

Another possibility for the wild goat is the American pronghorn, indigenous to North America. It has one horn (single in females but bifurcated in males). Its scientific name, *Antilocapra*, means “antelope-goat.” The pronghorn was and is abundant in much of western North America, with its present range extending into Mexico.⁸¹ Historically, its range extended to just north of Mexico City.⁸² A related genus, *Capromeryx*, had a geographic range farther south, well into central Mexico. While extinct, evidence of it appears in the latest Pleistocene sediments, and it could certainly have coexisted with man. This antilocaprid is smaller than the extant form of pronghorn but is more goatlike in appearance. If known to the Jaredites in the land northward, the pronghorn might well have been considered a goat. Since this animal was not known in the Old World, it is likely, when Book of Mormon peoples encountered it, they would have named it after a similar-looking Old World animal.

The Horse and the Ass

Like sheep and goats, the horse and ass are very closely related mammals. This can be seen in their biological classification, both belonging to the genus *Equus*. Equid fossils are among the most common and diverse of large vertebrates from the Pleistocene in North America, including Mesoamerica (fig. 5). One of the authors (Miller) has done many years of research in Mexico. This research has confirmed that equid and mammoth fossils are the most abundant types of vertebrate fossils from the late Pleistocene. Horses first came into being in North America and from there spread to the rest of the world through natural dispersals. The fossil history of the horse (and ass) shows that this animal was most numerous and varied in North America. It has not been satisfactorily explained why, after so much success here, they likely became extinct. After being reintroduced, horses did well in a feral state. Although it is commonly held that both the horse and ass became extinct in the Americas at the close of the Pleistocene (about ten thousand years ago), a growing body of evidence shows that at least some survived on this continent for much longer.

Some researchers have suggested that references to horses in the Book of Mormon could refer to other animals in the land of promise that had characteristics that in certain ways resembled those of the horse or the

81. Hall and Kelson, *The Mammals of North America*, 1022–23.

82. “Pronghorn, *Antilocapra americana*,” San Diego Zoo Global, May 2009, <http://library.sandiegozoo.org/factsheets/pronghorn/pronghorn.htm>.



FIGURE 5. Horses were extremely abundant in all of North America prior to the close of the Pleistocene epoch, about ten thousand years ago. Photo courtesy of Wikimedia Commons.

ass.⁸³ Though this is possible, we believe it is most likely that the horse mentioned in the Book of Mormon was the horse as we know it. However, this does not mean that horses survived everywhere in the Americas or that they were numerous. There is a strong case for the survival of the horse well past the close of the Pleistocene epoch in the limited regions occupied by Book of Mormon peoples in the Formative Mesoamerican period. Therefore, the horses referenced in the Book of Mormon text seem plausible, although it is interesting to note that horses are not mentioned in the Book of Mormon after the time of Christ (3 Ne. 6:1). Horses possibly existed among the Nephites but were not mentioned later in the limited commentary of 3 Nephi; the subsequent disasters associated with the death of Christ (3 Ne. 8–10), coupled with wars and famines of later years (Alma 45:11; Mor. 2:8), may have led to their final extinction. If there were limited numbers of horses and asses in Nephite or Lamanite cultures, it would not be surprising that evidence for them could be difficult to find. The horse and the ass, along with other animals, dispersed more than once between Asia and North America via Beringia (a large, late Pleistocene land bridge that joined Asia with Alaska). The Beringia land bridge formed and reformed throughout much of the Pleistocene

83. Sorenson, *Ancient American Setting*, 295–96. Sorenson did not exclude the possibility of a late survival of the horse but offered the association with deer as a secondary alternative. One of the writers of this article (Roper) once suggested a possible correlation between the Mesoamerican Baird's tapir and the ass. Daniel C. Peterson and Matthew Roper, "Ein Heldenleben? On Thomas Stuart Ferguson as an Elias for Cultural Mormons," *FARMS Review* 16, no. 1 (2004): 202–4. The present article reflects his current view.

