

The Horner Site
The Type Site
of the
Cody Cultural Complex

Edited by George C. Frison and Lawrence C. Todd

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Cody Cultural Complex

STUDIES IN ARCHAEOLOGY

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The Type Site of the Cody Cultural Complex

Edited by

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To H. Marie Wormington, who has continually inspired all of us whose interests include Paleoindian studies.

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Preface

The dust bowl days of the 1930s extended over a period of seven years and witnessed the removal and wind transport of much of the topsoil on the High Plains, especially in areas that were sandy and where the native sod had been disturbed. As the topsoil blew away, human artifacts that were buried and protected by a thick, natural sod cover were exposed and many persons began to collect these specimens. The greatest interest centered around the lanceolate-shaped specimens of exceptional workmanship that were considered to be older than the more common notched varieties.

Professional archaeologists interested in the High Plains also became aware of this climatic event and the subsequent exposure of artifacts. Paleoindian or Early Man studies in North America had just realized a respectable status with the confirmation of New World man associated with extinct fauna at the Folsom site. Radio-carbon dating was yet to be developed but some of the age estimates for Folsom were not too much in error. The unfluted, unnotched projectile points with superior technological attributes were suspected of being quite old, but just how old was still very much conjecture.

Yuma County, Colorado, contained many large areas of sandy deposits and also many Paleoindian sites. Consequently, numerous nonfluted, unnotched projectile points were found there, and they gradually became referred to by the collective name "Yuma," a term that was soon realized to be unsatisfactory because it became

a catchall for all Paleoindian projectile points that were obviously not fluted. At about this same time, what were soon to be recognized and referred to as Scottsbluff projectile points were found *in situ* at the Scottsbluff bison quarry in western Nebraska. Eden points were found *in situ* at the Finley site in western Wyoming and, in both cases, in association with extinct subspecies of bison.

In the early 1940s, the situation was further complicated with the discovery of another different lanceolate point—given the name Agate Basin—from a site, another bison kill, in eastern Wyoming. Still other lanceolate projectile points demonstrated diagonal flaking patterns in contrast to the frequently observed transverse flaking patterns, and it was not known if this reflected different ages or variations of the same technological tradition. Paleoindian studies had reached a point where they were badly in need of some means to establish a validity of projectile point types along with some measure of chronological order. We are indebted to H. M. Wormington for her efforts in discarding the term “Yuma” and insisting that Paleoindian projectile points be given formal type names only when found in proper context.

The Horner site discovery happened at an opportune moment. It was of Paleoindian age, the geological context was good, the site materials were in association with bison, and interest in Paleoindian studies was high enough to generate the necessary levels of research support. On the other hand there was a major obstacle to the interpretation of the body of data that was accumulating from animal kill sites. The problem was that the methodology needed for the analysis and interpretation of these kinds of sites was not yet extant and, in addition, no one realized that it would take at least a generation for it to develop.

The specialists needed would have to be trained in the fringe areas of many disciplines rather than in their mainstreams of interest. For example, archaeological data come from geologic contexts that produce little of interest to most geologists. Taphonomy in archaeology developed in response to the unique needs of archaeologists to accurately assess details of living animal populations from death assemblages. This enumeration of the analytic and interpretive needs of archaeologists that must come from other disciplines can be expanded almost *ad infinitum*. The process of developing these new methods of analysis and interpretation is ongoing and only time will tell how far it can proceed.

The purpose of this book is to present the known body of data from the Horner site, the type site of the Cody Cultural Complex, and bring it to a level consistent with current analytic and interpretive analysis. Future study of the present data and the recovery of new data from the Horner site can and undoubtedly will produce new and better results as improved methods of data recovery, analysis, and interpretation develop.

Acknowledgments

Chapter 2 covers the early history of the Horner site including the discovery, the 1949 to 1952 investigations, and mention of the various persons involved in this phase of the project. We wish to let this chapter stand in lieu of formal acknowledgments for the Princeton–Smithsonian efforts at the site, which the authors do not feel qualified to assemble and properly evaluate.

Beginning with the senior author's earliest professional involvement in the Horner site, the efforts of many individuals and agencies made the project possible. These include Bayard D. Rea, consulting geologist from Casper, Wyoming, who acted as the liaison in the negotiations with Dr. Glen Jepsen which eventually led to a formal, planned Horner site project. This volume is evidence of the final results of his efforts.

Pearl Horner, the original owner of the site area, has been interested in and supportive of the project from its beginning. Upon selling the property, Mrs. Horner stipulated as a condition of sale that the necessary access for further investigation be allowed. We thank the present landowners, Mr. and Mrs. Merle Dutton, for allowing us unrestricted access and use of the site and the site area as needed. We were allowed also to cross lands owned by Bob Adams and "Curley" Kelly when normal access due to flooding of streams and irrigation of meadows forced us to make other arrangements.

Robert Witter, who served on the original Princeton site excavation crew, aided us in many ways. He allowed access to his personal records as well as spending most

xviii Acknowledgments

of the winter bringing the field notes obtained from Princeton into some semblance of order. Without his help, the interpretation of the site records would have been more difficult and the accuracy of the results would very likely have suffered.

