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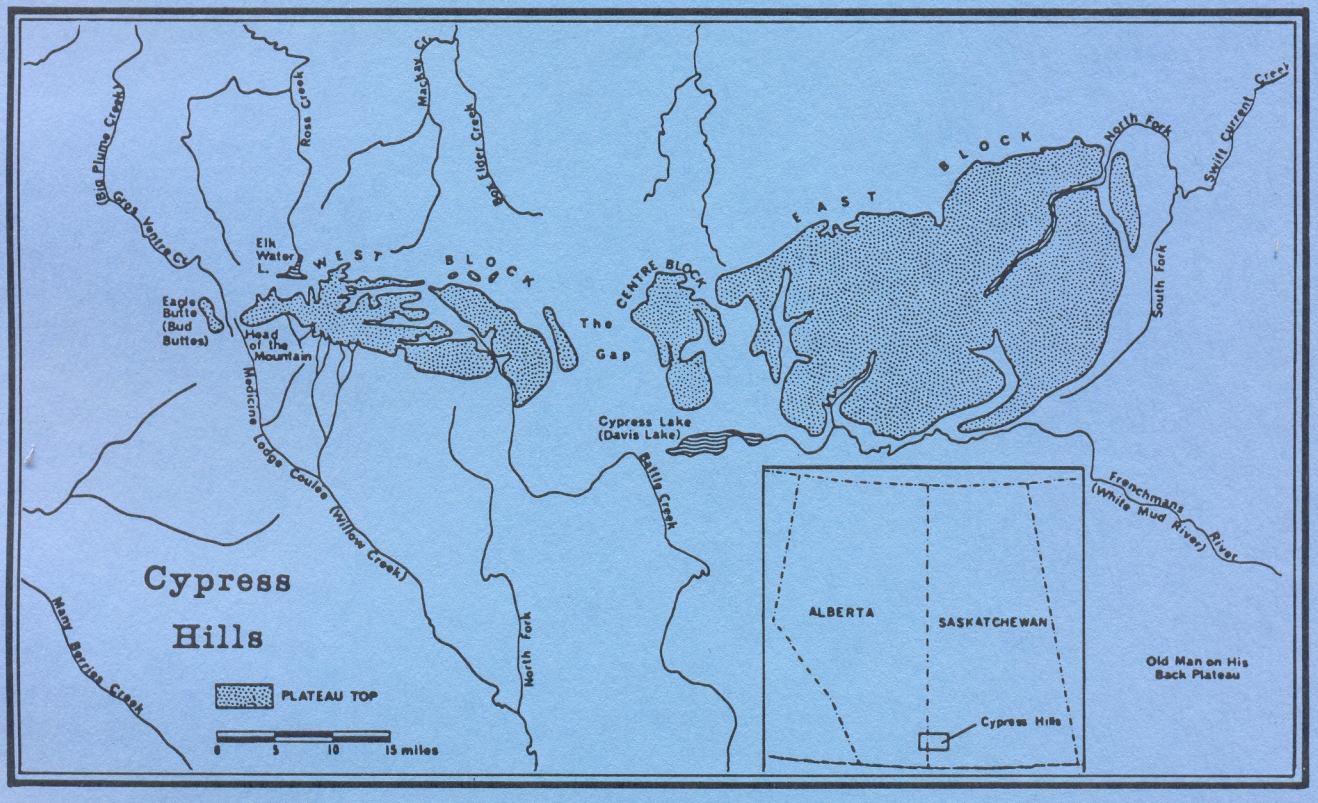
CYPRESS HILLS ETHNOHISTORY AND ECOLOGY

Robson Bonnichsen
and
Stuart J. Baldwin



Alberta
CULTURE
Historical Resources

CYPRESS HILLS
ETHNOHISTORY AND ECOLOGY:
A REGIONAL PERSPECTIVE

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Objectives

These Occasional Papers are designed to permit the rapid dissemination of information resulting from Historical Resources' programmes. They are intended primarily for interested specialists, rather than as popular publications for general readers. In the interests of making information available quickly to these specialists, normal production procedures have been abbreviated.

The cover illustration shows the geographic relationships of the major blocks of the Cypress Hills remnant plateau and the more important outliers. Note the radial drainage of this prairie area.

ABSTRACT

Students of the northwestern plains archaeological region have very limited and scattered amounts of historical and ethnographic records available to them for study. This lack has prompted us to develope a new organizational framework which synthesizes ethnohistoric data gathered from previous literature, archaeological assemblages and available ecological data. This theoretical organization model is discussed in detail and applied with reference to the prehistory of the Cypress Hills area, Alberta.

ACKNOWLEDGEMENTS

This is the first of several papers undertaken as part of the Cypress Hills Archaeological Project. We are indebted and wish to express our sincere thanks to a number of individuals and institutions that have given us academic and financial support during the preparation of this study. The actual writing of the paper took place during the winters of 1972-76. During the first winter, research funds were received from the federal government of Canada as part of a local initiatives grant. In 1973 the Provincial Parks Division of the Alberta Government's Department of Lands and Forests funded the Cypress Hills project. Additional funding was provided by Alberta Culture's Archaeological Survey of Alberta during 1976 under an extension of Archaeological Research Permit No. 75-56 which allowed the completion of the present manuscript.

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Technical expertise has been provided by several individuals. Archie Landels and Lisa Bostwick drafted the maps. Stuart Baldwin translated source materials from French into English. Georgie Brooks, Diane Kopec, Glennis Tober and Susan Hawiuk typed the final manuscripts.

We thank the following outside readers for their comments and suggestions: Alan Bryan, Gordon Drever, Paul Donahue, Ruth Gruhn, Tim Losey, John Foster, John Nicks, and Patricia Severs. David Young's editorial assistance has without question improved the quality of the text presented in the following pages.

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INTRODUCTION

PROBLEM STATEMENT

Attempts to use the direct historical approach and ethnographic records for interpreting remains at particular archaeological sites have met with poor success in the northwestern plains archaeological research region (cf. Forbis 1963). The sporadic and incomplete nature of historical records, the dearth of observations, the time-lag between observation and development of current theoretical objectives in archaeology, and the differential preservation of materials in archaeological sites are key contributing factors to this impasse.

The lack of good ethnohistorical syntheses which could be used for interpretation of prehistoric remains recovered on the Cypress Hills Archaeological Project led to the conception of the present study (Figure 1). Over ninety sites have been found in the Cypress Hills area (Figure 2). Remains from these sites are not normally typified by projectile points and bison bones, but there is an abundance of cobble tools. In order to gain an understanding of the significance of the prehistoric remains recovered from this archaeological project, a new organizational framework has been developed for conducting a systematic ethnohistorical literature review.

The premise from the outset was that the Cypress Hills sites and archaeological assemblages must be in some way related to the unusual ecology and physiography of the area. Therefore, a cultural-ecological theoretical framework has been developed which views the northwestern plains as a series of contiguous, but diverse, ecosystems. Ethnohistorical records pertaining to activities conducted in the highland outlier ecosystems (e.g. the Cypress Hills and Wood Mountain) are systematically examined in an attempt to determine who was doing "what," "when," and "where." A number of regularities have been discovered in the adaptive strategies employed by historical groups in outlier highland ecosystems. It is felt that these patterns reflect fundamental principles of regional adaptation. They are significant to the prehistoric archaeologist for formulating research designs and as analogs for interpreting prehistoric remains.

LOCATION

The Cypress Hills is a flat-topped erosional remnant plateau situated between the Missouri and Saskatchewan drainage systems. This east-west trending plateau, which is eighty-five miles long and twenty-five miles wide, is located approximately fifty miles north of the Canadian-American border. The Hills cover about 1,000 square miles of which one-third lies in Alberta and two-thirds in Saskatchewan. From its eastern end, the plateau gradually rises from 3,500 feet above sea level on the prairie near Eastend, Saskatchewan, to an elevation of 4,810 feet at its north-western summit.

The plateau is divided into three physiographic units. Two north/south-trending meltwater channels have divided the hills into what are known as the East Block, Centre Block and the West Block (Figure 1). An escarpment that is 1,000 feet above the surrounding prairie occurs at the west end of the West Block as a result of glacial erosion.

The dominant air mass movement of the northwestern plains region is from north-west toward the south-east. The highlands provide a trip mechanism for low-passing clouds resulting in more rain than in the surrounding prairies. Eighteen to twenty inches of rainfall per year is not uncommon in the hills as contrasted to ten to twelve inches per year at stations on the plains to the north. With this additional rainfall, the hills support groves of white spruce, lodgepole pine and quaking aspen, along with mixed grass and fescue, which are atypical of the short-grass prairies in this sector of the northwestern plains. As might be expected, grey wooded forest, dark brown and brown soils are associated with this anomalous vegetation pattern. It supports a number of mammals and birds not commonly found in the adjacent prairie region.

HISTORY OF PROJECT

Dr. Lou Bayrock and Dr. John Westgate, formerly of the Alberta Research Council, discovered that during the Pleistocene Period, south-trending ice advanced, thinned and diverged around the plateau at the 4,500 foot elevation. The remaining 310 feet remained an unglaciated nunatak of about 80 square miles. During his 1965 survey in southern Alberta, Dr. Alan L. Bryan, of the University of Alberta, visited the Cypress Hills. He reasoned

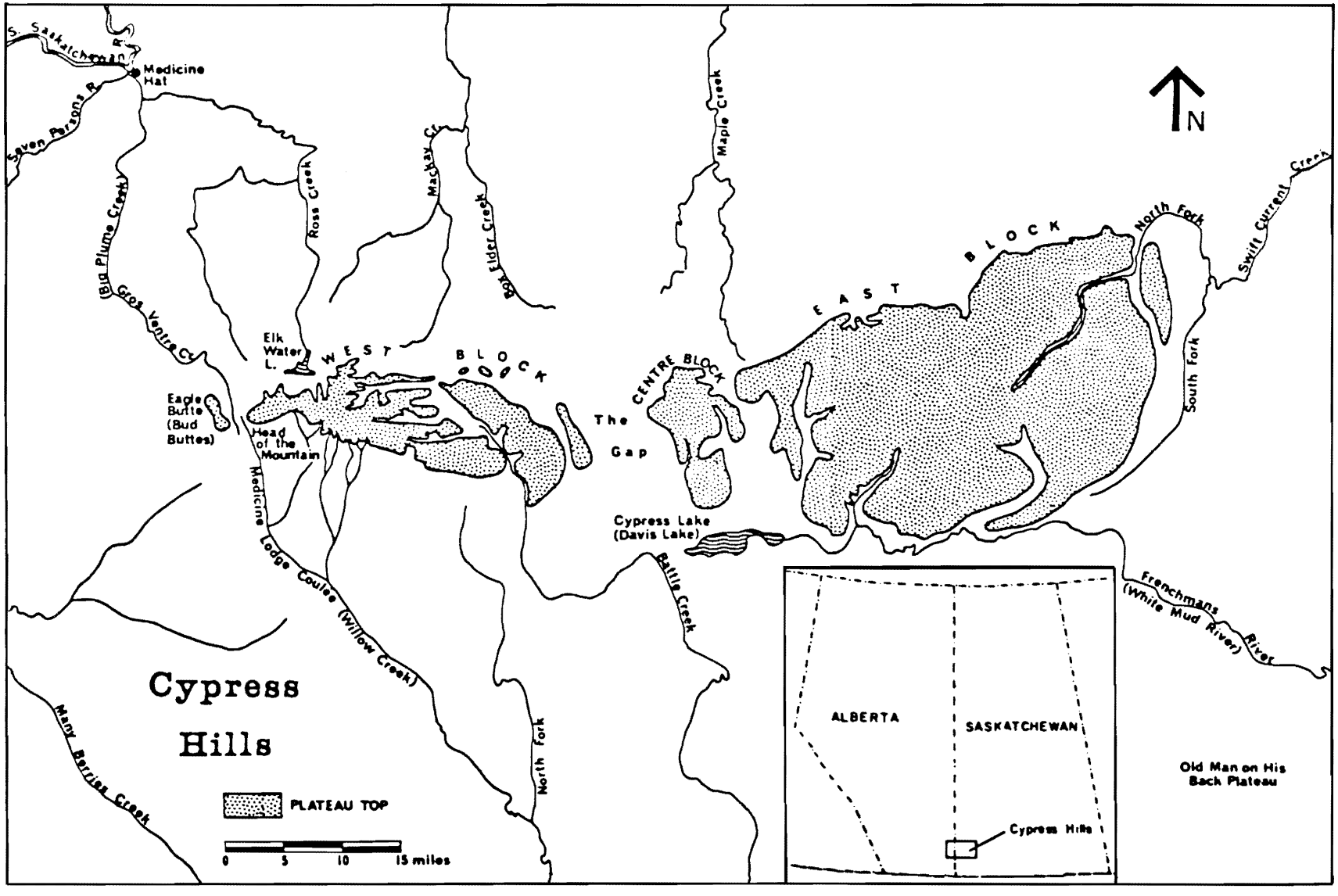

Figure 1: Map of the Cypress Hills area, Alberta-Saskatchewan.

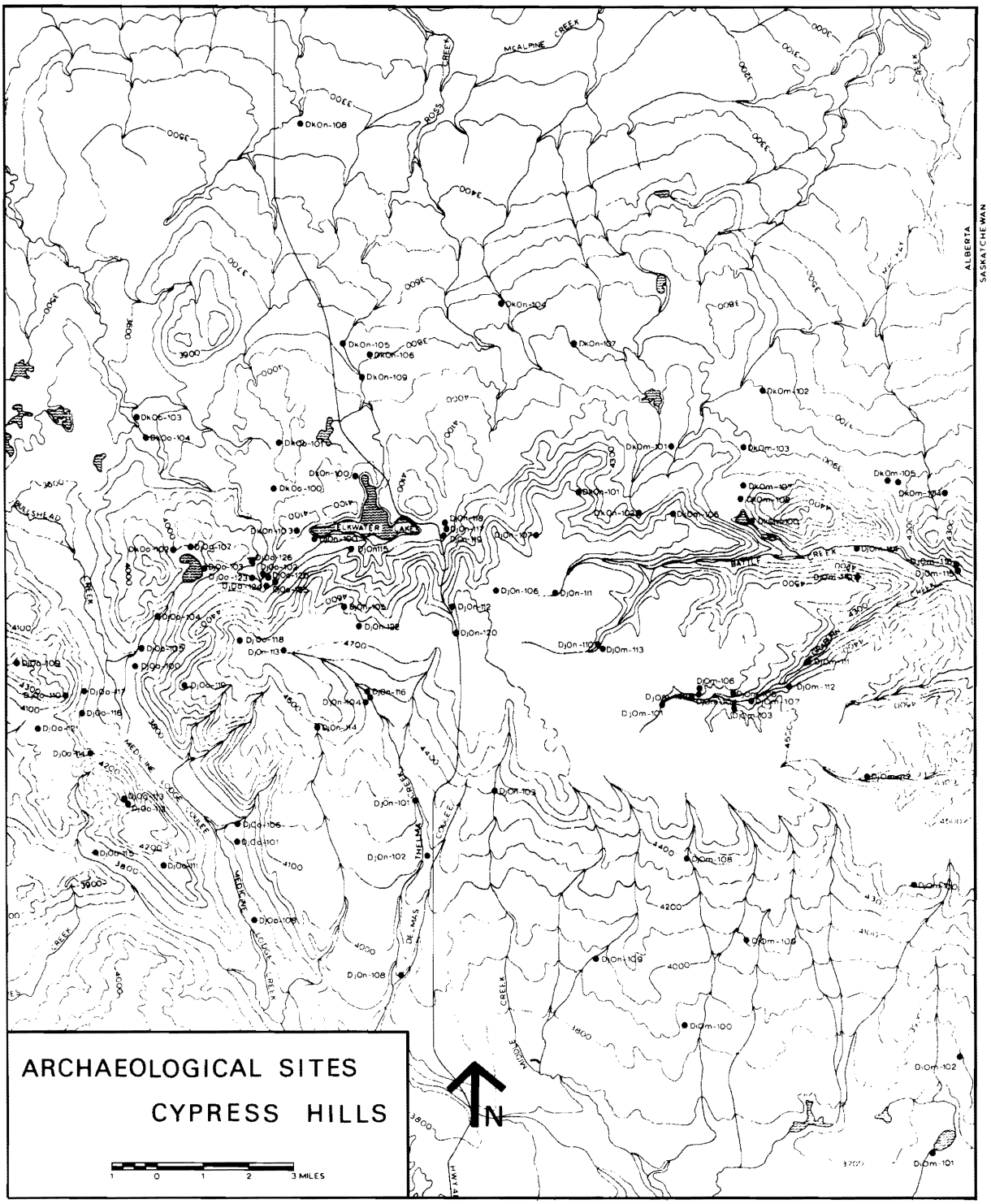

Figure 2: Map showing locations of known archaeological sites in the West Block of the Cypress Hills region.

that the Hills would provide an excellent region to search for the remains of early hominid activities as the area had not been glaciated. Although this initial survey did not result in the discovery of any early sites (several sites dating to the Holocene Period were discovered), Bryan felt that the Cypress Hills area had good potential for archaeological research. He suggested that one of us (Bonnichsen) undertake a field research program in the Cypress Hills area.

