

Chapter Eleven

GOLD, GRASS, AND GYPSUM

California Joe Milner, who traveled with Walter Jenney's Expedition in 1875, is quoted as saying, in reference to the Black Hills: "There's gold from the grass roots down, but there's more gold from the grass roots up" (Newton and Jenney 1880:317). Gold was the metal of greatest interest to European Americans, and indeed, the primary reason for the United States to extinguish American Indian title to the area. Gypsum, however, was probably the most significant mineral to American Indians, particularly the Cheyennes and Lakotas. Next to gypsum and gold, the Hills' abundant and varied grasses were another important resource for American Indians and European Americans, but for vastly different reasons. For centuries, the abundance and rich variety of grasses in and around the Black Hills sustained many of the wildlife species on which local tribal nations depended for their livelihood, and they also provided good pasturage for their horses. When European Americans arrived in the area, these same grasses fed the growth and development of a way of life built around the raising of livestock. Over the long term, ranching equaled, if not exceeded, mining as a major producer of the region's wealth.

When European Americans evaluated the area for its monetary worth as a prelude to extinguishing American Indian title, they took into consideration its mineral wealth, the potential of its grasses for grazing, and its abundant timber resources, but they assigned little if any value to the other varieties of plants important to the tribal nations who resided there (Jenney 1875:182; Newton and Jenney 1880:5). Although many other plants would have some importance to early European American settlers as food and medicine, they were largely ignored in government appraisals of the area because they showed little promise for commercial development in the U.S. economy of the late nineteenth century. More important in these evaluations was the value of the region for mineral extraction that had considerable commercial potential, the worth of its soils and grasses for farming and ranching, and the wealth of its timber for logging.

At least in the minds of European Americans, the history of the Black Hills has been most closely linked to its mineral wealth. Indeed, a large part of the romance and enchantment surrounding the Hills harks back to the frontier and gold rush years of the mid-1870s. The well-publicized discoveries of gold in the Hills by the Black Hills Expedition of 1874 led directly to the illegal invasion of the area by miners and entrepreneurs and eventually, to the extinguishment of Native American title to the area. Insofar as lands were prospected and mining claims were staked in the area of Wind Cave National Park, and insofar as the acquisition of park properties evolved out of a controversy surrounding titles to these claims, some of the park's cultural and historical legacy is tied to the region's gold boom. But for a wide variety of reasons already described in earlier chapters, this area was never developed for its mineral resources. Although sandstones were mined successfully over the years in canyon quarries in nearby areas of the Hogback, the land on which Wind Cave National Park now sits was not a location for mining. Instead, its development grew out of the "discovery" of a vast cavern structure in the limestone formations underneath some of its surface lands. Just to the south of park properties, development sprang from the mineral rich hot springs. In both cases, the cultural history of the region was tied to the preservation of geological resources supporting the growth of a leisure, recreation, and tourist industry. This contrasted with many of the regions in the central and northern portions of the Hills where the extraction of mineral resources fueled local economic growth.

For the tribal nations who inhabited the Black Hills area, it was an entirely different story. Beyond the animals, the Hills held a wealth of other life forms for them, revered for their properties as food and

medicine and in manufacture and ceremony. In the minds of American Indian people, especially the Lakotas and Cheyennes, the Black Hills were historically associated with mineral wealth too. Native peoples are known to have extracted minerals in various parts of this region since prehistoric times for practical and spiritual purposes. The presence of the Black Hills as a massive body of stone evoked considerable awe and reverence, one that was tied to tribal cosmological tenets about how the universe originated and recreated itself. Even more impressive, in terms of sheer numbers and varieties, were the plant species found in the Black Hills, of which hundreds have been associated with culturally significant uses among the tribal nations who occupied the area. The Hills also held special importance because they contained many unique varieties of plants not found in other parts of the region where local tribes lived and traveled. Indeed, the diversity of the Hills' plants only added to tribal beliefs that this was a special place, which revealed in a multitude of ways the workings of the universe and "the heart of everything that is" (Black Elk, C. 1986a:205).

I. THE PLANT AND MINERAL LIFE OF THE REGION

As revealed in the introduction to this report, the geography of the Black Hills can be represented in terms of a series of rings that surround a central crystalline core. Each of these rings is associated with fairly distinct geological formations that exhibit recurring mineral properties as they encircle the Hills. Much of the diversity in the region's vegetation also follows these rings, although this variation is modified in significant ways by differences in moisture and temperature from the Hills' northern sections to their southern borders. Wind Cave National Park is located in an area that crosses all of the Hills' geological formations, the Hogback, the Red Valley, the Limestone Plateau, and the Central Core, but it is situated in the drier and warmer portions of these zones. As a result, its vegetation is significantly different from locations with moister and colder climates but comparable geological formations farther north.

A. Plants

In relation to its vegetation, Arthur McIntosh (1949:45) reported that over 1300 different flowering plants and ferns are located in the Black Hills. Of these, less than half are documented and described in Gary Larson and James Johnson's recent book, *Plants of the Black Hills and the Bear Lodge Mountains* (1999). The great numbers and varieties of common as well as rare plant species make the Hills a veritable herbarium. The Lakotas often referred euphemistically to the Hills as their meat pack, but they could have easily called them their "medicine bag" because of the abundance and diversity of plants they could draw from the Hills for medicine, food, manufacturing, and other purposes.

Although many different plants are found throughout the Black Hills, a large number are specific to certain biomes. The moist, high elevation locations in the northern and central Black Hills contain some of the most unique and variable plant communities in the region. Indeed, nearly fifty percent of the plants reported in Larson and Johnson's book are restricted to this area. Another ten percent are limited to the western sagebrush steppes. In the grasslands, ponderosa stands, and woodland riparian niches that make up the southeastern Hills, including the lands of Wind Cave National Park, there are only a few species unique to this area; most of the rest are located in other parts of the Hills or the neighboring grasslands.

In assembling the vast body of ethnobotanical material available on the tribal nations and European Americans who lived historically in the region of the Black Hills, only a few sources directly tie the Hills to specific kinds of plant gathering. Nonetheless, there is a great deal of circumstantial evidence that suggests what kinds of plants American Indians and European Americans would have gathered when they

camped, settled, and traveled in the Black Hills. Indeed, some of the plants they relied upon are only found in the Black Hills and not on the surrounding grasslands.

Larson and Johnson's work (1999) was the basic source employed to identify the species of plants located in the Black Hills. Not all of the plants they identified, however, are associated with any use either by Americans Indians or European Americans. Of the plants they list, ethno-botanical material was uncovered on about half of them. In addition, a few other plants not listed in Larson and Johnson are covered here. These are reported at Wind Cave National Park (Pisarowicz 2001e, 2001f, 2001g, 2001h, 2001i, 2001j, 2001k, 2002a, 2002b, 2002c) or in nearby grasslands on the outer edge of the Hogback, and many of them are very important to local tribes.

The plants reported for the Black Hills and Wind Cave National Park were matched with material in primary and secondary ethnobotanical and ethnographic sources on populations with known periods of occupancy in the Hills, most notably in the region of Wind Cave National Park. These populations include the Arapahos, Arikaras, Cheyennes, Comanches, Kiowas, Kiowa-Apaches, Lakotas, and Poncas. Some data are also included on the Crows, Hidatsas and Mandans who made periodic use of the Hills but, generally, beyond the range of Wind Cave National Park and its environs. The plant list (Appendix B), which accompanies this report, contains a much more detailed body of information, organized by plant families and species with their names in Native languages and descriptions of their habitats.

1. Woody Plants

At least eighty different varieties of woody plants, trees and shrubs, are reported in the Black Hills (Larson and Johnson 1999), and of these, more than seventy-five percent have reported tribal names and uses. At least twenty-seven are listed at Wind Cave National Park, and the vast majority of them are associated with names in Native languages and important cultural uses. Box elder, elm, bur oak, Rocky Mountain juniper, paper birch, cottonwood, ponderosa pine, green ash, northern hawthorn, and quaking aspen are some of the species of trees listed at Wind Cave National Park. There are many other trees reported in the Hills with important cultural uses as well, and these include, among others, hazel nut, Black Hills spruce, and lodgepole pine.

A wide variety of woody shrubs are also found at Wind Cave National Park, including common juniper, rabbitberry (a.k.a. buffaloberry), skunkbush, buckthorn, leadplant, false indigo, currant, elderberry, coralberry, snowberry, raspberry, chokecherry, wild plum, bearberry, stinking elderberry, broom snakeweed, dogwood, willow, sagewort, and woodbine; all of these are associated with native names and uses, and many have been identified as historically important to European Americans as well. There are other shrubs in the Black Hills of significance but not reported at Wind Cave National Park. Among these, Oregon grape, American bittersweet, wild roses, and one woody variety of sage were used by local tribes and European American settlers.

2. Grasses, Rushes, and Sedges

Based on his observations in 1875, Henry Newton (and Jenney 1880:318) wrote: "The grasses in the Black Hills are almost endless in variety, every condition being so extremely favorable to their growth." Indeed, more than forty different species of grass, sedge, and rush are found in the Black Hills and at Wind Cave National Park. Nearly half of these appear in the ethnobotanical nomenclatures of the tribal nations who lived in the region, but less than a quarter of the species are associated with any specific use. Some of the grasses located in the park and identified in the ethnobotanical literature include indianguass, dropseed, grama, foxtail barley, reedgrass, prairie sandreed, switchgrass, ricegrass, prairie cordgrass, porcupine grass, buffalo grass, stinkgrass, and red threeawn. Not reported at Wind Cave National Park or

in the Black Hills is sweetgrass, regarded as sacred and important ceremonially to all of the tribes in the region. Softstem bulrush is the only sedge reported in the park; it had important uses among the tribal nations of the region. Nebraska sedge, located at lower elevations in the Black Hills, also had important ceremonial uses for the Cheyennes and probably the Lakotas, while various flatsedges found in regions east of the Hills were important medicinally to other tribes. The only member of the rush family reported at Wind Cave National Park is wiregrass, and there are no reported cultural uses for it.

3. Forbs

There are more than seven hundred different species of flowering forbs in the Black Hills with over one hundred and fifty reported for Wind Cave Park alone. Although approximately forty-five percent of the species reported in the Black Hills are mentioned by name or use in ethnobotanical sources on the region, nearly seventy percent of those found at Wind Cave have identified cultural associations. Some of the more important flowering forbs used for food and medicine are located on park properties, but many of them are not and appear to be restricted to the northern and/or central regions of the Hills. Soapweed, prairie turnip, milkvetch, Indian hemp, western ragweed, pearly everlasting, cowparsnip, groundplum, prairie clover, false gromwell, prickly pear cactus, pinedrops, cattail, beardtongue, wild onion, milkweed, red falsemallow, fetid marigold, downy paintbrush, purple coneflower, field mint, dotted gayfeather, sunflower, goldenrod, yarrow, pussytoes, sagewort, curley gumweed, tansy, pepperweed, fleabane, wood lily, and vervain are just a few of the park's many forbs with known cultural uses. There are several other culturally important plants, which surprisingly are not reported for the park, but likely exist at nearby locations. These include arrowhead, biscuitroot, bush morning glory, wild bergamot, lavender hyssop, and scarlet guara.

4. Nonvascular plants

Many different nonvascular plants, fungi, lichens, and moss, are also found in the Hills. Puffballs, elm cap, and bracket fungi were used for food, medicine, and other purposes by local tribes and early European American settlers as well.

B. Minerals and Soils

The mineral formations that encircle the Hills' follow a fairly regular pattern and do not substantially differ from the northern to the southern Hills. The high elevation interior of the Hills is composed of a Precambrian core made up of granite and pegmatite surrounded by schist, slate, and quartzite formations overlaid in some areas with sandstone, grit, and conglomerate. Layers of limestone, dolomite, shale, and some sandstone of varying complexion surround the interior. The Minnelusa sandstones and the Minnekahta limestones, both of which find expression at Wind Cave National Park, follow the Pahasapa limestone formations where Wind Cave was born. Along the Red Valley, also in the park, layers of red shale and sandstone interlaced with gypsum mark the geology of the Spearfish formation. The variegated sandstones and shales of the Sun-dance and Inyan Kara formations dominate the Hogback's geological complexion. Between the Hogback and the Cheyenne River, various clays, shales, and sandstones support the soil beds of the outer grasslands (Froiland 1978:24; *Geological Map of South Dakota #5* in Froiland 1978). The concentric distribution of geological formations in the Black Hills did not go unnoticed in tribal conceptualizations of the area. Indeed, as revealed later, the Lakotas and Cheyennes may have made connections between some of the unique geological characteristics of the gypsum formations in the area of Wind Cave National Park and those in the vicinity of Sundance Mountain.

II. THE SOURCES AND THEIR HISTORY

Most of what we know about the geology and botany of the Black Hills has been written by European Americans based on their dominant philosophical perspective, which rests, as mentioned previously, on scientific empiricism. Much less is known about American Indian knowledge and understandings of the Hills' botanical and geological landscape. There are several good sources on the ethnobotany of tribes who lived in the region, and these can be used to construct a picture of the probable nature of tribal relationships to plants and minerals in the Black Hills.

A. European American Views

The earliest reports of the Hills' mineral and plant resources extend back to the time when the Black Hills were under the domain of the Spanish. Reports of the Hills' vast wealth in gold and other minerals were contained in correspondence between traders and Spanish officials as early as 1804 (Nasatir 1952:738). Most of these reports were based on rumors, of which some early traders, who actually lived in their general vicinity, were highly skeptical. Antoine Pierre Tabeau (in Abel 1939:68), for one, wrote:

I say nothing about the minerals, having seen no sign of them and not having been able upon this subject to draw any information from the Savages to whom all the glittering pebble-work is mineral. Nevertheless, the Chayennes let me see a bit of lead mineral which they had brought from the Black Hills.

He also reported that the local tribes used a kind of pumice stone from the Black Hills (Tabeau in Abel 1939:68). In addition, Tabeau (Ibid:93-98) wrote a great deal about the plant life in the region. Although nothing pertains specifically to the Black Hills, his writing provides valuable information on tribal uses of some of the more common plants widely distributed on the grass-lands and in the river valleys west of the Missouri River. Another trader, Edwin Denig (in Ewers 1961:11-14), provided general information about Lakota plant use and knowledge based on his many years of service as a trader on the upper Missouri River. In the 1840s, Francis Parkman (in Feltskog 1969:270-271) and E. De Girardin (1936:63) were among other early writers to make specific connections between the Black Hills and tribal plant collection.

From the early nineteenth century until the time U.S. government expeditions began to explore the region in the 1850s, European Americans knew little about the geology or botany of the Black Hills. There were numerous unsubstantiated reports of traders receiving gold and other minerals in trade from local tribes, however, and some of these stories were passed down in tribal oral traditions (see Chapter Five). Between 1855 and 1857, military expeditions under the command of General William Harney skirted the northern end of the Hills, reporting on the general features of their topography and also making observations on their general mineral potential (Warren 1875; McClaird and Turchen 1973:359-389). Two years later, in 1859, Capt. William Reynolds toured the northern edges of the Hills and reported on their geology (McClaird and Turchen 1974a:19-62). Accompanying some of these expeditions was the naturalist Ferdinand Hayden, who published extensive notes (1862a, 1862b) on the region's botany with some information on tribal plant use and knowledge.

The watershed expedition, however, was the one led by General George Armstrong Custer in 1874. Colonel William Ludlow (1875), Chief Engineer of the expedition, and the geologist, N. H. Winchell (1875), described in some detail features of the area's geology (McClaird and Turchen 1974c:281-319). A.B. Donaldson (in Krause and Olson 1974:41-77) wrote extensively about the area's botany as did other newspaper correspondents who accompanied the expedition. When the expedition arrived at Reynold's Prairie they were astounded by the diverse array of flora located there. A. B. Donaldson (*quoted from* McClaird and Turchen 1974c:296) described the flowering species as: "the gaudy sunflower and the

delicate harebell, the fair lily and the bright blue daisy, the coarse elecampane and the modest violet, the gay larkspur and the fragrant peppermint, roses and pinks, asters and phlox, bellflower and caropsis, geraniums, golden rod, purple coneflower.” Even General Custer (*quoted from* McLaird and Turchen 1974c:296-297) had this to say: “In no private or public park have I ever seen such a profuse display of flowers. So luxuriant in growth were they that men plucked them without dismounting from their saddle.” In other areas of the Hills as well, early explorers described the abundant plant growth, the rich timbers, and the fine grasses (McLaird and Turchen 1974a:46, 48, 1974b:175, 1974c:295, 297, 303).

The following summer, two geologists, Walter Jenney and Henry Newton, toured the Hills and wrote detailed reports about their geology and the value of their mineral wealth, pursuant to pressuring the Lakotas to relinquish their rights to the area. They provided little information on the region’s botany other than describing the varieties of wild fruit, recommending the grasses for cattle raising and describing the richness of the timber for logging (Jenney 1875; Newton and Jenney 1880:315, 316, 318, 320-323; McLaird and Turchen 1974d:402-438).

The gold boom and the rush of miners into the Hills in 1874 cast a particular history of development for the area, much of which has already been chronicled in Chapter Five. The area where Wind Cave National Park is located stood on the edge of these developments, and it was not systematically explored until Walter Jenney and Henry Newton traveled Beaver (a.k.a. Amphibious) Creek in 1875 and when growing numbers of European Americans began to settle the surrounding areas after 1878 (Tallent 1899:648-651; Clark, B. 1983:17-19). Although mining claims were staked afterwards in portions of the park, most of these remained undeveloped because the area held little potential for economically viable forms of extraction. Other than a lime-kiln and small gold processing operation at the southwest end of the park, no other mining appears to have taken place within the park’s present-day boundaries (McAdam 1973). The mineral extraction that occurred locally took place at stone quarries in canyons near the Buffalo Gap, which, as previously reported, provided the masonry material for the construction of many old buildings in local communities (Tallent 1899:415; Stewart 1967-1970:70). Also, a gypsum plant was in operation near Hot Springs for some years (Schell 1961:376).

The only historical role the park appears to have played in the gold rush days was its location along a major trail that took early prospectors and settlers into the mining districts around Custer. As much of the mining in the Custer area was not profitable, except in the mica industry, the trails leading to this once bustling region of the Hills became marginalized. The centers of development were in the north, near Deadwood, Lead, and Rapid City, and the quickest access to these locations followed routes on the outer edge of the Hogback. Much of the nostalgia and romanticism that surrounds the gold rush days in European American histories of the area reside outside the region where Wind Cave National Park is located. The history of the southeastern Hills, as described in Chapter Six, rests more on the early cattle business and on the development of a resort industry in the late nineteenth century around the thermal waters at Hot Springs. The European American discovery of Wind Cave, its original development as a commercial enterprise, and its later operation as a government run attraction, is also connected to the history of leisure travel in the area, much of which has already been discussed in Chapter Six as well.

In the early years of European American settlement, little was written about the area’s botany, although in later years the first-generation descendants of pioneer settlers would recall the use of native plants by their own families and local Lakotas as well (Eastern Custer County Historical Society 1967-70:12, 40, 402, 425, 583, 585, 730; Fall River County Historical Society 1976:72, 119, 243; Sundstrom, J. 1977:227, 365, 379). The first systematic scientific studies of the region’s plant life did not take place until the twentieth century when S.D. Visher (1912, 1913), H.E. Hayward (1928:353-412) and A. C. McIntosh (1926, 1927, 1928, 1929) began to write about the region’s botany. Since the early “discovery” days in the Black Hills, much has been written about the geology and botany of the Hills in general and about the area of Wind Cave National Park from a scientific perspective. There are detailed

descriptions (McIntosh 1949; Froiland 1978; Larson and Johnson 1999) of local mineral formations, soil compositions, hydrological features, and plant distributions, none of which need to be covered here.

