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Piikáni Ethnobotany: Traditional Plant Knowledge of the Piikáni Peoples of the Northwestern Plains

by

Sandra Leslie Peacock

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Piikáni Ethnobotany: Traditional Plant Knowledge of the Piikáni Peoples of the Northwestern Plains" submitted by Sandra Leslie Peacock in partial fulfillment of the requirements for the degree of Master of Arts.

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Sept. 8 1992
Date

Abstract

This study documents the traditional ethnobotanical knowledge of the Piikáni (Peigan) peoples of the Northwestern Plains as synthesized from interviews with Piikáni elders and from previously published ethnographic sources. Specifically, it records information on over 90 plant species which were consumed as food, administered as medicines, prepared for spiritual purposes, or used as materials for a variety of tasks. Details concerning the use, collection, processing and preservation of each plant resource is provided, as is a discussion of the possible archaeological implications of these activities. When possible, the Piikáni plant names are recorded using a standard orthography. The habitat and distribution of each species is also included.

By documenting traditional Piikáni plant knowledge and usage, this research establishes an ethnobotanical database which will augment existing ethnographic and archaeological information and assist in the identification and interpretation of archaeological artifacts, sites and pre-contact settlement patterns on the Northwestern Plains.

Acknowledgements

After writing an entire thesis, one would think that the preparation of this section would be relatively simple. Unfortunately, this is not the case. In fact, it seems impossible to express adequately my appreciation to the many different people who have assisted me in so many different ways. However, I hope this much abbreviated list serves the purpose. My sincerest thanks are extended:

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To my family, who have always encouraged me to pursue my dreams.

And to Kevin, for everything.

Dedication

To the Piikáni elders,

in appreciation of

your wisdom and your patience.

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Chapter 1: Introduction

> "Old Man covered the plains with grass for the animals to feed on. He marked off a piece of ground, and in it he made to grow all kinds of roots and berries -- camas, wild carrots, wild turnips, sweet-root, bitter-root, sarvis berries, bull berries, cherries, plums, and rosebuds. . . Old Man showed them the roots and berries, and told them that they could eat them; that in a certain month of the year they could peel the bark off some trees and eat it, that it was good. . . The first people that he created he used to take about through the timber and swamps and over the prairies, and show them the different plants. Of a certain plant he would say, 'The root of this plant, if gathered in a certain month of the year, is good for a certain sickness.' So they learned the power of all herbs" (Grinnell 1892:137-139).

The oral traditions of the Piikáni (Peigan) peoples reflect an intimate and sophisticated understanding of the plant world. These traditions, whether recorded by ethnographers or told by the elders today, speak of collecting plants for foods, medicines and spiritual purposes. They contain information on harvesting times and locations, preparation techniques, and the benefits accruing from the proper use of each plant. In essence, these traditions are guidelines governing the interactions between the Piikáni people and the plant environment. As Ford (1978:46) notes, "Behavior towards plants is not random; it is prescribed by a series of rules that [must be learned] in order to determine which plants are used, when and what alternatives will be obtained, and how they will be procured."

Given this, the study of traditional Piikáni plant knowledge and usage has much to offer current understandings of the subsistence practices, seasonal settlement patterns and resource management techniques of the historic and pre-contact Indigenous peoples of the Northwestern Plains. It is particularly relevant in view of the fact that few studies have systematically documented plant use by the people of the Plains. In fact, writings of early explorers and ethnographers tend to record only the more "dramatic" aspects of Plains culture, such as the pursuit and capture of buffalo. Plant collecting and processing are seldom discussed in comparable detail.

This "tryanny of the ethnographic record" (Wobst 1978), in turn, has influenced current interpretations of pre-contact subsistence strategies, which tend to emphasize the importance of the buffalo to the exclusion of plant resources. The preservation of vast

quantities of buffalo bone in the archaeological record of the region, coupled with the low archaeological visibility of many plant collecting and processing activities, has done little to alter this perspective.

The primary objective of this study is to document the ethnobotanical knowledge of the Piikáni people. Specifically, it seeks to record the oral traditions of the Piikáni in order to identify culturally significant plant resources and to provide greater detail concerning the use, collection and processing of those resources. The Piikáni elders are our window to the past. As they vanish, so do our opportunities for understanding traditional Piikáni lifeways.

By documenting traditional Piikáni plant knowledge and usage, this research establishes an ethnobotanical database which will augment the existing archaeological record and assist in the interpretation of archaeological artifacts, sites and pre-contact settlement patterns of the Northwestern Plains. In doing so, the study strives to demonstrate the importance of plant resources to the Piikáni and to provide a more holistic picture of pre-contact lifeways. To this end, this research:

Records over 90 plants identified by Piikáni elders during field interviews.

Provides the scientific designation (genus and species) of each plant.

Records the Piikáni name for each plant using a standard orthography developed for the Blackfoot language. When possible, a literal translation of the Piikáni name is included, as are the characteristics for which a plant is recognized and/or named.

Describes the habitat(s) and ecoregion(s) of each species, as well as its distribution within the study area. The relative abundance and availability of a plant are also discussed.

Synthesizes information obtained during field interviews with Piikáni elders and from previous ethnographic sources concerning the utilization of each plant for nutritional, medicinal, spiritual or other purposes.

Provides detail, when possible, concerning the collecting, processing and preservation of a plant resource. This may include harvesting times and locations, the task groups involved, the tools and techniques required for processing, and storage considerations.

Discusses the nature and extent of the archaeological evidence such as palaeobotanical remans, artifacts, features or site locations which may result from the use, collection and processing and/or preservation of a particular plant resource.

The discussion begins with a brief history of the Piikáni people (Chapter 2), followed by an examination of the ecological complexity and botanical diversity of their traditional homeland (Chapter 3). Previous ethnobotanical studies are reviewed briefly in Chapter 4, while the research methods of the current study are outlined in Chapter 5. The results of the study are summarized in Chapter 6 and the evidence of plant utilization in the archaeological record is examined in Chapter 7. Concluding remarks are presented in Chapter 8.

Chapter 2: The Piikáni Peoples

When European explorers arrived on the Northwestern Plains, the Piikáni were the largest tribe of the Blackfoot nation (Dempsey 1972b:3), a confederacy which also included the Siksiká (Blackfoot) and the Kainaa (Blood). These divisions were politically autonomous, although all spoke Blackfoot, an Algonkian language, and shared a common culture. As McClintock (1910:1) notes: "Although they speak the same language, have similar customs, and are closely intermarried, these three divisions are independent of each other, each having its own Sun-dance, council and head chief."

The traditional homeland of the Piikáni lay to the east of the Rocky Mountains, stretching across the foothills and plains from Calgary south to the upper reaches of the Missouri drainage (Figure 1). After assessing the journal observations of early explorers, Wissler (1910:8-12) concludes that in the early 1800's, the Piikáni occupied the area between the Belly and the Bow Rivers on the head waters of the various branches of the Saskatchewan River. The southern boundary of their territory was near the Two Medicine River in Montana. This, he claims, was the same area the Piikáni held when the Europeans first arrived in the mid 1700's.

Oral traditions of Piikáni elders are consistent with this information. Piikáni spiritual leader Joe Crowshoe believes the Piikáni have "always lived here" and points to the many events described in Piikáni myth which are said to have occurred in this region. The Oldman River, for example, is named after Napi, or Old Man, whose birthplace is at the headwaters of the river. Wissler (1910:17) notes that those myths dealing with incidents of the Old Man are often "placed between MacLeod and Edmonton".

Archaeological evidence also supports a lengthy occupation of this area by the Piikáni and their ancestors. Reeves (1983; 1985) suggests the last two prehistoric cultural phases of the area, Avonlea (1750 to 1150 BP) and Old Women's (1400 to 250 BP) represent the prehistoric Blackfoot.

Within this territory, the Piikáni travelled seasonally, hunting vast herds of bison and gathering plant foods and medicines. Briefly, the yearly round of the Piikáni can be divided into four seasons, based upon the availability of resources and the demands of social and ceremonial activities. Winter settlements were based in the foothills, while summer camps were established on the short grass plains. At the beginning of winter,

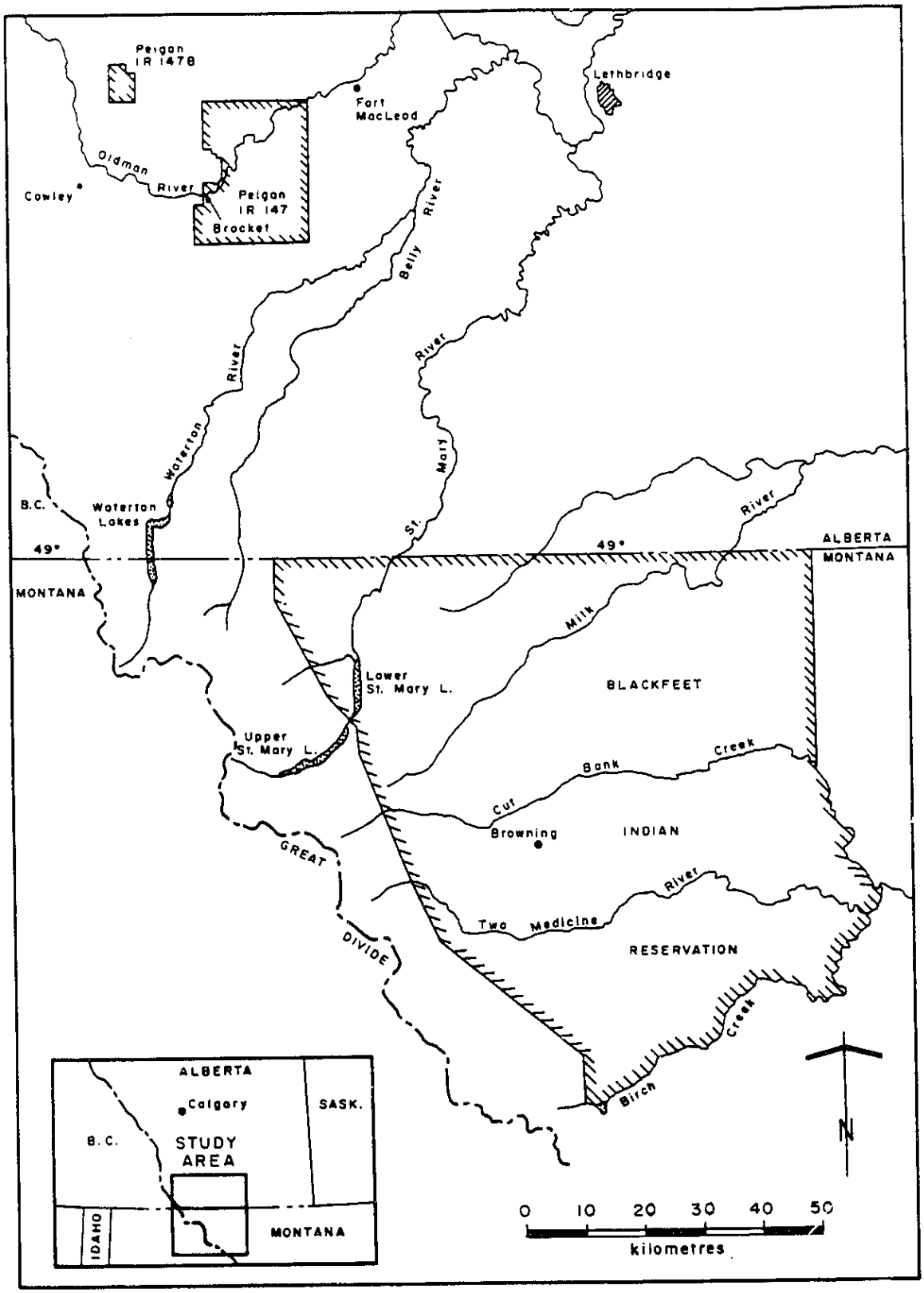

Figure 1: Study Area Showing Traditional Piikáni Homeland and Current Communities

bands dispersed to camps along valley bottoms, which offered firewood, water and protection from winter storms. People subsisted on dried meats, berries and other plant materials which were supplemented by fresh meat whenever possible. In the spring, camps moved from the foothills to the plains. Communal buffalo hunts provided fresh meat and a variety of plant resources were collected. Plant collecting, lithic resource procurement and small-scale hunting continued throughout the summer months. However, the focus of the summer was the Sundance, the major religious ceremony of the Piikáni, traditionally held in late July or early August. This tribal gathering lasted approximately two weeks, after which bands dispersed for the fall hunt. The fall hunt was important, as this was when stores of dried meat were prepared for the winter. Berries were equally important for stored provisions and camps were often moved to favourite berry picking locales. With the return of the cold weather in late fall, the bands moved back to winter camps in the foothills (Reeves 1985; Vickers 1986).

The arrival of European traders and settlers effectively put an end to the traditional lifeways of the Piikáni. The buffalo gradually disappeared, while starvation and the introduction of European diseases such as influenza and small pox began to take their toll. Once the largest tribe of the Blackfoot nation, the total Piikáni population declined from approximately 6,000 in 1832 to 2,640 in 1870 (Dempsey 1972a:7). Realizing they had few alternatives, the Piikáni signed treaties with the governments of the United States (1851) and Canada (1877).

Today the Piikáni people are divided between communities in Alberta and Montana. According to McClintock (1910:1) "their fixed settlements were made in the localities where their permanent camps were formerly located. The Piegans became subdivided into North and South Piegans, the former in Alberta, and the latter in Northwestern Montana."

In Alberta, the North Piikáni, or "aapátohsipiikáni", live on the Piikáni Reserve approximately 15 kilometres southwest of Fort Macleod (Figure 1). This area "on the Old Man's River, near the foot of the Porcupine Hills, at a place called Crow's Creek" was requested by the Piikáni as it was a traditional wintering ground and buffalo hunting area (Dempsey 1972b:3). This reserve covers approximately 425 km^2 of land and an additional 30 km^2 are set aside as a timber reserve on the southern edge of the Porcupine Hills (Department of Indian Affairs and Northern Development 1985). Although ranching and farming are the primary industries on the reserve, the Piikáni also operate a small moccasin factory and many of the women manufacture and sell traditional crafts. Elementary and high school education is available on the reserve, as are health care facilities. As of

January 1, 1992, a total of 2,553 people were registered with the band in Alberta (DIAND pers. comm. 1992).

The South Piikáni, or "aamsskáápipiikani", are officially incorporated as the "Blackfeet Tribe of Montana" (Dempsey 1972a:3) and are usually referred to as Blackfeet, although the majority of their tribal members are Piikáni (U.S. Dept. of the Interior, Bureau of Indian Affairs 1978:23). The Blackfeet Reservation is located in north central Montana along the eastern slopes of the Rocky Mountains (Figure 1). The Canadian border marks the northern boundary of the reservation and Birch Creek marks its the southern limits. In total, the reservation covers approximately 6,175 km^2 (ibid.:29). The primary sources of income for tribal members are agriculture, stock raising, timber and forest products, crafts, and oil activity. In 1978, a total of 11,587 people were registered with the Blackfeet Tribe and approximately 6,246 lived on the reservation (ibid.:25).

Chapter 3: The Land of the Piikáni

The traditional homeland of the Piikáni is a region of gentle grasslands, rolling foothills and rugged mountains. It is also a region of ecological diversity unique on the Northwestern Plains. The complex physical geography of the area provides the basis for this diversity. Within distances of less than 100 kilometres, one encounters landscapes associated with the Plains, the Foothills and the Rocky Mountains (Figure 2).

The Plains are typically viewed as 'vast and flat', yet in reality the Plains exhibit a significant amount of topographic variability. Glaciation, wind and water erosion have created a landscape of rolling, hummocky till plain averaging less than 1100 metres in elevation (Beaty 1975:65; Wallis 1980:8). The region is crosscut by a series of deep glacial meltwater channels, as well as by a number of major river systems (see below). Small, ephemeral ponds are scattered across the terrain, but large wetlands and lakes are scarce (Wallis 1980:8).

The Foothills parallel the eastern edge of the Rockies, forming a transition zone between the mountains and the plains. The region is narrow, averaging less than 20 kilometres in width (Wallis 1980:7), and is comprised of thrust-faulted and folded sedimentary rocks (Beaty 1975:53). Rolling hills and broad, gentle valleys characterize the Foothills landscape which is "dominated by long, low, roughly parallel ridges with a general northwest-southeast orientation" (Beaty 1975:51). Average elevations in the Foothills range between 1200 to 1800 metres, although some ridges are as high as 2200 metres (Wallis 1980:7). Natural lakes and wetlands are relatively scarce, however there are numerous creeks which drain into the major river systems (Wallis 1980:7).

The Front Ranges of the Rocky Mountains mark the western boundary of the study region. The landscape here is steep and rugged, characterized by linear, tilted masses of sedimentary rock (Beaty 1975:30) which reach elevations of over 2900 metres. The mountains are punctuated by deep, glacier-carved valleys where extensive lake networks, such as Waterton Lakes and St. Mary Lakes, developed.

The headwaters of the South Saskatchewan and Missouri River drainage systems are included in the study region. In southwestern Alberta, The Oldman, Waterton, Belly and the St. Mary Rivers drain into the South Saskatchewan system. In Montana, rivers draining into the Missouri system include the Milk River, Cutbank Creek, Two Medicine

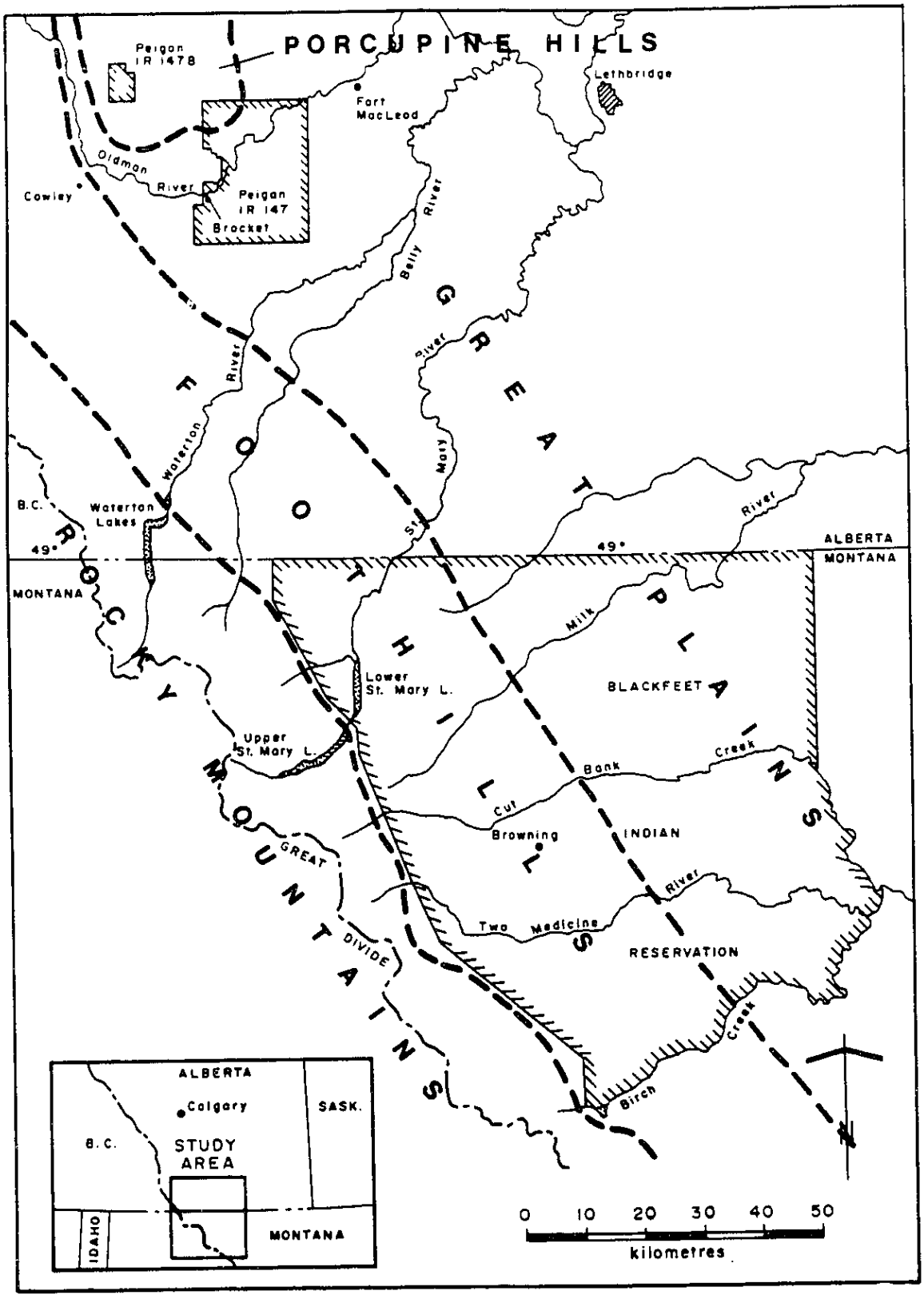

Figure 2: Topography of the Study Area

River, Badger Creek and Birch Creek. Water levels on these rivers are highest in between May and July (Wallis 1980:8) and peak in June when melting snow and high early summer precipitation cause seasonal flooding.

This complex physical geography creates variable climatic conditions throughout the region. In general, the climate of the study area is described as Continental, with cool summers and cold winters (Wallis 1980:5; United States Dept. of the Interior, Bureau of Indian Affairs 1978:27). However, this varies significantly east to west. For example, the eastern portions are characterized by warm, dry conditions. At Fort MacLeod, the dominant climatic regime is Prairie, with a mean temperature between May and September of 14.5°C (Strong and Leggat 1981). Rainfall averages 260 millimetres annually. In contrast, the climate becomes relatively cooler and moister to the west due to increased elevation and proximity to the Foothills and Rocky Mountains. The mean temperature for Cowley between May and September is 13.0°C, with a mean rainfall of 300 millimetres. This places it in a Prairie-Boreal climatic regime. The climatic regimes of the study area are summarized in Table 1.

The distribution of vegetation across the landscape is influenced by both geography and climate. The interactions of these variables creates a series of ecoregions. An "ecoregion" is similar in concept to a biogeoclimatic zone or to a physiographic region. Simply defined, it is "a geographical area over which the environmental complex, produced by climate, topography, and soil is sufficiently uniform to permit development of characteristic types of ecologic associations" (Bailey 1976).

The botanical diversity of the study area is reflected in the variety of ecoregions present. Here, six ecoregions "intricately intermingle with each other, reflecting a complicated physiography and geology, and a variable local climate affected by the complex geography of the area" (Kojima 1980:20). Although different systems of classifying vegetation are employed in Alberta (i.e. Strong and Leggat 1981) and Montana (i.e. Küchler 1964), the vegetation is essentially similar and continuous. In fact, the vegetation of southwestern Alberta is more similar to that of northern Montana than it is to other regions of Alberta. According to Kuijt (1982:xvii), there is an east-west "botanical watershed" which crosses the Rockies at approximately the 50th parallel. Similarly, Argus and White (1978:11) note that plants of the cordillera of the United States extend into the southwestern corner of Alberta. Therefore, for the purposes of this discussion, the ecoregion classifications of Strong and Leggat (1981) are applied to the entire study region.

The six ecoregions in the study area are identified on the basis of the "modal"

Table 3: Climatic Regimes of the Study Area (adapted from Strong and Leggat 1981)

		Mean May to Sept.				Mean Oct. to April		Mean Dec. to Feb.
Ecoregion	Dominant Climatic Regime	Temperature ° C	Freeze Free Period (Days)	Precipitation (mm)	Month of Maximum Precipitation	Temperature ° C	No. of Days with Chinooks	Precipitation (mm)
Short Grass	Prairie	15.0	115	210	June	-10.5	20	120
Mixed Grass	Prairie	14.5	110	260	June	-10.0	20	140
Fescue Grass	Prairie-Cordilleran	12.5	90	290	June	- 8.0	30	230
Parkland	Prairie-Boreal	13.0	95	300	July	-12.5	10	160
Montane	Cordilleran	11.5	75	270	June	- 7.5	20	300
Subalpine	Cordilleran	9.5	15	320	June	- 9.0	15	400
Alpine	Cordilleran-Arctic	6.5	--	360	June	-14.0	<5	400

Table 2: Ecoregions of the Study Area (adapted from Strong and Leggat 1981)

Ecoregion	Modal Vegetation	Modal Soils
Short Grass	Grama-Spear Grass	Brown Chernozem
Mixed Grass	Spear-Grama-Wheat Grass	Dark Brown Chernozem
Fescue Grass	Rough Fescue-Parry Oatgrass	Black Chernozem
Aspen Parkland	Aspen & Rough Fescue Grassland	Dark Gray / Black Chernozem
Montane	Douglas Fir	Eutric Brunisol
Subalpine	Lodgepole Pine	Eutric Brunisol
Alpine	Phyllodoce	Brunisol

condition of the region, or the vegetation that occurs in a moderately well-drained, medium textured substrate (Strong and Leggat 1981:2). From east to west, the ecoregions include: Mixed Grass, Fescue Grass, Aspen Parkland, Montane, Subalpine and Alpine (Figure 3). The modal soils and vegetation of each of these ecoregions is presented in Table 2 and summarized in the following discussion which represents a synthesis of information found in Strong and Leggat (1981), Wallis (1980), Kuijt (1982), Kojima (1980) and Küchler (1964). Whenever possible, plant species utilized by the Piikáni have been included in the ecoregion descriptions. The plant terminology follows the standards outlined in Moss (1983). Readers are referred to these publications for further details.

Mixed Grass Ecoregion

The Plains along the eastern edge of the study area are characterized by Mixed Grass prairie. The range between summer and winter temperatures is substantial in this ecoregion. Precipitation is moderate, with the majority falling in June, while late summer conditions tend to be semiarid. These semiarid conditions are largely responsible for the development of the grassland vegetation (Strong and Leggat 1981:7-12).

As the name suggests, the vegetation of the Mixed Grass prairie is dominated by grasses. Wallis (1980:48-49) describes an area of mixed grassland on the terraces of the Oldman River near Fort MacLeod. Grass species include june grass (*Koeleria cristata*), northern wheat grass (*Agropyron dasystachyum*), bluegrass (*Poa interior*), spear grass (*Stipa comata*), and sand grass (*Calamovilfa longifolia*).

Herbs common to the mixed grassland include sages (*Artemisia frigida* and *A. ludoviciana*), onions (*Allium textile* and *A. cernuum*), puccoon (*Lithospermum incisum*), milk vetch (*Astragalus missouriensis*), golden bean (*Thermopsis rhombifolia*), smooth blue beard-tongue (*Penstemon nitidus*), locoweed (*Oxytropis sericea* and *O. splendens*), cut-leaved anemone (*Anemone multifida*), wild bergamot (*Monarda fistulosa*), gaillardia (*Gaillardia aristata*), cinquefoil (*Potentilla hipiana*), prairie crocus (*Anemone patens*), blazing star (*Liatris punctata*) and cactus (*Coryphantha vivipara*).

In small coulees and depressions, where moisture levels are higher, shrubs such as buckbrush (*Symphoricarpos occidentalis*) and wolf willow (*Elaeagnus commutata*) are found. Aspen (*Populus tremuloides*), willow (*Salix* spp.) and birch (*Betula* spp.) grow on wetter soils associated with wetlands or small streams.

The floodplains of the major rivers in the prairie grasslands are also important habitats (Figure 4). Forests of narrow-leaved cottonwood (*Populus angustifolia*) and

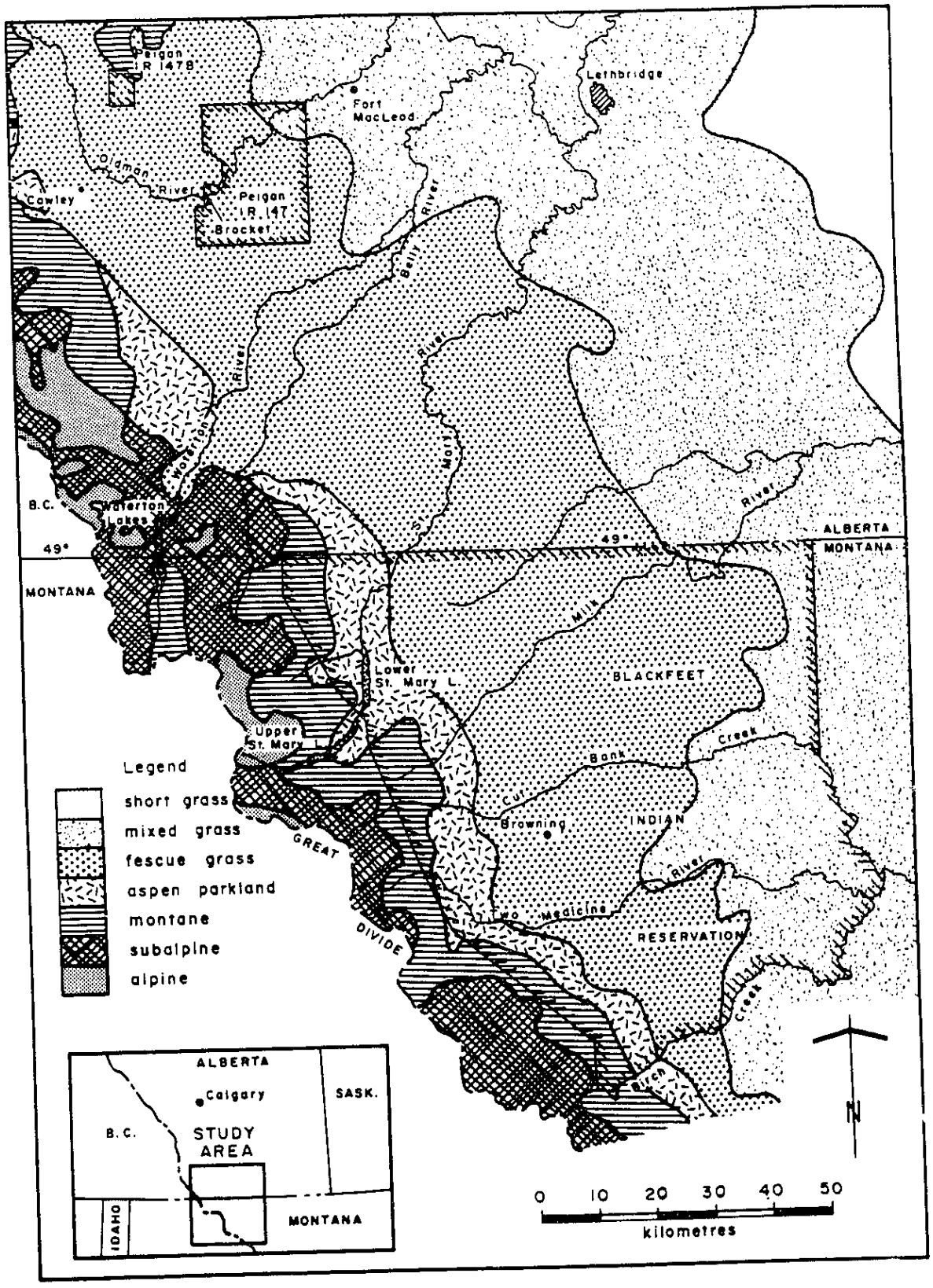

Figure 3: Ecoregions of the Study Area

balsam poplar (*Populus balsamifera*) thrive along the valley bottoms and support dense shrub communities. Willows are dominant on the wetter sites, while wolf willow, saskatoon (*Amelanchier alnifolia*), choke cherry (*Prunus virginiana*), red osier dogwood (*Cornus stolonifera*), thorny buffalo-berry (*Sherpherdia argentea*), and water birch (*Betula occidentalis*) are common on drier sites. Low shrubs include rose (*Rosa* spp.) and buckbrush.

The herb communities of the river forests tends to be relatively sparse as plants in this environment must survive seasonal flooding. Common herbs include wild strawberry (*Fragaria virginiana*), early blue violet (*Viola adunca*), veiny meadow rue (*Thalictrum venulosum*), fairy bells (*Disporum trachycarpum*), red and white baneberry (*Actaea rubra*), mint (*Mentha arvensis*) and wild licorice (*Glycyrrhiza lepidota*). Wet channels support marsh-like vegetation such as common cattails (*Typha latifolia*), broad-leaved water plantain (*Alisma plantago-aquatica*), water parsnip (*Sium suave*), and horsetail (*Equisetum* spp.).

Fescue Grass Ecoregion

The Fescue Grass ecoregion lies to the west of the mixed grasslands and is found on both Plains and Foothills topography (Figure 5). The gradual increase in elevation and proximity to the Rocky Mountains brings additional moisture to this region. Rain falls in the early summer, producing a moisture deficit towards the end of the season. Although summer temperatures are slightly cooler than in the Mixed Grass region, the chinooks keep winter temperatures higher relative to that area (Strong and Leggat 1981:12-13).

Vegetation typical of these grasslands is described by Wallis (1980:21-24). Rough fescue (*Festuca scabrella*) and bluebunch fescue (*Festuca idahoensis*) are the dominant species. Associated grasses include wheat grass (*Agropyron trachycaulum*), Parry oat grass (*Danthonia parryi*) and minor amounts of june grass, mountain Timothy (*Phleum commutatum*), bluegrass and sweet grass (*Hierochloe odorata*).

The herb component is extremely diverse and includes species such as old man's whiskers (*Geum triflorum*), cinquefoil (*Potentilla* spp.), northern bedstraw (*Galium boreale*), prairie parsley (*Lomatium triternatum*), yarrow (*Achillea millefolium*), sticky purple geranium (*Geranium viscosissimum*), alum root (*Heuchera parvifolia*), wild strawberry, prairie crocus, onions, wild caraway (*Perideridia gairdneri*), willow-herb (*Epilobium glandulosum*), and veiny meadow rue. Blue camas (*Camassia quamash*) occurs on wetter sites, while death camas (*Zigadenus venenosus*) is found on drier sites.

Figure 4: Mixed grasslands and cottonwood (*Populus* spp.) forests along the Oldman River just west of Brocket, Alberta.

Figure 5: Fescue grasslands along the Castle River, looking north towards the Porcupine Hills in southwestern Alberta.

Balsamroot (*Balsamorhiza sagittata*) thrives on the south-facing slopes in this region.

Shrub communities are more numerous in the Fescue Grass ecoregion, due to the increased moisture available in coulees, wet sites and on steep north-facing slopes. Shrubs common to these communities include buckbrush, wolf willow, rose, saskatoon, choke cherry and willow (Strong and Leggat 1981:14). Trees are not common, although aspen and balsam poplar occur where moisture is sufficient.

Aspen Parkland Ecoregion

The Aspen Parkland ecoregion is associated with the Foothills. Here, the climate is slightly moister than in areas to east and the topography changes more abruptly. As a result, the vegetation is unique and diverse, an intricate mixture of grasslands, shrub communities and aspen forests (Strong and Leggat 1981:14-16) (Figure 6).

Grasslands of the Aspen Parkland are described by Wallis (1980:55-56) as comprising fescue grass (*Festuca* spp.), bluegrass, and oat grass. Blue camas, old man's whiskers and lupines (*Lupinus* spp.) are also prevalent in the grasslands. Other herbs included in the composition are prairie parsley, bistort (*Polygonum bistortoides*), sticky purple geranium, low larkspur (*Delphinium bicolor*), alum root, balsamroot, western spring beauty (*Claytonia lanceolata*), musineon (*Musineon divaricatum*) and valeriana (*Valeriana dioica*).

Shrub communities of the Aspen Parkland are similar to those of the Fescue grasslands and include willow, saskatoon, wild rose, buckbrush, snowberry (*Symphoricarpos albus*) and wolf willow. There are also extensive willow grovelands in the region. These stands of willow grow on moist, poorly drained sites where herbs such as gaillardia, valeriana, blue camas, veiny meadow rue, yarrow and glacier lily (*Erythronium grandiflorum*) are common (Wallis 1980:27-28).

Perhaps the richest habitats of the Aspen Parkland ecoregion are the aspen woodlands. These woodlands support a diverse understorey with a unique combination of species, many of which do not occur elsewhere in the province (Wallis 1980:13). In early spring, glacier lilies and blue camas are common in the understorey. As the season progresses, the woodlands develop a dense undergrowth of herbs, shrubs and grasses. The herb layer includes veiny meadow rue, red and white baneberry, common pink wintergreen (*Pyrola asarifolia*), cow parsnip (*Heracleum lanatum*), fairy-bells, purple clematis (*Clematis occidentalis*), yellow angelica (*Angelica dawsonii*), valeriana, creeping mahonia (*Berberis repens*), dewberry (*Rubus pubescens*), wild caraway, sweet cicely

(*Osmorhiza chilensis* and *O. occidentalis*), wild red raspberry (*Rubus idaeus*), twining honeysuckle (*Lonicera dioica*) and false hellebore (*Veratrum eschscholtzii*). Shrubs include willow, saskatoon, buckbrush, rose, wild gooseberry (*Ribes oxyacanthoides*), and white meadowsweet (*Spirea betulifolia*) (Wallis 1980:54-55).

Montane Ecoregion

The Montane ecoregion occurs in the foothills and major valleys of the Rocky Mountains as well as the Porcupine Hills (Figure 7). This zone is associated with the major east-west valleys which are influenced by warm Pacific air for much of the winter. As a result, winter temperatures in the Montane are warmer than in any other ecoregion, while the average temperatures from May to September are approximately 1 to 1.5° C lower than in the Parkland and Fescue grasslands. Annual precipitation is approximately 25 per cent higher than in the Aspen Parkland, with snowfall responsible for much of this difference. June is the wettest month in the Montane, while July and August are the driest (Strong and Leggat 1981:16-21).

Ecological conditions in this zone are highly variable. Although Douglas-fir (*Pseudotsuga menziesii*) is considered the diagnostic species, Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*) and limber pine (*Pinus flexilis*) are also important (Strong and Leggat 1981:16). Drier sites, such as south-facing slopes, are characterized by grassland vegetation while cool, moist north-facing slopes are covered by lodgepole pine and aspen (Strong and Leggat 1981:21).

Montane forests dominated by Douglas fir have relatively few herbaceous plants at ground level. According to Wallis (1980:28-31), these include sedges (*Carex* spp.), bunchberry (*Cornus canadensis*), fairy-bells, bracted honeysuckle (*Lonicera involucrata*), rose, veiny meadow rue, twinflower (*Linnaea borealis*), common pink wintergreen, glacier lily, baneberry, thimbleberry (*Rubus parviflorus*), and bristly black currant (*Ribes lacustre*). In areas where the canopy is more open, grasses such as pine grass (*Calamagrostis rubescens*), wheat grass (*Agropyron* spp.) and Columbia needle grass (*Stipa columbiana*) are the dominant ground cover. Scattered shrubs include rose, white meadowsweet and snowberry.

Lodgepole pine occupies the cooler, moister north-facing slopes. These forests tend to have large amounts of deadfall and little ground cover. Plants common in lodgepole pine forests include green alder (*Alnus crispa*), thimbleberry, bunchberry, fireweed (*Epilobium angustifolia*), dwarf and low bilberry (*Vaccinium caespitosum* and V

myrtillus), bristly black currant, bracted honeysuckle and red and white baneberry (Wallis 1980:31).

One of the unique features of the Montane, according to Kojima (1980:21), is the presence of extensive grasslands on the south and south-west facing slopes (Figure 7). These grasslands are similar in composition to those of the fescue prairie and aspen parkland regions.

Ridge tops of the Montane are also extremely rich in species. The ground cover includes creeping juniper (*Juniperus horizontalis*) or bearberry (*Arctostaphylos uva-ursi*) with taller shrubs such as Canadian buffalo-berry (*Shepherdia canadensis*), rose, shrubby cinquefoil (*Potentilla fruticosa*), saskatoon and snowberry. On more exposed sites, common plants include townsendia (*Townsendia parryi*), fescue grass, gaillardia, milk vetch (*Astragalus* spp.), yarrow, onion, and alum root (Wallis 1980:29). Bitter-root (*Lewisia rediviva*), which is presently known to occur at only two locales in Alberta, is found on the exposed, south-facing upper ridges west of Pincher Creek (Wilson et al. 1988:515).

Subalpine Ecoregion

The Subalpine ecoregion is found between elevations of 1520 to 2135 metres in the Rocky Mountains (Figure 8). The climate here is cool and damp; winters are cold and snowy, while summers are rainy and cool (Strong and Leggat 1981:22-24).

The lowest elevations of the Subalpine support lodgepole pine forests. The understorey of these forests are characterized by wild strawberry, Canadian buffalo-berry, bearberry, showy aster (*Aster conspicuus*), white meadowsweet, everlasting (*Antennaria racemosa*), arnica (*Arnica cordifolia*), and red twin-berry (*Lonicera utahensis*) (Kuijt 1982:xxii).

At mid elevations, stands of lodgepole pine forests give way to forests of Engelmann spruce and Alpine fir (*Abies lasiocarpa*). This forest type represents the climax vegetation for the ecoregion. Common plants include menziesia (*Menziesia ferruginea*), false mitrewort (*Tiarella unifoliata*), evergreen violet (*Viola orbiculata*), red and white baneberry, wintergreen (*Pyrola* spp.) and bear grass (*Xerophyllum tenax*) (Kuijt 1982:xxiii).

The upper Subalpine extends beyond the spruce-fir forests to the tree line. It is characterized by open canopied vegetation, including dwarfed Engelmann spruce, alpine fir, white-bark pine (*Pinus albicaulis*) and alpine larch (*Larix lyallii*). Plants such as prairie

Figure 6: Aspen parkland ecoregion in southwestern Alberta.

Figure 8: Montane and subalpine ecoregions in Waterton National Park.

Figure 7: The foothills and Rocky Mountains of southwestern Alberta. Note the well developed grasslands on the south-facing slopes in the montane ecoregion.

parsley (*Lomatium sandbergii*), cinquefoil (*Potentilla* spp.) and several others provide sparse ground cover along the ridges. Open meadows are also common at higher elevations. These support a variety of vegetation, including bear grass, mariposa lily (*Calochortus apiculatus*), white thistle (*Cirsium hookerianum*), fleabane (*Erigeron peregrinus*), aster (*Aster engelmannii*) and sandwort (*Arenaria capillarius*). In areas where snow remains well into the summer, thickets of alder (*Alnus viridis*), cow parsnip, western spring beauty, false hellebore, glacier lilies, prairie parsley and sweet cicely are found (Kuijt 1982:xxiii-xxiv).

Alpine Ecoregion

The Alpine ecoregion is also an altitudinal zone, occurring above heights of 2135 metres in the mountainous areas (Figure 8). The climate is severe, characterized by strong winds, long winters and cool summers. Precipitation is high throughout the year, although it tends to be greater during the winter (Strong and Leggat 1981:24-26).

Vegetation in this zone is extremely variable due to variations in soils and climate. At lower elevations, willow and dwarf birch communities are common as are a variety of heathers, sedges, grasses, forbs, pryophytes and lichens (Kojima 1980:21).

The upper elevations of the Alpine ecoregion are sparsely vegetated. Trees are scarce and tend to be stunted and deformed. Small, perennial plants such as anemone (*Anemone lithophila*), everlasting (*Antennaria alpina*), milk vetch (*Astragalus alpinus*), alpine loco-weed (*Oxytropis cusickii*), cinquefoil (*Potentilla diversifolia*) and alpine bluegrass (*Poa alpina*) survive in rocky meadows and ridges. On unstable scree slopes, skunkweed (*Polemonium viscosum*), yellow prairie violet (*Viola nuttallii*) and fireweed (*Epilobium latifolium*) are common (Kuijt 1982:xxiv).

Summary

In summary, the traditional homeland of the Piikáni is a land of ecological diversity. The complex climate and physiography of the region have created a variety of ecoregions in a relatively short geographic distance. Thus, there was a wide array of plant resources available to the Piikáni peoples within the study region.

Chapter 4: A Review of Previous Ethnobotanical Research

Literature describing the Blackfoot culture is extensive. At last count, it consisted of close to 1200 published works (see Johnson 1988; Dempsey and Moir 1989). Included are many excellent ethnographic sources which provide detailed accounts of life among the Blackfoot from the mid 1700's to the present day.

Despite this, there is a dearth of detailed information concerning traditional plant knowledge and utilization. For example, of the 1186 entries in Johnson's (1988) annotated bibliography of the Blackfoot, only seven deal specifically with the topic of plants, and five of these are by the same author. When this is compared to the number of works devoted to discussions of buffalo hunting, an imbalance becomes apparent.

The reasons for this imbalance are not obvious. However, it may reflect the fact the male ethnographers of the late 19th and early 20th centuries dealt primarily with male informants. As a result, these observers were more frequently exposed to men's activities, such as hunting or warfare, and consequently, these more dramatic aspects of Piikáni life were recorded. This androcentric perspective, although perhaps unintentional, is exemplified by Grinnell's (1892:xv) statement that "I have learned to know well all their principal men . . . and have devoted much time and effort to the work of accumulating from their old men and best warriors the facts bearing on the history, customs, and oral literature of the tribe, which are presented in this volume".

Nonetheless, such studies represent the only historic information available and modern researchers must glean as much as possible from their pages (while being aware of the inherent biases!). The ethnographic works of Grinnell (1892), Wissler (1910, 1911, 1913, 1918), McClintock (1910) and Ewers (1955, 1958) are considered required reading for students of the Blackfoot. While these are only a sample of the ethnographic literature available, they may be considered a representative sample with respect to the quantity and quality of plant data they present.

Blackfoot Lodge Tales, by George Bird Grinnell (1892) is one of the earliest accounts of traditional Blackfoot life. Grinnell spent more than a decade recording the oral traditions and daily activities of the Piikáni as described to him by the elders. In discussing the Blackfoot diet, Grinnell (1892:203-204) notes that it is "more varied than one would think" and offers a brief description of the various plant foods utilized, with some

discussion of collecting and processing techniques. Included in the list of plant foods are: "sarvis berries", "choke-cherries", "bull berries", "white berry of the red willow", "camas root", "bitter-root" and "a certain root called *mats*". In contrast, Grinnell (1892:226-241) devotes an entire chapter to hunting.

Clark Wissler, an ethnographer from the American Museum of Natural History, conducted extensive fieldwork primarily among the Piikáni in Montana at the beginning of this century (Wissler 1910:5; Thomas 1986:vii). His volume, *Material Culture of the Blackfoot*, contains a lengthy discussion of the food habits of the Piikáni (1910:20-52). Although the bulk of this chapter pertains to the pursuit, capture and processing of bison and other game, Wissler devotes several paragraphs to plant collection and preparation (1910:20-22; 24-25; 43). He also includes the list of the plants previously identified by Grinnell (1892), as well as a list of food plants published by McClintock (1909) (see below).

Unfortunately, Wissler omits (or neglected to record?) many of the specifics concerning plant gathering and processing. Perhaps this is because "the fact, that the vegetable food of the Blackfoot seems to have been normally used as the secondary element in meat dishes, leaves little to be said as to cooking and preparation" (Wissler 1910:43).

The works of John Ewers are also important sources of Blackfoot ethnographic data. Ewers, a student of Wissler's, became curator of the Museum of the Plains Indian on the Blackfeet Reservation in 1941 and worked with the Blackfeet for many years. His 1958 publication, *The Blackfeet: Raiders on the Northwestern Plains*, presents the history and culture of the Blackfeet, and has been called "perhaps the best single introduction to the Blackfeet" (Johnson 1988:40). In his book, Ewers discusses the contribution of plant resources, saying "Wild plants, especially roots in early summer and berries in fall, supplied vegetal foods which brought some variety to their heavy meat diet" (1958:15). However, food plants are mentioned only briefly at the end of a chapter detailing buffalo hunting (1958:72-87). Further, the plants listed are essentially the same set of plant foods originally published by Grinnell (1892) and Wissler (1910).

Walter McClintock's botanical bent appears to be the exception to the foregoing. In 1896, McClintock served as a member of the U.S. Forest Service expedition to northwestern Montana. In this capacity, he worked closely with a Piikáni guide, who later became his interpreter. After leaving the Forest Service, McClintock remained in Montana where he lived with the South Piikáni and was adopted by one of the chiefs. During his travels, McClintock became interested in the collection and processing of the various plants

and spent time with the Piikáni men and women as they collected. He notes (1910:364): "When I started a botanical collection of my own, the women were constantly on the look-out to aid me, pointing out the different varieties, telling their Indian names, and explaining their different uses and methods of preparation. Our outfit was frequently halted to secure additional specimens."

The result of McClintock's efforts is a list of over 60 plants used by the Piikáni for food, medicines and spiritual purposes (McClintock 1909). For each plant, he records the Blackfoot name(s) and a brief description of how the plant was collected and used. This list was later included as an appendix in *The Old North Trail* (McClintock 1910:524-531). It is worth mentioning that McClintock's observations remain highly respected by Piikáni elders today. In fact, one elder (JC) refers to *The Old North Trail* as "the bible" as he finds it to be an accurate account of traditional Piikáni ways at the end of the last century. JC is the great-grandson of Brings-Down-the-Sun, a prominent North Piikáni Chief visited by McClintock.

The foregoing is not intended to be an exhaustive review of the ethnographic literature concerning the Piikáni. Nor is it meant to imply that plants are not mentioned in any other portions of these studies, or in other works. It is meant, however, to demonstrate that with the exception of McClintock's studies, few ethnographic works have treated plant use in any systematic fashion (in a manner comparable to buffalo hunting, for example). The net result is a picture of past lifeways which tends to overemphasize the importance of the buffalo in Blackfoot diet and culture at the expense of plant contributions.

This picture persists today and may account for the fact that there are a only a handful of modern Blackfoot ethnobotanical studies. A review of the published literature reveals that only two sources deal specifically with Blackfoot plant use. These include the works of Johnston (1960, 1969, 1970, 1982, 1987) and Hellson and Gadd (1974). A third study by Raczka and Bastien (1986) remains unpublished. A number of secondary sources make reference to Blackfoot plant use in the broader context of the native economic plants of Montana (i.e. Blankinship 1905; Hart 1976). However, for the purposes of this discussion, only the primary sources will be examined.

The first major source of Blackfoot ethnobotanical information is the work of Alex Johnston. Johnston, a range ecologist in southwestern Alberta and a member of the Kainaa Chieftainship (Johnston 1987:7), has published numerous studies on Blackfoot plant utilization. Although he appears to have been a prolific writer on the subject, these works present essentially the same information, revised and expanded through the years (see for

example Johnston 1970, 1982 and 1987). For this reason, only his last publication will be discussed.

In *Plants and the Blackfoot*, Johnston (1987) presents a thorough review of all Blackfoot ethnographic literature, including some 90 sources which make reference to plant use. This is an impressive synthesis of the existing historical documents and provides relatively detailed information on over 180 plants, along with historic photographs and numerous plant illustrations. The plant information is arranged taxonomically, with plants listed by their botanical name, followed by the common and Blackfoot name(s) when available. The uses of each plant, as recorded by historic observers, are included and referenced. Although Johnston did not conduct formal field interviews with the Blackfoot, he does list several native consultants in his references.

Hellson and Gadd's (1974) *Ethnobotany of the Blackfoot Indians* was the first contemporary study to document first-hand the traditional plant knowledge of the Blackfoot elders. It represents a collaborative effort between John Hellson, an anthropologist, and Morgan Gadd, a field botanist. During the summer of 1971, the authors interviewed 14 men and women elders "all of whom had the specimens in hand" (1974:2). Although the scope of this research is said to include all three tribal divisions of the Blackfoot, including the South Peigan, it focuses primarily upon the Blood band (Taylor 1989:361).

Ethnobotany of the Blackfoot Indians includes information on approximately 100 plants and is illustrated with photographs of historic artifacts and selected plant specimens. The information is presented in six sections reflecting the broad categories of plant use identified by the elders. This is done "in order to stress the Blackfoot emphasis rather than an imposed taxonomy" (Hellson and Gadd 1974:2). The categories include plants used for religious and ceremonial purposes, birth control, medicines, foods, horse medicines, folklore and craftways. Each section begins with an overview of the subject followed by a listing of the relevant plant species and a brief description of the use(s) of each particular plant. For example, a typical entry in the medicinal plants section reads: "Geum triflorum: An infusion of the plant was given as a general tonic for severe cough" (Hellson and Gadd 1974:72). Although they claim that plants collected for the study were "pointed out to us by elderly informants" (Hellson and Gadd 1974:2), the authors do not indicate whether the study was limited to these plants or if it also included those plants mentioned in historic sources.

An unpublished study of the culturally significant flora and fauna of the Piikáni Reserve (Raczka and Bastien 1986) also merits discussion. It was prepared for the Piikáni

band administration to assist in assessing the impact of the Oldman River Dam on the religious practices of the Piikáni. The researchers, Paul Raczka, an anthropologist, and Leonard Bastien, a North Piikáni band member, continue to be actively involved in the cultural and religious activities on the reserve (Bastien is currently Chief). They interviewed 11 elders (10 men and one woman) and incorporated information from previously published works (such as Johnston 1969) and taped interview materials from the Provincial Archives of Alberta.

The emphasis of this work is on the ceremonial use of plants and the authors provide an insightful discussion on the role of religion in Piikáni life. Plants are listed under a variety of use categories, including: ceremonial bundles, curing bundles, horse medicine, curing, food, crafts, and miscellaneous. Within these categories, plants are listed alphabetically by their scientific names, along with common names and Blackfoot names. Detailed information on the collection, preparation and use of these plants is not included. Although Raczka and Bastien (1986:10) claim that "some very specific and detailed information was obtained concerning the major, and individual, medicine bundles among the Piikáni Tribe and the over all religious practices", none of this information is presented for public consumption due to its sacred nature.

In summary, the ethnobotanical studies of Johnson, Hellson and Gadd, and Raczka and Bastien differ in scope and method, yet they provide complementary data necessary for further research. However, these previous studies have several shortcomings which limit their utility to those archaeologists and prehistorians interested in analyzing subsistence strategies and settlement patterns.

First, and foremost, the works are essentially inventories of plants and their uses. They make no attempt to synthesize data in order to identify patterns of plant utilization. This is typical of early ethnobotanical investigations when "the questions and focus were utilitarian . . . and the organization of these data followed scientific classifications" (Ford 1978:39). This approach is most evident in Johnston's works and reflects the purpose of his studies: to synthesize the historical evidence and develop an inventory of plants used by the Blackfoot. This is not to suggest the utilitarian approach is without merit. At the very least, it provides an essential database. However, lengthy lists of plants arranged by scientific classifications do little to assist us in understanding how a particular culture classifies and utilizes the resources in its environment.