We are indebted also to Dr. Waldo Wedel for his complete cooperation in allowing access to the Horner site materials stored at the Smithsonian. We are very pleased also that Dr. Wedel agreed to put his thoughts on paper (Chapter 2) in a manner that provides the profession with an important segment of the history of American archaeology as well as a documentation of the early work at the Horner site. We are indebted also to Dr. Wedel for allowing us to use several of his excellent photographs (Figs. 1.7–1.9, 3.3, 3.4, 3.10, 3.12–3.14, 3.16–3.19, 3.22, 3.24, 3.25, 4.1) that he took in 1952. One photograph (Fig. 1.6) was taken by Jack Richards and another (Fig. 4.3) is by James Truesdale. We also thank the *Denver Post* for use of the drawing in Fig. 1.2.

Dr. Donald Baird of Princeton University was instrumental in allowing the transfer of the Horner site materials at Princeton to the University of Wyoming after the death of Dr. Jepsen. We thank Dr. Baird also for his patience in waiting for some concrete evidence that his faith in the Horner site project was not misplaced.

In the Cody, Wyoming, area several persons helped us in various ways. Jim and Barbara Tracy gave us special rates for lodging during the site excavations. Milford and Imogene Hanson performed tasks too numerous to mention that helped us toward a successful completion of the project. The project was supported monetarily by the University of Wyoming, the Wyoming Archaeological Foundation, and the Wyoming Recreation Commission. In addition, the senior author thanks the Smithsonian Institution for a Regents Fellowship during 1980 which allowed for some time to be spent toward the analysis of the Horner site assemblage. We thank also Dr. Dennis J. Stanford of the Smithsonian Institution for his support in partially funding the geologic study of the Horner site.

The list of persons who worked at the Horner site in 1977 and/or 1978 and who in other ways contributed to the analysis and curation of the site materials include Bruce Bradley, Cindy Bradley, Susan Bupp, Cary Craig, Caren Collins, Dennis Dahms, Susan Eastwood, Dan Eakin, Dan Hayes, Jack Hofman, Tom Larson, Julie Longenecker, James Miller, Bob Peterson, Judy Pinner, Pam Rhodes, Kim Smiley, Paula Ingram Tibesar, Willy Tibesar, James Truesdale, Danny Walker, and George Ziemens.

Photography: 1977, Kim Smiley (site and lab); 1978, Bob Swaim (site and lab); 1985–1986, Eric Ingbar (lab).

Curation and cataloging bones: Princeton–Smithsonian: Paula Rosa; University of Wyoming: Robert L. Kelly, David Rapson, and Eric Ingbar.

The drawings in Figures 6.6, 6.7, 6.10, 6.15, 6.17, 7.16, and 7.21 were made by Marcia Bakry of the Smithsonian Institution. The drawings in Figures 7.2, 7.4, 7.5, 7.7, 7.10, 7.11, 7.12, 7.24, and 7.26 were done by Connie Robinson, freelance artist from Sheridan, Wyoming. The photographs in Figures A2.1–A2.5, A2.16, and A2.18 were made by Victor Krantz of the Smithsonian Institution.

Last but certainly not least must be acknowledged the contribution of the senior author's spouse, June Frison, for the daily preparation of excellent meals for all persons involved in the 1977–1978 site investigations.

1

Introduction

George C. Frison

THE FOUNDATIONS OF HIGH PLAINS PALEOINDIAN RESEARCH

Detailed presentations and discussions of Paleoindian studies in North America have been published (Wilmsen 1965, Wormington 1957). However, the beginnings of meaningful Paleoindian studies dealing with the northern High Plains of North America began to a large extent with the combination of the data gathered from the Folsom site (Figgins 1927), the Scottsbluff Bison Quarry (Barbour and Schultz 1932), the Dent site (Figgins 1933), and the Lindenmeier site (Roberts 1935, 1936; Wilmsen and Roberts 1978). Several other bison kill and/or butchering sites were discovered and partially investigated from the early 1940s through the early 1950s including the Finley site (Moss *et al.* 1951), the Agate Basin site (Roberts 1943, 1951, 1961; Frison and Stanford 1982b), and the Horner site (Jepsen 1953a,b), which is the subject of this volume.

Most of the early efforts reflect an overabundance of data gathering and insufficient analysis and dissemination of results. This is not surprising since there is always the expectation in new and uncertain areas of archaeological research that the next round of data gathering will provide the long-sought answers. These expectations too often fail to materialize and the investigator is ultimately left with an overwhelming

and uncontrollable body of data. The logistics of organizing, analyzing, integrating, interpreting, and synthesizing become increasingly insurmountable tasks and too often also, the investigator moves on to other interests.

On the other hand, these same investigators always promised themselves that the task would be accomplished sometime in the future. Too often, as in the case of the Horner site, the data are passed on to others to analyze and interpret. This is always more difficult in the case of archaeology because of the unique nature of data collecting which irrevocably destroys the original data base. The results are that other investigators are unable to view it and either confirm or disclaim the original observations in acceptable scientific terms. The original investigator has a familiarity with the data that, unfortunately, can never be duplicated by others.

