

SECTION 7: BUFFALO EVIDENCE

Editor's Note: *This paper is the full version of the executive summary available at http://www.fairlds.org/DNA_Evidence_for_Book_of_Mormon_Geography/. This paper was last updated 18 January 2009.*

This document is a partial analysis of the scholarly merits of the evidence and research used by Rodney Meldrum¹ in his firesides and DVD presentation, *DNA Evidence for Book of Mormon Geography*.² Neither FAIR nor this document take any position on the geographic location of Book of Mormon events.³ It is important, however, that Meldrum's theories be analyzed according to the same standards by which other Book of Mormon geography theories are evaluated. To avoid confusion, this paper refers to Meldrum's geographic model as the Limited North American Model, or LNAM.⁴ This document is just one in a series of such analytical documents.

In this document we examine Meldrum's research and conclusions presented in Part 8 of the DVD, titled "Buffalo Evidence: Migratory Beasts in the Book of Mormon." Near the beginning of the presentation viewers see the following image from Dale Lott's *American Bison: A Natural History*.⁵

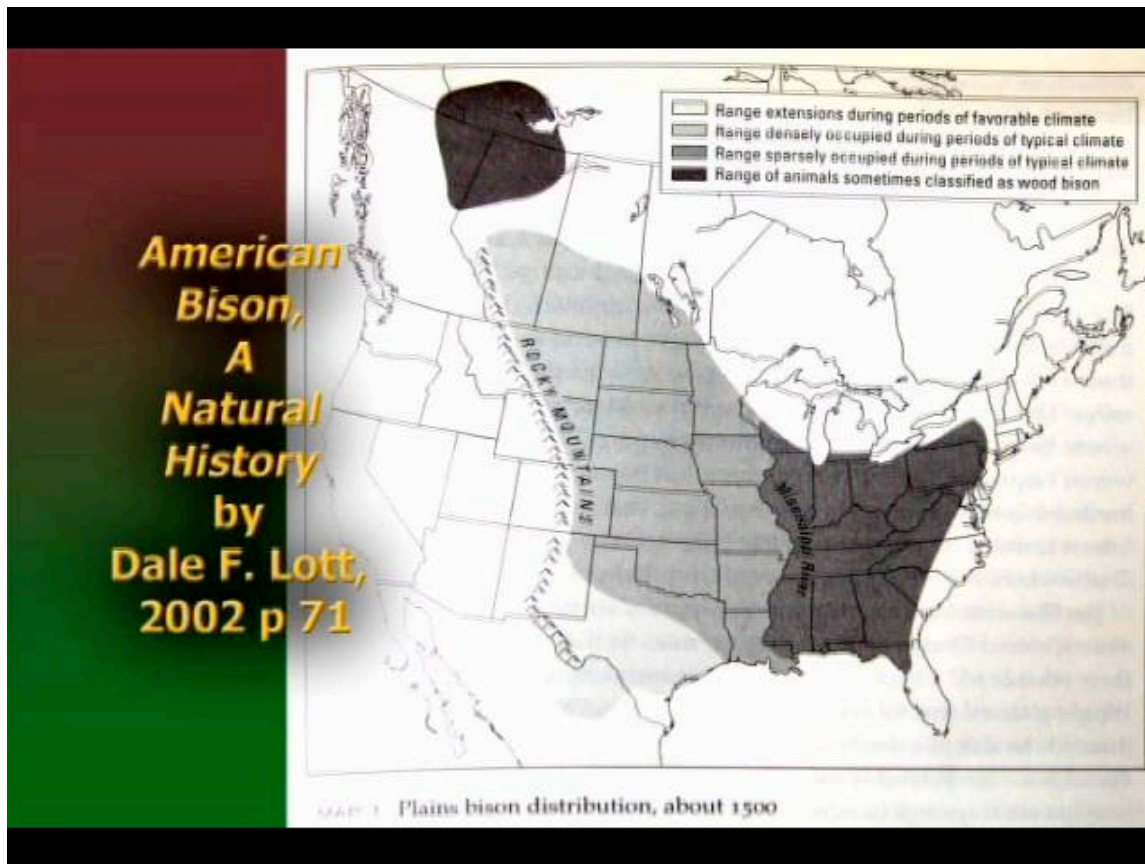
¹ This paper follows the scholarly custom of referring to an individual, at first reference, by full name and then subsequently referring to the individual by last name only. We fully recognize Rodney as a brother in the gospel, but in discussing secular issues (such as scholarly research and geographic models) it was felt that continually prefacing his name or the name of any other referenced scholar or individual with "Brother" or "Sister," while accurate, would distract from the readability of the paper.

