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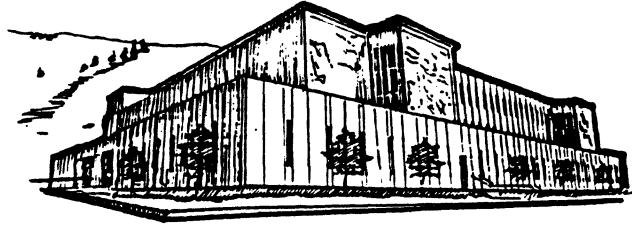
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University of  
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**TRAILS AND ABORIGINAL LAND USE IN THE NORTHERN  
BIGHORN MOUNTAINS, WYOMING**

**By**

**Steve Platt**

**B.A. University of Vermont, 1987**

**Presented in partial fulfillment of the requirements**

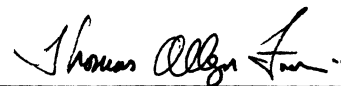
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**Master of Arts**

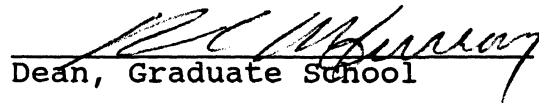
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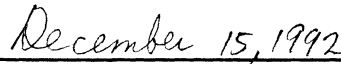
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Trails and Aboriginal Land Use in the Northern Bighorn Mountains, Wyoming (79 p.)

Director: <sup>TAP</sup> Thomas A. Foor

A case study of aboriginal trails in the Bighorn Mountains of Wyoming is used to demonstrate the problems of trail identification and the importance of trail research for answering questions of hunter-gatherer land use, resource exploitation and scheduling, seasonal movements and trade.

Trail identification is difficult and problematical. Physical evidence of trails is often limited and discontinuous. Trails are usually obscured by more recent human activity.

Trail ruts, the most ubiquitous of trail features, are difficult to tell apart from ruts formed by wagon passage and more contemporary ruts formed by motor vehicles. Cairns too, are somewhat problematic. Aside from determining whether or not a stone cairn has soil built up around its base researchers are forced to rely on general impressions of how much lichen is present on the stones to determine whether the feature is of prehistoric origin or not.

Four kinds of evidence are suggested for positive identification of aboriginal trails: (1) The presence of ruts and cairns can alert a researcher that he or she may be dealing with a trail; (2) site densities increase as one gets closer to the topographic feature the suspected trail follows; (3) a low density cluster of lithic debris should be found along the route; (4) when they exist, historic documents provide the most conclusive evidence of Native use of a particular trail.

All four lines of evidence point to the importance of trail preservation in the Northern Bighorn Mountains. The same ridges used by Native peoples to get from place to place were subsequently used by explorers, hunters, the U.S. military, and later miners, stockmen and recreationists. Later still, Bighorn National Forest established graded gravel roads along many of the same routes. Today the ridges in the study area appear scarred with numerous sets of ruts, wheel tracks, and contemporary Forest Service roads.

Archaeologists can determine aboriginal travel routes without relying solely on the presence of ruts and cairns. Aboriginal trails can be better identified by using the historic record, site density data, and a variety of indirect evidence.

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## I. INTRODUCTION TO THE PROBLEM

Groups of hunter-gatherers move over the landscape and choose their campsites with respect to specific goals which produces definable patterns (Jochim 1981). Over the last 25 years a number of anthropologists have addressed pattern and purpose of hunter-gatherer group movement. While subsistence and settlement research has focused on peoples living in specific habitats (Woodburn 1971, Lee 1968, Wilmsen 1973, Heffly 1981, Yesner 1981, Kelly 1983, Torrence 1983), Binford (1980) (1983) addressed the general problem of hunter-gather settlement pattern and how it is reflected in the archaeological record. Butzer has also written about what he refers to as "intersite networks," and integrated site systems dispersed across landscapes (Butzer 1982). Research indicates that camp movements are tailored to the specific ecosystem in which a group of hunter-gatherers live. (Heffly 1981, Yesner 1981, Binford 1980 and 1983, Kelly 1983).

The perspective I take here is that anthropologists can benefit in three ways from increasing their knowledge of aboriginal travel routes. First, since travel routes connect other kinds of archaeological sites, if we can accurately locate trails then we can improve our

understanding of how prehistoric activities at sites are related. Second, if trail locations can be predicted then it may be possible to predict the location of here-to-for undiscovered trails. Third, by exploring trail locations archaeologists may better understand how hunter-gatherers used the environment.

Two major problems dominate trail research. First, how do archaeologists identify Indian trails? Second, why are prehistoric trails found where they are? In order to answer these questions I will use a case study from the Northern Bighorn Mountains in Wyoming.

Aboriginal travel routes across the Plains are well documented (Blakeslee and Blasing 1988, Davis et al 1980, Loendorf and Brownell 1980). However, little or no research has been conducted on the trails within the adjacent Bighorn Mountains of north-central Wyoming. Describing archaeological features associated with the Big Horn Medicine Wheel, Charles Reher writes, "The northern Bighorns are one of the few areas where evidence for "indian trails" still exists. Once a common and very real topic for conversation, travois trails are now more obscure, even legendary to some, and the material evidence for them has been largely destroyed in many areas" (Reher 1987:2).

The Bighorn Mountains and associated foothills are rich in prehistoric archaeological sites. Human occupation of the area covers at least 8,500 years (Mulloy 1958, Frison

1978). Because the Bighorns are an isolated mountain range within largely lowland prairie ecosystems they offer a unique opportunity to study aboriginal travel routes and use of different environments.

The open, grassy, ridges of the Northwestern flank of the Bighorns are rich in prehistoric sites as well as features archaeologists generally associate with trails. Ruts, cairns, and large linear stone circle sites have been reported on Medicine Mountain, Sheep Mountain, Little Bald Mountain, Hunt Mountain, and in the Twin Buttes area. These locales are within the Lodgegrass, Porcupine, Beaver, Tongue and Little Bighorn watersheds. In this thesis I will describe trail segments in the above named drainages. Data from these areas will be used to identify prehistoric trails and infer why they are found where they are. My arguments will be supported by information on aboriginal subsistence and settlement in the study area.

## II. BACKGROUND TO THE STUDY AREA

### NATURAL HISTORY

I will now discuss aspects of the Northern Bighorns natural history pertinent to Native use of the area. Climate, of course, influences the distribution of plants and animals. Geology is discussed because it shapes the topography of the Northern Bighorns and offered prehistoric peoples shelter and raw materials for the manufacture of tools. Flora and fauna are important because they provided Native peoples with food and other essential materials like sinew, bone and hides.

The Bighorns are one of the largest island mountain systems on the Northern Plains. They extend from approximately the Montana/Wyoming border 90 miles south to the Middle Fork of the Powder River near Kaycee, Wyoming. West of the range lies the arid Bighorn Basin and to the east are the vast Powder River and Tongue River drainages. To the north, the Bighorns are separated from the Pryor Mountains by the Bighorn River. (See Figure 1.)

The study area is bounded to the north by the steep and precipitous Bighorn Canyon. The area is confined on the west to the margin where the mountains drop off into the Bighorn Basin. The eastern boundary of the study area

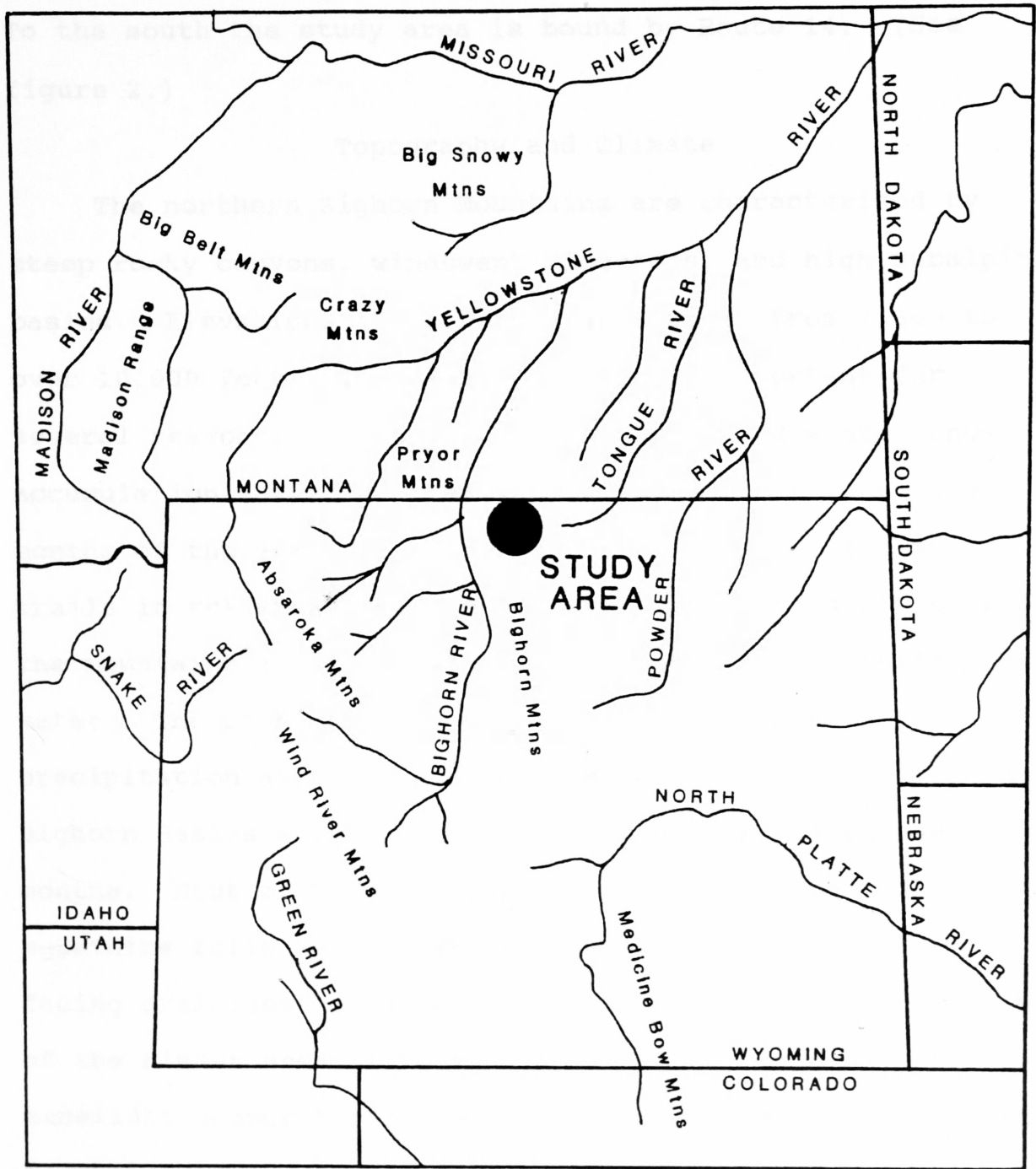


Figure 1. Location of the Bighorn Mountains and study area.

occurs where the mountains drop into the Powder River Basin. To the south the study area is bound by Route 14. (See figure 2.)

### Topography and Climate

The northern Bighorn Mountains are characterized by steep rocky canyons, windswept ridgetops, and high subalpine basins. Elevations in the study area range from 7,600 to over 10,000 feet. The high elevation is important for several reasons. First, low temperatures and winter snow accumulation makes the area inhospitable for five to six months of the year and suggests seasonal use of Indian trails in the area. Second, the relatively high altitude of the mountains is important when considering availability of water. The Bighorns receive substantially more precipitation annually than do the adjacent Powder River and Bighorn Basins which are dry and hot during the summer months. Most of this increased precipitation in the mountains falls as snow which lingers in east and north facing drainages heads well into August. Third, since much of the higher area is subalpine grassland, it provides excellent summer forage for a variety of game species. And fourth, edible plants mature much later at high elevation than they do at lower altitudes east and west of the range.

