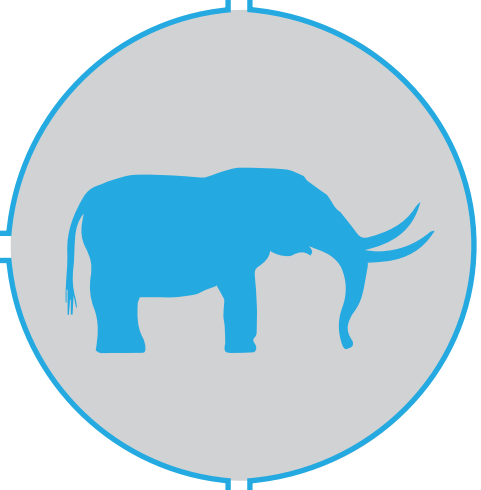
Mastodon Clue Board

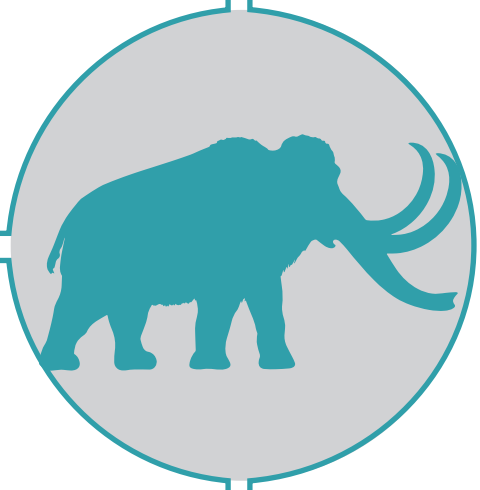


The American Mastodon

These extinct relatives of elephants lived in North and Central America from about 5.3 million years ago to about 11,000 years ago. Their most recent common ancestor with the mammoths is thought to have lived over 5 million years ago.

Add the appropriate clues to this page to piece together the evidence about mastodons' ancient diets.

Mammoth Clue Board



The Columbian Mammoth

The Columbian mammoth lived in the warmer, more southern areas of North America from about 1.5 milion years ago to about 10,000 years ago. Mammoths are more closely related to modern elephants than to mastodons.

Add the appropriate clues to this page to piece together the evidence about mammoths' ancient diets.

Deciphering Diets Preserved Clues

Teeth can provide evidence of the type of food eaten for all kinds of animals. In herbivores, the molars are important for breaking down all that plant matter. High-crowned molars with many closely-spaced ridges are more resistant to the tough, sandy grasses eaten by grazers. Scientists also look at microscopic wear patterns on teeth as evidence of what foods were eaten. Many scratches on the surface of teeth indicate that they ate tough, gritty foods.

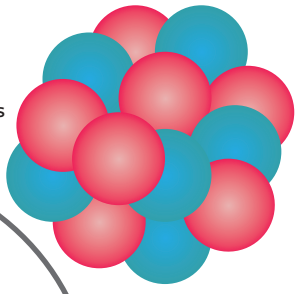
discoverynews.com

What's the scoop from poop?

Preserved dung from these animals has been found in multiple locations. As you might imagine, this dung tells us so much about what the animals were eating. Scientists found grasses, leaves, seeds, small tree branches, buds, cactus spines, spruce needles, and pollen in the dung. They also found fungi inside the dung, a type that typically grows on the outside of old dung. This suggests these animals also ate dung, known as coprophagy. Elephants do this, too!

C^{13}

6 protons
7 neutrons
stable



Carbon stable isotopes are measured from the tissue of animals to infer thier diets. For herbivores, carbon from the plants they eat is incorporated into their bodies. Different types of plants (C_3 and C_4 plants) have different amounts of the stable carbon 13 isotope. Mastodon carbon isotope analyses suggest their diet was high in C_3 plants, which are mainly trees and shrubs. Which kind of teeth would be good for chewing on the woody branches and leaves of trees and shrubs?

Teeth can provide evidence of the type of food eaten for all kinds of animals. In herbivores, the molars are important for breaking down all that plant matter. Widely-spaced cusps on the molars enhance the teeth's ability to break down the woodier plants eaten by browsers. Scientists also look at microscopic wear patterns on teeth as evidence of the diet. Many pits on the surface of the teeth indicate a diet high in woody plants or seeds.

Deciphering Diets Preserved Clues

Print and cut out these clues, and match them to either the mammoth or mastodon clue board to gather evidence about the diets of these extinct elephant relatives that roamed North America.

What are some differences and similarities between the two?

What information are we still missing? How can we find it out?

Body size can help us to infer the diets of mammoths and mastodons based on their habitats. Mastodons were smaller than mammoths, likely making it easier to move through wooded areas with closely-spaced trees and shrubs. Mastodons also had shorter, straighter tusks better suited to wooded areas.

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Body size can help us to infer the diets of mammoths and mastodons based on their habitats. Mammoths were larger than mastodons and had larger, more curved tusks. These traits would have been advantageous in fighting and in digging up grasses and low-growing plants in open areas.

What's the scoop from poop?

simulated dung
westernscienceceneter.org

Preserved dung from these animals was found in Florida at the Page-Ladson site on the Aucilla River (the river in which our mastodon Priscilla was found!). As you might imagine, this dung tells us so much about what the animals were eating. Scientists found material from 57 species of plants in the dung; however, most of it was cypress twigs. This suggests these animals mostly browsed in cypress wetlands. They also found whole gourd seeds, suggesting that these animals helped to disperse these plants before they were domesticated by humans.