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REVISION OF THE GENUS *TRACHYRHINUS* WEED (OPILIONES, PHALANGIOIDEA)

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ABSTRACT

The western North American phalangioid genus *Trachyrhinus* is redefined and diagnosed. *Trachyrhinus favosus* (Wood) and *T. marmoratus* Banks are redescribed and illustrated. A neotype for *T. favosus* and a lectotype for *T. marmoratus* are designated. Four new species from New Mexico, Texas and northeastern México are described. A key to the species of *Trachyrhinus* is provided.

INTRODUCTION

Considerable confusion has surrounded the identity of members of the genus *Trachyrhinus*. This in part was due to the difficulty in obtaining type specimens, but to a greater extent to inadequate original descriptions of the two known species: *Trachyrhinus favosus* (Wood) and *Trachyrhinus marmoratus* Banks. A third species, *Trachyrhinus sonoranus*, was described by Chamberlin (1925), but was synonymized with *T. marmoratus* by Goodnight and Goodnight (1946). In addition to the inadequate descriptions, the long used character of coxal coloration has proved to be of little value. This paper redescribes known species and describes four new species.

METHODS

With the growing understanding of the importance of structural measurements, it is necessary to standardize methods used in making measurements. Throughout the descriptions the following methods were used. All measurements (means in parentheses) are in mm and were made using a binocular microscope equipped with an ocular micrometer.

Body–Total length measured from dorsal view, from anterior tip of supracheliceral lamellae to posterior tip of abdomen; greatest width, not including coxae, measured from dorsal view; maximum height (abdomen) measured from lateral view.

Ocular tubercle–All measurements from dorsal view, spine and tubercle lengths not included in measurements.

Penis–Length and width measurements as in figure 1.

Palpi–Lengths as in figures 2 and 3.

Genital operculum–Length and width measurements as in figure 4.

Leg segments–Lengths measured along dorsal surface from a lateral view.

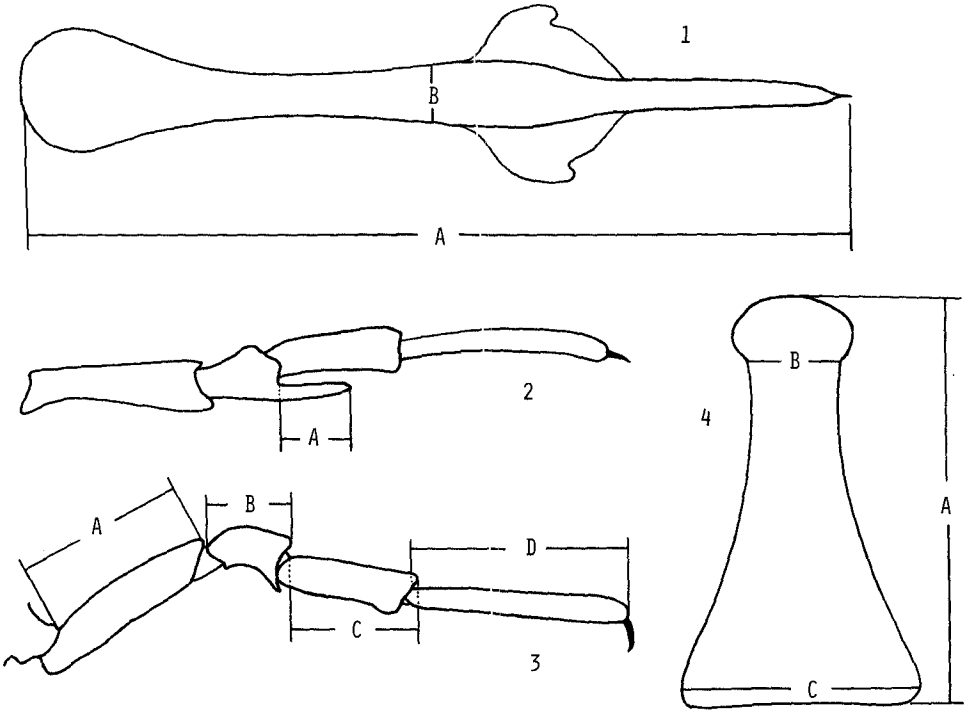
Abbreviations for collections from which specimens were examined, or deposited in, are listed in the acknowledgments. Specimens in The Museum, Texas Tech University are listed TTU; specimens in my personal collection are JCC.

GENUS *TRACHYRHINUS* WEED

Phalangium: Wood 1871:28 (in part); Underwood 1885:168 (in part); Weed 1889:105 (in part).
Astrobunus: Weed 1890:914 (in part).
Trachyrhinus Weed 1892a:529, 1892b:193, 1893:287; Banks 1893:206, 1894:145, 1901a:673, 1901b:593, 1901c:588; Scheffer 1906:128; Roewer 1910:259, 1923:872, 1957:356; Chamberlin 1925:172; Goodnight and Goodnight 1942:15, 1946:7; Comstock 1948:67; Milstead 1958:445; Katayama and Post 1974:8.

Type species.–*Phalangium favosum* Wood, by original designation.

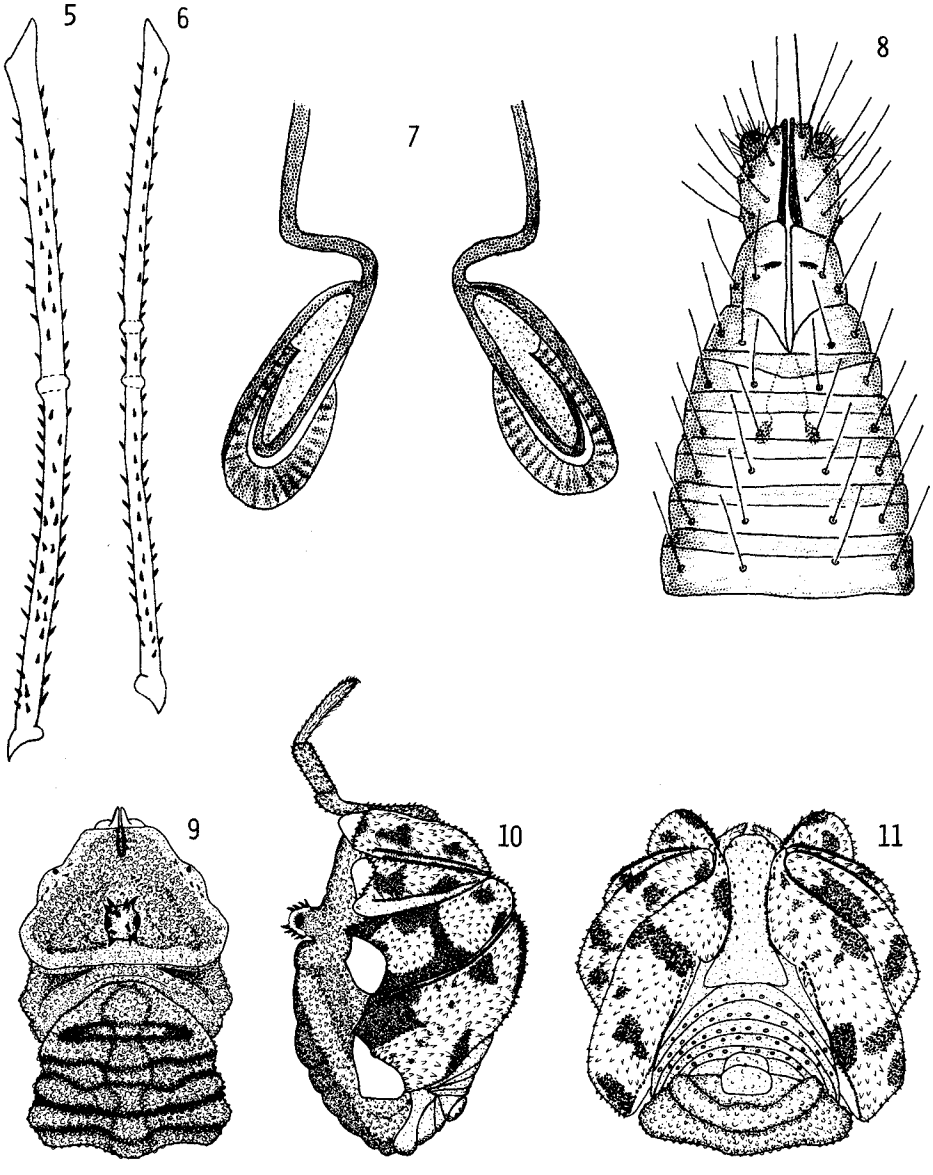
Comments and diagnosis.–Within the genus *Trachyrhinus* are apparently two species groups. One group is easily recognized by the presence of a palpal apophysis and by having the alate portion of the penis large and expanded. The second group is characterized by lacking a palpal apophysis, penis with small alate portion, reduced number and size of lateral tubercles on the ocular tubercle, and by having the distal portions of the palpal tarsi slightly expanded. Until the present all described species of



Figs. 1-4.-*Trachyrhinus*: 1, penis, dorsal view (a = total length, b = width at midshaft); 2, palpus, dorsal view (a = patellar apophysis length); 3, palpus, lateral view (a = femur length, b = patella length, c = tibia length, d = tarsus length); 4, genital operculum, ventral view (a = total length, b = width at neck, c = width at base).

