"Hard" Evidence of Ancient American Horses

Daniel Johnson

The suggestion of horses and chariots in pre-Columbian America has long been an easy target for critics of the Book of Mormon. Those who believe in this unique book of scripture have been hard-pressed to defend this aspect of the record and some may have wavered in their faith while trying to circumnavigate this stumbling block. Finding proof of horses in the New World has been a goal for many scholars of The Church of Jesus Christ of Latter-day Saints who have offered various theories as a means of explanation, yet hard evidence still remains elusive.

However, although incomplete, the geological and archaeological record does provide support for horses and even wheeled vehicles in ancient America. The extinction of the ancient horse and the origins of the modern horse in the Americas have become clouded and unsure in light of the latest research. Much of this evidence is not questionable or even that new, but still, sadly, both critics and faithful members of the Church are unaware of it. Several valid arguments are worth considering.

The topic of horses in the Book of Mormon's depiction of the ancient New World is undoubtedly a controversial one. Although hard evidence is available to consider, so far no incontrovertible proof of Book of Mormon horses exists—that is to say, physical remains conclusively dated to around 500 BC (and earlier) from supposed Book of Mormon lands in Mesoamerica are yet to be found. Because of this, more than any other criticism of the Book of Mormon, its inclusion of horses has generated greater accusation of its supposedly fraudulent nature. The horse is still used in this day and age to cast doubt on the book's divine origins. Critics have long pointed to the mention of horses as an anachronism and

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This article began as a presentation given at the Book of Mormon Archaeological Forum's 2012 conference. Jack Welch, who was the keynote speaker that year, approached me afterward to suggest that I prepare it for submission to BYU Studies. The content of my talk was drawn from research I did during the writing of *An LDS Guide to the Yucatán.* One of the sites described in that book was a series of caves where scientific work that had special significance to this topic had been done. Book of Mormon horses have long been somewhat enigmatic and a challenge not always overcome by members of the Church. It is still a topic that easily attracts skeptics, whose arguments are well known. Regardless of what we have been told for so long, the true history of the horse in the Americas is a dimly lit moving target and the final story is yet to be told. Without finding a final answer, I have come across enough evidence that should improve the quality of this debate among Church members and critics. The final article is the result of countless hours of study and research, along with invaluable assistance in formatting, revising, and editing provided by others.

evidence of its modern invention. Since 1830, their mention has seemed a bit problematic, but everyone should remember that the prevailing belief during Joseph Smith's time (and to some degree, still in ours) was that there were no horses in America before the arrival of the Spanish. Therefore, why mention them at all, especially since they are not an integral part of the storyline?

Defining the Issue

If the Book of Mormon is merely an early nineteenth-century fabrication attempting to appear authentic, then it should not include any horses in its historical narrative. However, even though Joseph Smith made

corrections and grammatical changes to subsequent editions published during his lifetime, he left the accounts of horses intact. Arnold Friberg's illustration of Helaman on his massive white charger notwithstanding, the Book of Mormon does not ever say that anyone rode horses or used them in battle. Perhaps the terrain in much of Mesoamerica would have made the Old World use of horses and chariots for warfare impractical in the promised land. Only twice are they mentioned along with chariots: once among the Lamanites (Alma 18:9–10, 12; 20:6) and once among the Nephites (3 Ne. 3:22). All other instances of horses in the Book of Mormon (not including examples from the Isaiah chapters) describe them as among indigenous animals or kept in herds. Book of Mormon readers can logically infer that their use was for transportation or as beasts of burden, but these uses are not specifically described. It may be that they were also used as food.

Several theories that attempt to address the issue of pre-Columbian horses will be examined in this article, some of which are mutually exclusive. Therefore, not all can be correct. Latter-day Saint apologists have offered various explanations for Book of Mormon horses. Critics have rejected this so-called "shotgun" approach as unfocused attempts to answer the question with a multitude of conflicting theories. This is not a valid criticism of the apologetics, since analysts may not really know the complete answer to what Book of Mormon "horses" were, how they were used, how commonplace they were, or how long they survived on this continent. Therefore, several possibilities can reasonably be considered. Although Latter-day Saints may never have the final answers to all of these questions, a serious, concerted, and objective effort to study this issue may result in more hard evidence for horses in the Americas outside of the traditionally accepted timeframe, which is now seen to be continually in need of updating.

Before going any further, readers should remember that Book of Mormon references to horses are somewhat infrequent and not a crucial part of the narrative. According to Ether 9:19, the Jaredites had horses. They apparently were still around when Lehi's party landed because Nephi briefly mentions them along with other large animals in 1 Nephi 18:25. Interestingly, the elephants, cureloms, and cumoms mentioned in the Jaredite history are nowhere to be found in Nephite records. A generation or more later, Enos 1:21 relates that the Nephites had many horses among their flocks. The Lamanite king Lamoni is described as having horses and chariots in Alma 18:9–10. In 3 Nephi 6:1, the Nephites still had horses among their animals when they returned to their lands after dealing with the Gadianton robbers. The last mention of horses is

roughly AD 26, well before most known surviving writing or artifacts in Mesoamerica, so readers do not need to look for horses from any date later than this. Critics of the Book of Mormon point to an apparent lack of horses in surviving writings, art, and artifacts from ancient America. This may be true, but because much of the knowledge of these ancient cultures comes from archaeological finds from a much later date than the Book of Mormon's own history (such as the Classic and Postclassic periods of the Maya region), this lack of reference is not necessarily applicable to Book of Mormon details. Not finding references to horses from these and later cultures should not be seen as problematic. Culturally and chronologically (perhaps even geographically), Nephites are not the Maya, Aztecs, or Inca. Just because Book of Mormon groups had something, it does not necessarily follow that known American groups would have the same experience historically.

Large Animals for Draft and Transportation

Archaeologists note that indigenous New World cultures had no draft animals or beasts of burden. Even if this is true, at least the Maya did understand the concept. A case in point is artifact Kerr #196 of the Maya Vase Database. It depicts a mythological tale involving the three stones of creation, one of which is shown carried on a deer.[1] Not only is the deer bearing the stone on its back, but also some sort of contrivance or constructed device is apparently worn by the animal, with the stone strapped to it. Even though this is a depiction of a fantastic tale of gods and divine acts, the artist carving this vase would unlikely be able to invent such a scene without first being familiar with some actual, real-life precedent.

One possibly pre-Columbian artifact is an obvious depiction of a rider mounted on some indeterminate animal. Originally from Oaxaca, it now resides in the American Museum of Natural History in New York City. Described as a rattle, the wheeled effigy was obtained by Marshall H. Saville on one of his expeditions to Oaxaca between the years 1898 and 1902.[2] The extraordinary feature is the human figure, unfortunately incomplete, seated on the animal's back with legs clasping the

1. Full-color image available at http://research.mayavase.com/kerrmaya_hires.php?vase=196.

2. Gordon F. Ekholm, "Wheeled Toys in Mexico," *American Antiquity* 11, no. 4 (1946): 224. See also Paul R. Cheesman, "The Wheel in Ancient America," *BYU Studies* 9, no. 2 (1969): 185–97.

Maya Vase #K196, © Justin Kerr, used by permission.

Wheeled effigy from Oaxaca, Mexico. © American Museum of Natural History, 30.0-3274, used by permission.

sides of the animal in a manner exactly like that of a horseback rider. Clay fillets are also found behind and in front of the rider, obviously representing some form of saddle. On this basis alone, the artifact has been classified as post-Conquest because common knowledge would deny the understanding of such a concept (or the animal necessary for it) before accepted European contact. However, some experts claim that no such artifacts were made after the arrival of the Spanish.[3] The museum's own listing for the artifact describes it as coming from the Late Classic/Postclassic Periods, AD 900–1521.

