

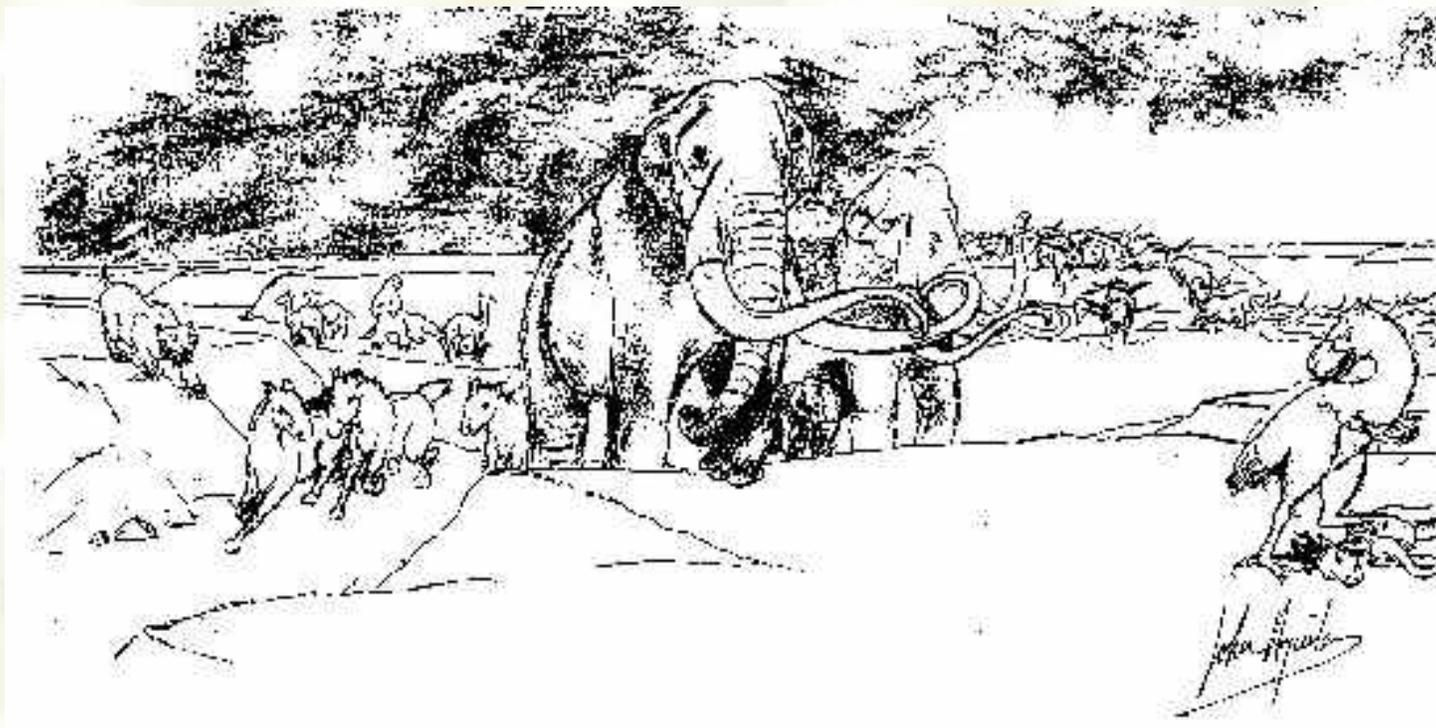
# THE PLEISTOCENE FAUNA OF SOUTH TEXAS

[Jon A. Baskin](#) - Texas A&M University-Kingsville

[Family Fossil Day - 2004](#)

[Family Fossil Day - 2003](#)

[Family Fossil Day - 2002](#)



John Aguilar: Design for a [mural at the John E. Conner Museum](#)

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## INTRODUCTION

The Quaternary Period is subdivided into the Pleistocene and Holocene. The Pleistocene or "[Ice Age](#)" includes the events from 1.8 million to about 10,000 years ago. The Holocene (or Recent) includes the past 10,000 years. Vertebrate paleontologists designate the late Pleistocene (the past 250,000 years) in North America as the Rancholabrean Land Mammal Age. The type fauna for this age is at Rancho La Brea in California. Learn more about this locality and its fossils from the [Museum of Paleontology](#) at UC Berkeley or go directly to the tar pits at the [George C. Page Museum](#) and learn more about its [fossils](#) and [more](#); or try Ice Age Mammals from the [Smithsonian](#).

