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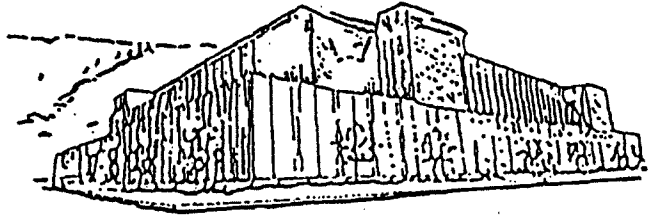
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ARCHAEOLOGICAL INVESTIGATIONS
ON THE SUN RIVER GAME RANGE:
A STUDY OF PREHISTORIC
AND HISTORIC LAND USE INTENSITY


by

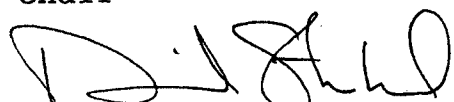
Patrick Joseph Kuntz

B.A., University of Montana, 1992

Presented in partial fulfillment of the requirements
for the degree of
Master of Arts
University of Montana
1997

Approved by


Chair


Dean, Graduate School

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Archaeological Investigations on the Sun River Game Range: A
Study of Prehistoric and Historic Land Use Intensity
(pp 1-60)

 Committee Chair: Dr. Thomas A. Foor

The goal of this project is to describe and explain land use patterns on the Sun River Game Range in the past. The test null hypothesis states that there is no predictable relationship between intensity of land use (as inferred from the number of large feature sites) and the abundance and/or stability of natural resources.

Research of the local ethnographic and historical records was done to predict and interpret the types of sites that were expected to be encountered on the Sun River Game Range. An archaeological survey was conducted to inventory prehistoric and historic sites. Sites were recorded and the number of features in each site were numbered. Based on the number of features within each site, sites were classified as large or small feature sites. This was done to infer the intensity of land use. Title searches were conducted for historic sites to track property ownership through time. This was done in order to reconstruct a pattern of settlement, abandonment, and consolidation of land holdings by homesteaders. Research of the local natural environment was also conducted.

It was determined that the number of large feature sites on the Sun River Game Range is very low. This was interpreted to indicate a low level of intensity of land use. It was also determined that natural resources on the game range, though varied, are relatively sparse and unreliable for human populations to use at a high level of intensity. The relationship between these two factors appears to be a predictable, direct correlation. The null hypothesis was rejected, supporting the conclusion that the level of intensity of land use is dependent upon the abundance and/or stability of natural resources. The historic settlement pattern conforms with a statewide "boom and bust" cycle which occurred in the early twentieth century. Initial land use intensity was too high, which led to a significant decrease in population. The property was consolidated into a much smaller number of homesteads with larger tracts of land. This achieved a level of low intensity land use.

CHAPTER ONE

Introduction

In the summer of 1994, I conducted a comprehensive archaeological survey of the Sun River Game Range (Wildlife Management Area) for the Montana Department of Fish, Wildlife and Parks. The contract was through the University of Montana, with Dr. Thomas Foor as Principle Investigator. The project began on May 24 and concluded August 6. Kevin Nelson accompanied me from June 9 to July 8 as an assistant. Erin Driskell, another graduate student at the University of Montana, assisted me on July 7 and 8.

The Game Range, roughly 27 square miles in area, includes all or parts of sections 2 through 35, T21N, R8W. The Sawtooth and Barr Creek Quadrangles of the USGS 7.5 minute topographical maps contain the entire survey area. Figure 1 shows the location of the Sun River Game Range and Figure 2 shows the recorded sites within the game range.

Purpose. The goal of this project is to describe and explain past land use patterns on the Sun River Game Range. One of the basic purposes of a survey such as this one is to find archaeological sites and record them. For this reason, I used "site" as my basic unit of analysis, and adopted an approach that focuses on overall settlement-subsistence systems within the Sun River area.

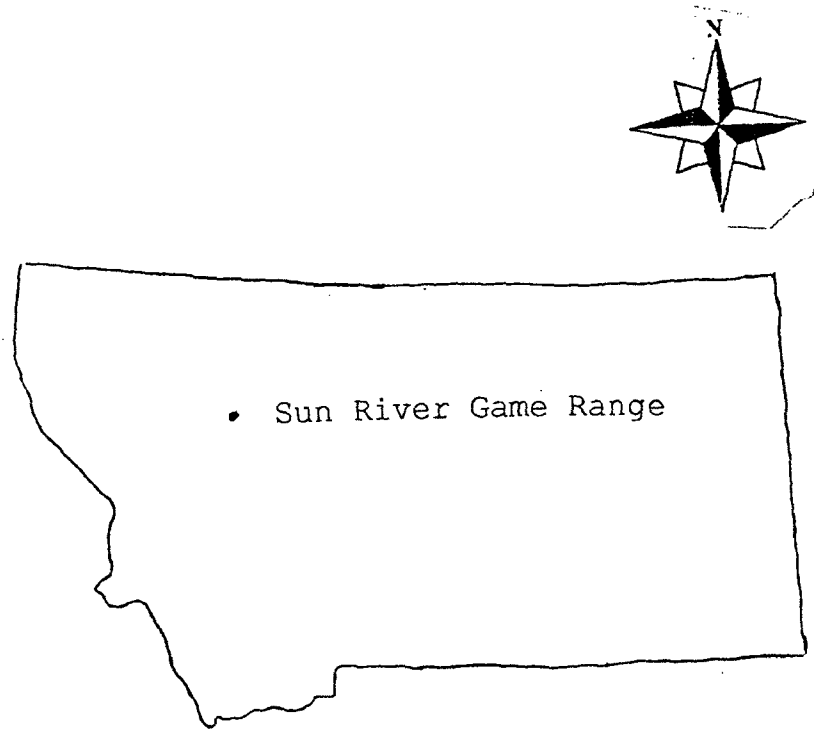


Figure 1. Location of the Sun River Game Range in Montana.

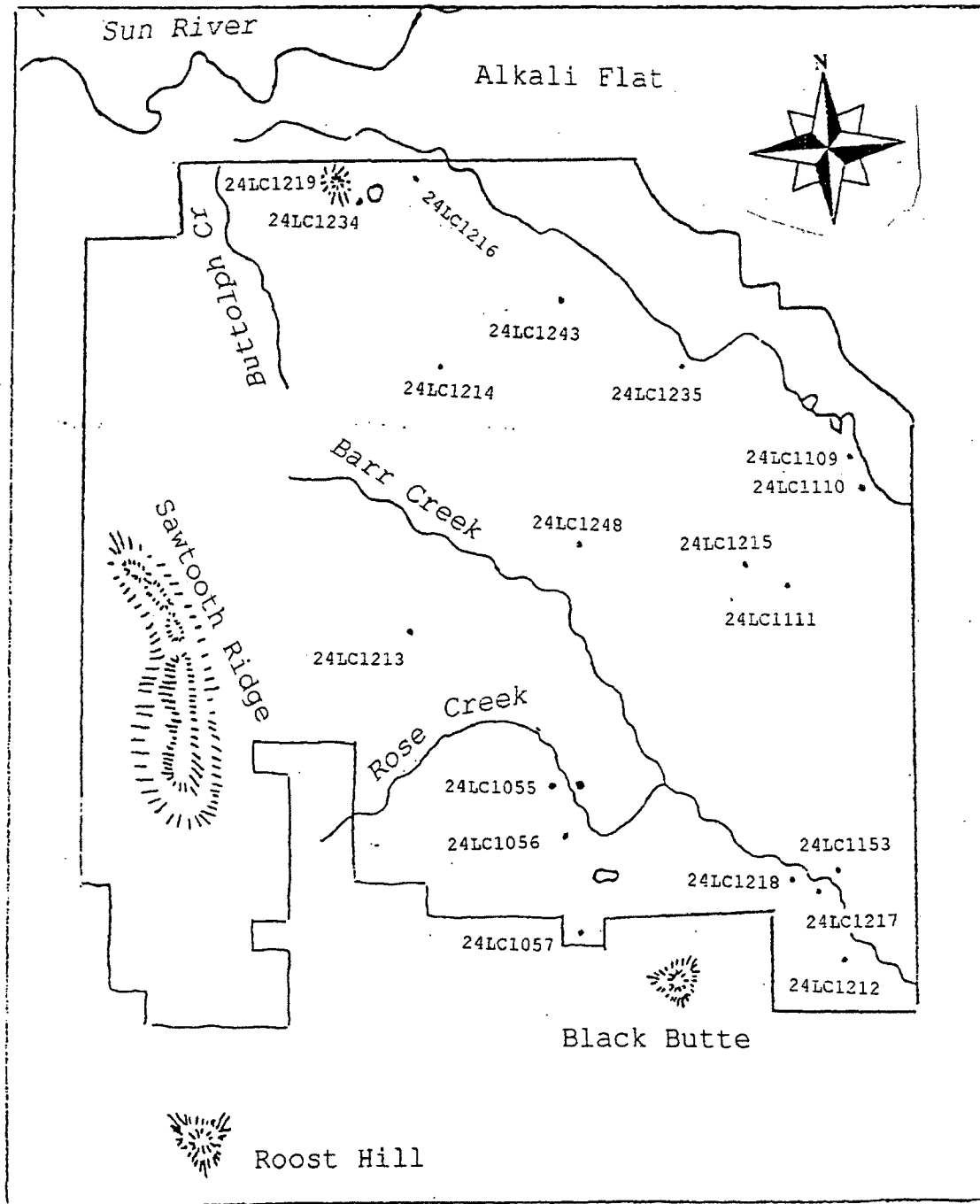


Figure 2. Sun River Game Range with locations of archaeological sites. Scale: 2cm = 1 mile.