The mention of chariots brings another supposed anachronism to critics' minds: wheels. Although wheels are never specifically described in the Book of Mormon, they are easily imagined on chariots. What these chariots were or if they had wheels has not been determined,[4] so the opponents' demands for wheels in ancient America do not have to be met. Supporters of the Book of Mormon are never in a position of needing to show evidence for something not mentioned within its pages. However, supposing for the sake of argument that Lamanites and Nephites were knowledgeable about wheels (Lehi's group would certainly have been familiar with them), why have archaeologists not discovered any concrete examples? A possible answer from scientist, author, and publisher Tim McGuinness, PhD, who is not a member of the Latter-day Saint faith, is enlightening. According to him, "Wheels might have been in limited use, but the technology was lost, and no artifacts remain. It is known that warfare was widespread throughout ancient America, in Mesoamerica and in the Andean region of South America especially. It is probable that numerous advances in technology were lost, as the artisans that developed them were overrun and killed or made captive. This may be one of the reasons we see sophisticated crafts devolve into more primitive, as occurred in many regions. If there were limited wheel makers, they may have expired before being able to spread the knowledge needed."[5] If an answer this measured and

3. See Richard A. Diehl and Margaret D. Mandeville, "Tula and Wheeled Animal Effigies in Mesoamerica," *Antiquity* 61, no. 232 (July 1987): 243.

4. See John L. Sorenson, *An Ancient American Setting for the Book of Mormon* (Salt Lake City: Deseret Book; Provo, Utah: FARMS, 1996), 296; and John L. Sorenson, *Mormon's Codex: An Ancient American Book* (Provo, Utah: Neal A. Maxwell Institute for Religious Scholarship; Salt Lake City: Deseret Book, 2013), 312–19.

5. Quote found at PrecolumbianWheels.com. This website is no longer active but was archived at http://archive.is/eJ2q as of July 23, 2015.

supportive of the idea of wheels as lost technology were to be offered up by Latter-day Saint apologists, critics of the Church would likely attack it as being unobjective and biased.

Gordon Ekholm, curator emeritus of anthropology at the American Museum of Natural History in New York, was an authority on pre-Columbian archaeology of Mexico and Central America. In 1949, Ekholm displayed at the museum a detailed exhibition showing parallels between advanced cultures in southern and eastern Asia and the Maya civilization, suggesting that the Maya's forebears had migrated across the Pacific. In his opinion,

> The evidence to be presented indicates that the Indians of Mexico had some knowledge of the principle of the wheel in pre-Conquest times. This will come as a surprise to many, because the supposed absence of any knowledge of this principle in the New World has often been stressed in discussions concerning the origin of the American Indian and his cultures. It is held that the absence of the wheel is proof that contact with the developed cultures of the Old World could not have occurred and that the higher aspects of the New World cultures must have been autochthonous developments. This argument is not necessarily nullified by the finding of wheeled toys in Mexico, but because of them it certainly cannot be used without some reservation.[6]

A fascinating variant to wheeled artifacts is what are known as composite types in which a person or animal is shown riding on an obviously artificial platform. Examples of this type are rare but are known and accepted. The Los Angeles County Museum of Art has an example from Veracruz, dated from AD 450 to 650. It depicts a dog standing on an unknown wheeled vehicle. Richard A. Diehl and Margaret D. Mandeville discuss the topic of wheeled effigies, stating that most, if not all, wheeled figurines were made during the early Postclassic (before the Spanish arrival), if not earlier.[7] On the topic of the needed draft animals, they continue by saying, "Ironically, until the end of the Pleistocene, Mesoamerica did contain large animals which could have been domesticated; horses, camels, and even elephant forms inhabited Mexico and Central America until the Palaeoindian hunted them to extinction. Further south, in the Andes, there were llamas and alpacas which might

6. Ekholm, "Wheeled Toys in Mexico," 222.

7. Diehl and Mandeville, "Tula and Wheeled Animal Effigies in Mesoamerica," 240.

Dog standing on wheeled vehicle, from Veracruz, Mexico. © The Los Angeles County Museum of Art, AC1996.146.40, used with permission.

have pulled wheeled vehicles."[8] Why some of these large, native, and potentially useful animals vanished from this hemisphere is a mystery not yet fully resolved. Several answers currently exist in the scientific community.

Although such wheeled toys, figurines, or effigies are now commonly known and accepted, no large-scale practical examples of working wheels have been found, so this outcome immediately raises the question, why not? Everyone seems to assume that ancient American peoples had no need for such devices or never quite made the leap from theoretical plaything to functioning tool. On this very topic, Ekholm notes, "Seemingly uncommon, however, are toys or models—for instance, toy bows and arrows involving principles which could have been put to use in cultures where they are not so used or in cultures not in contact with peoples who did use them. When its full implications are considered, the presence of wheeled toys in the New World must be recognized as

8. Diehl and Mandeville, "Tula and Wheeled Animal Effigies in Mesoamerica," 244.

completely unexpected."[9] He concludes by suggesting that "toy" vehicles found in Mexico may be the result of contact with or influence from Old World cultures. In his day, he felt that some controversies regarding New and Old World contact had yet to be resolved. Perhaps such is still the case.

In considering an answer to the critics, analysts must first become familiar with their positions. A concise statement of such an argument is found on that modern bastion of knowledge, Wikipedia: "Horses are mentioned fourteen times in the Book of Mormon, and are portrayed as an integral part of the cultures described. There is no evidence that horses existed on the American continent during the 2,500–3,000 year history of the Book of Mormon (2500 BC–AD 400). Horses evolved in North America but *are believed* to have become extinct on the American continent at the end of the Pleistocene. Horses did not reappear in the Americas until the Spaniards brought them from Europe. They were brought to the Caribbean by Christopher Columbus in 1493, and to the American continent by Cortés in 1519."[10] Analysts certainly agree that the Spanish *reintroduced* horses to the Americas, but when or even *if* they became extinct on these continents is the issue at hand.

Linguistic Explanations and the Tapir Suggestion

LDS apologists have offered several possible responses to what some analysts label as the apparent anachronism of the horse. A weaker argument is that Nephi is using Hebrew words such as "horse" (סֵס, *sûs*) and "ass" (חֲמֹר, *chămôr*) to describe large mammals unknown to him but similar in some aspects to a horse or an ass, with which he certainly was familiar. On its surface, this response is potentially valid, since new animals can be difficult to name. The hippopotamus got its name from Greeks who decided to call this strange animal a "water horse," although no one today confuses the two. Did Nephi and subsequent record keepers simply do the same thing? He wrote, "There were beasts in the forests of every kind, both the cow and the ox, and the ass and the horse, and the goat and the wild goat" (1 Ne. 18:25). Interestingly, of the six animals mentioned, they are paired up by similarity: ox and cow can be gender-specific terms for bovines (or different but similar beasts), an

9. Ekholm, "Wheeled Toys in Mexico," 226.

10. "Anachronisms in the Book of Mormon," http://en.wikipedia.org/wiki/Book_of_Mormon_anachronisms, emphasis added.

ass and a horse belong to the same genus and are very similar (genetically close enough that they can be bred together), and a goat and a wild goat must be similar. Perhaps also noteworthy about the pairs is that for Jews, oxen/cows are clean animals, asses/horses are unclean, and goats are clean. Nephi did not mix the two distinctions. The words Nephi chose and whatever the original Hebrew connotations are would make an appropriate topic for further study, but that is beyond the scope of this article.

Such being the case, a likely candidate for Nephi's "horse" has to be Baird's tapir.[11] It was the largest known land mammal native to Central America at the time of European contact. It is actually related to the primitive horse and known in Spanish as the *anteburro.*[12] The tapir is the national animal of Belize, where it is also known as the mountain cow.[13] In Mexican languages, it is called *tzemen* in Tzeltal; in Lacandón, it is called *cash-i-tzimin,* meaning "horse of the jungle."[14] Body mass in adult tapirs can range from 150 to 400 kilograms (330 to 880 pounds). Interestingly, like horses and other hoofed animals, tapirs exhibit the flehmen response, curling back the lips to allow for greater smelling or olfactory reception of pheromones. With a bit of imagination, readers can see why Nephi would have called this animal a horse if he had no Hebrew vocabulary for it. Similarly, the Maya during the Spanish Conquest, having no word for the European horse, called it *tzimin* (tapir), an animal they did know.[15] All in all, this explanation may make some sense, but it does not win over many opponents of the Book of Mormon. A better challenge must be forthcoming if the critics are to take notice. What if Nephi and his successors really did write about horses as Book of Mormon readers of today would know them?