B. Tribal Perspectives

Much less has been written about American Indian understandings of the region's botany, although some of it can be deduced from various ethnobotanical sources on the subject. In their 1939 study of Kiowa ethnobotany, Paul Vestal and Richard Schultes (1939:3-4) wrote that little was known about the uses of plants among the tribal nations of the Great Plains. Although additional material has been gathered during the past sixty years, much of their assessment still remains true today. In comparison to other regions of North America, where there are comprehensive and richly detailed studies of tribal ethnobotany, much of the information on the names and uses of plants for tribal nations of the Black Hills region is sketchy. Even though there are a number of general works on the medicinal uses of native plants by European Americans in the plains and intermountain west (Moore, M. 1979; Kindscher 1987, 1992; Tilford 1997), there is hardly anything that refers specifically to the Black Hills. Nonetheless, there is still an enormous amount of material for the general area as evidenced in the large list of plants attached to this report (Appendix B).

The material on the tribal nations who historically occupied the Black Hills is very uneven. Fairly good material can be found on the Kiowas (Vestal and Schultes 1939), Plains Apaches (Jordan 1965), Poncas (Gilmore 1919), and Cheyennes (Grinnell 1972; Hart 1981, 1992), but existing sources on the Comanches (Carlson and Jones 1939), Arikaras (Gilmore 1926, 1987), Hidatsas (Nickel 1974), and Arapahoes (Nickerson 1966) are limited. There is also a substantial body of information on the Lakotas, but it is scattered over many different sources. Reverend Eugene Buechel's dictionary (1970) contains an exhaustive listing of Lakota plant names and some brief notes on their uses. A decade later Dilwyn Rogers (1980) reorganized much of this information in a manner more accessible for ethnobotanical study. Still, most of the richer and more elaborate descriptions on Lakota plant use, their preparation for culinary and medicinal purposes, and their symbolic and ceremonial associations are located in primary ethnographic sources (Densmore 1918; Gilmore 1919; Hassrick 1964; Walker 1980; DeMallie 1984). Red Cloud High School (2001) now has an excellent website for its course on Lakota Ethnobotany that contains information not found in other sources.

The overall lack of attention to plants in the literature on the tribal nations of the Black Hills reflects a bias about the nature of their local subsistence practices. Throughout much of the ethnographic literature, there is a pervasive idea that local tribes focused most of their subsistence efforts on hunting and spent little time on plant procurement. Since no ethnographers were in a position to actually witness historic procural practices, there is little to substantiate their claims that meat dominated tribal diets. This remains one of many unproven assumptions about the subsistence economies of the tribal nations who historically occupied the Black Hills. In 1851, the fur-trader Edwin Denig (in Ewers 1961:12), on the basis of his firsthand knowledge of the matter, wrote:

Few can have any idea, without actual observation, of the immense quantities of cherries and berries eaten by them in season. The former are masticated stones and all, making a noise with their incomparable grinders not unlike and fully as loud as horses eating corn. These fruits and roots together with some others of minor note are a great resource to a people who depend entirely upon the chase for subsistence. They can be easily cured, packed, and carried, and are of much service, particularly to their children, when meat is not to be had.

More recently, Julia Ann Jordan's study (1965) of Plains Apache ethnobotany confirms Denig's observations and provides substantial evidence that plants were a much more important part of tribal subsistence economies than is commonly supposed.

In the twentieth century, much of the research on ethnobotany was severely constrained because tribal populations were living in environments considerably different from the ones they had occupied before their settlement on reservations. This was true because many groups were settled at locations far removed from their aboriginal territories, where they were unfamiliar with many of the plants in their new homes. But even when tribes were not relocated, many of the plants they once knew and relied upon had disappeared as a result of being overgrazed by cattle or plowed under by farmers (Jordan 1965:57).

In comparison to the information available on Native faunal and floral knowledge, the material written on their geological understandings of the area is slim, consisting mostly of brief and ad hoc references written in other contexts. Nonetheless, some information can still be gleaned from some of the classic ethnographic works on the Cheyennes and Lakotas (Densmore 1918; Hassrick 1964; Grinnell 1972; Walker 1980; Moore 1996).

III. HUMAN AND PLANT/MINERAL RELATIONSHIPS

In the Cheyenne and Lakota scheme of things, plants are living beings, and like animals and humans, they have physical and spiritual properties (Schlesier 1987:6, 11). As Karl Schlesier (Ibid:11) wrote in reference to the Cheyennes:

Edible plants were regarded as powerful beings because they allowed animal and human life. Without the use of plant physical forms in artifacts and a wide range of cultural activities, human life would not have been possible. Plants could not be abused, and plants physically killed had to be propitiated.

Through the ingestion of plant food, animals and humans were made part of the plant community. Plants sought by Tsistsistas shamans and herbalists could not be used without the consent of their *hematasoomao*. Often plants revealed themselves to a specific person and disclosed their healing properties. The Tsistsistas tradition retains examples where the *hematasoomao* of shamans identified with specific plant species. In their plant manifestations, some are celebrated in Tsistsistas ceremonies to the present. Because of their solidarity with plants, Tsistsistas shamans used their spiritual power to heal plant diseases or to change weather conditions harmful to vegetation growth. Because game animals sustain themselves with the original, powerful potency of plants, the Tsistsistas regard their flesh as sacred. The ingestion of animal flesh made the human a part of the animal community also.

Schlesier (1987:6) also points out that in Cheyenne cosmology plants are divided according to their locations in the seven levels of the universe. Domesticated plants, such as corn, and wild berries whose edible parts grow above ground are known as *zehoneo* (Moore 1996:211). Below the earth, at the level of the *eseohonozoom*, where animals have their dens, is the place where plants valued for their roots and collectively called *eseohonoz* are found (Schlesier 1987:6). The *noavoom*, which is above the surface of the earth, is linked to sedges, short grasses, and other plants that grow close to the ground, whereas the *nostostovoom* is the level of bushes and tall grasses. The *matavoom* is the region of forests and trees. Since trees straddle many different tiers, penetrating into the deepest level of the universe, the *nsthoaman*, they are considered very powerful (Schlesier 1987:6; Moore 1996:211). These and other plants with deep root systems are known as *maheonezehoneo* (Moore 1996:211). Plants from each of these levels were represented physically or symbolically in major Cheyenne ceremonies including the *Massaum* (Schlesier 1987:6).

Although there appears to be no parallel organization for plants among the Lakotas, except perhaps for the use of plant material in *Yuwipi* ceremonies (Kemnitzer 1970:41-43), we can infer from other contexts that one of the reasons they were revered is because they transversed more than one plane of the cosmos, existing both below and above ground. Large trees, such as cottonwoods, were held in special regard because their roots traveled underground, their trunks occupied the earth's surface, and their branches reached towards the sky. As William Powers (1982:13, 1986:113, 162) argues, any living entity that transverses multiple planes of existence is understood to have special properties. Like badgers and ants, which lead a subterranean life, the roots of plants are connected to the purifying properties of the underground. And as with eagles and hawks, which soar above the earth, trees that grow to great heights are able to reach the cleansing properties of the sky, clouds, and thunders. But as pointed out in Chapter Nine, the principal structural theme in Lakota organization is based primarily on direction rather than stratification.

Different from the Cheyennes, who order their world mostly by hierarchy, the Lakotas emphasize directionality in theirs and connect animals, and thereby plants to the Four Directions or Winds. Bearberry is linked to the North Wind, while sage is associated with the South Wind, cedar the West Wind, and sweetgrass the East Wind. In one of his visions, Black Elk (in De-Mallie 1984:128-129, 240-244) describes the integral connections between the North Wind, *Waziyata*, the buffalo, humans, and herbs, such as the purple coneflower (Red Cloud High School 2001). As already mentioned in the last chapter, all of the major animals in Lakota cosmology are linked in one way or another to each of the Four Winds. Each of these animals, in turn, is associated with specific medicines, some of which are named the *tawote* [food] or *pejuta* [medicine] of a particular species. *Pte tawote* [buffalo food] applies to a species of milkvetch (Buechel 1970:440), *pispiza tawote* [prairie dog food] is the name of the fetid marigold (Ibid:444), and *hehaka tawote* [elk food] is known in English as wild bergamot (Ibid:172). The white prairie clover is called as *tapejuta hu bloka* [male kit-fox medicine stem], while the purple clover is identified as *tokala tapejuta hu winyela* [female kit-fox medicine stem] (Ibid:495). Not all plant names are linked to specific animals, but there is a general sense, as in some of Black Elk's visions (in DeMallie 1984:133-134), that the spirits of the animal species who "help" humans are the ones who "own" or steward certain plants. Bearberry [*Arctostaphylos uva-ursi*], also called "kinnikinnick," for example, was the gift of a spirit wolf according to Luther Standing Bear (1988:103).

The metamorphosis of animals into plants is a common occurrence in Lakota visionary narratives (Brown 1992:57). Stephen Feraca (1998:77) described what he learned from a Lakota female herbalist in the 1960s:

According to Mrs. Fast Horse, practically every flowering plant and bush in the area has a medicinal use or property. This does not mean, of course, that anyone may gather and make use of them. She pointed out various plants as buffalo, elk, and bear medicine, but she never gathered them.

Generally, people must gain the permission of the animal that oversees a particular plant in order to use it, and they must also gain further instruction in its proper application from knowledgeable and accomplished healers. This permission and its accompanying knowledge are gifted by the animals and come ultimately through encounters in visions and dreams (Ibid:72).

Despite their differences, the Lakotas share with the Cheyennes a basic belief in the transubstantiation of spiritual essences across living forms such that humans are able to partake of the healing properties of plants either directly or indirectly through the consumption of the flesh of animals, who depended on various floral species for their own life and well-being. In this regard, the meat of bison and deer are considered especially healthy because of the kinds of plants they feed on (Brown 1992:16, 30; Young Bear and Theisz 1994:128). As Wallace Black Elk (1990: 40) wrote:

Take, for example, the buffalo. He gave his life so we could wear his robe. We wear buckskins and moccasins. We use his sinews for thread and his bones for needles. He is a vegetarian and eats grass. But the same elements that are in that grass are also in our body. So the buffalo eats the grass and turns it into flesh and blood. We digest his flesh and blood. In turn, we get strength from this four-legged.

Comparable schemata for rocks, minerals, and soils are not developed in the literature on the Cheyennes or the Lakotas, although John Moore (1974:156-157, 171, 174, 175) writes a little about the colors of stones and soils and their connection to the four directions. Both tribes, however, believed that these natural phenomena had animate qualities.

IV. THE BLACK HILLS IN PLANT AND MINERAL COLLECTION

One of the major limitations of ethnobotanical studies is their failure to identify the specific geographic locations where tribal members traditionally procured their various plant and mineral resources. This is especially true for the tribal nations who once occupied the Black Hills. Indeed, most of the references to Native plant and mineral collection in the Black Hills are general to the area as a whole and rarely identify site-specific locations for this activity. References connecting the Black Hills to lodgepole procurement are widespread, however, and there are several citations that mention the Hills as a preferred location for the collection of medicinal plants and certain stones. Some even specify particular locations, such as Bear Butte, Harney Peak, Hot Springs, the Needles area, and Inyan Kara Mountain for the collection of plants and/or stones. Wind Cave National Park, however, has not been singled out in any of the sources examined for this study, except for Rufus Pilcher's recollections (1964) of Lakotas requesting stones from the cave in the early twentieth century. Nonetheless, it is a location where many culturally important plants grow, and several tribal cultural preservation officers specifically identified the plants of this area as important. Given the sacred significance of the area and its association with bison, which are widely connected to herbs and herbal medicine, it would not be surprising, for reasons discussed below, to know that park properties, or the general area in which they are situated, are associated with certain kinds of plant and mineral collection.

Of the many tribal nations who were known historically to occupy the Black Hills, only the Lakotas and Cheyennes are described as using the Hills for plant and mineral procurement. Other groups certainly used it for this purpose too, but their occupation of the area took place long before ethnographers and ethnobotanists conducted research on the subject. One of the consistent themes in the literature is the Cheyennes' and Lakotas' high regard for the Black Hills as a location for securing plants and minerals, especially those used in healing and ceremonies.

The Black Hills achieved this stature for many reasons. One of the most important of these is that a number of plant species do not grow in the surrounding grasslands and sagebrush steppes. They are found only in the higher elevation environments of the Black Hills. Although some of them grow in the neighboring Laramie Range and the Big Horn Mountains, these areas were outside much of the Cheyennes' and Lakotas' customary territorial range until fairly late in the historic era. Cowparsnip (*Heracleum maximum*), bearberry (*Arctostaphylos uva-ursi*), snakeroot (*Polygala senega*), lodgepole pine (*Pinus contorta*), and the wood lily (*Lilium philadelphium*) are just a few of the culturally important plants whose distributions are restricted to habitats in the Black Hills. In some cases, these plants grow in moister areas east of the Missouri River, and the Hills represent an outlier environment for their growth. Clearly, the metaphor of the Black Hills as an island is very appropriate here.

As early as 1846, Francis Parkman (in Feltskog 1969:270-271) specifically commented about the importance of the Black Hills for securing lodgepoles, and three years later, in 1849, E. De Girardin

(1936:63) wrote about local tribes procuring kinnikinick (bearberry) from the Hills for their tobacco mixtures. According to Ferdinand Hayden (1862b:200), these tribes used the bark of the redsoir dogwood in their tobacco mixes only when bearberry was unavailable. Other historic observations (Hayden 1862b:199-200; Hinman 1874b:95; Jenney 1875:182; Newton and Jenney 1880:323; Bushnell 1922:70; Chittenden 1935:728; Denig in Ewers 1961:6; Dodge 1965:137, Dodge in Kime 1998:105; Power in Krause and Olson 1974:88-89; Grant in Krause and Olson 1974:250) also remark on the use of the Hills for collecting lodgepoles, and William Bordeaux (1929:191) reported that green ash trees used in bow making were historically procured along stream banks in the Black Hills.

At the end of the nineteenth century, early agents on the Pine Ridge Reservation routinely gave Lakotas passes to travel to the Black Hills to collect plants for food and medicine (Jones 1904:125-128; Mekeel 1932:278). Early settlers recall Lakotas coming to the Black Hills well into the twentieth century to acquire their lodgepoles, to pick berries, dig for turnips, and collect other plants for food and medicine (Stewart 1967-1970:71; Eastern Custer County Historical Society 1967-70:12, 730; McAdam 1973:6; Smith 1973:16; Fall River County Historical Society 1976:24, 33, 47, 72, 176, 213, 262, 264; Sundstrom, J. 1977:293, 317, 379, 1994:75). In addition, Cheyennes were known to come to the Hills from as far away as Montana and even Oklahoma after the 1930s to collect plants and gather minerals and clays for ceremonial purposes (Hart 1981:33, 39; Moore 1981:14; Schlesier 1987:6).

There are also many species that grow outside the Black Hills, but the Hills are the preferred site for their procural due to their connection with the sacred character of the area. The elms (*Ulmus americanus*) and baneberries (*Actaea rubra*) growing at Bear Butte, for example, have special significance to the Cheyennes (Hart 1981:33, 39). John Moore (1981:14) described how the historic Cheyennes always returned to the Hills to gather plants for their medicines. Three of the most important and sacred ceremonies of the Cheyennes, the *Massaum* (Animal Dance), the *Oxheheom* (Sun Dance), and the *Maxhoetonstov* (Sacred Arrows Ceremony), were conducted historically in the Black Hills and required the collection of native plants for their performances (Schlesier 1987:6, 88-104; Whiteman in Schwartz 1988:68-70). The sacred food prepared at the *Massaum*, for instance, represents plants from three of the four growth regions that make up the middle level of the universe, the *votostoom*. This food symbolized all edible food and plants in general (Schlesier 1987:6). As Karl Schlesier (1987:81) points out, just as all of the animals that made up the universe were represented symbolically at the *Massaum*, so all of the plant species that comprised this world were part of the ceremony's complex material base. Although all plants are respected and implicated in the drama of the cosmos, those appearing in the Black Hills are especially revered because they come from the place where the spirits reside that created the universe and made life possible for the Cheyennes today

The strong spiritual association of the Black Hills with plants also holds true for the Lakotas (Catches in Parlow 1983:2). In reference to Bear Butte, for example, Kari Forbes-Boyte (1996: 104) wrote:

Sacred plants grow at Bear Butte, and a number of Lakota mentioned the healing properties of these plants. Although many of these plants can be found at other locales, because of the affiliation between Bear Butte and doctoring, it is believed that plants are more powerful when gathered at this site. In addition, according to the Lakota, some plants are found only at Bear Butte. For example, one Lakota elder said only Bear Butte provides a type of herb traditionally applied to an infant's umbilical cord to ward off infection.

Fools Crow, a well-known spiritual leader of the Lakotas, had this to say about Bear Butte and its relation to healing and herbs:

To all the different medicine men, or medicine powers, the bear is the most powerful. The bear holds the secret of the roots and herbs that can cure a lot of diseases the medicines [Euro-American

pharmaceuticals] cannot. This is why Bear Butte is especially important and sacred for the medicine men who use herbs and roots and other forms of plant life to cure diseases and who have to go to Bear Butte regularly to renew their power to cure diseases and sickness (*quoted from Forbes-Boyte 1996:106*).

Bear Butte and the Black Hills proper are closely connected to healing because of their historic associations with bears, which are identified very specifically with medicines and root plants by the Lakotas (Dorsey, J. 1894:495; Densmore 1918:195; Lone Bear in Walker 1980:128; Lewis, T. 1990:108; Forbes Boyte 1996:106).

Similar comments have also been made in relation to the plants that grow at Harney Peak (Black Elk in DeMallie 1984:230-231), in the Hot Springs area (LaPointe 1976:46; Catches in Parlow 1983a: 2), and for the Black Hills as a whole (Bordeaux 1929:191; Buechel 1970:116-117; Catches in Parlow 1983a:2-3; Loud Hawk in Parlow 1983a:46; Red Shirt in Parlow 1983a: 63; Black Elk in DeMallie 1984:46, 98, 141, 253, 258-259; Flying By in Ingram 1989:181; Young Bear and Theisz 1994:30; Red Shirt 2002:38). Black Elk (in DeMallie 1984:133-134) described one of these plants as follows:

Then this gopher transformed into an herb. This was the most powerful herb of all that I had gotten. It could be used in war and could destroy a nation. (This was used in war and it was very destructive. If you touch this herb it will kill you at once. Nothing grows anywhere near it because it is killed immediately if it does). 'Behold him. There will be dispute of nations and you will defend your people with this herb' (I was not old enough when I was supposed to use this herb or else I could have used it and killed many enemies. It was too terrible to use and I was glad that I did not get use to it. This herb is in the Black Hills. Every animal that nears it dies. Although where it grows, there are many skeletons always. This medicine belongs only to me -- no one else knows what this herb looks like. It looks like a little tree with crinkly leaves, reddish in color. I call this herb soldier weed).

The story of the origin of kinikinick that Standing Bear (1988:103) tells is also probably connected to the Black Hills, as is the medicinal use of a herb associated with a story about bison that took place at the Buffalo Gap (Lone Wolf in Stars, Iron Shell, and Buechel 1978:242-245).

Although there is nothing specific in the published literature that connects medicinal plants to Wind Cave National Park per se, there are explicit associations in the literature between the healing properties of plants and the thermal waters at Hot Springs (LaPointe 1976:46; Catches in Parlow 1983a:2) and the Buffalo Gap (Lone Wolf in Stars, Iron Shell, and Buechel 1978:242-245). Several Lakotas and Cheyennes, however, identified the general area of the park as a location for the procurement of plants used in ceremonial observances, especially sage and kin-nikinick (Albers and Kittelson Interviews 2002).

Since the lands of Wind Cave National Park occupy an area that has long been considered *Tatanka makalpaya* [the Stomping Ground of the Bison Bull] in Lakota (Lone Wolf in Stars, Iron Shell, and Buechel 1978:242), it is easy to imagine how powerful symbolic connections might be made between the park's land, its bison and plants. This is true in two ways. First, as revealed in Chapter Nine, there is a close association in Lakota cosmology between bison and healing herbs. Severt Young Bear (and Theisz 1994:128) expressed it this way:

Even the buffalo meat the Oglala ate -- I don't know how many of the rest of the Lakotas were the same -- was especially healthy and even sacred because when those buffalo went into the Black Hills, they ate all the sacred herbs and medicines that are found there. Through the buffalo the Oglala then ate those same medicines.

