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CAVE SPIDERS (ARANEAE) OF FORT HOOD, TEXAS, WITH DESCRIPTIONS OF NEW SPECIES OF *CICURINA* (DICTYNIDAE) AND *NEOLEPTONETA* (LEPTONETIDAE)

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ABSTRACT

All records are included for all spiders known from 85 caves and sinks on Fort Hood, Bell and Coryell Counties, Texas. The fauna includes at least 45 species, including four troglobites: *Cicurina* (*Cicurella*) *coryelli* Gertsch, *C.* (*C.*) *caliga* new species, *C.* (*C.*) *hoodensis* new species, and *C.* (*C.*) *mixmaster* new species. The first authenticated occurrence of two troglobitic *Cicurina* spp. in the same cave is reported. *Neoleptoneta paraconcinna* new species is also described and is probably cave-restricted.

INTRODUCTION

The Fort Hood Military Reservation is a large military base located in central (Bell and Coryell Counties) Texas. It is the U. S. Army's largest tactical armor training base and contains about 217,000 acres of land, much of which is underlain by the Edwards Limestone of Cretaceous Age. This geological formation is highly soluble and contains caves in many parts of Texas. Physiographically, Fort Hood is located in the Lampasas Cut Plains, an area of limestone-capped mesas separated from each other by streams and lakes. On Fort Hood, two significant streams, Cowhouse Creek to the south and Owl Creek to the north, have dissected the area. In addition, other limestone-capped mesas have been isolated by erosion associated with downcutting of smaller streams. This has allowed isolation and speciation to occur in different areas of Fort Hood.

David McKenzie and James Reddell made the first collections of spiders on Fort Hood in 1963 and 1964. At that time, they visited Nolan Creek Cave, Shell Mountain Bat Cave, and Tippit Cave. A single immature

blind spider of the genus *Cicurina* was found in Tippit Cave. David McKenzie, James Reddell, and Marcelino Reyes made the first return trip to Fort Hood in 1990 and 1991, collecting in several caves. Adult blind *Cicurina* were obtained from Tippit Cave, and Gertsch (1992) described the species as *Cicurina* (*Cicurella*) *coryelli*. In 1992, an active program of study of the caves and cave fauna of Fort Hood was initiated with funding provided by the U.S. Army Construction and Engineering Research Laboratory. This program continues to the present and has resulted in the accumulation of an extensive collection of spiders from 85 caves and sinks in all parts of Fort Hood.

At least 45 species of spider are presently recorded from the caves of Fort Hood. These include accidentals (species fallen or washed into caves), threshold troglophiles (species usually hanging in webs or found in leaf litter in the twilight zone just inside of entrances), dark-zone troglophiles (species showing no special adaptations to the cave environment but capable of reproducing in the cave), and troglobites (species restricted to the cave environment and exhibiting such morphological adaptations as loss or reduction of eyes and pigment and elongation of appendages).

The species of greatest interest to the study of cave fauna are the troglobitic species. Four species of unquestioned troglobitic spiders are presently known from Fort Hood, all belonging in *Cicurina* (*Cicurella*). This is an extremely speciose group with 51 species having been described from caves in Texas; of which 46 are true eyeless troglobites (Gertsch, 1992). Additional undescribed species have been discovered since 1992 and the number is expected to increase considerably as new cavernous areas of the state are studied. A possible fourth troglobite encountered is a *Neoleptoneta* sp. with reduced eyes and pigment.

MATERIALS AND METHODS

Unless indicated otherwise, all specimens are deposited in the collection of the Texas Memorial Museum (TMM). Other collections are: AMNH (American Museum of Natural History), JCC (J. Cokendolpher Collection). With the exception of a few specimens studied earlier by Dr. W. J. Gertsch, Cokendolpher has identified all material.

ACKNOWLEDGMENTS

We are especially grateful to the following personnel at Fort Hood for their support throughout the process of studies on Fort Hood: Tim Buchanan, John Cornelius, Dennis Herbert, and B. R. Jones. B. R. Jones has been especially helpful in locating caves and assisting in access to artillery impact zones.

We are particularly grateful to Marcelino Reyes for his help in all aspects of fieldwork on Fort Hood; his collecting skills have been instrumental in obtaining much of the material upon which this report is based. While it may not be apparent to those that have not gone underground, it does take 3-4 people sometimes to access the deeper regions of a cave to catch a single tiny spider. Cave spider collecting is a team effort and we also thank the following cave explorers for their assistance in studying the caves and cave biology of Fort Hood: Doug Allen, Eddie Boyd, Lee Jay Graves, Jim Killian, Jean Krejca, Dan Love, David McKenzie, Rodney Price, Charley Savvas, Peter Sprouse, and Mike Warton.

Don Buckle (Saskatoon, Saskatchewan) kindly provided identifications or verifications of some of the linyphiids. His invaluable help is greatly appreciated.

The U. S. Army Construction and Engineering Research Laboratory provided funding. The Nature Conservancy is thanked for managing the 1997-1998 contracts.

Norman I. Platnick (American Museum of Natural History, New York) and Darrell Ubick (California Academy of Sciences, San Francisco) are thanked for their reviews of the manuscript.

LIST OF SPECIES

Agelenidae

Agelenopsis sp.

Record.—*Bell County*: West Corral Sink, 3 May 2000 (J. Reddell, M. Reyes, M. Warton), 1 immature.

Comment.—This is an accidental. Because of the immature state it cannot be identified further.

Agelenopsis sp. prob. *aperta* (Gertsch)

Records.—*Bell County*: Hidden Chasm Cave, 18 May 1999 (J. Reddell), 1 immature; Skeeter Cave, 18 May 1999 (L.J. Graves, J. Reddell, M. Reyes), 1 immature.

Comment.—This is an accidental. Because of their immature state, these cannot be identified for certain.

Agelenopsis aperta (Gertsch)

Record.—*Bell County*: Rock Ring Sink, 13 May 1999 (J. Reddell), 1 male, 1 penultimate male.

Comment.—This is an accidental.

Anyphaenidae

Anyphaena sp.

Record.—*Bell County*: Septum Pit Cave, Oct. 1995 (M. Warton & Associates), 1 immature.

Comments.—This is an accidental found at the bottom of the cave entrance. Because of its immature state, it cannot be identified further.

Araneidae

Undetermined genus and species

Record.—*Bell County*: Fools Cave, 1 April 1999 (J. Reddell, M. Reyes), 1 immature; L.Z. Sid Sink, 3 May 2000 (J. Reddell, M. Reyes), 1 immature.

Comment.—These specimens are too immature for further identification.

Argiope aurantia Lucas

Argiope aurantia: Reddell, 1965:170.

Records.—*Bell County*: Medusa Cave, 18 Sept. 1997 (J. Reddell, M. Reyes), 1 female; Road Side Sink, 3 Nov. 1998 (J. Reddell); Seven Cave, 18 Sept. 1997 (J. Reddell).

Coryell County: Brokeback Cave, 16 Aug. 1964 (D. McKenzie, J. Reddell), 1 female (det. W.J. Gertsch) (AMNH) (Reddell, 1965); Mixmaster Cave, 9 Sept. 1997 (J. Reddell.

Comments.—The records for Road Side Sink, Seven Cave, and Mixmaster Cave are based on sight records of specimens resting in webs inside the entrance. This is a large colorful species that is easily recognized.

Hypsosinga singaeformis (Scheffer)

Record.—*Bell County*: Canyon Side Sink, 6 June 2000 (J. Reddell, M. Reyes), 1 male.

Comment.—This is an accidental.

Mangora sp.

Record.—*Coryell County*: Mixmaster Cave, 9 Sept. 1997 (L.J. Graves, D. McKenzie, J. Reddell, M. Reyes), 1 immature.

Comments.—This accidental is too immature for further identification. It was found at the bottom of the entrance drop.

Clubionidae

Undetermined genus and species

Record.—*Coryell County*: Plateau Cave No. 1, 23 March 1990 (J. Reddell, M. Reyes), 2 immatures (det. W.J. Gertsch) (AMNH).

Comments.—We have not seen this material. It may actually belong to the Corinnidae or Liocranidae.

Dictynidae

Cicurina (*Cicurella*) spp.

Cicurina spp.: Reddell, 1965:168.

Records.—*Bell County*: Buchanan Cave, 7 May 1998 (L.J. Graves, J. Reddell, M. Reyes), 3 immatures; 8 Nov. 1995 (D. Allen), 4 immatures; upper level, 13 June 2000 (J. Reddell, M. Reyes), 1 immature; Fellers Cave, 6 May 1998 (L.J. Graves, J. Reddell, M. Reyes), 3 immatures; Figure 8 Cave, 9 Feb. 1996 (M. Warton), 1 immature; Lucky Rock Cave, 22 Feb. 1996 (D. Allen, L.J. Graves, D. Love), 1 immature; 10 Sept. 1997 (L.J. Graves, J. Reddell, M. Reyes), 1 immature; 25 March 1999 (L.J. Graves, J. Reddell, M. Reyes), 1 immature; Owl Mountain Cave, 28 May 2000 (J. Reddell, M. Reyes), 2 immatures; 27 June 2000 (J. Reddell, M. Reyes), 1 immature; Peep in the Deep Cave, 8 May 1998 (J. Reddell, M. Reyes), 1 immature; 3 Nov. 1998 (J. Cokendolpher, J. Reddell), 2 immatures; Rugger's Rift Cave, 13 June 2000 (J. Reddell, M. Reyes), 1 damaged immature; Sanford Pit Cave, bottom of pit, 4 Nov. 1998 (J. Krejca), 1 immature; Seven Mile Mountain Cave, 11 April 1999 (R. Price, M. Warton), 1 immature; 28 June 2000 (J. Reddell, M. Reyes), 1 ?immature (abdomen missing); Streak Cave, 6 Oct. 1995 (M. Warton), 1 immature; 26 Sept. 1997 (L.J. Graves, J. Reddell, M. Reyes), 3 immatures; Treasure Cave, 21 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 immature; Triple J Cave, 23 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 2 immatures; 14 June 2000 (J. Krejca, J. Reddell, M. Reyes, P. Sprouse), 1 immature; Valentine Cave, 14 Feb. 1996 (M. Warton), 1 immature.

Coryell County: Big Red Cave, 30 April 1998 (J. Reddell, M. Reyes), 7 immatures; Egypt Cave, 13 Jan. 1992 (D. McKenzie, J. Reddell, M. Reyes), 1 immature; 23 Nov. 1994 (M. Warton), 1 immature; Mixmaster Cave, 9 Sept. 1998 (L.J. Graves, J. Reddell, M. Reyes), 3 immatures; 5 Nov. 1998 (J. Cokendolpher, J. Krejca, J. Reddell, M. Reyes), 4 immatures; Rocket River Cave System (Rocket River Cave), 16 Jan. 1992 (L.J. Graves,

Key to *Cicurina* from Caves on Fort Hood

1. With 8 well developed eyes.....*Cicurina* (*Cicurusta*) *varians*
   Without any trace of eyes.....*Cicurina* (*Cicurella*) spp. 2

2. Copulatory duct extending to anterior edge of spermathecal body (Figs. 1, 8, 10).....3
   Copulatory duct crossing over midline of spermathecae (Fig. 4).....*C. coryelli*

3. Index coil of copulatory duct at 90° to axis of spermatheca (Figs. 1, 4).....4
   Index coil of copulatory duct at 45° to axis of spermatheca (Fig. 8).....*C. mixmaster*

4. Index coil straight (Fig. 1).....*C. caliga*
   Index coil arched anteriorly (Fig. 10).....*C. hoodensis*

M. Warton, C. Savvas), 1 immature (det. W.J. Gertsch) (AMNH); 16 July 1993 (J. Reddell, M. Reyes), 1 immature; 27 Oct. 1994 (M. Warton), 3 immatures; Tippit Cave, 24 Jan. 1992 (D. McKenzie, J. Reddell, M. Reyes), 7 immatures; 31 Jan. 1992 (J. Reddell, M. Reyes), 2 immatures.