Too often also, the original investigators have passed away, losing forever their intimate associations with data bases that can add so much to the final results. It has happened at several Paleoindian sites including the Agate Basin and Lindenmeier sites with the death of Frank H. H. Roberts; the Hell Gap site with the death of Henry Irwin; and the Horner site with the deaths of Glenn Jepsen, Loren Eiseley, and John Moss, to mention only a few cases. Many of their observations, thoughts, and ideas were never recorded and the inevitable result is that the potential for reliable interpretation has been greatly diminished.

As archaeologists, we all tend to dwell too heavily upon the shortcomings of colleagues, particularly the ones who are no longer with us and are unable to defend their positions. However, the purpose in this volume is not to over-criticize but instead to present what can be salvaged out of a long-delayed analysis and interpret the data so that it can be used to benefit future investigators. Remember, also, that in working with the data gathered by the deceased, the present group of investigators is intruding into what were very personal and emotional thoughts and ideas. We may stray far afield from those thoughts and ideas developed by the original investigators. The knowledge that the original investigators cannot make rebuttals may insulate us from a certain amount of criticism and contradiction, but it should not allow us to feel free to make uncritical statements or gloss over areas of uncertainty. It could very well be that working with the data bases of the deceased is more of a worry and a responsibility than working with one's own. Whatever the answer, it is not a responsibility that should be taken lightly.

Perhaps the greatest hesitancy for investigators to publish research results during the early days of Paleoindian studies was the lack of a balanced methodology for both the recovery and analysis of data that was just being perceived and needed more time to develop. A bone bed containing the skeletal remains of large herbivores was impressive to observe but, lacking the methodology that has emerged in the past decade, the extent of possible analysis and interpretation was severely limited. Lacking a host of relatively recent developments in site-formation studies, taphonomic analysis, taxonomy, absolute dating, and animal behavior in the context of animal procurement strategies, there were heavy restraints as to what could be done with the analysis of bone beds in terms of reconstructions of past human behavior.

Without doubt, Wheat's (1972) analysis of the Olsen-Chubbuck site opened the door to the future possibilities of bone bed analysis. Since then, taphonomy has become a byword in faunal analysis with strong emphasis directed toward the areas

of research mentioned above. This kind of methodology could not appear overnight: it required the training of an entirely new group of specialists over a long period of time. It must be strongly emphasized that the present methodology is still in its developmental stages and that the future will see many modifications that will inevitably change what is presently accepted methodological procedure.

The early days of Paleoindian studies also lacked radiocarbon or other reliable means of absolute dating so that the first concern of the earlier investigators was to establish a chronology for which the only diagnostics were the projectile points. There were, as yet, no relative chronologies established: sites such as Agate Basin did contain the necessary stratigraphy for relative chronological data but these required long, involved investigations over several field seasons (see, e.g., Frison and Stanford 1982b) before reliable chronological sequences could be defined. The Hell Gap site in southeastern Wyoming provided the badly needed relative and absolute chronologies, but this was later in time and the investigations here required a number of years, a strong interdisciplinary effort, and the efforts of a number of specialists before meaningful results could be realized (Irwin-Williams *et al.* 1973).

The methodology of lithic analysis needed to be further developed also in order to better analyze Paleoindian assemblages. The idea of systematic, staged production of specialized bifaces and other forms has demonstrated systematic processes in Paleoindian lifeways and has added a needed measure of reassurance and analytic integrity to studies in cultural systematics. On the negative side, Paleoindian projectile points, because of their rarity and excellence in lithic technology, became the most sought after by the collecting element. Unfortunately, the latter group interpreted the heuristic value expressed in artifacts by archaeologists as aesthetic and monetary. Consequently there was an unprecedented and unequalled assault on the known Paleoindian sites, along with a concentrated search for new ones. Paleoindian sites with their large bonebeds were also the most visible of archaeological manifestations, besides being the most productive of artifacts. Thus, the actual extent of the loss of data may never be known.

The Horner site was no exception. Part of the site was left intact in 1952 for future excavation, but the well-known photograph of three projectile points on the cover of the *Princeton Alumni Weekly* for May 8, 1953 (Figure 1.1) inevitably resulted in a concentrated assault on the site. The search by collectors for projectile points ultimately saw the destruction of all the remaining, *in situ* parts of the site. It was fortunate that one site component was separated by several meters and was covered by nearly 2 m of deposits so that its presence was unsuspected (see Chapter 4).

The Horner site received its share of local and national publicity from the time that the investigations began in 1949 until they were completed in 1952. The stage of development of Paleoindian studies at that time resulted in its being labeled as an extremely important site of "Yuma" man since the concept of the "Cody Complex" had not yet been formally proposed. Interpretations ran rampant on the answers to questions such as the nature of the bison involved, the method of procurement, and the kind of human beings that were the hunters. An artist's 1949 representation of the Horner site events in the *Rocky Mountain Empire Magazine* probably reveals more vividly than any number of words can convey, the thinking of the average layman on the topic of the physiology and lifestyle of New World Paleoindian at that time