Similarly, Black Elk (in DeMallie 1984:128-129) revealed the following in one of his visions of bison:

As I looked down upon the people, there stood on the north side a man painted red all over his body and he had with him a lance (Indian spear) and he walked into the center of the sacred nation's hoop and lay down and rolled himself on the ground and when he got up he was a buffalo standing right in the center of the nation's hoop. The buffalo rolled and when he got up there was an herb there in his place. The herb plant grew up and bloomed so that I could see what it looked like --what kind of an herb it was from the bloom. After the buffalo's arrival the people looked better and then when the buffalo turned into an herb, the people all got up and seemed to be well. Even the horses got up and stretched themselves and neighed. Then a little breeze came from the north and I could see that the wind was in the form of a spirit and as it went over the people all the dead things came to life. All the horses pulled up their tails and neighed and began to prance around.

The spirit said: 'Behold you have seen the powers of the north in the form of man, buffalo, herb and wind. The people shall follow the man's steps; like him they shall walk and like the buffalo they shall live and with the herb they shall have knowledge. They shall be like relatives to the wind.' [From the man in the illustration they should be healthy, from the buffalo they shall get meat, from the herb they shall get knowledge of diseases. the north wind will give them strong endurance.

As discussed in Chapter Fifteen, the symbolic associations Black Elk made in this dream have relevance to Wind Cave, believed by some to be the home of *Waziyata* [the North Wind and/or his grandfather], a connection he in fact infers in another context (in Brown 1971:19-20).

Additionally, the creation of plants and a number of specific plant species are described in de-tail in the sacred story of the Four Winds and the Lakota genesis story that are also closely connected to Wind Cave (Walker 1983:220-228, 230-236). As Elaine Jahner (in Walker 1983:196) points out, James Walker's narrative synthesis of the Lakota genesis story tells how the *Wakinyan* [Thunders] instruct *Wohpe* to create seeds and plants by blowing dust on them. In order to create all the plants and foods for the gods to feast on, *Wohpe* needs help and so the *Pte Oyate* [the Buffalo People] are made to assist her. The process whereby plants and foods are created reveals "the way power works in bringing things into existence in the process of creation" (Jahner in Walker 1983:196). Even more specifically, it is the connection of Wind Cave with the North Wind, *Waziya* or *Waziyata*, and his relation to the buffalo and their rebirth that undoubtedly punctuates the special stature of the plants that grow in this region.

The general sense that one gets from the literature is that the Lakotas believe different varieties of plants are more potent and powerful when they grow in the Black Hills because of their connections to the home of the animals, the winds, and the place of human origin. As the medicine man Pete Catches (Parlow 1983a:2-3) put it,

Another of the sacred spiritual men, brought yet another medicine. In the Black Hills, even of this day, we walk through the many canyons and deep recesses of the Black Hills and we see beautiful, powerful, potent medicine that grows no where else but the Black Hills. The medicine that grows there does not grow where I am talking now. I am talking in the reservation, near Pine Ridge. I know this territory very well. I go in the hills, looking for medicine. Many times I am sitting on top of the hill here looking towards the Black Hills. Oh how I want to go there in search of medicine.

Another Lakota, Stella Loud Hawk, also speaks about the relationship between plants and the Hills sacredness. As she says:

The whites say they never heard the Black Hills is sacred. But way back, it's been sacred. It's very sacred. The Medicine men, he mentioned all things, they get from the Black Hills. The roots, the leaves. That's where they get all their medicine. The roots, the plants they use. And the barks. And these Medicine men travel very far to get their medicine. I have a grandfather that travels very far. He travels to North Dakota to get a certain plant for his medicine collection. And then into Montana and into Wayoming, Wyoming, Big Horn. And they always say that our Medicine men are wtich doctors.

But they are not. They are using the same roots as our grandfathers used back in those days. And I always say the Creator made those plants to us. So, I can say he was a doctor. He was a doctor for our Indian people. And I can say these Medicines are very strong. And there are certain kinds of Medicine that he gets from the Hills. And that's why today the Lakota people say, 'sacred.' We use that word, 'sacred' (in Parlow 1983a:46).

It is well known that plant species exhibit considerable diversity across their varied habitats, and this was certainly recognized by the Lakotas and Cheyennes. Variation is revealed not only in the relative productivity of particular plant patches, but also in terms of other qualitative criteria. Plains Apaches, for example, recognize variations in the aromatic qualities of different patches of wild bergamot, a plant widely used by plains tribes as a medicine and perfume. They jealously protected their knowledge of the best patches of this plant (Jordan 1965:143-147). Similarly, Utes recognize differences in buffaloberry stands by their productivity and the relative quality of their fruit. Again, the whereabouts of the highest yielding and best tasting berries is a closely guarded family secret (Albers and Lowry 1995). Iron Teeth told Thomas Marquis (and Limbaugh 1973:6) that the Cheyennes always searched for and returned to the best locations to collect berries, and Melvin Gilmore (1919:88) noted that the Lakotas often made special trips to find locations where fruits like chokecherries were abundant. Not uncommonly, chokecherry bushes are plentiful near Lakota rock art sites in the Black Hills and neighboring areas associated with female fasting and dreams of the Double-Woman, *Winyan Nunpapika* (Sundstrom, L. 2002:112).

There are a host of criteria one may use in selecting sites to collect plants, and their choice depends, in part, on a plant's use. Thus while taste may be among the primary considerations for food plants, color is more important for selecting plants that work as dyes, and durability for those with structural uses. It is also true that families often gather plants at preferred places whose whereabouts has been passed down over many generations and kept secret. Therefore, even though particular plant species may grow in abundance elsewhere, Lakotas and Cheyennes may still come to the Black Hills to gather them because of their association with a sacred space, because of family traditions of having gathered plants at locations in the Hills, or because of the productivity and special properties (e.g., fragrance, taste) of particular stands in this area.

Finally, one must be mindful of the fact that many of the rich native plant environments on the plains were destroyed because the lands were overgrazed, plowed under, or inundated by large dam projects. Some of the most valuable riparian environments in Lakota country were destroyed after the building of dams along the Missouri River and the South Fork of the Cheyenne. Plant habitats in the Black Hills were also despoiled through grazing, logging, and mining practices, but there are still many local environments where culturally significant plants not only survive but flourish (Larson and Johnson 1999:14). Paramount among these are state and federal lands with a protected status.

There is no question that the Hills were, and still remain, an important area for the procurement of plants, nor is there any doubt that this area also served as a prominent place for the collection of stones and minerals with practical as well as ceremonial uses. There is an abundant body of archaeological evidence for quarrying activity having taken place in the Black Hills during prehistoric and early historic times. Many of the minerals procured in the Hills, including gypsum and certain varieties of quartzite, flint, chalcedony, chert, limestone, and sand-stone, are restricted to the Hills. Two of the most famous quarrying sites in the Black Hills are in close proximity to Wind Cave National Park. One is Battle Mountain, about five miles southeast of the park, at the top of which is a large outcropping of variegated colored quartzite found in association with numerous flaked pieces. Local whites have mistakenly interpreted this site as a battleground. While battles certainly took place near this location, as reported in oral histories and winter counts, the debris of worked stone found atop Battle Mountain reveals not a battle site but a quarrying area. Another is Flint Hill, just six miles south of Minnekahta Junction and approximately twenty miles southwest of the park, which also contains rich outcroppings of quartzite

material. Tipi rings abound near both of these sites, and the stone material quarried at both was well represented in archeological sites submerged by the Angostura Reservoir on the South Fork of the Cheyenne River. Other stone, including agate, chalcedony, and chert, suitable for making projectile points, and hematite, for making paint, were also found in the general area of the Black Hills (Wedel 1959:272; Sundstrom, L. 1990:59-60; Wedel and Frison 2001:44-45, 49). Evidence for the prehistoric quarrying of chalcedony is found at a number of documented sites at Wind Cave National Park or in its immediate vicinity (CU0869, CU0870, CU0871, CU0872, CU0873, CU0876, CU1235, CU1236, CU1285).

As far back as 1804, traders wrote about local tribes taking and trading gold, lead, and other minerals from the Black Hills (Tabeau in Abel 1939:68). In 1874, Samuel Burrows (in Krause and Olson 1974:208) reported that atop Inyan Kara Mountain “small pieces of white quartz were found. As they had no geological business to be there, they were no doubt left there by the Indians, who are fond of making offerings to their gods from these lofty altars.” William Ludlow (1875:15), Chief Engineer of the Custer Expedition, reported a site on the northwestern side of the Black Hills where there were enormous quantities of gypsum that had been quarried by local tribes who left offerings there. Gypsum and other crystalline stone, as discussed momentarily, had important practical and spiritual uses for the Cheyennes as well as the Lakotas.

Several ethnographers and local historians described the Black Hills area as a preferred location for the collection of certain stones. According to Francis Densmore (1918:438), the Lakotas on the Standing Rock Reservation procured finely grained sandstones used for finishing off arrow shafts in the Black Hills. Thomas Odell (1942:23-24) reported a formation near Bear Butte where Lakotas collected a certain kind of stone. As he wrote:

Many small concretions of burnish color, divisible into two parts, each of which forms a cup-like receptacle, abound in the vicinity of Bear Butte. The Dakotas, it is said, gathered and polished these stones, on which they engraved pictures of Bear Butte, together with those of the sun and moon. It is reported that some of these stone idols are still in existence.

John Moore (1981:14; 1996a:67-68) writes that Cheyennes continue to collect red hematite, coal, blue earth, and white clay from locations in and around the Hills to use as pigments in their ceremonial paints. He specifically mentions the area of Bear Butte as one location for the procurement of blue clay and gypsum (Moore, J. 1974a:174, 259). Finally, Rufus Pilcher (1964) told a story about Lakotas requesting stone from Wind Cave for healing in the first decade of the twentieth century (see Chapter Thirteen for details).

Even after the United States took over the Hills, Lakotas and Cheyennes continued to gather their plants and minerals here. In fact, it appears to have been a customary practice in the early twentieth century to permit Lakotas to leave their reservations in order to gather plants in the Black Hills for food and medicinal purposes (Jones 1904:125-128; Mekeel 1932:278). In later years, there are many other references to Lakotas and Cheyennes continuing to make use of the Black Hills for collecting plants and minerals (Eastern Custer County Historical Society 1967-70:12, 730; Buechel 1970:116-117; Fall River County Historical Society 1976:72; LaPointe 1976:46; Hart 1981:33, 39; Moore 1981:14; Black Elk in DeMallie 1984:46, 98, 133-134, 141, 253, 258-259; Schlesier 1987:6, 88-104; Schwartz 1988:68-70; Ingram 1989:181; Born 1994:26-27; Forbes-Boyte 1996:104, 106). Over time, however, the Lakotas and Cheyennes' ability to procure the plants and minerals they needed for their religious observances was restricted in the Hills. As Pete Catches (in Parlow 1983a:3) explains:

And I can't because it is being watched very closely and you cannot get off your car and get into the hills. You are told to get away from there. I done that once. We went to the Black Hills for the sole purpose of getting what is known as tobacco. No one knows that except a few people. I went there teaching a young man to show him what it looks like. And we were ordered away. 'Do not take

anything, leave everything as it is,' they told us. So in the Black Hills there is many beautiful medicine that we wish we could have. And we go there and there area signs; we are ordered away from it. Medicine is very, very powerful there, blessed by the Great Spirit and given for the use of Lakota people. For 100 years we are kept from even entering the Black Hills. We go there fearing we will be chased out. We go there to be in the presence of the powerful Medicine sights there. When we walk in the region, we are strong.

Similar sentiments are expressed by Wallace Black Elk (and Lyon 1990:72) as follows:

So it's hard for us to gather the materials we need. They are on the land but that land is federal or state or private land. So you can't walk these private lands. There's a *no trespass* there. If you go there and try to pick medicine, they will shoot at you. Sometimes they shoot us dead. Then the government comes and says, "Well, a dead Indian is a good one," like that. So it's really hard to go in any land. It used to be our land but it's like they pulled the rug out from under our feet. So we are a people without a land and without a law. The spirit told us, "Not even one law was made for the Indian." So investigate that, because that is what the spirit told us. So every law that was made for Indians was made to go against us. So there never was a law made for Indians. So these things happened to us.

Indeed, one very good reason tribal people have not identified the sites where they gather plants on public lands in the Black Hills is the legitimate fear that the discovery of such use will lead to restrictions and the prevention of future access (Melmer 2003: B1).

V. SEASONAL CYCLES IN TRIBAL PROCUREMENT

Historically, the collection of plants was seasonally specific, and as the case with animals, the Lakotas and Cheyennes came to the Hills at particular times of the year to procure them. The late spring and early summer months were the times most tribal nations would have used the Black Hills for specialized plant collection. This was the time when the bands that wintered at the base of the Hills split into smaller camp groups to carry on various plant gathering activities, and it was also the season when people from more distant locations traveled to and spent time in the area every year, specifically for the purpose of gathering their lodgepoles and medicinal plants. This period was also associated with intense ceremonial activity, much of it conducted at various sites in and around the Hills (Bordeaux 1929:191; Hassrick 1964:154-155; Looking Horse in Parlow 1943a: 42-43; Schlesier 1987:82-83; Black Elk, C. 1992a:49-51; Goodman 1992:8, 13, 16).

The early spring was the time groups tapped sap from the box elder tree (Hassrick 1964:155) or gathered the buds of American licorice (Grinnell 1972:2:178). Around the time of the vernal equinox bearberry, pasqueflowers, and milkvetch were collected. By the time of the summer solstice, berries were starting to ripen, leaves were becoming mature, and roots were reaching their highest potency in the Black Hills. The wild turnip, for example, was abundant here, and historically, it was commonly gathered in the foothills (Fall River County Historical Society 1976:72). The opportune time for identifying and gathering turnips is limited because the plant's top breaks off and scatters its seeds soon after ripening in June, making it difficult to locate (Kindscher 1987:183-189). The most intense gathering of plants for food, medicinal, ceremonial, and manufacturing purposes occurred during the weeks following the summer solstice (Hassrick 1964:155). This was the time when many tribal groups encamped at higher elevation locations in the Black Hills, where they were able to find an abundance of berries and many medicinal plants, such as cowparsnip, not found on the surrounding prairies (Bordeaux 1929:191).

By the middle of August, people would make their departure from the Hills to gather into larger groups in preparation for their annual communal bison hunts, which historically took place on the grasslands surrounding the Hills or in the gaps and canyon spaces where herds of bison and other animals

could be easily isolated, surrounded, and/or driven into pounds (Warren 1875: 15-16; Hassrick 1964:155-156; Schlesier 1987:55-59; Sundstrom, L. 2000). This was the season when wild plums and buffaloberries ripened and when sunflowers, curly gumweed, gayfeathers, and goldenrod bloomed. These plants would have been harvested in and around the Hills only when groups located bison in the immediate area, and this certainly would have happened before the 1840s and even after but with much less frequency.

Another season when groups came to the Hills was in the late fall after their large communal game hunts. Groups who typically overwintered here probably gathered hazelnuts¹ and oak acorns near the sites of their winter camps (Hassrick 1964:153, 156). Even buffaloberries² may have been procured at this time of the year because some tribal people believe they taste better after the first frost (Albers 1966-1976, Fieldnotes; Nickel 1974:73). Trips to collect lodgepoles are also reported to have taken place in the fall (Bordeaux 1929:45). Other populations who wintered elsewhere may also have engaged in some plant and mineral collection during this season in conjunction with specialized trips to the area for elk and bighorn sheep hunting or en route to other locales.

VI. PLANTS/MINERALS AND THEIR USES

In the remaining part of this chapter, the plants and minerals reported at Wind Cave National Park or in its vicinity are discussed in terms of their uses in subsistence, healing, hygiene, manufacture, decorative art, animal care, and in symbolism as well as ceremony. In this discussion, particular attention is given to the tribes with known histories of occupancy in areas at or surrounding the park. Again, the large plant list (Appendix B) attached to this report contains much more detailed information on these and other plants along with their uses. A more detailed discussion of the minerals and clays of importance to the Cheyennes and Lakotas is found in Appendix C.

It must be emphasized that the material presented here and in the accompanying appendices is not to be construed as exhaustive or complete. There are probably many plants, minerals, and clays whose use in healing and religious ceremonies is not public knowledge. Spiritually gifted people generally do not reveal or identify the plants and stones they use or the places they procure them. This kind of information is kept secret out of respect for a plant or stone's spiritual potency, the places it lives, and/or the spirit partners who revealed and gave instructions on its use. Even Nicholas Black Elk (in DeMallie 1984), who talked about his own spiritual experiences in very detailed and candid ways, did not offer specific information on the identities of the plants he used in healing.

A. Plants Used in Food and Food Preparation

The Black Hills is a veritable produce market when it comes to the quality, variety, and productivity of their fruits and other edible wild plants. In historic times, the berries, nuts, seeds, saps, nectars, resins, stalks, flowers, leaves, barks, roots, bulbs, and tubers of a wide range of plants made up the diets of the tribal nations who lived in the region. Many of the plant staples in tribal diets are located in the Black Hills and at Wind Cave National Park.

1. Berries, Nuts, Seeds, and Pods

¹ Walter Jenney (in Newton and Jenney 1880:318) reported that two different varieties of hazelnuts were found in extensive patches in the southeastern Black Hills in 1875.

² These berries can be found on their bushes into late October and early November.

Some of the early fur traders in the region, especially Pierre Antoine Tabeau (in Abel 1939:93-94) and Edwin Denig (in Ewers 1961:11-14), wrote extensive narratives about the importance of fruits in native diets, including the chokecherry, serviceberry, currant, wild plum, wild grape, strawberry, buffaloberry, gooseberry, cacti tuna, and rosebuds. Different members of the Black Hills Expedition described all of the fruits important in local tribal diets as growing in profuse quantities at various locations in the Black Hills in 1874. William Ludlow (1875:18), the chief engineer on this expedition, for example, described one such location at the base of Harney Peak: "Wild raspberries, unexcelled in size and flavor, abounded; and in the dark wet bottoms the june-berry bushes grew to a height of 10 or 12 feet, and hung full of fruit." A. B. Donaldson (in Krause and Olson 1974:64), the expedition's botanist, described the profusion of fruit there as well. Samuel Barrows (in Krause and Olson 1974:1974:250), one of the journalists, wrote that strawberries, raspberries, gooseberries, and serviceberries grew abundantly on the side of Inyan Kara Mountain, and another correspondent (Knappen in Krause and Olson 1974:23) wrote of the rich berry-producing vegetation of Floral and Castle valleys, where "thousands of acres" of raspberries, currants, gooseberries, huckleberries, and strawberries could be found. A year later, members of the Jenney Expedition also reported on the abundance of the Hills' fruit-bearing plants (Newton and Jenney 1880:316-38). Indeed, Walter Jenney (in Newton and Jenney 1880: 316) likened the richness of the Hills' vegetation to southern Maine and New Hampshire.

Of the numerous varieties of fruits found in the Black Hills, chokecherries [*Prunus virginiana*] were probably the most important and certainly among the most highly esteemed by local tribes (Hart 1992:42). The Lakotas and other tribal nations in the region made special trips to find locations where this fruit was abundant during the months of July and August (Gilmore 1919:88). Edwin Denig (in Ewers 1961:11-12) wrote about this fruit and the buffaloberry as follows:

Choke cherries, *cham pah'* (Sioux), and grain de beouf, *mush tim' poo tah* (Sioux), grow on low bushes in great quantities along the coulees. These with the plumbs form the principal food for bears and wolves. Both the fruits last named are dried. The former is pounded with the seeds, and cooked in various ways, occasionally made into soup, but more often mixed with dried buffalo meat bruised and marrow grease added. This is what is known among the voyagers as pemmican. It is convenient to carry, nutritious and rather more desirable than most of their dishes. The grain de beouf is a small, red berry with an acid taste. When dried it is made into soup by boiling or enters as a component into pemmican instead of the cherries.