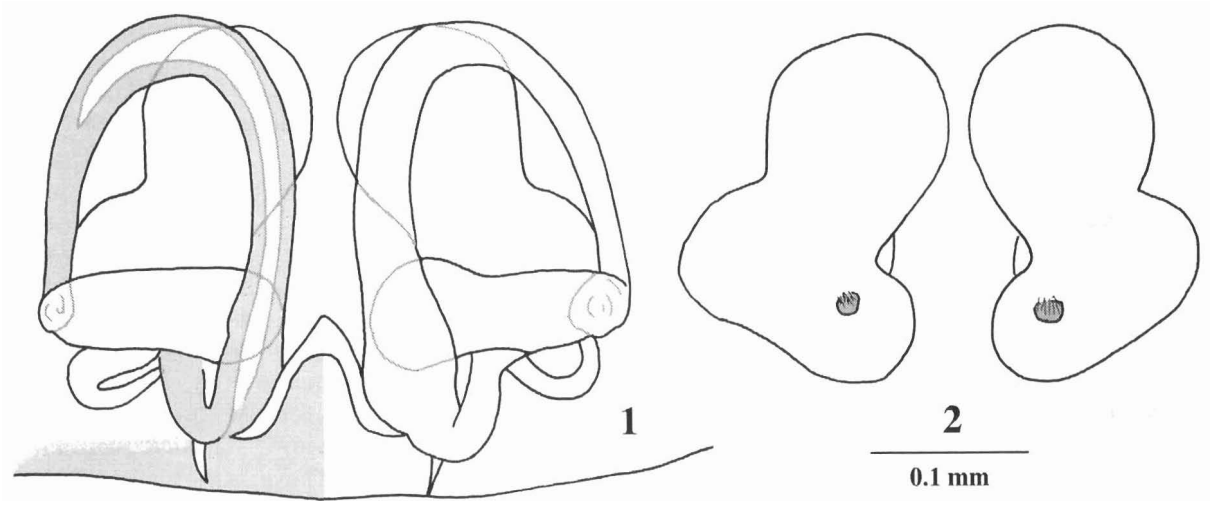
Comments.—These blind specimens cannot be further identified. Even immatures associated with adults cannot be identified because two eyeless spp. are recorded from the same caves (see below). All were taken in the dark zone of the caves. The immatures from Seven Mile Mountain Cave probably represent an undescribed species because this cave is geologically and geographically isolated from all other populations of eyeless *Cicurina* (Fig. 22).

Cicurina (*Cicurella*) *caliga* new species
Figs. 1-3A, 22

Diagnosis.—Eyeless troglobite from Triple J, Streak, and Buchanan Caves. Spermathecae with index coil of copulatory duct lying across posterior end of spermathecal base, not arched, straight; anterior-most arch of copulatory duct at anterior edge of spermathecal head.

The general morphology of the spermathecae resembles *C. hoodensis*, but the two can be easily separated by the index coil being straight in *C. caliga* and arched anteriorly in *C. hoodensis*.

Etymology.—Latin noun in apposition; referring to the boot shape of the spermathecae. Because the spider



Figs. 1-2.—Female holotype genitalia of *Cicurina caliga*, new species, from Triple J Cave: 1, ventral view with right copulatory duct shaded to show thick walls; 2, dorsal view of spermathecal lobes.

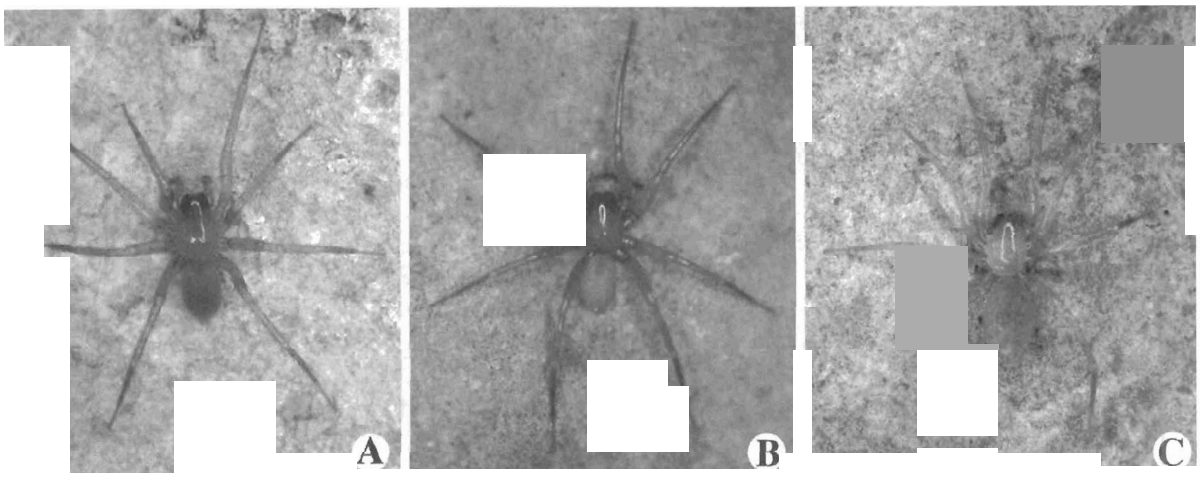


Fig. 3.—Female cicurinas: 3A, *Cicurina caliga* new species from Streak Cave; 3B, *Cicurina coryelli* Gertsch from Egypt Cave; 3C, *Cicurina hoodensis* new species from Buchanan Cave.

lives on an army base, we have specifically selected the noun for an army boot.

Type-data.—*Bell County*: Buchanan Cave, 5 May 1999 (J. Reddell, M. Reyes), 1 female paratype; Streak Cave, 13 June 2000 (J. Krejca, J. Reddell, M. Reyes, P. Sprouse), 1 female paratype; Triple J Cave, Nov. 1994 (M. Warton), female holotype (AMNH); 13 June 2000 (J. Krejca, J. Reddell, M. Reyes, P. Sprouse), 2 female paratypes; 14 June 2000 (J. Krejca, J. Reddell, M. Reyes, P. Sprouse), 1 female paratype (JCC).

Description (holotype followed by smallest and largest specimens in parentheses, see comments below).—Female creamy to straw-colored, troglobite, eyeless (Fig. 3A). Cephalothorax 2.1 (1.7, 3.0) mm long, 1.4 (1.15, 1.95) mm wide. Abdomen 2.25 (1.75, 3.0) mm long, 1.3 (1.05, 1.9) mm wide. Cheliceral retromargin with 6/7 (5/6, 7/7) teeth. Leg lengths: first femur 1.8 (1.45, 2.55) mm, fourth femur 1.9 (1.55, 2.9) mm; first patella-tibia 2.2 (1.8, 3.3) mm, fourth patella-tibia 2.3 (1.95, 3.5) mm. Ventral leg spines: first tibia 2-2-2 (2-2-0, 2-2-2), fourth tibia 1-2-2 (1-2-2, 2-2-2). Epigynum: spermathecae with index coil of copulatory duct lying across posterior end of spermathecal base, not arched, straight; anterior-most arch of copulatory duct at anterior edge of spermathecal head (Fig. 1); lateral end of index coil strongly bent dorsally with copulatory ducts looping dorsally lateral to spermathecae, then ventrally below spermathecae; spermathecae in dorsal view boot shaped, mesal and lateral sides of base approximately same width, with diaphanous ridge at mesal junction of two spermathecae (Fig. 2).

Distribution.—Known only from the eastern region of Fort Hood, Bell County, Texas (Fig. 22).

Comments.—Measuring the cephalothorax lengths (in mm) of all the specimens revealed the following variations: Buchanan Cave (3.0), Streak Cave (2.05), Triple J Cave (1.7, 1.7, 2.1, 2.52). The index coil of the copulatory duct is slightly arched (in ventral view) in the smallest specimen from Triple J Cave, but much less so than specimens of *Cicurina hoodensis* new species. The occurrences of this species with *C. hoodensis* in Buchanan and Triple J Caves are the first authenticated records of two troglobitic species of *Cicurina* being recorded from the same caves. Gertsch (1992) described *Cicurina reddelli* and *Cicurina elliotti* from Cotterell Cave in Travis County, Texas. Although we have not examined material from that cave, it seems unlikely that this is correct. Cotterell Cave is small and would not have provided sufficient habitat for two species to have evolved unless the ancestor of the second species arrived in the cave long after the first species was isolated and had started to evolve. This is not the case at Buchanan Cave. This is a large cave with a deep pit following a long entrance. Triple J Cave is also quite large. Using elongation of the legs versus cephalothorax length as a ratio (cephalothorax length/femur + patella + tibia I length) to rank the degree of troglomorphy resulted in the following data: *C. caliga* holotype 0.66, smallest paratype 0.52, largest paratype 0.55; *C. hoodensis* holotype 0.52, smallest paratype 0.54, largest paratype 0.54. Because a smaller number reveals relatively longer appendages, we can state that *C. hoodensis* is slightly more troglobitic and presumably has been isolated in the cave longer than *C. caliga*. While a single specimen of *C. caliga* was taken in the upper level of Buchanan Cave, this region as well as the lower sections of the cave are inhabited by *C. hoodensis*. There is only a single level to Triple J Cave and the positions of the two species within the cave

were not recorded (the species cannot be told apart outside of a laboratory, Fig. 3).

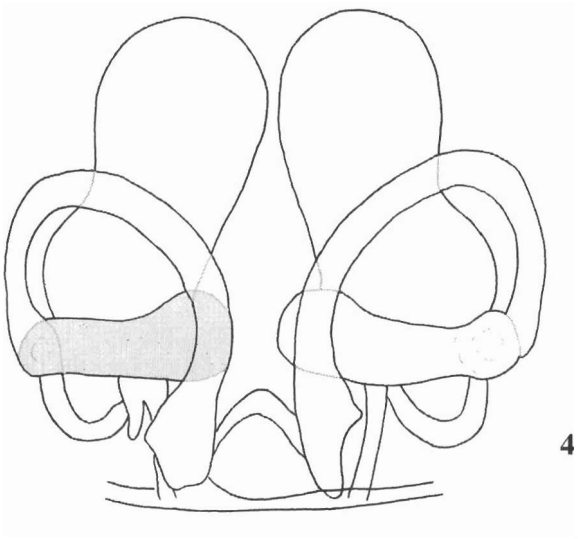
Cicurina (*Cicurella*) *coryelli* Gertsch
Figs. 3B, 4-7, 22

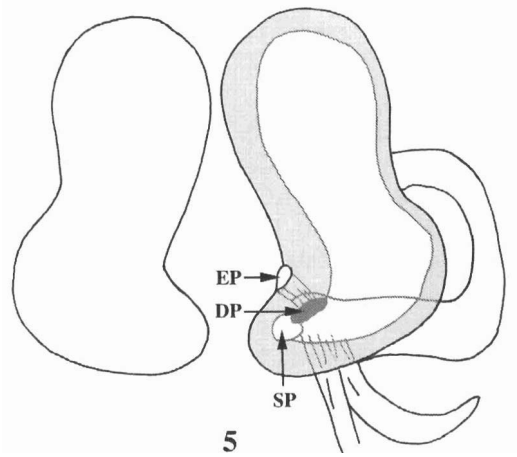
Cicurina (*Cicurella*) *coryelli* Gertsch, 1992:97, 102-103, figs. 71-72.

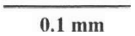
Diagnosis.—Eyeless troglobite from caves on Fort Hood. Spermathecae with index coil of copulatory duct lying across posterior end of spermathecal base, not arched, straight; anterior-most arch of copulatory duct at mid-point of spermathecum.

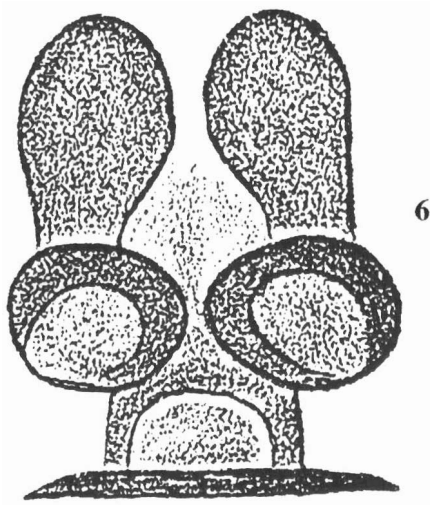
The general morphology and short copulatory duct of the spermathecae are like those of *C. mixmaster*. The two are easily separated by the position of the index coil of the copulatory duct: the coil in *C. coryelli* lies at the base of the spermathecal body; the coil of *C. mixmaster* crosses the spermathecae at the midline at 45° to axis of spermathecae.

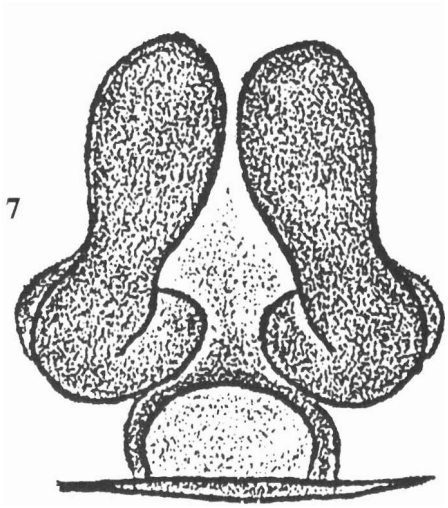
Material examined.—*Coryell County*: Tippit Cave, 24 Jan. 1992 (D. McKenzie, J. Reddell, M. Reyes), 2 females; 31 Jan. 1992 (J. Reddell, M. Reyes), female holotype (AMNH); 8 April 1999 (M. Reyes), 1 female;











Figs. 4-7.—Female genitalia of *Cicurina coryelli* Gertsch: ventral (4) and dorsal (5) views of female from Tippit Cave: DP = dictynoid pore, EP = external pore, SP = spermathecal pore, shading on dorsal views showing thick walls of spermathecae, shading on ventral views showing index coil of copulatory duct. 6-7, Copies of illustrations of female genitalia of *C. coryelli* from Tippit Cave (Gertsch, 1992: figs. 71, 72); 6, ventral view; 7, dorsal view. Scale is only approximate for Figs. 6-7.

