

Human-Nature Coupled Systems

How the Introduction of Horses to North America Impacted the Ecosystem and Altered the Lives of the Lakota Sioux

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Abstract: The introduction of the horse to the North Americas during European exploration in the 1500s had a drastic influence upon both the environment and the lives of the Native Peoples. Through acquisition of horses, the Lakota Sioux rose as the most powerful tribe, expanding their territory and resisting European conquest the longest. Historians and anthropologists have looked at the horse as a form of new technology, which fundamentally altered the Lakota's culture, economy, and relationship with nature.

While horses were a significant facet in many Native American cultures in the early European westward expansion, no tribe benefited more from the horse than the Teton of the Sioux nation. After migrating west in the early 18th century from their original location around Lake Superior, the Teton occupied a territory on land that is now Montana, North Dakota, South Dakota, Nebraska, Colorado, and Wyoming.¹ By the 19th century, the Lakota were a feared and dominant power on the plains, and were more of a threat than the white settlers were to other native tribes. This acquisition of power is due to a number of factors, one of which was the introduction of the horse. The relationship between the Lakota and the horse is an interesting human-nature coupled system in which one can analyze the complex web of interactions between horses, the Lakota, and their surrounding environment. While horses had an impact on culture and the environment, ecological constraints had their own effect upon horses and the tribes using them. Incorporation of the horse dramatically influenced Lakota use of resources within the ecosystem, particularly buffalo, increased their mobility and material wealth, altered social structures, and changed their subsistence patterns.

Prior to the use of the horse, the plains were populated at a low density by hunter-gatherer bands that travelled on foot. One of these hunter-gatherer bands was the Teton Native Americans, also known as the Lakota, which were a tribe within the Sioux Nation of Plains Indians. The Lakota, who were the Western Sioux, occupied the vast plains of central United States until the western expansion of white settlers forced them onto reservations and killed vast numbers of their population. Comprised of several smaller subdivision bands, the Teton are often called the Lakota Tribe in reference to their spoke language of Lakota.² The seven bands within the Lakota (Blackfoot, Brule, Hunkpapa, Miniconjou, Oglala, Sans Arcs, and Two-Kettle) were

¹ "Sioux," The History Channel website, <http://www.history.com/topics/sioux> (accessed Feb 20, 2011).

² "Sioux," The History Channel website, <http://www.history.com/topics/sioux> (accessed Feb 20, 2011).

connected through intermarriage and family ties, but acted politically independent from one another.³

The Lakota, like many other tribes, lived in Tepees made of bison hide, wore clothing made of leather, suede, and fur, and were highly nomadic. They migrated following buffalo herds and foraged for food such as wild onions, potatoes, turnips, and berries. They also traded or stole agricultural goods like corn, beans, squash, and sunflowers from permanent farming villages settled along the Missouri River and its tributaries. The river-coast residing tribes had been very effective in blocking Lakota expansion until the use of horses.⁴ Before horses, the Lakota relied upon domesticated dogs as work animals. The dogs were used to pull simple carts that contained tepees, personal possession, firewood, and other heavy items. Given the size of dogs, the tribes were limited in their mobility and amount of accumulated possessions; this restricted mobility and lack of horses decreased the motivation for excessive warfare. The Plains Indians in general, which includes the Lakota, were relatively egalitarian and had a deeply religious culture. They believed that every animal and plant had a spirit within it, and their religion focused around ceremonies such as the yearly Sun Dance. The Teton were already a more warrior-oriented culture than some other tribes, and the valor of war was connected to their religious beliefs in the belief that animal spirits, such as the bear, could protect the warriors against enemies.⁵ It was thus fitting that they were interested in obtaining guns from the French through the fur trade, ensuring a military advantage over other tribes.⁶ The only social hierarchy established was a loose organization of ranking among individuals, with an emphasis on warriors.

³ Richard White, "The Winning of the West: The Expansion of the Western Sioux in the Eighteenth and Nineteenth Centuries," *The Journal of American History* 65, No. 2 (Sep 1978), <http://www.jstor.org/pss/1894083> (accessed Feb 25, 2011).

⁴ "Plains Indian," The History Channel website, <http://www.history.com/topics/plains-indian> (accessed Feb 25, 2011).

⁵ "Sioux," The History Channel website, <http://www.history.com/topics/sioux> (accessed Feb 20, 2011).