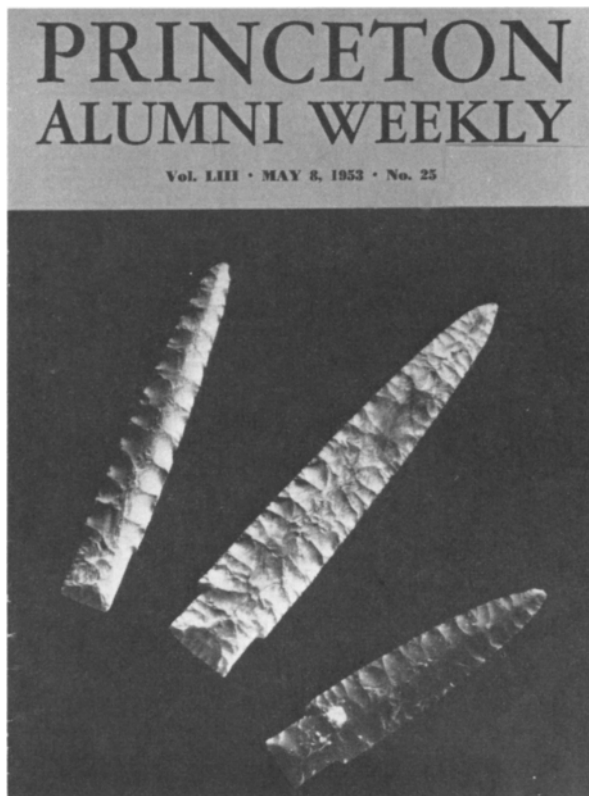


FIGURE 1.1. The 1953 cover picture of the *Princeton Alumni Weekly* that first attracted attention to the Horner site artifacts.

(Figure 1.2). They were characterized as something definitely in the subhuman category.

The history of the Horner site investigations (see Chapter 2) reveals the intense interest that was being generated in Paleoindian studies during the late 1940s and early 1950s. The list of professional archaeologists, geologists, and paleontologists that visited the site includes the leading scholars in these disciplines at that time. A hitherto isolated and little-known part of the west suddenly became prominent in the area of New World Paleoindian studies. The results are still very much in evidence: the community of Cody, Wyoming has developed a deep commitment and interest in historic and prehistoric resources and recognizes their value to future generations.

Because this volume concerns the Horner site, which became known as the type site of the Cody Cultural Complex, another aspect of the development of High Plains Paleoindian studies—and one not connected with animal kills—should be mentioned. The plains of eastern Colorado, particularly Yuma County, was subject to extensive sand movement during the dust bowl days of the 1930s, exposing large numbers of prehistoric artifacts. The Yuma County collections were the largest (particularly the Andersen collection) (Renaud 1932:5; Wormington 1957:130) that were

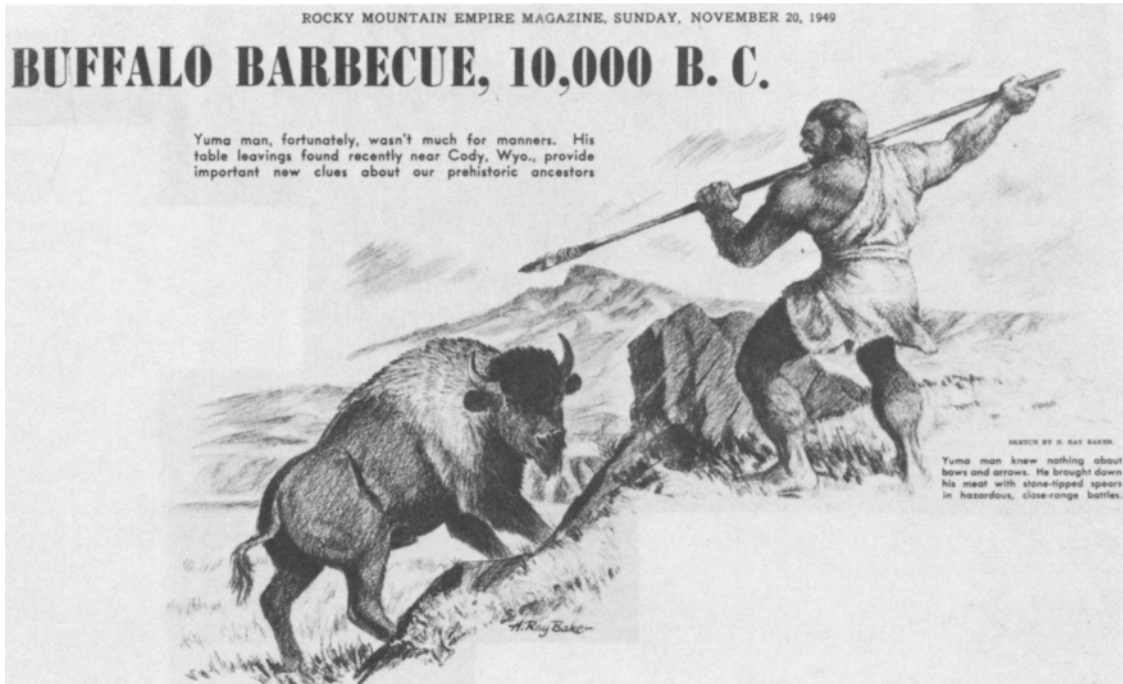


FIGURE 1.2. Artist's reconstruction of the Horner site from a 1949 perspective.

gathered from a sandy blowout that was later to become known as the Claypool site (Wormington 1957:128–132; Dick and Mountain 1960). E. B. Renaud conducted archaeological surveys in eastern Colorado and analyzed the Andersen and other collections. Renaud (1931) set up a typology based on projectile-point morphology which, a short time later (Renaud 1932), became a descriptive classification of two major groups that he referred to as Yuma and Folsom. Unfortunately the term *Yuma* was to become a catchall for all Paleoindian projectile points not identifiable as Folsom, and the term was later abandoned.

