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THE FIRST PHASE OF DESTRUCTION

KILLING THE SOUTHERN PLAINS BUFFALO, 1790-1840

PEKKA HÄMÄLÄINEN

The eradication of the vast bison herds from the North American Great Plains is one of the oldest topics in western history and, recently, also one of the most popular. Drawing ideas and methodologies from ecology and zoology, historians have revealed in the 1990s an entirely new anatomy of the destruction. According to the new interpretation, the great slaughter of the 1870s merely delivered a clinching blow to herds that had already been weakened in a number of ways. Concentrating

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on the Southern Plains, Dan Flores has concluded that large-scale dying may have begun as early as 1840, when a peace among Comanche, Kiowa, Plains Apache, Cheyenne, and Arapahoe opened the previously contested hunting grounds for Native hunters. A severe drought in 1846, along with exotic bovine diseases and Euro-American disturbance, brought about a full-blown crisis by mid-century. Following Flores's lead, Elliott West has revealed a similar development on the Central Plains, although he argued that the principal catalyst of the crisis was a zoological phenomenon known as "species packing." In the 1840s, thousands of white overlanders and their horses, oxen, cattle, and sheep swarmed onto the already crowded Central Plains, throwing off the delicate ecological equilibrium. Basically, there were not enough resources for everyone—the Euro-Americans, Indians, domestic herds, and bison.¹

By now, these revisionist studies have become the new canon of bison ecology, which is not necessarily what the authors had had in mind. Both Flores and West intended their essays to be broadly conceived, at least partly hypothetical works that would encourage us



FIG. 1. Carl Bodmer (1809-1893), *Indians Hunting the Bison, 1845*, engraving, 6 $\frac{1}{8}$ x 7 $\frac{15}{16}$ in. Courtesy of Great Plains Art Collection, University of Nebraska. Gift of Leon McGoogan, M.D.

to rethink some of the fixed notions about the buffalo's demise.² However, New Western historians, eager to promote studies supporting their theses, hurried to sanction the two essays. Touching upon such themes as complexity of Euro-American takeover and interrelatedness of environmental and economic processes, Flores and West's writing resonated so perfectly with the core paradigms of the New Western History movement that few had the patience to wait for affirmative studies.³ This impatience is problematic because Flores and West's studies contain a number of unresolved questions that have to be answered before they can be accepted as the new standard of bison ecology.

The first question involves geographic scope. Flores's essay focuses on the regions immediately south of the upper Arkansas Ba-

sin, and West's study concentrates to the areas immediately to the north. Both are thus essentially geographically focused case studies, models for more inclusive further research. The second question involves timing, the temporal trajectory of destruction. Flores and West designated the 1840s as the critical period, witnessing the expansion of indigenous hunting following the 1840 détente, swelling overland traffic, and a prolonged dry spell. Both emphasize that starvation was widespread by 1850, suggesting that the bison populations had declined by several hundred thousand, if not by millions, by that time. But is such a drastic decline conceivable in a mere decade? After all, drought did not begin until 1846, and the five Native groups involved in the 1840 détente can be documented as killing only slightly more than 100,000 animals a year.

According to John W. Whitfield, the agent of the upper Arkansas, the 11,470 Comanche, Kiowa, Plains Apache, Cheyenne, and Arapahoe living on the river basin were killing about 112,000 bison annually.⁴ Clearly, there seems to be a component missing in the Flores-West model.

This component, I believe, is a longer time perspective: the bison decline began on the Southern Plains much earlier than has been previously thought. It is possible that the herds began shrinking there as early as the late 1780s or early 1790s, leading into a perceptible reduction by the 1810s. When David G. Burnet, later the president of the Republic of Texas, visited the Comanche in the Brazos River valley in 1818, he reported that "It has been remarked that the number of Buffaloes that annually reach the regions inhabited by the Comanchees [sic], has sensibly diminished within a few years." By the 1820s, the Comanche and Kiowa increased their raiding in Texas, New Mexico, and northern Mexico, apparently because declining hunting opportunities forced them to diversify their economies. Finally, by the early 1830s, the herds were vanishing at an alarming rate all across the Texas Plains. Writing in 1833 at Fort Gibson on the Arkansas River, about thirty miles to the west of the present-day Arkansas-Oklahoma border, one observer stated that the bison "have receded, it would seem, one hundred miles westward in the last ten years; and it may be safely assured that thirty or forty years hence, they will not be found nearer to us than the spurs of the Rocky Mountains."⁵

I suggest in this essay, besides a new temporal trajectory, a causality that differs significantly from Flores and West's ecological models. Not the result of environmental degradation alone, the early decline of bison was triggered by large-scale overhunting, which stemmed from indigenous population growth, intensified subsistence and market hunting, and rapid commercial expansion. Although some of the ecological factors that Flores and West discuss—particularly grazing competition from growing herds of domesticated and

wild horses—were at work already in the late eighteenth and early nineteenth centuries, the early diminution of the Southern Plains bison population was primarily the result of excessive human utilization. Finally, I present a modified geographic dynamic. The decline of bison did not begin in the Arkansas Basin but on the Texas Plains, at the center of Comanchería. There, the Comanche fashioned in the late eighteenth and early nineteenth centuries an attractive but inherently fragile economic regime that rested on a large-scale, and ultimately excessive, exploitation of the bison.

HUMAN PREDATION AND THE SOUTHERN PLAINS BUFFALO

A central postulate still influencing the thinking of many Plains historians is the idea that the Indians lived in a hunter's paradise where enormous buffalo herds formed a virtually bottomless pool of protein, fat, hides, and other crucial resources. So vast were the herds, the argument goes, that Indians could harvest them without the slightest concern for overhunting or ecological mismanagement. To be sure, scholars have chronicled and scrutinized the momentous effects of climatic shifts, droughts, and killer winters on bison populations,⁶ but few have paused to consider the fundamental, underlying question: why exactly were the environmental changes so detrimental to the bison? Is it possible that the safe margin for human exploitation, the difference between the bison's ability to propagate and humans' potential to kill, was narrower than has been assumed, making the herds vulnerable to environmental shifts?