Egypt Cave, 7 April 1999 (J. Reddell, M. Reyes), 1 female; Big Red Cave, 30 April 1998 (J. Reddell, M. Reyes), 1 female; 6 May 1999 (J. Reddell, M. Reyes), 2 females (JCC).

Description (holotype followed by smallest and largest specimens in parentheses, see comments below).—Female creamy to straw-colored, troglobite, eyeless (Fig. 3B). Cephalothorax 1.85 (1.6, 2.85) mm long, 1.2 (1.2, 2.0) mm wide. Abdomen damaged, reported as 3.0 (2.0, 3.1) mm long, 1.6 (1.2, 1.7) mm wide. Cheliceral retromargin with 6/6 (7/7, 8/9) teeth. Leg lengths: first femur 1.5 (1.4, 2.7) mm, fourth femur 1.7 (1.5, 2.7) mm; first patella-tibia 1.9 (1.1, 3.25) mm, fourth patella-tibia 1.9 (1.85, 3.5) mm. Ventral leg spines: first tibia 2-2-2 (2-2-2, 2-2-2), fourth tibia 1-2-2 (1-2-2, 2[posterior setae petite]-2-2). Epigynum: Spermathecae with index coil of copulatory duct lying across posterior end of spermathecal base (Fig. 4), not arched, straight; anterior-most arch of copulatory duct at mid-point of spermathecum; lateral end of index coil strongly bent dorsally with copulatory ducts looping dorsally lateral to spermathecae, then ventrally below spermathecae; spermathecal bodies in dorsal view with base broadest, with what appears to be a pore opening on external surface of spermathecae at mesal junction of two bodies (Fig. 5 EP), pore of copulatory duct opening (SP) on ventral surface next to dictynoid pore (DP).

Distribution—Known only from three caves on Fort Hood, Coryell County, Texas.

Comments.—Gertsch (1992) reported the ventral spines of the first tibia as 2-2-2. This is incorrect; the first pair is missing a spine on both sides. There seems to be some variation found in the other specimens. The second pair of spines on some is shifted apart (distal and proximally) so that it appears 2-1-1-2, others are normal. We do not place much value on this character and only present it here because Gertsch used it in his revision. The variation which we observed is: 1-1-1-2 (Tippit Cave); 1-2-2 (Tippit Cave; Big Red Cave- 2 specimens); 2 (posterior setae petite)-1-1-2 (Tippit Cave); 2 (posterior setae petite)-2-2 (Egypt Cave; Big Red Cave). Gertsch's measurements are also slightly different from ours, so we present our measurements above. Measuring the cephalothorax lengths (in mm) of all the specimens revealed the following variations: Tippit Cave (1.7, 1.8, 1.85, 2.25), Big Red Cave (2.1, 2.55, 2.6), Egypt Cave (2.85). The female genitalia of the holotype is badly crushed, to the point that many structures cannot be recognized. This may be the reason Gertsch's illustrations (copied here as Figs. 6, 7) bear little resemblance to the genitalia of this species. Further evidence that Gertsch illustrated the genitalia from a crushed specimen is the fact that he shows no copulatory ducts, but does so on all his other species in the same publication. We are able to locate the copulatory duct on the right side and it is definitely that of what we have interpreted as this species. The anterior loop is very short and is not near the anterior end of the spermathecal head. The index coil is evident on the right side and it does appear to be arched in the middle (somewhat resembling what we illustrate for *C. hoodensis*), but not as arched as Gertsch illustrated. We assume this arch is because the index coil is broken in 5 places throughout its length. The index coil and part of the duct from the left side are detached and held in the genitalia vial. This index coil is not greatly curved and therefore probably was not arched when attached to the spermathecal base. The duct is short, as on the right side. The spermathecal bulbs are too badly smashed to determine their shapes. It is not clear why Gertsch selected a holotype with crushed genitalia. He recorded two other females and upon examining them, we found that the genitalia had not been dissected for microscopic examination.

Cicurina (Cicurella) mixmaster new species
Figs. 8, 9, 22

Diagnosis.—Eyeless troglobite from Mixmaster Cave. Spermathecae with index coil of copulatory duct lying across midline of spermathecae, not arched, straight; anterior-most arch of copulatory duct at anterior-most edge of spermathecum. The general morphology and short copulatory duct of the spermathecae are like those of *C. coryelli*. The two are easily separated by the position of the index coil of the copulatory duct: the coil in *C. coryelli* lies at the base of the spermathecal body; the coil of *C. mixmaster* crosses the spermathecae at the midline at 45° to axis of spermathecae. See also below under comments.

Etymology.—Noun in apposition; referring to the type locality.

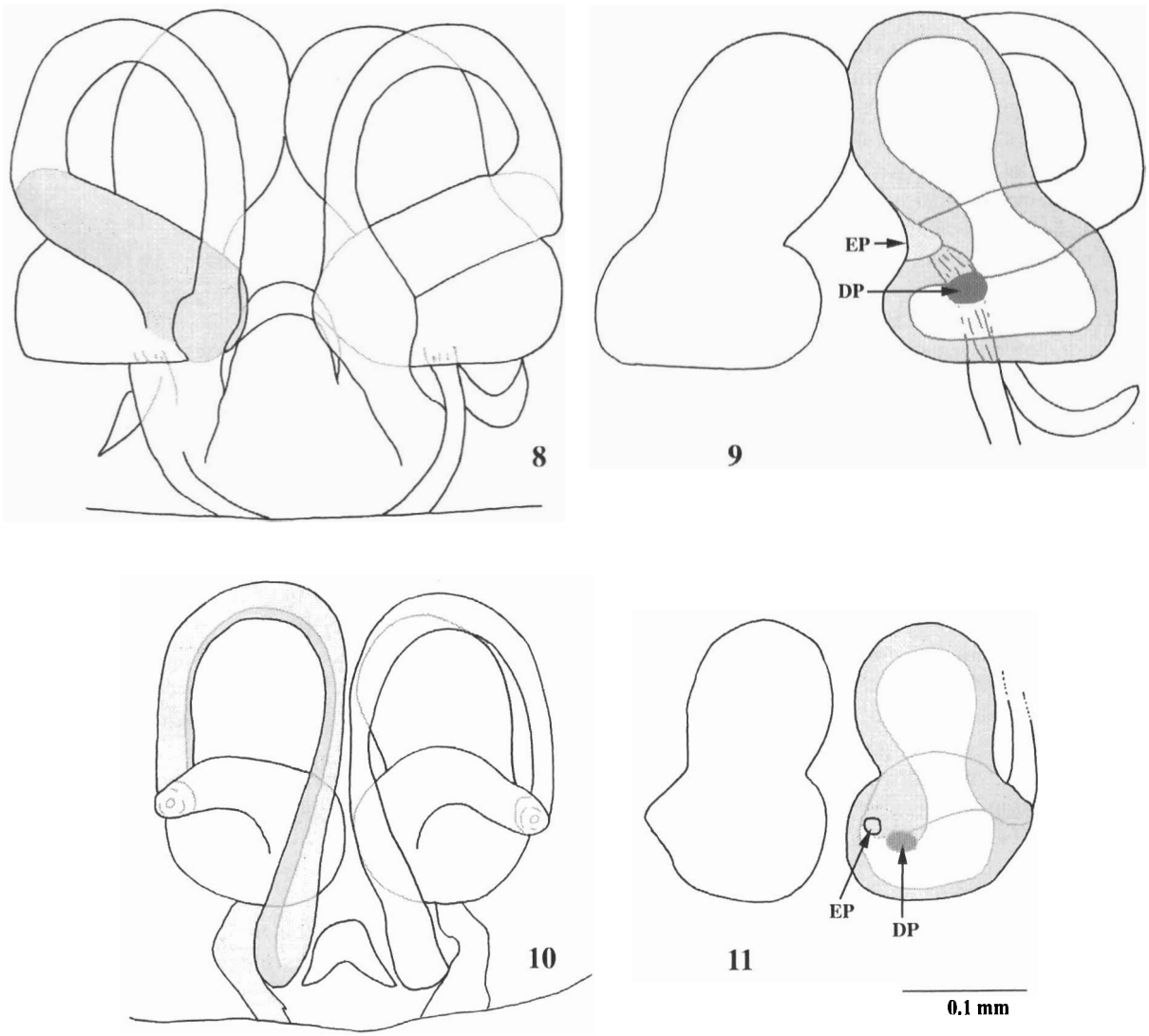
Type-data.—*Coryell County*: Mixmaster Cave, 5 Nov. 1998 (J. Cokendolpher, J. Krejca, J. Reddell, M. Reyes), female holotype (AMNH).

Description (holotype).—Female creamy to straw-colored, troglobite, eyeless. Cephalothorax 2.95 mm long, 1.95 mm wide. Abdomen 3.35 mm long, 2.4 mm wide. Cheliceral retromargin with 7/7 teeth. Leg lengths: first femur 2.6 mm, fourth femur 2.8 mm; first patella-tibia 3.35 mm, fourth patella-tibia 3.45 mm. Ventral leg spines: first tibia 2-2-2, fourth tibia 2-2-2. Epigynum: Spermathecae with index coil of copulatory duct lying across midline at about 45° angle to the epigastric furrow (Fig. 8, 9), not arched, straight; anterior-most arch of copulatory duct at anterior-most

edge of spermathecum; lateral end of index coil weakly bent dorsally with copulatory ducts looping dorsally lateral; spermathecal bodies in dorsal view with base broadest, with what appears to be pore opening on external surface of spermathecae at mesal junction of two bodies (Fig. 8 FP).

Distribution—Known only from Mixmaster Cave on Fort Hood, Coryell County, Texas.

Comments.— Because Mixmaster and Big Red Caves are within a mile of each other and there are no significant dispersal barriers between the two, we originally thought the single specimen from Mixmaster Cave was a member of *C. coryelli*. The Mixmaster Cave specimen differs from *C. coryelli* in four respects. First, the index coil is lifted laterally at approximately a 45° angle to the epigastric furrow (Fig. 8); making the anterior-most loop of the copulatory duct reach the anterior edge of the spermathecal head. One of the females of *C. coryelli* from Big Red Cave (JCC) also has the index coil lifted some but it appears the ducts are actually longer than those of the Mixmaster Cave specimen. Second, the spermathecae when viewed dorsally are touching anteriorly and widely separated at the base; the halves of the spermathecae are not in the typical "L" shape of *C. coryelli* but have the ends pulled together in more of a "<" shape (Fig. 9). Third, the pore opening upon the external face of the spermathecum of *C. coryelli* is placed inside of a small



Figs. 8-11.—8-9, female holotype genitalia of *Cicurina mixmaster* new species from Mixmaster Cave: 8, ventral view with shading to show index coil of copulatory duct; 9, dorsal view with left half shaded to show copulatory duct; 10-11, female holotype genitalia of *Cicurina hoodensis*, new species, from Buchanan Cave: 10, ventral view with left half shaded to show copulatory duct; 11, dorsal view of spermathecal lobes with right half shaded to show thick walls of spermathecum. DP = dictynoid pore, EP = external pore.

depression on the mesal side in *C. mixmaster* (Fig. 9). Fourth, *C. mixmaster* is slightly larger than *C. coryelli*.

We have two adult males from Mixmaster Cave (one collected 5 Nov. 1998, one matured in captivity on 4 Oct. 1999) that are probably this species, but we are not describing them here because of the uncertainty. The only other male of an eyeless *Cicurina* known from Ft. Hood is from Buchanan Cave (matured in captivity 28 Sept. 1999); where both *C. caliga* and *C. hoodensis* are known. Comparisons of these three specimens reveals some minor differences. Because so few males of other eyeless *Cicurina* spp. have been studied (6 out of 50 species studied by Gertsch, 1992) we are uncertain how significant these differences might be. Hopefully future collecting and rearings will result in additional males which can be compared and described.

