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NEW SPECIES AND NEW RECORDS OF CHIGGERS
(ACARINA : TROMBICULIDAE) FROM TEXAS

BY

Richard B. LOOMIS and D. A. CROSSLEY, Jr.

For the past several years, the authors have received and studied chiggers from Texas. Some of these chiggers have been reported in earlier publications, whereas others, including the three new species, are reported here for the first time.

We wish to express our appreciation to the following people for providing us with specimens of chiggers: Dr. Richard B. EADS, U. S. Public Health Service, U. S. Quarantine Station, Brownsville, Texas; Dr. John S. WISEMAN, Texas Department of Health, Austin; Dr. Russell W. STRANDTMANN, Texas Technological College, Lubbock; and Dr. James M. BRENNAN, Rocky Mountain Laboratory, Hamilton, Montana. Dr. BRENNAN also graciously supplied us with additional records, all from Cameron County, based upon specimens sent to him by Dr. EADS. Those specimens identified by Dr. BRENNAN, but not seen by us, are listed under records and additional records. Mr. Julius GEEST of Long Beach State College illustrated the new species.

Field work and preliminary studies by one of us (RBL) were supported in part by the Research Grant E-547 between the University of Kansas Medical Center and the National Institutes of Health under the direction of Dr. J. K. FRENKEL. The study was completed under the Research Grant E-3407 from the National Institutes of Health to Long Beach State College.

ACCOUNTS OF THE SPECIES.

The specimens listed below are larvae. The numbers of larvae and the collections in which they are deposited are indicated in parentheses. All measurements are in microns. The terminology usually follows WHARTON, et al (1951). The

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localities in Texas are listed alphabetically by county. The reader is referred to the key to chigger species in North America (BRENNAN and JONES, 1959).

Specimens, including paratypes, of most species are in or will be distributed to the following collections: University of Kansas (KU); Texas Department of Health; Rocky Mountain Laboratory (RML); United States National Museum; Russell W. STRANDTMANN (RWS); Richard B. LOOMIS (RBL) and D. A. CROSSLEY, Jr. (DAC).

**Euschoengastia eadsi** 1 new species.

(Figure 1).

*Types.* — Holotype in the Snow Entomological Museum (KU), from Camp Bullis, 18 mi. NNW San Antonio, Bexar Co., Texas, taken from *Lepus californicus* Gray, (Blacktailed Jackrabbit), Field Number RL540424–1, shot by Richard B. LOOMIS and John S. WISEMAN, on April 24, 1954. One paratopotype (RBL) same locality and collectors, host *Sylvilagus auduboni* (Baird) April 25, 1954; and seven paratypes from Camp Bullis, Bexar Co., Texas, from *Sylvilagus auduboni*, March 2, 1954.

*Diagnosis.* — *Euschoengastia, sensu lato,* with tibiala III present; palpal tarsus with 4 branched setae; palpal setal formula B/N/NNN; no mastisetae; differing from all other known North American species of *Euschoengastia* in the shape of scutum, and sternal setae 2–2–2.

*Description of holotype.* — Body: Engorged 600 by 340, widest point at "shoulders" near coxae II; color in life whitish, eyes 2/2 red in life, ocular plate indistinct.

Dorsal setal formula 2–6–6–8–8–4–4, total 46; humeral seta measuring 37, setae of first posthumeral row, inner 28, outer 45, posterior dorsal seta 36.

Ventral setal formula 2–2–2 (sternal) + approximately 40 (preanal) + approximately 16 (postanal), total approximately 62; first sternal seta measuring 30, posterior ventral seta 26. Total body setae approximately 108.

Scutum: Shape roughly square, with PL setal bases slightly flared out; AL and PL setal bases at apices, AM setal base in slightly from margin, below AL. Many fine distinct puncta over plate, short raised brows over SB. Sensilla expanded, with a long stem and few setules. Sensillary bases approximately equidistant between AL and PL (see figure 1 A).