The last 100,000 years or so of the Pleistocene are the Wisconsinan glacial age, the last and most extensive episode of Pleistocene glaciation. Wisconsinan glaciers reached their maximum extent 18,000 years ago, a time when continental glaciers extended to central Illinois, Indiana, and Ohio. Although glacial ice was several 1000 kilometers north, the advances and retreats of glaciers during the Pleistocene had dramatic effects on the biota, climate, and geomorphology of South Texas.

During glacial episodes, when sea level fell as much as 120 meters, rivers carved out their valleys and carried sediment to the shoreline which was at the edge of the continental shelf. During interglacials, sea level rose and river and coastal deposition occurred on the continental shelf. Glacial episodes were not times of uniformly falling sea level and erosion of river valleys. During interstadials, relatively warmer intervals, there were minor rises in sea level and the rivers filled in their valleys with terrace deposits. The Beaumont Formation, which underlies the coastal region of Texas, is late Pleistocene in age (approximately 120,000 to perhaps 50,000 years ago). Some authorities believe that the Beaumont was deposited during the last highstand of sea level, the Sangamonian Interglacial (or perhaps the Peorian Interstadial). During the Wisconsinan, the Nueces River carved out its present valley, which is over 30 meters deep and 10 kilometers wide. During the late Wisconsinan interstadials, the five alluvial units that fill the Nueces River Valley formed at progressively lower elevations. These incised terrace and valley fill deposits range in age from perhaps 50,000 to 12,000 years ago. They are capped by Holocene stream deposits of the Holocene flood plain.

## PLEISTOCENE FOSSILS FROM SOUTH TEXAS

South Texas has an excellent record of late Pleistocene fossils. Fossils occur mainly in the river channel and floodplain deposits of the Beaumont Formation and in the terrace deposits cut into the Beaumont Formation. Rancholabrean fossils from South Texas were first described by E. D. Cope over 100 years ago. The majority of fossil mammals from South Texas are grazers, such as horses and mammoths. Grazers live in savannas and grasslands and feed mainly on grasses. They often have high-crowned cheek teeth, in which the enamel extends below the gum line and the roots are frequently open. Browsers are less common. Browsers are typically forest-dwelling animals that feed mainly on stems, twigs, and leaves. Browsers can be recognized by their low-crowned cheek teeth in which the enamel extends to the gum line and the roots are closed. During the Pleistocene, South Texas was a mosaic of grassland and woodland environments which supported a much greater diversity of mammals than at present. There were probably extensive woodlands along the rivers. Time travelers to the Pleistocene of this region might at first glance think they were on the Serengeti Plain of Africa. Extinct fossil species identified from South Texas are listed below.

The Pleistocene was a time of extensive migration between North America and Eurasia and between North and South America. The Isthmus of Panama formed and connected North and South America in the late Pliocene, approximately 2.5 million years ago. During Pleistocene glacial episodes when sea level fell over 100 meters a land bridge formed in what today is the Bering Sea. The Pleistocene fauna of North America is distinct in containing South American immigrants (ground sloths, armadillos, glyptodonts, porcupines, capybaras, and opossums) and Old World immigrants (lions, hyenas, elephants, bison). Some

mammals that evolved in North America became extinct on this continent, but survived in South America (llamas and tapirs) and the Old World (cheetahs, camels, horses [including zebras and wild asses], and tapirs).

## PLEISTOCENE EXTINCTIONS

The extinction of large animals (the megafauna) in North America at the end of the Pleistocene has been related to climatic changes and human influences. Lundelius implicates a reduction in habitat diversity caused by a general warming and drying trend, as well as more seasonal conditions (warmer summers, colder winters). Martin attributes the extinction to the arrival of big game hunters (the Clovis and Folsom cultures) across the Bering land bridge 11,500 years ago. This is known as the overkill hypothesis. Learn more about [late Pleistocene extinctions](#) from the Illinois State Museum. The American Museum of Natural History has a website devoted to [Pleistocene extinctions](#) world wide. Included is a [bestiary](#) featuring many of the large vertebrates that became extinct, including some from North America.