² Rodney Meldrum, *DNA Evidence for Book of Mormon Geography: New scientific support for the truthfulness of the Book of Mormon; Correlation and Verification through DNA, Prophetic, Scriptural, Historical, Climatological, Archaeological, Social, and Cultural Evidence* (Rodney Meldrum, 2008). The DVD is in sections; citations in this paper reference the DVD's section number and title, followed by an approximate time stamp from the DVD.

³ FAIR recognizes that faithful individuals and scholars can honestly disagree on where Book of Mormon events took place; there is no revealed or officially accepted geography. FAIR provides an online reference to over 60 different geographic models at http://en.fairmormon.org/Book_of_Mormon_geography (click on Book of Mormon Geographical Models).

⁴ Meldrum's model places Book of Mormon peoples in an area roughly covering the Atlantic seaboard to the Rocky Mountains. This name was chosen as descriptive of the general model. We recognize that Meldrum may pick a different name at some point and would invite him to do so.

⁵ Dale F. Lott, *American Bison: A Natural History, Organisms and Environments* (Berkeley: University of California Press, 2002).



The presentation then interprets the map for the audience:

This area right here is the range that is densely occupied by buffalo during periods of typical climate. This area over here is range sparsely occupied during periods of typical climate. And I was looking at that, and going, “Wow, look at the differentiation between those two. What is causing such a dramatic difference between the two?”

And then I got to reading and I find out, what is that line going up here? It’s the Mississippi River. And I thought that maybe buffalo can’t swim, maybe that’s the problem. Well, it turns out that buffalo can swim. They’re actually quite good swimmers. But they won’t swim if they can’t clearly see the other side. And so when they get their heads down low, like a buffalo is, this is the Mississippi River at Nauvoo, this is a long swim. The buffalo wouldn’t cross there.

In fact, there’s a county up in Wisconsin called Buffalo County. It’s right on the Mississippi River. And it’s called that because back in the day, when there were millions of buffalo—and we’ll get to that in just a second—this is where they would cross. Way up north, up in Wisconsin, that’s where they would cross the river. They didn’t cross down below.⁶

⁶ Meldrum, *DNA Evidence*, section 8, “Buffalo Evidence,” 1:10-2:30.

The DVD tells us that the reason bison are so scarce east of the Mississippi is the difficulty they have in crossing the river. Is this true?

THE RIVER BARRIER?

Dr. Valerius Geist, a biologist at the University of Calgary and first head of that institution's Environmental Science program, noted that the limits on the bison had little to do with the river, and much to do with human hunters: "...about 10,000 years ago, human hunters confined bison to the Great Plains, keeping them away from the richer forage of the western foothills *and the eastern river systems*." When compared to bison in the richer areas, "bison on the Great Plains suffered from poor nutrition; however, plains bison that were venturesome and left the security of the big herds on the plains to go where forage was better—and people were more abundant—were soon killed off...Thus, it was fear that kept bison in the safety of open spaces" on the plains.⁷

In short, the Great Plains was a relatively inhospitable environment for humans, and so Great Plains hunters were more rare. Bison that crossed into the better territory had to compete with more humans in the more fertile land of the east. The river is merely a rough dividing line between the fertile and less-fertile territory.

DATES MATTER

The DVD presentation ignores or fails to understand the significance of the map's title: "Plains bison distribution, about 1500."⁸ The presentation assumes that the map's numbers would be valid for the Nephite/Lamanite period, up to two thousand years earlier. This assumption leads to difficulty.