This problem is intensified by the fact that the current Blackfoot studies fail to record the details of plant gathering and processing. Archaeologists interested in

pre-contact land use require information regarding harvesting times, collecting areas, processing techniques and the artifacts associated with these activities. These data are largely absent in the published literature and when included, they are presented unsystematically. For example, Hellson and Gadd record processing information for some plants, but not others. While this may reflect the amount of traditional knowledge retained by the elders, it may also reflect the authors' utilitarian focus. Unfortunately, Hellson and Gadd do not elaborate on this point.

The current studies also neglect to identify the folk categories used by the Blackfoot themselves. This stems from the use of western scientific classifications as a method of structuring plant data. For example, Hellson and Gadd develop use categories which reflect elder comments (1974:2), and then proceed to list plants alphabetically by scientific name in all but one of these categories. When they do attempt to list plants according to "the Blackfoot emphasis rather than botanical taxonomy" (Hellson and Gadd 1974:9), they fail to define that "emphasis". As a result, there is no way of interpreting the order in which the plants are presented.

The development of a folk taxonomy is also hindered by the failure of these studies to identify principles of Blackfoot plant nomenclature. Plant names have been recorded by Johnston (1987) and Raczka and Bastien (1986), but neither study attempts to develop a classificatory scheme. In addition, the orthography is inconsistent, making it difficult to compare and assess these names. Hellson and Gadd's work is particularly disappointing in this respect. Although they recorded the Blackfoot plant names during their interviews with the elders, they decided not to include these in their study "because they differ according to region and division in the confederacy, though the uses remain the same" (Hellson and Gadd 1974:3). As one Blackfoot linguist notes, this is true of all languages "but is insufficient reason for failing to include names were available. . . Judging from the two or three fumbling attempts to record native names which are included . . . I suspect Hellson and Gadd were simply incapable of recording the Blackfoot names. This is the more regrettable because it did not need to be so: expertise in writing Blackfoot was available in Alberta and could have been had for the asking" (Taylor 1989:362).

In conclusion, existing Blackfoot ethnographic and ethnobotanical sources provide a basis for further investigation. Johnston has skillfully synthesized the observations of numerous observers of 18th, 19th and early 20th centuries. These are complemented by Hellson and Gadd's *Ethnobotany of the Blackfoot Indians*, an important first-hand account of the traditional plant knowledge of the elders. Finally, the work of Raczka and Bastien

presents a relatively current inventory of spiritually significant plants as well as a sensitive discussion of the Piikáni world view.

However, as discussed, these studies are of limited analytic utility to archaeologists and others interested in past resource use. Researchers interested in subsistence strategies and settlement patterns require much more than long lists of plants and their uses. Information on the seasonal collection of plants, the age and gender-specific task groups involved, the methods of plant preparation and processing, and the artifacts associated with these activities is essential. In addition, the cultural significance and relative importance of the various plants utilized by a culture (folk taxonomy) must be assessed in order to determine which resources played important roles in the scheduling of seasonal movements. The following chapter details how this current study attempts to address these issues.

Chapter 5: Research Methods

The manner in which people interact with the plants in their environment is influenced by their culture. The goal of the ethnobotanist is to identify which plants are significant to that culture; to discover how those plants are identified, classified and utilized; and to examine how a people's perception of their plant world influences their actions and concomitantly structures the floral environment (Ford 1978:44).

With these goals in mind, this study began with a comprehensive literature review. Plant data from ethnographic sources were synthesized to compile a list of plants believed to have been used by the Blackfoot (that is, all three tribes) or by the Piikáni specifically. Pertinent details concerning harvesting times, tools, processing techniques, and so forth were recorded and the Blackfoot plant names were included when available. The habitat of each species was defined and the distribution of each plant within the study region noted. In total, information was obtained on over 90 species. This established a framework for the field research component of the study. From this database, plants were added or deleted (see Table 11) and information modified as new data were recorded during interviews with the Piikáni elders (Appendix A).

With this preliminary preparation, I travelled to the Piikáni communities in Alberta and Montana in May of 1990 to begin the field research component of the study. After receiving official approval from the Piikáni Band Council, interviews with the Piikáni elders began. Band Councillor Nelbert Little Moustache assisted greatly in this endeavour by supporting the research project through council and by arranging introductions to elders considered to be knowledgeable concerning traditional plant use.

At the beginning of the field season, interviews with the elders were to be conducted in a variety of natural habitats at different times throughout the season. Although this was arranged on several occasions, it soon became apparent this approach was not going to be successful due to a number of factors. First, several elders were restricted physically and not able to take part in field excursions. In addition, the elders were extremely busy during the summer months participating in medicine bundle openings, the Sundance, and various powwows. As a result, it was often difficult to arrange suitable times for repeated visits to the habitats. Finally, not all habitat types are found on the Piikáni Reserve and consequently, it was often necessary to travel lengthy distances in

order to visit certain habitats.

With these considerations in mind, the field strategy was altered slightly. Relying upon information compiled from ethnographic sources, specimens of the plants reported to have been used by the Blackfoot were collected, as were those plants present in the study area, but not mentioned in the literature. Collecting began in May and continued until the end of September.

Every effort was taken to ensure that the specimens used for the interviews were as fresh as possible since the shape and smell of a plant were essential to its identification. When specimens had to be preserved, it was done so in a manner which would be familiar to the elders. For example, if an ethnographic source noted that a plant was hung in bunches and dried, the specimen was also prepared in this manner. This approach was quite effective and assisted elders in identifying many plants, some of which they had not seen for years. These samples were preferable to the pressed herbarium specimens (which lack smell and three-dimensional form!) used on several occasions when fresh plants were unavailable. The identification of specimens collected in the field was later confirmed at the University of Calgary herbarium.

The interviews were conducted in the homes of the Piikáni elders using freshly collected or preserved plant specimens. The interview format was unstructured, at least by western scientific standards. This is not to say, however, that they were without focus. I had a clear idea of the information to be obtained and the elders, in turn, relayed their knowledge to me in a traditional manner. It is important to realize, however, that traditional Piikáni teaching methods are not readily accommodated by a rigid question and answer interview format. As Wissler (1911:52) notes,

> "It is a breach to ask a leading question as to one's personal medicines or experiences. . . on the other hand . . . we found no reason to believe that a man felt any great reluctance to speak of such things at his own initiative or that he felt under special obligation not to do so: it is the blunt asking for information that is offensive."

A typical interview involved presenting plant specimens and discussing these with the elder(s). The flow of the conversation varied with each elder and the plant under discussion, reflecting the differing degrees of traditional botanical knowledge as well as the importance of that specific plant. Discussions of commonly used plants, for example, required little input on the part of the researcher. However, many of the traditional plants are no longer used for food, medicine or crafts by the Piikáni. As a result, the elders had difficulty identifying these resources. In such instances, it was sometimes necessary to

ask more direct questions or, as a last resort, to suggest a Piikáni name or use for the plant in an attempt to trigger a memory. This technique often assisted the elder in recognizing a particular plant and provided information which would not have been obtained otherwise. I am confident that this technique did not introduce biases into the data as elders often responded negatively to my suggestions.

Interviews varied in length and in the number of plants discussed. During conversations, elders often remembered other plants and described them so that they could be collected for the next interview. The elders were visited on several separate occasions to review new specimens and to clarify points from previous interviews. An interpreter was used when necessary, and all of the interviews were taped recorded and transcribed. The elders were reimbursed for their participation.

In total, nine Piikáni elders (seven women, two men) from Brocket, Alberta and Browning, Montana were interviewed. The ages of the elders ranged from the mid-50's to the early 90's. The quantity and quality of traditional plant knowledge varied with the ages, upbringing, and ceremonial involvement of the elders. However, all are considered "traditional" and continue to be active participants in cultural and ceremonial events. All are fluent speakers of Blackfoot, and with several exceptions, are bilingual. A list of the elders consulted in this study is included in the Piikáni Elder Profile (Appendix C). As several elders wished to remain anonymous, the elders are identified only by their initials.

The results of Piikáni ethnobotanical study are presented as an Annotated List of Plants in Appendix A. Plant data are summarized in a standard format and are arranged alphabetically according to the scientific name of the plant. Information for each plant is divided into a number of headings representing the broad categories of information sought during the elder interviews. These categories were established to assist in presentation of the data and should not be construed as folk categories. A sample plant form sheet is presented in Table 3, along with a description of the information included under each heading.

Information presented in the Annotated List of Plants consists largely of the original information provided by the Piikáni elders during field interviews. All elder comments regarding a specific plant have been included unless it was obvious there was some confusion concerning the plant in question. As plant knowledge varies with age, gender, and community, I felt it was important to record all observations without making assumptions as to which was the more accurate or appropriate. The elders' comments are referenced according to their initials as assigned in the Elder Profile (Appendix C).

In many instances, evidence from previous ethnographic work is incorporated on the plant summary forms. While it is not the intent of this study to include all previously published Piikáni ethnobotanical data, such details were included to clarify, corroborate, or to contradict a point. These are referenced accordingly.

Often a category on the summary forms contains only the words "None recorded". This indicates that information on that particular subject was not obtained during interviews with the Piikáni consultants. This is not meant to imply that knowledge regarding this subject is totally absent in the community now, or was absent in the past. It merely indicates that this study was not successful in obtaining such information.

The results of the study are summarized in Chapter 6.

Table 3: Plant Summary Form Explanation

Plant Name:

Each plant is listed by scientific designation (genus and species), common name(s) and family as recorded in *The Flora of Alberta* (Moss 1983). For the sake of brevity, the botanical descriptions of the plants are omitted. Readers are referred to Moss (1983) for these details.

Blackfoot Name:

The Blackfoot plant names given by the Piikáni elders are recorded using the orthographic standards outlined in *The Blackfoot Dictionary* (Frantz and Russell 1989). The dictionary uses an alphabetic system which is based upon a linguistic analysis of the sound system of the Blackfoot language. Each of the twelve letters represents a distinctive sound unit of the language. This system was approved as the official writing system for the Blackfoot in 1974. For details, see Appendix B.

For consistency, the Blackfoot name is given as the stem (which is never a full word), as well as its plural form. For example, the stem for Alpine Fir (*Abies lasiocarpa*) is "katoyiss" or "sweet pine". This becomes the plural "katoyissiksi", "sweet pines" in conversation. Readers are referred to Frantz and Russell (1989) for a more detailed explanation.

Often, the names given by the Piikáni consultants were not available in *The Blackfoot Dictionary*. In these instances, the work of Taylor (1989) was referenced. Taylor, a Blackfoot linguist, has collected plant names and associated folklore during visits to the Blackfeet Reservation in Montana for over 20 years. His orthography is similar to that used by Frantz and Russell (1989) and readers are referred to Appendix B for full details.

Several Blackfoot plant names are prefaced with a "?". This indicates that the orthography is uncertain and requires further research.

When the Piikáni elders were unable to provide a name for a particular plant, the original historic reference was included if available. It should be noted that these names are not recorded in the standard orthography. Alternately, the words "None recorded" were inserted.

Meaning:

This section provides translations of the Blackfoot plant name as interpreted by the Piikáni elders. Literal translations are prefaced by "*lit.*". On occasion, the elders were unable to provide an English translation of the name. If a translation was available in a historic source, this was included and referenced. In other instances, a tentative interpretation is proposed based upon field observations. These are referenced as (SLP).

Refers to:

This category identifies the property or characteristic for which a plant is recognized or named. Often, this information was surmised from observations made during elder interviews.

Table 3: Plant Summary Form Explanation (continued)

Ecoregion:
Each plant was assigned to an ecoregion(s) on the basis of habitat descriptions (see below) and field observations. The ecoregion classification is based upon Strong and Leggat (1981) as outlined in Chapter 3.

Habitat:
Information on the general growing conditions of each species was compiled from Moss (1983), Kuijt (1982) and Vance et al. (1984).

Food Use(s):
This category records details regarding the use of a plant for food. Previously published information is included when pertinent to the discussion.

Medicinal Use(s):
This section discusses medicinal uses of a plant as described by Piikáni elders. Previous ethnographic data are included when necessary.

Spiritual Use(s):
The ritual and ceremonial use(s) of a plant are outlined in this section. This section tends to include more information from ethnographic sources. Much of this knowledge is sacred and restricted, and as such, was not usually the subject of elder interviews.

Other Use(s):
This is a miscellaneous category which includes information about the use of a plant for crafts, horse medicine, perfumes, etc.

Collecting:
Detailed information concerning the collecting of a plant is recorded in this section. This may include harvesting times, the implements utilized, and specific locations if known. Again, this represents data reported by Piikáni elders and is supplemented by other sources when necessary.

Processing:
The details of plant processing are included under this heading. This may include the tools and techniques used, the location of processing, the amount of time required, and so on.

Preservation:
Methods of plant preservation and storage are described in this section.

Table 3: Plant Summary Form Explanation (continued)

Artifacts:

Based upon the evidence presented above for each plant, this discussion seeks to determine the nature and extent of archaeological evidence resulting from the use, collecting, processing or storage of a particular plant. This information was not generally provided by Piikáni elders, but rather reflects the author's assessment of the evidence.

Comments:

This is a miscellaneous section for notes pertaining to the preceding information. It may contain references to myths, lists of the active ingredients in a particular plant, notes concerning conflicting ethnographic evidence or discussions of the problems associated with obtaining information about a specific plant.

References:

This section features a list of selected ethnographic sources which also make reference to this particular plant. Readers can refer to these sources for additional details (see References Cited).

Chapter 6: The Role of Plants in Traditional Piikáni Society

Introduction

The rich botanical heritage of the Piikáni peoples is reflected in the results of this study, which succeeded in documenting at least 90 different species of plants utilized by the Piikáni for food, medicine, rituals and a variety of other purposes. The number of plants utilized in each category is summarized as follows:

Food Plants	45 species
Medicinal Plants	75 species
Ritual Plants	27 species
Other Uses	52 species

The total of these figures exceeds 90, revealing that the Piikáni used a significant number of the plants for multiple purposes.

Each of the 90 plants identified by this study is listed alphabetically in Table 4, as are the uses for each plant as described by the Piikáni elders. A number of the plants in this list are followed by a single asterisk (*) indicating that the identification of this plant is tentative. Others are followed by two asterisks (**). In these instances, the plant was previously recorded by an earlier researcher, but was not identified with confidence by the Piikáni elders during the current study. However, when sufficient data were available, these plants were added to the database in the hope that the elders' comments and additional information might assist further research in supporting or refuting the original identification.

The Annotated List of Plants (Appendix A) contains detailed data on each of the plants listed in Table 4. Readers are referred to this section for specific information. The remainder of this chapter summarizes the material gathered during this study as it relates to the use of plants in traditional Piikáni culture. The discussion begins with a look at the role of food plants, with particular attention to the collection, processing and preservation of those resources. This is followed by an overview of medicinal plants in Piikáni culture. The use of plants for spiritual purposes is briefly summarized, as are additional uses for the plants identified by the study. The nature of the archaeological evidence associated with plant utilization is examined in Chapter 7.

Table 4: Plants Identified by Study

Scientific	Common	F	M	S	O
Abies lasiocarpa	Alpine Fir	x	x	x	x
Achillea millefolium	Common Yarrow		x		x
Acorus americanus	Sweet Flag		x		
Actaea rubra	Baneberry		x		x
Allium spp.	Onion	x	x		x
Amelanchier alnifolia	Saskatoon	x	x	x	x
Anemone multifida	Cut-leaved Anemone		x		
Anemone patens	Prairie Crocus		x		
*Angelica dawsonii**	Yellow Angelica		x	x	x
*Apocynum cannabinium***	Indian Hemp		x		
Arctostaphylos uva-ursi	Common Bearberry	x	x	x	x
Artemisia frigida	Pasture Sagewort	x	x		x
Artemisia ludoviciana	Prairie Sagewort	x	x	x	x
Asclepias viridflora	Green Milkweed		x		
*Astragalus canadensis***	Milk Vetch	x	x		
Astragalus crassicarpus	Ground Plum				
Balsamorhiza sagittata	Balsamroot	x	x	x	x
Berberis repens	Creeping Mahonia	x	x		x
Betula spp.	Birch		x		x
Camassia quamash	Blue Camas	x	x	x	
Castilleja spp.**	Indian Paint-brush		x		x
*Chimaphila umbellata***	Prince's Pine				x
*Claytonia lanceolata***	Western Spring Beauty	x			
Clematis occidentalis	Purple Clematis		x		x
Cornus stolonifera	Red Osier Dogwood	x	x	x	x
Coryphantha vivipara	Ball Cactus	x	x		
Disporum trachycarpum	Fairy Bells	x	x		
Elaeagnus commutata	Wolf Willow	x	x		x
Equisetum spp.	Common Horsetail		x		x
*Erythronium grandiflorum***	Glacier Lily	x			
Fragaria virginiana	Wild Strawberry	x	x		
*Fritillaria pudica***	Yellow-bell	x			
Geum triflorum	Old Man's Whiskers		x		x
Glycyrrhiza lepidota	Wild Licorice		x		x
Grindelia squarrosa	Gumweed		x		
Heracleum lanatum	Cow Parsnip	x	x	x	x
Heuchera spp.	Alum-root		x		x
Hierochloe odorata	Sweet Grass		x	x	x
Juniperus spp.	Juniper	x	x	x	x
*Ledum groenlandicum**	Common Labrador Tea	x			
*Letharia vulpina***	Wolf Lichen		x		x
Lewisia rediviva	Bitter-root	x	x	x	

F = Food Use; M = Medicinal Use; S = Spiritual Use; 0 = Other Use;

Table 4: Plants Identified by Study (continued)

Scientific	Common	F	M	S	O
*Ligusticum canbyi**	Lovage		x		
*Lilium philadelphicum***	Western Wood Lily	x			
*Lithospermum ruderale***	Yellow Puccoon			x	x
*Lomatium dissectum***	Chocolate-tips	?	x	x	x
*Lomatium triternatum***	Prairie Parsley	x	x		x
Lonicera involucrata	Bracted Honeysuckle		x		
Lycoperdon spp.	Puffballs		x	x	x
Lygodesmia juncea	Skeleton-weed		x		x
Matricaria matricarioides	Pineapple-weed		x	x	x
Mentha arvensis	Wild Mint	x	x	x	
Monarda fistulosa	Wild Bergamot	?	x		x
*Musineon divaricatum***	Leafy Musineon	x	x		
*Oenothera caespitosa***	Butte Primrose		x		
Opuntia spp.	Prickly Pear		x		
Osmorhiza occidentalis	Sweet Cicely		x	x	x
Oxytropis sericea	Early Yellow Loco-weed		x		x
*Penstemon nitidus***	Smooth Blue Beard-tongue		x		
Perideridia gairdneri	Wild Caraway	x	x		x
Physaria didymocarpa	Double Bladder-pod		x		x
Pinus contorta	Lodgepole Pine	x	x		x
*Polygonum bistortoides***	Bistort	x			
Polyporus spp.	Pore Fungus		x	x	x
Populus balsamifera	Balsam Poplar	x	x	x	x
Populus tremuloides	Aspen	x	x	x	x
Potentilla anserina	Silverweed	x	x		x
Prunus virginiana	Choke Cherry	x	x	x	x
Psoralea esculenta	Indian Bread-root	x	x	x	x
Ribes aureum	Golden Currant	x			
Ribes oxyacanthoides	Wild Gooseberry	x	x		
Rosa spp.	Rose	x	x		
Rubus idaeus	Wild Red Raspberry	x			
Rubus parviflorus	Thimbleberry	x	x		x
Rumex spp.	Dock		x		
Salix spp.	Willow	x	x	x	x
*Selaginella densa***	Club-moss	x	x		x
Shepherdia argentea	Thorny Buffalo-berry	x	x		
Shepherdia canadensis	Canadian Buffalo-berry				
Solanum triflorum	Wild Tomato		x		
Solidago spp.	Goldenrod		x		
Symphoricarpos spp.	Snowberry and Buckbrush				x
Thalictrum occidentale	Western Meadow Rue	x	x	x	x
Thermopsis rhombifolia	Golden Bean			x	x

F = Food Use; M = Medicinal Use; S = Spiritual Use; 0 = Other Use;

Table 4: Plants Identified by Study (continued)

Scientific	Common	F	M	S	O
Vaccinium membranaceum	Black Mountain Huckleberry	x	x		
Valeriana spp.	Valeriana		x	x	x
Veratrum eschscholtzii	False Hellebore		x		x
*Xerophyllum tenax***	Bear Grass		x		
*Yucca glauca***	Soapweed		x		x
*Zigadenus venenosus**	Death Camas				

F = Food Use; M = Medicinal Use; S = Spiritual Use; 0 = Other Use;

NOTE: A number of the plants in this list are followed by a single asterisk (*) indicating that the identification of this plant is tentative. Others are followed by two asterisks (**). In these instances, the plant was previously recorded by an earlier researcher(s), but was not identified with confidence by the Piikáni elders during the current study. However, when sufficient data were available, these plants were added to the database in the hope that the elders' comments and additional information might assist further research in supporting or refuting the original identification. Readers are referred to the Annotated List of Plants (Appendix A) for details.

Traditional Food Plants: An Overview

The overall importance of plants to the traditional Piikáni diet is reflected in the results of this study which indicate at least 45 different plant species were consumed on a consistent basis. For discussion purposes, the food plants have been divided into the following categories:

Edible roots	15 species
Fruits and berries	17 species
Greens (stems, leaves, sprouts, shoots)	5 species
Tree Inner Bark, Pitch, Cones	5 species
Beverage Plants	3 species

These categories, and the plants appropriate to each, are listed in Table 5. It is important to note that these divisions do not reflect Piikáni folk categories (but see language discussion, page 90). Rather, they have been devised in order to present the data. While a detailed discussion of each of the 45 plant foods is beyond the scope of this chapter, it is possible to summarize the major food groups.

Edible roots (including corms, tubers, bulbs, and rhizomes) were consumed in considerable quantities by the Piikáni. In fact, root vegetables account for one third of the plants in the diet. Nutrient analysis of several of these more important root resources reveals a food source high in carbohydrates. Fresh prairie turnip, for example, contains 66.6 grams of carbohydrates per 100 grams fresh weight. The same weight of bitter-root contains 81.0 grams of carbohydrates, while camas contains 71.0 grams (Kuhnlein and Turner 1991).

Carbohydrates provide energy to the body and are essential to the efficient metabolism of protein. Without sufficient carbohydrates in diet, the amino acids in protein are converted to meet energy requirements, resulting in a loss of protein for the body's normal uses (Speth and Spielmann 1983:13). Thus, these root resources and the carbohydrates they provide can be seen as necessary components of the Piikáni diet, which incorporated substantial amounts of animal proteins in the form of buffalo and other game. As Speth and Spielmann (1983:20) note,

> "In light of the greater protein-sparing capacity of carbohydrate compared to fat, and the higher essential fatty acid content of many plant foods, hunter-gatherers, when possible, may place equal or greater emphasis on building up storable carbohydrate reserves during the fall than on hunting . . ."

Table 5: Traditional Plant Foods of the Piikáni

Edible Roots		Fresh	Cooked	Stored
Allium spp.	Onion		x	?
Asclepias viridflora	Green Milkweed	x	x	x
Balsamorhiza sagittata	Balsamroot		x	x
Camassia quamash	Blue Camas		x	x
*Claytonia lanceolata**	Western Spring Beauty	x	x	
*Erythronium grandiflorum**	Glacier Lily		x	x
*Fritillaria pudica**	Yellow-bell		x	x
Lewisia rediviva	Bitter-root	x	x	x
*Lilium philadelphicum**	Western Wood Lily		x	x
*Lomatium triternatum**	Prairie Parsley	x	x	x
*Musineon divaricatum***	Leafy Musineon	x	?	x
Perideridia gairdneri	Wild Caraway	x	x	x
*Polygonum bistortoides**	Bistort		x	
Potentilla anserina	Silverweed		x	x
Psoralea esculenta	Prairie Turnip	x	x	x
Fruits & Berries				
Amelanchier alnifolia	Saskatoon	x	x	x
Arctostaphylos uva-ursi	Common Bearberry	x	x	x
Berberis repens	Creeping Mahonia	x		
Cornus stolonifera	Red Osier Dogwood	x		
Coryphantha vivipara	Ball Cactus	x		
Disporum trachycarpum	Fairy Bells	x		
Elaeagnus commutata	Wolf Willow	x	x	x
Fragaria virginiana	Wild Strawberry		x	
Juniperus spp.	Juniper	x	x	x
Prunus virginiana	Choke Cherry	x	x	x
Ribes aureum	Golden Currant	x	x	x
Ribes oxyacanthoides	Wild Gooseberry	x	x	x
Rosa spp.	Rose	x	x	x
Rubus idaeus	Wild Red Raspberry	x	x	
Shepherdia argentea	Thorny Buffalo-berry	x	x	x
Thalictrum occidentale	Western Meadow Rue		x	
Vaccinium membranaceum	Black Mountain Huckleberry	x	x	
Greens				
Allium schoenoprasum	Wild Chives		x	?
Artemisia frigida	Pasture Sagewort		x	?
Artemisia ludoviciana	Prairie Sagewort		x	?
Heracleum lanatum	Cow Parsnip		x	x
Mentha arvensis	Wild Mint	x	x	x

Table 5: Traditional Plant Foods of the Piikáni (continued)

Tree Inner Bark, Pitch, Cones		Fresh	Cooked	Stored
Abies lasiocarpa	Alpine Fir	x		
Pinus contorta	Lodgepole Pine	x		x
Populus balsamifera	Balsam Poplar	x		
Populus tremuloides	Trembling Aspen	x		
Salix spp.	Willows	x		
Beverage Plants				
Fragaria virginiana	Wild Strawberry		x	
Mentha arvensis	Wild Mint		x	x
*Ledum groenlandicum**	Common Labrador Tea		x	?

* see notes on Table 4.
** see notes on Table 4.

Fruits and berries (including drupes, pomes, aggregate and accessory fruits) comprised an additional one third of the Piikáni diet. These also contributed carbohydrates, as well as essential vitamins and minerals. Saskatoons, considered the most important berry by the Piikáni, are high in Vitamins A and C, and contain unusually high concentrations of iron and copper (Turner and Szczawinski 1979:137).

The remainder of the diet consisted of a variety of edible shoots, stems and leaves. These too provided nutrients to the diet. Cow parsnip, for example, was eaten as a fresh vegetable in the spring and provided folate, ascorbate and other water soluble vitamins (Kuhnlein and Turner 1986:318). The inner bark or "cambium" of the "cottonwood" trees (*Populus* spp.) was also an important source of food energy in the spring, at a time when other resources were scarce. The bark of the balsam poplar (*P. balsamifera*), for example, provides 230 kcal of food energy per 100 grams fresh weight. The same weight of trembling aspen bark (*P. tremuloides*) provides 684 mg of calcium (Kuhnlein and Turner 1991:347).

It is difficult to estimate the overall caloric contributions of plant foods to the Piikáni diet, although it is reasonable to suggest these contributions have been underestimated and undervalued in the past. Research with other Indigenous groups has revealed the importance of plant resources to hunter-gatherer diets. For example, Lee's (1968) seminal study of the !Kung showed that plant foods comprised over 60% of the diet. Similarly, Hunn (1981) has demonstrated that the pre-contact peoples of the Columbia-Fraser Plateau obtained approximately 70% of their food energy needs from plant foods rather than salmon resources as is commonly assumed. Whether these figures are appropriate to the Piikáni remains to be determined through quantitative and/or nutritional analysis of plant and animal foods in the diet. The preceding discussion does demonstrate however, that the Piikáni utilized a wide variety of plant foods and that these were important -- and essential -- sources of food energy, vitamins and minerals.

The Distribution and Seasonal Availability of Plant Foods

As discussed in Chapter 3, the distribution of vegetation is influenced by local geography and climate, as well as the tolerance of each species to the varying environmental conditions. Thus, some plants are widely distributed throughout a variety of ecoregions; others are much more restricted in their spatial distribution.

The spatial distribution of plant resources also affects their temporal availability. This is particularly true of the study region, where elevation and moisture levels increase

from east to west, while temperature generally decreases. As a result, plants on the plains are available for harvesting earlier than those same plants found in the foothills and mountains. These spatial and temporal restrictions on the availability of food resources have important implications for plant collecting and the scheduling of seasonal movements.

It is appropriate to note at this juncture that several of the more important root crops collected by the Piikáni are relatively restricted in their distribution in the study area (see Table 6). In fact, both the prairie turnip (*Psoralea esculenta*) and camas (*Camassia quamash*) were previously believed to be absent from the northern portion of the region altogether. Wissler (1910:20) notes that "the prairie turnip was seldom found north of the Sun River [in Montana] and the camas root rarely east of the foothills of the mountains in Montana. Thus, these important foods were accessible only in the extreme southern part of their historic habitat".

Field observations during this study, however, revealed the current distributions of these plants is much more extensive. The prairie turnip is widely distributed in the mixed and fescue grasslands along the Oldman River in the northern portion of the study region. In fact, the town of Cowley, Alberta was known to the Blackfoot as "the place of many prairie turnips" (Johnson 1987). Similarly, camas occurs in abundance in the aspen parkland and montane ecoregions of the foothills of southwestern Alberta and northern Montana (see also Chapter 3). This contradicts the information presented by Wilson et al. (1988:517) which suggests that the occurrences of camas in the study area are few and localized.

Data concerning the seasonal collection of the various plant foods, as well as their distribution throughout the study area, are presented in Table 6. It should be noted that the seasonal divisions -- spring, summer, fall and winter -- apparently did not exist in Piikáni culture prior to contact. According to Wissler (1911:44-45), the Piikáni recognized only two seasons: summer and winter. This division may more accurately represent the actual weather patterns of the region (spring and fall tend to be very short!). However, as the Piikáni elders refer to all four seasons, these will be used throughout the study. The seasons are defined, rather loosely, as: spring (April, May, early June); summer (late June, July, August); fall (September, October); winter (November to March).

An examination of Table 6 reveals that there is considerable overlap between the seasonal divisions. This reflects the nature of plant gathering activities which, as outlined above, must respond to varying weather conditions (seasonally and annually), as well as to changes in geographic locations. The seasonal collection of plant foods is discussed in

Table 6: Food Plants Harvested by Season and Distribution within Study Area

Scientific	Common	Ecoregion*
Spring (late April, May to early-June)		
Allium spp.	Onion	MG, FG, AP, MT
Artemisia frigida	Pasture Sagewort	MG, FG, AP, MT, SA
Artemisia ludoviciana	Prairie Sagewort	MG, FG, AP, MT, SA
*Astragalus canadensis***	Milk Vetch	MG, FG, AP, MT
Balsamorhiza sagittata	Balsamroot	FG, AP
Camassia quamash	Blue Camas	AP, MT
*Claytonia lanceolata***	Western Spring Beauty	AP, MT, SA, AL
*Erythronium grandiflorum***	Glacier Lily	AP, MT, SA
*Fritillaria pudica***	Yellow-bell	FG, AP, MT
Heracleum lanatum	Cow Parsnip	MG, FG, AP, MT
*Lilium philadelphicum***	Western Wood Lily	FG, AP, MT
*Lomatium triternatum***	Prairie Parsley	MG, FG
Mentha arvensis	Wild Mint	MG, FG, AP, MT
Monarda fistulosa	Wild Bergamot	MG, FG, AP, MT
Perideridia gairdneri	Wild Caraway	MG, FG, AP
Pinus contorta	Lodgepole Pine	MT, SA
*Polygonum bistortoides***	Bistort	MT
Populus balsamifera	Balsam Poplar	MG, FG, AP, MT
Populus tremuloides	Aspen	FG, AP, MT
Ribes oxyacanthoides	Wild Gooseberry	FG, AP, MT, SA
Salix spp.	Willow	MG, FG, AP, MT
Summer (late June, July, August)		
Allium spp.	Onion	MG, FG, AP, MT
Amelanchier alnifolia	Saskatoon	MG, FG, AP, MT
Artemisia frigida	Pasture Sagewort	MG, FG, AP, MT, SA
Artemisia ludoviciana	Prairie Sagewort	MG, FG, AP, MT, SA
*Astragalus canadensis***	Milk Vetch	MG, FG, AP, MT
Camassia quamash	Blue Camas	AP, MT
Cornus stolonifera	Red Osier Dogwood	FG, AP, MT
Coryphantha vivipara	Ball Cactus	MG, FG
Disporum trachycarpum	Fairy Bells	MG, FG, AP, MT
Fragaria virginiana	Wild Strawberry	MG, FG, AP, MT
*Ledum groenlandicum**	Common Labrador Tea	MT, SA
Lewisia rediviva	Bitter-root	MT
*Lomatium triternatum***	Prairie Parsley	MG, FG
Mentha arvensis	Wild Mint	MG, FG, AP, MT
Monarda fistulosa	Wild Bergamot	MG, FG, AP, MT

* MG = Mixed Grass; FG = Fescue Grass; AP = Aspen Parkland; MT = Montane; SA = Subalpine; A= Alpine;

Table 6: Food Plants Harvested by Season and Distribution within Study Area (continued)

Scientific	Common	Ecoregion*
Summer (continued)		
Perideridia gairdneri	Wild Caraway	MG, FG, AP
*Polygonum bistortoides***	Bistort	MT
Potentilla anserina	Silverweed	MG, FG, AP
Prunus virginiana	Choke Cherry	MG, FG, AP, MT
Psoralea esculenta	Indian Bread-root	MG, FG
Rosa spp.	Rose	MG, FG, AP, MT
Rubus idaeus	Wild Red Raspberry	AP, MT
*Selaginella densa***	Club-moss	MG, FG
Thalictrum occidentale	Western Meadow Rue	AP, MT
Vaccinium membranaceum	Black Mountain Huckleberry	MT, SA
Fall (September, October)		
Abies lasiocarpa	Alpine Fir	SA
Arctostaphylos uva-ursi	Common Bearberry	MG, FG, AP, MT
*Astragalus canadensis***	Milk Vetch	MG, FG, AP, MT
Berberis repens	Creeping Mahonia	MT
Elaeagnus commutata	Wolf Willow	MG, FG, AP, MT
Juniperus spp.	Juniper	MG, FG, AP, MT, SA
*Musineon divaricatum***	Leafy Musineon	MG, FG
Rosa spp.	Rose	MG, FG, AP, MT
Shepherdia argentea	Thorny Buffalo-berry	MG, FG, AP, MT
Vaccinium membranaceum	Black Mountain Huckleberry	MT, SA
Winter (November to March)		
Arctostaphylos uva-ursi	Common Bearberry	MG, FG, AP, MT
Berberis repens	Creeping Mahonia	MT
Elaeagnus commutata	Wolf Willow	MG, FG, AP, MT
Juniperus spp.	Juniper	MG, FG, AP, MT, SA
Rosa spp.	Rose	MG, FG, AP, MT

* MG = Mixed Grass; FG = Fescue Grass; AP = Aspen Parkland; MT = Montane; SA = Subalpine; A = Alpine;

* see notes Table 4.
** see notes Table 4.

greater detail in the following section.

The Collection of Plant Foods

As in many other Indigenous cultures, the Piikáni women possessed the knowledge and skills necessary to harvest and prepare the wide assortment of plants consumed in the diet or utilized for a variety of other purposes. In this task, they were usually assisted by the children. According to McClintock (1910:235-236):

> "A Blackfoot mother conscientiously trained her daughter from childhood in the tanning of hides and converting them into clothes and shelter, the making of lodges and travois, and in the knowledge of herbs and wild vegetables for eating and healing. Women considered this work was their rightful vocation and allowed no interference from the men of the family. In fact, as the men lacked the necessary training they naturally were unfitted for these tasks."

The collection of plant foods began in the spring, and continued throughout the summer and fall as the various greens, roots, and berries became available in the different ecoregions. The first fresh greens were collected in the spring. Stalks of cow parsnip or "wild rhubarb" (Figure 9) were one of the most important green vegetables. According to the Piikáni elders, these stalks had to be harvested before the plant bloomed otherwise, the stalks became tough and dry and were said to "have bones in them" (MPE, MLB).

Gooseberries were also collected in the spring, and according to the Piikáni elders, they were traditionally gathered at the same time as the wild rhubarb (MKW). Gooseberries were the earliest berries harvested, and although they are green at this time, the elders said if the berries are left to ripen on the bushes they "get worms" and are inedible (MKW, AD, MPE, EYH). MKW said her grandmother used to collect the berries in lard buckets. She punctured holes in these buckets, placed the bucket in the sun, and left the berries in there to ripen and turn red.

The inner bark of the "cottonwoods" (*Populus* spp.) and other trees was collected in the spring while the sap was running. According to AD, "you just peel them skins -- get a knife and scrape them. They're just like juice and you can eat them".

Edible roots were harvested in late spring and early summer. The "wild potato" (western spring beauty) (Figure 10), the "wild carrot" (wild caraway) and balsamroot (Figure 11) were amongst the first roots collected. As the season progressed, these were followed by other important root crops such as the prairie turnip (Figure 12) which, according to Grinnell (1892:204) was "eaten in great quantities" in the spring. Camas

Figure 9: Cow parsnip (*Heracleum lanatum*) or "wild rhubarb"

Figure 10: Western spring beauty (*Claytonia lanceolata*)

Figure 11: Balsamroot (*Balsamorhiza (sagittata*)

Figure 12: Prairie turnip (*Psoralea esculenta*) or the "wild turnip"

(Figure 13), bitter-root (Figure 14) and the wild onion were also collected during this time.

The women harvested the edible roots with a digging stick (JSC, MPE, EYH,MKW, AD). According to Piikáni oral tradition, the digging stick was "originally brought to them by the Indian maiden, who was loved by Morning Star, and was taken by him to live in the home of the Sun. She was compelled by the Sun God to return to earth and her tribe, because of her disobedience to his commands, in digging up the sacred Turnip, and in gazing down at her people on the earth through the hole she had made in the sky" (McClintock 1910:87-88).

Ethnographic accounts describe the digging stick as "a wooden stick, about two feet long, with a sharpened point" (McClintock 1910:87). The sharp end was "hardened in a fire and the upper end was rounded so that a woman could bear upon it with her stomach muscles in loosening roots from the ground" (Ewers 1958:86). The wood of birch (Ewers 1958), hawthorn (Raczka and Bastien 1986) or choke cherry (Hellson and Gadd 1974:94) was commonly used to manufacture digging sticks.

The Piikáni began collecting berries in the early summer. Saskatoons (also sarvis or service berry) (Figure 15) were one of the first berries to ripen. Wissler (1910:20) notes that "In their opinion, the service berry was the most important vegetable food, reference to its gathering and curing being frequent in ceremonies and narratives." According to Grinnell (1892:203), "large quantities of sarvis berries were gathered whenever there was a crop (which occurs every other year)". Choke cherries (Figure 16) were "also gathered when ripe" (Grinnell 1892:203), which generally occurred in late July or August.

Both berries were of considerable importance to the Piikáni, a fact reflected in the names given to the summer months. July, for example, is called "ókonokistsi otsítsi'tssp" or "when saskatoons are ripe", while August is known as "pákkipistsi otsítai'tssp" or "when the choke cherries are ripe". September is referred to as "iitáípa'ksiksini'kayi pákki'pistsi" or "when cherries are mushy from being overripe" (Frantz and Russell 1989), perhaps as a reminder of the necessity of collecting the choke cherries in August!

Other berries, such as fairy bells, strawberries, and "wild figs" (the fruit of the ball cactus), ripened during the summer months. According to the Piikáni elders, these berries were eaten fresh, often as snacks. It does not appear that they were collected and preserved to the same extent as saskatoons and choke cherries.

The collection of the saskatoons, and presumably of other important berries, was a communal effort. According to McClintock (1910:467):

Figure 13: Camas (*Camassia quamash*) meadow in southwestern Alberta

Figure 14: Bitter-root (*Lewisia rediviva*) in southwestern Alberta

Figure 15: Saskatoon berries (*Amelanchier alnifolia*)

Figure 16: Choke cherries (*Prunus virginiana*)

> "One evening, a crowd of sarvis berry pickers, consisting largely of women and children, filed past our camp, with bags and parfleches filled with the fruit. . . I was interested in watching the women dividing up the fruit, before separating to their tipis. Each woman seemed to know exactly the amount she had gathered, and there was no bickering."

Ethnographic sources indicate that camps were moved during summer months in order to be situated at the productive berry areas. "During the berry season, the Blackfoot camps were shifted to favourable localities where the women and girls worked industriously gathering the fruit" (Wissler 1910:21). Although these areas were not "owned", it appears that they were visited on a yearly basis. Brings-down-the-Sun, the North Piikáni chief, said, "We pitch out tipis in this grove of cottonwoods every summer, to gather sarvis berries for our use, when the snows are deep" (McClintock 1910:385).

Several ethnographic sources (Wissler 1910; Grinnell 1892) suggest the Piikáni harvested berries by beating the bushes with sticks. This method is described by McClintock (1910:466), who notes:

> "The women were gathering their winter supply of sarvis berries. The bushes . . . were loaded down with ripe fruit. Their method was to strike the bushes with sticks, catching the berries in blankets, and then spreading them in the sun to dry."

However, the Piikáni elders (MKW, AD, JSC, MPE, EYH), said saskatoons, choke cherries and other berries were picked by hand. According to the elders, only the "bull berries" (*Shepherdia argentea*) were knocked off with a stick as these bushes have large, sharp thorns.

The berries were collected in containers of various shapes, sizes and materials. Wissler (1910:21) states that berries were kept in "rectangular rawhide bags, or similar bags of soft dressed skin, which when filled, were emptied into larger storage bags". According to McClintock (1910:466) berry bags were also "made of small skins from deer legs, wolf-pups or unborn calves of large animals such as the elk, deer, or, most often, the buffalo."

By fall, the majority of the plant foods had been collected. However, as indicated by Table 6, certain roots and berries were still available. One of the last berries collected was the "bull berry" (Figure 17) which ripens in late September or early October and is said to be best "after a storm" (MKW). Grinnell (1892:203) reports that the bull berries "were a favorite fruit, and were gathered in large quantities, as was also the white berry of the red willow [red osier dogwood]".

According to ethnographic information, certain edible roots, such as milk vetch and leafy musineon (McClintock 1910:529; 530) were also gathered in the fall. In addition, a number of other berries, such as rose hips (Figure 18), common bearberry and wolf willow, remained on the bushes throughout the fall and winter, providing an important source of emergency food.

Presumably, the Piikáni obtained a number of plant foods through trade with neighboring groups. The elders (JSC, MKW, AD) said bitter-root was acquired from the Kutenai and Flathead in this manner. Although it does occur within the study region, bitter-root is not widely distributed. In fact, in southwestern Alberta it is found in only two isolated locales (Wilson et al. 1988:516).

Estimating the quantities of greens, roots and berries collected by the Piikáni is difficult. Most ethnographic sources state only that "large quantities" of a particular root or berry were collected. However, many of these roots and berries were dried and stored, thus is reasonable to suggest that they were gathered in sufficient quantities to supply a family for a minimum of five to six months. Clearly, further research is necessary.

The Processing of Plant Foods

The Piikáni processed virtually all plant foods prior to consumption (Table 5). Methods of processing ranged from the simple to the complex, and included peeling, boiling, roasting and pit cooking. The amount of processing, and the methods employed, were determined by the plant resource and the available technology. For example, certain roots were simply washed, peeled and eaten, while others required lengthy cooking to improve their digestibility.

Peeling was often the first step in the processing of vegetal foods. The fibrous outer "skins" of several root vegetables, including the wild onion, the prairie turnip (Figure 19) and bitter-root (Figure 20) were removed (MKW, JSC), presumably to facilitate further processing and to enhance the taste and/or digestibility. The Piikáni boiled balsamroot to soften the thick, bark-like covering before peeling it (BSWAG).

Stalks of cow parsnip were also peeled. Recent research (Kuhnlein and Turner 1986) has shown that the outer skin of the stalk contains a furanocoumarin, a phototoxin activated by ultraviolet light, which causes burning and blistering of the skin. The researchers found that peeling removes slightly more than half of the furanocoumarin content. The fact that the Piikáni peeled the stalks prior to further processing (it was boiled or roasted) suggests they were aware of the irritating effects of the unpeeled stalks.

Figure 17: Thorny buffalo berries (*Shepherdia argentea*) or "bull berries"

Figure 18: Rose hips (*Rosa* spp.)

Figure 19: Peeled root of prairie turnip (*Psoralea esculenta*)

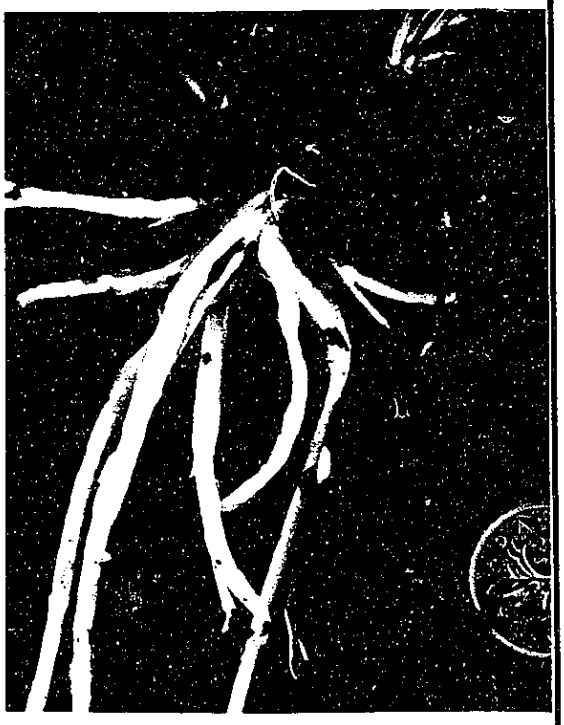

Figure 20: Peeled bitter-root (*Lewisia rediviva*)

Boiling was the most common method used to cook plant foods (Wissler 1910:26). A variety of green vegetables, roots and berries were boiled individually or with meat to create soups and stews. JSC said her grandmother used to add the "wild turnip" to meat stews, along with "wild onions" and "wild carrots". Balsamroot, bitter-root and silverweed (*Potentilla anserina*) were also prepared in this manner (BSWAG, JSC, MKW, AD).

Boiling was achieved by dropping heated rocks into a fresh hide or paunch. Wissler (1910:27) provides a detailed description of this process:

> ". . . four sticks about 40 cm. in length were driven into the ground on a radius of about 15 cm. Near the top of each stake wa a kind of catch, or notch, the butt of a projecting twig or branch. The fresh paunch of a cow was brought out , a slit cut in the edge with a knife and thrust down over one of the stakes. A second slit was cut near this one . . . in a similar manner, the edge of the paunch was adjusted to the other stakes at such points as gave it the form of a bag . . . A stone about the size of an egg was placed gently in the bottom of the bag which now just touched the ground. The demonstrator said that it would boil quickly if the bottom touched the ground and the stone served to keep the bag in place. About a quart of blood with an equal amount of water was poured in. In the meantime, a number of stones had been heated in a fire of wood and cow chips. . . From time to time, these were gently slid into the soup which was stirred with the shorter stick. . . When the soup threatened to boil over, a little water was poured into it. It was stated that other kinds of soup were made in such a vessel, as berry soup and common meat soup".

Apparently, basketry and pottery cooking vessels were not utilized by the Piikáni, at least not at the time of contact (however, there is archaeological evidence for the use of pottery; see for example Bryne 1973). According to Grinnell (1892:202), "it is doubtful if the Blackfeet ever made any pottery or basket ware", although Wissler (1910:26) records an oral tradition concerning the use of pottery. Grinnell (1892:202) suggests that the Blackfeet manufactured cooking vessels from stone, and provides the following information:

> "On this point, Wolf Calf, a very old man, states that in early days the Blackfeet sometimes boiled their meat in a stone bowl made out of a hard clayey rock. Choosing a fragment of the right size and shape, they would pound it with another heavier rock, dealing light blows until a hollow had been made in the top. This hollow was made deeper by pounding and grinding; and when it was deep enough, they put water in it, and set it on the fire, and the water would boil. These pots were strong and would last a long time."

Several types of plant foods were roasted over an open fire. Stalks of cow parsnip

were often "barbecued" (MLB, MPE, EYH). Wissler (1910:24) said the prairie turnip was "baked in hot ashes", a fact with which McClintock (1910:530) concurs.

One of the more complex methods of processing plant foods which was utilized by the Piikáni was the earth oven or roasting pit. This technique was commonly used throughout northwestern North America to cook a variety of vegetable products. Amongst the Piikáni, the process was employed to cook camas (JSC, MKW, AD), although other plants, including balsamroot, may have been cooked in this manner.

Wissler (1910:25) notes that "the camas root received more elaborate treatment in which were manifested certain social and ceremonial functions". He describes as follows:

> "According to our information, men were supposed to keep at some distance from the cooking place. First, a hole about ten feet square and three feet deep was dug. Stones, very hot, were placed over the bottom and covered with wet willow leaves and branches. On this, the camas roots were placed, each woman dividing her portion from the others. Willow brush was placed on the top and earth heaped over it. On this earth the fire was built and carefully tended for thirty-six hours or more, until the odor from the baking camas indicated the end. The fire was then raked away and the camas uncovered at which a cloud of steam arose. The roots were then taken out and what was not eaten on the spot was dried and put in bags for storage. Should any of the individual portions of camas be burned, ill-luck would most certainly befall the woman to whom they belonged."

McClintock (1910:442-443) provides additional information concerning this process:

> "For baking the Mississa (camass roots, Camassia esculenta), Menake and Nitana dug a hole about three feet deep. They placed hot stones at the bottom of the hole, covering them over with long grass and leaves of the A-pono-kauki (Paper Leaves), *Balsamorhiza sagittata.* The camass roots were placed in layers, with the grass and leaves between each layer. When the hole was filled, it was covered over and a fire built on the top. In this way the camass was thoroughly baked. Menake said that it required two days and two nights to prepare it properly for food. In former times, when the women were baking camass, it was contrary to their custom for men to come near the place. The camass roots, that Menake dug, were in size like a small potato, and had a very delicate sweet flavour. The women generally secured them in the mountains, where they grew in great abundance. It was at its best for eating after the blossoms had fallen" (McClintock 1910:442-443).

From these descriptions, it is evident that the collection and processing of camas represented a substantial investment of time and energy on the part of the Piikáni women. The significance of this investment is more fully appreciated when the chemistry of camas is understood.

Camas in its raw form is virtually indigestible. This is because it contains inulin, an indigestible polysaccharide. However, during the pit cooking process, the inulin is hydrolysed and converted to fructose, a sweet, highly digestible sugar. Thus "pit cooking is quite obviously a means whereby the caloric intake provided by a given quantity of "roots" is substantially increased" (Turner et al. 1990).

The Preservation of Plant Foods

With the exception of several types of green vegetables, berries and roots, the vast majority of plant foods collected by the Piikáni were preserved and stored (Table 5). This ensured a consistent supply of vegetal foods throughout the year, which was especially important in the winter months when fresh plants were unavailable.

The most common method of preserving plant foods was to dry them in the sun. As Wissler remarked (1910:22), "In general, it may be said that practically all kinds of vegetable foods were dried and stored." The hot, dry and windy climate of the Northwestern Plains assisted immensely, making this a relatively simple process.

A variety of edible roots were preserved in this manner. The drying method appears to have varied according to the size and shape of the root itself For example, the long, thin roots of bitter-root were simply peeled and dried. Small, bulbous roots, such as those of the "wild carrot", were left whole and threaded onto strings (MKW). Larger roots were often sliced to facilitate drying. According to JSC, the prairie turnip was sliced and threaded, although she had also observed braids of the whole, dried roots.

Several roots were dried after processing. Balsamroot, for example, was first boiled to remove the thick, outer bark. Camas, as discussed previously, was pit-cooked prior to being dried and stored. According to Grinnell (1892:204): "After being cooked, the roots [camas] are spread out in the sun to dry, and are then put in sacks to be stored away. Sometimes a few are pounded up with sarvis berries, and dried".

Berries were another major source of storable food energy. Saskatoons, choke cherries, rose hips and bull berries were preserved in considerable quantities by the Piikáni. Saskatoons, and most other berries, were left whole, spread on a hide or cloth and allowed to dry in the sun (Figure 21) (MKW, AD, JSC). This process is described by Hellson and Gadd (1974:94), who note:

> "The hide was usually perforated with small holes which allowed air to pass through it and the berries. For making supplies, the hide was raised off the ground and its burden sun dried. The women turned the berries every few hours, discarding ones of poor quality."

Figure 21: Woman drying berries. Photo courtesy of the Glenbow Museum.

Figure 22: Woman pounding berries, possibly choke cherries. Photo courtesy of the Glenbow Museum.

Choke cherries were an exception to this pattern. Wissler (1910:21) notes that "the wild cherry was gathered when ripe and pounded on a stone until the fruit with its pits was reduced to a thick paste" (Figure 22). As JSC explains,

> "you have to crush choke cherries to get everything. You pound them really fine with a flat rock and then a smaller rock. Dry them and make little cakes and put them away for winter. When you want to use them, put them in a pot with water and soak them. Then drain the water and then mix them with grease or whatever, and fry them up."

According to Grinnell (1892:203), "a bushel of the fruit, after being pounded up and dried, was reduced to a very small quantity".

The hammer or maul used to crush the choke cherries is described by Wissler (1910:21), who states:

> "For pounding the cherries a hammer was used. These hammers were of stone, usually hafted to wooden handles by shrunken rawhide. . . The head is of stone, egg-shaped, and has a transverse groove around the middle. The handle is of wood, apparently double, passing around the head in the groove. Over the whole, is a firm covering of rawhide. The entire head, except the surface of contact, is covered. At the end of the handle is a small loop for a cord."

It is interesting to note that choke cherry pits contain cyanide-producing glycosides. Vomiting and death may result if the pits are eaten in sufficient quantities. However, "cooking and drying seems to dispel most of the glycosides and hence, the seed kernels in dried, mashed choke cherries are apparently not a problem" (Kuhnlein and Turner 1991:246).