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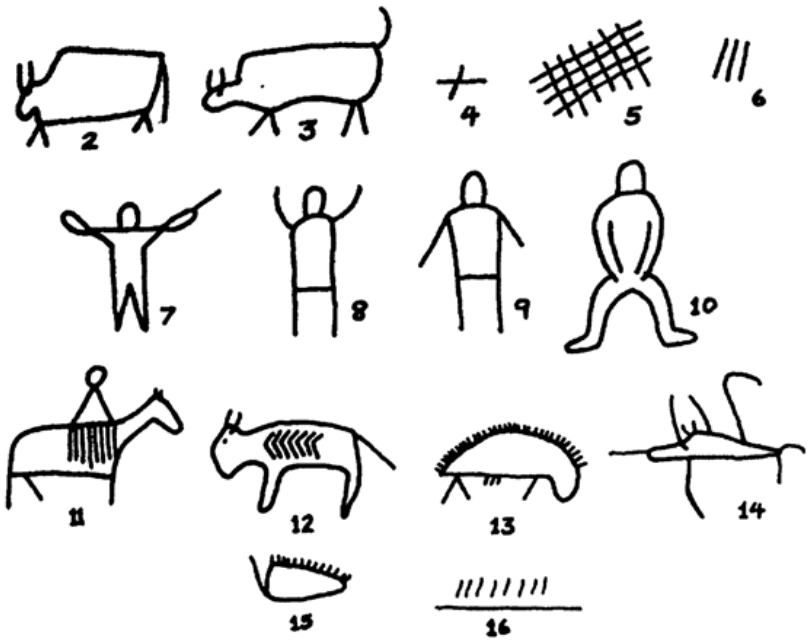
11. See Sorenson, *Ancient American Setting for the Book of Mormon,* 295, 299.

12. San Diego Zoo Global, "Tapirs, *Tapirus spp*.," May 2009, http://library.sandiegozoo.org/factsheets/tapir/tapir.htm.

13. Belize.com, "Belize Flag and National Symbols," http://www.belize.com/belize-flag.

14. "Status and Action Plan of Baird's Tapir," in Daniel M. Brooks, Richard E. Bodmer, and Sharon Matola, eds., *Tapirs: Status Survey and Conservation Action Plan* (Cambridge, U.K.: IUCN Publications Services, 1997), 30, available on line at http://www.tapirback.com/tapirgal/iucn-ssc/tsg/action97/ap97-06.htm.

15. See Diego de Landa, *Yucatan before and after the Conquest* (New York: Dover Publications, 1978), 109.



Freehand sketches of petroglyphs from the Black Mesa area of Cimarron County, Oklahoma, Cave II.

Early History of the Native American and the Horse

For such to be the case, analysts should be able to find evidence of pre-Columbian horses later than the end of the last ice age. The horse became an integral part of many native tribes of North America and does appear in ancient art and depictions from time to time. An example from North America is a petroglyph found in the Black Mesa area in Cimarron County, Oklahoma. The inscribed images are unable to be dated with certainty, but because figure 11 is obviously a mounted horse, scholars have supposed that it could not be older than the first contact of indigenous tribes from this region with European explorers with horses.[16] How long ago did that happen? If no horses were here until European contact, when and how did the Native American first obtain the horse? In *The Indian and the Horse,* Frank Gilbert Roe attempts to

16. See Tim W. Clark, "Some Petroglyphs from the Black Mesa Area of Cimarron County, Oklahoma," in *Proceedings of the Oklahoma Academy of Science for 1967* (Norman: Oklahoma State University, 1967), 140.

find an answer to this very question. However, the verifiable information obtained by his research leaves him a bit puzzled.[17] Many native groups seemed to be very familiar with horses and horsemanship and were even masters at equestrian skills at a surprisingly early time. As far back as initial contact occurred, white explorers were encountering horse cultures among native peoples. The horses' true origins seem shrouded in mystery. A few examples bear this out.

The first European in some territories west of the Hudson Bay was Antony Henday. He describes the local Blackfoot not only as possessing horses in 1754 but also being well supplied in numbers.[18] For this honest observation, he was denounced and discredited as a liar for almost twenty years until he was vindicated by a later explorer, Matthew Cocking, in his travels from 1772 to 1773.[19]

Le Page du Pratz, one of the first French explorers to travel in the southern Gulf Coast area of North America, speaks of horses as being numerous in the area now known as Louisiana in 1719. Others corroborated his account. Without going into much detail, he also describes these horses as appearing different from the European horse.[20]

In addition to tribes in the Rocky Mountains that already had horses around this time, the Snake Indians, who lived in southern Idaho and eastern Oregon, should be mentioned. Also known as the Shoshoni, they had horses not later than 1700—and probably much earlier.[21]

The Tejas, indigenous to northern Mexico, were described in 1682 as being "a settled people . . . [who] raised grain in such abundance that they even fed it to their horses."[22] The Missouri, a tribe for which that state is named, were visited by Henri de Tonti in 1682, who describes them as having horses at that time.[23]

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17. See Frank Gilbert Roe, *The Indian and the Horse* (Norman: University of Oklahoma Press, 1955), 134, 247.

18. See Clark Wissler, "The Influence of the Horse in the Development of Plains Culture," *American Anthropologist* 16 (1914): 10.

19. See Burpee's note in Antony Henday, "The Journal of Antony Hendry [Henday]," ed. Lawrence J. Burpee, *Proceedings and Transactions of the Royal Society of Canada,* 3d ser., sec. II (1907): 307–54.

20. Roe, *Indian and the Horse,* 69.

21. Roe, *Indian and the Horse,* 128; and Francis D. Haines, "Where Did the Plains Indians Get Their Horses?" *American Anthropologist* 40, no. 1 (1938): 116.

22. Herbert Eugene Bolton, *Spanish Exploration in the Southwest, 1542–1706* (New York: n.p., 1916), 314–15, 324, 330–37.

23. Roe, *Indian and the Horse,* 83; and Wissler, "Influence of the Horse in the Development of Plains Culture," 2, 6.

The Arikaras of North Dakota had extensive trade with the Gatakas and Apache involving horses as early as 1680.[24] Oddly enough, wild horses in Virginia were described as a pest in 1669.[25] Horse aficionados must wonder where these pesky and supposedly numerous wild horses came from. The standard answer is suspect.

The Pawnee are thought to have had horses by 1650 or even as early as 1630.[26] Although the Apache had been trading for horses in the latter half of the seventeenth century, they had been using them since much earlier times. The first use was as food. Historians do not know when the Apache made the transition to using them as mounts and beasts of burden, but it was likely between 1620 and 1630 and possibly earlier.[27] Anthropologist Clark Wissler suggests that tribes like the Pawnee and the Kiowa had begun "horse raiding . . . in the early years of 1600."[28]

Official accounts of native horse use and possession extend into the sixteenth century as well. Francisco de Ibarra traveled in the Sonora Valley of Mexico in 1567. His record states that some tribes in that region were not only acquainted with the horse but also were practiced horsemen by that time.[29] Knowing what horses are and that they can be useful is one thing. But being able to raise, care for, train, and use them effectively is quite another. If an indigenous group is seen as accomplished in horsemanship and has a deep cultural connection to the horse by a certain date, analysts could naturally suspect that the actual introduction of that animal to that people must have been much earlier than typically believed. Native American beliefs, although disregarded by most nonnative scholars, provide another perspective on these origins. For example, the Comanche thought that the Great Spirit had created horses especially for them.[30] The Blackfoot's claim of having horses extends as far back as their traditions.[31]

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24. George E. Hyde, "The Mystery of the Arikaras," *North Dakota History* 18 (1951): 190, 217.