By the late 1400s, Europeans had made contact with North America and "these early contacts had brought Eurasian diseases—such as tuberculosis, typhoid, diphtheria, smallpox, whooping cough, influenza, yellow and scarlet fever, and measles—to the native people. These diseases began decimating native people in North America well before various explorers in the sixteenth century [i.e., the 1500s] made incursions inland."⁹

According to the best evidence, over 95% of all American Indians died within one to two centuries of Columbus' arrival—and most of these deaths were not from war, but from disease. In "the Mississippi Valley...conquistadores contributed nothing directly to the societies' destruction; Eurasian germs, spreading in advance, did everything."¹⁰

⁷ Valerius Geist, *Buffalo Nation: History and Legend of the North American Bison* (Stillwater, Minnesota: Voyageur Press, 1996), 39–40.

⁸ Lott, *American Bison*, 70.

⁹ Geist, *Buffalo Nation*, 60.

¹⁰ Jared M. Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W.W. Norton, 1997), 211.

If human hunters were what kept bison from spreading east of the Mississippi, what would happen if human numbers in the river valley—and all over the continent—were severely reduced? The bison would spread.

This is, says Geist, exactly what happened. “The range extension of bison east of the Mississippi coincides with the first recorded major smallpox epidemics in the eastern and southern states, as well as with the extinction of native tribes.” Buffalo numbers surged everywhere—in the east and on the Great Plains.¹¹ By the time the Pilgrims landed, there were 2–4 million bison east of the Mississippi: certainly less than on the Great Plains, but not insignificant.¹²

Using a map from the 1500s—exactly when bison were undergoing an unprecedented population explosion following the decimation of native hunters—does nothing to rehabilitate, and a great deal to discredit, a theory of Book of Mormon geography that is already fatally flawed.

HOW MANY BISON?

The DVD presentation’s report of the number of bison is not accurate. It tells us that: “Now, it turns out, in that book that I just showed you, there were 60 million buffalo. This is approximately. 60 million buffalo were slaughtered on the plains. OK?”¹³

The book referred to is *American Bison: A Natural History* by Dale Lott, and the assertion about buffalo populations is incorrect. In the same book, a six-page discussion of how bison populations may be estimated immediately follows the map presented in the DVD. The chapter concludes with the author’s assessment that the peak bison population was “probably less than thirty million—perhaps, on average, three to six million less.”¹⁴ The figure of thirty million “maximum” is also visible on the facing page when one looks at the book from which the DVD’s map was taken.¹⁵

It is true that a figure of sixty million bison has been used historically, dating from an estimate made by Ernest Thompson Seton in 1929.¹⁶ Eighty years is a long time in science, and modern estimates are much lower—including those in the book the DVD claims to be citing. Other modern researchers have agreed with Geist’s figures, but they are not mentioned in the DVD either.¹⁷

¹¹ Geist, *Buffalo Nation*, 61-62.

¹² Michael Punke, *Last Stand: George Bird Grinnell, the Battle to Save the Buffalo, and the Birth of the New West*, (New York: Smithsonian Books/Collins, 2007), 33; Lott, *American Bison*, 73.

¹³ Meldrum, *DNA Evidence*, section 8, “Buffalo Evidence,” 5:10-5:25.

¹⁴ Lott, *American Bison*, 76.

¹⁵ Lott, *American Bison*, 69.

¹⁶ Charles C. Mann, *1491: New Revelations of the Americas before Columbus* (New York: Knopf, 2005), 319.

¹⁷ Delaney P. Boyd, *Conservation of North American Bison: Status and Recommendations* (Calgary, Alberta: University of Calgary, April 2003), 20.

ARE THERE BUFFALOS IN THE BOOK OF MORMON?

The DVD explains how buffalo solve a presumed problem in the Book of Mormon text:

I always wondered, how did the Lamanites live so comfortably, it says they were a lazy and idolatrous people? How did they live so comfortably off the land when the Nephites had to sit there and work all of the time? And work the land and so forth to provide their food?

Well, now the answer is really simple. They were doing the same thing as the Indians were doing when the settlers arrived on the Plains. They were following the buffalo herds.¹⁸

By now, it should be clear that the DVD's presentation of history is severely flawed. It uses the Amerindian lifestyle encountered by settlers on the plains as a good model for lazy Lamanites of two thousand years earlier—this is not only factually flawed, but ignores the Book of Mormon indication that Lamanite society was at least as advanced as the Nephite society.

Before the coming of Europeans, plains Amerindians probably had no horses.¹⁹ This required them to hunt buffalo on foot, using spears and (later) bows and arrows; or by driving the animals through specially-constructed pounds and off cliffs.²⁰ During this period, Amerindian numbers were much higher before approximately 95% died from European disease. And, bison numbers were much lower because human hunters kept them in check.

