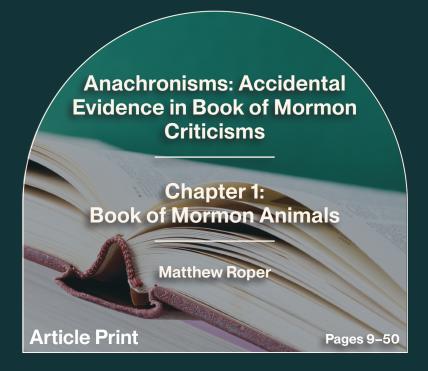


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Anachronisms: Accidental Evidence in Book of Mormon Criticisms

Matthew Roper

[Editor's Note: We are pleased to present chapter 1 from a book entitled Anachronisms: Accidental Evidence in Book of Mormon Criticisms. It is presented in serialized form in this volume of Interpreter: A Journal of Latter-day Saint Faith and Scholarship.]

Chapter 1: Book of Mormon Animals

ne set of claimed anachronisms has to do with references to animals mentioned in the text. Fauna which were at one time thought to have been completely absent from the New World previous to the fifteenth century or to have become extinct long before the end of the Pleistocene era (circa 10,000 BC), did not, it has been argued, exist during the time in which the Book of Mormon is set. "When what is known of America since its discovery, is compared with the history of [the Book of] Mormon, it makes it appear just what it is, a complete fiction" wrote one British reader in 1839. Nephi, for instance, reports that his family encountered cows, oxen, horses, asses, goats, and wild goats (1 Nephi 18:25). "These kind of animals which are now in such abundance in that country," he continued, "have been introduced by Europeans, since its discovery. . . . Nor are these a kind of animals which would be likely to become extinct" had they been here. Other references to animals in the text that have been considered erroneous include the elephant, sheep, flocks and herds, swine, the honeybee, lions, and other wild animals. While there are still many questions about the nature of animals in the Nephite account, scientific advances and discoveries after 1830 have shed additional light on the history of animals in pre-Columbian times.²

The evaluation of status given to each animal mentioned in the text is based upon current archaeological evidence or the lack thereof. A plausible case can be made that some names of animals in the text could be examples of loan-shifting or semantic extension (in which a people apply terms from the Old World to similar but different varieties of animals in the New World, a well-attested cultural practice).³ For example, while the Mesoamerican peccary is not a pig under a strict scientific nomenclature, the resemblance to swine is notable, and is commonly expressed as such by observers. A similar argument could be made for a few of the other animals discussed in this chapter. Those which I find most persuasive I score as confirmed. However, others may differ on the validity of such evidence, so I have indicated that these are examples of loan-shift (LS) in my scoring.

1. Pre-Columbian Horses

Status: Confirmed (1845–1966)

Critics' Claim: Horses are repeatedly mentioned in the Book of Mormon (1 Nephi 18:25; 2 Nephi 12:7; Enos 1:21; Alma 18:9–12; 3 Nephi 3:22, 4:4, 6:1, 21:14; Ether 9:19). Some early critics, however, claimed that there were never horses *at any point* in the Americas prior to the arrival of Columbus and other Europeans, and if they had ever existed before that time, they would not have become extinct.⁴

Response: Charles Darwin was among the first to discover fossils of extinct pre-Columbian horses (see figure 1). While in Argentina in 1833, he recovered molars from a Pleistocene species of horse. This species is known as *Equus (Amerhippus) neogeus* meaning "American horse of the New World." Many other prehistoric horse specimens have subsequently been recovered and identified throughout North, Central, and South America.

When they became aware of such discoveries, some Church members took note of these reports. In 1876 Moses Thatcher, a Latter-day Saint Apostle, observed, "When the Book of Mormon was first published, some fifty years ago, one of the strong arguments brought against it by its disbelieving opponents, was that it spoke of the primitive inhabitants possessing elephants, horses, asses, oxen and so on," which was the prevailing view of the time. "It does



Figure 1. Illustration of fossilized horse tooth from Bahia Blanca, discovered by Charles Darwin. (Wikimedia Commons, s.v. "Fossil tooth of horse from Bahia Blanca — Charles Darwin," commons.wikimedia.org/wiki/File:Fossil tooth _of_horse_from_Bahia_Blanca_-_Charles_Darwin.jpg.)

not appear that our elders at that time had any historical or scientific knowledge, with which to meet what was generally conceded to be the well-established fact that horses and elephants had been from the remotest periods unknown in this country." Thatcher then noted several examples of the existence of pre-Columbian elephants such as the mammoth and mastodon, as well as the horse at an early time.6

While "it may be objected that we have no evidence that the horse existed this side of these great fossil periods," noted another Latterday Saint writer, this emerging fossil evidence nevertheless refuted the earlier argument and helped "prove that the horse was once a native of America." In 1907, Latter-day Saint geologist Fred Pack notes, "When the Book of Mormon was published, in 1830, it was generally believed that the horses introduced by the Spanish were the only ones ever known to America, but it has since been proved that they appeared on the western continent ages ago."8

2. Pre-Columbian Horses (Contemporary with Man)

Status: Confirmed (1845–1965)

Critics' Claim: After fossils of early pre-Columbian horses were discovered, establishing that they had once lived in the Americas, some critics then argued that while this was true, these earlier species died out long before the advent of humans. "While there is abundant evidence that the horse originally inhabited the American continent." wrote one author in 1906, "the most careful research of zoologists has failed to bring to light anything that would indicate the existence of the horse, as known to man, anywhere on the American continent earlier than the Spanish conquest." According to another writer, "There is no authentic record of either horses . . . having survived in America until the first appearance of man on this continent. So far as the fossil records go, the last of these animals disappeared from this continent at least twenty thousand years ago." ¹⁰

Response: Evidence that some species of horse were contemporary with humans living in the Americas, at least during the Pleistocene, is now generally accepted.¹¹

3. Pre-Columbian Horses (Native Traditions)

Status: Confirmed (1966–2024)

Critics' Claim: Some critics have claimed that if there had once been horses in ancient America, then traditions about their previous existence would be found among native peoples.¹²

Response: Native traditions of various tribes assert that they had knowledge of the horse before the arrival of Europeans and may thus reflect knowledge of pre-Columbian horses.¹³

4. Pre-Columbian Horses (in Book of Mormon Times)

Status: Partially Confirmed (1966-2024)

Critics' Claim: More recently, critics of the Book of Mormon have claimed that while some Pleistocene species of horse were contemporary with early man, they had all died off by the end of that period (circa 10,000 BC) and therefore had become extinct many thousands of years before the time covered in the Book of Mormon.

Charles Shook, writing in 1910, states,

No one who had studied geology will deny that in the earlier epochs the horse was an inhabitant of this continent along with many other species now extinct. And it is also probable that the horse and man were coexistent for some time after the latter's arrival. This much I concede. But that the horse was here ... at the time when those cities which have been attributed to the Jaredites and Nephites were erected, I most emphatically deny.¹⁴

Another writes, "The American horse had at the time of the Jaredites' landing been extinct not less than sixteen thousand years, and at the

time of the Nephites' coming not less than eighteen thousand years."¹⁵ According to L. Rumble, "The Pleistocene period came to an end at least 10,000 years B.C. From at least 10,000 years B.C. until the arrival of the Spaniards there were no living horses in America. How then, could the Book of Mormon's mythical band of Nephites have found horses there in 600 B.C.?"¹⁶

Response: It is now becoming increasingly clear that while many early species became extinct by the end of the Pleistocene era, some animals—including a few species of the horse—did indeed survive into more recent historical times, although how long they persisted continues to be a question of scientific interest and research. Supporting evidence comes from fossils, DNA, and associated carbon-based materials discovered and dated to several thousand years after the end of the Pleistocene.

In 2009, DNA from Pleistocene-era horses recovered from permafrost in the interior of Alaska showed that they survived in that region as late as 5600 BC.¹⁷ Another study found evidence for the survival of horses in the Yukon as late as 3700 BC.¹⁸ Researchers have noted that the icy arctic favors the preservation of fossils and DNA material, whereas such material may be less likely to be preserved in warmer climates.¹⁹ In Argentina, species of horse may have persisted past the Pleistocene to as late as 5000 BC.²⁰

At least three species of horse are known to have been present in Mexico until the end of the Pleistocene. These include a large horse (*Equus mexicanus*), a medium-sized horse (*E. conversidens*; see figure 2), and a smaller horse (*H. Francisci*). Recently archaeologists working at a site of Rancho Carabanchel, near Cedral, San Luis Potosi, Mexico, recovered remains of pre-Columbian horse bones, including *Equus mexicanus* and *E. conversidens*, as well as a smaller variety known as *Equus tau* which is comparable to *H. Francisci*. While collagen was no longer extant in the horse remains (a not uncommon challenge in obtaining reliable dates), they were all recovered from a well-established sequence of strata and the bones were dated in close association with relative carbon material from 1660–1508 BC, 1544–1424 BC, 548–400 BC, AD 73–226, AD 86–242, AD 253–542, and AD 1025–1165.

The researchers concluded,

The remains of Equus that we recovered from [Rancho Carabanchel] from multiple stratigraphic layers all with



Figure 2. Skeleton of *Equus conversidens*. (*Wikipedia*, s.v. "*Equus conversidens*," en.wikipedia.org/wiki/Equus_conversidens.)

associated radiocarbon dates, all in a fair stratigraphic continuum and showing no mixing between geological units imply that horses may have persisted in this region of Mexico well after the classical late Pleistocene extinction time.

They further note that this evidence appears to add to "a growing set of data that the late Pleistocene extinction was more a process (over many thousands of years) rather than the typically accepted and presumed extinction event." Notably, some of the dates obtained correlate with the time of the Book of Mormon. As these dates were obtained from material in close association with the horse bones rather than collagen in the bone (which was not available), I have scored this item as partially confirmed since we cannot be entirely certain that the dating is correct. However, given the undisturbed state of the strata prior to excavation and the excellent chronological sequence established throughout the various layers, the accuracy of the dating seems likely.

5. Pre-Columbian Asses

Status: Partially Confirmed (1966–2024)

Critics' Claim: The ass is mentioned as an animal known to the Nephites and the Jaredites in the New World (1 Nephi 18:25; Mosiah 5:14, 12:5, 13:24, 21:3; Ether 9:10). Some have claimed that this species did not exist in the Americas during pre-Columbian times.²³

Response: Some smaller species of Pleistocene equids comparable to the ass are now attested in the Americas during the Pleistocene (see figure 3).²⁴

6. Pre-Columbian Asses (Native Traditions)

Status: Unconfirmed

Critics' Claim: Some critics have claimed that if there had once been ass species in pre-Columbian times, then traditions about their previous existence would be found among native peoples.²⁵

Response: No known Indigenous traditions refer specifically to asses.