During the winter of 1965 and spring of 1966, a research program was initiated with the goals of discovering Early Man remains and developing a regional cultural-historical sequence for this poorly-known archaeological region. An intensive archaeological survey of the West Block was conducted in the spring of 1966 (Figure 2). The three-man survey team recorded over 90 sites, and an abundance of cobble tools such as had not been reported previously in the northwestern plains. However, no early man sites were discovered.

In an attempt to determine why the Cypress Hills archaeological data are atypical (compared to known bison jump sites, kill sites and projectile point sequences) it was decided to systematically investigate inter- and intra-site variability. It seemed probable that the variant archaeological assemblages represented aboriginal adaptation to environmental conditions in the Cypress Hills area. We designed a test excavation program with the goal in mind of developing a regional cultural sequence and of determining what kinds of adaptive patterns were represented by the sites and artifacts found on the survey.

Nine sites in different topographic and ecological positions were excavated during the summer of 1966. Major test excavations were conducted at the Kajewski Site (DjOo-102), Elkwater Lake Site (DjOn-100A), Last Site (DjOn-100B), Murray Hill Site (DjOo-118) and the South Battle Creek Site (DjOo-113); and single test pits were dug at the Nicholas Spring Site (DjOn-105), Willow Glen Site (DjOo-100) and the East Battle Creek Site (DjOm-114). During the subsequent summer of 1967, the month of June was spent excacating a Métis cabin site (DjOo-120); see Appendix 6 for site number conversions. W.E. Elliott continued excavations at the cabin site in 1968, gathering information for his Master's thesis (Elliot 1971). In

April 1967, heavy snowfall produced a meltwater flashflood which swept out of Grayburn Creek into the Battle Creek drainage, resulting in extensive bank erosion. We cleared the slumped banks of the East Battle Creek Site, exposing a deeply stratified site. In the following year, Alan Bryan and Ruth Gruhn returned to the site and conducted a major testing program in search of early man remains. No early material was disclosed during the excavation. Consequently, data recovered from this important stratigraphic section will be reported as a part of the data recovered from the Hills.

A considerable body of information was accumulated during the three years of fieldwork. However, in many respects, the fieldwork was the easy part of the project. Major intellectual problems were encountered at several points in the analysis which required solutions that were not immediately self-evident. Early in the project it was decided that the final reports should be written from a single theoretical viewpoint. Ultimately, a theoretical framework (focusing upon adaptation) was chosen for the interpretation of ethnohistoric, historical and prehistoric data. One of the most difficult problems has been how to anlyze the seemingly amorphous cobble-tool assemblages. Existing typological approaches currently in vogue in the plains area do not accommodate the range of variation represented by this kind of artifact. A sustained effort has been required to develop a theory and method for reconstructing tool-production and use-strategies from this kind of lithic remains (Bonnichsen 1974, Bonnichsen and Young 1979, this paper, and Bonnichsen: manuscript). With a set of theoretical and methodological tools in hand, efforts have now been turned to producing the long-awaited reports outlining the human adaptive patterns reflected by historical and prehistoric remains recovered from the Cypress Hills.

ORGANIZATION OF STUDY

The general plan for the presentation of the Cypress Hills data, is first to publish the historical, theoretical, and experimental data. Papers of this nature will then be used in subsequent publications for the analysis of the archaeological data.

The present study is organized into five major sections, including

Part I, this Introduction. In Part II, "Previous Theoretical Frameworks," a critical review of the culture area concept, is presented which sets the stage for the development of an alternative interpretive framework presented in Part III. The central hypothesis developed in Part III is that the isolated highlands (outlier ecosystems) had a significant role in the adaptive strategies of northwestern plains ethnic groups of the historical period. Part IV, "Ethnohistorical Data," presents ethnographic and historical information which outlines the kinds of activities conducted in outlier ecosystems (with special emphasis on the Cypress Hills). The study is concluded in Part V with a summary of the model employed, a synopsis of the activity patterns which are common to outlier ecosystems, and last but not least, the implications of these patterns for the interpretation of archaeological remains.

PREVIOUS THEORETICAL FRAMEWORKS

North American anthropologists have long been interested in interpreting culture in terms of environmental parameters. This interest developed from rather humble beginnings at the turn of the century. Large eastern museums commissioned their workers to collect rapidly-disappearing aboriginal material for their collections. As objects accumulated, it became necessary to devise organizational systems for categorizing specimens. Clark Wissler, one of these early workers (a geographer by training), helped formulate a system known as the culture area approach (Wissler 1923 and 1926). This system played a very significant role in the development of North American anthropology and is to some extent still important.

The culture area concept is interdisciplinary in that it draws on ideas originally developed within the fields of anthropology and ecology. Since certain ideas associated with the culture area concept are still common in the archaeological literature, we here undertake critical review of this approach. Methodological changes which have taken place in the field of ecology and which have ramifications for archaeological interpretations are also considered.

Early naturalists and anthropologists were confronted with very similar issues. Their problem in a poorly-known continent was how to organize a seemingly endless range of varying subject material into some kind of coherent framework. It is not surprising that fundamental time-space concepts cross-cut whole disciplines. Of particular interest here are parallel developments that took place in both ecology and anthropology.

McIntosh (1967) and Whittaker (1957, 1975) provide excellent summaries of the major theoretical trends in the discipline of ecology during the last fifty years. Two distinct trends are apparent and are known in their most polarized forms as the unit-association and the individualistic-continuum theories. The unit-association theory, predominant in ecological thought during the 1930's and 1940's, is sometimes also referred to as the "Clementsian system" after F.E. Clements, one of its early promoters. This theory is based upon the concept of an "association." An association is a distinct unit or assemblage of plant species which are always associated.

All the component species have similar geographical distributions with sharp boundaries between different associations. It is assumed that the association, named after the dominant species, is a natural unit which is observable in nature. A large unit, such as the North American grassland, is considered to be composed of two or more associations, e.g., Shortgrass (or Mixed Grass) association, and a Tallgrass association. These vegetation communities are considered to be indicators of the climatic conditions of a geographical area. The concept of succession is employed to explain change within association units. Communities are believed to have an organic life during which they arise, mature, reach adulthood and die. A series of stages have been defined to explain these vegetation growth changes, e.g. proclimax, disclimax, subclimax and climax-or adulthood. As Whittaker points out, one of the most significant characteristics of the system is the hierarchically-interconnected and interdependent components of the system, which imply a natural orderliness of vegetation (Whittaker 1957: 198).

Wissler (1923, 1926) proposed a system for explaining the distribution of cultural elements which is structured in an identical manner to the "Clementsian System." The basic units of Wissler's system are tribal groupings, culture traits, culture types and culture areas. Tribal groupings are to be discerned on the basis of outstanding characteristics such as political unity, speech uniformity and geographical continuity. The trait is a unit of tribal culture; it is traits (such as how fire is kindled) which are used to distinguish one tribal grouping from another. Traits usually do not occur as isolated entities but in a kind of a complex-- (e.g. head-hunting, totemism, couvade, growing of maize, sun worship, etc.). Culture types are tribal groupings which are very much alike in their trait complexes. Similar culture types are commonly grouped together into culture areas.

It is interesting to note that there is a very high correlation between the areas occupied by the Clementsian vegetation climaxes and the distribution of proposed culture areas. Specifically, Wissler (1926: 214-221) proposed a plains culture area based on the geographical coincidence of a set of trait complexes which characterize a "plains culture type" within

the Great Plains environment. He considered the extent of this culture area to be determined or limited by the coincident geographical ranges of bison and grassland. From this correlation, he made the following generalization: "In each case the basic resources chosen as the chief sustenance determined the extent of the culture type, or the distribution of the constituent traits" (1926: 221). Furthermore, the richest environmental area is the seat of cultural innovation (carried out by the most typical tribes in the center of the geographical area). The culture center is an important concept for explaining variance encountered in the culture area. Innovations diffuse outward from the center in a successional manner: the oldest traits and trait complexes are the furthest away from the center of innovation, and the youngest ones are closest.

Kroeber (1939) did not greatly modify Wissler's earlier view in his book "Cultural and Natural Areas of Native North America" but his view of cultural-environmental relationships is somewhat more developed. He felt that correlations may be found between the distribution of particular cultural patterns and environmental parameters such as physiography, natural vegetation, climate, water and drainage. Like Wissler, he considered all cultural elements to be derived from previous ones. He stated "the immediate causes of cultural phenomena are other cultural phenomena" (Kroeber 1939: 1). He also employed the concept of culture center and other ideas borrowed directly from the association-unit theory: "...the culture center ... (is the) district of greatest cultural productivity and richness. This obviously is the regional (spatial) expression of a culmination whose temporal manifestation is the climax" (Kroeber 1939: 5).

Regarding the identification and characterization of culture and culture areas, Kroeber argued against Wissler's trait lists and suggests the use of a concept known as <u>culture wholes</u>. Kroeber is not particularly clear on what he means by "culture wholes;" one interpretation is that they are coincident with the vegetation association and many ethnic groups may be encompassed within the boundaries of an association. He notes that he is not satisfied with the use of the culture area approach as there are problems of drawing boundaries. He avoids this problem by simply placing the name of each group in the middle of the geographical locality in which they resided.

Kroeber criticized Wissler's static view of the plains and argued in favor of a position that perceives plains culture as developing out of diverse pre-existing elements that are reintegrated through the catalyst of the horse. In pre-horse days, the plains were thought to be marginal to the more affluent agricultural areas of the Middle Missouri, the Southwest and the Caddoan agriculturalists of the southeast (Kroeber 1939: 78-79).

The Kroeber and Wissler views of the relationship between culture and environment can be subsumed under the term environmental possibilism (Vayda and Rapport 1968). A uniform Clementsian type of environment is viewed as limiting cultural possibilities and providing the stages for men to act out their histories.

Archaeologists were quick to capitalize on the theoretical foundations laid by these early ehtnographers. A matching set of terms was developed for the anlysis of archeological data. The following substitutions have been made: tribal groups have been replaced by the terms "component" and "assemblage"; the concept of trait has been replaced by the concept of "type"; and the idea of trait complex has been replaced by "phase." The idea of culture area has remained coincident (cf. Willey and Phillips 1955, Krieger 1944). It may be objected that the meaning of these terms is not exactly identical to their ethnographic counterparts, but the important point is that the analytical systems are structured in a similar manner and based on identical premises. In other words, this early scientific framework employed in the analysis of prehistoric cultural-environmental relationships is based on parallel, interdependent analytical models developed in ecology, ethnolgy and archaeology.

The crack in this analytical pyramid first appeared in the discipline of ecology. It developed out of a controversy between the unit-association and individualistic schools.

The basic premises of the individualistic school of thought was established by H.A. Gleason, L.G. Ramensky and others (Gleason 1926, Lenoble 1926 and Ramensky 1924), but it was not until the late 1940's that it gained widespread acceptance. The individualistic hypothesis suggests that

> "...each species responds uniquely to external factors and enters the community as an independent member and that there are no two species which relate themselves to environments and communities in quite the same way..." (Whittaker 1957: 199).

The continuum concept follows logically from the individualistic hypothesis. Since each plant species has a unique response to the environment (which implies a unique geographical distribution), there will be a continuum of plant communities "...in which species are distributed in a continuously shifting series of combinations and proportions in a definite sequence or pattern" (McIntosh 1967: 136).

In the field of ecology, the critical factors which brought about a shift in opinion from the association-unit theory to the individualistic-continuum school was not only a conceptual reorientation but also the development of a new quantitative technique. Whittaker pioneered what is known as gradient analysis. In concept it is a simple method. A straight line which crosses a vegetation unit is laid out. The length of the line can vary depending on the analyst's objectives. The composition of the vegetation along the transect is recorded by sampling at set transect intervals (Whittaker 1975). Through the use of this method Whittaker was able to demonstrate that sharp boundaries do not occur between vegetation units. Rather, there is a continuum of overlapping distributions. This important developments paved the way for modern ecology, which has broken out of the closed-systems approach and employes a dynamic open-systems model.

For the archaeologist these advances are important from several points of view. Perhaps the most important issue raised by the shift in the ecology discipline is the question of how analytical units are chosen. The problem of the association-unit concept is that it is based on intuitive, unsystematically-collected impressions of the observer. The analyst brings order to a vast array of observations by generalizing from subjective-normative impressions--a type of unquantified statistical evaluation. The ethnological units of trait, trait complex and culture type and the archaeological units of type, phase, etc., suffer from the same conceptual dilemma (Willey and Phillips 1958: 1-57). The problems connected with subjective-normative approaches have been widely discussed in the anthropological literature and need not be reiterated here other than to mention that a

major transformation began to take place in the discipline of anthropology during the decades of the 1950's and 1960's.

A fundamental consequence of these conceptual and methodological shifts is that the ecological foundation of the culture area approach has been dissolved. If sharp boundaries often do not exist between vegetation communities, likewise distinct, clear-cut boundaries do not necessarily occur between culture areas. Areas encompassed by boundaries are arbitrary constructs of the analyst and do not reflect natural units of investigation

Another related issue is that since vegetational units are not homogeneous, there is no reason to believe that associated cultural types have uniform characteristics. Steward (1955) was one of the first to question the concept of cultural relativism as applied to the culture area. This view holds that each area has an independent historical development which can be understood in its own terms. Such a view can be criticized as a closed-system orientation which does not give sufficient weight to outside influences.

Finally, the analogy between the individual life-cycles postulated to characterize both vegetation associations and cultures can be questioned. If each vegetation species is governed by independent parameters, there is no reason to believe that all species wll react simultaneously in the same manner. Rather, species should flourish in all contexts which favor their existence. Likewise, the same argument can be made for cultural patterns; they will be practiced in those milieus conducive to their existence Thus, variation in the natural environment provides a shifting array of contexts for the practice of cultural activities.

To summarize, many of the questions that have been reviewed in the preceding pages are not new. Nevertheless, archaeologists have been slow in generating a body of systematics that will replace the closed-system "culture area approach." In the following section an attempt is made to establish an alternative set of systematics for analyzing cultural/environmental relationships which can be employed in the analysis of data from historic and prehistoric contexts.

