# Cueva de la Florida

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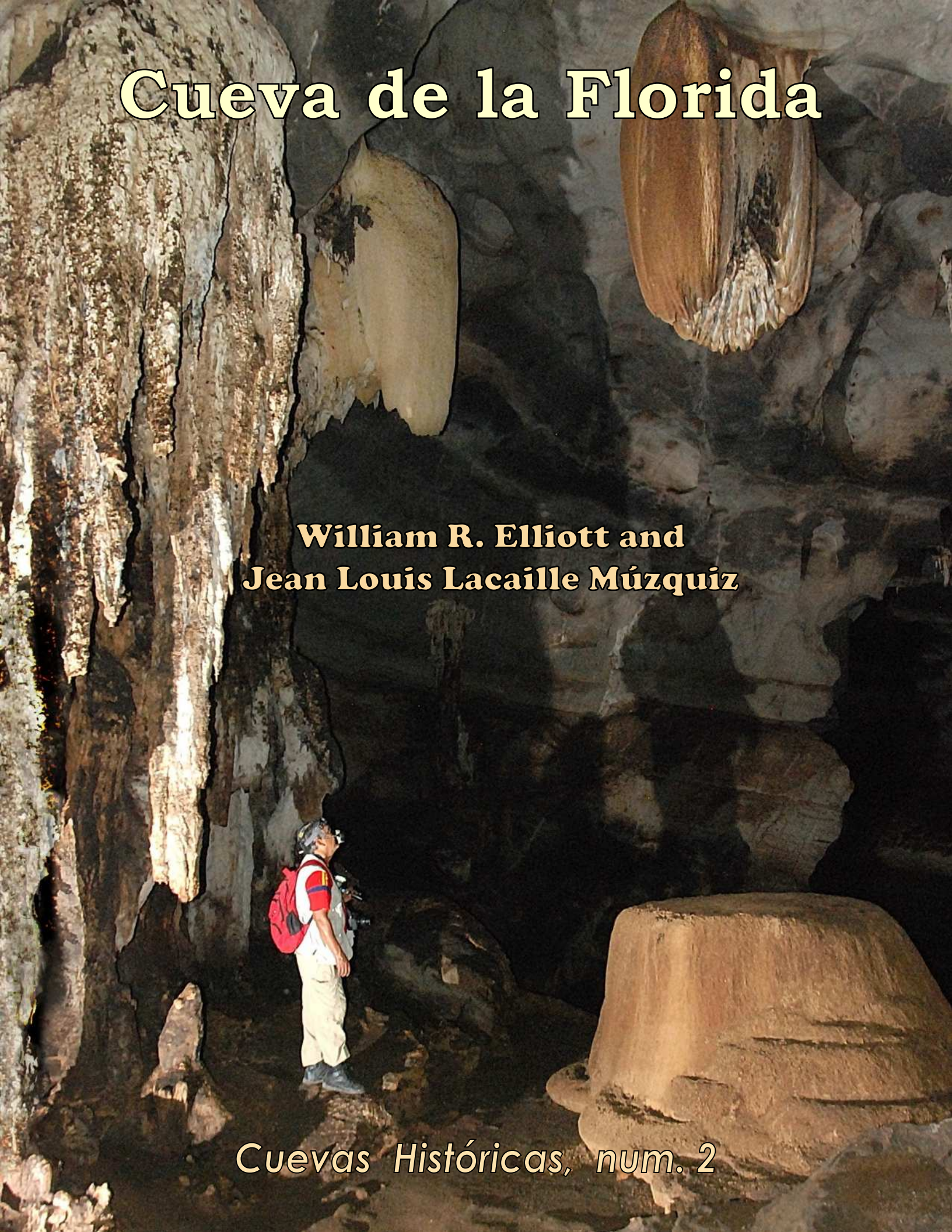

*Cuevas Históricas, num. 2*

# *Cueva de la Florida*

**William R. Elliott and Jean Louis Lacaille Múzquiz**

***Cuevas Históricas***

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**Cuevas Históricas, num. 2**
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**Front cover photo: Jesús García López at El Altar, Cueva de la Florida.**
**by Jean Louis Lacaille Múzquiz, 2022**

# Cueva de la Florida

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Photographs by Jean Louis Lacaille Múzquiz, Robert W. Mitchell*,
and Francis E. Abernethy* (*deceased)

**Abstract**

Cueva de la Florida, Tamaulipas, México, is an important biological cave located on the Rancho Misantla, about 15 km SW of Ciudad Mante, in the Municipio de Antiguo Morelos. Cueva de la Florida is 1.6 km NW of Cueva de El Pachón, and 3 km W of the crest of the Sierra de El Abra (Mitchell 1970, Russell 1972, Elliott 2018). The cave lies at an elevation of 225 m above sea level. Apparently Cueva de la Florida is an ancient resurgence similar to Cueva de El Pachón, but now it is a dry cave with at least eight bat species and a rich invertebrate fauna. The cave also contains possibly ancient Huastecan pictographs.

**Resumen**

La Cueva de la Florida, Tamaulipas, México, es una importante cueva biológica ubicada en el Rancho Misantla, a unos 15 km al SO de Ciudad Mante, en el Municipio de Antiguo Morelos. Cueva de la Florida se encuentra a 1.6 km al NO de la Cueva de El Pachón y a 3 km al O de la cresta de la Sierra de El Abra (Mitchell 1970, Russell 1972, Elliott 2018). La cueva se encuentra a una altitud de 225 m sobre el nivel del mar. Aparentemente Cueva de la Florida es una antigua resurgencia similar a la Cueva de El Pachón, pero ahora es una cueva seca con al menos ocho especies de murciélagos y una rica fauna de invertebrados. La cueva también contiene pictografías huastecas posiblemente antiguas.

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## Map Lost for 51 Years

The early visits to Cueva de la Florida were made by several groups of speleologists, who were not entirely aware of each other. Three separate attempts were made to map the cave.