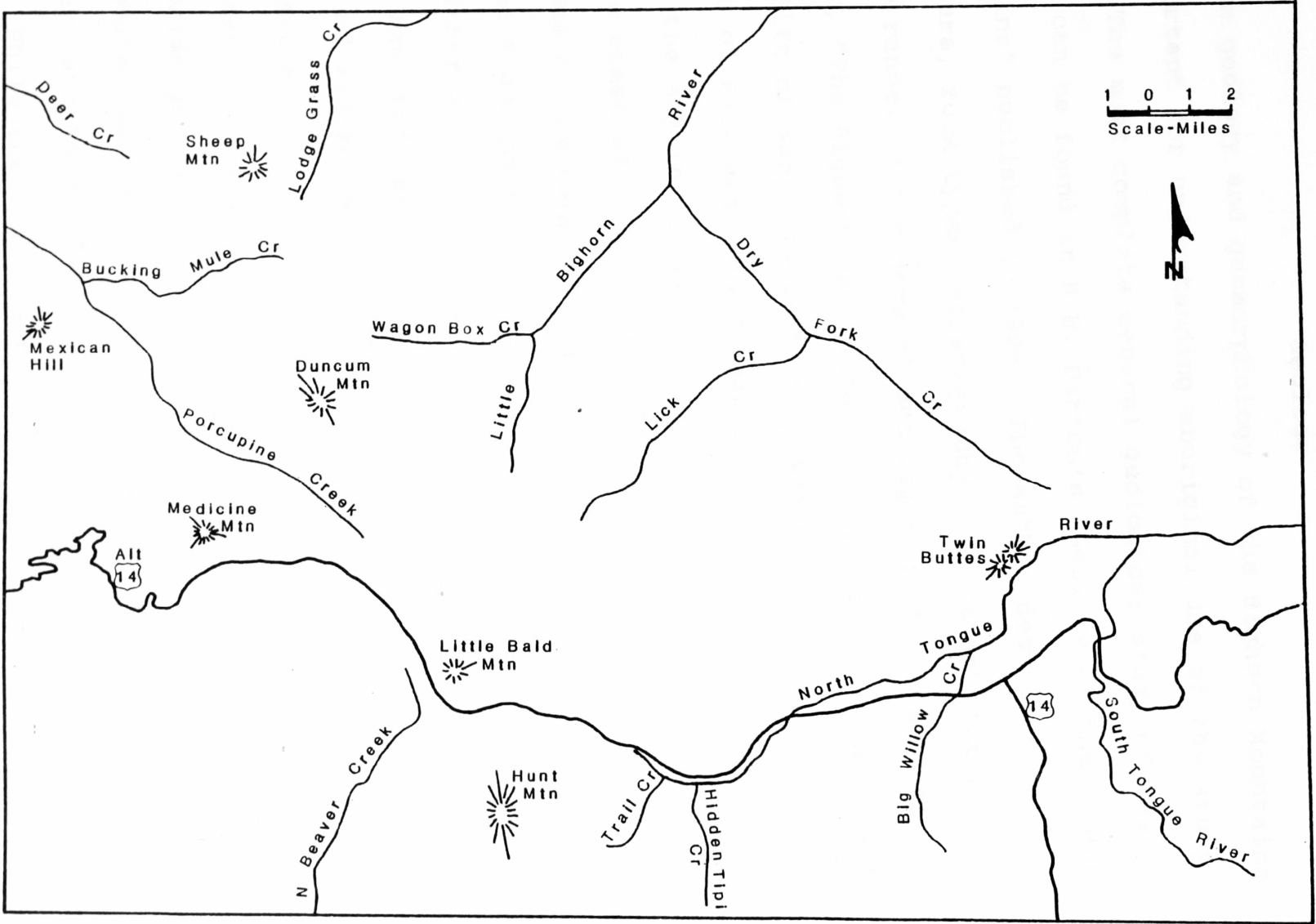


Figure 2. Detailed map of the study area.



## Geology

The geology and geomorphology of the Bighorn Mountains is important for understanding aboriginal use of the study area. The most complete general geological study of the region can be found in N.H. Darton's "Geology of the Bighorn Mountains" published in 1906. The author describes structure, rock types, stratigraphy, and recent glaciation in the range. For a general description of the Bighorns he writes, "The Bighorn Mountains are a great anticline due to an uplift of many thousand feet, which has brought a thick series of Paleozoic and Mesozoic sedimentary rocks high above the adjoining Great Plains. Owing to the deep erosion of the crest of this uplift, the mountains present a central nucleus of pre-Cambrian granites, with the sedimentary rocks on the flanking front ranges and constituting the plateaus at either end" (Darton 1906:13).

The study area is located, for the most part, in an area of sedimentary ridges of limestone, dolomite, and sandstone, on the northwest margin of the large northern plateau. The formations within the study area include pre-Cambrian granite, Cambrian Deadwood, Ordovician Bighorn Dolomite, Carboniferous Madison limestone and Tensleep, Embar, and Amsden Formations (Darton 1906).

While the Bighorns produced an extensive system of mountain glaciers in the Quaternary, and still hold a series

of small glaciers near their summit, the study area has never been glaciated.

The single most important geomorphological characteristic of the northwestern Bighorns is the area's relative flatness.

The salient features of the northwestern portion of the region are the steep rise of the beds on the western side of the uplift and the great breadth and flatness of its summit. The most elevated portion of the uplift lies near the top of the mountains, but for a breadth of 10 miles the top of the arch is nearly flat, and it has but little pitch to the north and southeast. The beds rise toward Bald Mountain in a low dome, while in the region on either side of Tongue River, especially to the south, they lie nearly level for many square miles" (Darton 1906:95).

On all margins of the study area this northern plateau is broken by deeply eroded canyons. This combination of features results in a series of sedimentary rock ridges that run from the Bighorn Basin into the northwest flank of the mountains and forms a series of natural travel routes.

Additional geological attributes include the fact that the sedimentary rock formations in the Bighorns provide an excellent source of rock shelters and overhangs. These natural shelters make attractive campsites in poor weather. Also, several of the sedimentary beds are the source of high quality cherts and quartzites. These materials were extensively quarried by prehistoric people in certain localities in the Bighorns.

## Flora and Fauna

The grasslands of the Bighorn range have been described as a **Festuca idahoensis-Lupinus sericeus** association. In this community grasses and sedges made up over half of the vegetative cover, with forbs dominating the rest. (Hurd 1961) In the study area **Festuca idahoensis** and grasses of the genus **Poa** are historically important species providing forage for bison (**Bison bison**), elk (**Cervus canadensis**), mule deer (**Odocoileus hemionus**), bighorn sheep (**Ovis canadensis**), and antelope (**Antilocapra americana**). Smaller mammals including a variety of animals like marmot (**Marmota flaviventris**), several species of ground squirrel (**Citellus** sp.), and pika (**Ochotona princeps**) inhabited the range. Historical accounts suggest that grizzly bears (**Ursus arctos**) roamed these open meadows in significant numbers. All of these animals (except for grizzly bears and bison) can be found in the study area at this time. Bison are limited to a small portion of the Bighorn Mountains on the Crow Indian Reservation in Montana.

The subalpine meadows of the study area are interspersed with small stands of subalpine fir (**Abies lasiocarpa**) and engelmann spruce (**Picea engelmannii**) while lodgepole pine (**Pinus contorta**) dominates the lower portions of drainages. Ethnographic accounts suggest that the spruce and fir provided fuel wood, and lodgepole pine is a good source of new tipi poles, atlatl darts and lance shafts.

The forested portions of the area provide game cover as well as supporting black bear (*Ursus americanus*), mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), and coyote (*Canis latrans*). All of these animals are found in the study area at this time. The forested area is also home to a wide variety of furbearers like marten (*Martes americana*), and other mammals such as snowshoe hare (*Lepus americanus*) and red squirrel (*Tamiasciurus hudsonicus*). These animals too, can all be found in the area today. Several species of gallinaceous birds like ruffed grouse (*Bonasa umbellus*) and blue grouse (*Dendragapus obscurus*) exist in good numbers in this area. Several species of passerine birds like raven (*Corvus corax*), as well as birds of prey like golden eagle (*Aquila chrysaetos*) can also be found throughout the Bighorns.

Portions of the subalpine zone are well watered. One researcher writes, "Many streams rise in low-gradient boggy areas and springs in the subsummit" (Wilson 1983 118). The area is also interspersed with extensive willow (*Salix* sp.) thickets along the north fork of Tongue River. This area today supports a healthy population of moose (*Alces alces*) which were introduced to the Bighorns in the late 1940's. Historically moose were not found in the range but the large riparian zones were a rich source of beaver (*Castor canadensis*) and otter (*Lutra canadensis*), as well as waterfowl in the summer season.

Below the high subalpine zone the slopes of the open ridges and meadows fall off into steep rugged canyons. These canyons support a slightly different flora and fauna than do the subalpine meadows at the crest of the northern Bighorns. Many of these canyons have running water throughout the dry time of the year. The canyons support raspberries (*Rubus* sp.), currents (*Ribes* sp.), cottonwood (*Populus* sp.), serviceberry (*Amelanchier* sp.), chokecherry (*Prunus* sp.), willow (*Salix* sp.), and alder (*Alnus* sp.). The creeks all have populations of trout.

Where the Bighorns fall off into arid Bighorn Basin the vegetation grades from lodgepole pine dominated slopes to brushy canyons and ridges dominated by shortgrass species and sagebrush (*Artemesia* sp.). A number of edible plants can be found on these ridges including wild onion (*Allium acuminatum*), sego lily (*Calochortus nuttallii*), and bitterroot (*Lewisia rediviva*).

## CULTURE HISTORY

In order to understand the pattern of human travel in the northern Bighorn Mountains it is necessary to consider the prehistory and history of the area. Three authors have produced the most widely used interpretations of Northwest Plains prehistory. William Mulloy was the first archaeologist to publish a cultural chronology for the region (Mulloy 1958). Mulloy grouped Plains prehistory into three basic time periods, the Early, Middle and Late Prehistoric Periods. Later, Brian Reeves refined Mulloy's classification system with respect to data from Southern Alberta (Reeves 1969). Finally, George Frison put together a classificatory framework for the Northwest Plains which retained parts of both Mulloy's and Reeves' models. (Frison 1978). Reeves and Frison based their models on the formal characteristics of artifact assemblages creating cultural classifications. Mulloy's system, while recognizing horizon styles, remains the system of classification most closely resembling a true temporal classification (Foor 1985).

I will use Mulloy's (1958) classification to discuss the cultural chronology of the study area. The Early Prehistoric Period is marked by the use of large spear points and a reliance upon big game hunting as the primary means of subsistence. Frison recognizes nine separate cultural complexes within the Early Period (he refers to the

Early Period as the Paleo-Indian Period). Clovis, Goshen, Folsom, Agate Basin, Hell Gap, Alberta, Cody, Frederick and the Lanceolate Lateral Flakes Point Complex are the "archaeological cultures" which he assigned to the Early Prehistoric Period. However, one author has recently suggested that Paleo-Indian projectile point types are based on unreasonably narrow ranges of variability (Bamforth 1991). Paleoindian material from the Bighorns can be traced back to roughly 8,500 BP. Projectile points of the Hell Gap, Alberta, and Cody Complex types have been documented from the range as has a wide variety of later Paleoindian point types (Husted 1969, Laurent, personal communication, 1992).

The Middle Period represents a time during which it is believed that native groups switched their subsistence focus from big game to smaller game and more reliance on plant resources. Frison (1978) refers to this period as the Archaic. Middle Period cultural material is present in the Bighorns. At the Medicine Lodge Creek site on the western slope of the mountains, early Middle Period artifacts such as large side notched projectile points were recovered in a multicomponent rock shelter (Frison 1978). These are followed in time by assemblages associated with the McKean Complex. McKean points are a series of large, lanceolate, bifurcate based points. Some have side notches (Mulloy 1954). Artifacts associated with this cultural complex are

common throughout the Bighorns, at low to high elevations (Frison 1978). Late Middle Period artifacts are also common in the range. Projectile points are corner or side notched, and include Pelican Lake and Besant types. At Spring Creek Cave (48WA0001), on the southwestern margin of the Bighorn Mountains, Pelican Lake points were found hafted to atlatl forshafts (Frison 1965).

The Late Prehistoric Period (ie AD 500 to AD 1750) is thought to mark a shift from more generalized subsistence to a greater focus on hunting bison with large scale drives and established jumps (Kehoe 1966) (Frison 1978). Late Period sites are also common in the Bighorns. Late Period cultural complexes are marked by small side notched projectile points that are assumed to have been bow-projected. Pottery is also present. Late Period point types include Avonlea, Plains Side-Notched and Prairie Side-Notched (Kehoe 1966).