Expected Settlement Pattern. According to the ethnographic record, habitation site placement seems to have been influenced by at least two main factors. The first is the availability of natural resources- particularly water, as well as plant resources, game, lithic materials, and wood (Deaver and Deaver 1990). The second factor, which is more difficult to detect archaeologically, is geopolitics affecting social relationships between different groups (Johnson and Earle 1987).

Ethnohistoric sources suggest that Native American settlements conform to a pattern. Favored locations were used repeatedly, often by different groups of individuals. Caches were maintained at these locations for periods of many years. Populations were sometimes concentrated at these resource-rich campsites (Roll 1982).

The implication for the Sun River archaeological record is that areas that were used at a high level of intensity will contain sites with many features. Conversely, sites with smaller numbers of features will be found in areas that received a lower intensity of use. Since resource availability is one of the main factors affecting the placement of habitation sites, the chosen locations for the campsite should be in close proximity to a stable abundance of natural resources, particularly water.

Hypothesis. The working hypothesis is that Sun River Game Range was used by very small bands of prehistoric

people, probably for relatively short periods of time. This hypothesis may be retained if I can reject the null hypothesis that there is no predictable relationship between intensity of land use -as inferred from the number of large feature sites (number of stone rings, drive lines, or structures) and the abundance and/or stability of resources.

A similar null hypothesis is applicable to the historic sites on the game range, as well. It can be used in testing a secondary working hypothesis that the Sun River Game Range was not ecologically suitable for intense use by the homesteader population. The initial influx of settlers into the area was followed by a subsequent depopulation. This indicates that sustainable use of the land had to be at a low level of intensity.

Theoretical Approach. Ecological theory asserts that each species, including human societies, has its own subsistence strategy, or profession, in the natural world (Odum, E. 1971). This can be defined as activities related to obtaining food, extracting resources, and raising children, as well as the functional relationship of these activities to the environment the population occupies. The number of people occupying an area is set by the number allowed by each profession, whether bison hunters, deer hunters, wheat farmers, or stock growers (Johnson and Earle 1987). Therefore, the number of people who will be able to live into the next generation has been fixed by the

environment. Human population will have a direct correlation to the carrying capacity of the land for people who have a particular technology at any time (Deaver 1983). In other words, there is a predictable relationship between environment and population.

Land use patterns on the game range will reflect this relationship and will be manifested in the archaeological record. The presence or absence of large feature sites will be an indication of population and the environment. When related to prehistoric subsistence systems, the results of this survey will help in describing the role that the Sun River Game Range had for prehistoric people who lived the Sun River area.

This cultural ecological approach applies to Euroamerican settlement in the area as well. The relationship of climate to population is illustrated dramatically in the history of the homestead boom and bust cycle of the early twentieth century. Though these agricultural homesteaders were not seasonally migrant, much of their pattern of settlement and abandonment can be explained by climatic fluctuations over the span of a few decades. Lured to Montana by uninformed and misguided federal policy, many settlers were ill-equipped for the conditions they found when they arrived.

CHAPTER TWO

Brief Overview of the Natural Environment

The topography is extremely varied on the game range due to its position between two physiographic regions (Mulloy 1958). The game range is located on the eastern edge of the Northern Rockies province and the western edge of the Great Plains province (Hunt 1967). The general topography is sharply broken and rolling plains, and short grass prairie foothills with considerable relief. The western edge of the Game Range is classified as high mountains with a local relief of over 3000 feet. Typical land elevation within the game range lies between 4300 and 6600 feet, with the highest point, Sawtooth Ridge, reaching 8179 feet.

Soil information was gathered from the 1953 soil survey report by the US Department of Agriculture's Soil Conservation Service. The survey found five types of soil strata in this area. The surface soil is just a shallow mat of dark plant residue. Beneath this is a 6-9 inch layer of stony loam or silt loam, followed by a 20-24 inch level of firm, dark, stony clay loam. Forty inches and below is the parent till: a light brown, calcareous, stony, clay loam from a paraglacial environment. The parent rock is a gray to green mudstone from the Cretaceous Two Medicine formation, interbedded with sandstone. This information suggests that most archaeological sites on the Game Range will have

minimal deposition. Artifacts will most likely be found within the top 20 centimeters.

Large boulders, which are scattered all over the survey area, are composed mainly of limestone, argillite, and quartzite. The mountain on the west edge of the game range, Sawtooth Ridge, is part of the Disturbed Belt. It is characterized by closely spaced thrust faults and consists of a series of north-trending ridges of carbonate rock (Mudge 1972a, 1972b). Sawtooth Ridge is, for the most part, composed of Castle Reef dolomite, which contains lenses and nodules of dark gray chert (Mudge 1972a). This chert source may have been used by prehistoric peoples for making stone tools. However, the most of chipped stone artifacts found on the Game Range are not of local origin. This indicates a non-local, transitory population.

The Sun River is the major river in the area and is approximately 1.5 miles north of the northern edge of the game range. It is one of 3 major east-flowing tributaries of the Missouri River that drain west-central Montana, the other 2 being the Teton and Marias. It flows from its head waters in the Rocky Mountains, near the Continental Divide, to the Missouri River at Great Falls. The Sun River Canyon provides a pass through the mountains, which allows transportation between the western Rocky Mountains and the eastern Plains regions of the state (Cobb 1976). Because of this, and the abundant resources associated with it, the Sun

River, known as the Medicine River to local tribes, was particularly important to Native peoples. The erosion of the Sun River to its current bed has left a series of terraces high above its present course, creating desirable areas for human use. Rose Creek, Buttolph Creek, and Barr Creek are the main drainages on the Sun River Game Range. These are relatively small streams that could possibly be expected to run dry during periods of drought.

The contemporary climate in the area is continental, with wide seasonal temperature ranges and year-round precipitation that falls principally during the warm parts of the year (Greiser et al. 1985). Winter can be characterized as cold and harsh while summers are hot and dry.

The wind is a dominating aspect of the climate on the Game Range. It can blow with great force and is active all year long. It generally blows from the southwest towards the northeast. Cobb suggests that aboriginal people utilized wind-protected area for habitation sites (Cobb 1976:4). This may have applied to historic people as well.

Post-glacial paleoclimatic conditions in the west passed through at least 3 major periods according to Antevs (1955). These episodes include the Anathermal, dating from about 13,000 to 8000 B.P. It is characterized as generally moister than the present climate, and roughly congruent to the Paleoindian culture period. There were two episodes of

heavy erosion during this period in the Sun River Valley (Gritzner, personal communication 1996). Consequently, any site dating to this period would be greatly disturbed. The Altithermal dates from 7,000 to 4,500 B.P. It is typically characterized as warmer and drier than present, and corresponds to the Early Plains Archaic (Middle) culture period. The Medithermal, dating from 4,500 B.P. to the present, has an essentially modern climate, and coincides with the Middle and Late Plains Archaic, Late Prehistoric, and historic culture periods (Fagan 1991; Frison 1978:20).

The flora within the game range is represented by a variety of different communities, including douglas fir and pine forest, alpine meadows, foothills prairie, and wetlands. The valley bottoms support groves of cottonwood, aspen, thickets of wild rose and other bushes, and tall grasses. The rolling plains, comprising much of the game range, are covered with sagebrush, prickly pear cactus, and short bunchgrasses. According to Turney-High, several plant resources were important to hunter-gatherers in the region (Turney-High 1941:33-34). Bitterroot and camas were prepared by roasting the tubers in pits. Chokecherries were eaten fresh off the bush, or dried and stored for winter use. Huckleberries and serviceberries were dried and pounded for use in pemmican.