epoch as sea levels fell and rose. Because of this land bridge, the two continents shared some mammal species.⁸⁴ Some of these species adapted to their new environments, resulting in new species. The horse was one of these animals so affected. Similarity between new and old species of horses has caused and still does cause confusion as to which species existed at different time periods.⁸⁵ For instance, horses reintroduced by the Spaniards would be difficult if not impossible to distinguish from native forms based on discovered bones and teeth. If the Jaredites did bring horses to America from Asia, it is unlikely that they could be distinguished from those that came through natural dispersals. According to Azzaroli, a noted expert on Pleistocene horses, *Equus ferus* (a modern caballine horse) was widespread in the Pleistocene of Eurasia and well represented in North America during the latest Pleistocene.⁸⁶

It seems reasonable to assume that the Jaredites had domesticated horses. Certainly, horses were present among the Nephites and Lamanites (Enos 1:21; Alma 18:9). Their domestication by these peoples should not be surprising. The horse has been domesticated by various peoples for millennia, and new evidences keep pushing the date back. Outram and others, based on discoveries in eastern Europe and central Asia, placed this date to about 3500 BC,⁸⁷ which well predates the Jaredite record. An even earlier date was suggested by Achilli and others based on DNA.⁸⁸ If, as Nibley argued, the Jaredites journeyed through central Asia, this data could be relevant.⁸⁹ They surely would have seen the value of horses as they came across peoples using them. Whether they obtained horses along the way and brought these with them is not important. As noted above, horses native to America were most likely in existence then.

Regarding horses, a concept discussed earlier cannot be overstated: extinctions take time. Too often, nonspecialists have the impression

84. See Prothero and Dott, *Evolution of the Earth*, 528–29.

85. Wade E. Miller and others, “Preliminary Report of Pleistocene Mammals from the State of Coahuila, Mexico,” *Natural History Museum of Los Angeles County Science Series* 41 (2008): 346.

86. Augusto Azzaroli, “The Genus *Equus* in North America: The Pleistocene Species,” *Palaeontographia Italica* 85 (1998): 1–60.

87. Alan K. Outram and others, “The Earliest Horse Harnessing and Milking,” *Science* 323 (2009): 1332–35.

88. Alessandro Achilli and others, “Mitochondrial Genomes from Modern Horses Reveal the Major Haplogroups That Underwent Domestication,” *Proceedings of the National Academy of Sciences of the United States of America* 109, no. 7 (2012): 2449–54.

89. Nibley, *Lehi in the Desert*, 183–98.

that extinctions occur very suddenly. Almost always, however, the extinction of organisms takes place over thousands to hundreds of thousands of years. Some plants and animals thought to be extinct turn out to still be living even millions of years later. Until the past few decades, almost all researchers on the subject believed that the majority of North America's large mammals became extinct at the end of the Pleistocene. This, of course, excludes modern species of the bison, elk, moose, and bear. New finds, however, show that proboscideans and horses, thought to have become extinct at the end of the Pleistocene, actually lived on far past the ten-thousand-year limit that earlier scholars had placed on them. In the past few decades, an ever-increasing body of evidence shows that some of these species survived much longer. It should be kept in mind, though, that these animals were restricted to various refugia. In time, as the refugia disappeared, the animal finally became extinct. As noted above, the woolly mammoth, thought to have been extinct by the close of the Pleistocene, survived much longer on Wrangle Island, northwest of Alaska. Radiocarbon dates reveal that this animal was still living until approximately 2000 BC.⁹⁰ Proboscideans and horses also survived past the terminal Pleistocene much farther south in North America, extending into Mesoamerica. Of course, their populations were ever dwindling.

One reason more is not known about the horse and other extinct animals in Mesoamerica is that their remains are much less likely to be preserved there than in more arid environments and also less likely to be found even when they are preserved. In general, as noted above, organisms do not preserve well in subtropical and tropical environments because of a high rate of decay. Even bone decomposes very quickly. Another problem is that in these environments thick vegetation usually covers sediments that might contain fossils, making the fossils extremely difficult to find when they do exist. One exception is caves. The caves found in the Yucatan Peninsula, for instance, have produced some rare and important finds. Both extinct and extant faunas have been discovered in these caves along with human artifacts.⁹¹

90. K. A. Arslanov and others, "Consensus Dating of Mammoth Remains from Wrangle Island," *Radiocarbon* 40 (1997): 289–94; S. L. Vartanyan and others, "Radiocarbon Dating Evidence for Mammoths on Wrangle Island, Arctic Ocean, until 2000 BC," *Radiocarbon* 37 (1995): 1–6.