The dried berries were stored in containers of various shapes and sizes. Hellson and Gadd (1974:94) note that the "berries were greased and stored in fetal bags". Likewise, Wissler (1910:21) notes that choke cherries "were packed away in bags". As mentioned previously, the containers were made of rawhide or the dressed skin of the buffalo, elk or deer (Wissler 1910:21; McClintock 1910:466).

The preserved berries were added to soups and stews or were rehydrated and eaten as a separate food dish. However, a significant proportion of the berries were added to pemmican, a mixture of dried meat and grease. According to the Piikáni elders, saskatoons, choke cherries, rose hips, bearberries and juniper were used in making pemmican.

Ethnographic evidence suggests pemmican was produced in vast quantities in the

fall, in preparation for the coming winter. Reeves (1985) suggests pemmican was an important food source during the summer months as well. The manufacture of pemmican is described as follows:

> "For this, the best cuts of buffalo were dried in the usual manner. Then they were pounded on a stone until fine. Hammers, as previously described, were often used for this purpose. Just before pounding, the pieces of dried meat were held over the fire to make them soft and oily. Marrow and other fats were heated and mixed with the pounded meats, after which crushed wild cherries were worked into the mess. Often, a few leaves from the peppermint plant were added in order to give flavor to it." (Wissler 1910:22).

It is difficult to assess the actual quantities of roots and berries that were preserved. Most ethnographic sources state only that the roots and berries were collected in "great quantities". However, the volume must have been significant if these stores were to support the Piikáni through the winter and early spring, a period of approximately six months.

In summary, the Piikáni preserved and stored a variety of edible roots and berries. The majority of these were dried, creating a storable food source which was light, compact and easily transported. Thus, the Piikáni had access to the essential nutrients throughout the year.

Traditional Plant Foods Today

As mentioned at the beginning of this section, at least 45 plant species were consistently incorporated into the traditional Piikáni diet. However, it is probable that the number of plant foods formerly consumed was much higher. As Wissler (1910:20) notes "no one seems to have made an exhaustive study of the food of the Blackfoot when they were living their free life".

In addition, much traditional botanical knowledge has been lost through acculturation, and this is particularly true with respect to Indigenous food sources. The introduction of European foods and the dependence on government rations created by forcing populations onto reserves resulted in rapid and drastic dietary changes. Such changes were occurring even during Wissler's time, for he notes (1910:22) that "edible roots were formerly gathered with a digging stick, an instrument now surviving only in ceremonies".

Today, few of the former staples are used by the Piikáni. While the elders

remember collecting roots and berries as children with their mothers and grandmothers, at least 50 or 60 years have passed since many of the edible roots, berries and greens were regularly collected and consumed.

Berries, especially the saskatoons and choke cherries, are an exception to this. These are still gathered in large quantities, although the elders of today now preserve them in their deep freezers! Bitter-root is also used by the Piikáni elders (JSC, MKW), who still obtain it from friends to the west and freeze it for later use.

The loss of the traditional Piikáni foods is unfortunate for several reasons. From a purely nutritional standpoint, many of the greens and edible roots were equally as nutritious, if not more so, than their European replacements. The prairie turnip, for example, contains more protein than a potato and is a good source of Vitamin C (Johnston 1987:66; Kaye and Moodie 1978:334). Perhaps with the renewed interest in traditional lifeways, more of the younger generation of Piikáni peoples will return to living with the land.

Traditional Medicinal Plants: An Overview

The importance of plant medicines in traditional Piikáni culture is reflected by the fact that at least 75 species were commonly used as herbal remedies in the treatment of a variety of ailments. For discussion purposes, I have grouped these plant medicines into categories, as follows:

Medicines for colds, tuberculosis, influenza, "chest problems"	38 species
Medicines for stomach and/or digestive tract	32 species
Poultices, salves or washes	26 species
Medicines for arthritis, rheumatism, muscular aches and pains	11 species
Purgatives, laxatives, emetics	11 species
Medicines used by women	11 species
Tonics and general medicines	10 species
Eye medicines	10 species
Medicines for kidney and urinary ailments	9 species
Medicines for diabetes	7 species
Miscellaneous or unspecified medicines	6 species
Headache medicines	5 species
"Heart" medicines	4 species
"Liver" medicines	3 species

Table 7 presents a listing of the plants in each of these categories and identifies the portions of the plant which were used medicinally. Readers are referred to the Annotated List of Plants (Appendix A) for full details.

Although early observers often noted that "in olden times the Blackfeet were very numerous, and it is said that then they were a strong and hardy people, and few of them were ever sick" (Grinnell 1892:287), it is evident from the information presented in Table 7 that the Piikáni suffered from a variety of afflictions prior to the introduction of European diseases. For example, at least 38 species were used to treat colds, influenza and "chest problems", suggesting these were common complaints. Digestive problems, such as stomach aches and diarrhea, appear to have been quite common as well. In addition, some 26 plants were used to treat cuts, scrapes, burns and skin disorders, suggesting that these ailments were also prevalent, as might be expected.

The traditional Piikáni concept of health is much more holistic than that associated with the practice of western medicine. The Piikáni believe that a person's physical health is inextricably linked to his or her spiritual well-being. This view is reflected in Grinnell's (1892:281) comments concerning perceptions of sickness amongst the Piikáni:

> "Disease among the Blackfeet is supposed to be caused by evil spirits, usually the spirits of ghosts or enemies slain in battle. These spirits are said

Table 7: Traditional Medicinal Plants of the Piikáni

Medicines for colds, sore throats, tuberculosis, influenza and "chest problems"

Abies lasiocarpa (Alpine Fir)	needles? used as poultice
Achillea millefolium (Common Yarrow)	leaves, flowers brewed as medicinal tea
Acorus americanus (Sweet Flag)	roots chewed; brewed as medicinal tea
Actaea rubra (Baneberry)	roots brewed as medicinal tea
Allium spp. (Onion)	roots/leaves? brewed as medicinal tea
*Angelica dawsonii** (Yellow Angelica)	roots brewed as medicinal tea
Artemisia frigida (Pasture Sagewort)	leaves brewed as medicinal tea
Artemisia ludoviciana (Prairie Sagewort)	leaves brewed as medicinal tea
Asclepias viridflora (Green Milkweed)	roots brewed as medicinal tea
Castilleja spp.** (Indian Paint-brush)	roots/leaves? brewed as medicinal tea?
Cornus stolonifera (Red Osier Dogwood)	bark brewed as medicinal tea
Geum triflorum (Old Man's Whiskers)	roots chewed; brewed as medicinal tea
Glycyrrhiza lepidota (Wild Licorice)	roots brewed as medicinal tea
Grindelia squarrosa (Gumweed)	leaves, flowers brewed as medicinal tea
Heuchera spp. (Alum-root)	roots brewed as medicinal tea
Hierochloe odorata (Sweet Grass)	leaves brewed as medicinal tea
Lewisia rediviva (Bitter-root)	roots chewed; brewed as medicinal tea
*Ligusticum canbyi** (Lovage)	roots snuffed
*Lomatium triternatum*** (Prairie Parsley)	roots brewed as medicinal tea
Lonicera involucrata (Bracted Honeysuckle)	berries brewed as medicinal tea
Lygodesmia juncea (Skeleton-weed)	stems, leaves brewed as medicinal tea
Matricaria matricarioides (Pineapple-weed)	flowers, leaves brewed as medicinal tea
Mentha arvensis (Wild Mint)	leaves brewed as medicinal tea
Monarda fistulosa (Wild Bergamot)	flowers brewed as medicinal tea
Osmorhiza occidentalis (Sweet Cicely)	roots brewed as medicinal tea
Oxytropis sericea (Early Yellow Loco-weed)	roots/leaves? chewed (toxic)
Perideridia gairdneri (Wild Caraway)	roots chewed
Physaria didymocarpa (Double Bladder-pod)	roots chewed; brewed as medicinal tea
Pinus contorta (Lodgepole Pine)	pitch chewed
Prunus virginiana (Choke Cherry)	bark brewed as medicinal tea
Psoralea esculenta (Indian Bread-root)	roots brewed as medicinal tea
Rubus parviflorus (Thimbleberry)	berries used
Salix spp. (Willow)	roots? brewed as medicinal tea
*Selaginella densa*** (Club-moss)	leaves? brewed as medicinal tea
Solidago spp. (Goldenrod)	leaves, flowers brewed as medicinal tea
Thalictrum occidentale (Western Meadow Rue)	seeds brewed as medicinal tea?
Valeriana spp. (Valeriana)	roots brewed as medicinal tea
Veratrum eschscholtzii (False Hellebore)	roots snuffed (toxic)

Table 7: Traditional Medicinal Plants of the Piikáni (continued)

Medicines for stomach and/or digestive tract	
Allium spp.(Onion)	roots/leaves? brewed as medicinal tea
Achillea millefolium (Common Yarrow)	leaves, flowers brewed as medicinal tea
Acorus americanus (Sweet Flag)	roots brewed as medicinal tea
Amelanchier alnifolia (Saskatoon)	berry juice used
*Angelica dawsonii** (Yellow Angelica)	roots brewed as medicinal tea
Artemisia frigida (Pasture Sagewort)	leaves chewed
Asclepias viridflora (Green Milkweed)	roots brewed as medicinal tea
Berberis repens (Creeping Mahonia)	roots brewed as medicinal tea
Betula spp. (Birch)	catkins/bark brewed as medicinal tea
Cornus stolonifera (Red Osier Dogwood)	berries eaten; leaves brewed
Coryphantha vivipara (Ball Cactus)	fruit eaten
Fragaria virginiana (Wild Strawberry)	roots brewed as medicinal tea
Geum triflorum (Old Man's Whiskers)	roots brewed as medicinal tea
Grindelia squarrosa (Gumweed)	leaves, flowers brewed as medicinal tea
Heracleum lanatum (Cow Parsnip)	stems brewed as medicinal tea
Heuchera spp. (Alum-root)	roots brewed as medicinal tea
Juniperus spp. (Juniper)	berries brewed as medicinal tea
*Letharia vulpina*** (Wolf Lichen)	lichen brewed as medicinal tea (toxic)
Lonicera involucrata (Bracted Honeysuckle)	berries brewed as medicinal tea
Matricaria matricarioides (Pineapple-weed)	leaves, flowers brewed as medicinal tea
Osmorhiza occidentalis (Sweet Cicely)	roots brewed as medicinal tea
*Penstemon nitidus*** (Sm. Blue Beard-tongue)	roots/leaves? brewed as medicinal tea
Physaria didymocarpa (Double Bladder-pod)	roots chewed; brewed as medicinal tea
Polyporus spp. (Pore Fungus)	fungus brewed as medicinal tea
Populus tremuloides (Aspen)	bark brewed as medicinal tea
Potentilla anserina (Silverweed)	roots brewed as medicinal tea
Prunus virginiana (Choke Cherry)	bark brewed as medicinal tea
Psoralea esculenta (Indian Bread-root)	roots brewed as medicinal tea
Rosa spp. (Rose)	roots? brewed as medicinal tea
Rumex spp.(Dock)	seeds brewed as medicinal tea
Shepherdia argentea (Thorny Buffalo-berry)	berries eaten
Solanum triflorum (Wild Tomato)	fruits brewed as medicinal tea (toxic)
Valeriana spp. (Valeriana)	roots brewed as medicinal tea
Poultices, salves or washes for sores, wounds, infections, burns	
Allium spp. (Onion)	roots/leaves brewed for wash
*Angelica dawsonii** (Yellow Angelica)	roots chewed for salve
Arctostaphylos uva-ursi (Bearberry)	leaves? used for salve
Artemisia frigida (Pasture Sagewort)	leaves chewed for salve
Artemisia ludoviciana (Prairie Sagewort)	leaves crushed for salve
Asclepias viridflora (Green Milkweed)	roots chewed for salve
*Astragalus canadensis*** (Milk Vetch)	roots chewed for salve (toxic)

Table 7: Traditional Medicinal Plants of the Piikáni (continued)

Poultices, salves or washes for sores, wounds, infections, burns (continued)	
Balsamorhiza sagittata (Balsamroot)	roots chewed for salve
Berberis repens (Creeping Mahonia)	root, berries brewed for wash
Elaeagnus commutata (Wolf Willow)	bark brewed for salve
Fragaria virginiana (Wild Strawberry)	roots brewed for poultice
Geum triflorum (Old Man's Whiskers)	roots brewed for wash
Heracleum lanatum (Cow Parsnip)	stems brewed for rinse
Heuchera spp. (Alum-root)	roots ground for salve
*Letharia vulpina*** (Wolf Lichen)	lichen crushed for salve (toxic)
Lycoperdon spp. (Puffballs)	spores applied as styptic
Monarda fistulosa (Wild Bergamot)	flowers crushed for salve
*Oenothera caespitosa*** (Butte Primrose)	roots ground for salve
Oxytropis sericea (Early Yellow Loco-weed)	leaves brewed for wash (toxic)
Perideridia gairdneri (Wild Caraway)	roots chewed for salve
Polyporus spp. (Pore Fungus)	fungus applied as styptic
Potentilla anserina (Silverweed)	roots chewed for salve
Rumex spp. (Dock)	leaves? brewed for wash
Salix spp. (Willow)	roots? brewed for wash
*?Xerophyllum tenax*** (Bear Grass)	roots brewed; applied for poultice
*?Yucca glauca***(Soapweed)	roots brewed; applied for poultice
Medicines for arthritis and/or rheumatism and/or muscular aches and pains	
Achillea millefolium (Common Yarrow)	leaves, flowers brewed as medicinal tea
Angelica dawsonii * (Yellow Angelica)	roots brewed and applied as wash
Balsamorhiza sagittata (Balsamroot)	roots smudged and inhaled
Juniperus spp. (Juniper)	roots? brewed for liniment
*?Musineon divaricatum*** (Leafy Musineon)	roots brewed for liniment
Opuntia spp. (Prickly Pear)	spines burned
Osmorhiza occidentalis (Sweet Cicely)	roots brewed for poultice
Physaria didymocarpa (Double Bladder-pod)	roots chewed, boiled for liniment
Psoralea esculenta (Indian Bread-root)	roots chewed for poultice
Valeriana spp. (Valeriana)	roots brewed for poultice
*?Xerophyllum tenax*** (Bear Grass)	roots brewed for poultice
*?Yucca glauca*** (Soapweed)	roots brewed for poultice
Purgatives, laxatives, emetics	
Amelanchier alnifolia (Saskatoon)	berries eaten?
*Apocynum cannabinium***(Indian Hemp)	roots brewed as laxative (toxic)
Cornus stolonifera (Red Osier Dogwood)	berries eaten
*Letharia vulpina***(Wolf Lichen)	lichen brewed as purgative (toxic)
Lonicera involucrata (Bracted Honeysuckle)	berries brewed as purgative
Perideridia gairdneri (Wild Caraway)	roots eaten as laxative

Table 7: Traditional Medicinal Plants of the Piikáni (continued)

Purgatives, laxatives, emetics (continued)	
Polyporus spp.(Pore Fungus)	fungus brewed? as a purgative
Potentilla anserina (Silverweed)	roots brewed as emetic
Ribes oxyacanthoides (Wild Gooseberry)	berries eaten as laxative
Shepherdia argentea (Thorny Buffalo-berry)	berries eaten as laxative
Medicines used by women	
Achillea millefolium (Common Yarrow)	flowers brewed as medicinal tea
Anemone multifida (Cut-leaved Anemone)	plant? brewed? as abortive (toxic)
Anemone patens (Prairie Crocus)	flowers brewed (irritant)
Artemisia frigida (Pasture Sagewort)	leaves used during menstruation
Betula spp. (Birch)	flowers, leaves used
Camassia quamash (Blue Camas)	roots brewed to induce labor
Castilleja spp.** (Indian Paint-brush)	roots/leaves? brewed as medicinal tea
Hierochloe odorata (Sweet Grass)	leaves brewed as medicinal tea
Lygodesmia juncea (Skeleton-weed)	stems brewed as medicinal tea
Physaria didymocarpa (Double Bladder-pod)	roots brewed as abortive
Populus tremuloides (Aspen)	bark brewed as medicinal tea
*Selaginella densa*** (Club-moss)	plant brewed as medicinal tea
Tonics & General Medicines	
Geum triflorum (Old Man's Whiskers)	roots brewed as tonic
Juniperus spp. (Juniper)	roots? brewed as tonic
*Lomatium dissectum*** (Chocolate-tips)	roots brewed as tonic
Lonicera involucrata (Bracted Honeysuckle)	berries brewed as cathartic
Lygodesmia juncea (Skeleton-weed)	stems brewed as tonic
Mentha arvensis (Wild Mint)	leaves brewed as medicinal tea
Populus balsamifera (Balsam Poplar)	roots? cambium? eaten
Salix spp. (Willow)	bark brewed as medicinal tea
Thalictrum occidentale (Western Meadow Rue)	roots brewed as tonic
Eye medicines	
Anemone patens (Prairie Crocus)	flowers boiled as eyewash (irritant)
Asclepias viridiflora (Green Milkweed)	roots chewed for salve
Coryphantha vivipara (Ball Cactus)	seeds used
Disporum trachycarpum (Fairy Bells)	seeds used
Geum triflorum (Old Man's Whiskers)	roots brewed as eyewash
Monarda fistulosa (Wild Bergamot)	flowers brewed as eyewash
Populus tremuloides (Aspen)	bark brewed as eyewash
Psoralea esculenta (Indian Bread-root)	roots chewed for poultice
Salix spp.(Willow)	roots? brewed as eyewash

Table 7: Traditional Medicinal Plants of the Piikáni (continued)

Medicines for kidney & urinary ailments	
Berberis repens (Creeping Mahonia)	root, berries brewed as medicinal tea
Castilleja spp.* (Indian Paint-brush)	roots/leaves brewed as diuretic
Equisetum spp. (Common Horsetail)	stems brewed as diuretic
Geum triflorum (Old Man's Whiskers)	roots brewed as medicinal tea
Lygodesmia juncea (Skeleton-weed)	roots/stems? brewed as diuretic
Matricaria matricarioides (Pineapple-weed)	flowers, leaves brewed as diuretic
Monarda fistulosa (Wild Bergamot)	flowers brewed as medicinal tea
Osmorhiza occidentalis (Sweet Cicely)	roots brewed as medicinal tea
Perideridia gairdneri (Wild Caraway)	roots brewed as diuretic
Medicine for diabetes	
Achillea millefolium (Common Yarrow)	leaves, flowers brewed as medicinal tea
Actaea rubra (Baneberry)	roots brewed as medicinal tea
Artemisia ludoviciana (Prairie Sagewort)	leaves brewed as medicinal tea
Equisetum spp. (Common Horsetail)	stems brewed as medicinal tea
Lonicera involucrata (Bracted Honeysuckle)	leaves brewed as medicinal tea
Mentha arvensis (Wild Mint)	leaves brewed as medicinal tea
Vaccinium membranaceum (Huckleberry)	leaves brewed as medicinal tea
Medicines for "headaches"	
Anemone multifida (Cut-leaved Anemone)	seeds smudged and inhaled
*Letharia vulpina** (Wolf Lichen)	lichen used (toxic)
*Ligusticum canbyi** (Lovage)	roots smudged and inhaled
Polyporus spp. (Pore Fungus)	fungus smudged and inhaled
Veratrum eschscholtzii (False Hellebore)	roots snuffed (toxic)
Medicines for "the heart"	
Acorus americanus (Sweet Flag)	roots chewed
Osmorhiza occidentalis (Sweet Cicely)	roots brewed as medicinal tea
Psoralea esculenta (Indian Bread-root)	roots brewed as medicinal tea
Medicines for "the liver"	
Cornus stolonifera (Red Osier Dogwood)	bark brewed as medicinal tea
Grindelia squarrosa (Gumweed)	roots brewed as medicinal tea
Populus balsamifera (Balsam Poplar)	bark brewed as medicinal tea

Table 7: Traditional Medicinal Plants of the Piikáni (continued)

Medicines, miscellaneous or unspecified	
Arctostaphylos uva-ursi (Bearberry)	leaves brewed as mouthwash
Berberis repens (Creeping Mahonia)	bark? brewed as medicine
Clematis occidentalis (Purple Clematis)	leaves brewed for salve
Lewisia rediviva (Bitter-root)	roots brewed as medicine
Ribes oxyacanthoides (Wild Gooseberry)	berries used as medicine
Vaccinium membranaceum (Huckleberry)	leaves brewed as cancer medicine

WARNING: A number of the plants used by the Piikáni for medicinal purposes are extremely toxic and can cause illness, even death, if used incorrectly. Such plants are identified in the list by the word "toxic". The medicines described in this study are not recommended for use, except under the advice of a physician.

Several of the plant names are prefaced with a "?". This indicates that the use of this plant for a particular purpose is questionable. Similarly, the actual portion of the plant used as a medicine was often unclear. These instances are also noted with a "?". Readers are referred to the Annotated List of Plants (Appendix A) for further details.

In addition, a number of the plants in this list are followed by a single asterisk (*) indicating that the identification of this plant is tentative. Others are followed by two asterisks (**). In these instances, the plant was previously recorded by an earlier researcher(s), but was not identified with confidence by the Piikáni elders during the current study. However, when sufficient data were available, these plants were added to the database in the hope that the elders' comments and additional information might assist further research in supporting or refuting the original identification.

> to wander about at night, and whenever the opportunity offers, they shot invisible arrows into persons. These cause various internal troubles, such as consumption, hemorrhages [sic], and diseases of the digestive organs. Mice, frogs, snakes and tailed batrachians are said to cause much disease among women, and hence should be shunned, and on no account handled."

Piikáni medicinal practices vary according to the nature and severity of the ailment. Minor disorders, such as those outlined in Table 7, are treated with herbal remedies which are readily available to all members of the community. As MKW said "in the old days, [we] never had clinics -- [we] had to make medicine."

Knowledge of these common medicines also differed between individuals. Age, gender and life experiences frequently influence a person's "recipe" for a particular plant medicine. Often, the same plant is used to treat several different illnesses. For example, the roots of old man's whiskers (*Geum triflorum*) are used as a medicinal tea for coughs, colds, sore throats, fevers, stomach aches and kidney troubles (Table 7).

Traditions surrounding these herbal remedies are passed from generation to generation. MPE said that "old people would know what they used and they would explain to us what they use it for". JSC's knowledge of medicinal plants was acquired through watching and listening to her mother-in-law. "She doesn't teach. You see things happening, you know and hear and watch. You learn better that way. That's how you get it in the Indian way. It's not like teaching. To tell you, is not the way."

As previously mentioned, common herbal remedies are available to all individuals and are not considered to be supernatural in origin (Hellson and Gadd 1974:64). This does not diminish their importance, however. The collection, preparation and administration of the common medicines is always undertaken with great respect. JC said: "When I prepare my roots, I am in the mood of the spirit. I have a spiritual confidence in them. I don't just take them and boil them and give them away to someone."

Amongst the Piikáni, individuals considered to have spiritual powers for curing are called upon to treat more severe illnesses. These specialists are commonly referred to as "medicine men", although as Grinnell (1892:286) notes, "there are also many women in the guild, some of which are quite noted for their success". According to JSC:

> "There are some plants that everyone knows and can use to help for minor things. But there are some medicines that have strong power that one certain person will be given to use. That's why many years ago, when someone got very sick, they'd say, 'Go tell so and so, they know'. They come and help the person. "

Spiritual curing powers are obtained by an individual through a dream or vision,

but as JSC noted, "the spirit doesn't work through all people, only those who will use it". According to JC, "It's a mystery to explain and understand these cures except that a man is given the right through spiritual contact. Certain people are good at healing".

During the dream, the individual receives his or her personal medicine from a spirit helper and is instructed as to the songs, rituals and curing bundle which are to be used in conjunction with that medicine. As MKW explained:

> "The old people dream and the spirits give them how to use a medicine. Certain people, they'll say 'That old lady, she's really a medicine women'. That's how they find out. That's how come they dig them [roots]. The spirits they give it to them and say 'use that for that'. And that's the way it goes".

According to the elders, individuals with spiritual curing powers are prohibited from revealing those powers to other members of the community. This taboo is mentioned by McClintock (1910:247), who notes that the Piikáni "had a superstition that a doctor should not relate his dream (sources of inspiration), nor reveal his methods, nor hand them down to others". JSC explained:

> "We have a law that we can't go out and tell people 'Come to this'. The spirit will put it in their heads to go. We can't put on our doors that we do medicine for the sick and help people, we can't. That's the law. There's people that say 'I make this medicine'. Some don't know, but some do, but it won't help. If JC uses a root to help somebody -- it works for him. So, I think, 'I'll get the same kind of root and I'll use it'. But, that won't work for me because it wasn't given to me. The roots and things that are given to people -- they can use them. But if I use them because I've seem them use them, if I pick the same root, it won't work for me. But it will work for her. That's the way it is."

Due to the sacred nature of spiritual curing, it would be inappropriate to discuss personal medicines and curing methods. In fact, it should be emphasized that personal medicines were not discussed with the Piikáni elders during the course of this study. Several ethnographic sources provide general descriptions of the curing ceremonies, however. Grinnell (1892:284) states that "as a rule, doctors sing while endeavouring to work their cures, and, as helpers, a number of women are always present . . . No two doctors have the same methods or songs. Herbs are used, but not always". Other references (Grinnell 1892:283-286; McClintock 1910:244-250; Hellson and Gadd 1974:63-64) provided more detailed accounts. Readers are referred to these for further details.

Traditionally, the herbal specialist is reimbursed for his or her services. Grinnell (1892:238) states, "This fee pays only for one visit, but the duration of the visit is seldom

less than twelve hours, and sometimes exceeds forty-eight." As JSC explained:

> "We don't ask for payment but if someone is helping a person through medicine, they give something to pay -- maybe money. A long time ago, maybe horses. In the old days when they gave tobacco, it was something big. You just couldn't reach out and get tobacco. Money was scarce then. Today, they still give packs of tobacco. JC doesn't ask for things but what he gets from people he appreciates. He paid a lot for [the knowledge] he's got in his lifetime that brought him to sit there."

In summary, Piikáni medicine incorporates the purely medicinal properties of plants with the spiritual aspects of curing. Common herbal remedies are used to treat a variety of minor ailments, and are widely available to all members of the community. It is interesting to note that one person's common remedy is often another's personal medicine. Wild bergamot (*Monarda fistulosa*), for example, is widely used by the Piikáni. Yet, Hellson and Gadd (1974:64) record an instance of this plant being given to an individual as a spiritual medicine. The difference is not determined by the plant or its properties, but by how the plant is ultimately used in curing.

The Collection of Medicinal Plants

As discussed previously, the distribution and seasonal availability of plants is influenced by a variety of factors and as a result, some plant resources are more widely distributed than others in any given region. This is true also of the medicinal plants gathered by the Piikáni.

In contrast to food plants which were often gathered communally, the collection of medicinal plants appears to have been an individual task undertaken by both men and women. This is illustrated by McClintock's (1910:363) comment:

> "[the women] were industrious collectors of medicinal herbs . . . Whether in camp, or on the trail, whether in the forest, or along the streams, or even on the dry and dusty plains, they never lost an opportunity for collecting them."

The collection of plant medicines began in the spring and continued throughout the summer and into the fall. Although McClintock's observation suggests the harvesting of medicinal plants was somewhat opportunistic, the Piikáni elders continually emphasized the importance of collecting medicines at the "right" time. According to JC:

> "The time for roots is mostly from the spring season. You have to pick when they're prime, just like all the roots. You have to go by what you're ordered to do because everything has a certain time to pick. If you use them

> at wrong time, they won't be as effective. Like choke cherries -- there's a certain time, like apples and pears -- like all fruit. There's a certain time when they're right. It's the same thing."

The "right" time appears to be a matter of individual preference and experience, to some extent. For example, JC felt it is best to collect roots in the spring and summer, while MPE and EYH said they usually collect roots in the fall. As JSC noted, "You have to wait until its right to pick the root. It's hard to explain. That's why it's not taught. You learn by watching and knowing."

Traditionally, the implements used to collect plant medicines were the same as those used in harvesting food plants. Many could be gathered by hand or with the aid of a knife. A digging stick was frequently employed to harvest the wide variety of medicinal roots. Today, prayers and an offering are made prior to collecting any medicinal plant. MKW said "I have to pray and put tobacco when I want to dig plants. I pray that I can pick the right ones that I want to pick".

According to the Piikáni elders, one gathered "as much as was needed". From this, it can be assumed people collected medicinal plants in quantities commensurate with their individual needs. Medicinal plants were dried and stored in sufficient amounts to last until the following season. According to MKW, "the old ladies make little sacks for plants. They can smell them and tell what's in them".

Medicinal plants which do not grow in Piikáni territory are acquired through trade with neighbouring groups. Sweet flag (*Acorus americanus*), for example, is obtained from the Kutenai, the Flathead and the Cree (MPE, JSC, AD). The latter are considered to be herbal specialists. In 1793, Fidler wrote , "the Crees are far from their own country . . . but as they pretend to be great Doctors. . . they come here only to get what Skins they can from these Indians for leaves, roots, &c., of their own gathering" (Haig 1991:55). According to McClintock (1910:190-191) the Piikáni acquired a love medicine called "ito-wa-mami-wa-natsi" or "Cree medicine" from the Cree, who were considered specialists in its preparation.

The Preparation of Plant Medicines

Once collected, medicinal plants are prepared for immediate use or preserved and stored. Techniques used in processing differ according to the properties of the plant and its intended use. Plants collected for their leaves, stems and/or flowers are usually rinsed and dried. Wild mint (Figure 23) and wild bergamot (Figure 24) are prepared in

Figure 23: Wild mint (*Mentha arvensis*)

Figure 24: Wild bergamot (*Monarda fistulosa*)

Figure 25: The leaves of common bearberry (*Arctostaphylos uva-ursi*).

this manner, as are the leaves of common bearberry (Figure 25).

Roots are used in the majority of Piikáni herbal remedies (EYH, MKW) (see Table 7). After harvesting, the roots are usually "washed, dried and then ground up" (MKW). Some people prefer to grind the fresh roots prior to drying (JSC), while others leave the roots whole and grind them as required. Medicinal roots are not usually peeled according to the elders.

A grinding stone is essential to the preparation of root medicines which are usually ground into a powder for use or storage. Cylindrical or elongated river cobbles are commonly used for this purpose (MPE, EYH, JSC). MKW said she prepares the roots of old man's whiskers (Figure 26) by "smashing them up really fine with a good size rock on a piece of canvas".

Plant medicines are prepared and administered in a variety ways. The most common method of preparation is a herbal brew or "kssistsikimisstaan" (MPE, EYH, JSC). These decoctions are prepared by steeping the leaves, berries or ground roots in boiling water. According to MPE and EYH, the mixture is usually consumed while warm, as most medicinal teas do not taste as good when cold.

Medicinal plants are also applied as a salve or rinse. As Grinnell (1892:281) notes, "Less important external ailments and hurts, such as ulcers, boils, sprains, and so on, are treated by applying various lotions or poultices, compounded by boiling or macerating certain roots or herbs, known only to the person supplying them." Salves are made by grinding the plant material into a powder and mixing it with grease. This is then applied directly to the affected area. A salve of alum-root is prepared by this method and is used to "dry up" infected cuts, sores and burns (EYH, MPE, JC, MLB, MKW, AD). Rinses are prepared by steeping the plant in boiling water. A cloth is then soaked in this mixture and placed upon the sore.

In addition, several plant medicines are snuffed or inhaled as a smudge. The roots of false hellebore, or "sneezing root" (Figure 27), are snuffed to relieve headaches. According to MKW these roots "are really good for when you have a running nose and sneezing. Scrape off some and sniff it up your nose and it breaks everything up". AD grinds lovage roots into a powder and places them on a hot coal, covers her head and inhales the smoke. "It sure cures a headache", she said.

In recent years, western scientists have confirmed what the Piikáni and other Indigenous peoples have known for generations -- the active ingredients in many of these herbal remedies do have medicinal value. For example, a medicinal tea brewed from

gumweed (*Grindelia squarrosa*) is used by the Piikáni to treat coughs, colds and sore throats. Analysis reveals that gumweed contains a variety of chemicals, including amorphous resin, tannic acid, volatile oils and the alkaloid grindeline (Hart 1976:32). The drug "grindelia" is derived from this plant and is recognized as a stimulating expectorant (Kowalchick and Hylton 1987:239).

It is difficult to measure the quantities or dosage of medicinal plants administered through the various preparations. The elders commonly stated that people "used as much as they needed". In discussing "stink root" (*Valeriana* spp.) (Figure 28), MKW said "grind up what you need -- use as many as necessary depending on how sick you feel". The matter is further complicated by the fact that medicinal plants are often combined with one another. "The old people mix things -- they don't use just one", said MKW. For instance, a medicinal tea brewed from yarrow is taken for stomach aches, fevers and assorted aches and pains. Yarrow is also boiled with the roots of baneberry to treat diabetes, and is mixed with choke cherry bark as a stomach medicine.

Finally, it is important to note that it is often difficult to distinguish between the nutritional and medicinal values of plants. In fact, a number of the plants identified by this study are used for both purposes (see Table 4). The leaves of wild mint, for example, were boiled to make a "peppermint tea" that was "good for everything" (MKW, AD). As Turner et al. (1990:43) observe:

> "It would be unrealistic to separate completely the various roles of plants as foods, material and medicines . . . Since many medicines were consumed, as infusions or decoctions, or chewed and swallowed in entirety, they would have had some nutritional impact on the person taking them. Many "medicines", especially those classed as "tonics", were consumed routinely, over a long period of time, and as a replacement for beverages. Furthermore, some "foods" and beverages were themselves considered to have medicinal properties, either for particular ailments or for general maintenance of health."

This relationship is reflected in MKW's observation that "the old people boil [roots] and drink them all the time -- that' s how come we have lots of old people".

Traditional Plant Medicines Today

It is evident from the preceding discussion that much of the traditional medicinal knowledge has been retained by the Piikáni people. Many of the 75 plants are still used to treat a variety of complaints and are often considered more effective than "white medicine" (AD). Medicine men and women still practise in both communities and trade with the Cree,

Figure 26: Old man's whiskers (*Geum triflorum*)

Figure 27: False hellebore (*Veratrum eschscholtzii*)

Figure 28: The roots and leaves of valeriana (*Valeriana* spp.) collected by the Piikáni elders.

Kutenai and Flathead for those medicinal plants not available in the study area.

As was indicated in Table 7, many of the plants used by the Piikáni for medicinal purposes can be toxic if taken in sufficient quantities. This is true of many medicinal plants, for the ingredients which make them effective medicines also make them potentially deadly if administered improperly (Turner and Szczawinski 1991:8). The use of these plants by the Piikáni further illustrates their sophisticated understanding of the properties of the many plants in their environment.

Plants and Traditional Piikáni Beliefs: An overview

In traditional Piikáni culture, plants are believed to have spiritual properties which can be called upon for purification, protection and power. This spiritual role is equally as important as the nutritional and medicinal contributions of plants and frequently, the roles are inseparable. As one Piikáni elder (JC) noted, "plants all connect with the spirits of things".

The results of this study suggest that the Piikáni used at least 27 plants for spiritual purposes. These are presented in Table 8. This is by no means an exhaustive list. While a discussion of the Piikáni belief system is well beyond the scope of this thesis, the information presented is indicative of the cultural significance of plants in Piikáni ideology. For presentation purposes, the plants have been divided into a number of categories as follows:

Plants used for purification, protection, power	8 species
Plants associated with ceremonies	19 species
Plants used as smoking substances	3 species
Plants referred to in Piikáni mythology	6 species

A number of plants occur in more than one category, reflecting the difficulty encountered in attempting to categorize an extremely complex system of beliefs. Once again, it must be emphasized that much of this information is considered privileged and was not the subject of interviews with the Piikáni elders. The majority of the following discussion is summarized from previously published sources. Readers are referred to the Annotated List of Plants (Appendix A) for details.

One of the most important functions of spiritual plants is that of purification and protection. Plants used for these purposes tend to be highly aromatic and are placed on hot coals as a smudge or incense. Hellson and Gadd (1974:7) note, "plants were the ideal mediators between [humans] and the supernatural realm. This was especially true of their ability to replace the [human scent] with their own and so symbolically release [humans] from mortal bonds".

The "mediating" nature of plants is illustrated by the Piikáni use of alpine fir. Alpine fir or "sweet pine" (JSC, JC, MPE, EYH) is smudged for protection during thunderstorms (MPE, EYH) in the belief that Thunder will smell the sweet pine offering and protect his people by preventing the lightning from striking them (Hellson and Gadd 1974:36). Sweet pine is also used during ceremonies associated with medicine pipe bundles (MPE, EYH, MKW, AD) as the pipes were given to the Piikáni by Thunder.

Table 8: Plants associated with traditional Piikáni beliefs

Plants used for purification, protection, power		
Abies lasiocarpa	Alpine Fir	needles smudged
*Angelica dawsonii**	Yellow Angelica	roots impart power, luck?
Artemisia ludoviciana	Prairie Sagewort	leaves fresh; smudged
Hierochloe odorata	Sweet Grass	leaves fresh; smudged
Juniperus spp.	Juniper	branches smudged
Lycoperdon spp.	Puffballs	smudged
Valeriana spp.	Valeriana	roots smudged
Plants associated with ceremonies		
Abies lasiocarpa	Alpine Fir	needles smudged
Amelanchier alnifolia	Saskatoon	berries eaten as soup
*Angelica dawsonii**	Yellow Angelica	roots impart power in rituals?
Artemisia ludoviciana	Prairie Sagewort	leaves fresh; smudged
Balsamorhiza sagittata	Balsamroot	roots smudged
Camassia quamash	Blue Camas	bulbs added to berry soup
Cornus stolonifera	Red Osier Dogwood	bark mixture smoked
Heracleum lanatum	Cow Parsnip	fresh stalks used
Hierochloe odorata	Sweet Grass	leaves fresh; smudged
Juniperus spp.	Juniper	fresh branches; smudged
Lewisia rediviva	Bitter-root	roots added to berry soup
Lycoperdon spp.	Puffballs	used as punk
Mentha arvensis	Wild Mint	brewed as tea
Osmorhiza occidentalis	Sweet Cicely	root imparts power?
Polyporus spp.	Pore Fungus	pipe rest for medicine pipes
Populus balsamifera	Balsam Poplar	cambium eaten; wood used
Populus tremuloides	Trembling Aspen	wood used?
Psoralea esculenta	Indian Bread-root	symbolic use in Sundance
Salix spp.	Willow	branches form sweatlodge frame
Plants used as smoking substances		
Arctostaphylos uva-ursi	Common Bearberry	leaves mixed with tobacco
Cornus stolonifera	Red Osier Dogwood	bark mixed with tobacco
Nicotiana attenuata	Wild Tobacco	formerly cultivated
*Chimaphila umbellata***	Prince's Pine	leaves smoked?
Plants in Piikáni mythology		
Betula spp.	Birch	origin of markings on bark
Cornus stolonifera	Red Osier Dogwood	origin of grease when burned
Elaeagnus commutata	Wolf Willow	origin of name "stink wood"
Hierochloe odorata	Sweet Grass	origin of ceremonial use
Juniperus spp.	Juniper	origin of ceremonial use
Lycoperdon spp.	Puffballs	origin of "dusty stars"
Pinus contorta	Lodgepole Pine	origin of pine forests
Psoralea esculenta	Indian Bread-root	origin of ceremonial use

Sage is another spiritually significant plant. Although several species are found in Piikáni territory, only "man sage" (*Artemisia ludoviciana*) is utilized ritually (JC, JSC, MPE, EYH, MKW). Fresh sage is tied to offerings in order to purify them (MPE, EYH) and is spread as a ground covering in the sweat lodge (JSC). Sage is also smudged for spiritual purification (MPE, EYH). JSC explained that Feather Woman, upon her return to the earth, "cleansed herself with sage to purify herself because she was in another world" (see discussion of mythology below). Hellson and Gadd (1974:24-26) provide a list of additional uses of sage.

Sweet grass (*Hierochloe odorata*) is widely used as an incense for the purification of people and items during ceremonies and daily prayers. MPE and EYH prayed and purified themselves with sweet grass prior to collecting medicinal roots. The Piikáni elders also use sweet grass for protection "around the house -- you just light it and use it all over" (MPE, EYH). A list of ceremonial bundles and tipis requiring the use of sweet grass is presented in Hellson and Gadd (1974:51-55).

The Piikáni also use the branches of "smooth juniper" (*Juniperus horizontalis*) in a variety of ways (MPE, EYH, MKW, AD, JSC). In the home, branches are smudged for protection against thunderstorms (MPE, EYH) or "just anytime". It is also used as a smudge by "those who put up the Sundance" (MPE, EYH, JSC). In addition, the branches cover the floor of the medicine lodge of the Sundance (MPE EYH). The "sharp juniper" (*J. communis*) can be used as a smudge as well. According to MKW, "it's the same thing". It is interesting to note that the berries, leaves and branches of juniper contain a volatile oil (Kowalchick and Hylton 1987:347). The berries produce a disinfectant gas when burned (Turner and Szczawinski 1978:23-24).

Several food plants also attained spiritual significance in Piikáni ceremonies. A soup made of saskatoon berries, for example, is served at medicine pipe bundle openings and during the Sundance (JSC, MKW, MPE, EYH). According to Grinnell, this tradition stems from the fact that "thunder is believed to bring the rain in spring, and the rain makes the berries grow. It is a rule that after the first thunder is heard in the spring, every medicine man must give a feast and offer prayers for a large berry crop" (1892:277). During a ceremony, each person receives a serving of berry soup and from this removes a single berry, which is held while prayers were offered. The berry is then placed in the ground as an offering. This ritual was recorded by McClintock (1910:34), who states:

> "Mad Wolf said: The berries that grow are blessed, for upon them we live. He held a sarvis berry aloft in his right hand and chanted, everyone

> imitating his motions and joining with him in his prayer to Mother Earth that they might live to see many summers. After each person had planted a berry in the ground, a symbolic act in recognition of the source of their sustenance, they partook of the feast".

Cow parsnip or "wild rhubarb" is another food plant which is considered to have spiritual properties. A stalk of the plant is incorporated into the rituals associated with the "medicine lodge" of the Sundance (MKW, JSC, MPE, EYH, AD). Although the Piikáni elders did not elaborate upon this point, McClintock (1910:294) provides a detailed account:

> "In front . . . was an altar, or holy place, made by cutting out the grass and smoothing the soft earth. It was lined with juniper (red cedar). At the foot, and bending towards the west, was a single stalk of wild rhubarb (cow parsnip), with an eagle plume fastened to the top. The wild rhubarb and plume were used by the Indians in the Sun-dance ceremonial as symbols of lightness, and were believed to favour the safe raising of the Centre Pole".

Smoking is an integral element of Piikáni ceremonial occasions and the Piikáni use several plants in this capacity. Dried leaves of bearberry are crushed, mixed with grease and added to tobacco. This is smoked in pipes during ceremonies (MKW, MPE, EYH, JSC, MLB). The bark of red osier dogwood is prepared and used in this manner as well (MKW, MLB, MM, AD).

Ethnographic evidence suggests wild tobacco (*Nicotiana attenuata* Torr. ex. S. wats) was formerly cultivated by the Piikáni. According to Grinnell (1892:268):

> "Before the coming of the whites, the Blackfeet used to smoke the leaves of a plant which they call na-wuh'-to-ski, and which is said to have been received long, long ago from a medicine beaver. It was used unmixed with any other plant. This tobacco is no longer planted by the Piegans, nor by the Bloods, though it is said that an old Blackfoot each year still goes through the ceremony, and raised a little. The plant grows about ten inches high and has a long seed stalk growing from the centre."

Traditionally, native tobacco was planted in early May after the women and children had prepared a plot "in the timber". The seeds were planted in an elaborate ceremony, and the tobacco was left to grow unattended throughout the summer, except for the occasional visit of a "medicine man" who monitored the crop's progress. In the fall, " the season comes for gathering the crop, and, at a time appointed, all the camps begin to move back toward the tobacco patch, timing their marches so that they all may reach it on the same day" (Grinnell 1892:270). Another ceremony is held prior to harvesting the tobacco. Once harvested, the tobacco "is dried and put in sacks for use during the year. The seed is

collected for the next planting. After the gathering, they all move away again after the buffalo" (Grinnell 1892:270-271).

Piikáni mythology includes numerous references to plants and those listed in Table 8 must represent only a portion of these. Many of these oral traditions explain the origin of the natural features of a particular plant. For example, JSC said the marks visible on the bark of the birch tree were put there long ago by Napi (Old Man). This oral tradition is recorded by Grinnell (1892:173), who tells us that:

> "A hard wind came, and it blew [Old Man] away down to Birch Creek. As he was flying along, he caught at the weeds and brush to try to stop himself, but nothing was strong enough to hold him. At last he seized a birch tree. He held on to this, and it did not give way. Although the wind whipped him about, this way and that, and tumbled him up and down, the tree held him. He kept calling to the wind to blow gently, and finally it listened to him and went down. So he said: 'This is a beautiful tree. It has kept me from being blown away and knocked all to pieces. I will ornament it and it shall always be like that.' So he gashed it across with his stone knife, as you see it to-day."

Another myth explains the origin of the technique used to harvest berries from bushes. According to this tradition, Napi jumped into the river after the reflection of ripe berries on the water. He tried several times to pick the berries before realizing it was only a reflection. When he realized this, he became "so angry that he seized a stick and beat the bush, knocking off all the berries, and said to it, 'Old bush, from this time forward, the people will gather berries from you in this way'. This accounts for the custom, which Indian women have of knocking the berries from bushes with sticks" (McClintock 1910:345).

Other Piikáni oral traditions record the role of plants in the origin of certain rituals. One of the more focal legends is the Woman who Married a Star, which was briefly mentioned in the discussion of plant food collecting. The following story is summarized from the accounts of Piikáni elders (JSC, MPE, EYH) and ethnographic information from Wissler (and Duvall 1908; 1918) and McClintock (1910):

> Early one morning, two young sisters were sleeping outside of their tipi. One of the girls, Feather Woman, looked up to the sky and saw a bright star --the Morning Star. It was very handsome and she wished that it were a man so that she might marry him. Morning Star, overhearing her request, came down to the earth and took Feather Woman back up to the sky to live with his Father, the Sun, and his mother, the Moon. The Moon gave Feather Woman a digging stick and told her she could dig any of the roots in the sky, with one exception -- a large turnip, which was considered sacred.

> Feather Woman went about the sky country digging roots, carefully avoiding the large turnip. However, one day her curiosity got the better of her and she decided to dig up the turnip. After a struggle, she managed to pull the turnip out of the ground, and when she did, it left a large hole in the sky. Feather Woman peered through the hole and saw her people camped below. This made her very homesick and she began to cry.
>
> When Morning Star discovered that Feather Woman had dug up the turnip, he told her she would have the go back to her people. So they wrapped her in buffalo robes and lowered her back to the earth, along with her sacred digging stick and a turnip. The Moon taught Feather Woman the songs to accompany the digging stick and the sacred turnip in the Sundance.

Today, the "scared turnip" remains an integral component of the Sundance ceremony (JSC, MPE, EYH; Cowan 1991; Peacock 1991). According to Wissler (1918:241) "The Woman-who-married-a-star is credited with bringing down the digging-stick and the turnip, together with the songs pertaining thereto". The Holy Woman of the Sundance carries a sacred digging stick which has a piece of the "holy turnip" tied to it (BSWAG), and wears a headdress whose feathers are said to represent the leaves of the prairie turnip.

It is evident from the preceding discussion that plants are an essential component of the traditional Piikáni belief system. The purifying and protective properties of plants were central to the spiritual activities. In many instances, the more powerful plants were introduced to the Piikáni by supernatural beings. Yet, despite their supernatural origins, these plants are widely available to all members of the community for personal use.

As is evident from this cursory examination of the role of plants in the Piikáni belief system, plants permeated all aspects of traditional Piikáni culture, and continue to do so today.

Additional Uses for Plants in Piikáni Culture

The diversity and versatility of Piikáni ethnobotanical knowledge is reflected in the additional ways in which plants materials were utilized. The results of this study suggest at least 52 different plants were used for the following purposes:

Craft manufacture	18 species
Treatment of horses	26 species
Scents and/or cleansing agents	12 species
Wood for implements, construction, shelter	9 species
Wood and other plants for fuel	6 species
Miscellaneous uses	9 species

These categories, and the plants appropriate to each, are listed in Table 9. Readers are referred to the Annotated List of Plants (Appendix A) for full details.

As is evident in Table 9, the Piikáni employed numerous plants in the manufacture of craft items. Berries and seeds, for example, were dried to create necklaces, bracelets and "beads" for ornamentation. In most instances, the berry was simply threaded and dried. Saskatoon berry necklaces were prepared in this manner. Others, required more elaborate treatment. For example, the berries of the wolf willow contain a large, striated seed which was softened by boiling and then threaded (MKW, MM, AD, MLB, MPE, JSC). Today, small beads are placed between the seeds, although traditionally, juniper berries were used. These necklaces are still manufactured by the Piikáni women, who sell them in craft stores.

Plants also provided the Piikáni with dyes for feathers, porcupine quills and hides. The study recorded six species used to produce dyes, although the information gathered was often contradictory. For example, BSWAG said that items wrapped in the wet stems of common horsetail would turn blue, while Hellson and Gadd (1974:88) state that the same plant was used to dye porcupine quills a light pink color. McClintock (1910:62) and others (Fidler in Haig 1991:53; Maximilian in Wissler 1910:62) record the use of wolf lichen to produce a yellow dye. However, the elders (MKW, MPE, EYH) were unfamiliar with this plant. These discrepancies likely reflect the loss of this traditional knowledge. Even during Wissler's time, "little could be learned as to native dyes used in quill work as for a long time the Blackfoot have used commercial dyes, the usual mode being to boil quills and feathers with pieces of print goods of the desired color" (Wissler 1910:62).

One of the more intriguing categories included in Table 9 is that of the role of plants in the treatment of horses. At least 26 plants were administered for their medicinal

Table 9: Additional Uses of Plants in Piikáni Culture

Craft manufacture		
Amelanchier alnifolia	Saskatoon	dried berries used for necklaces
Arctostaphylos uva-ursi	Com. Bearberry	dried berries used for necklaces, rattles
Berberis repens	Creeping Mahonia	bark produces yellow dye
?Castilleja spp.	Indian Paint-brush	plant used as dye; waterproof hides?
Elaeagnus commutata	Wolf Willow	berries used for necklaces
Equisetum spp.	Common Horsetail	stems produce blue? dye
Heracleum lanatum	Cow Parsnip	stems used as toy blow gun
Juniperus spp.	Juniper	berries used for necklaces, beads
*Letharia vulpina***	Wolf Lichen	lichen produces yellow dye
*Lomatium dissectum***	Chocolate-tips	roots mixed with brains for tanning
Lygodesmia juncea	Skeleton-weed	stems crushed for moccasin pads
Monarda fistulosa	Wild Bergamot	dried flowers used in hide processing
Perideridia gairdneri	Wild Caraway	roots used to shine arrows
Pinus contorta	Lodgepole Pine	pitch used for waterproofing
Polyporus spp.	Pore Fungus	fungus used to whiten hides
Psoralea esculenta	Indian Bread-root	dried root used as ornamentation
Rubus parviflorus	Thimbleberry	berries used to dye hides, quivers
Salix spp.	Willow	bark used as red? dye
Wood for implements, construction, shelter		
Amelanchier alnifolia	Saskatoon	arrow shafts, incense tongs
Betula spp.	Birch	tipi pegs, digging stick
Elaeagnus commutata	Wolf Willow	bark for strong rope
Pinus contorta	Lodgepole Pine	tipi poles, travois poles, bowls
Populus balsamifera	Balsam Poplar	wooden bowls
Populus tremuloides	Aspen	brooms for camping
Prunus virginiana	Choke Cherry	backrests, incense tongs, digging stick
Salix spp.	Willow	backrests, tipi pegs, tipi pins
Symphoricarpos spp.	Snowberry	brooms for camping
Wood and other plants for fuel		
Betula spp.	Birch	collected for firewood
Elaeagnus commutata	Wolf Willow	"stink wood" burned?
Pinus contorta	Lodgepole Pine	collected for firewood
Populus balsamifera	Balsam Poplar	collected for firewood
Populus tremuloides	Aspen	collected for firewood
Polyporus spp.	Pore Fungus	used as tinder to start fires

Table 9: Additional Uses of Plants in Piikáni Culture (continued)

Perfumes, scents and/or cleansing agents

Abies lasiocarpa	Alpine Fir	needles kept for perfume, hair tonic
Artemisia frigida	Pasture Sagewort	stems, leaves used as freshener
Hierochloe odorata	Sweet Grass	leaves kept for perfume, hair tonic
Juniperus spp.	Juniper	infusion as footwash, tonic for face
*Lomatium triternatum***	Prairie Parsley	fruits used in tanning to improve scent
Matricaria matricarioides	Pineapple-weed	leaves, flowers as perfume, hair rinse
Osmorhiza occidentalis	Sweet Cicely	roots as perfume; female deodorant
Polyporus spp.	Pore Fungus	pieces used as perfume
Populus balsamifera	Balsam Poplar	buds, leaves used as perfume
Salix spp.	Willow	infusion of roots as hair tonic
Thalictrum occidentale	Western Meadow Rue	seeds used as perfume
*Yucca glauca***	Soapweed	roots boiled as hair tonic, soap?