### FOSSIL LOCALITIES

- 1 = Nueces River
- 2 = Ingleside
- 3 = Aransas River
- 4 = Bee County
- 5 = Petronila Creek

### SYMBOLS

- ††† = extinct genus
- †† = extinct species
- † = extinct subspecies

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### FAUNAL LIST

## CLASS REPTILIA

### Order TESTUDINES

Turtles and tortoises.

††† *Hesperotestudo crassiscutata* (1, 2, 3)

The giant Pleistocene tortoise. Presence of this and other large tortoises indicates relatively mild winters. Although considered closely related to the giant Galapagos tortoises, a recent study suggests *Hesperotestudo* is most closely related to gopher tortoises.

††*Gopherus* large extinct species (1, 2)

Gopher tortoises today live in dry areas of the southeastern and southwestern United States.

†*Trachemys scripta bisornata* (1, 2, 3, 4)

The common slider, a wide-spread turtle species that lives in ponds and slow moving streams. This extinct subspecies is considerably larger than recent forms.

*Terrapene carolina* (1, 2, 4)

The common box turtle.

*Kinosternum flavescens* (4)

The yellow mud turtle.

*Apalone spinifera* (1, 2)

The spiny softshell turtle.

## Order CROCODILIA

*Alligator mississippiensis* (1, 2)

The American alligator.

## CLASS AVES

†††*Titanis walleri* (1)

A two meter tall, cursorial, flightless, predator. It is distantly related to cranes. A Pliocene immigrant from South America. Learn more about [\*Titanis\*](#) and other [terror birds](#) from Christoph Kulmann (this site was put off line January, 2002, with a note that a new and improved version was in the making.). More information is available from the [FMNH](#). The BBC's [Walking with Beasts television program](#) featured the South American ancestor

[Phorusrhacos](#). I prefer this restoration over others I have seen. It is even better in the animations on the tv show or on the BBC web page. Here is a more muscular reconstruction from [Kelly Taylor](#)



*Titanis* toe. Actual length is 90 mm. [Click on image to enlarge.](#)

*Haliaeetus leucocephalus* (1)

Robert Chandler identified a left distal tarsometatarsus as best fitting a large female bald eagle, or possibly a small male golden eagle (*Aquila chrysaetos*).

## CLASS MAMMALIA

### Order XENARTHRA

The xenarthrans, also known as edentates, are South American mammals that emigrated to North America in the late Cenozoic, especially after the completion of the Panamanian land bridge, approximately 2.5 million years ago.

### Suborder Tardigrada

Sloths are browsers. There are two species of living sloths. Both are relatively small, and spend most of their lives hanging upside down from trees. Most of the extinct sloths were large ground-dwellers. Learn more about [ground sloths](#) from the Illinois State Museum. Charles Darwin discovered the remains of ground sloths and other late Pleistocene mammals in Argentina during his sail around the world on the [HMS Beagle](#).

### Family Megatheriidae

†††*Eremotherium laurillardii* (1, 3)

The megatheres include the largest of all the ground sloths. This genus, which ranged from Brazil to South Carolina, was the size of an elephant, with adult males over 6 meters long and weighing more than 3 tons. This species has been associated with savanna habitats. Megatherium from the BBC's [Walking with Beasts](#)

## Family Mylodontidae

†††*Paramylodon harlani* (2)

This giant ground sloth (sometimes referred to the genus *Glossotherium*) was a large browser the size an ox and weighed at least one ton.

## Family Megalonychidae

†††*Megalonyx jeffersonii* (1, 2)

This ground sloth is the size of a large bear. This species is associated with forest and woodland habitats. The genus was named in 1796 by our third president Thomas Jefferson who thought its "great claw" (*megalo- onyx*) indicated the fossil was from a giant lion.



*Megalonyx* skull

## Suborder Cingulata

The cingulates are the armored xenarthrans. They are represented by one extant family, the Dasypodidae (armadillos), and two extinct families (Pampatheriidae and Glyptodontidae). They are represented most frequently in the fossil record by their distinctive osteoderms, the bony plates that form their armor.

