAS), 1♀; 26 km SW Yolomécatl, Aug. 8, 1988 (S. Stockwell, AMNH), 1♀.

DISTRIBUTION: Known only from Oaxaca, Mexico (map 4).

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REFERENCES

- Banks, N. 1901. Some spiders and other Arachnida from southern Arizona. *Proceedings of the United States National Museum* 23: 581–590.
- Bertkau, P. 1882. Über das Cribellum und Calamistrum. Ein Beitrag zur Histologie, Biologie und Systematik der Spinnen. *Archiv für Naturgeschichte* 48: 316–362.
- Cambridge, F.O.P.-. 1902. Arachnida - Araneida and Opiliones. In *Biologia Centrali-Americana, Zoology*. London, 2: 313–424.
- Cambridge, O.P.-. 1892. Arachnida. Araneida. In *Biologia Centrali-Americana, Zoology*. London, 1: 89–104.
- Cambridge, O.P.-. 1896. Arachnida. Araneida. In *Biologia Centrali-Americana, Zoology*. London, 1: 161–224.
- Cambridge, O.P.-. 1898. Arachnida. Araneida. In *Biologia Centrali-Americana, Zoology*. London, 1: 233–288.
- Chamberlin, R.V. 1919. New Californian spiders. *Journal of Entomology and Zoology, Claremont* 12: 1–17.
- Dahl, F. 1901. Nachtrag zur Übersicht der Zoropsiden. *Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin* 1901: 244–255.
- Dahl, F. 1908. Die Lycosiden oder Wolfsspinnen Deutschlands und ihre Stellung im Haushalt der Natur. Nach statistischen Untersuchungen dargestellt. *Nova Acta Academiae Caesaræ Leopoldino-Carolinæ Germanicæ Naturæ Curiosorum* 88: 175–678.
- Dahl, F. 1913. Vergleichende Physiologie und Morphologie der Spinnentiere unter besonderer Berücksichtigung der Lebensweise. Jena, 113 pp.
- Eberhard, W.G., N.I. Platnick, and R.T. Schuh. 1993. Natural history and systematics of arthropod symbionts (Araneae; Hemiptera; Diptera) inhabiting webs of the spider *Tengella radiata* (Araneae, Tenggellidae). *American Museum Novitates* 3065: 1–17.
- Gertsch, W.J. 1935. Spiders from the southwestern United States. *American Museum Novitates* 792: 1–31.
- Gertsch, W.J., and L.I. Davis. 1936. New spiders from Texas. *American Museum Novitates* 881: 1–21.
- Gertsch, W.J., and L.I. Davis. 1940. Report on a collection of spiders from Mexico. III. *American Museum Novitates* 1069: 1–22.
- Gertsch, W.J., and S.E. Riechert. 1976. The spatial and temporal partitioning of a desert spider community, with descriptions of new species. *American Museum Novitates* 2604: 1–25.
- Griswold, C.E. 1993. Investigations into the phylogeny of the lycosoid spiders and their kin (Arachnida: Araneae: Lycosoidea). *Smithsonian Contributions to Zoology* 539: 1–39.
- Griswold, C.E. 2002. A revision of the African spider genus *Raecius* Simon, 1892 (Araneae, Zorocratidae). *Proceedings of the California Academy of Sciences* 53: 117–149.
- Griswold, C.E., J.A. Coddington, N.I. Platnick, and R.R. Forster. 1999. Towards a phylogeny of entelegyne spiders (Araneae, Araneomorphae, Entelegynae). *Journal of Arachnology* 27: 53–63.
- Griswold, C.E., M.J. Ramírez, J.A. Coddington, and N.I. Platnick. 2005. Atlas of phylogenetic data for entelegyne spiders (Araneae: Araneomorphae: Entelegynae) with comments on their phylogeny. *Proceedings of the California Academy of Sciences* 56(Suppl. II): 1–324.
- Griswold, C.E., and D. Ubick. 2001. Zoropsidae: a spider family newly introduced to the USA (Araneae, Entelegynae, Lycosoidea). *Journal of Arachnology* 29: 111–113.
- Karsch, F. 1880. *Arachnologische Blätter* (Decas I). *Zeitschrift für Gesamten Naturwissenschaften* 53: 373–409.
- Karsch, F. 1891. Arachniden von Ceylon und von Minikoy gesammelt von den Herren Doctoren P. und F. Sarasin. *Berliner Entomologische Zeitschrift* 36: 267–310.
- Keyserling, E.G. 1877. Über amerikanische Spinnenarten der Unterordnung Citigradae. *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* 26: 609–708.
- Keyserling, E.G. 1881. Neue Spinnen aus Amerika. III. *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* 31: 269–314.
- Koch, L. 1866. Die Arachniden-Familie der Drassiden. *Nürnberg Hefte* 1–6: 1–304.
- Koch, L. 1873. Die Arachniden Australiens. *Nürnberg*, 1: 369–472.
- Kraus, O. 1955. Spinnen aus El Salvador (Arachnoidea, Araneae). *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft* 493: 1–112.
- Lehtinen, P.T. 1967. Classification of the cribellate spiders and some allied families, with notes on the evolution of the suborder Araneomorpha. *Annales Zoologici Fennici* 4: 199–468.
- Platnick, N.I. 1999. A revision of the Appalachian spider genus *Liocranoides* (Araneae: Tenggellidae). *American Museum Novitates* 3285: 1–13.
- Platnick, N.I. 2006. The world spider catalog, version 7.0. American Museum of Natural History. online at <http://research.amnh.org/entomology/spiders/catalog/index.html>.