Plants used in the treatment of horses

Abies lasiocarpa	Alpine Fir	smudge to fumigate sick horses
Achillea millefolium	Common Yarrow	infusion used as eyewash
Actaea rubra	Baneberry	roots eaten; brewed for wounds
Allium spp.	Onion	roots smudged for sinus problems
*Angelica dawsonii**	Yellow Angelica	roots used as medicine
Artemisia frigida	Pasture Sagewort	infusion for wounds, sinus problems
Artemisia ludoviciana	Prairie Sagewort	leaves smudged for distemper
Berberis repens	Creeping Mahonia	infusion of berries, roots used
Clematis occidentalis	Purple Clematis	plant brewed as diuretic
Equisetum spp.	Common Horsetail	stem brewed as diuretic
Geum triflorum	Old Man's Whiskers	infusion of root for wounds
Glycyrrhiza lepidota	Wild Licorice	roots used for windgalls
Heuchera spp.	Alum-root	root brewed for respiratory problems
Juniperus spp.	Juniper	infusion of roots used to shine coat
*Lomatium dissectum***	Chocolate-tips	roots smudged; brewed for distemper
Lycoperdon spp.	Puffballs	pieces applied as styptic to wounds
Lygodesmia juncea	Skeleton-weed	infusion for sores, coughs
Osmorhiza occidentalis	Sweet Cicely	roots eaten for health; distemper
Perideridia gairdneri	Wild Caraway	root chewed; brewed as diuretic
Physaria didymocarpa	Double Bladder-pod	roots used as liniment
Populus balsamifera	Balsam Poplar	cambium fed to horses
Populus tremuloides	Aspen	cambium fed to horses
Salix spp.	Willow	root used for sore, tired eyes
*Selaginella densa***	Club-moss	root given to race horses for energy
Valeriana spp.	Valeriana	root smudged; brewed for ailments
Veratrum eschscholtzii	False Hellebore	snuffed for respiratory problems

Table 9: Additional Uses of Plants in Piikáni Culture (continued)

Miscellaneous uses		
Artemisia frigida	Pasture Sagewort	juice used as mosquito repellent
Balsamorhiza sagittata	Balsamroot	leaves used in pit cooking camas
Glycyrrhiza lepidota	Wild Licorice	burrs sucked to prevent thirst
*Lithospermum ruderale***	Yellow Puccoon	children's toy
Osmorhiza occidentalis	Sweet Cicely	diapers sweetened with infusion of root
Oxytropis ?sericea	Loco-weed	children's toy
Perideridia gairdneri	Wild Caraway	buffalo runners chewed roots
Potentilla anserina	Silverweed	roots used to tie blankets, leggings
Thermopsis rhombifolia	Golden Bean	flowers indicate buffalo hunting good

* see notes Table 4
** see notes Table 4

properties. It is interesting that virtually all of the plants identified were used in the treatment of human ailments as well. Common horsetail, for example, was brewed as a diuretic for both people and horses. Similarly, the root of double bladder-pod was applied as a liniment for a person's muscular aches and pains (AD, MPE, EYH, JC). It was also applied to the shoulders of work and wagon horses (Hellson and Gadd 1974:89).

Horses were introduced to the Northwestern Plains between 1730 and 1740 (Ewers 1955; Vickers 1986:103). Prior to this, the Piikáni relied upon dogs for the transportation of materials. Given this, it is reasonable to suggest that administration of plant remedies to horses represents a relatively recent adaptation of the more traditional medicinal practices used to treat human diseases. Alternatively, it is possible that the Piikáni originally adapted these medicines for dogs, and subsequently modified them for use with horses. Clearly, this is a subject which warrants further investigation.

Included in Table 9 are a number of plants utilized by the Piikáni as perfumes, scents and cleansing agents. Pineapple-weed, whose name derives from its pineapple odour, is crushed and used as a perfume, applied as a freshener to clothing and assorted articles, and was boiled for a hair rinse (JC, JSC, AD, MKW). Similarly, "the leaves of sweet pine [alpine fir] are also valued for their delightful odour . . . and are also used to give a pleasant fragrance to hair grease" (McClintock 1910:364).

Readers will note that many of the plants included as perfumes and scents are also identified in Table 8 as agents of spiritual cleansing and protection. As previously discussed, it is often difficult to distinguish between the secular and the spiritual properties of plants. Thus, while the plants listed in Table 9 may have been used in a more utilitarian manner, their spiritual roles cannot be entirely disregarded.

A wide range of implements were manufactured from the wood of the various trees and shrubs common to Piikáni territory. Dishes, eating utensils and containers were just a few of the many artifacts which incorporated wood in their design. Grinnell (1892:203) notes that "wooden bowls and dishes were made from knots and protuberances of trees, dug out and smoothed by fire and the knife or by the latter alone" (Grinnell 1892:203). Spoons and ladles were also made of wood (Grinnell 1892:202; Wissler 1910:28). Although most containers were manufactured from hide, they usually had a wooden rim. As Grinnell (1892:201) explains:

> "The Blackfeet made buckets, cups, basins and dishes from the lining of the buffalo's paunch. This was torn off in large pieces, and was stretched over a flattened willow or cherry hoop at the bottom and top. These hoops were sometimes inside and sometimes outside the bucket or dish."

Composite tools, such as knives, scrapers, mauls and other items were often hafted to wooden shafts. The technique used for this manufacture is described by Grinnell (1892:200) who states:

> "Some of the flint knives were long, others short. A stick was fitted to them, forming a wooden handle. The handles of mauls . . . were usually made of green sticks fitted as closely as possible into a groove made into the stone, the whole being bound together by a covering of hide put on green, tightly fitted and strongly sewed. This, as it shrunk in drying, bound the different parts of the implement together in the strongest possible manner."

The bow and arrow were also manufactured from wood. Bows were usually made of "ash wood", but when this was not available, choke cherry was used, although "this had not strength nor spring enough to be of much service" (Grinnell 1892:199). Arrows were made of saskatoon wood which was "straight, very heavy, and not brittle" (Grinnell 1892:200), although willow was used occasionally (Wissler 1910:157). The shafts were smoothed and straightened with "a stone implement" (Grinnell 1892:200).

Rope or cord was manufactured from the bark of the wolf willow. McClintock (1910:529) notes that "the bark was very tough and made strong rope for tying skins and parfleches when raw-hide was not at hand". Wissler (1910:53) also states that cord was formerly made from the "tough bark of an unidentified shrub (the buffalo berry?) which was twisted or plaited into ropes".

Wood also played an essential role in the construction of the traditional Piikáni dwelling, the tipi. As Grinnell (1892:198) notes "lodge coverings were supported by light, straight pine or spruce poles, about eighteen of which were required". McClintock (1910:234) notes that "the best poles are made of slim and straight mountain pines, which the women cut and peel and season slowly, to keep them straight. Their length varies from fifteen to thirty feet according to the size of the tipi".

Tipis were owned by the Piikáni women who were responsible for cutting and preparing the pole (Wissler 1910:99). Tipi poles were collected in the spring, according to McClintock (1910:52-52), who notes that:

> "It was in early summer, the time when the camass is in bloom and they were engaged in cutting and peeling lodge poles. In those days the Blackfeet travelled so far in a year that their lodge poles were worn too short. Every spring they went into the mountains to cut new poles and to dig camass roots" (McClintock 1910:52-53).

However, Ewers (1958:168) states that "in the fall of the year women cut new tipi poles of lodgepole pine."

Wood also played an important role around the tipi as well. Wooden pegs of birch or willow were used to stake the outer rim of the covering (MPE, EYH). Backrests "used in tipis at the heads of couches" (Wissler 1910:54) were made of willow woven with sinew (MPE, EYH, MKW).

Fuels for cooking and warmth were also essential to the Piikáni, especially during the winter months. The cottonwoods and numerous shrubs of the river valley bottoms were particularly important in this respect. The collection of firewood was the responsibility of the women. In 1811, Henry (cited in Wissler 1910:84) noted that

> "The [Piikáni] women . . . have much difficulty in collecting firewood. Those who have no axes fasten together the ends of two long poles, which two women then hook over dry limbs of large trees, and thus break them off. They also use lines for the same purpose . . . Others again set fire to the roots of large trees, which having burned down, the branches supply a good stock of fuel."

According to Thompson "the Poplar and aspin [sic] make the best of fire wood for a tent, the wood does not sparkle and the smoke is mild. The smoke of no other wood should be used for drying meat" (cited in Johnston 1987:28). However, McClintock's information suggests a variety of trees and shrubs were used. "It was interesting to distinguish the different odours of burning firewood, the sweet fragrance of birch and cottonwood, the resinous scent of pine and the disagreeable odour of [a wood] called "stink-wood" [wolf willow] by the Blackfeet, because of the offensive smell of its smoke" (McClintock 1910:176-177).

The final category in Table 9, that of miscellaneous uses, contains an array of plants utilized in very diverse manners, including everything from mosquito repellent to children's toys and diaper fresheners.

This brief and by no means exhaustive review of the additional uses of plants by the Piikáni demonstrates that the Piikáni possessed a comprehensive knowledge of the properties and charactertistics of each plant in their environment and understood how to maximize those resources to their fullest extent.

Plants and the Piikáni Language

It has long been recognized that people identify and classify the plants, animals and other organisms in the natural environment in ways which reflect cultural perceptions of similarities and differences. The principles of these folk classifications are, in part, represented in the language, specifically, in the names assigned to the various organisms. Thus, the study of Piikáni plant names can contribute significantly to our understandings of how the people perceived and utilized the resources in their environment. As Taylor (1989:363) explains:

> "Popular names for plants in all languages often give information about the place of the plant in the world of the speakers of the language. The names may reflect the use to which the plant is put by the naming group, or again, the names may be descriptive, indicating some notable thing about the plant: its appearance, taste, smell, feel. The description is often localized to a particular part of the plant, to its flower, fruit, stem, leaves, roots, etc. Names may also be metaphorical, relating the plant to some other familiar feature of the natural or cultural environment."

This research succeeded in recording Piikáni plant names for 87 of the 90 plants identified in the study (Table 10). These names were supplied by the Piikáni elders and, in most instances, are recorded using the orthographic standards outlined by either Frantz and Russell (1989) or Taylor (1989). The meanings or translations of the names are included in the Annotated List of Plants in Appendix A. Additional information is provided in Table 3 and Appendix B.

The majority of Piikáni plant names are descriptive of the features or properties of the plants themselves. Often, these names describe the physical appearance of a plant, such as its shape, color or texture. For example, "immitáóxkatsiistsi" means "dog's foot" (JSC, MPE, EYH) and refers to the texture of the berries of fairy bells which resemble the textured skin on a dog's pad. The name "double root" or "niistsikápa's" recognizes the fact that wild caraway has two or more spindle-shaped, tuberous roots. Old man's whiskers or "sooyéíxtsii" is named "lies on his belly" because the roots run horizontally just beneath the ground surface.

Other Piikáni names refer to the peculiar characteristics of a plant. The pungent smell of valeriana earns it the name "éípaxksikeimoy" or "smells like stinking feet". Gumweed is known as "aksspís" or "sticky head" because of the sticky resin which coats the flower buds. The name for milkweed, "ónnikiisikimska" or "milk comes out of it", refers to the milky sap exuded from the leaves, stems and roots.

In some instances, the effects resulting from the use of the plant are reflected in the

Table 10: Piikáni Plant Names

Scientific	Common	Blackfoot
Abies lasiocarpa	Alpine Fir	kátoyiss
Achillea millefolium	Common Yarrow	áóxtoksòo'kii
Acorus americanus	Sweet Flag	áámyòo'kakiikin
Actaea rubra	Baneberry	siksaokaa's or siksaokaa'sim
Allium spp.	Onion	pisatsiinikiim
Amelanchier alnifolia	Saskatoon	ókonok
Anemone multifida	Cut-leaved Anemone	asáápo'pinátsi
Anemone patens	Prairie Crocus	kippiaapi
Angelica dawsonii	Yellow Angelica	?asaokaa'sim or ?sáókaa'simma
*Apocynum cannabinium**	Indian Hemp	i'nákseipistsi
Arctostaphylos uva-ursi	Common Bearberry	kákahsiin
Artemisia frigida	Pasture Sagewort	áakiikaaksimiisi or ka'ksimí
Artemisia ludoviciana	Prairie Sagewort	ninaaika'simo or ka'ksimí
Asclepias viridflora	Green Milkweed	ónnikìiseikimiska
*Astragalus canadensis**	Milk Vetch	kaakaxtáánay
Astragalus crassicarpus	Ground Plum	?piksíksiinaa owahsin
Balsamorhiza sagittata	Balsamroot	ómahka's
Berberis repens	Creeping Mahonia	ótsskoyiini
Betula spp.	Birch	síkokíiniis
Camassia quamash	Blue Camas	misiséi
Castilleja spp.	Indian Paint-brush	?natsiipski or matssipski
*Chimaphila umbellata**	Prince's Pine	ómaxksikakaxsiini
*Claytonia lanceolata**	Western Spring Beauty	pach-op-it-skinni
Clematis occidentalis	Purple Clematis	stá'oa'kaatsisi
Cornus stolonifera	Red Osier Dogwood	áápinikiim
Coryphantha vivipara	Ball Cactus	otsstatsimaan
Disporum trachycarpum	Fairy Bells	iimitáóxkatsa
Elaeagnus commutata	Wolf Willow	kappssíí or miisiséímmii'soyiis
Equisetum spp.	Common Horsetail	saapuxtúnnakyottoyisi
*Erythronium grandiflorum**	Glacier Lily	naamúikina
Fragaria virginiana	Wild Strawberry	ootsistsííni
*Fritillaria pudica**	Yellow-bell	naamúikina
Geum triflorum	Old Man's Whiskers	sooyéíxtsii
Glycyrrhiza lepidota	Wild Licorice	ááhsowa
Grindelia squarrosa	Gumweed	aksspís

Table 10: Piikáni Plant Names (continued)

Scientific	Common	Blackfoot
Heracleum lanatum	Cow Parsnip	pokínssomo
Heuchera spp.	Alum-root	apahsípoko
Hierochloe odorata	Sweet Grass	sipátsimo
Juniperus spp.	Juniper	siiksiinokoyiini or siiksiinoko
Ledum groenlandicum	Common Labrador Tea	immatótsiineimoy
*Letharia vulpina**	Wolf Lichen	ootsiisiimats?
Lewisia rediviva	Bitter-root	éíksikksiksi
Ligusticum canbyi	Lovage	?siisoowakstaks
*Lilium philadelphicum**	Western Wood Lily	naamúikina
*Lithospermum ruderale**	Yellow Puccoon	ponokáówaxsini
*Lomatium dissectum**	Chocolate-tips	o-muck-mas
*Lomatium triternatum**	Prairie Parsley	None recorded
Lonicera involucrata	Bracted Honeysuckle	?paksiikoyiini
Lycoperdon spp.	Puffballs	kakató'si
Lygodesmia juncea	Skeleton-weed	?otahkoyitsi
Matricaria matricarioides	Pineapple-weed	matoyaitsiimo
Mentha arvensis	Wild Mint	ka'kitsímo
Monarda fistulosa	Wild Bergamot	maanikápi
*Musineon divaricatum**	Leafy Musineon	ómaxkeiksikksiksi
*Oenothera caespitosa**	Butte Primrose	áwàanatapistsiskitsi;okspiipoko
Opuntia spp.	Prickly Pear	otaxkóttsisa
Osmorhiza occidentalis	Sweet Cicely	?matsii pokoyi saokaa's
Oxytropis ?sericea	Early Yellow Loco-weed	éísaittsikuxtakkyui
*Penstemon nitidus**	Smooth Blue Beard-tongue	asstssípokoy
Perideridia gairdneri	Wild Caraway	niistsikápa'
Physaria didymocarpa	Double Bladder-pod	éiksikooki
Pinus contorta	Lodgepole Pine	apahtók
*Polygonum bistortoides**	Bistort	ek-sik-a-pato-api
Polyporus spp.	Pore Fungus	áápopixkaa'tsisi
Populus balsamifera	Balsam Poplar	a'síísiksimm
Populus tremuloides	Aspen	siikokíína
Potentilla anserina	Silverweed	kiitakápssimma
Prunus virginiana	Choke Cherry	pákki'p or pákkyoono
Psoralea esculenta	Indian Bread-root	ma's

Table 10: Piikáni Plant Names (continued)

Scientific	Common	Blackfoot
Ribes aureum	Golden Currant	?pakksiniisimaan
Ribes oxyacanthoides	Wild Gooseberry	pakksíni'simaan
Rosa spp.	Rose	kiníí or kiniipisatsasski
Rubus idaeus	Wild Red Raspberry	otohtoksiin
Rubus parviflorus	Thimbleberry	?kyaainii or paksiikoyinii
Rumex spp.	Dock	matoa-koa-ksi
Salix spp.	Willow	otsipiiyis
Selaginella densa	Club-moss	None recorded
*Shepherdia argentea**	Thorny Buffalo-berry	mi'ksiníttsiim
Shepherdia canadensis	Canadian Buffalo-berry	otaxkóiksinittsiima
Solanum triflorum	Wild Tomato	ómahkokataoowahsin
Solidago spp.	Goldenrod	None recorded
Symphoricarpos spp.	Snowberry & Buckbrush	siinikskoi or sííksikskaaxkoy;
Thalictrum occidentale	Western Meadow Rue	atsíínaimo
Thermopsis rhombifolia	Golden Bean	útsiikii
Vaccinium membranaceum	Black Mtn. Huckleberry	áápaawapsspii
Valeriana spp.	Valeriana	éípaxksikeimoy
Veratrum eschscholtzii	False Hellebore	ixtawáa'si
*Xerophyllum tenax**	Bear Grass	kyááyàapistsisskiitsi
*Yucca glauca**	Soapweed	éíksisooki; áíksikkoki
*Zigadenus venenosus**	Death Camas	None recorded

Note: Several Blackfoot names are prefaced with an "?". This indicates that the orthography is uncertain and requires further research.

A number of plants in this list are followed by a single asterisk (*) indicating that the identification of this plant is tentative. Others are followed by two asterisks (**). In these instances, the plant was previously recorded by an earlier researcher, but was not identified with confidence by the Piikáni elders during the current study. However, when sufficient data were available, these plants were added to the database in the hope that the elders' comments and additional information might assist further research in supporting or refuting the original identification. Readers are referred to the Annotated List of Plants (Appendix A) for details.

Piikáni names. For example, "we make ourselves sneeze with it" is the translation of the Piikáni word for false hellebore, which was snuffed to relieve headaches. Alum root is referred to as "tastes dry" or "apahsípoko" because of the astringent properties of the root.

As Taylor noted, many of the names are metaphorical. Wild bergamot, for example, is called "maanikápi" or "bachelor", presumably because of its showy appearance. The name "áámyòo'kakiikin" or "looks like a fish backbone" refers to sweet flag, whose root is said to resemble the vertebral column of a fish. The prairie crocus is known as "kippiappi". According to MKW, this means "something that comes really fast and then gets old". The prairie crocus is one of the first flowers of spring, but its blooms fade quickly. Interestingly, camas is referred to as "misiséi" or "turd". Given its importance as a food source, this name probably refers to the appearance of the bulbs following pit-cooking!

There are several Piikáni plant names whose meanings cannot be determined. According to Taylor (1989:363) these names "are so traditional that they cannot be analyzed; such names are usually very old, and sound or analogical change has so altered their shape that their derivational history is obscure". Examples of unanalyzable names include the word for rose (kiníí), saskatoons (ókonok), and sweet pine (kátoyiss) (Taylor 1989:369).

One of the more intriguing features of Piikáni plant nomenclature is the fact that a genus or species may be distinguished as male and female. For example, the Piikani identify both male and female stalks of cow parsnip. The male, or "ninaapokínssomo", is the immature flower stalk, while the female, or "aakiipokínssomo" is the leaf stalk. According to Kuhnlein and Turner (1986:341), this distinction is made by almost all Indigenous peoples in reference to cow parsnip.

The Piikáni also distinguish a male and female sage, but in this instance, the two represent different species. "Man sage" or "ninaaika'simo" is prairie sagewort (*Artemisia ludoviciana*) while the "woman sage" or "áakiikaaksimiisi" is pasture sagewort (*A. frigida*). According to Hungry Wolf (1980:203), "one plant in the world of Blackfoot botany was left practically for the exclusive use of the women. For that reason, it was called women's sage. A companion plant was called man's sage, because it was used mainly by men."

Geographic locations were also named for the presence of specific plant resources. As previously mentioned, the area around Cowley, Alberta known as "the place of many turnips" (Johnston 1987). Several locations in traditional Piikáni territory were named after the cottonwoods. High River and the Highwood River, in Alberta, were known as

"spitsíi" or "tall trees" because the trees along the river could be seen from a distance. The Pincher Creek area is called "aamsskaa - spitsíi" or "south tall trees" (Johnston 1987:28).

Months of the year were also named after plants, as was previously discussed. For example, July was known as "ókonokistsi otsítsi'tssp" or "when the saskatoons are ripe", while August was known as "pákkipistsi otsítai'tssp" or "when the choke cherries are ripe".

Taylor (1989:370) has identified a number of terms used only in plant designations and these provide further insights into Piikáni nomenclatural principles and folk categories. These include:

-sasskii-	herbaceous plant
-innoko-, -iiniki-	berry
-iksi-	root
-in-	berry
-isooki-	plant with stiff leaves?
-ottoyi-	reed; plant with stiff stems?
-oo'kii-	stem

The single morpheme "ma's" is also of interest. Although Taylor translates this as "turnip" (1989:363), it is more accurately translated as "edible root" as suggested by Frantz and Russell (1989) and by the Piikáni elders. This morpheme is present in several plant names (Taylor 1989:363). The prairie turnip is known simply as "ma's", for example, while wild caraway is called "double root" or "niistsikípa's". Balsamroot is known as "omahka's" or "big root". The presence of this morpheme could reflect similar uses of the plants, i.e. as edible roots. Or, it could identify a similar morphological feature. However, it seems reasonable to suggest that "edible root" represents a folk category.

Taylor (1989:369) also observes that a number of the Piikáni plant names include elements which appear to mean "flower" or "flowering plant", or "áápistsisskiitsi" and "pisátsasskii", respectively. He suggests that "both of these are themselves probably complex constructions; the latter, for example is composed of the following morphemes: pisat -, an initial stem meaning 'fancy, beautiful' and -sasskii - a medial which probably means '(herbaceous) plant, vegetative growth' "(Taylor 1989:369-370). The wild onion is an interesting example. It is called "pisatsiinikimm" which translates as "fancy berry".

Another interesting aspect of Piikáni folk classification is the fact that there appears to be a folk category which includes those plants which are recognized but not utilized. For example, the Piikáni elders often referred to a plant as "oh, that's just a flower" or "that's a purple flower", adding that this particular specimen was not utilized. Several examples of

this were recorded by other researchers, and include:

Aster falcatus	ksikkapistsiskitsimi or "white flower" (Taylor 1989)
Arnica amplexicaulis?	otaxkaapistsiskitsi or "yellow flower" (Taylor 1989)
Gaillardia aristata	otaxkáápistsiskitsi or "yellow flower" (Taylor 1989)
Gentiana affinis	ot-ska-a-pis-is-kit-sa or "blue flower" (McClintock 1910)

Hunn (1982; Hunn and French 1981) has recorded similar occurrences amongst Sahaptin speakers of the Interior Plateau. Here, only the species of the genus *Lomatium*, which were utilized as food, are distinguished nomenclaturally. The rest are referred to as "just flowers". Hunn (1982) terms these "residuals" and defines them as groups of plants with little or no cultural utility. Hunn suggests that residual plant categories are common to the folk classifications of peoples of all cultures.

In summary, it is evident from the examples above that Piikáni plant terminology reflects a complex folk classification system which recognizes the diversity of the natural environment and structures it on the basis of culturally significant criteria. It is hoped that by recording the Piikáni plant names, this study provides basis for further investigation.

Previously Recorded Plants not Identified by Study

Table 11 includes a list of 23 plants which had been recorded by previous investigators but were not identified by the Piikáni elders during this study. There are several possible explanations for these results.

First, it is possible that the traditional knowledge concerning these particular plants has been lost due to acculturation. Or, as botanical knowledge varies between generations and communities, it could be that only certain people retain this information. For example, Hellson and Gadd (1974) obtained the majority of their data from the Kainaa peoples. Therefore, this knowledge might be restricted to that community. In addition, several plants on this list, such as arnica or creeping white prairie aster, are included in the category of plants named but not utilized, as was discussed in the language section. Perhaps others on this list belong in the same category. Finally, it is possible that some of the plants were misidentified initially and this misinformation has been reiterated without verification by subsequent researchers.

Table 11: Previously Recorded Plants not Identified during Study

Scientific	Common	References
Arnica amplexicaulis	Arnica	WM 1910; RB 1986
Aster falcatus	Creeping White Prairie Aster	WM 1910; HG 1974; RB 1986
Calochortus apiculatus	Mariposa Lily	AJ 1987
Delphinium bicolor	Low Larkspur	HG 1974
Dodecatheon pulchellum	Shooting Star	HG 1974
Draba incerta	None recorded	HG 1974
Epilobium angustifolium	Fireweed	HG 1974
Gaillardia aristata	Gaillardia	HG 1974
Gentiana affinis	Prairie Gentian	WM 1910
Geranium viscosissimum	Sticky Purple Geranium	HG 1974
Gutierrezia sarothrae	Broomweed	WM 1910; RB 1986
Liatris punctata	Blazing Star	WM 1910; RB 1986; AJ 1987
Lupinus spp.	Lupine	HG 1974
Lycopus americanus	Water Horehound	WM 1910; AJ 1987
Orobanche fasciculata	Broom-rape	WM 1910; AJ 1987
Orthocarpus luteus	Owl-clover	WM 1910
Phlox hoodii	Moss Phlox	HG 1974
Potentilla fruticosa	Shrubby Cinquefoil	HG 1974; RB 1986; AJ 1987
Prunella vulgaris	Heal-all	HG 1974
Pyrola spp.	Wintergreen	HG 1974
Sorbus spp.	Mountain Ash	GG 1892; JE 1958; HG 1974
Spiraea densiflora	Pink Meadowsweet.	HG 1974
Viola adunca	Early Blue Violet	HG 1974

AJ = Alex Johnston 1987; GG = George Grinnell 1892; HG = Hellson and Gadd 1974; JE = John Ewers 1958; WM = Walter McClintock 1910; RB = Razcka and Bastien 1986;

Chapter 7: Plant Utilization and the Archaeological Record

The investigation of pre-contact plant resource use on the Northwestern Plains has been somewhat neglected by archaeologists. This may be attributed to the paucity of ethnobotanical data and to the notion that activities associated with plant utilization have "low archaeological visibility". However, the information gathered by this study indicates there are several types of direct and indirect evidence which may used to draw inferences concerning pre-contact plant utilization. For discussion purposes, these are summarized in the following categories:

> Palaeobotanical Evidence: the macro and micro remains of the plants themselves;
>
> Artifacts: the artifacts associated with collecting, processing, preservation of plants, including digging sticks, knives or bifaces, grinding stones, mauls, shaft straighteners, etc.;
>
> Features: the archaeological features which represent the evidence of plant processing activities such as boiling pits, roasting pits and platforms, and the associated fire-cracked rock and charcoal;
>
> Site location: the location of archaeological sites in relation to extant plant communities which may have been the focus of plant gathering and processing activities;

This chapter briefly examines the nature of this evidence in order to draw attention to the possibilities and problems associated with each.

The discussion assumes that modern plant communities, with more or less similar distributions, have existed throughout the study region for several thousand years. This is supported by paleoecological data which suggest that the environmental conditions of the Northwestern Plains have remained relatively stable for the past 5000 years (e.g. McKinnon 1986). Unfortunately, the data are not sufficiently refined to permit a detailed discussion of the past distribution and composition of specific plant communities. Pollen studies from lakes and bogs provide only an overview of regional vegetation (Ford 1979:310), and tend to concentrate on key indicator species (Wilson et al. 1988:521). However, it is known that minor fluctuations in temperature and precipitation levels have occurred and boundaries between ecoregions have migrated both longitudinally and

altitudinally in response to these variations. However, these changes have been ones of degree rather than type. As Wilson et al. (1988:518) note:

> "Holocene climatic conditions have been . . . variable. Of obvious relevance is the Hypsithermal (Altithermal) climatic interval, which lasted from about 9000 to 5000 years ago, and a minor warming event between 4000 and 3000 years ago. During these intervals, grasslands extended into areas earlier and later occupied by forests, both in the Alberta foothills and mountains . . "

In addition, the following discussion assumes that these plant resources were utilized as foods, medicines, and materials by the pre-contact peoples of the area in much the same manner as they were utilized by the Piikáni.

Palaeobotanical Evidence

The most direct form of archaeological evidence for plant utilization is the remains of the plants themselves. A variety of natural factors affect the preservation of micro and macro floral remains in the archaeological record, including the anatomy of the plant, depositional environments and preservation factors (Ford 1988:216). In addition, cultural factors also influence the deposition and preservation of plant remains.

Of particular interest to this discussion is the manner in which a plant is processed prior to entering the archaeological record. As discussed in Chapter 6, Piikáni plant processing techniques involved peeling, drying, boiling and roasting, or a combination of these activities. All else being equal, it may be suggested that processing enhances the possibility of a plant resource being preserved in the archaeological record. For example, the peelings of wild onions were preserved in a dry cave site in the Bighorn Basin, as were choke cherry pits and wild rose seeds (Keyser 1986). However, it is well established that the vast majority of floral remains recovered from archaeological contexts are carbonized. As Shay (1990:2) observes:

> "Charring is virtually the only way that plant remains can survive for long in most soils. The probability of a plant food becoming charred depends upon how it is processed. Seeds that are parched or roasted over a fire are more likely to become charred than those used without such treatment. . . Fruits such as choke cherry may be pounded but the resulting fragments, even if charred, would not easily be identified. . . Plants sought for their leaves, flowers or underground parts would have little chance of becoming charred. Even if charred, these soft tissues would be easily fragmented and difficult to recover and identify".

The Piikáni roasted a variety of plant foods, including cow parsnip, prairie turnip

and camas and used a variety of trees and shrubs as fuel. Therefore, these are potentially recoverable from the archaeological record. Haberman (1986:239), for example, reports that a carbonized fragment of prairie turnip was recovered from a site in South Dakota. Similarly, Thoms (1989:394) states that over half of the earth ovens excavated in the Calispell Valley in Washington yielded charred camas bulbs. Interestingly, a recent study of the diagnostic characteristics of charred tubers demonstrated that latex cells and xylem elements of the groundnut (*Apios americana*) persist after charring and can be used to determine the position of vascular bundles and to identify charred tuber fragments (Standifer et al. 1991).

The techniques employed in obtaining palaeobotanical samples for analysis, as well as the quantity of samples processed, also have a significant impact on the nature of information recovered from archaeological sites (Pearsall 1989). According to Ford (1988:216-217):

> "When few soil samples are processed, the plants with low probabilities will almost never be recovered. As the number of water-processed soil samples increases, the prospects of discovering a rare or unusual plant remain also rises. Poorly preserved taxa can only be discovered when numerous soil samples are analyzed. But they must be sought because they provide a greater cultural texture to a site's description".

The development of research designs which incorporate systematic sampling for palaeobotanical remains is also critical, especially on the Northwestern Plains. To date, few such studies have been conducted in the study region. As Vance (1992:2) notes, "palaeobotanical analysis of sediments from archaeological sites is not commonly a component of archaeological studies in Alberta". However, this situation may be changing, as is illustrated by several recent studies.

A preliminary report on the analysis of sediment samples from a variety of sites in the Oldman River Valley revealed numerous charred seeds, including: goosefoot (*Chenopodium*); mustard (Cruciferae); grasses (Gramineae including cf. *Bouteloua* and cf. *Poa*); sedges (Cyperaceae, cf. *Scirpus*), including spike rush (*Eleocharis*); caryoph (cf. *Silene*); and stinkweed (*Thlaspi arvense*) (Vance 1992). Shay's (1990) analysis also recovered a variety of charred seeds, including the pit of a wild cherry (*Prunus* cf. *pensylvanica*), a seed of gooseberry (*Chenopodium* cf. *capitatum*) and one tentatively identified as a member of the figwort family (cf. *Veronica*). Shay also identified charcoal fragments of willow (*Salix*) and willow/poplar or aspen (*Salix/Populus*). Several pieces of unidentifiable bark and bark/pitch were also present (Shay 1990).

Of particular interest are the 206 charred and broken chenopodium seeds recovered from DjPm 36 (Vance 1992), a multi-component campsite situated at the confluence of the Oldman and Crowsnest Rivers. The seeds were recovered from a small pit feature which contained blackened soil, quantities of fire cracked rock and several bird bones. It is affiliated with an early Pelican Lake occupation (Stan van Dyke, pers. comm. 1992).

The results of this research are encouraging and emphasize the need for systematic palaeobotanical studies. As Shay notes (1990:3), "A few charred seeds, however, do not a subsistence pattern make".

Artifacts Associated with Plant Utilization

In the absence of palaeobotanical remains, the role of plants in pre-contact lifeways may be inferred from the presence of artifacts associated with plant collecting, processing and utilization. The results of this study reveal that a wide variety of artifacts were employed by the Piikáni in the collecting and processing of plant products. These include digging sticks, containers of various shapes and sizes, knives or bifaces, grinding stones (Figure 29) and mauls (Figure 30).

Unfortunately, it is difficult to demonstrate that such artifacts were used exclusively for plant processing. With the exception of digging sticks (which are not likely to be preserved), the majority of these artifacts could have been used for multiple purposes. For example, knives or bifaces used to slice prairie turnips may also have been used for butchering meat. Similarly, Wissler (1910:22) notes that mauls used to crush choke cherries were also used to break bones for marrow extraction.

The recognition of certain artifact types may also be problematic. For example, the Piikáni elders stated that rounded river cobbles were commonly used as grinding stones in the preparation of plant foods and medicines. Numerous elongated river cobbles appear in cultural contexts in southwestern Alberta, but are often not recognized as artifacts because they lack obvious signs of use.

Difficulties in identifying artifacts associated with plant processing may be eliminated through use wear analysis and/or residue analysis. In a study of Mesolithic assemblages in southern Greece, Vaughan analyzed an assortment of lithic tools used to harvest a variety of plant materials including almond (hardwood), cypress (softwood), reeds, domesticated barley and wild grasses, cattails and marsh-elder. His results suggested that the use wear polishes on artifacts utilized to cut "soft plants" (greens and stems), were the most distinctive (1985:46). He (1985:45) concludes that "microwear

Figure 29: Grinding stone similar to those described by the Piikáni elders. Photo courtesy of the Glenbow Museum.

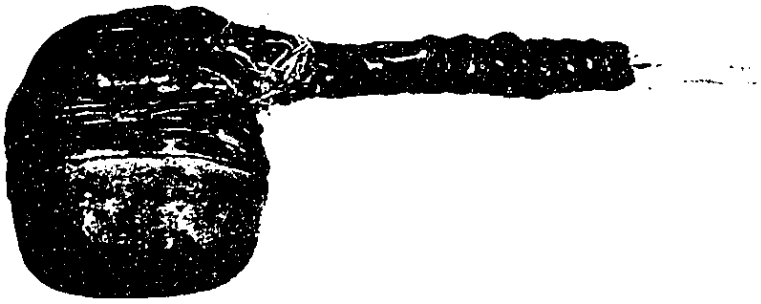

Figure 30: Stone maul similar to that described by Wissler (1910) as one which was used to crush choke cherries. Photo courtesy of the Glenbow Museum.

polishes . . . can be diagnostic of the worked substance because their formation is dependent primarily on the contact material, while the length of use and the texture of the flint also exert a certain influence".

Chemical residue analysis of artifacts may also assist in determining whether or not an item was used in plant processing. A study by Briuer (1976), for example, analyzed the organic residues present on unwashed lithic artifacts from two dry rock shelters in northeastern Arizona. An initial assessment of microscopic edge wear patterns led the researchers to select a sample of 37 specimens with "what appeared to be organic residue still intact . . . In some cases, plant fibres were found embedded in sticky, piled-up residues. In many cases, residues showed obvious signs of polishing, smearing, spreading and directionality, usually away from the edge" (Briuer 1976:478).

Briuer applied standard chemical reagents (phlorglucin and hydrochloric acid, iodine potassium iodide, Sudan III) to the residues to test for the presence of plant tissues such as suberin, cutin, lignin and cellulose. The procedure obtained positive results for a variety of flakes, core tools, knives, a mano and a shaft straightener (Briuer 1976:479). These results led Briuer to suggest that at least 25% of the lithic assemblage at the O'Haco rockshelter had been used in plant processing. He concluded that:

> " . . . archaeologists who religiously scrub their artifacts may be unwittingly destroying potential information bearing on the prehistoric function of the artifacts. Moreover, archaeologists may be assuming the opposite of Locards' principle, i.e., that there are simply no traces or that the traces are beyond the archaeologist's ability to identify. It seems more productive to assume that traces will always be there, even if they are very difficult to identify." (Briuer 1976:483).

Archaeological Features

The presence of certain features at an archaeological site may also allow inferences to be drawn concerning plant utilization. The study of Piikáni plant processing suggests these features may include hearths, boiling pits and roasting pits.

The roasting pits are of particular interest. As discussed previously, the Piikáni constructed large roasting pits to cook camas, and possibly other vegetal foods (see Chapter 6 for a detailed description). It is interesting to note that Wissler (1910:42-43) states the Piikáni methods of processing camas are "the same as Plateau groups", adding that "the detail of the method . . . does not essentially differ from that used by the Thompson Indians for dry roots of all kinds". Therefore, we can turn to the Plateau for

further insights into Piikáni practices.

Investigations at Hat Creek, a pre-contact root gathering and processing area in the interior of British Columbia, identified numerous roasting pits (Pokotylo and Froese 1983). Test excavations of 15 of these features revealed a mixture of burned earth, charcoal, ash and heat fractured rocks. Several of the pits were lined with large rocks, while others were dug into glacial till. At least three of the depressions had been reused. The charcoal dates from the 15 depressions range from 2245 BP to 600 BP.

Analysis of the carbonized floral remains preserved in the roasting pits provided information on food plants, plant matting and fuel types. Plant foods included remains of *Allium* spp., Compositae and Liliaceae. Coniferous needles and branches, as well as bearberry, were used as matting in the roasting pits, while various coniferous species were used as fuel. In addition, the roasting pits yielded faunal remains of mule deer, elk, grouse and fish (Pokotylo and Froese 1983:141).

In addition, Thoms' (1989) comprehensive study of camas utilization in the Pacific Northwest suggests that flat surface platforms were also used in camas processing. The depth of the surface ovens ranged from 10 to 44 cm below surface, with average being 24.6 cm. They were built in a shallower pit and lacked the distinctive basin shape of the roasting pits (Thoms 1989:395).

Thoms also identified numerous concentrations of fire-cracked rock (FCR) at the camas processing sites. These were "spatially restricted and readily definable" but lacked the discreteness of oven features and were not underlain by charcoal (Thoms 1989:393). The FCR concentrations ranged in size from approximately one to five metres square and between 15 and 18 cm. in depth. The exact function of these features is unclear. However, Thoms suggests they may have served as stockpiles of rocks for new ovens, or represent the remains of ovens built on the surface. Alternatively, they could be the remains of fires built under large racks for drying the cooked bulbs for storage (Thoms 1989:393).

Based upon Wissler's observations and the archaeological information from other parts of the Pacific Northwest, it is reasonable to suggest that similar basin-shaped roasting pits and surface platform features should be preserved in the archaeological record of the study area. Such features not only provide evidence of plant processing activities, but may also provide the carbonized remains of the plants being processed and radiocarbon dates for these activities. Figure 31 depicts a roasting pit from the interior of British Columbia. The stratigraphy of a basin-shaped roasting pit from the same area is illustrated

Figure 31: A roasting pit feature from the interior of British Columbia. Similar features should be present in the study area.

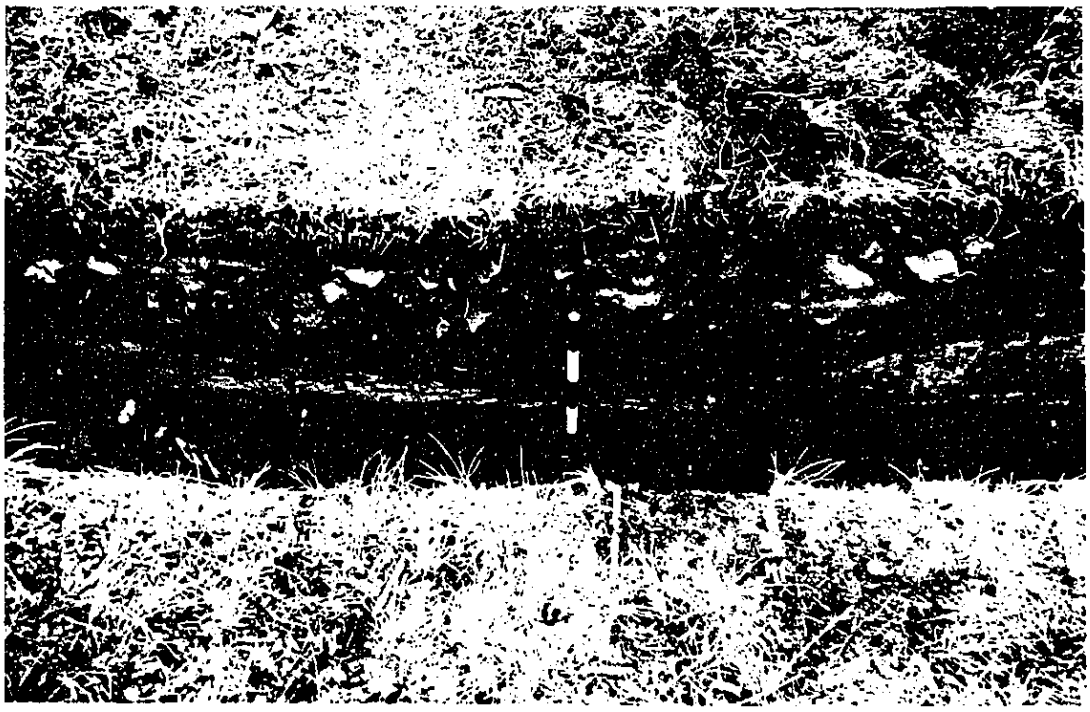

Figure 32: Cross section of a basin-shaped roasting pit from the interior of British Columbia. Note fire-cracked rock and stained soil.

in Figure 32.

Site Locations

In the absence of preserved plant remains, artifacts and features, the locations of campsites may provide important evidence for pre-contact plant use. According to Aaberg (1983:303), "In some cases, strong evidence for primary dependence on plants may amount merely to the co-occurrence of an archaeological site with a particular plant population or complex of populations known to have been significant to local hunter-gatherers".

This is true of the Pilgrim site, an extensive stone circle site in Montana. Excavation of 40 of the 71 stones circles revealed the site was occupied repeatedly over a 3000 year period (Aaberg 1983). However, the Pelican Lake, Avonlea and Old Women's occupations were characterized by a paucity of those lithic artifacts and faunal remains typically associated with intensive meat procurement activities. This led researchers to look for other explanations for the repeated use of the site.

A survey of plant species in the immediate vicinity identified 45 economically important species, 27 of which were potential foodstuffs (Aaberg 1983:280). Most importantly, there were significant quantities of bitter-root and wild parsley (*Musineon divaricatum*) growing at the site, a situation unique in the region. After studying the ecology of both species, Aaberg determined that both ripened for harvesting at approximately the same time. He concluded that the pre-contact occupants of the Pilgrim site were gathering and processing bitter-root and wild parsley each spring.

As discussed in Chapter 6, ethnographic evidence indicates the Piikáni selected camp sites on the basis of nearby plant resources. Camps were moved to productive berry picking areas and these were returned to on an annual basis. It is reasonable to suggest therefore, that camps may have been located next to productive patches of prairie turnip, balsamroot or other plant resources as well. In the interior of British Columbia, Pokotylo and Froese (1983) determined that base camps were established next to root digging grounds and water sources and served as receiving and processing sites for the collected roots.

Given the limited distribution of root resources such as camas, balsamroot and prairie turnip in Piikáni territory, and the fact that processing usually occurred at or near the gathering area, it is reasonable to suggest that archaeological sites in the study area may be located next to extant communities of economically important plant resources. A systematic

survey of the vegetation surrounding the site would assist in site interpretations.

Summary

This chapter provides only a cursory discussion of the nature the archaeological evidence for plant utilization. However, it is hoped that it has taken a step towards dispelling the notion that the activities associated with plant utilization are below the threshold of archaeological visibility. While the actual plant remains may not always (or ever) be preserved, the fact remains that unless research designs begin to systematically incorporate palaeobotanical analysis, we will never know for certain. In the absence of preserved floral remains, there are several types of indirect evidence which may be used to infer the presence of plant collecting and processing activities. For example, use wear and chemical residue analysis may assist in identifying artifacts used in these capacities. In addition, relationships between sites and extant plant communities can also be investigated. As Aaberg (1983:302) concludes:

> "This study has also shown that specialized artifactual and ecofactual remains indicative of various aspects of plant gathering and use need be neither expected nor present. A careful review of historic, ethnographic and ethnobotanical literature is necessary in order to determine the harvest, preservation and preparation techniques used for each plant species. The expected, but largely non-existent archaeological evidence can be deduced from those historic facts".

Chapter 8: Conclusions (or The Tryanny of the Ethnographic Record Revisited)

As discussed in the introduction to this study, the ethnographic record has been largely silent concerning the subject of Piikáni plant use. Early historic accounts emphasize the more "dramatic", male-dominated aspects of Plains culture, such as buffalo hunting. In contrast, the role of plants in traditional lifeways is seldom discussed with comparable enthusiasm. This "tyranny of the ethnographic record" has, in turn, influenced current interpretations of pre-contact subsistence patterns. As a result, plant utilization in traditional Piikáni culture is viewed as largely opportunistic and of secondary importance to the pursuit and capture of buffalo.

However, this study clearly demonstrates that plants were an integral component of all aspects of Piikáni culture. Over 90 different plants continue to be consumed as food, administered as medicine, prepared for spiritual purposes or used as materials for a variety of tasks. Many species are used for multiple purposes, a fact which clearly illustrates the Piikáni people's sophisticated understanding of the properties and characteristics of each plant. Further, Piikáni plant terminology reflects a complex folk classification system which recognizes the diversity of the natural environment and structures it according to culturally significant criteria.

It must be emphasized that the information presented here is by no means an exhaustive list of the plant species utilized by the Piikáni peoples at present, or in the past. According to the Piikáni elders, much of the traditional ethnobotanical knowledge of the "old people" has been lost through acculturation.

This study also demonstrates that Piikáni behavior towards plants is not, and was not, random. In the past, the collection and processing of plant resources was conducted in a systematic and structured manner which was influenced by the seasonal and geographic distribution of plant resources across Piikáni territory. As previously discussed, plants are relatively predictable resources, yet they are limited in both their spatial and temporal availability. In other words, plants are a predictable, but patchy resource (Pianka 1978). Effective exploitation of these resources required the Piikáni to schedule their seasonal movements to coincide with the availability of the various plants throughout their territory.

This is not to suggest that people's actions are determined solely by the ecology of plants. Cultural factors are also influential in the selection of plant resources. As Ford

(1979:289) notes "Certainly, nature, or in this case plant biology, imposes constraints on a culture, but the choice of a plant is by no means dictated strictly by its biological properties to the exclusion of human cognition". For example, certain plants are considered more "culturally significant" than others. As Turner (1988a) observes, plant taxa with cultural relevance exhibit a range of significance -- some are extremely important, while others are less so. Turner defines the cultural significance of a plant as the importance of the role it plays within a particular culture. According to Turner (1988a:275):

> "Those plants which are 'used' within a culture, whether as food, materials, medicines, religious objects, subjects in mythology, or in some other way . . . must be considered to have importance in that culture . . . Furthermore, the more widely or intensively a plant is used, the greater its cultural significance".

In summary, Piikáni plant utilization is guided by both ecological and cultural considerations. In the past, this resulted in a subsistence strategy which accommodated the spatial and temporal availability of plant resources, as well as a variety of other cultural constraints. Included in the latter is the scheduling of other economic activities, such as hunting and lithic resource procurement, as well as social and ceremonial activities. Thus, at certain times during the year, it was necessary to harvest plant crops which "ripened" in a specific area at a specific time. At other times, the group's energy focused on communal buffalo hunting. Therefore, no one resource was consistently more important than another in the scheduling of seasonal activities.

The complementary nature of Piikáni subsistence strategies is exemplified by the role of the "buffalo bean" (*Thermopsis rhombifolia*) in the spring buffalo hunt. According to the Piikáni (BSWAG, JSC), when the buffalo bean bloomed, "the old people knew to kill the buffalo" because they were "fat and good to eat". Ewers (1955) notes that the buffalo bulls moved to their summer grazing territory on the plains in the spring and were considered prime for a relatively short time. The flowering of the "buffalo bean" signalled this period. Thus, plants even played a role in the timing of the hunt!

At this juncture, it is appropriate to briefly return to the "tryanny of the archaeological record". As mentioned, buffalo bone is preserved in vast quantities in archaeological sites throughout the Northwestern Plains. This, coupled with the paucity of ethnobotanical information and the belief that activities associated with plant utilization are below the threshold of archaeological visibility, has meant that the investigation of pre-contact plant resource use has been somewhat neglected.

By documenting traditional Piikáni plant knowledge and uses, this study provides

an ethnobotanical database which will assist in the interpretation of archaeological artifacts, sites and settlement patterns on the Northwestern Plains. Further, it has demonstrated that there are several types of direct and indirect evidence which may be used to draw inferences concerning plant collection and processing. However, plant utilization will continue to remain "invisible" until archaeologists begin to systematically investigate this component of pre-contact lifeways.

In conclusion, this study has documented the rich botanical heritage of the Piikáni peoples of the Northwestern Plains. In doing so, it has demonstrated the importance of plant contributions to Piikáni culture and provided a more holistic picture of past, and present, Piikáni lifeways.

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Appendix A: Annotated List of Plants

Abies lasiocarpa (Hook.) Nutt. (Alpine Fir) Pinaceae (Pine Family)

Blackfoot: kátoyiss (kátoyissiksi) (MPE, EYH);
katoya (McClintock 1910:530);

Meaning: sweet pine (JSC, JC, MPE, EYH); pine cedars or holy pine (AD);
name unanalyzable (Taylor 1989:369);

Refers to: The name "sweet pine" refers to the fragrant smell of the needles.

Ecoregion: subalpine;

Habitat: subalpine forests and lower elevations;

Parts Used: needles, cones;

Food Use(s):

The Piikáni elders did not identify a food use. Hellson and Gadd (1974:100) state that cone fragments were ground into powder and mixed with backfat and marrow. This mixture was served as a confectionary at special occasions and was said to aid digestion. The pitch was chewed for enjoyment and to alleviate bad breath (Hellson and Gadd 1974:123)

Medicinal Use(s):

The Piikáni elders did not know of any medicinal uses for sweet pine. However, McClintock (1910:524) said a poultice of sweet pine was used for fevers and chest colds.

Spiritual Use(s):

Sweet pine is used as an incense or smudge during ceremonies associated with Medicine Pipe bundles (MPE, EYH, MKW, AD) because the pipes were given to the people by Thunder (Hellson and Gadd 1974:36). Sweet pine is also burned for protection when a thunderstorm approaches (MPE, EYH). According to tradition, Thunder will smell the offering and keep the lightning away from the camps of his people (Hellson and Gadd 1974:8).

Other Use(s):

McClintock (1910:364) notes: "The leaves of sweet pine are also valued for their delightful odour, when confined in small buckskin bags, and are also used to give a pleasant fragrance to hair grease." Sweet pine was also used as a horse medicine (Hellson and Gadd 1974:91).

Collecting:

Sweet pine is easily distinguished from other pine by its soft, flat needles (JSC, MPE, EYH) and its "holy smell" (AD). McClintock (1910:364) notes "In gathering sweet pine, the women distinguished the right species from others by its branches turning upwards". The green branches and needles of the sweet pine may be gathered at any season (JSC). People prefer to collect from younger, shrub-sized

trees because they are more fragrant than the older ones (MPE, EYH). On a field trip with MPE and EYH, we visited the spot where their mother collected sweet pine and other roots. Both women prayed with sweet grass (*Hierochloe ordorata*) and offered tobacco before collecting the sweet pine. Other elders said people had favorite harvesting areas. McClintock (1910:525) notes that sweet pine growing in dry places has a sweeter, more concentrated odor.

Processing:

Once collected, the needles were removed from the branches and dried in the sun. In this way, the needles retained their green color (JSC, MPE, EYH).

Storage:

The Piikáni elders keep sweet pine in small bags of various shapes, sizes and materials.

Artifacts:

A knife might be used to collect sweet pine branches, although these could easily be removed by hand. Processing did not involve tools and the only evidence of the use of sweet pine as an incense or smudge would be the charred remains of the leaves.

Comments:

Hellson and Gadd (1974:36) provide a list of Medicine Pipe bundles which required the use of sweet pine as incense. According to McClintock (1910:215), the "sweet pine hills" were called the "katoysix".

References:

McClintock 1910; Ewers 1955; Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

Achillea millefolium L. (Common Yarrow) — Compositae (Composite Family)

Blackfoot: áóxtoksòo'kii (áóxtoksòo'kiistsi) (MPE, EYH, MKW, AD) (Taylor 1989);

Meaning: *lit.* 'pine stem' (MPE, EYH, MM) (Taylor 1989);
lit. 'pine root' (MLB);

Refers to: The leaves of yarrow are divided into numerous small segments and have a fern-like appearance. The Piikáni say these resemble miniature pine branches, hence the name "pine stem".

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: open prairie, aspen groves, protected slopes up to 2500 metres.

Parts Used: leaves, flowers;

Food Use(s):

None recorded.

Medicinal Use(s):

A medicinal tea brewed from the flowers and/or leaves was used for a variety of ailments including stomach aches, fevers, coughs, sore throats and assorted aches and pains (MKW, AD, MPE, EYH). The medicine is bitter-tasting (MKW). According to several elders (MPE, EYH), a small amount of the plant can be boiled and taken several times a day to treat diabetes. The leaves can also be mixed with choke cherry bark (*Prunus virginiana*) as a remedy for colds and sore stomachs (MPE, EYH, AD). A brew of the flowers was also given to women during childbirth (MKW, EYH, LES, LGS).

Spiritual Use(s):

None recorded.

Other Use(s):

Hellson and Gadd (1974:87) note that this was used as an eyewash for horses.

Collecting:

The Piikáni elders said it is best to pick this plant "when it turns yellow" (MPE, EYH, MKW) that is, when the flowers have dried on the stem, although the leaves can be used when green (MM). The fresh leaves can be collected during the spring and summer. The dried flowers were collected in late summer or early fall, although they would be available for harvesting throughout the winter.