Fauna that are native to the region include the following: bison, grizzly bear, black bear, elk, mule deer,

white-tail deer, antelope, big horn sheep, mountain goat, grouse, goose, rabbits, and rodents. Mammoth were also apparently present prior to about 11,000 years B.P., indicated by a mammoth scapula found on the game range by ranger Bert Goodman and sent to the University of Montana, Missoula (personal communication 1994).

The most important game animal was the bison. They were the dominant resource for Northwestern Plains peoples. Bison were a large, relatively abundant, and gregarious herd animal. For these reasons they were utilized far more than any other game. Bison served not only as a food source, but also provided materials for tools, containers, clothing, and lodge covers. Typically, large communal hunts were held in the fall to collect meat to be dried and used through the winter. Deer, elk, and antelope were hunted on a much smaller scale to supplement winter food stores. Bison hunts were held again in the spring or summer.

Overall, resources on the Sun River Game Range are comparatively unreliable and sparse for use by human populations. Its current status as elk habitat probably uses the land at its highest potential.

CHAPTER THREE

Methods

Survey Strategy. I designed my survey to find the greatest number of sites given the relatively large Management Area and the limited time and resources available. First, I eliminated from my primary survey area those sections previously covered by Dr. Foor's field classes. These included sections 27, 28, northern portions of sections 33 and 34 surveyed in the spring of 1991, sections 12 and 13 surveyed in the fall of 1992, and sections 25, 26, and 36 in the fall of 1993. However, I revisited sites discovered by these classes and re-recorded them.

Two different survey methods were used. Dr. Foor's field classes used deployed 30 meter transects. Because I worked alone or with one assistant, I chose a non-deployed pedestrian survey strategy. I will discuss the differing results at the end of this chapter. I concentrated my investigations on areas where I would most likely find sites and/or artifacts. I estimated the chances of finding sites using my knowledge of characteristics typical of known archaeological sites in Montana. For example, I surveyed high and relatively level terrain because it was likely to contain structures such as stone circles (tipi rings), hearths, rock cairns, and rock alignments, and homesteads. Stream courses are also high probability areas for camp

sites and homesteads. I considered ridge tops and peaks as possible locations for vision quest sites, rock cairns, or kill sites. The east half of the Game Range contains a number of glacial erratics--large, conspicuous boulders scattered along the rolling plains. I checked these for petroglyphs or pictographs, caches of artifacts such as chert cores, and evidence of use for shelter. I surveyed the west half of the Game Range (including Sawtooth Ridge) expecting to find eagle catching pits, vision quest sites, or rock art.

Ground visibility was extremely variable. It ranged from excellent (80-95 percent visibility) in areas of active surface erosion to extremely poor (0-5 percent visibility) on the lower alluvial terraces. Most surfaces lie somewhere between these two extremes--with the greater part of the game range characterized by less than 50 percent visibility. I intensively searched exposed surfaces with good ground visibility for lithic material such as flakes and tools. These areas include roads, road cuts, and cut banks in which older sediments were visible. In addition, I examined rodent burrows for lithics as I encountered them.

The physical geography of the Game Range appears to be relatively stable. However, it is likely that many sites located along the banks of the larger drainages, such as Rose and Barr Creek, were not only covered by dense grass, but by alluvial deposition as well, making them impossible

to detect on the surface. It is also possible that some sites near drainages have been carried away by erosion.

I recorded all sites on standard forms, as well as in my field note book. I sketch mapped, photographed, and plotted them on the appropriate USGS 7.5 minute topographic map. I collected only those artifacts thought to contain diagnostic information indicating the time of settlement or site use. Location was determined through the use of cadastral markers, when available, or using natural or man-made features in conjunction with pacing and triangulation with map and compass.

Survey Results. In total, I recorded 19 sites on the Game Range. These include 9 sites presumably used during the prehistoric period (24LC1055, 24LC1057, 24LC1109, 24LC1110, 24LC1111, 24LC1212, 24LC1217, 24LC1218, and 24LC1219) and 10 sites used during the historic period (24LC1056, 24LC1153, 24LC1213, 24LC1214, 24LC1215, 24LC1216, 24LC1234, 24LC1235, 24LC1243, and 24LC1248). The map in Figure 2 shows all sites plotted with their site number.

Comparing Method Recovery Rates. Comparison of the two survey methods used (Dr. Foor's classes and my own) reveals different recovery rates. Dr. Foor's classes (of which I was an occasional member) used deployed 30 meter transects. The class found 7 of 9 prehistoric sites (78%) and 2 of 10 historic sites (20%). They surveyed 9 of 27 sections, or 33% of the survey area.

I used a nondeployed, single person survey method. I discovered 2 of 9 prehistoric sites (22%) and 8 of 10 historic sites (80%). The area of land surveyed exclusively by myself was 18 of 27 sections, or 67% of the game range.

At least three possible conclusions can be drawn from these results. Deployed transect survey may be more effective in finding prehistoric sites. It is a more intense survey strategy, and therefore can be predicted to find more sites (Schiffer 1987). Schiffer also states that survey intensity level affects not only the number of sites discovered, but the size of sites, as well (Schiffer 1987). Historic sites, 80% of which I found in my non-deployed survey, tend to be larger, more obtrusive, therefore easier to find. A third possibility exists which may explain some of the difference in results. It is probable that the classes' surveys, which preceded my own, concentrated in the most likely locations of prehistoric sites.

CHAPTER FOUR

Brief Prehistoric and Historic Overview

Prehistoric Period. Diagnostic artifacts and a few radiocarbon dates from controlled excavations indicate that west-central Montana has been inhabited by human groups for the last 12,000 years (Reeves 1990; Taylor 1961; Mulloy 1958).

Early Paleoindian Period sites are generally rare. However, a local artifact collector, Bud Bisnett, reports that Clovis and Folsom points have been found in the Sun River area (Bud Bisnett, personal communication). Though Early Paleoindian peoples are considered to have been mammoth hunters, in mountainous areas they may have been generalized foragers (Frison 1978). Exploitation of a variety of low density resources was probably the strategy used during this earliest period.

An apparent decline in intensity of occupation occurred during the Early Middle Period (Reeves 1973). This period corresponds with the Altithermal event, during which climatic conditions became warmer and dryer than those now present. This environmental stress caused people to respond with a more intensive hunting and gathering economy without sole reliance on bison (Reeves 1973). Because areas with great topographic relief provide diverse plant and animal habitats in close proximity, evidence of broad-spectrum subsistence adaptations during the Early Middle Period are

found mainly in the mountains (Frison 1975).

During the Middle Plains Archaic (Middle) and Late Plains Archaic (Middle) Periods, intensity of occupation increased. The climate had cooled and human subsistence strategies again became adapted to "open-country hunting, while at the same time retaining an emphasis on food processing and a montane settlement pattern" (Knight 1989:224). Bison kills became common, utilizing jumping and arroyo trap techniques (Bentzen 1962:113-118; Brumley 1978:175-193; Frison 1968:31-39; Frison 1970:1-35; Knight 1989:224). Sites of these periods often contain slab milling stones and manos and food preparation pits (Knight 1989:226). This suggests a reliance on plant foods in addition to meat.

The Late Prehistoric Period is characterized by the introduction and use of the bow and arrow. Late Prehistoric subsistence strategies reflect a continuation of past broad spectrum economies with a possible intensification of communal bison hunting (Roll et al. 1989).

Identifying the ethnic affiliations of the prehistoric residents of the Sun River area largely remains conjecture. This is due to the fact that most archaeological artifact types found in this area cannot be used to infer ethnicity. Furthermore, social organization could be very fluid. Groups were known to combine for social and protective purposes. Tribal boundaries often overlapped to accommodate the

seasonality of resources.

The area in which the Sun River Game Range now lies has been occupied by a variety of ethnic groups during the Late Prehistoric and Protohistoric periods. Malouf states that a branch of the Upper Pend D'Oreille known as the Tunaxa may have lived in the Sun River Valley as early as 1650 A.D. (Malouf 1967). The Semte'use branch of the Pend D'Oreille and the Flathead ranged to the south of the Tuxana while the Plains Kutenai occupied lands to the north. The "Tunaxa" who inhabited the Sun River may have been a branch of the Salish Flathead tribe. Turney-High considers them to be a plains-dwelling branch of the Kutenai. Malouf and Turney-High note that the Tunaxa population declined, probably as a result of war and epidemics, and lost their identity as a distinct group. Cultural absorption into the Blackfeet tribe probably occurred the mid 1700's.

