
Greater Yellowstone Bison Distribution and Abundance in the Early Historical Period

Paul Schullery

P.O. Box 168, Yellowstone National Park, WY 82190 (307-344-2220, paul_schullery@nps.gov)

Lee Whittlesey

P.O. Box 168, Yellowstone National Park, WY 82190 (307-344-2261, lee_whittlesey@nps.gov)

Abstract

Bison management in Yellowstone and Grand Teton national parks, as well as on other public and private lands in the Greater Yellowstone Ecosystem (GYE), has long been controversial. Both professional management and popular advocacy relating to bison are routinely based on presumptions about the historical distribution of the species in the region that have not yet been fully evaluated by ecological historians. In an exhaustive review of published and unpublished first-hand accounts of the GYE prior to the creation of Yellowstone National Park in 1872, we compiled all observations, accounts, and references to bison, including tracks, hide, meat, and other parts and evidence. Based on this substantial body of information, we describe the presence of bison in the first decades of Euro-American contact with Greater Yellowstone. We also provide and analyze anecdotal evidence of the decline of bison numbers and the contraction of bison distribution in the period before the famous industrial slaughter of the mid-1870s. Bison were spectacularly abundant in lower river valleys and prairie habitats, and were all but exterminated from those areas by the close of the study period. Contrary to still-popular belief, bison and other large herbivores were not “driven into higher country” by settlement, but inhabited those higher regions as environmental conditions permitted prior to the arrival of Euro-Americans. Key historiographical issues relating to this body of evidence and its use include: conflicting and incomplete previous interpretations of American Indian influences on bison population and distribution; the formidable weight of western and regional folklore regarding bison presence/absence; and previous misunderstandings of the meaning or relevance of early historical accounts to modern management dialogues. We discuss other avenues of investigation and evidence types awaiting attention.

Yellowstone’s wildlife populations have been controversial for almost the entire history of the park. As Mary Ann Franke’s new book on the bison of Yellowstone ably demonstrates, these controversies reach deeply into the political, economic, social, and even religious fabric of our society (Franke 2005). While today’s scientists have produced a large and formidable body of bison research findings, and while agency professionals go to great lengths to dispense reliable information based on that research, the general public’s awareness of Yellowstone wildlife history and ecology continues to be based in good part on folklore, hyperbolic rhetoric, and an appalling variety of misinformation. Even for those people with the time and inclination to search out what is actually known about the bison of Yellowstone, the task of understanding can be daunting. This is certainly true in unraveling the historical evidence of bison presence and abundance in Greater Yellowstone.

For our ongoing study of early Greater Yellowstone wildlife history, we have gathered observations, accounts, and references to bison (including tracks, hide, meat, and other parts and evidence) from several hundred accounts of the Greater Yellowstone Ecosystem (GYE) prior to 1882 (e.g., Schullery and Whittlesey 1992; 1995; 1999a). These accounts include formal government survey reports, published and unpublished journals of explorers, trappers, prospectors, military parties, and tourists, early published and unpublished maps, anthropological literature, popular journalism such as books and periodical articles about the GYE, and contemporary newspaper accounts. In this paper we summarize our findings in the following areas: First, we review what is known about the distribution and abundance of bison in Greater Yellowstone at the time of first Euro-American visits to the area. Second, we review the process of the decline of the bison population in the area. Third, we consider

several interesting aspects of the historiography of early historical evidence of wildlife, especially bison, in Greater Yellowstone.

Distribution of bison in the Greater Yellowstone Ecosystem

Prehistoric bison distribution in the GYE can perhaps best be summarized simply by saying that bison appear to have been living everywhere in Greater Yellowstone where habitats were suitable. The notion that bison are not native to the area now known as Yellowstone National Park, though still apparently a popular opinion, has no basis in historical record.

It is worth pointing out that we are not dependent solely upon the historical record for our knowledge of bison distribution in the park area. Archeological work, most of it within the past 20 years, has identified bison remains at park sites near Gardiner, Montana; in the Hellroaring drainage; near Tower Junction; in Lamar Valley; and on the Yellowstone Lake shore. These finds indicate bison presence in the park area for 8,000 years (Johnson 1997). Likewise, a recent survey of Greater Yellowstone archeological research has identified bison remains in 29 archeological and three paleontological sites (Cannon 2001).