Trachyrhinus belonged in the group with apophyses, rendering previous generic diagnoses inadequate. The genus *Trachyrhinus* is diagnosed as follows: *Trachyrhinus* differs from all other known genera of Phalangioidea by having at least one pseudoarticulary nodule in femora II, tibiae II with pseudosegments, palpal claw smooth, and chelicerae with a tooth ventrally on first segment.

Description.–Medium sized *phalangioids* with hard, coarsely punctate bodies (Figs. 9-11); dorsum with white opalescent spots; with poorly developed lateral sclerites in some specimens. Ocular tubercle approximately equal in length and width, with two well



Figs. 5-11.-*Trachyrhinus*: 5, femur II, *T. maramoratus*; 6, femur II, female *T. horneri*; 7, seminal receptacle, *T. dicropalpus*; 8, ovipositor, *T. dicropalpus*; 9-11, male *T. marmoratus*, 9 dorsal view, 10 lateral view, 11 ventral view.

developed rows of pointed tubercles. Chelicerae not enlarged, with tooth on first segment ventrally. Supracheliceral lamellae in the form of two plates. Scent gland pores small, oval to slightly elongated. Coxae, except posterior portions of III, and genital operculum with lateral rows of tri-pointed denticles; rows on genital operculum rarely reduced or absent. Coxae III and IV enlarged in males (Figs. 10, 11). Legs long, covered with spines and tubercles; femora I equal to or shorter than length of body, II with one or two pseudoarticulary nodules (Figs. 5, 6); tibiae II with pseudosegments. Palpi often with an apophysis on inner distal margins of patellae; tarsi with ventral rows of denticles in males, unarmed in females; claw smooth. Penis alate; shaft long and thin, contracted and bent slightly anterior to alate portion, ending in a sharp tip; alate portion consisting of two sacs opening distally. Ovipositor as in figure 8; seminal receptacle varies slightly between species, general form as in figure 7.

Distribution.–Northern México and western United States (Figs. 12-13).

Remarks.–The male of *Trachyrhinus mesillensis*, n. sp. is unknown and will not be listed in the following key. As the female of this species belongs to the group without palpal apophyses the male presumably also has no palpal apophyses.

KEY TO ADULT *TRACHYRHINUS*

1. Palpal patellae with an apophysis 6
   Palpal patellae without an apophysis 2
2. Males 3
   Females 4
3. Femora II less than 6.5 mm in length . . . . . *T. horneri*
   Femora II greater than 7.0 mm in length . . . . . *T. rectipalpus*
4. Femora II with two pseudoarticulary nodules (Fig. 6), less than 6.5 mm in length . . . . . *T. horneri*
   Femora II with one pseudoarticulary nodule (Fig. 5), greater than 8.0 mm in length. 5
5. Femora II less than 10.5 mm in length . . . . . *T. rectipalpus*
   Femora II greater than 11.5 mm in length . . . . . *T. mesillensis*
6. Patellar apophysis greater than 0.23 mm in length . . . . . *T. dicropalpus*
   Patellar apophysis less than 0.18 mm in length 7
7. Palpal tarsi with only ventral row of denticles, bare in females (Figs. 23, 25) . . . . . *T. marmoratus*
   Palpal tarsi with many small obtuse tubercles ventrally, reduced in females, as well as ventral rows of denticles in males (Figs. 17, 19) . . . . . *T. favosus*

Trachyrhinus favosus (Wood)

Figs. 12, 14-19

Phalangium favosum Wood 1871:28; Underwood 1885:168; Weed 1889:105; Banks 1893:206.
Astrobunus (?) *favosum*: Weed 1890:914.
Trachyrhinus favosus: Weed 1892a:529, 1892b:193, plt. 10, 1893:287; Banks 1894:145, 1901a:675; Scheffer 1906:128; Roewer 1910:266 (in part), 1923:876 (in part), 1957:356; Comstock 1948:72; Katayama and Post 1974:8 (in part).

Types.–The female type collected by Prof. F. V. Hayden in Nebraska (Wood, 1871) is presumably lost or destroyed. Attempts to locate Wood's types in major collections

(listed in acknowledgments) have failed, and for this reason I am selecting an adult male as the neotype. The neotype was collected at Broken Bow, Custer Co., Nebraska (20 August 1945, M. H. Muma); AMNH.

Diagnosis.–*Trachyrhinus favosus* differs from all other species of *Trachyrhinus* except *T. marmoratus* Banks, by having the palpal apophyses 0.07-0.18 in length. *T. favosus* differs from *T. marmoratus* by having the ventral surface of the palpal tarsus with many small obtuse tubercles (Figs. 17, 19).

Description.–Males (n = 12): Body large, total length 4.84-8.20 (6.04), greatest width 3.00-5.00 (3.94), maximum height 2.37-5.00 (3.46). Ocular tubercle essentially round 0.41-0.56 (0.47), width 0.43-0.53 (0.47); with 4-9 (6) large tubercles on each side. Genital operculum length 1.57-2.80 (2.21), width at base 0.92-1.42 (1.12), width at neck 0.57-0.80 (0.64). Chelicerae black to yellow-brown with brown maculations on first segment dorsally, teeth black. Body ranging from solid black to creamy white with light brown legs that are lightened on the bases of femora. Typically, body light brown to gray-brwon with dark brown maculations; fewer maculations on coxae of legs and ventral surface of body; faint vase-like pattern on dorsum of abdomen. Palpi (Figs. 17-19) black to yellow-brown except for distal portions of femora and patellae and often proximal protions of tibiae dark brown; tarsi with 3-11 (7) ventral denticles, with many small obtuse tubercles. Palpal lengths: femora 0.91-1.30 (1.11), patellae 0.50-0.78 (0.64), patellar apophyses 0.07-0.18 (0.10), tibiae 0.69-0.90 (0.78), tarsi 1.28-1.60 (1.44). Legs black to reddish-brown with bases of femora, dorsa of patellae, disto-dorsal portions of tibiae, and tarsi yellow-brown. Tibiae II with 2-7 (6) pseudosegments. Femora I-IV

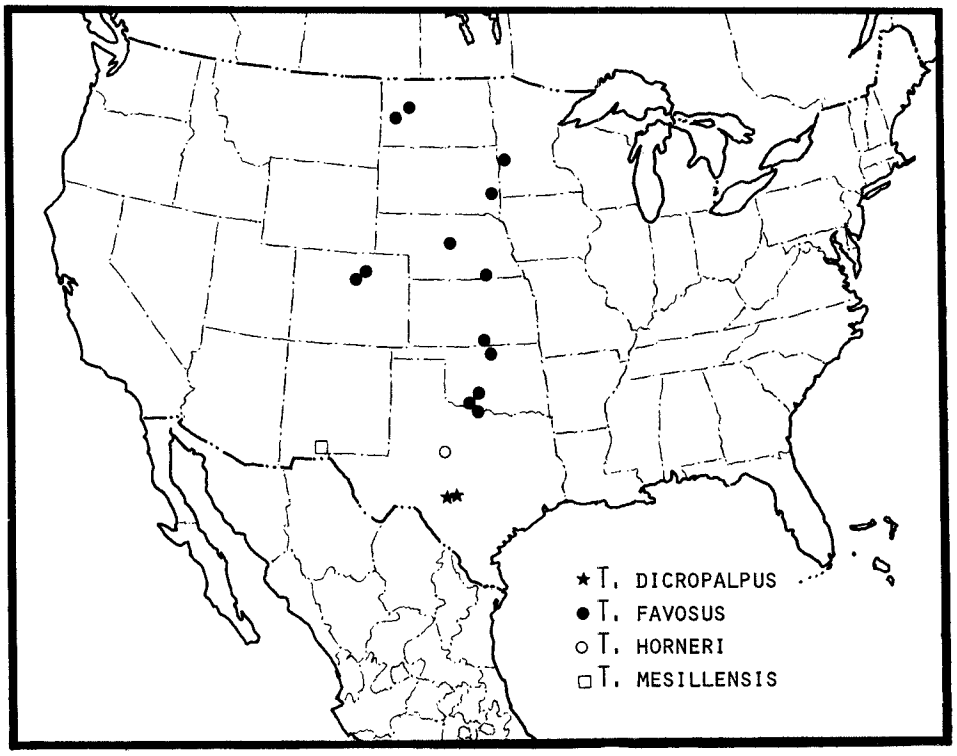


Fig. 12.-Distribution of T. dicropalpus, T. favosus, T. horneri, and *T. mesillensis.*

lengths (respectively): 4.22-7.00 (5.54), 7.75-12.42 (10.04), 4.50-6.84 (5.61), 6.32-9.97 (7.94); tibiae I-IV lengths (respectively): 2.82-5.40 (3.92), 6.83-10.97 (8.83), 3.19-4.85 (4.00), 4.28-6.18 (5.44). Penis as in figures 14-16; length 2.30-3.09 (2.74), width at midshaft 0.10-0.14 (0.12).