It is thought that the Crow tribe moved westward along the Missouri River around 1700 and possibly entered the Sun River Area (Malouf 1967). The Shoshone moved northward in the area by about 1730 as they expanded their territory, having acquired horses earlier than other local tribes. The Blackfeet entered the area from the north and east in the mid- 1700's. Because the Blackfeet possessed firearms, they were able to push the Shoshone southward (Ewers 1958). The Blackfeet occupied the Sun River area in early historic times until being displaced by Euroamerican settlement.

The Flathead, though forced west into the Rocky Mountains by the Shoshone and Blackfeet expansion, continued to hunt bison on the Plains in the Sun River region. Rogers Pass and Lewis and Clark Pass allowed access to the Plains for the winter bison hunt. Western groups entered the Sun River area by way of Lewis and Clark Pass (Brumley 1990).

Historical Period. In 1862 with the passing of the Federal Homestead Act, settlers started to enter the Sun River valley. The law allowed for settlement on the public domain at no cost other than that of processing the claim. After 5 years of residency on the homestead claim, the settler would receive patent to the 160 acre property if he or she had made sufficient improvements. By the end of the 1860's, ranches began to appear in response to the demand for foodstuffs among the growing population of gold miners in southwestern Montana. Cattle and sheep were seen on the eastern plains of the Rockies. However, in most areas of arid Montana, 160 acres were not enough for a family farm.

With the passage of yet more federal acts such as the Timber Culture Act (1873) and the Desert Land Act (1877) more people moved west for land. The Desert Land Act provided that a settler could purchase 640 acres at \$1.25 per acre if he could bring the land under irrigation within 3 years of entry. In 1890 Congress reduced the size of the Desert Land entries to 320 acres, and in 1891 to 80 acres. This law was widely abused. It was meant for lands which

were unfit for cultivation without irrigation, but many claims were made for non-desert land. Furthermore, settlers generally lacked the funds and technology to produce irrigation systems. To rectify this situation, Congress passed the Newlands Act in 1902 to create a federal program of irrigation projects in the western states. Construction of the Willow Creek Dam near the Game Range began in 1908 as the first step in the Sun River Irrigation Project that was to last for the next 20 years (Picton and Picton 1975).

The Enlarged Homestead Act of 1909 increased allotments to 320 acres, and in 1912 the Three Year Homestead Act shortened the length of required residency time and allowed the claimant to be absent for 5 months a year (Carstensen 1963).

These later laws, rising prices of land in the Midwest, and a barrage of promotional campaigns, brought in a second, and much larger wave of settlers (Malone and Roeder 1991:241).

The settlement of central and eastern Montana in the early twentieth century was swift. By 1914 more than 20,000 homestead entries were made per year. During the period 1910 to 1922, 42% of the land area of the state was claimed by homesteaders. The number of farms in Montana more than doubled, while the number of acres in crops tripled (Howard 1943:207-209). Unfortunately, more than 80% of that area would prove to be unfit for crop agriculture. After little

more than a decade, the homestead "boom" in Montana was to be followed by a long "bust" period that displaced thousands of settlers. The homestead dating back to this boom period is a common site type in Montana.

CHAPTER FIVE

Site Descriptions:

Prehistoric Sites

24LC1055, Horse Pasture Site. This site consists of at least two stone circles, two rock cairns, and a stone alignment. Feature 1 is a large, well-sodded rock cairn. It measures 4 meters by 2 meters and is constructed of at least 30 stones. Twenty-five meters south is feature 2. Feature 2 is a smaller cairn, approximately 1 meter by 75 cm. It contains at least 10 well sodded stones. Thirty-two meters east of Feature 1 is the north end of Feature 3. Feature 3 is a rock alignment. It is 56 meters long, less than a meter wide, and runs at an angle of 25 degrees east of north. The alignment is no taller than 10 cm above the surrounding surface. This feature does not appear to be a solid line, but is made up of many small cairns, at least 36, but not always distinctly separate. Feature 4 is a stone circle measuring 6.25 meters in diameter. It is double or triple coursed, and the stones are well sodded. Feature 5 is another stone circle about 6 meters in diameter. It is not as well defined as Feature 4. Four orange chert scrapers were found 27 meters east of Feature 5.

24LC1057, McCarthy Cairn Site. This site was previously recorded by Mary McCarthy on June 3, 1991. It is

located on a knoll between an intermittent drainage about 120 meters to the east, and a low swale to the west edge of the site. The site consists of a large, well-sodded stone cairn measuring approximately 2 meters by 2 meters. A pink/white quartzite projectile point tip was located 9 meters north of the cairn. Several chert and quartzite pebbles were also found around the cairn.

24LC1109, S.R.W.M.A. Bison Kill Site. This site is near the east edge of the Game Range where the topography is rolling plains vegetated with short prairie grasses and juniper. The site consists of bison bone fragments and lithic artifacts found on two remnant terraces on the west side of the Willow Creek drainage. The north terrace measures 45 meters (N-S) by 50 meters (E-W), and the south terrace measures 30 meters (N-S) by 75 meters (E-W), which marks the south edge of the site. These are separated by a sunken terrace that is 84 meters wide (N-S). A minor drainage lies 66m north of the north terrace, marking the north edge of the site. There is a bone concentration here including large ungulate teeth and a scapula. From the terraces, a 30 degree slope rises to the west for about 90 meters until reaching a sharply rising ledge, marking the west edge of the site. The site has an open exposure, except to the west. A yellow chert, Late Plains period, side-notched point was found on the north edge of the northern

terrace. One tertiary obsidian flake, 1 tertiary chert flake, and 2 exposed bison bone fragments were found on this same terrace. No drive lines appear to exist above the ledge to the west. The nearest water is the Willow Creek Drainage, marking the east edge of the site.

There is major deposition, as well as erosion occurring. The latter poses a serious threat of destroying the site.

24LC1110, Circles & Points Site. This site is located on a relatively flat river terrace above an unnamed drainage of the Willow Creek canal which makes the eastern boundary of the site. The site is sheltered to the west by a high ridge forming the west boundary. It consists of at least 3 (possibly 6) stone circles and a rock cairn on the highest point of the ridge directly west of the occupation site. The circles I observed were Features 4, 6, and 7 from the original site description. These circles are roughly distributed in a triangular pattern. Feature 4 is 4.5 meters in diameter and contains at least 30 well-sodded stones. The ring appears to be double coursed. Seven meters east lies Feature 6. This stone circle is 4 meters in diameter, contains at least 25 well-sodded stones and appears to be single coursed. Seven meters south of feature 4 is another stone circle, Feature 7. It is well sodded and less distinct than Feature 4 and Feature 6. It measures approximately 4

meters in diameter. The three circles are situated on a terrace west of an unnamed Willow Creek drainage. Though too indistinct to record, there may be more circles at the site than these three. Two lithic artifacts were also found. Underneath a rock in Feature 4 a side-notched projectile point was found. It measures 4.5 cm long and 2.5 cm wide. It appears to be a Besant point. The second artifact is a corner-notched projectile point measuring 3.3 cm long by 2.6 cm wide. It closely resembles a Pelican Lake projectile point. Both artifacts have broken point-tips. These artifacts suggest the site is 1,500 to 3,000 years old. West of the stone circles, on the apex of a ridge, is a rock cairn (feature 9). The cairn measures 1.5 meters by 1.5 meters and consists of at least 30 stones. The view from this spot is excellent, allowing one to see for many miles in all directions.

24LC1111, Wanda Site. This site is situated on a low ridge between two small coulees and is 30 meters south of an unnamed lake. The ridge slopes down toward the lake at a slope of 6%. It is somewhat sheltered to the west by a higher ridge. The site consists of at least one stone circle that measures 8 meters in diameter and is constructed of over 80 stones. The first site report lists two circles existing at the site, Features 2 and 3. I found the best defined circle, Feature 3. Feature 2 is reported to be

located 10 feet south, but it is difficult to detect. There are several possible circles on the same ridge.

24LC1212, Barr Creek Cairn Site. This site consists of a single stone cairn on a terrace 200 meters south of Barr Creek. The cairn is very well sodded and measures 3 meters in diameter. It is constructed of at least 40 boulder sized sub-rounded and sub-angular stones, and has an open exposure.