THEORETICAL FRAMEWORK

The goal undertaken in this section is the development of a theoretical framework for conceptualizing cultural/environmental relationships which can be used for the analysis of both ethnohistorical and archaeological data. Discussion is conducted under two headings: theoretical concepts and the working model. In the first section, the general ecological concepts of biome and ecosystem are defined and the anthropological idea of adaptation is discussed. These concepts are then employed in the development of a working model which is fleshed out by defining specific ecosystems and adaptive organizational units, e.g. ethnic groups in the northwestern plains research area. These analytical units provide the basis for promposal of an hypothesis and a research design which seeks to determine if the Cypress Hills ecologies had a significant role in the adaptive strategies of ethnic groups in the region.

THEORETICAL CONCEPTS

The central anthropological concept employed in the study is adaptation. This term has been defined in a variety of ways, affected by different theoretical frameworks, in both cultural and biological anthropology (Alland and McCay 1973). We use Bennett's (1976: 847-52) concept of adaptation as the key concept for integrating cultural and environmental relationships. He explained that the concept of adaptation focuses on how human actors attempt to realize objectives and satisfy needs while coping with societal and environmental conditions during their life-span. Human coping-behavior operates through the use of the cognitive perceptual process. Adaptive strategies are generated in terms of anticipated future conditons and are structured in the light of known past conditions. We do not deal with the question of the dynamics of how individuals generate strategies. The important point is that individuals and human groups, through socialization and personal observation, incorporate environmental parameters into their cognitive structure. These elements become building blocks for formulating adaptive strategies. Once the strategies are implemented, they enter into a dynamic interaction with the environment. As feed-back is commonly involved between the environmental variables and particular strategies,

such relationships can be characterized as forming dynamic open systems.

It is those strategies which have actually been implemented in the past which are of interest to the prehistorian. Through ethnoghistorical and archaeological research, our goal is to isolate and identify patterns which may be further interpreted in terms of known cultural and environmental variables.

In this study, two ecological units, the biome and the ecosystem, are used in analyzing the adaptive strategies of northwestern plains peoples.

> The biome is the largest land community unit which it is convenient to recognize. In a given biome the life form of the climatic climax vegetation...is uniform. Thus, the climax vegetation of dominant grasses may vary in different parts of the biome.... The biome includes not only the climatic climax vegetation, which is the key to recognition, but the edaphic climaxes and developmental stages as well, which in many cases are dominated by other life forms...all of the communities in a given climatic region, whether climax or not, are natural parts of the biome (Odum 1971: 378).

Individuals and groups enter into dynamic interaction within particular ecosystems. Basic resources are exploited in this ecological unit for the purpose of fulfilling basic needs. An ecosystem (ecological system) is an:

> ...unit that includes all of the organisms (i.e., the "community") in a given area interacting with the physical environment so that a flow of energy leads to clearly defined trophic (nourishment) structure, biotic diversity, and material cycles (i.e., exchange of materials between living and non-living parts) within the system... (Odum 1971: 8).

It should be stressed that an ecosystem is composed of both biotic (plant and animal) and non-biotic (geological and climatic) elements. It is this latter unit that is of greatest interest for the purpose of historical reconstruction as it provides a systematic spatial framework for examining human adaptive strategies within the grassland biome (Figure 3).

We do not consider the northwestern plains research area as a homogeneous grassland, but as a mosaic of different kinds of ecosystems exhibiting considerable diversity. Included are the grasslands, parklands, outlier ecosystems, foothill prairies, and rocky mountain ecosystems. The

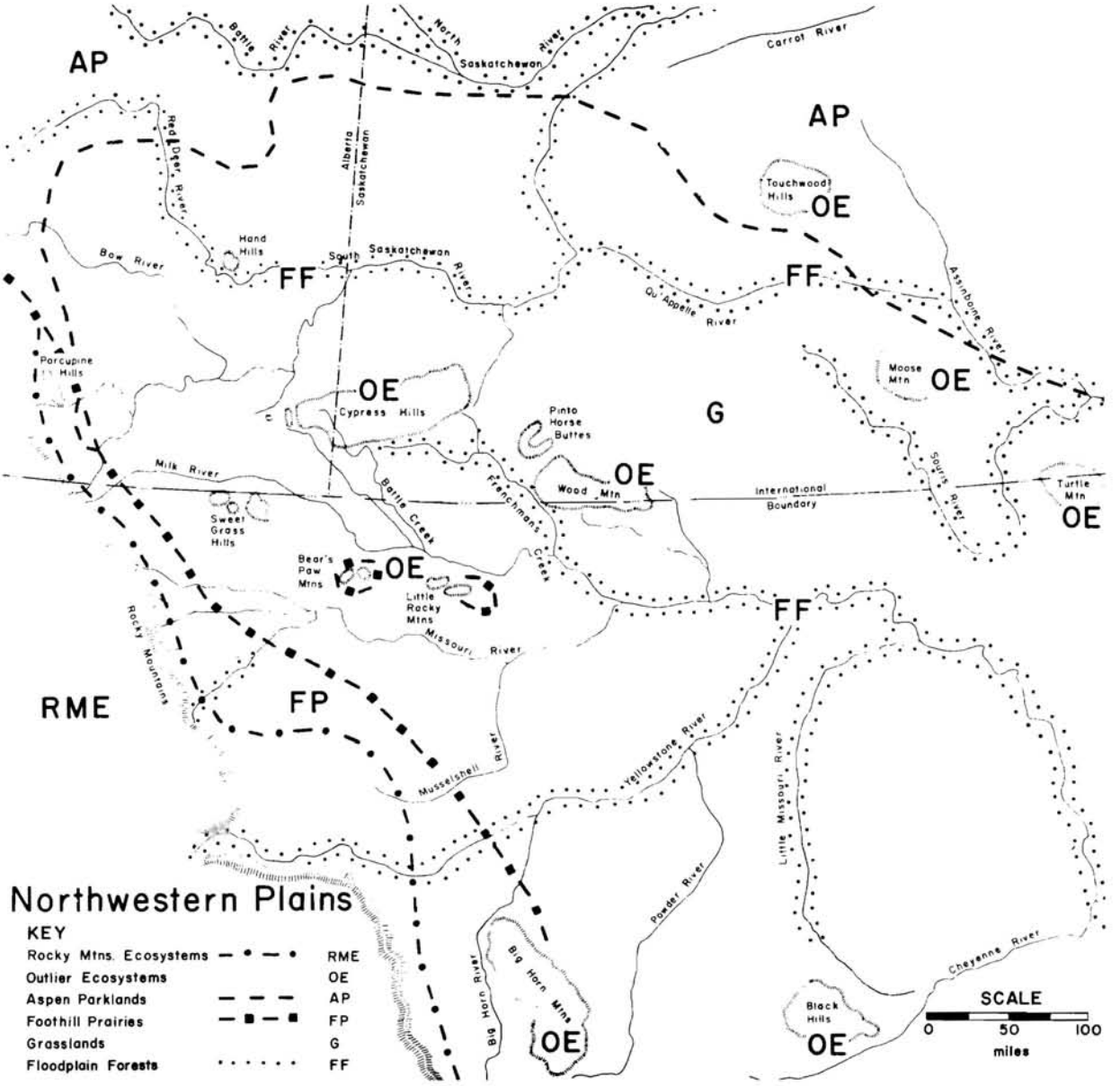

Figure 3 : Ecosystems in the Northwestern Plains (Compiled from: map published by Canada Department of Mines and Technical Surveys 1957, Kuchler 1964, Richards and Fung 1969, Weir and Matthews 1971).

grassland ecosystem consists of flat to rolling plains, covered primarily by short grass where agricultural disturbance has not yet occurred (Webb, Johnston and Soper 1967; Weaver and Albertson 1956). River valley ecosystems are characterized by incised, terraced river or stream valleys. They contain groves of trees, mostly Populus sp., and underbrush.

The aspen parkland ecosystem, typified by aspen, poplar, needlegrass and fescue prairie (Canada Department of Mines and Technical Surveys 1957: 38-39), serves to remind us that the boundaries between ecosystems are neither sharp nor absolute. As it is situated between the grassland and the boreal forest, the parkland is also known as an ecotone:

> An ecotone is a transition between two or more diverse communities as, for example, between forest and grassland.... It is a junction zone or tension belt which may have considerable linear extent but is narrower than the adjoining community areas themselves. The ecotonal community commonly contains many of the organisms of each of the overlapping communities and, in addition, organisms which are characteristic of and often restricted to the ecotone. Often, both the number of species and the population density of some of the species are greater in the ecotone than in communites flanking it. The tendency for increased variety and density at community junctions is known as the edge effect (Odum 1971: 157).

The parkland ecosystem of the Canadian prairie provinces could easily serve as an archetype of the ecotone concept. (See discussion in R. Bird (1956), Bird & Bird (1967).)

The foothill prairie ecosystems along the flanks of the Rocky Mountains are vegetated by Agopyroron, Festuca and Stipa (Kuchler 1964). Of most concern in this study are the outlying highlands (outliers) in the northern plains, which have two physiographic forms: a) plateaus, which are erosional remnants of plains, cut along the edges by deep erosional channels, and b) remnant volcanoes, laccoliths, anticlines and related positive features, characterized by broken, mountainous terrain. Many of the mountainous outliers, including the Sweet Grass Hills, the Bear Paw Mountains and the Little Rock Mountains are listed by Alden (1932: 3). The plateau outliers are represented by teh Cypress Hills and Wood Mountains.

Outliers are not only characterized by distinctive physiography, but

also by distinctive climate and ecologies. For example:

> The climate of the prairie area surrounding the Cypress Hills is characterized by relatively long, hot and dry summers, and cold, sharp winters. The effective precipitation is relatively low because of high evaporation rates induced by strong winds and low humidity (Holmes 1970: 160).

The outliers provide a significantly different picture. Commonly, they rise abruptly to a thousand feet or more above the surrounding region. Moist air masses advancing from the northwest are forced to rise as they approach the outliers' northern slopes, often resulting in orographic rainfall. This phenomenon has been specifically noted for the Sweet Grass Hills by Dawson (1975: 296). The higher altitudes also result in cooler temperatures, which in turn reduce the rate of evaporation. Consequently, springs are relatively abundant and creeks radiate out onto the prairies from each outlier.

These moist conditions support a relatively lush biota not found elsewhere on the prairies except in the river valleys. The elevated areas are usually forested. The plains immediately adjacent to the outliers receive the run-off, and they have lusher and greener grass throughout the growing season than is usual for the region. Nearby areas, such as Old Man on His Back Plateau, though much less elevated, are still sufficiently higher than the plains to receive a greater rainfall and support lusher grasses.

Although the highlands trigger similar climatic effects, each outlier should be considered a separate ecological system since plant and animal species and/or their distributions may not be identical. For instance, the Alpine Fir (Abies lasiocarpa) is common in the forests of the Sweet Grass Hills, but it is completely absent in the nearby Cypress Hills (Johnston 1970: 304; Breitung 1954).

In detail, the various outliers can be considered as distinct and individual ecosystems. However, since the ethnohistorical information available for any one outlier is fragmentary and incomplete, we have selected a "local group" of outliers, adjacent to and including the Cypress Hills, from which data are compiled in order to produce a more complete picture. Within this "local group", mountainous outliers are represented by the Sweet Grass Hills, Bear Paw Mountains and Little Rocky Mountains.

Geological studies of these outliers are found in Dawson (1875), Reeves (1924), Alden (1932), Parker (1953), Alpha (1955) and Knechtel (1959). Plateau outliers are represented by the Cypress Hills and Wood Mountain, geological studies of which will be found in Dawson (1875), McConnell (1885), Alden (1932), Parker (1953), and Zell and Weihmann (1965). Detailed climatological and ecological information is available only for the Cypress Hills (Holmes 1969, 1970; Breitung 1954; Zell and Weihmann 1965; Nalbach et al. 1971). A recent general study of northern plains climate is found in Longley (1972).

In late historic times (ca. A.D. 1800-1885), Indian groups in the norhtwestern plains were organized into two contrasting social-political patterns. These patterns can be called "autonomous bands" and "integrated bands."

"Autonomous bands," which characterized the Cree and Assiniboine, were relatively small groups of human beings (30 to 50 people, sometimes larger) composed of both nuclear and extended families, with a self-recognized unity symbolized by a "band leader." Each "autonomous band" was more than a social-political unit; it was also the basic unit of adaptation to the natural environment in that it generally moved across the landscape and exploited the environment as a coherent unit. Leadership was vested in the "band leader," a senior individual whose personal prestige as warrior, hunter, and "politician" attracted the loyalty of the other male family heads. That an "autonomous band" was an open system is seen in the dispersal of the membership of a band whose leader had lost his prestige and their attachment to various other bands whose leaders had maintained their status. Band membership thus was unstable and fluctuating.

"Integrated bands," characteristic of the Blackfoot (Blood, Peigan and Blackfoot proper) and Gros Ventre, were essentially groups of "autonomous bands" which recognized a higher and more formal authority structure. This higher structure (often termed the "tribal organization") consisted of a paramount chief, a council of band leaders and other respected personages, and a policing group (often called "dog soldiers") responsible to the paramount chief and council. For most of each year, the component "autonomous bands" went their own way, following their own individual band chiefs; the integration of these bands into a larger social-political unit only became

apparent at certain times of the year, as, for instance, during the Sun Dance ceremony (see Table 1) or on special occasions such as a treaty council with English, Canadian or American officials. That "integrated bands" were also open systems is indicated by known instances of individual bands changing affiliation from one group to another.

In both the ethnographic and historical literature, "autonomous bands" are referred to as "bands" with great consistency, although other terms occasionally appear. Of the Indian groups dealt with in this study, the Cree and Assiniboine "tribes" are characterized by the presence of "autonomous bands" and the lack of an integrating authority stucture above the band level. The groupings called "Cree" and "Assiniboine" are based on linguistic criteria, not on actual social-political units; indeed, within these groups were bands of mixed origin (see Sharrock 1974). The Métis, of mixed European and Indian origin, possessed a social-political structure similar in broad terms to that of the Cree. Basic ethnographic sources for the Cree, Assiniboine and Métis include Mandelbaum (1940), Denig (1930), Lowie (1909), Rodnick (1937), Rondeau (1923), Giraud (1945) and Rodney (1969).

"Integrated bands" are usually referred to as "tribes" in the ethnographic and historical literature, but the term "tribe" has been, and still is, commonly used for groupings based on purely linguistic criteria. These contradictory and confused usages have robbed the term "tribe" of its usefulness: for a recent discussion of this problem on the northern plains (see Sharrock 1974). "Integrated bands" represented in this study include the Blood, Peigan, Blackfoot proper, and Gros Ventre. Basic sources on these groups include Ewers (1955, 1958), Kroeber (1908), Flannery (1953) and Cooper (1957).

As all of the Indian groups mentioned are relatively recent arrivals on the northern plains, their social-political organizations can be seen as various traditional societies, originating in a variety of different social and natural environments, but now modified to a greater or lesser extent by the social and environmental circumstances of the northern plains (for a more extensive discussion see Oliver 1962). That two general patterns of social-political organization emerged and successfully co-existed

under the shifting and stressful conditions of the historical period on the northern plains (at least until the near-extinction of the bison) is indicative of the variety, resilience and adaptability of human societies.

The two patterns discussed above are sufficiently similar in basic organization and subsistence adaptation to render it improbable that their remains can be distinguished archaeologically. However, both patterns incorporate a similar distinctive seasonal round (Table 2), components of which should be distinguishable archaeologically. The seasonal rounds depicted in Table 2 are generalized summaries drawn from two specific sources; they can be seen to parallel each other closely, differeing for the most part only in detail. As the two seasonal rounds do not represent exhaustive lists of activities, but only those selected or emphasized by the two different authors, it must be stressed that differences in detail between the two seasonal rounds may be more apparent than real.