25. Wissler, "Influence of the Horse in the Development of Plains Culture," 7.

26. Wissler, "Influence of the Horse in the Development of Plains Culture," 6.

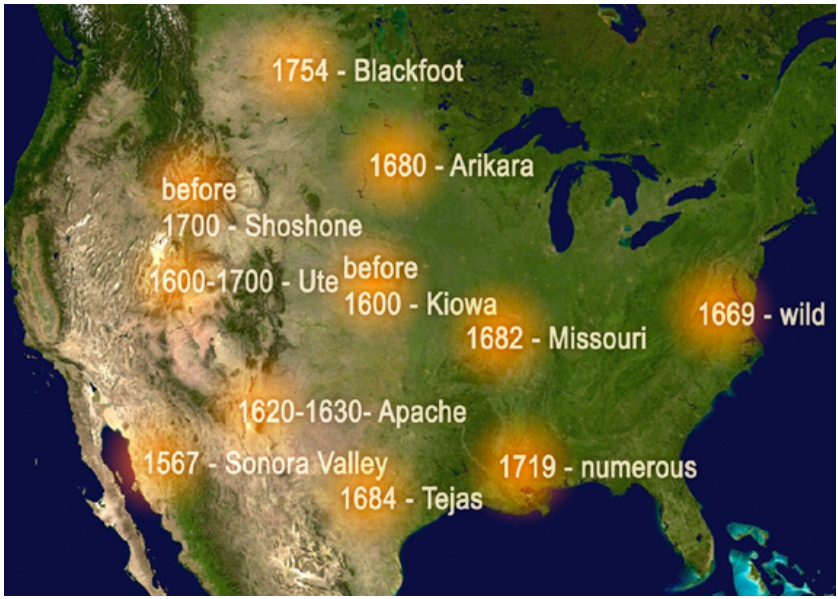
27. D. E. Worcester, "The Spread of Spanish Horses in the Southwest," *New Mexico Historical Review* 19 (1944): 226.

28. See Wissler, "Influence of the Horse in the Development of Plains Culture," 10.

29. Robert Moorman Denhardt, *The Horse of the Americas* (Norman, Okla.: n.p., 1947), 87–92; see ch. 2.

30. J. Frank Dobie, Mody C. Boatright, and Harry H. Ransom, eds., *Mustangs and Cow Horses* (Austin: Texas Folk-Lore Society, 1940), 331.

31. John C. Ewers, "Were the Blackfoot Rich in Horses?" *American Anthropologist* 45 (1943): 603.



Discovery by Europeans of horses found among Native American tribes. Graphic by Daniel Johnson.

"Strays" from Spanish Expeditions

The current scholarly position is that all these and other "native" horses must be descended from European stock, mostly Spanish and Portuguese. Researchers originally believed that these early progenitors were strays from conquering expeditions. However, no clear, obvious evidence supports this theory.[32] In fact, historical records affirm just the opposite. Cavalry was of utmost importance to the Spanish and their horses' fate was always recorded. They certainly did not think that their horses escaped and survived in the wild.[33] Even if this were the case, the stray hypothesis works only if both stallions and mares escape together, remain together, flourish in the new land, breed, and continue to pursue these behaviors successfully for generations. Although supporting evidence is severely

32. See Roe, *Indian and the Horse,* 33–34; and Thornton Chard, "Did the First Spanish Horses Landed in Florida and Carolina Leave Progeny?" *American Anthropologist* 42 (1940): 91–92.

33. See Roe, *Indian and the Horse,* 35, 42.

lacking, this simple explanation is still accepted.[34] This outcome has certainly happened from time to time and has eventually resulted in herds of wild horses roaming the American Southwest, where they have flourished in what is essentially their ancestral homeland. However, the pertinent question is whether it happened early enough to explain the aforementioned accounts of horses kept by indigenous peoples in North America and documented by early European explorers.

Besides the expedition by Cortés, the first three important Spanish land expeditions with horses were led by Pánfilo de Narváez, Hernando de Soto, and Francisco Vásquez de Coronado.[35] By conventional wisdom, horses from these expeditions would have to be the earliest sources for horses later described among indigenous peoples. As documented by the Spanish conquerors and their chroniclers themselves, the actual events of each of these excursions into the New World prove such an assertion practically impossible.

Pánfilo de Narváez left port in Cuba in 1528 and attempted to sail around to Havana on the other side of the island. He started out with eighty horses on board his ships. However, they did not all survive the catastrophes that befell his group. High winds prevented his arrival at Havana, blowing his fleet into the Gulf of Mexico. Unable to reach the Mexican coast, they eventually landed in modern-day Florida. By this time, only forty-two horses remained.[36] Barely five months later, just one was left alive, the rest having been killed in battle or eaten.[37] The fate of this surviving horse is unknown, but a solitary animal, regardless of sex or condition, could hardly have engendered a population.

Researchers used to believe that horses discarded by Hernando de Soto's men in 1541 were the ancestors of all American horses west of the lower Mississippi.[38] That assertion now rests firmly in the realm of fiction. In 1539, de Soto left Cuba with 243 horses on board. Of these, 223 landed on the Florida coast, twenty having died during the voyage across the

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34. Jay F. Kirkpatrick and Patricia M. Fazio, "The Surprising History of America's Wild Horses," July 24, 2008, *Live Science,* http://www.livescience.com/9589-surprising-history-america-wild-horses.html.

35. Roe, *Indian and the Horse,* 52.

36. Morris Bishop, *The Odyssey of Cabeza de Vaca* (New York: n.p., 1933), 33, 38, 43.

37. Bishop, *Odyssey of Cabeza de Vaca,* 43–47, 50–52, 65.

38. Wissler, "Influence of the Horse in the Development of Plains Culture," 9–10.

water. Three years later, 150 had perished. By 1542, only forty remained.[39] In 1543, his decimated forces launched from the lower Mississippi River. The good animals, numbering twenty-two, were put on board rafts and taken with them; the rest were made into jerky so the men could survive. By their final departure, de Soto had died, overcome by semitropical fever. His successor, Luis de Moscoso Alvarado, records that only four or five horses, all stallions, remained at this time. They were left behind as the surviving Spanish forces departed the mainland and sailed away. The Spanish account states that these few horses were killed by native tribes before the Spanish boats were even out of sight.[40]

Francisco Coronado's foray in 1540 into the American Southwest contained the largest contingent of horses yet, 558. His records list 556 *caballos*[41] (horses), and two *yeguas* (mares).[42] While *caballos* is a generic term in Spanish meaning horses of either gender, the specific mention of mares in addition undoubtedly shows the previous group to be male (likely *caballos enteros,* or stallions). No geldings are mentioned; the preference among Spanish soldiers was for stallions of a solid color. Their belief was that multicolored horses were good only for carrying packs.[43] Usually, mares were forbidden as an encumbrance to the expedition.[44] In this case, regardless of the fate of individual horses, the ratio of males to females in this expedition was not favorable to originating a new population.

Because the first Spanish horses were brought to the American mainland by Hernán Cortés in 1519, the record of his expedition is also worthy of note. By comparison with later groups, the sixteen horses he brought are quite insignificant numerically. Six of those were mares, which is a high percentage in light of the norm.[45]

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39. Hernando de Soto, *Narrative of the Career of Hernando de Soto, in the Conquest of Florida, 1539–1542,* ed. by E. G. Bourne, 2 vols. (New York: n.p., 1922), 2:55; 1:142, 154.

40. Roe, *Indian and the Horse,* 39; and cited by Frank Dobie, *The Mustangs* (Boston: Little, Brown, and Company, 1952), 34.

41. *Caballos* is the modern Spanish term. Coronado's muster lists them as either "cauallos" or "cavallos."

42. Arthur S. Aiton, "Coronado's Muster Roll," *American Historical Review* 44, no. 3 (1938): 556–70, especially 557.

43. R. B. Cunninghame Graham, *The Horses of the Conquest* (London: Heinemann, 1930), 138.

44. Roe, *Indian and the Horse,* 51.

45. William H. Prescott, *History of the Conquest of Mexico,* 3 vols. (Philadelphia: David McKay, 1892), 1:249–50; Roe, *Indian and the Horse,* 50.