A closer look suggests that the Plains Indians' celebrated bison-hunting economy rested on a rather shaky ecological foundation. The basic problem was a precarious balance between the bison's reproduction rate and human exploitation; the Plains may have been a hunter's paradise, but only for so many people. In a seminal study, William Brown has estimated that the roughly 240,000 square miles

of luscious mid- and shortgrass steppe that comprised Comanchería could support about 7 million bison. Derived from range-use efficiency calculations and United States census data for livestock, this number is notably smaller than most earlier estimates that were based on anecdotal historical documents. Even more challenging is Brown's estimate on the maximum number of animals the Indians could kill annually without depleting the herds. Assuming a balanced sex ratio, with breeding cows amounting to 45 percent of the total, he projected that the herds increased by 567,000 a year; he then estimated the annual loss to nonhuman causes—natural mortality, diseases, accidents, fire, and wolves—at 7.5 percent, or 525,000 animals. The crucial difference—the safe yearly margin for human exploitation—is thus 42,000 animals.⁷ This figure is strikingly low, and it suggests a provocative possibility: the Southern Plains Indians may have been killing buffalo at an unsustainable rate for fifty years before the troubled 1840s began.⁸

The eighteenth century was one of the most chaotic periods in the history of the Southern Plains, witnessing the great Comanche onslaught from the Rocky Mountains and the subsequent decline of the Apache, who had previously dominated the region. This turbulence makes estimates of Native populations virtually impossible; the contemporary observers were simply too busy keeping track of the rapidly shifting tribal map to make reliable population estimates. It is relatively clear, however, that the Comanche steadily increased their numbers until, by the 1780s, there were at least 8,000 of them along and south of the Arkansas Basin. In 1786, for example, Spanish officials estimated that the Western Comanche, that is, the Comanche bands living near New Mexico, numbered between 6,000 and 7,000. This figure does not include the Eastern Comanche, who were estimated in 1785 to comprise ten or twelve rancherías, each of which probably contained a few hundred people. Eager to muster enough warriors to fend off the Apache and the encroaching Spanish and Osage, the Comanche

maintained a relatively stable population base until the 1840s, when diseases, habitat destruction, and starvation finally began to cut into their numbers.⁹ In addition to the estimated 8,000 Comanche, the Southern Plains accommodated some 1,800 Kiowa and Plains Apache, who in the 1780s pushed south of the Arkansas and gradually forged an alliance with the Comanche, who had been momentarily weakened by smallpox and needed allies to bolster their military power.¹⁰ In effect, the Comanche opened their northern border to gain strength to block the Osage in the east and the Spanish and Apache in the west and south.

In all, then, there were approximately 10,000 full-time hunters drawing on approximately 7 million bison on the Southern Plains between 1790 and 1840. Fully mounted, they were able to exploit the herds to the maximum, employing a new and remarkably efficient killing method: the mounted bison chase. In a typical chase, the hunters surrounded a bison herd on horseback, riding alongside the animals to keep them in place, and firing arrows into selected young cows. A skillful hunter could easily kill three animals on a single chase, and a communal hunt could yield as many as 300 carcasses in one day.¹¹ Indeed, so productive was the mounted chase that all Southern Plains hunters developed a singular dependency on the bison. They relied on the buffalo for clothing, shelter, and food and eschewed farming, preferring to barter surplus meat and hides with neighboring horticulturists for corn and vegetables. It has been estimated that specialized hunters needed a yearly average of six bison per person to meet their subsistence demands of meat (about five pounds per person a day) and hides,¹² which suggests that the late-eighteenth- and early-nineteenth-century Southern Plains hunters were consuming about 60,000 animals a year—18,000 above the safe margin. Since this deficit kept accumulating year after year, the Comanche and their Kiowa and Plains Apache allies may have drained the Southern Plains bison population



FIG. 2. William de la Montagne Cary (1840-1922), *Indians Killing Buffaloes in the Missouri River, 1874*, engraving, 9 x 13 ⁹/₁₆ in. Courtesy of Great Plains Art Collection, University of Nebraska. Gift of Vivian Kiechel.

by almost 1 million by 1840, the supposed outset of the great dying.

Subsistence hunting was the primary cause of the early diminution of the Southern Plains bison population, but commercial hunting dramatically expedited the decline. Conventional wisdom asserts that the eighteenth- and early-nineteenth-century Southern Plains was not a major trading region—historians have been much more impressed with the Northern Plains commercial systems, particularly the great Mandan, Hidatsa, and Arikara trade center on the upper Missouri River—but this portrayal is now coming under increasing criticism. According to the new interpretation, the Comanche, far from being the one-dimensional warrior society depicted in the early studies, relied in their foreign policy more on trade and diplomacy than on war and raiding. By the late eighteenth cen-

tury, they controlled an imposing commercial network, which featured distinctive trade centers and multiple links that mantled the entire lower mid-continent. Although horses and guns would later become principal items in Comanche trade, the early exchange revolved heavily around subsistence goods: suffering from a chronic carbohydrate deficiency, the hunting-oriented Comanche purchased large quantities of corn, vegetables, and bread with bison products. Consequently, they provided substantial amounts of hides, meat, and tallow for a multitude of groups—Wichita, Kansa, Iowa, Pawnee, French, British, Americans, Spaniards, and *comancheros* (New Mexican traders operating on the Llano Estacado). Commercial hunting intensified further in the 1830s, when Americans and Anglo-Texans erected several trading posts on the Southern Plains.¹³

By a rough estimate, the Comanche and Kiowa produced in the late eighteenth and early nineteenth centuries only a few thousand hides a year for exchange.¹⁴ Although the overall volume of market-oriented bison hunting was limited, the hunting practices of the Indians aggravated the damage. When engaged in commercial hide and robe production, most Plains Indians preferred killing two- to five-year-old cows for their more palatable meat and thinner and more easily processed skins. Moreover, the Indians did most of their market hunting in winter when the robes were the thickest and most valuable. Because bison cows produce their first calves at the age of three or four and their gestation period usually extends from mid-July to early April, the commercial hunting centered heavily on pregnant cows, critically impairing the herds' ability to maintain their numbers.¹⁵