Given the above ecological and ethnographic concepts as the theoretical framework or background of our study, the task at hand is to develope a single general hypothesis and test it against a body of ethnohistorical data. It is hoped that this test will develop a series of ethnographic analogues of potential use in interpreting archaeological materials from outliers, particularly the excavated remains gathered from the Cypress Hills of Alberta between 1966-1968. The hypothesis is: Isolated highlands (outlier ecosystems) in the northwestern plains have a significant role in the adaptive strategies of ethnic groups. By limiting a research focus to an indepth understanding of the adaptive patterns occuring in a single ecosystem at a time, it may ultimately be possible to develop a more comprehensive regional picture that accommodates the observed ecological diversity. In attempting to test the above hypothesis, the schematic research design depicted in Table 1 was evolved during the course of the study. It is used for the purpose of organizing data presented in the next section and for isolating significant cultural patterns.

TABLE 1: Types of Activities Conducted in Outlier Ecosystems

Ethnic Group / Activities	Assiniboine	Blackfoot	Gros Ventre	Cree	Métis
Wintering					
Hunting					
Plant Collecting					
Vision Quest					
Other Activities					

A cautionary note should be added before passing on to the next section. Due to the imprecise nature of the historical record, we have been forced to lump information under the linguistically-defined Ethnic Groups, e.g., Cree, Assiniboine, Blackfoot (subsuming Blood, Peigan and Blackfoot proper), Gros Ventre, and Métis. Traders and explorers, whose writings form much of the original source data, frequently distinguished native groups solely in terms of linguistic affiliation. Thus, for the present, we are forced to accept the lowest common denominator present within the primary sources as the basis for sorting our data.

TABLE 2: COMPARISON OF PEIGAN AND PLAINS CREE SEASONAL ROUNDS

	PEIGAN (Ewers 1955: 123-129)	PLAINS CREE (Mandelbaum 1940: 203-204)
SPRING:	(L. March/E. April to L. May/E. June; 2 mo.). Bands abandon winter camps and separately follow and hunt bison; root digging.	(L. March to L. June; 3 mo.) Families abandon winter camps; fish weirs built; maple sugar collected; small groups follow and hunt bison.
SUMMER:	(L. May/E. June to L. Aug./E. Sept.; 3 mo.). Assembly of bands into tribal camp; tribal summer bison hunt; move of tribal camp to Sun Dance site; Sun Dance Ceremony (Aug.); dispersal of the bands.	
MID-SUMMER:		(L. June/E. July to Mid. or L. July; 1/2 to 1 mo.) Assembly of band segments or several bands into a Sun Dance camp; concerted bison hunts; dispersal of bands and band segments.
LATE SUMMER:		(L. July to E. Sept.; 1 to 1 1/2 mo.) Separate bands or families; no bison hunting; root digging.
FALL:	(L. Aug./E. Sept. to L. Oct./E. Nov.; 2 mo.) Fall bison hunting and berry collecting by separate bands - band camps follow bison.	(E. Sept. to L. Oct.; 2 mo.) Fall bison hunting by separate bands or families; some individual elk and deer hunting; berry collecting.
WINTER:	(L. Oct./E. Nov. to L. March/E. April; 5 mo.) Each band makes separate winter encampments; bison hunting, including use of jumps and pounds, in early winter or when weather permits.	
EARLY WINTER:		(L. Oct. to Jan. or Feb.; 2-3 mo.) Bison pounds constructed - convergence of families on successful bison pounds; some families leave to trap for Hudson Bay Company.
LATE WINTER:		(Jan. or Feb. to L. March; 2-3 mo.) Dispersal of families from pounds to winter camps; fishing; elk, deer hunting when weather permits.

ETHNOHISTORICAL DATA

The data presented in this section covers the period of time from A.D. 1800 to 1885. For the outlier of greatest interest, the Cypress Hills, there is no historical information preceding the beginning of the nineteenth century. Specific information remains rare until approximately A.D. 1850, after which date, the quantity -- if not always the quality -- of historical information greatly increases. We organize this data into two chronological sections: (a) A.D. 1800-1870, and (b) A.D. 1870-1885. The segregation of data from the last fifteen years, the latter time span, represents markedly shifting conditions in the Cypress Hills after 1870: the establishment of permanent European outposts, the rapid recession of the eastern and southern limits of the bison range towards the general area of the Cypress Hills, the near-extinction of the bison and its immediate consequences, and the termination of the free-ranging Indian life-style with the creation of constricting reserves and reservations.

Summaries and analyses of the historical trends and events on the northern plains during and previous to this paper's study period are readily available in a number of excellent sources, particularly Secoy (1953), Ray (1974), and Nelson (1973). Consequently, we concentrate on those historical and ethnographic data which illustrate specific activities of the Indians and Métis within the outlier ecosystems. We group these activities under headings such as "wintering," "hunting," "warfare," etc.

Before proceeding, certain biases in the data must be pointed out. First, there is a noticeable lack of information on activities sex-linked to women, e.g. "plant collecting." We suspect that the reason for this is a general disinterest on the part of men, both Indian and European, in "women's work."

Secondly, there are obvious biases within the historical record linked to the personal opinions and professional interests of the recorders. For example, fur traders of the Hudson's Bay Company approved the "industrious" fur-trapping activities of the Cree and their dependence upon European supplies, regretted the "indifference" to fur-trapping and the relative economic independence of the Blackfoot, and deplored the "destructive" and "disruptive" effects of Plains Indian warfare.

Finally, there is a great uneveness of reportage on activities within the various outliers produced by such factors as differential distance of outliers from European outposts, the non-recording of "common-place" and "everyday" activities, etc.

Data from the later ethnographic studies are also biased in that the early ethnographers tended to record idealized accounts of subsistence activities, etc. so that the full range of variability in such activities is often unknown.

Consequently, the picture of Indian and Métis activities presented herein is a minimal account which provides a mere outline or sketch of the past reality.

INDIAN ACTIVITIES IN OUTLIER ECOSYSTEMS, A.D. 1800 - 1870

Prior to 1870, four Indian groups habitually utilized the Cypress Hills. These included various autonomous bands of the Cree and Assiniboine, the Gros Ventre bands, the Blood bands, and some component bands and occasionally the whole of the Peigan integrated band. In addition, occasional small parties of Europeans (English, Canadians, and Americans) and other Indian groups (such as the Crow, Blackfoot proper, Arapaho, and various groups - such as the Kalispels - from west of the Rocky Mountains) passed through the area, but cannot be considered to have made habitual use of it. Appendix 4 lists the recorded presence of Indian groups in the Cypress Hills and the "local group" of outliers - Wood Mountain, Sweet Grass Hills, Little Rocky Mountains and Bear Paw Mountains as a supplement to the information here presented.

Wintering

At the beginning of a northern plains winter, Indian groups would seek out a location providing wood, water, horse pasturage and sheltering topography as the site for a winter camp. Such sites could be found in the river valleys, the foothills, the park lands and the outliers. The term "wintering", as used here, covers all of the activities engaged in by the Indians while based at a permanent or semi-permanent winter camp (Table 3, page 43). Bison, elk and other grassland-dwelling large animals also retreated into wooded areas during the winter and were customarily preyed

upon there by the Indians. Should ephemeral events (such as an autumn fire) render a location unsuitable for large animals during a particular winter, it would be avoided by the animals and their Indian dependents alike (see discussion in Moodie and Ray 1976). It is apparent, then, that a location or even a whole region which was occupied by winter camps one year might be deserted the next.

An Assiniboine legendary account (Kennedy 1961: 10-14) includes mention of the Waziyamwincasta (people of the North) band following "the buffaloes as far as the Cypress Hills, their winter campgrounds" and calls the Hills the Assiniboines' "winter home". V.F. Hayden, in referring to the Assiniboine, notes that:

> These bands [previously referred to by him as Gens du Lac, Gens des Roche, Gens des Filles, and Gens du Nord] commonly make their winter hunt near the Quaking Asp River [now called Poplar River or Creek], and along the stream, but when the weather permits them to travel over the unwooded plains, proceed as far north as the Cypress Mountains...(Hayden 1862: 388).

A source of much of Hayden's material was E.T. Denig, a fur trader on the Missouri. An account written by the latter writer in 1855 gives the same information, almost word for word, as in the above quotation (Ewers 1961: 82). It is significant to note that the "Gens du Nord" or Wah zé ab" listed by Denig and Hayden are the same band as the "Waziyamwincasta, People of the North" referred to in the legendary account given above. Issac Cowie makes the following comments during midwinter, 1867-1868:

> The Indians wintering in the wooded valleys of the mountains [Wood Mountain] were principally Assiniboine, and amongst them the Chieftain, Growing Thunder. They were living in abudnace, making occasional raids out to the open plains after buffalo...(Cowie 1913: 259).

Winter bison hunting, mentioned in the accounts above, was an activity restricted to periods of relatively good weather and thin snow-cover which permitted group hunting of bison; other game animals (such as moose, elk, deer, and antelope) tended to winter in the outliers as solitary individuals or, at best, in small groups. Usually they were sought by solitary hunters or small parties of men on snowshoes at times of heavy snow cover when the animals could easily be tracked and deep snow impeded their

effort to escape (Mandelbaum 1941: 198; Kennedy 1961: 117; Flannery 1953: 55).

Hunting

In the course of the remainder of a year's seasonal round, the Plains Indians lived in mobile camps which followed herds of big game or, when outdistanced by the moving animals, directed their movements towards likely hunting localities. Prominent among such localities were the outliers, where rivulets and springs fed by orographic rainfall produced lush pasturage for game on the plains immediately around the bases of the uplands. Such pasturage, especially during the dry month of August, could be counted upon to attract bison, elk, antelope, and their attendant predators. Most hunting accounts from the vicinity of outliers refer to the bison, reflecting the Indians' overriding concern with this game animal. Although seldom mentioned, many other animals were also hunted. Appendix 1 lists mammals, birds and fish present in the Cypress Hills and known to be utilized by the Indians.

Concerning one of the most famous of the outlier-associated hunting grounds, that surrounding the Sweet Grass Hills, Alexander Culbertson noted in 1870 that:

> ...the Indians...make the intervening valleys a frequent camping ground, owing to its abundance of game, particularly the buffalo. Big Horn with the antelope make this their favorite home. Unlike other localities in this vicinity, water and the best of feeding is plenty for wild animals...(Dempsey 1971: 11).

and John Mix Stanley produced a painting in 1853 showing Peigans hunting bison near the Sweet Grass Hills (reproduced in Ewers 1958: facing page 222).

In 1855 the Americans held a council on the Missouri River in an effort to "regularize" the boundaries of the Indian groups of the Upper Missouri region:

> These boundaries were drawn on a map which was shown to the chiefs. Alexander, the Pend d'Oreille (Kalispel) chief, objected to the provision prohibiting his tribe from hunting on the plains north of the Musselshell River. He asserted his ancestral right to hunt in that region, saying 'A long time ago our people used to hunt

> about the Three Buttes (Sweet Grass Hills) and the Blackfeet lived far north.' Little Dog, the Peigan chief, was inclined to let Alexander have his wish... (Ewers 1958: 211-218).

Cree hunting in and around the Cypress Hills and Wood Mountain is indicated for the band of She-mau-kâu (La Lance) which hunted "near and in the Cypress and Prickly Pear Mountains" (Hayden 1862: 237-238) and for the band of Ma-tâi-tai-ke-ok (Plusiers des Aigles, or Le Sonant) of "about 300 lodges who move and hunt the country along the Woody Mountains" (Ewers 1961: 110). An Assiniboine bison pound near Wood Mountain is mentioned in Kennedy (1961: 103-104).

Plant Collecting

There is only one account of plant collecting from the outliers: the ill-fated party of Cree, Assiniboine and Saulteaux young men who visited the Cypress Hills in 1868 to collect spruce gum, but were killed by the Blackfoot on their return journey (Cowie 1913: 304). Obviously this portion of the record is incomplete, given the well-documented gathering of plants for food, medicine and other purposes by the Plains Indians.

In order to fill in part of this gap in the historical record, we compare Breitung's (1954) list of current flora of the Cypress Hills with ethnographically-known uses of plants by the Blackfoot, Cree, Assiniboine and Gros Ventre (Appendix 2). A summary enumeration of species by use follows: Human Medicine (51 spp.), Horse Medicine (18 spp.), Food/Beverage (29 spp.), Horse Fodder (4 spp.), Incense/Perfume/Deodorant (10 spp.), Smoking (2 spp.), Dye/Paint (8 spp.), Structures/Furniture (6 spp.), Spice (5 spp.), Decoration (5 spp.), and Ceremonial (6 spp.).

In all, at least 62 different useful plant species were present in the Cypress Hills, some of which had several known uses. We can only assume that while Indian camps were present in the Cypress Hills the people, particularly the women, would venture out to gather plants. Among the Gros Ventre,

> Such additional foods were evidently of sufficient importance that the women occasionally ventured quite far from camp for berry-picking and root-digging expeditions, disregarding the very real danger of surprise by the enemy...(Flannery 1953: 60).

Mention should be made of the lodgepole pine: abundantly present in the Cypress Hills, it was undoubtedly a source of new lodgepoles for camps passing through the area. As Ewers (1955: 121) notes, outliers "furnished timber, found elsewhere only in the stream valleys and on the slopes of the Rockies."

Warfare and Scouting

The most frequently-mentioned Indian activities in the outliers are warfare and scouting. Their representation in the historical record seems disaproportionately large, probably because the often dramatic and bloody character of Plains Indian warfare, as well as the implicit (and sometimes explicit!) threat of its use against the European observer, led many fur traders and explorers to record it in great detail.

The wooded and elevated nature of the outliers provided both concealment and ready-made observation posts for war parties and, in case of military disaster, favorable terrain from which to stand off the enemy. Furthermore, given the conditions favouring hunting, camping and other activities in the outliers, war parties would be attracted to them when in search of an unsuspecting enemy camp. An excellent illustration of this is the story told by the Peigan Kai Otokan (Bear Head) to James Willard Schultz of the discovery and attack upon a Cree hunting party by Peigans in the Cypress Hills in 1865 (Schultz 1962: 290-294).

In 1866, a famous battle in the Cypress Hills between the Peigan on the one hand and the Gros Ventre and Crow on the other ended in a disastrous route of the latter. George Bird Grinnell (1895: 137-138) and James Willard Schultz (1962: 276-280) both record this event. According to Schultz' account, the leader of the Gros Ventre was a man named Sitting Woman, who was killed in the battle. This man is mentioned in the Fort Benton journal: "Sitting Woman, Sitting Squaw or Femmisee was a Gros Ventre chief. His father, who bore the same name, was killed in battle between the Gros Ventre and Assiniboines at the Cypress Mountains before 1853" (McDonnell 1940: 274-275). Apparently both father and son, at different times, lost their lives fighting in the Cypress Hills. Sanderson (1965: 13-14) records a story which mentions another occasion when the Gros Ventre, after an unsuccessful raid on the Blackfoot, took refuge in the timber of the

west end of the Cypress Hills.

The use of outliers for scouting the surrounding plains is well illustrated in the description given by W.A. Tinkman (U.S. Congress 1855: 288):

> Distinct from each other, and isolated from any mountain group, they [the Sweet Grass Hills] have been thrown up high above the surrounding country and have long served as the watch-towers and landmarks of the roving tribes ranging for a thousand miles distance north, south, east and west. Assiniboine, Crow, and Blackfeet, all know them well in their geography, and their summits are marked with their monumental stone heaps, and retain the ledges where some war party has waited the favorable moments to pounce upon the unguarded and isolated wanderers of the plain below.