Cicurina (*Cicurella*) *hoodensis* new species
Figs. 3C, 10, 11, 22

Diagnosis.—Eyeless troglobite from caves in the eastern section of Fort Hood. Spermathecae with index coil of copulatory duct lying across midline of spermathecal base, arched anteriorly; anterior-most arch of copulatory duct at or more anteriorly placed than tip of spermathecal head.

The general morphology of the spermathecae resembles *C caliga*, but the two can be easily separated by the index coil being straight in *C. caliga* and arched anteriorly in *C. hoodensis*.

Etymology.—This species is named for its occurrence on Fort Hood.

Type-data.—*Bell County*: Buchanan Cave, 7 May 1998 (L.J. Graves, J. Reddell, M. Reyes), female holotype (AMNH), 2 female paratypes (1 female JCC); 4 Nov. 1998 (J. Cokendolpher, J. Krejca, J. Reddell, M. Reyes), 3 female paratypes (2 matured in captivity on 28 Nov. 1998); 5 May 1999 (J. Reddell & M. Reyes), 1 female (matured in captivity on 6 Nov. 1999); upper level of cave, 13 June 2000 (J. Krejca, J. Reddell, M. Reyes, P. Sprouse), 1 female (JCC), 3 females; Camp 6 Cave No. 1, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 female paratype; 2 Nov. 1998 (J. Cokendolpher, J. Reddell), 1 female paratype (matured in captivity on 22 Nov. 1998, JCC); Peep in the Deep Cave, 3 Nov. 1998 (J. Cokendolpher, J. Reddell), 1 female paratype (matured in captivity on 20 Jan. 1999); 5 May 1999 (J. Reddell, M. Reyes), 1 female (matured in captivity on 18 August 2000); Talking Crows Cave, 2 Nov. 1998 (M. Reyes), 1 female paratype; Treasure Cave, 2 Nov. 1998 (J. Cokendolpher, J. Reddell, M. Reyes), 1 female paratype (matured in captivity on 5 Dec. 1998); Triple J. Cave, 13 June 2000 (J. Krejca, J. Reddell, M. Reyes, P. Sprouse), 1 female.

Description (holotype followed by smallest and largest specimens in parentheses, see comments below).—Female creamy to straw-colored, troglobite, eyeless (Fig. 3C). Cephalothorax 1.6 (1.4, 2.2) mm long, 1.1 (1.0, 1.35) mm wide. Abdomen 1.95 (1.70, 2.85) mm long, 1.05 (0.9, 2.0) mm wide. Cheliceral retromargin with 7/7 (6/6, 7/7) teeth. Leg lengths: first femur 1.4 (1.2, 1.8) mm, fourth femur 1.5 (1.2, 1.9) mm; first patella-tibia 1.7 (1.4, 2.3) mm, fourth patella-tibia 1.8 (1.5, 2.4) mm. Ventral leg spines: first tibia 2-2-2 (2-2-2, 2-2-2), fourth tibia 2(posterior one petite)-2-2 (2-2-2, 2-2-2). Epigynum: Spermathecae with index coil of copulatory duct lying across midline of spermathecal base, arched anteriorly; anterior-most arch of copulatory duct at or more anteriorly placed than tip of spermathecal head (Fig. 10); lateral end of index coil strongly bent dorsally with copulatory ducts looping dorsally lateral to spermathecae, then ventrally below spermathecae; area near junction of spermathecal head and base on mesal side with large pore apparently opening on dorsal surface of base (Fig. 11 EP).

Distribution.—Known only from caves in the eastern section of Fort Hood, Bell County, Texas.

Comments.—Measuring the cephalothorax lengths (in mm) of all the specimens revealed the following variations: Buchanan Cave (1.4, 1.6, 1.7, 1.75, 1.9, 1.9, 1.9, 1.95, 2.0, 2.15, 2.2, 2.2), Camp 6 Cave No. 1 (1.6, 1.65), Peep in the Deep Cave (1.6, 2.05), Talking Crows Cave (2.05), Treasure Cave (1.55), Triple J Cave (1.95). The female illustrated in Fig. 3C appears to have spots on the abdomen. Numerous species of eyed *Cicurina* have spotted or otherwise pigmented abdomens, but this is not the case with *C. hoodensis*. The spots are from darker material inside the digestive system that are showing through the abdominal wall, not pigmentation of the integument. Rearing spiderlings in captivity revealed that this is not uncommon in troglobitic cicurinas. Also, it has been noted that older adult troglobitic cicurinas are darker than more recently matured females. Within minutes of molting specimens will be white which will gradually change to creamy yellow. This will continue to change over weeks to a darker straw color, almost brown. Older adults (legs missing, cheliceral teeth worn, etc.) of some troglobitic cicurinas will be very dark, almost as dark as some specimens of the eyed *C. varians*.

As noted above, this species occurs with *C. caliga* in Buchanan and Triple J Caves. See comments under that species for further discussion of this topic.

Eight females were reared to adulthood in captivity, all maturing during late summer to winter. The dates of maturation are given under type-data.

Cicurina (*Cicurusta*) sp. prob. *varians* Gertsch and Mulaik

Cicurina varians: Reddell, 1965:169.

Records.—*Bell County*: Buchanan Cave, 4 Nov. 1998 (J. Cokendolpher, J. Krejca, J. Reddell, M. Reyes), 1 penultimate female; Camp 6 Cave No. 2, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 immature; Cicurina Sink, 14 June 2000 (J. Reddell, M. Reyes), 1 immature; Coyote Den Cave, 21 April 1998 (J. Reddell, M. Reyes), 2 immatures; Deep in Dis Bear Cave, 18 May 1998 (J. Reddell, M. Reyes), 10 immatures; Herbert Cave, 10 Sept. 1997 (L.J. Graves, M. Reyes), 1 immature; Keilman Cave, 26 Sept. 1997 (J. Reddell), 1 immature; L.Z. Sid Sink, 3 May 2000 (J. Reddell, M. Reyes), 1 immature; Long Joint Sink, Nov. 1995 (M. Warton & Associates), 1 immature; Marcelino's Cave, 2 May 2000 (M. Reyes), 1 immature; Monkey Walk Cave No. 1, 23 April 1998 (J. Reddell, M. Reyes), 1 immature; Owl Mountain Cave, Oct. 1995 (D. Allen, L.J. Graves), 1 immature; Peep in the Deep Cave, 8 May 1998 (J. Reddell, M. Reyes), 1 immature; 3 Nov. 1998 (J. Cokendolpher, J. Reddell), 1 immature; 28 May 2000 (J. Reddell, M. Reyes), 1 immature; 27 June 2000 (J. Reddell, M. Reyes), 1 immature; Rugger's Rift Cave, 5 Nov. 1998 (J. Reddell, M. Reyes), 2 immatures; upper level, 13 June 2000 (J. Reddell, M. Reyes), 1 immature; Sanford Pit Cave, 23 Nov. 1994 (M. Warton), 1 immature; Seven Mile Mountain Cave, 11 April 1999 (R. Price, M. Warton), 5 immatures; 26 May 1999 (J. Reddell), 1 immature; 28 June 2000 (J. Reddell, M. Reyes), 3 immatures; Violet Cave, Oct. 1995 (M. Warton & Associates), 1 immature; 23 April 1998 (J. Reddell, M. Reyes), 1 immature; 5 June 2000 (J. Reddell, M. Reyes), 2 immatures.

Coryell County: Brokeback Cave, 16 Aug. 1964 (D. McKenzie, J. Reddell), 1 female (det. W.J. Gertsch) (AMNH) (Reddell, 1965); 5 Sept. 1991 (D. McKenzie, J. Reddell, M. Reyes), 3 immatures (det. W.J. Gertsch) (AMNH); Cornelius Cave, 21 Nov. 1995 (J. Reddell, M. Reyes), 1 immature; Fossil Spring Cave, 16 July 1993 (J. Reddell, M. Reyes), 1 immature; Keyhole Cave, 6 May 1999 (J. Reddell, M. Reyes), 1 immature; Nervous Rock Cave, 26 May 1999 (J. Reddell), 1 immature; Porter Cave, 8 April 1999 (J. Reddell, M. Reyes), 3 immatures.

Comment.—These immature specimens probably belong to *C. varians*, the only known eyed species of *Cicurina* on Fort Hood.

Cicurina (*Cicurusta*) *varians* Gertsch and Mulaik

Cicurina varians: Reddell, 1965:169.

Records.—*Bell County*: Camp 6 Cave No. 1, 5 May 1999 (J. Reddell, M. Reyes), 1 male; Figure 8 Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 female, 2 immatures; Fools Cave, 1 April 1999 (J. Reddell, M. Reyes), 1 immature; 13 May 1999 (J. Reddell, M. Reyes); Gnarla Cave, 20 April 1998 (J. Reddell, M. Reyes), 1 male, 1 immature; 24 April 1998 (J. Reddell, M. Reyes), 1 male; Jagged Walls Cave, 14 March 1992 (J. Reddell, M. Reyes), 1 immature; 3 Nov. 1998 (J. Cokendolpher, M. Reyes), 2 females, 3 immatures; Moffatt Pit Cave, 1 May 1998 (J. Reddell, M. Reyes), 1 female; Nolan Creek Cave, 9 March 1963 (D. McKenzie, J. Reddell), 1 female, 1 immature (det. W.J. Gertsch) (AMNH) (Reddell, 1965); 27 Jan. 1990 (J. Reddell, M. Reyes), 1 female, 5 immatures; 17 July 1993 (J. Reddell, M. Reyes), 7 immatures; 19 May 1998 (J. Reddell, M. Reyes), 1 immature; Price Pit Cave, 23 March 1999 (E. Boyd, R. Price, J. Killian, M. Warton), 1 female; Root Sink, 13 May 1999 (J. Reddell), 1 female; Sledgehammer Cave, 27 Jan. 1990 (J. Reddell), 1 female; 13 Jan. 1995 (D. Allen), 1 female; Sparta Cave, 20 May 1998 (J. Reddell, M. Reyes), 1 female; Streak Cave, 6 Oct. 1995 (M. Warton), 1 female, 1 immature; 26 Sept. 1997 (L.J. Graves, J. Reddell, M. Reyes), 1 immature; 14 June 2000 (J. Krejca, J. Reddell, M. Reyes, P. Sprouse), 2 immatures; Talking Crows Cave, 8 Feb. 1996 (M. Warton), 1 immature; 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 2 females; 2 Nov. 1998 (M. Reyes), 1 immature; Tres Dedos Cave, 24 March 1999 (J. Reddell, M. Reyes), 2 females; Valentine Cave, 14 Feb. 1996 (M. Warton), 1 female; Viper Den Cave, 12 Jan. 1995 (D. Allen, M. Warton), 1 male, 3 females, 6 immatures.

Coryell County: Chigiouxs' Cave, 12 Nov. 1994 (M. Warton), 1 immature; 21 Nov. 1995 (J. Reddell, M. Reyes), 1 male, 2 immatures; Copperhead Cave No. 2, 20 Feb. 1999 (M. Reyes), 1 male; Egypt Cave, 13 Jan. 1992 (D. McKenzie, J. Reddell, M. Reyes), 2 females, 2 immatures (det. W.J. Gertsch) (AMNH); 21 Jan. 1992 (J. Reddell, M. Reyes), 2 immatures (det. W.J. Gertsch) (AMNH); 23 Nov. 1994 (M. Warton), 1 immature; Gann Cave, 1 male, 1 immature (det. W.J. Gertsch) (AMNH); Mixmaster Cave, 9 Sept. 1997 (L.J. Graves, D. McKenzie, J. Reddell, M. Reyes), 1 male, 3 females; 4 Nov. 1998 (J. Cokendolpher, J. Krejca, J. Reddell, M. Reyes), 1 female, 1 female (molted 5 Dec. 1998, 7 Feb., 29 April, 25 Aug. 1999, JCC), 10 immatures; Rocket River Cave System (Double Tree Cave), 23 March 1990 (J. Reddell, M. Reyes), 1 female, 5 immatures; 16 Jan. 1992 (J. Reddell, M. Reyes), 4 females, 4 immatures (det. W.J. Gertsch) (AMNH); Rocket River Cave System (Rocket River Cave), 16 Jan. 1992 (L.J. Graves, M. Warton, C. Savvas), 1 female (det. W.J. Gertsch) (AMNH); Runoff Cave, 27 Jan. 1990 (J. Reddell, M.

Reyes), 1 male, 1 immature; 28 Aug. 1991 (J. Reddell, M. Reyes), 1 male, 1 immature (det. W.J. Gertsch) (AMNH); Saltpeter Cave, 21 Nov. 1995 (J. Reddell, M. Reyes), 3 males, 2 females, 1 immature; Shell Mountain Bat Cave, 16 March 1963 (D. McKenzie, J. Reddell), 1 female (det. W.J. Gertsch) (AMNH) (Reddell, 1965); 31 March 1999 (L.J. Graves, J. Reddell, M. Reyes), 1 male, 2 females, 1 immature; Tippit Cave, 9 March 1963 (D. McKenzie, J. Reddell), 1 female (det. W.J. Gertsch) (AMNH) (Reddell, 1965); 24 Jan. 1992 (D. McKenzie, J. Reddell, M. Reyes), 3 females, 3 immatures; 31 Jan. 1992 (J. Reddell, M. Reyes), 2 immatures.