We are indebted to H. M. Wormington for leading the efforts that finally resulted in establishing order out of the chaos that the use (or misuse) of the term *Yuma* inflicted on Paleoindian studies (Wormington 1957:103–107). Out of her efforts came the concept of the Cody Complex, which included the projectile-point types of Eden and Scottsbluff (Wormington 1957:136–137) that are still very much in use today, unlike the term *Yuma*.

The type designations of Eden came from the Finley site (Moss *et al.* 1951) near the small town of Eden in western Wyoming, where they were first found in good geological context. The Scottsbluff type came from the Scottsbluff Bison Quarry in western Nebraska (Barbour and Schultz 1932). The term *Cody Complex* is named after the town of Cody in northwest Wyoming and was so designated because of the presence of both the Eden and Scottsbluff in good geological context at the Horner site. Wormington (1957:137) also recognized and proposed dividing Scottsbluff into

Type I and Type II. It should be mentioned also that both the Eden and Scottsbluff types occurred together in the Finley site (Moss *et al.* 1951; Wormington 1957:124–127) and more recently in the Carter/Kerr-McGee site in eastern Wyoming (Frison 1984).

THE BIGHORN BASIN

The present climate, topography, flora, and fauna of the Bighorn Basin in north central Wyoming has been described in some detail elsewhere (Frison and Todd 1986) so that only a brief summary is presented here. The Bighorn Basin is one of several intermontane basins that characterize this part of the continent (see Figures 1.3, 1.4, 1.5). The eastern boundaries are the Pryor Mountains in Montana and the Bighorn Mountains immediately to south in Wyoming. The latter curve westward on the southern end (hence the name that was derived from the resemblance of the mountain range to the shape of the horn of the bighorn sheep) to meet the Owl Creek Mountains that trend northwestward and connect to the Absaroksa Range which

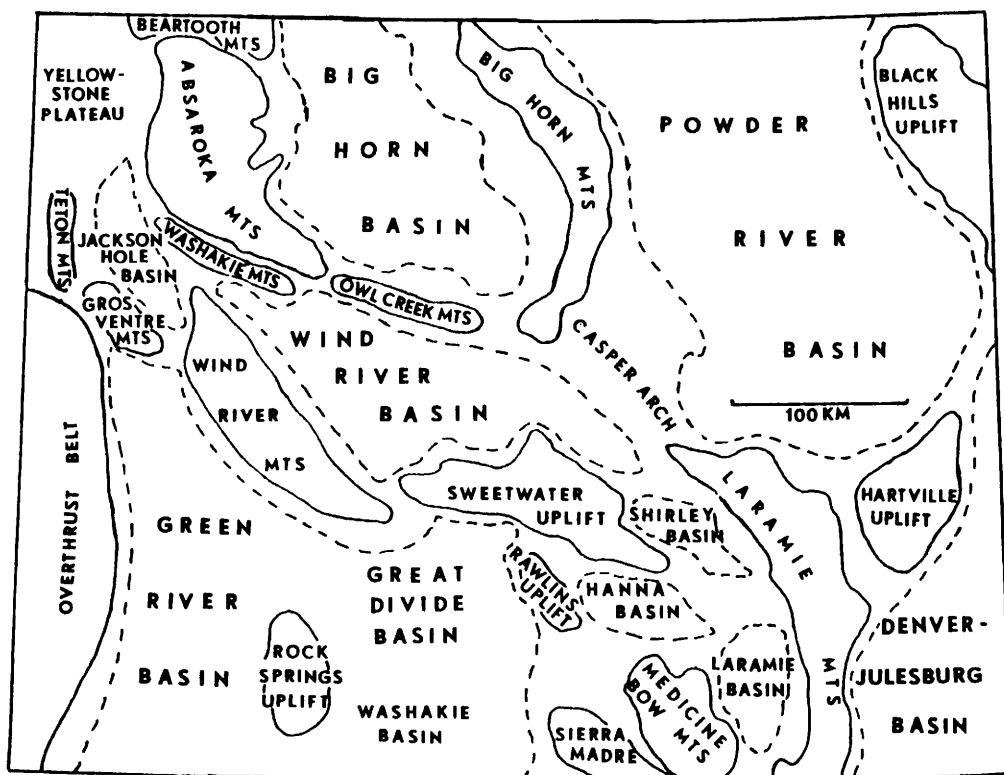


FIGURE 1.3. Physiographic map of Wyoming to demonstrate the intermontane basin character of this area.

