

# THE TERRESTRIAL ARTHROPOD FAUNA OF FLORIDA CAVES

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## ABSTRACT

Locality records are given for 3 species of troglonexes, 13 species of facultative troglaphiles, and 1 species of obligate troglaphile and 2 species of troglobites known from Florida caves. Accidentals are not included.

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Since the first paper on Florida cave life (Hubbard 1901), a number of troglobitic (cave specialized) arthropods have been discovered in Florida. These are all aquatic crustaceans (reviewed in Nicholas 1960, and Warren 1961). Little previous effort has been made to comprehensively collect and study the terrestrial cave inhabitants. During the past seven years I have been involved in an extensive study of the evolution and distribution of North American cave faunas. As a part of this study, several weeks of field work have been spent in Florida caves. This paper is a compilation of species and locality records collected in this field work and literature references known to me on this fauna. These records are published at this time to document some evolutionary and distributional generalizations that will be made in future papers on the cave faunas of Georgia (with J. Holsinger) and of Alabama.

Hopefully this paper will stimulate others to continue work on the terrestrial arthropod fauna of Florida caves. Much yet remains to be learned about what species use cave habitats, the exact limits of the species distributions, and the ecological roles of the species in the cave communities.

The following list includes only those species judged to be members of a cave community, i.e. capable of establishing permanent cave-utilizing populations. Several species, especially from the Ocala area, have been excluded because they seem to be only accidental strays that have wandered into the caves. Following each species name is an ecological classification. A troglonexe can not complete its life cycle in a cave. Facultative troglaphiles may complete their life cycles in caves but are also known from non-cave habitats. Obligate troglaphiles are known only from caves, but do not show morphological adaptation to caves. Troglobites possess morphological adaptations for a cave environment.

Names used are on file with the Florida Cave Survey and the National Speleological Society. A name in quotation marks is one I have coined when no other seems to be available. Indian Cave and Miller's Cave are undeveloped caves in Florida Caverns State Park (FCSP).

## SYSTEMATIC LIST

Class CRUSTACEA: Order ISOPODA: Family TRICHONISCIDAE

*Miktoniscus alabamensis* Muchmore (facultative troglaphile). FLORIDA RECORDS: Jackson County; Florida Caverns (Vandel 1965), Miller's Cave,

Gerard's Cave. COMMENTS: Found on moist rotted wood. Distributed from Florida to Ohio.

Class ARACHNIDA: Order OPHILIONES: Family PHALANGODIDAE

*Phalangodes (Bishopella) laciniosa* Crosby & Bishop (facultative troglophile). FLORIDA RECORDS: Jackson County; Florida Caverns. COMMENTS: One collection, August 1965, (determined by C. Goodnight) and not collected since in a Florida cave. Attempts should be made to verify if the species has formed cave populations in Florida as it has frequently in Alabama and Georgia. It is known from litter in FCSP (Goodnight & Goodnight 1942, 1953) under the synonym of *P. marianna*.

*Phalangodes (Crosbyella) spinturnix* Crosby & Bishop (facultative troglophile). FLORIDA RECORDS: Jackson County; Gerard's Cave, Milton Cave, Miller's Cave. COMMENTS: The species forms large cave populations, often found under rocks and near organic debris. It comes to carrion bait.

Class ARACHNIDA: Order ARANEA: Family ARGIOPIDAE

*Azilia vagepicta* Simon (facultative troglophile). FLORIDA RECORDS: Jackson County; "Spring Cave" and "Two Entrance Cave" both in FCSP. COMMENTS: The species spins orb webs in small moist cave entrances just at the edge of the dark zone. It is moderately common in Florida (W. J. Gertsch in litt.). Its range outside the state is uncertain.

Family LINYPHIIDAE

*Centromerus latidens* (Emerton) (facultative troglophile). FLORIDA RECORDS: Jackson County; Indian Cave. COMMENTS: First Florida record. A common cave-inhabiting spider in the Appalachians. It is found in forest litter in northern states. An undetermined female *Centromerus* was taken in Dr. Dame's Cave, Citrus County, which may be this species. This cave should be recollected for this species.

*Islandiana* sp. (troglobite). FLORIDA RECORDS: Jackson County; Miller's Cave. COMMENTS: This is an undescribed species, judged to be cave limited and adapted because of its reduced eyes and lack of pigment (W. J. Gertsch in litt.). The genus is typically boreal and montane, with 4 species known only from southeastern caves (Ivie 1965).

Family NESTICIDAE

*Gaucelmus augustinus* Keyserling (facultative troglophile). FLORIDA RECORDS: Alachua County; Dudley Cave (Gertsch record), Warrens Cave. Citrus County; "Caves" (Gertsch record). Jackson County; Milton Cave, Miller's Cave. Marion County; Medford Cave (S. of Reddick, Gertsch record). COMMENTS: Also known from caves in Alabama, Texas, and Mexico, and non-cave habitats in Florida, Alabama, Louisiana, and Texas.