### III. METHODS OF ANALYSIS

How can archaeologists identify Indian trails? I will answer this question by discussing evidence used by Plains archaeologists to define Indian trails. This will illuminate the inherent difficulties of trail research. Finally, I will use site density and site type information to demonstrate an association between trail attributes and a linear pattern of prehistoric sites within the study area.

I will explain trail locations by examining ecological data and aboriginal subsistence patterns in the Northern Bighorns. My argument explores the role of geography, geology, flora and fauna in aboriginal route selection within the study area.

I use several approaches to map, describe and analyze several trail segments discernable in the Northern Bighorn Mountains. To begin with, I present historical as well as contemporary accounts of ancient trails throughout the Northwest Plains and in the Bighorn Mountains in particular. The archaeological literature review helps to explain the importance of trail research to more general anthropological goals. The historic literature is important because it makes up the strongest direct evidence supporting the presence of Indian trails not only in the Northern Bighorns, but also in the Northwest Plains as a whole. Culture history has proven useful in the investigation of the Lolo

Trail which traverses the Bitterroot Mountains in Montana and Idaho (McLeod 1984).

Next, I conducted field examinations of the extant portions of several trails found in the Lodgegrass, Porcupine, Beaver, Tongue and Little Bighorn drainages. Examinations took place on foot and by four wheel drive vehicle where appropriate, and were conducted by: (1) Noting locations with trail attributes on topographic maps; (2) Driving roads paralleling trail locales; (3) Looking for debitage, taking photographs, and examining sites. Various portions of these trails have been recorded during pedestrian cultural resource surveys conducted by Bighorn National Forest.

I recorded extant trail segments based on prevailing ideas of what constitutes an Indian trail. For example, the presence or absence of cairns was noted as was the presence or absence of lithic debris within the ruts. When discovered, chipped stone debitage within trail ruts was documented with photographs. Last, the presence of historic features associated with presumed Indian trails were noted and photographed.

Site locations were obtained from the Wyoming State Historic Preservation Office and the Bighorn National Forest. This information made it obvious that most recorded sites were found in limited portions of the area. Sites

were mostly located along the major limestone ridgetops in the study area.

More cultural resource surveys have been conducted in the area north of Medicine Mountain than any other portion of the study area. I have quantified site density and site type along the Sioux Trail which traverses this part of the study area. All sites within 1 km of the roads which presently follow this trail were documented. I calculated the percentage of known sites which were within the Medicine Mountain and Mexican Hill 7.5 minute topographic maps and were directly associated with the Sioux Trail. I also calculated percentages of site types found along the trail.

After demonstrating that material evidence left behind by prehistoric peoples is concentrated along trails in the study area, I attempt to explain trail locations by reference to the area's topography and natural resources. Finally, I apply ideas developed by others to explain prehistoric subsistence and settlement patterns in the Pryor Mountains, to infer subsistence activities in the study area.

### HOW DO ARCHAEOLOGISTS DEFINE INDIAN TRAILS?

Archaeologists define Plains Indian trails in two ways. First, they use information from the historic record. Several papers cite historic passages that refer to aboriginal use of the trail in question. When discussing two newly reported trails in Kansas Blakeslee and Blasing state, "We have begun the long process of plotting trails used by various explorers in the region and have found that most explorers from Coronado on, were led by Indian guides along Indian trails" (1988:18). One variation of this is to use information from local sources -sometimes written, and sometimes oral- and then attempt to locate the physical evidence of the trail from the description given in the source. Archaeologists used this method in Northwestern Montana to successfully record several segments of the Grave Creek Trail across the Whitefish Range (Mathews and Frost 1972). The Bad Pass Trail in the Pryor Mountains of Montana has been documented in the historic record from expeditions as early as 1825. This same trail has also been found to be part of the oral tradition of the Crow tribe (Loendorf and Brownell 1980). More recently one author has used an historic journal which records Pawnee travel along a series of trails in Nebraska to create a predictive model of Pawnee hunting sites (Roper 1991).

The second means by which archaeologists identify Indian trails is by discovering physical evidence of a trail in the course of field survey. Erosional ruts and stone cairns are features most commonly used to indicate the presence of a trail. There is good reason to associate both ruts and cairns with Indian trails. Several authors have maintained that Indian trail ruts result from dragging travois poles on the ground behind dogs or horses. In his "Historical Sketch of Madison County, Montana Territory," Henry Blake writes of "...the trail over which the Indians for many centuries dragged their lodgepoles" (Blake 1896:80). In one pioneer journal the following account is recorded, "We saw long lines of Indian Ponies in charge of squaws, moving away. Lodge Poles dragging on the ground from each side and behind the Ponies, on which Poles were cross pieces on which their property and papooses were loaded... Old Mountaineers know the Lodge Pole trails and that an Indian village has moved by there..." (Larson 1968 :16). One author refers to the presence of stone cairns along an Indian trail over the Little Blackfoot Pass west of Helena, Montana (Hedges 1896).

Archaeologist George Frison has identified seven locales with linear cairn lines in Wyoming and Montana. He writes, "[cairn lines] have been referred to as trails and in some cases there are deeply-cut trails here and there alongside the cairn lines..." (Frison 1981:134). Frison

also notes the presence of livestock trails and present day roads in the vicinity of some of the cairn lines (Frison 1981). The presence of cairns on transverse ridges along several Indian trails in the Central Plains has been recorded by Blakeslee and Blasing (1988). In Southwestern Montana cairns have been reported on the continental divide as well as on nearby ridgetops. These cairns are believed to mark aboriginal trails (Rominger 1979). Loendorf and Brownell have reported the excavation of 16 of 173 stone cairns along the Bad Pass Trail in the Pryor Mountains of Montana. They found cultural material in 10 of the excavated cairns and were able to date a juniper log in one of them (Loendorf and Brownell 1980). Malouf has argued that Indian cairns can be differentiated from those built by shepherders, miners and surveyors because the rocks in ancient cairns are usually lichen covered whereas cairns of more recent construction usually lack lichen cover (Malouf 1963). Most stone cairns however, remain difficult to date or relate to aboriginal construction.

The East Bearpaw Slope Trail in Northcentral Montana has also been associated with ruts and stone cairns (Davis et al 1980). In another instance, one author describes the Bannock Trail in Yellowstone National Park, "While the route just described is plainly visible at many points in the Park, it is most evident in the Blacktail Meadows, where there are often several parallel travois tracks, and in the

Tower Fall area, where traffic was forced into a single track by the rough country" (Haines 1962:5).

Often, the descriptions of Indian trails are strictly anecdotal. Sometimes the historic documentation of a given trail is limited to "local traditions and recollections" as is the case for several trails in Alberta (Fromhold 1973:101). Describing a trail associated with a prehistoric game trap in the Castle Mountains of Central Montana one author simply places the word TRAIL in quotation marks (Hogan 1974). Often an author will simply describe how game trails usually follow the easiest grades and how these trails become transformed over time into Indian trails, then wagon roads, and finally present day thoroughfares (Christensen 1963). These accounts are not necessarily false but they lack scientific rigor.

Recently, Reeves (1992) has described a section of the Old North Trail along the Rocky Mountain Front outside of Choteau, Montana. The author uses a combination of history, Native American oral tradition and archaeology to make a case for including several Old North Trail segments in the National Register of Historic Places. "The Old North Trail is not a single trail or road from one point to another, but rather an interrelated set of northwest-southeast Native American foot, dog and horse travois, and later wagon trails, forming a corridor approximately 200 km in length and 36 km in width paralleling the Rocky Mountain Front"

(Reeves 1992:1). Within this corridor Reeves differentiates between an "Outer Trail" that has been largely destroyed by modern farming activities, and an "Inner Trail" marked by trail ruts and stone cairns that is still evident in ranchland immediately adjacent to the Rocky Mountain Front.

Reeves believes that the function of the Old North Trail was to provide human access to stone quarries in central and southwestern Montana. He concludes, "In sum, the patterning of archaeological sites and artifacts observable along the Trail is a palimpsest of past Native activities. At one end are sites directly related to the Trail, while at the other end are sites reflecting the seasonal use of these locales as preferred settlement areas" (Reeves 1992:2).

What makes historic information so compelling to archaeologists is that the physical residues of Indian trails are generally confusing. The physical evidence of an old trail is often so disturbed or fragmentary that historical references provide the most convincing evidence of Indian use of an area.

#### PROBLEMS IDENTIFYING TRAILS

As several authors have acknowledged, ancient trails are often obscured by a variety of historic and present day activities (Davis et al 1980, Loendorf and Brownell 1980,



Frison 1981). For example, historic wagon roads often followed Native routes; these historic roads frequently resemble Indian trails in their present physical appearance because soil erosion has resulted in a series of parallel ruts. The ruts widen out in open level areas and contract into what sometimes becomes a single, deep, narrow track in places where the terrain dictates a specific location for the route. Wagons, like horse or dog drawn travois, were easiest to pull directly over the tops of topographic features that blocked the general direction of desired travel. Until Euroamericans were willing to do the cut and fill work necessary to circumvent topographic obstacles, the best wagon routes were directly along the path of old travois trails. Early historic travel was therefore likely to more or less exactly follow native routes and to obscure evidence of specifically Indian use.

Later on, after historic use of a particular route had intensified the route was sometimes straightened. Cut and fill work was necessary to bring the road along the sides of hills. Evidence of historic Euroamerican cut and fill work, water bar installation, or bridge construction often can still be identified in the field. Thus it is possible, under certain circumstances, to differentiate between routes with and those without construction improvement. Those segments of an historic road without improvements that go directly over the tops of topographic features are the

segments most likely to approximate the location of Indian trails.

Other human and non-human activities also obscure Indian trails. For example, modern stone cairns are routinely built by shepherders and recreationists frequently erect stone monuments on mountain peaks. Stone cairns of Indian manufacture are frequently settled into the ground and lichen covered. The trail cairns observed in the study area are for the most part smaller than those described by Loendorf and Brownell (1980) and Frison (1981). However, there is no known way of determining with certainty which cairns documented in this or many other studies are of Indian origin.

Contemporary use of ancient trails as roads by stockmen and recreationists further mask distinct Indian use. Unfortunately, I know of no method of differentiating ruts caused by travois and horse travel from those made by wagon or motorized vehicle travel. Recently, however, Reeves (1992) has contrasted travois versus wagon derived ruts for segments of the Old North Trail along the Rocky Mountain Front west of Choteau, Montana.

The wagon trail scars in the moraine are easily distinguishable by distinct sets of linearly oriented parallel wheel tracks, and loose rocks lying along the edges of the trail which were tossed off the wagon trail. The Old North Trail scars in contrast range from multiple sets of narrow marks representing horses and travois to a uniform trail crease of two or so meters in width lacking any internal definition of travois

impressions. Rocks rather than being tossed out of the trail are imbedded, or somewhat loosened in the floor of the trail. In areas of soil accumulation, the travois trail scars show up as multiple sets of subparallel to irregular trail marks, and the wagon trail marks as multiple sets of well defined linear to subparallel marks (Reeves 1992b:1).

During the course of completing fieldwork for this study I encountered a shepherd's wagon placed directly within the Little Bald Mountain Trail. Furthermore, many places on the Plains have been subjected to intensive livestock grazing for over a century. Numerous locations in Bighorn National Forest have been overgrazed to some degree. Disturbance of this kind may alter the appearance of ruts and damage sites associated with a trail.

Finally, the impacts of wild game traffic must be considered. Much of the study area harbors significant numbers of mule deer and elk. As with contemporary Forest users and their livestock, game animals tend to use the easiest most practical travel routes. Because Indian trails are often located in geographically practical locations they can be obscured by such use over the years.

## IV. RESULTS

### TRAIL DESCRIPTIONS

#### Sioux Trail- 1. Medicine Mountain Segment (48BH1393)

The Indian trail which runs across Medicine Mountain is probably the best documented trail in the study area. (See Figure 3). It has been mentioned as a travois trail by Simms (1903), Grinnell (1923), Grey (1963), and most recently, Reher (1987). This route can also be seen on several old Bighorn National Forest Atlases, one example being the 1924 Recreation Binder which refers to the Medicine Mountain Trail as the "Old Sioux Trail" (Bighorn National Forest Recreation Binder 1924).

An ethnographer gathering information about the history of the Ponca tribe in the 1940's recorded a statement made by a Ponca Indian named Peter Le Claire which suggests that the Ponca were familiar with the Sioux Trail and the Bighorn Medicine Wheel.