Historically, chokecherries were eaten fresh and prepared for later use. They were commonly ground with special mortars and pestles and made into small cakes and dried in the sun. These cakes, which contain a mixture of dried fruit, meat, and fat, are commonly known as pemmican in English or *wasna* in Lakota (Gilmore 1913b:364-365, 1919:88; Grinnell 1972:2:178; Nickel 1974:71; Standing Bear 1975:22, 1978:6, 59, 1998:111; Brown 1992:12). Many of the corn-producing tribes in the region also combined chokecherries with ground corn meal, a practice followed by the non-horticultural groups as well (Gilmore 1926b:14; Nickel 1974:71). In fact, chokecherries were an important part of the intertribal trade between the Arikaras and Lakotas (Gilmore 1987:90-91). The tribal nations of the region also mixed these berries in a variety of different soups and stews, and today, they are made into a popular pudding among the Cheyennes and the Lakotas (Lewis, L. 1980:252; Hart 1981:36; Hart 1992:35). Chokecherries remain a necessary food and/or offering at most contemporary feasts and religious events among contemporary Lakotas (Albers 1966-1976; Kemnitzer 1970:75; Nurge 1970:67, 82). In modern times, Lakotas continue to gather chokecherries; they prepare them using meat grinders and food processors and preserve them through drying, canning, and freezing techniques (Nurge 1970:82; Lewis, T. 1990:155). Chokecherries were also a popular fruit for early European American settlers, who processed them for jams and jellies (Eastern Custer County Historical Society 1967-70:40, 402, 425, 583; Fall River County Historical Society 1976:119, 243; Sundstrom, J. 1977:227, 365, 379). The Lakotas also make jams and jellies from chokecherries (Albers 1966-1976).

Buffaloberries [*Shepherdia canadensis* or *S. argentea*] (also known as rabbitberries) ripened in the late summer and early fall. They were probably collected near tribal buffalo hunting grounds outside the Hills, but they may have been gathered along the Hills' margins when groups moved there to set up their winter encampments. The Arapahos, Cheyennes, Lakotas, Poncas, and Arikaras consumed the tart berries fresh but dried most of them for winter use (Gilmore 1919:106, 1987:54; Hassrick 1964:178; Nickerson 1966:49; Buechel 1970:333-334; Grinnell 1972:2:181; Nickel 1974:73; Hart 1981:25). Today, they remain a favorite fruit among local tribes who can and freeze them, prepare them in puddings for ceremonial occasions, or put them up in jams (Nickerson 1966:49; Kemnitzer 1970:75; Nurge 1970:67, 82; Standing Bear 1978:59). Early European American settlers in the region also consumed large quantities of these berries, and settlers garnished their meats with sauces and jellies made from the fruit (Fall River County Historical Society 1976:119, 243; Sundstrom, J. 1977:227).

Wild plum [*Prunus Americana*], which also ripens at the end of summer, from August to September, was another important fruit for tribal nations throughout the region. Again, Denig (in Ewers 1961:11) wrote:

Red plums, *cauntah* (Sioux) grow on small bushes in many places on the borders of most of the rivers mentioned, but are found in great abundance high up on the White River and L'eau qui Court. They are best eaten ripe, but are dried and laid up by the natives, and when wanted are rendered eatable by boiling. The process of drying, however, extracts most of the fruit taste and leaves nothing but the rind.

Not only was this an important fruit historically, but it remains a valued one today (Gilmore 1919:87; Carlson and Jones 1939:523; Vestal and Schultes 1939:29; Jordan 1965:41; Grinnell 1972:2:177; Nickel 1974:70; Standing Bear 1978:59; 1988:111; Brown 1992:12). In modern times, wild plums are often made into jams and jellies or preserved by canning for use on ceremonial occasions (Kemnitzer 1970:75; Nurge 1970:67, 82; Lewis, L. 1980:252). This fruit has also been a popular food for European Americans living in the Black Hills (Sundstrom, J. 1994:75).

Another member of the rose family, the serviceberry [*Amelanchiera*], remains an important food for tribes throughout the region. Like the chokecherry, it was eaten fresh or dried and pounded into bison meat to make pemmican cakes (Gilmore 1919:87, 1987:35; Bordeaux 1929:132; Hassrick 1964:179; Nickerson 1966:48; Grinnell 1972:2:176; Hart 1981:34, 1992:8). It is a popular ingredient in puddings and soups served today on ceremonial occasions (Albers 1966-1976). Historically, this was a popular trade item that tribes exchanged with European Americans (Gilmore 1919:91), and today, it remains a popular wild fruit among European American residents of the Black Hills (Fall River County Historical Society 1976:119, 243; Sundstrom, J. 1977:227, 379).

Many other fruit-bearing woody plants located at Wind Cave National Park were a source of food in earlier times, and they remain important in tribal diets today. Local tribes eat raspberries [*Rubus idaeus* or *R. occidentalis*] and various species of currant and gooseberry [*Ribes americanum*, *R. aureum*, *R. cereum*, *R. hertellium*, *R. oxycanthoides*, and *R. missouriensis*], fresh or dried for long-term use (Gilmore 1919:85; Hassrick 1964:179; Grinnell 1972: 2:175, 177; Nickel 1974:72; Jordan 1965:49; Standing Bear 1978:59, 1988:11-12; Brown 1992:12; Hart 1981:26-27, 36). The berries of the skunkbush or fragrant sumac [*Rhus aromatica*] are important to the Kiowas, Plains Apaches, and various Numic speaking tribes in the area, but other tribes do not appear to have collected them systematically (Vestal and Schultes 1939:39, 40, 72; Jordan 1965:48). In earlier eras, the Plains Apaches and the Lakotas often made hackberries [*Celtis occidentalis*] into candy or a condiment for seasoning meats (Gilmore 1913b:362; Jordan 1965: 63). Nannyberries [*Viburnum lentago*] were once eaten too but not in great quantities (Gilmore 1919:115; Nickel 1974:75), and elderberries [*Sambucus racemosa*] were eaten raw

and used in a beverage tea (Gilmore 1919:115; Vestal and Schultes 1939:52). The Lakotas and Poncas dried the fruits of sandcherries [*Prunus pumila*] for later use and also made them into a sauce when fresh (Gilmore 1913b:364). The Lakotas and Cheyennes believed that if a person approached sand-cherries from the windward side they would be bitter but coming from the opposite direction, they would be sweet (Gilmore 1919:88; Buechel 1970:97; Grinnell 1972:2:177; Eastman in Graeber 1978:88, 101; Standing Bear 1988:12). Rosebuds [*Rosa* spp.] are eaten too, but more often, along with bearberries [*Arctostaphylos uva-ursi*], they are taken as an emergency food (Gilmore 1919:85; Hassrick 1964:156; Kemnitzer 1970:73; Nurge 1970:82; Nickel 1974:73, 74; Hart 1981:31, 36; Wilson 1981:106-107; Kindscher 1987:200-204; Standing Bear 1988:11; Brown 1992:12). Wild strawberries [*Fragaria virginiana*] were taken fresh by all of the tribal nations of the northern Plains when they ripened in June, and they were also desired and sought after by early European American travelers and settlers (Sundstrom, J. 1977:227). River grapes [*Vitis riparia*], which are not reported on park properties, are abundant in the general region, and they are still important sources of food for the region's tribal peoples (Gilmore 1919:102; Carlson and Jones 1939:523; Vestal and Schultes 1939:42; Jordan 1965:52-54; Hassrick 1964:179,190; Jordan 1965:52-54; Buechel 1970:135; Grinnell 1972:2:180; Nickel 1974:75; Standing Bear 1978:59; Hart 1981:41). Finally, European Americans ground the berries of the common juniper [*Juniperus communis*] to flavor their meats (Larson and Johnson 1999:504).

Many trees in the region provide food as well. One of the most important food staples was the acorn of the bur oak [*Quercus macrocarpa*], which was gathered in late fall (Gilmore 1919:75; Carlson and Jones 1939:524; Grinnell 1972:1:248; Hart 1981:26). The bitterness of the acorns was extracted through a leaching process (Gilmore 1919:75), and then the nuts were ground into a meal for soups and mush (Hassrick 1964:156, 180; Brown 1992:12). Ground acorns were also added to the ingredients that went into the making of pemmican (Black Elk in DeMallie 1984:387). Notwithstanding the difficulties in collecting them, hazelnuts, which were reported as very abundant in the southeastern Hills in 1875 (Newton and Jenney 1880:316), were eaten raw or pounded into a meal for thickening soups (Gilmore 1919:74). In times of food scarcity, especially during the winter months, they became an important emergency food (Hassrick 1964: 156, 180). The fruits of the northern hawthorn [*Crataegus chrysoarpa/dissona*] were used as food, but these were eaten in moderation and taken mostly in emergency situations (Gilmore 1919:87; Carlson and Jones 1939:521; Jordan 1965:31; Grinnell 1972:2:176; Nickel 1974:61-62). The fruits of the Rocky Mountain juniper [*Juniperus scopulorum*] are also edible, and even though they were widely procured for food by tribes in the Intermountain West, this was not the case for most of the tribes in the Plains who consumed them on an occasional basis (Carlson and Jones 1939:522; Smith, A. 1974:270). Finally, the seeds of the ponderosa [*Pinus ponderosa*] were eaten by the Cheyennes (Hart 1992:57).

Several species of flowering forbs provided fruits, pods, and seeds for consumption. The immature pods of the groundplum [*Astragalus crassicaarpus*] were collected in the spring and eaten raw or cooked by Lakotas and Poncas (Gilmore 1913b:365; Gilmore 1919:91; Buechel 1970:440; Kindscher 1987:61). The Lakotas also ate the fruit of the pricklypear cactus [*Opuntia*], which they called *taspu* (Gilmore 1913b:366, 1919:104; Bordeaux 1929:130; Standing Bear 1978:59; Brown 1992: 12). Cacti tuna were eaten raw or stewed, and even the stems were consumed when other foods were scarce. Royal B. Hassrick (1964:179) quoted a Lakota woman, who said:

From the cactus we gathered the red tops or fruit and often brought them home, worked them around in a deerskin bag to remove all the thorns. Next we crushed them with a pestle and mortar in a rawhide bowl in much the same way we pounded cherries, and placed them in rows to dry. From this, we made mush, sometimes adding a little fat.

The Cheyennes dried the fruits as well, and they used them in meat stews and as a thickening agent for soups (Grinnell 1972:2:180; Hart 1981:16). The Comanches dried the unripe fruit, which they stored and

eventually cooked with other foods (Carlson and Jones 1939:523), while the Plains Apaches ate them raw when they picked them in the fall (Jordan 1965:38). Early European American settlers in the West quickly learned the food value of these cacti, too (Kindscher 1987:158). Various *Physalis* species or groundcherries, also commonly known as tomatillo, Chinese lantern, and popweed, were picked opportunistically and eaten fresh by Lakota children. They were also made into a sauce and dried for the winter when quantities were sufficient (Buechel 1970:467; Red Cloud High School 2001).

The seeds of the sunflower [*Helianthus annuus*], a plant commonly cultivated by the tribes who lived along the Missouri River, were gathered and eaten fresh, prepared by roasting and cooking, or dried and ground into a meal to make breads and thicken soups (Gilmore 1919:130-131; Grinnell 1972:2:189; Hart 1981:21; Kindscher 1987:124; Red Cloud Indian School 2001). Although some of the tribal nations along the Missouri River cultivated sunflowers, they preferred the wild varieties for making oils (Wilson 1917:18-19). Blue flax [*Linacea perenne*] seeds were used to flavor food as well (Kindscher 1987:244).

Another important food, but one not reported at Wind Cave National Park, was the wild bean or hogpeanut [*Amphicarpaea bracteata*]. Typically found on the lower elevation banks of rivers in and around the Black Hills, these beans were collected and stored in the dens of field mice or voles whose supplies were pilfered by the women of local tribes (Hayden 1862b:188; Gilmore 1919:95; Ewers 1961:11). Lakota women, however, left gifts of corn or other acceptable foods in exchange; there is a popular moral story in Lakota narrative traditions that tells of a woman who took beans from a mouse's storehouse without returning a gift and the calamity that befell her community as a result (Gilmore 1919:96). The underground seeds were gathered either in the early spring or in late fall, while the above ground seeds were harvested only during the fall (Kindscher 1987:38-41). The beans were eaten raw or boiled with meat fat to make a soup. According to Ferdinand Hayden (1862a:370), wild beans combined with dried beaver's tail was considered one of the Lakota's favorite dishes and often served to "distinguished visitors." The plant's smaller lentil sized seeds were cooked as well (Kindscher *ibid.*).

2. Bulbs, Tubers, and Roots

The prairie turnip, also known as breadroot scurfpea [*Psoralea esculenta*], was one of the most important foods for the tribal nations of the northern Plains, and it was also one of the most commonly reported in historic sources (Kaye and Moodie 1978:329-336). Pierre Antoine Tabeau (Abel 1939:98), for example, wrote:

...But the prairie turnip is the most common and is not only reserved for these occasions (famines) but is used much even in times of plenty. This root has almost the shape of a turnip. It is covered with a hard and very thick black skin which is easily detached and always removed whether the turnip is eaten raw or boiled. The women cut it in pieces, which they dry in the sun and afterwards pound and reduce to flour. They make of this flour a rich, nourishing, and palatable soup. All the wandering nations leave regretfully the districts where the prairie turnip grows abundantly and leave it, too, only after having dried great quantities of it. The Caninanbiches, Chayennes and others, who, independently of their chargers, have many horses not laden, are rarely without this flour and during the visit that they paid to the Ricaras, they bartered it for maize at a profit of three or four measures for one.

And Edwin Denig (in Ewers 1961:11) reported:

The prairie turnip, called by the Sioux *teep se nah*, or by the French *pomme blanche*, is found everywhere on the high prairies. It is either eaten raw or boiled and is collected and dried in large quantities by the Indians for winter use. When dried and pulverized a tolerable substitute for flour can be made of it. In any state it will support life for several months without the assistance of animal food. This root is much sought after and devoured by the grizzly bears.

In fact, Ferdinand Hayden (1862b:188) claimed that local tribes subsisted “almost entirely” on this plant during the spring and early summertime. Notwithstanding its importance, the prairie turnip is not an easy plant to harvest because its roots are generally compacted in hard soil. Historically, women used specially carved digging sticks to pry the turnips from the ground, and today, Lakota and Cheyenne women and men often use crowbars to do the job (Albers 1966-1976; Kindscher 1987:185-186). Melvin Gilmore (1919:92-93) noted that Lakota mothers told their children to take note of the directions of the plants and follow these to find the whereabouts of other plants because it is said that the plants ‘point to each other.’

The Lakotas and Cheyennes ate prairie turnip roots raw, and they also dried and braided them for winter use (Jordan 1965:46; Grinnell 1972:2:178; Iron Teeth in Marquis and Limbaugh 1973:6; Hart 1981:29-30; Standing Bear 1978:57, 1988:111). They were boiled with meat and also with sweeteners for puddings (Gilmore 1919:92, Hassrick 1964:173-174). They are still gathered by women and men today and considered an important ingredient in soups served on ceremonial occasions (Albers 1966-1976; Lewis, T. 1990:59).

The Arikaras, Mandans, and Hidatsas frequently acquired their supplies of prairie turnip in trade with the Lakotas, Cheyennes, and other tribal nations who lived on the plains west of their villages. In fact, there are vivid descriptions in traders’ accounts of Cheyenne and Arapaho horses laden with long strings of prairie turnip when they came to trade at the villages (Gilmore 1926:14; Tabeau in Abel 1939:98; Jordan 1965:47; Nickel 1974:72).

Gunnison’s mariposa lily [*Calochortus gunnisonni*] and the closely related sego lily [*C. nuttali*] were also sources of food for tribal nations in the northern Plains and adjoining regions of the Intermountain West. Among the Cheyennes, for example, the flower buds were eaten, and the bulbs were dried, pounded and stored for winter use to make a sweet mush (Grinnell 1972:2:172; Hart 1981:12).

Wild onions [*Allium*], which contain micronutrients such as vitamins C and A, were an important nutritional supplement to the buffalo meat diet of the tribal nations who lived in the central and northern Plains (Kindscher 1987:16, 1992:222-23). They were a popular food, eaten alone or as a condiment to enhance the flavor of meats and soups among all tribes in the region (Gilmore 1919:71; Carlson and Jones 1939:520; Jordan 1965:27; Nickerson 1966:46-47; Buechel 1970:447; Grinnell 1972:2:171; Standing Bear 1978:58; Hart 1981:12). Royal Hassrick (1964:179), quoting a Lakota woman, writes: “Wild onions were larger and sweeter than turnips. It was time to pick them when the prairie grass was thickest. Mixed with meat, either fresh or jerked, onions were extremely good.”

Although not listed for the Black Hills, the Jerusalem artichoke [*Helianthus tuberosus*] was also a major food staple, particularly for the tribal nations living on the eastern side of the Hills (Gilmore 1913b:369; Gilmore 1919:130-131; Buechel 1970:38; Standing Bear 1978:57; Walker 1982:128). According to the trader Edwin Denig (in Ewers 1961:11), “*Pangi* grow in abundance along marshy spots of the river banks. They are eaten raw, roasted or boiled, but are not dried and preserved.” Also found in locations farther east is the wild potato or groundnut [*Apios americana*], another important food in local tribal diets (Buechel 1970:111; Hart 1981:28).

The arrowhead plant [*Sagittaria cuneata*], widely found in the Black Hills, but not reported at Wind Cave National Park, was another significant source of food (Gilmore 1913:358, 1919:65; Nickerson 1966:46; Grinnell 1972:2:170; Standing Bear 1978:58; Hart 1981:7). Christina Little Horse (in Lewis, L. 1980:251), a Lakota woman, recollected her grandmother gathering these. As she described it:

When she would go out to pick the berries and wild food she had been used to eating, she would take me along. Usually the first place we’d go would be the creek. There was a plant growing there she

called “spetola.” That word meant beads. She’d take the plant out of the muddy, slushy water where the leaves would be floating on top of the water. She’d reach into the water with her hands and dig around and she would come up with a white, cordlike root with little bumps on it from about the size of a walnut down to the size of small beans. The root and the bumps together looked just like a string of beads. She would take all those beadlike things off the cordlike root and wash them in water. Then she’d boil them and they tasted just like mashed potatoes. She said they were Indian beans.

There were many other roots of importance in the diets of the tribal nations who lived around the Black Hills. The Lakotas, Kiowas, and Plains Apaches ate the bulb-like root of the dotted blazingstar, which is reported to have a carrot-like flavor (Vestal and Schultes 1939:61; Jordan 1965:34; Red Cloud High School 2001). The Plains Apaches also consumed the rootstalks of the cattail [*Typha latifolia*] (Jordan 1965:50). The roots of the American Licorice [*Glycyrrhiza lepidota*] were peeled and dried in large quantities for winter use by the Lakotas (Gilmore 1919:92), while the young shoots of the licorice plant were eaten raw by the Cheyennes when they budded in the early spring (Grinnell 1972:2:178). Various species of biscuitroot or wild parsley [*Lomatium* spp.] are reported in the Black Hills but not at Wind Cave National Park; these plants were gathered for food in the spring (Hassrick 1964:179-180; Buechel 1970:460; Grinnell 1972:2:182; Hart 1980:40; Kindscher 1987:147-148). Finally, the Poncas, Lakotas, and Comanches, chewed the roots of both the white and pink varieties of wild prairie clover [*Dalea* spp.] (Gilmore 1919:94; Carlson and Jones 1939:523; Buechel 1970:495; Kindscher 1987: 111).

3. Leaves, Stalks, Barks, Buds, and Flowers

Field Mint [*Mentha arvensis*] was widely used by European Americans and the tribal nations of the region for culinary purposes (Kindscher 1992:152-155). The Cheyennes, Lakotas, and Poncas boiled the dried leaves as a beverage tea (Bordeaux 1929:131; Grinnell 1972:2:186; Standing Bear 1978:58; Hart 1981:27). This tea is still served today at Lakota feasts (Albers 1966-76; Nurge 1970:67, 82). The Lakotas flavored their cooked meat with mint and packed the plant with their dried meat as well (Gilmore 1913b:363).