Females (n = 12): Form and coloration essentially as in males; palpal tarsi without denticles, but with few small obtuse tubercles; total length 4.80-7.91 (6.49), greatest width 3.45-5.01 (4.27), maximum height 2.45-4.62 (3.53). Ocular tubercle, length 0.38-0.52 (0.44), width 0.42-0.52 (0.45); with 3-6 (5) lateral tubercles. Genital operculum length 1.26-1.81 (1.59), width at base 1.20-1.41 (1.43), width at neck 0.54-0.82 (0.70). Palpal lengths: femora 0.87-1.05 (0.95), patellae 0.40-0.58 (0.49), patellar apophyses 0.10-0.18 (0.14), tibiae 0.58-0.74 (0.67), tarsi 1.23-1.45 (1.34). Femora I-IV lengths (respectively): 4.47-5.60 (4.89), 8.21-9.85 (9.10), 4.40-5.45 (4.89), 6.42-7.98 (6.98); tibiae I-IV lengths (respectively): 3.02-3.63 (3.37), 6.63-9.39 (7.98), 3.22-4.50 (3.58), 4.46-5.38 (4.79). Tibiae II with 4-9 (6) pseudosegments.

Distribution.—Central United States (Fig. 12).

Natural History.—Adults of *Trachyrhinus favosus* are only known to occur from late August to late November. Attempts to maintain specimens in the laboratory have failed. Captive specimens refused cockroaches, moths, and a mixture of cornmeal, yeast, and sugar-water, and generally died within two weeks. A male and a female captured in southern Oklahoma, late November, were guarding 45 white eggs (diameter 0.70-0.82 (0.80), n = 12). The two specimens were under a rock hanging upside down. The eggs were adhering to the rock.

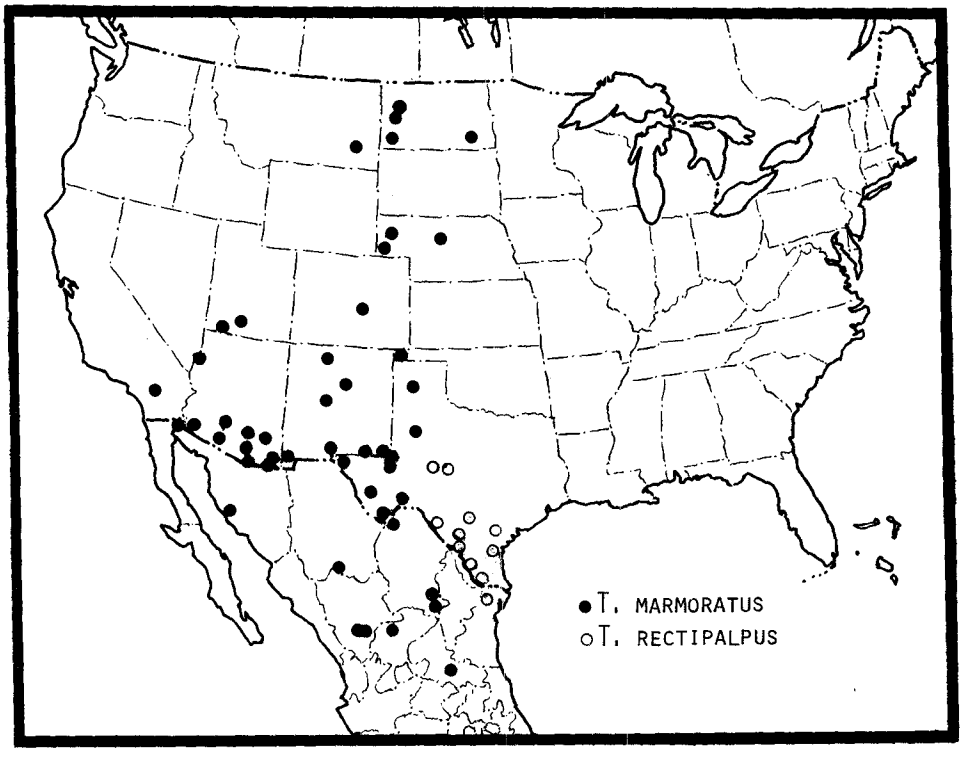
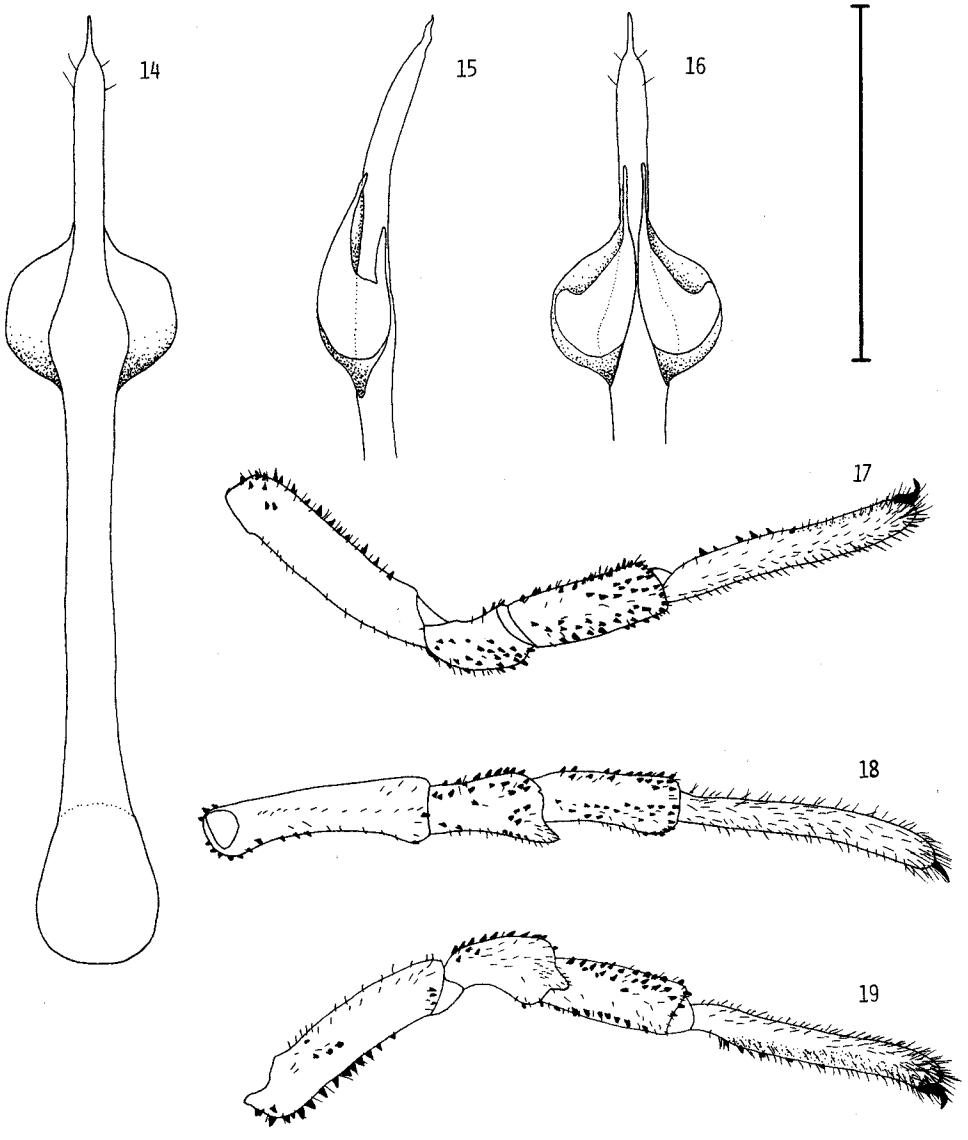


Fig. 13.-Distribution of *T. marmoratus* and *T. rectipalpus*.