"In the Bighorn mountains in Wyoming is the best trail marks there is (sic) made by the Poncas. It is a circle in the shape of a wagon wheel, rocks laid forming the shape. It represents a sun dance circle. All the colors that goes (sic) with the sun dance is (sic) found, the Black, red, and white. Black represents weeping, and White is their prayers and the answer. West of this circle is an arrow laid with rocks pointing directly toward it" (Howard 1965:18).

The stone arrow mentioned by Le Claire is documented by Reher (1987).

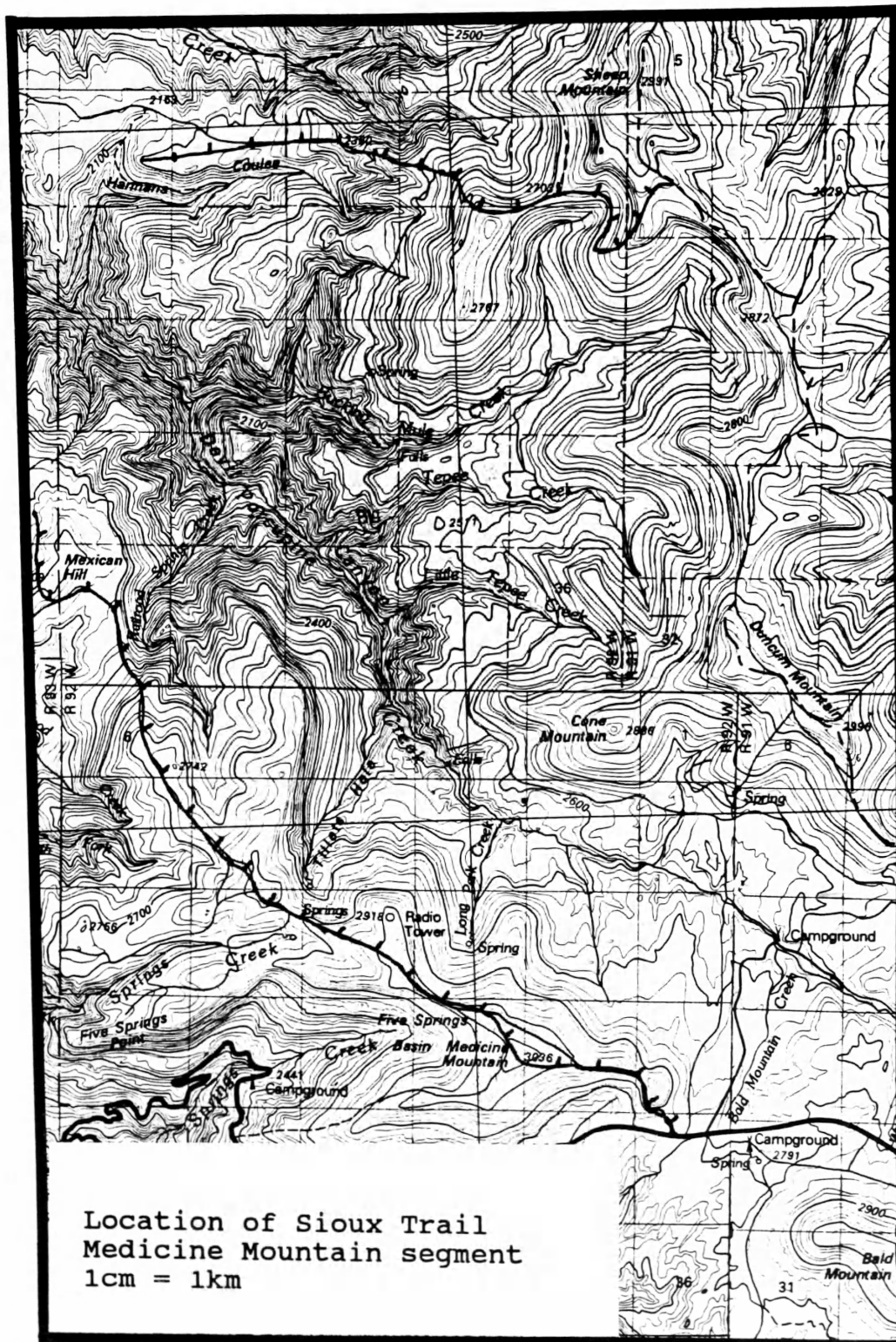


Figure 3. Location of the Sioux Trail-Medicine Mountain Segment (U.S. Geological Survey 1979.)

The Sioux Trail is described as follows,

"...north of the brink of Devils Canyon the route follows open, parky ridges; crossing several round timberless mountains. Its crossing of the Devils Canyon marks the only place in the canyon for several miles up or down where crossing might be effected, so rugged and precipitous are the walls of the canyon. The canyon is very steep and rugged where the trail now crosses and is little used. Leaving the canyon on the north rim, the trail turns northeast through an open, sagebrush country..." (Bighorn National Forest Recreation Binder 1924:14).

The trail runs northwest along a limestone ridge that slopes down toward a series of pediment benches that terminate in the Bighorn Basin. It skirts to the west of Devils Canyon, across Mexican Hill, and becomes difficult to follow on the sagebrush benches northwest of Mexican Hill. According to the 1924 Bighorn National Forest Recreation Binder one segment of the Sioux Trail swings northeast near Mexican Hill, crosses Devils Canyon and connects with the Sheep Mountain Trail via Hannans Coulee. (See Figure 4.)

The Sioux Trail is associated with all of the features that typically obscure Indian trails. Today, the trail has been mostly superceded by Forest Service Roads #12 and #105 and miscellaneous trails where off road vehicles have departed from particularly muddy segments of the official roads. However, the old trail ruts are discernable in numerous places.

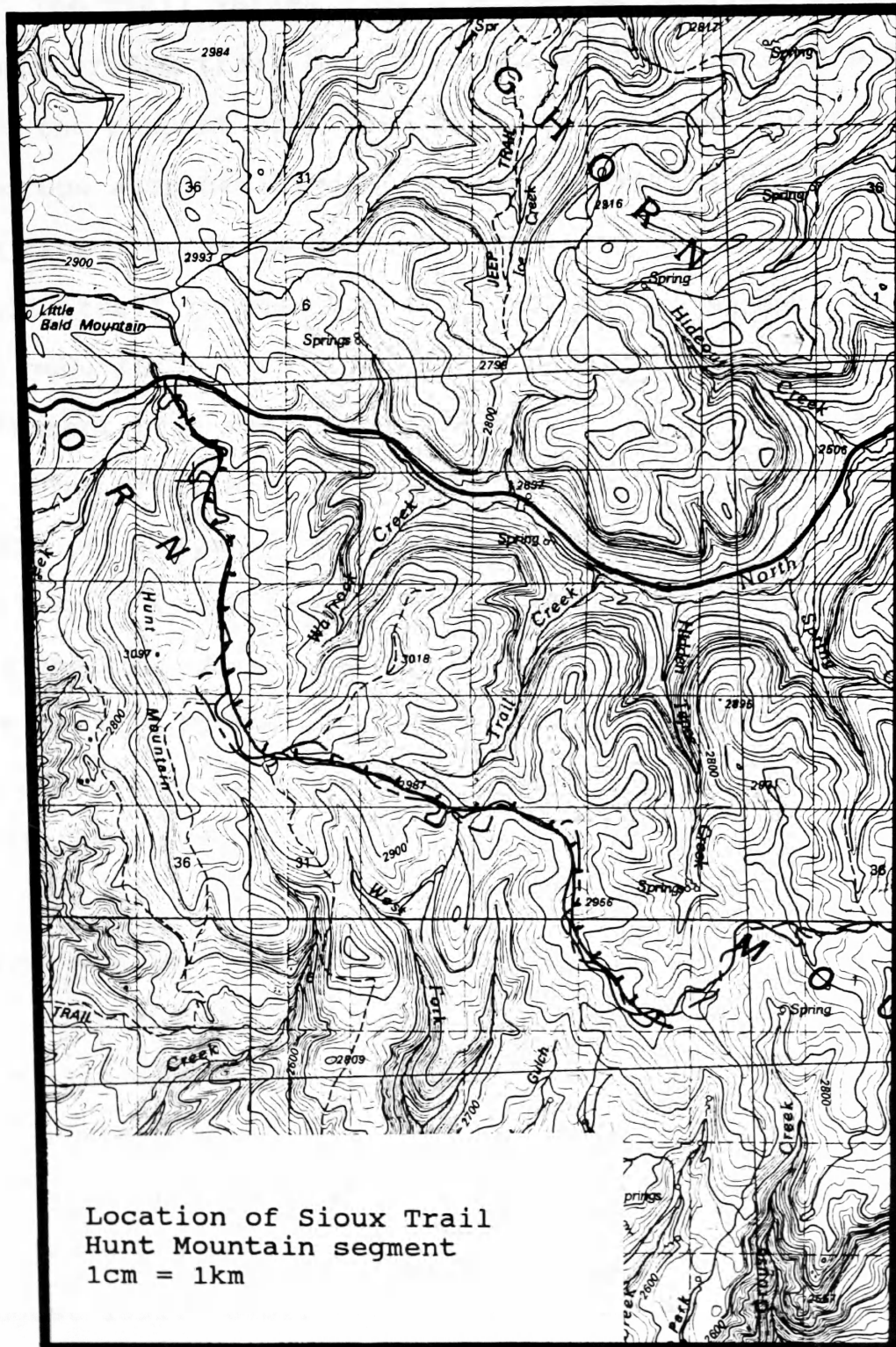


Figure 4. Location of the Sioux Trail-Hunt Mountain Segment (U.S. Geological Survey 1979.)

The trail varies from a series of parallel ruts to a single eroded trail bed, "...over a meter deep in places with the deepest trail bed portions located in the rocky outcrops atop Medicine Mountain" (Laurent 1989:169). Ruts are from 1 to 20 cm deep and are 10 to 25 cm wide. The trail itself ranges from 2.5 to 12 meters wide. In places, the vegetation within the trail parameters is noticeably different from vegetation on either side of the trail.

The trail has been used in historic times as part of a stock drive system. Cairns can be seen on the south side of Mexican Hill and have been recorded along the trail north of the Medicine Wheel (Laurent 1989). Portions of these cairns are covered by sod or lichen (See Figure 8.) Finally, I recorded several isolated pieces of debitage within the trail ruts.

#### Sioux Trail- 2. Hunt Mountain Segment (48BH1393)

The Hunt Mountain Segment of the Sioux Trail runs along the main divide of the Bighorn range south from highway 14A. The route follows Forest Service road #10 south of the highway for approximately four miles. No chipped stone debitage was found during a day of field investigation in August 1991. Similarly, no cairns were located in the immediate vicinity of trail ruts. No historic road features were located along the route.