Abundance of bison in the Greater Yellowstone Ecosystem

The historical record of Greater Yellowstone provides some vivid and fascinating evidence relating to the abundance of bison. In the first few decades of the nineteenth century, various writers reported vast herds of bison on the prairies along the edges of the Greater Yellowstone Ecosystem, including the Yellowstone, Wind, and Snake River drainages. Smaller numbers of animals were reported here and there throughout the ecosystem, most often in the internal valleys.

In almost no case prior to 1880, however, does the written historical record provide the means of calculating any herd size for any locale. Nor does such a spotty and intermittent set of records allow us to assume that a sighting of a certain herd in a certain valley or meadow in a certain year meant that bison occupied that site similarly year after year.

This is a central point, and of special importance in the case of animals with complicated migratory habits. We can only make so much of this evidence because it consisted almost entirely of brief verbal snapshots of a certain day and condition. Virtually

all early journalists in the Rocky Mountains were transient. Most traveled through the region in the warmer months of the year. Some of their accounts specifically remarked on the mobility of the bison herds, and the amazing swiftness with which a horizon-crowding herd of bison could apparently vanish. Such behavior on the part of enormous herds of grazers may seem intuitively sensible to us today, but it complicated life for early travelers even if they did understand it. Not all early travelers found bison in the same places, and some could not find them at all when they most desperately needed them for food.

However, the absence of bison from entire large drainages was apparently not always just a matter of the bison being somewhere else on the day a party came through. Sometimes the animals may have been either driven off or eliminated from a given range by native people. On July 14, 1806, some miles west of present Bozeman, Montana, Sacagawea told William Clark that bison had recently been abundant in the upper Gallatin Valley, but that Shoshone Indians had wiped them out (Thwaites 1905, 260–261).

According to this account, because of the superior military might of their neighbors, the Shoshones were unwilling to venture east into other bison ranges, and had hunted the local animals in the upper Gallatin Valley to extinction. As Clark's party moved across the Gallatin Valley and east into the Yellowstone drainage, he repeatedly said that they followed an "old buffalo road" (Thwaites 1905, 261). Proceeding eastward, on across the north side of Greater Yellowstone, they saw more bison after reaching the Yellowstone River, encountering them in large numbers from the site of present Big Timber, Montana, on downstream (Thwaites 1905, 266–269). In this instance, Greater Yellowstone provided potential evidence of ways in which native humans' political distribution on the landscape had the kinds of pronounced effects on western wildlife distribution and abundance hypothesized by Martin and Szuter (1999), who suggested that wildlife flourished in the "war zones" of less densely populated land contested by warring tribes, and were reduced in number in "game sinks" where large numbers of native humans were in regular residence.

Perhaps the largest herds that actually occupied what we now think of as Greater Yellowstone were in the south. In June 1833, trapper Warren Ferris was camped on the Green River not far from present Daniel, Wyoming. This one extended quotation from several such descriptions will help capture the mood of what Greater Yellowstone has lost:

Few persons, even in these romantic regions, have ever witnessed so interesting a scene as was presented to our view from an eminence or high mound, on which we were fortunately situated, overlooking the plains to a great distance. Immense herds of bison were seen in every direction galloping over the prairie, like vast squadrons of cavalry performing their accustomed evolutions. Platoons in one part filing off, and in another returning to the main bodies; scattering bands moving in various courses, enveloped in clouds of dust, now lost, and now reappearing to view, in their rapid movements; detachments passing and repassing, from one point to another, at full speed; and now and then a solitary patriarch of the mountain herds, halting for a moment behind the dashing cohorts, to ascertain, if possible, the cause and extent of the danger and alarm; but soon again with instinctive impulse, hurrying to join his less fearless files; and all rushing on, till form and numbers disappear in the dust and distance, and nothing remains visible of the long black lines but dark clouds slowly sweeping over the distant plains. . . . (Ferris 1940, 168).