**TABLE 6. List of Food Plants at Wind Cave National Park
Used by Lakotas, Cheyennes, and/or Arapahos**

| <u>common name</u> | <u>Woody Plants</u> | <u>taxonomic name</u> |
|---|----------------------------|-------------------------------|
| American elm | | <i>Ulmus americanus</i> |
| Bearberry | | <i>Arctostaphylos uva-urs</i> |
| Box elder | | <i>Acer negunda</i> |
| Buckthorn | | <i>Ceanothus fendleri</i> |
| Bur oak | | <i>Quercus macro</i> |
| Buffaloberry | | <i>Sheperdia Canadensis</i> |
| Chokecherry | | <i>Prunus virginiana</i> |
| Cottonwood | | <i>Populus deltoides</i> |
| Currant | | <i>Ribes aureum</i> |
| Elderberry | | <i>Sambuicus racemosa</i> |
| Hackberry (found near Hot Springs) | | <i>Celtus occidentalis</i> |
| Hazelnut (reported in area, circa 1875) | | <i>Corylus cornuta</i> |
| Leadplant | | <i>Amorpha canescens</i> |
| Nannyberry | | <i>Vibrum lentago</i> |

Northern hawthorn
 Ponderosa pine
 Raspberry
 Rocky Mountain Juniper
 Sandcherry
 Serviceberry (Juneberry)
 Wild plum
 Willow

Crataegus Chrysocarpa
Pinus ponderosa
Rubus, spp.
Juniperus Scopulorum
Prunus pumila
Amelancheria alnifolia
Prunus Americanus
Salix, spp.

Grasses and Sedges

Bulrush

Scripus validus

Flowering Forbes

American licorice
 Breadroot scurfpea
 Dock
 Downy paintbrush
 Dotted blazingstar
 Field mint
 Flax
 Groundcherry
 Groundplum
 Mariposa lily
 Milkweed
 Pigweed
 Prairie clover
 Pricklypear cactus
 Rush skeletonplant
 Soapweed
 Sunflower
 Thistle
 Wild onion

Glycyrrhiza lepidot
Psoralea esculenta
Rumex, spp.
Castilleja sessilifora
Liatrus punctata
Mentha arvensis
Lincea spp.
Physalis, spp.
Astragalus crassicaarpus
Calochortus gunnisonni
Asclepiadaceae speciosa
Chenopodium, spp.
Dalea, spp.
Opuntia polyacantha
Lygodesmia juncea
Yucca glauca
Helianthus annus
Cirsium, spp.
Allium, spp.

Table 6, cont.

Fungi, Lichens, and Moss

Puffballs

Lycoperdon

Many other plants were also used to make culinary beverages. The Lakotas used raspberry, buckthorn, and leadplant leaves, white clover roots, and chokecherry bark in beverage teas (Gilmore 1919:85, 89, 93, 94; Buechel 1970:507), while the Poncas steeped the leaves of blue vervain [*Verbena stricta*] for the same purpose (Gilmore 1919:111). Cheyenne beverage teas were also brewed from the barks of the cottonwood, aspen, and elm tree (Hart 1981:36, 37, 39).

Pigweeds [*Chenopodium* spp.] were an ancient food plant on the plains (Kindscher 1987:79-83). The Lakotas boiled the immature plant greens for food or prepared them as a mush, and the Kiowas also consumed them, even though they believed that the plant was put on the earth “to bother Indians or drive them away from dangerous places” (Vestal and Schultes 1939:25; Buechel 1970:117, 574). They were also a popular source of greens for European American travelers and immigrants in the nineteenth century (Kindscher 1987:82). Other species of plants called pigweeds that come from the amaranth family, including the prostrate variety [*Amaranthea graecizians*], were also used as a source of greens by the Kiowas, who often cooked them in soups (Vestal and Schultes 1939:26).

Various parts of local milkweed species, *Asclepiadaceae*, were used as food too. The Lakotas and Cheyennes used the flowers of *A. speciosa* to thicken soups (Gilmore 1913b:363; Buechel 1970:519). The Cheyennes ate the inner layer of the stalks when the fruit was still green, and they used the dry milk as a chewing gum (Grinnell 1972:2:183; Hart 1981:14). They also consumed the inner stem of thistles [*Cirsium edule*] raw and considered this a prized food (Hart 1981:20), while the Comanches consumed *C. undulatum* (Carlson and Jones 1939:521) and the Kiowas, *C. ochrocentrum* (Vestal and Schultes 1939:85). The Kiowas and Plains Apaches ate the flower stalks of the soapweed [*Yucca glauca*] plant (Vestal and Schultes 1939:17; Jordan 1965:54). Although the Cheyenne knew them to be eatable, they did not consume them in any measure (Whiteman in Schwartz 1988:53). The inner bark of young cottonwoods and the buds of willows were a source of food for the Lakotas (Bordeaux 1929:131). The inner stems of the softstem bulrush [*Scirpus validus*] were common foods for both the Cheyennes and the Lakotas (Gilmore 1913b:359; Hart 1981:8; Red Cloud High School 2001). Standing Bear (1978:58) wrote about the bulrush as follows:

A food that had an interesting history for us was the tall plant that grew in the swamps, commonly called bulrush. The duck, who brought many good plants and roots to the tribe, told the Duck Dreamer medicine-man about it and named it psa. In the early spring and summer we welcomed this plant which was pulled up by the roots, and the white part eaten like celery.

4. Saps, Nectars, and Resins

The box elder was a primary source of sugar for tribal nations in the Black Hills region. Its sap was used to make beverages and candies (Gilmore 1913b:366; Gilmore 1919:101; Grinnell 1972:1:249; Vestal and Schultes 1939:40; Hassrick 1964:150; Nickel 1974:57; Standing Bear 1988:98-99; Hart 1981:13, 1992:5). Luther Standing Bear (1978:59), a Lakota, said: "We had no sugar, but notched the boxelder and caught its juice in our horn spoons, drinking it like water." In early spring, gathering the sap from this tree was a major productive activity for women. Other trees also furnished sweet saps too. The Ponderosa pine, aspen, and cottonwood exuded palatable saps favored by tribes in the Intermountain West, and although the Lakota are reported to have eaten the inner bark of some of these trees (Bordeaux 1929:131), there is no published evidence that they or other tribes in the Black Hills collected the sap.

The Kiowas allowed the sap of Indian Hemp [*Apocynum cannabinum*] to harden and used it as a chewing gum (Vestal and Schultes 1939:47). The Lakotas chewed the latex from the roots of the Rush skeletonplant [*Lygodesmia juncea*] (Gilmore 1919:136), and the Cheyennes used the pitch of the ponderosa pine as a gum (Hart 1992:57). Finally, the Lakotas and the Cheyennes gathered the nectar of the downy paintbrush [*Castilleja sessiliflora*] in the spring and consumed it as a food (Buechel 1970: 521; Hart 1981:39).

5. Grasses, Fungi, and Lichen

The tribal nations who lived in the region of the Black Hills did not consume any of the abundant species of grass reported in the area, although tribes in the neighboring Intermountain West region were known to eat the seeds of rye [*Elymus*] and other grass species. Grasses, however, were critical in maintaining the health of their principal source of meat, the bison, and in providing forage for their horses. The short-grass grammas and buffalograsses are noteworthy, and in some ways, they are inseparable from the species that grazed on them. Bison grazing facilitates their growth by increasing the uptake of nitrogen, and the dung of this animal fertilizes the soils in which they grow (Isenberg 2000:22). These grasses are thickest and most nutritious in late summer. Since they are able to store their nutrients through the winter months, they provide good forage in some of the sheltered areas tribes overwintered,

including the Race Track and the lands of Wind Cave National Park (Isenberg 2000:23; Binnema 2001:28-29).

The tribal nations who lived in the Black Hills ate a variety of fungi, but, except for puffballs [*Lycoperdon*], the identity of many of these non-vascular plants is unknown or not consistent with modern scientific nomenclatures (Gilmore 1919:61-62; Vestal and Schultes 1939:12; Jordan 1965:136; Grinnell 1972:2:168-169; Standing Bear 1978:58, 62; Hart 1981:2-4; Little Horse in Lewis, L. 1980:253).

B.Plants/Minerals Used in Medicine and Hygiene

The plants of the Black Hills also constituted a veritable pharmacy for the tribal nations who lived within their reaches, and many were standard ingredients in the medicinal remedies of early European American settlers too. Although other areas of the Black Hills, especially the parks and grasslands of the central limestone plateau, hold the greatest variety of plants with medicinal uses, more than fifty different species of plants reported at Wind Cave National Park provided remedies for a wide range of ailments and injuries in American Indian and European American healing traditions.

1. Colds and Respiratory Ailments

The purple coneflower [*Echinacea angustifolia*] is probably the most well known of the park's healing plants. The Kiowas, Plains Apaches, Lakotas, Comanches, and the Cheyennes treated colds with teas and decoctions made from its roots and leaves (Densmore 1918:389; Carlson and Jones 1939:521; Vestal and Schultes 1939:58; Jordan 1965:110; Buechel 1970:397; Grinnell 1972:2:188; Hart 1981:20-21; Whiteman in Schwartz 1988:53; Lewis, T. 1990:135). Early European American settlers in the region quickly learned the medicinal value of the purple coneflower and applied it widely as a folk remedy (Tilford 1997:52-53). Today, it is sold commercially as a popular antidote and remedy for colds, and recent scientific research has documented many of its medically active components (Kindscher 1992:84-93).

Fetid marigold [*Dyssodia papposa*] is eaten by prairie dogs and commonly found near their towns: thus, its Lakota name, *Pispiza tawote*, or prairie dog food (Buechel 1970:444). The Lakotas and the Poncas powdered and administered the plant for pulmonary troubles (Gilmore 1919:132), while the Kiowas Apaches used the crumbled flowers as an inhalant for respiratory complications (Jordan 1965:135).

The rush skeletonplant [*Lygodesmia juncea*] was considered to be one of the Cheyenne's most important medicinal plants, and it was used to treat a whole range of illnesses (Hart 1981:22). John Stands in Timber (and Liberty 1967:110) indicated that it was an essential ingredient in nearly all medicinal mixtures and decoctions. The roots were used primarily in treating colds and tuberculosis.

Other members of the composite or aster family employed in the treatment of colds and respiratory ailments include sunflowers [*Helianthus annuus*] (Gilmore 1913b:369; 1919:130; Red Cloud High School 2001) and goldenrod [*Solidago*] (Jordan 1965:131-133; Tilford 1997:66). Different varieties of sagewort, including *Artemesia ludovicina*, were also popular remedies for sinus problems and pulmonary illnesses (Gilmore 1919:135; Vestal and Schultes 1939:56; Jordan 1965:99-103; Hart 1981:19; 1992:44-45). Of the many different medicinal applications the Lakota had for the wild bergamot [*Monarda fistulosa*], not found at Wind Cave National Park, was a tea brewed from the plant's blossoms to soothe sore throats and to treat colds and fevers. In another application, the roots were used to doctor whooping cough (Buechel 1970:172).

Many tribal peoples also made teas from the needles and berries of the Rocky Mountain juniper [*Juniperus Scopulorum*] to treat colds and respiratory illnesses (Gilmore 1919:63; Kemnitzer 197:66; Vestal and Schultes 1939:13; Grinnell 1972:2:170; Hart 1981:5; 1992:37; Standing Bear 1988:96, 102). The Cheyennes and Comanches boiled the leaves of the skunkbush [*Rhus aromatica*] in decoctions to treat head colds (Carlson and Jones 1939:524, 534; Hart 1981:14, 40), while the Kiowas relied on them to treat influenza (Vestal and Schultes 1939:40). The broom snakeweed plant [*Gutierrezia sarothrae*] was taken by the Lakotas and the Plains Apaches in teas for coughs and colds (Jordan 1965:65; Buechel 1970:440), while pinedrops [*Pterospora andromedea*], the common juniper [*Juniperus communis*], shepherd's purse [*Capsella bursa-pastoris*], and ragweed [*Ambrosia artemisiifolia*] were included in various Cheyenne remedies for colds and pulmonary complications (Grinnell 1972:2:169-170, 174, 183, 188; Hart 1981:18, 25). The Cheyennes and the Lakotas utilized common yarrow [*Achillea millefolium*] to stimulate sweating and to alleviate the symptoms of colds and other respiratory ailments (Buechel 1970:192; Grinnell 1972:2:189; Hart 1981:17; Whiteman in Schwartz 1988: 53). Cowparsnip [*Heracleum maximum*] was considered one of the Arapahos' primary medi-cines, and it was used widely in their treatments for colds and pulmonary disorders (Nickerson 1966:49). The Poncas depended on the curlycup gumweed [*Grindelia squarosa*] as a medicine for treating tuberculosis (Gilmore 1913b:368, 1919:133), and the Lakotas relied on it for treating respiratory difficulties (Red Cloud High School 2001). Finally, the Kiowas prepared various varieties of willow for treating pneumonia (Vestal and Schultes 1939:19).

Rocky Mountain juniper and the common yarrow were widely recognized for their medicinal properties among European Americans, and they were used in teas or infusions to treat coughs and sore throats (Kindscher 1992:20-21; Tilford 1997:84, 166). European American settlers also collected goldenrod for respiratory treatments and horseweed [*Conyza canadensis*] for bronchitis (Kindscher 1992:237). The common mullein [*Verbascum thapsus*], introduced from Eurasia, and now a ubiquitous roadside plant throughout the Black Hills, was frequently included in European American folk medicine as a remedy for the treatment of asthma and bronchitis (Tilford 1997: 102). Finally, curlycup gumweed [*Grindelia squarosa*], wild onions [*Allium*], the scarlet globe-mallow [*Sphaeralcea coccinea*], and willows [*Salix*, spp.] were widely employed by early Euro-pean American settlers to treat asthma, bronchitis, colds, and pneumonia (Hart 1992:34, 38; Kindscher 1992:30, 192; Tilford 1997; 94, 160, 164).

2. Gastrointestinal, Liver, and Kidney Ailments

To treat illnesses of the liver, kidneys, and gastrointestinal tract, tribal peoples procured an even greater array of plants found at the park. Various composite plants were used for these purposes. Sageworts, including *Artemisia compestris*, *A. filifolia*, and *A. ludoviciana*, were considered potent remedies for digestive and urinary complaints (Vestal and Schultz 1939:56; Buechel 1970:117, 439, 519; Fire in Erdoes 1978:172). The root of the purple coneflower [*Echinacea angustifolia*] was chewed by Lakotas to treat lower intestinal pain (Densmore 1918:270, 389), and pepperweed [*Lepidium densiflorum*] was brewed in a tea for kidney ailments (Buechel 1970: 659). Many tribes relied on the western ragweed [*Ambrosia psilostacya*] to treat intestinal disorders too. The Cheyennes concocted a tea from the stem and leaves to use as a remedy for constipation, bowel cramps, and bloody stools, while the Lakotas took the plant's top and leaves and made a medicine to relieve vomiting (Gilmore 1913b:369; Grinnell 1972:2:184; Hart 1981:18). The Cheyennes also brewed willow [*Salix amygdaloides*] in a tea for relieving diarrhea and other ailments (Hart 1981:38).

Fruit-bearing plants were also widely applied in treatments for gastrointestinal complaints. The Poncas brewed the roots of ground cherries in a tea for stomach complications (Gilmore 1919:113), and many tribal nations brewed a tea made from chokecherry bark to treat diarrhea and dysentery (Gilmore 1919:89; Hart 1981:36, 1992:43).

Several plant remedies were earmarked for children's gastrointestinal ailments. The Poncas and Plains Apaches used raspberry roots in treatments for childhood diarrhea and bowel problems (Gilmore 1919:84; Jordan 1965:129). The Lakotas treated intestinal complaints in children with a tea made from the bark of the bur oak (Gilmore 1919:75), while childhood diarrhea and dysentery were doctored with remedies concocted from horseweed [*Conyza canadensis*], the rush skele-tonplant [*Lygodesmia juncea*], goosefoot [*Chenopodium album*], thymeleaf spurge [*Euphorbiaceae serpyllifolia*], and various milkweeds [*Asclepiadaceae pumila*, *A. viridiflora*, *A. steno-phylla*] (Densmore 1918:266-267; Gilmore 1919:99; Buechel 1970:132, 192, 329, 440, 489, 520, Fire and Erdoes 1978:171-172).

Various species of milkweeds and spurges were employed by the Plains Apaches, Lakotas, and Poncas to treat adult stomach complaints too (Gilmore 1919:109-110; Jordan 1965:104). Many different tribes relied on field mint [*Mentha Arvensis*] for stomachaches and other intestinal ailments (Vestal and Schultes 1939:49; Hart 1981:27; Fire and Erdoes 1978:170). The Lakotas prepared soapweed [*Yucca glauca*], western wallflower [*Erysimum asperum*], and blue vervain [*verbena hastata*] in teas for intestinal distress (Gilmore 1913b:363; Fire and Erdoes 1978:170). Poncas and Lakotas took cowparsnip [*Heracleum maximum*] for stomachaches (Gilmore 1919: 107), while the Cheyennes used the dried pulverized root of the cattail [*Typha latifolia*] in a medicine to relieve abdominal cramping (Hart 1981:40). The Cheyennes also took the dried leaves and roots of American licorice [*Glycyrrhiza lepidota*] to prepare a medicinal tea for in-testinal distress (Hart 1981:28-29, 1992:35). Kiowas used skunkbush [*Rhus aromatica*] leaves and the roots of the beardtongue [*Penstemon grandiflorea*] for this purpose (Vestal and Schultes 1939:40, 51). Finally, the Plains Apaches prepared a tea from the gromwell species [*Lithospermum incisum*] to treat diarrhea and other stomach complaints (Jordan 1965:118).

The Lakotas brewed teas from wild buckwheat [*Eriogonum annuum*] and the pricklypear cactus [*Opuntia*] to promote urination (Buechel 1970:227). The pulverized roots of milkvetches [*Astragalus canadensis* and *A. racemosus*] were also used for this purpose (Buechel 1970:440), and wild lettuce [*Lactuca oblongifolia*] was an ingredient in a decoction the Lakotas prepared for kidney ailments (Densmore 1918:262-263).

European Americans relied on many of the same plants for treating their gastrointestinal complaints. Field mint has a long history as a stomach remedy in European American folk medicine, and today, it is one of the most popular herbal teas in the United States (Kindscher 1992:153-154). Milkweeds, fetid marigold, blue vervain, and chokecherry bark were also commonly taken for a wide range of intestinal ailments (Moore, M. 1979:106-107; Kindscher 1992:212, 241; Tilford 1997:34, 97). The common juniper and bearberry were ingredients in remedies to treat diarrhea and inflammations of the digestive and urinary tracts (Kindscher 1992: 132-133; Tilford 1997:86), while the evening primrose [*Calylophus serrulatus*] was administered in diuretic, laxative, and antispasmodic applications (Moore, M. 1979:75; Tilford 1997:56). Finally, the soapweed plant [*Yucca glauca*] served as an anti-inflammatory agent in treating maladies of the digestive and urinary tracts (Tilford 1997:118).

3. Obstetrical and Gynecological Applications

Several different plants found at Wind Cave National Park were employed in treating gynecological complaints, obstetrical complications, and postpartum distress. Sageworts were widely used for these purposes. *Artemisia filifolia* is the sage the Lakotas identified as "women's medicine," and it served as a remedy to treat irregular menstruation (Gilmore 1913b:369-370; Buechel 1970:587). The Lakotas also made a decoction with *A. frigida*, which was taken internal-ly to treat menstrual irregularities, as did the Cheyennes (Gilmore 1930:80; Hart 1992:45). *A. frigida* was utilized by the Lakotas to cleanse women after menstruation (Gilmore 1913b:369-370; Buechel 1970:587), and they brewed a tea from the roots of

A. compestris to treat complications in childbirth (Buechel 1970:117; Fire and Erdoes 1978:172). The Arikaras depend-ed on *A. ludoviciana* to ease delivery (Gilmore 1930:74). Rocky mountain juniper also had multiple gynecological and obstetrical applications for many of the tribal nations in the region (Jordan 1965:118; Grinnell 1972:2:170).