The cave was first visited by members of the University of Texas Grotto (UTG or UTSS) on 5 June 1967. Phil Sigmund, Eric Remington, Judy Sustare, and Dennis Sustare explored the cave, and mapped about 1000 ft. (300 m) of the Right Hand Tunnel; this incomplete survey was never published. Dennis Sustare (1969) reported that phosphate miners were working in the Left Hand Tunnel at that time. William H. Russell and Tom McGarrigle of the UTG and AMCS (Association for Mexican Cave Studies) made a reconnaissance trip about 25 November 1967, and they may have done some preliminary mapping.

William H. Russell, William R. Elliott and Brian Evans mapped the whole cave in early February 1968. Russell plotted the survey, and it was drafted later in ink by Carl Kunath for Robert W. Mitchell's research. The original map was later lost, but simplified versions of it appeared in Mitchell's 1968 study of ricinuleids (Mitchell 1970) and Edwards' MS thesis (1971). A partial survey, mostly of the Right Hand Tunnel, was made by Fred Wefer and

Del Myers on 1 September 1968 (Wefer 1969). Barbara Hershberger (1969) mentioned a 1968 trip, when they spoke with phosphate miners and a geologist at El Abra and the cave. Abernethy recounted the 1968 ricinuleid study in his personal memoir, posthumously published in 2022 in this journal.

The original 1968 Russell map of Cueva de la Florida was lost, but found in August 2019. Elliott discovered a faded blueline copy of the map in the AMCS flat files. This was scanned and he revised and updated the map digitally, adding data from the two biological studies and Wefer's map. A scanned copy of Kunath's final ink draft was later found by Elliott in the AMCS data archives in 2021. The original ink draft has not been found. Elliott's new map and the Wefer map are posted on the AMCS website.

**Description and Hydrogeologic History**

The cave is about 1700 m long in plan view, 1830 m total surveyed and 57 m vertical depth. The cave is in two segments separated by a collapse sink. The old downstream segment opens onto an arroyo (photos) originating on the crest of the sierra to the NE, and which intermittently flows SW to Arroyo El Lagarto. This morphology dates to an early phase of karst development when only the top of the crest had been exposed by erosion of the shales above the El Abra limestone. At that time there could have been multiple local swallets and resurgences along the west side of the narrow crest.

The morphology of the cave suggests that it formed in two stages, with the main trunk discharging into the arroyo via the Parrot Tunnel (Cueva de los Pajaros), which later was separated by collapse of the present entrance sink. Another flow route formed via the Drainage Tunnel, and thence farther down the arroyo to a new resurgence. Part of the Drainage Tunnel is a pressure tube that dips down, then rises to its outlet. The Drainage Tunnel flow could have risen from the rear of the cave, or alternatively, via overflow from the arroyo into the upper entrance, before the sink collapsed. These outlets do not appear to discharge water any more, except possibly during heavy storms.

The Left Hand Tunnel, 625 m long, is described in detail in the next section. The Right Hand Tunnel is a sinuous passage averaging 3 m wide and 5 m high. A 3-m pit prevented further exploration in 2001 by Jean Louis Lacaille Múzquiz. There are a major side passage and several interconnections, and a crawlway that leads to a blind 18–m pit. The main Right Hand Tunnel ends in a steep upward slope of flowstone, and above this a small water-crawl extends for perhaps 100 m (Russell 1972).

Hydrogeologically dating parts of this cave would help work out the history of Cueva de El Pachón, which functions as a small swallet and resurgence, but with a perched, permanent lake containing cavefishes (Mitchell, Russell, and Elliott 1977). This suggests that the cavefish population had an early colonization when tied to local karst development. It is possible that *Astyanax* colonized Pachón via swallets above it, which still exist. Another possible origin would be fish colonizing from Arroyo Lagarto, which may have back–flooded the cave before the arroyo downcut the valley to the west.

**Ecology of the Cave**

Invertebrates were collected by William H. Russell, William R. Elliott, and Brian Evans in February, 1968. Robert W. Mitchell, James R. Reddell, Francis E. Abernethy and William L. "Dub" Rhodes collected fauna during the spring 1968 ricinuleid study and later (Abernethy, 2022). On 10 March 1969, James Reddell and Suzanne Fowler (Wiley) made further collections, including a new species of pseudoscorpion, *Aphrastochthonius parvus*, found on the wall in the Left Hand passage. This pseudoscorpion was described by Muchmore, 1972.

Sustare (1967) reported, "The left-hand route contained numerous bats, including fruit bats and vampires, in addition to *Myotis*."

Edwards' 1971 thesis at Texas Tech University provided many temperature and relative humidity readings from the entrance to the end of the Left Hand Tunnel (see revised map). No date was given, but temperatures ranged from 24.5 to 29° C, and relative humidity ranged from 96 to 100%. The highest temperatures were in the main bat roost.

Ricinuleids are considered to be the rarest order of living arachnids, but Cueva de la Florida has the largest known population in the world. The first ricinuleids are found in the Left Hand Tunnel about 350 m from the entrance at point A on the map, just past Dome Pit 1. From point A to point B they are found in moderate numbers. The greatest concentration of ricinuleids is found between point B and the end of the Left Hand Tunnel. The terminal part of the Left Hand Tunnel has an abundance of food in the guano deposits of the two most abundant bats, *Glossophaga soricina* and *Pteronotus parnellii*, which roost in Dome Pits 2, 3 and 4. The greatest concentration of ricinuleids is found in the area where the temperature range is 28°-29°C and relative humidity is 100% (Edwards 1971).

Near the end of the Left Hand Tunnel is a small, guano-covered pool (charco on the map) containing a few aquatic invertebrates such as worms, ostracods, and a *Speocirolana* isopod, but no fish.

Mitchell conducted a population study of *Pseudocellus pelaezi* ricinuleids (photo) using mark-recapture and quadrat methods (photos). 500 individuals were marked with a small dot of nontoxic paint, then four days later 793 were captured (577 adults and 216 immatures). The number of recaptured marks was 49. Using Bailey's version of the Lincoln-Peterson index, the estimated population was 7,940 ± 2,108 95% confidence limits, with 5,780 ± 1,516 adults in the mark-recapture area between point A and the charco on the map. Extrapolating to the entire observed range of *P. pelaezi* in the Left Hand Tunnel, Mitchell further estimated a total population of about 11,000. This is a population many times larger than any ricinuleids ever reported.