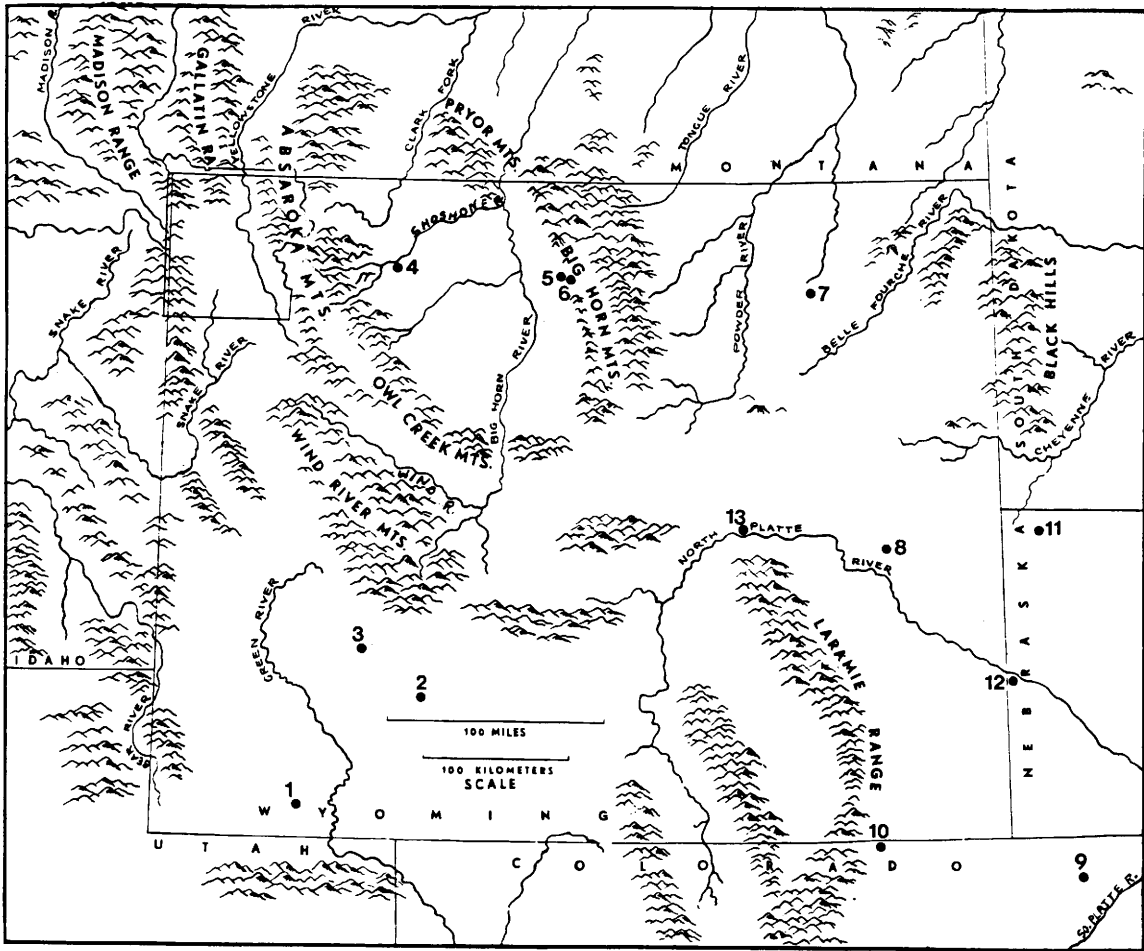


FIGURE 1.4. Map of Wyoming and immediately surrounding area with several major Paleoindian locations. 1: Pine Springs (Sharrock 1966); 2: Deadman Wash (Armitage *et al.* 1982); 3: Finley (Moss *et al.* 1951); 4: Horner; 5: Medicine Lodge Creek (Frison 1978b); 6: Laddie Creek (Frison 1978b); 7: Carter/Kerr-McGee (Frison 1984); 8: Hell gap (Irwin-Williams *et al.* 1973); 9: Frasca (Fulgham and Stanford 1982); 10: Lindenmeir (Wilmsen and Roberts 1978); 11: Hudson-Meng (Agenbroad 1978b); 12: Scottsbluff Bison Quarry (Barbour and Schultz 1932); 13: Casper (Frison 1974). All except 11 and 13 are Cody Complex or known to contain a Cody Complex component.

connects to the Beartooth Mountains to the north (see Figure 1.3). Part of the Beartooth are in Montana, and the wide valley of the Clark's Fork of the Yellowstone River that originates in the Absaroka and Beartooth Mountains lies between the latter and the Pryor Mountains and provides a northern corridor that connects the Bighorn Basin with the Great Plains in Montana.

Between the Bighorn Mountains and the Black Hills of South Dakota and Wyoming lies the Powder River Basin, which extends north to the confluence of the