Commerce and markets accelerated the bison decline also in a more indirect way: in the late eighteenth and early nineteenth centuries, the Comanches allowed several groups to enter and hunt in their territory. In exchange, the various Comanche bands and divisions received extensive trading privileges. This process began with the famous 1786 Comanche-Spanish accord, in which the Western Comanche—the Jupe, Yamparika, and Kotsoteka—received unlimited access to New Mexico's markets and in return opened their bison range for New Mexican bison hunters, or *ciboleros*. In the early nineteenth century, *ciboleros* made annual hunting expeditions to the Llano Estacado, harvesting, according to some estimates, at least 10,000 animals a season. At about the same time, the Eastern Comanche—the Kotsoteka—formed a trade relationship with the Wichita, who secured hunting privileges in Comanchería as a part of the accord. Numbering between 3,000 and 4,000 in the early nineteenth century, the Wichita took several thousand animals during their annual hunting expeditions, which continued into the late 1830s.¹⁶ Since subsistence hunting alone had been enough to dis-

rupt the delicate equilibrium, all the killing done by *ciboleros*, Wichita, and Comanche and Kiowa commercial hunters can be classified as overhunting. With an estimated yearly killing rate of 20,000, they may have depleted the bison population by 1 million by 1840, bringing the total reduction close to 2 million.

After allowing this influx of hunters into their territory, the Comanche began to protect their herds against external pressure. They permitted a few Lipan bands to travel and hunt within Comanchería in the 1810s, and their western boundary remained porous, making it possible for Eastern Shoshone and Ute to hunt periodically on the Southern Plains. However, all the others—the Cheyenne, Arapahoe, and Osage—were kept out by force. This defensive policy had implications for the bison as well, because it created buffer zones, contested areas where Native hunters only reluctantly followed their prey. Because of the low level of exploitation, the buffer zones functioned as effective animal preserves, shelters from human predation. Comanchería was skirted by two major neutral zones. One bordered the region's northern perimeter, keeping the Cheyenne and Arapahoe from pushing south of the Arkansas, and the second dissected Comanchería's eastern flank, blocking the Osage and the immigrant tribes of Indian Territory.¹⁷

This eastern preserve vanished with a single diplomatic move in 1835 at Camp Holmes, when the Comanche granted the Osage and immigrant tribes access to their hunting grounds, again in exchange for trading privileges. Although the Osage were traditionally semihorticultural people, external pressure had disrupted their farming cycle, forcing them to rely increasingly on the hunt. Apparently numbering between 4,000 and 5,000, the Osage needed at least 20,000 bison a year, and since their own hunting grounds had become badly depleted by the 1830s, they probably harvested the bulk of their bison from Comanchería. The Osage principal hunting territory lay between the upper Canadian and

Brazos Rivers, just west of their own core territory. The greatest pressure on Comanchería's bison herds, however, was applied by the immigrant Indians. Not only did the most populous groups—the Cherokee, Chickasaw, Choctaw, Creek, Delaware, and Seminole—remain active hunters after the removal, but they also were located in the western parts of Indian Territory, adjacent to Comanchería. In the late 1830s, they all hunted extensively in Comanche territory and many maintained permanent encampments on their principal hunting range between the upper Canadian and Brazos Rivers. Moreover, some of the immigrant groups, particularly the Delawares Kickapoo, and Shawnee, were rapidly transforming themselves into specialized bison hunters. Given their large population, commitment to the hunt, and geographical proximity, the immigrant groups probably drained Comanchería's bison population by several thousand animals a year.¹⁸ As noted earlier, the subsistence and commercial hunting activities of the Comanche, Kiowa, Plains Apache, Wichita, and *ciboleros* may have depleted the Southern Plains bison population by almost 2 million by 1840. The additional hunting done by the Osage and immigrant Indians after the Camp Holmes treaty may have brought the total reduction well above 2 million by 1840, when, according to the standard view, the large-scale bison destruction was only beginning.

This is a staggering figure that invites skepticism. However, one should bear in mind that my purpose is not to present exact calculations but to prove a more general point; that there was a substantial, historically significant decline in bison numbers well before the 1840s. Moreover, the figure matches other broad calculations on bison numbers. The prevailing view today is that the bison numbers peaked at 7 or 8 million animals on the Southern Plains. Of this, white professional hunters eliminated about 3.5 million animals during the great slaughter of the 1870s. If we assume that the hardships of the 1840s and 1850s

shaved off an additional 2 million, there is still a loss of between 1.5 and 2.5 million that has to be accounted for. The standard explanation is that most of these animals perished during the "big die-up" of 1867, when an intense drought scarred the region between the Brazos and Conchos Rivers, causing widespread starvation.¹⁹ The problem with this interpretation is that the enormous magnitude of the 1867 die-up has never been verified—and probably never will be. Perhaps the bulk of the supposed losses had occurred well before 1867 and from a different cause: chronic overhunting that had continued from the previous century.

DIMINISHED RANGELAND AND GRAZING COMPETITION

Overhunting alone did not kill the Southern Plains buffalo. Two powerful and interrelated factors hastened the bison's demise: reduction of their range and competition from exotic species. On the surface, it would seem that the rate of decline should have slowed down in time, because the diminution of the herds left more resources for the remaining animals, increasing their fertility and reproduction rate and allowing them to compensate for the intensified human predation. However, as ecologists point out, an organism's maintenance and reproduction are not determined by the abundance of essential resources but by their minimum availability.²⁰ It was this "rule of scarcity" that sealed the Southern Plains bison's fate: the overall abundance of resources may have been increasing, but this failed to abate the decline because the minimum availability was collapsing at the same time.