⁶ Richard White, "The Winning of the West: The Expansion of the Western Sioux in the Eighteenth and Nineteenth Centuries," *The Journal of American History* 65, No. 2 (Sep 1978), <http://www.jstor.org/pss/1894083> (accessed Feb 25, 2011).

There was very little social hierarchy and virtually no hereditary hierarchy.⁷ This social structure, along with other aspects of the Lakota, began to transform with their westward migration; the rise in power and presence on the plains defined a Plains Indian culture distinct from the woodland occupying Santee Sioux.

The introduction of horses to the Americas is interesting, because unlike many other non-native species introduced to a new location, the horse was not a highly environmentally destructive species, especially during its early days on the Plains. While bearing almost no physical similarities to the animals we have today, horses actually originated in the North Americas, but became extinct due to hunting and changes in grassland composition during the Pleistocene era.⁸ The horses that were re-introduced to the Americas in the 1500s were Andalusians from Spain. Andalusians are a hardy desert breed descended from North African Barbs introduced to Spain through Muslim military invasion during the 8th century. The Barbs are thin-skinned and hardy animals with exceptional stamina, agility, speed, and the ability to survive on limited food. Much like their Barb predecessors, the Andalusians are well adapted to hot, dry, and unforgiving environments; unlike the Barbs they are notably well tempered and gentle. Andalusians are not made to gallop, but they are courageous, willing, and agile. They are approximately 15.2 hands (62 inches) tall, which is an average height for an active general purpose riding horse.⁹ When these horses were brought to the Americas, they adapted well to the dry southern plains of the United States. In the northern plains, they did not fare as well due to colder climates and longer winters.

⁷ "Plains Indian," The History Channel website, <http://www.history.com/topics/plains-indian> (accessed Feb 25, 2011).

⁸ Neil Clarkson, "Why did horses die out in North America?" Horsetalk.co.nz, <http://www.horsetalk.co.nz/features/extinction-176.shtml> (accessed March 4, 2011).

⁹ Elwyn Hartley Edwards, *The Encyclopedia of the Horse* (New York: Dorling Kindersley Publishing, Inc, 1994).

Horses made their way north out of the New Mexico area due to ranches migrating and Natives stealing them to trade with northern tribes. In 1598, Don Juan de Oñate introduced the first large herd of horses when he settled New Mexico on behalf of Spain. The natives observed horses on Oñate's ranches along the Rio Grande and became fascinated by the large animals. Renegade ranchers taught the natives how to ride and work with horses, and some tribes began capturing groomsmen and forcing them to help with horses. The Apaches were the prominent tribe in the early 1600s that began stealing horses from Spanish settlements, and through intertribal raids and trade networks, horses slowly made their way across the plains between the 1600s and 1700s.¹⁰ The Northern Plains Indians tribes acquired horses through Rocky Mountain trade networks with roots along the Rio Grande, and not directly from the southern tribes.¹¹ Despite the Lakota's late transition to equestrianism in comparison to other tribes, assistant professor of early American history Pekka Hamalainen, argues that the Lakota were the only successful Plains Indian horse culture.¹² While the Apache Indians of the south were already skilled riders by the 1650s, there is no historical record of Sioux warfare involving horses until the 1760s.¹³

From the Spanish Andalusians came the Mustangs, Appaloosas, and Pintos/Paints used by Native Americans and cowboys of the classic west. Mustangs are the true wild horses of North America, and although they were sometimes ridden, they are naturally wary of humans and are difficult to train. The Appaloosa was bred by Nez Perce from the Spanish spotted horses, although was only recognized as a true breed in the United States and Canada. Known for their

¹⁰ Diana Serra Cary, "Horses and the Plains Indians," *Wild West* 12, no. 6 (April 2000): 50. *MasterFILE Premier*, EBSCOhost (accessed February 16, 2011).

¹¹ Pekka Hamalainen, "The Rise and Fall of the Plains Indian Horse Cultures," *The Journal of American History* 90, No. 3 (Dec 2003): 845, *Academic Search Complete*, EBSCOhost (accessed Feb 17, 2011).

¹² *Ibid*, 859.

