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THE VERTEBRATE PALEONTOLOGY OF TEXAS CAVES

By Ruben M. Frank

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THE VERTEBRATE PALEONTOLOGY OF TEXAS CAVES

INTRODUCTION

This report has been divided into three main sections: a short history of vertebrate paleontology in Texas caves, a brief discussion of each cave in which fossils have been found, and lists of faunal remains recovered from the previously discussed caves. Every cave in the state which has been studied or excavated solely for vertebrate paleontologic reasons is included in this report. In addition, a number of caves and shelters excavated for archeologic purposes, and which later proved to be interesting paleontologically are included. No attempt was made to include every cave or shelter in the state from which animal bones have been taken. Not only would this be an impossible task but it would have no vertebrate paleontologic or speleologic significance since almost every archeologic shelter excavation produces a few animal remains, and the bones of recent animals can be found in nearly every cave in the state.

I would like to acknowledge the assistance of William A. Akersten who helped with the faunal lists and of L.F. Duffield, T.N. Campbell, and E.B. Jelks who gave assistance with the archeologic literature and information on the archeologic sites, and of D.S. Dibble who helped with the Bonfire Shelter material.

History.- Vertebrate paleontology in Texas caves had its serious beginning in 1920 when the famous paleontologist, O.P. Hay, studied bones from Friesenhahn Cave in central Texas. Local residents had collected remains of elephant and other extinct animals from the cave and these were sent to Hay by E.H. Sellards, a geologist at the University of Texas. Hay hired a student from Texas A. & M. College to do further collecting and the resultant study of 18 different species of Pleistocene animals was published in 1920.

It was not until 1949 that any more serious work was done and this, again in Friesenhahn. The Texas Memorial Museum began a systematic excavation of the cave in that year, and during the summer of 1949 and 1950 they recovered abundant amounts of bone. Since then nine different papers have been published concerning various genera taken from the cave.

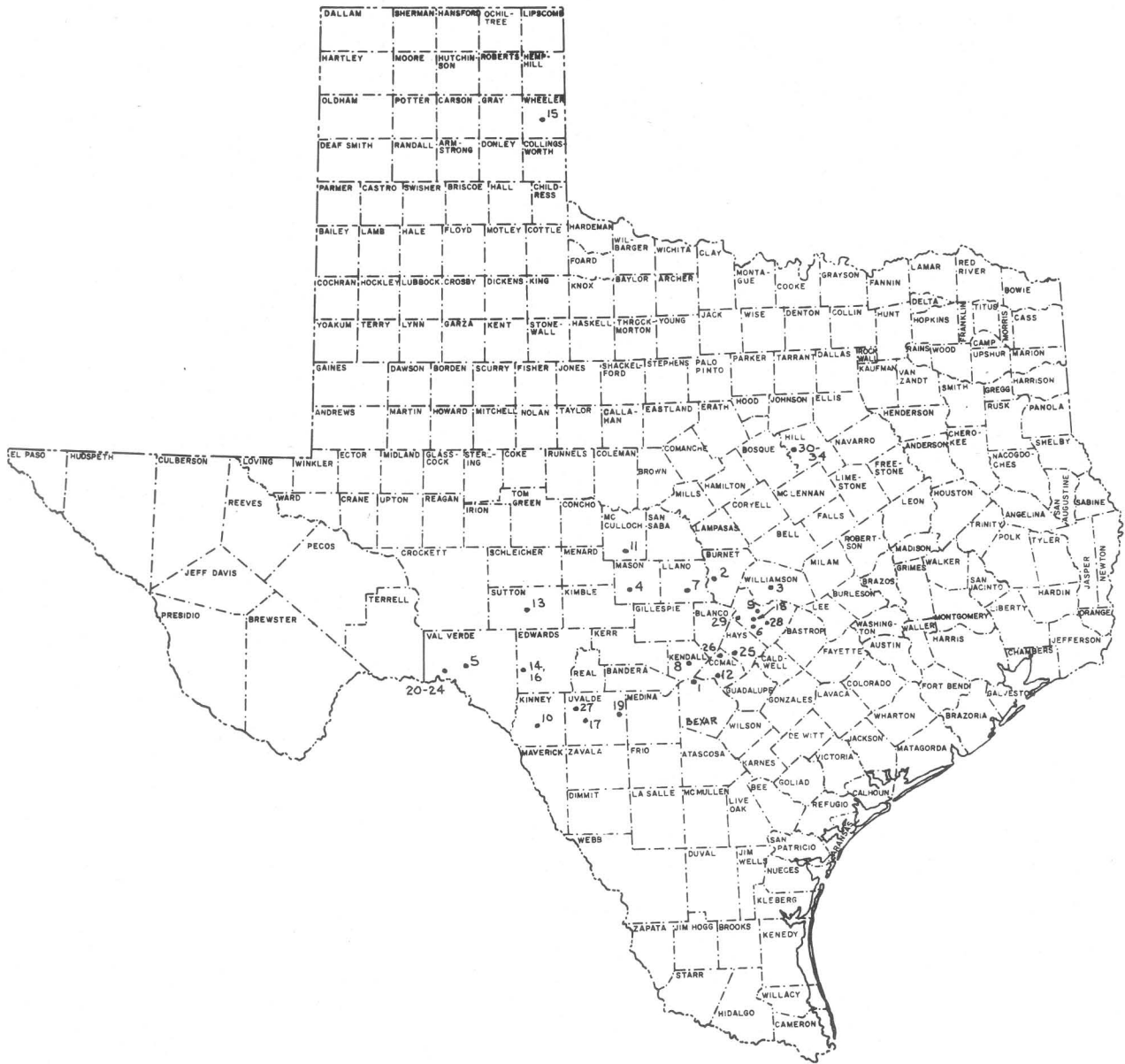
Texas bone caves took another rest from the prying eyes of vertebrate paleontologists until 1957. This was the year when Dr. E.L. Lundelius came to the University of Texas as professor of Pleistocene vertebrate paleontology. Dr. Lundelius had done previous work in bone caves in Western Australia. With the help of an avid spelunker, Holmes Semken, collections were made from six major bone caves and two minor ones in the following two and one-half years. During this time Semken also did the work for his Master's Thesis on the fauna from Longhorn Caverns.

In the spring of 1960 an Austin spelunker, Tom Warden, discovered the only other major bone cave that has been studied in detail, Miller's Cave. It was made the subject of the Master's Thesis of Thomas Patton, again under the supervision of Dr. Lundelius.

During the past three years four other major bone caves have been discovered and close cooperation with the University of Texas Archeology Department has resulted in extensive faunal collections from a number of archeological caves and shelters.

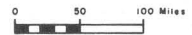
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LOCATION MAP OF

VERTEBRATE PALEONTOLOGIC CAVES AND SHELTERS OF TEXAS



THE CAVES

The vertebrate paleontologic caves will be discussed first, followed by the archeologic sites. All references are included in the bibliography at the end of the report. The speleologic description of the caves will be brief as most of them have been treated thoroughly in some previous issue of the Texas Speleological Survey. Besides the archeologic sites discussed here there are numerous others from which animal bones have been recovered. They either have no vertebrate paleontologic significance or the bone is not available for examination.

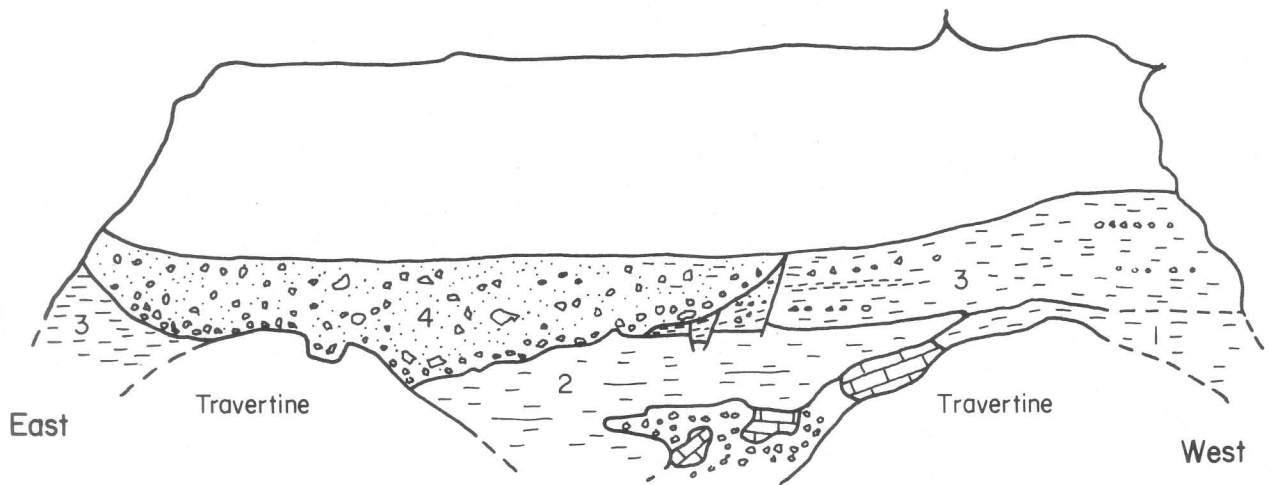
Friesenhahn Cave (Bexar County).- Located in the Bulverde 7.5' Quadrangle on the Alfred Friesenhahn Ranch. Friesenhahn Cave is a small, one-room cave whose present entrance is a vertical shaft about 30' deep. At the north end of the room is an old entrance which has been sealed by natural processes. It was through this old entrance that the animals entered. Evans describes four distinct stratigraphic zones within the cave deposits. (see map, page 5) Unfortunately, each fossil specimen was not labelled according to zone, although it was observed that zone 3 was the most fossiliferous.

The Texas Memorial Museum's excavations produced 3740 specimens. A great number of these specimens were of immature elephants and mastodons. Remains of the saber-toothed cat, Dinobastis serus, were also found and it has been concluded that this cave was once the lair of the saber-toothed cat and that the elephants and mastodons were his main food item. Other carnivores include bear, wolf, and coyote and these undoubtedly had a major influence on the accumulation of the smaller herbivores. The remains of Dinobastis serus represent the most complete and largest collection of bones of this animal found to date. A new species of turtle, Testudo wilsoni, was also named from the cave.

The faunal assemblage establishes a Late Pleistocene age for the accumulation of the bones and according to Evans the accumulation probably began during the Early Wisconsin and, with periods of interruption, proceeded up to the present. A great deal of sediment remains in the cave and careful processing would undoubtedly produce a wealth of additional material.

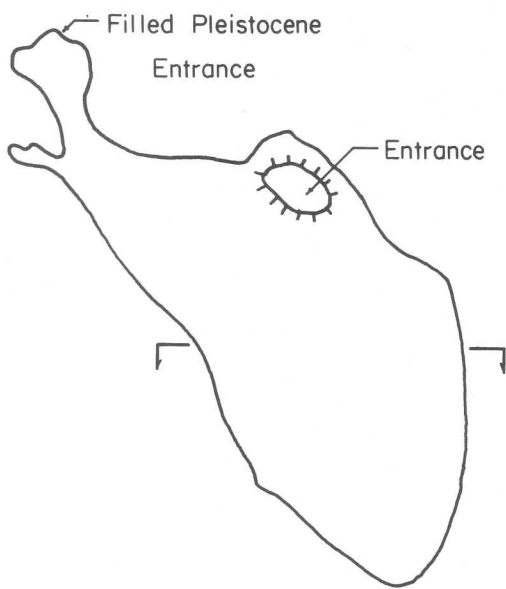
Bibliography: See references Nos. 7, 8, 9, 13, 14, 16, 18, 19, 20, 39.