Comments.—This troglophilic spider occurs in caves throughout Texas. It is most frequently found under rocks in the dark zone of caves where it feeds on small arthropods. Records of immatures are only listed as this species when they were found in the same cave as adults. Two females were also collected under rocks on the surface near the entrance to Jagged Walls Cave, 3 Nov. 1998 (J. Cokendolpher, J. Reddell, M. Reyes).

Dictyna sp.

Record.—*Bell County*: Buchanan Cave, upper level, 13 June 2000 (J. Reddell, M. Reyes), 1 female.

Comment.—Females of this large and complex genus are not easily identified unless associated with males. It is an accidental.

Gnaphosidae

Drassyllus aprilinus (Banks)

Record.—*Bell County*: Price Pit Cave, 6 May 1999 (J. Reddell, M. Reyes), 1 male (JCC).

Comment.—This accidental species was found at the bottom of the entrance drop in leaf litter.

Drassyllus gynosaphes Chamberlin

Record.—*Bell County*: Price Pit Cave, 6 May 1999 (J. Reddell, M. Reyes), 3 males (1 male JCC).

Comment.—This accidental species was found at the bottom of the entrance drop.

Drassyllus texamans Chamberlin

Record.—*Bell County*: Newby Cave, 19 May 1999 (J. Reddell, M. Reyes), 1 female.

Comment.—This is an accidental species found at the bottom of the entrance drop.

Gnaphosa sp.

Record.—*Bell County*: Seven Mile Mountain Cave, 11 April 1999 (R. Price, M. Warton), 1 penultimate male.

Comment.—This is an accidental and because of its immature state it cannot be identified to species.

Gnaphosa fontinalis Keyserling

Record.—*Bell County*: Cub Cave, 18 May 1999 (J. Reddell), 1 female.

Comment.—This is an accidental.

Micaria sp.

Records.—*Bell County*. Big Crevice, 14 June 2000 (J. Reddell, M. Reyes), 1 immature.

Comments.—Immatures of this genus cannot currently be identified.

Filistatidae

Filistatinella sp.

Record.—*Bell County*: Loop Joint Cave, 3 May 2000 (J. Reddell, M. Reyes), 1 immature.

Comment.— This specimen is too immature for further identification. Members of this genus are relatively common in buildings and are recorded from several Central Texas caves. There are at least four undescribed species (Texas to California).

Hahniidae

Undetermined genus and species

Records.—*Bell County*: Big Crevice, 6 June 2000 (J. Reddell, M. Reyes), Berlese of leaf litter, 1 immature; Gnarla Cave, 24 April 1998 (J. Reddell, M. Reyes), Berlese of leaf litter from Gnarla Pit, 1 immature.

Coryell County: Copperhead Sink No. 2, 20 Feb. 1999 (M. Reyes), Berlese of leaf litter, 1 immature.

Comment.—These very young immature specimens cannot be further identified.

Hahnia sp.

Records.—*Bell County*: Lunch Counter Cave, 18 Sept. 1997 (J. Reddell), Berlese of leaf litter, 1 immature; Nolan Creek Cave, 17 July 1993 (J. Reddell, M. Reyes), Berlese of leaf litter, 9 immatures.

Comments.—Specimens from these caves cannot be further identified, but are probably the species listed below. Only one other *Hahnia* sp. has been recorded from a cave in Texas and it was from Bexar County.

Hahnia flaviceps Emerton

Records.—*Bell County*: Big Crevice, 13 May 1999 (J. Reddell, M. Reyes), Berlese of leaf litter, 1 female; Jagged Walls Cave, 3 Nov. 1998 (J. Cokendolpher, M. Reyes), 4 females; Price Pit Cave, 6 May 1999 (J. Reddell, M. Reyes), Berlese of leaf litter, 2 females.

Coryell County: Porter Cave, 8 April 1999 (J. Reddell, M. Reyes), Berlese of leaf litter, 1 female.

Comment.—This small species is known from leaf litter in the entrance areas of several additional caves in Texas.

Leptonetidae

Neoleptoneta spp.

Records.—*Bell County*, Peep in the Deep Cave, 21 April 1998 (J. Reddell, M. Reyes), 1 female; 8 May 1998 (J. Reddell, M. Reyes), 1 female; 3 Nov. 1998 (J. Cokendolpher, J. Reddell), 1 female; Talking Crows Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 immature

Comments.—The area around the eyes of the immature is pigmented and is probably the species described below as new. The other specimens have no pigment in or around the eyes and have the eyes further reduced in size. They possibly represent an undescribed species. Until a male can be discovered we refrain from describing the species as new. With the reduction of eyes and pigmentation it is likely a troglobite. Gertsch (1974) recorded eye dimorphism in *Neoleptoneta valverde* Gertsch (1974: figs. 57, 58). In that case, the single male had smaller eyes and a reduction in pigmentation from the two known females. Unfortunately, the sexes were collected in separate caves 18 miles apart and could represent separate species or geographical variation. Further collections will be necessary to better understand eye polymorphy in these species. Although Gertsch (1974) found the spermathecae to be valuable diagnostic characters, we find that some of the characters used by Gertsch are influenced by the examination methodology. The weight of the cover-slip used for microscopic examinations can alter the position and axis of the spermathecae. The spermathecae of the species described below and the species represented here as a possible new species are similar, but so are all the members of the *coeca* series. The male genitalia appear to us to exhibit more and better characters to distinguish taxa in *Neoleptoneta*.

Neoleptoneta paraconcinna **new species**
Figs. 12-22

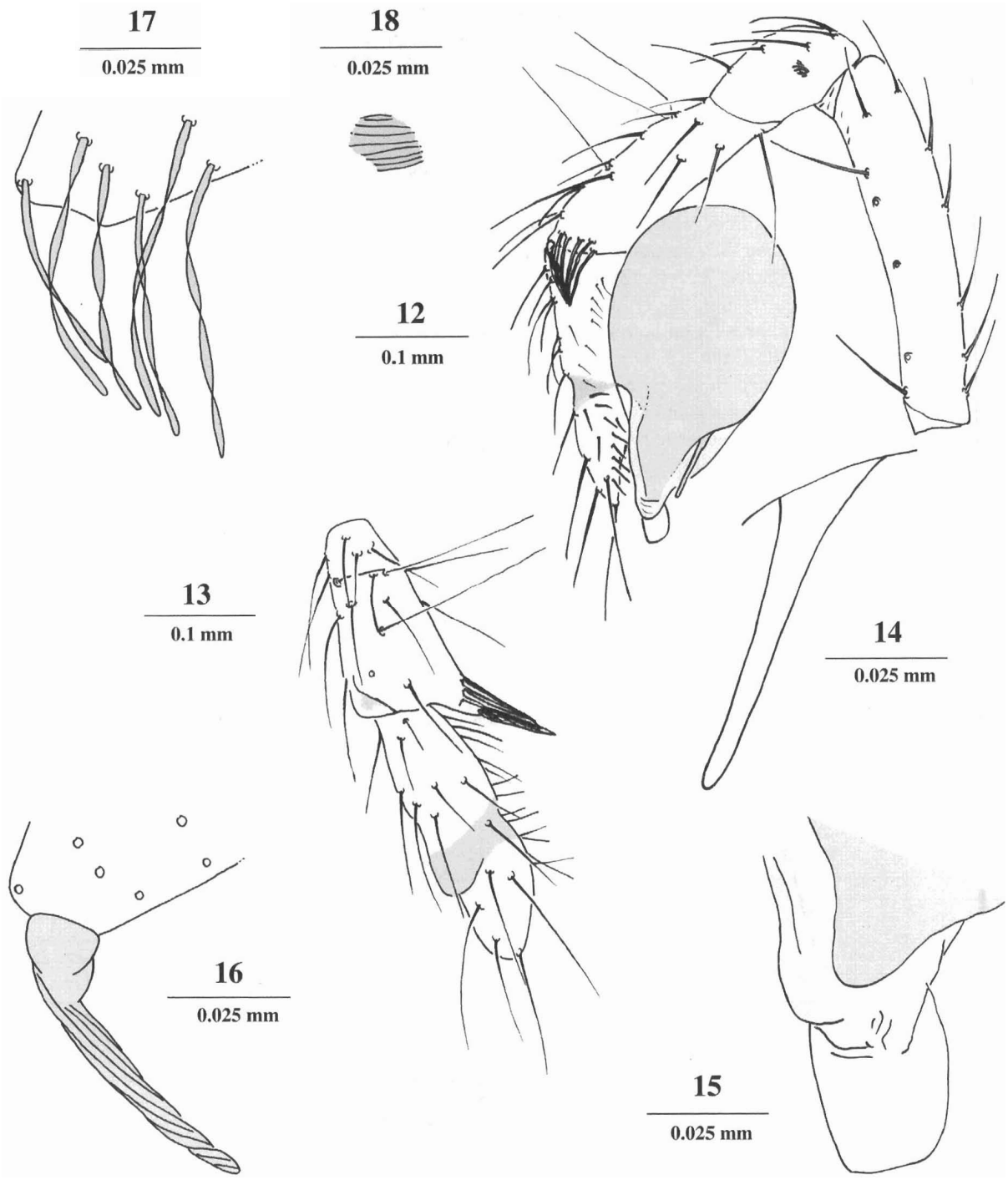
Diagnosis.—Pale cavernicole from Bell County caves; eyes present, relatively large, subcontiguous in front row; posterior eyes separated from anterior lateral eyes by 1-1.5 diameters of eyes; some surrounding cuticle with dark pigment; promargin of chelicerae with seven teeth; tibia of male pedipalp with retrolateral apophysis bearing a spur and six overlapping flattened setae; pedipalpal bulb with single retrolateral apophysis ventrally and bluntly rounded embolus; bulb of seminal receptacle medium sized with single loop in copulatory duct; first leg of male 4.9 times, of female 4.15 times as long as cephalothorax.

As indicated by the name, this species is most similar to *Neoleptoneta concinna* Gertsch. In Gertsch's key (1974) to the species of *Neoleptoneta* from Texas, the new species will key to *N. concinna* for both males and females. Males of *N. paraconcinna* share with *N. concinna* a series of setae on the retrolateral distal end of the palpal tibia. These setae are apparently not present on males of other species from the region. From males of *N. concinna*, the new species can be distinguished by differences in the palp: presence of 6 (4 in *N. concinna*) overlapping setae on the tibia; tibial spur about 1/3-1/4 (greater than 1/2 in *N. concinna*) length of tarsus; presence (absence in *N. concinna*) of numerous short setae on the distal half of the tarsus. Females of *N. paraconcinna* differ from *N. concinna* by having a loop in the copulatory duct.

Etymology.—*Para* from Greek, meaning near, and the species name *concinna*; referring to this species similarity to *N. concinna*.

Type-data.—TEXAS: *Bell County*: Camp 6 Cave No. 1, Fort Hood, 5 May 1999 (J. Reddell, M. Reyes), 1 male paratype; Peep in the Deep Cave, 21 April 1998 (J. Reddell, M. Reyes), 1 female paratype; 8 May 1998 (J. Reddell, M. Reyes), male holotype (AMNH); Figure 8 Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 female paratype.

Description.—Cephalothorax and appendages dusky yellow to creamy brown, abdomen creamy yellow. Promargin of chelicerae with 7-7 teeth, retromargin 2-



Figs. 12-18.—Male holotype of *Neoleptoneta paraconcinna*, new species, from Peep in the Deep Cave: 12, retrolateral view of pedipalp; 13, dorsal view of pedipalpal tibia and tarsus; 14, enlarged retrolateral view of apophysis on pedipalpal bulb; 15, enlarged retrolateral view of pedipalpal embolus; 16, enlarged retrolateral view of retrolateral spur; 17, enlarged retrolateral view of flattened spines which overlap the retrolateral spur; 18, enlarged retrolateral view of lyriform sensilla of pedipalpal patella.