We also can rely on Ferris for a similar if more succinct account of abundant bison along the western edge of Greater Yellowstone. When his party reached Pierre's Hole, the large plains west of the Teton Range, in August 1832, Ferris wrote, "The plains were covered with buffalo, in all directions, far as we could discern them" (Ferris 1940, 128). It is these western herds that we must consider next.

Decline of bison in the Greater Yellowstone Ecosystem

Our study of the decline of bison in Greater Yellowstone in the several decades before 1880 confirms recent portrayals of similar declines throughout the West. Though traditional accounts of the extermination of bison have tended to emphasize the great commercial slaughters of the 1870s and early 1880s, more recent scholarship has shown that the process was much more drawn out than that (Flores 1991; Benedict 1999; Isenberg 2000; Krech 2000). It certainly was in Greater Yellowstone.

The arrival of horses in the late 1700s, the arrival of whites with firearms soon after, and the arrival of increasing trade incentives through the early 1800s conspired to create a growing white and Indian hunting industry (Janetski 1987; Hoxie 1989; Fowler 1996). It was this complex set of changing conditions that led humans to make serious inroads on bison numbers in Greater Yellowstone at least

three decades before Yellowstone National Park was created in 1872.

The most striking example is from the west side of the ecosystem, where bison had been abundant (though how abundant is still a matter of disagreement) at the time of the first white arrivals around 1800. By about 1840, increasingly effective human hunters, both white and Indian, had essentially eliminated bison from the Snake River Plain (Haines 1964; Daubenmire 1985; Janetski 1987; Van Vuren 1987; Urness 1989; Whittlesey 1994; Shaw 1995). Climatic factors, especially the severe winter of 1836, may have further reduced herds (Lupo 1996).

It was in good part because of this loss of bison on the west side of Greater Yellowstone that use of a network of Indian trails across northern Yellowstone, now collectively known as the Bannock Indian Trail, greatly increased (Haines 1964; Janetski 2002). By the early 1840s, mounted Indians began making annual pilgrimages across the Gallatin and Absaroka ranges to better hunting grounds to the east and north of the present park.

It seems most likely to us that as bison were eliminated from the Snake River Plain, hunters would necessarily have sought out whatever bison were available in the interior of the Greater Yellowstone Ecosystem, starting along the western edge of Greater Yellowstone and working east. Thus, bison in Jackson Hole and other smaller habitats, such as the Firehole–Madison area or Hayden and Pelican valleys, would also have been hunted, presumably with similar effects as on the Snake River Plain. And thus, any bison lingering along the route of the Bannock Indian Trail in Gardner's Hole, the Mammoth–Gardner Basin, Blacktail Plateau, Pleasant Valley, or Lamar Valley, would have been subjected to heavier hunting pressure as well.

It is extremely important to recognize probable effects that industrial-scale bison hunting on the outer fringes of Greater Yellowstone had on interior populations. The increased mobility and improved technology of native hunters between 1800 and 1880 meant, among other things, that the first whites to make any attempt to estimate bison population size in the present park area were too late to get a clear picture of what the population must have been like before Euro-American influences reached the region. No one attempted to provide an actual count of bison in Yellowstone National Park until about 1880, after three or four decades of increased Indian hunting pressure were concluded by several years of industrial-scale commercial hide-hunting by whites.

Historiographical notes

Throughout the many years that we've been looking at this historical record, we have been struck by the haste and confidence with which individual accounts of early Yellowstone have been used by modern writers to prove this or that. There is a huge amount of this early material, and only a small part of it, perhaps 10% of the volume of material we have examined, is handy in many libraries, usually in the form of reprints of early reminiscences by various travelers. It has been that small, handy part that has been repeatedly re-interpreted by all previous commentators on this topic. In our own studies, we have been impressed with how carefully some of those commentators handled such a small amount of evidence and extrapolated from it with reasonable accuracy. But the majority of such commentators weren't as successful (summarized by Schullery and Whittlesey 1992; 1995; 1999a; 1999b).

It is very easy to shop through these handiest historical sources for friendly evidence, whatever case you may wish to make. Highlight the right sentences and you can "prove," at least to your own satisfaction and the satisfaction of whichever constituencies favor your view, virtually any of the alternative scenarios that are most commonly discussed.