7. Pre-Columbian Asses (in Book of Mormon Times)

Status: Partially Confirmed (1966–2024)

Critics' Claim: Some critics have more specifically claimed that the ass was unknown during Book of Mormon times.²⁶

Response: It is possible that smaller species of horse such as *Equus* conversidens were considered an ass by Book of Mormon peoples. Remains of this smaller form of horse were found at San Luis Potosi,

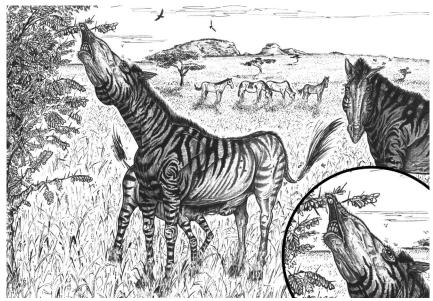


Figure 3. Reconstruction of South American Pleistocene equids. The function of the prehensile upper lip of hippidiforms during foraging is depicted in the foreground and in detail. The grazer *Equus* is shown in the background. (Camila Bernardes et al., "Rostral reconstruction of South American hippidiform equids: New anatomical and ecomorphological inferences," *Acta Palaeontologica Polonica* 58, no. 4: 675, fig. 5, app.pan.pl/archive/published/app58/app20110107.pdf.)

Mexico, in association with material that was carbon dated to 1300–1240 BC.²⁷

8. Pre-Columbian Cows

Status: Confirmed Bison Loan Shift (1845–1965)

Critics' Claim: Cows are mentioned in the Book of Mormon (1 Nephi 18:25; Ether 9:18). Some have claimed that they were not present in the Americas in pre-Columbian times.²⁸

Response: It is not clear from the text if the terms *cow* and *ox* in the Book of Mormon refer to one species of bovine or two distinct animals. In either case, several species of bovine were present during the Pleistocene period.²⁹ The shrub ox (figure 4) lived until at least the end of that period in parts of Mexico, where their bones are sometimes found in caves. Few of these have been dated, however.³⁰ When Europeans first encountered American bison, they often referred to them as "cows," "cattle," and "oxen," and the association has never fully disappeared.³¹ It therefore follows that bovine species sometimes referred to as "cows" did in fact exist in pre-Columbian times.

9. Pre-Columbian Cows (in Book of Mormon Times)

Status: Confirmed Bison Loan Shift (1966–2024)



Figure 4. Artist's rendering of a shrub ox. (N. Tamura, "Euceratherium," 2008, deviantart.com/ntamura/art/Euceratherium-87828403.)

Critics' Claim: Some critics have more specifically claimed that there were no cows in Book of Mormon times.³²

Response: As noted, early European settlers sometimes referred to the bison as "cow," and this is in fact the proper term for the females of the species. Bison are known to have been present for thousands of years in many parts of North America, including the period covered by the Book of Mormon. Questions about the extent of their range at various times is less clear.

10. Pre-Columbian Oxen

Status: Confirmed Bison Loan Shift (1845–1965)

Critics' Claim: The Book of Mormon mentions oxen (1 Nephi 18:25; Ether 9:18). Some have claimed that they were not present in the Americas in pre-Columbian times.³³

Response: It is not clear from the text if the terms *ox* and *cow* in the Book of Mormon refer to one species of bovine or two distinct animals. In either case, the term *ox* can refer to domesticated bovine or to wild animals such as shrub ox, musk ox, or American bison.³⁴ For example, a text from 1744 makes reference to "the *American* Oxen, or Beeves" which "have a large Bunch upon their Backs."³⁵ Several species of bovine were present during the Pleistocene and one species of the American bison survives today.

11. Pre-Columbian Oxen (in Book of Mormon Times)

Status: Confirmed Bison Loan Shift (1966–2024)

Critics' Claim: Some critics have more specifically claimed that there were no oxen in Book of Mormon times.³⁶

Response: American bison have sometimes been referred to as oxen. Bison have been present in the Americas for thousands of years including the time covered by the Book of Mormon, although questions remain about the extent of their range at various times.³⁷

12. Pre-Columbian Cattle

Status: Confirmed (1845–1965)

Critics' Claim: Cattle are mentioned in the Book of Mormon (Enos 1:21; 3 Nephi 3:22, 4:4, 6:1; Ether 9:18). Some have claimed that there were no cattle in pre-Columbian times.³⁸

Response: Hebrew words rendered as *cattle* by translators can refer to any large or small quadrupeds.³⁹ Thus, the the use of this term in the Book of Mormon could refer to animals used for food, but they could also refer to animals that could be exploited for other useful purposes. In addition to the American bison, there was a variety of such animals known in ancient Mesoamerica such as deer and peccary that were raised, husbanded, exploited for food, or used for other purposes.⁴⁰ While current evidence does not confirm the existence and use of all of the forms of cattle mentioned in the Book of Mormon text, enough evidence now exists to consider cattle to be generally confirmed.

13. Pre-Columbian Goats

Status: Confirmed Deer Loan Shift (1845–1965)

Critics' Claim: Goats are mentioned in the Book of Mormon (1 Nephi 18:25; Alma 14:29; Ether 9:18). Some have claimed that they were not present in pre-Columbian times.⁴¹

Response: Partial confirmation of pre-Columbian goats may be found in the native wild goat of North America (*Oreamnos americanus*), only known from southwestern Alaska into the northwestern United States. Archaeological evidence is known for an extinct species (*Oreamnos harringtoni*), which is related to it and was known during Pleistocene times to have lived as far south as the North American southwest and northern Mexico, but evidence for its survival past the Ice Age is currently lacking. Early Spanish observers of Mesoamerican wildlife sometimes characterized species such as the small brocket deer (figure 5) as "goats" and "wild goats."

14. Pre-Columbian Wild Goats

Status: Confirmed Deer Loan Shift (1845–1965)

Critics' Claim: Wild goats are mentioned in the Book of Mormon (1 Nephi 18:25; Enos 1:21). Some have claimed that there were no wild goats in pre-Columbian times.⁴⁴

Response: At least one species of goat (*Oreamnos harringtoni*) was known as far south as the North American southwest, but there is currently no evidence for their existence during Book of Mormon times. ⁴⁵ As discussed under #13, Spanish observers of Mesoamerican wildlife sometimes characterized species such as the small brocket deer as "goats" and "wild goats."





Figure 5. A Yucatan brown brocket deer. (Bernard Dupont, Wikimedia Commons, s.v., "Yucatan Brown Brocket Deer (Mazama pandora) male, captive specimen, Chiapas," commons.wikimedia.org/wiki/File:Yucatan Brown Brocket _Deer_%28Mazama_pandora%29_male,_captive_specimen,_Chiapas.jpg.)

15. Pre-Columbian Sheep

Status: Confirmed (1966-2024)

Critics' Claim: Sheep are mentioned in the Book of Mormon (Ether 9:18). Some have claimed there were no sheep in pre-Columbian times.46

Response: Mountain sheep (Ovis canadensis; see figure 6) are one possible candidate for sheep in the Book of Mormon. While some have claimed that these animals are incapable of domestication.⁴⁷ according to Valerius Geist, "It is hard to imagine a wild animal more readily tamed than mountain sheep."48 According to Charles A. Reed,

Bighorn sheep can become so accustomed to humans that one can feed them by hand while fitting them with radio-collars or eartags; I once had such an adult male Bighorn at a road intersection in the western United States stick his head. partially through the open car window begging for food like a Yellowstone bear. If his horns had been smaller he would have climbed into the car.49

Mountain sheep currently range as far south as northern Mexico,



Figure 6. Bighorn mountain sheep. (Cheryl Prince, "Bighorn Sheep Standing on Mountain Area," *Pexels*, pexels.com/photo/bighorn-sheep-standing-on -mountain-area-7824754/.)

but in pre-Columbian times their range was more extensive. ⁵⁰ Mexican archaeologists in the 1980s working at an Epiclassic site in Tula Hidalgo (AD 750–900) discovered a pot under the floor of a residential dwelling with the remains of two mountain sheep (*Ovis canadensis*). Some of the bones showed signs of having been cut and apparently had been used as ritual food; part of the animal had been eaten and part had been placed as an offering under the floor. ⁵¹ The presence of this species of sheep in central Mexico in pre-Columbian times and its apparent ritual use is noteworthy.

16. Flocks and Herds

Status: Confirmed (1845–1965)

Critics' Claim: The Book of Mormon mentions flocks and herds (Enos 1:21; Mosiah 22:2; Alma 7:27; Ether 10:12). Some have claimed that these were in reference to sheep and that there were no flocks of sheep in pre-Columbian times.⁵²

Response: Archaeological evidence for exploitation of mountain sheep is now attested from central Mexico (see Item #15), however

the term *flock*s could also have been applied to other animals. The same is true for the term *herds*.

Domestication is a process of changing animals genetically (often through intentional breeding practices) to make them more beneficial to humans. *Taming* is a process in which animals simply become accustomed to humans over time, which does not require genetic alteration. Animals that are not domesticated may often be tamed or managed in ways that benefit humans.⁵³ Under these circumstances, people may cultivate or manage flocks and herds of various kinds.

There are many examples of taming in Native American culture that are believed by some scholars to have been practiced in pre-Columbian times. The evidence suggests a solid trend of confirmation that a variety of herds and flocks of pre-Columbian animals were raised and exploited. If the word translated *flocks* in the text is derived from Hebrew, then the flocks would likely have referred to quadrupeds, but it is not known if that assumption is correct. If the word translated *flocks* was based on some other word, it could possibly then include birds and fowl for which there were abundant species in pre-Columbian times.

17. Pre-Columbian Elephants

Status: Confirmed (1845–1965)

Critics' Claim: The Jaredites are reported to have had elephants (Ether 9:19). Some have claimed that there were no elephants in the Americas in pre-Columbian times. "The elephant is not a native of America and never was its inhabitant." Another critic wrote, "Scientific men are unanimously agreed that elephants never existed on this continent."

Response: By the latter half of the nineteenth century, readers of the Book of Mormon could point to discoveries of fossil evidence of pre-Columbian elephants, mammoths (figure 7), mastodons, and related species showing that, though now extinct, such creatures once inhabited the Americas in an earlier age.⁵⁷

18. Pre-Columbian Elephants (Contemporary with Man)

Status: Confirmed (1845–1965)

Critics' Claim: When it became clear that some elephants and elephant-like species did, indeed, once inhabit the Americas, critics of the

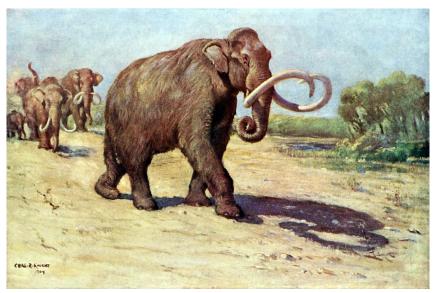


Figure 7. 1909 restoration of a hybrid between a Columbian and woolly mammoth. (Charles R. Knight, *Wikipedia*, s.v. "Columbian mammoth," en.wikipedia.org/wiki/Columbian_mammoth#/media/File:Columbian_mammoth.jpg.)