Specimens examined.–UNITED STATES: *Minnesota*; Travers Co., Browns Valley, 14 September 1938 (C. E. Mickel), 3 males (ALE): *North Dakota*; McKenzie Co., T146-R98-S16-P110, 24 August 1976 (collector unknown), 2 males, 3 females (NDSU); Dunn Co., T146-R97-S25-P400, 25 August 1976 (collector unknown), 2 males, 2 females (NDSU): *Nebraska*; Thayer Co., Gilead, 30 October 1945 (M. H. Muma), 2 males (AMNH); Custer Co., Broken Bow, 20 August 1945 (M. H. Muma), 5 males, 1 female (AMNH): *Colorado*; Larimer Co., Fort Collins (date and collector unknown), 2 males, 13 females (MCZ); Boulder Co., White Rocks, Boulder Canyon, 30 September 1939 (T. D. A. Cockerell), 1 male (AMNH): *Kansas*; (specific location, date, and collector unknown), 1 female (AMNH); Sumner Co., South Haven, (date unknown, P. Hayhurst), 1 male (R. V. Chamberlin Coll.-AMNH): *Oklahoma*: Kay Co., Newkirk, 28 October 1907 (collector unknown), 2 females (Cornell Univ. Coll.-AMNH); Comanche Co., 1 km S Crater Lake, Wichita Mountains Wildlife Refuge, 25



Figs. 14-19.-*T. favosus*: 14-16 penis, 14 dorsal view, 15 lateral view, 16 ventral view; 17-19 male palpus, 17 lateral view, 18 dorsal view, 19 medial view (Scale line for 14-16 = 1.0 mm, 17-19 = 3.6 mm).

November 1977 (J. C. Cokendolpher, D. C. Parmley, F. Bryce), 6 males, 2 females (3 males, 2 females JCC, all others MSU), 23 November 1978 (J. C. Cokendolpher), 2 males (1 male JCC, 1 male MSU); Cotton Co., Red River, S Devol, 15 October 1977 (J. C. Cokendolpher), 1 female (MSU): *Texas*; Wichita Co., Lake Iowa Park, 3 November 1977 (T. C. Kaspar), 1 male, 1 female (MSU).

Trachyrhinus marmoratus Banks

Figs. 9-11, 13, 20-25

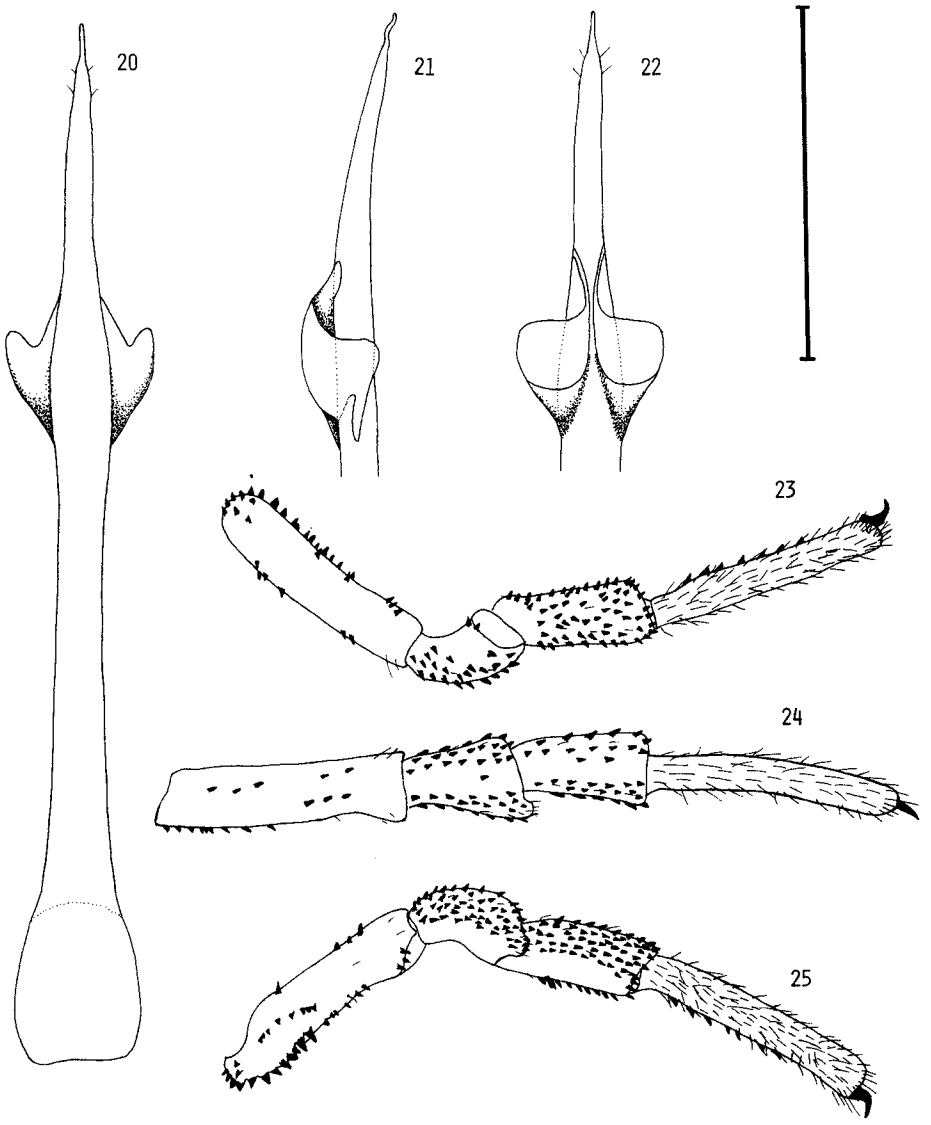
Trachyrhinus marmoratus Banks 1894:145, 1901a:675; Roewer 1910:268, 1923:876, 1957:356; Goodnight and Goodnight 1942:15, 1946:7; Comstock 1948:72.
Trachyrhinus favosus: Banks 1901c:588 (misidentification); Roewer 1910:266 (in part), 1923:876 (in part); Katayama and Post 1974:8 (in part).
Trachyrhinus maculatus Roewer 1910:288 (*lapsus calami*).
Trachyrhinus sonoranus Chamberlin 1925:172.

Types.—Only one male *Trachyrhinus marmoratus* type appears to still exist. I have been unable to locate any of the other males designated by Banks (1894) in major collections (listed in acknowledgments). I designate the male from Sante Fe, Santa Fe Co., New Mexico (pre-1901 collection, T. D. A. Cockerell) in SMF (cat. no. RI/5/29) as the lectotype. This specimen is described and illustrated (Roewer, 1923:876). There are three male and one female topotypes collected by T. D. A. Cockerell (MCZ) that might be part of the original type series, but as the specimens are not labeled types and the series contains a female I am regarding them as a separate collection. Male holotype (CAS, cat. no. 1643) and male paratype (MCZ) of *T. sonoranus* from Guaymas, Sonora, México, 15 April 1921 (J. C. Chamberlin); both examined. Six paratypes of *T. sonoranus* from Nogales, Arizona, 4 April 1921 (E. P. Van Duzee); CAS, 1 male and 3 females examined.

Diagnosis.—*Trachyrhinus marmoratus* differs from other species of *Trachyrhinus* by having an apophysis on the palpal patellae less than 0.18 in length and lacking small obtuse tubercles on ventral surfaces of palpal tarsi.

Description.—Males (n = 12): Body large, total length 4.35-7.57 (5.63), greatest width 2.63-4.79 (3.73), maximum height 2.40-4.25 (3.30). Ocular tubercle slightly wider than long, length 0.42-0.56 (0.50), width 0.50-0.58 (0.54); with 7, rarely 8, large lateral tubercles. Genital operculum length 1.50-2.62 (1.98), width at base 0.79-1.42 (1.02), width at neck 0.26-0.70 (0.57). Chelicerae ranging from creamy white to light yellow-brown with brown maculations on first segment dorsally, teeth dark brown. Body coloration varies from specimens which are entirely creamy white with few light brown maculations on dorsum of abdomen, coxae, and femora to specimens that are reddish-brown with dark brown legs and brown maculations on dorsum, coxae, and venter. Commonly, body yellow-brown with dark brown maculations on dorsum, coxae, and few on venter. Palpi (Figs. 23-25) white to yellow-brown, often with distal portions of femora and patellae brown; tarsi with 2-10 (6) ventral denticles, lacking small obtuse tubercles. Palpal lengths: femora 0.82-1.50 (1.05), patellae 0.42-0.98 (0.60), patellar apophyses 0.04-0.10 (0.07), tibiae 0.58-1.04 (0.71), tarsi 1.07-1.55 (1.27). Legs creamy white to dark brown; often with bases of femora, dorsa of patellae, disto-dorsal portions of tibiae, and tarsi yellow-brown. Tibiae II with 3-9 (6) pseudosegments. Femora I-IV lengths (respectively): 3.95-8.52 (5.74), 7.24-11.68 (9.22), 4.20-6.42 (5.37), 5.73-9.38 (7.43); tibiae I-IV lengths (respectively): 2.86-4.39 (3.81), 6.39-10.50 (8.48), 2.82-4.39 (4.00), 3.00-6.22 (4.73). Penis as in figures 20-22; length 2.10-2.85 (2.41), width at midshaft 0.09-0.15 (0.12).