## Family Pampatheriidae

†††*Holmesina septrionalis* (1, 2, 3, 4)

Although pampatheres are sometimes referred to as giant armadillos, it is unclear whether they are more closely related to armadillos or to glyptodonts. A nearly complete specimen, approximately 2 meters long, that was collected in Houston is on display at the [Houston Museum of Natural History](#). More on [pampatheres](#) from the American Museum of Natural History.

### Family Glyptodontidae

†††*Glyptotherium arizonae* (1, 2, 3, 4)

[Glyptodonts](#) were large, slow moving browsers that grew to over 2 meters in length and weighed about a ton. They had a huge turtlelike carapace made up of thick polygonal plates. Although glyptodonts superficially resemble giant armadillos, they are very distinctive, have a long separate fossil record, and belong in their own, distinct family.

## Order CARNIVORA

### Family Canidae

††*Canis dirus* (?1, 2, 4)

The dire wolf, a very large Pleistocene wolf.

*Canis latrans* (2, 5)

The coyote.

### Family Mustelidae

*Mephitis mephitis* (2)

The striped skunk.

### Family Ursidae

††*Tremarctos floridanus* (?1, 2)

The extinct Florida cave bear is a relative of the South American spectacled bear.

†††*Arctodus simus* (?1)

The giant short-faced bear, a bear up to twice the size of the brown bear, is tentatively represented by a distal humerus. Information from the Yukon/Beringia interpretive center. Laura Cunningham's painting of an *Arctodus* hunting *Bison*

### Family Felidae

††*Smilodon fatalis* (?1, 2, 4)

The well-known Pleistocene saber-toothed cat. Both it and the dire wolf are extremely abundant in the tar pits of Rancho la Brea. They are both extremely rare in South Texas. Learn more about *Smilodon* and other sabertooths from the Illinois State Museum or the Museum of Paleontology at Berkeley. *Smilodon* from the BBC *Walking with beasts*.

†*Panthera leo atrox* (1,2)

The American lion is a large subspecies that grew up to 2.5 m long.

*Puma concolor* (1, ?2)

The mountain lion or puma has been found in numerous Rancho la Brea localities.

*Lynx rufus* (2)

The bobcat.

## Order RODENTIA

### Family Sciuridae

*Cynomys ludovicianus* (1, 2, 5)

The black-tailed prairie dog is no longer present in South Texas.

### Family Geomyidae

*Geomys* sp. (2, 5)

Two gophers, *G. cf. attwateri* and *G. cf. personatus* are recognized from Petronila Creek.

### Family Hydrochoeridae

†††*Neochoerus pincknei* (3)

This species is 40% larger than the living capybaras, the largest living rodents (which weigh up to 50 kg). This genus, a South American immigrant, was named from material discovered on the Aransas River.

## Order PROBOSCIDEA



Elephants and their close relatives. Occlusal views of a gomphothere, mastodon and mammoth teeth. Click on image to enlarge.

## Family Mammutidae

†††*Mammut americanum* (1, 2, 3)

The American Mastodont, a browsing form with low crowned teeth, distantly related to elephants is relatively rare in South Texas. The mastodont stood about 2.7 m high at the shoulders. Learn more about the [mastodon](#) from the Illinois State Museum. Jacketing a



mastodon skull--at the Nueces River gravel pit. Click on image to enlarge. Image courtesy of [TAMUK News Service](#)



Mastodon molar, side view. Enamel is on the crown only. Click on image to enlarge.

## Family Gomphotheriidae

†††*Cuvieronius* sp. (1, 2, 3)

Gomphotheres are browsing forms, related to elephants. These are also very rare in South Texas.

**Family Elephantidae**

†††*Mammuthus columbi* (1, 2, 3, 4)

The Columbian Mammoth is closely related to the Indian elephant. Mammoths are grazers and they are among the most common fossils in South Texas. A full grown, male Columbian mammoth stood 4 meters tall at the shoulder. Learn more about [mammoths](#) from the Illinois State Museum.



paleontologist viewing mammoth skeleton at the New Mexico Museum of Science and history

## Order ARTIODACTYLA

Identifying Pleistocene artiodactyl teeth by David Thulman of the Florida Museum of Natural History.