Longhorn Caverns (Burnet County).- Located in the Burnet 30' Quadrangle on Longhorn Caverns State Park. About one-half mile of the 7500' of the cave is commercial. It is almost entirely horizontal and developed on two main levels with the lower being less extensive than the upper. There are three natural entrances, one horizontal and two vertical, plus an additional horizontal entrance that was sealed during commercialization. The cave was commercialized during W.P.A. days and the method used almost put an end to any future vertebrate paleontologic work. The mud and silt was washed out with high-pressure fire hoses. Fortunately some pockets and side passages were missed and it was mainly from these that the vertebrate remains were recovered. The fauna of the cave was the subject of the Master's Thesis of Holmes Semken at the University of Texas in 1957. The fauna consists of a profuse amount of rodents and also the extinct North American horse and camel and a jaguar. Semken recognized four stratigraphic units in the cave. Three of them in ascending order are basal breccia, red fill, and black fill. The fourth, the Longhorn breccia, occurs only in the non-commercial part of the cave where the other three units are not present. Semken believes, however, that the Longhorn breccia was derived from the red fill, the most extensive unit in the cave. Bones of the larger animals were most abundant in the Longhorn breccia and the smaller forms



SECTION

0 5 10 Feet



0 10 20 Feet



FRIESENHAHN CAVE
BEXAR CO., TEXAS

From BULL. NO. 2, TEXAS
MEMORIAL MUSEUM

were more frequent in the red fill and the black fill. Only one horse tooth fragment was recovered from the basal breccia. (See map, page 7)

The faunal assemblage establishes a Late Pleistocene age (Wisconsin) for the accumulation of the bones in the Longhorn breccia and the red fill. The presence of Mus musculus in the black fill confirms a very recent time of deposition for that unit.

Bibliography: See references nos. 14, 33.

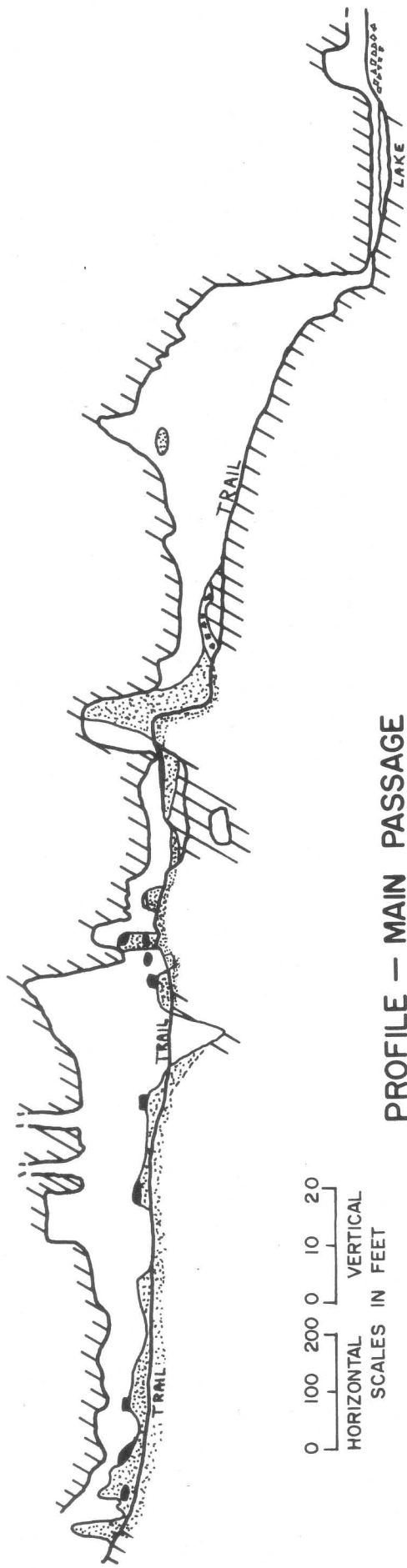
Laubach Cave (Williamson County).- Located in the Roundrock 15' Quadrangle on the W.W. Laubach Ranch. Laubach Cave was recently discovered when the highway department was drilling test cores for a new highway. It is an extensive 7000' long primarily horizontal cave. The present entrance is a 24" core hole, which is to be filled in the near future. At least two other entrances exist; however, both of these have been long ago sealed by natural processes. A large deposit of ossiferous breccia has been found at the site of one of the old entrances, Bone Sink. This deposit is about 130' in diameter and bone has been noted in three different places along its flanks. There is a definite possibility that the other sealed sink entrance may contain animal remains also. The fauna contains a large number of remarkably preserved remains of an extinct peccary, Platygonus compressus. Other forms include elephant, camel, and dire wolf. Bob Slaughter at the Shuler Museum of Paleontology is currently studying the peccary remains. At the present stage of excavation no stratigraphic sequence is discernible.

Bibliography: See references nos. 28, 34, 35.

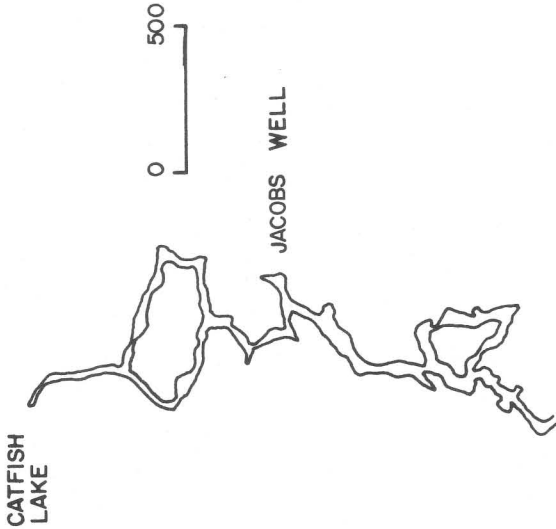
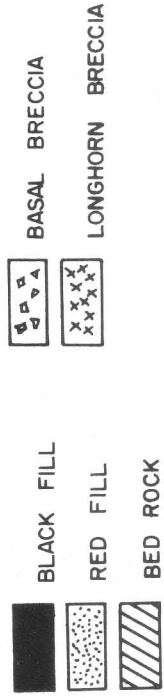
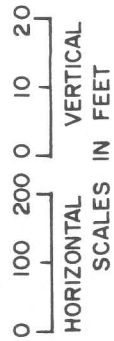
Zesch Ranch Cave (Mason County).- Located in the Mason 30' Quadrangle on the Kurt Zesch Ranch. Zesch Ranch Cave is a small one-room cave that, in form, shows a remarkable resemblance to Friesenhahn Cave. Its present vertical entrance is 20' deep and the room measures 55' by 35'. At the southeast end of the room is a breakdown cone that is evidence of an earlier entrance that has been sealed. Bone in the cave was discovered by a pioneer Texas spelunker, Bob Hudson, in about 1955. On a later trip Hudson took Glen Evans of the Texas Memorial Museum with him, but Evans evidently realized the difficulty of excavating the material and only two small collections have been made since. The bone is enclosed in a highly indurate calcite cemented breccia and the overhead working space in the area of the breakdown cone is less than two feet. The old entrance is directly under a paved highway and the present entrance is a two-foot in diameter twisting crawl opening up into the ceiling of the room. No stratigraphic sequence is discernible at present. (See map, page 8)

Fern Cave (Val Verde County).- Located in the Bakers Crossing 15' Quadrangle on the Martin Rose Ranch. Fern Cave is an impressively large bat cave comprising about 3400' of walking passageway. It has four entrances, all vertical. In 1958 Holmes Semken took a small amount of sediment from near the two south entrances. Processing of the sediment produced a large amount of rodent material. The faunal assemblage is a recent one and includes no extinct species and only one that is on the edge of its present range extension. Three stratigraphic units are discernible at the place where Semken recovered the bones. The majority of fossils came from the upper zone. No study has been made of the fauna.

Bibliography: See reference no. 25.



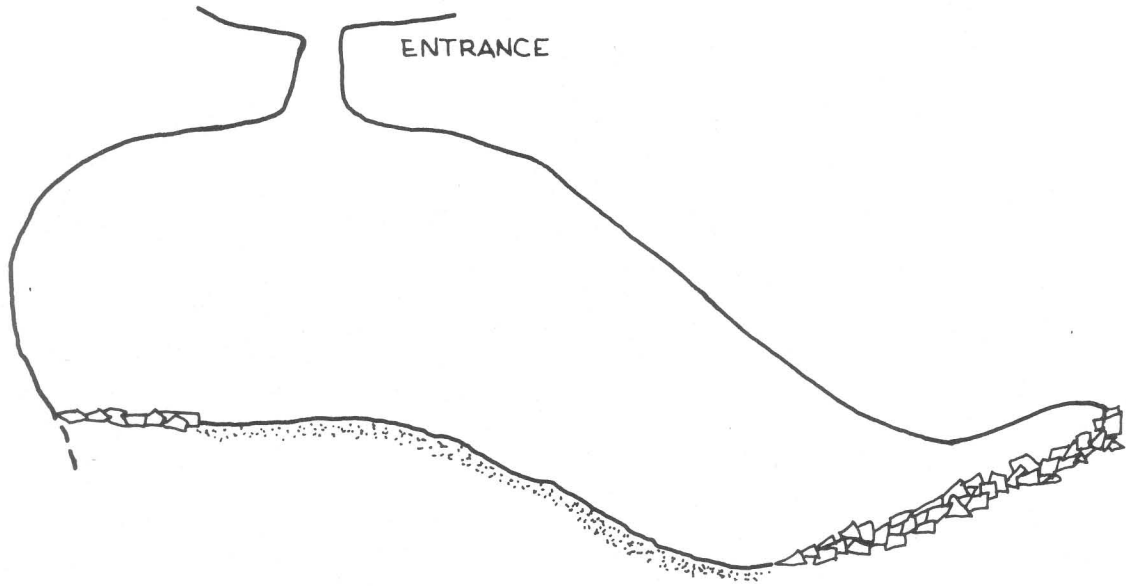
PROFILE — MAIN PASSAGE



ENTRANCE PLAN OF CAVERNS

LONGHORN CAVERNS

BURNET CO., TEXAS
FROM SEMKEN, 1961



ZESCH RANCH CAVE

MASON CO., TEXAS

Cave X (Travis County).- Located in the Austin West 7.5' Quadrangle on the Silas Foster Ranch. Cave X is a difficult 1300' long crawlway. The only place where the cave is not in a horizontal position is when he is negotiating the small pits. Turtle carapaces were recovered from a loosely cemented breccia in the first "room" about 500' from the entrance. One of the two species recovered is of the extinct Terrapene canaliculata. No stratigraphic sequence is apparent and the bones probably washed in from the entrance. If there are any other bones present in the cave they will probably not be studied due to the difficulty in getting them out of the cave intact.

Bibliography: See reference no. 29.