Gnathosoma: Cheliceral blade short, wide and flattened, curved with a prominent dorsal tricuspid cap and a conspicuous ventral flap; cheliceral base and

1. Named for Dr. Richard B. EADS, formerly chief Entomologist, Texas Department of Health, in recognition of his studies of mites and for making this and other species available to us for study.
capitular sternum punctate. Galeal seta nude. Palpal setal formula B/N (1 Br.)/NNN; palpal thumb with 4 branched setae and tarsala (7 microns); palpal claw trifurcate.

Legs (specialized setae as follows); Leg I with 2 genulae, microgenuala, 2 tibialae, microtibiala, tarsala (16 microns), microtarsala, long stout subterminala, small parasubterminala and pretarsala; leg II with genuala, 2 tibialae, tarsala (18 microns), microtarsala and pretarsala; leg III with genuala, and tibiala (no mastisetae

Fig. 1. — *Euschoengastia eadsi* new species.

A. Scutum and eyes. — B. Palpal tarsus and palpal claw. — C. Leg I showing nude setae (numbers refer to measurements in microns). — D. Leg II showing nude setae. — E. Leg III showing nude setae.
present). Leg segments punctate, and each leg terminating in claws and clawlike empodium (see figures 1 C, D and E).

Ecology. — This species was discovered in a lot of chiggers sent to the University of Kansas by Dr. Eads. Later in 1954, one of us (RBL) collected in the same general locality (Camp Bullis) from which the original series was recovered. Of 13 Jackrabbits (Lepus) examined for chiggers, only a single larva was recovered from the ear, and only one larva was found in the ear of the single cottontail (Sylvilagus). Judging from the scarcity of larvae and their engorged condition, late April seems to be the end of the larval season. This would imply that they are “winter” chiggers.

Trombicula breviseta new species.
(Figure 2).

Types. — Holotype and 9 paratypes in Snow Entomological Museum (KU), from Peromyscus eremicus (Baird) (Cactus Mouse) trapped in the Black Gap Wildlife Area, 50 mi. SSE Marathon, Brewster Co., Texas, on June 19, 1951, by E. T. Ashworth.

Diagnosis. — Related to Trombicula arenicola Loomis, T. montanensis Brennan, T. allredi Brennan and Beck and T. doremi Brennan and Beck. Distinctive features include oval-shaped scutum, with AL’s and PL’s short and plumose; sensilla with numerous short branches on tip; dorsal setae short, expanded, with numerous branches; humeral setae not distinctly separated from first dorsal row of approximately 14 setae.

Description of holotype. — Body: Partly engorged 414 by 276, color in life probably yellow, eyes 2/2, red in life, ocular plate distinct; humeral setae not separated distinctly from first dorsal setal row, and posterior dorsal setal formula indistinct, no humerals and approximately 14 setae in first row, total approximately 94, anterior and posterior dorsal setae measuring 14 and 17, respectively. Ventral setal formula 2–2 + 30 (preanal) + 14 (postanal), total 38; first sternal and posterior ventral setae measuring 33 and 17, respectively.

Scutum: Shape roughly oval, wider than long; scutal setae near margin of plate; puncta small and dispersed; AM longer than either AL or PL; AL and PL setae short, expanded with many setules; sensilla flagelliform with many branches on tip; sensillary bases equidistant between AL and PL.


Gnathosoma: Cheliceral blade long and slender, slightly curved with a prominent dorsal tricuspid cap. Galeal seta plumose. Capitular sternum punctate. Palpal setal formula B/B/NNB; palpal thumb with 7 branched setae and tarsala (8 microns); palpal claw trifurcate.

Legs (specialized setae as follows): Leg I with 3 genualae, microgenuala, 2 tibia-
lae, microtibiala, tarsala (21 microns), microtarsala, subterminala, parasubterminala and pretarsala; leg II with genuala, 2 tibialae, tarsala (15 microns), microtarsala and pretarsala; Leg III with genuala, tibiala, and 2 mastitarsalae with basal barbs. Leg segments punctate and each leg terminating in claws and clawlike empodium.