Processing:

If the leaves are picked when green, they are hung to dry. The dried flowers and leaves are crushed (by hand) and boiled in water to make the medicinal tea. Only a small amount of the plant is required.

Storage:

As with most medicinal plants, the elders keep supplies in small bags of various shapes and sizes.

Artifacts:

No specific tools are required for collecting "pine stem" as the plants can be picked easily by hand.

Comments:

The elders recognize two types of "pine stem" -- one with flowers and one with just leaves. However, these are considered the same plant and have the same name (MKW). Several of the elders (MPE, EYH) use only the dried flowers in their medicines.

The chemical constituents of yarrow include the alkaloid chemical "achillein" which reduces the clotting time of blood in laboratory experiments (Hart 1976:7). In addition, it contains a volatile oil called azulene and related compounds which have shown anti-inflammatory activity, although the chemical content varies with the part of the plant, its age, the season and environmental conditions (Kowalchik and Hylton 1987:517-518). Yarrow also contains flavonoids (anti-spasmodic) and

salicylic acid derivatives (salicylic acid is aspirin), as well as thujone, which in sufficient quantities, can cause abortions (ibid.).

References:
Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Acorus americanus (Raf.) Raf. (Sweet Flag) Araceae (Arum Family)

Blackfoot: áámyòo'kakiikin (JSC, JC, MPE, EYH, MKW);
áámyòo'kakiikinattsii (áámyòo'kakiikinattsiisti) (Taylor 1989);

Meaning: *lit.* 'looks like a fish backbone or spine' or 'backbone root' (MLB, MM, AD);

Refers to: The names derives from the appearance of the root, which resembles a large vertebral column of a fish.

Ecoregion: aspen parkland (but not in study area), boreal mixedwood;

Habitat: swamps and streams;

Parts Used: roots;

Food Use(s):
None recorded.

Medicinal Use(s):
This bitter-tasting root is considered "strong medicine" by the Piikáni. A small portion is chewed for sore throats or may be given to someone who sings a lot in order to "clear the throat" (MPE, EYH, JSC). Other elders use it for stomach troubles (MLB, MM, AD), presumably in the form of a medicinal tea. AD said you can chew a small piece when you have "heart trouble" and it will take the pain away.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
This plant does not grow in the study area. However, it is well known to the Piikáni elders who obtain it through trade with the Cree in Alberta and the Flathead in Montana.

Processing:
Small pieces of the dried root are broken off, either by hand or with a knife, and

chewed. Alternatively, the root is boiled in water to make a medicinal tea. The boiled root can be reused.

Storage:
The dried roots are stored in bags.

Artifacts:
A knife may have been used to cut or scrape the root.

Comments:
Sweet flag has an aromatic rootstock which smells like cinnamon. Until the 1960's, it was used commercially as a fragrance and flavoring (Kowalchick and Hylton 1987:476). However, sweet flag contains the essential oil, "oil of calamus" (beta-asarone), which has proven to be carcinogenic in laboratory rats (Kuhnlein and Turner 1991:75).

The Cree call sweet flag "wachuskomeetsoowim" or "muskrat - his food" and commonly refer to it as "rat root" (E. Seigfried pers. comm. 1992).

References:
Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Actaea rubra (Ait.) Willd. (Baneberry) Ranunculaceae (Crowfoot Family)

Blackfoot: siksaokaa's or siksaokaa'sim (MPE, EYH, MKW, JSC, JC); sixa-wa-kasim and siximas (McClintock 1910:526);

Meaning: *lit.* 'black root' (MPE) (McClintock 1910:526);

Refers to: None recorded.

Ecoregion: fescue grass, aspen parkland, montane;

Habitat: moist woods, wooded ravines and coulees;

Parts Used: roots;

Food Use(s):
None recorded.

Medicinal Use(s):
A medicinal tea made from the boiled roots can be mixed with yarrow and taken for diabetes (MPE and EYH). The boiled roots can also be mixed with *Osmorhiza occidentalis*? and taken for chest colds (MKW). McClintock (1910:526) states the roots were boiled for coughs and colds.

Spiritual Use(s):

None recorded.

Other Use(s):

MPE and EYH said their father boiled the root in water and used it to rinse cuts and wounds on a horse. Others (JSC, JC) noted that horses would be given the crushed root to smell if they were really tired. Ewers (1955) said that roots were crushed and fed to horses to keep them healthy.

Collecting:

McClintock (1923: 73) said the women gathered the "black root" for coughs in the fall.

Processing:

The roots were washed and dried. These were "smashed with rocks" and ground into a powder then boiled to make the medicinal tea (JSC, JC).

Storage:

The roots were stored whole and ground when needed.

Artifacts:

A digging stick would be required to collect the roots. A grinding stone would be necessary to crush the root into a powder.

Comments:

The Piikáni apparently recognized that baneberry has both red and white berries and distinguished between these nomenclaturally. The red berry "black root" was called "sixa-wa-kasim", while the white berry form was known as "siximas" (McClintock 1910:526).

Baneberry, especially the berries, is extremely poisonous (Moss 1983:273). However, other Indigenous peoples, such as the Thompson, used baneberry as a medicine but were careful to administer only very small doses (Turner et al. 1990:246). It is likely the Piikáni were also aware of baneberry's toxic properties and prepared it accordingly.

The names given for baneberry are very similar to those for *Angelica dawsonii* "?asaokasim" and *Osmorhiza occidentalis* "?matsii pokoyii saukasim". MPE and EYH said that "they are all different -- some are sweet, some aren't". The sweet ones, "siksaukasim", are used on horses. JC says it's the same as the others, but a little bit different. Hart (1976:8) notes that the Cheyenne name for baneberry is "sweet medicine". See also notes on *Angelica dawsonii* and *Osmorhiza occidentalis*.

References:

McClintock 1910, 1923; Ewers 1955; Raczka and Bastien 1986; Johnston 1987;

Allium spp. (Onion) — Liliaceae (Lily Family)

Blackfoot: pisatsiinikimm (pisátsiinikimmiski) (JSC, MKW); pisatsiini (MPE, EYH); pesat-se-nekim (McClintock 1910:529);

Meaning: wild onion (JSC);
lit. 'fancy berry' (Taylor 1989);
lit. 'funny vine' (McClintock 1910);

Refers to: The name "fancy berry" could refer to either the bulb or to the flowers and seeds of the wild onion.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: *A. cernuum* Roth (Nodding Onion): parkland prairie, open slopes, thickets;
A. textile Nels. & Macbr. (Prairie Onion): prairie meadows and hillsides;
A. schoenoprasum L. (Wild Chives): wet meadows, banks and shores;

Parts Used: roots; stems;

Food Use(s):
The bulb of the wild onion (*A. cernuum* and *A. textile*) is added to stews and soups for flavoring (JSC) (McClintock 1910:529). However, several other elders said they never pick the "bottoms" of the "wild onion with the purple flower" but instead use only the "green leaves"(MKW, MLB, AD). The latter comment probably refers to *A. schoenoprasum*.

Medicinal Use(s):
The elders did not mention medicinal uses for the wild onion. However, Hellson and Gadd (1974) note that an infusion was used to treat coughs and sinus trouble, constipation, vomiting, sores and swellings.

Spiritual Use(s):
None recorded.

Other Use(s):
The wild onion was used as a medicine for horses (Hellson and Gadd 1974:87).

Collecting:
Late spring or early summer is the best time to collect the bulbs of the wild onion because they become hard and woody later in the season (JSC). Wild chives are collected by the women just prior to, or during, flowering (MKW, AD, MLB) which occurs in July and August.

Processing:
Onion bulbs are cleaned, peeled and boiled in soups and stews (JSC). They may also have been dried for storage. Wild chives are rinsed, chopped and added to stews and gravies (MKW, MLB).

Storage:

The elders did not remember drying and storing onions. However, it is possible this was done in earlier times.

Artifacts:

A digging stick would be necessary to harvest the onion bulbs. A cutting tool would be required to slice the onions or chives.

Comments:

The Piikáni elders recognize the differences between *Allium textile*, *A. cernuum* and *A. schoenoprasum*, but do not distinguish these nomenclaturally. All are known as "wild onion" even though the flowers are different (JSC). The name "soakiipisatsiinikiim" (JSC) (Frantz and Russell 1989) also means "wild onion" according to JSC, although a more literal translation would be "prairie fancy berry" (SLP).

Several Piikáni elders claimed the bulb of the onion is poisonous and was not eaten (BSWAG, MPE, EYH). BSWAG called it "soyikintsomo" or "sooyikkinssimoyi" which is translated as "poisonous plant". It is possible the elders were referring to death camas (*Zigadenus venenosus*), which closely resembles the wild onion and is highly toxic.

References:

Tims 1889; McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Amelanchier alnifolia Nutt. (Saskatoon) — Rosaceae (Rose Family)

Blackfoot: ókonok (ókonokistsi) (JSC, MPE, EYH, MKW, AD, MLB, MM); ok-kun-okin (McClintock 1910:529);

Meaning: name unanalyzable (Taylor 1989:369);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: moist ravines, aspen parkland, open woodlands;

Parts Used: berries, branches;

Food Use(s):

Saskatoon berries are one of more important traditional foods still enjoyed today. As one Piikáni elder (MPE) commented, saskatoons "are the ones that are really used a lot". The berries are eaten fresh, added to soups and made into jams and jellies. Often the berries are mixed with the bitter-tasting berries of the red osier dogwood (*Cornus stolonifera*) to sweeten them (MKW, MM, MLB, AD, MPE,

EYH). Hellson and Gadd (1974:100) suggest this berry mixture was "a favorite snack reserved for men", however the Piikáni elders said this could be enjoyed by anyone, although it is usually eaten by only the "old people" who have acquired a taste for it.

In the past, saskatoon berries were dried and stored. Traditionally, the dried berries were mixed with grease and buffalo meat to make pemmican, a winter staple (JSC, MLB, MM, AD, MPE, EYH, MKW). McClintock (1910:529) notes that the Blackfeet used the berries "in great quantities with stews, soups and meat. They also dried them for winter use."

Medicinal Use(s):

The juice from the saskatoon berries was used to treat a variety of ailments, including stomach aches, constipation, and eye and ear problems (Hellson and Gadd 1974). The Piikáni elders did not know of any medicinal uses for the saskatoon berries.

Spiritual Use(s):

The importance of saskatoons (and berries in general) in traditional lifeways is recognized in Piikáni ceremonies. According to Grinnell (1892:277): "The thunder is believed to bring the rain in spring, and the rain makes the berries grow. It is a rule that after the first thunder is heard in the spring, every medicine man must give a feast and offer prayers for a large berry crop." Berry soup, made by boiling saskatoon berries in water with sugar and flour (to thicken), is served during ceremonies associated with the Sundance, bundle openings and other special occasions (MPE, MKW). During the ceremony, each person receives a portion of the berry soup. He or she takes a single berry from the soup and holds it while prayers are spoken. The berry is then placed in the ground as an offering and the remainder of the soup is eaten.

Grinnell (1892:264) notes that the "medicine lodge" of the Sundance is "always built in summer, at the season of the ripening of the sarvis berries". Wissler (1918:249) states that the Holy Woman of the Sundance breaks her fast with berry soup.

Other Use(s):

The wood of the saskatoon was utilized in the manufacture of many different items, including arrow shafts (Grinnell 1892:200; Ewers 1958) and incense tongs for ceremonies. The dried berries were strung together to create multi-stranded necklaces worn by the women (McClintock 1910:467).

Collecting:

Saskatoon berries are collected in mid to late July, a time which coincides with the Sundance ceremonies. In fact, the Blackfoot name for July is "ókonokistsi otsítsi'tssp" or "when saskatoons are ripe". The women and children collected large quantities of saskatoons (Grinnell 1892; Ewers 1958:86). McClintock (1910:466), Grinnell and Ewers all note that the berry branches were held over a robe and beaten to knock the ripe berries off. However, the Piikáni ladies said this is only necessary for bull berries (*Shepherdia argentea*) which have thorns.

Processing:

After collecting, the berries to be stored were spread on a cloth and left to dry in the sun (MKW, AD). Or, they were pounded with a stone hammer, shaped into cakes and dried (Hungry Wolf 1980:157). Fresh berries were eaten immediately, or added to soups and stews.

Storage:

Today, many Piikáni women keep saskatoon berries in freezers. Only a few still make pemmican. Traditionally, the dried berries, berry cakes and pemmican were stored in parfleches for winter use.

Artifacts:

The saskatoons (and other berries) were collected in berry-bags made of "small skins from deer legs, wolf-pups, or unborn calves of large animals such as the elk, or deer, or most often, the buffalo" (McClintock 1910:466). Evidence of the collection and processing of saskatoons might include items such as stone hammers or the location of a campsite itself. Ethnographic accounts by McClintock (1910, 1923) and others suggests the Piikáni selected camp locations close to favorite berry-picking locales and would return to these annually.

Comments:

The saskatoon was called the "real berry bush" (Hellson and Gadd 1974:29). According to Hellson and Gadd (1974:101), the Blackfoot distinguish river, coulee (cutbank) and mountain saskatoons and prefer the taste of those found in coulees. According to Kuhnlein and Turner (1991:442-443), 100 grams of fresh saskatoon berries contains 90 kcal food energy, 21.4 g carbohydrates, 15.7 mg Vitamin C, and 86 RE of Vitamin A. The berries also contain unusually high concentrations of iron and copper. For example, saskatoons contain three times the amount of iron found in dried prunes and four times that of raisins (Turner and Szczawinski 1979:137).

References:

Grinnell 1892; Wissler 1910; McClintock 1910, 1923; Ewers 1955, 1958; Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

Anemone multifida Poir. (Cut-leaved Anemone) Ranunculaceae (Crowfoot Family)

Blackfoot: asáápo'pináttsi (JSC, MPE, EYH); sáápo'p (BSWAG);
sáápò'piipsàtsasskii (Taylor 1989);
a-sa-po-pinats (McClintock 1910:526);

Meaning: *lit.* 'looks like a plume' (BSWAG) (McClintock 1910);
lit. 'plume flower' (Taylor 1989);

Refers to: The Piikáni name "looks like a plume" describes the appearance of the plant in seed, with its long, woolly plumes.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: prairie grassland and dry open woods;

Parts Used: seed heads;

Food Use(s):
None recorded. This plant is contains irritants (see Comments).

Medicinal Use(s):
According to the Piikáni elders, this plant was not used medicinally, although MKW thought it may have been used to relieve sore throats. McClintock (1910:526) notes that the 'cotton' from the ripe seed heads was burned and inhaled for headaches. Hellson and Gadd (1974:60) claim this plant was used to induce abortions.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
According to Turner and Szczawinski (1991:104), species of anemone and other members of the buttercup family, contain an "acrid, blister-causing juice which yields a highly irritant yellow oil, protoanemonin". Protoanemonin can cause severe skin irritation and blistering, and if consumed, can lead to gastrointestinal irritation. This oil is present in all of the plant tissues, especially during flowering. However, protoanemonin is unstable and when the plant tissues are dried, it converts to anemonin, an innocuous form.

The Piikáni elders were able to identify and name this plant, despite the fact the plant does not appear to be used for any specific purpose nowadays.

References:
McClintock 1910; Hellson and Gadd 1974; Johnston 1987;

Anemone patens L. (Prairie Crocus) Ranunculaceae (Crowfoot Family)

Blackfoot: kippiaapi (kippiáápiiksi) (JSC, JC, MPE, EYH, MKW, AD);

Meaning: soon an old man (JSC);
something that comes really fast and then gets old (MKW);

Refers to: The prairie crocus is one of the first flowers to bloom in spring, but the flowers fade away in a relatively short period. In other words, the plant gets old quickly, which is why the Piikáni call it "soon an old man".

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: prairies and dry open woods;

Parts Used: petals;

Food Use(s):
None recorded.

Medicinal Use(s):
JC said an infusion made by boiling the petals could be used as an eyewash. Hellson and Gadd (1974:60) said the entire plant was boiled and taken by women to speed delivery. Johnston (1987:35) notes that the crushed leaves contain a blistering agent and were used as a counter-irritant (see Comments).

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
Collecting of the petals of "kippiaapi"must be done in early spring (April or May) when they are "prime" (JC).

Processing:
Once collected, the petals are boiled in water.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
Two of the elders (MKW, AD) insisted the plants are poisonous and not used. This may relate to the fact that the leaves contain a blistering agent. See comments for

Anemone multifida.

Of interest is Gilmores (1919:20) recording a Dakota song about the prairie crocus, as follows: "I wish to encourage the children of other flowering nations now appearing all over the face of the earth; so while they awaken from sleeping and come up from the heart of the earth, I am standing here old and gray-headed."

References:
Hellson and Gadd 1974; Johnston 1987;

?*Angelica dawsonii* S. Wats. (Yellow Angelica) Umbelliferae (Carrot Family)

Blackfoot: sau-gas-sim (Hellson and Gadd 1974:40);
sáókaa'simma (sáókaa'simmiksi) (Taylor 1989);

Meaning: prairie turnip (Taylor 1989);
power root (Hellson and Gadd 1974:43);

Refers to: None recorded.

Ecoregion: montane;

Habitat: moist montane woods;

Parts Used: roots;

Food Use(s):
None recorded.

Medicinal Use(s):
According to Hellson and Gadd, an infusion of the root was taken to relieve intestinal ailments and malnutrition (1974:65) and was administered to a person 'coughing blood' (1974:70). The root was also chewed and applied to swellings, swollen glands and skin rashes (1974:75).

Spiritual Use(s):
Hellson and Gadd (1974:40-47) provide a detailed discussion concerning the use of yellow angelica as a "religious power medicine". The "power root" was used by ceremonialists to obtain individual power and was involved in rituals associated with several Blackfoot societies. In addition, those playing hand games or horse-racing used the root for good luck.

Other Use(s):
The root was also used as a horse medicine (Hellson and Gadd 1974:87).

Collecting:
Hellson and Gadd (1974:40) describe the collection of the root for ceremonial

purposes: "The harvesting of the root was the same in all cases: those responsible for gathering it would first pray; the root was dug while more prayers were sung; and the newly dug roots were tied to a circular piece of rawhide by means of a thong, which was laced through holes along the rim. The roots were kept there until needed."

Processing:

As with other medicinal plants, the roots were washed and dried. They would be ground or crushed for use in medicinal teas.

Storage:

The dried roots were stored whole, presumably in rawhide containers or on thongs, as described by Hellson and Gadd (1974:40).

Artifacts:

A digging stick would be required to harvest the roots.

Comments:

Hellson and Gadd (1974) appears to be the only ethnographic source which records information on yellow angelica. It is interesting to note, however, that: "Although we have had little difficulty in obtaining information about the root, we have been unable to gather a specimen in the field; our only identification comes from herbarium material" (Hellson and Gadd 1974:47). The dried, pressed specimen of yellow angelica, illustrated in Hellson and Gadd (1974:42) looks remarkably similar to dried, pressed specimens of western sweet cicely (*Osmorhiza occidentalis*). This, coupled with the fact that the previously recorded Piikáni names and uses for yellow angelica, sweet cicely and baneberry (*Actaea rubra*) are similar, raises several intriguing questions.

First, since Hellson and Gadd (1974) were unable to obtain a field specimen, could they have misidentified yellow angelica? Perhaps the elders' comments refer to sweet cicely? Or, assuming the identification is correct, what is the relationship between the three plants in terms of the Piikáni folk classification? Further research is needed to clarify these issues. Readers are referred to notes for *Actaea rubra* and *Osmorhiza occidentalis*.

References:

Hellson and Gadd 1974; Johnston 1987;

?*Apocynum cannabinium* L. (Indian Hemp) Apocynaceae (Dogbane Family)

Blackfoot: nuxapist (McClintock 1910:527); i'nákseipistsi (Taylor 1989);

Meaning: *lit.* 'little blanket' (McClintock 1910:527; Taylor 1989);

Refers to: None recorded.

Ecoregion: montane; Kuijt (1982:31) notes that it has been recorded only once in Waterton Park on a dry, south-facing slope and is not present elsewhere south of the Crowsnest Pass in Alberta;

Habitat: moist woods and shores;

Parts Used: roots?

Food Use(s):
None recorded.

Medicinal Use(s):
An infusion of the root was taken as a laxative. It was also used as a wash to prevent hair falling out (McClintock 1910:527).

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
McClintock (1910:527) notes that it grows on high cliffs and was gathered at all times during the year.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
The Piikáni elders did not recognize this plant. According to Hart (1976), Indian-hemp was commonly used in early American medicine as a diuretic, diaphoretic and expectorant, but was known to cause violent vomiting in large amounts. The milky sap produced by the plant is poisonous (Kuhnlein and Turner 1991:126).

References:
McClintock 1910; Raczka and Bastien 1986; Johnston 1987;

Arctostaphylos uva-ursi (L.) Spreng. (Common Bearberry; Kinnikinnick)
Ericaceae (Heath Family)

Blackfoot: kákahsiin (kákahsiinistsi) (MKW, JSC, MPE, EYH, MLB);
ka-ka-sin (McClintock 1910:528);

Meaning: *lit.* '-- berry' (Taylor 1989);

Refers to: The name describes the fruit or berry.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: moist to dry open woods, open sandy areas;

Parts Used: leaves, berries;

Food Use(s):
The berries are eaten, although they "make your mouth dry" (EYH, MKW, JSC). EYH said the berries were used to make pemmican in the old days. McClintock (1910:528) notes the berries were mashed in fat and fried.

Medicinal Use(s):
The Piikáni elders did not mention any medicinal uses. Hellson and Gadd (1974:66) note that an infusion of the plant was used as a mouthwash for cankers and sore gums. In addition, it was mixed with grease and applied as a skin salve (1974:75).

Spiritual Use(s):
The dried leaves are mixed with tobacco and a bit of grease and smoked in pipes during ceremonies (MKW, MPE, EYH, JSC, MLB). According to the elders, this mixture is not used for "everyday" smoking.

Other Use(s):
The dried berries were used in rattles and strung onto necklaces (Hellson and Gadd 1974:107).

Collecting:
The berries are collected as they ripen in late summer or early fall (August or September). According to the elders (MKW, MPE, EYH), the leaves are also thickest at this time and are harvested as well. However, JSC said the leaves can be picked at anytime by both men and women. MKW said she usually collects in September when they begin collecting winter firewood from the mountains. MPE and EYH said they gather their supplies in the Porcupine Hills.

Processing:
The berries are washed and eaten fresh (MKW, JSC, MPE). If they are used for pemmican, they are dried and mixed with grease and meat. Hellson and Gadd (1974:101) suggest grease and sugar were added to the dried berries.

To make the tobacco mixture, the leaves are washed and then browned in an oven. They are removed, crushed and moisten with a little grease to prevent them from drying out. This mixture is then added to regular tobacco for ceremonial use (JSC, MKW, MPE, EYH). In the old days, it was mixed with twist tobacco (MPE).

Storage:

The elders keep the tobacco mixture in small bags.

Artifacts:

A grinding stone may have been used to mash the berries before adding them to pemmican. Charred leaves might also be preserved.

Comments:

The berries are high in carbohydrates and Vitamin C (52.5 mg per 100 g fresh weight) (Kuhnlein and Turner 1991:442). Since they remain on the bushes throughout the winter, the berries are also an excellent emergency food source.

The leaves and berries of bearberry contain tannic and other acids, as well as the glycoside *arbutin*, which gives the plant its astringent and antiseptic properties (Kowalchick and Hylton 1987:494). Arbutin is used in medicine as a diuretic and astringent (Turner and Szczawinski 1978:51).

References:

McClintock 1910; Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

Artemisia frigida Willd. (Pasture Sagewort) Compositae (Composite Family)

Blackfoot: àakiikaaksimiisi (àakiikaaksimiisitsi) (JSC, MPE, EYH) (Taylor 1989);
ka'ksimí (MKW) (Frantz and Russell 1989);
kaksamis (McClintock 1910:526);

Meaning: *lit.* 'woman sage' (JSC, MPE, EYH, MKW);
lit. 'aromatic herb' (Frantz and Russell 1989:132);
lit. 'she sage or sweet sage' (McClintock 1910:526);

Refers to: According to Beverly Hungry Wolf (1980:203), "one plant in the world of Blackfoot botany was left practically for the exclusive use of the women. For that reason, it was called women's sage. A companion plant was called man's sage, because it was used mainly by men" (see *Artemisia ludoviciana*).

Ecoregion: mixed grass, fescue grass, aspen parkland, montane, subalpine;

Habitat: prairies, open areas to alpine elevations;

Parts Used: stems, leaves;

Food Use(s):

The Piikáni elders said sage is not used in cooking (MKW). However, Hellson and Gadd (1974:101) note that the crushed leaves were mixed with stored meat to maintain a good odor.

Medicinal Use(s):

The Piikáni elders claim woman sage is the best for colds (MKW, MLB, MM, AD). To make a medicinal tea, the water is boiled and the sage is added (but not boiled) and left to steep. A medicinal tea from the ?roots or tops was taken for "mountain fever" and the leaves were also chewed for heartburn (McClintock 1910:526). Hellson and Gadd (1974:83) note that the leaves were chewed and applied to wounds to decrease swelling and were stuffed up the nostril to stop bleeding. Leaves of *A. frigida* were also used as pads by women during menstruation as they were absorbent and helped prevent skin irritation (Hungry Wolf 1980:204).

Spiritual Use(s):

It does not appear that woman sage was used in ceremonies.

Other Use(s):

The juice of woman sage is rubbed on the body to keep mosquitos away (MPE, EYH). It is also used as a toilet paper (MKW; Hellson and Gadd 1974:124) and according to one elder (MKW), the old people tie sage and put them in the toilet as air freshener. MKW said "she sage" was used as a perfume or freshener. Hellson and Gadd (1974:87) also state that it was used in horse medicine.

Collecting:

The stems and leaves are collected in the spring and summer, as required.

Processing:

Once collected, the sage is hung in bunches to dry.

Storage:

None recorded.

Artifacts:

None recorded.

Comments:

Although the Piikáni elders recognize two types of sage -- woman sage and man sage (*A. ludoviciana*) -- no one seemed able to explain why they are identified in this manner, except to say that they are used differently. Gilmore (1919:82) records that the Dakota women drank an infusion of the plant when menstruation was irregular and this led to the Dakota name of "women's medicine".

References:

McClintock 1910; Ewers 1955; Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

Artemisia ludoviciana Nutt. (Prairie Sagewort) Compositae (Composite Family)

Blackfoot: ninaaika'ksimo (JSC, MPE, EYH); ka'ksimí (JC, MKW);

Meaning: *lit.* 'man sage' (JC, JSC, MPE, EYH, MKW);

Refers to: The name "man sage" signifies the fact that this plant was used mainly by men (Hungry Wolf 1980), in contrast to "woman sage" (*A. frigida*) which was used almost exclusively by women.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane and subalpine;

Habitat: prairies, open areas to alpine elevations

Parts Used: stems, leaves;

Food Use(s):

The leaves of man sage were used in smoking meats (LES, LGS). Meat was placed in a roasting pit and covered with a layer of sage and willow sticks. These alternating layers were repeated until the pit was filled. Then, a fire was built above the pit and the meat was roasted overnight.

Medicinal Use(s):

An infusion of man sage is taken for colds (MKW, MLB, MM, AD). MLB mixes man sage with mint to make a tea for diabetes. This mixture is boiled, cooled and stored in the refrigerator. JC squeezes the juice from leaves and rubs this on mosquito bites to stop the itching, a remedy which he says "is better than calamine lotion". This also acts as a mosquito repellant.

Spiritual Use(s):

Man sage is the only sage used for spiritual purposes. JC burns fresh sage and then adds sweet grass (*Hierochloe odorata*) as an incense for ceremonies. Fresh sage is also used as a ground covering in the sweat lodge (JSC). Man sage is tied to offerings and used to "purify yourself" (MPE, EYH). In the old days, it was used as a bed for the buffalo stone or "inniskim" (Hellson and Gadd 1974:26). Hellson and Gadd (1974:24-26) provide additional spiritual uses.

Other Use(s):

JC uses man sage as a horse medicine to treat distemper. He mixes the man sage with rags and starts a fire to create a smudge. The horse's head is covered with a blanket and the horse inhales the smoke. This same process can be used to make a smudge to keep mosquitos away (JC).

Collecting:

The leaves and stems of the sage are collected at any time during the spring and summer months.

Processing:
Fresh sage is preferred and readily available. It is hung in bunches to dry.

Storage:
The leaves are stored in various containers. JC keeps his collection in a large glass jar with a lid.

Artifacts:
None recorded.

Comments:
See also *A. frigida.*

References:
Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

Asclepias viridflora Raf. (Green Milkweed) Asclepiadaceae (Milkweed Family)

Blackfoot: ónnikìiseikimiska (MKW, JSC, AD, MPE);
ónnikìiseikimiskaani (ónnikìiseikimiskaanistsi) (Taylor 1989);

Meaning: *lit.* 'milk comes out of it' (JSC, MKW, AD);

Refers to: The Piikáni name derives from the fact that a milky sap exudes from the leaves, stems and roots of the milkweed.

Ecoregion: short grass, mixed grass and fescue grass;

Habitat: dry hillsides;

Parts Used: roots;

Food Use(s):
The Piikáni elders did not identify a food use. However, according to Hellson and Gadd (1974:101) the plant was used to spice soups in the spring. The root was also eaten fresh or dried and saved for winter soups.

Medicinal Use(s):
MKW and AD said the root of this plant is good for stomach trouble and can be taken to break a chest cold. The root is also used to cure hiccups (EYH). In all instances, the dried root is boiled in water to make a medicinal tea, which is taken "until you're better " (MKW). The milky sap is "really sweet" according to MKW. Hellson and Gadd (1974:71) note that the root was chewed to relieve a sore throat. A paste of the chewed root was also applied to swellings and rashes (1974:75) as well as to sore eyes (1974:80).

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
MKW and AD said these roots are collected from the cliffs and hills around Two Medicine River. According to MPE and EYH, the plant does not grow around Brocket.

Processing:
Once collected, the roots are cleaned and dried (MKW). When ready for use, a portion is ground and mixed with boiling water.

Storage:
As with other medicinal plants, these roots are stored dried in a variety of bags.

Artifacts:
A digging stick would be required to harvest the roots and a grinding stone would be used to crush the dried roots for medicine.

Comments:
The Piikáni elders were shown a herbarium specimen as this plant does not appear to grow in the area around Pincher Creek. This supports the observations of MPE and EYH, who noted it grows further east.

References:
Hellson and Gadd 1974;

?*Astragalus canadensis* L. (Milk Vetch) Leguminosae (Pea Family)

Blackfoot: kach-a-tan (McClintock 1910:529);
kaakaxtáánay (kaakaxtáánaeistsi) (Taylor 1989);

Meaning: *lit.* 'tender root' (McClintock 1910:529; Taylor 1989);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: moist open woodlands, valley bottoms, prairies;

Parts Used: roots;

Food Use(s):
The Piikáni elders did not recognize this plant or identify a food use. McClintock

(1910:529) said the root was eaten raw, or cooked in boiling water. This root was a staple, according to Hellson and Gadd (1974:101), and was eaten fresh or boiled in blood or broth. However, see comments below.

Medicinal Use(s):

Hellson and Gadd (1974) record numerous applications of the chewed root for medicinal purposes including snake bites, swellings, cuts, blisters and frostbite.

Spiritual Use(s):

None recorded.

Other Use(s):

None recorded.

Collecting:

The root was collected in spring or fall (McClintock 1910:529). Hellson and Gadd (1974:101) claim the roots were collected occasionally from the burrows of a small, mouse-like animal.

Processing:

The roots were cooked in boiling water or eaten raw according to the ethnographic information.

Storage:

None recorded.

Artifacts:

None recorded.

Comments:

The Piikáni elders (MKW, JSC, MPE, EYH) did not recognize this plant or the name "tender root" or "kaakaxtannay". Many species of milkvetch (*Astragalus* spp.), contain alkaloids and other toxic compounds which are poisonous to animals and humans (Kuhnlein and Turner 1991:192).

McClintock (1910:529) identifies this plant as Carolina milk vetch (*A. carolinianus*), but others, such as Hellson and Gadd (1974) and Johnston (1987) refer to it as *A. canadensis*.

References

McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Astragalus crassicarpus Nutt. (Ground Plum) Leguminosae (Pea Family)

Blackfoot: ?piksííksiinaa owahsin (JSC);

Meaning: *lit.* 'snake food' (JSC, BSWAG); 'snake eats them' (MPE, EYH);

Refers to: The Piikáni believe this plant to be poisonous and say that the fruits are eaten by snakes.

Ecoregion: mixed grass, fescue grass;

Habitat: prairie grasslands

Parts Used: Not utilized.

Food Use(s):
The Piikáni elders said this plant is poisonous and was not eaten. Johnston (1987:39) states that the fleshy pods were eaten raw or boiled. However, Johnston's information is based upon the work of Blankinship (1905:7), which does not refer specifically to the Piikáni.

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
The Piikáni do not collect this plant. In fact, the elders said that the old people used to tell them not to touch them because they were snake food (MPE). According to several elders (MPE, EYH) the Piikáni are afraid of this plant and avoid areas where they are plentiful as snakes live around the plants. JSC said although the fruit looks good enough to eat, " you can't - - only the snake eats them". BSWAG

said the "green grapes" that grow on it are "snake food or ?piksiksinos". According to Kuijt (1982:369), the fruits are not poisonous.

References:
Johnston 1987;

Balsamorhiza sagittata (Pursh) Nutt. (Balsamroot) Compositae (Composite Family)

Blackfoot: ómahka's (BSWAG, JSC, MPE, EYH);
ómaxkaa'si (ómaxkaa'siksi) (Taylor 1989);

Meaning: *lit.* 'big root' (JSC, SLP);
lit. 'big turnip' (Taylor 1989);

Refers to: The name "big root" or "big turnip" appears to refer to the size of the root, which can grow to be as large as one's forearm.

Ecoregion fescue grass, aspen parkland;

Habitat: grassland and open montane woods; this species is restricted in Alberta to the southwestern foothills and lower valleys, where it prefers fully exposed slopes and hilltops (Kuijt 1982:118);

Parts Used: roots, leaves;

Food Use(s):
MKW said people used to peel and boil the roots. Others (LES, LGS) suggested the root was dried and ground into a flour which was added to stews in the form of dumplings.

Medicinal Use(s):
The Piikáni elders did not identify any medicinal uses for this plant. According to Hellson and Gadd (1974:75, 78) the root was chewed and applied to blisters and sores, while a smudge from the root was inhaled to relieve "body ache".

Spiritual Use(s):
BSWAG said "omahkma's" is used as an incense in the Sundance. The root is peeled first (it has a thick, bark-like coating) and then scraped with a knife to make a powder (BSWAG). JSC said the root is "kind of greasy". An incense from the ground root is used during a bundle transfer ceremony. Hellson and Gadd (1974:47) list several other Spiritual uses of this incense.

Other Use(s):
The large leaves were used in pit-cooking camas (McClintock 1910:442, 529). See detailed notes for *Camassia quamash*.

Collecting:

According to BSWAG, "omahkma's" should be dug in the spring, before the flowers bloom. After this time, the roots "get a thick bark".

Processing:

To process balsamroot for food, the Piikáni traditionally boiled the root to soften the bark-like outer covering and then peeled the root and allowed it to dry. Once dry, it was ground into a flour. For use as incense, the root was peeled and dried and then scraped as required (BSWAG).

Storage:

The dried roots could be stored whole, or in the form of flour.

Artifacts:

The large size of the roots, and their tendency to grow in glacial till, makes balsamroot extremely difficult to collect. Harvesting balsamroot would require a digging stick. A knife or cutting tool would be useful in peeling the roots and scraping them to produce a powder for incense. A grinding stone would be necessary in order to grind the roots into flour.

Comments:

Kuhnlein and Turner (1991:127) call balsamroot "one of the most versatile sources of food for Indigenous Peoples within its range: the large taproots, root crowns, young shoots, young leafstalks and leaves, the flower budstalks, and the "seeds" were all eaten in one area or another". Balsamroot contains the complex carbohydrate inulin, a non-reducing sugar which is indigestible in its "raw" form. During the cooking process, the inulin is hydrolysed and converted to fructose, a sweeter-tasting, more digestible form. Pit-cooking was a common method of preparing balsamroot amongst other Indigenous groups, and it is possible the Piikáni did so as well. If so, these roasting ovens should be preserved in the archaeological record.

References:

McClintock 1910; Hellson and Gadd 1974;

Berberis repens Lindl. (Creeping Mahonia; Oregon Grape)
Berberidaceae (Barberry Family)

Blackfoot: ótsskoyiini (MKW, MPE, EYH);
otsque-eina (McClintock 1910:526);

Meaning: *lit.* 'blue berry' (McClintock 1910:526; Frantz and Russell 1989);

Refers to: The Piikáni name describes the color of the berries, which are a deep blue.

Ecoregion: montane;

Habitat: mountain woods; open or shaded forest;

Parts Used: berries, bark, roots;

Food Use(s):
There was no food use identified by the Piikáni elders. However, Hellson and Gadd (1974:101) note that the berries were occasionally eaten as an emergency food when nothing else was available.

Medicinal Use(s):
MKW said the "bark -- just the sticks (stems), not the leaves" is used for a medicine. It is mixed with other things, but she wasn't sure what the medicine was used to treat. McClintock (1910:526) suggests the roots were boiled for stomach problems and hemorrhages. Hellson and Gadd (1974) list several medicinal uses for the berries and roots, including a brew for kidney trouble and an antiseptic infusion for boils and wounds.

Spiritual Use(s):
None recorded.

Other Use(s):
Johnston (1987:35) notes that a yellow dye was obtained from the roots, but does not reference this source. According to Turner and Szczawinski (1979:43), the inner bark of the stems and roots produces a bright-yellow dye when shredded and added to boiling water. It was also used as a horse medicine (Hellson and Gadd 1974:88).

Collecting:
According to the Piikáni elders, the bark of the plant was collected. MKW says it is abundant in the mountains. The berries ripen in late July (Kuijt 1982:32).

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
The active medicinal ingredient in Oregon-grape is an alkaloid known as berberine. Skin disorders such as eczema, acne and psoriasis are treated with a tincture of Oregon grape (Kowalchick and Hylton 1987:404). Berberine is also used as an astringent for treating inflammation of the mucous membranes and can be toxic if taken in large amounts (Turner and Szczawinski 1979:40).

References:
McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Betula spp. (Birch) Betulaceae (Birch Family)

Blackfoot: sííkokííniis (sííkokííniisistsi) (MPE, EYH, MKW, JSC);

Meaning: None recorded.

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: open areas along streams, lake shores;

Parts Used: catkins, branches, bark;

Food Use(s):
None recorded.

Medicinal Use(s):
The catkins and/or the bark are boiled in water and the infusion is taken for diarrhea (MKW). A mixture of the flowers and leaves of new birch suckers (*Betula occidentalis*) were contained in two birth control bundles. According to Hellson and Gadd (1974:60), this mixture was taken if the power of the bundle failed to stop contraception.

Spiritual Use(s):
None recorded.

Other Use(s):
The wood of the birch is used for tipi pegs (MPE, EYH, JSC) and digging sticks (Ewers 1958). Birch makes good firewood because it burns slowly and gives lots of warmth (JSC).

Collecting:
None recorded.

Processing:
The bark was scraped off, chopped and boiled in water.

Storage:
None recorded.

Artifacts:
An axe or knife would be necessary to collect the wood and/or bark of the birch.

Comments:
According to JSC, the marks seen today on the bark of the birch tree were put there long ago by Napi (Old Man). Various versions of this story are found in Grinnell (1892:173), McClintock (1910:339-340) and in Wissler and Duvall (1908). JSC

notes that aspen (*Populus tremuloides*), which also has marks on its bark, is called "siikokiina", which is similar to the name for birch. This is also similar to the names for juniper (*Juniperus* spp.).

According to Kowalchick and Hylton (1987:44), methyl salicylate, which has counter-irritant and analgesic properties, is found members of the birch family.

References:

Grinnell 1892; McClintock 1910; Wissler and Duvall 1908; Wissler 1910; Ewers 1958; Hellson and Gadd 1974; Johnston 1987;

Camassia quamash (Pursh) Greene (Blue Camas) — Liliaceae (Lily Family)

Blackfoot: misisséi (JSC, MPE, MKW, MLB, AD, EHY) (Taylor 1989);
miss-issa (McClintock 1910:530);

Meaning: *lit.* 'turd' (Taylor 1989);
lit. 'excrement smell' (McClintock 1910);

Refers to: Given the importance of camas as a food source, this name may refer to the appearance of the camas bulbs after pit-cooking.

Ecoregion: aspen parkland, montane;

Habitat: wet meadows, moist open foothills;

Parts Used: roots;

Food Use(s):

Camas bulbs were boiled was or baked in earth ovens prior to eating (JSC, MKW, AD, EYH, MLB) as camas is indigestible in its raw form (see Comments below). According to Grinnell (1892:204), the "fresh-roasted camas tastes something like a roasted chestnut, with a little of the flavor of the sweet potato". After cooking, camas was eaten or dried for storage. Often, the cooked camas bulbs were "pounded up" with saskatoon berries and dried (ibid.).

Medicinal Use(s):

Hellson and Gadd (1974:60) claim that a decoction of the root was taken by women to induce labor.

Spiritual Use(s):

Camas bulbs were added to saskatoon berry soup for ceremonial occasions (MPE, EYH). To do so, the roots were boiled with berries and flour was added to thicken the mixture (MLB).

Other Use(s):

None recorded.

Collecting:

According to MKW, camas is plentiful in the hills around Browning and "some come in purple, some are white". She said it is best to dig camas when it flowers so that the plant can be identified. This supports Grinnell's (1892:204) observation that "It was gathered while in bloom -- June 15 to July 15". Similarly, McClintock (1910:52) states that "every spring they went into the mountains to cut new poles and to dig camass [sic] roots". However, McClintock (1910:442-443) also notes that "The women generally secured them in the mountains, where they grew in great abundance. It was at its best for eating after the blossoms had fallen".

MKW used to dig camas by chopping a square around each bulb with a hatchet. In the past, a digging stick was used for this purpose. JSC said the Piikáni used to have a root digging ceremony similar to that of the Nez Perce. Apparently, this involved two to three days of root collecting followed by a ceremony of thanksgiving. However, this ceremony is no longer held (JSC).

Processing:

The bulbs of camas were boiled, baked or pit-cooked (JSC, MPE, EYH, MKW, AD, MLB). According to JSC, camas was "baked in earth ovens". MKW said that the bulbs were washed, then cooked in pits, dried and "smashed". The bulbs were also "smashed and boiled" (MKW, AD). AD said "the old people toast them. They have a fire and toast them until they're brown". This may also refer to the pit-cooking process.

According to ethnographic accounts, pit-cooking was a complex procedure. As Wissler (1910:25) notes, "the camas root received more elaborate treatment in which were manifested certain social and ceremonial functions. According to our information, men were supposed to keep at some distance from the cooking place". Camas was "usually roasted at the gathering camp" (Wissler 1910:22) and Grinnell (1892:204) describes this pit-cooking process in detail: "A large pit is dug in which a hot fire is built, the bottom being first lined with flat stones. After keeping up this fire for several hours, until the stones and earth are thoroughly heated, the coals and ashes are removed. The pit is then lined with grass, and is filled almost to the top with camas bulbs. Over these, grass is laid, then twigs, and then earth to a depth of four inches. On this a fire is built, which is kept up for from one to three days, according to the quantity of bulbs in the pits. When the pit is opened, the small children gather about it to suck the syrup, which has collected on the twigs and grass, and which is very sweet."

Wissler (1910:25) and McClintock (1910:442) provide more specific information. For example, Wissler states that the pits were "about ten feet square and three feet deep" although McClintock's estimate of "about three feet deep" seems more probable. These authors also describe other plant materials used in the pit-cooking process including, wet willow leaves and branches, long grass, and the leaves of balsamroot. Detailed excerpts of these accounts are included in Chapter 6 under the discussion of food processing techniques.

Storage:

After cooking, the bulbs of camas were dried and stored. Wissler (1910:26) states "The roots were then taken out and what was not eaten on the spot was dried and put in bags for storage". Similarly, "after being cooked, the roots are spread out in

the sun to dry, and are then put in sacks to be stored away" (Grinnell 1892:204).

Artifacts:

Digging sticks were used to collect the roots and knives may have been used to clean and prepare the bulbs prior to cooking. Based upon the ethnographic descriptions of the pit-cooking process, evidence of these roasting pits should be visible in the archaeological record as large, basin-shaped depressions filled with quantities of charcoal and fire cracked rock, and possibly the charred remains of camas bulbs and other plant materials. In addition, as "camas was usually roasted at the gathering camp", there should be campsites associated with these processing grounds.

Comments:

Camas contains inulin, an indigestible polysaccharide. During the pit-cooking process, the inulin is hydrolysed and converted to fructose, a sweet, highly digestible sugar. As Turner et al. (1990) observe, "pit cooking is quite obviously a means whereby the caloric intake provided by a given quantity of 'roots' is substantially increased".

Several elders from Brocket (MPE, EYH) said they obtain camas from the Kootenai who "look after them and bring them to us. They cook them in pits and fix them really good". The elders in Browning appear to be much more familiar with the collection and processing of camas, perhaps because camas grows abundantly right on the reservation. In Alberta, camas is found to the south and west of the Piikáni reserve.

As a final note, I collected camas near Pincher Creek, Alberta in June and in mid-August. The bulbs collected in August were much bigger and had a dark brown outer covering which was not present on those specimens collected in June. The bulbs collected in August were still moist and appeared edible. Interestingly, one elder (MLB) said of the specimens collected in June that these were not camas because camas "is dark, almost dark brown and much bigger". This may suggest camas was collected in late summer or early fall as was suggested by McClintock.

References:

Grinnell 1892; Wissler 1910; McClintock 1910; Ewers 1958; Hellson and Gadd 1974;

?*Castilleja* spp. (Indian Paint-brush) — Scrophulariaceae (Figwort Family)

Blackfoot: ?natsiipski or ?matsiipski (MPE, EYH);
ii'símaatsisi (Taylor 1989);

Meaning: bleeding nose (MPE, EYH);
dye (Taylor 1989);

Refers to: According to MPE and EYH, the name refers to the fact that "when you have a bleeding nose, if you touch them (the red ones), they start bleeding". The verb "itsimsskiisi" means "to have a nose bleed" (Frantz and Russell 1989:117).

Ecoregion: fescue grass, aspen parkland, montane, subalpine;

Habitat: prairies, open woods;

Parts Used: leaves, flowers?

Food Use(s):
This plant was not used for food according to the Piikáni elders.

Medicinal Use(s):
The elders did not identify medicinal uses for this plant, however their interpretation of the name may suggest a past use. In this regard, it is interesting to note that an infusion of the plant was given to women to stop vaginal bleeding and was taken by people spitting blood ((Hellson and Gadd 1974:69,71). The plant was also boiled and taken as a diuretic.

Spiritual Use(s):
None recorded.

Other Use(s):
According to Hellson and Gadd (1974:111), the flowers were used to shine and waterproof hides. In addition, arrow feathers were pressed with the flowers for several hours to dye the feathers light yellow.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
Although the elders recognized this plant, they were unsure of its uses. The Blackfoot believed that the various colors of *Castilleja* spp. represented an aging sequence, with the youngest white, the oldest yellow, and the others red (Hellson and Gadd 1974:111).

References:
Hellson and Gadd 1974;

?*Chimaphila umbellata* (L.) Bart. (Prince's Pine) Pyrolaceae (Wintergreen Family)

Blackfoot: ómaxksikakaxsiini (ómaxksikakaxsiinistsi) (Taylor 1989); o-makse-ka-ka-sin (McClintock 1910:528);

Meaning: big kakaxsiini or big kinnikinnick (Taylor 1989);

Refers to: The name may refer to the size of leaves of *C. umbellata* in relation to those of "kákahsiin" or bearberry (*Arctostaphylos uva-ursi*).

Ecoregion: montane;

Habitat: dry woods; montane coniferous forests;

Parts Used: leaves;

Food Use(s):
None recorded.

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
According to McClintock (1910:528), the Blackfoot had a special preference for the dried leaves which were used for tobacco "by all the Mountain Indians". He does not indicate whether this tobacco was used for daily or ceremonial purposes.

Collecting:
McClintock (1910:528) notes that the plant grows among decaying leaves in sandy soils in the mountain forests.

Processing:
Based upon McClintock's observations, it is probable that the leaves were dried and prepared in a manner similar to that described for *Arctostaphylos uva-ursi*.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
The Piikáni elders did not recognize this specimen. Several elders (MKW, EYH) said there is just one kind of "kákahsiin", the one with the red berries (meaning *Arctostaphylos uva-ursi*). JSC said she had heard the name "ómaxksikakaxsiini"

but had never seen the plant and was not sure if people still used it.

References:
McClintock 1910; Raczka and Bastien 1986; Johnston 1987;

?*Claytonia lanceolata* Pursh (Western Spring Beauty) Portulacaceae (Purslane Family)

Blackfoot: pach-op-it-skinni (McClintock 1910:529);

Meaning: *lit.* 'lumpy head'; also wild potato (McClintock 1910:529);
lit. ?'lumpy berry' (SLP);

Refers to: The corm (root) is irregularly shaped and "lumpy" in appearance.

Ecoregion: aspen parkland, montane, subalpine, alpine;

Habitat: moist woods, meadows and banks; alpine meadows;

Parts Used: roots;

Food Use(s):
The "wild potato" was boiled and eaten (McClintock 1910:529).

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
According to McClintock (1910:529), the "wild potato" grows on the prairies and in the foothills and was dug in the spring. Hellson and Gadd (1974:101) comment that the roots of *Astragalus canadensis* "were obtained by robbing the burrow of a small, mouse-like animal". It seems more likely that this refers to *C. lanceolata* as other Indigenous peoples collected the corms in this manner (N. Turner, pers. comm. 1992; Kuhnlein and Turner 1991:227).

Processing:
The roots were cleaned and boiled.

Storage:
Although there is no record of the Piikáni storing the "wild potato", other Indigenous groups stored them fresh or cooked and dried them for the winter (Kuhnlein and Turner 1991:227).

Artifacts:
A digging implement would be required to collect the corms.

Comments:
The Piikáni elders were unfamiliar with this plant. MPE and EYH felt the specimen was not a "wild potato". They said wild potatoes grow around Brocket and have reddish flowers and a root similar to that of the wild carrots (*Perideridia gairdneri*). The roots are long and round and sweet tasting, hence the name "sweet potatoes" or "matsii pokata". These are easy to dig and are collected in the fall up in the hills (Porcupine Hills?) where they grow with the wild turnips (*Psoralea esculenta*). MPE said her mother used to collect them at same time as the wild turnips in olden days. MPE and EYH do not use them now "because they're too sweet". In their discussion *Epilobium angustifolium*, Hellson and Gadd (1974:102) state "the fresh roots of 'red round object' were eaten".

It is interesting to note that there is a "Lumpy Head Butte" located on the Kainaa Reserve to the south and east of the Piikáni Reserve in Alberta.

References:
McClintock 1910; Raczka and Bastien 1986; Johnston 1987;

Clematis occidentalis (Hornem.) DC. (Purple Clematis) Ranunculaceae (Crowfoot Family)

Blackfoot: stá'oa'kaatsisi (stá'oa'kaatsisistsi) (MPE) (Taylor 1989);
sto-o-kat-sis (McClintock 1910:531);

Meaning: *lit.* 'ghost rope' (MPE);
lit. 'ghost lariat' (McClintock 1910:531; Taylor 1989);

Refers to: This plant received its name from the fact that the vines trip people unexpectedly (McClintock 1910:531).

Ecoregion: fescue grass, aspen parkland, montane;

Habitat: open woods;

Parts Used: leaves, stems?

Food Use(s):
None recorded.

Medicinal Use(s):
The Piikáni elders knew of no medicinal uses. However, Hellson and Gadd (1974:111) state that diviners used a salve of the boiled leaves to remove "ghost bullets" or supernatural objects shot into people by ghosts. The authors also note that a smudge of the stem was used to revive those who fainted after close encounters with a ghost.

Spiritual Use(s):
None recorded.

Other Use(s):
An infusion of the plant was used as diuretic for horses (Hellson and Gadd 1974:89).

Collecting:
None recorded.

Processing:
Based on the observations of Hellson and Gadd (1974), it may be suggested that the leaves were boiled to make the infusion and that the stems were burned to create a smudge.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
According to the Piikáni elders interviewed, this plant was not used. McClintock (1910:531) includes it only under Blackfeet names for flowers.

References:
McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Cornus stolonifera Michx. (Red Osier Dogwood) Cornaceae (Dogwood Family)

Blackfoot: áápinikimm (áápinikimmiksi) (MPE, EYH, MKW, AD, MLB, MM);

Meaning: white berry (on red willow) (MLB, MM, AD, MPE, EYH, MKW);

Refers to: According to the elders, the name "áápinikiim" refers to both the berries and the bush.

Ecoregion: fescue grass, aspen parkland, montane;

Habitat: moist woods, riverbanks;

Parts Used: berries, leaves, bark;

Food Use(s):
The berries are eaten, although according to the Piikáni elders, they are very bitter. Consequently, the fresh berries are often mixed with the sweeter saskatoon berries

(*Amelanchier alnifolia*) to balance the taste (MPE, EYH, MLB, MM, AD, MKW). This berry mixture appears to be a favorite amongst the elders.

Medicinal Use(s):

AD said the berries are good for "cleaning out your stomach" and said one man ate a bunch of them to get rid of tapeworms. MKW crushes and boils the leaves (berries?) as a medicine for stomach, liver and kidney problems because "it cleans things out". Others use the berries as a laxative (MPE, EYH). The bark is also scraped off and used as a medicine (MLB, MM, AD). An infusion of the bark is used to treat chest colds and given for liver trouble and related disorders (Hellson and Gadd 1974:66,71).

Spiritual Use(s):

The bark of the dogwood is scraped and mixed with tobacco for smoking in pipes (MKW, MLB, MM, AD). It is included in certain ceremonial bundles (Raczka and Bastien 1986:50).

Other Use(s):

Hellson and Gadd (1974:84) report that the berries were chewed and the saliva smeared on arrow points and musket balls. It was believed that someone wounded by these items would eventually die from an infection.