*Nesticus pallidus* Emerton (facultative troglophile). FLORIDA RECORDS: Alachua County; Bat Cave. Citrus County; Blowing Hole Cave, Dr. Dame's Cave. Jackson County; Gerard's Cave, Indian Cave, Miller's Cave. COMMENTS: Found often in caves in the southeast. A widespread species throughout North America.

## Class DIPLOPODA: Order SPIROSTREPTIDA: Family CAMBALIDAE

*Cambala annulata* (Say) (facultative troglophile). FLORIDA RECORDS: Jackson County; Gerard's Cave, Indian Cave, Judge Cave, Miller's Cave, Milton Cave. COMMENTS: I have taken the species in FCSP in rotted logs in the forest. It is distributed across most of the southeast (Hoffman 1958), but not commonly in caves. In Florida it forms large populations in association with bat guano and organic debris. It can be collected by baiting with carrion.

## Class CHILOPODA: Order LITHIOBIOMORPHA: Family LITHIOBIIDAE

*Lithobius atkinsoni* Bollman (facultative troglophile). FLORIDA RECORDS: Jackson County; Gerards Cave, Milton Cave. COMMENTS: First Florida record. It is known from five caves in Alabama and generally distributed in the southern Appalachians.

## Class INSECTA: Order COLLEMBOLA: Family ENTOMOBRYIDAE

*Pseudosinella* sp. (troglomite). FLORIDA RECORDS: Jackson County; Miller's Cave (Christiansen and Culver 1968; 253), Gerard's Cave. COMMENTS: This is an undescribed species belonging to the *P. argentea* complex which has converged through subterranean evolution to strongly resemble *P. hirsuta*.

## Family ISOTOMIDAE

*Isotoma notabilis* Schaffer (facultative troglophile). FLORIDA RECORDS: Alachua County; Warren's Cave. COMMENTS: A cosmopolitan species, sometimes placed in the genus *Parisotoma*.

## Family TOMOCERIDAE

*Tomocerus dubius* Christiansen (facultative troglophile). FLORIDA RECORDS. Alachua County; Warren's Cave. Jackson County; Miller's Cave. COMMENTS: First Florida records. It is known from caves and epigeal sites in the east and California (Christiansen 1964).

## Order ORTHOPTERA: Family GRYLLACRIDIDAE

*Ceuthophilus gracilipes* (Haldeman) (troglaxene). FLORIDA RECORDS: Jackson County; Bat Cave (Hubbell 1936), Blue Spring Cave (Hubbell 1936), in Cave Entrance Florida Caverns (T. H. Hubbell coll.), Gerard's Cave, Miller's Cave, small cave near Judge Cave. COMMENTS: Hubbell (1936) reported these populations under the sub-specific name of *apalachicola*. The species occurs throughout much of the eastern United States in cave and epigeal habitats.

*Ceuthophilus latibuli* Scudder (troglaxene). FLORIDA RECORDS: Alachua County; Bat Cave (H. H. Hobbs coll.), Dudley Cave (Hubbell 1936), Grant's Cave (R. E. Woodruff coll.), Jook Cave (T. H. Hubbell coll.), O'Steen's Cave (Hobbs coll.), Warren's Cave (Hubbell 1936). Citrus County; Blowing Hole Cave, Dr. Doan's (Dame's) Cave (A. F. Carr coll.). Marion County; Bellview Cave (Hobbs coll.), Jennings' Cave (Hobbs coll.), Waldo Cave (Hobbs coll.). COMMENTS: The species is known only from Florida and Georgia and is also found in epigeal habitats (Hubbell 1936).

*Ceuthophilus virgatipes* Rehn & Hebard (troglaxene). FLORIDA RECORDS: Alachua County; Dudleys Cave (Hubbell 1936). Marion County;

Villa Heights Cave (Hubbell 1936). COMMENTS: Known only from Florida and Georgia. Not a common cave inhabitant.

Order COLEOPTERA: Family LEIODIDAE

*Nemadus* sp. (facultative troglophile). FLORIDA RECORDS: Alachua County; Warren's Cave. Jackson County; Gerard's Cave. COMMENTS: First records of the genus for Florida. The genus is badly in need of revision, which I am now preparing. The species may be undescribed. It is found in the caves in bat guano and can be baited with carrion and human dung. It may occur in Florida forests.

*Prionochoaeta opaca* (Say) (facultative troglophile). FLORIDA RECORDS: Jackson County; Gerard's Cave, Miller's Cave. COMMENTS: First report of the genus from Florida. It is widespread in mesic forest habitats in the eastern United States. I have taken it in the forests of FCSP. It is common in these two caves on bat guano and may be baited with carrion and human dung.

*Ptomaphagus cavernicola* Schwarz (obligate troglophile). FLORIDA RECORDS: Alachua County; Warrens Cave. Jackson County; Gerard's Cave, Miller's Cave. COMMENTS: First Florida records. It was found in large populations in the two Jackson County caves associated with bat guano. It is also known from Alabama, the Ozark states, Iowa, Texas, and Mexico (personal data). It has never been taken outside of caves. It can be baited with carrion and human dung.

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