91. Arroyo-Cabrales and Alvarez, "Preliminary Report of the Late Quaternary Mammal Fauna," 263–64.

Reliable evidences for ages of post-Pleistocene to pre-Columbian horses in America are admittedly few. Nevertheless, more continue to be discovered over time. Archaeologists in Alaska recently discovered horse remains with DNA material that dated to 7,600 years before present, showing that “small populations of these megafaunal species persisted well into the Holocene [the current geological epoch] in northwestern North America.”⁹² Horse teeth, which remain undated, discovered in a cave in the Yucatan, were said by Clayton Ray to be pre-Columbian in age. These teeth were reported to be part of a large collection made near Mayan ruins at Mayapan. Additional extinct horse remains from another cave were identified as *Equus conversidens* and were found associated with pot shards and other artifacts of man.⁹³ At Loltún Cave in Yucatan, according to an article by Velázquez-Valadez, “a good number of bone instruments was found directly associated with remains of Pleistocene megafauna, principally the horse (*Equus conversidens*) and animals now extinct.” An age of 1805 BC (± 150 years) was given in this article.⁹⁴ Other caves in Mexico have also yielded horse remains. At Cueva de Lara (Actun Lara), archaeologists found the bones of cow (*Bos taurus*) and other living animals from the region in association with the extinct horse (*Equus conversidens*). Researchers need to pursue further work and, where possible, obtain carbon-dating results for faunal remains, at these and other sites, since it is possible “that the sediments are from the Holocene and that the Pleistocene horse survived into historic time, as has been suggested from remains found in Loltún Cave and other sites in the Yucatán Peninsula.”⁹⁵ Some of the radiocarbon ages given above demonstrate that the horse existed in North America during the time of both the Jaredites and the Nephites. Additional evidences for the late survival of the horse has been presented by Daniel Johnson, who showed the presence of horses with pre-Columbian humans in Mesoamerica.⁹⁶

There are a few post-Pleistocene, pre-Columbian dates for horses that have come to light in the past several years. A recent discovery in southern California serves as an example. Philip Ireland reported,

92. Haile, “Ancient DNA Reveals Late Survival of Mammoth and Horse in Interior Alaska,” 22356.

93. Ray, “Pre-columbian Horses from Yucatan,” 278.

94. R. Velázquez-Valadez, “Recent Discoveries in Caves of Loltún, Yucatán, Mexico,” *Mexicon* (1980): 54.

95. Arroyo-Cabralles and Polaco, “Caves and the Pleistocene Vertebrate Paleontology,” 283.

96. Daniel Johnson, “‘Hard’ Evidence of Ancient American Horses,” *BYU Studies Quarterly* 54, no. 3 (2015): 149–79.

“Archaeologists working against the clock in Carlsbad have unearthed another nearly intact skeleton of a horse that may have lived and died 50 years before the Spanish began their conquest of California.” This article further reported that remains of another horse and a burro (ass) were buried at the same level.⁹⁷ Archaeologist John Sorenson relayed two radiocarbon dates—2600 and 200 BC—for horses from Beringia.⁹⁸ In an unpublished article, three other pre-Columbian dates were given for horses. One was based on remains found in a cave near El Paso, Texas, and the date was determined to be between 6020 and 5890 BC. Another radiocarbon date was based on evidence from a cave in Colorado, identified as between AD 1260 and 1400. A third date, based on horse bone from a cave in the Yucatan, is between AD 1230 and 1300.⁹⁹ If these last ages and the one from Carlsbad, California, prove valid, they provide evidence that some horses still survived in western North America at the time Spaniards first reintroduced them in 1493.

Recently, one of the authors (Miller) received results from C-14 dating of horse fossils. This material came from his field research in Mexico. A date of 2,540 years before the present was provided by the Radiocarbon Laboratory at the University of Arizona. This would place the horse in Mexico during the time of the Nephites.