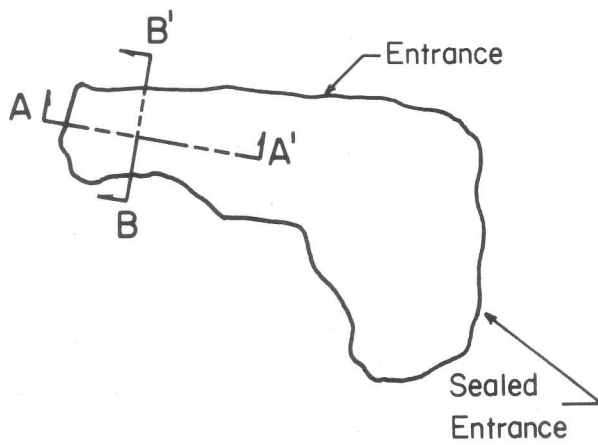
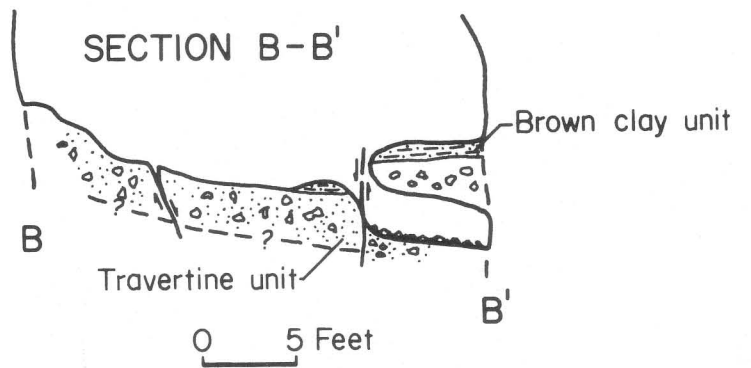
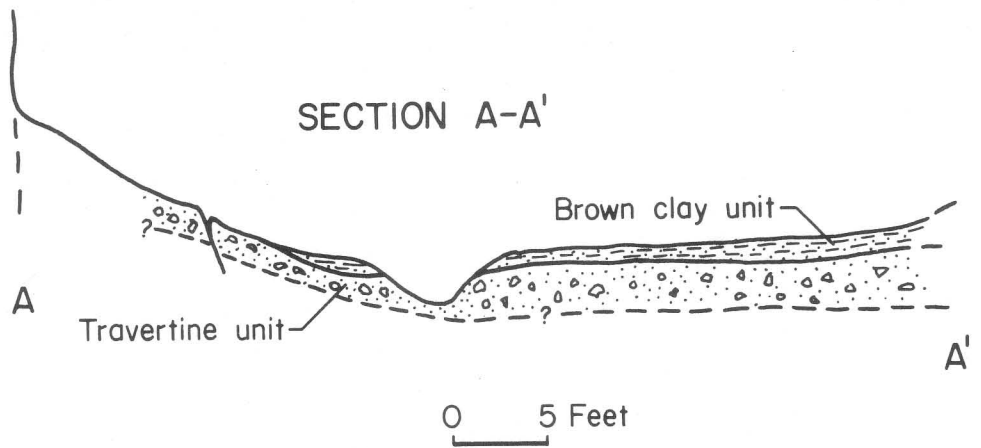
Miller's Cave (Llano County).- Located in the Llano 30' Quadrangle on the Fay Miller Ranch. Miller's Cave is similar in form to both Zesch Ranch Cave and Friesenhahn Cave but much larger. Its one room is a dog-leg about 180' long and 60' across at its widest point. The present entrance is a six foot drop to the top of a breakdown cone on the west side of the room. At the northeast end of the room an old sealed entrance is evidenced by another breakdown cone. The cave was excavated for its faunal remains in 1960 by Dr. Thomas H. Patton of the University of Texas. The rodent and insectivore material provided the basis for a paleoecologic interpretation of the area. The fauna contains both extinct and extant species and indicates that a wetter climate existed in the area than at present. Patton recognized five stratigraphic units within the cave sediment; two in the north end of the room near the sealed entrance and three in the south end. Excavations in the north portion yielded very few fossils and almost all of the bones came from the two upper units at the south end. Of these two units the lower one, travertine unit, was most ossiferous.

A radiocarbon date of around 7200 years B.P. from bone in the lower travertine unit complements the paleoecologically interpreted age and places the fauna of that unit in the Late Wisconsin. (See map, page 10)

Bibliography: See reference no. 22.

Cave-Without-A-Name (Kendall County).- Located in the Boerne 15' Quadrangle on the property of Mrs. J. Horne. This is a commercial cave, over 3000' long, mostly horizontal, and with two entrances, one of which is man-made. The natural opening is a 90' deep vertical shaft that opens into one end of a large room. During commercialization the bone-bearing sediments were considerably disturbed so that there is no natural stratigraphic sequence remaining, but the abundance of fossils contained in the sediment in part compensates for the absence of stratigraphic control. Dr. Lundelius is currently studying the thousands of specimens from the cave. Besides the omnipresent rodents and insectivores there are also bison, horse, and musk ox. The faunal assemblage indicates an age comparable to that of the fauna of other Texas caves.

Fyllan Cave (Travis County).- Located in the Austin 7.5' Quadrangle on property belonging to David Barrow. This is one of a number of small filled caves opened by quarrying operations. The exposed cross-section is about three feet in diameter. The cave has only been sampled for its faunal remains but a glance at the faunal list will make it evident that the bones are well worth studying. The microtine rodent, Atopomys texensis, is a new genus whose features strongly indicate a Middle Pleistocene form. Although no stratigraphic sequence has been worked out as yet, the sediment possesses textural and mineralogical properties which make it obvious that it was derived from a distant source and deposited by a river. The nearest river



MILLER'S CAVE
LLANO CO., TEXAS
AFTER TOM PATTON, 1963



the Colorado, is at present more than two miles distant and over 500' lower than the cave. Fyllan Cave may contain the oldest cave fauna in the state.

Bibliography: See reference no. 23.

Rattlesnake Cave (Kinney County).- Located in the Brackettville 15' Quadrangle on the Bader Ranch. This is a 200' long horizontal cave with a 20' deep vertical entrance about six feet in diameter.

In 1959 Holmes Semken took a small amount of sediment from the cave, and processing yielded a variety of rodent and other small animal bones. All species represented in the fauna of Rattlesnake Cave are extant, though some are currently out of range. Semken arbitrarily divided the conformable stratigraphic sequence into four zones. He is currently engaged in a statistical study of the vertical variation of species.

Bibliography: See reference no. 32.

Clamp Cave (McCullough County).- Located in the Brady 30' Quadrangle on the T. Brooks Ranch. Clamp Cave was a vertical, filled cave excavated by a treasure hunter with an eye for bone. According to the excavator, Mr. Frank Clamp, the hole is nine feet in diameter at the top and widens as it descends. He reportedly dug through 21' of uncemented breccia before encountering the 14' thick section of red clay that contained the bones. Almost all the species represented are of large animals and the paucity of small animal remains is probably due to the method of recovery. Five of the fourteen genera are extinct and the presence of Smilodon, Platygonus, Camelops, and Tanupolama create a tantalizing picture of the fossils still waiting to be recovered. Unfortunately the cave has since been completely refilled so that excavation would be a difficult job indeed.

Bibliography: See reference no. 14.

Natural Bridge Caverns (Comal County).- Located in the Bat Cave 7.5' Quadrangle on the Harry Heidemann Ranch. Natural Bridge Caverns is a large commercial cave with an entrance sink measuring 200' by 40' and 30' deep. This sink is floored with a variety of sediment from large breakdown blocks to fine silt and clay. William R. Gray made a sample collection of its vertebrate fossils in 1962. Additional sampling proved the original guess that the fossil fauna in the cave was worthy of study, and in 1964 Dr. Raun and William Akersten of the Texas Memorial Museum excavated some 800 pounds of sediment. This excavation was aided by the exposures created during commercialization of the cave. Although a record has been kept of the various places from which the bone was recovered the stratigraphic sequence of the sediment in the cave has been greatly obscured by the evolution of the entrance and yet remains to be interpreted. Dr. Raun and William Akersten will soon begin a study of the fossils.

Bibliography: See reference no. 27.

Felton Cave (Sutton County).- Located on the Billy Galbraith Ranch south of Sonora. Felton Cave is an extensive 7000' long cave with an entrance sink which is ideally suited for predator habitation. In July, 1964, while sampling the sediment in the cave, a profusion of small vertebrate remains were recovered along with bison and deer. The sediment has not been completely processed for bone but the abundance of the fossil material appears to warrant a detailed investigation.

Bibliography: See reference no. 31.

Four-Mile Cave (Val Verde County).- Located in the Del Rio 15' Quadrangle on the Gonzales Ranch. The cave is described fully in the Texas Speleological Survey. The bison or cow recovered from one of its entrances was undoubtedly due to an accident and no bones worthy of mention exist in either of the two entrance sinks.

Bibliography: See reference no. 26.

Deep Cave (Edwards County).- Located in the Carta Valley 15' Quadrangle. This vertical cave is 253' deep with a horizontal crawl-in entrance. Bones were picked up from the floor of the Bear Pit well below the entrance by members of the Dallas-Fort Worth Grotto of the National Speleological Society and are now in the collection of the Shuler Museum of Paleontology at Southern Methodist University.

Bibliography: See reference no. 17.

Small Mouth Cave (Wheeler County).- Located north of Shamrock. This is a rather unusual cave in the northwest gypsum country. Over 15' of ossiferous and artifact-bearing sediment is accessible both from the bottom and the top of the deposit. A passage directly underneath the sediment-floored walk-in entrance room exposes the lower portion of the deposits. A small collection of vertebrate remains made in 1963 reveals a varied, but probably recent fauna.

Bibliography: See reference no. 30.

Saltillo Cave (Edwards County).- Located in the Flat Rock 15' Quadrangle on the Rucker Ranch. This cave has a 60' deep vertical entrance about 8' in diameter. One-half of a mandible, part of a skull, and some post cranial elements of a bear were recovered by James K. Baker in about 1958 from the floor of the cave. It is unknown whether this cave contains any other significant vertebrate remains.