Likewise, it is easy, once the favored accounts have been extracted from their sources, to give them as much weight as seems necessary for rhetorical purposes. It is amazing how many trappers, prospectors, and other characters whose own companions might not have trusted them with a borrowed mule have been elevated by modern writers to the status of scientifically reliable ecological observers.

Even if the writer of an early account was the very soul of probity, as his party traveled through, let's say, Jackson Hole, they typically had neither the resources nor the inclination to scan every meadow, hollow, river bottom, and hilltop. Yet too many modern commentators have tended to treat the casually written fireside diaries of these early adventurers almost as if they were the equivalent of systematic modern aerial surveys.

On the other hand, many of these early accounts were written by savvy wilderness travelers, with great experience with western wildlife. They left us accounts and insights that are priceless to modern wildlife science. Our task should be to make the most of what they gave us, and our experience with this material has taught us important historiographical lessons.

First, the only acceptable way to employ this

kind of evidence is in the largest amount possible. Using only a few accounts as somehow "representative" of a presumed greater body of material is never safe. This may be even more important for the study of bison history than for some other species, because bison were so mysteriously mobile, and could be seen by one traveler in nearly stupendous numbers while the next traveler missed seeing them.

Second, parties of different size, travel pace, observer skill, firearm habits, and other variables had remarkably dissimilar fortunes in finding wildlife.

Third, individual writers differed enormously in their interests, but there were also nearly uniform patterns of what animal species were regarded as worth writing about. Most obvious among the patterns was that animals below a certain size—from somewhere around the size of a coyote on down—were almost never mentioned. The largest animals, such as bison, were most likely to be regarded as notable. It is hard to overstate the effect this has had on analysis of the historical record of wildlife. Virtually no early writers except for a few zoologists said anything about the hundreds of species of songbirds, small mammals, reptiles, amphibians, and insects that they could not have avoided seeing. As well, there were extreme and not at all surprising observer biases toward visual evidence and away from auditory evidence. Except for reports of elk bugles, wolf howls, and a very few other animal noises, the historical record of first-hand accounts of wildlife would give the mistaken impression that the Greater Yellowstone Ecosystem was an almost silent wilderness. Bird songs and calls are especially absent from almost all accounts.

Fourth, in sharp contrast to modern natural-history writers, virtually no writers from our study period reported animal droppings of any kind. There were at least two reasons for this. The first reason is that, unlike us, all of these people came from a manure-rich world; the stuff was a routine sight at home, where it was a reality of both rural and urban landscapes. Bison droppings may have been even more uninteresting than some other types, because they so nearly resembled those of domestic cattle. The second reason is that animal droppings weren't the topic of polite writing.

An interesting sidelight of this topic is the general absence, from early historical photographs of Yellowstone National Park landscapes, of such obvious bison evidence as their droppings. If, as seems likely to us, bison numbers had been reduced especially in the most accessible portions of what would

become Yellowstone National Park well before 1871, when the first cameras arrived, then “buffalo chips,” even old ones, would probably have been scarce at that time. In addition, professional photographers of the day, who typically went to considerable effort to set up each image, would have most likely kicked the closest and most noticeable such unwelcome natural features out of view before taking their pictures. However, we consider such photographic evidence worth further consideration.

Fifth, large parties might have contained several writers, and all must be consulted. As we accumulated these early accounts from many sources, we discovered that even the third or fourth account from yet another member of the same party might reveal new insights.

Conclusion

Though the written historical record does establish the widespread distribution of bison throughout the GYE, that record was made too late to provide us with a full portrait of the relationships between native people and bison before those relationships were influenced by Euro-Americans. That written record was also made too late to portray anything necessarily resembling a so-called “pristine” state of ecological affairs in regional bison populations.

What the historical record does tell us is that bison were here, they were all over the place, they were abundant, and, if we may add a new and sadder meaning to Warren Ferris’s words, “nothing remains visible of the long black lines but dark clouds slowly sweeping over the distant plains.”