Females (n = 12): Form and coloration essentially as in males; palpal tarsi bare; total length 4.58-7.84 (5.99), greatest width 3.43-5.62 (4.18), maximum height 2.65-5.00 (3.60). Ocular tubercle length 0.40-0.60 (0.43), width 0.47-0.53 (0.49); with 4-9 (6) lateral tubercles. Genital operculum length 1.30-1.62 (1.49), width at base 1.19-1.54 (1.31), width at neck 0.58-0.81 (0.66). Palpal lengths: femora 0.71-1.02 (0.89), patellae 0.43-0.60 (0.52), patellar apophyses 0.04-0.11 (0.08), tibiae 0.52-0.79 (0.64), tarsi 1.12-1.42 (1.25). Femora I-IV lengths (respectively): 4.12-6.82 (5.01), 7.18-11.79 (8.76), 4.12-6.91 (5.17), 6.01-9.78 (7.19); tibiae I-IV lengths (respectively): 2.63-4.84 (3.54), 6.84-11.00 (8.11), 2.79-4.32 (3.63), 4.22-6.73 (4.99). Tibiae II with 4-11 (6) pseudosegments.



Figs. 20-25.-*T. marmoratus*: 20-22 penis, 20 dorsal view, 21 lateral view, 22 ventral view; 23-25 male palpus, 23 lateral view, 24 dorsal view, 25 medial view (scale line for 20-22 - 1.0 mm, 23-25 = 3.6 mm).

Distribution.–Western North America (Fig. 13).

Specimens examined (115 males and 107 females, detailed list available from the author). - UNITED STATES: *North Dakota*; Sargent Co., Slope Co., Dunn Co., McKenzie Co.: *Montana*; Custer Co.: *Nebraska*; Thomas Co., Scottsbluff Co., Kimball Co.: *Colorado*; El Paso Co.: *Utah*; Washington Co.: *California*; Riverside Co.: *Arizona*; Mohave Co., Maricopa Co., Santa Cruz Co., Yuma Co., Pima Co., Cochise Co., Graham Co.: *New Mexico*; Rio Arriba Co., Santa Fe Co., Bernalillo Co., Hidalgo Co., Eddy Co.: *Texas*; Brewster Co., Terrell Co., Winkler Co., Potter Co., Lubbock Co.: *Oklahoma*; Cimarron Co.. MEXICO: *Baja California Norte; Sonora; Durango; Chihuahua; Coahuila; Zacatecas; San Luis Potosí.*

Trachyrhinus dicropalpus, new species
Figs. 7, 8, 12, 26-31

Mesosoma texanum: Rowland and Reddell 1976: 12 (misidentification).

Types.–Male holotype and two female paratypes from Camp Chrysalis, 22 km S Kerrville, Kerr Co., Texas (15 October 1977, D. Holub); holotype FSCA, one paratype MSU, one paratype JCC. Two female paratypes from Ney Cave, Medina Co., Texas (14 April 1972, S. Wiley, T. Mollhagen, and B. Davis); TTU (cat. no. 81).

Etymology.–The specific epithet from Greek *dicro* (meaning forked) and Latin *palpus* (meaning palp), describing the long apophyses of the palpi.

Diagnosis.–*Trachythinus dicropalpus* differs from all other species of *Trachyrhinus* by having the patellae of palpi with an apophysis which is about one-third length of palpal tibia (0.23 or greater in length).

Description.–Male: Body small, total length 4.40, greatest width 2.68, maximum height 2.38. Ocular tubercle essentially round, diameter 0.44, with 7 large tubercles on each side. Genital operculum length 1.36, width at base 1.05, width at neck 0.60. Dorsum of body and coxae of legs reddish-brown with dark maculations, venter lighter in color. Chelicerae yellow-brown with black teeth. Palpi (Figs. 29-31) yellow-brown except for distal portions of femora and patellae and proximal portions of tibiae dark brown; tarsi with 3-5 ventral denticles, lacking small obtuse tubercles. Palpal lengths: femur 0.96, patella 0.49, patellar apophysis 0.23, tibia 0.68, tarsus 1.14. Legs yellow-brown except for distal portions of femora, patellae, and tibiae dark brown; disto-dorsal tips of femora, tibiae, and dorsa of tarsi white. Tibiae II with 4 pseudosegments. Femur I-IV lengths (respectively): 5.09, 13.23, 5.07, 6.83; tibia I-IV lengths (respectively): 5.09, 13.23, 5.07, 6.83. Penis as in figures 26-28; length 2.09, width at midshaft 0.10.

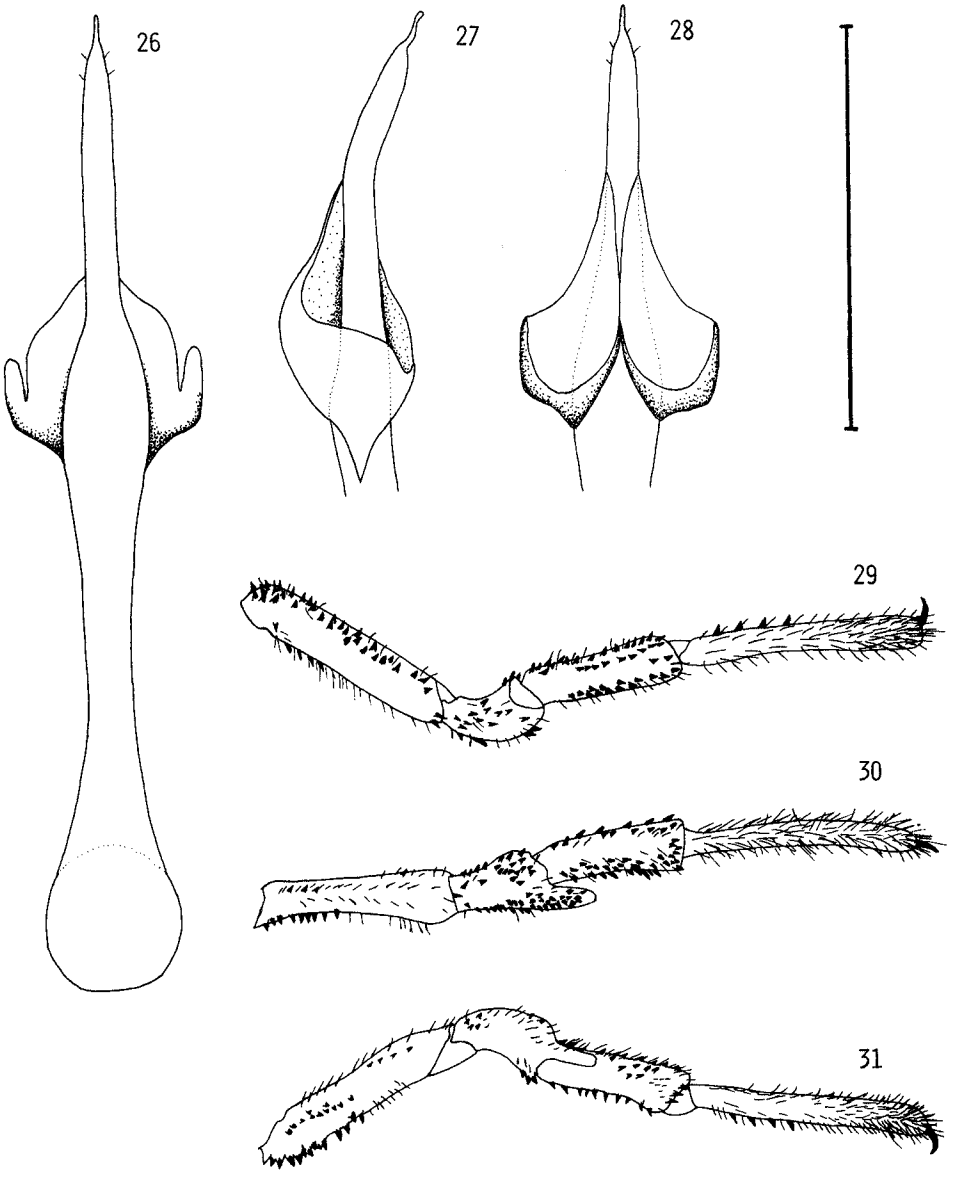
Females (n = 4): Form and coloration as in male, except dorsum of body brown; total length 4.82-6.40 (5.64), greatest width 3.52-5.10 (4.24), maximum height 3.13-5.00 (3.83). Ocular tubercle, diameter 0.44-0.48 (0.45), with 6, rarely 7, lateral tubercles. Genital operculum length 1.37-1.65 (1.48), width at base 1.30-1.44 (1.38), width at neck 0.60-0.84 (0.71). Palpal lengths: femora 0.94-1.16 (1.03), patellae 0.53-0.72 (0.63), patellar apophyses 0.23-0.29 (0.25), tibiae 0.70-0.79 (0.75), tarsi 1.21-1.28 (1.23). Femora I-IV lengths (respectively): 6.01-7.50 (6.72), 11.01-13.48 (12.14), 5.82-6.92 (6.31), 8.02-10.24 (9.02); tibiae I-IV lengths (respectively): 4.22-5.02 (4.62), 10.05-14.56 (12.07), 4.05-4.60 (4.37), 5.62-6.81 (6.24). Tibiae II with 4-8 (6) pseudosegments.

