

# Where the Buffalo Once Roamed

## THE HISTORICAL BACKGROUND

My paternal grandparents, Jake and Margaret Frison, were true pioneers. Jake was a railroad engineer, and he and my grandmother married and moved to Leadville, Colorado, in 1890. Their dream of the future was to own a cattle ranch; so three years later, they purchased a small place along the Roaring Fork River at Basalt, Colorado. However, they were not able to expand the property into the kind of ranch operation they were searching for, and in 1901, in their late thirties and with four young children, they decided to abandon a secure but to them unsatisfying life in Colorado to move to northern Wyoming. After spending most of the summer of 1900 traveling through several western states, and after considering several possible locations, they finally chose a spot in the Big Horn Basin in north-central Wyoming. In the summer of 1901, they gathered up their small herd of cattle, loaded their belongings on wagons, and began the trek from Basalt to Ten Sleep, a distance of about 500 kilometers as the crow flies but considerably further on the long, winding roads of that time. Following a route that took most of the summer of 1901, they reached their destination; the home ranch was to be at the base of the western slope of the Big Horn Mountains along a flowing mountain stream with mountains to the east and plains to the west. Even while facing a long, cold Wyoming winter, they were making plans to begin acquiring the range land needed to support cattle ranching.

By 1918, the ranch was a modest but viable cattle operation. Also by this time, each of the couple's three sons, one of them my father, had completed all necessary requirements for owning a homestead of 640 acres, which together formed a block of nearly 2,000 acres of prime mountain range. It was a transhumance operation: cattle were taken to the mountains in summer and to the plains in winter. Even relying only on horses for transportation, one could gather cattle from the plains one day and move them to the mountains the next. Besides the domestic animals, deer, elk, and pronghorn, along with a host of predators, occupied the area. My grandfather was an avid hunter and trapper: I am sure the presence of wild game strongly influenced his final selection of a place to put down permanent roots. The family's way of life was harsh but still rewarding because of the unfettered access and freedom found in the wide open spaces.

My father was killed in an accident in 1924, just before I was born, and my mother could not visualize a future for herself on the ranch. Consequently, when I was three, my mother left and my grandparents took on the chore of raising me. I took to ranch life like a duck to water from the day I was placed on the back of a horse and followed my grandfather around the ranch. As soon as I could put a saddle and bridle on a horse by myself, a whole new world opened up. At an early age, I began to see the plains and the mountains not as two separate ecosystems but as a continuum, a concept I have used repeatedly in analyzing plains and mountain prehistory. To me, the two ecosystems were inseparable, and ranchers had to deal with them as complements; the same was undoubtedly true for prehistoric hunters. Other ecologists have arrived at similar conclusions (see, e.g., Knight 1994).