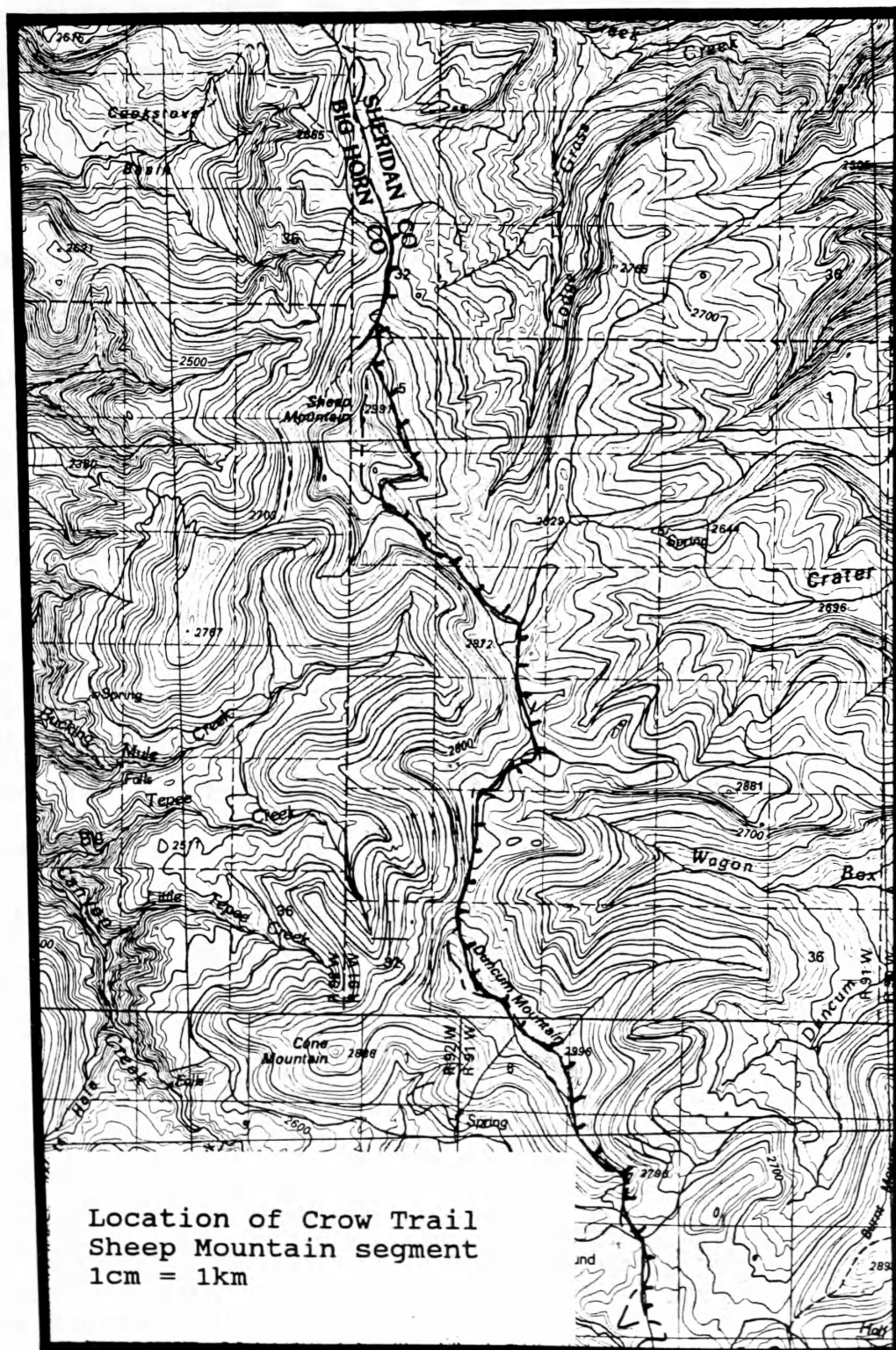


Figure 5. Location of the Crow Trail-  
Sheep Mountain Segment (U.S. Geological Survey 1979.)

The route has been used by Native Americans as recently as the 1930s when Art Big Man, a Crow Indian, fasted on Hunt Mountain (Laurent, personal communication, 1992).

In August of 1881 Sheridan's party followed either Wallrock, Trail or Hidden Tepee Creek south from the North Fork of Tongue River up onto the divide of the Bighorns. They then followed the divide north on the Hunt Mountain Trail. In my field investigations in early August 1991 I photographed snowbanks along the Hunt Mountain Trail. Leuit. Col. Gregory describes snowbanks in this same vicinity for early August 1881 (Connor 1940).

#### Crow Trail- 1. Sheep Mountain Segment (48SH710)

In 1823 a white fur trader by the name of Andrew Henry followed the "Old Crow Trail" to the headwaters of Tongue River to cross the Bighorn Mountains (Foster 1982). Portions of the Crow Trail have been recorded by Bighorn National Forest archaeologists.

The Crow Trail runs north from highway 14A along the hydrological divide between the Bighorn and Little Bighorn Rivers. Today this divide marks the boundary between Bighorn and Sheridan County, Wyoming. The trail crosses Duncum Mountain and passes .5 km to the east of the summit of Sheep Mountain. The Crow Trail along Sheep Mountain has also been largely obscured by Forest Service roads. For example, the Sheep Mountain Road (road #11)

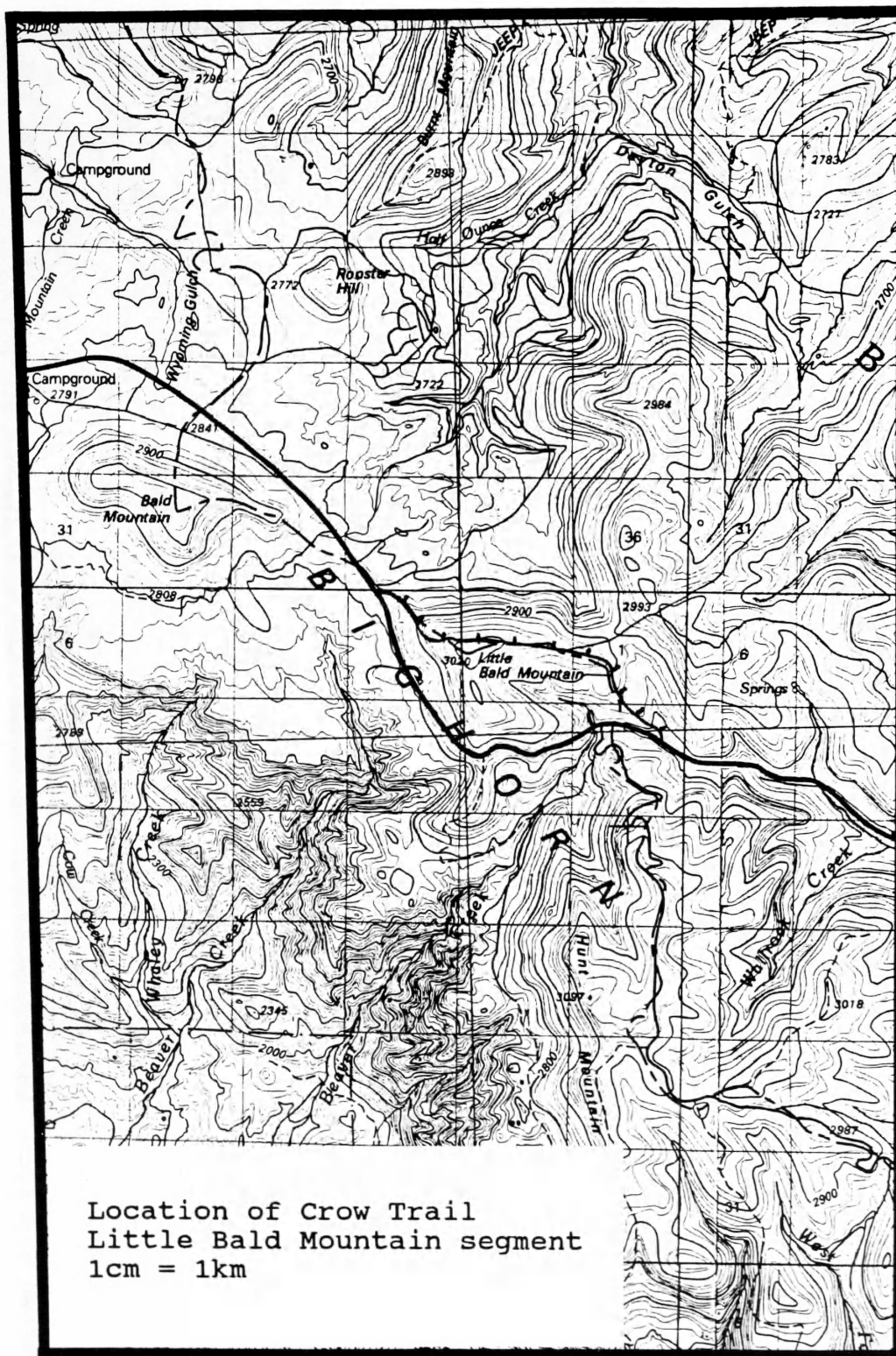


Figure 6. Location of the Crow Trail-  
Little Bald Mountain Segment (U.S. Geological Survey 1979.)

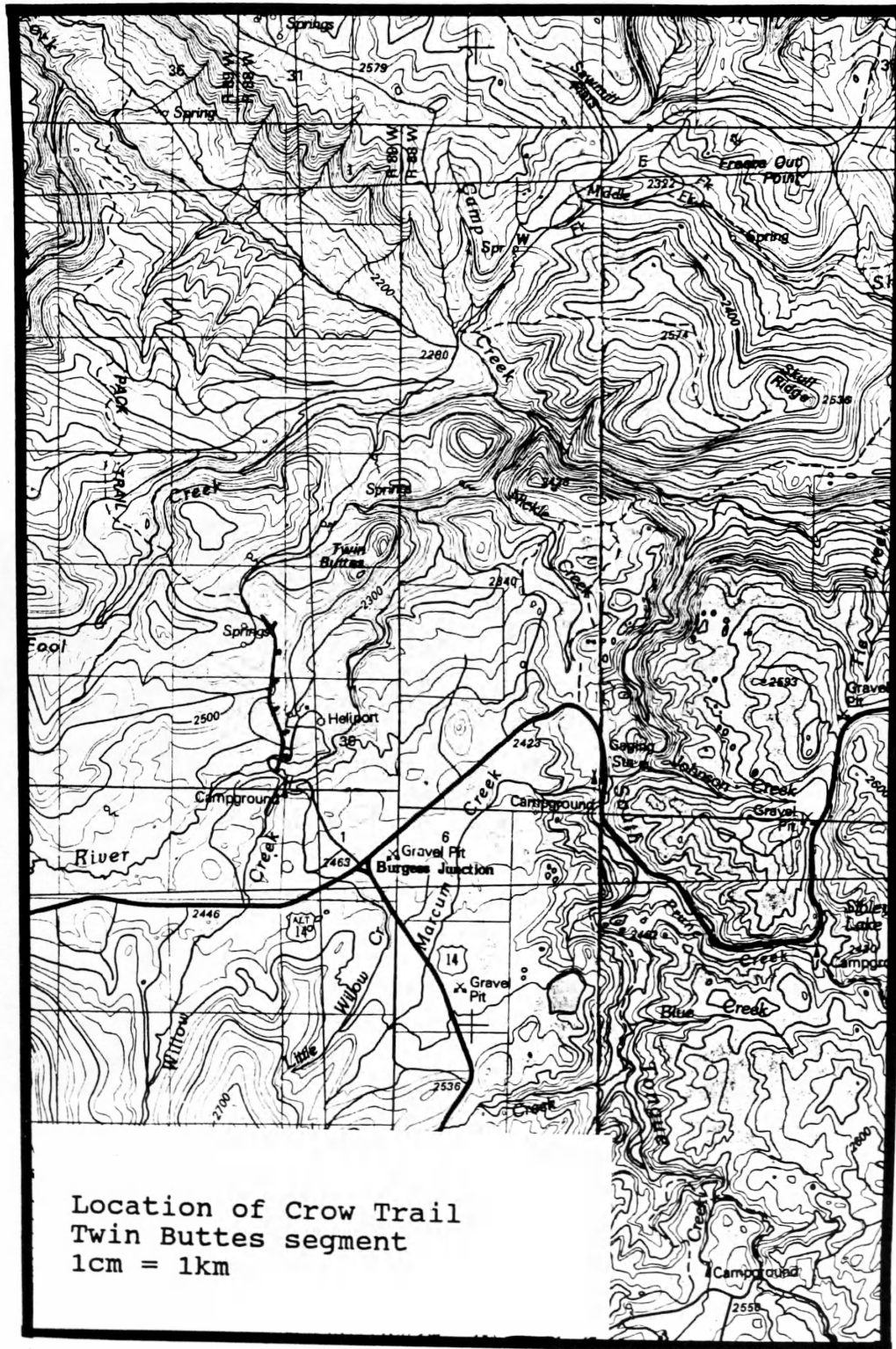


Figure 7. Location of the Crow Trail-  
Twin Buttes Segment (U.S. Geological Survey 1979.)



Figure 8. Stone cairns along the Sioux Trail.



Figure 9. Ruts along the Sheep Mountain  
Segment of the Crow Trail.



Figure 10. Crow Trail- Little Bald Mountain Segment  
visible from U.S. Alternate 14.



Figure 11. Historic road on Little Bald Mountain.

Note sawed log waterbar in foreground.



closely follows the old trail along the divide. Despite the fact that much of the trail has been obscured, parallel ruts are still visible in several locations (Figure 5.) Cairns have been recorded along the top of Sheep Mountain itself. These cairns may be associated with the trail or may be associated with vision quest structures in the same location. I have also found debitage in the Sheep Mountain Trail ruts. No recognizable historic road features could be found near the trail.