Distribution.–Known only from central Texas (Fig. 12).

Natural History.–The specimens from Ney Cave appear to be accidental and are not regarded as part of the cave fauna. The remaining specimens were taken under rocks

during the daytime. One female captured during April is filled with 145 ova, diameter 0.43-0.64 (0.54) for n = 25. Due to the large size and number of ova, it appears oviposition takes place in the spring.

Specimens examined.–Only the type series.



Figs. 26-31.-*T. dicropalpus*: 26-28 penis, 26 dorsal view, 27 lateral view, 28 ventral view; 29-31 male palpus, 29 lateral view, 30 dorsal view, 31 medial view (scale line for 26-28 = 1.0 mm, 29-31 = 3.6 mm).

Trachyrhinus rectipalpus, new species
Figs. 13, 32-37

Trachyrhinus sp.: Milstead 1958:445.
Trachyrhinus marmoratus: Milstead 1958:445 (misidentification).

Types.—Male holotype from Laredo, Webb Co., Texas, 18 December 1939 (F. Norman), AMNH; and 56 paratypes (listed under specimens examined).

Etymology.—The specific epithet from Latin *recti* (meaning straight) and *palpus* (meaning palp), describing the lack of a palpal apophysis.

Diagnosis.—*Trachyrhinus rectipalpus* differs from all other species of *Trachyrhinus*, except *T. horneri* and *T. mesillensis*, by lacking a palpal apophysis. From *T. horneri* and *T. mesillensis*, *T. rectipalpus* differs by the lengths of femora II: *T. horneri* mean length 6.04 (n = 3), *T. mesillensis* 12.19 (n = 2), and *T. rectipalpus* 9.21 (n = 57).

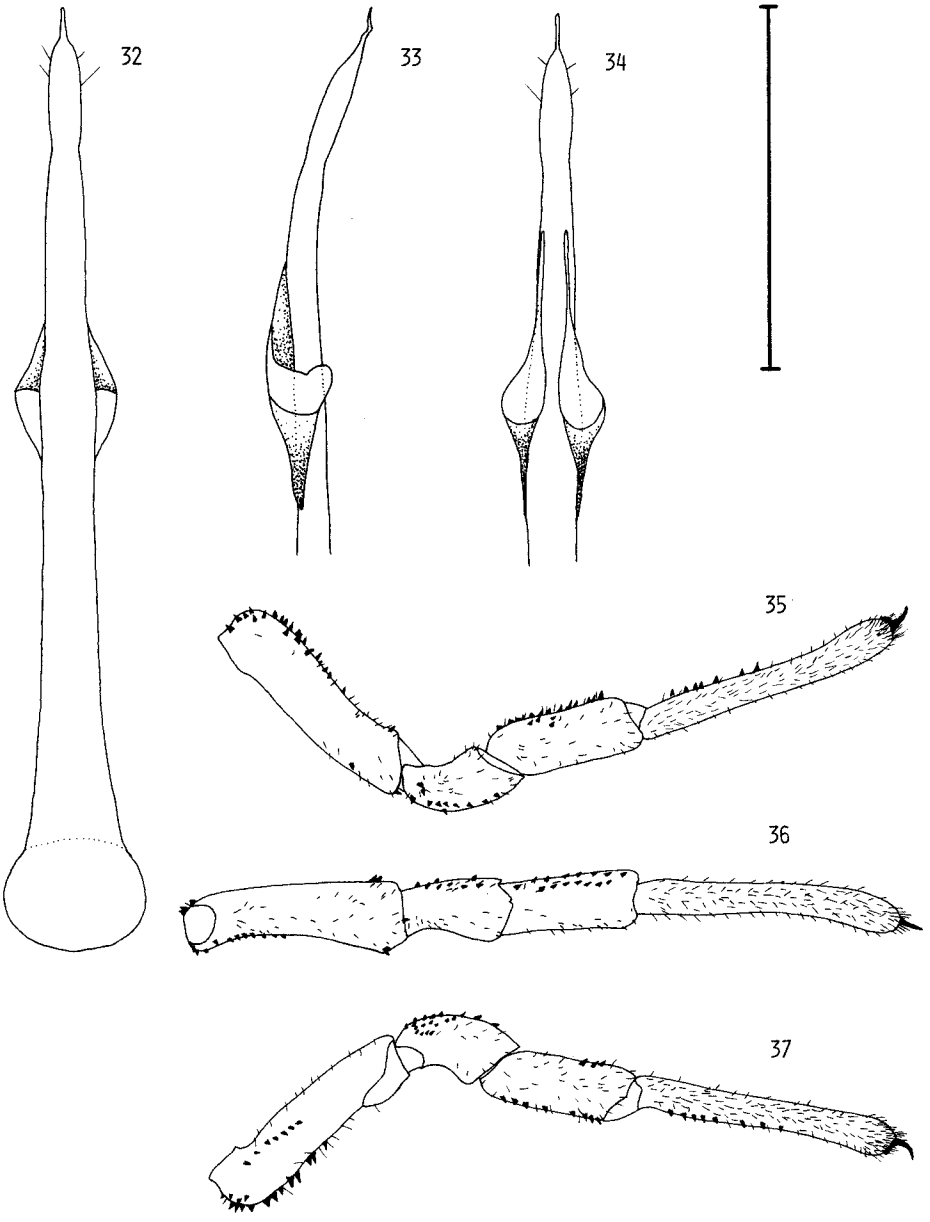
Description.—Males (n = 12): Body relatively small, total length 4.82-6.82 (5.54), greatest width 2.82-4.00 (3.16), maximum height 2.41-3.43 (2.91). Ocular tubercle essentially round, diameter 0.40-0.52 (0.45), with 4-8 (5) tubercles on each side. Genital operculum length 1.42-2.21 (1.83), width at base 0.89-1.21 (0.99), width at neck 0.48-0.64 (0.57). Dorsum light brown, venter and coxae lighter; with few dark brown maculations. Chelicerae light yellow-brown with dark brown teeth. Palpi (Figs. 35-37) light brown except bases of femora and tibiae often yellow-brown; tarsi with 4-10 (7) ventral denticles, lacking small obtuse tubercles. Palpal lengths: femora 0.80-1.04 (0.91), patellae 0.52-0.68 (0.61), tibiae 0.55-0.70 (0.64), tarsi 1.18-1.43 (1.33). Legs borwn, often darker on distal portions of femora, patellae, and tibiae. Tibiae II with 3-6 (5) pseudosegments. Femora I-IV lengths (respectively): 4.22-6.87 (5.49), 7.52-12.35 (9.34), 3.81-6.91 (5.52), 5.23-8.22 (7.05); tibiae I-IV lengths (respectively): 3.00-8.79 (4.53), 6.98-11.89 (9.38), 3.18-4.86 (4.11), 4.17-6.78 (5.48). Penis as in figures 32-34: length 2.04-2.45 (2.28), width at midshaft 0.10-0.13 (0.12).