Cavalry was a rare and valuable commodity in the New World at this time. For this excursion starting at Cozumel and then on to the Gulf Coast and into the Aztec empire, Cortés paid between four hundred and five hundred gold *pesos* for each one.[46] By the end of his campaign, their value had doubled to between eight hundred and a thousand *pesos* each.[47] Because of this high value (both monetary and tactical), unnecessary risks with them were not taken. Bernal Díaz del Castillo records the deaths of horses as well as of soldiers. Cortés's own horse died before their first major battle.[48] At first buried by the Spanish to hide the fact that these fearsome beasts, unknown in Mexico, were mere mortal creatures, the conquerors eventually resorted to eating their fallen steeds as their situation became more desperate.[49]

Although Spanish cavalry was extremely effective against native Mexicans, most major battles resulted in horse injuries or casualties. Before reaching the heart of the Aztec empire, all surviving horses had been wounded.[50] One mare foaled on board the ship, theoretically bringing the total number to seventeen. Obviously, a newborn colt would not have been much good in battle and could not have been mounted, so it does not figure into the official record. Later Mexican legends point to this young horse as the first stray lost in the Americas, but the accounts are more the stuff of myth than of accurate, historical fact.[51] Despite all conjecture to the contrary, no mention is made in Díaz's accounts of lost or stray horses.

As can be seen, the Spanish kept very detailed records of their horses in the New World. Fatalities and injuries were noted. Also evident is the fact that real dangers existed against the survival of horses in this new, foreign land, whether stray or not. Many were killed in battle, lamed, eaten by the soldiers, or gored by buffalo in northern regions.

The land of the Spanish Conquest was not the cultural environment described in the Book of Mormon; there were no more Nephites and Lamanites as depicted during its timeline. Apparently, horses had been absent in Mesoamerica for a long time, possibly even a millennium

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46. Prescott, *History of the Conquest of Mexico,* 1:250 n.

47. Prescott, *History of the Conquest of Mexico,* 3:136.

48. Bernal Díaz del Castillo, *The Discovery and Conquest of Mexico,* ed. Genaro García (n.p.: Farrar, Straus and Cudahy, 1956), 96.

49. Prescott, *History of the Conquest of Mexico,* 1:383; 2:323.

50. Prescott, *History of the Conquest of Mexico,* 1:397.

51. See Roe, *Indian and the Horse,* 146–47; Dobie, *Mustangs,* 97 n.

or more, by the time of the European arrival. Indigenous peoples in New Spain of the sixteenth century had no knowledge of these animals. The initial fear and awe of horses by the Aztec and Maya was quickly replaced by hatred and the ability to effectively kill them in battle, which was noted by de Soto, Coronado, and Cortés. Perhaps to demonstrate this new understanding and lack of fear, the native guides for de Soto's group showed the Spaniards skulls of horses left behind by de Narváez's earlier expedition.[52] The initial advantage enjoyed by Spanish cavalry began to dissipate as the mystique of horses wore off.

Spanish conquest and settlement in this new land was halted after reaching the territory of present-day Texas. A major factor for this limit of their expansion was the Plains Indians, who already had horses.[53] Spanish superiority in battle appears to have relied heavily on this one tactical advantage.

The Pinto Problem in North and South America

The mystery only deepens when the Indian pony is considered. It is notable for its unique, "hang-dog" appearance, which barely hints at its unfailing stamina. Not only for this characteristic was it prized by native tribes, but also they preferred its multicolor coat, also known as pinto or piebald.[54] This value is in sharp contrast to the European preference for solid-colored horses. The preferred steed for Spanish cavalry was a stallion of primarily one color. For American horses to have this piebald coat, horses of similar coloration as progenitors would have had to be extant. Spanish records do occasionally mention multicolored horses,[55] but this mention is by far the exception rather than the rule. A further complication is that this horse variety was quite common in North America but was virtually unknown in South America.[56] If they could all be traced back to modern European stock, the expectation would be that of finding pintos on both continents.

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52. De Soto, *Narrative of the Career of Hernando de Soto,* 1:47–48; 2:7; Bishop, *Odyssey of Cabeza de Vaca,* 53.

53. Denhardt, *Horse of the Americas,* 103.

54. Roe, *Indian and the Horse,* 148–49; Dobie, Boatright, and Ransom, *Mustangs and Cow Horses,* 247.

55. Denhardt, *Horse of the Americas,* 51, 198.

56. Roe, *Indian and the Horse,* 149, 151.

According to one author on the subject, at least one original pinto would be required among the ancestors of American horses if they were to be found in later wild herds.[57] In *The Indian and the Horse*, Roe dedicates an entire chapter to this "problem." Although accepting that no native American horse was available for cross-breeding, he also states that all Indian ponies must be lineal descendants of the earliest European horses brought to the American continents. The Northern Plains horse was typically a pinto, which was practically unknown in the pampas of South America. Inbreeding has been disregarded, and selective breeding among the Spanish would have been more than unlikely, based on their dislike, even contempt, for this coloration. The numbers of multicolored or pinto horses originally brought by the Spanish were practically negligible, and the disparity of their appearance in wild horse populations in North versus South America has not been resolved. Roe concludes that it may never be.[58]

Another explanation for the origin of horses among Native Americans is theft. Yes, indigenous peoples eventually did steal horses from European settlements, but when their first reaction of fear, awe, or hatred is considered, this outcome would not be expected for quite some time. Even today, everyone knows that animals like cows are useful for food, but no one unfamiliar with the animal would be tempted to steal, transport, and care for one. People today like their cows in nice little packages in the meat section of the grocery store. Natives who did steal horses must have not only known that horses could be useful, but they must also have known how to manage and control them. That feat would have required prior experience or familiarity. In Chile, Peru, and Brazil, indigenous tribes were stealing, riding, and breeding horses from 1540 onward.[59] At this point, records do not show large numbers of horses imported to South America, and many of those numbers are now considered exaggerated.[60] Yet wild horses were reported in this region, some provinces being full of them.[61]

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57. Denhardt, *Horse of the Americas,* 197.

58. See Roe, *Indian and the Horse,* 135, 140–42, 144–49.

59. Madaline W. Nichols, "The Spanish Horse of the Pampas," *American Anthropologist* 41 (1939): 119–29, especially 127.

60. See Roe, *Indian and the Horse,* 46.

61. R. B. Cunninghame Graham, *The Conquest of the River Plate* (London: n.p., 1924), 121, 238–43, 267–73.

Carving that could be of a man standing next to a horse, at Chichén Itzá. Photo and details by Daniel Johnson, 1999.

"Horses" in Mesoamerican Art

From time to time, the claim has been made by some Latter-day Saint authors that horses occasionally are seen in Mesoamerican art,[62] but these images are sometimes difficult to track down and are often very subjective. One intriguing example often cited is found at Chichén Itzá. It is located on the side of a building called the Temple of the Wall Panels. On its north and south sides, it has blocks carved with scenes of various animals. One of the blocks on the south panel shows an image that has been interpreted by some Latter-day Saint scholars to be a man standing next to a small horse. That image is shown here with an outline added to show what details remain in the eroded façade. It may be a horse, but that is difficult to determine for sure. The carving is definitely pre-Columbian, but most of the construction at Chichén Itzá dates to the ninth and tenth centuries AD, long after the close of the Book of

62. See Diane E. Wirth, *A Challenge to the Critics* (Bountiful, Utah: Horizon Publishers, 1986), 52–55.

Mormon. This dating would mean that knowledge of horses survived for a long time, if not the actual animals themselves. If the Chichén Itzá carving is not a depiction of a horse but some other real animal, then the only other known candidate is a tapir, or possibly a deer, although no antlers are visible. Latter-day Saint General Authority Emeritus Ted Brewerton had photos taken of this particular block in 1966, and he believed it to be the image of a horse. He also believed that the panel has been removed since then,[63] but it was still there in 1999. Because it is actually part of a permanent building at the site, it is likely still there. These and other rare images are fascinating, and while they may be seen as evidence, they should not be taken as proof. They do not convince critics, either.