The main problem was winter survival. In order to make it through the cold months, bison habitually retreated into river valleys, which provided crucial elements of survival: reliable water, shelter against freezing winds and blizzards, and cottonwood for emergency food.²¹ By the early nineteenth century, how-

ever, suitable riverine habitats were becoming increasingly scarce. From the early 1820s on, the Santa Fe traders took thousands of horses, oxen, and cattle through the upper Arkansas and Cimarron corridors each year, exhausting the river valleys of grass and other resources. In the 1830s the removed eastern tribes of Indian Territory began pushing toward Comanchería, clearing the Canadian, Washita, and Red Rivers of the bison. In 1841 the Osage agent reported that the valleys were so depleted that Osage hunters had to push deep into Comanche territory. Even more serious was that the bison had to compete with some 2 million wild mustangs for sustenance and shelter. With an 80 percent dietary overlap and similar water requirements, bison and mustangs competed fiercely for the shrinking riverine resources, critically weakening each other's chances to maintain their numbers.²²

However, the most serious threat to the bison's winter survival was posed by the Indians' rapidly growing domestic horse herds. While the Comanche had possessed between two and three horses per person in the 1770s and 1780s, the estimates by the early-nineteenth-century observers ranged between three and eight animals per capita.²³ To support all these animals—most of which were destined for the growing Anglo-American livestock trade—the Comanche turned more and more bottomland niches into herding range. Biologically, horses had no decisive advantage over bison in grazing competition, but with the help of their human partners they triumphed. By simply scaring off or killing the buffaloes, the Indians reserved a growing share of the bottomlands for themselves and their herds. In such key sites as the upper Arkansas, Canadian, Red, and Brazos Rivers huge horse herds and winter camps stretched for miles, covering all the prime locales and coercing the bison to retreat to poorer areas with reduced carrying capacity.²⁴ Already under stress from human predation and now denied vital resources, the Southern Plains buffalo population lost its ability to maintain its numbers.

THE CONFLICTING MOTIVES OF THE COMANCHE

The early diminution of the Southern Plains bison herds was first and foremost an economic process. The depletion began with more intense subsistence hunting, which in turn was propelled by the Comanche desire to maintain a large population. The decline was precipitated by the influx of new hunting groups, many of which had gained access to the Southern Plains bison by granting trading privileges to the Comanche. The bison's fate was sealed by the dramatic growth of the Indians' domestic horse herds, which competed with bison for grass and water in riverine habitats. Invariably, this development, too, stemmed from commercial considerations: the Comanche needed large horse and mule herds to supply thriving livestock trade. This conclusion deviates from the dominant ecological interpretations and is more in line with Andrew Isenberg's recent argument that the near-extirpation of the bison by the 1880s was a by-product of Euro-American economic and ecological invasion. According to Isenberg, the encounter between Indians and Euro-Americans in the western Plains created historical agents and institutions—equestrian Native hunters, professional white hide hunters, market-oriented robe trade—that proved detrimental to the bison's survival.²⁵

Yet it would be an oversimplification to say that the Comanche sacrificed the bison for shortsighted commercial and economic gain. Rather, their failure to adopt conservationist strategies stemmed from a complex conflict of motives involving ecological, economic, military, and religious interests. It is difficult to determine whether the Comanche were aware that their actions—granting hunting privileges, increasing their horse herd sizes, maintaining a large population base—were depressing the bison's numbers. Since the Comanche spent most of the year divided into small bands, they could not compare their hunting experiences and conceive a co-

ordinated resource strategy. Moreover, there was no way to assess how badly their numerous allies were depleting Comanchería's herds during their frequent hunting expeditions. Finally, it would have been virtually impossible to determine whether the scarcity of bison reflected a profound, permanent decline or normal seasonal fluctuations. On the other hand, at least some Comanche bands did complain that the increasing hunting pressure that followed the Camp Holmes treaty compromised their hunting success, exhibiting an acute understanding of the dynamic that was eradicating the foundation of their way of life.²⁶

However, whatever ecological concerns the Comanche had, they were overshadowed by compelling economic and military imperatives. In the early nineteenth century, pressure on Comanchería was rapidly increasing. Anglo-Texans, Cheyenne, Arapahoe, immigrant tribes, Osage, and Santa Fe traders all gravitated toward the Southern Plains, making it critical for the Comanche to increase their economic, commercial, and military power. The Comanche needed the bison's meat and hides for long-term survival, but in the short run it was more important for them to have several allies, large numbers of warriors, and secure trade that yielded metal weapons, guns, powder, and ammunition.²⁷ Faced with a critical strategic crisis, the Comanche had no other option but to allow unsustainable exploitation of the bison.

It is also possible that the Comanche spiritual worldview prevented them from working out an ecological balance. It has been argued that the Plains Indians shared a common belief that the bison's well-being was less a matter of human predation than a sort of ritualistic herd management: if the Indians performed the proper bison-calling ceremonies the herds would be renewed and the bison would return. An integral part of this belief was a conviction that buffaloes were supernatural in origin and infinite in numbers. According to Colonel Richard Dodge, whose information was

admittedly secondhand, all Plains Indians "firmly believed that the buffalo were produced in countless numbers in a country under the ground; that every spring the surplus swarmed, like bees from a hive, out of great cave-like openings to this country, which were situated somewhere in the great 'Llano Estacado,' or Staked Plain of Texas."²⁸ There is no direct evidence of the existence of such a belief among the Comanche, but Ernest Wallace and E. Adamson Hoebel describe a comparable idea in their 1952 ethnology. The Comanche, they report, believed that buffaloes would always be available if the proper rituals were performed:

Out on the prairie might be seen the skulls of buffalo turned so as to face the main camp, the idea being that the guardian spirit would direct the herd to move in the direction the skulls were facing. Sometimes when they were ceremoniously smoking, after puffs had been blown to the Great Spirit, Sun, and Earth, a puff was blown to a nearby buffalo skull with a prayer that it provide the people with meat to eat and skins for their lodges and clothing. At times they prayed to the buffalo in general to range where hunting would be good.²⁹

If such a belief existed, it may have had far-reaching consequences for how the Comanche reacted to the bison decline. While the Comanche undoubtedly understood the dynamics of wildlife populations and the ecological and economic causes of bison mortality, it is entirely plausible that they also believed in the supernatural origin of the bison. Thus, even if they realized that the bison herds were shrinking, they could have been convinced at the same time that there would always be buffaloes as long as there were Indians who knew and executed the necessary rituals. This kind of belief in nature's infinite abundance would explain why the Comanche gradually depleted the bison herds and undermined the foundation of their traditional way of life. Unable to

foresee the bison's extinction, they were also unable to adopt a conservationist policy.³⁰