Collecting:

The berries are usually collected in August (MPE, EYH). Presumably the was collected as required.

Processing:

The berries were eaten fresh and were not stored because they shrivel up and turn brown (MLB, MM, AD). The bark was dried and used for medicines or, as Hellson and Gadd (1974:102) note, mixed with grease and added to smoking tobacco. This method of preparation is similar to that used for *Arctostaphylos uva-ursi*.

Storage:

As previously mentioned, the berries were not stored. The dried bark could be stored.

Artifacts:

The berries were probably collected in hide containers. Knives would be needed to scrape the bark. Charred pieces of the bark might be preserved.

Comments:

There is some confusion in the literature concerning the Blackfoot name for *Cornus stolonifera*. Several Piikáni elders refer to it as "áápinikimm" or the "white berries of the red willow" (MLB, MM and AD). Grinnell (1892:204) also refers to the white berry of the red willow. The word "mi'kotsíípiiyis" or "red willow" is given as the name for the shrub itself (Taylor 1989:365; Frantz and Russell 1989:145). Both sources include "mi'kapikssoyi" which is translated as "red dogwood" (Frantz and Russell 1989:145). However, the Piikáni elders interviewed are unfamiliar with this term and believe both the berries and the bush are called "áápinikimm". Red osier dogwood is not a member of the willow family and it is best to think of

the term "willow" here as a folk category which includes shrubs in general.

The name "áápinikiim" is also listed for *Symphoricarpos occidentalis* and *S. albus* in the literature (see Johnston 1987:55). However, when the Piikáni elders were shown a specimen of snowberry, they said this was not "áápinikimm" because the berries were not white enough and the leaves were too small (MKW, AD).

There are several myths describing how the red willow became red. Grinnell (1892:155) recounts the story of Naapi roasting rabbits over a fire and laying them on some red willow sticks to cool. The grease from the roasted rabbits turned the bark red. Apparently, the grease can still be seen if a branch of red willow is held over the fire. Hellson and Gadd (1974:111) record a similar account.

References:

Grinnell 1892; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Coryphantha vivipara (Nutt.) Britt. & Rose (Ball Cactus) Cactaceae (Cactus Family)

Blackfoot: otsstatsimaan (ótsstatsimaanistsi) (JSC, MPE);

Meaning: wild figs (JSC, MPE);
lit. 'nipples' (Taylor 1989);

Refers to: The name "nipples" probably refers to the manner in which the ripe fruit protrudes from the plant.

Ecoregion: mixed grass, fescue grass;

Habitat: prairies, especially stony ground;

Parts Used: fruit;

Food Use(s):

The fresh fruit of the cactus are eaten when ripe (MPE, JSC, MKW). JSC boils "wild figs" with sugar.

Medicinal Use(s):

The Piikáni elders did not mention any medicinal uses for this plant. Hellson and Gadd (1974:67) note that a small amount of the fruit was eaten to treat diarrhea. In addition, a seed could be inserted in the eye and rubbed to remove an irritant (1974:81).

Spiritual Use(s):

None recorded.

Other Use(s):

None recorded.

Collecting:
According to JSC, July is the best time to pick the wild figs. Head-Smashed-In Buffalo Jump, in Alberta, is a good place to collect them but they can be found all over "where there are stones on the hills" (MPE).

Processing:
The fruits are eaten fresh or boiled with sugar.

Storage:
The elders said the cactus fruits were eaten fresh, and were not dried and stored.

Artifacts:
The fruits could be removed by hand.

Comments:
None recorded.

References:
Hellson and Gadd 1974;

Disporum trachycarpum (S. Wats.) B. & H. (Fairy Bells) Liliaceae (Lily Family)

Blackfoot: iimitáóxkatsa (iimitáóxkatsiistsi) (MPE, EYH, MKW, AD, JSC) (Taylor 1989);
im-a-toch-kot (McClintock 1910:529);

Meaning: *lit.* 'dog's foot' (JSC, MPE, MKW);
lit. 'dog feet' (McClintock 1910:529, Taylor 1989);

Refers to: According to the Piikáni elders, the plant is named "dog's foot" "on account of the berries". As JSC noted, the berry "has a little dog foot, like a raspberry". These comments may refer to the textured surface of the berry, which resembles the textured skin on a dog's pad.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: moist woods and thickets;

Parts Used: berries;

Food Use(s):
The berries are eaten fresh (MPE, EYH, MKW, JSC). The elders said the red berries are sour (JSC) and there are plenty on each plant (MPE, EYH).

Medicinal Use(s):
The elders said this was not used as a medicine. However, Hellson and Gadd (1974:80) say the seeds were used to remove foreign matter from the eye or used to

treat snowblindness. The authors also note that an infusion of the "bark" was used (although the plant does not have "bark").

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
The berries were collected when they ripen, which varies from June to August, depending on habitat. This seems to have been a snack food and was not systematically collected like the other berries. McClintock (1910:529) notes that this plant has yellow berries which are eaten raw. According to Moss (1983:810), the berries are green or lemon-yellow and turn orange or red when they ripen. McClintock's observations may mean that the berries were eaten before they ripened.

Processing:
As the berries are eaten fresh, there is no processing required.

Storage:
According to the elders, these berries were not stored.

Artifacts:
None recorded.

Comments:
None recorded.

References:
McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Elaeagnus commutata Bernh. *ex* Rydb. (Wolf Willow) Elaeagnaceae (Oleaster Family)

Blackfoot: kappssíí (MLB, MM, AD, MPE, EYH, MKW, JSC) (Taylor 1989); apssí (Frantz and Russell 1989);

Meaning: *lit.* 'white powder flower' (LES, LGS); *lit.* 'white buffalo berry' (Frantz and Russell 1989);

Refers to: The name probably refers to the silver color of the berries or to the powdery texture of the ripe berries.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: grasslands, shores and river valleys;

Parts Used: berries, bark;

Food Use(s):

The berries are eaten fresh and have a powdery texture (MPE, EYH, MKW). They are said to taste better after a storm (frost?) (MKW). JSC said her grandmother used to boil the berries with sugar and McClintock (1910:529) notes that the berries were used for soup. Hellson and Gadd (1974:102) state the berries were peeled and eaten, or mixed with grease and stored. These were added as a confection to soups or broths.

Medicinal Use(s):

The Piikáni elders did not identify any medicinal uses of the plant. Hellson and Gadd (1974:85) note that a strong solution of the boiled bark was used to treat children with frostbite. It was also mixed with grease to make a salve for sores.

Spiritual Use(s):

None recorded.

Other Use(s):

The berry was most frequently identified as the one used to make necklaces. Inside the berry is an eight-striate seed which is boiled (to soften) and then strung onto thread to create necklaces or prayer beads (MKW, MM, AD, MLB, MPE, JSC). Small beads are added between the seeds although traditionally, the berries of *Juniperus* spp. were used (Hellson and Gadd 1974:112). Today, these necklaces are manufactured in great quantities by Piikáni women who sell them in craft stores.

According to McClintock (1910:529), the bark was used to make a strong rope for tying skins and parfleches when raw-hide was unavailable.

Collecting:

JSC said it is best to pick the berries when the leaves fall off the bushes, or just prior to this time. This would give the seeds time to mature. The berries remain on the bushes throughout the winter.

Processing:

The berries were boiled for soup, as well as for necklaces. Hellson and Gadd (1974:112) note that the seeds were cleaned, boiled, threaded and hung to dry. The seeds were then greased and made into necklaces.

Storage:

The seeds could be stored in bags or strung on thread.

Artifacts:

The large, striated seeds are quite unique in appearance and would preserve well in archaeological contexts.

Comments:

The Piikáni elders identified this plant by the name "kappssíí", which is the name for the berries. According to Taylor (1989), the bush itself is known as

"miisisé'mmii'soyiis" (Taylor 1989). McClintock (1910:529) notes that the bush is called "miss-is-a-misoi or stink wood" due to the pungent odor of the wood when burned. McClintock said a person would be ridiculed if he or she gathered this for firewood.

Hellson and Gadd (1974:112) identify this as the "willow" in story of Old Man and the Gophers (originally recorded by Wissler and Duvall (1908:26)). They note: "The wood was a kind of willow, and ever since that time this willow has been called "stinking wood".

References:

Grinnell 1892; Wissler and Duvall 1908; McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Equisetum spp. (Common Horsetail) — Equisetaceae (Horsetail Family)

Blackfoot: saapuxtúnnakyottoyisi (saapuxtúnnakyottoyisiistsi) (MKW) (Taylor 1989); sa-po-tun-a-kio-toi-yis (McClintock 1910:528);

Meaning: wild vines (MKW); -- rush (Taylor 1989); *lit.* 'joint grass' (McClintock 1910:528); *lit.* 'jointed water grass' (Ewers 1955);

Refers to: The name refers to the jointed stem of the various species of horsetail.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: moist woods, meadows, river banks;

Parts Used: stems;

Food Use(s):

None recorded.

Medicinal Use(s):

An infusion of the stems of *E. hyemale* is taken as a diuretic (MKW, MLB). It is said to make the kidneys work again. MLB boils the stems in water and then refrigerates this mixture. She takes it "like water". According to MLB, this infusion also lowers the sugar level of diabetics. MLB calls this kidney medicine "?apotsapskatok". Hellson and Gadd (1974:69) state that infusion of the root of *E. arvense* was used as a powerful diuretic, however the Piikáni elders say only the "tops" of the "straight ones" with the "single stems" were used.

Spiritual Use(s):

None recorded.

Other Use(s):

An infusion of *E. hyemale* was given to horses as a diuretic (MLB, AD). McClintock (1910:528) also reports that the plant was boiled and used as a drink for horses. However, MKW said the "bushy one" (*E. arvense*) was used for horses. Hellson and Gadd (1974:88) state that *E. arvense* used rubbed on a horse's groin as a diuretic.

BSWAG said *Equisetum* spp. is used as a blue dye. The object to be dyed is wrapped in the wet plants. BSWAG calls the plant "?istay saukiopii" which means "to dye". However, Hellson and Gadd (1974:113) report that *E. arvense* was used to dye porcupine quills a light pink color. In addition, children used the plant to shine bouncing arrows (Hellson and Gadd 1974:112).

Collecting:

The stems of *E. hyemale*. which "grow in the lake and look like wild vines" (MKW) are best collected in July (MLB). If the plant is being collected for its abrasive properties, it should be picked in the fall when the silica content is highest (Kowalchick and Hylton 1987:341).

Processing:

The stems are cleaned and dried. They may have been ground into a powder to be used medicinally.

Storage:

None recorded.

Artifacts:

A grinding stone may have been used to prepare the plant for medicinal purposes.

Comments:

Equisetum spp. contains saponin and glycosides, which may account for its mild diuretic action. The plant is toxic if taken in large doses. Horsetail also contains quantities of silica (*E. hyemale* has the highest content) and were often used by various Indigenous peoples for their abrasive qualities. *Equisetum* spp. produces a dye which varies in color from yellowish-green to deep green (Kowalchick and Hylton 1987:341). This suggests BSWAG comments concerning the "blue" dye may be correct.

References:

McClintock 1910; Ewers 1955; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

?*Erythronium grandiflorum* Pursh (Glacier Lily) — Liliaceae (Lily Family)

Blackfoot: naamúikina (naamúikinaiksi) (Taylor 1989);

Meaning: bee tooth (Taylor 1989);

Refers to: According to Hellson and Gadd (1974:103), the name "bee's tooth" is applied to *Lilium philadelphicum* and by extension to this plant and *Fritillaria pudica* because the bulbs of all three break into small, rice-like kernels or imaginary bee teeth.

Ecoregion: aspen parkland, montane, subalpine;

Habitat: rich soil, grassy slopes and open forests, foothills to timberline;

Parts Used: roots;

Food Use(s):
The Piikáni elders did not recognize this plant or the name "bee tooth". However, Hellson and Gadd (1974:102) report that the bulb was eaten fresh or added to soups.

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
MKW said she used to collect these flowers in the early spring at Two Medicine. According to her, they smell good, but were not used for anything.

Processing:
None recorded.

Storage:
None required.

Artifacts:
None recorded.

Comments:
None of the elders recognized this plant or the name suggested by Hellson and Gadd (1974:103). The bulbs of the glacier lily contain inulin, a complex carbohydrate indigestible in its "raw" from. Thus, the bulbs would require cooking. The bulbs were an important food source to numerous Indigenous peoples (Kuhnlein and Turner 1991:87).

See also notes on *Fritillaria pudica* and *Lilium philadelphicum.*

References:
Hellson and Gadd 1974; Johnston 1987;

Fragaria virginiana Duchesne (Wild Strawberry) Rosaceae (Rose Family)

Blackfoot: ootsistsííni (ootsistsííniistsi) (MPE, EYH, MKW) (Taylor 1989);

Meaning: *lit.* 'palate berry' (Taylor 1989);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: woods and plains, to subalpine elevations;

Parts Used: berries, roots;

Food Use(s):
The fresh berries are eaten (MKW, MPE, EYH). According to Johnston (1987:38), a tea was made by brewing the leaves.

Medicinal Use(s):
MPE boils the roots and puts the liquid around the nose to stop a nosebleed. She said it is good for anything that is bleeding. MKW boils the root to make a medicine for stomach aches. An infusion of the root was taken for diarrhea (Hellson and Gadd 1974:66).

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
The berries are collected as they ripen, in mid summer. The roots were probably gathered at this time as well.

Processing:
The berries were eaten fresh. The roots were cleaned and dried.

Storage:
The berries were not stored (MPE).

Artifacts:
A digging stick might be required to collect the roots. Berry bags may have been used to collect the berries.

Comments:
According to Johnston (1987:38), the Hand Hills of Alberta are called "oht-tchis-tchis" or "strawberry hills" by the Blackfoot.

References:
Hellson and Gadd 1974; Johnston 1987;

?*Fritillaria pudica* (Pursh) Spreng (Yellow-bell) Liliaceae (Lily Family)

Blackfoot: naamúikina (naamúikinaiksi) (Taylor 1989);

Meaning: *lit.* 'bee tooth' (Taylor 1989);

Refers to: According to Hellson and Gadd (1974:103), the name "bee's tooth" is applied to *Lilium philadelphicum* and by extension to this plant and *Erythronium grandiflorum* because the bulbs of all three break into small, rice-like kernels or imaginary bee teeth.

Ecoregion: fescue grass, aspen parkland, montane;

Habitat: grassland and dry open forest areas;

Parts Used: roots;

Food Use(s):
The Piikáni elders did not recognize this plant. However, according to Hellson and Gadd (1974:73), the bulb was eaten fresh or added to soups.

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
MKW identified these as "buttercups" and said there were picked as "pretty flowers".

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:

The bulbs of the glacier lily were dug in early spring and eaten by Indigenous peoples of the souther-interior of British Columbia (Kuhnlein and Turner 1991:91). The bulbs were steamed, boiled or pit-cooked.

See also notes for *Lilium philadelphicum* and *Erythronium grandiflorum.*

References:

Hellson and Gadd 1974; Johnston 1987;

Geum triflorum Pursh (Old Man's Whiskers) Rosaceae (Rose Family)

Blackfoot: sooyéíxtsii (sooyéíxtsiiksi) (JSC, BSWAG, MPE, EYH, MKW, AD) (Taylor 1989);
so-ya-its (McClintock 1910:527);

Meaning: *lit.* 'lies flat' (Taylor 1989);
lit. 'lies on his belly' (McClintock 1910:527);

Refers to: The roots of *G. triflorum* run horizontally just beneath the surface of ground. In other words, they "lie flat".

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: foothills and prairies, protected or dry exposed habitats;

Parts Used: roots;

Food Use(s):

None recorded.

Medicinal Use(s):

A medicinal tea brewed from the root is used by the Piikáni elders to treat coughs, colds, sore throats and fevers (BSWAG, MPE, MKW, EYH, JSC). BSWAG also uses it for blisters in the mouth (cankers?). It is also "good for the appetite" (BSWAG). MKW said it is good for the stomach, while others (MPE, EYH) stated the infusion is good for kidney troubles. JSC said a small portion of the root can be chewed as an alternative to the medicinal tea. The elders said the root is pleasant tasting. McClintock (1910:527) notes that the root was boiled in water and used for sore and inflamed eyes.

Spiritual Use(s):

None recorded.

Other Use(s):

The root was used as a horse medicine (Hellson and Gadd 1974:88).

Collecting:

The roots are collected in the mid summer to early fall. The roots can be pulled up quite easily by hand. MKW said that once you get a root, "you just keep pulling", a reference to the fact that the roots are connected by runners. MPE and EYH said one should collect as many as required to last the winter.

Processing:

The root is cleaned and dried (MKW, MPE, EYH, JSC). Although BSWAG said the root should be peeled, the others did not feel this was necessary. Once dried, the roots can be ground as required. MKW "smashes them up really fine with a good size rock on a piece of canvas". This is then boiled with water. MPE and EYH advise that one should use the long, thin roots and keep the big part (the large rhizome) for something else.

Storage:

The roots can be easily stored for winter if they are cleaned and dried (JSC).

Artifacts:

Although the roots can be easily picked by hand, a digging stick may have been used. A grinding stone would be required to powder the dried root.

Comments:

The Piikáni elders recognized this plant immediately. It grows in abundance in the foothills and prairies around the Oldman River. The root has a sweet smell, which, combined with the pinkish color of the root in cross-section, appears to be the traits used to identify the plant.

References:

McClintock 1910; Hellson and Gadd 1974; Johnston 1987;

Glycyrrhiza lepidota (Nutt.) Pursh (Wild Licorice) Leguminosae (Pea Family)

Blackfoot: ááhsowa (JSC, MKW, AD, MPE, EYH);

Meaning: takes a woman by force (JSC; Hellson and Gadd 1974);
hitchhiker (MKW);
grabs, seizes (Taylor 1989);

Refers to: Although the name "ááhsowa" applies to the entire plant, it refers specifically to the burrs, which stick to clothing and are difficult to remove.

Ecoregion: mixed grass, fescue grass;

Habitat: moist prairies and shores;

Parts Used: burrs, roots;

Food Use(s):

None recorded.

Medicinal Use(s):

According to MKW and AD, the roots are ground and boiled to make a bitter-tasting medicinal tea. The infusion is used for "chest problems" (MPE, EYH). Similar information is recorded by Hellson and Gadd (1974:72), who note that an infusion of the root is used for coughs, sore throats and chest pains.

Spiritual Use(s):

None recorded.

Other Use(s):

JC said the burrs can be used. Hellson and Gadd (1974:113) said buffalo runners kept a burr in their mouth to protect against thirst. It was also used as a horse medicine (Hellson and Gadd 1974:88).

Collecting:

The best time to collect the roots is in August, when the plants have the "berries" (burrs) on them (MKW).

Processing:

As with most medicinal roots, the root is cleaned and dried whole, then ground into a powder as required.

Storage:

The whole dried root is stored.

Artifacts:

A digging stick would be necessary to harvest the roots. To powder the dried roots, the Piikáni probably used a grinding stone.

Comments:

According to JSC, there are different names for burrs -- "there's those little ones and big ones, round, called "omahkaaxsoowa".

According to Kowalchick and Hylton (1987:290), licorice is commonly added to cough syrups as an expectorant and demulcent. It is also used for congestion, various intestinal and stomach ailments, and constipation. The chief component of licorice is a saponin-like glycoside call glycyrrhizin, a sweetening agent 50 times sweeter than sugar (1987:360).

References:

Hellson and Gadd 1974; Johnston 1987;

Grindelia squarrosa (Pursh) Dunal (Gumweed) Compositae (Composite Family)

Blackfoot: aksspís (JSC, MPE, EYH, MKW, AD);
aks-peis (McClintock 1910:527);

Meaning *lit.* 'sticky ' (JSC, MPE, EYH, MKW, AD);
lit. 'sticky weed' (McClintock 1910:527)
lit. 'sticky head' (Taylor 1989);

Refers to: The leaves surrounding the flower buds are covered in a sticky resin, hence the name "sticky" or "sticky head".

Ecoregion: mixed grass, fescue grass;

Habitat: dry prairie, especially somewhat saline flats and denuded areas;

Parts Used: leaves, flower buds;

Food Use(s):
None recorded.

Medicinal Use(s):
The "sticky parts" (leaves, flowers) are boiled to make a medicinal tea to treat coughs, colds and sore stomachs (MKW, AD). MKW said these are really good and still used by a lot of the Piikáni. McClintock (1910:527) suggests the root was boiled and taken internally for liver trouble, but MKW said the root is not used. McClintock (1923) notes that the sticky buds used as cough medicine.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
The sticky flower buds are collected. According to MKW, the flowers can be picked after they bloom as well.

Processing:
MKW washes the plants, ties them together in bunches and hangs them to dry. Once dried, the flowers and leaves can be picked off as required. These are added to boiling water to make the medicinal tea.

Storage:
The dried plants are hung to store.

Artifacts:
None recorded.

Comments:

Gumweed contains a variety of chemicals, including amorphous resin, tannic acid, volatile oils and the alkaloid grindeline (Hart 1976:32). The drug "grindelia" is derived from the plant and is recognized as a stimulating expectorant (Kowalchick and Hylton 1987:239).

References:

McClintock 1910; Raczka and Bastien 1986; Johnston 1987;

Heracleum lanatum Michx. (Cow Parsnip) Umbelliferae (Carrot Family)

Blackfoot: pokínssomo (pokínssomoiksi) (JSC, MPE, EYH, MKW, MLB, AD); po-kint-somo (McClintock 1910:529);

Meaning: wild rhubarb (JSC, MPE, EHY); wild rhubarb (McClintock 1910:529); *lit.* ' -- smell' (Taylor 1989);

Refers to: The term "wild rhubarb" is a post-contact term which has been applied to *H. lanatum* as it resembles cultivated rhubarb in appearance and in the manner in which it is used. The Piikáni identify both a male and female "wild rhubarb". The male, or "ninaapokínssomo", is the immature flower stalk, while the female, or "aakiipokínssomo", is the leaf stalk (JSC, MPE, EYH).

Ecoregions: mixed grass, fescue grass, aspen parkland, montane;

Habitat: moist woods, damp open meadows, river banks;

Parts Used: stems;

Food Use(s):

The stalks of the "wild rhubarb" are collected and eaten in the spring (JSC, MPE, EYH, MKW, AD, MLB). The Piikáni differentiate between the "male" budstalks and "female" leafstalks (see below). According to several of the elders (MKW, AD, MLB), this difference determines how the wild rhubarb is prepared and consumed. MKW said: "the people used to eat it a long time ago. We used to eat them. There are he ones and she ones. There's a woman -- when just green you pick them woman. We used to look for them up on the side hills, used to cut them and peel them and take salt and eat them. To cook the she ones, you have to peel them like a banana. The old ladies make soup out of them -- cut them into little pieces, then boil them, and then mix them with flour -- they're good. The he ones, they cook them on the fire, without peeling. Only the she ones are peeled -- the he ones are just roasted." MLB, also said the "woman" stalks are "skinned like celery" and eaten raw, while the "man" stalks are roasted.

Although several other elders (MPE, EYH) recognized the differences between male and female stalks, they said both types are peeled and can be eaten raw, added

to soup, or "barbecued". JSC said the stalks were cut into pieces, boiled and mixed with flour and sugar, but she was not sure whether this applied to the male or female, or both. McClintock (1910:529) notes that the Blackfeet "peeled and split the stalk of the [she] before roasting but only peeled the [he]". McClintock (1910:485) describes this process: "They also roasted over the hot coals peeled stalks of Po-kint-somo (wild rhubarb). The roasted stalk was sprinkled with salt and eaten hot. In early summer wild rhubarb, prepared in this way, has a delicious and delicate flavour."

Medicinal Use(s):

The elders did not identify a medicinal use, although MKW hinted at one. Hellson and Gadd (1974:67, 76) said a brew of the fresh stems is used to treat diarrhea and to remove warts.

Spiritual Use(s):

The male rhubarb stalk is used in the "medicine lodge" of the Sundance (MKW, JSC, MPE, EYH, AD). Although the elders did not elaborate upon this point, McClintock (1910:294) provides an excellent description: "In front of Mad Wolf was an altar, or holy place, made by cutting out the grass and smoothing the soft earth. It was lined with juniper (red cedar). At the foot, and bending towards the west, was a single stalk of wild rhubarb (cow parsnip), with an eagle plume fastened to the top. The wild rhubarb and plume were used by the Indians in the Sun-dance ceremonial as symbols of lightness, and were believed to favour the safe raising of the Centre Pole. A young warrior was chosen to secure a rhubarb plant in bloom. Carrying it to the sacred tipi, he stood outside and announced, 'Here is the wild rhubarb'. When Mad Wolf bade him enter, he passed on the south side of the fire, laying the plant across the altar. Mad Wolf rubbed it with black paint, and, tying an eagle plume to one of the stalks, place it upon the altar." In Blackfoot legend, Scarface is said to have made a whistle from such a stalk, hence its involvement in the Sundance (Wissler 1918:248).

Other Use(s):

The Piikáni elders did not identify any other uses for the wild rhubarb. According to Hellson and Gadd (1974:113), the hollow stems were made into flutes and children's blowguns.

Collecting:

The stalks of the wild rhubarb were collected in early spring, before they flower (MPE, EYH, JSC, MKW, AD). After this the stalks become too dry and tough. The old people used to say that the rhubarb "had bones in it" in the summer (MPE, MLB). MKW recognizes the plants as the one with "big leaves that grows in May and June". MKW and AD say they used to pick wild rhubarb and gooseberries (*Ribes oxyacanthoides*) at the same time "up on them side hills" (coulees?). The stalks were cut.

Processing:

As mentioned above, the male and female stalks are processed differently. The female stalks are peeled and eaten fresh or cut into pieces for soup. Male stalks, on the other hand, are not peeled and are roasted prior to eating.

Storage:
The stalks were eaten fresh and not stored.

Artifacts:
Knives would be required to cut and peel the stalks.

Comments:
Kuhnlein and Turner (1986:318) report that the composition of *H. lanatum* is similar to that of other green vegetables, such as celery, and would have been an important contributor of folate, ascorbate and "water soluble" vitamins to the spring diet.

The outer skin of the stalk contains a furanocoumarin, which is activated by ultraviolet light. This phototoxin can cause burning and blistering as well as hyperpigmentation of the skin (Kuhnlein and Turner 1986:309). In an analysis of peeled and unpeeled stalks, Kuhnlein and Turner (1986:321) demonstrated that peeling removes slightly more than half of the furanocoumarin content. The fact that the Piikáni peeled the stalks prior to eating suggests they were aware of these effects, although the elders did not mention this specifically.

According to Kuhnlein and Turner (1986:314), "almost all native people distinguish between the leafstalks (petioles) and inflorescence bud stems of cow-parsnip when gathering and eating the plants. Although both were considered edible, they were treated almost as two different foods."

Several of the elders mentioned that there is a poisonous "wild rhubarb" but were unable to identify this plant. According to Frantz and Russell (1989:252), the word "sooyikkinssimoyi" refers to a "plant, similar to the wild rhubarb, which induces cramps/poisonous". Cow parsnip is, in fact, similar to poison hemlock (*Conium maculatum*) and water hemlock (*Cicuta spp.*), both of which are highly toxic.

References:
McClintock 1910; Wissler 1918; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Heuchera spp. (Alum-root) Saxifragaeceae (Saxifrage Family)

Blackfoot: apahsípoko (JSC, MPE, EYH, MKW, MLB, AD, MM, JC);
apos-ipoco (McClintock 1910:525);

Meaning: *lit.* 'tastes dry' (JSC; McClintock 1910; Taylor 1989)

Refers to: The name may refer to the astringent properties of the root.

Ecoregion: fescue grass, aspen parkland, montane;

Habitat: *H. richardsonii* R.Br.: moist areas of prairie and parkland;
H. parvifolia Nutt. *ex* T. & G.: gravelly montane slopes and talus;

Parts Used: roots;

Food Use(s):
None recorded.

Medicinal Use(s):
A medicinal tea made from the root is used to treat a variety of ailments, including sore throats, colds, "chest problems" and diarrhea (JSC, BSWAG, MPE, EYH, MKW, MLB, AD, MM). Often a small portion of the root was simply chewed, especially for sore throats (JSC, MPE, MKW). A salve of the root was also used to "dry up" infected cuts, sores and burns (EYH, MPE, JC, MLB, MKW, AD). JC says "dry taste" is also good for diabetics, whose skin is sensitive and itchy, and often bleeds. A paste is made by grinding the root and mixing it with a little grease. This is then applied directly to the sore (EYH, MPE). Or, the powdered root is boiled and a clean cloth is soaked in this mixture and then applied to the area (JC, MKW, AD).

Spiritual Use(s):
None recorded.

Other Use(s):
The root was used in horse medicine (Hellson and Gadd 1974:88).

Collecting:
The roots are collected in the summer. During a collecting trip to the mountains in mid-August, MPE and EYH noted that the roots were "real ripe" and that this was a good time to collect them. MLB says it is best to collect them in June or July. The elders recognize that there are some that grow in the mountains and some that grow on the prairies (JSC, MPE, EYH). MPE and EYH said you can collect them around Brocket, but they prefer to get theirs from the mountains because the soil is softer there. MKW says they grow in the mountains and are collected around Two Medicine. If they are collected too late in the fall, they become dry (MPE, EYH).

Processing:
Once collected, the roots are washed, the outer root covering scraped or peeled off, and the entire root is dried. (MPE, EYH, JSC, MKW, MM, MLB, AD). The dried roots are then ground up as required, using a grinding stone and canvas, and mixed with water or grease. Alternately, a small portion of the dried root is chewed. MKW boils approximately half of one root with one cup of water.

Storage:
The roots are dried and stored whole.

Artifacts:
A digging stick was necessary to harvest the roots. Once dried, the roots could be crushed with a grinding stone.

Comments:

The elders recognize both the prairie and mountain types, but all agree that they are both used in the same manner (JSC, MPE, EYH, MKW). MKW says the only difference between the two is that the mountain species have bigger leaves and roots and the ones that grow flat on the hills are smaller. Both species are given the same Blackfoot name.

References:

McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Hierochloe odorata (L.) Beauv. (Sweet Grass) Gramineae (Grass Family)

Blackfoot: sipátsimo (sipátsimoistsi) (JSC, MPE, EHY, MKW, AD, JC); se-pat-semo (McClintock 1910:525);

Meaning: -- smell (Taylor 1989); fragrant smell (Hellson and Gadd 1974);

Refers to: The name refers to the fragrant smell of the sweet grass.

Ecoregion: mixed grass, fescue grass;

Habitat: moist to dry open areas;

Parts Used: blades;

Food Use(s):

None recorded.

Medicinal Use(s):

The elders did not identify medicinal uses of sweet grass. However, Hellson and Gadd (1974) provide an extensive list. According to these authors, an infusion of sweet grass was taken to treat everything from male venereal infections to coughs, sore throats and windburn. Women drank an infusion after childbirth to stop bleeding and to expel the afterbirth.

Spiritual Use(s):

Sweet grass is used primarily as an incense for the purification of people and items during ceremonies and for daily prayers. The elders also use it for protection "around the house -- you just light it and use it all over" (MPE, EYH). Before collecting roots, MPE and EYH prayed and purified themselves with sweet grass broken from a braid. Each lady held a small piece of sweet grass and moved their hands up and down the length of their bodies while praying. The sweet grass was then buried as an offering. Hellson and Gadd (1974:51-55) provide a list of the ceremonial bundles and tipis which require the use of sweet grass.

Other Use(s):
McClintock (1910:525) notes that sweet grass was soaked in water to make a tonic for hair. He also states (1910:364) that it was a favorite perfume of the women.

Collecting:
According to the elders, sweet grass can be collected by "anyone". It appears that people have their favorite collecting locales, although no one was keen to give the exact locations! MPE and EYH said it is best collected in June or July. The elders did not recognize a herbarium specimen with seeds, which suggests that sweet grass is traditionally collected before it goes to seed. MPE said sweet grass is easy to identify because "one side of the leaf is flat and one side is shiny and the grass is red at the bottom". Besides, "where they grow a lot, you can just smell them" (MPE).

Processing:
The blades of sweet grass are collected and then braided. Traditionally, pieces are broken off and placed on hot coals to create an incense or smudge.

Storage:
The braids of sweet grass are dried and stored.

Artifacts:
None recorded.

Comments:
Sweet grass contains coumarin, which accounts for its fragrant smell (Johnston 1987:20). See discussion in text regarding the use of incenses in purification.

References:
McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Juniperus spp. (Juniper) Cupressaceae

Blackfoot: siiksiinoko (siiksiinokoistsi) (= bush) (JSC, MPE, EYH, MKW, AD);
siiksiinokoyiini (= berries) (MKW);
six-in-oko (McClintock 1910:527);

Meaning: *lit.* '-- berry '(Taylor 1989);
lit. 'round black object berry' (Hellson and Gadd 1974:33);

Refers to: The name refers to a trait of the berries. The translation offered by Hellson and Gadd (1974:33) suggests the color may be the characteristic for which they are named.

Ecoregions: mixed grass, fescue grass, aspen parkland, montane, subalpine;

Habitat: *J. communis* L. - woods and open slopes;
J. horizontalis Moench - sandy and rocky areas;

Parts Used: berries, branches;

Food Use(s):

JSC said her grandmother used to pound the berries and add them to pemmican.

Medicinal Use(s):

Several elders (MPE, EYH) said juniper was not used as a medicine. However, McClintock (1910:527) notes the berries were made into a tea to stop vomiting. Hellson and Gadd (1974:78, 83) also list several medicinal uses of juniper. An infusion of juniper root was taken as a general tonic or mixed with poplar leaves and applied as a liniment for a back ache.

Spiritual Use(s):

Branches of "smooth juniper" (*J. horizontalis*) are used ritually as a smudge for purification and protection in both domestic and ceremonial settings (MPE, EYH, MKW, AD, JSC). In the home, branches are smudged for protection against thunderstorms (MPE, EYH) or "just anytime" (MKW, AD). JSC remembers her grandfather singing and making a smudge when thunderstorms were approaching. *J. horizontalis* is also used as a smudge by "those who put up the Sundance" (MPE, EYH, JSC). In addition, the branches are used at the Sundance as a covering for the floor inside of the medicine lodge which is slept on (MPE, EYH). Raczka and Bastien (1986:50) include *J. horizontalis* in the list of plants associated with ceremonial bundles.

The "sharp juniper" (*J. communis*) can be used for a smudge too, "it's the same thing" (MKW). JSC said the "prickly ones" were used at the Sundance as a ground covering.

According to legend, the Holy Woman of the Sundance wore a wreath of juniper branches as a sacred headdress before the Naatoas headdress was visioned (Hungry Wolf 1980:42). Wissler (1918:241) states that Scarface brought the juniper wreath and the rituals for the Sundance to earth.

Other Use(s):

According to Hellson and Gadd (1974:114), women collected and dried juniper berries to make necklaces, wristlets and decorations for clothing. These berries were blackened by holding them in greasy smoke from the campfire and then polished. Often, they were mixed with berries of the wolf willow (*Elaeagnus commutata*).

Collecting:

The elders said juniper can be collected and used anytime (JSC). Juniper berries require two to three years to mature, and consequently, there are berries on the branches year round. MKW says the smooth ones "grow long and you pull them". This refers to the fact that the branches lie almost flat along the surface of the ground.

Processing:

To create a smudge, portions of the branches are placed on hot coals (MPE, EYH, JSC) or on the top of a hot stove (MKW, AD). At the Sundance, the branches are cut and placed around the altar of Sundance and on the floor.

Storage:

Not recorded.

Artifacts:

A knife would be required to cut the branches. Charred pieces of the branches, leaves or berries might be preserved in an archaeological context.

Comments:

The Piikáni elders recognize two types of juniper -- a "smooth" one (*J. horizontalis*) and a "sharp" or "prickly" one (*J. communis*). However, both are identified by the same name and are considered to be the same (JSC, MKW).

Hellson and Gadd (1974:33-36) make no mention of the use of juniper as a smudge, and in fact, state that "Although it is strongly aromatic, it was not used as an incense". This is contrary to the information received from the Piikáni elders.

Juniper contains a volatile oil which is found in the berries, leaves and wood (Kowalchick and Hylton 1987:347). The plant's diuretic properties are attributed to a constituent of this oil, terpinen-4-ol, which works on the kidneys. Ripe, freshly picked berries have the highest concentration of this oil, but this decreases dramatically as the berries dry. A disinfectant gas is produced when the berries are burned (Turner and Szczawinski 1978:23-24).

References:

McClintock 1910; Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

?*Ledum groenlandicum* Oeder (Common Labrador Tea) Ericaceae (Heath Family)

Blackfoot: iimatótsiineimoy (iimatótsiineimoyistsi) (Taylor 1989);

Meaning: -- smell (Taylor 1989);

Refers to: None recorded.

Ecoregion: montane, subalpine;

Habitat: bogs and wet coniferous forests;

Parts Used: leaves?

Food Use(s):
According to MKW, "there are some they made tea from a long time ago. They look like leaves and they make a tea out of them, like regular tea. That's what the old timers say -- it grows on trees".

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
From her description, it is possible that MKW was talking about Labrador tea (note, this discussion took place without a specimen). In Alberta, *L. groenlandicum* occurs frequently to the north of the study area (Moss 1983:651).

References:
Taylor 1989;

?*Letharia vulpina* (L.) Hue (Wolf Lichen) — Usneaceae (Tree Lichens)

Blackfoot: ?ootsiisiimats (MKW);
e-simatch-sis (McClintock 1910:527);

Meaning: *lit.*"dye' (McClintock 1910:527);

Refers to: The name appears to refer to the use of this plant to produce a yellow dye.

Ecoregion: montane, subalpine;

Habitat: branches and trunks of conifers in open forest on western mountains (Vitt et al. 1988:253); grows on pine trees (McClintock 1910:527);

Parts Used: entire plant;

Food Use(s):
None recorded.

Medicinal Use(s):
Hellson and Gadd (1974:76) state an infusion of the tree lichen *Evernia vulpina* (see below) and marrow was taken for stomach disorders such as ulcers. The plant was also blackened in a fire and rubbed on rashes, eczema and wart sores. *Evernia vulpina* was also used to treat headaches (McClintock 1910:527). Grinnell (1892:284) notes that "one of their medicines is a great yellow fungus which grows on the pine tree. This is dried and powdered, and administered either dry or in an infusion. It is a purgative."

Spiritual Use(s):
None recorded.

Other Use(s):
McClintock (1910:527) records that *Evernia vulpina* was used to dye porcupine quills yellow, adding that the quills were placed with the dye in boiling water. Hellson and Gadd (1974:113) record an identical use. In 1792, Peter Fidler noted a yellow "moss" that grows on the branches and trunks of trees in the Porcupine Hills and foothills of southwestern Alberta "makes an excellent yellow dye for porcupine quills" (Haig 1991:53). However, the Piikáni elders did not feel this lichen was used as a yellow dye (MKW, MPE, EYH).

Collecting:
McClintock (1923:160) includes this plant in a list of those collected in spring. However, the lichen remains on the trees year round and could be collected at any time.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
The lichen could be removed easily by hand.

Comments:
McClintock (1910:527) was the first to identify this plant as *Evernia vulpina*. Ethnographers since then have also adopted this identification. However, the correct name for this plant is *Letharia vulpina*.

MPE and EYH said the plant used as a yellow dye are yellow flowers which are soaked in water until the water turns yellow. EYH did not know the name of this plant, but said it resembles *L. vulpina* but grows on the ground.

Vulpinic acid, the prominent lichen acid present in the species, is poisonous (Vitt et al. 1988:253).

References:
McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Lewisia rediviva Pursh (Bitter-root) Portulacaceae (Purslane Family)

Blackfoot: éíksikksiksi (JSC, MKW, AD) (Taylor 1989);
eks-ix-ix (McClintock 1910:530);

Meaning: *lit.* 'white root' (JSC; McClintock 1910:530; Taylor 1989);

Refers to: The peeled roots, which resemble short strands of spaghetti, are white in color.

Ecoregion: montane;

Habitat: dry rocky soils of valleys, plains, foothills; Note: Although bitter-root is plentiful in Montana, it is presently known to occur at only two locations in Alberta on adjacent ridges west of Pincher Creek (Wilson et al. 1988).

Part Used: roots;

Food Use(s):
The Piikáni ladies said they boil the roots in soup or add them to saskatoon berry soup (JSC, MKW, AD). One elder (JSC) had a large freezer bag full of peeled bitter-root which she obtained from a friend in British Columbia. According to McClintock (1910:530), the Blackfeet considered "white root" a healthy food and prepared it by boiling it in water. Grinnell (1892:204) notes the starchy roots were steeped in water to swell, then boiled and eaten. Sugar was often added to this mixture.

Medicinal Use(s):
MKW and AD said the roots can be chewed to relieve sore throats and colds. Others (MPE, EYH) indicated that the roots turn the water red when boiled, and this can be used for a medicine, although they could not specify.

Spiritual Use(s):
Bitter-root is also added to the berry soup used for ceremonies. One elder (JSC) said she was going to boil the bitter-root with saskatoon berries for the Sundance ceremony that summer.

Other Use(s):
None recorded.

Collecting:
The elders said they do not collect bitter-root themselves, but obtain it from the Kutenai or Flathead (JSC, MKW, AD). MKW said they are easily harvested "you

can just pull them up". The people to the west (Flathead) pick them in July (MKW). Other sources suggest the plant was dug in spring (Ewers 1958:86; McClintock 1923:160) as soon as the flower buds become visible.

Processing:

The thin, reddish covering is peeled off the fresh roots (MKW, JSC). This can be done quite easily by hand. Then, the roots are dried in the sun (JSC, MKW).

Storage:

Today, the elders store the roots in the freezer. In the past, the dried roots were probably stored in buckskin bags.

Artifacts:

Ethnographic evidence suggests digging sticks were formerly used to harvest bitter-root. However, at least one elder, MKW, felt they could be easily pulled from the ground by hand.

Comments:

According to McClintock (1910:530), bitter-root grows plentifully in the mountains. One assumes that McClintock was referring to the mountainous regions of Montana, where it is widely distributed and is, in fact, the state flower. As previously mentioned, bitter-root has been recorded at only two locations in Alberta (Wilson et al. 1988). However, this does not necessarily reflect the past, or present, distribution of the bitter-root population.

Nutritionally, 100 g. of dried roots provide 343 kcal of food energy, 4.0 g. of protein, 81.0 g. of carbohydrates, 17 mg. of Vitamin C, 168 mg. of calcium and 5.3 mg of iron (Kuhnlein and Turner 1991:356).

References:

Grinnell 1892; McClintock 1910, 1923; Ewers 1955, 1958; Raczka and Bastien 1986; Johnston 1987;

?Ligusticum canbyi Coult. & Rose (Lovage) — Umbelliferae (Carrot Family)

Blackfoot: ? siisoowakstaks or ?siisoowaxtax (MKW);

Meaning: None recorded.

Refers to: None recorded.

Habitat: wet soils at higher elevations in the mountains; in Montana, it occurs only west of the Continental Divide (Hart 1976:25); it is not found in Alberta;

Parts Used: roots;

Food Use(s):

None recorded.

Medicinal Use(s):

One of the elders (JSC) had a string of sweet-smelling roots but was unsure of what they were. However, MKW and AD recognized them immediately and said they are similar to the "sneezing root" (*Veratrum eschscholtzii*). When she has a headache, AD grinds them into a powder, places them on a hot coal, covers her head with a blanket, and inhales the smoke. "It sure cures a headache", she adds. The Flathead and Kutenai use the same thing for colds (AD). MKW said the old people "smoke with them. The old people scrape them, put them in tobacco -- smells good".

Spiritual Use(s):

None recorded.

Other Use(s):

None recorded.

Collecting:

MKW said the roots grow in swamps and are collected in June. Some are as large as her little finger. However, the plant does not grow in Piikáni territory and is obtained from the Flathead peoples further west. AD said she buys it whenever she can.

Processing:

The roots are cleaned and dried.

Storage:

The dried roots may have been threaded onto strings for storage, as was the sample from JSC. Or, they may simply have been kept in bags.

Artifacts:

None recorded.

Comments:

Kidd (1937:91) provides an interesting discussion of a plant called "minoique root" "which the Peigans had in great abundance". His informants "had knowledge of a sweet-smelling root which they say comes, like Henry's "minoique", from the south, and which like it was used mixed with tobacco for smoking, since it was a cure for headaches, but they denied this was used for a necklace". Although Kidd suggests this may be *Veratrum eschscholtzii* (on the basis of McClintock 1910), it seems more likely this may be *L. canbyi*.

Lovage is still widely used by the Flathead and Kutenai who gather the root in late summer (Hart 1976:24). The peoples chewed the dried roots for sore throats and colds, and to cure headaches, stomach aches, fevers and heart problems.

References:

Kidd 1937;

?*Lilium philadelphicum* L. (Western Wood Lily) Liliaceae (Lily Family)

Blackfoot: naamúikina (naamúikinaiksi) (Taylor 1989);

Meaning: *lit.* 'bee tooth' (Taylor 1989);

Refers to: According to Hellson and Gadd (1974:103), the name "bee's tooth" is applied to *Lilium philadelphicum* (and by extension to *Fritillaria pudica* and *Erythronium grandiflorum)* because the bulbs of all three break into small, rice-like kernels or imaginary bee teeth.

Ecoregion: fescue grass, aspen parkland, montane;

Habitat: open woodlands and prairies;

Parts Used: roots;

Food Use(s):
The Piikáni elders did not recognize this plant. According to Hellson and Gadd (1974:103), the bulb was eaten fresh or added to soups.

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
The elders did not recognize this plant or the name "bee's tooth". MKW calls it "just a flower" and MPE and EYH refer to it as "just a wild flower". See notes for *Erythronium grandiflorum* and *Fritillaria pudica.*

Several other Indigenous groups ate the bulbs of the western wood lily, including

the Kutenai, Stoney and Woods Cree (Kuhnlein and Turner 1991:93).

References:
Hellson and Gadd 1974;

?*Lithospermum ruderale* Dougl. ex Lehm. (Yellow Puccoon)
Boraginaceae (Borage Family)

Blackfoot: ponokáówaxsini (Taylor 1989);
pono-kau-sinni (McClintock 1910:528);

Meaning: *lit.* 'elk food' (Taylor 1989);
lit. 'turnip elk food' (McClintock 1910:528);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass, aspen parkland;

Habitat: dry slopes and grassland;

Parts Used: roots?

Food Use(s):
None recorded.

Medicinal Use(s):
None recorded.

Spiritual Use(s):
McClintock (1910:528) notes that the "tops" of *L. linearifolium* (Narrow Leaved Puccoon) were dried and used for as incense in ceremonials. He states (1910:361): "The incense he burned . . . consisted of small dried seeds which gave forth a pleasing odour. He called it Pono-kan-sinni (Elk Food) (Narrow Leaved Puccoon), and said it was prepared by drying the tops of the plant".

Other Use(s):
According to Hellson and Gadd (1974:114), *L. ruderale* was called the "holy turnip" by children and used it as headpieces in their play to mimic the affairs of the Holy Woman who owned the Naatoas Bundle.

Collecting:
None recorded.

Processing:
According to McClintock's account, the seeds were dried.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
There appears to be some confusion in the literature concerning this plant. McClintock (1910:530) identifies *Lithospermum linearifolium* as "mass" or "wild turnip/elk food". He states the roots were prepared for eating by boiling or roasting. Apparently, he has confused this species with *Psoralea esculenta* (Johnston 1987:41) which is referred to as the "wild turnip". It is also the "holy turnip" of the Sundance.

Others have added to the confusion. For example, Hellson and Gadd (1974:114) state that children call *Lithospermum ruderale* the "holy turnip". Frantz and Russell (1989:150) also identify *Lithospermum ruderale* as "naatowá's or sacred Indian turnip". They too appear to have confused this species with *P. esculenta.*

Finally, McClintock's (1910:528) original identification -- *Lithospermum linearifolium* (Narrow Leaved Puccoon) -- is now known as *L. incisum. L. ruderale* (Stoneseed) is a different plant.

References:
McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

?*Lomatium dissectum* (Nutt.) Math. & Const. (Chocolate-tips)
Umbelliferae (Carrot Family)

Blackfoot: o-muck-kas (McClintock 1910:525);

Meaning: big turnip/parsnip (McClintock 1910:525);

Refers to: None recorded.

Ecoregion: fescue grass, aspen parkland, montane, subalpine;

Habitat: dry prairies, meadows, rocky slopes and talus at low to moderate elevations; (Kuhnlein and Turner 1991:117);

Parts Used: roots?

Food Use(s):
None recorded.

Medicinal Use(s):
The Piikáni elders were unfamiliar with this plant and knew of no medicinal uses. However, McClintock (1910:525) notes that a hot infusion of the root was given as a tonic to nourish people in a weakened condition.

Spiritual Use(s):
According to McClintock (1910:525), the root was pounded up and burned for incense (but see notes on *Balsamorhiza sagittata*).

Other Use(s).
Horses with distemper inhaled the smoke from the root (McClintock 1910:525). According to Ewers (1955), boiled root was given to horses with colic and distemper. In addition, the roots were roasted, sliced and strung on a buckskin cord and tied around the neck of a mare to ensure big colts (ibid.). McClintock (1910:525) notes the root was also mixed with brains and used in soft tanning.

Collecting:
According to McClintock (1910:525), the roots were gathered in the fall from the "sides of hills, growing in sandy loam soil".

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
Further research is required to verify the identification of this plant and other members of the *Lomatium* genus. The Piikáni elders (MKW, MPE, EYH) did not recognize this specimen, nor did they recognize *L. cous* or *L. macrocarpum.*

McClintock (1910:525) and Ewers (1955) identify this plant as *Leptotaenia multifida,* which is now known as *Lomatium dissectum* var. *multifidum.* However, based upon McClintock's name "o-muck-kas" and the description of the plant's habitat, it is possible he may be referring to *Balsamorhiza sagittata.*

References:
McClintock 1910; Ewers 1955; Johnston 1987;

?*Lomatium triternatum* (Pursh) Coult. & Rose (Prairie Parsley)
Umbelliferae (Carrot Family)

Blackfoot: None recorded.

Meaning: "stands alone or many standing" (Hellson and Gadd 1974:103);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass;

Habitat: prairie grassland and gravelly slopes;

Parts Used: flowers, roots?

Food Use(s):
The flowers of "stands alone" or "many standing" were sometimes mixed with pemmican (Hellson and Gadd 1974:103). According to Johnston (1987:49), the root was eaten raw or roasted.

Medicinal Use(s):
BSWAG called this the "medicine root" and said it can be boiled and taken if you are coughing. On a collecting trip in the mountains, EYH pointed to this plant and said the insides of the seeds are used for medicine when they are green.

Hellson and Gadd (1974:72) note that an infusion of the roots and leaves were taken for "chest troubles".

Spiritual Use(s):
None recorded.

Other Use(s):
According to Hellson and Gadd (1974:115), animal pelts which were used in ceremonial bundles were stuffed with the fruits of this plant during the tanning process to prevent them from smelling.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
The identification of this plant is tentative. Further research is required to verify the information presented above.

References:
Hellson and Gadd 1974; Johnston 1987;

Lonicera involucrata (Richards.) Banks (Bracted Honeysuckle, Black Twinberry)
Caprifoliaceae (Honeysuckle Family)

Blackfoot: ?paksiikoyiini (MKW);

Meaning: *lit.* 'bear berries' (MKW);
lit. 'bear eats them' (Hellson and Gadd 1974:115)

Refers to: These berries are considered inedible and eaten only by bears, hence the name "bear berries" or "bear eats them" (MKW).

Ecoregions: montane, subalpine;

Habitat: moist woods

Parts Used: berries, leaves,?bark;

Food Use(s):

According to MKW, these berries are not eaten by humans, only by bears. She notes that "when all the leaves come down, you just see them berries". This refers to the fact that the berries remain on the bushes in the fall. Although the purplish-black berries have an unpleasant flavor, they are edible (Moss 1983:513).

Medicinal Use(s):

MLB said a man with diabetes collects leaves from a "shrub" in the mountains. Unfortunately, MLB did not know the name of the shrub, but said it has black berries. The gentleman mixes leaves of this shrub with man sage (*Artemisia ludoviciana*) and "this is good for diabetes".

Hellson and Gadd (1974:67) note that an infusion of the berries was used to treat chest and stomach troubles. According to the authors, the cathartic and emetic effects of the brew "cleansed the body".

Spiritual Use(s):

None recorded.

Other Use(s):

None recorded.

Collecting:

None recorded.

Processing:

None recorded.

Storage:

None recorded.

Artifacts:
None recorded.

Comments:
Other Indigenous peoples also believe the berries to be poisonous and use the plant mainly for medicinal purposes (Kuhnlein and Turner 1991:144-145).

References:
Hellson and Gadd 1974;

Lycoperdon spp. (Puffballs) — Lycoperdaceae (Puffball Family)

Blackfoot: kakató'si (kakató'siiksi) (EYH, MKW, AD, MPE);

Meaning: star/mushroom/puffball (Frantz and Russell 1989);

Refers to: According to McClintock (1910:217): "The Blackfeet have given the name 'dusty stars' to the puff-balls which grow in circular clusters upon the prairies, because they are supposed to be meteors, which have fallen from the night-sky and spring up into puff-balls in a single night. They call them 'dusty stars' because they emit a puff of dust when pressed".

Ecoregion: mixed grass, fescue grass;

Habitat: dry prairies;

Parts Used: entire plant?

Food Use(s):
None recorded.

Medicinal Use(s):
The elders recognize this plant, but do not believe it was used as a medicine. According to Hellson and Gadd (1974:84), the pores of this puffball were applied to wounds as a styptic. Pieces of the fungus were also held to the nose to stop bleeding. In other cases, the spores were mixed in water and consumed for the treatment of an internal hemorrhage.

Spiritual Use(s):
Hellson and Gadd (1974:38) note that *Lycoperdon* spp. was used as an incense to keep ghosts away. Pieces were also kept in ceremonial bundles and used as a type of punk to assist in lighting fires.