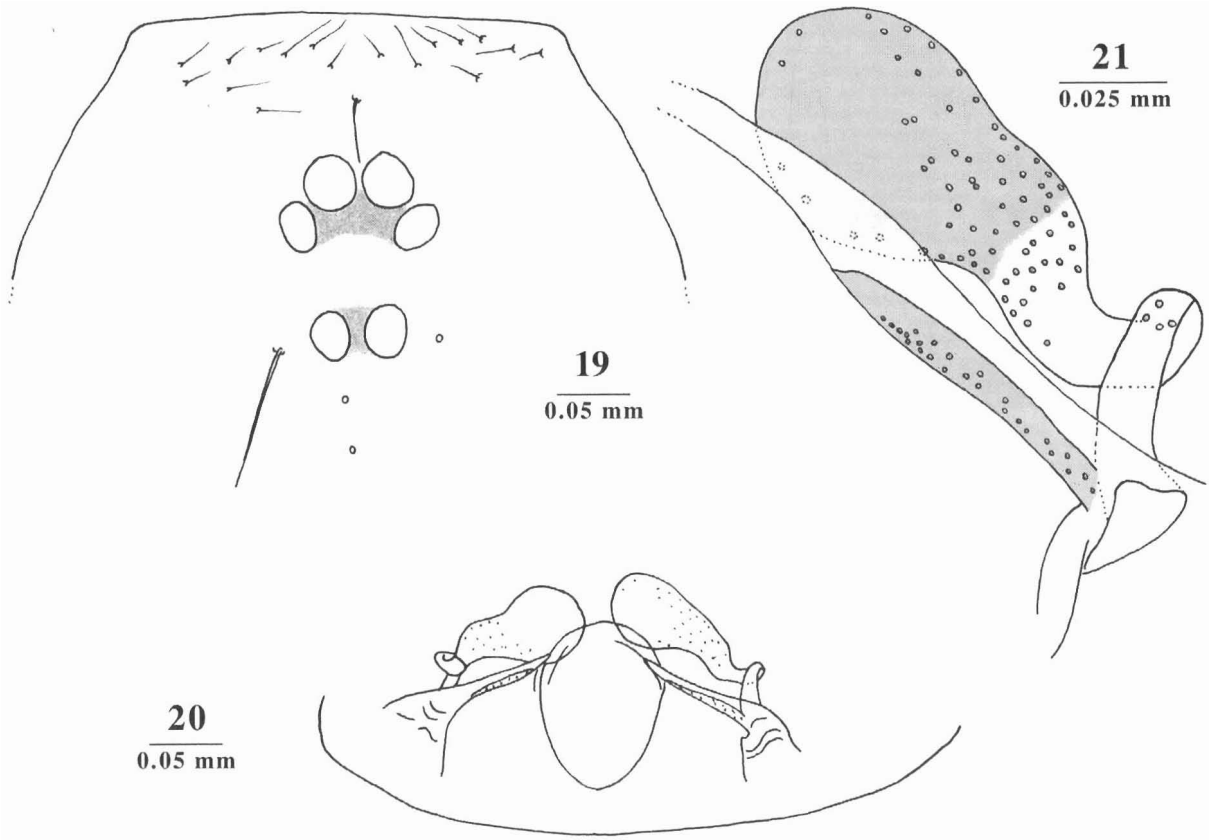
2 teeth. Eyes relatively large; anterior row strongly recurved, eyes subequal to posterior eyes slightly smaller, contiguous; anterior median eyes separated by less than half diameter of eye, posterior eyes contiguous, separated from anterior laterals by 1-1.5 diameter of eye; dark pigment between eyes (Fig. 19). Leg formula 1423.

Male (holotype followed by paratype in parentheses): Cephalothorax 0.64 (0.69) mm long, 0.45 (0.52) mm wide; abdomen 0.70 (0.94) mm long, 0.42 (0.76) mm wide. Femora I-IV lengths (in mm): 0.90 (0.99), 0.75 (0.82), 0.60 (0.68), 0.86 (0.92); patella + tibia I, II: 1.08 (1.16), 0.88 (missing). Legs relatively long, thin; femur I 6.9 (6.2) times longer than maximum wide; leg I (excluding coxa + trochanter) 3.16 (3.42) mm long, leg IV 3.04 (?, missing tarsi) mm long.

Pedipalp with lyriform sensilla on both lateral and retrolateral sides of patella (Figs. 12, 18); tibia with retrolateral spur, with twisted ridges running most of length of spur (Fig. 16); spur overlain by series of six, smooth, flattened, loosely twisted setae (Fig. 17); tibia dorsally with three trichobothria (Fig. 13); tarsus with relatively deep transverse groove in apical part, retrolateral side with group of 11 (9 on paratype) short stout setae distal to groove and 9 (10 on paratype) very thin, short setae starting at groove and extending basally (Fig. 12), setae of tarsus finely serrated; bulb with single smooth apophysis on retrolateral side near ventral border (Figs. 12, 14); embolus wide, bluntly rounded at tip (Figs. 12, 15).

Female (Peep in the Deep Cave, Figure 8 Cave): Cephalothorax 0.67, 0.60 mm long, 0.44, 0.42 mm wide; abdomen 0.98, 1.00 mm long, 0.74, 0.56 mm wide). Femora lengths (in mm): I= 0.85, 0.70; II= 0.70, 0.61 ; III= 0.62, 0.50; IV= 0.80, 0.73; patella + tibia I= missing, 0.86; II- missing, 0.70. Legs relatively long and thin; femur I 7.7, 6.4 times longer than maximum wide; leg I (excluding coxa + trochanter) broken, 2.49 mm long; leg IV 2.98, 2.60 mm long.

Genitalia: Seminal receptacles relatively large; bulb directed slightly anteriorly (about 20 degrees from epigastric furrow), covered with many minute pores; spermathecal duct with single coil; long thin sclerotized plate (or flattened duct?) attached at junction of the



Figs. 19-21.—Female paratype of *Neoleptoneta paraconcinna*, new species, from Peep in the Deep Cave: 19, anterodorsal view of eyes and clypeus; 20, ventral view of genitalia; 21, enlarged ventral view of left seminal receptacle.

copulatory and spermathecal ducts, posterior edge covered with minute pores (Figs. 20, 21).

Comments.—On 8 May the male holotype of this species and what we are referring to *N.* spp. (see above) were collected from under rocks lightly buried in clay at the bottom of Peep in the Deep Cave. On 21 April a female was collected just below the entrance and a female was collected in the same area as the 8 May specimens. Unfortunately, the 21 April samples consist of *N. paraconcinna* and what we are referring to *N.* spp. Presumably, the specimen with reduced eyes came from the lower level, but this is not certain as the holotype of *N. paraconcinna* also came from the lower level. Data available from other caves reveals *N. paraconcinna* to occur on the underside of a rock at the bottom of the entrance in twilight (Camp 6 Cave) and in the upper level within sight of the entrance (Figure 8 Cave).

Linyphiidae

Undetermined genus and species

Records.—*Bell County*: Big Crevice, 6 June 2000 (J. Reddell, M. Reyes), Berlese of leaf litter, 5 immatures; Buchanan Cave, 8 Nov. 1995 (D. Allen), 4 immatures; Camp 6 Cave No. 1, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 immature; 5 May 1999 (J. Reddell, M. Reyes), 1 penultimate male; Chimney Windows Cave, 19 May 1999 (J. Reddell, M. Reyes), 1 immature; Coyote Den Cave, 21 April 1998 (J. Reddell, M. Reyes), 2 immatures; Cub Cave, 18 May 1999 (J. Reddell), 2 immatures; Deep in Dis Bear Cave, 8 Feb. 1996 (L.J. Graves), 2 immatures; Jagged Walls Cave, 3 Nov. 1998 (J. Cokendolpher, M. Reyes), 4 immatures; Keilman Cave, Nov. 1994 (M. Warton), 1 immature; Lucky Rock Cave, 5 May 1999 (J. Reddell, M. Reyes),

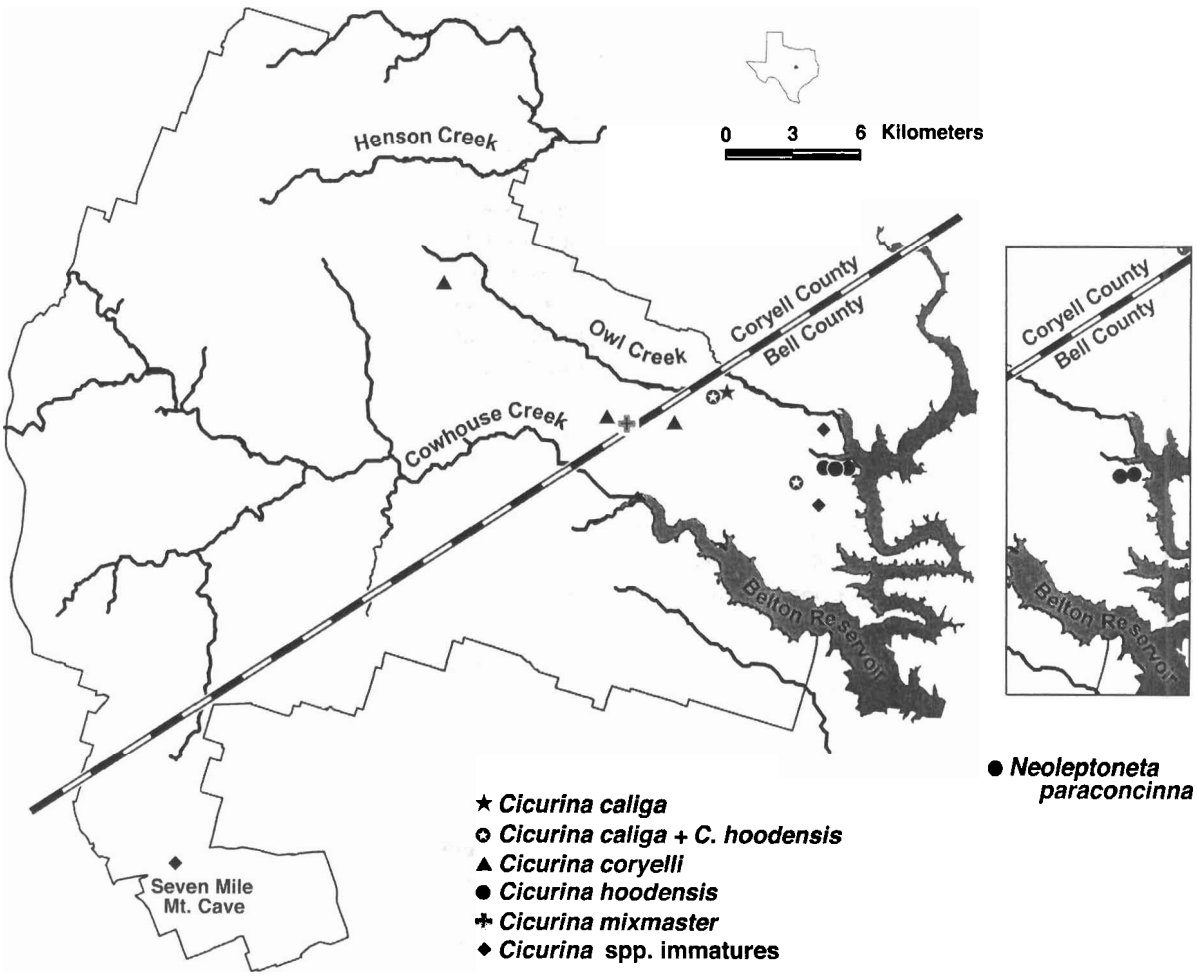


Fig. 22.—Map of Foot Hood showing distributions of troglobitic *Cicurina* and *Neoleptoneta* spiders

1 immature; Nolan Creek Cave, 27 Jan. 1990 (J. Reddell, M. Reyes), 2 immatures; 17 July 1993 (J. Reddell, M. Reyes), Berlese of leaf litter, 1 immature; Plasma Cave, 19 May 1999 (J. Reddell), Berlese of leaf litter, 5 immatures of sp. 1 and 1 immature of sp. 2; Price Pit Cave, 6 May 1999 (J. Reddell, M. Reyes), Berlese of leaf litter, 1 penultimate male, 4 immatures; Red Ant Cave, 28 Aug. 1991 (J. Reddell), 1 female (det. W.J. Gertsch) (AMNH); Septum Pit Cave, Oct. 1995 (M. Warton & Associates), 1 immature; Skeeter Cave, 18 May 1999 (L.J. Graves, J. Reddell, M. Reyes), 2 immatures; Talking Crows Cave, 6 June 2000 (J. Reddell, M. Reyes), 1 damaged immature; Valentine Cave, 14 Feb. 1996 (M. Warton), 2 immatures; 18 Sept. 1997 (J. Reddell, M. Reyes), 2 immatures; Viper Den Cave, Tumble Down Entrance, 13 Jan. 1995 (M. Warton), 1 immature.