The quadrat study was between points A and B on the map, and used wire frames 30 cm square (photo). Each quadrat was randomly chosen and tallied by a team member (photos); the number of ricinuleids and other fauna were noted. This was used to calculate the dispersion patterns of the fauna. Only ricinuleids, large millipedes and crickets were numerous enough for statistical analysis. Mitchell found that ricinuleids were strongly associated with the millipede, *Orthoporus lenonus*, indicating that ricinuleids probably were feeding on millipede guano. The ricinuleids were seen to feed upon the bodies of bats, crickets, amblypygids, and millipedes and on the feces of bats and millipedes (Edwards 1971). So, a food chain of bat guano/carrion → millipede guano/carrion → ricinuleids seems to exist in this case.

Mitchell took many live ricinuleids for laboratory, behavioral and anatomical study. Immatures were kept in an artificial cave laboratory at Texas Tech, and molting times were recorded. They are long-lived troglophiles with slow growth.

Mitchell's study led to spin-off studies that became MS theses at Texas Tech: Pittard's (1970) comparative morphological study of the life stages of *P. pelaezi*, Edwards' study of the cave and lab study of temperature and humidity preferences in ricinuleids (1971), Tipton's (1971) study of the integument of *P. pelaezi*, and Cooke's (1971) work on mating behavior of *P. pelaezi*.

The other ricinuleid in the cave, *P. osorioi*, mostly inhabits the Right Hand Tunnel. That species also has a large population in bat guano in Sótano del Tigre. No one has yet determined if the two ricinuleid species are segregating in roosts of different bat species, which would be difficult to determine owing to the disturbances that humans create among the bats when visiting.

**2001 Visit to the Cave**

Jean Louis Lacaille Múzquiz from Ciudad Mante visited the cave on 20 April 2001, made notes, and photographed it (see photo section at end). He was accompanied by Jesús García López, Gerardo Moctezuma Garcés, Arturo Gutierrez Reyes, José Luis Meza Castro, and Don Juan Ortiz. The cave and fauna appeared to be normal, apparenty not damaged by the prospect mining in 1967-1968.

**2022 Visit to the Cave**

Lacaille Múzquiz and Jesús García López visited the cave again in 30 October 2022, and extensively photographed it. The cave appeared to be in good condition, and bats were photographed. Pictographs were found and photographed in the Parrot Tunnel. It is hoped that the cave will continue to be protected by the private landowner.

## Abbreviated Fauna List

Most of the 44 species listed here were collected in 1968-1969. The ecology and species of the Sierra de El Abra caves were covered in Elliott 2015 and 2018, based mostly on Reddell and Mitchell 1971 and Reddell and Elliott 1973. This list adds bat records from the literature.

***Eukerria saltensis* (Beddard)**, aquatic, Branchiobdellid leech-like worms

***Ankylocythere sinuosa* (Rioja)**, aquatic, entocytherid ostracod, seed shrimp

****Sphaeromicola cirolanae* Rioja**, aquatic, ostracod, seed shrimp, commensal on *Speocirolana* isopods

****Speocirolana pelaezi* (Bolívar)**, aquatic, cirolanid cave isopod

**Unidentified chernetid pseudoscorpion** in bat guano

***Semeiochernes* sp.,** genus uncertain, chernetid pseudoscorpion

****Aphrastochthonius parvus* Muchmore.** This pseudoscorpion was described from Cueva de la Florida by Muchmore, 1972. 10 March 1969, James Reddell, Suzanne Fowler. Found on wall in Left Hand Tunnel.

***Sotanostenochrus mitchelli* (Rowland)**, schizomid or short-tailed whipscorpion

****Paraphrynus baeops* Mullinex**, amblypygid, tail-less whip scorpion, or scorpion-spider with reduced eyes

***Paraphrynus pococki* Mullinex,** commonly occurring amblypygid in the El Abra caves, where it is often abundant on cave walls and floor.

***Schizopelma* sp.,** theraphosid "tarantula" spider

***Corinna* sp.,** clubionid spider. A male from la Florida may represent a new species.

***Ctenus* sp.**, ctenid, wandering spider, probably *C. mitchelli*, the large wall spider in the El Abra caves.
***Modisimus boneti* Gertsch**,pholcid, cellar spider

***Uloborus variegatus* O.P.-Cambridge**, uloborid, cribellate orb weaver

***Pseudocellus osorioi* (Bolivar)**, ricinuleid or "tick spider", formerly in the genus *Cryptocellus*. This relatively "large" species (7 mm) is abundant in Sótano del Tigre, where they appear to be long-legged ticks living in bat guano, similar to their environment in the Right Hand Tunnelof Cueva de la Florida. They are neither ticks nor spiders, but an Order of free-living, ancient arachnids with unusual anatomy and reproductive habits. Females carry one large egg, propped under the hood on the cephalothorax like the hood of a car. The male's mating structures are on the tips of the third pair of legs.

***Pseudocellus pelaezi* (Coronado)** (formerly *Cryptocellus*), an estimated population of 11,000 ricinuleids inhabits the Left Hand Tunnel.

***Cynorta jamesoni* Goodnight and Goodnight**, cosmetid harvestman

***Antricola coprophilus* (Mcintosh)**, soft tick, Family Argasidae, taken from bat guano.

***Antricola mexicanus* Hoffmann**, soft tick, taken from bat guano.

**Undescribed stylodesmid millipede**

***Orthoporus lenonus* Chamberlin**, spirostreptid millipede, a large, cylindrical form abundant on bat guano.

***Pseudosinella petrustrinatii* Christiansen**, entomobryid collembolan or springtail.

***Paracophus apterus* Chopard**, troglophilic cricket, occurs under rocks, on silt banks, and on cave walls in the El Abra caves.

