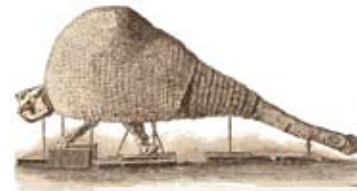


Ancient Megafauna of the Americas



Many very large animals used to live in different parts of the Americas. Can you recognize any of the animals in these pictures? Do they look like modern animals?

Here are the Latin genus names of some important ancient animals.

Doedicurus Hippidion Macrauchenia Mammuthus Megatherium Smilodon Toxodon
Canis dirus Glossotherium Glyptodon Megalonyx Mylodon Paleolama Stegomastodon

1. Investigate one of these animals on an internet encyclopedia like Wikipedia.
(Make sure all the animals in the top row are covered by your group.)

Try to find the answers to these five questions:

- About how large was this animal - what was its height or length? ____ feet
- About how much did this animal weigh when full grown? _____ pounds
- Where did this animal live? _____
- About when did this animal go extinct? _____ BCE
- What are some other interesting facts about this animal?

2. Is your animal in one of the pictures on this page?

Find a picture and make a short illustrated report about your animal.

Do you think hunting or other human activity caused this animal to go extinct?

Be prepared to discuss your answer.

Ancient Megafauna of the Americas

Genus	General Description	Height in feet	Weight in lbs	Last date BCE	Notes from/about Wikipedia article
C Amerhippus	small horse	5	850	10,000	extremely short article, but important animal
B Arctotherium	short-faced bear	5	3,500	9,500	very short article
B Canis dirus	dire wolf, fearsome predator	3	130	7,500	240 specimens dated at La Brea tar pits
B Cuvieronius	elephant-like, straight tusk	7.5	7,500	9,500	bones observed by Alexander Humboldt
A Doedicurus	armadillo-like, with tail club	5	4,500	9,000	fat-storage area under "shell"
C Eremotherium	ground sloth 20 ft long	5	7,000	9,000	BIG animal, but short confusing article
C Eutatus	armadillo-like			9,000	very short article
B Glossotherium	ground sloth 13 ft long	4	2,500	7,000	debate - did it eat grass or shrubs/trees?
B Glyptodon	armadillo-like, VW beetle size	5	4,500	8,000	people used "shells" as shelter
C Hemiauchenia	llama-like			9,000	short, hard-to-read article
A Hippidion	donkey-like horse	4.5	??	6,000	short article, but key species
C Holmesina	armadillo-like	3	500	10,000	short article
D Lestodon	upright ground sloth	4.5	5,500		stone tools in bones 30,000 years ago (?)
A Macrauchenia	camel-like	5	2,000	8,000	discovered by Darwin
A Mammuthus	mammoth	10	11,000	8,000	remnant on St Paul island until 4,000 BCE
B Mastodon	mastodon	8	16,000	8,500	in Michigan, include keyword "extinct" in search
B Megalonyx	sloth 10 ft long	4	2,000	9,000	noted by T. Jefferson, wide geographic range
A Megatherium	ground sloth 20 ft long	6	9000	8,000	able to pull tree branches down
B Mylodon	ground sloth 10 ft long	3.5	2,000	3,000	last giant sloth to go extinct
C Neochoerus	like modern capybara		250	10,000	need to read several articles
B Palaeolama	like modern llama		500	9,000	Florida to Chile, tiny article
C Panochthus	armadillo-like, spiked tail	4.5	3,000	??	very short article
C Platygonus	peccary-like, 3 ft long			9,000	short article, missing key information
A Smilodon	sabre-tooth cat	3	600	8,000	common in LaBrea tar pits, long article
B Stegomastodon	elephant-like, curved tusk	8.5	10,000	26,000	complicated article, only one not hunted
A Toxodon	rhino-like	5	3000	5,000	arrowheads found in skeletons
C Xenorhinotherium	camel-like				tiny article

A-list animals are important, pictured on activity worksheet; B-listed on worksheet; C-list other animals; D-questionable, "fake news"

Teacher's Guide: **Ancient Megafauna of the Americas**

Overview: Students investigate one of a list of ancient “megafauna” (very large animals) that used to live in the Americas.

When they share information, they should realize two things:

- There is a LOT of evidence for the existence of these animals.
- Most went extinct shortly after humans arrived in the Americas.

Grade: 6-8

Related Discipline: Earth Sci.

GLCEs: 6G414, 433, 7W112

Time: 10-30 minutes

Setup: Talk about ancient **megafauna** (modern relatives in parentheses). The large picture on the handout is Smilodon (sabre-tooth “cat”); clockwise from top right are Doedicurus (club-tail armadillo), Hippidion (horse), Mammutus (mammoth), Toxodon (rhino), Megatherium (sloth), and Macrauchenia (llama). Ask (rhetorically) what do we know about these animals? Let’s find out.

Procedure: Hand out the worksheet. Assign (or let students choose) an animal or two to study. Make sure that each animal on the top row is “covered.” Animals in the second row are less important and/or there is less easily-accessible information about them.

Answers: The spreadsheet has basic data about 27 animals, including those on the worksheet list. Students could look up their animal on the data sheet if you want this to be a shorter activity.

- A in the first column indicates an animal pictured and in the top row on the handout data sheet.
- B indicates an animal on the second row of the data sheet, with less information easily available.
- C and D mark animals that could be assigned as extensions to those who get really interested.

Debrief: After individuals have researched their animal, have them share short presentations. Discussion should lead to two important conclusions:

1. There is a LOT of information about these animals. Remains of most of the animals on the top list have been observed in dozens of places, enough that we can make fairly accurate maps showing their geographic range. Some have hundreds of specimens dated by radiocarbon and other techniques. Many also have clear indications of hunting, like spear points stuck in bones!
2. All of the animals on the worksheet except Stegomastodon went extinct shortly after humans crossed the Bering land bridge and moved into the Americas (roughly 12,000 years ago)

A simple math exercise could show that it would take much less than a thousand years for a successful human group to reach a population of more than a million. Start with a group of 20 adults; assume that each pair could produce 4 children that survive into adulthood. Assume one generation every 25 years, four generations per century. That’s 20 40 80 160 in the first century; 320 640 1280 2560 in the second; 5K (thousand) 10K 20K 40K in the third; 80K 160K 320K 640K in the fourth century. It’s already over a million by the middle of the fifth century. Note that famines, diseases, and wars could complicate things, but it is certainly plausible to reach a population over a million in a thousand years.

What does this mean? Humans arrived in many places, from New Mexico and New York to Peru and Argentina, about 12-13,000 years ago, or about 10-11,000 BCE. Populations in each area could have reached a million by 9-10,000 BCE. Most animals on the list went extinct between 10,000 and 8,000 BCE. A lot of evidence suggests that humans hunted these animals – things like spear points in bones, cut marks on bones, bones that look like they were charred in campfires.

AND, when the large, slow animals were gone, where could people find food?

The extinction of megafauna is well documents in the Americas – it probably happened on other continents, but much earlier. Discuss how the extinction of large, slow animals may have been important in the development of herding, farming, fishing, and other ways to get food.

Vocabulary: megafauna extinction hunting pastoralism agriculture fossil radiocarbon dating

Extension: Investigate other animals on the spreadsheet and/or animals on other continents.