**Fig. 2.** *Trombicula breviseta* new species.
A. Scutum and eyes. — B. Palpal tarsus and claw. — C. Posterior dorsal seta. — D. Leg I showing nude setae. — E. Leg II showing nude setae. — F. Leg III showing nude setae, and one branched seta.
Remarks. — The single larva from Nuevo Leon has slight differences in the shape of the body setae.

Specimens examined. — Total 11, as follows: BREWSTER Co.: Type series (10). MEXICO. Nuevo Leon: 5 mi. N, 3 mi. W La Gloria, 500, Perognathus merriami, 12 June 1952 (1).

Trombicula texana new species.

(Figure 3).

Types. — Holotype and 11 paratypes (RWS) from Frio Cave, Uvalde County, Texas, from Mormoops megalophylla senicula Peters, (Leaf-chinned Bat) taken 22 January 1956, by D. K. JAMESON. The holotype will be deposited in the United States National Museum.

Diagnosis. — Larva similar to Trombicula macrozota Brennan and Jones, in having two long branches on sensilla, setae of legs with few long branches, and number and position of nude setae on legs. Differing in shape of scutum, (posterior margin rounded in macrozota), dorsal setal formula 2–8–8 (2–6–6 in macrozota), eyes 2/2 (absent in macrozota).

Description of holotype (variations in paratypes listed in parentheses). — Body: Engorged 288 by 216, color in life unknown, eyes 2/2, large, 22 microns across both lenses, ocular plate indistinct.

Dorsal setal formula 2–8–8–8–8–8–4, total 46; humeral seta measuring 52, seta of first posthumeral row 40.

Ventral setal formula 2–2 + 12 + 12 + approximately 16, first sternal seta measuring 34, posterior ventral seta 34. Total body setae approximately 90.

Scutum: Shape rectangular, with posterior projection (see figure 3 A). Scutal setae adjacent to margin, scutum strongly punctate. Sensilla flagelliform with two branches near tip. Scutal measurements of holotype (and one paratype); AW–82 (79), PW–97 (89), SB–24 (26), ASB–38 (38), PSB–27 (26), AP–42 (41), AM–46 (broken), AL–46 (41), PL–57 (59), S–72 (56 +, tips broken).

Gnathosoma: Cheliceral blade large, with tricuspid cap; cheliceral base and capitular sternum punctate. Galeal seta nude. Palpal setal formula B/B/NNN; palpal thumb with 6 branched setae, 1 nude seta (15), subterminala (8), and tarsala (13 microns) ; palpal claw trifurcate (see figure 3 B).

Legs (specialized setae as follows): Leg I with 3 genualae, microgenuala, 2 tibia-lae, microtibiala, tarsala (30 microns), microtarsala, subterminala, parasternala and pretarsala; leg II with genuala, 2 tibia-lae, tarsala (18 microns), micro-tarsala, and pretarsala; leg III with genuala and tibiala. All nude setae long. Branched setae of legs with few long branches. Leg segments punctate and each leg terminating in claws and clawlike empodium.

Remarks. — This species seems to be closely related to Trombicula macrozota Brennan and Jones (1960: 518) which has been recovered in Trinidad from the same
Fig. 3. — Trombicula texana new species.

A. Scutum. — B. Palpal tarsus and palpal claw. — C. Leg I showing nude setae and typical branched setae. — D. Leg II showing nude setae. — E. Leg III showing nude setae.
host species. This chigger was in the same lot with *Trombicula tibbettsi* Brennan and White, to which it bears a superficial resemblance in the shape of the scutum.

**Eutrombicula alfreddugesi** (Oudemans).


*Additional records.* — Total 76, as follows: CAMERON Co.: *Cnemidophorus sacki*, 21 April 1961 (5); *Neotoma micropus*, 7 and 18 June 1960 (21), 10 July 1960 (24); *Peromyscus leucopus*, 20 July 1961 (1); *Phrynosoma cornutum*, 19 April 1961 (5), 3 May 1961 (5); *Sceloporus olivaceus*, 18 April 1961 (5); *Sigmodon hispidus*, 27 May 1960 (6), 3 June 1960 (4).

The common pest chigger is widely distributed throughout Texas. It has been taken frequently on reptiles.