#### THE PLAINS AND THE MOUNTAINS

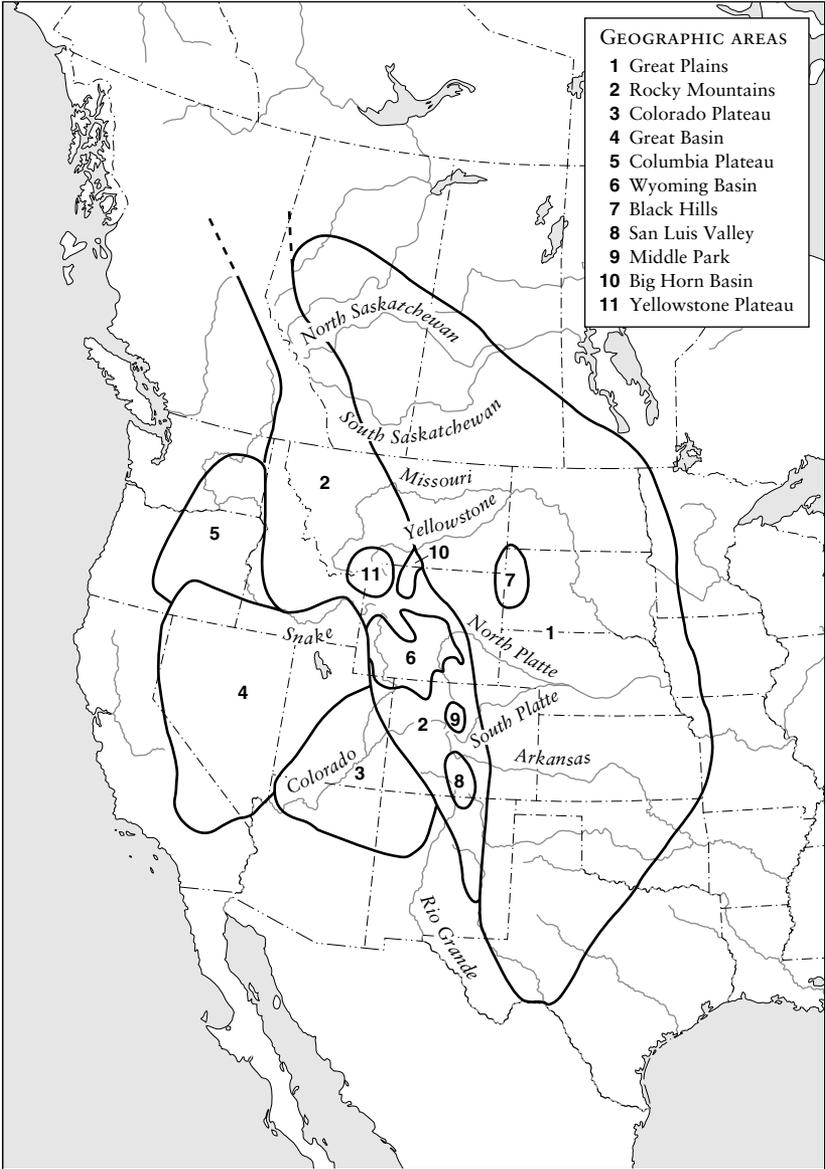
The late Waldo Wedel, the first widely recognized authority on Great Plains archaeology, referred to the area as a land of sun, wind, and grass (Wedel 1961). These are appropriate terms, but they strike me as inadequate to convey a realistic picture. Just a few of the obvious characteristics missing from his description are bitterly cold winters; oppressively hot summers, with hailstorms and tornadoes; spring, fall, and winter blizzards; abrupt weather changes; wood ticks; swarms of biting insects; and rattlesnakes. It is a land of grass but there are also seemingly endless stretches of sagebrush, yucca, greasewood, salt bushes, and juniper, along with many areas of soil incapable of producing any vegetation. Livestock

raisers and wildlife managers have as many ways of describing grass as the Inuit have to describe snow—conditions that, although very different, are critical to the daily lives of both.

One has to be close to the land at all times of the year, over many years, to acquire a true feeling for it and be able to extract a living from it. For all their good and bad qualities, the plains and the Rocky Mountains together provide a large share of the information about prehistoric large mammal hunting during the more than 11,000 years of known human habitation in North America. This is where the evidence for the hunting of these animals is found in good geologic contexts. Yet the records of the livestock industry over more than a century suggest that prehistoric human survival must have been tested on many occasions.

In reality, the plains and Rocky Mountains are composed of an almost endless variety of landforms—flat to rolling plains, mountain ranges, isolated uplifts, semideserts, playa lakes, vegetated sand hills, active sand dunes, foothills, intermontane basins, flowing springs, intermittent streams, permanent watercourses, large rivers, dry arroyos, swamps, mountain meadows, buttes, deep canyons, glacial features, high peaks, and year-round snow fields. However, to avoid endless description of landscapes that are peripheral to the main topic of prehistoric hunting, I will reduce the area of reference to the commonly recognized physiographic regions of the Great Plains, Rocky Mountains, Great Basin, Colorado Plateau, and Columbia Plateau. Within these are several small geographic locations that I believe have yielded information pertinent to prehistoric hunting; these include the Wyoming Basin and the Big Horn Basin, both in Wyoming; the Black Hills, situated mostly in South Dakota and partly in Wyoming, with a small extension into Montana; Middle Park and the San Luis Valley, both in Colorado; and the Yellowstone Plateau in Wyoming, Idaho, and Montana (map 1). Continuing research in plains and mountain archaeology will undoubtedly result in the recognition of other pertinent geographic areas.

The wide variety of physiographic features provides very different and rapidly changing vegetative cover critical to animal ecology. The wide expanses of open plains are mostly treeless and, depending on soil conditions and moisture, are covered with several different species of grasses, yucca, and sagebrush. Low-lying and poorly drained areas support alkali-tolerant greasewood and salt bushes. In contrast, riparian areas along river valleys with terrace systems support trees, shrubs, and tall grasses. Foothills are carved by arroyos of varying sizes and depths, depending on gradients and underlying bedrock: foothill vegetation consists of



MAP 1. Geographic locations of prehistoric large mammal hunters.

juniper, mountain mahogany, scattered trees, and bunch grasses. There is an arbitrary and not always well-defined boundary between upper foothills and mountain meadows and slopes; in places, it extends to the timberline. Increased moisture at the higher elevations produces pine and aspen forests interspersed with open parks that support tall, dense stands of grass and big sagebrush. Alpine vegetation begins at the timberline and continues up to more than 4,000 meters (13,000 ft.).