24LC1217, Single Circle Site. The site consists of a single stone circle on a terrace 100 meters south of Barr Creek with a slope of about 5% and a northern aspect. The circle is constructed of boulder and coarse-cobble sized sub-rounded and sub-angular stones. There are at least 70 well-sodded stones in the circle which measures 4.5 meters in diameter, and is double or triple coursed. There is a small concentration of stones near the center of the circle which may represent the remains of a hearth. No other cultural materials were found. The circle is situated on the west side of the terrace, overlooking the coulee.

24LC1218, Last Site. The site is located on a terrace 200 meters south of Barr Creek with a slope of 4%. The site consists of 3 stone circles. The circles are roughly aligned in a north-south axis. The southernmost circle is Feature 1.

Feature 1 has at least 50 well-sodded stones, is double or triple coursed, and measures 4 meters in diameter. Feature 2 is the middle stone circle, located 2 meters northeast of Feature 1. It is 4.5 meters in diameter. Feature 2 has an opening, or break, in the southwest section of the circle about 1.5m wide. Four meters north of Feature 2 is another stone circle, Feature 3. It is well-sodded, with a heavier concentration of stones in the southwest section. Feature 3 measures 4 meters in diameter. It is not as well-defined as Features 1 or 2.

The three circles are situated west of center on the terrace. Visual inspection of the terrace did not produce any more definite stone circles. Though too indistinct to record, there may be more circles at the Last site than these three.

24LC1219, Black Bear Site. The site consists of a single, large stone cairn on the peak of a small mountain 1 mile south of the Sun River and 1/5 mile west of Dickens Lake. The cairn is located on the northwest aspect of the peak with an 8-10% slope on a very rocky surface. The cairn is composed of at least 100 lichen-covered stones. The cairn is a half meter high and measures 2m (N-S) by 1.5m (E-W). There is a prostrate juniper growing over the northwest side, and a scrub limber pine growing near its southeast side. The site offers an excellent view in all directions

including the Lewis and Clark Pass to the NW, Alkali Flats to the north, Sawtooth Ridge to the south, and east over much of the Game Range. No other cultural material was observed at the site. Cairns such as this one can be difficult to interpret. George Frison states:

Rock piles or single cairns are present in forms for which their purpose is unclear. With a high predictability, they are present on high points. Their cultural origin is usually difficult to determine because of their context, and their age cannot be determined reliably because of a lack of diagnostic items and/or organic materials for dating. There seems to be little doubt that these cairns are not of Euroamerican origin (Frison 1978:357).

It is possible that this cairn represents a vision quest site. Vision quest localities are usually associated with "high altitudes, rugged topography, and isolated topographic features, such as islands and buttes" (Deaver 1986:46).

Historic Sites

24LC1056, Marshall Swayze Site. This site includes dugouts and debris associated with a historic homestead. The nearest water is Rose Creek, 180 meters north of the site. The site has a slope of from 5 to 20% with an eastern aspect.

Feature 1 is a 40 feet by 40 feet stone dugout built into a slope with an eastern exposure. The south, west, and north walls are lined with angular boulders. There are red

bricks and a metal frame measuring 6 feet by 3 feet lying on the floor. A metal pipe projects out of the floor of Feature 1, 5 feet east of the center of the west wall. A similar pipe extends out of the west wall near the southwest corner.

Feature 2 lies 40 feet directly east of Feature 1. It is a round hole, 13.5 feet in diameter, and 5 feet deep. It contains scraps of metal and red bricks. Feature 3 lies 150 yards west (upslope) of Feature 1. It is also a dugout depression cut into a berm with a 10 feet high west wall. It is 30 feet wide (north to south) and 20 feet deep. This feature is lined with stone cobbles. It contains wood scraps, bits of metal cans, and the sole and leather upper of a boot.

Feature 4 is located 20 feet south of Feature 3. It has the same dimensions as Feature 3, but has a secondary depression in the west wall measuring 7 feet by 7 feet. Feature 4 also has a 10 feet high west wall.

Feature 5 is a low rock alignment 60 feet long, running at an angle of 173 degrees east of north. Three large cattle metatarsal bones, one small tibia, and metal debris were also found on this feature.

Informant Bert Goodman told me that Marshall Swayze built his home at this site and later sold it to Bud Swanson. A title search at the Lewis & Clark County Clerk and Recorder's Office revealed that Marshall Swayze purchased the land on June 1, 1927. A small lake nearby

still bears his name.

24LC1153, Schaap Site. The site consist of 3 dry stone masonry wall structures, 1 depression, 1 rock alignment, and 1 wood-lined spring. The site is located near the north bank of Barr Creek that has a 15% south-facing slope.

Feature 1 is the western-most structure. It consists of 3 dry masonry stone walls forming a square enclosure measuring 30 feet (north-south) by 21 feet (east-west). The walls are composed of subangular, limestone boulders. Each of the walls are doubled, with dirt fill in the middle. The average wall thickness is 4 feet.

Feature 2 is the smallest structure at the site. It consists of two perpendicular walls of stone construction forming a near right angle. The north wall is 18.5 feet long. The west wall is 19 feet long. The walls are 1 to 2 feet tall and there is a slight depression located between the walls in the center.

Feature 3 is a depression located just northeast of feature 2. It is circular in shape and measures 14 feet across.

Feature 4 is a 21 foot long stone alignment. It runs east to west, and is constructed of limestone.

Feature 5 is the largest structure on the site. It is of dry masonry construction utilizing the same sort of stones as the other structures. It measures 61 feet (east to

west) by 50 feet (north to south), with a 14 feet wide opening on the south wall. The walls are double lined with dirt fill in the middle. The structure lies on a 15% slope, therefore the heights of the walls vary. The south wall is 5 feet tall; the north wall is 2 feet tall. Wild rose bushes surround most of the feature, suggesting high amounts of organic matter in the soil. Animals may have been kept in this structure.

Feature 6 is a wooden plank-lined spring measuring about 5 feet in diameter. Several acres adjacent to the site contains an abundance of sweet clover, suggesting tillage of the soil in the past.

Local informants Bert Goodman and Dick Kinck said that this is the homestead site of John Schaap, who built the structures in the 1920's. Schaap, a one-armed man, reportedly constructed a wood-frame house and out buildings with the aid of his siblings. The stone walls were added to protect against the fierce wind. Titles indicate that the land was owned by John Schaap in the 1920's, and a nearby property was owned by an Albert Schaap. Both men lost the properties in 1927 for non-payment of taxes.

24LC1213, Stove Creek Site (Power Place). This site is located in a gulch on the west side of the Game Range. The topography around this site is mountainous and wooded, with open meadows to the east. It is vegetated with short prairie

grass, pine, and willows near Stove Creek, which runs right through the site. It has a slope of about 5 to 20 percent with an southern aspect.

The site includes many features, including a dugout, a wood stove, the remains of several collapsed structures, and scattered debris located on a slope and flatter area right up to Stove Creek, and extending to the south bank of the creek, over which there was a small foot-bridge. The site extends for approximately 200 meters east-west and is about 20 meters wide north-south.

Feature 1 is a covered dugout built into the slope with a southern exposure that has collapsed. It is 5.2 feet high and 7 feet across. The structure was lined on the sides and back with logs. The roof is lined with smaller branches logs, laid across from left to right, and 1 by 4 inch boards running from front to back about 10 feet. On top of these are sheets of corrugated tin.

Seven feet east of Feature 1, is Feature 2. This is a 9 by 6 foot pile of milled boards of various dimensions with wire nails and a 20 by 12 inch sheet of tin. This may have been a structure, but it is completely collapsed.

Another pile of similar boards lying 13 feet southeast of Feature 2 is Feature 3. It lies partially in the creek. It extends over the creek into a square dugout that measures 7 feet by 7 feet, and 5 feet deep, and is filled with boards. Artifacts in this area include part of a iron wood

stove, a rust-resistant metal jug next to the creek's edge, a 10 by 18 inch piece of metal wired to a dead tree (about 5 feet up from the ground), and a rubber tire. Fifty feet west lies a second part of the wood stove. West and up the slope from here lie another two pieces of the stove.

On the south side of creek, about 250 east of Feature 2, are 3 more features. Feature 4 is a pile of wood and tarpaper, feature 5 is a dugout that measures 17 feet (east-west) by 28 feet (north-south), and contains wooden boards. Feature 6 is a foot-bridge that crosses the creek just north of feature 5. About 75 meters west of feature 1, more debris was lying next to the creek, including a pan and shovel, and a bucket with a spout. Other artifacts include coffee cans and other refuse scattered around the site.