Females (n = 12): Form and coloration essentially as in males, total length 5.29-6.72 (5.90), greatest width 3.31-4.21 (3.84), maximum height 2.40-4.02 (3.29). Ocular tubercle, diameter 0.39-0.50 (0.46), with 1-6 (5) lateral tubercles. Genital operculum length 1.20-1.43 (1.33), width at base 1.11-1.48 (1.24), width at neck 0.60-0.72 (0.67). Palpal lengths: femora 0.71-0.91 (0.83), patellae 0.50-0.59 (0.54), tibiae 0.53-0.60 (0.56), tarsi 1.11-1.35 (1.24). Femora I-IV lengths (respectively): 4.37-6.25 (5.03), 8.22-10.45 (9.05), 4.38-6.01 (4.93), 6.18-7.38 (6.63); tibiae I-IV lengths (respectively): 2.71-4.26 (3.38), 7.18-9.14 (8.22), 3.26-3.79 (3.46), 4.21-5.23 (4.69). Tibiae II with 4-7 (4) pseudosegments.

Distribution.—South Texas in the United States, northern Coahuila and Tamaulipas in México (Fig. 13).

Specimens examined.—56 paratypes- UNITED STATES: *Texas*; McCulloch Co., 4.8 km E Salt Gap, 15 October 1968 (Perkins), 4 males, 4 females (NDSU); Tom Green Co., 23 October 1968 (Perkins), 9 males, 7 females (NDSU), 2 males, 2 females (JCC), 1 male, 1 female (CAS), 1 male, 1 female (FSCA), 1 male, 1 female (SMF); Bexar Co., San Antonio, 23 August 1940 (L. I. Davis), 1 female (MCZ); Goliad Co., Berclair, 2 January 1952 (Causey), 1 male (MCZ), Goliad, 2 January 1952 (Causey), 2 males, 2 females (MCZ), San Antonio River, 2 January 1952 (Causey), 3 males (MCZ); Nueces Co., Corpus Christi, 1-20 July 1935 (H. C. Sibley, Jr.), 1 female (AMNH); Webb Co., Laredo (date and collector unknown), 1 male (AMNH), 51.2 km E Laredo, 11 November 1934 (Mulaik), 2 males (AMNH); Hidalgo Co., Edinburg, 9 October 1935 (C. Rutherford), 1 male (AMNH), 4 December 1935 (M. Welch), 1 male (AMNH), 5 December 1935 (Mulaik), 1 male (AMNH), 7 December 1935 (C. Rutherford), 1 male (AMNH); Val Verde Co., Lake Walk, 11 August 1966 (T. S. Briggs), 1 female

(CAS); Zapata Co., Falcon Reservoir State Park, 12 August 1966 (T. S. Briggs), 1 male, 1 female (CAS). MEXICO: *Tamaulipas*, 48 km S Reynosa, 24 April 1967 (W. Peck), 1 female (EP): *Coahuila*, Gloria, 24 August 1947 (W. J. Gertsch), 1 female (AMNH).



Figs. 32-37.-*T. rectipalpus*: 32-34 penis, 32 dorsal view, 33 lateral view, 34 ventral view; 35-37 male palpus, 35 lateral view, 36 dorsal view, 37 medial view (scale line for 32-34 = 1.0 mm, 35-37 = 3.6 mm).

Trachyrhinus mesillensis, new species
Figs. 12, 38-40

Trachyrhinus marmoratus: Banks, 1901b:593 (misidentification).

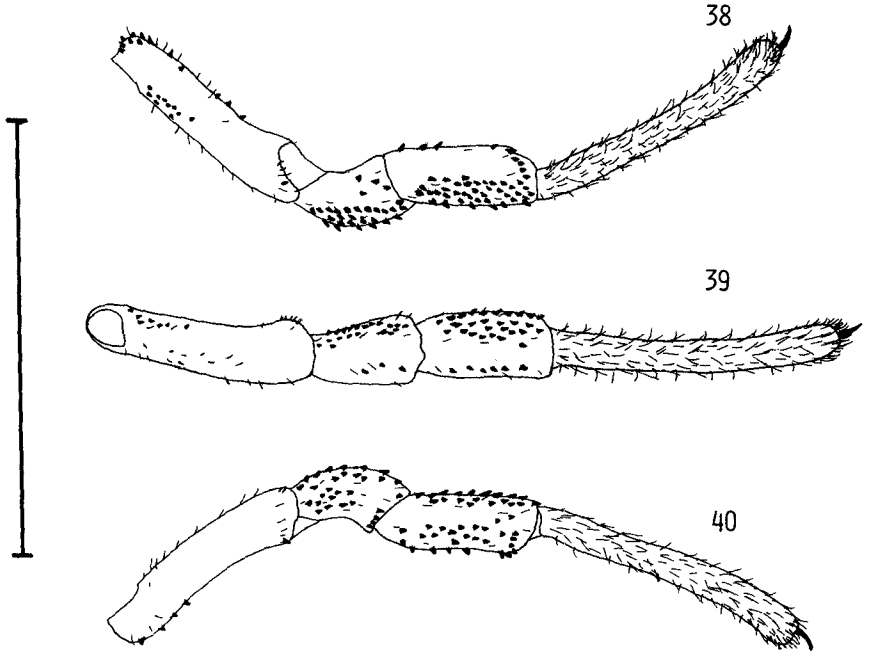
Types.–Female holotype and female paratype from Mesilla Valley, Dona Ana Co., New Mexico (N. Banks Coll.-MCZ). Although the specimens are labeled "Mesilla N. Mex.", Banks (1901b:593) reports the specimens are from Las Cruces, September (Cockerell). Mesilla and Las Cruces are only a few km apart and both are in the Mesilla Valley.

Etymology.–The specific epithet is an adjectival form derived from the type locality.

Diagnosis.–*Trachyrhinus mesillensis* differs from all other species of *Trachyrhinus* by lacking patellar apophyses and by having long slender legs (femora II 12.00 or greater in length).

Description.–Male: Unknown.

Females (measurements of holotype listed first): Body relatively large, robust; total length 6.40-6.08, greatest width 4.07-3.68, maximum height 3.47-3.79. Ocular tubercle slightly longer than wide, length 0.42-0.45, width 0.40-0.43; with 3-5 lateral tubercles. Genital operculum length 1.36-1.41, width at base 1.23-1.30, width at neck 0.70-0.72. Body light yellow-brown with few brown maculations. Chelicerae, palpi, and legs yellow-brown with patellae and distal ends of femora and tibiae of legs darkened. Palpi (Figs. 38-40) lacking apophyses or ventral tubercles on tarsi. Palpal lengths: femora 0.84-?,