- Platnick, N.I., and D. Ubick. 2001. A revision of the North American spiders of the new genus *Socalchemmis* (Araneae, Tenggellidae). *American Museum Novitates* 3339: 1–25.
- Raven, R.J., and K.S. Stumkat. 2005. Revisions of Australian ground-hunting spiders: II. Zoropsidae (Lycosoidea: Araneae). *Memoirs of the Queensland Museum* 50: 347–423.
- Roewer, C.F. 1955. Katalog der Araneen von 1758 bis 1940, bzw. 1954. Brussels 2: 1–1751.
- Roth, V.D. 1985. Spider genera of North America. Gainesville, FL: American Arachnological Society, no continuous pagination.
- Roth, V.D. 1993. Spider genera of North America, 3rd ed. Gainesville, FL: American Arachnological Society, 203 pp.
- Silva, D.D. 2003. Higher-level relationships of the spider family Ctenidae (Araneae: Ctenoidea). *Bulletin of the American Museum of Natural History* 274: 1–86.
- Simon, E. 1878. Les arachnides de France. Paris, 4: 1–334.
- Simon, E. 1880. Révision de la famille des Sparassidae (Arachnides). *Actes de la Société Linnéenne de Bordeaux* 34: 223–351.
- Simon, E. 1888. Études arachnologiques. 21e Mémoire. XXIX. Descriptions d'espèces et de genres nouveaux de l'Amérique centrale et des Antilles. *Annales de la Société Entomologique de France*, ser. 6, 8: 203–216.
- Simon, E. 1892. Histoire naturelle des araignées. Paris, 1: 1–256.
- Simon, E. 1895a. Descriptions de quelques arachnides de Basse-Californie faisant partie des collections du Dr Geo. Marx. *Bulletin de la Société Zoologique de France* 20: 134–137.
- Simon, E. 1895b. Sur les Arachnides recueillis en Basse-Californie par M. Diguët. *Bulletin du Muséum d'Histoire Naturelle* 1895: 105–107.
- Simon, E. 1897. Histoire naturelle des araignées. Paris, 2: 1–192.
- Simon, E. 1898. Histoire naturelle des araignées. Paris, 2: 193–380.
- Strand, E. 1907. Diagnosen neuer Spinnen aus Madagaskar und Sansibar. *Zoologischer Anzeiger* 31: 725–748.
- Thorell, T. 1878. Studi sui ragni Malesi e Papuani. II. Ragni di Amboina raccolti Prof. O. Beccari. *Annali del Museo Civico di Storia Naturale di Genova* 13: 1–317.
- Wolff, R.J. 1978. The cribellate genus *Tengella* (Araneae: Tenggellidae?). *Journal of Arachnology* 5: 139–144.

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