Book of Mormon then claimed that fossil evidence for such creatures became extinct long before the advent of man: "There is no authentic record of . . . elephants having survived in America until the first appearance of man on this continent. So far as fossil records go, the last of these animals disappeared from this continent at least twenty thousand years ago." 58

Response: Traditions of native peoples of North America (including Mexico), which seem to describe the elephant or related species, suggest that humans and elephants were once contemporaries in ancient America.⁵⁹ Moreover, mammoth and mastodon remains (figure 8) have been found at many locations, including in Mexico, in connection with human artifacts, demonstrating that some of these species were indeed contemporary with man.⁶⁰ For instance, remains of an American mastodon were found on the Olympic Peninsula in Washington with a projectile point embedded in one of the creature's ribs. It dates to around 10,000 BC.⁶¹

19. Pre-Columbian Elephants (in Book of Mormon Times)

Status: Partially Confirmed (1966–2024)

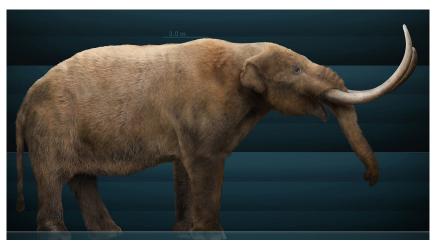


Figure 8. Reconstruction of *Mammut americanum* based on bony structure and paleontological texts. (*Wikimedia Commons*, s.v. "Mammut americanum Sergiodlarosa," commons.wikimedia.org/wiki/File:Mammut_americanum _Sergiodlarosa.jpg.)

Critics' Claim: Some critics have more specifically claimed that there were no elephants during Book of Mormon times.⁶²

Response: Growing evidence suggests that pre-Columbian species of mammoth, mastodon, and gomphothere (such as *Cuiveronius*) survived in various parts of the Americas past the end of the Pleistocene into the Holocene period. The Wooly Mammoth, once thought to have been extinct by the end of the Ice Age, survived in the Arctic, including parts of Alaska and Canada, thousands of years longer than had been previously accepted.⁶³

A team of researchers working on Wrangel Island in the Siberian arctic announced in 1993:

hardly anyone has doubted that mammoths had become extinct everywhere by around 9,500 years before present (BP). We report here new discoveries on Wrangle island in the Arctic Ocean that force this view to be revised. Along with normal-sized mammoth fossils dating to the end of the Pleistocene, numerous teeth of dwarf mammoth dated 7,000–4,000 yr BP [circa 5000–2000 BC] have been found there.⁶⁴

Additional remains of this species found on Pribilof Island, Alaska, have also yielded a date of 5,700 BP (3700 BC).⁶⁵ Mammoth and

horse DNA from the mainland interior of Alaska have been dated to 7,600 years BP (5600 BC), 66 and as late as 5,700 BP (3700 BC) in the Yukon of northwestern Canada. 67

It was long thought that mammoths had become extinct by the Pleistocene-Holocene transition around 12,000–10,000 years before present (yr BP). However, recent radiocarbon data indicate a prolonged survival in some areas, including a few islands where mammoths persisted into the Holocene. ... It is likely that the final extinction of mammoths happened later than the most recently dated mammoth specimen. 68

Evidence also suggests that some of the larger Columbian Mammoth may have survived past the Pleistocene as well. A collagen sample from a mammoth bone found in Sandy, Utah, yielded a date of 5,985 BP (3985 BC). ⁶⁹ Mastodon remains found in Mexico were dated to 7150 BC, ⁷⁰ and other fossils recovered from Huntington, Utah, were dated to 5080 and 5590 BC. ⁷¹

Cuvieronius, another related elephant-like species that once lived in parts of North and South America (figure 9), is known to have survived into the Late Pleistocene period in parts of Mexico and Central America, although the details of its extinction there are unclear. According to one group of researchers, during the Late Pleistocene in Mexico, Cuvieronius, mammoth, and mastodon may have been contemporaneous with each other. At some Mexican sites Cuvieronius and mammoth have been found together. A review of all

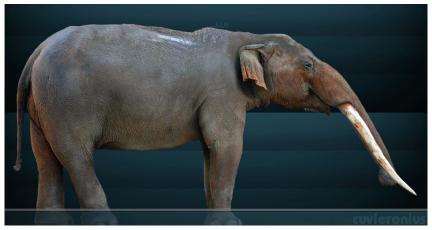


Figure 9. Life restoration of *Cuvieronius*. (Sergio De La Rosa, *Wikimedia Commons*, s.v. "Cuvieronius," commons.wikimedia.org/wiki/File:Cuvieronius.jpg.)

of the specimens held in museums is warranted to allow a complete understanding of the Mesoamerican proboscideans. Stratigraphic and radiometric-controlled excavations are required to enhance the proboscidean records for Mesoamerica as well." This species also survived past the Pleistocene and into the Holocene period in Guatemala. Remains from La Estanzuela have been dated to around 7500 BC. Researchers concluded, "These extremely young ages from the Montagua river in south-central Guatemala suggest that a local population of *Cuvieronius* may have survived into the Early Holocene."

The area, located in the Rio Montagua valley at only 200 m altitude, today presents a tropical climate. *Cuvieronius* is known to have adapted to temperate and tropical temperatures and high humidity; a survival of these adaptive mixfeeders into the Early Holocene therefore appears plausible. We are aware, however, that all fossils reported here were dated based on apatite and not collagen due to preservation issues. Biopatite is known to have a greater exchange with the environment, but it is an accepted technique and in this case the only material available to be dated.⁷⁶

20. Pre-Columbian Swine

Status: Confirmed Peccary Loan Shift (1845–1965)

Critics' Claim: The Jaredites are said to have possessed swine (Ether 9:18). Later, Mormon uses the term sow (an adult female swine) negatively in a proverbial sense (3 Nephi 7:8, 14:6). Some critics have claimed that references to swine in the Book of Mormon are anachronistic.⁷⁷

Response: Although there is at present no archaeological evidence for swine in pre-Columbian times, a New World species known as peccaries have often been considered swine. Peccaries, shown in figure 10, are not true pigs in terms of modern scientific classification, but they are part of a closely related family and resemble them greatly in both appearance and behavior. The Spanish conquistadors, explorers, and historians considered them pigs. Lyle Sowls observes,

When one travels within range of the peccaries, one hears references to "wild pigs" or "wild hogs." In Spanish-speaking countries these are "los puercos," "los cerdos," or "los cochinos." while in Portuguese-speaking countries the country



Figure 10. Collarared peccaries. (Brian Gratwicke, *Wikimedia Commons*, s.v. "Collared Peccaries," commons.wikimedia.org/wiki/File:Collared_Peccaries.jpg.)

people talk of "porcos." German settlers in South America refer to "the schwein." All of these names have been given to peccaries by people who first knew domestic hogs and equated them with peccaries in the New World.⁷⁸

The collared peccary is known to live in herds of up to 20–30 animals. It has "characteristically hog-like jowls, protruding snout, thick neck, and delicate, skinny legs. Gray to black hair covers its heavy-set body, with longer, stiffer hairs cresting the spine. A collar of pale hair rings the neck. Like pigs, it grunts, or when frightened makes a doggish bark . . . They roll in mud or dust to cool and clean off."⁷⁹

Despite their gentle appearance, wild peccaries can be fierce when they feel threatened or cornered. One observer in northern Mexico observed.

Many dogs are killed by peccaries, being torn open or gashed by their long, sharp-edged canine teeth. When about to attack, the peccary lowers its head, champs its teeth, and advances sideways with its mouth open and under jaw turned to one side, ready for an upward lunge to rip up its enemy.⁸⁰

The white-lipped peccary behaves much like the collared peccary,

but favors swampy regions with thick vegetation. "This animal is more gregarious than the collared peccary, and hundreds of individuals may travel or wallow together; when this occurs, the low rumbling noise made can be heard for almost a kilometer."81

Peccaries, as an important source of meat in ancient Mesoamerica, were likely hunted and eaten from at least Olmec times (1200–400 BC). They were also valued for their hides. Some scholars believe that peccaries may have sometimes been tamed and husbanded for use. According to Sowls, "the collared peccary tames quickly if removed from the mother and handled at an early age. This readiness to taming has been described by many writers." Dillon, based on ethnographic evidence, concluded that the taming of peccaries was likely a pre-Columbian practice and that these and other animals may have been kept in stone enclosures, which have been identified at some Maya sites. Kitty Emery argues that both white-tailed deer and peccaries were husbanded by the Maya for food and other uses and finds support for this in analysis from soil samples.

Given their resemblance to wild pigs in both its appearance and behavior, as well as their usefulness as a resource for food and other commodities, it requires no stretch of credulity to see peccaries as an appropriate fit for the swine mentioned in the Book of Mormon.⁸⁵

21. Honeybees

Status: Confirmed (1845–1965)

Critics' Claim: The Jaredites are said to have kept bees during their travels in the wilderness of the Old World (Ether 2:3). Some have claimed that the honeybee was unknown in the Americas during pre-Columbian times.⁸⁶

Response: Honeybees are not mentioned among the animals which the Jaredites brought across the sea from the Old World to the land of promise (Ether 6:4). Be that as it may, honeybees of a stingless variety were well known in Mesoamerica from an early period.⁸⁷

22. Lions

Status: Confirmed Puma Loan Shift (1830–1844)

Critics' Claim: Lions are mentioned multiple times in the text (see, for example, Mosiah 20:10 and Alma 14:29). As early as 1838, critics claimed that lions never inhabited the Americas.⁸⁸

Response: There are several pre-Columbian animals that fit the textual description of lions. One obvious correlation is the mountain lion (*Felix concolor*), also known as a panther, puma, or cougar. The mountain lion is the most widely distributed species of the genus (Felis), extending from Canada south to Patagonia. Of the few animals that range literally throughout Mexico. Of the predatory cats known to Mesoamerica, such as jaguars, may also have been characterized as lions. Spanish accounts of the Conquest and early histories frequently refer to South American and Mesoamerican feline predators as "lions and tigers."

23. Wild Animals

Status: Confirmed (1830–1844)

Critics' Claim: Nephi states that there were "all manner of wild animals" in the land of promise (1 Nephi 18:25). At least one critic has claimed that references to wild animals are anachronistic.⁹³

Response: Many examples of wild animals are known.94

24. Moths

Status: Confirmed (1966–2024)

Critics' Claim: Jesus refers to the moth in his teachings at Bountiful (3 Nephi 13:19, 20; 27:32). Some critics have claimed that moths were unknown in the Americas in pre-Columbian times.⁹⁵

Response: Various species of moth are known.96

25. Dragons

Status: Confirmed (1966–2024)

Critics' Claim: The Book of Mormon refers to dragons (2 Nephi 23:22; Mosiah 20:11; Alma 43:44). Some have claimed that the term *dragon* is an entirely inappropriate term for any animal which might have existed in the Americas.⁹⁷

Response: The people of Nephi would have been familiar with the concept of *tannin* or *dragon* from their cultural heritage. "Biblical references to the dragon can be regarded as symbolic — that is, the writer using the dragon in a fictional way. These references are a kind of shorthand evocation of the evil forces of the cosmos that are in conflict

with man."98 This is the context of passages like Mosiah 20:11 and Alma 43:44, where Nephite and Lamanite forces fight fiercely under desperate conditions and are compared to dragons.