The "monumental stone heaps" might have been fasting shelters, and the "ledges" were almost certainly war lodges such as Ewers described for the Blackfoot (Ewers 1968: 117-130). Schultz (1962: 325-327) records an account by Aiko Pitsu, a Peigan, of scouting for enemies from the top of the Hairy Cap, a peak in the Little Rocky Mountains, and the presence there of an old war lodge. However, scouting from the tops of outliers was also used for purposes other than war: "The Blackfoot Indians told Governor Stevens, 'Providence created the hills [Sweet Grass Hills] for the tribe to ascend and look for buffalo'" (McDonnell 1940: 250).

Sun Dance Ceremony

Sun Dance ceremonies were occasionally held in or near outliers, probably, in part, because of the presence in those localities of the necessary building materials for the lodge. This necessity for "great tall timber" is noted by Duvall (1904-1911: 878) and Wissler (1918: 253, footnote) for the Peigan.

Big Brave, a Peigan, made reference to a Sun Dance Ceremony of the mid-1860's:

> In the Green-Grass Moon [June] of that summer, Many Horses counselled with our medicine men and foremost warriors, and they decided that we should make our great, every summer offering to Sun this time at Divided Mountains (Cypress Hills, Alberta) (Schultz 1962: 276).

It may be that his particular ceremony was the one conducted by the

Peigan and Blood in the eastern portion of the Cypress Hills in July 1866, and whose encampment was attacked by the Crows and the Gros Ventre led by Sitting Woman.

Vision Quest

Elevated points, such as the outliers, would be utilized during the vision quest by the various Indian groups. Although no specific mention of this activity occurs for this early period, W.A. Tinkman noted some "monumental stone heaps" on the tops of the Sweet Grass Hills which may have been fasting shelters (U.S. Congress 1855: 228).

INDIAN AND MÉTIS ACTIVITIES IN OUTLIER ECOSYSTEMS, A.D. 1870-1885

During the 1870's, new groups entered the Cypress Hills with increasing frequency, to a great extent drawn there by the westward recession of the bison range. Prominent among these are the Métis and the Saulteaux, these latter appearing in the company of Cree and Assiniboine. A European presence was established in the Cypress Hills, first by American "whisky posts" and the temporary Hudson's Bay Company fur trade post at Eastend, then by the N.W.M.P. garrison of Fort Walsh which soon became the focus of a frontier settlement. Finally, in 1876, to the great unease of all previous habitues of the Cypress Hills and Wood Mountain, the Sioux, under Sitting Bull, passed north of the newly-established international boundary and established themselves along the southwestern skirts of Wood Mountain.

The European establishments in the Cypress Hills represent the appearance of new activities, including trade in furs and bison robes for European goods, and, after the disappearance of the bison, the distribution of Canadian government supplies to the Indians. Some activities declined: warfare, due to the peace-keeping efforts of the N.W.M.P., and bison hunting, due to the virtual extinction of the animal. The period terminated when the Indians were removed to reserves and reservations in Canada and the United States and because of the influx of ranchers and settlers.

Appendix 4 presents additional supplementary data on Indian activities in the Cypress Hills.

Wintering

The following Blackfoot account from the early 1870's suggests the extent to which intelligence of animal concentrations affected choice of wintering areas:

> Some were for going again to the Bear Paw Country; others suggested the Cypress Hills; but most were in favor of wintering on Judith River, as a war party of Pikunis [Peigans], recently returned from a raid upon the Crows, had reported plenty of buffalo from Arrow Creek to the Judith, and south of it to the Yellowstone (Schultz 1962: 27).

The presence of Métis hivernants (winterers) in the Cypress Hills and Wood Mountain in the 1870's is well attested historically, with the latter location being the best known Métis wintering area. It is possible that Métis wintering settlements may predate the 1870's at Wood Mountain since the Hudson's Bay Company maintained an establishment there (as an outpost of Qu'Appelle) in the 1860's. This could have served (as it did in the 1870's) as the focus of hivernant activity (Walter Trail in Atwood 1970: 56, Nelson 1973: 109). Be this as it may, the first account of an hivernant village at Wood Mountain was given for the year 1870 by the Oblate missionary J.M. Lestanc (1910: 15): "...there was there [at Wood Mountain] a large winter camp in whose vicinity more than a hundred families must have wintered."

A Métis settlement named Willow Bunch, at Wood Mountain, was noted by the N.W.M.P. in 1874 (Turner 1950: 123-124, 137-138, 181). George Mercer Dawson (1875: 293-294) described its situation:

> An important advantage of this plateau [Wood Mountain] is the existence along the edges of sheltered ravines and valleys, containing groves of poplar.... In one of these sheltered valleys, the half-breed settlement known as Wood Mountain [Willow Bunch] is situated. No cultivation of the ground has been attempted by the families frequenting the place, and its prosperous days are already over, as the buffalo, on which its existence depends, now [1874] rarely come so far east. It is, in fact, merely a base for a certain number of hunters and traders, who have found it convenient to erect wintering shanties there.

Finally, a detailed account of the Wood Mountain wintering area throughout the 1870's is given in Rondeau (1923).

The Cypress Hills winter settlements were not as well known as those of Wood Mountain. Elliott suggests that the Métis appeared in the Cypress Hills perhaps as early as 1868 (Elliott 1971: 70-71). "During the winter of 1875-1876, Wood Mountain and Milk River were almost completely abandoned by the Métis, who, following the bison, installed themselves at the Cypress Hills" (Rondeau 1923: 64). In 1879, passing mention is made of five Cypress Hills Métis settlements in the report of the N.W.M.P. commissioner (Canada, Department of the Interior 1880: Part 3, Paragraph 29).

Hunting and the End of the Bison

The period 1870-1885 is perhaps best characterized as that of the swift decline and near-extinction of the northern and last large herd of wild bison. As a result, important shifts occurred in animals hunted and localities visited, resulting in greater hunting pressure on the animal populations of the outliers.

Before this occurred, however, considerations of where bison were likely to congregate still heavily influenced Indian movements, as seen in the immigrant Sioux' choice of the area adjacent to the Wood Mountain outlier. This area was "rich with knee deep pasturage - a favourite grazing ground of the buffalo" and also had other outlier-associated advantages (Turner 1950: 330).

Giraud (1945: 820-821) has described the attractions of the outliers' other fauna for the Métis:

> The hivernants did not devote themselves solely to the pursuit of the bison.... [At] Turtle Mountain the streams which cut it were plentifully supplied with all varieties of fur-bearing animals, especially muskrats, and they offered to the Métis a resource supplementary to the large animals: bear, moose and deer. In other areas, equally well supplied with game, were formed centres for wintering which the Métis frequented in great numbers. These were on the banks of the Qu'Appelle River, on certain wooded buttes, such as Wood Mountain, the Touchwood Hills, and the Cypress Hills, which rose up out of the prairie and offered advantages comparable to Turtle Mountain, and on the rich grazing lands of the South Saskatchewan.

By 1974 the bison ranged no further east than the region between the Cypress Hills and Wood Mountain (Dawson 1975: 294), and by 1879 they were gone north of the "Medicine Line." In desperation and hope, many Indians headed towards the Cypress Hills:

> Tribal boundaries were a thing of the past. Indian bands and individual camps wandered this way and that, hoping that distant fields would provide relief from the ever-tightening privation pressing upon them. In this constant movement and intermingling, Fort Walsh and the vicinity were a lodestar of hope, an intermediary haven, a possible point of succour between north and south and east and west--in every sense the principal redezvous...of the Canadian plains.... Crees of the North Saskatchewan hearing stories of massed buffalo in the boundary country, Blackfoot camps in need and mindful that the headquarters of their red-coated friends might assist them, Assiniboine and Saulteaux ever on the move, as well as troubled and exasperated Sioux, all turned upon the slightest impulse towards the little citadel and trading centre in the Cypress Hills (Turner 1950: 453).

South of the border, in the vicinity of the other outliers, the bison persisted slightly longer, but by early 1883 this last herd was annihilated (Flannery 1953: 23).

Warfare and Scouting

There are fewer accounts of warfare from this period, probably (as noted above) due to the peace-keeping activites of the N.W.M.P. after 1874.

James Willard Schultz (1906: 52-53) gives an eyewitness account from the early 1870's, of scouting by a Peigan war party from the Hairy Cap, a peak in the Little Rocky Mountains; in addition, he reports the presence of six war lodges, some of them new, on the peak.

Apparently the Métis also joined in the Indians' internicene warfare. Dawson (1875: 296) makes this comment in 1874: "A few weeks before arrival, the half-breeds had been in the Cypress Hills, and had there assisted, or countenanced, the Sioux [he probably means Assiniboines] in a fight with the Blackfeet, in which eight of the latter tribe were killed."

Sun Dance Ceremony

A number of Sun Dance ceremonies associated with outliers are reported for this period. In the summer of 1878, the Assiniboine held a Sun

Dance in the Cypress Hills and the refugee Sioux are reported as having one at Wood Mountain in 1879 (Turner 1950: 394-395, 451). Morrow (1923: 38-40) and Michael (1948: 6) note locations in the Cypress Hills where Sun Dances were performed, probably in the 1870's and 1880's. Finally, Ewers (1955: 128) notes that "The neighborhood of the Sweet Grass Hills was a favorite site for the Peigan Sun Dance in late buffalo days...."

Vision Quests

John M. Cooper (1957: 275-276) notes Gros Ventre use of localities in the Bear Paw and Little Rocky Mountain in the vision quest.

Other Activities

A few other activities are reported from the outliers. The first is tree and scaffold burial, of which two reports are made: Sitting Bull and the remnants of the Sioux returned south of the border in 1881, and as noted by Turner (1950: 640):

> The only other traces of the once powerful aggregation under Sitting Bull were the many scaffolds supporting corpses on the hills [Wood Mountains] above the deserted camping ground. Incidentally, an order had been issued by the Mounted Police forbidding the disposal of deceased Indians other than in the ground....

For the Cypress Hills, Hope Hargrave Michael notes: "Some of the Indian graves up in trees have been found in the bush in quite recent years" (1948: 6). These burials might be Assiniboine or Gros Ventre, for whom the practice has been recorded (Lowie 1909: 41-42, Kroeber 1908: 181).

Second, and only a possible activity, is the collection of white clay (such as can be found in the White Mud Formation of the Cypress Hills) for the cleaning of buckskin by the Gros Ventre (Flannery 1953: 121).

Finally, the outliers were always used as landmarks by which the Indians could orient themselves, as is noted by Ewers for the Blackfoot (1955: 121).

Appendix 3 presents material on Indian legends and geographical terms relevant to the outliers.

THE "NEUTRAL GROUND" PROBLEM

During the past half-century, historical references to the Cypress Hills

often include a statement to the effect that prior to the intrusion of European outposts into the area the Hills were a "neutral ground" or "no-man's-land" between hostile "tribes" or confederations of Indians. Furthermore, it is usually stated that the Hills became a "natural game preserve" due to their borderline position (e.g., Gallup 1965, Bird & Halladay 1967: 122).

As far as can be determined, the original exponent of this view is Isaac Cowie (1913: 304), who writes:

> As far back as the memory and traditions of the Cree then living (1868) extended, these Cypress Hills...had been neutral ground between the many different warring tribes, south of the now marked international boundary, as well as the Crees and the Blackfeet and their friends. No Indians for hunting purposes ever set foot on the hills, whose wooded coulees and ravines became the undisturbed haunt of all kinds of game, and especially abounded in grizzly bears and the beautifully antlered and magnificent was-cay-sou, known variously by the English as red deer and elk. Only wary and watchful war parties of any tribe ever visited the hills....

Cowie then procedes to claim that the intrusion of Europeans (i.e., Cowie and party) broke the "neutrality" of the Hills and caused a depletion of the hitherto-protected game (1913: 437).

Cowie's "battle-ground only" thesis on Indian use of the Cypress Hills is easily disproven by reference to the data we have presented above, which indicates many other activities in addition to warfare; in particular hunting. However, the possibility that the Hills' position on the boundary between hostile groups may have decreased the "hunting pressure" on local animal populations must be explored further.

J.G. Nelson, although he notes that Cowie's statements are somewhat extravagant, did accept the latter's assessment of the effect of "neutral ground" on the animal population:

> ...there is considerable evidence to indicate that much of the Cypress Hills area was not under the overriding control of any one tribe during the years between 1800 and 1870 - and perhaps for a longer period. And like other neutral zones it was rich in wildlife, an important source of subsistence for all the surrounding people, an area not dominated by any one group

> long enough to come under the heavy hunting pressure that led to depletion (Nelson 1973: 111).

The phrase "other neutral zones" is a reference to Harold Hickerson's (1965) delineation of an intertribal "buffer zone" in Minnesota and Wisconsin which lay between the Sioux (Santee) and Chippewa (Ojibwa). Hickerson (1965: 45) states:

> The struggles of the Chippewa and Sioux over game resources, of which the deer was the most important for food, centered in the buffer. We shall see that warfare between members of the two tribes had the effect of preventing competing hunters from occupying the best game regions intensively enough to deplete the supply.

It is apparent that Nelson has taken Hickerson's demonstration of <u>one</u> instance of a conservation effect in a boundary area between hostile groups, and, with the support of Cowie's somewhat dubious opinion, applied it as a general principle to an area with a different cultural and environmental milieu.

We feel that this does not represent the situation in the Cypress Hills prior to 1870. One of the major objections to Nelson's idea is that the border area between the Blackfoot on the one hand and the Cree and Assiniboine on the other (the area included the Cypress Hills) was <u>not</u> deserted by hunters, as was the "buffer zone" between the Santee and Ojibwa. Secondly, this "neutral ground" was not a narrow strip like that described by Hickerson, but a broad belt at least a hundred miles wide (the length of the Cypress Hills) and possibly wider. Thirdly, the Cowie-Nelson conception of "neutral ground" smacks of the European concept of fixed borders and a deserted "no-man's-land' in between: in contrast, the Plains Indian concept of a "neutral ground" or border area is quite different. E.T. Denig, a fur trader on the Upper Missouri, writing in the mid-1850's, expressed the Indians' concept as follows:

> None of these prairie tribes claim a special right to any circumscribed or limited territory. Their arguments are these.... All the prairie or territory in the West (known to them) and now occupied by all the Indians was created by Wakoñda [Assiniboine creator] for their sole use and habitation.... All this is to prove their general right to the whole of the hunting grounds, where buffalo are to be found and Indians

> stationed. Now each nation finds themselves in possession of a portion of these lands, necessary for their preservation. They are therefore determined to keep them from aggression by every means in their power. Should the game fail, they have a right to hunt it in any of their enemies' country, in which they are able to protect themselves.
>
> It is not land or territory they seek in this but the means of subsistence, which every Indian deems himself entitled to, even should he be compelled to destroy his enemies or risk his own life to obtain it. Moreover, they are well aware that the surrounding nations would do the same and sweep them off entirely if they could. Possession is nothing without power to retain, and force to repel, and to defend with success they must limit themselves to a certain extent of territory, for by separating their force too widely they would be cut off in detail. By these different necessary locations the country has been parcelled out, each holding what they can with safety occupy, and making any encroachments they are able.
>
> ...From this view it would appear that their right to territory is nothing more than defending that portion on which they are located as necessary for their support. Invasion of another tribe's country would only be the consequences of famine or scarcity of game in their own and would be looked upon by them in the light of extending their hunting after the buffalo (which is the property of all Indians) into another part of the great plains intended by Wakonda for their support, being aware at the same time that they risk their lives by so doing. The foregoing are the outlines of the arguments they use. It is because they are at war that their lands appear to be distinct portions assigned to each nation, although between each there are several hundred miles of neutral ground, the nature of their forces not admitting of closer approximation.
>
> (Denig 1930: 476-478)

It is obvious from the above exposition of Indian "international law" that a "neutral ground" was any area frequented by mutually hostile hunting parties which were able to successfully defend themselves. That this was the case in practice as well as theory is born out by our historical data. Consequently, the concept of the Cypress Hills as a deserted "no-man's-land" must be discarded; indeed, if anything, the area should be called an "any-man's-land." Thus, the position of the Cypress Hills in a "neutral ground"

between hostile groups cannot be considered as a protection for the animal population. It might even be argued that the overlapping of several groups' hunting territories might have the opposite effect - one of increased hunting pressure. However, support of such an argument would go beyond the bounds of our present body of data.