How many evidences it will take to convince the major body of scientists, especially paleontologists and archaeologists, to accept this new paradigm is unknown. However, there are more horse specimens from Mesoamerica for which the current authors are seeking additional radiocarbon ages. There is a need for more researchers to pursue work

97. Philip Ireland, “Centuries-old Bones of Horses Unearthed in Carlsbad [CA],” *San Diego Union-Tribune*, July 17, 2005, <http://www.sandiegouniontribune.com/sdut-centuries-old-bones-of-horses-unearthed-in-2005jul17-story.html>.

98. Personal communication, John Sorenson to Wade E. Miller, 2007.

99. This was a report submitted to the Foundation for Ancient Research and Mormon Studies (FARMS) by Steven E. Jones and Wade E. Miller: “State-of-the-art Physical Analysis of Archaeological Finds and Historical Artifacts: Pre-Columbian Horses in the Americas, July 30, 2004,” unpublished. For several years, FARMS provided partial funding for this project. According to the report, forty-nine samples were obtained and tested. Of these, eighteen resulted in radiocarbon dates, while thirty-one samples had insufficient collagen in the bone to permit dating. Of the eighteen successful dates, twelve were found to be post-Columbian, three dated to the last Ice Age. The remaining three yielded dates that were post-Pleistocene and pre-Columbian: Pratt Cave, Texas, 6020–5890 BC; Wolf Spider Cave, Colorado, AD 1260–1400; and Cozumel Island, Mexico, AD 1230–1300. There is some uncertainty as to whether the last sample was horse or cow.

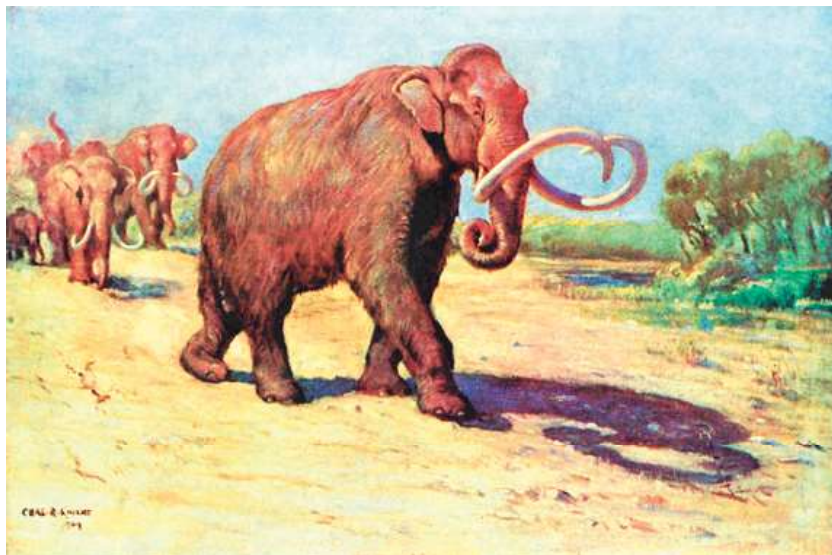


FIGURE 6. This illustration of a late Pleistocene scene in North America shows a small herd of Columbian mammoths, as drawn by Charles R. Knight, famous painter of prehistoric animals. Illustration courtesy of Wikimedia Commons.

on obtaining Holocene ages for equid specimens. A problem is that C-14 dating is expensive. Unless there is a very good reason to obtain this data, important specimens will probably continue to be overlooked.

Elephants, Cureloms, and Cumoms

The only references to elephants, cureloms, and cumoms in the Book of Mormon occur at an early point in Jaredite history (Ether 9:19). There are no subsequent references to these animals in the text, which could point to their extinction not long afterward. There is no indication that the people of Lehi were acquainted with these animals.

The most likely candidate for the Jaredite elephant is the Columbian mammoth (fig. 6), *Mammuthus columbi*. It was a true elephant, and its range extended over most of North America, including Mesoamerica. Although its fossils are found throughout northern Mesoamerica and are numerous,¹⁰⁰ the mammoth never did range as far south as South America. Many people think of the woolly mammoth, *Mammuthus*

100. Miller and others, "Preliminary Report of Pleistocene Mammals from the State of Coahuila, Mexico," 344–46.