This site is known locally as the Power place, according to informant Bert Goodman. A title search revealed a Charles Power living in the area in 1916. Marshall Swayze bought the place on November 16, 1925.

In the local biographical history collection, "In the Shadow of the Rockies", an article on the Krebs family and homestead mentions this site. The Krebs lived in section 29 at the foot of Sawtooth Ridge, which is still private property. Mrs. John Krebs tells the following:

The next year (1931) we had school at the Power house. I moved down there with the children. I had three rooms. Sadie Clemons, the teacher, had one room for her living quarters. The third room was the classroom. There were seven children; Marshall Swayze's four and our three.

Bert Goodman told me that Marshall Swayze had moved up to Stove Creek after selling his place in section 27 to Bud Swanson. The area around the site was known for the highest quality of rhubarb. Marshall enjoyed soaking in the mineral water near his place, and was found dead there in the mid-1940's. He left his land to the State to be incorporated into the Sun River Game Range.

24LC1214, Log Cabin Site. The site consists of a collapsed log structure. It is 13 feet long (N-S) by 7 feet wide (E-W), and is set into a dug-out depression. It is located on the south slope of a coulee, 22 feet south of an unnamed intermittent drainage. The slope is about 20% and the cabin has a north orientation. The entrance, when the building was erect, was at least 5.5 feet tall, 2.2 feet wide, and centered on the north wall. The logs were saddle-notched, and also nailed together with wire nails. These details suggest a twentieth century date of manufacture (Hufstetler, personal communication 1995). Milled boards were also used, particularly around the entrance. The soil is very moist, and the floor of the structure is filled with water. There is no visible debris outside of the structure. Southeast of this site, about 650 feet away, is another historic feature, probably associated with the structure. It consists of a large post, 6 feet high, sticking up from the

ground with a 6 inch iron spike on top. Thirty feet to the west lie two logs in a N-S orientation, each about 20 feet long and connected end to end with notch and nail. Some smaller fragments of logs and metal are scattered around the area. The ground is thickly vegetated with tall grasses, shrubs, cinquefoil, limber pine, snake grass, juniper, and wild iris. The dense grasses and shrubs around may signify a high level of organic material in the soil. This could indicate a barn or corral used to house animals.

The 1898 USGS topographic map (surveyed by W.H. Thorn) shows a W.E. Kelley living in the northwest corner of section 10, near the section 9 line. This is very close to the location of 24LC1214. However, the structure does not appear to be that old.

In a personal communication with Mr. Richard Osman of Battle Lake, Minnesota, I was told that the name on the 1898 map was Keller; his grandfather Elmer, who later moved into a new location east of this site.

Olaf Brusgard owned the land on which the site is located in 1929. Based on the physical characteristics of the cabin, it is most likely this structure was built around the 1920's. This indicates that Brusgard probably was the builder.

24LC1215, Boulder Camp Site. This site is located on a low hill in an area of rolling plains littered with large boulders, 50 meters south of an unnamed intermittent stream.

The site consists of over 30 angular and sub-angular boulder and coarse cobble sized stones arranged in a rectangle that measures 20 feet (E-W) by 11 feet (N-S). The west wall of the rectangle consists of a single large boulder that measures 13 feet by 12.5 feet wide and 6 feet tall. In addition to this stone feature, there are several artifacts indicating historic association. Three feet to the west of the large boulder lies a wooden rectangular frame with some wire coils measuring 6.5 feet long by 3.5 feet long. About 3 feet north of the frame, a metal artifact measuring 8 inches in length and 2.5 inches wide was found. It has what appear to be two U-shaped bolts with nuts, probably for fastening on an unknown apparatus. On the face of the artifact, there is an inscription that reads, "PAT'D JAN 12", and centered below this, "1897". There were also two metal spoons found inside the stone structure and approximately 15 broken white porcelain shards, including one large handle. The original artifact may have been a pitcher or tea pot. Inside the north wall of the structure is a metal pipe. There are also bits of glass, nuts, bolts, nails, and bone fragments scattered in and around the structure. One hundred and fifty feet east of the structure, the ground slopes down into a small basin. In this area are bits of wood (some charred), the bottom of a glass bottle, and a curved wooden board with a 3 feet long metal strip attached to it with screws. The structure is built on the east side of the large boulder,

which is the leeward side, shielded from the prevailing west wind. Since the terrain here is open, with no trees in the vicinity, the boulder offers shelter from the high winds.

Because of the 1897 date on an artifact at the site, it can be inferred that the site was occupied on or after that year. The 1898 USGS Topographic map (surveyed by W.H. Thorn) shows no homesteads near the Boulder Camp site. A title search revealed the earliest known land owners in section 14 as Emma and August Buckholz in 1916, though no homesteads have been found in this section.

The lack of boards, the nature of the makeshift foundation, and the small size of the structure, indicate that this site was not intended to be occupied for a long time. It was probably a short-term camp site. The position of the structure used the large boulder on the west side as a wind break, a necessity for protecting a tent or shanty from the frequently high winds on the Game Range. It is possible that this was either a cowboy, sheepherder, or hunting camp.

24LC1216, Oil Rig Site. This site is located in an area of rolling plains approximately 675 feet northeast of Dickens Lake, near the north end of the Game Range. The site consists of a large, wheeled tractor and a long metal shaft housed in a wooden frame. The tractor is 23 feet long, lying in an east-west orientation, and 7 feet wide. The west end

has two large iron spoked wheels. They are 5 feet in diameter, 8 inches in width and are studded with nuts and bolts. There is a wooden platform between these two large wheels. Two smaller, spoked, iron wheels are positioned at the east end of the tractor, 2.5 feet in diameter. Near the east end is a large, solid wheel made of wood, 5 feet in diameter, that appears to have been rubberized. Most of the frame is wooden, with many bolts, nuts, iron bars, and rods. Seventeen feet to the south lies a long, wooden frame containing an iron shaft. It is 41 feet long, 1.7 feet wide, and has an east-west orientation. There is no writing on the tractor indicating manufacturer or function.

A comparative study at the Memke Tractor and Steam Museum, east of Great Falls, revealed no clues as to the function or origin of this piece of machinery. Mr. Memke, upon viewing pictures of the site, suggested the machine was a well drilling outfit. Because of its mostly wooden construction, Mr. Memke believed it was custom built. Local informant, Bert Goodman, told me that it was an oil drill used in the years following World War I. The local biographical history collection, In the Shadow of the Rockies, contains a reference by Ashton Jones to an oil company in existence around 1918. According to Jones, four men from Gilman- Oscar Seitz, A.F. Belzer, Edwin A. Jones, and F.M. Mack- organized the Black Reef Oil Company after the discovery of oil in the Cat Creek area. County records

show that in 1925 the Black Reef Oil Company and the Keystone Oil Syndicate were interested in the area near this site. The extent of drilling or exploration that took place at this site is unknown.

24LC1234, Porter-MacDuffie Site. This site is located about 120 meters southwest of Dickens Lake on a 20% slope with an eastern aspect. It consists of a single dry masonry structure made of limestone angular, boulder-sized slabs. It is rectangular, about 22 feet by 14 feet, with a 3.3 feet opening near the southeast corner on the east side. The walls vary in height from 1.5 feet to 4.5 feet. There is no roof remaining.

The floor of the structure was dug out to make it level. The west wall (facing up-slope) is only 17 inches above surface on the outside, but is 4.5 feet to the floor inside. There are some scraps of wooden boards inside the structure, 3 or 4 two foot pieces, as well as some with nails scattered around the site. A rock outcrop about 100 feet north of the structure is the probable source of the stones used in the manufacture of the walls. A modern well made of corrugated metal is located 200 feet south of the structure. Local informant, Bert Goodman, stated that this well was constructed over a previously existing well, probably associated with the structure. Wild rose grows thickly in and around the structure.

There is a good view of the lake and the rolling plains to the east from the site. The land rises sharply to the west, and to a lesser extent to the north and south, providing a natural "U" shaped sheltered area.

A title search at the Clerk and Records Office of Lewis and Clark County in Helena reveals that the earliest known owners of the property on which the site is located were William and Maebell Porter, who owned Lots 2,3,4, and the south half of the north half of section 5 on March 18, 1919. In December of 1919, D.C. MacDuffie bought that same property. It was bought by Olaf Brusgard in the late 1920's.

In the local biographical history collection In the Shadow of the Rockies, June Eklund (MacDuffie) Higgins recalls her grandfather DeWitt C. MacDuffie's homestead near Sun River Canyon (page 295). He was a rancher there until a severe winter in 1922 destroyed many of his cattle. He and his wife, Orcelia, then moved to Gilman. That year they had a stillborn baby boy who was buried up on the ranch beneath a pile of rocks.