### Family Tayassuidae

Although closely related to the Old World swine (Family Suidae), peccaries (or javelina) are easily distinguished from pigs by anyone who cares to tell the difference.

†††*Platygonus compressus* (1, 2, 4)

The flat-headed peccary was much larger than its living relatives, such as the collared peccary (*Pecari tajacu*), the official mascot of Texas A&M-Kingsville.

### Family Camelidae

Camels and llamas initially evolved in North America in the late Eocene. In the Pleistocene they emigrated to Asia and Africa (camels) and to South America (llamas) and went extinct in North America.

†††*Camelops hesternus* (1)



*Camelops* jaw collected by Jonathan Reichel. Tooth row length is 168 mm. [Click on image to enlarge.](#)

This large camel is a giant llama that is known from many Rancho La Brea localities including [Rancho La Brea](#). As indicated by its high crowned, but rooted, teeth, it was mainly a grazer, although it probably browsed occasionally. Information from the [Yukon/Beringia](#) Interpretive Centre.

†††*Camelops* sp. (2, 3, 4)

The *Camelops* from Ingleside represents a new species. The material from the other localities is too incomplete to identify to species.

†††*Palaeolama mirifica* (?1, 2)

This short-legged llama was a browser.

†††[\*Hemiauchenia macrocephala\*](#) (1)

This gracile llama had very elongate, slender legs and was a cursorial grazer. Learn more about this species from the [Florida Museum of Natural History](#).

**Family Cervidae**

*Odocoileus virginianus*

The white-tailed deer is the only species of large mammal known from the Pleistocene that is still extant in South Texas. It is a browser.

**Family Antilocapridae**

The pronghorn "antelopes" belong to a family that is only known from North America.

†††*Capromeryx minor* (1, 2)

A diminutive species that weighed about 10 kg, with paired horn cores, a small anterior; one a larger posterior.

†††*Tetrameryx shuleri* (1, 2)



Right horncore. [Click on image to enlarge.](#)

This genus includes large four-horned antilocaprids, which have a long posterior horn-core and a shorter anterior horn-core.

†††*Stockoceras onusrosagris* (1)

A genus the size of the living pronghorn, but with 4 equal sized horns, two above each eye.

## Family Bovidae

Bovids such as the bison (popularly referred to as buffalo - a name that is properly applied to Asian water buffalo) are mainly grazers. This site now requires a password: Laura Cunningham (Volunteer at Death Valley National Park) has a web page developed as part of a Conservation Biology course from Dr. Dick Richardson at the University of Texas, Austin, discussing and illustrating fossil bison.



A modern female bison skull is at the center for comparison. Behind it are the horn cores of a male *Bison antiquus*. At the left front is the right skull roof and horn core of a female *Bison antiquus*. To the left of the skull between the male and female horn cores are pieces of horn cores from *Bison latifrons*.

### ††*Bison latifrons* (1)

The giant bison had horn cores that spanned up to 2.1 meters.

### ††*Bison antiquus* (1, 2, 5)

These bison have horn cores that are larger than the extant *B. bison*, and can span almost 0.9 meters in an adult male.

### *Bison* sp. (3, 4)

Known only from dentitions. Horn cores are necessary to identify the different species of *Bison*.

## Order PERISSODACTYLA

### Family Tapiridae

### ††*Tapirus veroensis* (1, 2)



*Tapirus* jaw. [Click on image to enlarge.](#)

Tapirs are primitive browsers that occur today in the tropical and subtropical forests of South and Central America (as well as the East Indies), after emigrating from North America during the Pleistocene. They are poorly represented in South Texas.

### Family Equidae

†††*Equus* spp. (1, 2, 3, 4)



*Equus* jaw. [Click on image to enlarge.](#)

At least 3 species of *Equus* (which includes horses, zebras, asses) are present in South Texas in the late Pleistocene and are probably the most common fossil. These grazers are well adapted for living in open country. It is probably impossible to identify species of *Equus* without relatively complete skulls and skeletons. [Laura Cunningham](#) (Volunteer at Death Valley National Park) has a web page developed as part of a class on Conservation Biology from Dr. Dick Richardson at the University of Texas, Austin, discussing and illustrating Pleistocene equids.

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