Unlike the Medicine Mountain segment of the Sioux Trail there is an historical reference to travel along the Sheep Mountain Trail. In the summer of 1881 General Sheridan and a party of 128 followed this route north to Fort C.F. Smith (Connor 1940).

#### Crow Trail- 2. Little Bald Mountain Segment (48SH710)

The Little Bald Mountain Trail follows the main divide of the Bighorns north from highway 14A. The trail runs north and then west for approximately 4.5 km directly across Little Bald Mountain. When driving east on highway 14 A the trail ruts are easily seen on the northwest flank of Little Bald Mountain (Figure 6.) Scattered chipped stone debris has been identified within trail ruts on the east side of the mountain. A tall stone cairn, known to have been built by shepherders, is visible on a

ridge about 1.5 km east of the trail but no cairns have been located in the immediate vicinity of the trail.

Where visible, the old trail exhibits a series of shallow parallel ruts and on the eastern slope of Bald Mountain and is still being used by sheepherders. Forest Service road #170, a dirt road, follows the old route. The trail is now mostly overgrown and partly obscured by dense brush. The trail is marked on the map of the area. (Sheridan and Wyatt 1982)



Figure 12. Crow Trail- Twin Buttes Segment near Burgess Junction.

ridge about 1.6 km east of the trail but no cairns have been located in the immediate vicinity of the trail.

Where visible, the old trail exhibits a series of shallow parallel ruts and on the eastern slope of Little Bald Mountain and is still being used by shepherders. Forest Service road #178, a four wheel drive road, follows the old route. The Little Bald Mountain Trail has also been partly obscured by a historic road. The historic road is marked on the GLO Plat (T55W R90N) from 1896 and is labelled "Sheridan and Bald Mountain Road" on the 1901 GLO Plat (Wyatt 1988). The Little Bald Mountain Trail was also part of General Sheridan's 1881 route (Connor 1940). The road is easily differentiated from the Indian trail because it shows evidence of cut and fill construction and log waterbars (Figure 11.) The historic road forms a single 10 centimeter to 1 meter deep erosional scar.

### Crow Trail- 3. Twin Buttes Segment (48SH710)

The Twin Buttes Trail is the shortest trail segment discussed in this thesis. The trail remnant is less than a mile long and runs in a generally north/south direction. The trail is marked by ruts and chipped stone flakes. Trail marks are particularly visible on the ridge west of Burgess Junction Ranger station (Figure 12.) Forest Service Road #15 follows the old trail west of Twin Buttes toward Freezeout Point. No cairns were located along

	ruts	stone cairns	chipped stone debris	historic features	historic reference	modern road
Sioux Trail Medicine Mountain segment	yes	yes	yes	yes		yes
Sioux Trail Hunt Mountain segment	yes	no	no	no	Sheridan 1881	yes
Crow Trail Sheep Mountain segment	yes	yes	yes	no	Sheridan 1881	yes
Crow Trail Little Bald Mountain segment	yes	no	yes	yes	Sheridan 1881	yes
Crow Trail Twin Buttes segment	yes	no	yes	no	Sheridan 1881?	yes

Figure 13. Summary of trail attributes.

the trail. No historic road features could be found along the trail.

It is likely that Sheridan's 1881 expedition followed the Twin Buttes Trail south into the valley of the North Fork of Tongue River. However, the written account of this part of Sheridan's journey is vague and it is not possible to substantiate whether the party used this trail segment.

#### Summary

Figure 13 classifies the five trail segments considered in this research by six attributes. The Medicine Mountain and Hunt Mountain segments of the Sioux Trail, and the Sheep Mountain, Little Bald Mountain, and Twin Buttes segments of the Crow Trail are described in terms of the presence or absence of ruts, cairns, chipped stone debris, historic features, historic references and modern roads.

At first glance it is apparent that there is a 100% correspondence between the presence of ruts and modern Forest Service roads. There are several possible explanations for this correlation. First, it is possible that the ruts seen in the five trail locales are simply evidence of modern vehicle travel over the last 75 years. Virtually the entire study area is open to off road travel at some point during the year, and the ruts may indicate places where hunters, stockmen and others have chosen to

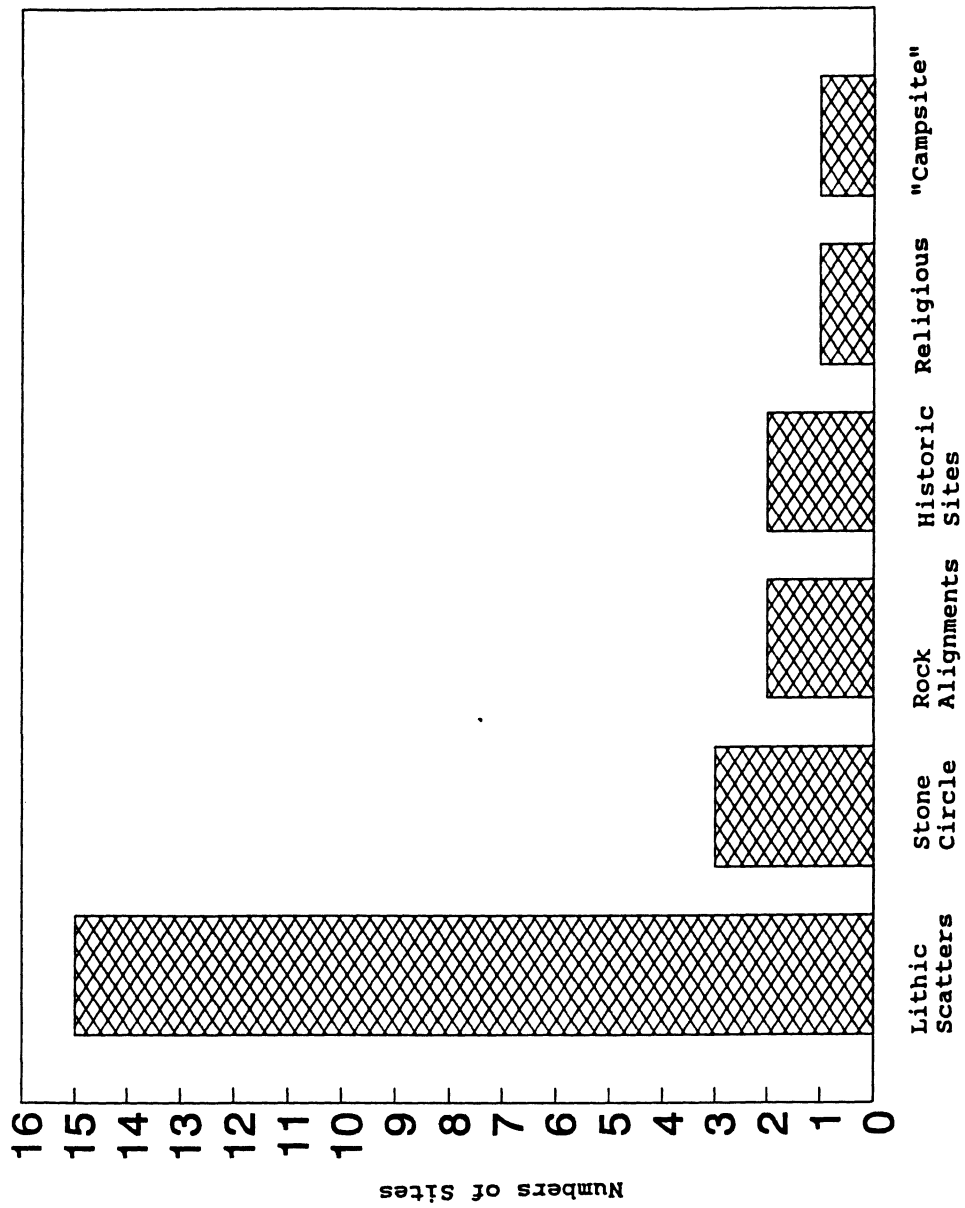


Figure 14. Types of recorded archaeological sites along the Medicine Mountain Segment of the Sioux Trail.

leave Forest Service gravel roads.

Ruts along parts of two trails are marked as numbered four wheel drive roads on the 1980 Bighorn National Forest Travel Plan. Ruts along part of the Sioux Trail are attributable to four wheel drive road #105 . Ruts along part of the Little Bald Mountain Trail are attributable to four wheel drive road #178. While correlation does not necessarily indicate causality, it is likely that ruts in trail segments currently listed as four wheel drive roads have been caused by modern vehicle traffic. One conclusion to be drawn from this is that ruts alone make poor diagnostic features of Indian trails because they are such ubiquitous features in the study area.

Cairns were located along the Medicine Mountain segment of the Sioux Trail and Sheep Mountain Trail. Chipped stone debris was recorded in the ruts of all trails except along the Hunt Mountain route. The presence of debitage in ruts associated with four of five trails under study suggests the presence of Native peoples.

Two trails, the Sioux Trail and Little Bald Mountain Segment of the Crow Trail, both exhibit recognizable historic features. The Sioux Trail shows evidence of an historic stock drive lane, while the Little Bald Mountain Trail exhibits evidence of an historic road. The historic road features include evidence of cut and fill work and log water-bars.

In 1881 general Sheridan lead an army expedition across the Northern Bighorn Range and followed the Sheep Mountain Trail, Little Bald Mountain Trail and Hunt Mountain Trail. It is likely that Sheridan followed the Twin Buttes Trail too, but the vagueness of the written account of that part of the trip does not allow a positive identification of trail use.

#### SITE DENSITY AND TYPE ALONG THE SIOUX TRAIL

Twenty four sites have been identified within 1 km of the Sioux Trail. All but two of these sites are located along the ridge that runs north from Medicine Mountain. Approximately 12,000 acres of the area covered by the Medicine Mountain Quadrangle map has been systematically surveyed by Bighorn National Forest archaeologists. Survey results show that the majority of sites in the area are spread out along the ridge that dominates the topography of the area. The Sioux Trail follows this ridge.

There are 34 recorded sites on the Medicine Mountain Quadrangle. Of these sites 22 (65%) are within 1 km of the Medicine Mountain Trail. Twenty-five sites or 74% of the known sites in the area are within 1.6 km of the trail. Nine sites or 26% of known sites marked on the Medicine Mountain Quadrangle are over 1.6 km from the trail.



The Mexican Hill Quadrangle area has been the subject of only dispersed surveys. Although approximately 20% of the Mexican Hill area has been surveyed, only a few (100 acres) acres have been surveyed in the vicinity of the Sioux Trail. There are 11 recorded sites on the Mexican Hill map. Two of the sites (18%) are within 1 km of the Sioux Trail. Four sites (36%) are within 1 km of the Sheep Mountain Trail and 5 (45%) sites are not along either trail.

Of the 24 sites found near the Sioux Trail, 15 (63%) are lithic scatters. One site (4%) is listed as a prehistoric habitation site, while 3 (13%) are stone circle sites. There are 2 rock alignments, two historic sites and one religious site (the Bighorn Medicine Wheel). The site classified as a campsite has a diverse assemblage, recognizable tools, and hearth features (Burney 1981). All of the tipi ring sites found along the Sioux Trail occur at or above 8,600 feet. This breakdown of site types along the Sioux Trail is consistent with what one might expect to find along a trail.

#### HISTORIC REFERENCES TO INDIAN TRAILS IN THE REGION

The strongest supporting evidence for the existence of prehistoric trails in the Northern Plains region are the written documents by the first Euroamericans to travel through the area. From the outset Euroamericans travelled

through the region along traditional native routes. On the Southern Plains (which has an older history of Euroamerican presence than the Northern Plains), it is believed that, "...most explorers, from Coronado on, were led by Indian guides along Indian trails" (Blakeslee and Blasing 1988:18). The first whites to use Indian trails in the Northern Plains were explorers. The Lewis and Clark expedition followed a number of different aboriginal trails on their famous trek of 1804-1806, including the well known Indian trail on the Big Blackfoot River in Western Montana. On October 15, 1809 David Thompson wrote in his journal of this same route along the Big Blackfoot, "...as we jogged well on, notwithstanding the stony Road- we now leave/ the Saleesh Road to the Buffalo..." (Thompson 1950:50). It is evident that early adventurers were "exploring" on Indian trails a great deal of the time. Descriptions found in these primary references are usually not very complete. For example, nineteenth century documents usually contain statements like "...very fine Road" (Thompson 1950:51), "...wrong road" (Rollins 1935:285), and "...tolerably good road" (Palliser 1968:107). These roads were invariably Indian trails.