How does this model of bison decline fit the Flores-West model? At first glance, there seems to be no connection, for all the basic components—interpretations of timing, spatial dynamic, and causes of the devastation—are different. According to Flores' and West's ecologically based models, large-scale decline began on the upper Arkansas Basin in the 1840s, while my contention is that a mixture of indigenous population growth, overkill, and ascendance of market forces had eroded the herds on the Texas Plains since the 1790s. The decline centered on the Texas Plains for a number of reasons. To begin, all the groups that gained access to Comanchería's bison range in the late eighteenth and early nineteenth centuries—the *ciboleros*, Wichita, Osage, and immigrant tribes of Indian Territory—focused their hunting activities on a relatively narrow strip between the upper Canadian and Brazos Rivers. Second, the 1,800 Kiowa and Plains Apache who made the Southern Plains their home in the late eighteenth century established their core territory between the Canadian and Red Rivers. Third, Comanche commercial hunting was most intense on the Texas Plains, which were infringed in the late 1830s and 1840s with several trading posts specializing in robe trade. Concurrently, the Comanche were intensifying their subsistence hunting on the Texas Plains. Pressed by a powerful Cheyenne-Arapaho bloc, the populous Yamparika and Jupe bands abandoned the Arkansas valley in the late 1820s, after which they concentrated their hunting activities farther south on the already crowded Texas Plains.

On closer inspection, however, the seemingly unconnected models merge to form a single causal continuum, the focal point of which was the Great Peace of 1840. Both Flores and West argue that the diminution was set off by the peace, which opened the previously uncontested upper Arkansas Basin for the five Native groups. Now, though, it appears that

the peace was not a starting point but rather a key event in a long and complex development that led to the demise of the Southern Plains bison. As conditions on the Texas Plains became increasingly dangerous for bison in the early nineteenth century, the geographic focus of bison populations gradually shifted toward the Arkansas Basin, which remained a contested tribal zone—and thus an animal refuge—until the Great Peace.³¹ The Arkansas valley, previously designated as the starting point of bison decline, was rather the last true sanctuary for the Southern Plains buffalo. This also explains why the 1840 peace became so decisive. When the détente unlocked the Arkansas, the bison had nowhere to go, for all other spots were swarming with Native and Euro-American hunters. The Great Peace sounded the death knell for the Southern Plains bison by aggravating a crisis that had been slowly brewing for half a century.

The early diminution of bison had a profound impact on the Southern Plains Indians' way of life. Unable to draw stable sustenance from the dwindling herds, the Comanche geared their economies toward pastoralism, the only other option available for them besides hunting. The Comanche had adopted pastoralist customs and strategies since the late eighteenth century, when they had become large-scale horse owners. The maintenance of vast horse herds had forced them to modify their annual cycle, settlement patterns, and labor organization, which had given a distinctive pastoral quality to their culture and economy.³² However, it was only in the 1820s and 1830s that the Comanche embraced the defining characteristic of pastoralism—the extensive use of herds for food and subsistence. The systematic subsistence utilization began in the 1820s, when the Comanche escalated their raiding operations in New Mexico, Texas, northern Mexico, and along the Santa Fe Trail. The principal objective of these raids was to steal horses and mules. Some of the stolen livestock were eaten; although bison meat remained the staple of Comanche diet, horseflesh became an important emergency food that

helped the Comanche survive short famines. However, most of the extra horses and mules were exchanged for various necessities. As the hunting opportunities deteriorated, the Comanche bought increasing amounts of corn, bread, blankets, tools, and other subsistence goods from *comancheros* and indigenous farmers. In a word, the Comanche began evolving into horse pastoralists who relied heavily on domestic herds for subsistence.³³

On a larger scale, the early diminution of bison ushered in a new era. As the herds declined, the Indians were forced to reevaluate their economic strategies and their relations with their neighbors. In 1790 the Southern Plains had been a relatively safe place where plentiful game had supported sound subsistence economies; a generation later the region had become a volatile place, marked by a deteriorating bison ecology, shifting Native economies, stiffening competition for diminishing resources, and increasing intercultural violence. In Plains Indian history the period between 1800 and 1850 is often referred to as the classic era, the time of the formidable mounted bison hunters, unforeseen material prosperity, and thriving social and ritual life. On the Southern Plains, the nineteenth century started promisingly, but a deepening ecological and economic crisis interrupted the favorable development long before mid-century. Alarming signs were increasingly frequent, foreshadowing the full-blown crisis that would soon follow.

NOTES

I would like to thank the Editor and anonymous readers for their insightful comments and useful criticism.

1. Dan Flores, "Bison Ecology and Bison Diplomacy: The Southern Plains from 1800 to 1850," *Journal of American History* 78 (September 1991): 465-85; Elliott West, *The Way to the West: Essays on the Central Plains* (Albuquerque: University of New Mexico Press, 1995), pp. 51-83.

2. See Flores, *ibid.*, pp. 480-84; West, *ibid.*, p. 82.

3. See, for example, Andrew Isenberg, "Toward a Policy of Destruction: Buffaloes, Law, and the Market, 1803-83," *Great Plains Quarterly* 12 (fall

1992): 235; Paul H. Carlson, *The Plains Indians* (College Station: Texas A&M University Press, 1998), pp. 18-19, 40. Richard White, by contrast, has been more reserved when referring to Flores's thesis. See Richard White, "Animals and Enterprise," in *The Oxford History of the American West*, ed. Clyde A. Milner II, Carol A. O'Connor, and Martha A. Sandweiss (New York: Oxford University Press, 1994), p. 249.