This dragon-like image would also have been understandable in ancient Mesoamerica where the cosmos was sometimes conceived of as a fierce reptilian caiman. According to Mary Miller and Karl Taube,

in both Central Mexican and Yucatec Maya thought, the earth could be viewed as a great caiman floating upon the sea. The Aztecs considered it too as a monstrous devouring being, with a huge gaping maw, talons, and gnashing mouths placed on joints of the limbs.⁹⁹

Another pair of scholars explains, "Among the Olmec, Earth was pictured as a great dragon floating on the sea, whose body sustained and nourished a vast array of plants." Caimans, a species of alligator (figure 11), are described in one Spanish source as

very ferocious, and greatly feared by the people.... Some of the caimans are from twenty to thirty feet and upwards in length, with large bodies and big feet, and covered with scales through which a musket ball cannot pierce. Their



Figure 11. American crocodile, La Manzanilla, Jalisco, Mexico. (*Wikimedia Commons*, s.v. "Crocodylus acutus mexico," commons.wikimedia.org/wiki /File:Crocodylus_acutus_mexico_08.jpg.)

tails are very powerful and dangerous; and their mouths are large, with three rows of formidable teeth.¹⁰¹

The nineteenth-century traveler and explorer John Lloyd Stephens was amazed at these creatures when he encountered them and described them as "hideous monsters." ¹⁰² Nicholas Helmuth, who discussed the role that these creatures played in Mesoamerican mythology and art, observes that "actually, 'dragon' is a term that is not always inappropriate" in describing such creatures. ¹⁰³

26. Chickens

Status: Confirmed (1966–2024)

Critics' Claim: Jesus refers to chickens in his teachings to the Nephites (3 Nephi 10:5–6). Some have claimed that references to chickens are out of place in pre-Columbian times.¹⁰⁴

Response: Chickens were known to pre-Columbian peoples and were present in the Americas during Book of Mormon times.¹⁰⁵ The term *chicken*, however, can also simply refer to "the young of the domestic fowl" and can be "extended to the young of any bird."¹⁰⁶ When the Europeans arrived in the New World, they categorized turkeys as chickens.¹⁰⁷ Turkeys were domesticated from early pre-Columbian times.¹⁰⁸ Some fowl were raised for food, while others were kept for their feathers.

According to one conquistador,

They have many large fowl in the manner of peacocks, which are very tasty; also, four or five species of quail, some of which are like partridges. They have many geese and ducks of all kinds, domesticated as well as wild, from whose feathers they make their battle and ceremonial dress. These feathers are used for many things, because they are of diverse colors, and every year they pluck them from these fowl.¹⁰⁹

Thus, the metaphor used by the resurrected Jesus would have been easily understood by his audience.

27. Dogs

Status: Confirmed (1966–2024)

Critics' Claim: Several passages in the Book of Mormon make

reference to dogs that could feed on remains of the dead (Mosiah 12:2; Alma 16:10; Helaman 7:19) and prey on flocks (Alma 5:59-60). They are also mentioned negatively in proverbial passages (3 Nephi 7:8, 14:6). It has been claimed that dogs were unknown in ancient America. 110

Response: Several species of dogs were known in pre-Columbian times. The covote and the wolf were known in ancient Mexico. They were significant predators that often feed on carrion.¹¹¹ Moreover, "During the Preclassic, the Maya relied extensively on the domestic dog (Canis lupus familiaris), which they used for both dietary and ritual purposes."112 As reported by one group of researchers,

Remains of the domestic dog (Canis lupus familiaris) can be found at virtually every site in pre-Columbian Mesoamerica, from the burial mounds of ancient nobles, to the ritual caches of ceremonial temples, to the kitchen middens of low-status households. Their images appear in ancient codices, on elaborately decorated ceramic pottery and murals, and in the chronicles of the Spanish conquerors. 113

28. Snake Behavior

Status: Confirmed (1845–1965)

Critics' Claim: In the book of Ether, it is mentioned that serpents caused serious problems during a famine and prevented the Jaredites at that time from freely moving into the land southward (Ether 9:30-33). Some critics have dismissed the account as ridiculous. 114

Response: Events analogous to those in the book of Ether—involving snake infestations that caused serious problems for people and soldiers — have been described by ancient historians. The Greek historian, Herodotus, described a people known as the Neuri:

A generation before the campaign of Darius they were forced to guit their country by snakes, which appeared all over the place in great numbers, while still more invaded them from the uninhabited region to the north, until life became so unendurable that there was nothing for it but to move out and take up their quarters with the Budini. 115

The Roman historian, Plutarch, stated that in one of Pompey's military campaigns in the East, the general wanted to invade the region of Hvrcania near the Caspian Sea. Yet, "he was compelled to go back again for the infinite number of deadly venomous serpents which he met with, being come within three days journey of it." ¹¹⁶ Snakes have caused similar disruptions to human activities in modern times. ¹¹⁷

Summary of Results

As shown in figure 12, between 1830–1844, twelve anachronistic items related to animals in the Book of Mormon had been mentioned by writers. By 1844, two of these had been confirmed and ten were unconfirmed. During the next 120 years, 1845–1965, the number of animal-related items rose to twenty-three. By 1965, sixteen of these items had been confirmed (figure 13). During the next fifty-nine years, 1966–2024, the total number of items had risen to twenty-eight, but twenty-three have now been confirmed (eight confirmed LS), and four of these have been partially confirmed, while one remains unconfirmed (figure 14).



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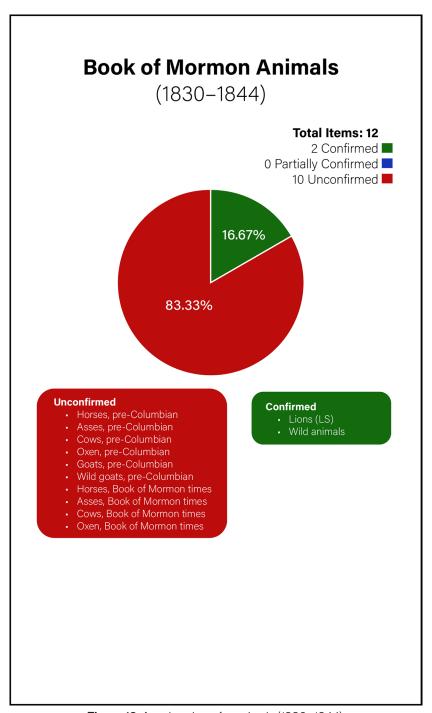


Figure 12. Anachronisms for animals (1830–1844).

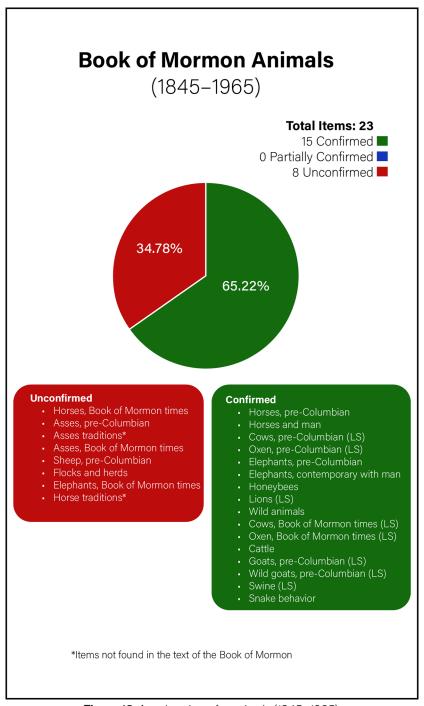


Figure 13. Anachronisms for animals (1845–1965).

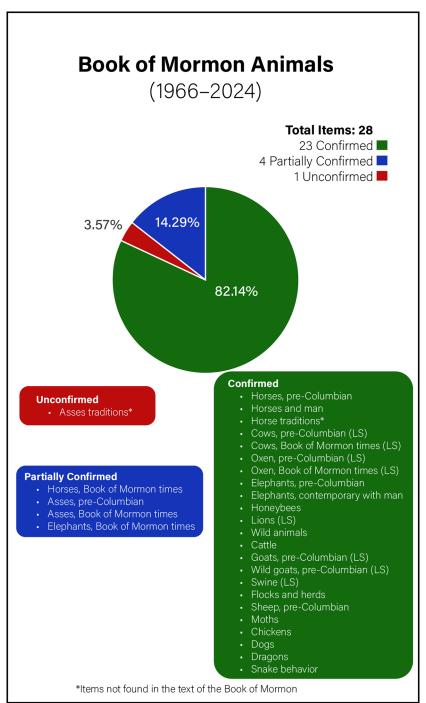


Figure 14. Anachronisms for animals (1966-2024).

Notes

- H. Stevenson, A Lecture on Mormonism Delivered at the Wesleyan Methodist Chapel, Alston, December 7th, 1838 (Newcastle, UK: J. Blackwell, 1839), 9–10.
- For a general discussion of the challenges relating to the study of animals in the Book of Mormon, see Wade E. Miller and Matthew Roper, "Animals in the Book of Mormon: Challenges and Perspectives," BYU Studies Quarterly 56, no. 4 (2017): 133–75, scholarsarchive.byu.edu/byusq/vol56/iss4/7/.
- 3. Loan-shift may be less of a translation issue and more of a cultural one since the name of the unfamiliar species that is an example of loan-shift may have been adopted within a culture long before a record of that people was rendered into English by a translator.
- SeeStevenson, Lectureon Mormonism, 9–10; John Mason, Latter-day Saints: The Dupes of a Foolish and Wicked Imposture (Cape Town, ZA: Saul Solomon, 1853), 18; see also John Hyde Jr., Mormonism: Its Leaders and Designs (New York: W. P. Fetridge, 1857), 224–27; J. H. Beadle, Life in Utah, or, the Mysteries and Crimes of Mormonism (Philadelphia: National Publishing, 1870), 299; T. B. H. Stenhouse, The Rocky Mountain Saints (New York: D. Appleton, 1873), 532–33; M. T. Lamb, The Golden Bible, or, The Book of Mormon: Is It From God? (New York: Ward & Drummond, 1887), 306–8; Thomas Gregg, The Prophet of Palmyra (New York: John B. Alden, 1890), 93; M. L. Oswalt, Pen Pictures of Mormonism (Philadelphia: American Baptist Publication Society, 1899), 35; Enos T. Hall, The Mormon Bible (Columbus: Fred J. Heer, 1899), 17; Edgar E. Folk, The Mormon Monster (Chicago: Fleming H. Revell, 1900), 177; G. Townshend, Why I Am Not A Mormon (Denver: Alexander & Meyer, 1907), 14; C. Sheridan Jones, The Truth About the Mormons: Secrets of Salt Lake City (London: William Rider & Son, 1920), 5.
- 5. Adrian Lister, *Darwin's Fossils: The Collection That Shaped the Theory of Evolution* (Washington, DC: Smithsonian Books, 2018), 60–63. This discovery was not published until 1859, in Charles Darwin, *On the Origin of the Species* (London: John Murray, 1859), 318–19. In an article published in 1847, Joseph Leidy observed that "the existence of fossil remains of the horse in America has been received with a good deal of incredulity" and then noted additional fossils that had been discovered in North America. Joseph Leidy, "On the Fossil Horse of America," *Proceedings of the Academy of Natural Sciences of Philadelphia* 3, no. 11 (1847): 262. See also O. C. Marsh, "Fossil Horses in America," *American Naturalist* 8, no. 5 (1874): 288–94, jstor.org /stable/2447952.
- See Moses Thatcher, "Divine Origin of the Book of Mormon," Contributor 2, no. 11 (1881): 321–24, archive.bookofmormoncentral.org/sites/default/files/archive-files/pdf/thatcher/2023-07-19/ms_43.28_moses_thatcher_divine_origin_of_the_book_of_mormon_11_july_1881_433-435.pdf. See also Orson Pratt, "Discovery of an American Mastodon," Latter-day Saints' Millennial Star, 8 December 1866, 776–77, google.com/books/edition/The_Latter_Day_Saints_Millennial_Star/3m4tAAAAYAAJ?hl=en&gbpv=0; W. W. B., "The Horse in Ancient America," The True Latter Day Saints' Herald, 15 January 1875, 33–35; G. M. O., "The Mastodon and the Horse," Juvenile

Instructor, 1 June 1876, 128–29; R. Etzenhouser, *The Book Unsealed, Revised and Enlarged* (Independence, MO: Ensign Publishing, 1894), 10, 54–60; William Woodhead, "Myths of the New World—No. 8. Extinct Animals," *Saints Herald*, 6 June 1900, 369; Fred J. Pack, "Revelation Ante-Dating Scientific Discovery—An Instance," *Improvement Era*, February 1907, 245; John A. Widtsoe and Franklin S. Harris Jr., *Seven Claims of the Book of Mormon: A Collection of Evidences* (Independence, MO: Zion's Printing and Publishing, 1937), 74–75; E. V. Shute, "The Horse in Pre-Columbian America," *Saints' Herald*, 13 December 1941, 1583–85.