The nomadic Amerindian tribes lazily living off the abundant bison envisioned by the DVD's reconstruction of history is a myth. The nomadic lifestyle didn't exist until the Amerindians were driven to it in the eighteenth century by necessity, the availability of the horse, and the explosion in buffalo populations.

Commenting on the history of nomadic plains Amerindians, Dr. Andrew Isenberg, chair of the Department of History at Temple University, states, "When Europeans established their first colonies in North America, the societies that Euroamericans would come to know in the eighteenth and nineteenth centuries as the western plains nomads...hunted game, gathered fruits and vegetables, and in some cases planted crops, primarily on the fringes of the plains."

This is even true of the LNAM's proposed Nephites and Lamanites, those who "resided in the woodland-prairie border region of the Great Lakes and Mississippi River valley."²¹ "In

¹⁸ Meldrum, *DNA Evidence*, section 16, "Travel Indications," 9:45-10:20.

¹⁹ It should be noted that the best available archaeological evidence indicates that modern horses were introduced into the Americas by Europeans. The Book of Mormon refers to pre-Columbian horses, but the use to which those horses were put by Book of Mormon peoples is open to debate. This is an area open to further analysis and study.

²⁰ These "buffalo jumps" (as they are known today) are rich in archaeological information. A quick search for the term provides a wealth of information on how plains Amerindians trapped and killed these massive beasts.

²¹ Andrew C. Isenberg, *The Destruction of the Bison: An Environmental History, 1750-1920* (Cambridge and New York: Cambridge University Press, 2000), 34.

the woodland-prairie border zone of the upper Mississippi, the Sioux probably planted little corn and rather relied heavily on gathering and hunting a diverse variety of plants and animals...This resource strategy was typical of the woodland Indians of eastern North America.” Isenberg notes that this included gathering berries, plums, and nuts, digging roots from shallow lakebeds, harvesting wild rice, fishing, ice fishing, and hunting such game as deer, ducks and geese.²²

Many pre-European groups did hunt bison as part of their food source, but their inability to keep up with the traveling herds on foot meant that this was only a seasonal option—one source among many, and certainly not the option of choice for lazy idolaters.

Without the horse, the simultaneous bison population explosion, and the collapse of the traditional Amerindian way of life because of epidemic disease, these people were hunter-gatherers, with some agriculture thrown into the mix. The plains Amerindian lifestyle of the LNAM was not a viable option for Lamanites, or anyone else without a horse, before the 1700s. With horses, which gave “the ability to follow the herd and the vast food supply it represented, there was little incentive to farm—or even to hunt other types of game. Some tribes...abandoned farming when they came into possession of the horse.”²³

The pre-horse pre-European tribes were anything but “living so comfortably off the land,” as the DVD assumes. “So all-consuming was the search for food,” writes Isenberg, “that the three primary divisions of the Comanches were known as the Yampa Diggers, Antelope Eaters, and Buffalo Eaters.”²⁴ Tribal legends repeatedly explained splits between tribes because of tribe members quarreling over the division of a single game animal, “a further indication of the centrality of food procurement and apportionment among the pre-[horse] Indians.”²⁵

Nor was bison hunting on foot easy work for the lazy. It required stealth and patience if one were to sneak up to a herd to kill individuals. The use of buffalo jumps to kill large numbers of animals at once required extensive planning and teamwork. Funneling the herd toward a jump required the construction of “stone cairns topped by branches, behind which hunters hid” to scare the herd at the appropriate time.²⁶ One witness described in 1808 how involved was the construction of the “funnel” to drive the herd to the killing ground:

The pounds [to trap bison] are of different dimensions...[T]he common size is from sixty to one hundred paces or yards in circumference, and about five feet in height. Trees are cut down, laid upon one another, and interwoven with branches and green twigs...[O]n each side of [the] entrance commences a thick range of fascines, the two ranges spreading asunder as they extend, to the distance of 100 yards, beyond which...each range has been extended about 300 yards from the pound. The labor is then diminished by only placing

²² Isenberg, *Destruction of the Bison*, 35-36.

