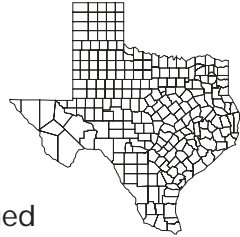


# Araneae: Dictynidae: *Cicurina madla* Gertsch

## SPECIES-LEVEL INFORMATION

**Range:** *C. madla* is known only from caves in Bexar County.



**Level of cave adaptation:** troglobite

**Distinguishing features:** Small long-legged cream colored spider that moves rapidly when disturbed. It is usually found in the same caves as another species of the genus, *C. varians*. Adult *C. varians* are typically larger, darker, and more robust than the blind species. The various blind species of *Cicurina* can only be distinguished by detailed examination of the genitalia.

**Abundance:** Adults are rarely seen with males extremely rare. It is likely that males mature, mate, and die soon afterwards. Juvenile specimens may be abundant under certain circumstances.

**Size:** This species ranges from 4.5 to 6.5 mm in body length.

## GENUS-LEVEL INFORMATION

**Biology:** Troglotic species may take more than a year to mature.

**Ecology:** These are predators.

**Habitat:** The blind members of this genus are usually found on the underside of rocks lightly buried in silt. They build a small irregular web.

TEXAS PARKS AND WILDLIFE

## *Cicurina madla*



*Cicurina madla*.  
Jean Krejca



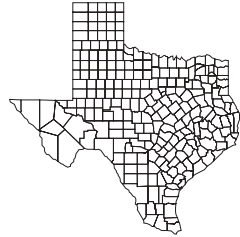
*Cicurina varidus*.  
Jean Krejca and  
Peter Sprouse

*Karst Invertebrates*

**Araneae: Nesticidae:**  
***Eidmannella rostrata* Gertsch**

**SPECIES-LEVEL INFORMATION**

**Range:** This species ranges from Bexar County north to Williamson County and west to Terrell County.



**Level of cave adaptation:** troglobite

**Distinguishing features:** This long-legged, depigmented species may be eyeless or retain small vestigial eyes. It occasionally occurs in caves with the fully eyed species, *E. pallida*, and they cannot be easily separated in the field. Another common species in the same caves with *E. rostrata* is the eyed linyphiid spider *Agyneta llanoensis*. Both have a similar morphology and it is difficult to separate them without a microscope or good hand lens.

**Abundance:** This species may be present in large numbers in some caves, but typically only a few are found on a single trip because of their secretive nature.

**Size:** This species is about 2.7 mm in total length.

**GENUS-LEVEL INFORMATION**

**Biology:**

**Ecology:** These are predators.

**Habitat:** The cavernous species typically hang from webs on cave walls.

***Eidmannella rostrata***

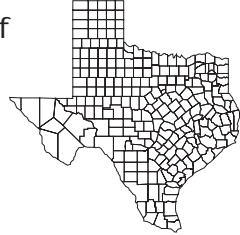


James C. Cokendolpher

# Opiliones: Phalangodidae: *Texalla reyesi* Ubick and Briggs

## SPECIES - LEVEL INFORMATION

**Range:** This species ranges from north of the Colorado River in Travis County to northern Williamson County.



**Level of cave adaptation:** troglobite

**Distinguishing features:** This is a small long-legged light orange colored species that lacks the retinas in all specimens. Southern populations typically retain the cornea but in some of the more northern populations the cornea is also absent. Immature individuals are white.

**Abundance:** This species is typically rare, but occasionally several individuals can be found on a single trip to a cave.

**Size:** Adults range from about 1.4 to 2.7 mm in total body length.

## GENUS - LEVEL INFORMATION

**Biology:**

**Ecology:** These are predators but may also feed on organic matter. No observations have been made on their feeding behavior.

**Habitat:** The cavernicolous species are usually found on the underside of rocks lightly buried in silt, but more cave-adapted species are occasionally found crawling on wet cave walls and flowstone.

TEXAS PARKS AND WILDLIFE

## *Texalla reyesi*



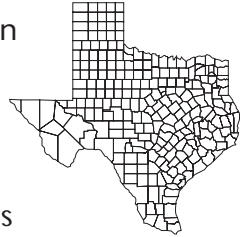
James C. Cokendolpher

*Karst Invertebrates*

# Pseudoscorpiones: Neobisiidae: *Tartarocreagris infernalis* (Muchmore)

## SPECIES-LEVEL INFORMATION

**Range:** This species ranges from northern Travis to northern Williamson County.



**Level of cave adaptation:** troglobite

**Distinguishing features:** Pseudoscorpions crudely resemble a scorpion without the tail. This species is eyeless, tan to pale brown, and has extremely elongate appendages. It can only be distinguished from other species of the genus by detailed examination of body parts.