Horse Survival in the Americas after the Ice Age

Prior to the mid-1800s, apparently ancient horse teeth or bones had been found in North America, but they did not attract any scientific attention until much later. Primitive horse leg and foot bones were among the fossils found at Big Bone Lick, Kentucky, in an expedition sent by Thomas Jefferson in 1807, but were dismissed or ignored at the time.[64] The remains were sent to the White House to be studied, displayed, and put in collections (including Jefferson's own), but the mammoth fossils generated the greatest interest.[65] The existence of ancient, indigenous horses on the American continent first came to light in 1840, when (Sir) Richard Owen, a noted paleontologist, described a fossilized horse tooth found by Charles Darwin in Argentina.[66]

In 1847, paleontologist Joseph Leidy published "On the Fossil Horse of America," proving that ancient horses lived in North America.[67] Only

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63. Ted Brewerton to author, September 2012.

64. The Academy of Natural Sciences of Drexel University, "Ancient Horse (*Equus* cf. *E. complicatus*)," archived at https://web.archive.org/web/20120224183205/http:/www.ansp.org/museum/jefferson/otherFossils/equus.php; The Academy of Natural Sciences, "Ancient American Horses," archived at https://web.archive.org/web/20070205181807/http:/www.ansp.org/museum/leidy/paleo/equus.php.

65. Kentucky State Parks, "Big Bone Lick History," http://parks.ky.gov/parks/historicsites/big-bone-lick/history.aspx.

66. Richard Owen, *Fossil Mammalia,* part 1, no. 4, of *The Zoology of the Voyage of H.M.S. Beagle,* ed. Charles R. Darwin (London: Smith Elder, 1840), 108–9.

67. *Encyclopædia Britannica,* s.v. "Leidy, Joseph," http://www.britannica.com/biography/Joseph-Leidy.

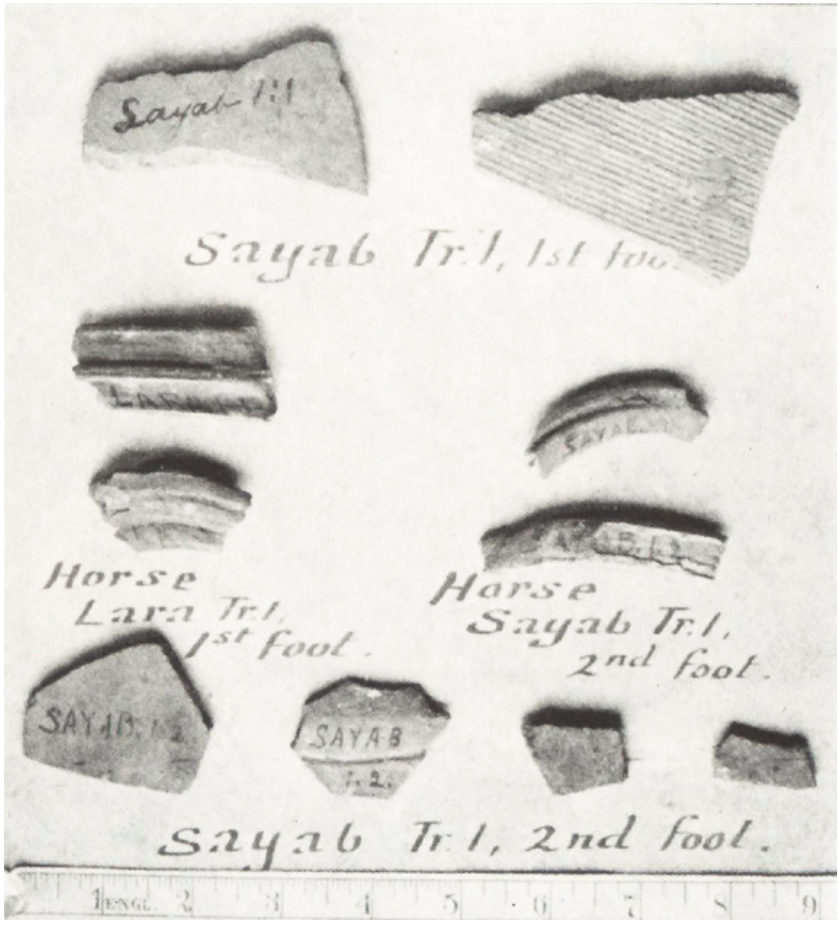
afterward did it become acceptable to admit that horses existed on this continent anciently. In fact, researchers now believe that horses, camels, early elephant types, and other large animals evolved first in this hemisphere before migrating to Asia and then becoming extinct here for a combination of reasons that are still debated. Was it climate change, hunting by early man, disease, or a combination of factors? The generally accepted answer has been that horses died out about 10,000 BC,[68] but if we look hard enough, we will see respected scientists pushing that date forward thousands of years. For example, Ross MacPhee, curator of mammalogy at the American Museum of Natural History, and his colleagues collected core samples of the permafrost that provided a clear picture of the local Alaskan fauna at the end of the last ice age. One core, deposited between 10,500 and 7,600 years ago, confirmed the presence of both mammoth and horse DNA. To make certain there was no contamination, the team did extensive surface sampling around Stevens Village with the same result.[69] MacPhee also believes that small populations of humans could not have killed all the megafauna in the Americas and that climate change is an incomplete answer. For him, disease and pathogens brought by migrating humans are the best explanation. "The fossil record's very incomplete, and just because the most recent remain is from 12,500 years ago, that doesn't mean that the horse became extinct at this time," said study coauthor Andrew Solow of Woods Hole Oceanographic Institute.[70] For supporters of the Book of Mormon, this convincing evidence of horse existence in the western hemisphere from 8500 to 5600 BC is encouraging.

As the change in attitude since the 1840s is considered, analysts will recognize that on the subject of horses, the Book of Mormon was actually ahead of its time. If it had been written according to the knowledge of the day, horses would not have appeared within its pages. But now horse fossils, as well as unfossilized bones and teeth, have been found in North, Central, and South America. In North America alone, up to nine varieties of ancient horse are known, including the Western

68. Kirkpatrick and Fazio, "Surprising History of America's Wild Horses."

69. Live Science Staff, "Mammoths Were Alive More Recently Than Thought," *Live Science,* December 15, 2009, http://www.livescience.com/9771-mammoths-alive-thought.html; Sebastian Zieler, "Mammoths Had More Time," *University Post,* University of Copenhagen, http://universitypost.dk/article/mammoths-had-more-time.

70. Bjorn Carey, "Humans May Have Wiped Out Wild Horses," *Live Science,* May 1, 2006, http://www.livescience.com/717-humans-wiped-wild-horses.html.



Some of Mercer's horse remains. Image from Henry C. Mercer, *The Hill-Caves of Yucatan,* used by permission.

Horse (*Equus occidentalis*), the Mexican Horse (*Equus conversidens*), the Yukon Horse (*Equus lambei*), Scott's Horse (*Equus scotti*), and the Complex-tooth Horse (*Equus complicatus*). Some of these varieties were quite large, growing to the size of modern horses. The Western Horse stood 14½ hands tall at the shoulder, much like the modern Arabian, but had a stockier build, similar to a modern mustang.