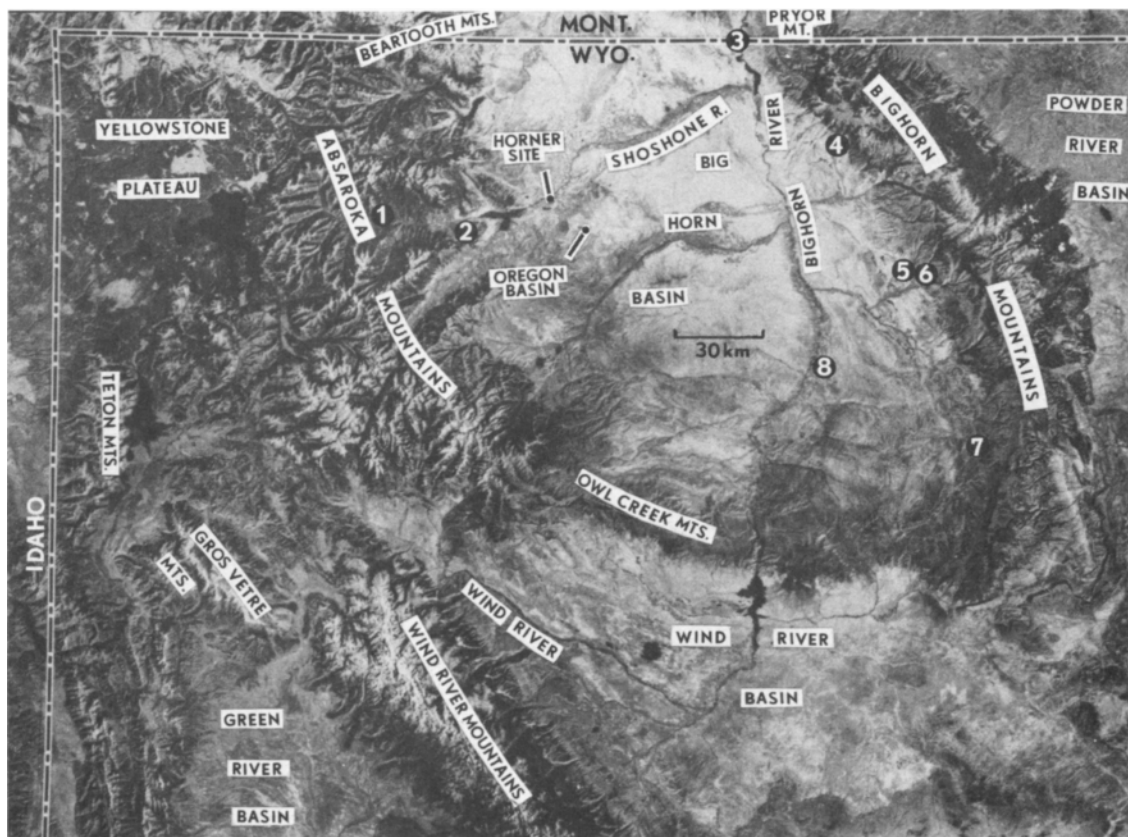


FIGURE 1.5. Landsat photo of the Bighorn Basin with locations of major Paleoindian sites. 1: Mummy Cave (Wedel *et al.* 1968); 2: Sheep Mountain Net (Frison *et al.* 1986); 3: Bighorn Canyon Caves (Husted 1969); 4: Hanson Folsom site (Frison and Bradley 1980); 5: Medicine Lodge Creek site (Frison 1976a, 1978b); 6: Laddie Creek and Southsider Cave (Frison 1978b); 7: Little Canyon Creek Cave and Bush Shelter (Frison 1978b; Shaw 1980); 8: Colby (Frison and Todd 1986).

Powder River and the Yellowstone River in Montana. South of the Owl Creek Mountains and the southern Bighorn Mountains lies the Wind River Basin, while to the south and west of the Wind River Mountains is the Green River Basin. The Wind River begins at Togwotee Pass at the juncture of the Absaroka and the Wind River mountains and flows southeast through the Wind River Basin. It then makes an abrupt turn to the north and flows through the Wind River Canyon, which separates the Bighorn and Owl Creek mountains. As the Wind River enters the Bighorn Basin, it changes its name to the Bighorn River. The latter drains the entire Bighorn Basin: one of its major tributaries that originates in the Absaroka Mountains is the Shoshone River, along which lies the Horner site. The Bighorn River continues northeastward into Montana through Bighorn Canyon, which separates the Pryor and Bighorn mountains. The lowest elevation in the Bighorn Basin is 1097 m (3600 ft) where the Bighorn River crosses the Montana–Wyoming line. The highest elevation in the

surrounding mountains is Cloud Peak in the Bighorns at 4019 m (13,185 ft). There are several peaks throughout the Absarokas that are over 3658 m (12,000 ft).

Located in the northwest corner of Wyoming is the Yellowstone Plateau, a broad area at a relatively high elevation that was covered with ice during the glacial periods and, along with valley glaciers in the adjacent mountains, has consequently been instrumental in determining the climatic conditions of the surrounding area, including the Horner site locality (see Figures 1.3, 1.5). The Yellowstone Plateau is more commonly recognized as Yellowstone National Park.

Many parts of the interior of the Bighorn Basin are relatively arid with annual precipitation rates under 17.8 cm (7.0 in), but these amounts increase with elevation along the mountain slopes. The period of greatest precipitation is usually March through May and summers are generally hot and dry with temperatures that regularly exceed +44°C (+110°F). Winter temperatures within the basin regularly fall below -37°C (-35°F). It is an area of marked seasonal contrast that required highly organized subsistence strategies in order for humans to survive, particularly during the critical late winter and early spring months.