24LC1235, Axel Swanson Site. The site consists of six historic features, including two wooden roof structures, two dugouts, one concrete foundation, and one early model automobile. Feature 1 is a concrete foundation measuring 17 feet east to west, and 30 feet north to south, and has crumbled somewhat in the northwest corner and the southwest

corner. The foundation itself measures 8 inches high and 7 inches wide. The west wall, running north to south, is 20 feet long (shorter than the east wall) to allow for an entrance on the north side of structure consisting of two concrete steps measuring 6 feet wide. A door would have faced east. The foundation has lichens growing on it, rose is abundant at the north end near steps, and there is no evidence of walls or roof within the foundation.

Feature 2 is a roughly square depression measuring 2.4m by 3.5m. It lies 195 degrees east of magnetic north from the northwest corner of Feature 1, at a distance of 115 feet. Loose lumber is present on the south side of the feature.

Feature 3 is a larger, roughly square depression measuring 6m by 6m. It lies 125 degrees east of magnetic north from the NW corner of Feature 1, at a distance of 70 feet. It contains large timbers.

Feature 4 is the remains of a wooden gabled roof structure. It lies 135 degrees east of magnetic north from the NW corner of Feature 1, at a distance of 130 feet. It is constructed of logs and boards with shingles and measures 19 feet N-S and 8.5 feet E-W.

Seventeen feet to the west is feature 5. It is a collapsed wooden structure measuring 20 feet N-S by 12.5 feet, east to west. It may have been a roof, or a wall and part of a roof.

Feature 6 is located on the north side of the Willow

Creek Feeder Canal and is not visible from Features 1 through 5. It is an early model two-door automobile. Tires, windows, engine, and roof are absent. It is partially imbedded in the north face of the berm just north of the canal.

A title search at the Clerk and Records Office of Lewis and Clark County in Helena reveals that the earliest known owners of the property on which the site is located were Axel and Marie Swanson, who purchased the land in 1927. The local biographical history collection entitled In the Shadow of the Rockies states that Axel emigrated from Sweden to the United States around 1893. Marie Bracket Swanson was a chiropractor who moved to Montana from Tennessee and occasionally gave chiropractic adjustments at the ranch. The Swanson ranch grew to be one of the largest in the area. Axel and Marie lived there until Axel's death in August of 1943.

Local informant Bert Goodman told me that the two wooden structures at the site, features 4 and 5, were still standing in the 1960's when he tore them down to prevent hunters from camping in them and starting a fire. The local history book also mentions that Axel owned a Ford, which may now be Feature 6 at the site.

24LC1243, Keller Site. The site consists of at least 11 historic features, including a long rock and debris pile,

two collapsed wooden structures, four dug out depressions, two unusual wooden posts, a concentration of broken glass, and various bits of refuse. The site is located in a broad coulee that runs roughly east to west and is surrounded by rolling plains. A steep hill to the north rises quickly and has dark igneous rock deposit. The nearest water is an unnamed creek lying 5m south of Feature 5. It has a variable slope from 0 to about 10 percent with a southern aspect.

Feature 1 is a 66 feet long, 5 feet wide alignment of over 100 sub-rounded and sub-angular boulders and cobbles. The pile runs approximately north-south. On the north end is a collection of lumber ranging in size from 5.5 meters long and 12cm in diameter, down to fragments. Some of these boards have nails, nuts, bolts, wire, and spikes.

To the west, 3.5 meters from the center of Feature 1 is an erect 20cm post, 6cm in diameter. This is feature 2. A wire is tied around its base and a 1 meter piece of metal is partly encircling the post.

Seven meters east from the south end of Feature 1 is Feature 3. It is a depression measuring 7m (N-S) by 2m (E-W) and is 60cm deep. It contains a small amount of lumber.

Feature 4 lies 70 meters west of Feature 1. It is a concentration of clear window glass fragments, scattered on the ground just south of an adjacent boulder.

Feature 5 is located 50 meters southeast of Feature 1. It consists of a wooden post 2 meters long standing at a 45

degree angle to the ground. The top points toward the west, braced by two 1 meter logs nailed together to form an "X". The longer post is held at the juncture of the two smaller logs. A large boulder lies directly to the northwest of this feature.

Three depressions lie 9 meters to the north of feature 5. These are features 6, 7 and 8. Feature 6 is a 1 meter (north-south) by 2 meter (east-west) dugout depression and is 1 meter deep.

Three meters east is feature 7. It is 1 meter by 2 meters, and 50cm deep. Another 8 meters east is feature 8. It is a 3 meter by 2 meter depression, 1 meter deep.

Forty meters east of feature 1 are features 9 and 10 which are the remains of two collapsed wooden structures. Feature 9 is 3 meters by 6 meters with wild rose growing thickly around it. Feature 10 is located 3 meters east of feature 9. It is a remnant floor of a disintegrated wooden structure, measuring 3 meters by 6 meters.

Feature 11 is a piece of agricultural equipment called a binder. It is located on a flat north of features 1 through 10. A comparative study at the Memke Tractor and Steam Museum east of Great Falls indicated that the binder dates to the early twentieth century.

A title search at the Clerk and Records Office of Lewis and Clark County in Helena reveals that the earliest known owners of the property on which the site is located

were Elmer and Lillie Keller, who owned the land prior to selling it in 1916 to M.S. Draper. The area of land north of the site is known locally as Keller Flat and, according to informant Bert Goodman, the soil there was damaged by the Kellers' attempts at agriculture. Informant Rich Osman, a grandson of Elmer and Lillie Keller, stated that the hill directly north of the site is called Keller Mountain, and that the Kellers settled in the area by 1895, making them one of the earliest pioneer families to settle on land that is now the Sun River Game Range.

24LC1248, Ditch Site. The site consists of a single ditch measuring 250 feet long, roughly running east to west. At its deepest point, it is 7 feet in depth and 27 feet across. On the north edge of the ditch there is an 8 foot length of barbed wire tied to a boulder 40 feet from the west end of the ditch. The ditch is dug into a low ridge separating the nearest water, an unnamed pond 42 meters to the west, and a large basin to the east. The pond may only be a seasonal source of water.

A title search revealed that August Buckholz obtained the property on which this site is located on March 5, 1921. The ditch was probably an attempted irrigation project.

CHAPTER SIX

Conclusion

Prehistoric Land Use. Prehistoric peoples who lived in Montana practiced hunting and gathering subsistence strategies (Frison 1978). Such adaptations usually require social groups to be highly mobile. Seasonal availability of foods and distance between resources meant that prehistoric people had to move frequently to other areas where and when food was locally abundant.

This system of procurement required a social organization characterized by small, widely dispersed bands (Lee and Devore 1968). These bands chose their campsites based on proximity to natural resources. Deaver and Deaver (1990) list six factors that are significant in understanding subsistence strategies and settlement patterns: 1) seasonal availability of resources, 2) scheduling decisions made to maximize efficiency in terms of the first factor, 3) monitoring costs created by the need for information to make proper scheduling decisions, 4) caloric efficiency of using particular resources (a function of density, visibility, accessibility, competition for, processing, and monitoring costs), 5) the reliability /predictability of particular resources, and 6) the centrality of lithic sources and other non-edible essential resources, such as wood and water, relative to the distribution of food resources (Deaver and Deaver 1990).

Another factor affecting where people settled is the nature of social relationships with other groups in the vicinity, whether hostile or allied.

In discussing site placement in the Upper Yellowstone River Drainage, George Arthur concluded that sites "were usually located on level grass covered terraces at the mouths of canyons where water from springs and streams was plentiful and game animals abounded" (Arthur 1966). Lewis Napton's survey report on the Gallatin River Canyon and Valley came to similar conclusions. He found that 90% of the sites in the Gallatin area were associated with permanent water sources. Furthermore, he observed that archaeological material decreases in quantity with increasing elevation, with most material occurring below 5000 feet (Napton 1966). "Populations concentrated in the river bottoms (late winter-early spring) and dispersed at other times to utilize the various resource potential of additional life zones" (Roll 1982).

Therefore, large feature sites, indicating a concentrated population, will be found at the locations with stable and abundant resources. These locations tend to be major river valleys and terraces. Sites with smaller numbers of features, indicating a less intense use, are to be found in locations with relatively sparse and undependable resources. These sites tend to be located in foothills and broken terrain, which describes most of the game range.