***Masoreine* sp**., carabid, ground beetle

***Pachyteles urrutiai* Bolivar**, ground beetle, troglophile

***Pelonomus* sp.**, dryopid or long-toed water beetle

***Ischiodontus* sp.**, elaterid or click beetle

***Ptomaphagus elabra* Peck**, leiodid, round fungus beetle. This species is frequently abundant on vampire bat guano in other caves.

***Eleodes rugosa* Perbosc**, tenebrionid, darkling beetle. This species is abundant in entrance areas of caves.

***Liodema* sp. nr. *kirschi* Bates**, tenebrionid

***Trichobius* sp. nr. *sparsus*** Kess, Streblidae, bat flies. A single female was collected in Cueva de los Pajaros = Parrot Tunnel (part of Cueva de la Florida).

***Henicomyia hubbardi* Coq**., Therevidae, stiletto fly, one specimen was collected near the entrance of the Parrot Tunnel.

***Partamona cupira orizabensis* (Str.)**, Apidae, bees in Parrot Tunnel. A nest of this stingless bee was located just inside the arroyo entrance in 1968. On 20 April 2001 Lacaille Múzquiz and cavers from Ciudad Mante were stung by bees in this area, probably a different bee species.

***Eleutherodactylus dennisi* (Lynch),** Rana-chirriadora de Dennis, rain frog.This species is usually found in the general vicinity of cave entrances.

***Aratinga holochlora* (Sclater),** Green Parakeet, Perico Verde in Cueva de los Pajaros = Parrot Tunnel (part of Cueva de la Florida). These parrots were observed roosting in pockets in the ceiling near the lower entrance.

**Order Chiroptera, Bats**

At least eight species of bats in three families inhabit the cave, mainly in the Left Hand Tunnel (Sustare 1969, Mollhagen 1971, Torres-Flores and López-Wilchis, 2010, Elliott 2015b, 2018). Copious guano deposits support a large population (11,000 estimated by Mitchell) of *Pseudocellus pelaezi* ricinuleids, millipedes, schizomids, amblypygids, and other fauna. *P. osorioi* is found more in the Right Hand Tunnel. Three of the bat species are also found in Cueva de El Pachón nearby. In February 1968 Russell, Elliott, and Evans spent 2½ days mapping the cave, with thousands of bats swarming around them in the Left Hand Tunnel, but none ever touched the cavers.

**Family Phyllostomidae, leaf-nosed bats.**

***Artibeus jamaicensis***, Jamaican Fruit Bat
***Desmodus rotundus***, Common Vampire Bat
***Diphylla ecaudata***, Hair-legged Vampire Bat
***Glossophaga soricina leachii* Gray**, Pallas' Long-tongued Bat

**Family Mormoopidae**

***Pteronotus davyi fulvus* (Thomas)**, Davy's Naked-backed Bat, Lesser Naked-backed Bat
***Pteronotus parnellii* (Gray)**, Parnell's Mustached Bat
***Pteronotus personatus,***Wagner's mustached bat

**Family Natalidae, Funnel-eared Bats**

***Natalus stramineus* Gray**, Mexican Funnel-eared Bat

**National Importance of Cueva de la Florida**

In a review of human impacts on Mexican caves, Elliott, Palacios–Vargas, Medellín, and Calva (2023) documented that Cueva de la Florida ranks number 10 among 25 important Mexican caves for overall biodiversity. Quantitative bat surveys and a new estimate of the ricinuleid population would be helpful for conservation. Once potentially threatened by mining, the current risk to the cave's ecology, biodiversity, and cultural artifacts is considered to be low, provided that it continues to be protected.

**Literature Cited**


Abernethy, Francis E. 2022. Caving With Mitch. *Cuevas Históricas*, 1:80.

Cooke, Jerry W. 1971. Mating behavior and the functional morphology of the male copulatory apparatus in *Cryptocellus pelaezi* (Arachnida, Ricinulei). MS thesis, Texas Tech University.

Edwards, Charles L. 1971. Relative humidity and temperature preference responses of the ricinuleid *Cryptocellus pelaezi* (Arachnida). MS thesis, Texas Tech University, 50 pp.

Elliott, William R. 2015. Cave ecology and biodiversity in the Sierra de El Abra Region. Chapter 3, pp. 59-76 in: Keene, Alex C., Masato Yoshizawa, and Suzanne E. McGaugh (eds.), *Biology and Evolution of the Mexican Cavefish.* Academic Press (Elsevier), Amsterdam.

Elliott, William R. 2018. The *Astyanax* Caves of Mexico. Cavefishes of Tamaulipas, San Luis Potosí, and Guerrero. Association for Mexican Cave Studies, Bulletin 26. Austin, Texas. 326 pp.

Elliott, William R., José G. Palacios–Vargas, Rodrigo A. Medellín, and Omar Calva. 2023. Human Impacts on Mexican Caves. Chapter 18 *in* Robert W. Jones, Patricia Ornelas-García, Rubén Pineda, and Fernando Álvarez (eds.), *Mexican Fauna in the Anthropocene*, Springer Nature, *in press.*

Hershberger, Barbara. 1969. Bustamante and other places. UTG News, 1969-1, 8.

Mitchell, Robert W. 1970. Population size and dispersion and species associations of a Mexican cavernicole ricinuleid (Arachnida.). Ciencia, México, 27(2-3):63-74.

Mitchell, Robert W., William H. Russell, and William R. Elliott. 1977. Mexican eyeless characin fishes, genus *Astyanax*: environment, distribution, and evolution. Special Publications of the Museum, Texas Tech University, No. 12, 89 pp.

Mollhagen, Tony. 1971. Checklist of bats in caves in the regions of the Sierra de Guatemala and Sierra de El Abra, northeastern México. Association for Mexican Cave Studies Bulletin, 4:19-22.

Muchmore, William B. 1972. The unique, cave-restricted genus *Aphrastochthonius* (Pseudo-scorpionida, Chthoniidae). Proceedings of the Biological Society of Washington, 85:433-444.

Pittard, S. Kay. 1970. Comparative external morphology of the life stages of *Cryptocellus pelaezi* (Arachnida, Ricinulei). MS thesis, Texas Tech University.