Other Use(s):
The small circles painted around the bases of tipis are thought to represent puffballs or stars, although MPE felt this was not always so. McClintock (1910:363) states "we may have in this belief the origin of their use of the broad band of dark colour,

with its circle of discs or Dusty Stars, as the bottom decoration of the Blackfoot tipi. This band, usually painted in red, with the discs in yellow or other colour, suitably symbolises the Earth as the foundation for all things." Hellson and Gadd (1974:38) suggest paintings of puffballs on the tipi would insure the inhabitants were always able to start a fire.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
According to Johnston (1987:15), the legend of The Twin Brothers states: "The punk which you use to make fires is made of bark and does not kindle quickly; take puffballs instead as they are much better. They are The Dusty Stars. You are to paint these stars around the bottom of the lodge".

References:
Wissler 1910; Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

Lygodesmia juncea (Pursh) D. Don (Skeleton-weed) Compositae (Composite Family)

Blackfoot: ?otahkoyitsi (MKW);
root-squeeks-see (Hellson and Gadd 1974:61);

Meaning: *lit.* 'blue sticks' (Hellson and Gadd 1974);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass;

Habitat: dry sandy prairies;

Parts Used: stems?

Food Use(s):
None recorded.

Medicinal Use(s):

MKW and AD said an infusion made by boiling the whole plant in water is used for kidneys (this followed a discussion of *Equisetum* spp. as a kidney medicine). The ladies say you have to pick a lot and that the water turns yellow/green when the plants are boiled. Hellson and Gadd (1974:70) also note that kidney trouble was treated with an infusion of the plant, although they state the galls of the plant were ground and use to make a diuretic tea. A medicinal tea from the stem was taken for a burning cough (1974:72) or for symptoms of heartburn in pregnant women (1974:61). It was also given to children as a tonic (1974:67).

Spiritual Use(s):

None recorded.

Other Use(s):

The stems, which are rich in latex, were crushed and used as foot pads in moccasins. A mixture of the stem and red ochre was applied to freshly-tanned hides to color and waterproof them (Hellson and Gadd 1974:115).

Collecting:

According to the elders, "a lot" of this plant was collected for use. Presumably, it was collected during the summer months.

Processing:

The entire plant (root and stems) were boiled (MKW, AD) and the galls were ground (Hellson and Gadd 1974:70).

Storage:

None recorded.

Artifacts:

A knife might be required to collect the stems and galls. A grinding stone would be necessary to powder the galls.

Comments:

See also notes for *Equisetum* spp.

References:

Hellson and Gadd 1974; Johnston 1987;

Matricaria matricarioides (Less.) Porter (Pineapple-weed) Compositae (Composite Family)

Blackfoot: matoyaitsiimo (JSC, MKW, AD); atsiinaiko (MPE, EYH); mat-o-at-sim (McClintock 1910:530);

Meaning: *lit.* 'perfumed plant' (McClintock 1910:530);

Refers to: Pineapple-weed is a member of the chamomile group and has a fragrant odor, particularly when crushed. The Piikáni name recognizes this characteristic of the plant.

Ecoregion: mixed grass, fescue grass;

Habitat: roadsides, field margins and meadows;

Parts Used: flowers, leaves;

Food Use(s):
None recorded.

Medicinal Use(s):
The "tops" (flower heads) are boiled to make a medicinal tea for stomach aches (MPE, EYH). The root of "ááhsowa" (*Glycyrrhiza lepidota*) is often added to this infusion (MPE, EYH). MKW and AD use the "soft parts" (feathery leaves and flower heads) to make a tea for coughs and colds. Pineapple-weed is also mixed with "stink root" (*Valeriana* spp.) to make a kidney medicine which is taken "when you can't pass water" (MPE, EYH).

Spiritual Use(s):
JC said when the plants are "ripe" when they turn yellow. "This is when the old people collect them. They crush them and mix them and use them for perfume. They just rub them on." According to JC, the old people often put this mixture on their good blankets that they wear to make them smell nice. JC also mixes the plant with "horse hoof" (pore fungus?). However, the plant is not used for everyday perfume (JC).

Other Use(s):
A mixture of the boiled plant is also used to rinse one's hair to make it grow (AD). JSC used to put the fragrant plant between clean clothes to keep them smelling nice. McClintock (1910:530) notes that the blossoms were dried and used for perfumery.

Collecting:
The plants are collected when they are "ripe and turn yellow" (JC). The flowers bloom between July and September. Several elders prefer to collect only the flower heads (MPE, EYH), while others (MKW, AD, JSC, JC) also use the feathery leaves. MPE says the plant "grows all over" and is often found along old wagon trails. As a little girl, MPE used to collect it for her grandmother.

Processing:
MKW and AD rubbed the flower heads and fine, feathery leaves off the dried plant. This makes a fine powder, which would be boiled for a tea or used to perfume clothing.

Storage:
The dried plants or powder was probably stored in bags.

Artifacts:
The plant is easily harvested by hand. Once dry, the leaves and flowers can be

removed by simply rubbing them between one's fingers. Therefore, it is unlikely that any specific tools were required to harvest or process this plant.

Comments:

According to Kowalchick and Hylton (1987:81) extracts of pineapple-weed are used as an anti-inflammatory for afflictions of the skin and mucous membranes and as an anti-infective for a number of minor illnesses. It is also useful in treating indigestion and cramps, and is often employed as an antispasmodic.

References:

McClintock 1910; Raczka and Bastien 1986; Johnston 1987;

Mentha arvensis L. (Wild Mint) — Labiatae (Mint Family)

Blackfoot: ka'kitsímo (ka'kitsímoistsi) (MPE, JSC, EYH);
sax-ika-kitsim (McClintock 1910:530);

Meaning: mint (JSC, MPE, EYH, MLB); peppermint (MKW, AD);
lit. 'quick smell' (McClintock 1910:530);
peppermint herb (Frantz and Russell 1989:132);

Refers to: The names "mint" and "peppermint" are borrowed from the English terms for the plant. McClintock's translation "quick smell" is probably closer to the original meaning of the name.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: marshy ground, riverbanks, sloughs, coulees;

Parts Used: leaves;

Food Use(s):

Mint tea is made by adding mint leaves (fresh or dried) to boiling water or to regular tea (JSC, MPE, MKW, AD). This tea is served in the home, at social events and during ceremonies. Another popular use of mint is to mix it with dried meat or pemmican to preserve its freshness (MPE, JSC, LES, LGS). JSC said mint is "put on when you're going to put the dry meat away". Others, (LES, LGS) said the mint is mixed with pemmican or wrapped around the dry meat. Mint is also used to smoke meat because it produces a sweet-tasting meat (LES, LGS). McClintock (1910:530) notes that the leaves are used to make tea and are placed in parfleches to flavor dried meat. A similar use is recorded by Wissler (1910:22).

Medicinal Use(s):

According to MKW and AD, "peppermint tea is good for everything". JSC takes mint tea for colds. It is also commonly used to treat those with diabetes (MPE, EYH, MLB). The leaves are boiled alone or mixed with man sage (*Artemisia ludoviciana*) (MKW, AD, MLB). MLB drinks a mixture of mint and man sage

every day for her diabetes and avoids taking coffee or tea.

Spiritual Use(s):
Mint tea is traditionally served at ceremonials. Raczka and Bastien (1986:51) list it as a plant associated with ceremonial bundles.

Other Use(s):
None recorded.

Collecting:
Mint is collected from early spring to late summer. MPE felt it was best to collect mint in the spring "when it blooms" because it is fresh and aromatic. However, MKW and AD said it is best to pick in July or August. After this, it gets too dry.

Processing:
MKW said that when picking mint "just cut off the long (stem) part and tie them and hang them to dry. When they are dry, put in paper bag and use the leaves, not stems (AD)". MPE washes the leaves and stems first, then hangs them to dry. She crushes the leaves to use them in teas.

Storage:
Dried mint is stored in bunches, or the leaves are stored in bags.

Artifacts:
A knife would be required to cut the stems of the mint during harvesting, although the stems can be easily broken by hand.

Comments:
Mint is widely used and is commonly discussed as a treatment for diabetes. Mint contains menthol which promotes digestion by stimulating the flow of bile to the stomach. In addition, mint acts as an antispasmodic and is especially useful in relieving upset stomachs. It may also help relieve menstrual cramps (Kowalchick and Hylton 1987:383).

References:
McClintock 1910; Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

Monarda fistulosa L. (Wild Bergamot) — Labiatae (Mint Family)

Blackfoot: maanikápi (MPE, EYH, JSC, MKW, AD);
ma-ne-ka-pe (McClintock 1910:527);

Meaning: *lit.* 'bachelor' (JSC) or 'slick foot' (MKW, AD);
lit. 'young man' (McClintock 1910:527);

Refers to: In traditional Piikáni society, bachelors often spent a great deal of time making themselves look fancy in order to impress the other members of the band. The flower of wild bergamot is one of the more spectacular prairie wild flowers. Like the bachelors, it is fancy and showy!

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: open woods, fields;

Parts Used: leaves, flowers;

Food Use(s):

The elders did not identify a food use. However, Hellson and Gadd (1974:115) say the dried flowers were used to soak up soup and broth by invalids.

Medicinal Use(s):

A medicinal tea made from the boiled flowers is said to be "better than white medicine" for treating colds (MKW, AD). The elders (AD, MKW) said that "when you boil them, they taste like soup", perhaps in reference to the slightly spicy flavor. Additional medicinal uses are described by Hellson and Gadd (1974). According to these authors, a tea was used to sooth sore kidneys. In addition, the flowers were applied to cuts and boils. An eyewash to reduce inflammation was also made by adding the flowers to warm water McClintock (1910:527).

Spiritual Use(s):

None recorded.

Other Use(s):

Apparently, the dried flowers were used to apply water to a green hide (Hellson and Gadd 1974:115).

Collecting:

According to MKW, the flowers of "maanikápi" can be picked at any time. AD said it is okay to collect the flowers once they have dried, too. She collects the plant along the ?Two Little Badger River.

Processing:

Once collected, the flowers are dried. These are boiled as required.

Storage:

The flowers can be stored in a sack, once dried (MKW).

Artifacts:

The blossoms are easily removed by hand, therefore it is unlikely that any tools were used.

Comments:

When it was suggested to MKW and AD that name "maanikápi" meant "bachelor", they laughed heartily and said it meant "slick foot". This is likely a euphemism.

The active ingredient in *M. fistulosa* is the volatile oil thymol. Thymol is used

medicinally as an antifungal, antibacterial, and anthelmintic (against worms) (Turner and Szczawinski 1978:73; Kowalchick and Hylton 1987:40).

References:
McClintock 1910, 1923; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

?*Musineon divaricatum* (Pursh) Nutt. (Leafy Musineon) Umbelliferae (Carrot Family)

Blackfoot: ómaxkeiksikksiksi (Taylor 1989);
o-muck-ai-ix-ixi (McClintock 1910:530);

Meaning: *lit.* 'big bitter-root' (Taylor 1989);
lit. 'big white root' (McClintock 1910:530);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass;

Habitat: dry prairies;

Parts Used: roots;

Food Use(s):
The Piikáni elders did not recognize this plant. However, according to McClintock (1910:530), the root was gathered in the fall and eaten raw. It was said to have no flavor until it was dried.

Medicinal Use(s):
BSWAG said this was a "bitter medicine". He said the root was boiled in water and the mixture was rubbed on for muscular aches and pains. However, this description is similar to that of *Physaria didymocarpa* and it is possible that he has confused the two plants, which are fairly similar in appearance.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
According to McClintock (1910:530), the roots are collected in the fall. He notes that the plant grows on the prairies.

Processing:
Based upon McClintock's (1910:530) observations, the roots were not cooked or processed.

Storage:
None recorded.

Artifacts:
Ethnographic sources do not provide evidence of artifacts used for collecting this root. However, it is reasonable to suggest that a digging stick may have been used. Aaberg (1983) has suggested that the location of a prehistoric stone circle site in Montana was determined by the presence of *Musineon divaricatum* and *Lewisia rediviva*. (see discussion in text).

Comments:
There is some confusion concerning the identification of this plant. McClintock's (1910:530) entry reads "O-muck-ai-ix-ix. Big White Root -- Evening Primrose, Alkali Lily. *Musenium divaricatum*". Under medicinal plants, McClintock (1910:525) includes a "Tufted Primrose or Alkali Lily" as "*Pachylobus caespitosus*" (which is now *Oenothera caespitosa*). Obviously, the names have become confused somewhere along the line.

It is also possible that McClintock has confused *M. divaricatum* with *Lomatium macrocarpum* (Desert Parsley), a species which is very similar in appearance. The roots of *L. macrocarpum* were eaten by numerous Indigenous peoples (Kuhnlein and Turner 1991:119).

Further research is needed to confirm the identification of this plant.

References:
McClintock 1910;

?*Oenothera caespitosa* Nutt. (Butte Primrose) Onagraceae (Evening Primrose Family)

Blackfoot: áwàanatapistsiskitsi (áwàanatapistsiskitsiistsi) (Taylor 1989);
okspiipoko (Frantz and Russell 1989);
oks-pi-poku or ap-aks-iboku (McClintock 1910:525);

Meaning: *lit.* 'tastes sticky'(JSC);
lit. 'sticky root or wide leaves' (McClintock 1910:525);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass;

Habitat: clay flats; McClintock (1910:525) notes that the plant grows in alkali soil and is generally found in gravel beds;

Parts Used: roots;

Food Use(s):
None recorded.

Medicinal Use(s):
The Piikáni elders did not recognize this plant. McClintock (1910:525) records that the root was pounded up and applied wet to sores and swellings to reduce inflammation.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
An ointment made from the leaves of *O. biennis* (Common Evening Primrose) was used by other Indigenous peoples to treat skin disorders such as eczema (Turner and Szczawinski 1978:126).

McClintock (1910:525) identifies this plant as "Tufted Primrose or Alkali Lily. *Pachylobus caespitosus*", which is now "*Oenothera caespitosa*".

The Piikáni elders were not familiar with the plant. JSC said she has never heard of "okspipoko" although it means "tastes sticky". It is possible that McClintock has confused this with another plant, such as "apahsípoko" (*Heuchera* spp.) which sounds similar to "ap-aks-iboku". Both grow in similar habitats.

References:
McClintock 1910; Raczka and Bastien 1986; Johnston 1987;

Opuntia spp. (Prickly Pear) Cactaceae (Cactus Family)

Blackfoot: otaxkóttsisa (otaxkóttsisaiksi) (MKW) (Taylor 1989);

Meaning: *lit.* 'yellow guts' (Taylor 1989);

Refers to: None recorded.

Ecoregion: mixed grass; fescue grass;

Habitat: prairie grassland, hillsides and clay flats;

Parts Used: fruits, spines;

Food Use(s):
The Piikáni elders recognized this plant but said it was not eaten.

Medicinal Use(s):
According to Grinnell (1892:282), the thorns from the cactus were inserted in the flesh and then set on fire as a treatment for rheumatic pains.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
According to the elders, this plant was not collected.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
According to MKW, these grow in abundance at the "buffalo jump" but are not used -- "they're just in the way". MPE and EYH identify this plant as "otsstatsimaan" which is the name given to *Coryphantha vivipara*. Johnston (1987:45) gives a long list of uses derived from various sources, but none of these refer directly to the Blackfoot.

The juicy stems of the prickly pear cactus were eaten by other Indigenous peoples. The spines were singed off and then the stems were pit-cooked, boiled or roasted. Once cooked, the insides "pop out readily" (Kuhnlein and Turner 1991:143). The Blackfoot name "yellow guts" may refer to this fact.

References:
Grinnell 1892; Raczka and Bastien 1986; Johnston 1987;

Osmorhiza occidentalis (Nutt.) Torr. (Sweet Cicely) Umbelliferae (Carrot Family)

Blackfoot: matsii pokoyi saokaa's (MKW, MPE, EYH, MLB, MM, AD) (SLP);
asaokaa'siim (JSC, JC, MPE, EYH, MKW);
paxkúyiisaokaa'simi (paxkuyiisaokaa'simiksi) (Taylor 1989);
pach-oc-i-au-saukas (McClintock 1910:528);

Meaning: lit. 'sweet tasting root/strong root' (SLP);
lit. 'bear prairie turnip' (Taylor 1989);
lit. 'smell mouth' (McClintock 1910:528);

Refers to: The name "smell mouth" or "sweet tasting root" may refer to the strong licorice scent of the root. MKW said the name means "smells strong".

Ecoregion: aspen parkland, montane; According to Kuijt (1987:639), the distribution of the plant does not extend further north than the Crowsnest Pass area in southwestern Alberta.

Habitat: montane woods;

Parts Used: roots;

Food Use(s):
None recorded.

Medicinal Use(s):
MKW said the "ones that smell like licorice, they're used as a medicine. The old people dig these -- they can tell by smelling the roots and leaves. They're really strong". According to JC, this is "one of the main roots. It's a powerful medicine. If you're really sick, headache, tired -- take a bit and smell it". The elders said the roots were boiled and taken for chest and head colds (MKW, JSC, MPE, EYH, MLB, MM, AD) as well as stomach aches (MLB). JSC said her mother-in-law used the root to reduce a baby's fever. She boiled the root, soaked a cloth in the water and put it on the infant's chest, neck and feet. According to JSC, the baby's temperature went down right away. The Piikáni elders said it was also used for "bones" or arthritis (JC, MPE, EYH). The root was ground, made into a paste and applied to the sore area (JC) or was used in a steam? (MPE). MPE and EYH said "it is a really good root. Boil it and drink it. It's good for your heart". According to McClintock (1910:528), "A pleasant drink was made with a small piece of the western sweet cicely root, a little more of sixocasim (Indian Horehound) to three cups of water. It was taken hot for colds or tickling in the throat." Hellson and Gadd (1974) record similar uses and note that women used the root as a feminine deodorant (1974:124).

Spiritual Use(s):
None recorded.

Other Use(s):

JC said this root "is good for horses too". The root is ground into a powder and rubbed on the nose of a tired horse to make him "fresh" again (JSC) or to enable him to run for a long time without getting tired (MPE, EYH). JC has treated horses with distemper with this root. Hellson and Gadd (1974:115) record that pieces of the root were kept in clothing as deodorant. An infusion of the root was also used to sweeten diapers (1974:124).

Collecting:

Western sweet cicely is easily identified by the strong licorice smell of its leaves and roots, and this is how the Piikáni elders identified the plant (MPE, EYH, MKW). According to MKW, anyone can collect this root as long as they know where it grows in the mountains. JC said he digs the root in the mountains, as well. The roots were usually collected in the fall (MPE), although JSC thought they were gathered in the spring. MPE said roots collected in fall. JC digs these roots in the mountains.

Processing:

The roots were cleaned, dried and stored and then ground into pieces as required. According to MLB, they roots have to be "bone dry -- as hard as a rock, and then you pound them on a piece of canvas. All roots are done this way. Not into a powder, but fine chunks".

Storage:

The dried roots were stored in a variety of bags.

Artifacts:

A digging stick was used to collect these roots. A grinding stone was necessary to prepare the roots for use.

Comments:

The strong licorice smell of the roots is the chief characteristic by which the Piikáni elders identify this plant (MKW, MPE, EYH). Further, it was observed that "the plant grows tall" (JC) and has "a big yellow flower" (JSC). Kuijt (1987: 639) notes that western sweet cicely "has a sweet licorice-like fragrance and was central in the ethnobotany of Plains Indians".

This is mentioned because there appears to be some confusion surrounding this plant in the literature. First, Johnston (1987:49) suggests that earlier ethnographers were referring to *Osmorhiza chilensis*. However, the roots of *O. chilensis* lack the strong licorice smell and it appears that Johnston has misidentified this plant.

In addition, the Piikani names for *Osmorhiza occidentalis*, *Angelica dawsonii* and *Actaea rubra* are very similar. In my experience, the Piikani elders used all three during discussions of *Osmorhiza occidentalis*. Although the implications of this are unclear at this point, it leads one to question the previous identifications In particular, the identification of *Angelica dawsonii* by Hellson and Gadd (1974) is suspect. The authors admit that "although we had little difficulty in obtaining information about the root, we have been unable to gather a specimen in the field; our only identification comes from herbarium material" (Hellson and Gadd 1974:47). The leaves, roots and flowers of *Angelica dawsonii and Osmorhiza*

occidentalis look remarkably similar. However, the roots and leaves of the former do not have a strong licorice smell. Therefore, if Hellson and Gadd used a pressed and scentless herbarium specimen, it is reasonable to suggest the elders may have mistaken this plant for *Osmorhiza occidentalis*. Hellson and Gadd are the only ethnographic sources to document the use of *Angelica dawsonii* by the Blackfoot and the uses they record are similar to those described by the Piikáni elders for *Osmorhiza occidentalis*. Obviously, further research is needed to clarify the identity of these three species and to determine the relationships between them. See also notes for *Actaea rubra* and *Angelica dawsonii*.

References:
McClintock 1910; Hellson and Gadd 1974;

Oxytropis ?sericea Nutt. (Early Yellow Loco-weed) Leguminosae (Pea Family)

Blackfoot: éísaittsikuxtakkyui (éísaittsikuxtakkyuistsi) (Taylor 1989);
a-sat-chiot-ake (McClintock 1910:526);

Meaning: *lit.* 'rattle --' (Taylor 1989);
lit. 'rattle weed' (McClintock 1910:526);

Refers to: The ripe seed pods rattle in the wind, or if shaken. This may be why the plant is known as "rattle weed".

Ecoregion: mixed grass, fescue grass, aspen parkland;

Habitat: grassy slopes, open woods, gravelly banks; gravel bottoms (McClintock 1910:526);

Parts Used: ?roots, leaves;

Food Use(s):
According to the Piikáni elders, this plant was not used as a food. This may be due to the fact that it contains alkaloids and other toxic compounds, as do other species of locoweed, which make it poisonous to humans and animals (Turner and Szczawinski 1991:122).

Medicinal Use(s):
McClintock (1910:526) notes that the Blackfeet "chewed it for sore throats". According to Hellson and Gadd (1974:77, 81), an infusion of the leaves was applied to sores and used to treat ear troubles.

Spiritual Use(s):
None recorded.

Other Use(s):
BSWAG identified this as "?sikotsiyiki" and said "it grows a lot when it rains, it means wet weather". Children made headdresses of the stems and played games with the rattling seed pods (Hellson and Gadd 1974:115).

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
McClintock (1910:526) identifies "Purple Loco Weed" as "*Aragallus lagopus*" and notes that some of the flowers are purple, while others are blue, yellow and white. However, the correct scientific designation for this plant is *Oxytropis lagopus* Nutt. Hellson and Gadd (1974) refer specifically to *O. sericea* in their volume. *O. sericea* is quite common in the study area and was shown to the Piikáni elders during the field research.

References:
McClintock 1910; Hellson and Gadd 1974; Johnston 1987;

?*Penstemon nitidus* Dougl. ex Benth. (Smooth Blue Beard-tongue)
Scrophulariaceae (Figwort Family)

Blackfoot: asstssípokoy (Taylor 1989);
at-si-po-koa (McClintock 1910:527);

Meaning: *lit.* 'bitter taste' (JSC);
lit. 'burning taste' (Taylor 1989);
lit. 'fire taste' (McClintock 1910:527);

Refers to: According to McClintock (1910:527) the name derives from the biting flavor of the plant.

Ecoregion: mixed grass, fescue grass;

Habitat: prairies;

Parts Used: ?roots, ?leaves;

Food Use(s):
None recorded.

Medicinal Use(s):
The elders were not familiar with this plant. McClintock (1910:527) notes that it was boiled in water and taken internally for cramps and stomach pains. It was also used to stop vomiting.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
BSWAG, called this "?a'sstsimatsoki" or "matches flower", and said it "was just a flower" and not utilized. JSC was able to translate the name, but did not recognize the plant. MPE said they are "wild flowers" and was not sure if they were used. MKW thought it was a medicine, but did not know for certain.

McClintock (1910:527) identifies this plant as *Pentstemon acuminatus* (Sharp Leaved Beard Tongue). Taylor (1989) provides the name for *Penstemon* spp. only. The Piikáni elders were shown *P. nitidus*.

References:
McClintock 1910;

Perideridia gairdneri (Hook. & Arn.) (Wild Caraway) Umbelliferae (Carrot Family)

Blackfoot: niistsikápa's (MPE, MKW, JSC, MLB, EYH);
nits-ik-opa (McClintock 1910:525)

Meaning: wild carrot (JSC, MPE, MKW, MLB, MM, AD, EYH);
lit. 'double root' (SLP; McClintock 1910:525);

Refers to: The name "double root" recognizes the fact that *P. gairdneri* has two or more spindle-shaped, tuberous roots. The white, fleshy roots are sweet tasting, and reminiscent of carrots, which is probably why they are commonly referred to as "wild carrots".

Ecoregion: mixed grass, fescue grass, aspen parkland;

Habitat: woods and meadows;

Parts Used: roots;

Food Use(s):

The sweet-tasting roots of the "wild carrot" were eaten fresh (MPE, MKW, JSC, MLB, EYH). Several elders (MPE, MLB) remember eating them as snacks while playing in the fields. The fresh roots are also added to soups and stews (MKW, JSC, MPE, EYH). JSC said the wild carrots are mixed with wild onion (*Allium* spp.) and wild turnip (*Psoralea esculenta*) in stew. MPE said the roots are sometimes dried. According to McClintock (1910:525), the roots were eaten raw or boiled as a vegetable and used to flavor stews.

Medicinal Use(s):

The fresh roots were chewed to relieve sore throats (MKW). A similar use is noted by McClintock (1910:525) who adds that the root was also placed on swellings to draw out inflammation. Hellson and Gadd (1974:67) report that the root acted as a diuretic and a mild laxative when eaten in sufficient quantities. A smudge of the root was inhaled to relieve coughs (1974:72) and an infusion was applied to sores and wounds (1974:77). Hellson and Gadd (1974:83) said a diviner would chew the root and spray it on a patient.

Spiritual Use(s):

None recorded.

Other Use(s):

According to Hellson and Gadd (1974:116), buffalo runners chewed the roots to extend their endurance. In addition, the plant was rubbed on arrows to shine and waterproof them (ibid.).

Collecting:

The wild carrots "grow on the hills where there are bushes" and were collected at the same time as the wild turnip "or else they become hard" (MPE). This suggests the roots were harvested in early summer (June or July). MKW said they grow in the meadows and have white flowers.

Processing:

After the roots are collected, they are washed and/or peeled (MKW, MPE, EYH). MKW said her mother used to thread the roots and hang them to dry. Several other elders (MLB, MM, AD) also said wild carrots should be dried. These could be added to soups and stews, or used as medicine, as required.

Storage:

The dried roots were stored for future use. According to MKW, the roots were

commonly threaded onto string to dry and store.

Artifacts:

According to MPE and EYH, the "root doesn't go right into the ground, so they're easy to pick". This refers to the fact that the roots can be pulled up quite easily from the moist ground of the coulees. A digging stick is not necessary to harvest these roots, but it would help.

Comments:

Nutritionally, the roots are an excellent source of food energy, vitamins and minerals. Kuhnlein and Turner (1991:358-359) report that 100 g of the dried roots contains: 350 kcal, 79.3 g carbohydrates, 6.2 g of protein, 3.0 mg Vitamin C, 74 mg calcium, 80.3 mg magnesium and 7.5 mg of iron.

References:

McClintock 1910; Hellson and Gadd 1974; Johnston 1987;

Physaria didymocarpa (Hook.) A. Gray (Double Bladder-pod)
Cruciferae (Mustard Family)

Blackfoot: éiksikooki (JSC, MKW, MLB, AD);
éíkànaskiinaoxtooki or paaxkstóóki (Taylor 1989);
pa-kito-ki (McClintock 1910:526);

Meaning: *lit.* 'white root' (JSC, MKW, MLB, AD);
lit. 'something white or grows white' (JSC);
lit. 'white leaves' (JC); horseradish root (AD);
lit. 'gray leaves' (McClintock 1910:526);
lit. 'mouse ears or deaf ears' (Taylor 1989);

Refers to: The long white roots of this plant produce a penetrating heat and taste similar to horseradish. These traits are reflected in the various names.

Ecoregion: mixed grass, fescue grass;

Habitat: dry slopes and plains;

Parts Used: roots, leaves;

Food Use(s):

The Piikáni said this plant was not used as a food.

Medicinal Use(s):

The root is highly valued by the Piikáni for its medicinal properties. When moistened, the root produces a penetrating heat. The Piikáni use the root for colds, sore throats, the flu, pneumonia and chest ailments (MKW, AD, MLB, JC). The root can either be chewed or ground, boiled and taken as a medicinal tea. According

to JC, "they work like aspirins, they relieve you right away". Similar information is recorded by McClintock (1910:526) who notes the plant was chewed for sore throats, cramps and stomach trouble.

The Piikáni also use this root as a liniment to reduce swelling, muscular stiffness, and aches and pains (AD, MPE, EYH, JC). JC said "you can boil them and drink them, or boil them and rub them on -- they penetrate like white liniment -- and just about the taste of them too!" AD said to chew them "really fine" and spread this onto the swollen part to take the swelling down. The chewed root can also be placed on the outside of the cheek to relieve a toothache (AD). MPE and EYH said the root is used in sweats and is good for sore joints. McClintock (1910:526) states the root is placed in water with hot stones and used to reduce swelling.

According to Hellson and Gadd (1974:61), women drank small amounts of the boiled mixture to abort.

Spiritual Use(s):

None recorded.

Other Use(s):

Hellson and Gadd (1974:89) note that the root was applied as a liniment to the shoulders of work and wagon horses.

Collecting:

According to JC, the roots are best collected in July and August. After this, they tend to dry out and break off. However, other elders said that the root could be collected well into the fall (MPE, MKW, MLB, AD). Several of the women in Browning collect along the Two Medicine River where they grow on "cliffs". MKW said years ago, she used to pick them "by the sackful" around Babb, Montana and give them "to an old man who took them to the river and washed them and then put them in the sun to dry".

Processing:

Once the roots were collected, they were washed and dried. JSC said she peels her roots prior to drying, but others (MKW, AD) say this isn't necessary as long as they are washed well. The roots are then chewed, pounded or boiled when ready for use.

Storage:

The dried roots are stored in "little sacks" (MKW). MKW says the old ladies make little sacks for plants because you "can smell them and tell what's in them and know what's used for".

Artifacts:

A digging stick would facilitate collection of these roots, although they could be collected by hand. A grinding stone would be required to pound the root into a powder for use.

Comments:

The Piikáni elders are very familiar with this plant and many swear by it as a treatment for a variety of ailments. The name "éiksikooki" is similar to the name

"eksisoke" or "sharp vine" given by McClintock (1910:525) for "Bear Grass - *Yucca glauca*" (McClintock is somewhat confused here. Yucca glauca refers to Soapweed, while *Xerophyllum tenax* refers to Bear Grass). It is interesting to note that the Piikáni elders often use the word "sharp" to identify something bitter, or biting. This seems to fit with the properties of *Physaria didymocarpa.*

References:

McClintock 1910, 1923; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Pinus contorta Loudon (Lodgepole Pine) Pinaceae (Pine Family)

Blackfoot: apahtók (apahtókiksi);

Meaning: coniferous tree (Frantz and Russell 1989);

Refers to: None recorded.

Ecoregion: montane, subalpine;

Habitat: most common tree species at lower and middle altitudes on the eastern slopes of the Rocky Mountains in Alberta;

Parts Used: pitch, ?cambium, wood;

Food Use(s):

According to several elders (MPE, EYH), the pitch of the pine tree was chewed as a gum. It is called "?amokska".

Medicinal Use(s):

JC said a certain type of "gum from pine -- the round type" was chewed for colds. He called it "?awaksiis" which means gum or something that is chewed. The pitch was also boiled and taken as a treatment for tubercular coughs (Hellson and Gadd 1974:73).

Spiritual Use(s):

None recorded.

Other Use(s):

The wood of the lodgepole pine was utilized for tipi poles, travois poles, backrests, bowls (from pine burls), story sticks, wind chimes, and storage bag fasteners while the pitch was used to waterproof moccasins (Hellson and Gadd 1974:116-117). According to McClintock (1910:234), "the best poles are made of the slim and straight mountain pines, which the women cut and peel and season slowly, to keep them straight".

Collecting:

The pitch of the pine is best collected in the fall "when the sap is moving down" according to JC. In the summer, the sap is "too high in the tree". Once collected, the pitch was cleaned and dried (MPE, EYH).

Tipi poles were collected in spring and fall by the women (McClintock 1910, 1923; Wissler 1910:99; Ewers 1958:116). McClintock (1910:52-53) observes: "It was in early summer, the time when the camass is in bloom and they were engaged in cutting and peeling lodge poles. In those days the Blackfeet travelled so far in a year that their lodge poles were worn too short. Every spring they went into the mountains to cut new poles and to dig camass roots". However, McClintock (1923:73) also notes that in the fall, the Blackfeet camped near the forest at the head of Cutbank River so the women could cut new lodgepoles as "the trees there grew straight and tall".

Processing:

Women cut and processed the tipi poles by removing the branches and peeling the bark. The logs where then allowed to dry in the sun. Turner (1988b) notes that the bark is more easily peeled in early spring. Ewers (1958:116) states: "In the fall of the year women cut new tipi poles of lodgepole pine. After a woman had brought her poles into camp she made berry soup and invited young men who wished to help peel these poles to a feast. To remove the bark from a pole, a man secured a stick on the sharp end of his knife, grasped the stick with one hand and the knife handle with the other, and employed the knife as a draw shave."

Storage:

Not recorded.

Artifacts:

Axes would be required for chopping the trees, and knives needed to peel the bark or to collect the pitch.

Comments:

Early Blackfoot linguists record the name "manistami = lodge pole" (Uhlenbeck and van Gulik 1930) and "mun'stam = lodge pole" (Tims 1889) for *Pinus contorta*. According to Hellson and Gadd (1974:116), the Blackfoot identified five variations of conifer, including: "curly pine" (from the lichen growths on the branches of *Pinus contorta*); "mean pine" (also "sweet pine", *Abies lasiocarpa*); "tomato scent pine" (*Thuja* spp.), "red pine" (*Pseudotsuga menziesii?*) and "cedar pine" (*Juniperus* spp.?). This suggests that pine/conifer may be a folk category.

References:

Tims 1889; Grinnell 1892; McClintock 1910, 1923; Uhlenbeck and van Gulik 1930; Ewers 1958; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

?*Polygonum bistortoides* Pursh (Bistort) Polygonaceae (Buckwheat Family)

Blackfoot: ek-sik-a-pato-api (McClintock 1910:529);

Meaning: *lit.* 'looks back' (McClintock 1910:529);

Refers to: None recorded.

Ecoregion: montane;

Habitat: mountain meadows and stream banks;

Parts Used: roots;

Food Use(s):
The Piikáni elders were unfamiliar with this plant. According to McClintock (1910:529), the root was used in soups and stews.

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
BSWAG said the birds use the flower heads to make their nests soft. He called the plant "?sikatsokoy" which means "like feathers".

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
Members of the Knotweed Family, including *P. bistortoides*, *P. bistorta*, *P. viviparum*, have nut-like rootstocks and edible greens (Szczawinski and Turner 1980:143).

References:
McClintock 1910; Raczka and Bastien 1986; Johnston 1987;

?Polyporus spp. (Pore Fungus) Polyporaceae

Blackfoot: áápopixkaa'tsisi (Taylor 1989);
apo-pik-a-tis (McClintock 1910:527)

Meaning: *lit.* 'makes your hair gray' (McClintock 1910:527);
lit. 'makes hair gray' (Taylor 1989);
"horse hoof" or "pine fungus" (JC);

Refers to: According to McClintock (1910:527), the name refers to the use of the fungus as a purgative -- if too much is taken, it makes the hair turn gray. However, Frantz and Russell (1989) note that the name derives from the use of the fungus in whitening hides. JC's name "horse hoof" is descriptive of the shape of the fungus, which resembles the hoof of a horse.

Ecoregion: aspen parkland, montane;

Habitat: There are approximately 250 species in this genus and most grow on trees (Johnston 1987:15). JC said this is collected from "willows" and "pines".

Parts Used: entire fungus?

Food Use(s):
None recorded.

Medicinal Use(s):
JC said the smoke from "horse hoof" can be inhaled for headaches and McClintock (1910:527) reports that a small quantity (presumably boiled in water) was used as a purgative. An infusion of the fungus was also taken to stop diarrhea and to treat dysentery (Hellson and Gadd 1974:119). It was also used as styptic on wounds (Hellson and Gadd 1974:117).

Spiritual Use(s):
During ceremonies, JC rests his pipes on "horse hoof". This use is commonly described in the work of Wissler and Duvall.

Other Use(s):
According to JC, the fungus was also ground up and used as a perfume "in the early days". In addition, pieces were shaved off and used as tinder for starting fires - "it's just like paper" (JC). McClintock (1910:527) notes that it was also used for cleaning buckskin. He describes this technique (1910:230): "An old woman was patiently softening a hide, which was the last step in tanning. She pulled and worked it against a raw-hide rope, fastened at both ends to an upright pole. When the hide became sufficiently soft and pliable, she whitened it by rubbing with a piece of fungus".

Collecting:
No specific information was recorded regarding the collection of the pore fungus.

However, it would be available for harvesting throughout the year and could be easily removed with the use of a knife or axe.

Processing:
There is little processing required. Pieces are simply removed as required.

Storage:
The fungus is stored whole, possibly in buckskin bags.

Artifacts:
A knife or axe may have been used to remove the fungus from the trees.

Comments:
The Piikáni may recognize different types of the fungus based on their habitat (ie. "pine" versus "willow"). According to JC, "There's other ones stronger than that -- they're round and small, very strong."

References:
McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Populus balsamifera L. (Cottonwood or Balsam Poplar) Salicaceae (Willow Family)

Blackfoot: a'síísiksimm (a'síísiksimmiksi) (MPE, EYH, MKW);

Meaning: river trees or cottonwoods (MKW);
lit. 'spear-leaf trees' (McClintock 1910:386);

Refers to: The name 'spear-leaf trees' is descriptive of the leaf shape. MKW calls them "river trees" because this is where they grow.

Ecoregion: fescue grass, aspen parkland, montane;

Habitat: moist woods, riverbanks and alluvial plains;

Parts Used: cambium, leaves, wood;

Food Use(s):
The Piikáni elders remember eating the inner bark of the "cottonwoods". MKW and AD explained "you just peel them skins -- get a knife and scrape them. They're just like juice and you eat them".

Medicinal Use(s):
One elder (AD) described a medicine made from the ?roots of the "cotton trees". She said "dig way under old cotton trees, on the bottom. We get the skins, they're hard to get. Cottonwood roots -- they're used for all kinds of things". Hellson and

Gadd (1974:67) note that an infusion of the bark of the "river cottonwoods" was taken for liver problems.

Spiritual Use(s):

The "cottonwood" is used as the centre pole for the Dancing Lodge of the Sundance The collecting and raising of the centre pole is an integral component of the Sundance ceremony (readers are referred to Wissler (1918:252) or McClintock (1910:300-301) for a detailed discussion). The juice from the inner bark is taken by the "old people when they have a medicine lodge" (MKW, AD), that is, the Sundance participants who fast for four days. "They take them with them, they have little bowls, and they take that stuff and they get a whole bunch. That's what they give the old ladies. They drink them before the sun comes up and when the sun goes down. They give them drinks so they don't get sick. They don't eat anything and then they give them that juice."

Cottonwoods were also used for burials. According to McClintock (1910:14), "The dead were placed upon scaffolds built in trees, upon the summit of a high hill, or laid in a lodge pitched in a thicket". Wissler (1911:31) notes: "In former times, tree burial was common but now rare, only one example having come under our observation".

Other Use(s):

On the prairies, cottonwoods were also an important source of shelter and firewood. Fidler (cited in Johnston 1987:28) noted that "It is generally the upper branches of the Poplar that are dry and fit for firewood, which they [the women] procure by tying a hooked stick to along pole and pull down the single detached branches on by one". In addition, Thompson (cited in Johnston 1987:28) said "The Poplar and aspin [sic] make the best of fire wood for a tent, the wood does not sparkle and the smoke is mild. The smoke of no other wood should be used for drying meat".

In addition, the buds and leaves were used as a perfume (McClintock 1910:530). Burls were removed and carved out and used as bowls. The inner bark was also used to feed horses (McClintock 1910:70-71).

Collecting:

The inner bark and juice is best collected in spring and early summer (MKW, AD). According to Kuhnlein and Turner (1991:260), the cambium and associated secondary phloem tissues are "thick, sweet and juicy" at this time as the sap is running.

Processing:

The inner bark was usually eaten fresh and required little processing, other than removing it from the tree. Other Indigenous peoples harvested the inner bark by removing the outer bark and scraping off the soft inner tissues in long strips (Kuhnlein and Turner 1991:260).

Storage:

None required.

Artifacts:

Knives and axes would be required to harvest the inner bark and to collect the centre poles.

Comments:

Cottonwoods contain salicylate precursors which are related to aspirin and share its properties as an anti-inflammatory, antipyretic and analgesic (Kowalchick and Hylton 1987:418). The species with very resinous buds are usually most effective medicinally.

The term "cottonwood" is applied by the Piikáni to various species of this genus (with the exception of *P. tremuloides*). The Piikáni recognize several different varieties of "cottonwoods", but claim they have the same name. For example, MPE and EYH say some have very large leaves. MKW calls the "big high ones with big leaves" the "river trees" because they "grow anywhere along the rivers". She contrasts these with the "mountain trees" (*P. tremuloides*) which "grows in the mountains and has round leaves".

Brings-down-the-Sun, a Piikáni chief, explained to McClintock (1910:386) ". . . the big leaf trees (cottonwoods). The long leaved trees are the spear-leaf trees (Balsam-Poplar). We also have round-leaf trees (Quaking Asps) and brush-sticks (Willows). We always speak of large trees as 'The Old Time Trees' and the small ones as 'Young People's Trees'".

Several locations in traditional Piikáni territory were named after the cottonwoods. High River and the Highwood River, in Alberta, were known as "spitsíi" or "tall trees" because the trees along the river could be seen from distance (Johnston 1987:28). The area around Augusta, Montana is also known as "spitsíi", while the Pincher Creek area is called " aamsskaa - spitsíi" or "south tall trees" (ibid.).

A variety of poplar species inhabit the floodplains along the major river systems in southwestern Alberta. These include *Populus angustifolia* (Narrow-leaf cottonwood), *P. balsamifera* (Balsam poplar), *P. trichocarpa* (Black cottonwood), *P. sargentii* (Plains cottonwood), *P. tremuloides* (Trembling aspen) and *P. acuminata* (Lanceleaf cottonwood) (Johnston 1987:30). There is significant hybridization between these species.

References:

McClintock 1910, 1923; Wissler 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Populus tremuloides Michx. (Aspen) — Salicaceae (Willow Family)

Blackfoot: siikokíína (MPE, EYH; Frantz and Russell 1989);
?soyopok oktaksi (MKW)
àa'kíítoy (àa'kíítoyiistsi) (Taylor 1989);

Meaning: *lit.* 'round leaves' (MKW);
lit. 'round-leaf-trees' (McClintock 1910:386);

Refers to: The Piikáni name refers to the round shape of the leaves in contrast to those of *P. balsamifera*. MKW also calls these "mountain trees" because "that's the only place they grow".

Ecoregion: fescue grassland, aspen parkland, montane;

Habitat: forest and parkland;

Parts Used: cambium, bark, wood;

Food Use(s):

The Piikáni elders did not identify a food use for the aspen and suggested that it was only the "cottonwood" bark which was eaten. However, Hellson and Gadd (1974:104) note that the cambium of the aspen was eaten, especially by children who enjoyed it as a snack. In addition, a person observing a liquid taboo was permitted to suck a piece of the bark.

Medicinal Use(s):

One elder used to make an eyewash by boiling the ?bark (?buds) of the aspen (MPE, EYH). In addition, the shavings of the bark were brewed and given to women during childbirth (Hellson and Gadd 1974:61). An infusion of the bark was also taken for heartburn and general discomfort (ibid.:83).

Spiritual Use(s):

According to Hellson and Gadd (1974:29), aspen was originally used for the centrepoles of the Okan (Holy Lodge of the Sundance) and Motokiks Society lodges, but these were gradually replaced by "any kind of river cottonwood". In addition, members of the Motokiks wore headwreaths of aspen.

Other Use(s):

When camping, MPE and EYH tie the branches together to make a broom. The branches also make excellent firewood when dry (MKW). The bark was used as winter fodder for horses (Hellson and Gadd 1974:89).

Collecting:

As with *P. balsamifera*, the inner bark of the aspen is best collected in the spring and summer, when the cambium and associated secondary phloem tissues are "thick, sweet and juicy"(Kuhnlein and Turner 1991:260).

The selection of the aspen centrepole and branches for the Okan and Motokiks occur during July. Hellson and Gadd (1974:29-30) describe this ceremony in some detail.

Processing:

The inner bark was usually eaten fresh and required little processing, other than removing it from the tree. Other Indigenous peoples harvested the inner bark by removing the outer bark and scraping off the softer inner tissues in long strips

(Kuhnlein and Turner 1991:260).

Storage:
None required.

Artifacts:
Axes and knives would be required to harvest the aspen for centrepoles or to peel the bark for eating.

Comments:
P. tremuloides contains salicylate precursors which are related to aspirin and share its properties as an anti-inflammatory, antipyretic and analgesic (Kowalchick and Hylton 1987:418). See also comments for *P. balsamifera*.

References:
McClintock 1910; Wissler 1910; Ewers 1955; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Potentilla anserina L. (Silverweed) Rosaceae (Rose Family)

Blackfoot: kitakopsi (BSWAG);
kiitakápssimma (kiitakápssimmistsi) (Taylor 1989);
kita-kop-sim or pachsi (McClintock 1910:527);

Meaning: *lit.* 'garter root' (BSWAG);
lit. 'garter root or dry root' (McClintock 1910:527);

Refers to: The name may refer to the shape of the root, which is long and thin.

Ecoregion: mixed grass, fescue grass, aspen parkland

Habitat: lake shores and river flats;

Parts Used: roots;

Food Use(s):
The root of "kitakopsi" is peeled, boiled and eaten like a "turnip" according to BSWAG.

Medicinal Use(s):
The elders did not identify a medicinal use for the plant. However, McClintock (1910:527) notes the root was used for diarrhea. Hellson and Gadd (1974:68) record that an emetic for stomach troubles was made by soaking the plant in water and drinking the solution. The chewed root was also applied to sores and scrapes (1974:78).

Spiritual Use(s):

None recorded.

Other Use(s):

The runners of silverweed were apparently used as cord to fix leggings in place or to tie up blankets (Hellson and Gadd 1974:119).

Collecting:

Although there is no information recorded for the Piikáni, the roots of a related species, Pacific silverweed (*P. anserina* spp. *pacifica*), were generally collected in the fall by Indigenous peoples of the Northwest Coast, but could be harvested throughout the year (Kuhnlein and Turner 1991:241). Digging sticks were commonly used to harvest these roots.

Processing:

The roots of silverweed were peeled and boiled (BSWAG). In the interior of British Columbia, the roots were "cooked in pits or steamed in baskets" (Kuhnlein and Turner 1991:242).

Storage:

It appears that the roots were eaten fresh, although they may have been dried, before or after cooking, and stored. This was commonly done in other parts of northwestern North America (Kuhnlein and Turner 1991:242).

Artifacts:

A digging stick was probably used to harvest the roots. If the Piikáni pit-cooked silverweed, then evidence of earth ovens, including fire broken rock and charcoal staining, should be visible.

Comments:

The steamed roots of Pacific silverweed are a good source of food energy and other essential nutrients. In fact, 100 grams contains: 132 kcal food energy, 3.1 g of protein, 0.6 g of fat, 29.5 g of carbohydrates, 37 mg of calcium, 109 mg of phosphorus, 65 mg of sodium, 60.0 mg of magnesium and 3.5 mg of iron (Kuhnlein and Turner 1991:360-361).

Silverweed also contains tormentil, which is a powerful astringent and has significant amounts of tannin (Kowalchick and Hylton 1987:421).

References:

McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Prunus virginiana L. (Choke Cherry) Rosaceae (Rose Family)

Blackfoot: pákki'p (pákki'pistsi) (JSC, MPE, EYH);
pukkeep (McClintock 1910:529);
pákkyoono (pákkyóónoosa) (MPE, EYH) (Taylor 1989);

Meaning: lit. 'smashed -- '(Taylor 1989);

Refers to: The reference to "smashed" in the name for choke cherries may reflect the fact that the berries were crushed during processing.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: woods and clearings;

Parts Used: berries, bark, wood;

Food Use(s):

Choke cherries were an important food source to the Piikáni. The berries were usually crushed "because of the seeds", shaped into small cakes and dried (JSC, MPE, MLB, MM, AD). In the winter, these dried cakes were soaked in water and then eaten (MPE, JSC). MPE said some people also used choke cherries for pemmican and soups. McClintock (1910:529) states that choke cherries were eaten fresh, added to soups, or pounded up and mixed with meat. According to Wissler (1910:21), "while this dried mess was sometimes eaten alone, it was more often used in soups". He adds that it was also used in making pemmican.

Medicinal Use(s):

The bark of the choke cherry was peeled, dried and used medicinally for a variety of purposes. According to the elders, the bark of the larger branches was scraped, boiled and used to treat diarrhea (MPE, EHY, MKW, AD). MPE and EYH prepare a stomach medicine from the bark and the dried flowers of yarrow (*Achillea millefolium*). This is also good for colds. The bark of the choke cherry can be mixed with valeriana and taken for fevers (MPE, EYH). McClintock (1910:529) notes that the bark was boiled and used internally in combination with the roots of western sweet cicely, valeriana and Indian horehound.

Spiritual Use(s):

None recorded.

Other Use(s):

The wood of the choke cherry was used in the construction of a variety of objects. The digging stick was made of choke cherry wood (Hellson and Gadd 1974:94). In addition, the straight branches were used for backrests, incense tongs and roasting skewers (Hellson and Gadd 1974). On occasion, choke cherry wood was used for making bows although "this had not strength nor spring enough to be of much service" (Grinnell 1892:199).

Collecting:

MPE and EYH said it is best to pick choke cherries in August. In fact, the month of August is known as "pákkipistsi otsítai'tssp" or "when choke cherries are ripe" (Frantz and Russell 1989). However, McClintock (1910:529) states that "the Blackfeet say it does not ripen till later than the Sarvis Berry, generally September or even October". As discussed in Chapter 6, plant resources on the plains tend to become available earlier than those in the foothills and mountains. Thus, McClintock's comments may reflect differences in the geographic distribution of the plant.

Processing:

Ripe choke cherries were "pounded on a stone until the fruit with its pits was reduced to a thick paste" (Wissler 1910:21). As JSC explained, "you have to crush choke cherries to get everything. You pound them really fine with a flat rock and then a smaller rock. Dry them and make little cakes and put them away for winter. When you want to use them, put them in a pot with water and soak them. Then drain the water and then mix them with grease, or whatever, and fry them up." However, not many people do this anymore (MM, MLB, AD). Today, JSC uses a food processor to grind the choke cherries. Hellson and Gadd (1974:104) also note that fresh, whole choke cherries were greased and dried in the sun.

Storage:

The crushed choke cherries were shaped into small cakes and dried for storage (MPE, JSC, MM, MLB, AD). Similarly, Wissler (1910:21) notes that the choke cherry paste was "dried and packed away in bags". The whole, dried berries were stored in fawn-skin bags (Hellson and Gadd 1974:104).

Artifacts:

Grinding stones or mauls were used to crush the choke cherries. A description of the stone maul is provided by Wissler (1910:21) who observes: "For pounding the cherries, a hammer was used. These hammers were of stone, usually hafted to wooden handles by shrunken rawhide . . . The head is of stone, egg-shaped, and has a transverse groove around the middle. The handle is of wood, apparently double, passing around the head in the groove. Over the whole is a firm covering of rawhide. The entire head, except the surface of contact, is covered. At the end of the handle is a small loop for a cord." In addition, large, flat rocks would be required as the pounding surface.

Comments:

It is interesting to note that choke cherry pits contain cyanide-producing glycosides which can cause vomiting and death if eaten in sufficient quantities. However, "cooking and drying seems to dispel most of the glycosides and hence, the seed kernels in dried, mashed choke cherries are apparently not a problem" (Kuhnlein and Turner 1991:246).

References:

Grinnell 1892; Wissler 1910; McClintock 1910, 1923; Ewers 1958; Hellson and Gadd 1974; Johnston 1987; Hungry Wolf 1980;

Psoralea esculenta Pursh (Indian Bread-root; Prairie Turnip) Leguminosae (Pea Family)

Blackfoot: ma's (má'siksi) (JSC, MPE, EYH, BSWAG);

Meaning: wild turnip (JSC, MPE, EYH, MKW);
lit. 'a type of edible bulbous root' (Frantz and Russell 1989);

Refers to: Although the Piikáni commonly refer to this as the "wild turnip", this name has been borrowed from English. A more appropriate translation is offered by Frantz and Russell (1989) in reference to the plant's edible tuber-like root.

Ecoregion: mixed grass, fescue grass;

Habitat: prairies and dry banks;

Parts Used: roots;

Food Use(s):
The old people used the "wild turnip" as food (JSC). The roots "taste good" when peeled and boiled (MPE, EYH, BSWAG). JSC said her grandmother used to put "ma's" in stew with wild onions (*Allium* spp.) and wild carrots (*Perideridia gairdneri*). Occasionally, it was added to berry soups (MPE). According to McClintock (1910:530), the prairie turnip was prepared for eating by boiling or roasting. Wissler (1910:24) states that the prairie turnip was "baked in hot ashes".

Medicinal Use(s):
The prairie turnip was also used for a variety of medicinal purposes (JSC). BSWAG said it was "good medicine for the heart". According to Hellson and Gadd (1974), the dried root was brewed for sore throats, chest trouble and gastroenteritis. In addition, the root was chewed and applied to sprains and fractures and was used to assist in removing matter from the eye.