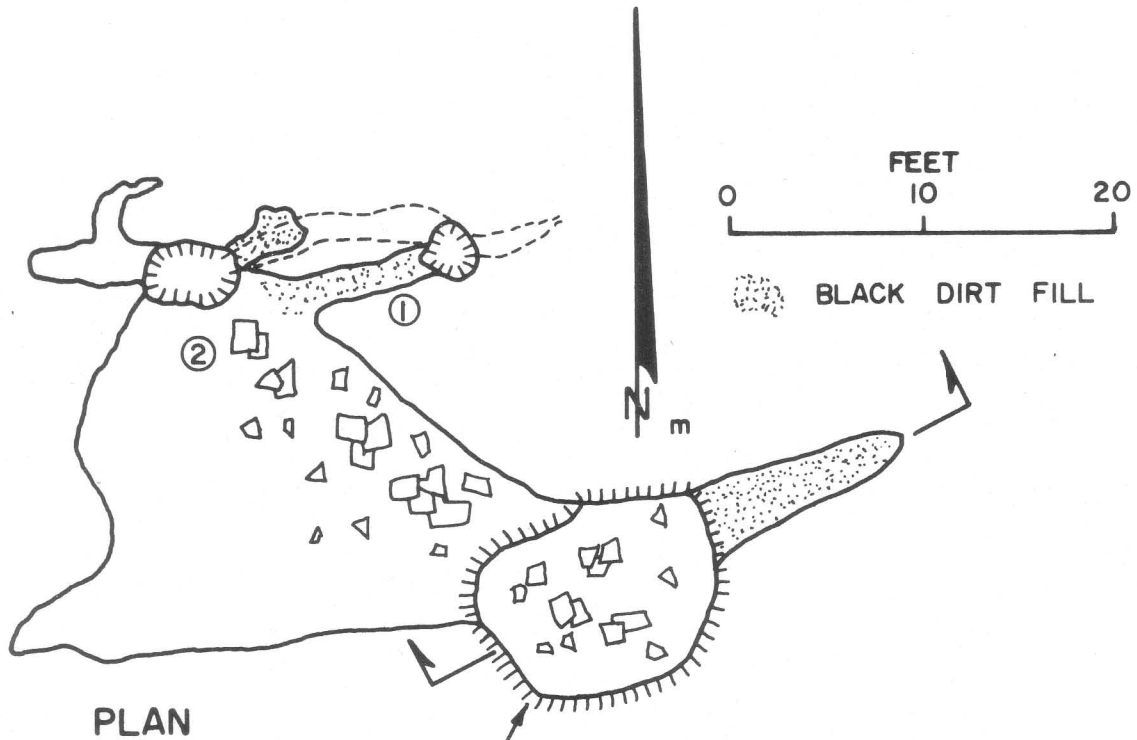
Bibliography: See reference no. 14.

Burial Cave (Uvalde County).- Located in the Uvalde 30' Quadrangle on the Fred Mason, Jr., Ranch. This is a vertical shaft that was completely filled when discovered. The owner began excavating it and encountered numerous Indian skeletons and artifacts. In 1961 a small amount of vertebrate remains were taken from two separate places within the shaft: a small side alcove about 30' below the entrance and the floor of the cave 35' below the entrance. A detailed paleoecologic study by Margaret Cridlebough Frank revealed a more humid climate than at present followed by a general aridity and then a return to the present semi-arid conditions. Artifacts found in the cave put a minimum date of 1000 years B.P. on the deposition of the sediments. (See map, page 13)

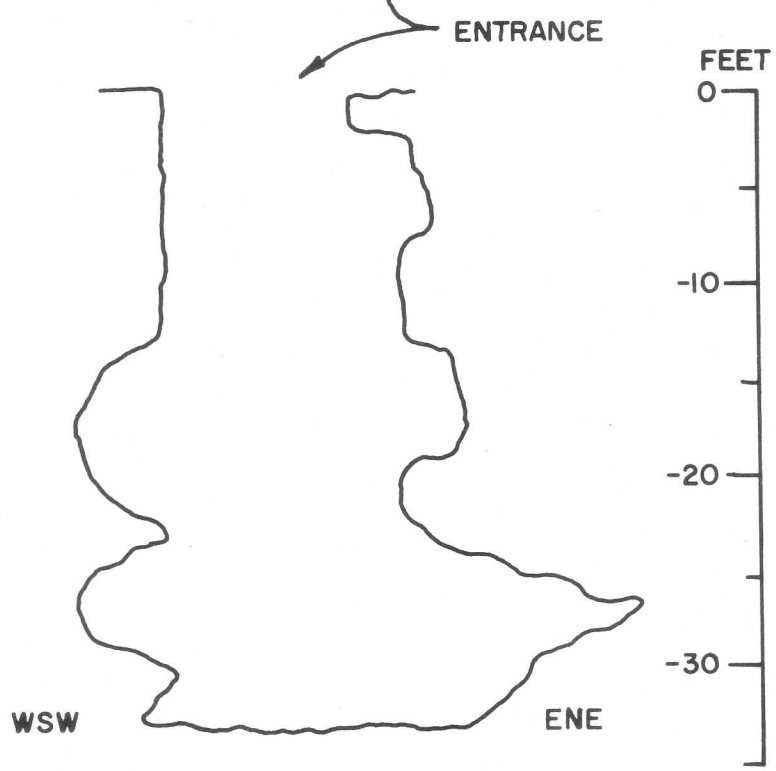
Bibliography: See reference no. 4.

Barton Springs Site (Travis County).- Located in the Austin West 7.5' Quadrangle and possibly on land belonging to the city of Austin. This is a shallow shelter that was excavated by C.D. Tunnell in 1960 for its archaeological remains. In 1962 William Akersten studied the vertebrate fossils taken from the shelter. A radiocarbon date of around 2000 B.P. complemented his post Wisconsin paleoecological interpretation.

Bibliography: See reference no. 1.



PLAN



SECTION

BURIAL CAVE
 UVALDE CO., TEXAS

Kincaid Shelter (Uvalde County).- Located in the Sabinal 15' Quadrangle on the Edgar Kincaid Ranch. This is an approximately 35' in diameter shelter cave excavated by the Texas Memorial Museum in 1948 for its archeological remains. The vertebrate fauna differs from remains taken from other archeological shelters in the state in its number of extinct species. Folsom points found in the cave indicate that the fauna is at least 9000 years old. The oldest radiocarbon date is about 8000 years B.P.

Bibliography: See reference no. 3.

Centipede Cave and Damp Cave (Val Verde County).- Located in the Shumla 15' Quadrangle on the Rufus (Bob) Williams Ranch. These two archeological sites were excavated in 1958 by the Texas Archeological Salvage Project. The vertebrate fossils were examined by Dr. E.L. Lundelius. Although the cave deposits appear to be almost as old as the Kincaid site, the fauna is not nearly so intriguing. The oldest radiocarbon date from Centipede Cave is about 6500 years B.P.

Bibliography: See reference no. 6.

Mosquito Cave and Coontail Spin Shelter (Val Verde County).- Located in the Mouth of Pecos 15' Quadrangle. These two shelters were recently excavated by the Texas Archeological Salvage Project. The vertebrate remains are varied but not spectacular. The oldest radiocarbon date is about 10,300 years B.P.

Bibliography: See reference no. 21.

Bonfire Shelter (Val Verde County).- Located in the Langtry 15' Quadrangle on the Guy Skiles Ranch. This shelter was excavated by the Texas Archeological Salvage Project under the supervision of C.D. Tunnell in 1963 and 1964. The vertebrate remains, which include an extremely large number of bison, together with camel and elephant, are currently being studied by Dessamae Lorrain. Radiocarbon dates give a minimum age of 10,250 years B.P.

Bibliography: See reference no. 5.

Don Williams Cave (Hays County).- Located in the Hunter 15' Quadrangle on land owned by Don Williams father. This is a shelter that was excavated by an amateur archeologist in 1964. No other information is available at present.

Oblate Site (Comal County).- Located in the Smithson Valley 15' Quadrangle on the San Enrique Ranch, which is owned by the Oblate Fathers. This archeologic shelter was excavated by the Texas Archeological Salvage Project under the direction of C.D. Tunnell in 1959 and 1960. Artifacts recovered place a minimum date of 1000 years B.P. on the deposition of the sediment. The oldest radiocarbon date is about 3600 years B.P.

Bibliography: See reference no. 12.

Montell Shelter Cave (Uvalde County).- Located in the Barksdale 15' Quadrangle on the Ray Miller Ranch. A shelter that was excavated by the Texas Memorial Museum about 1946 for its archeological remains. The presence of tapir in the faunal remains indicates an age on the same order of magnitude as Kincaid Shelter.

Smith Rock Shelter (Travis County).- Located in the Montopolis 7.5' Quadrangle on property owned by J.E. Smith. Smith Rock Shelter was excavated by the University of Texas Archeology Department under the supervision of D.A. Suhm in 1954. All of the genera represented are extant. From archeological evidence the fauna is probably not older than 2000 years B.P. The oldest radiocarbon date is about 1200 years B.P.

Bibliography: See reference no. 37.

Levi Rock Shelter (Travis County).- Located in the Spicewood 15' Quadrangle. Levi Rock Shelter was excavated by the University of Texas Archeology Department in 1959 and 1960 under the supervision of H.L. Alexander, Jr. A number of extinct and out-of-range species were recovered including Aenocyon, Platygonus, and Tapirus. Radiocarbon dates place a minimum date on the deposits of 10,000 years B.P.

Bibliography: See reference no. 2.

Blum Rock Shelter, Kyle Site, Sheep Cave, Pictograph Cave, and Buzzard Cave (Hill County).- Located in the Whitney 15' Quadrangle in the Whitney Reservoir. These five shelters were all excavated for their archeological remains. None of the sites are older than 2000 years B.P. and all of the represented faunas are of extant species.

Bibliography: See references nos. 10, 11, 15, 36, 39.

FAUNAL LISTS

FRIESENHAHN CAVE

FAUNAL LIST. COLLECTED BY TEXAS MEMORIAL MUSEUM, 1949-1950. IDENTIFIED BY E.L. LUNDELIUS, JR., B. KURTEN, G.E. MEADE, T.E. KENNERLY, JR., J.S. MECHAM, W.W. MILSTEAD, J.R. TAMSITT, D. PETTUS, AND FOUQUETTE.

Class Amphibia

Order Salientia

- Bufo woodhousei bexarensis -- garden toad
- Bufo cognatus -- plains toad
- Scaphiopus sp. -- spade-foot toad
- Eleutherodactylus augusti -- frog
- Rana pipiens -- leopard frog
- Rana sp. -- frog

Class Reptilia

Order Squamata

- Crotaphytus collaris -- collared lizard
- Pituophis melanoleucus -- pine snake
- Crotalus atrox -- western diamond-backed rattlesnake

Order Chelonia

- Terrapene canaliculata -- turtle
- Testudo wilsoni -- turtle

Class Mammalia

Order Marsupialia

- Didelphis marsupialis -- opossum

Order Insectivora

- Cryptotis cf. parva -- least shrew
- Notiosorex cf. crawfordi -- Crawford's desert shrew

Order Lagomorpha

- Lepus californicus -- black-tailed jack rabbit
- Sylvilagus audoboni -- desert cottontail rabbit
- Sylvilagus floridanus -- eastern cottontail rabbit

Order Rodentia

- Cynomys ludovicianus -- black-tailed prairie dog
- Geomys bursarius -- plains pocket gopher
- Perognathus hispidus -- hispid pocket mouse
- Reithrodontomys sp. -- harvest mouse
- Peromyscus leucopus -- white-footed mouse
- Peromyscus cf. maniculatus -- deer mouse
- Peromyscus cf. nasutus -- rock mouse
- Sigmodon hispidus -- hispid cotton rat
- Neotoma floridana -- eastern wood rat
- Pitymys pinetorum -- pine vole

Order Carnivora

- Aenocyon dirus -- dire wolf
- Canis latrans -- coyote
- Arctodus cf. pristinus -- short-faced bear
- Ursus americanus amplidens -- black bear
- Mephitis mephitis -- striped skunk
- Smilodon sp. -- saber-toothed cat
- Dinobastis serus -- saber-toothed cat

Order Proboscidea

- Mammut sp. -- mastodon
- Parelephas sp. -- elephant
- Elephas cf. imperator -- elephant

Order Perissodactyla

- Equus sp. -- horse
- Tapirus veroensis -- tapir

Order Artiodactyla

- Mylohyus nasutus -- long-nosed peccary
- Odocoileus virginianus -- white-tailed deer
- Bison sp. -- bison

Also unidentified camel.