- 7. W. W. B., "Horse in Ancient America," 34-35.
- 8. Pack, "Revelation Ante-dating Scientific Discovery," 596.
- 9. Daniel M. Helmick, *Claims of the Book of Mormon Critically Examined* (Salt Lake City: printed by the author, 1906), 18.
- Samuel W. Traum, Mormonism against Itself (Cincinnati: Standard Publishing, 1910), 148.
- 11. See, for example, Michael R. Waters et al., "Late Pleistocene Horse and Camel Hunting at the Southern Margin of the Ice-Free Corridor: Reassessing the Age of Wally's Beach, Canada," Proceedings of the National Academy of Sciences 112, no. 14 (2015): 4263–67. See also Leo Deuel, Conquistadors Without Swords: Archaeologists in the Americas (New York: St. Martin's, 1967), 537–38; Mario Pichardo, "Review of Horses in Paleoindian Sites of the Americas," Anthroplogischer Anzeiger 62, no. 1 (2004): 28; Carl E. Gustafson, Delbert Gilbow, and Richard D. Daugherty, "The Manis Mastodon Site: Early Man on the Olympic Peninsula," Canadian Journal of Archaeology 3 (1979): 157; Joaquin Arroyo-Cabrales, Oscar J. Polaco, and Eileen Johnson, "A Preliminary View of the Coexistence of Mammoth and Early Peoples of Mexico," Quaternary International 142–43 (2006): 79–86; Joaquin Arroyo-Cabrales et al., "The Distribution of the Genus Mammuthus in Mexico," DEINSEA 9 (2003): 27–39.
- 12. See Hyde, Mormonism: Its Leaders and Designs, 225; Helmick, Claims of the Book of Mormon Critically Examined, 19; Traum, Mormonism against Itself, 146.
- 13. See Eugene R. Craine and Reginald C. Reindrop, trans. and eds., *The Chronicles of Michoacan* (Norman: University of Oklahoma Press, 1970), 63–64; Hugh Thomas, *Conquest: Montezuma, Cortes, and the Fall of Old Mexico* (New York: Simon & Schuster, 1993), 178; Yvette Running Horse Collin, "The Relationship between the Indigenous Peoples of the Americas and the Horse: Deconstructing a Eurocentric Myth" (PhD diss., University of Alaska, Fairbanks, 2017), 73–101; Scripture Central Staff, "Horse and Elephant," Evidence 243, 2 May 2022, scripturecentral.org/evidence/horse-and-elephant.
- 14. Charles A. Shook, Cumorah Revisited (Cincinnati: Standard Publishing, 1910), 381.
- 15. Traum, Mormonism against Itself, 151.
- 16. L.Rumble, *A Reply to the Mormon Counter-Attack* (St. Paul, MN: Fathers Rumble & Carty, 1956), 20–21.
- 17. See James Haile et al., "Ancient DNA Reveals Late Survival of Mammoth and

Horse in Interior Alaska," *Proceedings of the National Academy of Sciences* 106, no. 52 (2009): 22352–57. They observe,

the youngest dated macrofossil (usually a bone or tooth) of an extinct species is commonly taken to represent the approximate time of its disappearance. In practice, however, there is a very low probability of discovering fossil remains of the last members of any species, so ages for extinction based on dated macrofossil finds will likely be older than the true ages (raising the possibility of 'ghost ranges' of unknown direction). (p. 22352)

According to David Meltzer, "LADs [last available dates] are just a Last Date, not a Last Appearance. Given the vagaries of preservation and sampling, and the proposition that rare animals disappear from the fossil record before they go extinct (the Signor-Lipps Effect), the last mammoth dated was almost certainly not the last mammoth standing." David J. Meltzer, "Pleistocene Overkill and North American Mammalian Extinctions," *Annual Review of Anthropology* 44 (2015): 43.

- See Tyler J. Murchie et al., "Collapse of the Mammoth-Steppe in Central Yukon as Revealed by Ancient Environmental DNA," *Nature Communications* 12 (2021): 10.
- 19. See Todd A. Surovell and Spencer R. Pelton, "Spatio-Temporal Variation in the Preservation of Ancient Faunal Remains," *Biology Letters* 12, no. 2 (2015): 1–4, royalsocietypublishing.org/doi/10.1098/rsbl.2015.0823. "While bone preservation in Arctic regions is aided by cold temperatures and the presence of permafrost, considerably more bone has been lost over time in regions farther south—in fact, at a faster rate than the sediments in which they were deposited have eroded," says Surovell. "That means researchers must adjust for those differences as they estimate the numbers of these animals, many of which are now extinct, across the Americas." Todd A. Surovell, "Fossil Record Disappears at Different Rates," *Science Daily*, 10 February 2016, sciencedaily. com/releases/2016/02/160210110638.htm. This may be relevant to the issue of animals mentioned in the Book of Mormon, especially if its events took place in a much warmer southern region of the Americas (no known geography proposal currently places the text's primary events in an arctic setting).
- 20. See Pichardo, "Review of Horses in Paleoindian Sites of the Americas," 28.
- 21. "Three horse species inhabited the territory that now constitutes the states of Chiapas and Oaxaca during the Late Pleistocene: the largest is *Equus mexicanus*, the medium-sized is *E. conversidens*, and the smallest is *H. francisci*. The dating of several fossiliferous localities indicate that in Oaxaca, *E. conversidens* and *E. mexicanus* were present since at least 44,510–43,030 Cal BP, they were common between 30,123 and 19,584 Cal BP, and that *E. conversidens* persisted until 12,620–11,380 years BP. *Haringtonhippus francisci* was present in the Mixteca region of Oaxaca between 19,584 and 20,180 Cal BP. By the same token, the three identified equid species were present in Chiapas at least until 12,720 Cal BP." Eduardo Jimenez-Hidalgo et al., "Species Diversity and Paleoecology of Late Pleistocene Horses from Southern Mexico," *Frontiers in Ecology and Evolution* 7 (2019): 13.

Remains of Pleistocene horses (Equus conversidens, E. Tau) have been found in caves in northwestern Yucatan, some in apparent association with human artifacts and most of which were never dated. Anthony Andrews and Fernando Robles Castellanos state that it is possible that "the extinct horse may have survived into Holocene times"; however, there may have been mixing between the layers of some of these deposits, making their association with man uncertain. Anthony P. Andrews and Fernando Robles Castellanos, "The Paleo-American and Archaic Periods in Yucatan," in Pathways to Complexity: A View from the Maya Lowlands, ed. M. Kathryn Brown and George J. Bey III (Gainesville: University Press of Florida, 2018), 25. "Since the horse also survived into post-Pleistocene times in the Old World, the possibility of its survival into Archaic times in the American tropics may also need to be considered." Andrews and Castellanos, "Paleo-American and Archaic Periods in Yucatan," 26. John L. Sorenson, "Once More: The Horse," in Reexploring the Book of Mormon: A Decade of New Research, ed. John W. Welch (Salt Lake City: Deseret Book, 1992), 98-100; John L. Sorenson, "Out of the Dust," Journal of Book of Mormon Studies 10, no. 1 (2001): 76-77, scholarsarchive.byu.edu /jbms/vol10/iss1/16/; John L. Sorenson, Mormon's Codex: An Ancient American Book (Salt Lake City: Deseret Book; Provo, UT: Neal A. Maxwell Institute for Religious Scholarship, 2013), 315–19; Miller and Roper, "Animals in the Book of Mormon," 159-65.

- 22. Wade Miller et al., "Post-Pleistocene Horses (*Equus*) from México," *Texas Journal of Science* 74, no. 1 (2022): article 5, meridian.allenpress.com/tjs/article/74/1/Article%205/487323/POST-PLEISTOCENE-HORSES-EQUUS-FROM-MEXICO. This research was previously presented at the 2021 conference of the Geological Society of America. See Wade Miller et al., "Post-Pleistocene, Pre-Columbian Horses from a Site in San Luis Potosi, Mexico," *Geological Society of America Abstracts and Programs* 53, no. 6 (2021); see also Scripture Central Staff, "When Lehi's Party Arrived in the Land, Did They Find Horses There?," *KnoWhy* 649, 17 October 2022, scripturecentral.org /knowhy/when-lehis-party-arrived-in-the-land-did-they-find-horses-there.
- 23. See Stevenson, Lecture on Mormonism, 9–11; Mason, Latter-day Saints, 18. See also Hyde, Mormonism, 225; Beadle, Life in Utah, 299; Oswalt, Pen Pictures of Mormonism, 35; Hall, Mormon Bible, 17; Folk, Mormon Monster, 177.
- 24. Hippidion Owen, a small Pleistocene horse, was present in the Patagonia region of South America as late as 6500 BC. See Mario T. Alberdi and Jose L. Prado, "Review of the Genus Hippidion Owen, 1869 (Mammalia Perissodactyla) from the Pleistocene of South America," Zoological Journal of the Linnean Society 108 (1993): 19. Note that the apparent similarity between this species and the traditional ass is commonly recognized, as can be seen in the Wikipedia article on this topic: "It stood approximately 1.4 metres (4.6 ft) (also 13.2 hh) high at the shoulders and resembled a donkey." Wikipedia, s.v. "Hippidion," last edited 30 December 2024, en.wikipedia.org/wiki/Hippidion. In addition, medium and smaller species of horse (Equus. Conversidens, and Equus Francisci) were present in parts of Mexico during the Late Pleistocene. These could also plausibly be described as asses by foreign settlers. See Jimenez-Hidalgo et al., "Species Diversity and Paleoecology of Late Pleistocene Horses from Southern Mexico," 13–16; Maria Teresa Alberdi et al., "Study of El Cedral