On the topic of ancient American horse remains, Mesoamerica also plays an important role. In 1895, Henry Mercer explored twenty-nine caves in the Yucatán Peninsula looking for evidence of prehistoric

habitation. He left without finding any fossils or what he was looking for initially and published his account in 1896. Most caves contained potsherds, human refuse, and animal bones, including horse remains. In Actún Lara, he found two horse teeth in the first foot of excavation. In Sayab Actún, he found two horse teeth in the second foot of excavation. In Actún Chektaleh, a horse bone fragment was found in the second foot of excavation.[71] Other unidentified large mammal bones, such as part of a rib, were also found. At the time, he did not attach any significance to them, because using the knowledge of the day, he did not recognize them for what they were. They looked to be post-Conquest, but other Yucatán finds suggest this was not the only possibility. His assessment was that the horse remains were from the modern horse, *Equus caballus* (also *Equus equus*), but closer examination by paleontologist Edward D. Cope gave a more likely classification of the extinct *E. conversidens* (Mexican horse), only known in central Mexico and North America and only as fossils. However, according to Cope, Mercer's finds were unfossilized.[72]

Horse teeth were also found in a cenote at Mayapán, a major post-classic site on the Yucatán Peninsula. It was the last great Maya capital, flourishing after the collapse of Chichén Itzá until about AD 1440.[73] Researchers can safely say that no living horses existed in the Yucatán or elsewhere in Mesoamerica by then. The teeth were found along with pottery fragments, and judging by their stratigraphic location and degree of mineralization, analysts designate them to be pre–Columbian as well. They are currently at the Museum of Comparative Zoology at Cambridge, Massachusetts, labeled as "Equus, from bottom stratum of unconsolidated black earth, Pre-Columbian." By at least 1957, this information had been published in scientific journals. Experts had to admit that indeed pre-Columbian horses existed in the Yucatán, but they did not wish to imply that horses were known among the Maya, vaguely stating that the remains must be from a "pre-Maya" time. The teeth have been classified as *E. occidentalis* and *E. conversidens,*[74] similar to Mercer's finds. Oddly enough, this seemingly revolutionary information

71. Henry C. Mercer, *The Hill-Caves of Yucatan* (Norman: University of Oklahoma Press, 1975), 40, 68–69, 170.

72. Mercer, *Hill-Caves of Yucatan,* 172n.

73. Simon Martin and Nikolai Grube, *Chronicle of the Maya Kings and Queens* (London: Thames and Hudson, 2000), 228.

74. Clayton E. Ray, "Pre-Columbian Horses from Yucatan," *Journal of Mammalogy* 38 (May 1957): 278.

Horse bone and tooth fragments from Mayapán. © The Agassiz Museum, Harvard University, MCZ 3937, used by permission.

was relegated to one page of the General Notes section near the end of the *Journal of Mammalogy*.[75] It can be found sandwiched between "Three Additional Records of Antlered Female Deer" and "Longevity of Captive Mammals."

75. Ray, "Pre-Columbian Horses from Yucatan," 278.

In addition to these teeth, other bones and artifacts found in 1977 in two lateral extensions of the Huechil Grotto at Loltún, known as El Túnel and El Toro, have been described by Peter Schmidt of the Instituto Nacional de Antropología e Historia (INAH) as "problematic" and "complicated."[76] Unfortunately, very few details about the findings have been published. According to the study, Level VII of El Túnel contained fifty-nine horse bone fragments. Most of the data come from stratigraphic excavations in El Toro. Labeled I to XVI, the levels represent the caves' chronology, with level I being the most recent and XVI the most ancient. Bones and bony fragments of Pleistocene megafauna have been found in most of El Toro's levels, but the only published radiocarbon dating comes from levels VII and VIII. Taken from various pieces of charcoal, the date is 1805 BC, with an error of ±150 years,[77] well after the ice age. But this is not all. Sadly, as Schmidt laments, forty-four horse bone fragments have been recovered from levels VII to II, all supposedly from later time periods and also containing Classic and Preclassic ceramics! He exclaims that something has happened in Loltún that is still hard to explain: The survival of extinct animals like the Western Horse and Mexican Horse may need to be extended to the beginnings of the Ceramic Era, which "would not please paleontologists." He has also said that the presence of Pleistocene *Equus conversidens* in ceramic layers has been interpreted as possible proof of the survival of the extinct horse into the Holocene, the current geological epoch. Had he read Ray's article in the *Journal of Mammalogy* published twenty years before his dig, he may have been less surprised.

Although these findings may seem earth-shattering, some critics are aware of them and have dismissed them without much apparent consideration. They note the results of tunneling rodents in the cave floor and suggest that this activity has moved bones from their original strata into higher layers.[78]

As unlikely as this explanation appears, supporters of the Book of Mormon need to be cautious about the evidences they accept and support, especially in controversial areas. However, Schmidt's 1988 report

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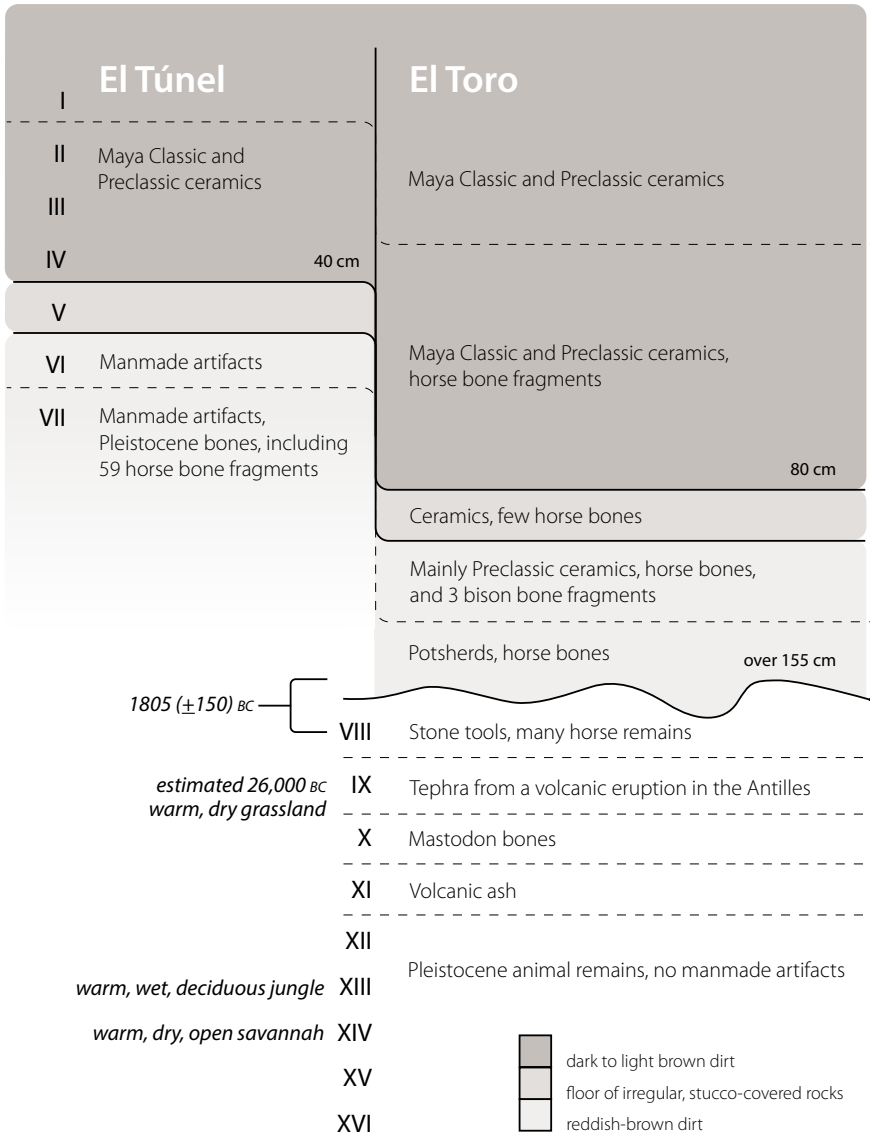
76. See Peter J. Schmidt, "La Entrada del Hombre a la Peninsula de Yucatán," in *Orígines del Hombre Americano,* comp. Alba González Jácome (Mexico: Secretaria de Educación Pública, 1988), 254–55.

77. Schmidt, "La Entrada del Hombre a la Peninsula de Yucatán," 253.

78. "Horses," http://mormonthink.com/backup/horses.htm.