SUMMARY AND ARCHAEOLOGICAL IMPLICATIONS

The interpretation of man's relationship with prehistoric environments and the explanation of the material remains found at archaeological sites must begin with an understanding of the present-day processes which govern human adaptation. The ethnic groups who resided in the northwestern plains research area during the contact period have undergone modernization. With few exceptions, the indigenous adaptive patterns employed by these native inhabitants are no longer practised. Consequently, it is impossible to make observations of ongoing cultural systems that can serve as an interpretive framework for explaining archaeological remains. Fortunately, ethnographers and historians have recorded selected aspects of aboriginal cultural patterns in this area.

The present study has been undertaken with the explicit objective of developing an interpretive framework for the analysis of prehistoric remains found during the Cypress Hills Archaeological Project. Over ninety sites were located in this area between 1966 and 1968. It became evident that the archaeological assemblages, dominated by a variety of cobble-tool implements, must in some way be related to the unique ecology and physiography of the Cypress Hills.

We decided that a cultural ecological approach would be well suited for investigating this kind of problem. Upon reviewing the northwestern plains literature, we discovered that the dominant culture area approach is inadequate for studies which seek to explain diversity.

The culture area approach employs a set of unified concepts derived from the fields of anthropology and ecology. In this paper, we describe problems first encountered by application of the unit-assocaation theory from the field of ecology. This approach calls for the definition of sharp boundaries between homogeneous areas. An alternative school of thought, known as the individualistic continuum school, may be advanced. This position holds that each species responds uniquely to external factors, and species are distributed in a continuously-shifting series of combinations. Through the use of gradient analysis, in which transects are sampled at set intervals, it can be demonstrated that sharp boundaries

do not occur between vegetation units. Instead, a continuum of overlapping distributions occur, negating the idea of clear-cut boundaries between natural vegetation units. This major shift in the discipline of ecology has undermined the rationale for drawing boundaries between culture areas. The boundaries of the vegetation associations and culture areas are arbitrary constructs which can not be empirically demonstrated. Rather than beginning with the assumption that culture and environment are locked into a closed homogenous system we are therefore interested in exploring the view that cultural-environmental relationships constitute an open-system which permits diversity.

In developing this point of view, we have selected for our analytical units the concepts of adaptation, biome and ecosystem. Adaptation is viewed as the way human actors attempt to realize objectives and satisfy needs while coping with social and environmental conditions during their life span. Adaptive strategies are formulated in reference to anticipated future conditions and structured in light of known past conditions. Individuals and human groups, through personal observation and socialization, incorporate environemntal variables into their cognitive structure. These images and categories become building blocks for formulating adaptive strategies in relation to the natural environment. When there is environmental variation, humans have the capability of governing their response to best fit the situation at hand. From a research point of view, this perspective calls for the explanation of both normative patterns as well as variation.

We used the ecosystem concept to subdivide the northwestern plains region into a series of smaller untis. Through examination of a series of published maps, six generalized ecosystems are here defined on the basis of variation in physiography and plant cover. It should be noted, however, that these ecosystems are not based on field studies in which energy exchange, nourishment levels and material exchange cycles have systematically been investigated. For this reason our ecosystems should be regarded as initial constructs. The types of ecosystems that we recognize in the northern plains research area include the Rocky Mountain, Aspen Parklands, Foothill Prairie, Grassland, Floodplain Forest and the Outlier ecosystems.

From the theoretical concepts of adaptation and ecosystem, we have derived a single hypothesis which has been used to guide our research. The hypothesis states that:

> Isolated highlands (outlier ecosystems) in the northwestern plains have played a significant role in the adaptive strategies of ethnic groups in the area.

We have attempted to test this hypothesis by searching the ethnographic and historical literature systematic to determine what activities were conducted, during the late historic period, in outliers such as the Cypress Hills, Sweet Grass Hills, Bear Paw Mountains, Wood Mountain, etc. This approach has resulted in the delineation of adaptive patterns which reflect fundamental principles of regional adaptation.

Although ethnographic information for the northwestern plains allows the delineation of two forms of human social organization, "autonomous bands" and "integrated bands" (see pp. 19-21, this paper), the distinction between them is too blurred in the historical literature to allow thier use as units of analysis. In their place we have used linguistically-defined "ethnic groups".

The activities pursued within the outlier ecosystems by the various ethnic groups between A.D. 1800 and 1885 are summarized in Table 3.

TABLE 3: SUMMARY OF ACTIVITIES ASSOCIATED WITH OUTLIERS

(grouped by activity for each outlier, X = before 1870, XX = after 1870)

CYPRESS HILLS

	Wintering	Hunting	Plant Collecting	War Scouting	Sun Dance	Burial
BLACKFOOT	XX	X XX		X XX	X XX	
CREE		X XX	X	X	XX	
GROS VENTRE				X		XX (?)
ASSINIBOINE	X	XX		X XX	XX	XX (?)
SIOUX		XX				
MÉTIS	XX	XX		XX		

WOOD MOUNTAIN

	Wintering	Hunting	Plant Collecting	War Scouting	Sun Dance	Burial
CREE		X				
ASSINIBOINE	X	X				
SIOUX	XX	XX			XX	XX
MÉTIS	XX	XX				

Continuation - Table 3: Summary of Activities Associated With Outliers

SWEET GRASS HILLS

	Wintering	Hunting	Plant Collecting	War Scouting	Sun Dance	Burial	Vision Quest
BLACKFOOT		X		X	XX		
CREE				X			
ASSINIBOINE				X			
UNSPECIFIED		X		X(?)			

BEAR PAW MOUNTAINS

	Wintering	Hunting	Plant Collecting	War Scouting	Sun Dance	Burial	Vision Quest
BLACKFOOT	XX						
GROS VENTRE		XX					XX (?)

LITTLE ROCKY MOUNTAINS

	Wintering	Hunting	Plant Collecting	War Scouting	Sun Dance	Burial	Vision Quest
BLACKFOOT				X XX			
GROS VENTRE							XX (?)

All of the activities have been recorded for the Cypress Hills with the sole exception of the vision quest. The lack of warfare at Wood Mountain follows from its position deep within the home territories of the Allied Cree and Assiniboine. Otherwise, the uneven distribution of activities between outliers is probably a result of lacunae in the historical records.

From these activities emerge five adaptive patterns associated with outlier ecosystems:

1. subsistence activities: animal hunting and plant collecting;
2. residence: wintering and transient camping;
3. religious activities: sun dance ceremonies and vision quests;
4. warfare; and
5. burial.

Of these, burial must be considered incidental in that the death of an individual was not an event "scheduled" for occurrence within the outliers. However, the events (activities) composing the other adaptive patterns could be scheduled to occur within the outliers within the appropriate season. Such seasonal scheduling is illustrated in Table 4, where human activity in the outliers can be seen to fall into three annual phases: a) winter, b) spring, and c) summer and autumn.

Winter: characterized by the abandonment of the grasslands by game animals and their concentration in wooded ecosystems such as the outliers; these animal concentrations attracted human groups, as did the presence of wood, water, horse pasturage, and sheltering topography: highest seasonal concentration of human beings in outliers.

Spring: characterized by the abandonment by game animals of wooded ecosystems (which retain snow and cold longer) in favour of the grasslands; human groups also abandon wooded ecosystems in order to follow the game: lowest seasonal concentration of human beings in outliers.

Summer and Autumn: characterized by gradual drying out of grasslands culminating in the hot, dry month of August: game animals gradually reconcentrate towards wooded ecosystems in search of lusher pasturage; late summer and early autumn fires render some locations unsuitable for wintering purposes; human groups concentrate near wooded ecosystems in July for

TABLE 4: SEASONAL USE OF OUTLIERS

WINTER	SPRING	SUMMER	AUTUMN
Winter Camps - (semi-permanent use of wood, water, pasturage, sheltering, topography)	Transient Camping - (use of wood, water, pasturage)	Transient Camping	Transient Camping
Communal Bison Hunting (when weather permits)		Communal Bison Hunting	Communal Bison Hunting
Solitary Hunting		Berry Collecting (summer fruits)	Berry Collecting (autumn fruits)
		Sun Dance Ceremony (building materials)	
	Warfare and Scouting (concealment, lookout points)	Warfare and Scouting (attacks on summer camps of enemy)	Warfare and Scouting (attacks on autumn camps of enemy)

Sun Dance Ceremony, disperse during August (bison rutting season; other animals hunted), berry-collecting in wooded ecosystems during early summer and late autumn: variable concentrations of human beings in outliers.

The seasonal scheduling of activities discussed above should be compared to the generalized seasonal rounds given in Table 2 (page 23). It is apparent that all of the adaptive patterns associated with outlier ecosystems cross-cut other ecosystems of the northwestern plains. This reveals the basic adaptive strategy of northwestern plains ethnic groups: the exploitation of seasonal plant and animal resources when and where they are available. The means whereby this strategy is realized is the nomadic band, which forms the basis of both forms of northwestern plains social organization.

However, a corollary of this basic adaptive strategy is the exploitation of human (social) resources. These resources -- kinship ties, friendships, status distinctions, etc. -- are critical in obtaining the aid, cooperation, information, marital and religious exchanges necessary between the nomadic bands if the basic adaptive strategy is to succeed, and they must be renewed periodically. This is the underlying rationale for the midsummer Sun Dance encampment and other lesser gatherings, which, like other critical activities, must be scheduled into the seasonal round.

Furthermore, during the late historic period, northwestern plains ethnic groups came to rely increasingly upon the European trade-gun for hunting and defense. This necessitated periodic trips to European trading posts for powder, shot, gun parts and repairs, and new guns. As these European posts were usually geographically restricted to two long chains lying along the north branch of the Saskatchewan River and along the Missouri River, the schedule of seasonal activities had to be arranged so as to bring the individual bands eventually within trading distance of one or another of the European posts.

Variations in seasonal rounds -- i.e., in activities and their scheduling -- occurred between ethnic groups (Table 1). For instance, the Blackfoot were prejudiced against eating birds and fish whereas the Cree would consume both (Appendix 1), with concomitant differences in subsistence activities, localities visited, etc. Such a range of variation within adaptive patterns

serves as a pointed reminder that we are dealing with open systems in which selection among available options is to be expected.

Before leaving the subject of scheduling and seasonal rounds we should note that the varied physiography and plant communities of the outlier ecosystems seem to offer the greatest variety present within any one kind of ecosystem in the northwestern plains. Thus, the great variety of recorded human activities present therein can be seen as confirmation of our initial hypothesis: that outlier ecosystems have played a significant role in the adaptive strategies of ethnic groups of the northwestern plains.

With regard to the archaeological implications of our data, we must first stress an all-important difference between the prehistoric and historical peoples of the northwestern plains: the mode of transportation. The prehistoric inhabitant of the northwestern plains is generally agreed to have been a pedestrian hunter-and-gatherer, there being no indications of an agricultural mode of subsistence and no native domestic animals larger than a dog in precolumbian times. In contrast, the historically known hunters-and-gatherers, particularly those of late historical times (ca. A.D. 1800-1885), relied heavily upon the horse as a mode of transportation -- both while hunting and while moving camp. Given the superior strength, endurance and speed of the horse as a traction animal as compared to a dog or human being, it may be assumed that the historical peoples were able to move larger and better-equipped camps over greater distances each day and for more extended periods of steady travel than their prehistoric counterparts. Thus, historic peoples were much better prepared to implement an adaptive strategy of seasonal resource exploitation through nomadic cross-cutting of a number of ecosystems.

Given a more restricted sphere and rate of travel for the prehistoric pedestrians, two alternative adaptive strategies suggest themselves:

First, a less-secure version of the historical adaptive strategy, in which nomadic camps would cross-cut ecosystems in order to exploit seasonally available resources. This would require tighter scheduling than among the historical groups: a restricted sphere of movement and greater travel time would result in fewer options. This would mean fewer possible deviations from a

set seasonal round. Such a strategy would be extremely sensitive to scheduling mistakes or ephemeral natural events upsetting anticipated conditions. Consequently -- to speculate -- safety mechanisms such as intensive and widespread reciprocal relationships between human groups would be of greater importance than among historical peoples.

The alternative strategy would be the use of stationary, semi-permanent camps located in the wooded ecosystems (near reliable sources of wood and water) throughout the year. This would free hunters to travel, lightly-equipped in any direction in search of game. Solitary kills could be brought back to camp while communal kills (such as would occur at bison jumps) would cause temporary movement of the camp to the killsite. Such communal kills could also supply the means and occasion for sharing with less fortunate camps, which would confirm and solidify reciprocal ties between groups and provide the occasions for social and religious activities.

In both cases, outliers would be favoured as camping areas, due to their greater diversity of resources within a small geographical area as compared to other ecosystems. We would expect, then, to find high concentrations of archaeological sites -- primarily camp-sites -- in the outliers. Only with close study of the remains at individual sites and their location in relation to water sources, sheltering topography, etc., can archaeologists hope to determine such factors as season and duration of occupation. It should be noted that individual campsites are unlikely to represent the full annual round of activities; indeed, should nomadic camps be the prehistoric settlement pattern, a full annual record is unlikely to be present within any one ecosystem. Finally, care will have to be taken to integrate paleoecological information into any archaeological interpretation, since differing ecological conditions in the past could render invalid incautious applications of ethnohistorical analogy.

In summary, ethnographic and historical data reveal a wide range of activities conducted by historical ethnic groups within outlier ecosystems. These activities form parts of adaptive patterns, such as subsistence, residence, religious activities and warfare, which are restricted to certain seasons. A basic adaptive strategy of exploitation of seasonal natural resources through nomadic cross-cutting of a variety of ecosystems is revealed

for the northwestern plains in the late historical period. Within this strategy, outlier ecosystems played a prominent role. Prehistorically, a different transportation mode suggests two possible adaptive strategies, both of which imply a prominent role for the outlier ecosystems.

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APPENDIX 1: UTILIZATION OF ANIMAL SPECIES

TABLE 1.1: MAMMALS, BIRDS AND FISH IN CYPRESS HILLS KNOWN TO BE UTILIZED BY INDIANS

Data abstracted from:

(For mammals) Nalbach et al 1971, Halladay 1965, Ewers 1958, Mandelbaum 1941, Denig 1930, Saskatchewan, Department of Natural Resources 1961.

(For birds and Fish) Godfrey 1950, Elliott 1971, Mandelbaum 1941, Flannery 1953, Ewers 1958, Denig 1930.