¹³ Richard White, "The Winning of the West: The Expansion of the Western Sioux in the Eighteenth and Nineteenth Centuries," *The Journal of American History* 65, No. 2 (Sep 1978), <http://www.jstor.org/pss/1894083> (accessed Feb 25, 2011).

stamina, agility, soundness, intelligence, versatility, and hard working character, they made excellent hunting and warrior horses for Native Americans. The Pinto or Paint horses also originated from the Spanish horses, through selective breeding for specific coat colors and patterns. While the Native Americans chose these horses primarily for their coloring, they made excellent all-around riding horses with smooth gaits and agility.¹⁴

The introduction of the horse significantly altered the Lakota's culture and economy, and aided in their expansion and dominance on the Plains. They could more effectively hunt, travel, and wage war. The horse, along with the incentive of the fur trade, brought an end to the Lakota's subsistence economy. The horse was easily incorporated into their way of life, partly because they already had experience working with dogs as domesticated animals. Like other groups, the Lakota compared horses to dogs, referring to them as "medicine-dogs".¹⁵ The transition to horse power brought a new period of increased material wealth and expansion to the natives, especially the Lakota. Coming to fruition in the 19th century, the Lakota dominance and competitive advantage over other tribes was accomplished slowly in multiple stages, beginning with their migration during the previous century. During the last phase, the Lakota incorporated the Cheyennes and Arapohoes of the Black Hills region through economic and military alliance. They continued to pillage the Arikaras for corn, as they had frequently done throughout their expansion. The Lakota gained full control of the territory between the upper Missouri River and the Platte River by 1850.¹⁶ While already a highly organized warrior culture, the Lakota gained a decisive advantage over other tribes when they began using both guns and horses. The Lakota traded with the French for guns and were well armed by the time they moved onto the Minnesota

¹⁴ Mary Gordon Watson, Russell Lyon, and Sue Montgomery, *Horse: The Complete Guide* (China: MetroBooks, 2000), 192-193.

¹⁵ Pekka Hamalainen, "The Rise and Fall of the Plains Indian Horse Cultures," *The Journal of American History* 90, No. 3 (Dec 2003): 846, *Academic Search Complete*, EBSCOhost (accessed Feb 17, 2011).

¹⁶ *Ibid*, 860.

plains in the 18th century. They originally trapped beaver in the winter and hunted buffalo in the summer for trade, but with the use of horses, they began focusing solely on hunting buffalo. By the late 18th century, they spent more time accumulating horses and hunting buffalo, significantly depleting the buffalo population just east of the Missouri River. Expansion further up the Missouri river was blocked by the Arikara, Mandans, and Hidatsas, who were horse-wealthy horticulturists with well fortified settlements.

The Lakota's increase in mobility, wealth, and adept military skill allowed them to briefly flourish as a nation and hold off conquest from the white settlers longer than most other tribes. A smallpox outbreak between 1780 and 1795 reduced populations in the Missouri Valley, but those affected were the sedentary village tribes and not the Lakota.¹⁷ In fact, while other tribes dwindled, the Lakota grew in population during the 19th century. In 1804, it is estimated there were 5,000 Lakota, but by 1850 their numbers jumped to about 25,000. This increase in population however, led to increased pressure on buffalo since more needed to be hunted to maintain an increasing population.¹⁸

The Lakota social structure underwent a significant change from a mostly egalitarian society to a more strictly stratified structure with clearer hierarchies of wealth. Horses were scarce and valuable, signifying wealth for those who owned them. Owning more horses meant one could hunt more buffalo, increasing their ability to trade with Europeans. Women began having a more clearly defined role as the ones responsible for the manual labor involved in preparing buffalo robes. If a man had more wives then he was able to have more workers to produce more goods for trade. Horses were not part of the publically shared property of a tribe,

¹⁷ Pekka Hamalainen , "The Rise and Fall of the Plains Indian Horse Cultures," *The Journal of American History* 90, No. 3 (Dec 2003): 859, *Academic Search Complete*, EBSCOhost (accessed Feb 17, 2011).

¹⁸ Richard White, "The Winning of the West: The Expansion of the Western Sioux in the Eighteenth and Nineteenth Centuries," *The Journal of American History* 65, No. 2 (Sep 1978): 330, [http:// www.jstor.org/pss/1894083](http://www.jstor.org/pss/1894083) (accessed Feb 25, 2011).

but were shared within a family and used as monetary value outside of the family. This goes back to being able to trade more furs, since a man with more horses could use those to acquire more wives. This entire dynamic led to clear differences of wealth among individuals and families and resulted in the formation of an elite class, who married within their higher economic status.¹⁹