²³ Punke, *Last Stand*, 36.

²⁴ Isenberg, *Destruction of the Bison*, 34, Amerindian names silently omitted.

²⁵ Isenberg, *Destruction of the Bison*, 36.

²⁶ Geist, *Buffalo Nation*, 42.

at intervals three or four cross-sticks, in imitation of a dog or other animal...these extend on the plain for about two miles, and double rows of them are planted in several other directions to a still greater distance. Young men are usually sent out to collect and bring in the buffalo—a tedious task which requires great patience...²⁷

As ultimately effective as this was, it was hard work. (The entire herd was killed even though all the animals could not be used, since the tribes were rightly worried that any animals who escaped would be less easy to fool next time.) The mass buffalo hunt took a heavy toll in time and effort. It was not for the lazy, only for the hungry. And, such hunts were only one part of the tribes' constant search for food.

Dr. Isenberg concludes:

Thus, before the arrival of the horse, the immense bison herds of the plains served many societies as a partial source of subsistence. In addition to the groups that migrated to the grasslands from nearby regions, the [farmers] of the Missouri River valley supplemented their corn production with bison hunting...At the beginning of the eighteenth century [1700], the villagers were more numerous and more powerful than the nomads.²⁸

A hunter-gatherer lifestyle is precarious: the classic “feast or famine” scenario. It is difficult for this lifestyle to establish a consistent food surplus—because the society is mobile, they must carry everything with them and have no annual harvest of excess grain to store for the lean times. Hunter-gatherers cannot live as closely together as farmers can—they require much more land to support their population (10 to 100 times more).

When conflict comes, agriculture-based societies almost always overwhelm hunter-gatherers because of higher population densities, greater specialization of labor (allowing for professional militaries and the bureaucracy needed to supply them), better nutrition, and higher birth rates (usually double that of hunter-gatherers).²⁹

All of these facts make it extremely unlikely that most Lamanites were hunter-gatherers. The Lamanites were capable of fielding large armies far from their homeland that dwarfed the Nephites' forces and kept them in the field sometimes for years. They were clearly under strong central leadership (the kings), while hunter-gatherers are much more loosely allied—“as the groups that would become [horse-using] nomads were drawn to the plains, toward the bison...their social structures became increasingly decentralized.”³⁰ Hunter-gatherers might raid farms for food or plunder, but would be unlikely to threaten them with destruction, as the Lamanites did the Nephites.

²⁷ Alexander Henry the Younger, *Journals* (1808); cited in Harry Hamilton Johnson, *Pioneers in Canada* (BiblioLife, 2008), 178.

²⁸ Isenberg, *Destruction of the Bison*, 38.

²⁹ For an excellent discussion, see Diamond, *Guns, Germs, and Steel*, 85-92.

³⁰ Isenberg, *Destruction of the Bison*, 43.

The presence of the vast bison herds and the horses to exploit them was a “perfect storm” that did not occur earlier in history, and would not have been viable in the long term.³¹

LAZY LAMANITES?

Why, then, were the Lamanites repeatedly described as “lazy” or “idle” by the Nephites? The answer is to be found in work already done by LDS scholars. It is important to realize that although the Nephite authors consistently describe the Lamanites in negative terms like “lazy,” when we actually get a glimpse of Lamanite society away from the borderlands (as with the missionary journeys of the sons of Mosiah and Zeniff’s expedition back to Nephi), Lamanite society seems to be as complex and sophisticated as that of the Nephites. Lamanites farmed, fielded armies, had kings, used writing, engaged in trade, etc.—all traits of a settled, agriculture-based society.

John Sorenson notes that the initial Book of Mormon landing site may have been less than ideally suited for agriculture, and so the Nephites’ memories of the Lamanites as lazy, naked, bloodthirsty nomads may have been accurate. However, when the Nephites fled to the land of Nephi, they certainly farmed. When that area was eventually taken over by the Lamanites, Zeniff and the sons of Mosiah provide testimony of settled cities and agriculture.³² Brant Gardner argues that the stereotyped catalogue of the Lamanites’ bad traits reflects an ancient setting:

Each ancient culture usually saw itself as the center of the universe—the norm, the standard, the “good.”...This is origin of the term “barbarian,” which the Greeks frequently used as a generic term for anyone who was not Greek and who was, therefore, inferior...While there is at least a possibility that the description was true when Nephi began this traditional stereotyping of the Lamanites, it was untrue by the time of Enos if not earlier. It is conclusively untrue in Alma where the story of the Anti-Nephi-Lehies discusses the many cities of the Lamanites (Alma 23:9–15).³³

John Tvedtnes noted how common such views were in the ancient world:

We should not be surprised to find attitudes of superiority and the attribution of negative characteristics to foreign people and cultures among the Nephites...For example, in the Florentine Codex, which is indisputably pre-Columbian, descriptions of the Otomi people of Mexico reflect Aztec ethnocentrism...

According to this text, the Aztecs commonly described the Otomi as “untrained, stupid,” and “very covetous, that is, very desirous, greedy. That which was good, they bought all; they longed for all of it even though it was not really necessary.” They were “very gaudy dressers—vain people.” They

³¹ Geist, *Buffalo Nation*, 70-75.

³² John L. Sorenson, *An Ancient American Setting for the Book of Mormon* (Salt Lake City and Provo, Utah: Deseret Book Company & FARMS, 1985), 221-231.

³³ Gardner, *Second Witness*, 2:114-116.

were “lazy, shiftless, although wiry, strong; as is said, hardened; laborers. Although great workers of the land, they did not apply themselves to gaining the necessities of life. When they had worked the land they only wandered. Behold what they did: they went catching (game).” These descriptions sound reminiscent of Nephite descriptions of the Lamanites.

In the ancient Near East, the Amorite was described as “a tent dweller,” the “one who does not know city(-life),” “the one who in his lifetime does not have a house,” or “the awkward man living in the mountains.” He was “the one who does not know (i.e. cultivate) grain,” “the one who digs up mushrooms at the foot of the mountain,” or he “who eats uncooked meat” and “who on the day of his death will not be buried.” They were “a ravaging people, with canine instincts, like wolves.” Referencing such descriptions, William F. Albright observed, “This is naturally a somewhat extreme description, but it vividly illustrates the attitude of the sedentary folk of Babylonia at an undetermined period in the third millennium. It may be added that the Arab peasants of Syria still call the nomads *el-wuhûsh* ‘the wild beasts.’”³⁴

A few Lamanites might have been nomadic, but they were not the chief threat to the Nephites. Likewise, Lamanites dependant on agriculture might have hunted to supplement their diet, for traditional/religious reasons, or because they were elites. (In Europe, for example, many forms of hunting were restricted to nobility.) The irritation of raiding parties along the borders would have further reinforced the Nephite view of their enemies as those who were less “civilized” and who resorted to plunder—but this, and all of the other accoutrements of civilization that have been noted, would have made it hard to have time for running after galloping herds of migrating buffalo as the LNAM proposes.

BONES, BONES, BONES

In another proposed contribution to Book of Mormon studies, the DVD points out that we no longer see the bones from the “60 [actually 30] million buffalo slaughtered on the plains... See, if they’re not buried and they’re just left on the plains...they just disintegrate. And they’re gone. No record.”³⁵

While animal bone *can* be broken down over time, the DVD is wrong again. The slaughter of the bison produced raw materials that were not wasted. “Following in the footsteps of the buffalo hunters,” wrote Geist, “came the bonepickers.”

Descriptions abound of the great plains reeking with the stench of putrefying buffalo carcasses that later decayed into prairies of bones. Several entrepreneurs saw these bones as dollar signs...

³⁴ John A. Tvedtnes, “The Charge of ‘Racism’ in the Book of Mormon,” *FARMS Review* 15/2 (2003): 183–198, references omitted.

³⁵ Meldrum, *DNA Evidence*, section 8, “Buffalo Evidence,” 6:05-6:30.

The bones, hooves, and horns were shipped back east, ground, and used in refining sugar and for fertilizer...

“One bone-buying firm estimated that over the seven years, 1884–1891 they bought the bones of approximately five million, nine hundred and fifty thousand buffalo skeletons, and there were many firms in the business.” (Mari Sandoz, *The Buffalo Hunters*).³⁶

The bones aren’t on the plains for the simple reason that they were *worth money*—they were gathered up, packed into boxcars, and shipped to the east for use in industrial processes and agriculture on a vast scale.