Thick stands of trees and browse may be found on north- and east-facing mountain slopes, because there less moisture is lost through evaporation. On south- and west-facing slopes, drier conditions result in scattered pines, junipers, mountain mahogany, sagebrush, and bunch grass. Certain sedimentary sandstone and limestone formations are aquifers; in many locations, where exposed, flowing springs provide water for all animals. Mountain ranges form rain shadows that deny rainfall to certain areas; for example, parts of the interior of the Big Horn Basin in northern Wyoming, aptly referred to as badlands, receive as little as 12 centimeters of annual precipitation and are more reminiscent of the Great Basin than the Great Plains. Mountain ranges also affect the movement of storm systems, influencing both winter snow accumulations in higher elevations and rainfall patterns during the warm months. The open plains and foothills usually become dry by early summer, and vegetation turns brown. Meltwater from deep winter snow in the mountains feeds and flushes out the river systems and provides moisture for trees, brush, and tall grasses on banks and floodplains; these may remain green throughout the summer, in marked contrast to areas that lack adequate moisture (see Knight 1994).

Seasons are clearly defined over the entire area, and one must frequent it at all times to gain a basis for understanding the significance of these changes to the hunters who lived there in the past. There is a stark contrast between the long, hot days of summer and the extended periods of sub-zero temperatures in winter. Everyone hopes that warm, sunny days in early spring and late fall presage early grass and mild winters, respectively; but more often than not, these short periods of good weather rapidly deteriorate into blizzard conditions hazardous to animals both wild and domestic. Having more than once experienced the loss of much of a calf crop from range cattle because of a severe spring blizzard, I find not unreasonable the proposal that the absence of an entire age group from the 10,000-year-old Casper bison kill site could have resulted from a spring blizzard that had the same effect on a herd of bison (see Reher 1974: 115).

Severe winters must have tested the survival skills of prehistoric inhabitants. Some winters have moderate temperatures and light snowfall, while others are marked by deep snow and long periods of intense cold. These variations are totally unpredictable: several mild winters may follow several bad ones, or a single bad winter may occur in a string of several mild ones—or vice versa. Late-nineteenth- and early-twentieth-century livestock raisers suffered through a number of bad winters. Perhaps the most notable, and one I remember as a common topic of conversation a half century after its occurrence, was the winter of 1886 and 1887, which eliminated much of the livestock on the open range in Montana and Wyoming (see Larson 1978: 190–94) and, according to one rancher (now long deceased), killed the last nine bison known to have been in the Big Horn Basin. These winters were cynically referred to by livestock operators as “equalizer years,” because having lost their economic base, everyone began the following year as equals. Livestock operators quickly learned to prepare for the worst and hope for the best. There is no reason to assume that these vicissitudes of weather were limited only to historic times, and prehistoric year-to-year human subsistence strategies had to allow for similar rapid and unpredictable changes.

One way to acquire a lasting impression of the region is to view it on clear days from the window of an airplane on flights up and down the spine of the Rocky Mountains from about Albuquerque, New Mexico, to Calgary, Alberta. Flights at all seasons of the year emphasize the contrasts, and shadows—particularly just after sunrise and before sunset—enhance the area’s physiographic features. The Rocky Mountains might aptly be described as a ridgepole with major rivers flowing in all directions. The Rio Grande and the Colorado flow to the south, the Snake flows west into the Columbia, and the Missouri first flows northerly and gradually turns east. The Yellowstone flows east to the Missouri, as do both the North and South Platte. The Arkansas begins in the mountains in southern Colorado and flows east, eventually ending at the Mississippi. These river systems appear to have been avenues that many prehistoric groups followed in moving into the country, and they were critical to the overall prehistory of the area.