4. John W. Whitfield to C. E. Mix, 5 January 1856, Letters Received by the Office of Indian Affairs from the Upper Arkansas Agency, National Archives Microfilm Publication, M234, 878:102. Whitfield also provided a tribe-by-tribe breakdown of killing rates:

	Comanches	Kiowas	Apaches	Cheyennes	Arapahoes
Population	3,200	2,400	320	3,150	2,400
Buffaloes killed	30,000	20,000	2,000	40,000	20,000

5. Ernest Wallace, comp., "David G. Burnet's Letters Describing the Comanche Indians," *West Texas Historical Association Year Book* 30 (1954): 136; Morris W. Foster, *Being Comanche: A Social History of an American Indian Community* (Tucson: University of Arizona Press, 1991), pp. 44-45; Thomas W. Kavanagh, *Comanche Political History, 1706-1875* (Lincoln: University of Nebraska Press, 1996), pp. 199-203; Rupert Norval Richardson, *The Comanche Barrier to South Plains Settlement: A Century and a Half of Savage Resistance to the Advancing White Frontier* (Glendale: Arthur H. Clark, 1933), pp. 173-74, quote on p. 173. Gary Clay Anderson has recently argued that the southern Plains bison population may have dropped by as much as 50 percent between 1780 and 1820, but he offers no evidence for this claim. He tries to explain the dramatic (but unverified) decline by a prolonged dry spell in the early nineteenth century, but there is very little evidence of the effects of the drought on the bison herds. See Gary Clayton Anderson, *The Indian Southwest, 1580-1830: Ethnogenesis and Reinvention* (Norman: University of Oklahoma Press, 1999), p. 252.

6. Perhaps the most authoritative proponent of the idea of the Plains as a hunter's paradise was Frank Gilbert Roe, the author of the classic *The North American Buffalo: A Critical Study of the Species in Its Wild State* (Toronto: University of Toronto Press, 1951). Flores, too, has endorsed the idea that overhunting was not an issue under normal weather conditions. Assuming that the Southern Plains bison produced more than 1 million calves a year, he argued that the region could support the subsistence needs of as many as 60,000 full-time hunters—about twice the number of Indians that

actually lived in the region before Euro-American takeover. Flores, however, may have overestimated the bison's reproductive capacity. He asserts the bison's rate of increase at 18 percent of the *total population*, whereas Roe and William Brown argue that the reproduction rate was in fact 18 percent of the *total female aggregate*. See Flores, "Bison Ecology" (note 1 above), p. 480; Roe, *ibid.*, p. 505; William R. Brown Jr., "Comancheria Demography, 1805-1803," *Panhandle-Plains Historical Review* 59 (1986): 10. For studies that discuss the environmental shifts that contributed to the diminution of the bison, see Douglas B. Bamforth, *Ecology and Human Organization on the Great Plains* (New York: Plenum Press, 1988); John R. Bozell, "Culture, Environment, and Bison Populations on the Late Prehistoric and Early Historic Central Plains," *Plains Anthropologist* 40 (May 1995): 145-63; Richmond Clow, "Bison Ecology, Brulé and Yankton Winter Hunting, and the Starving Winter of 1832-33," *Great Plains Quarterly* 15 (fall 1995): 259-70.

7. Brown, *ibid.*, pp. 9-12. By using somewhat different figures, Andrew Isenberg has recently come to a similar conclusion. In his view, the bison were vulnerable to depletion by overhunting, because the "combination of wolf predation, competition from other grazers, and accidents raised the natural mortality of the bison to the point that in some years it may have exceeded its natural increase." See Andrew C. Isenberg, *The Destruction of the Bison: An Environmental History, 1750-1920* (Cambridge: Cambridge University Press, 2000), p. 28. Brown's argument for lower bison numbers is backed by at least two other scholars. Tom McHugh has shown that sections of Yellowstone National Park can support twenty-six bison per square mile, which translates to 6.2 million in an area of Comancheria's size. Flores, using the 1910 Census for cattle, horses, and mules, has estimated that the pre-horse southern Plains might have supported just over 8 million bison. Because horses competed with the bison for forage and water, the horse-era figure would have been notably smaller. See Tom McHugh, *The Time of the Buffalo* (Lincoln: University of Nebraska Press, 1972), pp. 16-17; Flores, "Bison Ecology" (note 1 above), pp. 470-71.

8. It should be noted that the Southern Plains bison benefitted in the late eighteenth and early nineteenth centuries from what has been called the Little Ice Age, a global cooling period that began in the fourteenth century and lasted until the middle of the nineteenth. However, frequent droughts in the late eighteenth and early nineteenth centuries—particularly in the 1780s and between 1806 and the early 1820s—nullified any positive effects that Little Ice Age may have had on the bison populations during the period dis-

cussed in this study. For droughts, see Anderson, *Indian Southwest* (note 5 above), pp. 185-86, 199-200, 252.

9. "List of Comanches Who Came to Make Peace in New Mexico, 1786," in *Forgotten Frontiers: A Study of the Spanish Indian Policy of Don Juan Bautista de Anza, Governor of New Mexico, 1777-1787*, ed. and trans. Alfred Barnaby Thomas (Norman: University of Oklahoma Press, 1932), pp. 325-27; Pedro Vial and Francisco Xavier de Chavez, "Diary of Trip from San Antonio to the Comanche Villages to Treat For Peace," 15 November 1785, Archivo General de Indias, Seville, Guadalajara, legajo 286, roll 10, available at Western History Collections, University of Oklahoma, Norman, Okla. Most early-nineteenth-century estimates of Comanche population range between 7,000 and 12,000, suggesting a recurrent cycle between sharp population declines (probably triggered by epidemic diseases) and spurts of intense, compensatory growth. See Jean Louis Berlander, *The Indians of Texas in 1830*, ed. John C. Ewers, trans. Patricia Reading Leclercq (Washington, D.C.: Smithsonian Institution Press, 1969), p. 121; Albert Pike to John Cass, 16 March 1833, Letters Received by the Office of Indian Affairs from the Western Superintendency, National Archives Microfilm Publication, M234, 921:166, Charles Bent to William Medill, Commissioner of Indian Affairs, 10 November 1846, in *The Official Correspondence of James S. Calhoun*, ed. Annie Heloise Abel (Washington, D.C.: US Government Printing Office, 1915), pp. 6-9; Pierce Butler to William Medill, 4 March 1846, Miscellaneous Letters Received by the Office of Indian Affairs, National Archives Microfilm Publication, M234, 444:44; Brown, "Comancheria Demography" (note 6 above), p. 8.