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
MAMMALS:					
Ursus arctos horribilis	Grizzly Bear	Claws for Necklaces	Food	Food	Food
Castor canadensis	Beaver		Food	Food	Food
Eutamias minimas	Chipmunk		Food		
Citellus spp.	Ground Squirrel "Gopher"		Food	Food	Food
Lepus spp.	Rabbit		Food	Food	Food
Mephitis mephitis	Skunk		Food		Food
Erethizon dorsatum	Porcupine		Food	Food	Food
Canis latrans	Coyote		Food	Food(young)	
Canis lupus	Wolf		Food	Food(young)	
Vulpes spp.	Fox		Food		Food
Vulpes velox	Kit Fox		Food		
Mustela vison	Mink		Food		Food
Lynx canadensis	Lynx		Food		Food

Continuation - Table 1.1: Mammals, Birds and Fish in Cypress Hills Known to be Utilized by Indians

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
Bison bison	Bison:"Buffalo"	Food, clothing, shelter.	Food, clothing, shelter.	Food, clothing, shelter.	Food, clothing, shelter.
Cervus canadensis	Elk	Food	Food	Food	Food
Odocoileus spp.	Deer	Food	Food	Food	Food
Antilocapra americana	Pronghorn Antelope	Food	Food	Food	Food
		At least 4 species for food; 1 for clothing; 1 for shelter; 1 for ornamentation.	At least 17 species for food; 1 for clothing; 1 for shelter.	At least 11 species for food; 1 for clothing; 1 for shelter.	At least 14 species for food; 1 for clothing; 1 for shelter.
BIRDS:					
Pelecanus erythrorhynchos Gmelin	Pelican				Food
Cygnus columbianus	Swans		Food		
Anas platyrhynchos Linnaeus	Common Mallard		Food		
A. acuta tzitzihoa Vieillot	Pintail		Food		
	Geese			Food	Food
	Eagles	Feathers for decoration.	Food		
Falco sparverius sparverius Linnaeus	Eastern Sparrow Hawk		Food		

Continuation - Table 1.1: Mammals, Birds and Fish in Cypress Hills Known to be Utilized by Indians

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
	Cranes				Food
Numenius americanus parus Bishop	Curlews			Food	
	Owls		Food		Food
Pica pica hudsonia	Magpies		Food		Food
Corvus coraxprincipalis Ridgway	Ravens		Food (young only)		Food
Corvus brachyrhynchos	Crows		Food (young only)		Food
		Prejudiced against eating birds.			
		At least 1 species for ornamentation.	At least 9 species for food.	At least 2 species for for food.	At least 7 species for for food.
FISH:					
Esox lucius spp.	Northern Pike, Jackfish, Yellow Head.		Food		
		Prejudiced against eating fish.			

APPENDIX 2: UTILIZATION OF PLANT SPECIES

TABLE 2.1: INDIAN USES OF PLANTS FOUND IN THE CYPRESS HILLS

Data abstracted from:

Breitung 1954, Denig 1930, Flannery 1953, Hellson & Gadd 1974, Johnston 1970, Lowie 1935, Mandelbaum 1940.

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
EQUISITACEAE					
Equisetum arvense L.	Common or field horsetail.	Human medicine; horse medicine; Fall-Winter horse fodder; "dye"; manufacturing.			
SELAGINELLACEAE					
Selaginella densa Rydb.		Human medicine; horse medicine; meat spice.			
PINACEAE					
Juniperus spp.	Juniper; "cedar"	needles, roots: human medicine. berries: decoration.		needles: incense berries: medicine	
J. horizontalis Moench	Creeping juniper	roots: horse medicine. branches: shelters; carpeting; ceremonial. sprigs: ceremonial.			

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
Picea spp.	Spruce		gum: chewing (use by Indians in Cypress Hills is documented)	gum: chewing	
Pinus spp.	Pine			Lodge poles	
P. contorta Dougl. var. *latifolia* Engelm.	Lodgepole pines; "jackpine", "cypress"	gum: human medicine; chewed; glue; water-proofing. wood: lodge poles; travois poles; furniture; windchimes; bowls. Sticks: story-sticks; fasteners.			
GRAMINEAE					
Hierochloe odorata (L.) Wahl.	Sweet grass	incense; perfume; human medicine; ceremonial.			
LILIACEAE					
Allium spp.	Wild Onions	Bulbs: human medicine; horse medicine; food; deordorant; manufacturing.		bulbs: food	

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
Disporum trachycarpum S. Wats.	Fairy bells; rough-fruited	bark, seeds: human medicine. berries: food.			
SALICACEAE					
Populus spp.	Poplars	wood: ceremonial lodge centrepoles; whistles. bark: human medicine; winter horse fodder; food.			bark: food.
Salix spp.	Willows	wood: sweat lodges; whistles; furniture. galls: incense; food. roots: human medicine; horse medicine. bark: food.			wood: furniture
BETULACEAE					
Betula occidentalis Hook.	Water Birch	wood: sweat lodges.			
RANUNCULACEAE					
Actaea rubra forma neglecta (Gillman) Robins.	White Baneberry	horse medicine			
A. rubra (Ait.) Willd.	Red Baneberry	human medicine			
A. arguta (Nutt.) Hult.					

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
Anemone multifida Poir. var. richardsoniana Fern.	Anemone	human medicine			
A. patens [Pulsatilla ludoviciana (Nutt.) Heller]					
Clematis verticillaris DC. var. columbiana (Nutt.) A. Gray	Purple Clematis	human medicine			
Delphinium bicolor Nutt.	Delphinium (Low Larkspur)	plant: human medicine; shampoo. Flowers: dye			
Thalictrum occidentale A. Gray	Meadow Rue	seeds: human medicine. fruit: meat spice; deodorant; perfume.			
CRUCIFERAE					
Draba incerta	Mustard	human medicine			
SAXIFRAGACEAE					
Heuchera spp.	Alum-root	horse medicine			
Ribes spp.	Currant; gooseberry	berries: human medicine	berries: food	berries: food	berries: food
R. aureum Pursh	Golden Currant	berries: food			
R. oxyacanthoides L.	Wild gooseberry	berries: food			

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
ROSACEAE					
Amelanchier alnifolia Nutt.	Saskatoon: serviceberry, sarvisberry, juneberry.	berries: food ceremonial; human medicine leaves: food	berries: food	berries: food	berries: food
Crataegus spp.	Hawthorn				berries: food
C. chrysocarpa Ashe		berries: human medicine; food			
Fragaria spp.	Strawberry	human medicine			
Geum triflorum Pursh var. ciliatum (Pursh) Fassett	Old Man's Whiskers Three Flower Avens Prairie Smoke	root, plant: human medicine.			
Potentilla anserina L.	Silverweed	root, plant: human medicine. runners: cordage.			
P. fruticosa L.	Shrubby Cinquefoil	leaves: deodorant; meat spice; pillow stuffing.			
Prunus virginiana L. var. melanocarpa A. Nels.	Chokecherry	berries: food human medicine bark: human medicine. sticks: meat spice. wood: furniture; tongs, skewers.	berries: food	berries: food	berries: food

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
Rosa spp.	Wild roses	berries: food	berries: food	berries medicinal buds: food. berries: food	buds: food
Rubus parviflorus Nutt.	Red raspberry	berries: food human medicine; dye.	berries: food	berries: food	
LEGUMINOSAE					
Astragalus canadensis L.	Canadian milk vetch	root: human medicine, food			
Glycyrrhiza lepidota (Nutt.) Pursh	Wild licorice	root: human medicine, horse medicine, burrs: used against thirst			
Lupinus spp.	Lupine	leaves: incense; ceremonial; human medicine; horse medicine.			
Psoralea esculenta Pursh	Indian bread-fruit; "wild turnip"; pomme blanche.	roots: human medicine; food; ornamental.	roots: food.	roots: food	roots: food
Thermopsis rhombifolia (Nutt.) Richards	Golden Bean	flowers: paint			

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
GERANIACEAE					
Geranium viscosissimum Fisch. Mey.	Sticky Purple Geranium	leaves: human medicine; deodorant.			
VIOLACEAE					
Viola adunca Smith	Early Blue Violet	leaves, roots: human medicine; plant: dye.			
ACERACEAE					
Acer negundo L.	Manitoba maple; "box elder".		sap: food		
CACTACEAE					
Mamillaria vivipara (Nutt.) Haw.	Pincushion; ball cactus.	fruit: human medicine; food. seeds: human medicine plant: practical jokes.	fruit: food		
ELEAGNACEAE					
Eleagnus commutata Bernh.	Silverberry; wolf willow.	bark: human medicine. berries: food; decoration			
Shepherdia argentea (Nutt.)	Thorny buffaloberry; graisse de boeuf	berries: human medicine; food			berries: food

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAMES	ENGLISH NAMES	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
Shepherdia canadensis (L.) Nutt.	Canadian Buffalo-berry.	berries: food			
ONAGRACEAE					
Epilobium angustifolium L.	Fireweed Great Willow-herb	root: human medicine; food; flowers: water-proofing.			
UMBELLIFERAE					
Heracleum lanatum Michx.	Cow parsnip	stems: human medicine; food; toys.			
Lomatium dissectum (*Leptotaenia multifida* Nutt.)	Wild Carrot	root: horse medicine.		roots: food	
Perideridia gairdneri (Hook Arn.) Mathias	Squaw-root; yampa	roots: human medicine; horse medicine; food. plant: waterproofing.			
CORNACEAE					
Cornus stolonifera Michx.	Red-osier dog-wood; kinnikinnick	bar: mixed with smoking tobacco; human medicine. berries: "poison" for arrows, musket balls; food. stems: pipestems, tamps.			

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
PYROLACEAE					
Pyrola spp.	Wintergreen	leaves, roots, flowers: human medicine.			
ERICACEAE					
Arctostaphylos uva-ursi (L.) Spreng.	Common bearberry; kinnikinnick	leaves mixed with smoking tobacco; human medicine; beverage. berries: food; rattle stones; decoration.	berries: food	berries: food	
POLEMONIACEAE					
Phlox hoodii Richards.	Moss Phlox	human medicine; dye.			
BORAGINACEAE					
Lithospermum ruderale Lehm.	Puccoon; stoneseed.	stems: toys			
LABIATAE					
Mentha arvensis L. var. *glabrata* (Benth.) Fern.	Wild mint.	leaves: beverage; spice.			

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
Monarda fistulosa L. var. menthaefolia (Graham) Fern.	Wild bergamot; horse mint	plant: human medicine; horse medicine. roots: human medicine. flowerheads: human medicine; sponges.			
SCROPHULARIACEAE					
Castilleja spp.	Indian Paint-Brush	plant: human medicine. flowers: paint; dye; water-proofing.			
CAPRIFOLIACEAE					
Symphoricarpos albus (L.) Blake	Snowberry; buckbrush; wolf-berry.		berries: food		
Viburnum trilobum Marsh.	"High-bush cranberries"		berries: food.		
COMPOSITAE					
Achilea millefolium L. spp. lanulosa (Nutt.) Piper.	Common Yarrow	leaves, flowers: human medicine; beverage.			
Artemisia spp.	Sagebrush Worm Wood	leaves: horse medicine		leaves: medicinal	leaves: medicinial; preservative.

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
Artemisia cana Pursh	Sagebush	leaves: horse fodder.			
Artemisia frigida Willd.	Fringed sage	leaves: menstrual pads; human medicine; horse medicine; deodorant; stuffing for pillows, etc.; manufacturing; rags; mosquito repellant; toilet paper.			
Artemisia gnaphalodes Nutt. (A. ludoviciana)	Prairie Sagewort	leaves: ceremonial; packaging; human medicine; horse medicine; stuffing for pillows, etc; toilet paper; deodorant; chewed.			
Aster spp.	Asters	plant: human medicine; horse medicine; dog medicine. flowers: decoration; paint.			
Chrysothamnus nauseosus Nutt.	Rabbit brush	Fall-Winter horse fodder.			
Cirsium spp.	Thistle	flowers: food.			

Continuation - Table 2.1: Indian Uses of Plants Found in the Cypress Hills

SCIENTIFIC NAME	ENGLISH NAME	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
Gaillardia aristata Pursh	Gaillardia	roots, plant: human medicine. flowerheads: waterproofing; sponges; cleansing.			
Grindelia squarrosa (Pursh) Dunal.	Gumweed	Flowerheads: toys			
Lygodesmia juncea (Pursh) D. Don.	Skeleton weed; prairie pink	plant: human medicine; horse medicine; padding; waterproofing; hair tonic. galls: human medicine.			
Solidago spp.	Golden Rod	plant, root: human medicine.			
Townsendia sericea (T. exscapa, Richards, Porter)		horse medicine.			

TABLE 2.2: SUMMARY OF PLANT TAXA USED BY INDIANS IN THE CYPRESS HILLS; BY TYPE OF USE

USE	BLACKFOOT	CREE	GROS VENTRE	ASSINIBOINE
TOTALS: 62 genera, 55 species.	58 genera 52 species	12 genera 9 species	13 genera 6 species	10 genera 4 species
human medicine	50	----------	3	1
horse medicine	18	----------	----------	----------
food/beverage	25	11	9	8
horse fodder	4	----------	----------	----------
incense/perfume/deodorant	9	----------	1	----------
smoking	2	----------	----------	----------
dye/paint	8	----------	----------	----------
furniture	3	----------	----------	1
structures	6	----------	1	----------
spice	5	----------	----------	----------
decoration	5	----------	----------	----------
ceremonial	6	----------	----------	----------
miscellaneous	25	1	1	1

APPENDIX 3

NOTES ON LEGENDS AND ETHNOGEOGRAPHY APPLICABLE TO THE CYPRESS HILLS

There is a Blackfoot legend which describes the origin of some of the outliers. This is a Blood Story, told to R.N. Wilson:

> There was originally a range of mountains running from the west to east as far as Wolf Mountains [the Little Rockies], on the Old Man River, (so called). Napi [Old Man] had a gambling bout with a mountain Indian and lost the east and west range, all but the Sweet Grass Hills, Bear Paw and Wolf Mountains, which stand yet in their old place, the rest of them were moved and placed among the Rockies...(Godsell 1958: 53).

Another version of this tale was told to Walter McClintock by Spotted Eagle, a Peigan:

> The Old Man, who made us, and all things, gambled with another Old Man, who created the people on the other side of the mountains...the Old Man from over the mountains won all the mountain sheep and elk, leaving the antelope and buffalo...(McClintock 1910: 345-346).

Both of these accounts are portions of stories explaining the beginning of scalp taking.

Another Blood story, also collected by R.N. Wilson, explains the origin of white clay, like that which occurs in the White Mud Formation in the Cypress Hills:

> 'Napi', the Old Man, came from the south and to southern Alberta and then northward. He was wounded and bled as he came, wherever this blood fell, there is found to this day red earth used by the Indians as paint, in some places there is found white earth which was caused by matter flowing from the wounds when in a bad state (Godsell 1958: 21).

Since there is no ethnogeographic study of any of the groups with whom this paper is concerned, the geographic terms which are available are recorded in a wide variety of orthographies which often lack any sort of pronunciation key. Translations of the terms are also often not given.

Table 3.1 lists these terms and a representative source for each. A

few terms for features in or near some of the outliers are also given. It will be noted that most of the Indian terms are Blackfoot, which group has been recorded the most frequently.

The most interesting and informative group of terms are those first listed: from á-ygh-kimi-kway to ai-kimikoyi. It is obvious that these are all renditions or variations of the same Blackfoot term. This term is almost always glossed as the name for the Cypress Hills, which suggests that MacLean mistook a specific referent for a general geographic term. Nelson and Patrick give identical forms of this term as names for Wood Mountain and The Gap (which is in the Cypress Hills); this suggests that the Blackfoot may have considered the Cypress Hills and Wood Mountain as all one intermittent chain of hills. The meaning of the term would appear to be approximately that given by Schultz. Of historical interest is that comparison of these terms allows us a reasonably safe identification of the term recorded by Peter Fidler in 1801 as Blackfoot, which indicates that the Cypress Hills were known to the Blackfoot at that time.