- Horses and their Place in the Mexican Quaternary," *Revista Mexicana de Ciencias Geologicas* 31, no. 2 (2014): 221–37; Peter D. Heintzman et al., "A New Genus of Horse from Pleistocene North America," *eLife* 6 (28 November 2017), elifesciences.org/articles/29944.
- 25. See Hyde, Mormonism, 225; see also Helmick, Claims of the Book of Mormon Critically Examined, 19; Traum, Mormonism against Itself, 146.
- 26. See Stevenson, Lecture on Mormonism, 9–11; Stenhouse, Rocky Mountain Saints, 532–33; Folk, Mormon Monster, 177; Traum, Mormonism against Itself, 148.
- 27. Miller et al., "Post-Pleistocene, Pre-Columbian Horses."
- 28. Stevenson, *Lecture on Mormonism*, 9–11; Mason, *Latter-day Saints*, 18. See also Hyde, *Mormonism*, 225.
- 29. Eduardo Jimenez-Hidalgo et al., "First Record of *Bison antiquus* from the Late Pleistocene of Southern Mexico," *Journal of South American Earth Sciences* 42 (2013): 83–90, sciencedirect.com/science/article/abs/pii /S0895981112001046.
- 30. OscarCarranza-CastenedaandWadeE.Miller, "RediscoveredTypeSpecimens and Other Important Published Pleistocene Mammalian Fossils from Central Mexico," *Journal of Vertebrate Paleontology* 7, no. 3 (1987): 339–40; Joaquin Arroyo-Cabrales and Oscar J. Polaco, "Caves and the Pleistocene Vertebrate Paleontology of Mexico," in *Ice Age Cave Faunas of North America*, ed. Blaine W. Schubert, Jim I. Mead, and Russell William Graham (Bloomington: Indiana University Press, 2003), 287–88.
- 31. Donald D. Brand, "The Status of Ethnozoologic Studies in Mesoamerica," XXXV Congreso Internacional de Americanistas: Mexico (Mexico City: Editorial Libros de Mexico, 1962), 3:133; Doris Stone, Pre-Columbian Man Finds Central America (Cambridge, MA: Peabody Museum Press, 1972), 21–22; Alan L. Bryan, "New Light on Ancient Nicaraguan Footprints," Archaeology 26, no. 2 (1973): 147.
- 32. Stevenson, Lecture on Mormonism, 9-11; Traum, Mormonism against Itself, 147.
- 33. See Stevenson, Lecture on Mormonism, 9-11.
- 34. See The Compact Edition of the Oxford English Dictionary (Oxford: Oxford University Press, 1971), s.v. "ox." For an early account of "a kind of Ox, called the Musk Ox," see Arthur Dobbs, An Account of the Countries Adjoining to the Hudson Bay (London: J. Robinson, 1744), 18–19. For information on the shrub ox, see Carranza-Casteneda and Miller, "Rediscovered Type Specimens," 339–40.
- 35. Dobbs, *Account of the Countries*, 41. In addition to mentions of wild oxen in different contexts (pp. 20, 62–63), the text also gives a second-hand account of south-bound voyage from Peru along the coast of South America. Among other discoveries, the voyagers came into contact with Indigenous people who "said they had cows and oxen" (p. 145).
- 36. Stevenson, Lecture on Mormonism, 9-11.
- 37. See Brand, "Status of Ethnozoologic Studies in Mesoamerica," 3:133; Stone,

- Pre-Columbian Man Finds Central America, 21–22; Bryan, "New Light on Ancient Nicaraguan Footprints," 147.
- 38. Helmick, Claims of the Book of Mormon Critically Examined, 17–19; Traum, Mormonismagainst Itself, 145, 147–49; William Edward Biederwolf, Mormonism under the Searchlight (Chicago: Glad Tidings, 1915), 21.
- 39. Francis Brown, S. R. Driver, and Charles A. Briggs, eds., *A Hebrew and English Lexicon of the Old Testament* (Oxford: Clarendon Press, 1974), 96–97, 961–62.
- 40. See under the sections for goats, sheep, and swine.
- 41. Stevenson, Lecture on Mormonism, 9–11; Mason, Latter-day Saints, 18; Lamb, Golden Bible, 306–8; Hall, Mormon Bible, 17; Helmick, Claims of the Book of Mormon Critically Examined, 17–19; Traum, Mormonism against Itself, 144–52.
- 42. Miller and Roper, "Animals in the Book of Mormon," 157-58.
- 43. MatthewRoper, "Deer as 'Goat' and Pre-Columbian Domesticate," *Insights: The Newsletter of the Neal A. Maxwell Institute for Religious Scholarship* 26, no. 6 (2006): 2–3, scholarsarchive.byu.edu/insights/vol26/iss6/3/.
- 44. Helmick, Claims of the Book of Mormon Critically Examined, 17–19.
- 45. Roper, "Deer as 'Goat' and Pre-Columbian Domesticate," 2–3; Dobbs, *Account of the Countries*, 33, 144–45.
- 46. Hyde, Mormonism, 226; Lamb, Golden Bible, 306-7; Gregg, Prophet of Palmyra, 93; John Fiske, The Discovery of America, 2 vols. (Boston: Houghton Mifflin, 1892), 1:3; Townshend, Why I Am Not a Mormon, 14; Traum, Mormonism against Itself, 149; Daniel H. C. Bartlett, The Mormons or, Latter-Day Saints. Whence Came They? (London: James Nisbet, 1911), 15; Biederwolf, Mormonism under the Searchlight, 21; Alva A. Tanner, A Key to the Book of Mormon (Oakley, ID: printed by the author, 1916), 3; Frank Ballard, Why Not Mormonism? (London: Epworth, 1922), 12; George Bartholomew Arbaugh, Revelation in Mormonism: Its Character and Changing Forms (Chicago: University of Chicago Press, 1932), 55; Fawn M. Brodie, No Man Knows My History: The Life of Joseph Smith the Mormon Prophet, 2nd ed. (New York: Alfred A. Knopf, 1993), 72; Arthur Budvarson, The Book of Mormon Examined (La Mesa, CA: Utah Christian Tract Society, 1959), 36; Larry Jonas, Mormon Claims Examined (Grand Rapids, MI: Baker Book House, 1965), 14; Gordon H. Fraser, What Does the Book of Mormon Teach? (Chicago: Moody Press, 1964), 90; J. Roy H. Paterson, Meeting the Mormons: A Study of the Mormon Church in Scotland and Elsewhere (Edinburgh: Home Board of the Church of Scotland, 1965), 40.
- 47. Hall, Mormon Bible, 17.
- 48. Valerius Geist, *Mountain Sheep: A Study in Behavior and Evolution* (Chicago: University of Chicago Press, 1971), 41.
- 49. Charles A. Reed, "Wild Animals Ain't So Wild, Domesticating Them Not So Difficult," *Expedition* 28, no. 2 (1986): 12, penn.museum/sites/expedition/wild-animals-aint-so-wild-domesticating-them-not-so-difficult/.
- 50. E. Raymond Hall and Keith R. Kelson, *The Mammals of North America* (New York: Ronald Press, 1959), 1031–32.

- 51. Raul Valadez Azua and Bernardo Rodriguez Galicia, "Uso de la fauna, estudios arqueozoologicos y tendencias alimentarias en culturas prehispanicas del centro de México," *Anales de Antropologia* 48, no. 1 (2014): 150, 153.
- 52. Hyde, Mormonism, 226; Helmick, Claims of the Book of Mormon Critically Examined, 17–19.
- See Eugene Shanklin, "Sustenance and Symbolic Anthropological Studies of Domesticated Animals," *Annual Review of Anthropology* 14 (1985): 380–81. Charles Reed wrote,

In my own experience, the young of wild sheep, goats, and gazelles (as also wolves) are born docile, and remain docile if fed and treated well. I believe from accounts in the literature that this docility is a near universal trait among many if not most young mammals and birds, even if expressed to different degrees in different species. . . . Many adult wild mammals and birds can be taken into captivity or induced to remain in a given area by artificial feeding, and become tame; the flight or fight reaction is diminished by experience.

He also notes the successful domestication of musk oxen in North America. Reed, "Wild Animals Ain't So Wild," 11–12. See also Nerissa Russell, "The Wild Side of Animal Domestication," *Society and Animals* 10, no. 3 (2002): 285–302, researchgate.net/publication/233575117_The_Wild_Side_of_Animal Domestication.

54. "Although neither the peccary nor the white-tailed deer was truly domesticated, they may have been husbanded in various places. Archaeological and soil analysis suggests that animals were penned for accessibility, while dietary studies document corn-feeding in some regions." Kitty Emery, "Fauna," in Archaeology of Ancient Mexico and Central America: An Encyclopedia, ed. Susan Toby Evans and David L. Webster (New York: Routledge, 2010), 257. Throughout Mesoamerica, a number of animals—including birds (quail, doves, pigeons, turkeys), rabbits, deer, and so forth—provided an economic resource as well as food. Azua and Galicia, "Uso de la fauna," 139-66. The Jaredites, who were not under the restrictions of the law of Moses, may have exploited peccaries (see item #20). Victoria Schlesinger, Animals and Plants of the Ancient Maya: A Guide (Austin: University of Texas Press, 2001), 157-58; Brian D. Dillon, "Meatless Maya? Ethnoarchaeologicial Implications for Ancient Subsistence," Journal of New World Archaeology 7 (1988): 63; Lyle K. Sowls, The Peccaries (Tucson: University of Arizona Press, 1984); A. Starker Leopold, Wildlife of Mexico (Berkeley: University of California Press, 1959), 497. Dogs were raised in large numbers and eaten by the Aztecs, a practice that may go back to Olmec times. Richard A. Diehl, The Olmecs: America's First Civilization (London: Thames & Hudson, 2004), 78; Michael D. Coe and Rex Koontz, Mexico: From the Olmecs to the Aztecs, 7th ed. (London: Thames & Hudson, 2013), 43. Among the later Aztecs, several species of dog were domesticated for food. "Of these large herds were kept, the females for breeding, the males for eating and for sacrificial purposes." J. Eric Thompson, Mexico before Cortez (New York: Scribner, 1933), 68. The American pronghorn has been suggested by anthropologists as a candidate for semidomestication. Herds of these were present in northern and central Mexico in recent pre-Columbian

times. Eugene Hunn, "Did the Aztecs Lack Potential Domesticates?," *American Ethnologist* 9 (1982): 579, faculty.washington.edu/hunn/vitae/comment_on _Harner_AE.pdf. Evidence suggests that pre-Columbian peoples exploited herds of deer through a process of taming or animal husbandry. See Roper, "Deer as 'Goat' and Pre-Columbian Domesticate," 2–3; John L. Sorenson, *An Ancient American Setting for the Book of Mormon* (Salt Lake City: Deseret Book, 1985), 299. Archaeologists have recently argued that herds of deer at Mayapan were raised and exploited on a large scale:

The larger enclosures at Mayapan could have corralled turkeys, peccaries, dogs, or tethered deer . . . We argue that white-tailed deerraising or management was a major production industry for the site based on the high proportions of full-sized subadults—these deer provided a staple food source for the city's residents and surplus meat and bone products for exchange. Ethnohistoric evidence suggests that women were heavily involved in many aspects of animal exchange, including selling dogs in the marketplace, providing birds for tribute, and delivering peccaries and deer destined for sacrifice.