The Lakotas mixed pricklypear cactus with soapweed in obstetrical treatments too. Reverend Eugene Buechel (1970:190) points out, however, that yucca was known to have dangerous side effects when used obstetrically because it could cause a fetus to be aborted. As the medicine man Lane Deer (Fire and Erdoes 1978:172) noted, “This medicine is *lila wakan* -- very sacred, working two ways.” The Poncas used currant roots to treat uterine disorders (Gilmore 1919:84), while the Arikaras took chokecherry juice to stop postpartum hemorrhaging. The Arikaras also combined the scarlet globemallow [*Sphaeralcea coccinea*] with resin from the chokecherry tree to relieve postpartum bleeding (Gilmore 1930:74).

A wide variety of plants were known to promote milk production in nursing mothers. The Lakotas drew on milkweed [*Asclepiadaceae verticillata*], snow-on-the-mountain [*Euphorbiaceae argenta*], and milkvetch [*Astragalus gracilis*] for this purpose, and they employed the curlycup gumweed [*Grindelia squarosa*] to treat colic in infants (Buechel 1970:117, 133, 440, 520). The Cheyennes, Poncas, and Lakotas relied on the rush skeletonplant [*Lygodesmia juncea*] to stimu-late the milk flow in nursing mothers (Gilmore 1919:136; Hart 1992:27). The Cheyennes also relied on lanceleaf bluebells [*Mertensia lanceolata*] and the powdered root of the locoweed [*Oxytropis sericea*] for this purpose (Grinnell 1972:2:179; Hart 1981:16). The Poncas made a concoction from spurge [*Euphorbiaceae serpyllifolia*] for the same purpose (Gilmore 1919: 99).

European American settlers administered horseweed [*Conyza canadensis*] to accelerate contractions in childbirth (Kindscher 1992:237), and they brewed raspberry and sage leaves in teas to treat female reproductive disorders (Tilford 1997:122). As among the tribal nations of the Intermountain West, the common juniper [*Juniperus communis*] was a popular folk remedy for treating menstrual ailments and for expelling the afterbirth (Kindscher 1992:132-133).

4. Anti-inflammatory and Paralytic Treatments

A variety of plants in Native pharmacopeias had anti-inflammatory applications for reducing various kinds of swelling or for treating rheumatic and arthritic complaints. A number of plants have also been reported in treatments for numbness and paralysis. Many plants with these appli-cations grow at Wind Cave National Park.

The Lakotas used a variety of plants to reduce external swellings, including false boneset [*Brickellia eupatorioides*], western ragweed [*Ambrosia artemisiifolia*], pussytoes [*Antennaria*], snow-on-the-mountain [*Euphorbiaceae argenta*], soapweed [*Yucca glauca*], and false gromwell [*Onosmodium molle*] (Buechel 1970:117, 190, 445, 520; Walker 1980:93). They treated swollen glands with salves made from the roots of the milkweed [*Asclepiadaceae incarnata*] (Buechel 1970:517). The Cheyennes drew on the purple coneflower [*Echinacea angustifolia*] in some of their remedies for rheumatism (Hart 1981:20).

Arthritis, neuralgia, and rheumatism were diseases that Plains Apaches doctored with moxa treatments using the leaves of sagewort [*Artemisia ludoviciana*] (Jordan 1965:99-103). The Poncas drew on the twigs of the leadplant [*Amorpha canescens*] for this kind of therapy (Gilmore 1919:93). The goldenpea [*Thermopsis rhombifolia*] was used in a smoke treatment for rheumat-ism by the Cheyennes, who also relied on the gromwell (*Lithospermum ruderale*) for this condition (Grinnell 1972:2:185; Hart 1981:16, 30). The Lakotas administered the low fleabane [*Erigeron pumilus*] in one of their treatments for rheumatism (Densmore 1918:389). The crushed leaves of the pasqueflower [*Pulsatilla patens*] were applied as a counter irritant in the treatment of rheumatism by the Lakotas, Arapahos, and Poncas

(Gilmore 1919:81-82; Nickerson 1966:47). Finally, the Kiowas depended on willow [*Salix*, spp.] in some of their treatments for rheumatism (Vestal and Schultes 1939:19).

The Cheyennes rubbed the finely ground leaves, roots, and stems of the narrowleaf gromwell [*Lithospermum incision*] on parts of the body affected by paralysis, and they mixed the pulverized leaves and stems of the false gromwell [*Onosmodium molle*] with grease to treat numbness (Grinnell 1972:2:185; Hart 1981:15).

European Americans included soapweed [*Yucca glauca*] and false solomon's seal [*Smilacina racemosa*] in their treatments for rheumatism and arthritis (Kindscher 1992:221-222; Tilford 1997:58, 172). They also employed the cottonwood in various anti-inflammatory applications. Surprisingly, this tree has not been reported in medicinal applications for the tribal nations who lived in the plains, although it is widely used as an anti-inflammatory by tribes in the Inter-mountain West (Albers and Lowry 1995: 67; Tilford 1997:114; Larson and Johnson 1999:554).

5. Dermatologic Remedies

The Kiowas used ragweed [*Ambrosia artemisiifolia*] leaves to heal sores (Vestal and Schultes 1939:55), and the Plains Apaches also applied them to lesions but considered them too strong for persistent use (Jordan 1965:97). The Lakotas prepared a salve from the roots of the scarlet globemallow [*Sphaeralcea coccinea*] to treat skin eruptions (Gilmore 1977:55; Buechel 1970: 174; Lewis, T. 1990:149), while the Arapahos made poultices for sores from the common yarrow [*Achillea millefolium*] (Nickerson 1966:50). The Cheyennes pulverized the roots of soapweed [*Yucca glauca*] to make a powder to treat sores, rashes, and other skin ailments (Hart 1981:12), and they made poultices from the ground roots and stems of the wild onion [*Allium*, spp.] to heal carbuncles (Grinnell 1972:2:171-172). Plains Apache used broomsnake [*Gutierrezia sarothrae*] in an external remedy for skin rashes and fungi (Jordan 1965:11), while the Kiowas applied sagewort [*Artemisia filifolia*] in a decoction to treat scalp diseases (Vestal and Schultes 1939:55).

The Cheyennes sprinkled the powdered leaves and stems of the milkvetch [*Astragalus adsurgens*] on parts of the body afflicted by poison ivy and other plant toxins (Grinnell 1972:2:179). The Kiowas relied on poison ivy [*Toxicodendron rybergii*] as a healing remedy to treat boils, skin eruptions, and other sorts of running sores; they rubbed it over the surface of the affected area to trigger a dermatitis that disappeared when the sores were healed (Vestal and Schultes 1939:39). Even though Reverend Eugene Buechel (1970:586) wrote that poison ivy had no medicinal value for the Lakotas, its name, *wikoskat tape'juta* [root, vagina of a loose woman a.k.a. women's venereal disease], does suggest that the root may have been used by the Lakotas to treat venereal disease in women.

Lakotas healed burns with the roots of the scarlet globemallow [*Sphaeralcea coccinea*] (Buechel 1970; Gilmore 1977:55), while the Cheyennes used the breadroot scurfpea [*Psoralea esculenta*] as an ingredient in decoctions for treating burns (Hart 1981:29). The Cheyennes also applied the resin from the ponderosa pine in an ointment for burns, and they mixed skunkbush berries in a decoction to protect the hands from being scalded in hot water (Hart 1981:6, 14). The Hidatsas and the Lakotas made dressings for burns from the fuzz of the cattail (Gilmore 1919:64-65; Nickel 1974:75), and so did European American settlers (Tilford 1997:29). Lakotas ingested purple coneflower [*Echinacea angustifolia*] during ceremonial sweats to help them endure ex-treme heat, and they used juices from this plant to bathe burns (Gilmore 1913b:368).

European settlers relied on a wide range of plants in treating dermatologic disorders. The resin of the curlycup gumweed [*Grindelia squarosa*] was applied to poison ivy rashes to relieve itching (Hart

1981:21), and the mucilaginous juice of the soapweed plant was used as an emollient to soothe dry skin (Tilford 1997:118). The scarlet globemallow was administered to treat skin irritations, and the mucilaginous juice of the spearleaf stonecrop [*Sedum lanceolatum*] was applied to burns and other skin damage (Tilford 1997:94, 140). *Asclepiadaceae speciosa* and other milkweed species were used in remedies to eliminate warts and skin parasites (Moore, M. 1979:106-107; Tilford 1997:97). Finally, wild comfrey [*Cynoglossum virginianum*] and hound's tongue [*C. officinale*] were ingredients in salves and poultices for treating burns and skin inflammations (Tilford 1997:78).

6. Wounds, Injuries, and Bites

The Lakotas, Kiowas, and Plains Apaches applied the mucilaginous juice from the stems of the pricklypear cactus [*Opuntia*] as a dressing in the treatment of wounds (Gilmore 1919:104; Vestal and Schultes 1939:45; Jordan 1965:125). The Plains Apaches made poultices out of strips of soapweed [*Yucca glauca*] leaves to wrap around injuries (Jordan 1965:54), while the Lakotas applied a poultice out of common yarrow [*Achillea millefolium*] for treating wounds (Densmore 1918:254; Fire and Erdoes 1978:171-172). The root of the pasqueflower [*Pulsatilla patens*] was one of the most highly esteemed medicines of the Poncas and their close relatives the Omahas; it was prescribed for wounds and many other ailments, but the right to use it was confined to members of the *Te-sinde* gens. (Gilmore 1919:82). In their various treatments for wounds, the Lakotas made several other remedies: one combined the roots of ground cherries and meadow anemones (Gilmore 1913b:362; Lewis, T. 1990:135), another drew on the roots of the narrowleaf gromwell [*Lithospermum incision*] (Buechel 1970:440; Fire and Erdoes 1978:71), and a third relied on a pipe smoke treatment where bearberry [*Arctostaphylos uva-ursi*] was a central ingredient (Walker 1980:93; Standing Bear 1988:103). The Cheyennes made a salve out of the purple coneflower [*Echinacea angustifolia*] to treat a wide variety of external injuries and swellings (Hart 1981:20; Schwartz 1988:53), while the Lakotas used it in treatments to heal putrefied wounds (Smith, H. 1928:212; Fire and Erdoes 1978:171). Standing Bear (1978:60) said of this plant: "The long, slender black root of this plant, which grew abundantly on the plains, was chewed and applied to the injured place. Though not pleasant to taste, it eased pain and almost magically cured cuts and bruises." Finally, the Cheyennes, Lakotas, Poncas, Kiowas, and Plains Apaches moistened the dry spores of puffballs [*Lycoperdon*] for use as a styptic to treat sores, scratches, and an infant's umbilicus (Gilmore 1919:63; Vestal and Schultes 1939:12; Jordan 1965:136; Hart 1981:2-4; Lewis, T. 1990:134; St. Pierre and Long Soldier 1995:84).

The Omahas (and Poncas) relied on the roots of the wild plum tree [*Prunus Americana*] to treat abrasions, and they heated the leaves of the plantain [*Plantaginaca patagonica*] to draw out thorns and splinters from the foot (Gilmore 1919:87, 115). The Plains Apaches made a decoction from the roots of the blazingstar [*Liatris punctata*] for healing cuts (Jordan 1965:118), while the Cheyennes gathered the flowering culms of junegrass [*Koeleria*] to treat abrasions (Hart 1981:10; Schwartz 1988:53).

Snake and insect bites were doctored with a variety of different plants. The Lakotas made a remedy for snake bites from the beardtongue [*Penstemon gracilis*], the purple coneflower [*Echinacea angustifolia*] and the ground cherry [*Physalis*] (Buechel 1970, 659; Fire and Erdoes 1978:171; Red Cloud High School 2001), while the Kiowas used currant roots and the Plains Apaches milkweed species [*A. speciosa*] as antidotes for snake bites (Vestal and Schultes 1939: 29; Jordan 1965:104). The Lakotas applied the wood lily [*Lilium philadepicum*] as an antidote for the bites of small poisonous brown spiders, and they used the slimflower scurfpea [*Psoralea tenuiflora*] in a smudge to repel mosquitoes (Gilmore 1919:71; Buechel 1970:487). European Americans employed bruised wild onions [*Allium*, spp.] in their treatments for bee stings (Kindscher 1992:29).

7. Heart, Back, and Chest Pain

Common yarrow [*Achillea millefolium*] was brewed by the Cheyennes in a tea for heart trouble and chest pains (Grinnell 1972:2:189; Hart 1981:17-18; Schwartz 1988:53). The Cheyennes also used the berries, stems, and leaves of the bearberry in a treatment for back pain (Grinnell 1972:2:183; Hart 1981:25). The Lakotas dried and powdered the blazingstar [*Liatris punctata*] for heart pain (Densmore 1918:389; Fire and Erdoes 1978:170), and they also pulverized the roots of milkvetch [*Astragalus canadensis* or *A. racemosus*] and chewed them for heart and back pain (Buechel 1970:440; Lewis, T. 1990:134).

8. Headaches, Dizziness, and Psychogenic Complaints

Only the Cheyennes are known to have named and used the hairy golden aster [*Chrysopsis villosa*], which they called *mis ka tsi* [chickadee plant]: they made a drink from the plant's top and leaves to help a person sleep and also to exorcise evil influences (Grinnell 1972:2:81; Hart 1981:20). The Cheyennes also made a tea from the roots, leaves, and stems of the narrowleaf gromwell [*Lithospermum incision*] that was rubbed on a patient's head and face to treat delirium and to prevent a person from excessive sleeping (Grinnell 1972:2:185; Hart 1981:15). Hyper-activity was treated by the Cheyennes with a vapor treatment using Rocky Mountain juniper [*Juniperus Scopulorum*] (Grinnell 1972:2:170; Hart 1981:4), while bearberry [*Arctostaphylos uva-ursi*] was used to smudge people who were acting "crazy" (Hart 1981:25). For sinus problems and headaches, the Cheyennes crushed the leaves of sagewort [*Artemisia ludoviciana*] and administered them as a snuff (Hart 1981:19, 1992:44-45).

The Lakotas had numerous remedies for headaches. They powdered and inhaled the fetid marigold [*Dyssodia papposa*] (Buechel 1970:444; Fire and Erdoes 1978:171), and they administered the roots of the purple coneflower [*Echinacea angustifolia*] in a smoke treatment (Densmore 1918: 270, 389; Buechel 1970:200, 397). Headache remedies were also prepared from several other plants, including field mint [*Mentha arvensis*] (Buechel 1970:131), the slimflower scurfpea [*Psoralea tenuiflora*] (Ibid:487), the woodbine [*Partheocissus vitacea*] (Ibid:119), western virgin's bower [*Clematis ligusticifolia*] (Ibid:117), and sagewort [*Artemisia frigida*] (Densmore 1918:259). Finally, the Lakotas treated dizziness with broom snakeweed [*Gutierrezia sarothrae*] (Buechel 1970:440).

The sagewort [*Artemisia ludoviciana*] was one of the most important plants in the Kiowa Apache pharmacopoeia, and it was believed to be especially potent in curing depression and restoring harmony. It was typically prepared as a moxa in headache treatments (Jordan 1965:99-103). Plains Apache took pollen from the cattail [*Tyhus latifolia*] and gave it to children to make them goodnatured (Jordan 1965:35).

9. Treatments for Eye, Ear, Nose, and Mouth

The Cheyenne included milkweed [*Asclepiadaceae speciosa*] in a remedy to treat various forms of blindness (Hart 1981:15, 1992:66), and they prepared the flowering tops of the curlycup gumweed [*Grindelia squarosa*] in a treatment for eye inflammations (Hart 1981:21). The Plains Apaches made teas from the rush skeletonplant [*Lygodesmia juncea*] to soothe sore eyes (Jordan 1965:262), and so did the Poncas, who also relied on the purple coneflower [*Echinacea angustifolia*] for this purpose (Gilmore 1919:131, 136). The Lakotas used the leaves of the snowberry [*Symphoricarpus occidentalis*] in a solution to ease eye inflammations (Gilmore 1913b:367; Buechel 1970:172). Sideoats grama grass [*Bouteloua*] was employed in a Plains Apache procedure to remove cataracts (Jordan 1965:105), and the

ashes from burning willow stems were applied in a Comanche eye treatment (Carlson and Jones 1939: 524, 533).

The Cheyennes, Comanches, Kiowas, Plains Apaches, and Lakotas chewed the roots of the purple coneflower [*Echinacea angustifolia*] to relieve toothaches and sore gums (Densmore 1918:389; Carlson and Jones 1939:521; Vestal and Schultes 1939:58; Jordan 1965:119; Buechel

TABLE 7. Medicinal & Hygienic Plants and Minerals at Wind Cave National Park Used by Lakotas, Arapahos, and/or Cheyennes

| <u>common name</u> | <u>taxonomic name</u> |
|--------------------------------|------------------------------------|
| <u>Woody Plants</u> | |
| American elm | <i>Ulmus americanus</i> |
| Bearberry | <i>Arctostaphylos uva-ursi</i> |
| Broom snakeweed | <i>Gutierrezia sarothrae</i> |
| Bur oak | <i>Quercus macrocarpa</i> |
| Chokecherry | <i>Prunus virginiana</i> |
| Leadplant | <i>Amorpha canescens</i> |
| Northern hawthorn | <i>Crataegus Chrysocarpa</i> |
| Poison ivy | <i>Toxicodendron rybergii</i> |
| Ponderosa pine | <i>Pinus ponderosa</i> |
| Redosier dogwood | <i>Cornus Stolonifera</i> |
| Rocky Mountain juniper | <i>Juniperus Scopulorum</i> |
| Serviceberry | <i>Amelanchiera alnifolia</i> |
| Skunkbush | <i>Rhus aromatica</i> |
| Snowberry | <i>Symphoricarpus occidentalis</i> |
| Western virgin's bower | <i>Clematis ligusticifolia</i> |
| Wild plum | <i>Prunus americana</i> |
| Willow | <i>Salix, spp.</i> |
| Woodbine | <i>Partheocissus vitacea</i> |
| <u>Grasses and Sedges</u> | |
| Big bluestem | <i>Andropogon, spp.</i> |
| Gamma | <i>Bouteloua, spp.</i> |
| Junegrass | <i>Koeleria</i> |
| Little bluestem | <i>Schizachyrium scoparium</i> |
| <u>Flowering Forbs</u> | |
| American licorice | <i>Glycyrrhiza lepidota</i> |
| Beardtongue | <i>Penstemon, spp.</i> |
| Blazingstar | <i>Liatris punctata</i> |
| Blue vervain | <i>Verbena hastate</i> |
| Breadroot scurfpea | <i>Psoralea esculenta</i> |
| Cattail | <i>Typha latifolia</i> |
| Cleavers or Catchweed bedstraw | <i>Galium aparine</i> |
| Common yarrow | <i>Achillea millefolium</i> |
| Cowparsnip | <i>Heracleum maximum</i> |
| Curlycup gumweed | <i>Grindelia squarosa</i> |
| Dock | <i>Rumex, spp.</i> |

Evening primrose
 False boneset
 False gromwell
 Fetid marigold
 Field mint
 Fleabane

Oenothera biennis
Brickellia eupatorioides
Onosmodium molle
Dyssodia papposa
Mentha arvensis
Erigeron, spp.

