

## NOTES ON TROGLOBITIC *CICURINA* (ARANEAE: DICTYNIDAE) FROM FORT HOOD, TEXAS, WITH DESCRIPTION OF ANOTHER NEW SPECIES

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### ABSTRACT

*Cicurina (Cicurella) troglobia*, new species, is described from Seven Mile Mountain Cave on the Fort Hood Military Reservation. This is the fifth troglobitic member of the genus from this Reservation. New collection records are presented for *C. coryelli* and *C. hoodensis*.

### INTRODUCTION

Cokendolpher and Reddell (2001) remarked "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*." Adult female specimens from that cave have now been examined and indeed represent a new species described below. New records of the troglobitic species *Cicurina coryelli* Gertsch and *Cicurina hoodensis* Cokendolpher and Reddell from Fort Hood are also provided.

Five species of troglobitic *Cicurina (Cicurella)* are now known from Fort Hood (Cokendolpher and Reddell, 2001; herein). It is not unusual for this subgenus to have many troglobitic species from a relatively small region. Gertsch (1992) recognized 51 *Cicurina* species from caves in central Texas; of which 46 are true eyeless

troglobites. Additional undescribed species have been discovered since 1992 and the total number is expected to increase as new cavernous areas of the state are studied. Gertsch (1992) recorded one species from Fort Hood; we (Cokendolpher and Reddell, 2001 and herein) described four new species from that area. Likewise, my descriptions (Cokendolpher, 2004) of five new species from Bexar County caves more than doubled the number of troglobitic *Cicurina* reported there by Gertsch (1992).

### MATERIALS AND METHODS

The description format and methods essentially follow that of Cokendolpher and Reddell (2001). The female epigynum and associated spermathecal structures were removed and examined on both covered and uncovered depression slides in lactophenol with a Nikon-SL3D microscope. The use of a 3D microscope with uncompressed samples has proved helpful in understanding the complex structures of the spermathecae. The term 'index coil' of the internal genitalia was used by Gertsch (1992) and Cokendolpher and Reddell (2001); it corresponds to the start of the 'spermathecal stalk' with primary pores demarking the end of the copulatory duct

proper and position of the 'spermathecal head' as used by Bennett (1992). Bennett's terminology is followed here. Depositories are: AMNH= American Museum of Natural History, TMM= Texas Memorial Museum, Austin, TTU = Museum of Texas Tech University. The studies on the DNA of several of the specimens is unpublished. The collection/rearing data for those samples are presented here.

#### ACKNOWLEDGMENTS

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#### *Cicurina (Cicurella) troglobia*, new species

Figs. 1-3

*Cicurina (Cicurella)* spp., Cokendolpher and Reddell, 2001:37.

**Diagnosis.**—Eyeless troglobite from Seven Mile Mountain Cave. Internal genitalia with spermathecal stalk (index coil) lying at or posterior to the midline of spermathecal base; stalk narrowed at base, gradually widening distally; anterior-most arch of copulatory duct placed slightly anterior to midpoint of anterior lobe of