LONGHORN CAVERNS

FAUNAL LIST. COLLECTED BY HOLMES SEMKEN, 1957. IDENTIFIED BY HOLMES SEMKEN.

	ZONES		
	Black Fill	Red Fill	Longhorn Breccia
Class Reptilia			
Order Chelonia			
<u>Testudo</u> sp. -- turtle			X
<u>Terrapene canaliculata</u> -- turtle		X	X
Class Mammalia			
Order Insectivora			
<u>Cryptotis parva</u> -- least shrew	X	X	
<u>Notiosorex crawfordi</u> -- Crawford's desert shrew	X		
<u>Scalopus aquaticus</u> -- eastern mole		X	
Order Chiroptera			
<u>Myotis</u> sp. -- mouse-eared bat	X	X	X
Order Rodentia			
<u>Sciurus</u> sp. -- tree squirrel			X
<u>Citellus</u> sp. -- ground squirrel	X		
<u>Geomys bursarius</u> -- plains pocket gopher	X		
<u>Perognathus hispidus</u> -- hispid pocket mouse	X	X	
<u>Perognathus merriami</u> -- Merriam's pocket mouse	X		
<u>Reithrodontomys montanus</u> -- plains harvest mouse	X		
<u>Peromyscus</u> sp. -- field mouse	X	X	X
<u>Onychomys leucogaster</u> -- grasshopper mouse	X		
<u>Sigmodon hispidus</u> -- hispid cotton rat	X	X	X
<u>Neotoma micropus</u> -- southern plains wood rat	X	X	
<u>Synaptomys cooperi</u> -- southern bog lemming	X	X	X
<u>Mus musculus</u> -- house mouse	X		
Order Carnivora			
<u>Canis</u> sp. -- dog			X
<u>Ursus americanus amplidens</u> -- black bear			X
<u>Procyon lotor</u> -- raccoon			X
<u>Bassariscus</u> sp. -- ringtailed cat		X	
<u>Felis onca</u> -- jaguar			X
Order Perissodactyla			
<u>Equus</u> sp. -- horse			X
Order Artiodactyla			
? <u>Camelops</u> sp. -- camel			X
? <u>Tanupolama</u> sp. -- camel			X
<u>Odocoileus</u> sp. -- deer	X	X	X
<u>Antilocapra</u> sp. -- pronghorn			X
<u>Bison</u> sp. -- bison		X	X
? <u>Ovis canadensis</u> -- mountain sheep			X

Also unidentified fish.

LAUBACH CAVE

PRELIMINARY FAUNAL LIST, INCLUDING MATERIAL AT SHULER MUSEUM OF PALEONTOLOGY, SOUTHERN METHODIST UNIVERSITY. COLLECTED BY BOB H. SLAUGHTER, W.A. AKERSTEN, B. FRANK, ET AL., 1963-1964. IDENTIFIED BY SLAUGHTER, AKERSTEN, KURTEN, WILSON.

Class Mammalia

Order Lagomorpha

Lepus sp. -- rabbit

Order Rodentia

Cynomys ludovicianus -- black-tailed prairie dog

Neotoma sp. -- wood rat

Order Carnivora

Canis latrans -- coyote

Procyon lotor -- raccoon

Felis cf. atrox -- cat

Felis onca -- jaguar

Order Proboscidea

Elephas sp. -- elephant

Order Artiodactyla

Platygonus compressus -- peccary

Camelops sp. -- camel

Also unidentified bat and rabbit.

ZESCH RANCH CAVE

PRELIMINARY FAUNAL LIST. COLLECTED BY BOB HUDSON (1955?), W.A. AKERSTEN, B. FRANK, ET AL. (1963). IDENTIFIED BY W.A. AKERSTEN, B. FRANK.

Class Mammalia

Order Insectivora

Notiosorex crawfordi -- Crawford's desert shrew

Scalopus aquaticus -- eastern mole

Order Chiroptera

Myotis sp. -- mouse-eared bat

Order Lagomorpha

Sylvilagus sp. -- cottontail rabbit

Order Rodentia

Neotoma sp. -- wood rat

Pitymys sp. -- vole

Order Carnivora

- Vulpes sp. -- fox
- Ursus sp. -- bear
- Taxidea taxus -- badger

Order Perissodactyla

- Equus sp. -- horse

Order Artiodactyla

- Tayassu tajacu -- peccary
- Bison sp. -- bison

Also unidentified snakes

FERN CAVE

PRELIMINARY FAUNAL LIST. COLLECTED BY HOLMES SEMKEN, 1958. IDENTIFIED BY E.L. LUNDELIUS.

	UPPER	ZONES	
		MIDDLE	LOWER
Class Reptilia			
Order Squamata			
<u>Phrynosoma</u> sp. -- horned lizard	X		
Class Mammalia			
Order Lagomorpha			
<u>Sylvilagus</u> sp. -- rabbit	X		
Order Rodentia			
<u>Perognathus hispidus</u> -- hispid pocket mouse	X	X	X
<u>Perognathus merriami</u> -- Merriam's pocket mouse	X	X	X
<u>Reithrodontomys</u> sp. -- harvest mouse	X	X	X
<u>Baiomys taylori</u> -- northern pigmy mouse	X		
<u>Onychomys leucogaster</u> -- grasshopper mouse	X		
<u>Sigmodon hispidus</u> -- hispid cotton rat	X		
<u>Neotoma</u> sp. -- wood rat	X		

Also unidentified bats.

CAVE X

FAUNAL LIST. COLLECTED BY W.H. RUSSELL, 1959. IDENTIFIED BY HOLMES SEMKEN AND W.W. MILSTEAD.

Class Reptilia

Order Chelonia

- Terrapene canaliculata -- turtle
- Terrapene carolina -- box turtle

MILLER'S CAVE

FAUNAL LIST. COLLECTED BY THOMAS H. PATTON, 1960. IDENTIFIED BY THOMAS H. PATTON.

	ZONES	
	Brown Clay	Travertine
Class Amphibia		
Order Salientia		
<u>Rana catesbeiana</u> -- common bull frog		X
Class Reptilia		
Order Squamata		
<u>Crotaphytus</u> sp. -- collared lizard		X
<u>Sceloporus</u> sp. -- lizard		X
<u>Cnemidophorus</u> sp. -- racerunner		X
<u>Elaphe</u> or <u>Pituophis</u> -- rat snake or bull snake		X
<u>Lampropeltis calligaster</u> -- blotched king snake		X
<u>Masticophis</u> sp. -- snake		X
<u>Opheodrys</u> sp. -- green snake		X
<u>Tantilla</u> sp. -- hooded snake		X
<u>Thamnophis sauritus</u> -- garter snake		X
<u>Crotalus</u> sp. -- rattlesnake		X
Class Mammalia		
Order Insectivora		
<u>Blarina brevicauda</u> -- shorttail shrew		X
<u>Cryptotis parva</u> -- least shrew		X
<u>Scalopus aquaticus</u> -- eastern mole		X
Order Chiroptera		
<u>Myotis velifer</u> -- little brown bat	X	X
<u>Eptesicus fuscus</u> -- big brown bat		X
Order Edentata		
<u>Dasypus bellus</u> -- armadillo		X
<u>Dasypus novemcinctus</u> -- nine-banded armadillo	X	
Order Lagomorpha		
<u>Lepus californicus</u> -- black-tailed jackrabbit		X
<u>Sylvilagus</u> sp. -- rabbit	X	X
Order Rodentia		
<u>Geomys bursarius</u> -- prairie pocket gopher	X	X
<u>Perognathus hispidus</u> -- hispid pocket mouse	X	X
<u>Reithrodontomys megalotis</u> -- western harvest mouse	X	
<u>Peromyscus leucopus</u> -- white-footed mouse		X
<u>Peromyscus</u> sp. -- pocket mouse	X	X
<u>Neotoma floridana</u> -- Florida wood rat	X	X
<u>Synaptomys cooperi</u> -- southern bog lemming		X
<u>Ondatra zibethicus</u> -- muskrat		X
<u>Microtus ochrogaster</u> -- prairie vole	X	X

Order Carnivora

<u>Canis</u> sp. -- dog	X
<u>Ursus americanus</u> -- black bear	X
<u>Mephitis mephitis</u> -- striped skunk	X
<u>Spilogale putorius</u> -- eastern spotted skunk	X

Order Artiodactyla

<u>Odocoileus</u> sp. -- deer	X
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Also unidentified fish, birds, frogs, and salamanders.

CAVE-WITHOUT-A-NAME (CENTURY CAVERNS)

FAUNAL LIST. COLLECTED BY E.L. LUNDELIUS, HOLMES SEMKEN, ET AL., 1958-1963.
IDENTIFIED BY E.L. LUNDELIUS.

Class Reptilia

Order Chelonia

<u>Terrapene canaliculata</u> -- turtle
<u>Terrapene carolina</u> -- box turtle

Class Mammalia

Order Insectivora

<u>Cryptotis parva</u> -- least shrew
<u>Scalopus aquaticus</u> -- eastern mole

Order Chiroptera

<u>Myotis</u> sp. -- mouse-eared bat

Order Edentata

<u>Dasybus bellus</u> -- armadillo
<u>Dasybus novemcinctus</u> -- nine-banded armadillo

Order Lagomorpha

<u>Lepus californicus</u> -- black-tailed jackrabbit
<u>Lepus</u> sp. -- rabbit
<u>Sylvilagus</u> sp. -- rabbit

Order Rodentia

<u>Sciurus</u> sp. -- tree squirrel
<u>Cynomys</u> sp. -- prairie dog
<u>Citellus</u> sp. -- ground squirrel
<u>Geomys bursarius</u> -- plains pocket gopher
<u>Geomys</u> sp. -- pocket gopher
<u>Perognathus hispidus</u> -- hispid pocket mouse
<u>Castor canadensis</u> -- beaver
<u>Peromyscus</u> sp. -- field mouse
<u>Sigmodon</u> sp. -- cotton rat
<u>Neotoma micropus</u> -- Southern Plains wood rat
<u>Neotoma</u> sp. -- wood rat
<u>Synaptomys</u> sp. -- bog lemming
<u>Pitymys pinetorum</u> -- pine vole
<u>Pitymys</u> sp. -- vole

Order Carnivora

- Canis latrans -- coyote
- Ursus americanus -- black bear
- Procyon sp. -- raccoon
- Mustela rixosa -- least weasel
- Mephitis sp. -- striped skunk
- Spilogale putorius -- eastern spotted skunk
- Spilogale sp. -- spotted skunk
- Conepatus sp. -- hog-nosed skunk
- Felis rufus -- bobcat

Order Proboscidea

- Mammut sp. -- mastodon

Order Artiodactyla

- Odocoileus sp. -- deer
- Bison sp. -- bison
- Symbos sp. -- musk ox

FYLLIAN CAVE

PRELIMINARY FAUNAL LIST. COLLECTED BY E.L. LUNDELIUS, W.A. AKERSTEN, T.H. PATTON, B. FRANK, 1963. IDENTIFIED BY W.A. AKERSTEN.