Horses allowed the Lakota to increase their participation in a market economy that revolved around the fur trade; their presence and use by the natives due to increased participation did have significant effects upon various natural resources, most notably, the American Bison. In the past the Lakota hunted bison at subsistence levels, but with the adoption of the horse and the gun, the Lakota began hunting the bison to gain profits from selling and trading meat and furs. This increase of hunting buffalo among the Natives in general, not only the Lakota, has been re-examined by historians recently as a contributing factor to the near extinction of the American bison. Climate change, cattle-borne diseases, white hunters, and competition with horses are all seen as causes. Natives began trading buffalo hides and meat in exchange for guns, ammunition, blankets, clothing, cooking instruments, and alcohol. It is estimated that before the 1840s there were 60,000 Native American individuals hunting bison on the plains, killing approximately half a million a year. This figure jumped to 600,000 hunting on the plains, killing already weakened herds of buffalo at an unsustainable level. It is hypothesized that buffalo were already diminishing by the mid-1800s due to the ending of the Little Ice Age that started in the 1500s. The end of this ice age resulted in changes in grassland composition, which had a detrimental impact upon the buffalo diet. With the introduction of another large, grazing mammal, the buffalo had increased competition for grazing land, and by the 1800s were most likely sharing

¹⁹ Pekka Hamalainen , "The Rise and Fall of the Plains Indian Horse Cultures," *The Journal of American History* 90, No. 3 (Dec 2003): 849, *Academic Search Complete*, EBSCOhost (accessed Feb 17, 2011).

the plains with about 2 million horses.²⁰ This situation marked one significant difference between the southern and northern plains; due to the harsher climates further north, horses were scarcer and herds were smaller, thus having inflicting less damage upon the ecosystem. Although there is disagreement upon the specific number of buffalo roaming the plains before this decline in numbers, historians have estimated that it was at least 20 million, and most believe it to be closer to 60 million. Around the time of the Civil War, buffalo numbers had dwindled to approximately 10-12 million.²¹ Considering that the buffalo were a staple in Lakota life, their quick eradication had negative consequences on the survival of the Lakota. As the buffalo disappeared, the Lakota were facing limited food supply and a loss of a resource that was used to construct their homes, tools, and clothing. As a case study in human ecology, one can analyze this situation using Garrett Hardin's theory of the Tragedy of the Commons, in which the buffalo are the commons. Once European markets expanded into Native American territory and introduced both the horse and the gun, the Natives began to exploit a public resource for personal gain. This resource was almost completely destroyed, as buffalo were almost extinct due hunting from both the white settlers and the Native Americans involved in the fur trade. Both groups were using a public resource that had no limitations or regulations. As Hardin stated, "Freedom in a commons brings ruin to all."²² In this particular case, the burden was almost completely upon the Native Americans, who relied on the buffalo for food and other basic necessities for survival.

While many attribute large horse herds to the Lakota's rise to power, an examination of horse populations reveals that the Lakota actually had relatively few horses. Alan J. Osborn argued that "Many significant aspects of aboriginal life, including group size, mobility,

²⁰ Jim Robbins, "Historian Revisit Slaughter on the Plains," University of Nebraska, <http://www.unl.edu/rhames/courses/212/readings/buffalo-extinction.htm> (accessed February 20, 2011).

²¹ Ibid.

²² Garrett Hardin, "The Tragedy of the Commons," *Science* 162, no. 3859 (1968): 1244. <http://links.jstor.org/sici?sici=0036-8075%2819681213%293%3A162%3A3859%3C1243%3ATTOTC%3E2.0.CO%3B2-N>. (accessed March 6, 2011).

technology, food getting, settlement systems, and socio-economic/sociopolitical organization, can be causally linked to horse herd size(s) and horse-to-person ratios.”²³ For the Lakota however, there were compounding factors that allowed them to dominant the territory while retaining relatively few horses. This scarcity of horses did fuel intertribal warfare and it was significantly worse in the horse-poor areas of the northern plains compared to the southern plains.²⁴