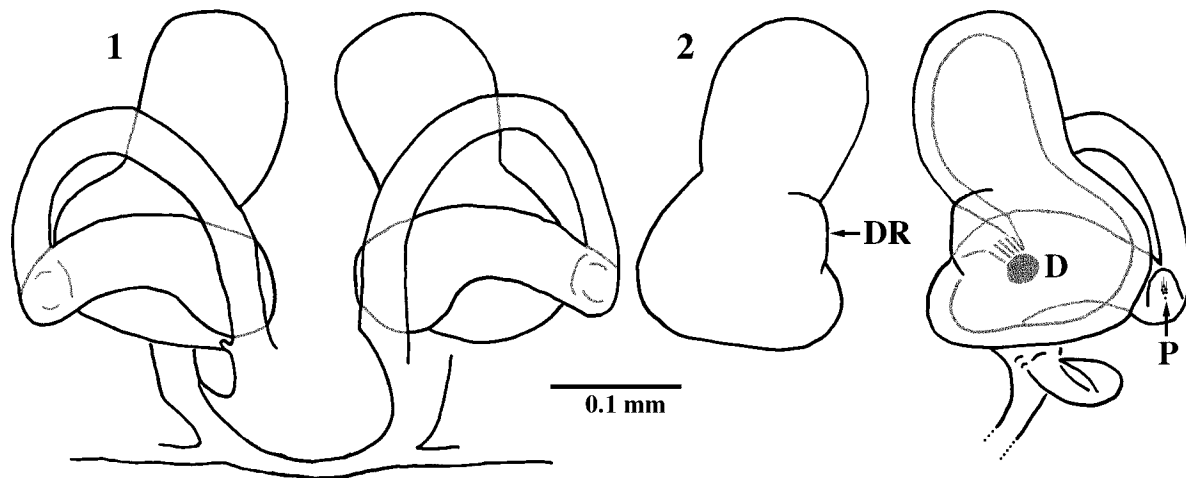
the spermathecal base; distal end of copulatory duct (at junction with spermathecal stalk) extended ventrally as short lobe with 4-6 primary pores; spermathecal base in dorsal view with diaphanous ridge at mesal junction of spermathecal bodies.

In the key to Fort Hood *Cicurina* (Cokendolpher and Reddell, 2001), the new species keys to *C. coryelli* because of the short copulatory duct that crosses over the midline of the spermathecal base. The short lobe at the junction of the copulatory duct and spermathecal stalk is present in the new species and absent in *C. coryelli*. In this latter species, the copulatory duct loops more dorsal and bends ventrally to attach to the dorsal surface of the spermathecal stalk. The two species also differ in the shapes of the spermathecae (broader connection between spermathecal bodies in *C. troglobia*, more slender connection in *C. coryelli*).

**Etymology.**—The specific name is taken from the Greek *trogli-* meaning cave, and *bios* meaning life.

**Type-data.**—Texas: Bell County: Seven Mile Mountain Cave, 28 June 2000 (J. Reddell, M. Reyes), molted in captivity 2 Oct. 2000, molted to maturity 14 July 2001, female holotype (AMNH), right legs removed for DNA studies. 28 June 2000 (J. Reddell, M. Reyes), molted in captivity 20 Nov. 2000, 17 March 2001, 25 Nov. 2002, matured 25 Aug. 2003), female paratype epigynum in 70% ethanol, body frozen at -80°C (TTU), 4 legs preserved for DNA.

**Other records.**—Seven Mile Mountain Cave, 11 April 1999 (R. Price, M. Warton), 1 immature (TMM); 28 June 2000 (J. Reddell, M. Reyes), 1 ?immature (abdomen missing) (TMM), 1 immature (died 3 Sept. 2000, not preserved), 1 immature (molted in captivity 2 Sept. 2000, 3 Feb. 2001, 20 Sept. 2002, died 26 March 2003, preserved



Figs. 1-2.—Cleared genitalia of female holotype of *Cicurina troglobia*, new species, from Seven Mile Mountain Cave: 1, ventral view; 2, dorsal view. Shading on dorsal view showing thick walls of spermathecal bodies, shading on ventral view showing right spermathecal stalk; D = 'dictynoid' pore, DR = diaphanous ridge, P = primary pores.

for DNA studies); 30 Nov. 2002 (M. Reyes, M. Warton), 2 immatures (TMM).

**Description.**—Female holotype straw-colored, troglobite, eyeless. Cephalothorax 2.15 mm long, 1.5 mm wide. Abdomen 2.85 mm long, 1.6 mm wide. Cheliceral retromargin with 7/7 teeth. Legs: FI - 1.9 mm, FIV - 2.15 mm; P-TI - 2.4 mm, P-TIV - 2.65 mm. Ventral leg macrosetae: TI - 2-2-2, TIV - 2-2-2. Epigynum (Fig. 3): thinly sclerotized without distinct borders except at posterior edge; atrium thin and pointed anteriorly; chitin around atrium thickened posteriorly; internally genitalia visible through chitin. Vulva (Figs. 1-2): spermathecae with spermathecal stalk lying across midline of spermathecal base, arched anteriorly, narrowed at base, gradually widening distally; anterior-most arch of each copulatory duct placed slightly anterior to midpoint of spermathecal base; basal end of spermathecal stalk strongly bent dorsally with copulatory ducts looping dorsally lateral to spermathecae, then ventrally below spermathecae; distal end of copulatory duct (at junction with spermathecal stalk) extended ventrally as short lobe with 4-6 primary pores (each with a small microduct); spermathecae in dorsal view with diaphanous ridge at mesal junction of spermathecal bodies (Fig. 2).