Coryell County: Keyhole Cave, 20 Feb. 1999 (J. Reddell, M. Reyes), Berlese of leaf litter, 1 immature; Plateau Cave No. 2, 15 Jan. 1992 (J. Reddell, M. Reyes), 1 female (det. W.J. Gertsch) (AMNH); Porter Cave, 8 April 1999 (J. Reddell, M. Reyes), Berlese of leaf litter, 23 very young immatures; Rocket River Cave System (Rocket River Cave), 27 Oct. 1994 (M. Warton), 1 immature.

Comments.—Immatures from these caves cannot be further identified without adults. We have not seen the adults identified by W.J. Gertsch.

Erigonine genus and species

Records.—*Bell County*: Deep in Dis Bear Cave, 18 May 1999 (J. Reddell, M. Reyes), 1 female.

Coryell County: Copperhead Sink No. 2, 20 Feb. 1999 (M. Reyes), 1 female.

Comments.—These females have a distinctive epigynum vaguely reminiscent of *Sisicottus*. A male will have to be studied to be certain of the genus. It has large eyes and looks typical of a litter dweller and is therefore considered an accidental.

Eperigone new species

Records.—*Bell County*: Big Crevice, 13 May 1999 (J. Reddell, M. Reyes), Berlese of leaf litter, 5 females; Figure 8 Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 male; Fools Cave, 1 April 1999 (J. Reddell, M. Reyes), Berlese of litter, 1 female; Keilman Cave, 26 Sept. 1997 (J. Reddell), Berlese of leaf litter, 1 female, 11 immatures; 23 April 1998 (J. Reddell, M. Reyes), Berlese of leaf litter, 6 females, 2 males; Peep in the Deep Cave, 8 May 1998 (J. Reddell, M. Reyes), Berlese of leaf litter), 1 female, 1 immature; Price Pit Cave, 6 May 1999 (J. Reddell, M. Reyes), Berlese of litter, 2 females, 2 immatures; Soldier's Cave, 25 March 1999 (J. Reddell, M. Reyes), Berlese of litter, 1 male, 2 immatures; Viper Den Cave, Tumble Down Entrance, 13 Jan. 1995 (M. Warton), 1 male.

Coryell County: Copperhead Sink No. 2, 20 Feb. 1999 (J. Reddell, M. Reyes), Berlese of litter, 1 female; Porter Cave, 8 April 1999, (J. Reddell, M. Reyes), Berlese of leaf litter, 2 females; Rocker River Cave System (B.R.'s Secret Cave), 9 Feb. 1992 (J. Reddell, M. Reyes), Berlese of litter, 1 female.

Comments.—This is an undescribed species known from many caves in Central Texas. It is related to "*Eularia*" *suspecta* Gertsch and Mulaik, which is known from a cave in Val Verde County.

Eperigone maculata (Banks)

Records.—*Bell County*: Keilman Cave, 26 Sept. 1997 (J. Reddell), Berlese of leaf litter, 1 female; 23 April 1998 (J. Reddell, M. Reyes), Berlese of leaf litter, 26 immatures; Plasma Cave, 19 May 1999 (J. Reddell), Berlese of leaf litter, 1 female, 1 immature; .

Coryell County: Chigiouxs' Cave, 21 Nov. 1995 (J. Reddell, M. Reyes), 1 male; Copperhead Sink No. 2, 20 Feb. 1999 (M. Reyes), 1 female; Plateau Cave No. 2, 15 Jan. 1992 (J. Reddell, M. Reyes), 1 female; Porter Cave, 8 April 1999 (J. Reddell, M. Reyes), 1 female; Berlese of leaf litter, 1 male; Runoff Cave, 8 May 1998 (J. Reddell, M. Reyes), 1 female.

Comments.—This troglophilic spider has been found in caves throughout Central Texas. It is usually found under rocks and in leaf litter.

Erigone autumnalis Emerton

Records.—*Bell County*: Fellers Cave, 6 May 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 male.

Coryell County: Fossil Spring Cave, 16 July 1993 (J. Reddell, M. Reyes), 1 male.

Comment.—This species was taken from under rocks in darkness.

Lepthyphantes sp.

Record.—*Bell County*. L.Z. Sid Sink, 3 May 2000 (J. Reddell, M. Reyes), 1 immature.

Comment.—Without adults being known from this sink, this accidental cannot be identified further.

Lepthyphantes sabulosus (Keyserling)

Record.—*Bell County*: Treasure Cave, 2 Nov. 1998 (J. Cokendolpher, J. Reddell, M. Reyes), 1 male, 1 female (JCC).

Comment.—This species was taken from under rocks and is an accidental.

?*Meioneta* sp.

Records.—*Bell County*. Talking Crows Cave, 6 June 2000 (J. Reddell, M. Reyes), 1 damaged immature.

Coryell County: Ingram Cave, 16 Sept. 1997 (L.J. Graves, M. Reyes), 3 immatures.

Comment.—This material is too immature for positive generic identification.

Meioneta sp.

Records.—*Bell County*: Sanford Pit Cave, bottom of pit, 4 Nov. 1998 (J. Krejca), 1 immature.

Coryell County: Plateau Cave No. 2, 23 March 1990 (J. Reddell, M. Reyes), 2 immatures.

Comment.—This material is too immature for further identification.

Meioneta sp. prob. *llanoensis* (Gertsch and Davis)

Records.—*Bell County*: Cub Cave, 18 May 1999 (J. Reddell), 1 immature; Nolan Creek Cave, 19 May 1998 (J. Reddell, M. Reyes), 1 immature; Raining Rattler Cave, 2 May 2000 (M. Reyes), 2 immatures; Root Sink, 13 May 1999 (J. Reddell), 1 immature; Seven Mile Mountain Cave, 11 April 1999 (R. Price, M. Warton), 2 immatures; Streak Cave, 14 June 2000 (J. Krejca, J. Reddell, M. Reyes, P. Sprouse), 1 immature; Talking Crows Cave, 6 June 2000 (J. Reddell, M. Reyes), 2 immatures; Violet Cave, 23 April 1998 (J. Reddell, M. Reyes), 1 immature.

Coryell County: Plateau Cave No. 1, 15 Jan. 1992 (L.J. Graves), 1 male (det. W.J. Gertsch) (AMNH); Rocket River Cave System (Double Tree Cave), 1 female (det. W.J. Gertsch) (AMNH); Runoff Cave, 28 Aug. 1991 (J. Reddell, M. Reyes), 2 females (det. W.J. Gertsch) (AMNH).

Comments.—These specimens probably belong to the widespread species listed below. We have not seen the adults identified by W.J. Gertsch.

Meioneta llanoensis (Gertsch and Davis)

Records.—*Bell County*: Big Crevice, 13 May 1999 (J. Reddell, M. Reyes), Berlese of leaf litter, 1 female; Buchanan Cave, 7 May 1998 (L.J. Graves, J. Reddell, M. Reyes), 2 females, 1 immature; 4 Nov. 1998 (J. Cokendolpher, J. Krejca, J. Reddell, M. Reyes), 4 males, 4 females, 2 immatures; 5 May 1999 (J. Reddell, M. Reyes), 1 female; lower level, 13 June 2000 (J. Krejca, P. Sprouse), 1 female, 1 immature; upper level, 13 June 2000 (J. Reddell, M. Reyes), 2 males, 2 females, 1 immature; Bumelia Well Cave, 4 Nov. 1998 (J. Cokendolpher, J. Krejca), 1 male; C. B. Cave, 21 April 1998 (J. Reddell, M. Reyes), 2 females, 1 immature; Camp 6 Cave No. 1, 5 May 1999 (J. Reddell, M. Reyes), 2 males, 1 female, 1 immature; Deep in Dis Bear Cave, 18 May 1998 (J. Reddell, M. Reyes), 1 female, 3 immatures; Estes Cave, 28 June 2000 (M. Reyes, M. Warton), 2 males; Fellers Cave, 6 May 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 male, 1 female; Figure 8 Cave, 9 Feb. 1996 (M. Warton); 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 male, 2 females, 5 immatures; 3 Nov. 1998 (J. Cokendolpher, M. Reyes), 1 male, 4 females; Fools Cave, 1 April 1999 (J. Reddell, M. Reyes), 1 male, 1 female; Forgotten Sink, 1 April 1999 (J. Reddell, M. Reyes), 4 females, 1 immature; Gnarla Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 3 females, 1 immature; 24 April 1998 (J. Reddell, M. Reyes), 2 males; 3 females, 1 immature; Jagged Walls Cave, 14 March 1992 (J. Reddell, M. Reyes), 1 male; L.Z. Sid Sink, 3 May 2000 (J. Reddell, M. Reyes), 1 female; Long Joint Sink, Oct. 1995 (M. Warton & Associates), 2 females, 1 immature; Lucky Rock Cave, 22 Feb. 1996 (D. Allen, L.J. Graves, D. Love), 2 males, 1 immature; 10 Sept. 1997 (L.J. Graves, J. Reddell, M. Reyes), 2 males, 5 females, 7 immatures; Marcelino's Cave, 2 May 2000 (M. Reyes), 2 males, 1 female; Owl Mountain Cave, 24-25 Oct. 1995 (D. Allen, L.J. Graves), 1 female, 1 immature; 28 May 2000 (J. Reddell, M. Reyes), 1 male; 27 June 2000 (J. Reddell, M. Reyes), 1 female; Peep in the Deep Cave, 21 April 1998 (J. Reddell, M. Reyes), 1 female, 1 immature; 8 May 1998 (J. Reddell, M. Reyes), 2 females; 3 Nov. 1998 (J. Cokendolpher, J. Reddell), 2 females, 1 immature; 5 May 1999 (J. Reddell, M. Reyes), 3 immatures; Road Side Sink, 1 July 1993 (M. Warton), 1 female; 3 Nov. 1998 (M. Reyes), 2 females; Rugger's Rift Cave, 5 Nov. 1998 (J. Reddell, M. Reyes), 2 males, 2 females; Sanford Pit Cave, 18 May 1998 (J. Reddell, M. Reyes), 1 female; 4 Nov. 1998 (J. Cokendolpher, J. Krejca), 2 males, 6 females, 4 immatures; Skeeter Cave, 18 May 1999 (L.J. Graves, J. Reddell, M. Reyes), 2 males; Soldiers Cave, 25 March 1999 (J. Reddell, M. Reyes), 1 female, 1 immature; Streak Cave, 6 Oct. 1995 (M. Warton), 1 male, 2 females; 26 Sept. 1997 (L.J. Graves, J. Reddell, M. Reyes), 1 male, 3 females, 5 immatures; Talking Crows Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 2 males, 3 females, 2 immatures; 2 Nov. 1998 (M. Reyes), 3 males, 1 female; 6 June 2000 (J. Reddell, M. Reyes), 1 male, 1 female, 3

immatures; Treasure Cave, 21 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 female, 1 immature; 2 Nov. 1998 (J. Cokendolpher, J. Reddell, M. Reyes), 3 females; Triple J Cave, 23 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 male, 6 immatures; Valentine Cave, 18 Sept. 1997 (J. Reddell, M. Reyes), 1 male, 3 females; Violet Cave, 5 June 2000 (J. Reddell, M. Reyes), 1 male, 2 immatures; Viper Den Cave, 27 Jan. 1990 (J. Reddell, M. Reyes), 1 female; West Corral Sink, 3 May 2000 (J. Reddell, M. Reyes, M. Warton), 1 female.

Coryell County: Big Red Cave, 6 May 1999 (J. Reddell, M. Reyes), 1 female; 14 June 2000 (J. Krejca, P. Sprouse), 1 female; Chigiouxs' Cave, 22 Nov. 1994 (M. Warton), 3 females; Copperhead Cave, 30 April 1998 (J. Reddell, M. Reyes), 1 female; Cornelius Cave, 21 Feb. 1995 (J. Reddell, M. Reyes), 1 female; Egypt Cave, 21 Jan. 1992 (J. Reddell, M. Reyes), 1 immature (det. W.J. Gertsch) (AMNH); 16 Sept. 1997 (L.J. Graves, J. Reddell, M. Reyes), 1 male; 7 April 1999 (J. Reddell, M. Reyes), 1 female; Ingram Cave, 7 April 1999 (J. Reddell, M. Reyes), 1 female, 1 immature; Keyhole Cave, 20 Feb. 1999 (J. Reddell, M. Reyes), 2 females; 6 May 1999 (J. Reddell, M. Reyes), 1 penultimate male, 1 female; Plateau Cave No. 2, 15 Jan. 1992 (J. Reddell, M. Reyes), 1 female, 1 immature; Porter Cave, 8 April 1999 (J. Reddell, M. Reyes), 1 male, 1 female; Tippit Cave, 24 Jan. 1992 (D. McKenzie, J. Reddell, M. Reyes), 1 male; 16 July 1993 (D. McKenzie, J. Reddell, M. Reyes), 1 male; 8 April 1999 (L.J. Graves), 1 female, 3 immatures; 22 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 male, 1 female.

