

Ice Age Mammoths in the Northern Hemisphere

An outline

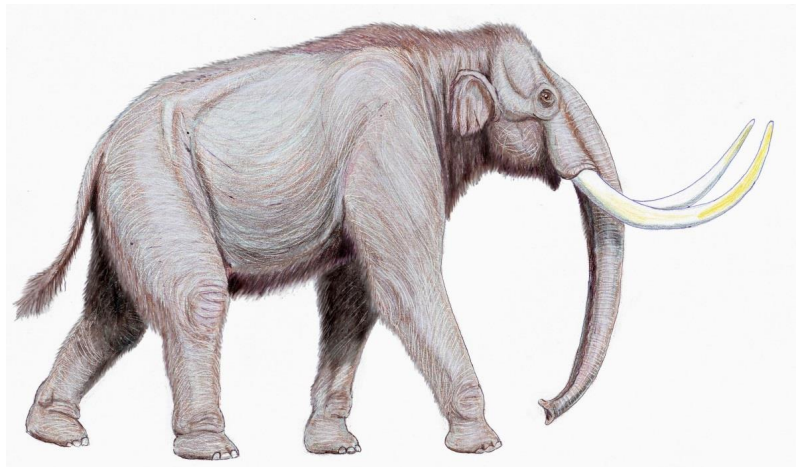
Curator of Archaeology Grant Keddie

Mammuthus meridionalis

The ancestral mammoth species *Mammuthus meridionalis* lived 2.5 to 1.5 million years ago, during the early Pleistocene. Based on the remains of associated plants and animals, we can say that these mammoths lived in a deciduous forest habitat and that the climate was slightly warmer than today's. *Mammuthus meridionalis* didn't live in the Americas—only in Europe and Asia.

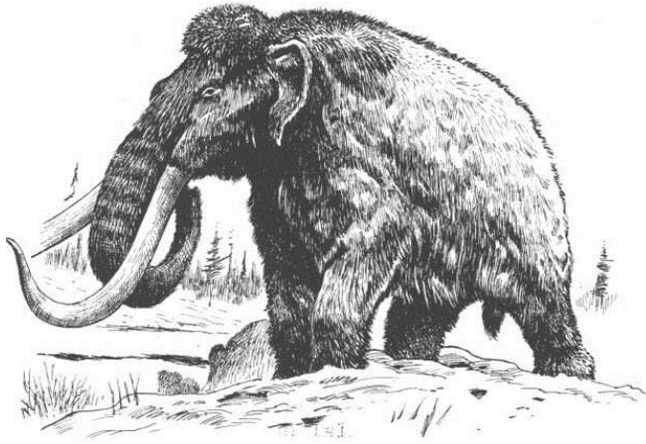
Mammuthus trogontherii

The Steppe mammoth, *Mammuthus trogontherii*, evolved from *Mammuthus meridionalis* in Asia, spreading west into Europe and east across Beringia (a large land mass centred on what is now the Bering Strait) to Central America. Over time, *Mammuthus trogontherii* adapted to tolerate a colder and more open habitat for grazing. Remains of this mammoth found in China have been dated to 1.7 million years ago, and others 1.2 million to 800,000 years old have been found in northeastern Siberia.



The Steppe mammoth, *Mammuthus trogontherii*. The ancestor of both the Woolly and Columbia mammoths. Image created by Dmitry Bogdanov, Free Software Foundation.

The Steppe mammoth arrived in North America at least 1.5 million years ago. In the southern regions, it evolved into the Columbian mammoth (*Mammuthus columbii*), which was adapted to a warmer environment than the Woolly mammoth (*Mammuthus primigenius*) was. Columbian mammoths migrated as far south as Costa Rica.



Columbian mammoth (*Mammuthus columbii*). Found in British Columbia from Victoria to Babine Lake in the central interior.



Woolly mammoth (*Mammuthus primigenius*). Found throughout British Columbia, including on Vancouver Island.

Mammuthus columbii

Recent genetic studies have shown that Woolly and Columbian mammoths are distant relatives, but they have considerable genetic differences because they were separated for so long. This suggests that Woolly mammoths were evolving from the Steppe mammoth (*Mammuthus trogontherii*) in the far north around the same time that Columbian mammoths appeared in southern North America.

As the Woolly mammoth adapted to the colder habitat of the far north, it spread across the northern hemisphere to Europe and North America, just like the earlier population of *Mammuthus trogontherii*. The Woolly and Columbian mammoths appear to have been separated for some time, possibly by a mid-Pleistocene glacial period. Later, the two species would have encountered one another in shared territory extending from Vancouver Island to the northeastern United States.

Mammuthus primigenius

Remains of Woolly mammoths have been found throughout British Columbia—including on Vancouver Island. The genetic similarity between Woolly and Columbian mammoths may also be a result of interbreeding: *Mammuthus jeffersonii*, a species found in the eastern part of their overlapping territory, may be a hybrid. We see the same phenomena of hybridization occurring today between

Savanna Elephants and Forest Elephants, the two African elephant species. To fully answer the question of the relationship between *Mammuthus columbii* and *Mammuthus primigenius*, we'll need more studies of mammoth remains, especially genetic studies and radiocarbon dating.