The earliest references to Northwest Plains aboriginal trails are accounts of explorers and early fur traders. Documentation of Indian trails from the late 1830's until the Civil War can be found in the official reports written by members of the Army Corps of Topographical Engineers.

William Goetzmann (1959:4) writes, "The Engineers were concerned with recording all of the western phenomena as accurately as possible, whether main-travelled roads or uncharted wilderness. As Army officials they represented the direct concern of the national government for the settling of the West." From 1854 until 1863 the Army Engineers undertook an aggressive wagon road surveying program. These parties naturally followed the easiest grades, and crossed mountain ranges in the most opportune places. Much of the time these surveyors marked their routes along Native pathways.

The historic Mullen road crossed the continental divide west of Helena, Montana and connected Fort Walla Walla in Washington with Fort Benton in Montana. It is a good example of an early wagon road that followed an Indian trail. "Capt. W.W. DeLacy, who is still with us, was with Mullen as an engineer at the time this road was built. According to his authority the road was carried over Medicine Rock and Lyons mountains along the Indian trail. Medicine rock they found covered with beads, arrows and other such offerings as every passing Indian for unknown years had cast as a propitiation to the Great Spirit" (Hedges 1896:108). In 1855 I.I. Stevens also refers to the Indian trail over what became Mullen Pass. "The northern Little Blackfoot Pass is the one by which Mr. Tinkham crossed the Rocky Mountains the third time, and in November;

is at the source of one of the north forks of Hell Gate river, termed by Lieut. Mullan Little Blackfoot River, and is remarkably easy. The Indian trail passing here is a well-worn road, and is perfectly practicable for wagons" (U. S. Congress 1855:31). Mullan's party followed Indian trails not only in Montana but also in Idaho and Washington. Mullan himself recorded following an Indian trail along the Palouse River in Eastern Washington, "Late in the day Donald McKay joined us, bringing the intelligence that the Indian trail followed up an easy valley near and almost parallel to the Palouse, but much more direct" (U.S. Congress 1863:103).

Early historians are another good source of information about aboriginal trails in the Northwest and Northern Plains. Peter Koch, a historian from Bozeman, writes at the turn of the century of trails in the vicinity of Bozeman, Montana, "About a mile south of Bozeman a trail runs across the prairie. Many of you may have noticed it, for you cannot reach the foot of the mountains to the south without crossing it. It is formed by the junction of two trails, one coming from Three Forks, the other from the West Gallatin Canyon. It traverses the valley in an easterly course, striking almost a bee line for the Bozeman Pass and across to the Great Bend of the Yellowstone" (Koch 1896 :127).

Likewise, westward bound pioneers and miners also observed Indian trails that they encountered. Writing of a prospecting party on their way from Pompey's Pillar on the Yellowstone to the Rosebud River in 1873, one author notes, "On the evening of the twenty-fifth, the prospectors came in and reported no gold, and the next morning the expedition started and, leaving the river, struck across country, on an Indian trail, to the Rosebud" (Topping 1968:105).

#### HISTORIC REFERENCES TO TRAILS IN THE STUDY AREA

In 1881 General Sheridan took a party of 124 men through the Northern Bighorns. Sheridan's expedition travelled on three and probably four of the five trails examined in this thesis. Sheridan's party entered the Bighorns along the eastern escarpment, a few miles north of Tongue River Canyon. "August 4th, Thursday-- At 6:30 am we were on the trail leading up into the Big Horn Mountains. The ascent was very steep, rising 3,000 feet in about 4 miles" (Connor 1940:3). The expedition's intentions, as stated by Lieut. Col. J.F. Gregory were as follows: "The route proposed was to reach the main divide of the mountains and to follow it as near as it might be to the boundary line between Wyoming and Montana, and then to descend to the Bighorn River at old Fort C. F. Smith. The trail lay to the north of and along the North Fork of Tongue River..." (Connor 1940:3).

After climbing up onto the northern plateau of the Bighorns, Sheridan descended into the valley of the North Fork of Tongue River in the vicinity of where Burgess Junction, Wyoming is found today. Given this location, it is probable that Sheridan followed the Twin Buttes Trail down to Tongue River. Unfortunately, it is impossible to know for certain which path the party took on this segment of their trip. All we know is what Gregory recorded in his journal, "August 5th, Friday-- There was quite a heavy frost last night, and the grass was heavy and wet with it when we broke camp at 6:00am. Crossed a low divide to the south shortly after leaving camp, and descending to the valley of the North Fork of Tongue River, followed that stream nearly to its source, our general course being from southwest to south" (Connor 1940:3).

After attaining the upper reaches of the North Fork of Tongue River, the group swung south along either Hidden Tipi, Trail or Wallrock Creek to the main divide of the range. Once they reached the divide in this location they were on the Hunt Mountain Trail. Gregory continues,

"On leaving the North Fork of Tongue River we turned nearly due south to cross the main divide of the mountains, which at the summit has an altitude of 9,100 feet. The summit and the hillsides around are covered with dense mats of wildflowers, and in various directions above and below are to be seen huge banks of last winter's snow. Dr. Forwood, who is our botanist, says that the Forget-me-nots, which in the east bloom in May, are just now in bloom here. We camped at the head of a beautiful creek, which canons about 2 miles below and empties into Shell Creek. Two

antelopes and one buffalo were killed in the afternoon. The country evidently has recently been full of game, which has probably been driven further south by the forest fires" (Connor 1940 :3).

Once on the divide, the party was impressed by the views afforded them across the Bighorn Basin.

On August 6th Gregory makes more specific observations, "On the trail at 6:10 am, the general direction being northwesterly and following the main divide. The trail was a very good one, over a lovely mountain country partly timbered, with abundant grass and water. Arrived in camp on a lovely little stream, tributary to the Big Horn, at 10:10am. In the afternoon several of the gentlemen with some of the scouts, went hunting, the result being ten elk killed, and one "silver tip" bear, and a black tail deer" (Connor 1940:4). The route that the party followed included what I have termed the Hunt Mountain Trail, Little Bald Mountain Trail and Sheep Mountain Trail. Note that this trail was called "a very good one."

On the following day Sheridan's expedition followed the Sheep Mountain Trail north across the border into Montana.

Gregory records the group's progress as follows:

August 7th, Sunday-- Broke camp at 6:15am. On taking the trail out of camp we ascended a very steep hill and henceforward all day the trail led us up and down steep places on the divide between the Bighorn and Little Big Horn Rivers/ The rocks were all limestone, and at numerous places we crossed incipient canons and caves. The greatest altitude reached during the day was 9,500 feet, a little off the trail and about 4 miles from camp, where a grand view of the country was had. Soon after leaving this point we came suddenly upon a small

herd of horses, and then upon the camp of their owners, who were Englishmen out hunting. They had been here in camp ten days, and besides several elk and deer had killed twelve bears. We went into camp shortly after noon at some springs near the head of the canon of Rotten or Greasy Grass Creek...It is apparent here that we have left the beautiful mountain country, with its snow-banks and wildflowers, timber and springs, luxuriant grass, and cool streams of crystal clearness, for before us the country looks hard and parched. The grass begins to have more the appearance of late summer grass on the prairies. There is no timber visible, and water is apparently scarce (Connor 1940:4).

On August 8th Sheridan's men reached Fort C.F. Smith.

Gregory's journal is important for two reasons. First, it is the strongest testimony available that Indian trails did exist in the Northern Bighorn Mountains at the end of the 19th century. When Gregory writes of following the Sheep Mountain Trail in August of 1881 and calls it " ... a very good one..." he is describing an Indian trail. Note too, that Sheridan's party encounters a group of European hunters along this trail. It is highly unlikely that the limited number of Euroamericans in the Northern Bighorns prior to 1881 created this "very good" trail.

Gregory's observations are important for a second reason. The soldier makes it clear how pleasant the northern plateau of the Bighorns can be when compared to the "dry and parched" country surrounding the range. In his journal Gregory describes ample water, grass, timber and game. These qualities deemed desirable by Sheridan's party are precisely the same qualities that the Crow chief



Arapoosh lists in his description of the virtues of "Crow country" (Brown 1961:17).

**V. SUMMARY AND CONCLUSIONS**  
**HISTORIC USE OF THE STUDY AREA**

Trail remnants in the Northern Bighorns may represent evidence of aboriginal subsistence activities. While prehistoric inhabitants of the Bighorns may have used certain trails simply to cross the range, I believe that the routes previously described could have been used as part of a seasonal settlement pattern. I believe a strong case can be made for trails in the study area as evidence of late spring through early fall mountain oriented subsistence activities. My interpretation is supported by Bender and Wright (1988) who argue that, "Although local annual variations in climatic conditions might curtail or prohibit occupation in any given year, the important factor is that the mountains in general become yet another stop on the round of annual movements made by small-scale hunting and gathering bands. The mountains thus become intrinsic, rather than marginal, to local adaptive strategies" (Bender and Wright 1988:626).

The Bighorn Range, in summer, is a rich source of many of the things that prehistoric peoples on the Northwest Plains would have wanted, including; water, lush pastures, abundant game, raw materials for chipped stone tools, tipi poles, edible plants, and vision quest locations. The Bighorns also would have offered early inhabitants a refuge

from the summer heat of the Powder River and Bighorn Basins. As Bender and Wright (1988:627) have suggested, "The utilization of mountain resources would not have presented local populations with scheduling conflicts; it would have presented them with specific subsistence opportunities."

The following quote by Chief Arapoosh illustrates the importance of the Bighorns to the Historic Crow Indians:

The Crow Country is a good country. The Great Spirit has put it exactly in the right place; when you are in it you fare well; whenever you go out of it, whichever way you travel, you fare worse.

If you go to the south, you have to wander over great barren plains; the water is warm and bad, and you meet fever and ague.

To the north it is cold; the winters are long and bitter, with no grass; you cannot keep horses there, but must travel with dogs. What is a country without horses?

On the Columbia they are poor and dirty, paddle about in canoes, and eat fish. Their teeth are worn out; they are always taking fish-bones out of their mouths. Fish is poor food.

To the east they dwell in villages; they live well but they drink the muddy water of the Missouri--that is bad. A Crow's dog would not drink such water. About the forks of the Missouri is a fine country; good water, good grass, plenty of buffalo. In the summer it is almost as good as the Crow country; but in winter it is cold; the grass is gone; and there is no salt weed for the horses.

The Crow country is exactly in the right place. It has snowy mountains and sunny plains; all kinds of climates, and good things for every season. When the summer heat scorch the prairies, you can draw up under the mountains, where the air is sweet and cool, the grass fresh, and the bright streams come tumbling out of the snowbanks. There you can hunt the elk, the deer, and the antelope, when their skins are fit for dressing;

there you will find plenty of white bears and mountain sheep.

In the autumn when your horses are fat and strong from the mountain pastures, you can go down into the plains and hunt the buffalo, or trap beaver on the streams. And when the winter comes on, you can take shelter in the woody bottoms along the rivers; there you will find buffalo meat for yourselves, and cottonwood bark for your horses; or you may winter in the Wind River Valley, where there is salt weed in abundance.

The Crow country is exactly in the right place. Everything good is to be found there. There is no country like the Crow country (Brown 1961:17).

Arapoosh's statement is important because it demonstrates the way local people viewed the Bighorns. It also shows that the speaker is well aware of the geography and peoples that exist around him. Arapoosh's favorable description of the mountains in summer is similar to observations recorded in Gregory's journal entries made while exploring the Bighorns with General Sheridan's expedition in August 1881.

The geology of the Bighorns played a significant role in luring prehistoric peoples out of the plains surrounding the range. The Mesozoic sedimentary beds uplifted during the Laramide orogeny consist of limestones, dolomites and sandstones, which contain a wide variety of high quality cherts and quartzites. Many of these rocks make excellent raw material for manufacturing stone tools. Several large quarry sites have been recorded in the Bighorns.

The plant and animal species present in the Bighorns were exceptionally inviting to local native groups. The

trail segments previously discussed pass through areas where wild onion, sego lily, bitterroot and a variety of other edible plants can be found between May and September. On August 25, 1811 a party led by Mr Wison Price Hunt reached the Bighorn Mountains. The party killed elk, mule deer, grizzly bear and bison while crossing the range. Besides the great quantity of game the general abundance of the country was noted thus, "In continuing our westerly route across the mountains and rocks, we encountered many beautiful bits of country, abundant springs, stretches of green grass, groves of pine, innunumerable quantities of blooming plants; and yet it froze continually...The ground was covered with gooseberries of two sorts, the best I have ever eatten" (Rollins 1935:285). The previous quote not only demonstrates the abundance of the mountains in summer, it also shows how short-term that abundance can be. Despite the blooming plants and berries the elevation of the range is such that even summer nights are close to freezing.