The vegetation in the lower elevations of the interior basin is dominated by small sagebrush with some patches of juniper in well-drained areas and greasewood in the low-lying, saline areas. Scattered bunch grass is usually present but rarely is there a solid grass cover. Saltbushes are found in saline areas and are important as winter feed for herbivores. River valley floodplains are lined mostly with cottonwood, willow and boxelder with lesser amounts of buffalo berry, chokecherry and other fruit-producing shrubs. Most of these trees and shrubs also grow but with less vigor along arroyos and intermittent streams. Canadian wild rye, which grows to 1.5 m in height, is commonly found along floodplains and, although low in feed value, it and stands of willows up to finger-size diameter may mean the difference between death and survival for large herbivores during the late winter and early spring months.

As the elevation increases, the grass cover also improves. Other vegetation communities likewise change, with a wide band of juniper and mountain mahogany in the foothills that gradually blends into a band of tall sagebrush at higher elevations. Yellow and limber pine occupy the north slopes. Above this, in ascending order, are bands of fir, lodgepole, quaking aspen and spruce. Timberline is reached at about 2900 m (9500 ft) with alpine areas above this. The lower mountain slopes are characterized by deeply eroded canyons. The many-facing slopes of these canyons provide an equal variety of vegetation communities that in turn provide habitat for numerous animal species.

The widely distributed and seasonally varying nature of plant and animal resources has been instrumental in determining the lifeways of prehistoric human hunting and gathering groups. Although limited in quantity, their variety and different periods of availability have continuously provided alternatives for human subsistence. This resulted in small but viable human groups throughout the known 11,000–12,000 years of Bighorn Basin prehistory.

The present-day plant communities provide year-round grazing for both wild and domestic animals that practice a pattern of transhumance in response to seasonal changes. The interior basin is a relatively good wintering area for domestic

animals and was undoubtedly used also by larger herbivores in prehistoric times for the same purpose. River bottoms and canyons that extend into the mountain slopes relieve the monotonous, badland topography of the interior basin and also enhance the animal carrying capacity. They offer needed protection for animals during the critical winter months even though the basin is not thought of as a deep snow area by livestock operators. The general appearance of the Bighorn Basin may leave the impression that it is an unfavorable area for large herbivores, but this is not entirely the case. The grasses and forbs are present in relatively small quantities during the critical winter months but they are highly nutritious and usually available to the animals.

Even with domestic animals utilizing much of the plant resources, there is still a relatively large number and variety of wildlife today within the Bighorn Basin. This includes whitetail and mule deer, elk, pronghorn, moose, black and grizzly bear, mountain lion, coyote, bobcat, porcupine, beaver, jackrabbit, and cottontail. However, the relatively recent irrigation farming of river valleys has been a major factor in increasing the animal carrying capacity far beyond its potential in prehistoric times.

THE HORNER SITE

The north and south forks of the Shoshone River originate in the high elevations of the Absaroka Mountains and join to form the Shoshone River at the head of Shoshone Canyon. The river flows through the Shoshone Canyon gorge (Figure 1.6) which has a maximum depth of 483 m (1585 ft) and is 5.12 km (3.2 miles) long. A line at a right angle to the Shoshone River at the mouth of Shoshone Canyon Gorge marks the western boundary of the Bighorn Basin at the base of the eastern slope of the Absaroka Mountains. The Horner site lies 11.5 km (7.2 miles) northeast of the mouth of Shoshone Canyon and at the confluence of the Shoshone River and Sage Creek. Elevation at the site is 1476 m (4843 ft) (determined from the Corbett Dam Quadrangle, U. S. Geological Survey) and it is situated on a landform known as the Cody Terrace only a few meters from the edge of Sage Creek canyon which is about 39.6 m (130 ft) deep. Sage Creek and the Shoshone River join approximately .5 km (.3 mile) north of the Horner site (Figure 1.7). Sage Creek is a small stream relative to the size of the Shoshone River and it has cut to the level of the latter stream which, at the point of confluence, is over 40 m (131 ft) below the surface of the Cody Terrace. One can stand at the Horner site and look west and slightly south to the town of Cody, Wyoming and the mouth of Shoshone Canyon with Cedar Mountain to the left and Rattlesnake Mountain to the right (Figure 1.6). To the north and slightly west of the site is the top of Hart Mountain at an elevation of 2476 m (8123 ft) (Figure 1.8). Looking northeast is the lower valley of the Shoshone River (Figure 1.7). Carter Mountain appears prominently to the southwest at an elevation of 3335 m (10,940 ft). Sage Creek originates in the Absarokas immediately to the left of Carter Mountain, whereas the South Fork of the Shoshone River originates in the distant reaches of the Absarokas to the right of Carter Mountain (Figure 1.9).



FIGURE 1.6. The Horner site in 1949. 1: Cody; 2: Cedar Mountain; 3: Rattlesnake Mountain.



FIGURE 1.7. The Horner site in 1952 (view to north). Arrow points to the Horner site. 1: Shallow ephemeral stream; 2: location of bone bed that produced a Scottsbluff projectile point.



FIGURE 1.8. The Horner site in 1952, view to northwest with Hart Mountain and the Shoshone River in the background. Two arrows point to the Princeton–Smithsonian site datums.



FIGURE 1.9. The Horner site (arrow) in 1952 (view to south). 1: Shoshone River; 2: Carter Mountain; 3: town of Cody.