Class Mammalia

Order Insectivora

- Scalopus aquaticus -- eastern mole

Order Chiroptera

- Myotis velifer -- little brown bat

Order Edentata

- Dasyopus bellus -- armadillo

Order Rodentia

- ?Citellus sp. -- ground squire
- Geomys sp. -- pocket gopher
- Peromyscus sp. -- field mouse
- Sigmodon sp. -- cotton rat
- Neotoma sp. -- wood rat
- Atopomys texensis -- microtine rodent

Order Carnivora

- Canis latrans -- coyote
- Urocyon sp. -- gray fox
- Mustela frenata -- long-tailed weasel
- Mephitis mephitis -- striped skunk
- Spilogale gracilis -- western spotted skunk
- Spilogale putorius -- eastern spotted skunk

Order Perissodactyla
Tapirus sp. -- tapir

Order Artiodactyla
Odocoileus sp. -- deer
Antilocapra sp. -- pronghorn

Also unidentified turtles, frogs, and lizards

RATTLESNAKE CAVE

FAUNAL LIST. COLLECTED BY HOLMES SEMKEN, 1958. IDENTIFIED BY HOLMES SEMKEN.

	ZONES			
	1	2	3	4
Class Reptilia				
Order Squamata				
<u>Crotalus</u> sp. -- rattlesnake	X			
Class Mammalia				
Order Marsupialia				
<u>Didelphis marsupialis</u> -- opossum	X			
Order Insectivora				
<u>Cryptotis parva</u> -- least shrew	X			
<u>Cryptotis</u> sp. -- shrew		X	X	X
<u>Notiosorex crawfordi</u> -- Crawford's desert shrew	X			
<u>Notiosorex</u> sp. -- desert shrew		X	X	X
Order Chiroptera				
<u>Myotis</u> sp. -- mouse-eared bat			X	
Order Lagomorpha				
<u>Sylvilagus auduboni</u> -- desert cottontail rabbit	X			
<u>Sylvilagus floridanus</u> -- eastern cottontail rabbit	X			
<u>Sylvilagus</u> sp. -- rabbit	X			
Order Rodentia				
<u>Citellus mexicanus</u> -- Mexican ground squirrel	X			
<u>Citellus</u> sp. -- ground squirrel			X	
<u>Geomys personatus</u> -- Texas pocket gopher	X			
<u>Geomys</u> sp. -- pocket gopher		X	X	X
<u>Perognathus hispidus</u> -- hispid pocket mouse	X	X	X	
<u>Perognathus merriami</u> -- Merriam's o	X	X	X	X
<u>Perognathus</u> sp. -- pocket mouse				X
<u>Reithrodontomys montanus</u> -- plains harvest mouse	X	X	X	
<u>Reithrodontomys</u> sp. -- harvest mouse				X
<u>Peromyscus</u> sp. -- field mouse	X	X	X	X
<u>Baiomys taylori</u> -- northern pigmy mouse	X		X	
<u>Baiomys</u> sp. -- pigmy mouse		X		X
<u>Onychomys leucogaster</u> -- northern grasshopper mouse	X	X	X	
<u>Onychomys</u> sp. -- grasshopper mouse	X	X		X

<u>Sigmodon hispidus</u> -- hispid cotton rat	X			
<u>Sigmodon</u> sp. -- cotton rat	X	X	X	X
<u>Neotoma micropus</u> -- southern plains wood rat	X		X	
<u>Neotoma</u> sp. -- wood rat	X	X	X	X
<u>Pitymys</u> sp. -- vole		X	X	
<u>Mus musculus</u> -- house mouse	X	X		

Order Carnivora

Mephitis mephitis -- striped skunk X

Order Artiodactyla

Capra sp. -- goat X

Also unidentified birds.

CLAMP CAVE

FAUNAL LIST. MATERIAL RECEIVED AT THE TEXAS MEMORIAL MUSEUM, MARCH 13, 1957, FROM MR. GLEN EVANS, MIDLAND, TEXAS, WHO RECEIVED THE BONES FROM MR. FRANK CLAMP OF SAN SABA. IDENTIFIED BY E.L. LUNDELIUS AND B. KURTEN.

Class Mammalia

Order Lagomorpha

Lepus sp. -- rabbit

Sylvilagus sp. -- rabbit

Order Rodentia

Erethizon dorsatum -- porcupine

Order Carnivora

Aenocyon dirus -- dire wolf

Canis latrans -- coyote

Vulpes sp. -- fox

Ursus americanus amplidens -- black bear

Taxidea taxus -- badger

Felis sp. -- cat

Smilodon sp. -- sabre-toothed cat

Order Perissodactyla

Equus sp. -- horse

Order Artiodactyla

Platygonus sp. -- peccary

Camelops sp. -- camel

Tanupolama sp. -- camel

Bison sp. -- bison

NATURAL BRIDGE CAVERNS

PRELIMINARY FAUNAL LIST. COLLECTED BY W.A. AKERSTEN, 1963. IDENTIFIED BY W.A. AKERSTEN.

Class Mammalia

Order Insectivora

Cryptotis parva -- least shrew

Order Chiroptera

Myotis velifer -- little brown bat

Tadarida brasiliensis -- Mexican free-tailed bat

Order Lagomorpha

Lepus californicus -- black-tailed jackrabbit

Sylvilagus sp. -- rabbit

Order Rodentia

Geomys bursarius -- plains pocket gopher

Perognathus hispidus -- hispid pocket mouse

Perognathus merriami -- Merriam's pocket mouse

Reithrodontomys sp. -- harvest mouse

Peromyscus sp. -- field mouse

Baiomys taylori -- northern pigmy mouse

Sigmodon hispidus -- hispid cotton rat

Neotoma sp. -- wood rat

Pitymys pinetorum -- pine vole

Order Carnivora

Canis latrans -- coyote

Ursus americanus -- black bear

Procyon lotor -- raccoon

Felis rufus -- bobcat

Order Artiodactyla

Odocoileus virginianus -- white-tailed deer

Bison bison -- bison

Also unidentified birds, snakes, lizards, frogs, toads, salamanders, turtles.

DEEP CAVE

FAUNAL LIST. MATERIAL AT SHULER MUSEUM OF PALEONTOLOGY, SOUTHERN METHODIST UNIVERSITY. COLLECTED BY PETE LINDSLEY, 1963. IDENTIFIED BY BOB H. SLAUGHTER.

Class Mammalia

Order Lagomorpha

Lepus sp. -- rabbit

Order Carnivora

Ursus americanus -- black bear

Procyon lotor -- raccoon

SMALL MOUTH CAVE

PRELIMINARY FAUNAL LIST. COLLECTED BY JAMES R. REDDELL AND WILLIAM H. RUSSELL, 1963. IDENTIFIED BY E.L. LUNDELIUS AND B. FRANK.

Class Mammalia

Order Lagomorpha

- Lepus sp. -- rabbit
- Sylvilagus sp. -- rabbit

Order Rodentia

- Cynomys sp. -- prairie dog
- Geomys sp. -- pocket gopher
- Perognathus merriami -- Merriam's pocket mouse
- Perognathus cf. hispidus -- hispid pocket mouse
- Sigmodon hispidus -- hispid cotton rat
- Neotoma sp. -- wood rat
- Microtus ochrogaster -- prairie vole
- Microtus sp. -- vole

Order Artiodactyla

- Odocoileus sp. -- deer
- Bison sp. -- bison

Also unidentified turtle, snake, lizard, fish, and bird.

SALTILLO CAVE

FAUNAL LIST. COLLECTED BY HOLMES SEMKEN, 1959? IDENTIFIED BY B. KURTEN.

Class Mammalia

Order Carnivora

- Ursus americanus amplidens -- black bear

BURIAL CAVE

FAUNAL LIST. COLLECTED BY MARGARET CRIDLEBAUGH FRANK, NOVEMBER 1962. IDENTIFIED BY M. FRANK AND B. FRANK.

	ZONES		
	Black	Red	Disturbed
	Fill	Fill	Layer

Class Mammalia

Order Insectivora

- Notiosorex crawfordi -- Crawford's desert shrew X

Order Lagomorpha

- Lepus sp. -- rabbit X
- Sylvilagus floridanus -- eastern cottontail rabbit X
- Sylvilagus sp. -- rabbit X

Order Rodentia			
<u>Perognathus hispidus</u> -- hispid pocket mouse	X	X	
<u>Perognathus</u> sp. -- pocket mouse	X		
<u>Reithrodontomys fulvescens</u> -- fulvous harvest mouse	X		
<u>Reithrodontomys megalotis</u> -- western harvest mouse	X		
<u>Reithrodontomys montanus</u> -- plains harvest mouse	X		
<u>Peromyscus leucopus</u> -- white-footed mouse	X		
<u>Peromyscus nuttalli</u> -- golden mouse		X	
<u>Peromyscus pectoralis</u> -- white-ankled mouse		X	
<u>Peromyscus</u> sp. -- field mouse	X	X	X
<u>Baiomys taylori</u> -- northern pigmy mouse	X	X	
<u>Onychomys leucogaster</u> -- grasshopper mouse	X		
<u>Sigmodon hispidus</u> -- hispid cotton rat	X	X	
<u>Sigmodon</u> sp. -- cotton rat	X		
<u>Neotoma micropus</u> -- southern plains wood rat	X		
<u>Neotoma</u> sp.	X		
<u>Rattus norvegicus</u> -- Norway rat			X
Order Carnivora			
<u>Canis familiaris</u> -- dog			X
<u>Urocyon cinereonargenteus</u> -- gray fox			X
<u>Taxidea taxus</u> -- badger			X
<u>Mephitis?</u> sp. -- striped skunk			X
Order Artiodactyla			
<u>Odocoileus</u> sp. -- deer			X
<u>Capra</u> sp. -- goat			X

Also unidentified frogs, toads, lizards, and snakes.

BARTON SPRINGS SITE

FAUNAL LIST. COLLECTED BY W.A. AKERSTEN, SPRING 1962. IDENTIFIED BY W.A. AKERSTEN.

	ZONES	
	Cultural Unit	Non-cultural Unit
Class Amphibia		
Order Salientia		
? <u>Bufo</u> sp. -- toad	X	X
? <u>Rana</u> sp. -- frog	X	X
Class Reptilia		
Order Squamata		
<u>Cnemidophorus</u> sp. -- racerunner	X	X
<u>Sceloporus</u> sp. -- lizard	X	X
<u>Crotalus atrox</u> -- western diamond-backed rattlesnake	X	X
<u>Agkistrodon</u> sp. -- snake	X	X
Class Mammalia		
Order Marsupialia		
<u>Didelphis marsupialis</u> -- opossum	X	X

Order Insectivora

<u>Blarina brevicauda carolinensis</u> -- short-tailed shrew	X	
<u>Cryptotis parva</u> -- least shrew	X	X
<u>Notiosorex crawfordi</u> -- Crawford's desert shrew	X	X

Order Lagomorpha

<u>Sylvilagus</u> sp. -- rabbit	X	X
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Order Rodentia

<u>Sciurus niger</u> -- fox squirrel		X
<u>Citellus tridecemlineatus</u> -- 13-lined ground squirrel		X
<u>Geomys bursarius</u> -- plains pocket gopher	X	X
<u>Perognathus hispidus</u> -- hispid pocket mouse	X	X
<u>Reithrodontomys</u> cf. <u>fulvescens</u> -- fulvous harvest mouse	X	X
<u>Peromyscus</u> cf. <u>leucopus</u> -- white-footed mouse	X	X
<u>Peromyscus</u> cf. <u>maniculatus</u> -- deer mouse	X	X
<u>Baiomys taylori</u> -- northern pigmy mouse	X	X
<u>Sigmodon hispidus</u> -- hispid cotton rat	X	X
<u>Neotoma floridana</u> -- Florida wood rat	X	X
<u>Pitymys pinetorum</u> -- pine vole	X	X

Order Carnivora

<u>Canis</u> sp. -- dog	X	
<u>Bassariscus astutus</u> -- ringtailed cat	X	
<u>Procyon lotor</u> -- raccoon	X	X

Order Artiodactyla

<u>Odocoileus virginianus</u> -- white-tailed deer	X	X
<u>Bison bison</u> -- bison		X

Also unidentified fish and birds.