Variation: Female paratype cephalothorax 2.5 mm long, 1.7 mm wide. Abdomen 2.8 mm long, 1.95 mm wide. Legs: FI - 1.9 mm, FIV - 2.2 mm; TI - 1.7 mm, TIV - 1.9 mm. Like holotype, except spermathecal stalk flipped over so that it is arched posteriorly in the midline.

**Distribution.**—Known only from the type locality.

**Comments.**—The posteriorly arching spermathecal stalk of the paratype looks like that of *C. coryelli*. It is uncertain if this is natural or possibly a result of extracting the genitalia from a living animal and then placing it in alcohol (all other genitalia were fixed *in situ*). Because the lobe with primary pores was present and also rotated



Fig. 3.— Epigynum of female holotype of *Cicurina troglobia*, new species, from Seven Mile Mountain Cave: Ventral view. Arrow indicates placement of atrium, scale = 0.1 mm.

some laterally, it suggest that this might not be the natural condition. Sequencing of the DNA of this animal should be informative.

These spiders may go for many months between molts. The time from egg to adult is unknown but may be greater than three years in captivity. Immatures have been held in captivity for three years before maturing after 4 molts. In captivity, these spiders readily capture and eat living fruitflies, immature domestic crickets, small moths, and small whiteworms (*Enchytraeus albidus* Henle). When the spiders are smaller they eat mites and collembolans but appear to prefer larger prey when older.

#### *Cicurina (Cicurella) coryelli* Gertsch

**Comments.**—The second known female (first being recorded by Cokendolpher and Reddell, 2001) from Egypt Cave was collected 7 April 1999 (molted 30 Oct. 1999, 3 Sept. 2000, 15 April 2001, 20 Sept. 2002, 25 Nov. 2002), J. Reddell, M. Reyes (deposited TTU, 4 legs removed for DNA studies).

The external features and spermathecae do not differ significantly from that described for the species. The anterior-most arch of copulatory duct is higher than that illustrated by Cokendolpher and Reddell (2001), but does not reach the top of the spermathecae like *C. caliga*. The anterior-most point of the duct reaches almost 3/4 the length of the spermathecae.

#### *Cicurina (Cicurella) hoodensis* Cokendolpher and Reddell

**Comments.**—Three females from the type locality (Buchanan Cave, Ft. Hood, Bell County, Texas): collected on 13 June 2000 (J. Reddell and M. Reyes) and 4 legs from each removed for DNA studies: specimen 1, deposited TTU, molted to adulthood in captivity on 29 Oct. 2001; specimen 2, deposited TMM, molted 18 Sept. 2000, no molts in 2001, molted 20 Sept. 2002, matured 25 Nov 2002; specimen 3, deposited TTU, collected 4 Nov. 1998 (J. Cokendolpher, J. Krejca, J. Reddell, M. Reyes) molted 28 Jan. 1999, 10 May 2000, 22 Feb. 2001, 20 Sept. 2002, matured 20 Jan. 2003.

The external features of these specimens do not differ significantly from the published description/illustration (Cokendolpher and Reddell, 2001). The internal genitalia of specimens 1 and 3 also are very similar. Spermathecal stalk of specimen 2 is not as strongly arched, but still is not straight as in *C. caliga*. Specimen 2 was collected in the upper level of the cave (similar information not recorded for specimens 1 and 3). Specimen 3 reached maturity after molting five times in a period of over four years in captivity. As observed with the

eight previous females reared to maturity in captivity (Cokendolpher and Reddell, 2001), these three specimens matured during later summer to winter.

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