10. Michael G. Davis, *Ecology, Sociopolitical Organization, and Cultural Change on the Southern Plains: A Critical Treatise in the Sociocultural Anthropology* (Kirksville, Missouri: Thomas Jefferson University Press, 1996), p. 134. n. 17; Kavanaugh, *Comanche Political History* (note 5 above), pp. 147-48.

11. Isenberg, *Destruction of the Bison* (note 7 above), p. 88.

12. Brown, "Comancheria Demography" (note 6 above), pp. 10-11; Shepard Krech III, *The Ecological Indian: Myth and History* (New York: W. W. Norton, 1999), p. 136. In reality, the Indians were probably killing even more than the minimum of six buffaloes per person, because all Plains nomads indulged in occasional wasteful acts during summer hunts, such as taking only the choicest parts of the fattest cows. See Isenberg, *Destruction of the Bison* (note 7 above), p. 85; Krech, *ibid.*, pp. 142-43.

13. For a classic portrayal of the Upper Missouri trade center, see John C. Ewers, "The Indian Trade of the Upper Missouri before Lewis and Clark," in *Indian Life on the Upper Missouri*, John C. Ewers (1954; reprint, Norman: University of Oklahoma Press, 1968), pp. 14-33. For new interpretations of Comanche trade and economy, see Pekka Hämäläinen, "The Western Comanche Trade Center: Rethinking the Plains Indian Trade System," *Western Historical Quarterly* 29 (winter 1998): 485-513; Kavanagh, *Comanche Political History* (note 5 above), pp. 163-386; Martha McCullough, "Three Analytical Approaches to Comanche and Caddoan Histories During Spain's Colonial Occupation of the Southern Plains" (Ph.D. diss., University of Oklahoma, 1996).

14. Data on Comanche and Kiowa hide trade is extremely scarce. According to Flores, the Southern Plains Indians produced between 6,000 and 10,000 bison for New Mexican and *comanchero* markets, but it is impossible to verify his estimate. The volume of the Comanches' and Kiowas' trade with their other allies, most of which were active hunters, was probably only a fraction of the volume of the New Mexican trade. See Brown, "Comancheria Demography" (note 6 above), n. 75.

15. William A. Dobak, "Killing the Canadian Buffalo: 1821-1881," *Western Historical Quarterly* 27 (spring 1996): 46; Flores, "Bison Ecology" (note 1 above), pp. 479-80; Bamforth, *Ecology* (note 6 above), p. 81.

16. H. Bailey Carroll and J. Villasana Haggard, trans. and ed., *Three New Mexico Chronicles* (Albuquerque: The Quivira Society, 1942), pp. 101-2; Charles L. Kenner, *A History of New Mexican-Plains Indian Relations* (Norman: University of Oklahoma Press, 1969), pp. 100-107; Elizabeth Ann Harper, "The Taovayas in Frontier Trade and Diplomacy, 1769-1779," *Southwestern Historical Quarterly* 57 (October 1953): 198-99; Elizabeth A. H. John, *Storms Brewed in Other Men's Worlds: The Confrontation of Indians, Spanish, and French in the Southwest, 1540-1795* (Norman: University of Oklahoma Press, 1975), p. 459; Ernest Wallace and E. Adamson Hoebel, *The Comanches: Lords of the South Plains* (Norman: University of Oklahoma Press, 1952), p. 287; Dan L. Flores, ed., *Journal of an Indian Trader: Anthony Glass and the Texas Trading Frontier, 1790-1810* (College Station: Texas A&M University Press, 1985), pp. 70-79.

17. Hämäläinen, "Western Comanche Trade Center" (note 13 above), p. 507; Elizabeth A. H. John, "An Earlier Chapter of Kiowa History," *New Mexico Historical Review* 60 (1985): 393-94; Joseph Jablow, "The Cheyenne in Plains Indian Trade Relations, 1795-1840," in *Monographs of the American Ethnological Society*, no. 19 (New York: J. J.

Augustin, 1951), pp. 63-72; Wallace and Hoebel, *Comanches*, *ibid.*, p. 291; Kavanagh, *Comanche Political History* (note 5 above), p. 235. For instructive analyses of buffer zones, see West, *Way to the West* (note 1 above), pp. 61-62; Richard White, *The Roots of Dependency: Subsistence, Environment, and Social Change among the Choctaws, Pawnees, and Navajos* (Lincoln: University of Nebraska Press, 1983), p. 67.

18. Willard H. Rollings, *The Osage: An Ethno-historical Study of Hegemony on the Prairie-Plains* (Columbia: University of Missouri Press, 1992), pp. 20-21, 257-85; David LaVere, *Contrary Neighbors: Southern Plains and Removed Indians in Indian Territory* (Norman: University of Oklahoma Press, 2000), pp. 62-116; Dianna Everett, *The Texas Cherokees: A People Between Two Fires, 1819-1840* (Norman: University of Oklahoma Press, 1990), p. 114; Stan Hoig, *Tribal Wars of the Southern Plains* (Norman: University of Oklahoma Press, 1993), pp. 118-35.

19. Brown, "Comancheria Demography" (note 6 above), pp. 9-10; Flores, "Bison Ecology" (note 1 above), p. 485; Richard White, "It's Your Misfortune and None of My Own": A New History of the American West (Norman: University of Oklahoma Press, 1994), p. 216.

20. Generally known as Liebig's law of the minimum, this principle has enjoyed wide popularity among the scholars of the American West and Plains Indians. See, for example, Alan J. Osborn, "Ecological Aspects of Equestrian Adaptations in Aboriginal North America," *American Anthropologist* 85 (September 1983): 563-91; West, *Way to the West* (note 1 above), pp. 49-50, 78-79.

21. Wallace and Hoebel, *Comanches* (note 16 above), p. 14; West, *Way to the West* (note 1 above), pp. 19-26.

22. West, *Way to the West* (note 1 above), pp. 31-32, 77-79; Flores, "Bison Ecology" (note 1 above), p. 481; Richardson, *Comanche Barrier* (note 5 above), p. 174.