**Leptotrombidium panamensis** (Ewing).

*Specimens examined.* — Total 2, as follows: BREWSTER Co.: *Dipodomys merriami*, 24 February 1958 (2, DAC).


These are the first specimens of this species to be reported from Texas. The species *Leptotrombidium potosina* (Hoffmann) is considered as a synonym of *L. panamensis* as suggested by BRENNAN and JONES (1959: 9), and supported by BRENNAN (1962, *in lit.*).

**Microtrombicula crossleyi** (Loomis).

*Specimens examined.* — Total 2, as follows: CAMERON Co.: Noriega Refuge, *Peromyscus leucopus*, 19 July 1960 (1, RML) and 24 March 1961 (1, RML).

These two larvae, the first to be reported from Texas, are typical of the species. Scutal measurements (one larva) are: AW-36, PW-47, SB-13, ASB-20, PSB-21, AP-21, AM-21, AL-18, PL-26, S-34. There are 4, 5, 5 and 6 branched setae on coxae III of the two specimens.
Neotrombicula whartoni (Ewing).

Specimens examined. — Total 28, as follows: BEXAR Co.: (18, KU); Camp Bullis, Lepus californicus, 22 Dec. 1953 (7, KU). CASS Co.: 10 mi. N Queen City, Sigmodon hispidus, 11 Dec. 1954 (3, RBL).

These are the first specimens of this genus and species to be reported from the State.

Trombicula gurneyi Ewing


Trombicula montanensis Brennan.

Specimens examined. — Total 29, as follows: BEXAR Co.: Fort Sam Houston, Citellus mexicanus, Summer, 1951 (27, RML); Citellus mexicanus, 30 June 1947 (1, RWS). PRESIDIO Co.: host unknown, 22 July 1947 (1, RWS).

The series of larvae from Bexar County represent a range extension of 300 miles to the south and east from the previous Texas report (Terry Co.; LOOMIS, 1956: 1307).

Trombicula tibbettsi Brennan and White.

Specimens examined. — Total 8, as follows: UVALDE Co.: Frio Cave, Mormoops megalophylla, 22 Jan. 1956 (8, RWS).

This species was taken with Trombicula texana, new species and was reported by JAMESON (1959: 62) without specific determination.

Speleocola tadaridae Lipovsky.

Specimens examined. — Total 15, as follows: BEXAR Co.: Fort Sam Houston, San Antonio, Tardarida braziliensis mexicana, 4 May 1954 (15, RBL).

These chiggers were taken from the ears of a lot of 45 preserved bats, received from J. S. WISEMAN, which were recovered from a building at Fort Sam Houston.

Euschoengastia bigenuala Farrell.

Records. — Total 2, as follows: CAMERON Co.: Liomys rroratus, 31 July 1961 (2, RML).

This is the second report of occurrence for this species, which was originally described from a single larva from Galveston, Texas (FARRELL, 1956: 128-9).
Euschoengastia lacerta Brennan.

Specimens examined. — Total 2, as follows: BREWSTER Co.: 3 mi. E Panther Junction, Perognathus penicillatus, 18 Nov. 1957 (2, DAC).

Additional record. — Total 1, as follows: CAMERON Co.: Liomys irroratus, 31 July 1961 (1).

Euschoengastoides hoplai (Loomis).

Specimen examined. — Total 1, as follows: BREWSTER Co.: Big Bend Nat. Park, Panther Junction, Perognathus merriami, 25 Sept. 1957 (1, DAC).

This specimen, which seems typical of this species although it lacks the sensillae, represents a range extension of approximately 350 miles to the southwest of the previous state record from Wichita County (LOOMIS, 1956 : 1305).

Euschoengastoides loomisi (Crossley & Lipovsky).

Specimens examined. — Total 8, as follows: ARCHER Co.: 5 mi. S Archer City, Perognathus hispidus, 5 July 1953 (8, KU).