Reddell, James R. and William R. Elliott. 1973. A checklist of the cave fauna of México. IV. Additional records from the Sierra de El Abra, Tamaulipas and San Luis Potosí. Association for Mexican Cave Studies Bulletin, 5:171-180.

Reddell, James R. and Mitchell, Robert W. 1971. A checklist of the cave fauna of Mexico. I. Sierra de El Abra, Tamaulipas and San Luis Potosi. Association for Mexican Cave Studies Bulletin, 4:137–180.

Russell, William H. 1972. Geographical checklist of the caves of the Sierra de El Abra. AMCS Newsletter, 3(6):133-142.

Sustare, Dennis. 1967. Pachón Area – June 4 to June 9 [1967]. UTG Newsletter, 1967-2:36-37.

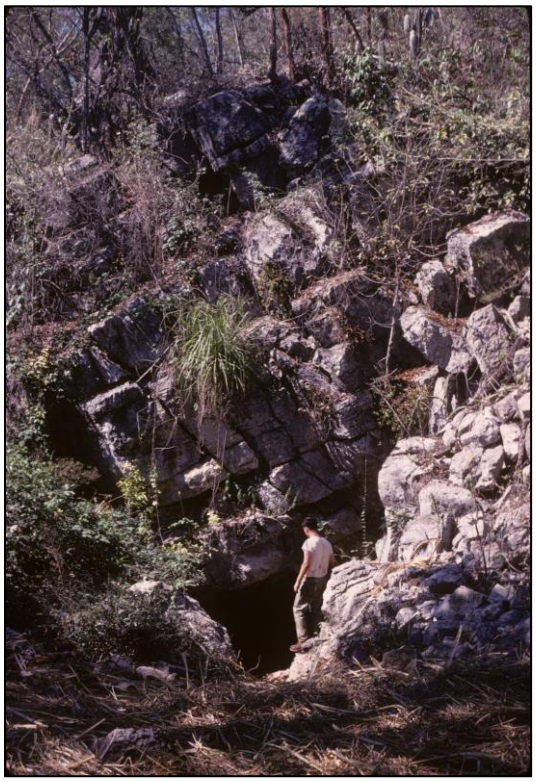
Tipton, Virginia W. 1971. The integument of *Cryptocellus pelaezi* (Arachnida, Ricinulei). MS thesis, Texas Tech University.

Torres-Flores, J.W. and R. López-Wilchis. 2010. Condiciones microclimáticas, hábitos de percha y especies asociadas a los refugios de *Natalus stramineus* en México. *Acta Zoológica Mexicana (n.s.)*,26(1): 191-213.

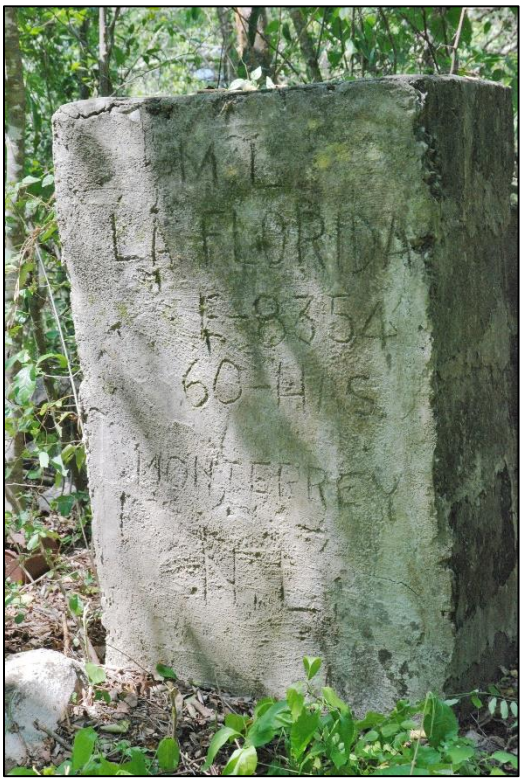
Wefer, Fred. 1969. Map of Cueva de la Florida. Nittany Grotto News, 18(1):30 and loose map supplement.

# Photo Section, Cueva de la Florida

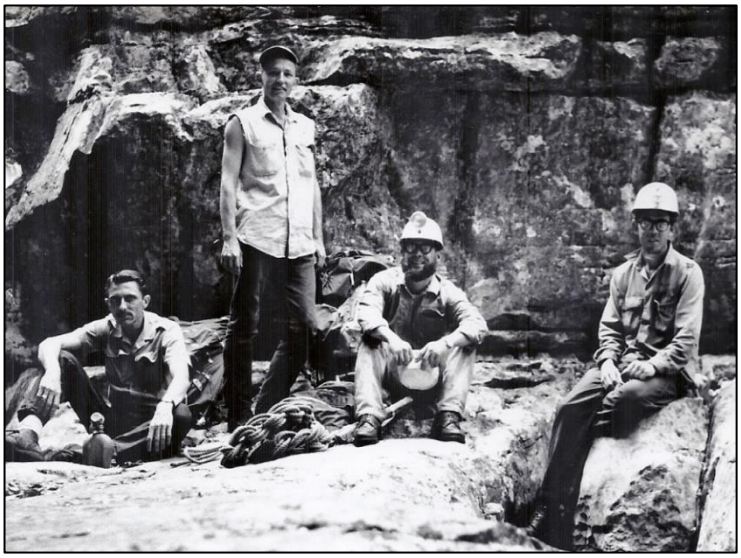
1968 photographs by Robert W. Mitchell (color) and Francis E. Abernethy (black and white).
2001 and 2022 photos by Jean Louis Lacaille Múzquiz.



John Fish at the entrance of Cueva de la Florida, 1968.