Further, more ancient bones—such as those found in the bottoms of buffalo jumps—are routine excavated by archaeologists. One such buffalo jump (Head-Smashed-In Buffalo Jump, near Alberta, Canada) displays the characteristic “loess” at the base of the cliff kill site going back 5,700 years:

These deposits consist of accumulated layers of dirt, stone rubble and bones....Over thousands of years of use the “loess” has accumulated to a depth of over eleven metres. The age of these layers or “Stratified material” and the different artifacts found in them can be determined by using radiocarbon dating methods to date the bone in each layer....[The processing site also contains] broken bones [which] were...boiled to render grease.³⁷

Thus, not only can such bone survive, but routinely does so from ages which pre-date the Nephite civilization.

MIGRATING ANIMALS

The DVD gives us a glimpse into a flawed research methodology in the bison section, and it shows how one can use facts to get erroneous results.

In Alma 22:31 it says, “Thus the land northward was called Desolation, the land in the south was called Bountiful. It being the wilderness that was filled with all manner of wild beasts of every kind, a part of which had come from that land northward looking for food.”

And then here in Ether [9:34] it says, “It came to pass that the people did follow the course of the beasts and did devour the carcasses of them which fell by the way.” What are these beasts doing?

(Audience member answers: Migrating.)

They’re migrating. That’s right. Now if these are beasts that are migrating then the question became, are there any beasts that migrate in Central

³⁶ Geist, *Buffalo Nation*, 110.

³⁷ “Archaeological Facts: The Kill Site,” from Head-Smashed-In Buffalo Jump, near Fort Macleod, Alberta, <http://www.head-smashed-in.com/archaeol2.html> (last accessed 28 December 2008).

America? Because the Book of Mormon is saying there are these beasts and they're migrating from the land northward looking for food.³⁸

The first job of any researcher or scientist is to define the problem clearly. Meldrum reads scriptures about animals changing locations to look for food. He concludes, then, that they are migrating. But, what if he has misunderstood the situation? Let's look at the Ether scripture in context.

And it came to pass that there began to be a great dearth upon the land, and the inhabitants began to be destroyed exceedingly fast because of the dearth, for there was no rain upon the face of the earth. And there came forth poisonous serpents also upon the face of the land, and did poison many people. And it came to pass that their flocks began to flee before the poisonous serpents, towards the land southward, which was called by the Nephites Zarahemla. (Ether 9:30–31)

So, this is not a regular, seasonal migration. The animals' environment has been suddenly altered. There is "a great dearth upon the land"—a drought. This presents the animals with three problems:

1. they need water to drink, which is in short supply
2. a drought will cause plants to die, which leads to a food shortage
3. poisonous snakes become plentiful

If you lose the plants, you eventually lose the whole ecosystem. The animals have two choices: stay and die, or move elsewhere looking for food.

Even the snakes are likely related to the drought, though they may also be an instrument of divine punishment. Snakes are exclusively carnivores, feeding upon herbivores (e.g., rodents). In drought conditions, herbivores tend to move closer to human settlements, because (a) humans need water too and often have better sources or stores; and (b) humans often store food, grain, etc. sought by the starving herbivores. Thus, plant-eaters would risk closer contact with humans for their food and predators follow the plant-eaters. All animals would risk human settlements looking for water if they were thirsty enough.³⁹ The only other option is death.

The land northward, then, was subject at times to drought. A biologist would say that animals that would normally not cross the narrow neck into the land southward would, if under extreme environmental stress, extend their range. Such behavior is unusual, and so it is not surprising that the Book of Mormon text mentions it (e.g., Alma 22:31) since the animals were found outside of their normal habitat.

An additional problem with the DVD's analysis is that the animals that the Book of Mormon describes as "fleeing" are "flocks"—some type of domestic animal kept by humans.

³⁸ Meldrum, *DNA Evidence*, section 8, "Buffalo Evidence," 2:31-3:30.

³⁹ For a discussion see John A. Tvedtnes, "Drought and Serpents," *Journal of Book of Mormon Studies* 7/1 (1997): 70–72.

Their behavior, then, might be different than that of wild animals, though both would flee drought and snakes.