Most of the rest of the terms need no extra comment. The English name "Cypress Hills" originates in faulty translation of the French "Montagne aux Cyprès." "Cyprès" does mean "cypress" in European French; however, the term as used by the French-Canadians and Métis referred first to the jack pine or banksian pine (Pinus banksiana) and later was also applied to the lodgepole pine (Pinus contorta var. latifolia) and other species of the genus Pinus (Cowie 1913: 303; Macoun 1882: 314; Spry 1968: 10, footnote). This term is still a recognized Canadianism (see terms: cyprès, cypress, jack pine, lodgepole pine, pin gris in Avis et al. 1967: 193-194, 390, 437; Bélisle 1954: 304 and 944; Demetelin n.d.: 128).

TABLE 3.1: ETHNOGEOGRAPHIC TERMS: OUTLIERS

TERM	GROUP	TRANSLATION	SOURCE & GEOGRAPHIC FEATURE NAMED
ā-ygh-kimi-kway	Blackfoot	---	The Gap (in the Cypress Hills) (Nelson & Patrick 1885: 163)
ā-ygh-kimi-kway	Blackfoot	Gap in the Hills	Wood Mountain (Nelson & Patrick 1885: 163)
ā-ygh-kimi-kway-in-aka-apewis	Blackfoot	---	Fort Walsh (Nelson & Patrick 1885: 163)
ai-ēkun-ēkwe	Blood	---	Cypress Hills (Dawson 1885: 167)
I-kim-e-kooy	Blackfoot	---	Cypress Hills (Lanning 1882: 70)
ahya kimikwi	Blackfoot (Peigan)	Divided mountains, divided hills	Cypress Hills (Schultz 1962: 276, 285)
I-ah-kim-me-coo Hills	(not given)	---	Cypress Hills (Peter Fidler, in Johnson 1967: 302)
aikimikoyi	Blackfoot	---	Glossed as "Plateau, tableland" (MacLean 1898: 135)
katewius netumoo	Blackfoot	The hills of whispering pines	Cypress Hills (Michael 1948: 2)
katewius netumoo	Blackfoot	Pine hills	Cypress Hills (Bird & Halladay 1967: 117)
mun-a-tuh-gow	Cree	Beautiful highlands	Cypress Hills (Michael 1948: 2)
me-nach-tah-kak	Cree	---	Cypress Hills (Cowie 1913: 303-304)
mi-na-ti-kak or ne-a-ti-kak	Cree	---	Cypress Hills (Geographic Board of Canada 1928: 40)
(not given)	Cree	Thunder breeding hills	Cypress Hills (Michael 1948: 2)

Continuation - Table 3.1: Ethnogeographic Terms: Outliers

TERM	GROUP	TRANSLATION	SOURCE & GEOGRAPHIC FEATURE NAMED
pa-ha-toonga	Stoney (Assiniboine)	---	Cypress Hills (Geographic Board of Canada 1928: 40)
(not given)	?	Grizzly Bear Hills	Cypress Hills (Michael 1948: 2)
(not given)	?	Sweet Pine Hills	Cypress Hills (Michael 1948: 2)
Fir Mountain	Anglo-Canadian	---	Cypress Hills (John Edward Harriott, in Nelson 1973: 71)
Cypress Mountain or Cypress Hills	Anglo-Canadian & Anglo-American	---	Cypress Hills (almost all sources in English: "Cypress Mountain" being the early term, which has been replaced by "Cypress Hills").
Montagne aux Cypres	Métis & French-Canadian	Mountain of the Jack Pines (see discussion of term "Cypres in text)	Cypress Hills (Giraud 1945: 820-821)
Montagne de Bois	Métis & French-Canadian	Wood Mountain	Wood Mountain (Rondeau 1923)
Woody Mountain or Wood Mounatin	Anglo-Canadian & Anglo-American	---	Wood Mountain (almost all English language sources: "Woody Mountain" has dropped out of usage)
katoyis	Blackfoot	---	Sweet Grass Hills (Nelson & Patrick 1885: 161)

Continuation - Table 3.1: Ethnogeographic Terms: Outliers

TERM	GROUP	TRANSLATION	SOURCE & GEOGRAPHIC FEATURE NAMED
kat-e-is	Blood	---	Sweet Grass Hills (Dawson 1885: 161)
kut-too-yis-ix	Blackfoot	---	Sweet Grass Hills (Lanning 1882: 70)
katoysix	Peigan	Sweet Pine Hills	Sweet Grass Hills (McClintock 1910: 215-216)
kutoyisiks	Blackfoot (Peigan)	Sweet Pines	Sweet Grass Hills (Schultz 1962: 369-377)
Montagnes du Foin de Senteur	Métis	Mountains of the Sweet Grass	Sweet Grass Hills (Dawson 1875: 123-this sounds like a translation of the English name into French, as this is the only source in which the term appears)
Les Trois Buttes	Métis & French-Canadian	The Three Buttes	Sweet Grass Hills (Palliser in Spry 1968: 420-this is the usual French term for these hills)
The Three Buttes	Anglo-American & Anglo-Canadian	---	Sweet Grass Hills (Dawson 1875: 123-this, which is probably a translation of the French name, is an early name which has been dropped)
Sweet Grass Hills	Anglo-American & Anglo-Canadian	---	Sweet Grass Hills (Most English language sources use this term)
kyo-'tsis	Blackfoot	---	Bear Paw Mountains (Nelson & Patrick 1885: 165)
kiy-o-tsis	Blackfoot	---	Bear Paw Mountains (Lanning 1882: 70)

Continuation - Table 3.1: Ethnogeographic Terms: Outliers

TERM	GROUP	TRANSLATION	SOURCE & GEOGRAPHIC FEATURE NAMED
kyai ochisistukiks	Peigan	Bear Hand Mountains	Bear Paw Mountains (Schultz 1962: Glossary)
Bear Paw Mountains, Bear's Paw Mountains	Anglo-American	---	Bear Paw Mountains (All English language sources)
muck-kwyé-stokkis	Blackfoot	---	Little Rocky Mountains (Nelson & Patrick 1885: 165)
mahkwyi stukists	Peigan	Wolf Mountains	Little Rocky Mountains (Schultz 1962: Glossary)
Wolf Mountain	Anglo-American	---	Little Rocky Mountains (McDonnel 1940: 76-this is a translation of the Blackfoot term)
Little Rocky Mountains	Anglo-American	---	Little Rocky Mountains (Usual term in English language sources)

APPENDIX 4: INDIANS OF THE CYPRESS HILLS

TABLE 4.1: RECORDED INDIAN GROUPS IN OUTLIERS PRIOR TO 1870

GROUP	SIZE	DATE	SOURCES & NOTES
Arapaho	"some"	December 1801	(Peter Fidler, in Johnson 1967: 303) "Some" Arapahoes, probably no more than about 20 individuals, met by Fidler's men in the Hills; heading north to join their close relatives, the Gros Ventre.
Blackfoot Proper	"a small party"	January 1802	(Peter Fidler, in Johnson 1967: 306) A Blackfoot war party traced five Snake (Shoshoni) Indians north from the Hills and killed four of them.
Gros Ventre	uncertain	Summer of 1801	(Peter Fidler, in Johnson 1967: 317) Unknown number of Gros Ventre killed in Cypress Hills in an attack by the Cree and Assiniboine.
Gros Ventre	uncertain	Before 1853	(McDonnell 1940: 274-275) Note on death of the first Chief Sitting Woman in the Cypress Hills.
Peigans	90 Lodges	September 1853	(Stanley 1854) This group was camped just west of the Cypress Hills.
Peigans	200 lodges	1855	(Schultz 1962: 266) Two Sioux stole horses from camp near Cypress Hills.
Bloods & Peigans	400 lodges	1855	(Schultz 1962: 266) Eight Sioux stole horses from camp near Cypress Hills.
Peigans, Bloods, Blackfoot, Gros Ventre	A large camp	July 1855	(Doty 1966: 22) A group which was waiting for the "Blackfoot Council" of 1855.

Continuation - Table 4.1: Recorded Indian Groups in Outliers Prior to 1870

GROUP	SIZE	DATE	SOURCES & NOTES
Peigans	A camp	July 2, 1855	(McDonnell 1940: 36) Mentioned in entry of Fort Benton Journal; may be same camp as noted by Doty (immediately above).
Peigans	?	1858	(Ewers 1958: 223) Big Sanke, Chief of the Small Brittle Fat Band, was killed in battle by Crees near the Cypress Hills
Bloods	7 men	?	(Godsell 1958: 222) Red Crow led a war party into the Cypress Hills where they captured a lone Cree, whom they then released.
Bloods	300 lodges	July 1859	(Spry 1968: 413-421) A camp of Bloods followed Palliser from the Bow River into the Cypress Hills.
Cree	"many lodges"	1865	(Schultz 1962: 290-294) A party of 33 were attacked by a party of Peigans while the rest of the camp watched helplessly; in the Cypress Hills.
Blackfoot	A camp (exact size not stated)	Between 1865 & 1870	(McClintock 1910: 330) Katoya, widow of See-Pis-Tok-Komi (Screaming Owl) told McClintock of being camped "near the Cypress Mountain" when they "were at war with the whites." She is probably referring to the Blackfoot War in Montana which occurred between 1865 and 1870
Peigans and Bloods	2,000 lodges (Grinnell)	July 1866	(Ewers 1958: 243; Grinnell 1895: 134-142; Schultz 1962: 276-280) This was a gathering for the annual Sun Dance; they were attacked by the Gros Ventre an Crows but achieved an overwhelming victory over their enemies. The story told to McClintock by Mad Wolf may be another version of the one above (McClintock 1910: 160-161).

Continuation - Table 4.1: Recorded Indian Groups in Outliers Prior to 1870

GROUP	SIZE	DATE	SOURCES & NOTES
Cree (plus some Assiniboine & Saulteaux)	60 men	1868	(Cowie 1913: 304) These young men were on an expedition "to procure chewing gum for their lady loves and for general use as dentifrice." On the return trip they were surrounded and annihilated by a larger party of Blackfoot warriors.
Gros Ventre	400 men	c. 1868	(Sanderson 1965: 13-14) Using the Cypress Hills as a base, this group unsuccessfully attacked the Blackfoot.
Cree	A horse stealing party	?	(Sanderson 1965: 19-20) Took cover in the Cypress Hills.
Peigan	A camp	1869	(Schultz 1962: 265) 6 Sioux tried to steal horses from the camp, all but one killed. Near Cypress Hills.
Peigan	A large village	1870	(Schultz 1962: 264) Ninokskatosi (Three Suns) told of the capture of 8 Pondera (Pend d'Oreille or Kalispel) Indians in the Hills, apparently near Battle Creek.
Peigan	200 lodges	July 1870	(Dempsey 1971: 13-15) Alexander Culbertson visited this camp just west of the Cypress Hills.

Continuation - Table 4.1: Recorded Indian Groups in Outliers Prior to 1870

GROUP	SIZE	DATE	SOURCES & NOTES
LITTLE ROCKY MOUNTAINS			
Gros Ventre	A camp	May 25, 1856	(McDonnell 1940: 76) Mentioned in an entry of the Fort Benton Journal.
BEAR PAW MOUNTAINS			
Peigan	A camp	April 18 - May 13, 1855	(McDonnel 1940: 28, 30-31) Consecutive entries in Fort Benton Journal all referring to the same camp.
Peigan or Gros Ventre	"Several camps"	August 3, 1855	(McDonnell 1940: 39) Mentioned in an entry in the Fort Benton Journal - only identified as "Indians", but later entries suggest either Peigan or Gros Ventre or both).
SWEET GRASS HILLS			
Gros Ventre	60 lodges ca. 400 persons	1834	(Flannery 1953: 19) A large group of Cree and Assiniboine attacked and annihilated this camp.
Peigans	300 lodges	1847	(Schultz 1962: 267) 53 Crees attacked this camp near the West Butte.
Peigans & Kalispels	60 + 10 lodges	1855	(Schultz 1962: 265-266) This camp was attacked by "400 Sioux" at the East Butte.
Peigans	Band (Unknown size)	1857	(Ewers 1958: 223) Lame Bull's Band was hunting buffalo near the hills when he was killed in a hunting accident.

TABLE 4.2: RECORDED INDIAN GROUPS IN OUTLIERS, A.D. 1870-1885

GROUP	SIZE	DATE	SOURCES & NOTES
Blackfoot	?	Spring 1872	(Cowie 1913: 434-435) Blackfoot scouts watched Cowie's post, and as soon as he left, killed nine Assiniboine who were busy plundering it.
Assiniboine	80 + persons	May 1873	(Turner 1950: 222-227; Cowie 1913: 451-453; Sharp 1955: 55-77) These and many other accounts give the muddled story of the "Cypress Hills Massacre" which seems to have occurred near Battle Creek.
Peigans	200 lodges	1875	(Schultz 1962: 268) This camp was located near "Head-of-the-Mountain."
Assiniboine & Gros Ventre	300 lodges	April 1878	(Turner 1950: 386-388) An Assiniboine Sun Dance was held in the Hills.
Bloods	20 + men	Late 1870's	(Ewers 1968: 122-125) This party stole horses from three camps of Sioux near the Cypress Hills.
Assiniboine	120 lodges	Summer 1880	(Macoun 1882: 555-556) This group was camped "On the western end of the Cypress Hills." Two Peigans stole horses from them.

APPENDIX 5: ARCHAEOLOGICAL SITE NOMENCLATURE

TABLE 5.1: CYPRESS HILLS SITES: CONVERSIONS FROM UNIVERSITY OF ALBERTA SYSTEM TO ALBERTA ARCHAEOLOGICAL SURVEY SYSTEM

DjOo-120 - Historic Metis Cabin Site = DjOo-31

DjOm-133 = DjOm-17	DjOm-117 = DjOm-21
DjOm-114 = DjOm-18	DjOn-101 = DjOn-9
DjOn-100A = DjOn-8	DjOn-102 = DjOn-10
DjOn-100B - DjOn-8	DjOn-103 = DjOn-11
DjOn-105 = DjOn-13	DjOn-104 = DjOn-12
DjOn-111 = DjOn-19	DjOn-108 = DjOn-16
DjOn-113 = DjOn-21	DjOn-109 = DjOn-18
DjOn-116A = DjOn-25	DjOn-111 = DjOn-19
DjOn-117 = DjOn-26	DjOo-103 = DjOo-14
DjOo-100 = DjOo-11	DjOo-104 = DjOo-15
DjOo-101 = DjOo-12	DjOo-105 = DjOo-16
DjOo-102 = DjOo-13	DjOo-107 = DjOo-18
DjOo-118 = DjOo-29	DjOo-108 = DjOo-19
DfOo-100 (Saskatchewan)	DjOo-109 = DjOo-20
DiOm-101 = DiOm-3	DjOo-111 = DjOo-22
DiOm-102 = DiOm-4	DjOo-113 = DjOo-24
DjOl-8/1 (Saskatchewan)	DjOo-114 = DjOo-25
DjOl-9/3 (Saskatchewan)	DjOo-115 = DjOo-26
DjOl-10/1 (Saskatchewan)	DjOo-116 = DjOo-27
DjOl-11/18 (Saskatchewan)	DjOo-117 = DjOo-28
DjOl-12/2 (Saskatchewan)	DjOo-119 = DjOo-30
DjOm-100 = DjOm-4	DkOm-100 = DkOm-5
DjOm-104 = DjOm-8	DkOm-101 = DkOm-6
DjOm-108 = DjOm-12	DkOm-103 = DkOm-8
DjOm-115 = DjOm-19	DkOn-100 = DkOn-7
DjOm-116 = DjOm-20	DkOn-101 = DkOn-8
DkOn-103 = DkOn-10	DkOn-108 = DkOn-15
DkOo-100 = DkOo-4	DkOo-102 = DkOo-6
DkOo-104 = DkOo-8	EbOp-100 = EbOp-151