**Abundance:** This species is extremely rare with seldom more than one individual found in several visits to a cave.

**Size:** The body length ranges from 2.56 to 2.85 mm.

## GENUS-LEVEL INFORMATION

**Biology:**

**Ecology:** These pseudoscorpions are predatory and have been observed feeding on small cave cricket nymphs. They probably feed on all small arthropods.

**Habitat:** Cavernicole pseudoscorpions typically are found on the underside of rocks but can also be found crawling on wet flowstone, clay, or other moist substrates.

TEXAS PARKS AND WILDLIFE

# *Tartarocreagris infernalis*



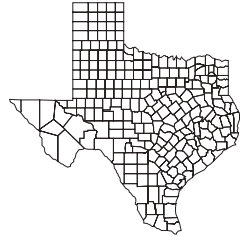
James C. Cokendolpher

*Karst Invertebrates*

# Amphipoda: Crangonyctidae: *Stygobromus russelli* (Holsinger)

## SPECIES-LEVEL INFORMATION

**Range:** This species ranges from Bexar County north to Fort Hood in Bell and Coryell counties and west to Bandera County.



**Level of cave adaptation:** troglobite

**Distinguishing features:** This is a depigmented, eyeless species. As in all amphipods, they are laterally flattened with a slightly curved body. This species may occur in the same caves with other species of the genus and cannot be distinguished except by microscopic examination.

**Abundance:** The species is typically rare but occasionally a large number of specimens may be found on a single cave visit.

**Size:** Adults range from 4 to 7 mm in total body length.

## GENUS-LEVEL INFORMATION

**Biology:**

**Ecology:**

**Habitat:** These live in cave pools and streams.

TEXAS PARKS AND WILDLIFE

# *Stygobromus russelli*



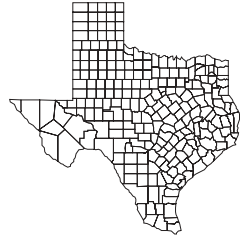
Robert & Linda Mitchell

*Rare Invertebrates*

# Spirostreptida: Cambalidae: *Cambala speobia* (Chamberlin)

## SPECIES-LEVEL INFORMATION

**Range:** This species occurs in caves throughout central Texas and the Edwards Plateau.



**Level of cave adaption:** troglobite

**Distinguishing features:** This is a pale tan to brown millipede with a circular cross-section. It lacks eyes but retains a sensitivity to light. Usually when a light is shined on it, it will roll into a tight ball. The only similar millipedes found in Texas caves are species of the family Parajulidae. This family is typically only found in entrance areas and is thicker and darker with distinct eyes.

**Abundance:** *Cambala speobia* is the most common species found in Texas caves and may occasionally be found in large numbers. It is especially abundant in some caves with limited bat guano deposits.

**Size:** Total body length ranges up to about 35 mm.

## GENUS-LEVEL INFORMATION

**Biology:**

**Ecology:** These probably feed on fungi and other decaying organic matter.

**Habitat:** Surface species live in leaf litter but cave forms may be found on bat guano, soil, and rock substrates.

TEXAS PARKS AND WILDLIFE

# *Cambala speobia*



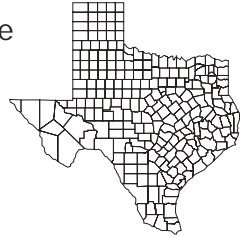
William R. Elliott

*Karst Invertebrates*

# Scutigermorpha: Scutigeraidae: *Scutigera* sp.

## SPECIES-LEVEL INFORMATION

**Range:** The genus *Scutigera* is worldwide in distribution but this species has not yet been identified. Some species are cosmopolitan but at least one Texas species is known only from a few localities in central Texas.



**Level of cave adaptation:** troglophile

**Distinguishing features:** House centipedes have extremely long legs and antennae and move very rapidly over cave walls, floors, and ceilings. Other centipedes in caves are either long and wormlike (order Geophilomorpha) and primarily live in soil or are more robust with much shorter legs (orders Scolopendromorpha and Lithobiomorpha).

**Abundance:** Scutigerids are comparatively rare in caves, although occasionally several can be seen on one visit.

**Size:** Adults from Texas caves seldom range more than 20 mm in total length.

## GENUS-LEVEL INFORMATION

**Biology:**

**Ecology:** Scutigerids are predators and feed on any arthropod that they can capture.

**Habitat:**

TEXAS PARKS AND WILDLIFE

# *Scutigera* sp.



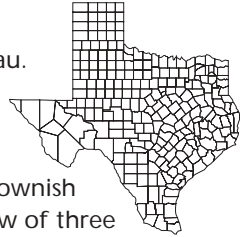
Jean Krejca and Steve Taylor.  
Courtesy of Natural Resources Branch, Fort Hood, Texas.