#### MAMMALS PAST AND PRESENT

The area described provided ecological conditions favorable for large grazers and browsers; as a result, it became the main focus of prehistoric large land mammal hunting in North America. The complete list of

TABLE I  
Common Late Pleistocene and Holocene Mammals

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<i>Antilocapra americana</i>	pronghorn
<i>Arctodus simus</i> *	short-faced bear
<i>Bison antiquus</i> *	bison
<i>Bison bison</i>	bison, plains bison
<i>Bison latifrons</i> *	bison, giant Ice Age bison
<i>Bison occidentalis</i> *	bison, western bison
<i>Camelops</i> sp.*	camel
<i>Canis dirus</i> *	dire wolf
<i>Canis latrans</i>	coyote
<i>Canis lupus</i>	gray wolf
<i>Castor canadensis</i>	beaver
<i>Cervus elaphus</i>	elk
<i>Cynomys</i> sp.	prairie dog
<i>Dicrostonyx torquatus</i> †	collared lemming
<i>Equus conversidens</i> *	Mexican horse
<i>Erethizon dorsatum</i>	porcupine
<i>Euarctos americanus</i>	black bear
<i>Felis atrox</i> *	American lion
<i>Felis canadensis</i>	lynx
<i>Felis concolor</i>	mountain lion
<i>Felis rufus</i>	bobcat
<i>Gulo luscus</i>	wolverine
<i>Lepus</i> sp.	jackrabbit
<i>Mammuthus columbi</i> *	Columbian mammoth
<i>Marmota flaviventris</i>	yellow-bellied marmot
<i>Mephitis mephitis</i>	skunk
<i>Miracinonyx trumani</i> *	American cheetah
<i>Neotoma cinerea</i>	bushy-tailed wood rat
<i>Ochotona princeps</i>	pika
<i>Odocoileus hemionus</i>	mule deer
<i>Odocoileus virginianus</i>	white-tailed deer
<i>Ondatra zibethicus</i>	muskrat
<i>Peromyscus moniculatus</i>	deer mouse
<i>Spermophilus richardsonii</i>	Richardson's ground squirrel
<i>Sylvilagus nuttallii</i>	cottontail rabbit
<i>Taxidea taxus</i>	badger
<i>Thomomys talpoides</i>	northern pocket gopher
<i>Ursus arctos</i>	grizzly bear

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\*Extinct species.

†Extinct in the study area.

animals recovered in archaeological contexts is large, but the ones relevant to the following chapters consist of a relatively few species, some extinct and others still present (table 1). The late Pleistocene mammoth and bison are extinct, but the latter were apparently the progenitors of the modern bison. Paleontologists seem to generally agree that there was a late Pleistocene mountain sheep that gave rise to the modern species. Pronghorn, deer, and elk are apparently unchanged from the earliest specimens known in archaeological contexts. The Pleistocene camel and horse are both extinct, and the extent of their contribution to the Paleoindian economy remains unclear. Gray wolves were eliminated but reintroduced recently into Yellowstone National Park, where their numbers seem to be rapidly increasing. It will be interesting to observe their future effects on the wildlife there—particularly on the elk that, according to wildlife managers, need a predator to control their numbers and prevent population growth that threatens their environment.

#### THE CULTURAL CHRONOLOGY

We need a chronological frame of reference within which to place the human hunters and their animal procurement activities. The one used here, which I developed and which applies over much of the area discussed (figure 1), is based on radiocarbon dates, stratigraphy, and projectile point typology. Approximately 5,000 years of this chronology fall into divisions broadly labeled Plains Archaic. I concede that the word *Archaic* was poorly chosen, in that it denotes a lifeway not characteristic of much of the area under consideration—as has been emphatically pointed out (see, e.g., Forbis 1968, 1985). The term should be reserved for populations that practiced specific prehistoric subsistence strategies commonly associated with that designation. However, I hope all readers will use the chronology and overlook one term's awkwardness.

The following chapters contain my thoughts on prehistoric human mammal hunters and hunting strategies as they pertain to our understanding of prehistoric hunters as seen in the archaeological record. I focus on those sites pertinent to the topics of prehistoric animal procurement and tool and weaponry use; they are not intended to be representative of the overall prehistory of the area.

After long and serious deliberation, I define *hunting*, in brief, as the exploitation of animals for specific purposes by human predators. Using this definition as a point of departure opens the door to the exploration of a voluminous body of information on the many different aspects of

YEARS BEFORE PRESENT	PROJECTILE POINT TYPES AND CULTURAL COMPLEXES	TIME PERIODS
12,000	Pre-Clovis ?	
11,500		
11,000	Clovis	
10,500	Goshen Folsom	
10,000	Midland Agate Basin Hell Gap	
9,500	Alberta	
9,000	Cody	
8,500	Angostura ? Frederick	
8,000	James Allen Lusk	
7,500	Blackwater side-notched	
7,000	Pahaska side-notched	
6,500		
6,000		
5,500		
5,000	Bitterroot Oxbow	
4,500	Mallory McKean lanceolate	
4,000		
3,500	Duncan	
3,000	Hannah Pelican Lake	
2,500	Late Plains Archaic corner-notched point varieties	
2,000	Avonlea Besant	
1,500		
1,000	Prairie side-notched (some corner-notched variants)	
500	Plains side-notched (some corner-notched and unnotched and many base-notched variants)	