KINCAID SHELTER

PRELIMINARY FAUNAL LIST. COLLECTED BY T.N. CAMPBELL. IDENTIFIED BY E.L. LUNDELIUS.

Class Reptilia

Order Loricata

<u>Alligator</u> sp. -- alligator

Order Chelonia

<u>Terrapene carolina</u> -- box turtle

Class Mammalia

Order Edentata

<u>Dasypus</u> sp. -- armadillo

Order Lagomorpha

<u>Lepus</u> sp. -- rabbit
<u>Sylvilagus</u> sp. -- rabbit

Order Rodentia

- Perognathus hispidus -- hispid pocket mouse
- Neotoma sp. -- wood rat

Order Carnivora

- Aenocyon sp. -- wolf
- Procyon lotor -- raccoon
- Felis atrox -- cat

Order Proboscidea

- Elephas sp. -- elephant

Order Perissodactyla

- Equus sp. -- horse

Order Artiodactyla

- Odocoileus sp.
- Antilocapra sp. -- pronghorn
- Bison sp. -- bison

Also unidentified camel, bird, peccary, and sloth.

CENTIPEDE CAVE

FAUNAL LIST. COLLECTED BY WILLIAM DAVIS, 1958. IDENTIFIED BY E.L. LUNDELIUS, E.A. DELCO, AND R. WILKES.

	ZONES		
	Upper	Inter.	Lower
Class Osteichthyes			
Order Lepisosteiformes			
<u>Lepisosteus</u> sp. -- gar			
Order Cypriniformes			
<u>Carpionotus carpio</u> -- river carpsucker			
<u>Ictalurus furcatus</u> -- blue catfish			
<u>Pylodictus olivaris</u> -- flathead cat			
Order Perciformes			
<u>Micropterus salmoides</u> -- large mouth bass			
Class Reptilia			
Order Squamata			
<u>Gehrronotus</u> sp. -- alligator lizard	X		
<u>Phrynosoma</u> sp. -- horned lizard	X		
Order Chelonia			
<u>Trionyx</u> sp. -- soft-shelled turtle	X	X	X
Class Mammalia			
Order Chiroptera			
<u>Eumops perotis</u> -- greater mastiff bat	X		

Order Lagomorpha			
<u>Lepus californicus</u>	-- black-tailed jackrabbit	X	X X
<u>Sylvilagus audoboni</u>	-- desert cottontail rabbit	X	X X
<u>Sylvilagus floridana</u>	-- eastern cottontail rabbit	X	X X
Order Rodentia			
<u>Citellus leucurus</u>	-- white-tailed antelope squirrel	X	X
<u>Citellus mexicanus</u>	-- Mexican ground squirrel	X	X X
<u>Citellus spilosoma</u>	-- spotted ground squirrel	X	X X
<u>Citellus variegatus</u>	-- rock squirrel	X	X X
<u>Geomys</u> sp.	-- pocket gopher		
<u>Castor canadensis</u>	-- beaver	X	
<u>Sigmodon hispidus</u>	-- hispid cotton rat	X	X
<u>Sigmodon ochrognathus</u>	-- yellow-nosed cotton rat	X	X
<u>Neotoma albigula</u>	-- white-throated wood rat	X	X X
<u>Neotoma mexicana</u>	-- Mexican wood rat	X	X X
<u>Erethizon dorsatum</u>	-- porcupine	X	
Order Carnivora			
<u>Urocyon cinereoargenteus</u>	-- gray fox	X	X
<u>Bassariscus astutus</u>	-- ringtailed cat	X	X X
<u>Procyon lotor</u>	-- raccoon	X	
<u>Spilogale putorius</u>	-- eastern spotted skunk	X	
<u>Conepatus mesoleucus</u>	-- hog-nosed skunk		X
Order Artiodactyla			
<u>Odocoileus virginianus</u>	-- whitetailed deer	X	X X
<u>Bison</u> or <u>Bos</u> sp.	-- bison or cattle	X	

DAMP CAVE

FAUNAL LIST. COLLECTED BY CURTIS TUNNELL, 1958. IDENTIFIED BY E.L. LUNDELIUS, E.A. DELCO, AND R. WILKES.

Class Osteichthyes

Order Lepisosteiformes

Lepisosteus sp. -- gar

Order Cypriniformes

Carpionodes carpio -- river carpsucker

Ictalurus furcatus -- blue catfish

Class Reptilia

Order Chelonia

Trionyx sp. -- soft-shelled turtle

Class Mammalia

Order Lagomorpha

Lepus californicus -- black-tailed jackrabbit

Sylvilagus sp. -- rabbit

Order Rodentia

Citellus mexicanus -- Mexican ground squirrel
Citellus spilosoma -- spotted ground squirrel
Citellus variegatus -- rock squirrel
Castor canadensis -- beaver
Sigmodon hispidus -- hispid cotton rat
Neotoma sp. -- wood rat
Ondatra zibethica -- muskrat

Order Carnivora

Canis latrans -- coyote
Urocyon cinereoargenteus -- gray fox
Bassariscus astutus -- ringtailed cat
Procyon lotor -- raccoon
Mephitis mephitis -- striped skunk
Spilogale putorius -- eastern spotted skunk

Order Perissodactyla

Equus sp. -- horse

Order Artiodactyla

Odocoileus virginianus -- whitetailed deer
Ovis sp. -- domestic sheep

MOSQUITO CAVE

COLLECTED BY TEXAS ARCHEOLOGICAL SALVAGE PROJECT, 1963? IDENTIFIED BY W.A. AKERSTEN. PRELIMINARY FAUNAL LIST.

Class Reptilia

Order Squamata

Phrynosoma sp. -- horned toad

Order Chelonia

Terrapene sp. -- box turtle
Trionyx sp. -- soft-shelled turtle

Class Mammalia

Order Lagomorpha

Lepus californicus -- black-tailed jackrabbit
Sylvilagus sp. -- rabbit

Order Rodentia

Citellus cf. mexicanus -- Mexican ground squirrel
Citellus variegatus -- rock squirrel
Perognathus cf. hispidus -- hispid pocket mouse
Castor canadensis -- beaver
Sigmodon hispidus -- hispid cotton rat
Neotoma micropus -- Southern Plains wood rat
Erethizon dorsatum -- porcupine

Order Carnivora

- Canis latrans -- coyote
- Procyon lotor -- raccoon
- Taxidea taxus -- badger
- Spilogale putorius -- eastern spotted skunk

Order Artiodactyla

- Odocoileus sp. -- deer
- Antilocapra americana -- pronghorn
- Bison sp. -- bison

Also unidentified fox, snake, bird, and fish.

COONTAIL SPIN SHELTER

PRELIMINARY FAUNAL LIST. COLLECTED BY TEXAS ARCHEOLOGICAL SALVAGE PROJECT,
1963? IDENTIFIED BY B. FRANK.

Class Reptilia

Order Chelonia

- Trionyx sp. -- soft-shelled turtle

Class Mammalia

Order Lagomorpha

- Lepus sp. -- rabbit
- Sylvilagus sp. -- rabbit

Order Rodentia

- Citellus variegatus -- rock squirrel
- Citellus sp. -- ground squirrel
- Castor canadensis -- beaver
- Neotoma sp. -- wood rat
- Erethizon dorsatum -- porcupine

Order Carnivora

- Canis sp. -- dog
- Vulpes sp. -- fox
- Bassariscus astutus -- ringtailed cat
- Procyon lotor -- raccoon

Order Artiodactyla

- Odocoileus sp. -- deer

Also unidentified fish, lizard, and snake.

BONFIRE SHELTER

FAUNAL LIST. COLLECTED BY C.D. TUNNELL, 1963-1964. IDENTIFIED BY B. FRANK.

Class Mammalia

Order Lagomorpha

Sylvilagus floridanus -- eastern cottontail rabbit

Order Rodentia

Onychomys leucogaster -- northern grasshopper mouse

Neotoma sp. -- wood rat

Order Carnivora

Urocyon cinereoargenteus -- gray fox

Order Proboscidea

Elephas sp. -- elephant

Order Perissodactyla

Equus sp. -- horse

Order Artiodactyla

Camelops sp. -- camel

Bison sp. -- bison

DOX WILLIAMS CAVE

FAUNAL LIST. COLLECTED BY DOX WILLIAMS, 1964. IDENTIFIED BY B. FRANK.

Class Mammalia

Order Carnivora

Aenocyon cf. dirus -- dire wolf

Ursus americanus -- black bear

Order Artiodactyla

Odocoileus virginianus -- white-tailed deer

OBLATE ROCKSHELTER

FAUNAL LIST. COLLECTED AND IDENTIFIED BY C.D. TUNNELL, 1959-1960.

Class Reptilia

Order Chelonia

Terrapene sp. -- turtle

Trionyx sp. -- soft-shelled turtle

Class Mammalia

Order Lagomorpha

Sylvilagus sp. -- rabbit

Order Rodentia

Castor canadensis -- beaver
Sigmodon sp. -- cotton rat
Neotoma sp. -- wood rat

Order Carnivora

Canis latrans -- coyote
Urocyon cinereoargenteus -- gray fox
Mephitis sp. -- striped skunk

Order Artiodactyla

Odocoileus sp. -- deer
Bison sp. -- bison

Also unidentified bird, fish, and snake.

MONTELL SHELTER CAVE

PRELIMINARY FAUNAL LIST. COLLECTED BY TEXAS MEMORIAL MUSEUM, 1947. IDENTIFIED BY E.L. LUNDELIUS AND B. FRANK.

Class Mammalia

Order Lagomorpha

Sylvilagus sp. -- rabbit

Order Rodentia

Cynomys sp. -- prairie dog
Geomys sp. -- pocket gopher
Perognathus hispidus -- hispid pocket mouse
Oryzomys sp. -- rice rat
Peromyscus sp. -- field mouse
Sigmodon hispidus -- hispid cotton rat
Neotoma micropus -- southern plains wood rat
Neotoma sp. -- wood rat
Ondatra sp. -- muskrat
Pitymys pinetorum -- pine vole

Order Perissodactyla

Tapirus sp. -- tapir

Order Artiodactyla

Odocoileus sp. -- deer

Also unidentified bird, snake, and turtle.