*Karst Invertebrates*

**Orthoptera: Rhaphidophoridae:**  
***Ceuthophilus (Ceuthophilus) secretus***  
**Scudder**

**SPECIES - LEVEL INFORMATION**

**Range:** This species ranges from Dallas south to Victoria and west throughout the Edwards Plateau.



**Level of cave adaptation:** troglaxene

**Distinguishing features:** This is a large, robust brownish species with long, heavily spinose hind legs. A row of three whitish spots extend along the length of the upper body. In central Texas it inhabits caves with two other species of *Ceuthophilus*. *Ceuthophilus cunicularis* is a reddish species almost always found on cave floors. The third species, *C. new species B*, also roosts on ceilings. It can be separated from *C. secretus* by its smaller size in adults and possession of a single pale line down the middle of the body as opposed to the three white spots. Adult females of *C. new species B* also have a longer ovipositor and both sexes are more orange colored than *C. secretus*. Recently molted individuals of the two species are difficult to distinguish in the field. Nymphs of all crickets are white to pale tan.

**Abundance:** This species is frequently present in large numbers (hundreds to thousands) in many caves.

**Size:** Adults range up to 30 mm in total body length.

**GENUS - LEVEL INFORMATION**

**Biology:** The cave species typically return to the surface to feed.

**Ecology:** This genus feeds on a wide variety of organic materials, including fruits. They are an integral part of the cave ecosystem, with their nocturnal foraging on the surface serving as a route of energy flow from the surface to the cave interior. Their guano, eggs and dead bodies are fed upon by the cave-limited species and are often the major component to the base of the food chain for those species.

**Habitat:** Many species live under rocks, in mammal burrows, wood piles, and other sheltered situations as well as caves.

***Ceuthophilus secretus***



Female *Ceuthophilus secretus*. USFWS-Jean Krejca



Male *Ceuthophilus secretus* showing back pattern. USFWS-Jean Krejca



Female *Ceuthophilus new species B* showing back pattern, orange color and long ovipositor. USFWS-Jean Krejca

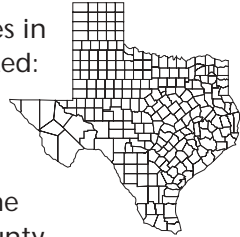


Female *Ceuthophilus cunicularis* showing ground habitat and reddish color. Jean Krejca

**Coleoptera: Carabidae:**  
***Rhadine infernalis***  
**new subspecies (Barr and Lawrence)**

**SPECIES - LEVEL INFORMATION**

**Range:** *R. infernalis* is known only from caves in Bexar County. Three subspecies are recognized: *R. infernalis infernalis* from caves in the Helotes area, *R. infernalis ewersi* from three caves in southwestern Camp Bullis, and *R. infernalis* new subspecies from caves in the Culebra Anticline area of western Bexar County.



**Level of cave adaptation:** troglobite

**Distinguishing features:** This is a reddish-brown beetle with minute eye rudiments and a narrow neck. This subspecies is the only member of the genus found the cave where it occurs. Other subspecies, however, frequently occur with *Rhadine exilis*. The two species can be separated by the more robust habitus of *R. infernalis*. A large-eyed species of *Rhadine* is also occasionally found in the same caves but usually occurs nearer the entrance and is much larger, darker, and more robust than the troglobitic species.

**Abundance:** This species may be occasionally abundant with ten or more individuals seen in a limited area. At some times, however, it appears to be absent or is extremely rare.

**Size:** The body length is about 6.5 to 8 mm.

**GENUS - LEVEL INFORMATION**

**Biology:**

**Ecology:** These beetles are opportunistic feeders but have been most often seen eating dead or dying arthropods. Some species actively seek cave cricket eggs in caves.

**Habitat:**

TEXAS PARKS AND WILDLIFE

***Rhadine infernalis***  
**new subspecies**



James C. Cokendolpher

*Karst Invertebrates*

**Coleoptera: Staphylinidae: Pselaphinae:**  
***Batrisodes (Excavodes) gravesi***  
**Chandler and Reddell**

**SPECIES - LEVEL INFORMATION**

**Range:** This species is known only from caves on Fort Hood in Bell and Coryell counties, Texas.



**Level of cave adaptation:** troglobite

**Distinguishing features:** This small reddish beetle is characterized by having the elytra (hardened wing covers) reduced so that they do not cover all of the abdomen. The antennae have a small club. The species is eyeless. Some species of the genus also occur with eyed species of the genus in the same cave. The troglomorphic species have longer legs but the small size of these beetles make it unlikely that they could be separated in the field.

**Abundance:** Eyeless *Batrisodes* are typically quite rare with seldom more than one individual seen on any visit to a cave.

**Size:** This species ranges in size from 2.32 to 2.64 mm in body length.

**GENUS - LEVEL INFORMATION**

**Biology:**

**Ecology:** These are probably predators of minute arthropods.

**Habitat:** This cavernicole species of this genus are usually found on the underside of small rocks lightly buried in silt.

TEXAS PARKS AND WILDLIFE

***Batrisodes gravesi***



James C. Cokendolpher

*Karst Invertebrates*