Table 7, cont.

| <u>common name</u> | <u>taxonomic name</u> |
|---------------------------|--------------------------------|
| Goldenrod | <i>Solidago</i> , spp. |
| Goosefoot | <i>Chenopodium</i> , spp. |
| Gromwell | <i>Lithospermum ruderale</i> |
| Groundcherry | <i>Physalis</i> , spp. |
| Hairy golden aster | <i>Chrysopsis villbsa</i> |
| Horseweed | <i>Conyza</i> , spp. |
| Lanceleaf bluebells | <i>Mertensia lanceolata</i> |
| Locoweed | <i>Oxytropis sericea</i> |
| Mariposa lily | <i>Calochortus gunnisonni</i> |
| Milkvetch | <i>Astragalus</i> , spp. |
| Milkweeds | <i>Asclepiadaceae</i> , spp. |
| Milkwort | <i>Polygalaceae</i> spp. |
| Narrowleaf gromwell | <i>Lithospermum incision</i> |
| Pasqueflower | <i>Pulsatilla patens</i> |
| Pepperweed | <i>Lepidium</i> , spp. |
| Pinedrops | <i>Pterospora andromedea</i> |
| Prairie goldenpea | <i>Thermopsis rhombifolia</i> |
| Pricklypear cactus | <i>Opuntia polyacantha</i> |
| Purple coneflower | <i>Echinacea angustifolia</i> |
| Pussytoes | <i>Antennaria</i> , spp. |
| Rush skeletonplant | <i>Lygodesmia jpuncea</i> |
| Sagewort | <i>Artemisia</i> , spp. |
| Scarlet globemallow | <i>Sphaeralcea coccinea</i> |
| Shepherd's purse | <i>Capsella bursa-pastoris</i> |
| Soapweed | <i>Yucca glauca</i> |
| Spurge | <i>Euphoriba</i> , spp. |
| Sunflower | <i>Helianthus annus</i> |
| Sweetclover | <i>Meliotus</i> , spp. |
| Tansy | <i>Tanacetum vulgare</i> |
| Western ragweed | <i>Ambrosia psilostacya</i> |
| Western wallflower | <i>Erysimum asperum</i> |
| Wild buckwheat | <i>Eriogonum</i> spp. |
| Wild lettuce | <i>Latuca oblongifolia</i> |
| Wood lily | <i>Lilium philadephicum</i> |

Fungi, Lichens, and Moss

| | |
|-----------|-------------------|
| Puffballs | <i>Lycoperdon</i> |
|-----------|-------------------|

1970:397; Grinnell 1972:2:188; Hart 1981:21; Lewis, T. 1990:35; Schwartz 1988:53). The Cheyennes also chewed the fruits of the skunkbush [*Rhus aromatica*] to treat toothaches (Hart 1981:14, 40), and they mixed crushed wild plums [*Prunus americana*] with salt to treat a sore mouth (Hart 1981:35). The Lakotas relied on American licorice [*Glycyrrhiza lepidota*] as a remedy for toothaches and earaches

(Densmore 1918:263; Gilmore 1913b:365). Known for containing “salicin,” a derivative found in aspirin, willow was an ingredient in treatments the Kiowas and other tribes depended on to relieve toothaches (Vestal and Schultes 1939:19; Kindscher 1992:194-198). Finally, the Cheyennes relieved nosebleeds with a braid woven from sagewort [*Artemisia frigida*] that they wore around their heads (Hart 1981:18), and they treated illnesses of the teeth and the whites of the eye with the berries from the white juniper (Moore, J. 1974:171).

10. Elixirs, Stimulants, and Compounds

There were also a number of plants found in the area of Wind Cave National Park that were relied upon to improve overall health, to fight off illness, or to use as compounds to make other medicines palatable. The Lakotas pulverized the roots of the dotted blazingstar [*Liatris punctata*], which they claimed were hardened like the intestinal contents of a deer, to treat a loss of appetite (Buechel 1970, 389). They also took sagewort [*Artemisia carolinianus*] to strengthen the appetite (Densmore 1918:257; Gilmore 1913b:365), and they consumed ground cherries [*Physalis*] for the same effect (Buechel 1970:97). They mixed hawthorn berries with other medicines to make them palatable (Buechel 1970:482), they used the roots of the sagewort [*Artemisia campestris*] to promote sound sleep (Gilmore 1919:118), and they made an infusion from shepherd’s purse [*Capsella bursa-pastoris*] to treat anemia (Sword in Walker 1980:93).

Cheyennes steeped elm bark in a tea as an elixir for children and pregnant women (Hart 1981:39), and they brewed wild mint [*Mentha arvensis*] leaves and stems to stimulate the heart and other vital organs (Grinnell 1972:2:188; Hart 1981:27). They also made a tea from the leaves and flowers of tansy [*Tanacetum vulgare*] to treat fatigue (Grinnell 1972:2:190-191; Hart 1981:23). Finally, they mixed the berries of redosier dogwood [*CornusStolonifera*] with chokecherries to treat a wide variety of ailments (Whiteman in Schwartz 1988:53), and they mixed the leaves of serviceberries with medicines to make them more palatable to children (Hart 1981:34).

11. Hygienic and Cosmetic

Many plants found at Wind Cave National Park also performed various hygienic functions. Different varieties of sagewort were important for these purposes among tribes throughout the northern plains. The Lakotas still use *Artemisia cana* and *A. tridentata* to freshen the air in their dwellings (Kemnitzer 1970:64), and they pulverize the roots of *A. campestris* for a perfume (Buechel 1970:117). They put *A. frigida* in their bathing solutions (Gilmore 1919:134), and they rely on *A. ludoviciana* to brush and purify the body, especially in preparation for ceremonial functions (Gilmore 1919:135). The Kiowas and Plains Apaches also bathed with this sagewort and with *A. filifolia* (Vestal and Schultes 1939:56; Jordan 1965:99). Several tribes used field mint [*Mentha arvensis*] to deodorize the body and to freshen the air in their living quarters (Grinnell 1972:2:186; Hart 1981:27-28, 1992:64; Kindscher 1992:153-154). The Cheyennes even made hair pomade by boiling dog meat with mint (Hart 1981:27-28).

Another plant commonly employed for hygienic purposes was soapweed [*Yucca glauca*]. The Lakotas, Cheyennes, Kiowas, and Plains Apaches extracted a sudsy lather from the roots to make soap for cleaning hair. Some tribes, such as the Cheyennes and the Lakotas, also believed it promoted hair growth. Luther Standing Bear (1978:65), a Lakota, wrote of this plant:

The pride of both Lakota men and women was a splendid head of hair, and especial attention was given to its care as a mark of good breeding. The women were especially proud of long hair and brushed and smoothed their long braids to keep them from breaking. Frequent washings in hupestola kept the hair glossy. Every morning a married woman had her hair brushed and her face painted for the day by her husband. This was a mark of respect that every Lakota brave paid his spouse.

The foamy juice of soapweed served as a tonic to treat dandruff and lice infestation as well (Gilmore 1913b:358; Carlson and Jones 1939:524; Vestal and Schultes 1939:19; Jordan 1965:150; Nickerson 1966:47; Hart 1981:53; Kindscher 1987:226; Buechel 1970:190; Fire and Erdoes 1978:172; Schwartz 1988:53). The Plains Apaches and Arapahos even used this plant to wash clothes and blankets (Nickerson 1966:47, Jordan 1965:151).

There were many other plants that served hygienic and/or cosmetic needs. The seeds of the evening primrose [*Oenothera biennis*] were considered by the Lakotas to have aromatic properties (Buechel 1970:116). Cleavers or Catchweed bedstraw [*Galium aparine*] was a popular fragrance among Lakota men (Buechel 1970:520), and the dried and pulverized flowers and leaves of the pineapple weed [*Matricaria matricaridos*] were included in a Cheyenne perfume mixture (Hart 1981:23). Although European Americans introduced white and yellow sweet-clovers [*Melilotus alba* and *M. officinalis*] to the plains region, local tribes quickly adopted them because their scent reminded them of sweetgrass. Lakotas hung the plant in their homes as an air freshener (Gilmore 1919:91). Finally, the down from the common cattail [*Typha latifolia*] was widely used as an absorbent or “diaper” for infants and a menstrual pad for women (Gilmore 1919:64; Buechel 1970:177; Powers, M. 1986:66).

12. Other Applications

The Cheyennes and the Lakotas used soils and stones in healing. The clean soil that prairie dogs brought up from underneath the earth was a remedy to heal wounds (Standing Bear 1978:215). William Powers (1982:13) explains that these soils and those raised by badgers, voles, and ants contain the purifying properties of the underworld, and as a result, they are considered especially efficacious for healing and religious activity. The soil that gophers dig up is considered dangerous, however; and the Cheyennes, at least, believe it causes disease (Grinnell 1972:1: 140; Whiteman in Schwartz 1955:55).

Although the spiritual importance of stones has been described elsewhere, they had many specific applications in healing. Stones are often rubbed on patients to treat sickness (Densmore 1918:246-250; Tyon in Walker 1980:153-155; Walker 1980:232). The stones ants bring to the earth’s surface and other crystalline stones are believed to have potent effects in healing (Bush-otter in Dorsey, J. 1889: 153-154; Powers, W. 1986:160). Rufus Pilcher (1964), one of the early superintendents of Wind Cave National Park, reported a request from the Lakotas for stones to heal a woman who was lame. The Cheyenne are known to have used stones in healing too (Whiteman in Schwartz 1988:54), but little has been written about their applications.

C. Veterinary Uses of Plants

After the tribal nations of the northern plains adopted horses, they were faced with two important considerations: one, how to adequately feed their stock, and two, how to keep them in good health, both of which required knowledge of the varieties of plants that could serve either as forage or as medicine. In this regard, one of the most surprising features of ethnobotanical writings on the tribal nations associated with the Black Hills is an almost complete absence of information on the kinds of grasses that were considered good fodder for their horses. Historical-ly, this would have been a major consideration in choosing campsites to occupy for extended stays. Except for the Kiowas and Plains Apaches, who had largely abandoned the region at the dawn of the nineteenth century, we know little about the kinds of grasses local tribes sought out for their horses. Of the grasses located at Wind Cave National Park, the Kiowas and Plains Apaches considered several of them good fodder. Other tribes probably valued them as well. The little bluestem grasses [*Schizachyrium scoparium*] and Indian grass [*Sorghastrum nutans*] were considered among the most nutritious for horses (Vestal and Schultes 1939:13, 16; Jordan 1965:62).

Sideoats grama [*Bouteloua curtipendula*] and hairy grama [*B. hirsute*] as well as sand dropseed [*Sporobolus cryptandrus*] (Vestal and Schultes 1939:14, 17) were also believed to make desirable fodder. In contrast to the information on grasses, there are widespread references in the literature to the use of cottonwood or elm boughs as food for horses during the winter months when the ground was covered in deep snows (Gilmore 1913b:360, 1919:72; Grinnell 1972:1:94-95; Hart 1981:37; DeMallie 1984:165, 209; Standing Bear 1988:94-95). The Lakotas told Father Buechel (1970:470) that horses eat and even dig out the roots of the crazyweed [*Oxytropis lamberti*], which is why the plant is called *sunkta peju'ta* [horse root] in their language.

Although there is little information on the varieties of fodder that local tribes selected for their horses, there is much more material on some of the plants they used to keep them strong and well. Among the plants found at Wind Cave National Park, the Lakotas made a decoction of juniper [*Juniperus scopulorum*] (Gilmore 1919:63) or fetid marigold [*Dyssodia papposa*] (Gilmore 1913b:369, 1919:132) to treat coughs in their horses, a remedy from the broom snakeweed [*Gutierrezia sarothrae*] to cure diarrhea (Gilmore 1913b:368, 1919:133), a treatment for dis-temper from the purple coneflower [*Echinecea angustifolia*] (Buechel 1970:200), a stimulant from the root of the sliver scurfpea [*Psoralea argophylla*] (Ibid:487), and a poultice of American licorice [*Glycyrrhiza lepidota*] for a horse's sore back (Gilmore 1919:92). The Lakotas also believed that soapweed [*Yucca glauca*] had *wakan*, or sacred qualities, when smoke from its burning roots was used to control horses. As Lame Deer (Fire and Erdoes 1978:172) said: "Let these animals smell its smoke and they slow up, quiet down enough for you to catch them." The Cheyennes put pearly everlasting [*Anaphalis margaritacea*] on the soles of their horses' hooves to make them endure, and a powder from this plant was blown between their animals' ears to

TABLE 8. Plants at Wind Cave National Park Used in Veterinary Applications By the Arapahos, Cheyennes and/or Lakotas

| <u>common name</u> | | <u>taxonomic name</u> |
|------------------------|------------------------|---------------------------------|
| | <u>Woody Plants</u> | |
| Broom snakeweed | | <i>Gutierrezia sarothrae</i> |
| Cottonwood | | <i>Populus deltoides</i> |
| Rocky Mountain juniper | | <i>Juniperus Scopulorum</i> |
| Skunkbush | | <i>Rhus Aromatica</i> |
| | <u>Flowering Forbs</u> | |
| American Licorice | | <i>Glycyrrhiza lepidota</i> |
| Dotted gayfeather | | <i>Liatris punctata</i> |
| False gromwell | | <i>Onosmodium molle</i> |
| Fetid marigold | | <i>Dyssodia papposa</i> |
| Locoweed | | <i>Oxytropis lamberti</i> |
| Mariposa lily | | <i>Calochortus gunnisonni</i> |
| Milkweed | | <i>Astragalus crassicaarpus</i> |
| Prairie coneflower | | <i>Ratibida columnifera</i> |
| Purple coneflower | | <i>Echinecea angustifolia</i> |
| Silver scurfpea | | <i>Psoralea agrophylla</i> |
| Soapweed | | <i>Yucca glauca</i> |

make them long-winded (Grinnell 1972:2:187; Hart 1981:18). The Cheyennes prepared a decoc-tion from skunkbush [*Rhus aromatica*] to prevent their racehorses from getting tired and also to promote urination. They also used the milkweed [*Astragalus crassicaarpus*] in an ointment to relieve urinary tract problems in

their horses (Hart 1981:14, 28). Many other plants found at Wind Cave National Park are also reputed to have had positive benefits for horses, including western ragweed [*Ambrosia psilostachya*] (Vestal and Schultes 1939:55, Jordan 1965:97), the dotted gayfeather [*Liatris punctata*] (Densmore 1918:389), the prairie coneflower [*Ratibida columnifera*] (Buechel 1970:92), and the false gromwell [*Onosmodium molle*] (Buechel 1970:445).

D. Plants and Minerals Used for Art and Manufacturing

The tribes who occupied the Black Hills in historic times relied on a wide range of plants for producing their dyes and paints, for making utensils, tools, weapons, and bedding, and for fuel and tinder. Among these plants, many were located at Wind Cave National Park.

1. Lodgepoles and Other Structural Uses

One of the few areas of consistency among historic documents, ethnographic sources, and tribal oral histories is the importance of the Black Hills as a location to find lodgepoles for tipis and poles to make runners for travois (Hinman 1874:95; Jenney 1875:182; Newton and Jenney 1880:323; Bushnell 1922:70; Chittenden 1935:728; De Girardin 1936:63; Denig in Ewers 1961:6; Dodge 1965:137, Dodge in Kime 1998:105; Bordeaux 1929:43, 191; Eastern Custer County Historical Society 1967-70:12, 730; Standing Bear 1975:6-17; Moore 1981:14; DeMallie 1984: 173; Brown 1992:12). One early eyewitness observer, Francis Parkman (in Feltskog 1969:270-271), described the movements of Lakotas into the mountainous regions to cut lodgepoles in July of 1846 as follows:

After having ridden in this manner six or eight miles the scene changed, and all the declivities were covered with forests of tall, slender spruce and pine trees. The Indians began to fall off to the right and left, dispersing with their hatchets and knives to cut the poles which they had come to seek. I was soon left almost alone; but in the stillness of those lonely mountains, the stroke of hatchets and the sound of voices might be heard from far and near.

Even writers (Hinman 1874:95; Jenney 1875:182; Newton and Jenney 1880:323; Dodge 1965:137) who otherwise denied the presence of Indian people in the Black Hills reluctantly acknowledged their use of the Hills for this purpose. The lodgepole pine [*Pinus contorta*] has a fairly restricted distribution in the Hills, but other pines, particularly ponderosa [*Pinus ponderosa*], were employed for this purpose as well. Luther Standing Bear (1975:6-17) offers one of the best descriptions of how the Lakotas gathered and processed ponderosa for tipi poles, and Nicholas Black Elk (in DeMallie 1984:157) described this process in the Black Hills above Rapid Creek. The Lakotas, however, used the forked stems of the box elder [*Acer negundo*] for bracing their tipi poles (Standing Bear 1988:98, 99). The Kiowas and Plains Apaches also valued the durability of Rocky Mountain juniper [*Juniperus scopulorum*] for making tipi poles, and they utilized bur oak [*Quercus macrocarpa*] as a supporting frame for their brush arbors, meat drying racks, and cooking tripods (Vestal and Schultes 1939:13; Jordan 1965:113).

Cottonwood [*Populus deltoides*] was another tree taken for structural purposes; it provided the support poles for summer arbors, earthlodges, fish traps, corrals, the runners for travois, and the frames for saddles (Gilmore 1924:120-121, Vestal and Schultes 1939:19, Jordan 1965:75, Grinnell 1972:2:229-32, 259, 287; Nickel 1974:70; Standing Bear 1978:222, Hart 1981:37; Walker 1982:97; Black Elk in DeMallie 1984:287). The Lakotas made their stirrups and saddles out of elm [*Ulmus americanus*], and they manufactured their drum bands from this wood as well (Standing Bear 1978:21; 1988:95, 98). The structural timbers of Mandan, Hidatsa, and Arikara earthlodges were fastened with the fibers of elm or basswood (Gilmore 1987:55). The Hidatas employed the inner bark of this tree for the binding sections of their willow fences (Nickel 1974:75). European Americans relied on elm wood for making tools,

furniture, flooring, barrels, and boxes (Larson and Johnson 1999:571). Finally, several tribes used wood from the green ash to make meat drying racks, tipi pins and pegs, and travois hoops (Gilmore 1919:108; Nickel 1974:64; Hart 1981:20).

The Poncas and other semisedentary tribal nations gathered two of the grasses found at Wind Cave National Park, the big bluestem and prairie cordgrass, for constructing their earth lodges (Gilmore 1919:66, 68). Cordgrass was also used by early European Americans as thatching for the roofs of their sod houses.

Willow [*Salix, spp.*] probably had the most ubiquitous structural uses (Kindscher 1992:192). Cheyennes, Lakotas, Plains Apaches, and Poncas relied on willow for the frames of their sweat- lodges (Gilmore 1919:73-74; Jordan 1965:79, 81; Grinnell 1972:1:210; Standing Bear 1988:80; Lewis, T. 1990:47). The Kiowas and Plains Apaches constructed their summer arbors out of willow (Vestal and Schultes 1939:19; Jordan 1965:81-82). Arikaras and Pawnees laid willows on the timbers of their earth lodge roofs before adding a thatch of dry grass and a covering of earth (Gilmore 1987:55). Plains Apaches utilized willow bark as lashing material for a wide variety of purposes (Jordan 1965:81-83). Finally, the Cheyennes made their fish weirs, tipi pegs and pins, animal traps, baby carriages for travois, and meat drying racks from willow (Hart 1981:37-38).

2. Mats, Containers, and Utensils

Several different plants found at Wind Cave National Park were woven into baskets and mats. Paramount among these was the softbulstem rush [*Scripus validus*], which was used by many tribes in the region to make mats for use as blanket coverings, mattresses, and tent drops (Gilmore 1919:69; Buechel 1970:446; Grinnell 1972:1:170-171). The Hidatsas wove stems of the snow-berry [*Symphoricarpos occidentalis*] and willows [*Salix interior*] into mats (Nickel 1974:73, 74), while the Kiowas made bedding material from the straight stalks of the false indigo [*Amorpha fruitcosa*] (Vestal and Schultes 1939:31). The Comanches used sagewort [*Artemisia frigida*] to make their mattresses (Carlson and Johnson 1939:520). The Lakotas' buckskin pillows were filled with down from cottonwood pods (Standing Bear 1978:21) or with the fuzz of the common cattail [*Typha latifolia*] (Gilmore 1919:64; Buechel 1970:177, 584), and their tipis were lined with big bluestem grass [*Andropogon gerardii*] for insulation (Red Cloud High School 2001). The Hidatsas depended on the seeds of the cattail as an all-purpose padding for packing and pillows (Nickel 1974:75). Among the Plains Apaches, tall bluestem grasses [*Andropogon girardii*] served as material for stuffing mattresses (Jordan 1965:56), The Lakotas pounded the dried culms and leaves of the little bluestems [*Schizachyrium scoparium*] into soft fibers to line and insulate their moccasins (Buechel 1970:440). The Cheyennes constructed bedding for their Sun Dancers from a species of wild rye grass [*Elymus*] because it was reputed to keep the dancers cool (Hart 1981:8). Finally, the Lakotas, Cheyennes, Kiowas, and Plains Apaches made backrests and mats out of willow (Vestal and Schultes 1939:19; Jordan 1965:81-83; Hart 1981: 37-38).