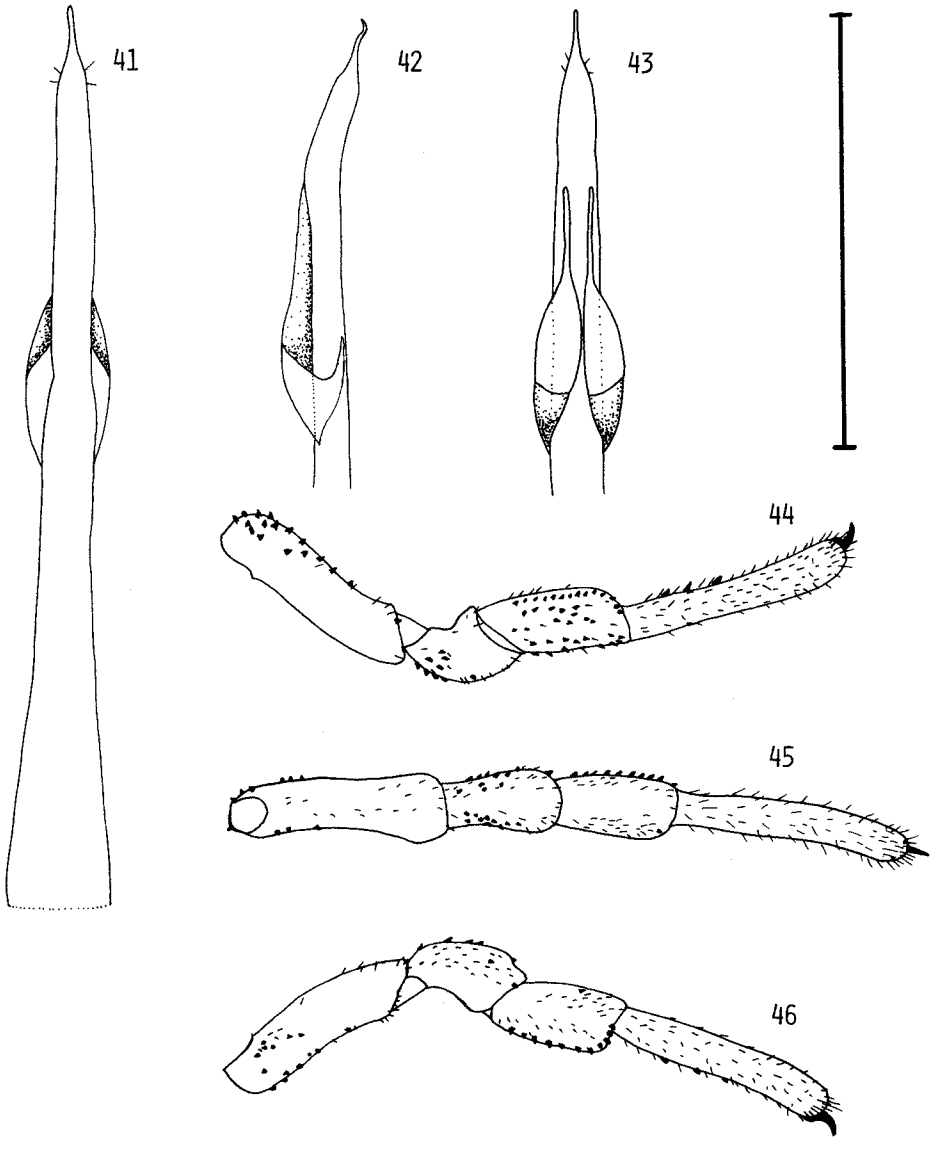


Figs. 38-40.-*T. mesillensis*: 38-40 female palpus, 38 lateral view, 39 dorsal view, 40 medial view (scale line = 3.6 mm).

patellae 0.54-?, tibiae 0.58-?, tarsi 1.30-?. Legs very long and slender, tibiae II with 3, 5 - 5, 7 pseudosegments. Femora I-IV lengths (respectively): 6.39-6.60, 12.00-12.38, 6.31-6.01, 8.75-9.09; tibiae I-IV lengths (respectively): 4.21-4.60, 9.22-11.03, 4.39-4.48, 5.94-6.19.

Distribution.–Known only from Mesilla Valley, New Mexico (Fig. 12).

Specimens examined.–Only the type specimens.



Figs. 41-46.-*T. horneri*: 41-43 penis, 41 dorsal view, 42 lateral view, 43 ventral view; 44-46 male palpus, 44 lateral view, 45 dorsal view, 46 medial view (scale line for 41-43 = 1.0 mm, 44-46 = 3.6 mm).

Trachyrhinus horneri, new species
Figs. 6, 12, 41-46

Types.–Male holotype and two female paratypes from 16 km SW Abilene, Taylor Co., Texas, February 1944 (H. S. Dybas); FMNH, one paratype JCC.

Etymology.–The specific epithet is a patronym honoring Dr. Norman V. Horner, who first introduced me to the study of arachnology.

Diagnosis.–This species differs from all other species of *Trachyrhinus* by having short legs (femora II less than 6.5 in length) and lacking palpal apophyses. Females of *T. horneri* differ from all other species of *Trachyrhinus* by having 2 pseudoarticulary nodules in femora II.

Description.–Male: Body small, length 4.51, greatest width 3.00, maximum height 2.41. Ocular tubercle slightly wider than long, length 0.40, width 0.46; with 3 tubercles on each side. Genital operculum without lateral rows of tri-pointed denticles; length 1.49, width at base 0.84, width at neck 0.50. Dorsum light brown with few dark brown maculations; ocular tubercle and venter white to light brown with few dark brown maculations on venter. Chelicerae light yellow-brown with dark brown teeth. Palpi (Figs. 44-46) light brown except for bases of femora white; tarsi with 5 ventral denticles, lacking small tubercles. Palpal lengths: femur 0.78, patella 0.51, tibia 0.50, tarsus 1.09. Legs light brown; darker on distal portions of femora, dorso-lateral portions of patellae, and laterally on tibiae. Tibiae II with 2 pseudosegments. Femur I-IV lengths (respectively): 3.19, 6.00, 3.41, 4.58; tibia I-IV lengths (respectively): 2.38, 5.62, 2.40, 3.21. Penis as in figures 41-43; length 1.76, width at midshaft 0.12.

Females (n = 2): Form essentially as male, coloration lighter, total length 5.10-6.10, greatest width 3.60-3.64, maximum height 3.18-3.68. Ocular tubercle length 0.41-0.50, width 0.43-0.50; with 4-6 lateral tubercles. Genital operculum length 1.35-1.40, width at base 1.28-1.32, width at neck 0.67-0.70; with a few tri-pointed tubercles on lateral margins. Palpal lengths: femora 0.80-1.09, patellae 0.50-0.54, tibiae 0.52-0.54, tarsi 1.13-1.28. Femora I-IV lengths (respectively): 3.38-3.42, 5.94-6.18, 3.41-3.52, 4.28-4.71; tibiae I-IV lengths (respectively): 2.42-2.60, 5.52-5.98, 2.49-2.60, 3.42-3.61. Tibiae II with 4-5 pseudosegments; femora II with 2 pseudoarticulary nodules (Fig. 6).

Distribution.–Known only from near Abilene, Texas (Fig. 12).

Specimens examined.–Only the type specimens.

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LITERATURE CITED

Banks, N. 1893. The Phalanginae of the United States. Canadian Entomol., 25:205-211.

Banks, N. 1894. Notes on Phalangidae. J. New York Entomol. Soc., 2(4): 145-146.

Banks, N. 1901a. Synopses of North-America invertebrates. XVI. The Phalangidae. Amer. Nat., 35: 669-679.

Banks, N. 1901b. Some Arachnida from New Mexico. Proc. Acad. Nat. Sci. Philadelphia, 53: 568-597.

Banks, N. 1901c. Some spiders and other Arachnida from southern Arizona. Proc. United States Natl. Mus., 23: 581-590.

Chamberlin, R. V. 1925. Expedition of the California Academy of Sciences to the Gulf of California in 1921, the Phalangidae. Proc. California Acad. Sci., 4th Ser., 14(9): 171-173.

Comstock, J. H. 1948. (revised and edited by W. J. Gertsch). The spider book. Cornell University Press. Ithaca, New York, 795 p.

Goodnight, C. J. and M. L. Goodnight. 1942. New and little known Phalangida from Mexico. Amer. Mus. Novit., No. 1163, 16 p.

Goodnight, C. J. and M. L. Goodnight.1946. Additional studies on the phalangid fauna of Mexico. 1. Amer. Mus. Novit., No. 1310, 17 p.

Katayama, R. W. and R. L. Post. 1974. Phalangida of North Dakota. North Dakota Insects, No. 9, 40 p.

Milstead, W. W. 1958. A list of the arthropods found in the stomachs of whiptail lizards from four stations in southwestern Texas. Texas J. Sci., 10(4): 443-446.

Roewer, C. F. 1910. Revision der Opiliones Plagiostethi (= Opiliones Palpatores). 1. Teil: Familie der Phalangiidae (Subfamilien Gagrellini, Liobunini, Leptobunini). Abhandl. Naturwiss. Ver. Hamburg, 19(4): 1-294.

Roewer, C. F. 1923. Die Weberknechte der Erde, Systematische Bearbeitung der bisher bekannten Opiliones. Gustav Fischer, Jena, 1116 p.

Roewer, C. F. 1957. Über Oligolophinae, Caddoinae, Sclerosomatinae, Leiobunianae, Neopilioninae and Leptobuninae (Phalangiidae, Opiliones, Palpatores). Senckenberg. Biol., 38: 323-358.

Rowland, J. M. and J. R. Reddell. 1976. Annotated checklist of the arachnid fauna of Texas (excluding Acarida and Araneida). Occ. Pap. Mus. Texas Tech Univ. No. 38, 25 p.

Scheffer, T. H. 1906. Additions to the list of Kansas Archnida. Trans. Kansas Acad. Sci., 20: 121-130.
Underwood, L. M. 1885. A preliminary list of the Arthogastra of North America (excluding Mexico). Canadian Entomol., 17(Phalangiinae): 167-169.
Weed, C. M. 1889. A partial bibliography of the Phalangiinae of North America. Bull. Illinois State Lab. Nat. Hist., 3: 99-106.
Weed, C. M. 1890. The harvest spiders of North America. Amer. Nat., 24: 914-918.
Weed, C. M. 1892a. Notes on harvest-spiders. Amer. Nat., 26: 528-530.
Weed, C. M. 1892b. New or little-know North-American harvest spiders. Trans. Amer. Entomol. Soc., 19: 187-194.
Weed, C. M. 1893. A synopsis of the harvest spiders (Phalangiidae) of South Dakota. Trans. Amer. Entomol. Soc., 20: 285-292.
Wood, H. C. 1871. On the Phalangeae of the United States of America. Comm. Essex Institute, 6: 10-40.

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