Additional records. — Total 45, as follows: CAMERON Co.: Citellus mexicanus, 12 July 1961 (5); Liomys irroratus, 14 June 1960 (3), 19 July 1960 (5), 31 July 1961 (1); Neotoma micropus, 7 June 1960 (9); Peromyscus leucopus, 19 July 1960 (7), 11 Aug. 1960 (2), 9 June 1961 (5); Sigmodon hispidus, 27 May 1960 (2) and 3 June 1960 (6).

Neoschoengastia americana (Hirst).

Specimens examined. — Total 65, as follows: BEXAR Co.: Camp Bullis, 7 July 1944, Lepus californicus (1, RML) and Sylvilagus sp. (1, RML). BREWSTER Co.: Oak Creek Canyon, Chisos Mts., Salpinctes obsoletus, 6 Oct. 1957 (21, DAC). CONCHO Co.: Eden, Cynomys ludovicianus, 13 June 1947 (1, RWS). DUVAL Co.: Eden, Geococcyx californianus, 5 August 1947 (1, RWS). KLEBERG Co.: Kingsville, Parabuteo unicinctus harrisi, 24 Nov. 1950 (1, RWS). SAN DIEGO Co.: 12 Sept. 1959 Amphispiza bilineata (2, RWS), Heleodytes brunneicapillus (10, RWS), Toxostoma curvirostre (6, RWS). WELLS Co.: Alice, 10-12 Sept. 1959, Chordeiles acutipennis (7, RWS), Geococcyx californianus (11, RWS) and Thryomanes bewickii (3, RWS).

Additional records. — Total 5, as follows: CAMERON Co.: Tyrrannus melancholicus, 27 July 1961 (5).

These specimens represent new distributional and host records.

Pseudoschoengastia audyi Brennan and Jones.

Records. — Total 2, as follows: CAMERON Co.: Peromyscus leucopus, 31 March 1961 (2).
This is the first report for Texas and the United States for this chigger. The nearest locality is in Mexico (Veracruz) as reported by Brennan (1960: 482).

**Pseudoschoengastia farneri** Lipovsky.


These represent the first specimens to be reported from Texas, although it is known from Oklahoma (Loomis, 1956: 1352).

**Pseudoschoengastia hungerfordi** Lipovsky.


**Odontacarus arizonensis** (Ewing).


**Odontacarus cayolargoensis** Brennan.


These specimens, the first to be reported from Texas, represent the second record of occurrence. The type locality is Key Largo, Florida and the type host is *Sigmodon hispidus* (Brennan; 1959: 2).

**Odontacarus galli** Ewing.


The type locality of this species is Uvalde, Uvalde Co., Texas, and the specimens listed above represent the only other specimens of this species known from Texas.
Odontacarus plumosus Greenberg.

Record. — Total 2, as follows: Cameron Co.: Peromyscus leucopus, 22 June 1961 (1); Brownsville, Liomys irroratus, 11 Oct. 1960 (1).

This is the first report of O. plumosus from Texas, and extends the range nearly 800 miles southward from the type locality in southcentral Kansas.

Whartonia whartoni Hoffmann.


Additional record. — Total 1, as follows: Cameron Co.: Boca Chica, Neotoma micropus, 19 July 1960 (1).

These are the first records for Texas. Other published reports are from California (Gould, 1956: 21) and from the type locality in Matamoros, Puebla, Mexico (Hoffmann, 1951: 33).

Womersia strandtmani Wharton.

Specimens examined. — Total 2, as follows: Galveston Co.: Galveston, Sterna antillarum (= Sterna albifrons), 5 June 1946 (2, RWS).

These topotypic specimens were recovered from a Least Tern, a new host record.

Abstract.

Three new species of chiggers are described from Texas: Euschoengastia eadsi from rabbits, Trombicula breviseta from a mouse, Peromyscus eremicus (also from Mexico) and Trombicula texana from the bat Mormoops megalophylla. Additional records for 22 additional species of chiggers from reptiles, birds and mammals, include new state records for the following species: Leptotrombidium panamensis, Microtrombicula crossleyi, Neotrombicula whartoni, Odontacarus cayolargoensis, Odontacarus plumosus, Pseudoschoengastia audyi (also the first record for the United States), Pseudoschoengastia farneri and Whartonia whartoni.

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