SMITH ROCK SHELTER

FAUNAL LIST. COLLECTED BY DEE ANN SUHM, ET AL., 1954-1955. IDENTIFIED BY DEE ANN SUHM, J.R. TAMSITT, KENNETH BAKER, AND VICTOR C. SPRINGER.

Class Mammalia

Order Marsupialia

Didelphis marsupialis -- opossum

Order Lagomorpha

Sylvilagus sp. -- rabbit

Order Rodentia

Castor canadensis -- beaver

Sigmodon hispidus texianus -- hispid cotton rat

Neotoma micropus micropus -- southern plains wood rat

Order Carnivora

Canis sp. -- dog

Procyon lotor -- raccoon

Mephitis mephitis mesomelas -- striped skunk

Mephitis mephitis varians -- striped skunk

Conepatus mesoleucus mearnsi -- hog-nosed skunk

Order Artiodactyla

Odocoileus sp. -- deer

Antilocapra sp. -- pronghorn

Bison sp. -- bison

Also unidentified fish, birds, and turtles.

LEVI ROCKSHELTER

FAUNAL LIST. COLLECTED BY HERBERT L. ALEXANDER, JR., 1959-1960. IDENTIFIED BY E.L. LUNDELINUS.

	ZONES				
	I	II	III	IV	V
Class Reptilia					
Order Squamata					
<u>Crotalus</u> sp. -- rattlesnake	X		X		
Class Mammalia					
Order Insectivora					
<u>Scalopus aquaticus</u> -- eastern mole	X				
Order Lagomorpha					
<u>Lepus</u> sp. -- rabbit				X	X
<u>Sylvilagus</u> sp. -- rabbit	X	X	X	X	X
Order Rodentia					
<u>Geomys</u> sp. -- pocket gopher		X		X	
<u>Sigmodon hispidus</u> -- hispid cotton rat	X		X		
<u>Neotoma</u> sp. -- wood rat		X	X	X	
<u>Pitymys pinetorum</u> -- pine vole	X				

Order Carnivora

<u>Aenocyon dirus</u> -- dire wolf	X			
<u>Canis latrans</u> -- coyote		X		X
<u>Procyon simus</u> -- raccoon				X
<u>Spilogale putorius</u> -- eastern spotted skunk	X			
<u>Felis rufus</u> -- bobcat		X		X

Order Perissodactyla

<u>Equus</u> sp. -- horse	X	X		
<u>Tapirus veroensis</u> -- tapir	X			

Order Artiodactyla

<u>Platygonus</u> sp. -- peccary		X			
<u>Odocoileus virginianus</u> -- white-tailed deer	X	X	X	X	X
<u>Antilocapra</u> sp. -- pronghorn				X	
<u>Bison</u> sp. -- bison	X	X		X	

Also unidentified fish, snakes, lizards, rabbit, and rodent.

BLUM ROCKSHELTER

FAUNAL LIST. COLLECTED BY EDWARD B. JELKS, 1952. IDENTIFIED BY B. FRANK.

Class Reptilia

Order Chelonia

<u>Terrapene</u> sp. -- box turtle
<u>Trionyx</u> sp. -- soft-shelled turtle

Class Mammalia

Order Lagomorpha

<u>Sylvilagus</u> sp. -- cottontail rabbit
--

Order Rodentia

<u>Castor canadensis</u> -- beaver

Order Carnivora

<u>Canis latrans</u> -- coyote
<u>Procyon lotor</u> -- raccoon
<u>Mephitis</u> sp. -- striped skunk
<u>Felis rufus</u> -- bobcat
<u>Felis</u> sp. -- cat

Order Artiodactyla

<u>Odocoileus virginianus</u> -- white-tailed deer
<u>Antilocapra americana</u> -- pronghorn
<u>Bison</u> sp. -- bison

KYLE SITE

FAUNAL LIST. COLLECTED BY EDWARD B. JELKS, 1959-1960. IDENTIFIED BY E.L. LUNDELIUS.

Class Osteichthyes

Order Lepisosteiformes

Lepisosteus sp. -- gar

Class Reptilia

Order Chelonia

Trionyx sp. -- soft-shelled turtle

Class Mammalia

Order Insectivora

Cryptotis parva -- least shrew

Scalopus aquaticus -- eastern mole

Order Lagomorpha

Sylvilagus sp. -- rabbit

Order Rodentia

Sciurus niger -- fox squirrel

Citellus sp. -- ground squirrel

Geomys sp. -- pocket gopher

Perognathus hispidus -- hispid pocket mouse

Onychomys leucogaster -- northern grasshopper mouse

Sigmodon hispidus -- hispid cotton rat

Neotoma sp. -- wood rat

Pitymys sp. cf. pinetorum -- pine vole

Order Carnivora

Taxidea taxus -- badger

Conepatus mesoleucus -- hog-nosed skunk

Also unidentified Cricetine rodents, crayfish, carp, catfish, fish, snake, turtle, frog, and bird.

SHEEP CAVE

FAUNAL LIST. COLLECTED BY SMITHSONIAN INSTITUTION. IDENTIFIED BY C. TUNNELL AND B. FRANK.

Class Reptilia

Order Chelonia

Terrapene sp. -- box turtle

Pseudemys sp. -- slider

Class Mammalia

Order Marsupialia

Didelphis marsupialis -- opossum

Order Lagomorpha

Lepus sp. -- rabbit

Sylvilagus sp. -- rabbit

Order Rodentia

- Sciurus sp. -- tree squirrel
- Castor sp. -- beaver

Order Carnivora

- Canis sp. -- dog
- Procyon sp. -- raccoon
- Taxidea taxus -- badger
- Mephitis sp. -- striped skunk

Order Perissodactyla

- Equus sp. -- horse

Order Artiodactyla

- Tayassu sp. -- collared peccary
- Odocoileus virginianus -- white-tailed deer
- Bison sp. -- bison

Also unidentified bird, frog, snake, and fish.

PICTOGRAPH CAVE

FAUNAL LIST. COLLECTED BY SMITHSONIAN INSTITUTE. IDENTIFIED BY C. TUNNELL AND B. FRANK.

Class Reptilia

Order Chelonia

- Terrapene sp. -- box turtle

Class Mammalia

Order Lagomorpha

- Sylvilagus sp. -- rabbit

Order Rodentia

- Castor sp. -- beaver
- Neotoma sp. -- wood rat

Order Carnivora

- Canis sp. -- dog
- Procyon sp. -- raccoon
- Taxidea taxus -- badger
- Mephitis sp. -- striped skunk

Order Artiodactyla

- Odocoileus virginianus -- white-tailed deer

Also unidentified turtle, frog, fish, snake, and bird.

BUZZARD CAVE

FAUNAL LIST. COLLECTED BY SMITHSONIAN INSTITUTE, 1947. IDENTIFIED BY C. TUNNELL AND WILLIAM BLACKBORN STALLCUP, JR.

Class Reptilia

Order Chelonia

- Terrapene sp. -- box turtle
- Trionyx sp. -- soft-shelled turtle

Class Mammalia

Order Marsupialia

- Didelphis marsupialis -- opossum

Order Lagomorpha

- Sylvilagus aquaticus -- swamp rabbit

Order Rodentia

- Sciurus sp. -- tree squirrel

Order Carnivora

- Canis sp. -- dog
- Procyon sp. -- raccoon

Order Artiodactyla

- Odocoileus virginianus -- white-tailed deer
- Bison sp. -- bison

Also unidentified bird, fish, and skunk.

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APPENDIX: MOLLUSCA

The following is a list of mollusks which have been recovered from the caves and shelters discussed in this report. Because of their possible significance as climatological indicators they are included herein. One of the species, Discus cronkhitei, is known only from the northern United States, while other species no longer live in the area. Among the most important of these are Helicodiscus intermedius, Helicodiscus jacksoni, and Strobilops labyrinthica. With the exception of the shells from Miller's Cave, Longhorn Caverns, and Buzzard Cave, all of the material included in this report were identified by Dr. Leslie Hubricht of Meridian, Mississippi.

CLASS GASTROPODA

Order Archaeogastropoda

Family Helicinidae

Helicina orbiculata (Say) -- Miller's Cave; Longhorn Caverns

Order Ctenobranchiata

Family Pleuroceridae

Goniobasis sp. -- Buzzard Cave

Order Pulmonata

Family Planorbidae

Tropicorbis sp. -- Barton Springs Site

Order Stylommatophora

Family Achatinidae

Rumina decollata (L.) -- Barton Springs Site

Family Bulimulidae

Bulimulus sp. -- Buzzard Cave

Bulimulus dealbatus (Say) -- Miller's Cave; Longhorn Caverns

Bulimulus dealbatus mooreanus (Pfr.) -- Fern Cave; Montell Shelter Cave; Burial Cave; Barton Springs Site; Cave-Without-A-Name; Laubach Cave

Bulimulus dealbatus ragdalei (Pils.) -- Fern Cave; Rattlesnake Cave

Family Endodontidae

Discus cronkhitei (Newc.) -- Cave-Without-A-Name

Helicodiscus eigenmanni Pilsbry -- Fern Cave; Montell Shelter Cave; Burial Cave; Barton Springs Site; Cave-Without-A-Name

Helicodiscus intermedius Morrison -- Burial Cave

Helicodiscus jacksoni Hubricht -- Fern Cave

Helicodiscus singleyanus (Pils.) -- Fern Cave; Rattlesnake Cave; Burial Cave

Family Oleacinidae

Euglandina singleyana (W.G. Binney) -- Montell Shelter Cave; Burial Cave; Cave-Without-A-Name

Family Polygyridae

Mesodon sp. -- Miller's Cave

Mesodon roemeri (Pfr.) -- Fern Cave; Longhorn Caverns

Polygyra sp. -- Cave-Without-A-Name; Miller's Cave; Longhorn Caverns

Polygyra mooreana (W.G. Binney) -- Fern Cave

Polygyra tamaulipasensis (Lea) -- Burial Cave; Fern Cave

Praticolella berlandieriana (Moric.) -- Barton Springs Site

Family Pupillidae

Gastrocopta contracta (Say) -- Fern Cave; Cave-Without-A-Name

Gastrocopta pellucida hordeacella (Pils.) -- Fern Cave; Burial Cave

Pupoides albilabris (C.B. Adams) -- Rattlesnake Cave

Family Strobilopsidae

Strobilops labyrinthica (Say) -- Cave-Without-A-Name

Family Succineidae

Succinea sp. -- Fern Cave; Rattlesnake Cave; Cave-Without-A-Name;
Longhorn Caverns

Family Urocoptidae

Holospira goldfussi (Menke) -- Montell Shelter Cave; Longhorn Caverns

Family Zonitidae

Glyphyalinia indentata (Say) -- Longhorn Caverns; Miller's Cave

Glyphyalinia paucillirata (Mor.) -- Barton Springs Site

Glyphyalinia roemeri (Pilsbry & Ferriss) -- Burial Cave; Barton Springs
Site; Cave-Without-A-Name

Hawaiiia minuscula (Binney) -- Rattlesnake Cave; Burial Cave

Hawaiiia minuscula neomexicana (C. & P.) -- Fern Cave

Zonitoides arboreus (Say) -- Cave-Without-A-Name

CLASS PELECYPODA

Order Prionodesmacea

Family Unionidae

Amblema sp. -- Buzzard Cave