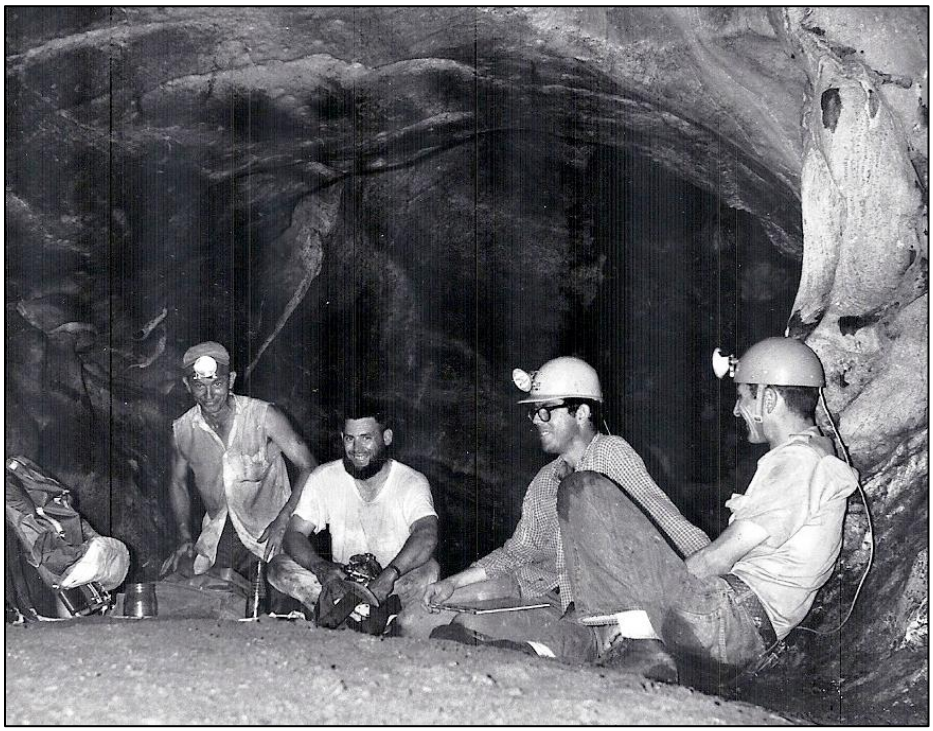



Survey monument near the cave, 2022.



Robert W. Mitchell, Francis Abernethy, William Rhodes, and James Reddell at Cueva de la Florida, spring 1968. From Abernethy 2022.

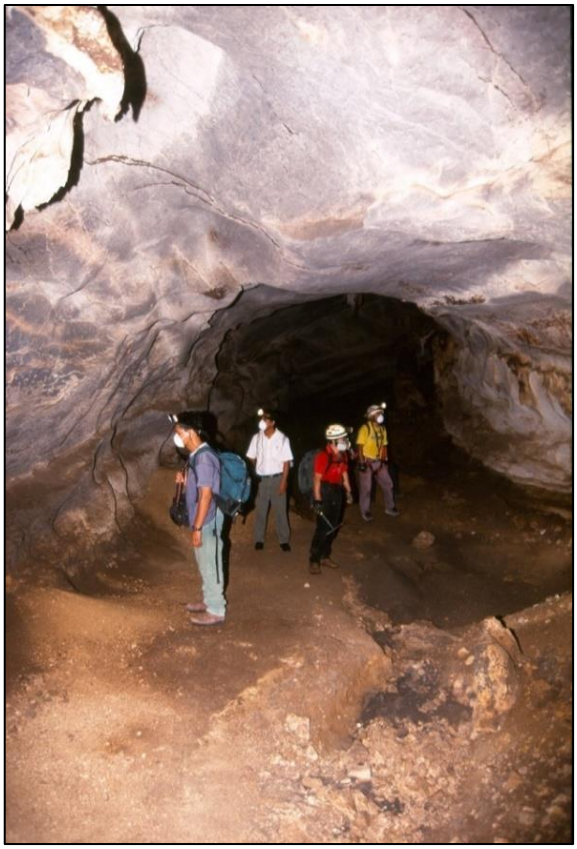
Quadrats for 1968 ricinuleid population study in the Left Hand Tunnel.



Francis Abernethy, William Rhodes, Robert W. Mitchell, and James Reddell, during the ricinuleid study, spring 1968. From Abernethy 2022.

Ricinuleid, *Pseudocellus pelaezi*, female carrying an egg.

Jesús García López at the main entrance of Cueva de la Florida, 2022.

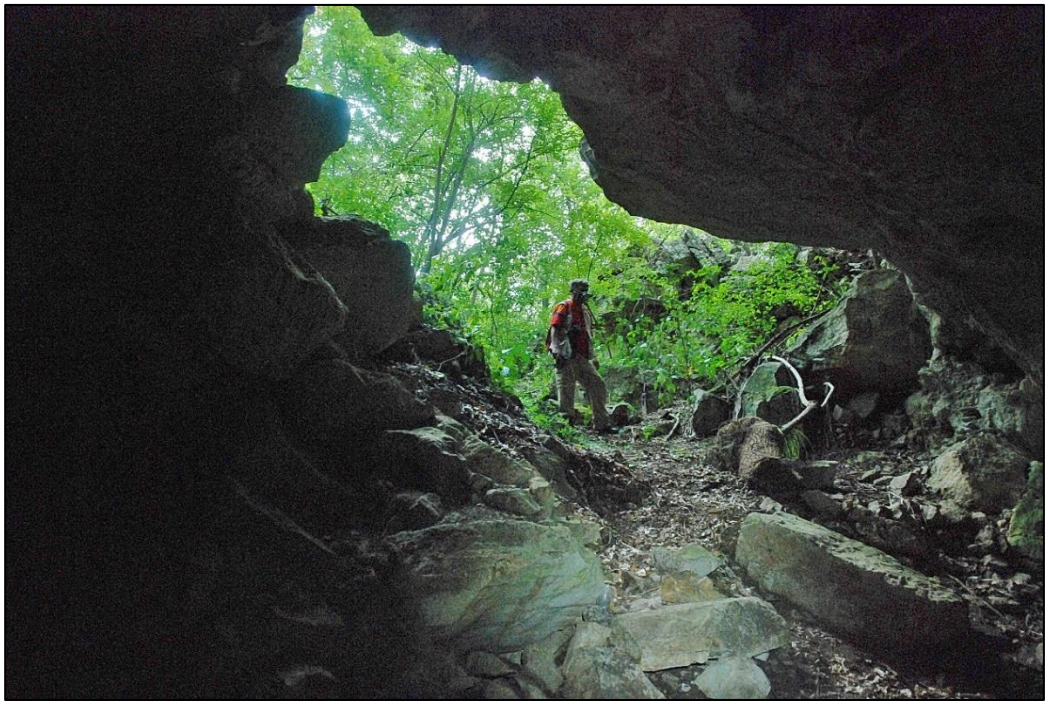


A visit to the cave on 20 April 2001.