Due to ecological restraints during winters in the Northern Plains, the horse culture of those tribes differed greatly from the Southern Plains. The long and harsh winters caused food scarcity for the horses, contributing to the limited herd sizes farther north. The Little Ice Age that was felt in North America could have influenced the severity of winters in the north, causing deeper snows and longer cold periods. This is only speculated upon since there isn't completely accurate data available.²⁵ Osborn created an analytical method of comparing climates with how many horses a tribe owned. He rated each tribe with a “winter severity index”, and the higher the index, the worse winters that tribe experienced. The majority of tribes with higher WSIs owned fewer horses; Osborn approximated the horse populations of tribes in 1874. The Sioux tribes of the plains had WSIs ranging from 19.98-22.74 and horse numbers of 3,000, 5,000, and 10,000. In comparison, the farther south residing tribes of Kiowa, Comanche, Apache, and Delaware had a WSI of 3.84 and owned approximately over 14,000 horses.²⁶ Horse population numbers are directly correlated with the supply of winter forage, although researchers are discovering that the numbers individual tribes possessed was not just related to environmental restraints, but also to

²³ Alan J. Osborn, “Ecological Aspects of Equestrian Adaptations in Aboriginal North America,” *American Anthropologist* 85, No. 3 (September 1983): 565, <http://www.jstor.org/stable/678660> (accessed Feb 25, 2011).

²⁴ Pekka Hamalainen, “The Rise and Fall of the Plains Indian Horse Cultures,” *The Journal of American History* 90, No. 3 (Dec 2003): 850, *Academic Search Complete*, EBSCOhost (accessed Feb 17, 2011).

²⁵ Alan J. Osborn, “Ecological Aspects of Equestrian Adaptations in Aboriginal North America,” *American Anthropologist* 85, No. 3 (September 1983): 563-591, <http://www.jstor.org/stable/678660> (accessed Feb 25, 2011).

²⁶ Alan J. Osborn, “Ecological Aspects of Equestrian Adaptations in Aboriginal North America,” *American Anthropologist* 85, No. 3 (September 1983): 572, <http://www.jstor.org/stable/678660> (accessed Feb 25, 2011).

social and economic constraints. During the winter months, some tribes fed bark from the Cottonwood tree to the horses, a resource that was quickly exhausted. The human labor cost for doing this was great, since humans had to cut down trees and chop wood and strip bark for the horses. This energy-intensive task was draining for women, who were the ones responsible for gathering and preparing food for the horses during the winter months.²⁷ This became an unsustainable practice considering the cost expended for little benefit in saving horse herd populations. It is possible that the ecological restraints that limited the number of horses owned by northern tribes actually helped the buffalo population to last longer.

Harsher winters in the north made it more difficult to maintain large herd numbers like the tribes in the south, and as a result, the northern tribes did not become completely nomadic and horse dependent.²⁸ Hamalainen argues that the lack of large herds allowed the Lakota to keep an ecological balance. He claims that although they relied heavily on hunting buffalo for subsistence and profit in the fur trade, they were able to maintain buffalo populations until the 1850s or so, whereas the southern tribes saw a quick decline of buffalo populations. Sometimes horses were too weak to hunt during the winter season, and many bands experienced entire herds dying off during the winter, limiting their hunting season to warmer months.²⁹

Hamalainen claims that the Lakota were the only successful horse culture on the plains, and he attributed this to the fact that the Lakota, “succeeded where almost all other Plains tribes had failed – finding a functional equilibrium among horse numbers, ecological constraints, and economic, cultural, and military imperatives.”³⁰ Considering the quick rise and fall of the Lakota,

²⁷ Ibid, 567.

²⁸ Pekka Hamalainen, “The Rise and Fall of the Plains Indian Horse Cultures,” *The Journal of American History* 90, No. 3 (Dec 2003): 833-862, *Academic Search Complete*, EBSCOhost (accessed Feb 17, 2011).

²⁹ Pekka Hamalainen, “The Rise and Fall of the Plains Indian Horse Cultures,” *The Journal of American History* 90, No. 3 (Dec 2003): 861, *Academic Search Complete*, EBSCOhost (accessed Feb 17, 2011).

³⁰ Ibid, 859.

and how buffalo populations did decline to almost extinction, it is not clear whether they actually did find this balance. The hostilities toward the other tribes and the high involvement in the fur trade did not appear to be sustainable practices, and like other Native American tribes the Lakota were eventually over-run by American westward expansion. The Lakota were the last of the Plains Indians to be overrun, and while disease ravaged most Native American tribes with European contact, the Lakota managed to escape this destructive force since their use of horses allowed them to be highly mobile and lived in small communities. Although the Lakota eventually suffered the same fate as other Native Americans, their ability to so effectively transition to equestrianism that gave them economic and military dominance over a vast region is a fascinating case study and important stage in North American ecological history.

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