References

- Benedict, J. B. 1999. Effects of changing climate on game-animal and human use of the Colorado high country (U.S.A.) since 1,000 B.C. *Arctic, Antarctic, and Alpine Research* 31(1):1–15.
- Cannon, K. P. 2001. What the past can provide: contribution of prehistoric bison studies to modern management. *Great Plains Research* 11(1):145–174.
- Daubenmire, R. 1985. The western limits of the range of the American bison. *Ecology* 66(2):622–624.
- Ferris, W. A. 1940. *Life in the Rocky Mountains 1830–1835*. Salt Lake City: Rocky Mountain Bookshop.
- Flores, D. 1991. Bison ecology and bison diplomacy: the southern plains from 1800 to 1850. *Journal of American History* 78(2):465–485.
- Fowler, L. 1996. The Great Plains from the arrival of the horse to 1885. Pages 1–55 in B. G. Trigger and W. E. Washburn, eds., *The Cambridge history of the native peoples of North America*, vol. 1, North America, part 2. New York: Cambridge University Press.
- Franke, M. A. 2005. *To save the wild bison: life on the edge in Yellowstone*. Norman: University of Oklahoma Press.
- Haines, A. L. 1964. *The Bannock Indian Trail*. Yellowstone National Park: The Yellowstone Library and Museum Association.
- Hoxie, F. 1989. *The Crow*. New York: Chelsea House Publishers.
- Isenberg, A. 2000. *The destruction of the bison*. New York: Cambridge University Press.
- Janetski, J. 1987. *The Indians of Yellowstone Park*. Salt Lake City: Bonneville Books, University of Utah Press.
- Johnson, A. 1997. How long have bison been in the park? *The Buffalo Chip*, January–February–March, 5.
- Krech, S., III. 2000. *The ecological Indian*. New York: W. W. Norton & Company.
- Lewis, M., and W. Clark. 1905. In R. G. Thwaites, ed., *Original journals of the Lewis and Clark expedition*. New York: Dodd, Mead & Company.
- Lupo, K. 1996. The historical occurrence and demise of bison in northeastern Utah. *Utah Historical Quarterly* 64(2):168–180.
- Martin, P. S., and C. R. Szuter. 1999. War zones and game sinks in Lewis and Clark’s West. *Conservation Biology* 13(1):36–45.
- Schullery, P., and L. H. Whittlesey. 1992. The documentary record of wolves and related wildlife species in the Yellowstone National Park area prior to 1882. Pages 1.3–1.173 in John D. Varley and Wayne G. Brewster, eds., *Wolves for Yellowstone? A report to the United States Congress*, volume 4, research and analysis. Yellowstone National Park, Wyo.: National Park Service.
- _____. 1995. A summary of the documentary record of wolves and other wildlife species in the Yellowstone National Park area prior to 1882. Pages 63–76 in L. N. Carbyn, S. H. Fritts, and D. R. Seip, eds., *Ecology and conservation of wolves in a changing world*. Canadian Circumpolar Institute, occasional publication No. 35.
- _____. 1999a. Early wildlife history of the Greater Yellowstone Ecosystem: an interim research report presented to National Research Council, National Academy of Sciences, committee on “Ungulate Management in Yellowstone National Park” (July). Copies available from the National Academy of Sciences, Washington, D.C., or from the Yellowstone Research Library or Yellowstone Center for Resources, Yellowstone National Park, Wyo.
- _____. 1999b. Greater Yellowstone carnivores: a history of changing attitudes. Pages 10–49 in T. P. Clark, P. C. Griffin, S. Minta, and P. Kareiva, eds., *Carnivores in ecosystems: the Yellowstone experience*. New Haven: Yale University Press.
- Shaw, J. H. 1995. How many bison originally populated western rangelands? *Rangelands* 17(5):148–150.

- Thwaites, R. G., ed. 1905. *Original journals of the Lewis and Clark expedition*, volume 5. New York: Dodd, Mead & Company.
- Urness, P. J. 1989. Why did bison fail west of the Rockies? *Utah Science* 50(3):175–179.
- Van Vuren, D. 1987. Bison west of the Rocky Mountains: an alternative explanation. *Northwest Science* 61(2):62–69.
- Whittlesey, L. H. 1994. A pre-1905 history of large mammals in Pierre's Hole, Idaho; Jackson Hole, Wyoming; and the Bechler region of southwestern Yellowstone. In-house draft report, August 2, 1994. Yellowstone National Park, Wyo.: National Park Service.