Marilyn A. Masson, Carlos Peraza Lope, "Animal Use at the Postclassic Maya Center of Mayapán," *Quaternary International* 191 (2008): 180–81, sciencedirect.com/science/article/abs/pii/S1040618208000232. Herds of bison and mountain sheep could have been another important animal resource in certain parts of Mexico. Azua and Galicia, "Uso de la Fauna," 150, 153. See also Arianne Boileau, Nicolas Delsol, and Kitty F. Emery, "Human-Animal Relations in the Maya World," in *The Maya World*, ed. Scott R. Hutson and Traci Ardren (New York: Routledge, 2020), 164–82. It is believed that the turkey was domesticated in ancient America. See Erin Kennedy Thornton, "Turkey Husbandry and Domestication: Recent Scientific Advances," *Journal of Archaeological Science: Reports* 10 (2016): 514–19, sciencedirect.com/science/article/abs/pii/S2352409X16304011.

- 55. Hyde, Mormonism, 226.
- 56. Stenhouse, Rocky Mountain Saints, 532. See also Folk, Mormon Monster, 177.
- 57. F. V. Hayden, Report of the United States Geological Survey of the Territories (Washington, DC: Government Printing Office, 1873), 231–39; Orson Pratt, "Discovery of an American Mastodon," Millennial Star, 8 December 1866, 776–77; W. W. B., "Horse in Ancient American," 33–35, cited discoveries of mastodon remains. See also G. M. O., "Mastodon and the Horse," 128–29; Moses Thatcher, "Divine Origin of the Book of Mormon," 321–24; Etzenhouser, Book Unsealed, 10, 54–60; John A. Widtsoe and Franklin S. Harris Jr. cited evidence for the mammoth and mastodon in Seven Claims of the Book of Mormon: A Collection of Evidences (Independence, MO: Zion's Printing and Publishing, 1937), 79–80.
- 58. Traum, Mormonism against Itself, 148.
- 59. See Scripture Central Staff, "Horse and Elephant"; W. D. Strong, "North American Indian Traditions Suggesting a Knowledge of the Mammoth," *American Anthropologist* 36 (1934): 81–88; John R. Swanton, *Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico*

- (Washington, DC: Government Printing Office, 1911), 355; Ludwell H. Johnson, "Men and Elephants in America," *Scientific Monthly* 75 (1952): 216. For pictographic evidence, see Beej Averitt and Paul Averitt, "Mastodon of Moab," *Desert Magazine*, August 1947, 24–27, bhroberts.org/records/0BGYbQ-P3vlSb/beej_averitt_and_paul_averitt_provides_photographic_evidence_for_new_world_mastodons_in_the_desert_magazine.
- 60. Arroyo-Cabrales et al., "Distribution of the Genus Mammuthus in Mexico," 31-32; Joaquin Arroyo-Cabrales, Oscar J. Polaco, and Felisa J. Aguilar-Arrellano, "Remains of Mammuthus Housed in the Collections of the Instituto Nacional de Antropología e Historia, Mexico," DEINSEA 9 (2003): 18-20; Joaquin Arroyo-Cabrales, Oscar Polaco, and Eileen Johnson, "A Preliminary View of the Coexistence of Mammoth and Early Peoples in Mexico," Quaternary International 142-43 (2006): 79-86; Larry D. Agenbroad, "North American Proboscideans: Mammoths: The State of Knowledge, 2003," Quaternary International 126-28 (2005): 85-86; Paul S. Martin, Twilight of the Mammoths: Ice Age Extinctions and the Rewilding of America (Berkeley: University of California Press, 2005), 150-51; Mario Pichardo, "Valsequillo Biostratigraphy IV: Proboscidean Ecospecies in Paleoindian Sites," Anthropologischer Anzieger Jahrgang 59 (2001): 41-60; Larry D. Agenbroad, "New World Mammoth Distribution," in Quaternary Extinctions: A Prehistoric Revolution, ed. Paul S. Martin and Richard G. Klein (Tucson: University of Arizona Press, 1984). 104; Richard S. MacNeish and Antoinette Nelken-Terner, "The Preceramic of Mesoamerica," Journal of Field Archaeology 10 (1983): 71–84.
- 61. Gustafson, Gilbow, and Daugherty, "Manis Mastodon Site," 157.
- 62. Traum, Mormonism against Itself, 151–52.
- 63. Sergey L. Vartanyan et al., "Collection of Radiocarbon Dates on the Mammoths (Mammuthus primigenius) and Other Genera of Wrangle Island, Northeast Siberia, Russia," Quaternary Research 70 (2008): 51-59, sciencedirect .com/science/article/abs/pii/S0033589408000422; Lyobov A. Orlova, Yaroslav V. Kuzmin, and Vyacheslav N. Dementiev, "A Review of the Evidence for Extinction Chronologies for Five Species of Upper Pleistocene Megafauna in Siberia," Radiocarbon 46, no. 1 (2004): 301-14, cambridge.org/core/journals /radiocarbon/article/review-of-the-evidence-for-extinction-chronologies -for-five-species-of-upper-pleistocene-megafauna-in-siberia/1F0E589E3 AA995161E1D7B0F707D4F49; S. L. Vartanyan, V. E. Garutt, and A. V. Sher, "Holocene Dwarf Mammoths from Wrangle Island in the Siberian Arctic," Nature 362 (1993): 337-40. Douglas W. Veltre et al., "Patterns of Faunal Extinction and Paleoclimatic Change from Mid-Holocene Mammoth and Polar Bear Remains, Pribilof Islands, Alaska," Quaternary Research 70 (2008): 40-50, sciencedirect.com/science/article/abs/pii/S0033589408000434. Other scientists using sedaDNA evidence dated wooly mammoth in the Yukon to 3700 BC. See Murchie et al., "Collapse of the Mammoth-Steppe in Central Yukon," 10; see also Haile et al., "Ancient DNA Reveals Late Survival of Mammoth and Horse," 22352-57. For an interesting discussion on the uses of DNA in dating ancient fauna, see Joshua H. Miller and Carl Simpson, "When Did Mammoths Go Extinct?," Nature 612 (2022): E1-E3, nature.com/articles /s41586-022-05416-3. For a response, see Yucheng Wang et al., "Reply to:

- When Did Mammoths Go Extinct?," *Nature* 612 (2022): E4–E6, nature.com/articles/s41586-022-05417-2.
- 64. Vartanyan, Garutt, and Sher, "Holocene Dwarf Mammoths," 337.
- 65. See Veltre et al., "Patterns of Faunal Extinction and Paleoclimatic Change," 40–50.
- 66. See Haile et al., "Ancient DNA Reveals Late Survival of Mammoth and Horse," 22352–57.
- 67. See Murchie et al., "Collapse of the Mammoth-Steppe in Central Yukon," 10. For an interesting discussion on the uses of DNA in dating ancient faunal remains, see Miller and Simpson, "When Did Mammoths Go Extinct?," E1–E3. For a response that strongly supports their later dating, see Wang et al., "Reply to: When Did Mammoths Go Extinct?," E4–E6.
- 68. Veronica Nystrom et al., "Temporal Genetic Change in the Last Remaining Population of Wooly Mammoth," *Proceedings of the Royal Society B* 277, no. 1692 (2010): 2331, 2336, royalsocietypublishing.org/doi/10.1098/rspb.2010 .0301.
- 69. Testing on collagen from the same mammoth bone yielded three dates, all of which were post-Pleistocene: 5985 BP, 7200 BP, and 8815 BP. Jim I. Mead and David J. Meltzer, "North American Late Quaternary Extinctions and the Radiocarbon Record," in *Quaternary Extinctions: A Prehistoric Revolution*, ed. Paul S. Martin and Richard G. Klein (Tucson: University of Arizona Press, 1984), 443–46; see also Miller and Roper, "Animals in the Book of Mormon," 165–67.
- See O. J. Polaco et al., "The American Mastodon Mammut Americanum in Mexico," in The World of Elephants. International Congress, ed. G. Cavarretta, P. Gioia, and M. R. Palombo (Rome: Comune di Roma Consiglio, Nazionale delle Ricerche, 2001), 240.
- 71. See Wade E. Miller, "Mammut Americanum, Utah's First Record of the American Mastodon," Journal of Paleontology 61 (1987): 168–83.
- 72. See Marisol Montellano-Ballesteros, "New Cuvieronius Finds from the Pleistocene of Central Mexico," Journal of Paleontology 76, no. 3 (2002): 578-83; Eduardo Corona-M and Maria Teresa Alberdi, "Two New Records of Gomphotheriidae (Mammalia: Proboscidea) in Southern Mexico and Some Biogeographic Implications," Journal of Paleontology 80, no. 2 (2006): 357-66; Lucia Gurrola-Riera, Ruben A. Rodriguez-de la Rosa, and Raul Rodarte-Flores, "The Genus Cuvieronius (Proboscidea, Gomphotheriidae) from the Late Pleistocene of Valparaiso, Zacatecas, Mexico," PaleoAmerica 1, no. 2 (2015): 204-6; Gregory James Smith and Larisa R. G. DeSantis, "Extinction of North American Cuvieronius (Mammalia: Proboscidea: Gomphotheriidae) Driven by Dietary Resource Competition with Sympatric Mammoth and Mastodons," Paleobiology 46, no. 1 (2020): 41-57, cambridge .org/core/journals/paleobiology/article/extinction-of-north-american -cuvieronius-mammalia-proboscidea-gomphotheriidae-driven-by-dietary -resource-competition-with-sympatric-mammoths-and-mastodons /FB719F2E6CAD22BAC697811223AF5A43.
- 73. Joaquin Arroyo-Cabrales et al., "The Proboscideans (Mammalia) from