It seems likely that one of the most important qualities of the study area was that it provided summer forage for large numbers of elk, deer, and most importantly, bison. On September 6, 1811 Hunt's diary states, "We killed an elk and several black-tail deer. The Bison have been very common in these mountains, which for that reason resemble a continuous barnyard; but now not more than a single one is to be seen" (Rollins 1935:285).

Hunt's 1811 party also mentions contacting several different groups of Natives. Two different bands of Crow, and a combined party of Flathead and "Snakes" were encountered while crossing the mountains. Hunt writes, "On the 30th [August], the river was quitted and the camp pitched near Mount Big Horn [Cloud Peak], which had been before us for so long a time. For several days we had been on the heights; our hunters had seen, the previous day, traces of Indians; they discovered us first... On September 2nd, we had received a visit from some Absarokas of a band which was different from the one we had recently left and which was camped in the mountain" (Rollins 1935:284). The second band described by Hunt eventually sent the party off on a trail that led across the southern end of the Bighorns. He writes, "Their chief, knowing that we had taken a wrong road, sent Rose on the 4th [September] to tell us this and to place us on the right road which crossed the mountains and which was shorter and better" (Rollins 1935:285). Hunt continues, "We were joined on the 6th by eight indians and three families who were of the nation of the Flatheads and of that of the Snakes" (Rollins 1935:285).

What Hunt's diaries make clear is that at the beginning of Indian-White contact in the early 19th century, Natives of at least three distinct ethnic groups were found either using or crossing the Bighorns.

RELATIONSHIP OF IDENTIFIED TRAIL SEGMENTS TO OTHER  
SITES

Historic accounts are not the only source of information regarding native use of the Bighorn Mountains. Archaeological sites can also provide important information regarding prehistoric native use of the study area. Several prehistoric sites within the study area have been excavated.

The Bentzen-Little Bald Mountain site (48BH0301), was discovered in the 1940's when the Forest Service was putting in the Hunt Mountain Road. The site is in the southern portion of the study area in a saddle between the North Fork of Tongue River and Beaver Creek. Members of the Wyoming Archaeological Society conducted excavations at the site in 1957. The site was interpreted as a multicomponent campsite and bison kill. Cultural materials associated with the Middle and Late Periods were identified, along with bones of elk, bighorn sheep, and bison. A piece of ground stone, a mano fragment, was also recovered (Bentzen 1963). The site provides evidence of both hunting and gathering activities in the Bighorns dating back to about 3,000 B.C.

The Horse Creek Tipi Ring Site (48BH344) is also located on the southern margin of the study area. The excavation of two stone circles revealed butchered bison bone in both features. The site has been assigned to the Late Period or Protohistoric based on the presence of pottery and small base and side-notched points (Wilson

1983). What is important about the Bentzen-Little Bald and the Horse Creek sites is that they are both located within the northern "plateau" (Darton 1906), or "subsummit" (Wilson 1983) zone. This zone is most likely to have harbored large numbers of ungulates and therefore attracted prehistoric hunters.

Excavations have been conducted at two other stone circle sites north of the Medicine Wheel along the Medicine Mountain Trail. Wilson (1983) tested the Death Camas tipi ring site (48BH0335), and recovered a large number of "... tiny sharpening flakes...", but no diagnostic stone or bone artifacts. Bighorn National Forest archaeologists conducted excavations at another stone circle site (48BH0336) 0.5 km to the north of the Death Camas Site in August 1989. A one meter square unit was placed in the center of a single stone circle. The remains of a hearth were encountered as were numerous tertiary porcellanite sharpening flakes. A date of 970 +/- 120 B.P. was obtained from charcoal within the hearth feature. This date is compatible with a Late Period occupation.

Loendorf analyzed prehistoric human use of the Pryor Mountains, 20 miles north of the study area, and proposed that eight factors governed campsite selection including: proximity of water, abundance of food, protection from elements, available fuel supply, and presence of lithic material. He applied factor analysis to a series of known



site locations and concluded that, "... data from small temporary sites in the Pryor Mountains reflects the annual subsistence cycle of the prehistoric inhabitants of that area" (Loendorf 1970:38).

The seasonal cycle postulated by Loendorf is important to discussions of subsistence and settlement patterns in the similar environment of the Bighorns. Loendorf writes,

The winter months were spent in immovable dwellings (caves and wooden huts) in the sandstone canyons, well protected from the elements. A ready fuel supply for winter warmth was available. Furthermore, I suggest that the winter habitation was a central base to which people returned annually.

Spring sites (March through June) are represented in this study by small impermanent sites in several environmental zones. With the arrival of spring weather, people must have left their well protected winter sites and moved into other zones to hunt and collect edible plants. Bitterroot was collected along the limestone ridges, and sego lilies were collected in the sandstone and grassland zones.

By June through August the mountaintops of the Pryors have lost their snow cover and present an ideal living place. I suggest that during the summer months prehistoric peoples took advantage of the quarrying materials and the good hunting on the tops of the mountains... During this time men would have been hunting and chipping new tools, while women would have been collecting some edible plants and perhaps making new tipi poles from the nearby pine trees.

By late August people were gathering in the grasslands at lower elevations for the annual bison drive. In conjunction with the bison drive, late August was the time for the annual collection of chokecherries for pemmican. After a successful drive when the meat had been butchered, the people scattered to return to their central base for the winter months.

I believe that this annual cycle was practiced from the beginning of the Middle Prehistoric Period until the introduction of the horse, that is from 4000 B.C. to A.D. 1700.

Middle Period peoples may have spent more time in the alpine zone during the summer, as is indicated by the number and size of Middle Period sites at higher elevations (Loendorf 1970:39-40).

Today, few archaeologists would argue that peoples in the Pryor-Bighorn area practiced a true transhumance pattern. However, Loendorf was essentially correct in that high elevation sites in the area represent non-winter occupations.

Black (1991), recently has made a case for a distinct, mountain oriented, population in the Rockies during the transition from Late Paleoindian (Early Period) to Early Archaic (Middle Period) times. The author refers to the remains left behind by this group as the Mountain Tradition (Black 1991), and includes evidence from the Bighorns. In Black's model Mountain Tradition peoples living in the vicinity of the Bighorns would presumably have wintered in one of the basins east or west of the high country. I believe, however, that year round occupation of 7,000 to 10,000 foot elevations in the Bighorn Mountains would be out of the question under present climatic conditions. The area is simply too harsh to support year round subsistence-based residents without simultaneously postulating a drastically modified altithermal climate, and there is little evidence of such a climate change. Available evidence does not refute the hypothesis that the Bighorns acted as a summer refuge from the heat and aridity of the surrounding prairies.

The Bighorn Mountains provided more than good hunting, lithic resources, lush grass and cool temperatures. Like the nearby Pryor Mountains, they provided ideal places for people to conduct vision quests and other religious rituals. High, windswept peaks, precipitous cliffs and expansive vistas made the Northern Bighorns an ideal location for vision quests in particular.

The Medicine Mountain Trail passes within a few meters of the well known Bighorn Medicine Wheel. Many hypotheses have been put forth over the years to explain the wheel's use (Loendorf 1986). Most archaeologists believe the Medicine Wheel is evidence of religious use.

The rather flat summit of Sheep Mountain- only 0.5 km from the Sheep Mountain Trail- is the location of at least two stone vision quest structures. One of these is situated on the highest part of the butte and has been somewhat disturbed by the placement of a USGS benchmark. During field investigations in August 1991 another stone vision quest structure was located, also near the summit of Sheep Mountain. This structure is undisturbed and conforms exactly to vision quest structures described in the Pryor Mountains about 25 km to the north (Good 1974, Connor 1982).

Members of the Crow tribe have used parts of the study area for vision quest activities as recently as the 1930's. The summit of Hunt Mountain has also been used as a vision quest locale (Laurent 1992).

### PREHISTORIC USE OVER TIME

It is difficult to determine exactly when prehistoric peoples began to exploit the resources of the Bighorns on a regular seasonal basis. Although Early Period artifacts are commonly found in the Bighorns they come almost exclusively from surface collections. Projectile point specimens from surface collections include various types from the Cody Complex, and several Paleoindian point types such as James Allen, Lovell Constricted, and Pryor Stemmed (Laurent 1992 personal communication). The limited data make it difficult to make reliable assertions about whether or not Early Prehistoric Period peoples used the trails in the study area. Since the trails in the area follow naturally favorable topographic features it is likely Early Period inhabitants of the area did use these routes.

Artifacts dating to the early part of the Middle Period present the same interpretive problems as Early Prehistoric Period artifacts- data are available but mostly consist of surface finds. However, large side-notched points diagnostic of the early part of the Middle Period appear to be more common in the Bighorns than Early Prehistoric Period artifacts (Laurent, personal communication, 1992). The McKean Complex is well represented in the study area by bifurcate based, lanceolate points. Late Middle Period sites marked by Pelican Lake and Besant types are more common still. Likewise, Late Period material is common in

the study area. Late Period points are represented by a number of small side-notched, corner-notched and base and side notched (presumably bow-projected) points. The increased volume of diagnostic artifacts beginning in the Middle Period suggests that the network of trails observed today in the study area might have been established at this time.

The "establishment" of trails in the study area probably had little to do with human physical modification of a route. The "establishment" of a trail probably was the result of a group's habitual use of a series of ridges that facilitated travel in a certain area. This is one reason that primitive travel routes are difficult to identify. A few eroded ruts, perhaps made by the dragging of travois poles behind dogs or horses, and a few stone cairns scattered along the route are easily obscured by more recent users of the area.

#### CONCLUSION

The study of Indian trails can add information to the archaeologist's understanding of many different anthropological questions: (1) When trails can be identified they have the potential to link together various types of archaeological sites; (2) Once aboriginal travel routes are identified they may allow archaeologists to better predict

site locations. Trail data can help archaeologists understand land use, resource exploitation and scheduling, seasonal movements and trade.

However, trail identification is difficult and problematical. Part of the problem is that the typical Indian trail on the Northwest Plains consists of a series of parallel ruts more visible in some places than others, with stone cairns infrequently found along the route. In other words, physical evidence of trails is often limited and discontinuous. Trails are almost always somewhat obscured by more recent human activity. Because early travel routes generally followed valleys, watercourses and ridgetops, they seldom if ever needed any human modification.

Practical and useful natural pathways did not lose their utility with the coming of Euroamericans, but human use changed over time. A great many modern highways closely follow early trails, although modern roads, along with simple animal paths, obliterate all traces of aboriginal travel in most areas.

Trail ruts, the most ubiquitous of trail features, are difficult to tell apart from ruts formed by wagon passage and more contemporary ruts formed by motor vehicles. Cairns too, are somewhat problematic. Aside from determining whether or not a stone cairn is "well sodded" into the ground, researchers are forced to rely on general

impressions of how much lichen is present on the stones or some other equally unsystematic observations.

At least four lines of evidence can be used to build a sound case for an Indian trail: (1) The presence of ruts and cairns can be useful to alert a researcher that he or she may be dealing with a trail; (2) Site densities increase as one gets closer to whatever topographic feature the suspected trail follows; (3) A low density cluster of lithic debris should be found along the suspected trail; (4) When they exist, historic documents provide the most conclusive evidence of Indian use of a particular trail.

All four lines of evidence point to the preservation of trails in the Northern Bighorn Mountains. The same ridges used by Native peoples to get from place to place were subsequently used by explorers, hunters, the U.S. military, and later miners, woodcutters and stockmen. Later still, Bighorn National Forest established graded gravel roads along many of the same routes. Today the ridges in the study area appear scarred with numerous sets of ruts, wheel tracks, and contemporary Forest Service roads. Exactly which set of features were made by aboriginal peoples (As opposed to a nineteenth century military expedition, a sheepherder or an elk hunter in 1963) is usually far from clear.

Archaeologists can determine aboriginal travel routes without relying solely on the presence of ruts and cairns.

In fact, those trails identified solely by the presence of ruts and cairns are going to remain problematical. A stronger case for an Indian trail can be made by using the historic record, site density data, and indirect evidence.



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