23. Charles Wilson Hackett, ed. and trans., Charmion Clair Shelby, trans., *Pichardo's Treatise on the Limits of Texas and Louisiana*, 4 vols. (Austin: University of Texas Press, 1931-46), 3:348; Pedro Fermín de Mendinueta to Antonio María de Bucareli y Ursúa, 20 October 1774, in *The Plains Indians and New Mexico, 1751-1778: A Collection of Documents Illustrative of the History of the Eastern Frontier of New Mexico*, ed. Alfred Barnaby Thomas (Albuquerque: University of New Mexico Press, 1940), p. 175; Juan Bautista de Anza, "Diary" and Francisco Xavier Ortiz to Anza, 20 May 1786, in *Forgotten Frontiers* (note 9 above), pp. 139, 323; Jürgen Döring, *Kulturwandel bei den nordamerikanischen Plains-Indianern: Zur Rolle des Pferdes bei*

den Comanchen und den Cheyenne (Berlin: Dietrick Reimer, 1984), pp. 236-37.

24. George E. Hyde, *Life of George Bent Written from His Letters*, ed. Savoie E. Lottinville (Norman: University of Oklahoma Press, 1968), p. 37; Jacob Fowler, *The Journal of Jacob Fowler*, ed. Elliott Coues (Minneapolis: Ross and Haines, 1965), pp. 51-59; John Sibley to the Secretary of War, 5 April 1805, Letters Received by the Secretary of War Related to Indian Affairs, National Archives Microfilm Publication, M271, 1:302; John Sibley, *A Report from Natchitoches in 1807*, ed. Annie Heloise Abel (New York: Museum of the American Indian, 1922), pp. 40-41; Thomas James, *Three Years among the Indians and Mexicans*, ed. Milo Milton Quaife (New York: Citadel Press, 1966), pp. 226-43; Kavanagh, *Comanche Political History* (note 5 above), pp. 133-39.

25. Isenberg, *Destruction of the Bison* (note 7 above), pp. 193-98. Isenberg's is a wide-ranging and broadly conceived study. His main objective is to place the destruction of the bison within the context of two meta-narratives of eighteenth- and nineteenth-century history—European imperial expansion, which introduced new economic systems and animals to the Great Plains, and the concomitant European biological invasion, which led to a global decline in ecological diversity. Isenberg is not particularly concerned with the spatial and temporal specifics of the bison's decline, and he does not discuss the possibility of the early decline of the bison.

26. Isenberg, *Destruction of the Bison* (note 7 above), p. 84; Montford Stokes and F. W. Armstrong to Lewis Cass, 29 December 1835, Letters Received by the Office of Indian Affairs from the Western Superintendency, National Archives Microfilm Publication, M234, 921:1069.

27. For the increasing external pressure around Comancheria, see T. R. Fehrenbach, *Comanches: The Destruction of a People* (New York: Alfred A. Knopf, 1974), pp. 305-33; Rollings, *Osage* (note 18 above), pp. 147-48; Kavanagh, *Comanche Political History* (note 5 above), pp. 210-21; Hoig, *Tribal Wars* (note 18 above), pp. 108-35.

28. Richard I. Dodge, *Our Wild Indians: Thirty-three Years' Personal Experience among the Red Men of the Great West* (1883; reprint, New York: Archer House, 1959), p. 286; Flores, "Bison Ecology" (note 1 above), pp. 484-85; Dobak, "Killing the Canadian Buffalo" (note 15 above), pp. 49-50.

29. Wallace and Hoebel, *Comanches* (note 16 above), pp. 199-200.

30. Shepard Krech III has pointed out that this kind of argument entails construing conservation and waste in other than utilitarian, or western, terms. To the Plains Indians, he argues, conservation meant maintaining a total relationship with the bison through ceremonies and rituals, not being concerned with the actual numbers or densities of the species. See Krech, *Ecological Indian* (note 12 above), p. 149.

31. Douglas Bamforth has shown that human predation could have had profound effects on bison's migration and settlement patterns. When under pressure, the herds could migrate more erratically, aggregate into larger and more mobile herds, and even shift their core home range. See Douglas B. Bamforth, "Historical Documents and Bison Ecology on the Great Plains," *Plains Anthropologist* 32 (February 1987): 1-16.

32. For Comanche pastoralism, see Gerard Betty, "Comanche Warfare, Pastoralism, and Enforced Cooperation," *Panhandle-Plains Historical Review* 88 (1995): 1-12; Gerard Betty, "'Skillful in the Management of the Horse': The Comanches as Southern Plains Pastoralists," *Heritage of the Great Plains* 30 (spring/summer 1997): 5-13; Hämäläinen, "Western Comanche Trade Center" (note 13 above), p. 498. For a general analysis of Plains Indian pastoralism, see Clyde H. Wilson, "An Inquiry into the Nature of Plains Indian Cultural Development," *American Anthropologist* (April 1963): 355-69.

33. Hämäläinen, "Western Comanche Trade Center" (note 13 above); Kavanagh, *Comanche Political History* (note 5 above), pp. 199-203; Foster, *Being Comanche* (note 5 above), pp. 47-48; Frances Levine, "Economic Perspectives on the Comanchero Trade," in *Farmers, Hunters, and Colonists: Interaction between the Southwest and the Southern Plains*, ed. Katherine Spielmann (Tucson: University of Arizona Press, 1991), pp. 158-62. For evidence that Comanches ate horses already in the 1820s and 1830s, see Juan Antonio Padilla, "Texas in 1820: Report on the Barbarous Indians of the Province of Texas," *Southwestern Historical Quarterly* 23 (1919): 54; José Francisco Ruiz, *Report on the Indian Tribes of Texas in 1828*, ed. John C. Ewers, trans. Georgette Dorn (New Haven: Yale University Press, 1972), p. 8; George Catlin, *North American Indians*, ed. Peter Matthiessen (New York: Penguin Books, 1989), p. 323; Victor Tixier, *Tixier's Travels on the Osage Prairies*, ed. John Francis McDermott, trans. Albert J. Salvan (Norman: University of Oklahoma Press, 1940), p. 266.