- Mesoamerica," *Quaternary International* 169–70 (2007): 21; see Joaquin Arroyo-Cabrales et al., "A Perspective on Mammal Biodiversity and Zoogeography in the Late Pleistocene of Mexico," *Quaternary International* 212 (210): 196.
- 74. A tusk yielded a date of 9539 uncalibrated BP, and a molar yielded 9725 uncalibrated BP. S. Lorena Davila et al., "Guatemala's Late Pleistocene (Rancholabrean) Fauna: Revision and Interpretation," *Quaternary Science Reviews* 219 (2019): 280, 289.
- 75. Davila et al., "Guatemala's Late Pleistocene (Rancholabrean) Fauna," 289.
- 76. Davila et al., "Guatemala's Late Pleistocene (Rancholabrean) Fauna," 289.
- 77. Hyde, Mormonism, 226–27; Stenhouse, Rocky Mountain Saints, 532–33; Gregg, Prophet of Palmyra, 93; Hall, Mormon Bible, 17; Folk, Mormon Monster, 177; Townshend, Why I Am Not a Mormon, 14; Traum, Mormonism against Itself, 145, 149.
- 78. Lyle Sowls, The Peccaries (Tucson: University of Arizona Press, 1984), 1.
- 79. Schlesinger, Animals and Plants of the Ancient Maya, 157–58.
- 80. A. Starker Leopold, *Wildlife of Mexico: The Game Birds and Mammals* (Berkeley: University of California Press, 1959), 497.
- 81. Dillon, "Meatless Maya?," 63.
- 82. Sowls, Peccaries, 105.
- 83. Dillon, "Meatless Maya?," 64.
- 84. Emery, "Fauna," 257.
- 85. Sorenson, Ancient American Setting for the Book of Mormon, 297.
- 86. "The common hive bees were unknown in America until introduced here from Europe." W. L. Crowe, *The Mormon Waterloo* (St. Paul, NE: printed by the author, 1902), 95–96; Fraser, *What Does the Book of Mormon Teach?*, 90; Marvin Cowan, *Mormon Claims Answered* (Salt Lake City: printed by the author, 1979), 43; Thomas Key, *The Book of Mormon in the Light of Science*, 15th ed. (Marlow, OK: Utah Missions, 1997), 70.
- 87. See Herbert F. Schwarz, "Stingless Bees (Meliponidae) of the Western Hemisphere," *American Museum of Natural History Bulletin* 90 (1948): 143–60. Linguistic studies show that there was a proto-Mayan word for *bee* as early as 2200 BC. See Terrence Kaufman, "Archaeological and Linguistic Correlations in Mayaland and Associated Areas of Mesoamerica," *World Archaeology* 8, no. 1 (1976): 105; Jaroslaw Zralka et al., "The Discovery of a Beehive and the Identification of Apiaries among the Ancient Maya," *Latin American Antiquity* 29, no. 3 (2018): 514–31; Schlesinger, *Animals and Plants of the Ancient Maya*, 247–52, cambridge.org/core/journals/latin-american-antiquity/article/discovery-of-a-beehive-and-the-identification-of-apiaries-among-the-ancient-maya /ACFF24BF7599D009AC7B93000D6C7B86.
- 88. Stevenson, Lecture on Mormonism, 11; Key, Book of Mormon in the Light of Science, 79.

- 89. Leopold, Wildlife of Mexico, 464-87.
- 90. L. C. Stuart, "Fauna of Middle America," in *Natural Environment and Early Cultures*, ed. Robert C. West (Austin: University of Texas Press, 1964), 319.
- 91. Leopold, Wildlife of Mexico, 476.
- 92. See Jedidiah Morse, *The American Universal Geography* (Boston: Thomas & Andrews, 1812), 783, 799; Bernal Diaz, *The Conquest of New Spain*, trans. J. M. Cohen (London: Penguin, 1963), 78, 229, 290, 305, 327, 373, 387, 395; Diego Duran, *The History of the Indies of New Spain*, trans. Doris Heyden (Norman: University of Oklahoma Press, 1994), 207n6, 426; Diego Duran, *Book of the Gods and Rites and the Ancient Calendar*, trans. Fernando Horcasitas and Doris Heyden (Norman: University of Oklahoma Press, 1971), 116, 244, 295–96; Patricia de Fuentes, ed. and trans., *The Conquistadors: First-Person Accounts of the Conquest of Mexico* (Norman: University of Oklahoma Press, 1993), 11, 167.
- 93. "Nor are there 'all kinds of wild animals' in America." Stevenson, *Lecture on Mormonism*, 11.
- 94. See, for example, Leopold, Wildlife of Mexico, 464-87.
- 95. Key, Book of Mormon in the Light of Science, 70.
- 96. See Stuart, "Fauna of Middle America," 336; Schlesinger, *Animals and Plants of the Ancient Maya*, 243–44, 252–53.
- 97. Key, Book of Mormon in the Light of Science, 73–74.
- 98. Roy Pinney, *The Animals in the Bible* (Philadelphia: Chilton, 1964), 201. Jacob, the brother of Nephi, quotes Isaiah 51:9 from the plates of brass and makes reference to the cosmic chaos beast that Isaiah calls *tannin*, or "dragon" in the King James translation. Jacob then uses that image in his teachings about death, misery, and suffering, comparing them to "that awful monster" (2 Nephi 9:10, 19, 26).
- 99. Mary Miller and Karl Taube, An Illustrated Dictionary of the Gods and Symbols of Ancient Mexico and the Maya (London: Thames & Hudson, 1993), 83; Terry Stocker, Sarah Meltzoff, and Steve Armsey, "Crocodilians and Olmecs: Further Interpretations in Formative Period Iconography," American Antiquity 45, no. 4 (1980): 740–58.
- 100. Kay Almere Read and Jason J. Gonzalez, Mesoamerican Mythology: A Guide to the Gods, Heroes, Rituals, and Beliefs of Mexico and Central America (New York: Oxford University Press, 2000), 173; Sorenson, Ancient American Setting for the Book of Mormon, 187–88.
- 101. Don Diego Garcia de Palacio, *Letter to the King of Spain*, trans. Ephraim G. Squier (Culver City, CA: Labyrinthos, 1985), 16.
- 102. John L. Stephens, *Incidents of Travel in Central America, Chiapas, and Yucatan* (New York: Dover Publications, 1969), 2:374–75, 382–84.
- 103. Nicholas M. Hellmuth, "Crocodiles, Caimans and Alligators in Mayan Art and Mythology of Guatemala," *Revue: Guatemala's English Language Magazine*, 10 November 2011, 94.

- 104. Weldon Langfield, The Truth About Mormonism: A Former Adherent Analyzes the LDS Faith}} (Bakersfield, CA: Weldon Langfield Publications, 1991), 40; Key, Book of Mormon in the Light of Science, 74.
- 105. See Alice A. Storey et al., "Investigating the Global Dispersal of Chickens in Prehistory Using Ancient Mitochondrial DNA Signatures," PLOS ONE 7, no. 7 (2012): e39171, journals.plos.org/plosone/article?id=10.1371/journal.pone .0039171; John L. Sorenson and Carl L. Johannessen, World Trade and Biological Exchanges before 1492 (New York: iUniverse, 2009), 74-77, 442-46; Alice A. Storey et al., "Radiocarbon and DNA Evidence for a Pre-Columbian Introduction of Polynesian Chickens to Chile," PNAS 104, no. 25 (2007), 10335-39, pnas.org/doi/10.1073/pnas.0703993104; Elizabeth S. Wing, "Maya Zooarchaeology from a Zooarchaeological Perspective," in Maya Zooarchaeology: New Directions in Method and Theory, ed. Kitty F. Emery (Los Angeles: University of California, 2004), 252; Wendy G. Teeter, "Animal Utilization in a Growing City: Vertebrate Exploitation at Caracol, Belize," in Maya Zooarchaeology, 182; George F. Carter, "The Chicken in America: Spanish Introduction or Pre-Spanish?," in Across before Columbus: Evidence for Transoceanic Contact with the Americas prior to 1492, ed. Donald Y. Gilmore and Linda S. McElroy (Edgecomb, ME: New England Antiquities Research Association, 1998), 149-60; Carl L. Johannessen, "Distribution and Medicinal Use of the Black-Boned and Black-Meated Chicken in Mexico, Guatemala, and South America," National Geographic Society Research Reports 17 (1984): 493–95; Carl L. Johannessen, "Melanotic Chicken Use and Chinese Traits in Guatemala," Revista de historia de America 93 (1982): 73-89. Several scholars have identified words for chicken in several pre-Columbian languages. See Howard W. Law, "A Reconstructed Proto-Culture Derived from some Yuman Vocabularies," Anthropological Linguistics 3, no. 4 (1961): 51; Soren Wichmann, The Relationship among the Mixe-Zoquean Languages of Mexico (Salt Lake City: University of Utah Press, 1995), 76, 276.
- 106. See Oxford English Dictionary (Oxford: Oxford University Press, 2016), s.v. "chicken."
- 107. See J. Bayard Morris, trans., *Hernando Cortes Five Letters* 1519–1526 (New York: W. W. Norton, 1991), 87.
- 108. Jacques Soustelle, *The Olmecs: The Oldest Civilization in Mexico* (Garden City, NY: Doubleday, 1984), 23; Michael D. Coe, *Mexico*, 3rd ed. (London: Thames & Hudson, 1984), 47, 100, 109.
- 109. De Fuentes, Conquistadors, 172.
- 110. Key, Book of Mormon in the Light of Science, 76–77.
- 111. Leopold, *Wildlife of Mexico*, 394–405; Schlesinger, *Animals and Plants of the Ancient Maya*, 160–63.
- 112. Erin Kennedy Thornton et al., "Earliest Mexican Turkeys (*Meleagris gallopavo*) in the Maya Region: Implications for Pre-Hispanic Animal Trade and the Timing of Turkey Domestication," *PLOS ONE* 7, no. 8 (2012): e42630, journals .plos.org/plosone/article?id=10.1371/journal.pone.0042630.
- 113. Petra Cunningham-Smith et al., "Food, Friend, or Offering: Exploring the Role of

- Maya Dogs in the Zooarchaeological Record," in *Her Cup for Sweet Cacao: Food in Ancient Maya Society*, ed. Tracy Ardren (Austin: University of Texas Press, 2020), 161. See also Ashley E. Sharpe et al., "Earliest Isotopic Evidence in the Maya Region for Animal Management and Long-Distance Trade at the Site of Ceibal, Guatemala," *PNAS* 115, no. 14 (2018): 3605–10; Christine D. White et al., "Isotopic Evidence for Maya Patterns of Deer and Dog Use at Preclassic Colha," *Journal of Archaeological Science* 28, no. 1 (2001): 89–107.
- 114. See Charles A. Sundberg, *The Mysterious Book of Mormon* (Sandy, UT: printed by the author, 1917), 11; Budvarson, *Book of Mormon Examined*, 45; William McKeever, "Cowboy Snakes," *Mormonism Research Ministry* 2, no. 5 (May 1980): 2; Anonymous, "The Story Teller," *The Inner Circle* 4, no. 10 (October 1987): 8; Key, *Book of Mormon in the Light of Science*, 72–73.
- 115. Herodotus, *The Histories*, trans. Aubrey de Selincourt (London: Penguin, 1972), 4.105.
- 116. James Amyot and Thomas North, trans., *The Lives of the Noble Grecians and Romans Compared together by That Grave, Learned Philosopher and Historiographer Plutarch* (New York: Heritage, 1941), 1177. During the time of the Seljuq ruler Mesud II (1284–98), the vizier Sadruddin Halidi had serious difficulties: "In the Winter he founded Erran, a new city on the bank of the Kur river. But in that area no one could live in the summer because it was swarming with snakes." Fikret Isiltan, *Die Seltschuken-Geschichte Des-Akserayi* (Leipzig: Otto Harrasowitz, 1943), 97; translation courtesy of John Gee.
- 117. See Scripture Central Staff, "Snake Infestation," Evidence 95, 19 September 2020, scripturecentral.org/evidence/snake-infestation; John A. Tvedtnes, "Notes and Communications—Drought and Serpents," *Journal of Book of Mormon Studies* 6, no. 1 (1997): 70–72, scholarsarchive.byu.edu/cgi/view content.cgi?article=1156&context=jbms; Jerry D. Grover Jr., *Geology of the Book of Mormon* (Vineyard, UT: Grover Publications, 2014), 206–10.

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