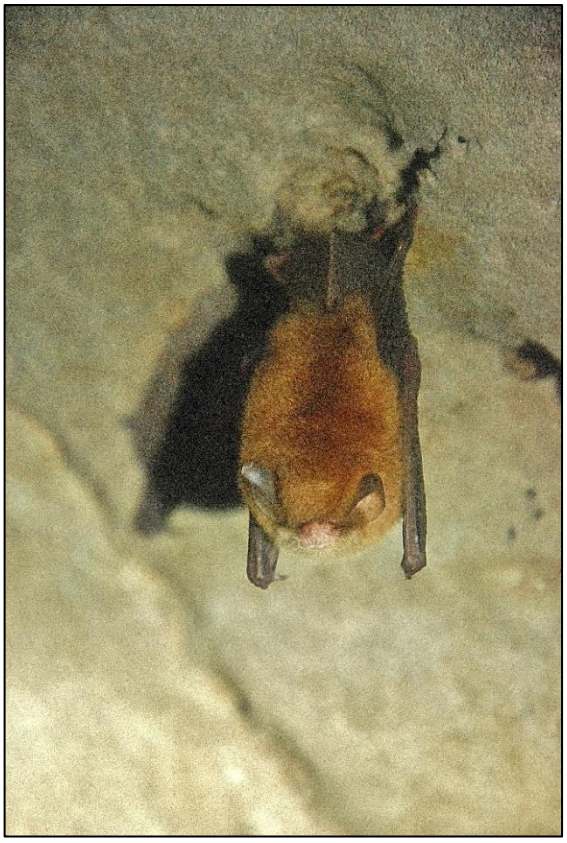
Jean Louis Lacaille Múzquiz views El Águila, 2001.

El Altar, 20 April 2001.


The main entrance on 20 April 2001, with cavers Gerardo Moctezuma Garcés, Arturo Gutierrez Reyes, José Luis Meza Castro, and Don Juan Ortiz.



Jesús García López in the main entrance of Cueva de la Florida, 2022.



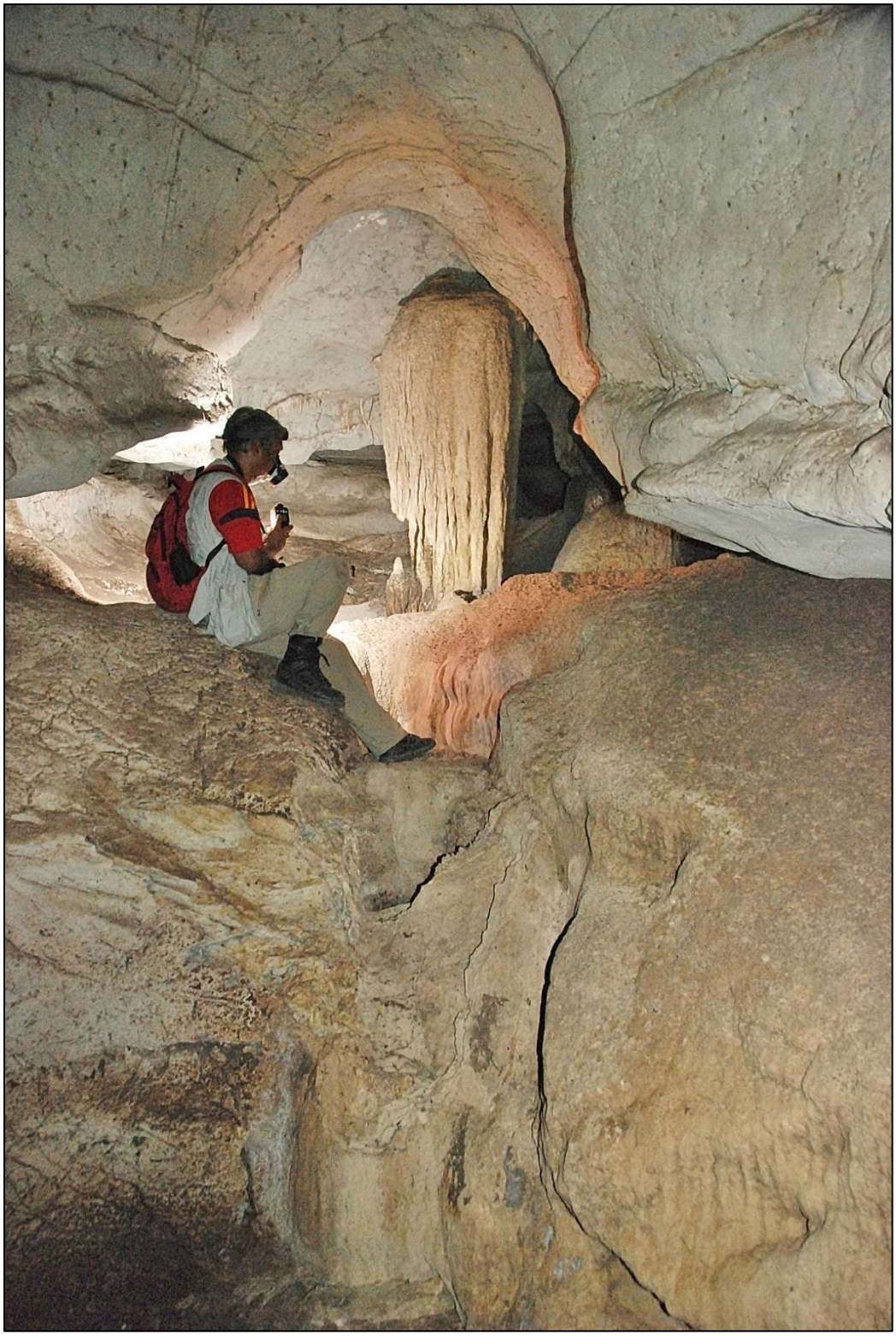
*Natalus stramineus* is the probable bat species in these two photos from the Right Hand Tunnel. This species has been reported in the literature from Cueva de la Florida. 2001 photos.