FIGURE 1. Chronological chart and cultural complexes. (From Frison 1991b: 24.)

hunting. However, the following chapters focus on a limited topic—that of prehistoric large mammal hunting in western North America. They are not designed or intended to constitute a “how-to-do-it” list of instructions for either hunters or archaeologists: to make such a claim would raise the hackles of many in both groups who would immediately reject it and most likely decide against a further look at the pages that follow. The message intended is that a better understanding of prehistoric hunting strategies can be enhanced by those familiar with animals and their behavior in response to modern hunting strategies.

In retrospect, though I have been involved in hunting for more than seven decades I must admit to certain deficiencies. My proficiency with the bow and arrow never rose above average, and though somewhat more skilled with firearms I envied those who could repeatedly group their shots in the bull’s-eye. My only recourse was to focus more attention on other hunter-related requirements to maintain an acceptable level of expertise. This leaves me with only the claim of fortuitously being in the right position at the right time to investigate a number of archaeological sites relating to large mammal hunting and being able to perceive that my experiences with animals, both wild and domestic, might benefit archaeologists faced with recovery, analysis, and interpretation of faunal assemblages resulting from prehistoric human hunting. With this caveat, I hope the reader will be encouraged to continue.

Some readers may conclude that much of chapter 2 wanders too far from my declared subject matter. I counter this with my own claim that more than once, seemingly insignificant observations of animals have long remained latent and suddenly materialized at the opportune moment to salvage what appeared to be a hunting strategy doomed to failure. In other words, while stalking an animal, the hunter not only needs to focus attention on the animal being pursued but, in addition, must be equally aware of the messages other animals, birds, and even insects are sending at the same time. In a much different vein, chapter 2 also portrays the interplay of influences that resulted in a combined interest in hunting, archaeology, and paleontology, which in turn led to an academic career.

My early interest in paleontology was fueled by a wealth of dinosaur fossils underfoot, but they never aroused the same level of interest as mammoth remains once I became aware that while they were said to be millions of years old, the mammoths, along with other extinct species, were only thousands of years old. This interest culminated much later in the discovery of a Clovis mammoth kill with several other extinct animals also represented. To me this is worthy of separate treatment, as pre-

sented in chapter 3, which explores late Pleistocene animal extinctions and the possible human relation to them.

Bison dominate the evidence of prehistoric large mammal hunting, which I believe justifies the depth and breadth of detail allotted to bison in chapter 4. Taphonomic studies of faunal assemblages in archaeological sites came into wide use when archaeologists were perceptive enough to realize that bone beds in bison kill sites had the potential to produce cultural information. That realization is tied to the underlying theme of this book: that animal and human behavior along with the evidence from taphonomic analysis reveal information significant for prehistoric animal procurement studies. I believe this approach has been vindicated during the past three decades, in large part through studies of bison bone beds.

Chapters 5, 6, and 7 rely on a similar approach to deal with the pronghorn, mountain sheep, deer, elk, bear, smaller animals, and birds whose skeletal remains occur in archaeological sites. Emphasis is placed on the contrasting behaviors of these species and the different procurement strategies that emerged as a result. I stress the advantages of being able to observe and pursue these species in their natural habitat and apply the information thereby gained to the evidence from archaeological sites.

Dispatching the animals is the final goal of hunting, and the manufacture, use, and maintenance of weapons determine the final coup de grâce (chapter 8). A hunter may stalk an animal in its natural environment and rely on his ability to outwit it; a cooperating hunting group may devise various ways to maneuver animals into favorable positions; in the case of buffalo jumps, varying numbers of animals were tricked into killing themselves. Even in the last case, weapons were needed to prevent the escape of animals that were not killed outright by the impact of their fall. In addition to killing animals, enhancing the quality and preventing loss of the products of the kill must be included as part of hunting. Consequently, tools as well as weapons must be included in discussions of hunting. Some archaeological site evidence indicates that projectile points were used as tools, a use that had some bearing on the value a hunter placed on them.

Chapter 9 presents some of the thoughts and impressions that have emerged as I compiled the preceding chapters. My overall sense is that although a significant body of data on prehistoric human hunting has accumulated over the past few decades, there is yet a long road ahead for researchers.