The goal of this project is to describe and explain land use patterns on the Sun River Game Range in the past. Assuming prehistoric people who lived in the Sun River area had the kind of subsistence system I have outlined, and examining the data I collected from the prehistoric sites on the Sun River Game Range, I can say with a degree of confidence that the game range was used by small groups of people at a low level of intensity.

The survey revealed a total of 9 prehistoric sites. Of these, 3 sites consist of single stone cairns (24LC1212, 24LC1057, 24LC1219), 2 sites consist of single stone circles (24LC1111, 24LC1217), 2 sites consist of 3 stone circles each (24LC1110, 24LC1218), one of these (24LC1110) also has a stone cairn feature, 1 site is apparently a bison kill at a small bluff, with a concentration of bison bone and a projectile point, but no other features (24LC1109), and 1 site contains 2 stone circles, 2 cairns, and 1 stone alignment (24LC1055). If I define "large feature sites" as those that contain at least 5 features, only 1 of the prehistoric sites on the game range can be described as such (24LC1055). This constitutes 11% of the sites. The evidence is consistent with small, mobile groups.

William Michael Cobb conducted a survey for the Butte District of the Bureau of Land Management in the summer of 1976 to inventory archaeological resources on lands that extend south from the south bank of the Sun River to the

northern edge of the Sun River Game Range (Cobb 1976). The square acreage that Cobb surveyed is slightly less than that of the Sun River Game Range. I am including a brief summary of his finds, because comparison with this information is pertinent to my discussion of land use.

Cobb's inventory revealed 34 prehistoric sites. Almost all of them are less than 200 yards from the Sun River. Most of these sites include stone circles, some contain stone alignments and/or cairns. Of these, 14 sites (41%) can be considered "large feature sites". Four sites (almost 12%) contain 10 or more features. One site (24LC189) consists of 42 stone circles, and one site (24LC204) consists of 17 stone circles.

The results of Cobb's survey stands in stark contrast to the findings on the Sun River Game Range. The total number of stone rings found on the Game Range is 10. The difference in results of these two surveys undoubtedly has been influenced by modern land management policy. The area in which Cobb's survey was conducted is commonly used for cattle grazing, and therefore high grass does not pose much of a problem in terms of ground visibility. The game range, on the other hand, is off-limits to cattle, allowing grass to grow as tall as conditions permit and thus possibly concealing sites from view. Nevertheless, the results of both of these inventories can be explained, for the most part, in terms of prehistoric land use patterns. Intensity

of use was different. George Knight stated:

According to the best evidence, people aggregated in the river basins and plains; their movements into the high country divided them into progressively smaller groups. Equally important is that these forays must have seen people practicing the utmost conservation of their raw materials (as they grew more and more distant from familiar sources) and of foodstuffs: the idea of late summer and early fall foraging was to lay in winter stores (Knight 1989).

Based on this, Knight argues that it is to be expected that the mountains will contain "rather sparse and dispersed archaeological remains" (Knight 1989). These assertions are consistent with the archaeological evidence I found during my survey.

The working hypothesis, that the Sun River Game Range was used by very small bands of prehistoric people at a low level of intensity, is supported by the results of this project. My conclusions support the rejection of the null hypothesis, that there is a random distribution between large feature sites (number of stone rings, drive lines, or structures) and the abundance and/or stability of resources.

Historic Land Use. The survey and research results also support the secondary working hypothesis that the homesteader population on the Sun River Game Range exceeded the carrying capacity of the land for that particular profession.

Federal homestead legislation such as the Enlarged Homestead Act of 1909 and the Three Year Homestead Act of

1912, as well as several years of deceptively humid weather helped to usher in a large wave of settlers (Malone and Roeder:241). Between 1910 and 1922, the number of farms in Montana more than doubled, while the number of acres in crops tripled. Ironically, more than 80% of the new farm land would turn out to be unfit for crop agriculture.

The shift in settlement that resulted is an example of how strong the relationship of climate to population is, even to industrialized societies.

The agricultural boom years of 1909 to 1919 gave way to a bust. After a series of unusually wet years, the climate swung to the other extreme, becoming much drier in 1918. The drought would last until 1923, resuming sporadically until 1939. From 1919 to 1939, the drought was severe enough that in 7 of those years even the native prairie grasses were killed (Howard 1943). During World War I, ground that was unsuitable for cultivation had been plowed, and, by 1920, was suffering from erosion in large dust storms. As Europe began to recover its productivity after the war, wheat prices fell drastically.

The combined impact of the economic and environmental changes was devastating. Between 1921 and 1925 half of all the farms in Montana failed and were lost through mortgage foreclosure. By 1940 approximately 60,000 people had left the state (Howard 1943).

The lure of large tracts of free or cheap land,

railroad company "boomer" activities, the promotion of "dry farming", and a period of unusually abundant moisture were all factors in the 1909-1919 settlement boom in Montana. However, subsistence farming was impossible in many parts of the state due to climatic and soil conditions. Many homesteaders could not maintain a livelihood, resulting in their lands being sold off or forfeited through mortgage foreclosure, tax sale, or abandonment. The massive amount of homesteading which occurred at the beginning of the twentieth century in Montana simply over-extended the carrying capacity of the region. Yields per acre were not nearly as high as many had expected. Consequently, most homesteads failed, while a few survived. Consolidation of homesteads into a smaller number of larger farming units has been a continuing trend since the second World War (Howard 1943:284).

Historic research of homestead sites on the Sun River Game Range indicates a confirmation of the documented homestead rush and subsequent depopulation. My local history information comes from several primary and secondary documents and sources. These include Lewis and Clark County deed books (grantor-grantee index), a personal interview with retired ranger Bert Goodman who worked and lived on the Sun River Game Range for 30 years, a written correspondence with long-time locals Dan Neal and R.C. Kinck, the local collection of family biographies and histories entitled, In

the Shadow of the Rockies, and General Land Office maps.

There are 3 relatively early homesteads indicated on the General Land Office map of 1898. The names shown on the map for the sites are W.E. Kelley, W.J. Leslie, and C.J. Furman. However, these homesteads could not be verified by county records, and no physical evidence of these sites were found.

Documented evidence indicates homestead activity on what is now the Sun River Game Range occurred primarily between 1916 and 1927 (Lewis and Clark County Clerk and Recorder's Office). Local informants generally referred to sites as dating back to around World War I, or as being occupied in "the 1920's".

John Schaap built his homestead (24LC1153) in the 1920's, and lost it in 1927 for failure to pay taxes. DeWitt and Orcelia MacDuffie began their ranch (24LC1234) in 1919. They were forced to give up after a severe winter in 1922 killed most of their cattle (In the Shadow of the Rockies). Erma and August Buckholz (also known as August Montana) owned land on the game range (24LC1215 and 24LC1248) from 1916 to 1921. Elmer and Lillie Keller sold their place (24LC1243) in 1916 to M.S. Draper, who lost the land to the bank in 1925.

A few homesteaders were able stay on the land almost until its incorporation as state game range in 1947. Marshall Swayze lived at 2 sites, 24LC1056 and 24LC1213,

from 1925 until his death near the Stove Creek site in 1944. He left 40 acres to the state for elk habitat. The homestead of Axel and Marie Swanson (24LC1235) began in 1927 and grew to be one of the largest ranches in the area. Axel Swanson bought up and consolidated neighboring land as it became available, insuring his chances for economic survival. He lived at the site until his death in 1943. Olaf and Clara Brusgard also made their way, beginning in 1929, by buying up the large tracts of land that had been deserted. They, too, sold their land to the state in the 1940's to be used as a game range.

It is my hypothesis that the Sun River Game Range was never occupied by high densities of prehistoric people because the land could not support a large population of hunter-gatherers. These groups adapted culturally by creating a subsistence system in which very small bands of people used the Sun River Game Range, and areas similar to it (sharply broken plains, foothills, and mountains), at a low intensity.

The historic "boom and bust" pattern that characterizes the homestead era in Montana also relates the importance of ecology to settlement and subsistence. Misguided federal legislation did much to encourage the migration of homesteaders into Montana. However, even the legislation itself, progressively allowing larger and larger claims, reflects the low capacity of the land for agriculturalists.

When the population exceeded this limit, a crisis ensued. The few that remained were the few that commanded enough capital and resources to consolidate holdings into larger, economically viable units.

It has been my goal to interpret and explain the cultural remains inventoried during this survey in terms of wider social and economic systems in relation to the environment. The results of this research shed light on the part the Sun River Game Range played in the prehistoric and historic settlement and subsistence patterns of the Sun River area, and central Montana.

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