UNFAIR CRITICISM

The DVD presentation unfairly criticizes the Central American model for not having migrating animals: “Are there any beasts that migrate in Central America? Because the Book of Mormon is saying there are these beasts and they’re migrating from the land northward looking for food.”⁴⁰

Meldrum turns to an expert, Dr. Klaus Reed of the Global Registry of Migratory Species. As qualified as Reed is, Meldrum is taking him out of his field of specialty—which is not that of flocks fleeing snakes and drought. Reed is asked:

I’m a researcher working on a natural science book. We simply need to verify if there are any large migratory terrestrial mammalia anywhere in Central America, including Mexico, Guatemala, Belize, El Salvador, Honduras, *et cetera*. I’m not aware of any, but I just wanted to verify.⁴¹

This question is guaranteed to give the wrong answer, for several reasons:

- The Book of Mormon says nothing about the flocks being large mammals. They might be small mammals, or not even mammals at all.
- Reed was not told that the question is about domesticated species, not wild animals.
- The Ether account comes from the Jaredites, so the LNAM must not only eliminate modern species, but any candidates that lived at least a thousand years before Christ.
- Reed was not told that a necessary condition is a severe drought that happens rapidly enough that pre-modern humans “begin to be destroyed exceedingly fast” (Ether 9:30).
- Reed is asked about *migration*, when this clearly isn’t a seasonal migration at all: it is driven by an extreme ecologic collapse.

Reed gives the correct answer based upon exactly what was asked—but it is a useless answer for supporting the LNAM. The DVD continues:

Now he [Reed] goes on to say, number one, there’s really no beasts, because the biggest animal down there, I think they call it a tapir. And it’s kind of like a large pig. And then he was a little condescending. He said, “You’re a

⁴⁰ Meldrum, *DNA Evidence*, section 8, “Buffalo Evidence,” 3:12-3:30.

⁴¹ Meldrum, *DNA Evidence*, section 8, “Buffalo Evidence,” 3:53-4:20.

researcher, you should know these things. There's only one reason why animals migrate: because of changing seasons.⁴²

Even were Reed to have said that “there's really no beasts”—the DVD claims “beast” means “large mammal,” when it really means any animal at all—the DVD also misinforms its audience about the tapir. The Baird's tapir is quite a bit bigger than a pig, being up to 6.5 feet long, 4 feet high, and weighing up to 880 pounds.⁴³

The research methods illustrated by this example are questionable, and cast no light on the Book of Mormon.

CONCLUSION

The DVD got almost nothing right in its research on the bison or animals fleeing the land northward:

- It is wrong about the reason for lower bison numbers east of the Mississippi
- It uses a map of the bison range in 1500 A.D. as representative of Book of Mormon times, when the later time was likely unique in all of history.
- It doubles the number of bison. Although the DVD claims that this data came from Dr. Geist's book, Geist contradicts it twice, once on the facing page of the map reproduced in the DVD.
- It misrepresents the history of Amerindian nomadism and mistakes Amerindian behavior, as described by white settlers, for a good model of the Lamanite lifestyle of two millennia earlier.
- It is confused about how great a threat which a nomadic hunter-gatherer Lamanites would pose to agricultural societies like the Nephites.
- It takes a superficial view of the Book of Mormon text, leading it to search for a “solution” to a problem (“lazy Lamanites”) that is not real. Previous research and the Book of Mormon itself both address this issue.
- It shows no understanding of the likelihood of the unaided disappearance of the bones from millions of bison and tells us nothing of the actual history behind the bones' disappearance.
- It demonstrates an inability to deal with plain Book of Mormon passages that conflict with its theories about migration.
- It does not frame research questions accurately so that expert help will be useful.

⁴² Meldrum, *DNA Evidence*, section 8, “Buffalo Evidence,” 4:10-4:40.

⁴³ “Baird's Tapir, wikipedia.org (accessed 27 May 2008), http://en.wikipedia.org/wiki/Baird's_Tapir

Despite all these problems, Meldrum claims that this part of the presentation was inspired by God, since he “was being directly guided in this particular portion.”⁴⁴ He calls the bison a “witness” to the Book of Mormon’s truth. If so, it is a witness that has eluded everyone else, prophet or scholar.

⁴⁴ Meldrum, *DNA Evidence*, section 8, “Buffalo Evidence,” 0:01-0:25.