Spiritual Use(s):
The prairie turnip has a special place in Piikáni mythology and in the Sundance ceremony (BSWAG, JSC, MPE, EYH). The elders (JSC, MPE, EYH) said that the "wild turnip" is the same as the "holy turnip" in the story of The Woman who Married a Star, only the "holy turnip" was much bigger. The following story is compiled from the accounts of the Piikáni elders (JSC, MPE, EYH) and information in (Wissler 1908; 1918) and McClintock (1910):

> Early one morning, two young sisters were sleeping outside their tipi. One of the girls, Feather Woman, looked up to the sky and saw a bright star -- the Morning Star. It was very handsome and she wished that it were a man so that she might marry him. Morning Star, overhearing her request, came down to earth and took Feather Woman back up to the sky to live with his Father, the Sun, and his

> mother, the Moon. The Moon gave Feather Woman a digging stick and told her she could dig any of the roots in the sky, with one exception -- a large turnip, which was considered sacred.
>
> Feather Woman went about the sky country digging roots, carefully avoiding the large turnip. However, one day her curiosity got the better of her and she decided to dig up the turnip. After a struggle, she managed to pull the turnip out of the ground, and when she did, it left a large hole in the sky. Feather Woman peered through the hole and saw her people camped below. This made her very homesick and she began to cry.
>
> When Morning Star discovered that Feather Woman had dug up the turnip, he told her she would have to return to her people. So, they wrapped her in buffalo robes and lowered her back to earth, along with her sacred digging stick and a turnip. The Moon taught Feather Woman the songs to accompany the digging stick and the sacred turnip in the Sundance.

Today, the "sacred turnip" is an integral component of the Sundance ceremony (JSC, MPE, EYH). The Sundance is the most important ceremony in Piikáni culture. It is a ceremony of renewal and thanksgiving, held annually in mid-July. The Sundance is sponsored by a woman who makes a vow to the Sun to perform the Sundance ritual in return for an answer to her prayers. The Holy Woman then becomes the central figure of the Sundance, and she and her partner conduct a four day ceremony known as the "Naatoas Ritual". The word "naatoas" is important to this discussion. It is really two words: "naato = holy" + "ma's = turnip". Thus, the word "naatoas" means "holy turnip". The Naatoas ritual is one of the key religious elements of the Sundance. During the ceremony, the Holy couple open the Naatoas bundle which contains a number of sacred items; each has an associated song and prayer. Of interest is the sacred digging stick which is tied to the outside of the bundle. This represents the one given by Feather Woman (Wissler 1918:241). According to BSWAG, a piece of turnip is actually tied to this sacred digging stick during the ceremony. Equally important is the Naatoas headdress. The headdress is made up of a number of symbolic articles, including plumes which are said to represent the leaves of the sacred turnip (Wissler 1918:241). The four day ceremony culminates with the Holy Woman putting on the Naatoas headdress and dancing with the sacred digging stick.

Other Use(s):

The prairie turnip was also used as a smudge (JSC). Hellson and Gadd (1974:119) note that pieces of the root were dried and attached to clothing and robes as ornamentation and "medicine"

Collecting:

The Piikani elders said the prairie turnip grows "on the hills and prairies" around Brocket. According to BSWAG, one should not touch the "neck" of the root before picking or else the root will be very long and hard to dig. MPE said as a child, she collect the wild turnips with mother and grandmother in the hills north of

the Oldman River. Usually, the wild turnip was harvested in June or July (JSC, BSWAG, MPE). MPE said the roots are not as good when the turnip is flowering (July, August) because the roots get really hard. Grinnell (1892:204) notes that "in the spring, a certain root called *mats* was eaten in great quantities".

Processing:

The fresh roots were peeled to remove the fibrous outer covering (BSWAG, JSC, MPE, EYH). Once peeled, the fresh roots were sliced and threaded onto a string to dry (JSC, EYH). Alternatively, they whole roots were braided together, much in same manner in which garlic is stored today (JSC). The roots were dried in the sun and stored for winter (BSWAG). Hellson and Gadd (1974:104) record similar information, and state that the prairie turnip was peeled, dried and stored for winter. Wissler (1910:22) suggests the dried prairie turnip was "pounded fine" and used to thicken soup.

Storage:

The dried turnips were stored on strings or as braids. Presumably, the ground flour would have been kept in a bag of some sort.

Artifacts:

A digging stick was used to harvest the large taproots of the "wild turnip" (MPE, JSC). A knife was used to slice the roots for storage. If Wissler's observations are correct, then a grinding stone would have been necessary to grind the hard, dry roots into a fine powder.

Several areas in southwestern Alberta appear to have been recognized by the Blackfoot for their abundant supplies of prairie turnip. The area around Cowley, Alberta is known as "many prairie turnips" and there is a "wild turnip hill" on the Kainaa Reserve to the south and east of the study area (Johnston 1987:41). Aaberg's (1983) study of the Pilgrim site in Montana suggests that extant communities of economically important plants may provide clues as to the nature of a site's prehistoric occupation. If this is so, then these areas warrant investigation.

Comments:

The former significance of the prairie turnip to the diet of the Piikáni is reflected in its role in oral traditions and the Sundance (Cowan 1991; Peacock 1991). The prairie turnip contains more protein than a potato and is a good source of Vitamin C (Johnston 1987:66; Kaye and Moodie 1978:334).

McClintock (1910:530) lists "mass" as "wild turnip or elk food" but misidentifies the species as *Lithospermum linearifolium*. See also notes for *Lithospermum ruderale*.

References:

Grinnell 1892; McClintock 1910, 1923; Wissler 1910; Ewers 1958; Hellson and Gadd 1974; Hungry Wolf 1980; Johnston 1987;

Ribes oxyacanthoides L. (Wild Gooseberry) Grossulariaceae (Currant Family)

Blackfoot: pakksíni'simaan (pakksíni'simaan'stsi) (JSC, MPE, EYH, MKW);

Meaning: gooseberries (JSC, MKW, MPE, EYH);
lit. 'real punctured berries'(Hellson and Gadd 1974:122);

Refers to: The name "punctured berries" may refer to the "wick" or the remains of the flower calyx which protrudes at the end of the ripe berries, making them look as though they have been punctured. However, Hellson and Gadd (1974:122) say the name derives from a children's game in which a child received a knuckle-punch on the thigh if he or she made a sour face while eating one of the berries.

Ecoregions: fescue grass, aspen parkland, montane, subalpine;

Habitat: moist woods;

Parts Used: berries;

Food Use(s):
The gooseberries were eaten fresh or used in berry soup (MKW, JSC, MPE, EYH). The berries were sometimes stored for the winter (MPE, EYH). The berries are said to be good tasting, although somewhat bitter.

Medicinal Use(s):
JC said gooseberries are medicine for the people, but did not identify a specific use. According to Hellson and Gadd (1974:68), the berries of *Ribes* spp. were eaten as a mild laxative.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
The gooseberries are picked "when they start coming out", in June or July (MPE, EYH, MKW, AD). Although the berries are green at this point, the Piikáni say if they are left to ripen and turn black on the bush, they get worms and are inedible (MKW, AD, MPE, EYH). MKW collects gooseberries alongside of the rivers and on the sides of the coulees and said there used to be lots of gooseberries around when they were picking "wild rhubarb" (*Heracleum lanatum*) (MKW, AD). JSC says gooseberries grow in the Porcupine Hills and around Brocket.

Processing:
MKW says her grandmother used to fill lard buckets with gooseberries. Then she punctured numerous small holes in the bucket and left the buckets in the sun in

order to ripen the berries and turn them red. When they ripened, she made berry soup from them. The berries may also have been dried in the sun and stored for winter use.

Storage:

Several elders (MPE, EYH) said the berries were stored for the winter. In contrast, Hellson and Gadd (1974:104) state the berries were not saved for winter use.

Artifacts:

The collection and processing of gooseberries required some form of container. In the past, these containers were probably made of rawhide.

Comments:

The berries of *Ribes aureum* (Golden Currant) were also eaten by the Piikáni. The golden berries "are almost the same as gooseberries"and were eaten fresh or made into soups, although nowadays, people often freeze them (MPE, EYH). These berries were also picked in June. MPE and EYH say these have the same name as gooseberries, "pakksiniisimaan". However, Taylor (1989) records the names "Sarcee berry = saxsíípakksiniisimaani" or "yellow berry = áótaxkowiinokoy". Hellson and Gadd (1974:119-122) also give the name "Sarsi puncture berry", explaining: "The Sarsi Indians were a constant source of humor to the Blackfoot. Because they were Beaver Indians who were in the midst of adopting a plains mode, they were often considered awkward and clumsy. . . This plant received the name 'Sarsi punctures-berry', because while the berries looked like the "real punctures-berry" (*Ribes oxyacanthoides*), they didn't taste as good and were considered 'fakes'".

Several elders (JC, JSC) described a plant with leaves that "taste like gooseberries -- you pick it and taste it, it just tastes like a gooseberry". According to JSC, the leaves are several inches long and the plant itself grows to knee height -- it is not a bush or a tree and does not have a flower. The plant was collected in springtime and eaten fresh. JSC said her grandmother used to gather the leaves in the Porcupine Hills. She made a soup by boiling them with sugar and flour. JSC's grandmother called them "apoksiinisimaaniipoko" which means "it tastes like gooseberries". JC said "there's another -- gooseberry leaves -- grow on the ground. They taste just the same and they come right from the roots right to the surface and they hang them to dry". This plant was not identified during the study.

References:

Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Rosa spp. (Rose) — Rosaceae (Rose Family)

Blackfoot: kiníí (kiníiksi) (MPE, EYH, MKW);
kine or apis-is-kitsa-wa (McClintock 1910:527);
kinyaapistsiskitsi (roseberry flower) (Taylor 1989);
kiniipisatsasski (roseberry plant) (Taylor 1989);

Meaning: wild tomato (MPE, EYH, MKW);
rose berries or tomato flower (McClintock 1910:527)

Refers to: According to Taylor (1989), the name "kiini" is unanalyzable.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: plains and prairies;

Parts Used: berries, root?;

Food Use(s):

According to the Piikáni elders (MKW, MPE, EYH), the berries of the rose were eaten raw or used for berry soup. The berries were also crushed and formed into berry cakes, which could be rehydrated as required (MPE). Occasionally, the rose berries were mixed with pemmican (MPE, EYH). However, "you don't eat the inside, just the tops" (MKW). This refers to the fact that only the outer rind of the berries is eaten. The seeds are covered in prickly hairs which cause irritation to the digestive system. The Piikáni avoided these difficulties by grinding the berries and removing the seeds (MPE). McClintock (1910:527) says the berries were eaten raw on occasion.

Medicinal Use(s):

The Piikáni elders did not identify any medicinal uses for the rose. However, McClintock (1910:527) states that a drink made from the root was given to children for diarrhea.

Spiritual Use(s):

None recorded.

Other Use(s):

None recorded.

Collecting:

MKW said the rose hips are really good and soft in the fall. She said the ones picked up in the mountains are larger. According to Turner and Szczawinski (1979:166), rose hips can be collected at any time during the fall and winter, but are best before the outer rind has been softened by frost.

Processing:

In the old days, the Piikáni used to "clean them real good and crush them and put them in cakes, like choke cherries" (MPE). They were also boiled.

Storage:

The rosehips could be stored in the form of berry cakes and rehydrated as required. Dried rose hips could also be stored in bags.

Artifacts:

Rawhide bags or containers were probably used to gather the rose hips. A grinding stone may have been used to grind the rose hips in order to remove the seeds.

Comments:

Rose hips are an excellent source of vitamin C. A study of a population of Alberta rose hips determined that 100 grams contained almost 1640 mg of vitamin C, "about 30 times the amount contained in the same amount of pure orange juice" (Turner and Szczawinski 1979:169). Rose hips are also rich in vitamins A, B, E, and K, as well as organic acids and pectin (the latter two constituents are mildly laxative and diuretic) (Kowalchick and Hylton 1987:423). Since the berries can be eaten even when frozen on the bushes, rose hips are an excellent emergency food.

References:

Grinnell 1892; Wissler 1910; McClintock 1910; Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

Rubus idaeus L. (Wild Red Raspberry) Rosaceae (Rose Family)

Blackfoot: otohtoksiin (otohtoksíínistsi) (MPE, MKW);

Meaning: *lit.* '-- berry' (Taylor 1989);

Refers to: None recorded.

Ecoregion: aspen parkland, montane;

Habitat: open woods;

Parts Used: berry;

Food Use(s):

Traditionally, raspberries were eaten fresh, although today many of the Piikáni preserve them in jams and jellies (MPE, MKW). MPE remembers picking them with her mother up in the Porcupine Hills.

Medicinal Use(s):

None recorded.

Spiritual Use(s):

None recorded.

Other Use(s):

None recorded.

Collecting:

The berries were collected in the summer, when they ripened. MPE collected them with her mother in the Porcupine Hills, while MKW says there are lots that grow "up Two Medicine".

Processing:
There is no evidence to determine whether or not the Piikáni traditionally dried or processed raspberries. Today the Piikáni women make raspberry jams and jellies.

Storage:
Although other Indigenous peoples in Canada stored dried raspberries (Kuhnlein and Turner 1991), there is no direct evidence that the Piikáni did so.

Artifacts:
Rawhide containers were probably used to collect the fresh berries.

Comments:
As Kuhnlein and Turner (1991:250) note, there are at least 25 species of the genus *Rubus* and most of these have edible berries. It is plausible to suggest the Piikáni may have utilized other members of this genus.

References:
Raczka and Bastien 1986; Johnston 1987;

Rubus parviflorus Nutt. (Thimbleberry) Rosaceae (Rose Family)

Blackfoot: kyaainii or paksiikoyinii (MKW);

Meaning: *lit.* 'bear berries' (MKW, AD);
lit. 'bear eats them' (Hellson and Gadd 1974:122);
red berry taste (Hellson and Gadd 1974:105);

Refers to: The name "bear berries" refers to the fact that the Piikáni considered these berries inedible and eaten only by bears.

Ecoregion: aspen parkland, montane, subalpine;

Habitat: moist open woods;

Parts Used: not utilized;

Food Use(s):
The Piikáni elders recognized this plant but said it was not eaten (except by bears). Although Hellson and Gadd (1974:105) claim that "the ripe fruit of this 'red berry taste' was eaten", this contradicts the information they present later which states "the berries were considered inedible and the plant named 'bear-eats-them' to denote the fact" (Hellson and Gadd 1974:122).

Medicinal Use(s):
The Piikáni elders did not identify a medicinal use for the plant. However, Hellson and Gadd (1974:74) say diviners used the berry in the treatment of chest disorders.

Spiritual Use(s):
None recorded.

Other Use(s):
The berries were applied to quivers to strengthen them and used as a dye for tanned hides. According to Hellson and Gadd (1974:122), the berries were spread across the hide, dried in the sun and then removed. The hide was then polished until it shone.

Collecting:
"Bear berries" were not collected, but grow in the mountains (MKW).

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
The berries of *Rubus parviflora* are edible and were eaten by numerous Indigenous peoples (see Kuhnlein and Turner 1991:252). It is not clear why the Piikáni believed them to be eaten only by bears.

It may be that Hellson and Gadd (1974:105) were referring to *R. idaeus* when they said the fruit of "red berry taste" was eaten.

References:
Hellson and Gadd 1974; Raczka and Bastien 1986;

Rumex spp. (Dock) — Polygonaceae (Buckwheat Family)

Blackfoot: matoa-koa-ksi (McClintock 1910);

Meaning: yellow root or swamp root (McClintock 1910);

Refers to: According to McClintock (1910:525), the plant grows in the swamp, hence the name "swamp root".

Ecoregion: mixed grass, fescue grass;

Habitat: swamps, marshes?

Parts Used: ?roots, ?seeds;

Food Use(s):
None recorded.

Medicinal Use(s):
The plant was boiled and used for a variety of ailments, including swellings (McClintock 1910:525). One Piikáni elder from Browning (MLB) brought a dried specimen of *Rumex* spp. which she called "coffee grind plant" (the dried seeds are dark brown in color and resemble coffee grinds). She boils the seeds and drinks the mixture to stop diarrhea. However, the other Piikáni elders (MPE, EYH, MKW, AD) did not recognize this plant.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
Based upon McClintock's description, it is logical to suggest this plant was collected in marshy or swampy areas. MLB collected "coffee grind plant" after it had dried on the stem, probably in late summer or early fall.

Processing:
Once collected, the ?root or seeds were boiled.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
Kowalchick and Hylton (1987:162) report that Yellow Dock is used medicinally as a laxative. The leaves and stems of other species of *Rumex* were an important source of green vegetables for various Native peoples across Canada (Kuhnlein and Turner 1991:222). McClintock (1910:525) identifies this as *Rumex salicifolius* or Willow-leaved Dock.

References:
McClintock 1910; Raczka and Bastien 1986; Johnston 1987;

Salix spp. (Willows) — Salicaceae (Willow Family)

Blackfoot: otsipiiyis (otsipííyiistsi) (MPE, EYH);
siiksiksi (MKW);
síiksiksi (Taylor 1989);

Meaning: willow (MPE, EYH, MKW);
lit. 'brush sticks' (McClintock 1910:386);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: river floodplains, moist meadows;

Parts Used: roots, cambium, branches;

Food Use(s):
The Piikáni consultants did not mention a food use. Apparently, the cambium was scraped and eaten, as were the galls of some river willows (Hellson and Gadd 1974:105).

Medicinal Use(s):
According to JC, you "cut willows and inside them, they're good for bleeding and for the blood too". Hellson and Gadd (1974:68, 74, 78, 82) record numerous uses for the root of the willow, which was crushed and brewed for "waist trouble", internal hemorrhage, throat constrictions and bloodshot or troublesome eyes. Kidney fat was also added to the infusion and applied to head sores.

Spiritual Use(s):
Willows are used in the construction of the sweatlodge (MKW, EYH, MPE). The ends of the branches are sharpened and pushed into the ground and then bent and intertwined to form a dome-shaped frame. This frame was then covered with skin robes or blankets. The door of the sweatlodge always faced east. Sweat lodges are associated with all of the ceremonial bundles, medicine pipes, many Blackfoot societies and the Holy Woman's sweat lodge in the Sundance (Hellson and Gadd 1974:19).

Other Use(s):
In the old days, the Piikáni cut the willows and tied them with sinew to make backrests for the tipis (MPE, EYH, MKW). Tipi pegs and pins were also made of willow. In addition, the bark of a "red willow with really thin leaves" (but not *Cornus stolonifera*) turns a reddish color when boiled and was used as a dye by the old people (MKW). MKW says this is called "amakkakotsiini -- you know, red". Ewers (1958) notes that the buds of the Pussy willow (*S. discolor*) were used as red dye. An infusion of the root was used as a hair tonic (Hellson and Gadd 1974:124).

Collecting:
MPE and EYH said willows could be collected by anyone, although it is plausible to suggest that there may have been some rituals involved with the gathering of willows for the various ceremonial sweat lodges. Hellson and Gadd (1974) do not provide further details on the collection of willow roots.

Processing:
The willow roots used for medicinal purposes were dried and ground. Willows used for backrests, etc. were cut and peeled. Those used in the frame of the

sweatlodge were sharpened at either end.

Storage:
None recorded.

Artifacts:
An axe or knife would be required to cut, peel and sharpen the willow branches. A digging stick may have been used to harvest the roots, but there is no direct evidence of this.

Comments:
The term "willow" seems to be applied by the Piikáni to a variety of shrubs, which may or may not be members of the willow family. For example, it is quite common for people to say "Oh, that's just a willow", when referring to a relatively non-distinct looking shrub. It is interesting to note that the berries of the red osier dogwood (*Cornus stolonifera*) are referred to as "the white berries of the red willow". Red osier dogwood is not a member of the willow family (at least not in western classification systems), but does resemble other shrubs in the Piikáni "willow" category in its appearance and habitat. It is also interesting to note that Frantz and Russell (1989) interpret "siiksiksi" as "branch".

The primary medicinal ingredient in willows is salicin, which is found in the bark. Once ingested, salicin is thought to convert to salicylic acid (Hart 1976:67), or aspirin -- a common remedy for fevers, headaches, inflammation of the joints, and general aches and pains. The salicin content of willow bark is genetically controlled (Johnston 1987:30) and therefore certain plants may be more potent than others. However, it is unclear whether or not the Piikáni selected certain willows on the basis of their salicin concentrations.

References:
Grinnell 1892; McClintock 1910, 1923; Ewers 1958; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

?*Selaginella densa* Rydb. (Club-moss) — Selaginellaceae (Selaginella)

Blackfoot: None recorded.

Meaning: *lit.* 'feels chest' (Hellson and Gadd 1974:105);

Refers to: The name of this plant derives from its doping effect, which made an individual feel unusually strong (Hellson and Gadd 1974:105).

Ecoregion: mixed grass, fescue grass;

Habitat: dry prairie, open sandhills, and other exposed places;

Parts Used: stems;

Food Use(s):
According to the Piikáni elders, this plant was not used as a food. However, Hellson and Gadd (1974:105) state it was dried and used to spice meat.

Medicinal Use(s):
The Piikáni elders did not believe this plant was used medicinally. According to Hellson and Gadd (1974:74), an infusion of the plant was given to people spitting blood. Others used a decoction of the plant to induce labor and to expel the afterbirth (1974:61).

Spiritual Use(s):
None recorded.

Other Use(s):
Hellson and Gadd (1974:90) record the use of the powdered root as a personal medicine which was given to racehorses to make them hyperactive.

Collecting:
None recorded.

Processing:
Based on the information presented in Hellson and Gadd (1974), the stem of the plant was probably dried and then boiled as a tea as required.

Storage:
None recorded.

Artifacts:
This plant could easily be harvested by hand without the use of tools.

Comments:
The Piikáni elders (MKW, AD, MPE, EYH) did not recognize this plant and the author has not been able to find any reference to it as a food or medicinal plant in other ethnobotanical studies. It is possible that Hellson and Gadd's (1974) study has misidentified this plant or confused it with another, such as yarrow (*Achillea millefolium*), whose feathery leaves resemble those of this ground moss. Yarrow, for example, is brewed and given to women during childbirth.

References:
Hellson and Gadd 1974; Johnston 1987;

Shepherdia argentea Nutt. (Thorny Buffalo-berry) Elaeagnaceae (Oleaster Family)

Blackfoot: mi'ksiníttsiim (mi'ksiníttsiimiksi) (MPE, MKW, EYH, JSC);

Meaning: *lit.* 'bull berries' (JSC, MKW, MPE, EYH);

Refers to: These berries were said to be a favorite of the buffalo, hence the name.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: open woods, shores and valleys;

Parts Used: berries;

Food Use(s):

Bull berries were eaten fresh, or dried and stored for the winter (MPE, EYH, MKW, JSC). The berries are quite tangy, but "they say that when it storms, they get sweet" (MKW). JSC mixed the dried berries with flour and sugar. Although the berries can be used for soup, MKW said one old lady made a berry soup with bull berries, but no one ate it because it was too sour! Today, many people make bull berry jam (MKW).

Medicinal Use(s):

The Piikáni elders did not identify any medicinal uses for bull berries. However, Hellson and Gadd (1974:68) note that the berries were eaten for "stomach trouble" and as a mild laxative.

Spiritual Use(s):

None recorded.

Other Use(s):

None recorded.

Collecting:

Bull berries are easily recognized by their silver leaves and sharp thorns (MPE, EYH). The Piikáni in Brocket collect berries along the Oldman River at "high bush", a traditional berry picking area (MPE). The berries were usually collected in the late fall (mid-September to October), after they sweeten from the frosts (MKW, AD, JSC, MPE, EYH). To collect the berries (and avoid the thorns), the women put canvas under the bushes and beat the branches with sticks, causing the ripe berries to drop to the canvas below (JSC, MLB, MM, AD, MPE, MKW). Grinnell (1892:203) states that the bull berries were "a favorite fruit, and were gathered in large quantities".

Processing:

Once collected, the berries to be stored were dried in the sun (MPE), presumably on the canvas. The berries could then be boiled for soup or mixed with flour and sugar as required.

Storage:

Traditionally, the dried berries would be stored in parfleches for winter use.

Artifacts:

Collecting bull berries involved the use of sticks, which were probably picked up from the surrounding area as required. In historic times, a piece of canvas was spread under the bush, although this would have been hide in pre-contact times. Berry bags may have been used to gather and transport the berries once they were

collected.

Comments:
Several elders (MPE, EYH) said lots of berries indicates a hard winter, while few berries suggests a much milder winter season.

References:
Grinnell 1892; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Shepherdia canadensis (L.) Nutt. (Canadian Buffalo-berry; Soapberry)
Elaeagnaceae (Oleaster Family)

Blackfoot: otaxkóiksinittsiima (Taylor 1989);

Meaning: *lit.* 'yellow --' (Taylor 1989);

Refers to: The name may refer to the color of the berry.

Ecoregion: aspen parkland, montane;

Habitat: open woods and shores;

Parts Used: ?berry;

Food Use(s):
The Piikáni elders (MPE, EYH, MKW) said these berries are not "bull berries" and were not eaten. According to MPE and EYH, these are "poison berries". The old people used to say a prayer to the bush and offer to make it moccasins because it was known to be poisonous. A cut or scrape that gets the juice of the berry in it will become infected (EYH). Hellson and Gadd (1974:105) note that these bitter berries were eaten in lean times.

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
Not recorded.

Processing:
Not recorded.

Storage:
Not recorded.

Artifacts:
Not recorded.

Comments:
Although the berries of *S. canadensis* are extremely bitter, they are edible and were an important food source for numerous Indigenous peoples in British Columbia (Kuhnlein and Turner 1991:162).

References:
Hellson and Gadd 1974;

Solanum triflorum Nutt. (Wild Tomato) Solanaceae (Nightshade Family)

Blackfoot: omahkokatayiini (MKW);
ómahkokataoowahsin (Frantz and Russell 1989);
omaka-ka-tane-wan (McClintock 1910:527);

Meaning: *lit.* 'gopher berries' (MKW) (McClintock 1910:527);
lit. 'gopher eats them' (MPE and EYH);
lit. 'gopher food' (Frantz and Russell 1989);

Refers to: According to McClintock (1910:527), this plant grows on "prairie dog" hills and this may be the reason they are called "gopher food".

Ecoregion: mixed grass, fescue grass;

Habitat: disturbed sandy prairies;

Parts Used: ?berries;

Food Use(s):
MPE and EYH recognize this as "gopher eats them" and said the fruit is not eaten (see below).

Medicinal Use(s):
McClintock (1910:527) said the berries were boiled and given to children with diarrhea (see below).

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
The fruit is poisonous, but apparently is not as deadly as other species of the *Solanum* genus (Vance et al. 1986:243). The Piikáni elders were not familiar this plant, although several did recognize the name "gopher food".

References:
McClintock 1910; Raczka and Bastien 1986;

Solidago spp. (Goldenrod) — Compositae (Composite Family)

Blackfoot: None recorded.

Meaning: None recorded.

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass, aspen parkland;

Habitat: varies with species;

Parts Used: root, leaves, flowers;

Food Use(s):
None recorded.

Medicinal Use(s):
MPE remembers picking these with her grandmother and said they were used as a medicine in the old days. MKW said the flowers and leaves were boiled as a medicine for colds. A tea of the plant was used to treat sore throats, throat constrictions or nasal congestions and the root was chewed for relief (Hellson and Gadd 1974:74).

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
The leaves and flowers were collected, probably in spring and early summer.

Processing:
Once collected and cleaned, the leaves and flowers were boiled, as required, to make a medicinal tea. It is possible the plant was also dried for storage.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
None recorded.

References:
Hellson and Gadd 1974;

Symphoricarpos albus (L.) Blake (Snowberry) and *S. occidentalis* Hook. (Buckbrush)
Caprifoliaceae (Honeysuckle Family)

Blackfoot: siinikskoi (MPE, EYH);
síiksikskaaxkoy (síiksikskaaxkoistsi) (Taylor 1989);

Meaning: *lit.* '-- alkali?'(Taylor 1989);

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass, aspen parkland, montane;

Habitat: open woodland, prairie slopes and valleys;

Parts Used: branches;

Food Use(s):
MPE and EYH said these berries were not eaten and are not the same as "áápinikiim" which are the berries of the red osier dogwood (*Cornus stolonifera*) (see below).

Medicinal Use(s):
None recorded.

Spiritual Use(s):
None recorded.

Other Use(s):
EYH said the branches are tied together to make a broom when people are camping. Blankinship (1905:24) records a similar use by various Indigenous groups of Montana.

Collecting:
The branches were collected and used as required.

Processing:
Presumably, little processing of the branches was required in order to make a broom.

Storage:
None recorded.

Artifacts:
A knife or axe may have been used to cut the branches.

Comments:
There is some confusion concerning the names for snowberry and/or buckbrush and red osier dogwood (*Cornus stolonifera*) in the literature. For example, Johnston (1987:55) identifies snowberry and buckbrush as "ap'ini'kun or white berry" after the original identification by Tims (1889). However, the Piikáni elders were certain that "áápinikiim" refers strictly to the berries of the dogwood. While examining a fresh sample of snowberry/buckbrush, MPE and EYH commented, "These [berries] are not áápinikiim -- they are different. The áápinikimm berries all come down in one [that is, in a cluster]. They have red bark and grow tall, and the leaves are different, bigger". In addition, snowberry fruit is considered inedible (Moss 1983:514).

References:
Johnston 1987;

Thalictrum occidentale A. Gray (Western Meadow Rue)
Ranunculaceae (Crowfoot Family)

Blackfoot: atsíínaimo (BSWAG, MPE, EYH, MKW, AD);
at-sina-mo (McClintock 1910:530);

Meaning: Gros Ventre scent (McClintock 1910:530);

Refers to: The plant is said to be a favorite perfume of the Gros Ventre, hence the name (Hungry Wolf 1980:35).

Ecoregions: aspen parkland, montane;

Habitat: moist woods;

Parts Used: flowers? fruits/seeds?

Food Use(s):

The Piikáni elders did not identify a food use. Hellson and Gadd (1974:105) state the fruits were added to pemmican, dried meat and broths as a spice. However, Turner and Szczawinski (1991:231) note that the seeds contain the irritating compound protoanemonin and must be cooked before eating.

Medicinal Use(s):

EYH said the root was boiled and the mixture taken as "vitamins" to make a person feel better. An infusion of the seeds was used to treat chest pains (Hellson and Gadd 1974:74).

Spiritual Use(s):

The seeds may have been used as a perfume for ceremonial occasions.

Other Use(s):

The primary use of "atsíínaimo" was as a perfume (MKW, AD, JC, JSC, BSWAG). According to MKW, "These are the ones the old people use that come in little seeds. You get them in the mountains. They dry them and smash them up fine, then they rub onto clothes. Them old people, they really smell good". People also put the dried, crushed leaves (seeds?) in their hair (BSWAG). A mixture of "atsíínaimo", sweet pine needles and cottonwood punk created in a fragrant perfume that was stored in small bags (Hungry Wolf 1980:35).

Collecting:

The elders (MKW, AD) recognize this as a plant collected in the "mountains". (It occurs in the aspen parkland and montane ecoregions which are associated with the foothills and the Rocky Mountains.) The flowers or seeds were likely gathered in the summer or early fall.

Processing:

Once collected, the flowers or seeds were dried and crushed (MKW, JSC). JSC said people also used to mix this powder into grease. The roots were washed and dried. Portions were removed as required.

Storage:

McClintock (1910:530) said the "berries" were dried and placed in small buckskin bags.

Artifacts:

Although the flowers and seeds could be harvested easily by hand, a digging stick would be required to collect the roots.

Comments:

None recorded.

References:

McClintock 1910, 1923; Hellson and Gadd 1974; Hungry Wolf 1980; Raczka and Bastien 1986; Johnston 1987;

Thermopsis rhombifolia (Nutt.) Richards. (Golden Bean) Leguminosae (Pea Family)

Blackfoot: útsiikii (útsiikiistsi) (BSWAG, JSC, MKW, EYH) (Taylor 1989);

Meaning: buffalo bean (BSWAG, MKW, JSC, EYH);

Refers to: The Piikáni elders (JSC, BSWAG) said the yellow flowers of this plant, which appear in spring, were used to indicate that the buffalo were ready to be hunted.

Ecoregion: mixed grass, fescue grass;

Habitat: dry sandy grassland;

Parts Used: flowers;

Food Use(s):
None recorded.

Medicinal Use(s):
None recorded.

Spiritual Use(s):
When the plant began to flower, the sponsors of the Holy Lodge began collecting buffalo tongues for the Sun Dance (Hellson and Gadd 1974:123).

Other Use(s):
According to BSWAG, "útsiikii" grows when it is going to rain and "the old people knew to kill the buffalo when it blooms". JSC said the "buffalo bean" indicates that the buffalo "are fat and good to hunt".

Collecting:
The Piikáni elders said the plant was not collected.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
Golden bean is one of the first wild flowers to bloom in spring (May-June) as the prairies begin to turn green (May and June also tend to be very rainy). With the winter snows long past, the buffalo would have had sufficient time to "fatten up" on the new grasses and herbs and would be ready for hunting. A slightly different

interpretation is offered by Ewers (1955), who says buffalo bulls moved to their summer grazing territory on the plains in the spring and were considered prime for a relatively short period. The flowering of the "buffalo bean" signalled this period.

References:
Ewers 1955; Hellson and Gadd 1974; Johnston 1987;

Vaccinium membranaceum Dougl. *ex* Hook. (Black Mountain Huckleberry)
Ericaceae (Heath Family)

Blackfoot: áápaawapsspii (áápaawapsspiistsi) (MKW) (Taylor 1989);

Meaning: huckleberries (MKW);
lit. 'weasel eyes' (Taylor 1989);

Refers to: None recorded.

Ecoregion: montane, subalpine;

Habitat: thickets and montane slopes in coniferous woods;

Parts Used: berries, leaves?

Food Use(s):
The fresh berries were eaten (MKW).

Medicinal Use(s):
Several Piikáni elders (MKW, MLB) said the leaves of the huckleberry are boiled and the infusion taken for diabetes. Man sage (*Artemisia ludoviciana*) can be boiled with the huckleberries leaves (MLB). Both elders said they knew of a man in Browning who had taken this mixture to cure his cancer.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
The berries ripen in late summer and MKW says the leaves (and presumably the berries) are collected in August. McClintock (1923) states the berries were collected in the fall.

Processing:
The berries were eaten fresh. Other Indigenous peoples dried the berries, or mashed them and made them into cakes (Kuhnlein and Turner 1991:179). As the

Piikáni did this with other berries, it is possible the huckleberries were processed in a similar manner. Today, many people prepare jams and jellies.

Storage:
None recorded.

Artifacts:
Berry bags may have been used to collect the berries.

Comments:
V. membranaceum does not grow in Alberta.

References:
McClintock 1923; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Valeriana spp. (Valeriana) Valerianaceae (Valerian Family)

Blackfoot: éípaxksikeimoy (éípaxksikeimoistsi) (MKW, JSC, AD) (Taylor 1989); apoks-ikim (McClintock 1910:526);

Meaning: *lit.* 'stink root' (JSC) or 'toe jam root' (MKW, MPE, EYH, AD, MLB); *lit.* 'smells like stinking feet' (Taylor 1989); *lit.* 'smell foot' (McClintock 1910:526);

Refers to: This plant is aptly named "stink root" or "toe jam root" as it does indeed smell like dirty socks! Kuijt (1982:645) describes the odor in kinder terms as a "soap-like perfume".

Ecoregion: aspen parkland?, montane, subalpine;

Habitat: *V. diocia* L. in wet meadows and bogs; *V. sitchensis* Bong. in mountain woods and slopes to subalpine elevations;

Parts Used: roots;

Food Use(s):
The Piikáni elders said this was not used as a food.

Medicinal Use(s):
The Piikáni elders agree this root "really smells awful" (MKW, JSC) but said "it doesn't taste as bad as it smells" (MPE, EYH). They still use it to reduce fevers and to calm upset stomachs. JSC's grandmother boiled the root in water and then wiped the infusion on a baby "to take the fever right away". To cure stomach aches, MKW "smashes them and boils them" and drinks this mixture. "You just take the roots until you feel better" said MKW. "They take away pain and fever -- that's what the old people say they're good for". MPE uses the root for diarrhea.

According to EYH, a paste made by boiling the roots can be rubbed on sore legs. McClintock (1910:526) notes that "a hot drink was made from the roots for stomach trouble".

Spiritual Use(s):

Identifying the plant only as "stink foot". Hellson and Gadd (1974:83) note that it was burned to ward off sickness.

Other Use(s):

According to Hellson and Gadd (1974:90), coughing horses were fumigated with a smudge of the root. An infusion of the root was also administered for round worm infections.

Collecting:

JSC said "stink root" was collected near the mountains around Cowley, Alberta and in Waterton Lakes National Park. Others recognize it as a plant that "only grows in the mountains"(MKW) or "up with the sweet pines" (MPE, EYH). MPE and EYH still gather the root at their mother's traditional collecting locale. The roots are harvested in late summer or early fall (MPE, EYH, MKW), after the flowers bloom. MKW recognizes the plant by its leaves, although the root is readily identified by its smell! The roots tend to grow together in tight clumps, and are difficult to remove by hand. A sharp tool is needed to dig them (MKW).

Processing:

The roots are thoroughly washed by soaking them overnight and then rinsing them (MKW, MPE, EYH). The entire root (including rootlets) is allowed to dry (MKW, MPE, EYH). Once dry, the elders use the root as required. MKW says to "grind up what you need -- use as many as necessary depending on how sick you feel". MPE and EYH generally use one whole root for their medicine as the roots are actually quite small. The dried root is generally ground into smaller pieces (not too powdery) and then boiled (MPE, EYH, MKW). A piece of cloth and a grinding stone are used to "smash" the dried root (MPE).

Storage:

The clean, dry roots are stored whole. MKW says she puts them in a plastic bag. In the past, a hide bag was probably used for this purpose.

Artifacts:

A digging stick would be necessary to harvest the roots. A stone "no special kind -- anything you can use " and a piece of cloth or hide were used in grinding the dried root (MPE).

Comments:

This is a well-known medicinal plant which is still widely used by the Piikáni. In western medicine, valerian has been used as a stomachic, antispasmodic, carminative and as a tranquilizer. Scientific studies show the active ingredients -- the valepotriates -- act as tranquilizers in humans and produce fewer side effects than the drug valium (Kowalchick and Hylton 1987:495-496).

Hellson and Gadd (1974) do not actually identify the plant by its scientific name. They refer to it in their publication as "stink foot".

References:
McClintock 1910; Ewers 1955; Hellson and Gadd 1974; Johnston 1987;

Veratrum eschscholtzii (R. & S.) A. Gray (False Hellebore) Liliaceae (Lily Family)

Blackfoot: ixtawáa'si (MPE, EYH, MKW);
ixtawáa'siyao'pi (MLB) (Taylor 1989);
et-awa-asi (McClintock 1910:526);

Meaning: *lit.* 'sneezing root' (MPE, EYH, MLB, MKW);
lit. 'we make ourselves sneeze with it' (Taylor 1989);
lit. 'makes you sneeze' (McClintock 1910:526);

Refers to: The Piikáni snuffed the crushed root to induce sneezing, hence the name "sneezing root" or "we make ourselves sneeze with it".

Ecoregion: aspen parkland, montane, subalpine;

Habitat: moist woods and open slopes;

Parts Used: roots;

Food Use(s):
The Piikáni elders said this plant was not eaten, and McClintock (1910:526) notes that the root is poisonous (see comments below). Hellson and Gadd (1974:105) note the young leaves of "bitter tastes" or "blue leaves" were added to soups and children were given the leaves to chew to stop their drooling. However, this seems highly unlikely given the extremely toxic nature of this plant.

Medicinal Use(s):
The dried root was powdered and snuffed to cure headaches and colds (JSC, MKW, MLB, MPE, EYH). JSC said "If you have a headache, it makes you sneeze and your headache is gone". MKW said "they are really good for when you have a running nose and sneezing. Scrape off some and sniff it up your nose and it breaks everything up". McClintock (1910:526) and Hellson and Gadd (1974:74; 79) record similar uses of the plant. Hellson and Gadd (1974:69) also note that an infusion of the plant was taken for indigestion, but again, given the highly toxic nature of the plant, this seems unlikely.

Spiritual Use(s):
None recorded.

Other Use(s):
Horses with respiratory problems were made to snuff the ground root (Hellson and Gadd 1974:89).

Collecting:

According to the Piikáni elders (MPE, EYH, MKW), late summer and early fall -- "when everything is still green"-- is the best time to collect the plant. MKW said it grows abundantly in the mountains. McClintock (1910:526) notes it was collected in the spring and fall from the mountain forests.

Processing:

The roots were washed and dried. Then, the dried roots were scraped with a knife and snuffed as required.

Storage:

The dried roots were stored whole, probably in buckskin bags.

Artifacts:

A digging stick would be required to harvest the roots. A knife or sharp implement would be required to powder the root.

Comments:

Often, medicinal plants are highly toxic. False hellebore is one of them. The plant contains ester alkaloids which lower blood pressure and the heart rate, while stimulating blood flow in the kidneys, liver and extremities (Kowalchick and Hylton 1987:8). Hellebore has been used medicinally as a heart depressant and spinal paralysant (Hart 1976:73). However, ingestion of the plant can cause "burning in the throat, impaired vision, abdominal pain, nausea, diarrhea, faintness, shallow breathing, spasms, loss of consciousness, paralysis, and sometimes death. Even if you don't die from ingesting the plant, the effects will make you think you are" (Kowalchick and Hylton 1987:9).

References:

McClintock 1910; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

?*Xerophyllum tenax* (Pursh) Nutt. (Bear Grass) — Liliaceae (Lily Family)

Blackfoot: kyááyàapistsisskiitsi (Taylor 1989);
áíksikkooki (Frantz and Russell 1989);
ek-siso-ke (McClintock 1910:525);

Meaning: *lit.* 'bear flower' (Taylor 1989);
lit. 'sharp stem' (Frantz and Russell 1989);
lit. 'sharp vine' (McClintock 1910:525);

Refers to: The leaves of bear grass are very stiff and sharp.

Ecoregion: subalpine, alpine;

Habitat: dry mountain slopes and open woods; in Alberta, the plant is found only in Waterton Lakes National Park;

Parts Used: roots;

Food Use(s):
None recorded.

Medicinal Use(s):
The Piikáni elders were not entirely positive that this root was used and were unfamiliar with the name. EYH thought the root may have been used as a medicine, but was not sure. MKW said she had not heard of anybody in Browning using them. McClintock (1910:525) however, claims the Blackfeet considered these roots the ideal remedy for breaks and sprains. The roots were grated and placed in boiling water. The injured portion was held in the steam to reduce the inflammation. McClintock also notes the roots were placed on cuts to stop bleeding and to reduce swelling. In addition, the roots were boiled in water and used as a tonic for falling hair.

Spiritual Use(s):
None recorded.

Other Use(s):
MKW recognized the plant and said there are lots growing where they collect their firewood. She said other groups (in Washington state) weave it for baskets although the Piikáni did not do this. She called it "tall flat weeds" and MPE called it "?omahksiipoks" which means "big grass". McClintock (1923) notes that the leaves were used by other tribes for basketry.

Collecting:
None recorded.

Processing:
According to McClintock (1910:525) the roots were grated and boiled in water.

Storage:
The roots were probably dried and stored as the plant is very limited in its distribution and would not always be readily available.

Artifacts:
A digging implement would be required to collect the roots. Presumably, a knife or other sharp object was used to grate the roots during processing.

Comments:
There appears to be some confusion in the literature concerning the identification of this plant and *Yucca glauca*. This stems from McClintock's entry (1910:525) which lists "ek-siso-ke" as "Sharp Vine. -- Bear Grass. *Yucca glauca*". As bear grass and *Yucca glauca* are different plants, growing in very different environments, this creates several difficulties.

As McClintock does not include an entry for *Xerophyllum tenax*, it would be easy

to suggest he has improperly applied the name "bear grass" to *Yucca glauca*. However, McClintock was familiar with bear grass and its habitat as is evident from the following passage: "I saw magnificent specimens of bear grass (*Xerophyllum Douglasii*), growing to the height of five feet. Their stalks were surmounted by dense caps of white flowers, each flower on an ascending pedical an inch or more long. The leaves are the base of the stem were narrow and stiff. The root is used by the Blackfeet as a remedy for fractures and sprains" (1910:10).

But in a later passage, McClintock appears to be discussing *Yucca glauca*. He notes: "She first handed him a large plant called Eksisoke (Sharp Vine) by the Blackfeet (Bear Grass or Yucca glauca), which she found when travelling along the Sun River, 250 miles to the south. Brings-down-the-Sun was greatly pleased by this rare plant and, as he took it, uttered a prayer and chanted a sacred song. He said . . 'I am glad to get the Sharp Vine, because of its great healing properties. I prefer it above all other remedies for fractures and sprains'" (McClintock 1910:443).

Whether both plants were known as "bear grass" and used in a similar fashion remains to be determined. However, it seems more plausible that McClintock has misidentified one or the other.

See also *Yucca glauca*.

References:

McClintock 1910, 1923; Raczka and Bastien 1986; Johnston 1987;

?*Yucca glauca* Nutt. (Soapweed) — Liliaceae (Lily Family)

Blackfoot: éíksisooki (éíksisookiistsi) (Taylor 1989);
áíksikkoki (Frantz and Russell 1989);
ek-siso-ke (McClintock 1910:525);

Meaning: *lit.* 'sharp plant' (Taylor 1989);
lit. 'sharp stem' (Frantz and Russell 1989);
lit. 'sharp vine' (McClintock 1910:525);

Refers to: The plant has sharp, pointed leaves.

Ecoregion: short grass;

Habitat: dry slopes; in Alberta, the plant occurs only in the extreme southeastern portion of the province (Moss 1983:631);

Parts Used: roots;

Food Use(s):

None recorded.

Medicinal Use(s):

The Piikáni elders (MKW, AD, MPE, EYH) did not recognize this plant and knew of no medicinal uses. McClintock (1910:525) claims the root was used to stop bleeding and swelling, and to treat breaks and sprains. Brings-down-the-Sun, a Piikáni chief, preferred the root "above all other remedies for fractures, or sprains. I first grind the root up and then put it in boiling water. For a broken leg, or arm, or sprain I use it with thin willow sticks for splints and then hold the part in the rising steam to allay the inflammation" (McClintock 1910:443).

Spiritual Use(s):

None recorded.

Other Use(s):

The roots were boiled in water and used as a tonic for falling hair (McClintock 1910:525). Johnston (1987:25) notes the roots were used as a soap substitute, and cites McClintock (1910) as the reference.

Collecting:

Based upon McClintock's (1910:443) observations, *Yucca glauca* was not commonly found in the traditional Piikáni homelands and was probably an article of trade.

Processing:

According to McClintock (1910:525), the roots were grated and boiled.

Storage:

McClintock (1910:443) notes that Brings-down-the-Sun "carefully stowed the precious gift of roots in his medicine sack".

Artifacts:

None recorded.

Comments:

It is interesting to note that McClintock (1910:525) identifies "ek-siso-ke" as "Sharp Vine - Bear Grass - Yucca glauca". As Bear Grass and *Yucca glauca* are different plants, growing in very different environments, this creates some confusion. McClintock (1910:443) provides a clue to the plant's identity in the following passage: "She first handed him a large plant called Eksisoke (Sharp Vine) by the Blackfeet (Bear Grass or Yucca glauca), which she found when travelling along the Sun River, 250 miles to the south. Brings-down-the-Sun was greatly pleased by this rare plant and, as he took it, uttered a prayer and chanted a sacred song. He said . . 'I am glad to get the Sharp Vine, because of its great healing properties'". From this description, it is evident the plant in question grows much further south, beyond the study area. Therefore, it is reasonable to suggest McClintock is describing *Yucca glauca* and not bear grass (but see also *Xerophyllum tenax).*

References:

McClintock 1910; Ewers 1955; Hellson and Gadd 1974; Raczka and Bastien 1986; Johnston 1987;

Zigadenus venenosus S. Wats (Death Camas) Liliaceae (Lily Family)

Blackfoot: None recorded.

Meaning: None recorded.

Refers to: None recorded.

Ecoregion: mixed grass, fescue grass, aspen parkland;

Parts Used: not utilized;

Habitat: plains and hillsides;

Food Use(s):
None recorded. Death camas is extremely toxic (see below).

Medicinal Use(s):
Johnston (1987:28) includes Blankinship's (1905:27) comments which state the bulbs were cooked, mashed and use as a poultice for boils, rheumatism and to reduce pain caused by strains and bruises. However, this information was originally complied by Chestnut (1892) and by Coville (1897) and does not refer specifically to the Piikáni.

Spiritual Use(s):
None recorded.

Other Use(s):
None recorded.

Collecting:
None recorded.

Processing:
None recorded.

Storage:
None recorded.

Artifacts:
None recorded.

Comments:
The Piikáni elders did not recognize this plant. However, during conversations concerning the use of wild onions (*Allium* spp.), several elders (BSWAG, MPE, EYH) claimed the bulb of the wild onion is poisonous. BSWAG called the wild onion "?soyikintsomo" or "?sooyikkinssimoyi" which means "poisonous plant". This suggests that the Piikáni were aware of the fact that there is a "poisonous

onion" -- death camas. The bulb and leaves of the death camas are very similar to that of the onion, but do not have the characteristic onion odor. Death camas contains highly toxic alkaloids and can be fatal if ingested (Kuhnlein and Turner 1991:81).

References:

Johnston 1987;

Appendix B: Guide to Blackfoot Pronuciation

Appendix B: Guide to Blackfoot Pronunciation

The Blackfoot plant names given by the Piikáni elders are recorded using the orthographic standards outlined in *The Blackfoot Dictionary* (Frantz and Russell 1989). The dictionary uses an alphabetic system which is based upon a linguistic analysis of the sound system of the Blackfoot language. Each of the twelve letters represents a distinctive sound unit of the language. This system was approved as the official writing system for the Blackfoot in 1974. The following discussion is taken from Frantz and Russell (1989:467-469):

Vowels:

a sounds about like the a of father except before long consonants, where it is more like a of among or the u of cut

i varies between the sound of the i of physique and the i of sit; it always has the former sound when long and always has the latter sound when followed by a long consonant

o has a sound very similar to that of the o in English no, though occasionally it may sound more like the oo of boot

Diphthong Variants

ai in Blood and North Piikáni dialects, sounds like ai of English paid before the glottal stop consonant, like the ai of said before long consonants, and like the ai of plaid in other positions. In other dialects, sounds like i of English hi before the glottal stop consonant, like the ai of plaid before long consonants, and like the ai of paid elsewhere.

ao sounds like a made with rounded lips (similar to the aw of dawn)

Consonants

h is a "gutteral" fricative, similar to the sound written ch in German.

k, p, t are similar to the English consonants, but they lack the aspiration.

m, n, s,w, and y are nearly identical to equivalent English consonants

' (an apostrophe) is a glottal stop, similar to the same kind of stop between the two oh's in the expression oh-oh!.

Length
All vowels and consonants, except h and ' have occur in two distinctive lengths: short and long. The long versions have approximately twice the duration of the short version and are written as double letters. Short sounds are written singly.

Stress the stress on vowels is marked with an acute accent

Often, the names given by the Piikáni consultants were not found in *The Blackfoot Dictionary*. In these cases, the work of Alan Taylor (1989) was referenced. Taylor, a Blackfoot linguist, has collected plant names and associated folklore during visits to the Blackfeet Reservation (South Piikáni) in Montana for over 20 years.

Taylor's orthography incorporates conventional phonetic symbols and values, with the exception of the letter "e", which represents a low front vowel with the quality of "a" in the English word "add" (Taylor 1989:363). Therefore, Taylor's system differs slightly from that of Frantz and Russell in several aspects. For instance, Taylor uses the letter "x" to represent the gutteral fricative rather than an "h". However, as the following examples illustrate, these differences do not alter substantially the pronunciation of the various plant names:

Alum-root (*Heuchera* spp.):	apahsípoko (Frantz and Russell 1989) éípaxsipokoy (Taylor 1989)
Gumweed (*Grindelia squarrosa*):	aksspís (Frantz and Russell 1989) áókspìi (Taylor 1989)
Wild Bergamot (*Monarda fistulosa*):	maanikápi (Frantz and Russell 1989) máánikàpi (Taylor 1989)

Readers are referred to Frantz and Russell (1989) and Taylor (1989) for further details.

Appendix C: Piikáni Elder Profiles

Appendix C: Piikáni Elder Profiles

The following provides a biographical sketch of the Piikáni elders consulted in this study. Wissler's (1910:52) comments are worth repeating with respect to the information presented here:

> "It is a breach to ask a leading question as to one's personal medicines or experiences . . . on the other hand . . . we found no reason to believe that a man felt any great reluctance to speak of such things at his own initiative or that he felt under special obligation not to do so: it is the blunt asking for information that is offensive."

With this in mind, it should be noted that much of the following represents my assessment of the ages and experiences of the Piikáni elders. Further, as mentioned in the text, several elders wished to remain anonymous. In accordance with their wishes, the elders are identified only by their initials and the comments included here are appropriately brief.

AD lives in Browning and is in her late 70's or 80's? Her step-father was a medicine man.

BSWAG is in his early 90's. As he never attended residential school while growing up in Brocket, he "learned the old ways" and continues to be involved in ceremonial activities.

EYH is in her late 60's. She is a member of various North Piikáni societies and is actively involved in ceremonial activities. EYH is a sister to MPE and JC.

JC is a Holy Man who continues to be active in both Piikáni communities as a spiritual leader, ceremonialist and medicine man. As owner of the Beaver Bundle, he has participated in numerous Sundance ceremonies. JC is in his late 80's and was born and raised in Brocket. He and his wife (JSC) were recently awarded the Order of Canada.

JSC is a Holy Woman who has sponsored numerous Sundances and who continues to be actively involved in ceremonial activities. She is in her mid-70's and was born and raised in Brocket. She and her husband (JC) were recently awarded the Order of Canada.

MKW is in her late 60's and lives in Browning. She and her husband own a medicine pipe bundle and continue to be active in ceremonial activities in their community.

MLB is in her mid-50's? and lives in Browning.

MM is in her late 50's or early 60's and lives in Browning.

MPE is in her early 60's. She owns a medicine pipe bundle and is active in many of the North Piikáni societies. MPE learned many of the traditional ways from her mother, who lived to be 109 years old. MPE is a sister to EYH and JC.