Comments.—This troglophilic species is extremely abundant in caves throughout Central Texas. It may be found under rocks and hanging from webs in small cavities on cave walls.

Neriene radiata (Walckenaer)

Record.—*Bell County*: Long Joint Sink, 1 May 1998 (J. Reddell, M. Reyes), 1 male, 1 female.

Comment.—This is an accidental species found in the entrance sink.

Liocranidae

Phrurotimpus sp.

Record.—*Bell County*: Fools Cave, 1 April 1999 (J. Reddell, M. Reyes), Berlese of leaf litter, 1 male.

Comments.—This is an accidental found in leaf litter at the bottom of the entrance sink. This genus is in need of taxonomic revision and many specimens cannot currently be identified with certainty.

Scotinella sp.

Records.—*Bell County*: Talking Crows Cave, 2 Nov. 1998 (M. Reyes), 1 female.

Coryell County: Mixmaster Cave, 9 Sept. 1997 (L.J. Graves, D. McKenzie, J. Reddell, M. Reyes), 1 immature.

Comments.—This is an accidental species taken from the entrance area of the caves. This genus is in need of taxonomic revision and many specimens cannot currently be identified with certainty.

Lycosidae

Undetermined genus and species

Record.—*Bell County*. Keilman Cave, 5 June 2000 (J. Reddell, M. Reyes), 3 immatures.

Comment.—These very early instar immatures cannot be reliably identified to genus.

Pirata sp.

Record.—*Coryell County*: Brokeback Cave, 5 Sept. 1991 (D. McKenzie, J. Reddell, M. Reyes), 1 male, 4 females (det. W.J. Gertsch) (AMNH).

Comments.—This is an accidental species. We have not seen this material.

Rabidosa rabida (Walckenaer)

Record.—*Bell County*. Keilman Cave, 5 June 2000 (J. Reddell, M. Reyes), 1 immature.

Comment.—Although immature, this distinctively marked species can be recognized. It is an accidental.

Schizocosa sp. prob. *saltatrix* (Hentz)

Record.—*Bell County*: Newby Cave, 19 May 1999 (J. Reddell, M. Reyes), 1 male.

Comment.—This is an accidental species. The identification of this specimen is uncertain because both pedipalps are missing. Further material needs to be collected from this cave.

Schizocosa saltatrix (Hentz)

Records.—*Bell County*: Coyote Den Cave, 8 May 1998 (J. Reddell, M. Reyes), 1 female; Keilman Cave, 8 May 1998 (J. Reddell, M. Reyes), 1 female; Lunch Counter Cave, 25 March 1999 (J. Reddell, M. Reyes), 1 male, 1 female; Seven Mile Mountain Cave, 11 April 1999 (R. Price, M. Warton), 1 male; Treasure Cave, 21 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 female.

Comment.—This accidental species was taken in the entrance area of these caves.

Trochosa sp.

Record.—*Coryell County*: 1923 Cave, 15 Jan. 1992 (J. Reddell, M. Reyes), 1 immature (det. W.J. Gertsch) (AMNH).

Comments.—This is an accidental species. We have not seen this material.

Nesticidae

Eidmannella sp. prob. *pallida* (Emerton)

Records.—*Bell County*: Sledgehammer Cave, 13 Jan. 1995 (D. Allen), 2 immatures; Viper Den Cave, 12 Jan. 1995 (D. Allen, M. Warton), 4 immatures.

Comment.—These immature specimens probably belong to *E. pallida*.

Eidmannella pallida (Emerton)

Records.—*Bell County*: Camp 6 Cave No. 1, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 female, 4 immatures; 6 June 2000 (J. Reddell, M. Reyes), 1 male, 3 females; Figure 8 Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 female; 3 Nov. 1998 (M. Reyes), 1 female; Marcelino's Cave, 2 May 2000 (M. Reyes), 1 female; Rugger's Rift Cave, 5 Nov. 1998 (J. Reddell, M. Reyes), 1 female; Sanford Pit Cave, lower level, 13 June 2000 (J. Krejca, P. Sprouse), 1 female; Talking Crows Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 male; Valentine Cave, 14 Feb. 1996 (M. Warton), 1 female.

Coryell County: Chigiouxs' Cave, 22 Nov. 1994 (M. Warton), 1 male; Plateau Cave No. 1, 23 March 1990 (J. Reddell, M. Reyes), 1 female; Tippit Cave, 31 Jan. 1992 (J. Reddell, M. Reyes), 1 female; 22 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 female.

Comments.—This is an abundant troglophile in caves throughout the United States and Mexico. It is usually found hanging from delicate webs in cavities of cave walls. Other species of the genus are troglobites in Texas.

Gaucelmus augustinus Keyserling

Record.—*Bell County*: Camp 6 Cave No. 1, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 female.

Comment.—This is a threshold troglophile found in many caves in Texas and Mexico.

Pholcidae

Modisimus texanus Banks

Records.—*Bell County*: Sledgehammer Cave, 13 Jan. 1995 (D. Allen), 2 females; Viper Den Cave, 12 Jan. 1995 (D. Allen, M. Warton), 2 females, 2 immatures.

Comments.—This is a troglophile found in many caves in Central Texas. It is found hanging from webs on cave walls.

Salticidae

Habrocestum acerbum Peckham and Peckham

Record.— *Bell County*: Road Side Sink, 1 July 1993 (M. Warton), 1 female.

Comment.—This accidental species was taken from the bottom of the entrance drop.

Scytodidae

Scytodes sp.

Record.—*Bell County*: Coyote Den Cave, 21 April 1998 (J. Reddell, M. Reyes), 3 immatures.

Comment.—This accidental species was taken from leaf litter just inside the entrance to the cave.

Sicariidae

Loxosceles sp.

Record.—*Coryell County*: Goathead Cave, 5 Sept. 1991 (D. McKenzie, J. Reddell, M. Reyes), 1 immature (det. W.J. Gertsch) (AMNH).

Comment.—This may be the same as the species reported below.

Loxosceles reclusa Gertsch and Mulaik

Record.—*Bell County*: Seven Cave, 18 Sept. 1997 (J. Reddell), 1 female.

Comments.—The brown recluse spider has been taken from caves in several counties in Texas. It is

presumably a troglophile. It was found in a web on the floor in the twilight zone of the cave.

Tetragnathidae

Leucauge venusta (Walckenaer)

Records.—*Bell County*: C. B. Cave, 21 April 1998 (J. Reddell, M. Reyes), 1 female; Keilman Cave, 8 May 1998 (J. Reddell, M. Reyes), 1 female; Violet Cave, 23 April 1998 (J. Reddell, M. Reyes), 1 female.

Comment.—This accidental species was found in the entrance areas of these caves.

Tetragnatha sp.

Record.—*Bell County*: Long Joint Sink, 23 March 1999 (J. Reddell), 1 immature.

Comment.—This accidental species was taken from the entrance sink.

Theridiidae

Undetermined genus and species

Records.—*Bell County*. Owl Mountain Cave, 28 May 2000 (J. Reddell, M. Reyes), 1 immature.

Coryell County: Gann Cave, 14 Jan. 1992 (J. Reddell, M. Reyes), 1 female, 1 immature (det. W.J. Gertsch) (AMNH); Rocket River Cave System (Cave Springs Cave), 14 Jan. 1992 (J. Reddell, M. Reyes), 2 females (det. W.J. Gertsch) (AMNH).

Comments.–We have not seen the specimens determined by Gertsch; all may belong to *Achaearanea porteri*.

Achaearanea sp. prob. *porteri* (Banks)

Records.—*Bell County*: C. B. Cave, 21 April 1998 (J. Reddell, M. Reyes), 1 immature; Night Vision Sink No. 2, 26 Sept. 1997 (J. Reddell), 1 immature; Red Ant Cave, 28 Aug. 1991 (J. Reddell), 4 females (det. W.J. Gertsch) (AMNH); Violet Cave, Oct. 1995 (M. Warton & Associates), 1 immature.

Coryell County: Egypt Cave, 23 Nov. 1994 (M. Warton), 1 immature; Goathead Cave, 5 Sept. 1991 (D. McKenzie, J. Reddell, M. Reyes), 1 female (det. W.J. Gertsch) (AMNH); Loop-Around Cave, 16 July 1993 (J. Reddell, M. Reyes), 4 immatures; Rocket River Cave System (Double Tree Cave), 16 Jan. 1992 (J. Reddell, M. Reyes), 2 females, 1 immature (det. W.J. Gertsch) (AMNH); Runoff Cave, 28 Aug. 1991 (J. Reddell, M. Reyes), 1 female, 1 immature (det. W.J. Gertsch) (AMNH).

Comments.—These specimens probably belong to *A. porteri*. We have not seen the material identified by W.J. Gertsch.

Achaearanea porteri (Banks)

Achaearanea porteri: Reddell, 1965:176.

Records.—*Bell County*: Cub Cave, 18 May 1999 (J. Reddell), 1 male, 1 immature; Gnarla Cave, 20 April 1998 (J. Reddell, M. Reyes), 1 female; Lunch Counter Cave, 18 Sept. 1997 (J. Reddell), 1 female; 25 March 1999 (J. Reddell, M. Reyes), 1 male, 2 females, 1 immature; Nolan Creek Cave, 9 March 1963 (D. McKenzie, J. Reddell), 3 females (det. W.J. Gertsch) (AMNH) (Reddell, 1965); 27 Jan. 1990 (J. Reddell, M. Reyes), 2 females, 5 immatures; 17 July 1993 (J. Reddell, M. Reyes), 3 females, 1 immature; Rugger's Rift Cave, 9 Nov. 1998 (J. Reddell, M. Reyes), 1 male, 2 immatures; Sanford Pit Cave, 18 May 1998 (J. Reddell, M. Reyes), 1 female; Streak Cave, 26 Nov. 1997 (L.J. Graves, J. Reddell, M. Reyes), 1 female.

Coryell County: Fossil Spring Cave, 16 July 1993 (J. Reddell, M. Reyes), 1 male, 1 female, 1 immature; Plateau Cave No. 2, 23 March 1990 (J. Reddell, M. Reyes), 1 female; Rocket River Cave System (Double Tree Cave), 23 March 1990 (J. Reddell, M. Reyes), 2 females; Saltpeter Cave, 21 Nov. 1995 (J. Reddell, M. Reyes), 2 males, 3 females, 4 immatures.

Comments.—This troglophile is found hanging from webs on cave walls, most commonly near entrances but may occur in the area of total darkness. It has been found in caves throughout Texas.

Argyrodes sp.

Record.—*Coryell County:* Cornelius Cave, 21 Nov. 1995 (J. Reddell, M. Reyes), 1 immature.

Comment.—This material is too immature for further identification. Species of this genus inhabit the webs of other species of Theridiidae, Araneidae, Tetragnathidae, and other web-builders.

Argyrodes furcatus (O. Pickard-Cambridge)

Records.—*Bell County*: Coyote Den Cave, 21 April 1998 (J. Reddell, M. Reyes), 1 male, 1 immature; Talking Crows Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 immature.

Comment.—This species was taken from the webs of *Tidarren* sp. prob. *sisyphoides* in Talking Crows Cave and *Tidarren sisyphoides* in Coyote Den Cave.

Latrodectus sp. prob. *mactans* Fabricius

Record.—*Coryell County*: Mixmaster Cave, 9 Sept. 1997 (L.J. Graves, D. McKenzie, J. Reddell, M. Reyes), 1 female.

Comment.—This species was taken below the entrance gate.

Pholcomma? sp.

Record.—*Bell County*: West Corral Sink, 3 May 2000 (J. Reddell, M. Reyes, M. Warton), 2 females.

Comments.—In the absence of male specimens we are not certain of this identification. This is apparently the first record of the genus in Texas, otherwise known from Louisiana and states further east.

Tidarren sp. prob. *sisyphoides* (Walckenaer)

Records.—*Bell County*: Lunch Counter Cave, 3 Nov. 1998 (M. Reyes), 1 immature; Talking Crows Cave, 20 April 1998 (L.J. Graves, J. Reddell, M. Reyes), 1 immature.

Comment.—This material was taken from webs just inside the entrance to the cave.

Tidarren sisyphoides (Walckenaer)

Records.—*Bell County*: Camp 6 Cave No. 1, 2 Nov. 1998 (J. Cokendolpher, J. Reddell), 2 females, 2 immatures; 6 June 2000 (J. Reddell, M. Reyes), 1 female; Coyote Den Cave, 21 April 1998 (J. Reddell, M. Reyes), 1 female, 1 immature.

Comment.—This material was taken from webs near the cave entrances.

Thomisidae

Xysticus robinsoni Gertsch

Record.—*Bell County*. Keilman Cave, 5 June 2000 (J. Reddell, M. Reyes), 1 female.

Comment.—This species is an accidental.

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