Summary of the excavation of El Túnel and El Toro. Graphic by Daniel Johnson using results published in Schmidt, "La Entrada del Hombre a la Peninsula de Yucatán."

does not suggest that tunneling rodents adequately explain the controversial findings. If that were the case, his exclamations of surprise and concern would not have been included. As the report itself states, something happened in Loltún that is hard to explain with the current understanding of the history of the horse in the Americas. Digging rats have not solved that problem.

Since 2000, Steven E. Jones (formerly of Brigham Young University) has been working with Wade Miller from the BYU Department of Geology, INAH archaeologist Joaquín Arroyo-Cabrales, and others to conclusively date ancient American horse bones. An unpublished 2012 paper Jones coauthored with Miller contains some of their initial findings. Out of forty-five *Equus* samples they tested from Mexico, thirty-eight had insufficient collagen for AMS (accelerator mass spectrometry) dating; one was from the ice age; and the others dated to after the Spanish Conquest. However, they have had surprising results from some North American samples. A horse bone from Pratt Cave near El Paso, Texas, dated from 6020 to 5890 BC. Another specimen from Wolf Spider Cave in Colorado dated from AD 1260 to 1400. A bone from Horsethief Cave in Wyoming dated to 1100 BC. Most of these dates were obtained through AMS dating, but the Wolf Spider specimen's date was obtained with thermoluminescent methods. Some Native American traditions also support the existence of horses from a post-Pleistocene but pre-Columbian era.[79] Jones graciously provided his paper, and more results from their ongoing research are eagerly awaited. Miller currently has samples at the University of Arizona for C-14 dating, but results were not in as of the writing of this article.

The Question of the Bashkir Curly

Analysts can safely say it is likely that no horses existed in the Yucatán Peninsula or elsewhere in Mesoamerica by the Maya Postclassic era. But what if some horse populations survived in remote enough areas and in small enough numbers not to have been noticed by the Spanish conquerors and other European settlers? Such a possibility exists. A breed of horse known alternately as the Bashkir curly or the North American curly is noteworthy for more than its curly, hypoallergenic coat. Its mysterious origins are still unknown and are the subject of

79. Steven E. Jones, "Were There Horses in the Americas before Columbus?" unpublished paper, 2012.

much debate within the curly horse community.[80] The Bashkir curly is named for a region in Russia located in the Ural Mountains. Known today as Bashkiria or Bashkortostan, this area is not known for curly-coated horses. However, the lokai, a breed from Tajikistan, more often has a curly coat. The curly in North America could have descended from this or other Asian breeds; however, in 1868, Charles Darwin cited an account by Félix de Azara, who observed curly horses in Paraguay in the late eighteenth century, long before any known documentation of their transportation from Asia.[81] No connection can be demonstrated between American curlies and the Russian Bashkirs; genetic studies suggest the former are not descended from the latter.[82] How the curly horse got to the Americas is still an enigma, despite ongoing study and research. There is even a preference among some equestrian groups for the name "North American curly," but keeping or removing "Bashkir" is highly debated. Some speculation has been evident outside the Latter-day Saint community that curlies may have crossed over the Bering Strait from Asia anciently and survived until modern times, becoming essentially a native American breed, although there is no fossil evidence.[83] They then may have gone undetected by European settlers until the nineteenth century or later. Could these be remnants of Book of Mormon horses?

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80. "History of the Curly Horse," *Curly Horse Country,* http://curlyhorsecountry.com/history_curlyhorses.htm.

81. International Museum of the Horse, "The American Bashkir Curly," http://www.imh.org/exhibits/online/american-bashkir-curly; Silver Storm Farm, "American Curly Horse," http://www.silverstormfarm.com/curly-horse-info.html; Charles Darwin, *The Variation of Animals and Plants under Domestication,* 2d ed., rev., 2 vols. (New York: D. Appleton, 1915), 2:189–90.

82. Department of Animal Science, Oklahoma State University, "Breeds of Livestock—Bashkir Curly Horse," February 4, 1997, http://www.ansi.okstate.edu/breeds/horses/bashkircurly; S. Thomas, "The Curly Horse Identification Project of the CS Fund Conservancy (a Case Study)," in *Genetic Conservation of Domestic Livestock,* ed. Lawrence Alderson (Wallingford, Oxon: CAB International, on behalf of the Rare Breeds Survival Trust, 1990), 154–59.

83. See, for example, American Bashkir Curly Horse Registry, "The Curly Horse Breed," http://www.abcregistry.org/#/curly-horse-info/4553749478; Silver Storm Farm, "American Curly Horse."

Conclusion

Although available valid evidence is worth considering, the question of horses in the Book of Mormon has not been decisively answered and may never be resolved to anyone's complete satisfaction. Hard evidence will go only so far in dealing with this and other related issues. Much of the information presented in this article is not new; some data have been known for over a century. The information should be common knowledge, but sadly it is not. The issue of horses in the Book of Mormon is still used by critics of The Church of Jesus Christ of Latter-day Saints as a means of attack and by some of its own members as justification for their loss of faith in the Book of Mormon and, subsequently, the religion itself. This situation is lamentable, for it is often based on a foundation of ignorance. The same question is still being thrown about, with an apparent disregard of the latest (or even some of the earliest) scientific knowledge on the subject. Those who wish to defend the authenticity of Latter-day Saint scripture can easily educate themselves to improve the quality of the debate.

The teachings contained in the Book of Mormon carry much more weight for the modern world than whether Nephites and Lamanites really had horses. But it is a valid question, and it deserves a thoughtful response. A possible and certainly reasonable answer is based on the theory that horses as people today would recognize them did indeed inhabit the ancient lands known to peoples in the Book of Mormon during the relevant time periods. Likely, science today would classify them as the Western Horse and the Mexican Horse, whose remains have been found in the Americas. They were used in a manner not explicitly stated by those who kept the Book of Mormon record. Sometime after AD 26 (3 Ne. 6:1), their numbers began to dwindle in the original Book of Mormon lands through warfare, predation, ecological changes, or other unknown events. Any surviving populations were pushed to the extreme north and south, and their existence was forgotten by subsequent cultures inhabiting the original areas, such as the Maya, Toltecs, Aztecs, and many others who did not understand this "new" animal reintroduced by the Spanish Conquest. Small pockets of horses may have continued to survive in remote enough locations in North and South America that they were not discovered until centuries after initial European contact and were thought to have descended entirely from Old World horses reintroduced to this continent in modern times. This is a solid hypothesis based on sound, up-to-date scientific research,

which excludes controversial claims. However, it is by no means the only possible answer.

Book of Mormon analysts must admit that logical reasons exist for the lack of incontrovertible evidence for ancient horses or other "proofs" of the Book of Mormon. Its readers will probably never find an ancient gold plate written in reformed Egyptian saying, "Welcome to Zarahemla," and signed by King Benjamin. If that were the case, faith in the Book of Mormon would be unnecessary. Latter-day Saints may long for proof, and their opponents may demand it, but Alma's words to the Zoramites may be particularly relevant to these kinds of issues today: "Yea, there are many who do say: If thou wilt show unto us a sign from heaven, then we shall know of a surety; then we shall believe. Now I ask, is this faith? Behold, I say unto you, Nay; for if a man knoweth a thing he hath no cause to believe, for he knoweth it. . . . And now, behold, I say unto you, and I would that ye should remember, that God is merciful unto all who believe on his name; therefore he desireth, *in the first place, that ye should believe,* yea, even on his word" (Alma 32:17–32; emphasis added).

Daniel Johnson is the principal author of *An LDS Guide to Mesoamerica* and *An LDS Guide to the Yucatán.* He has had a lifelong interest in ancient cultures, especially from the Americas, and his first trip to Mexico was in 1999. Since then, Daniel has led friends on excursions to Central America and has given firesides about his research and travels to ancient Maya sites. He has spoken on archaeological topics at the Book of Mormon Archaeological Forum's annual conferences. He served a mission in the Argentina Buenos Aires North and the Argentina Mendoza missions and now works as a digital artist and teaches at Northern California colleges.