These bats flying in the Left Hand Tunnel may be *Mormoops megallophylla* (with small ears) or *Pteronotus* sp., Family Mormoopidae. 2022 photo.

Left Hand Tunnel, 2022.

Stacked walls of mined floor deposits, Left Hand Tunnel, 2022.

Left Hand Tunnel, 2022.



Calcite formations and drop-off in Drainage Tunnel, 2022.

Right Hand Tunnel, 2022. Note bats flying in the high dome.

Right Hand Tunnel, bats flying on the right, 2022.

Jean Louis Lacaille Múzquiz at the collapse sink entrance to the Parrot Tunnel, 2022.

In the Parrot Tunnel Upper Passage looking outward to the arroyo entrance, 2022.

The Parrot Tunnel, looking inward to the Lower and Upper Passages, 2022.

The Parrot Tunnel, Lower and Upper Passages, 2022.

The Parrot Tunnel: the top pictograph may be a *Bassariscus astutus*, ring-tailed cat, or perhaps a gray fox, *Urocyon cinereoargenteus*. Likely from the Huastec people who occupied this area during Pre-Columbian times. 2022 photo.

The Parrot Tunnel: a negative hand print likely made by native Huastec people during Pre-Columbian times, perhaps around 1000 years old or much older, but uncertain without a reliable dating procedure. 2022 photo.

Parrot Tunnel, location of pictographs.

Jesús García López at the Parrot Tunnel opening onto the arroyo, 2022.

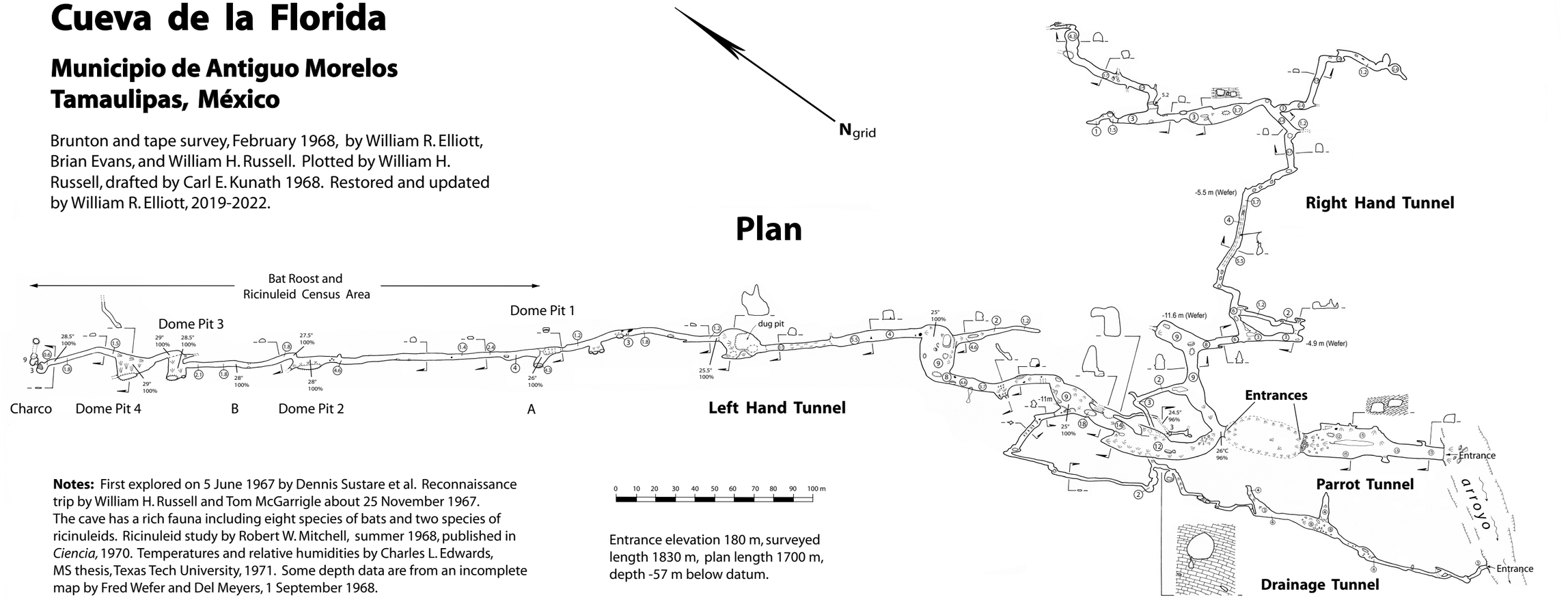
Unidentified worm in pool, Right Hand Tunnel, 2001.

Tiny ostracods in pool, Right Hand Tunnel, 2001.

# Cueva de la Florida

## Municipio de Antiguo Morelos
## Tamaulipas, México

Brunton and tape survey, February 1968, by William R. Elliott, Brian Evans, and William H. Russell. Plotted by William H. Russell, drafted by Carl E. Kunath 1968. Restored and updated by William R. Elliott, 2019-2022.




# Plan

**Notes:** First explored on 5 June 1967 by Dennis Sustare et al. Reconnaissance trip by William H. Russell and Tom McGarrigle about 25 November 1967. The cave has a rich fauna including eight species of bats and two species of ricinuleids. Ricinuleid study by Robert W. Mitchell, summer 1968, published in *Ciencia,* 1970. Temperatures and relative humidities by Charles L. Edwards, MS thesis, Texas Tech University, 1971. Some depth data are from an incomplete map by Fred Wefer and Del Meyers, 1 September 1968.

0 10 20 30 40 50 60 70 80 90 100 m

Entrance elevation 180 m, surveyed length 1830 m, plan length 1700 m, depth -57 m below datum.


# Extended Profile