The leaves of the false indigo [*Amorpha fruitcosa*] and various species of milkvetch [*Astragalus spp.*] as well as goldenrod [*Solidago spp.*] were spread on the ground when local tribes butchered their meat to keep it clean (Gilmore 1919:91, 93; Buechel 1970:117, 336, 447, 519). Edward Freeland (1938:4), the Superintendent of Wind Cave National Park described how the Lakotas butchered buffalo meat on a pile of psoralea leaves (probably *Psoralea argophylla*), and how they used the leaves to purify the water before the meat was boiled. The Lakotas and the Cheyennes also wove the plant's tough green stems into baskets to transport meat (Buechel 1970:487; Whiteman in Schwartz 1988:53).

The Kiowas made the dried pods of milkweed [*Asclepiadus speciosa*] into spoons (Vestal and Schultes 1939: 47). The Cheyennes and Lakotas manufactured bowls from the burls of the box elder

[*Acer negundo*], and they also used this wood or elm [*Ulmus americanus*] to make mortars and pestles for grinding medicines and perfumes (Gilmore 1919:75; Grinnell 1972:1:249). The stems and shoots of the skunkbush [*Rhus aromatica*] served as materials in Hidatsa basketry (Nickel 1974:48). The Hidatsas and Lakotas made cordage from the stems of Indian hemp [*Apocynum cannabinum*] (Nickel 1974:49; Buenchel 1970:353).

The broom snakeweed [*Gutierrezia sarothrae*] was a popular material for making brooms among the Comanches and Plains Apaches (Carlson and Jones 1939:522; Jordan 1965:65), while the stems of the snowberry [*Symphoricarpos occidentalis*] were commonly used for this purpose among the Hidatsas (Nickel 1974:74). The Lakotas and Hidatsas made brooms from various species of sagewort, including *Artemisia frigida* and *Artemisia dracunculus*, (Gilmore 1919:87; Nickel 1974:70). Plains Apaches also fabricated brooms out of big bluestem grass [*Andropogon gerardii*] (Jordan 1965:56).

Porcupine grass [*Stipa spartea*] was bound into a bundle and the pointed grains burned by the Poncas to make a brush for combing their hair (Gilmore 1919:67). The Poncas called the dried inflorescence of the purple coneflower [*Echinchia angustifolia*] *mika-hi* [comb plant], and the Lakotas named it *on'glakcapi* [hair comb] (Gilmore 1919:131; Buechel 1970:397). The Kiowas (Vestal and Schultes 1939:57) also used the plant to brush and comb the hair.

3. Tools and Weapons

By the time ethnographers began to consult with tribes in the Plains region, materials and items of European manufacture had replaced many traditional uses for stone (Ewers 1938:37-38). This change is reflected in what White Hawk, a Lakota, told Francis Densmore (1918:437-438) about arrowpoints. He recalled three different kinds of arrowpoints for hunting bison: the flint arrowpoints his grandfather flaked, the bone ones his father fashioned, and those he had made from steel. What is interesting about his historical commentary is that it shows that within three generations, the materials and knowledge for producing certain tools had changed substantially. As a result, our understanding of the Native uses and meanings of specific lithic material is much more limited than it is for other faunal and floral resources.

Flint was the preferred material for arrowheads among the Cheyennes and the Lakotas before Europeans introduced trade metals (Hayden 1862:312; Grinnell 1972:1:184), although other related quartzites were valued too. The Cheyennes once armed their elkhorn scrapers with a piece of flint, and they made other scrapers from this mineral too (Grinnell 1972:1:213-214). The Lakotas and Cheyennes employed various grades of sandstones to make mauls, hammers, axe-heads, grinding stones, warclubs, and knives (Buechel 1970:336; Grinnell 1972:1:211). The fine-ly grained varieties were used in making knives and for finishing off arrowshafts (Densmore 1918:438; Buechel 1970:336; Grinnell 1972:1:179). Some of the rougher varieties went into the making of war clubs, axeheads, hammers, mortars and pestles (Buechel 1970:266, 744). Slate, however, was the favored material for constructing axeheads (Buechel 1970:228; Grinnell 1972: 1:186, 214).

In making their arrowshafts, the Lakotas and Cheyennes relied on several different plants located at Wind Cave National Park. These include the stems of chokecherry, serviceberry, currant, dogwood, and snowberry (Densmore 1918:438; Hassrick 1964:196; Buechel 1970:108, 399, 577, 589; Grinnell 1972:1:179; Hart 1981:23-24, 35; Standing Bear 1988:18, 20). The Lakotas also utilized the straight stalks of the leadplant [*Amorpha canescens*] for this purpose (Buechel 1970:658), and the Cheyennes relied on green ash for making arrowshafts (Curtis 1907-30:6:156).

The Lakotas favored the green ash tree for manufacturing their bows (Gilmore 1919:108; Hassrick 1964:198; Standing Bear 1988:20). When ash was unavailable, they made their bows from the wood of

the plum or chokecherry tree (Standing Bear 1988:20). Elm bark went into the making of Lakota bowstrings (Black Elk in DeMallie 1984:310). The Cheyennes fabricated bows from Rocky Mountain juniper [*Juniperus Scopulorum*] because of its durability (Hart 1981:5). At one time, they made fiber for bowstrings from the milkweed [*Asclepiadus speciosa*] (Hart 1981: 14). Finally, skunkbush wood was one of the Kiowa's primary materials for making bows (Vestal and Schultes 1939:40).

The Lakotas made awls from the thorns of the buffaloberry bush [*Shepherdia* (Lyford 1940:38, 42), and they made needles from the sharp point of the soapweed plant [*Yucca glauca*] (Gilmore 1919:71). The Plains Apaches did the same (Jordan 1965:90). The Kiowas took the sharp thorns of the prickly pear cactus, [*Opuntia polyacantha*] to fabricate small arrows for hunting birds and other small animals (Vestal and Schultes 1939:45).

4. Musical, Recreational, and Ceremonial Items

For the Lakotas and most other tribes in the northern plains, green ash was the primary wood for making pipe stems (Gilmore 1919:108; Buechel 1970:446; Gilmore 1987:106; Standing Bear 1988:99). The Lakotas, Cheyennes, Kiowas, and Plains Apaches used the heartwood of the Rocky Mountain juniper or red cedar in making love flutes, and they applied its resin as glue (Vestal and Schultes 1939:13; Jordan 1965:113; Hart 1981:5; Standing Bear 1988:97, 173). Lakotas carved grass dance whistles from box elder and ashwood (Densmore 1948:189-190). The Cheyennes also made courting whistles from the hollow stems of the cowparsnip [*Heracleum maximum*] (Hart 1981:40), while the Lakotas made whistles for children from this plant (Buechel 1970:622). The false solomon's seal [*Smilacina racemosa*] was one of several different plants whose leaves the Lakotas drew on to make musical tones (Buechel 1970:626). Willows were another material that went into the making of whistles (Standing Bear 1988:171-172). The Cheyennes and Lakotas used ponderosa pine gum in manufacturing war and Sun Dance whistles (Grinnell 1972:1:204; Schwartz 1988:53; Standing Buffalo 1988:172).

Lakotas, Hidatsas, and Cheyennes used plum pits in a popular game of chance (Gilmore 1913b:364; Densmore 1948:190-191; Grinnell 1972:1:332; Buechel 1970:284; Nickel 1974:70; Black Elk in DeMallie 1984:325). Soapwood [*Yucca glauca*] leaves went into making basketry for a Cheyenne game called *i ko koe has in e ya*, and the root stems of the redosier dogwood were woven into this basketry as well (Grinnell 1972:1:246, 332). The Plains Apaches used soapweed leaves in a puzzle game (Jordan 1965:89-90). Lakota children made toys from cottonwood leaves (Gilmore 1913b:364; Standing Bear 1988:95).

TABLE 9. Plants and Minerals at Wind Cave National Park Used by Lakotas, Cheyennes, and/or Arapahos in Manufacturing

| <u>common name</u> | | <u>taxonomic name</u> |
|--------------------|---------------------|---------------------------|
| | <u>Woody Plants</u> | |
| American elm | | <i>Ulmus americanus</i> |
| Box elder | | <i>Acer negunda</i> |
| Buffaloberry | | <i>Sphepherdia</i> , spp. |
| Bur oak | | <i>Quercus macrocarpa</i> |
| Chokecherry | | <i>Prunus virginiana</i> |
| Cottonwood | | <i>Populus deltoides</i> |
| Currant | | <i>Ribes</i> , spp. |

False indigo
 Hackberry (found near Hot Springs)
 Leadplant
 Ponderosa pine
 Redosier dogwood
 Rocky Mountain juniper
 Sagewort
 Serviceberry
 Snowberry
 Smooth Sumac
 Western virgin's bower
 Wild plum
 Willow
 Woodbine

Amorpha fruitcosa
Celtis Occidentalis
Amorpha canescens
Pinus ponderosa
Cornus Stolonifera
Juniperus scopulorum
Artemesia frigida
Amelanchiera spp.
Symphoricarpos occidentalis
Rhus glabra
Clematis ligusticifolia
Prunus Americanus
Salix, spp.
Partheocissus vitacea

Flowering Forbs

Beardtongue
 Cattail
 Cowparsnip
 Crested pricklypoppy
 Dock
 False Solomon's seal
 Fleabane
 Indian Hemp
 Indian paintbrush
 Milkweed
 Northern bedstraw
 Pricklypear cactus
 Purple coneflower
 Sagewort
 Silver scurfpea
 Soapweed
 Spiderwort
 Wild buckwheat

Penstemon angustifolias
Typha latifolia
Heracleum maximum
Argemone polyanthemom
Rumax spp.
Smilacina racemosa
Erigeron pumilis
Apocynum cannabinum
Castilleja sessilifora
Asclepiadus speciosa
Galium borale
Opuntia polyacantha
Echinechia angustifolia
Artemesia spp.
Psoralea agrophylla
Yucca glauca
Tradescantia reflexa
Eriogonum spp.

Table 9, cont.

Grasses and Sedges

Big bluestem
 Bulrush
 Gramma
 Junegrass
 Little bluestem
 Porcupine grass
 Prairie cordgrass
 Wild rye

Andropogon, spp.
Schoenoplectus, spp.
Bouteloua, spp.
Koeleria
Schizachyrium scoparium
Stipa spartea
Spartina pectinata
Elymus, spp.

Minerals and Soils

Flint
 Gypsum
 Hematite
 Limestone

Quartz
Red Clay and Earth
Sandstone
Slate
White Clay and Earth

5. Dyes, Paints, and Tanning Agents

Among the plants the Lakotas relied upon to color their paints and dye their porcupine quills red was the buffaloberry (Lyford 1940:42). Red colorations were also achieved by combining snowberries [*Symphoricarpos occidentalis*] with the root of the curlydock [*Rumax crispus*] (Lyford 1940:42; Hassrick 1964:191). The Lakotas also mixed the leaves of curlydock with the fruit of the wild grape [*Vitis riparia*] to make a red dye (Standing Bear 1988:100). The Arapahos and Shoshones made a red-tan dye from the Indian paintbrush [*Castilleja sessiliflora*], a red dye from northern bedstraw [*Galium boreale*], and they used the paper birch to make an orange colored dye (Nickerson 1966:47, 50).

Yellow dyes were produced by the Lakotas when the prairie sunflower [*Ratibida columnaris*] or purple coneflower [*Echinacea augustifolia*] was boiled with cattail roots [*Typha latifolia*] or decayed oak bark (Lyford 1940:42). Yellow dyes were also made from the musk thistle [*Cardus nutans*] (Standing Bear 1988:101), the crested prickly poppy [*argemone polyanthemos*] (Buechel 1970: 494), the roots of the huckleberry (Hassrick 1964:191), and the bark of pine trees, which according to Carrie Lyford (1940:42) were only found in the Black Hills (this was probably the Black Hills Spruce). The root of the curlydock [*Rumax crispus*] also went into the making of yellow dyes among the Lakotas and the Cheyennes (Lyford 1940:42; Grinnell 1972:2:2). Another dock used by the Cheyennes, Hidatsas, and Arapahos for making yellow or red dyes was the veiny dock [*Rumex venosus*] (Grinnell 1972:2:2; Nickerson 1966:47; Nickel 1974:69). The lichen [*Usnea barbata*] and the resin from the ponderosa pine produced yellow dyes that the Lakotas relied on for coloring porcupine quills (Gilmore 1919:63; Buechel 1970:134, 593), while wolf moss [*Evernia vulpina*] went into the making of another yellow dye among the Lakotas and the Cheyennes (Grinnell 1972:2:2; Lyford 1940:42).

The Cheyennes are reported to have used the roots of the ponderosa pine in making a blue dye (Hart 1981:6). The flowers of the spiderwort [*Tradescantia reflexa*] made a blue, jelly-like paint that the Lakotas applied on their moccasins (Buechel 1970:117). The Lakotas also relied on the beardtongue [*Penstemon angustifolias*] to make a blue dye for moccasin painting (Buechel 1970:167). The Shoshones and Arapahos made a green dye from the leaves of the sagewort [*Artemesia frigidia*] and also the sunflower [*Helianthus annus*] (Nickerson 1966:50).

Woodbine [*Partheocissus vitacea*], wild grapes [*Vitis riparia*], and wild rye [*Elymus cinereus*] were among the plants that went into the making of black dyes (Vestal and Schultes 1939:42; Lyford 1940:43; Hassrick 1964:191; Hart 1981:28). Charcoals from the bur oak [*Quer-cus macrocarpa*] were used by the Plains Apaches in producing a black pigment for painting designs on artifacts (Jordan 1965:77), and the Lakotas employed burnt green ashwood for this purpose (Bordeaux 1929:182). Finally, black dyes for dyeing feathers, arrows, and robes were produced from boiled cottonwood buds (Gilmore 1919:73; Grinnell 1972:2:7, 19; Hart 1981:37, 1992:69),

In addition to the use of plants for dyes, some were added to tanning solutions. The roots of the soapwood [*Yucca glauca*] were employed in this way (Gilmore 1913b:358; Kindscher 1987:226), and the blossoms of the fleabane [*Erigeron pumilus*] were combined with brains, gall and spleen to produce a

substance that bleached hides in tanning (Buechel 1970:399). The mucilaginous juice of the pricklypear cactus [*Opuntia polyacantha*] served as a sizing among the Lakotas and the Kiowas to fix colors painted on hides (Gilmore 1919:104; Vestal and Schultes 1939:45).

Besides plants, various stones and clays were used in the tanning process and as pigments for ceremonial paints. Gypsum [*Selenite*], commonly called “mica” by local tribes, was an important mineral for the Cheyennes and Lakotas. The Cheyennes whitened the backs of their bows with gypsum (Grinnell 1972:1:175) and made glue from it to attach tiny red feathers to the tips of eagle feathers (Ibid:2:222). Women rubbed white gypsum on their hands to prevent robes from being soiled when they were decorating them with quills (Ibid:1:164; Moore, J. 1996:67). The Cheyennes employed gypsum or white clay to draw the patterns for quilling a robe, they applied it to the skins and heads of birds worn as talismans in war, they rubbed it on men’s bodies when war shields were painted and on women when they tanned a white buffalo robe. White clay, *makasan* in Lakota (Buechel 1970:329), was the substance for painting horses because it purportedly produced a “genuine color” (Densmore 1918:353), and ground limestone went into the production of white paints as well (Bordeaux 1929:182). Blue, red, and yellow clays served as the mediums for paints applied to dancers in various Lakota and Cheyenne ceremonies (Densmore 1918:116; Blish 1934:186; Moore, M. 1979:14). The Cheyennes and Lakotas also made red paints from hematite, and some of their black paints were produced from coal (Moore, J. 1981:14; Buechel 1970:330).

6. Fuel and Tinder

Another important function of plants was fuel and tinder. Indeed, as Royal B. Hassrick (1964:153, 156) noted, one of the major reasons the Lakotas preferred to establish their winter camps along waterways at the base of the Hills was their easy access to abundant supplies of timber for winter fuel. The tribal nations of the plains had a sophisticated knowledge of how the different trees in their environment burned, and they frequently chose specific woods as fuel for designated functions. Tribes differed among themselves in which woods they preferred, how-ever. The Cheyennes and Hidtasas favored box elder [*Acer negundo*], which is known to produce hot and long burning coals, for everyday purposes (Nickel 1974:57; Hart 1981:13, 1992:5). The Lakotas, Arikaras, and Plains Apaches reported that green ash was an excellent and long-lasting source of heat (Bordeaux 1929:155; Jordan 1965:155; Nickel 1974:64). Cottonwood [*Populus deltoides*] was the Kiowas and Lakotas’ wood of choice for everyday fires, tanning hides, and firing paints, although elm and aspen were popular multipurpose fuels also (Gilmore 1919:75; Vestal and Schultes 1939:40; Walker 1980:244; Standing Bear 1988:94, 122; Hart 1992:5). The Plains Apaches, in contrast, disliked cottonwood, believing that it burnt too fast and popped badly (Jordan 1965:156). They preferred to use bur oak [*Quercus macrocarpa*] as their major fuel source because it burned well and produced good coals (Jordan 1965:155). They also considered elm good firewood (Jordan 1965:156). The various species of pines abundant in the Black Hills were undoubtedly taken to fuel fires as well, but they were probably not considered the most desirable because pine has a tendency to burn rapidly and spark excessively.

Tribes also relied on different kinds of tinder to start their fires. The Plains Apaches used bunches of tall bluestem grass [*Andropogon girardii*] and little bluestem [*Schizachyrium scoparium*] as well as the stalks of the sunflower [*Helianthus annuus*] to start their fires (Jordan 1965:66, 156, 157), while the Cheyennes employed the dried leaves of the sagewort [*Artemisia ludoviciana*] as tinder (Hart 1981:19). The Cheyennes made their hearth fire-sticks out of cottonwood, and their upright, or twirling, stick from greasewood [*Acrobats vermiculatus*] (Grinnell 1972:1:53). They also made punks out of dry, rotten agave [*Yucca glauca*] roots to transport fire, and so did the Lakotas (Grinnell 1972:1:53-54; Black Elk in DeMallie 1984:311). The Poncas took the knarled roots of buckthorn [*Ceanothus*] to start fires on their buffalo hunts when timber was scarce (Gilmore 1919:10). The Lakotas employed dried, rotten elm roots

for this purpose (Mallery 1893:291; Gilmore 1913b:358). Although not reported at Wind Cave National Park, the bush morning glory [*Ipomoea leptophylla*] is a widespread plant in the region and especially prevalent in the dry sandy grasslands at the south end of the Red Valley (Larson and Johnson 1999:192). The Lakotas set a fire in the roots, which were wrapped and hung outside. This fire could be transported and lasted up to seven months (Buechel 1970:440). Lame Deer (in Fire and Erdoes 1978:172) said about this plant, "In the old days, before we had matches, when you lit this herb it would keep smoldering for months. It used to be hung up before the tipi. If you needed a fire you just blew on it until it glowed, then you hung it up again to smolder some more." Finally, the Lakotas made sticks from the branches of the chokecherry tree [*Prunus virginiana*] for poking coals (Buechel 1970:123).

Flint was used to produce sparks that ignited fires. This is probably the stone that *Itokagata* gave Wohpe in the Lakota creation story because it was described as a stone that could be rubbed to make a fire (Sword in Walker 1983:68).

7. Fumigants

The Lakotas made a fluid out of the powdered and boiled needles of the Rocky Mountain juniper [*Juniperus scopulorum*] to eradicate insects (Buechel 1970:192). Melvin Gilmore (1919:88) reports that Ponca trappers boiled the bark of chokecherry, [*Prunus virginia*] in a solution to clean their traps and to remove the scent of former captives. Modern Lakota hunters rub sagewort [*Artemisia*] on traps, guns, and themselves to disguise their own scent (Kemnitzer 1970:64).

E. Plants and Minerals in Symbolism and Ceremony

Most tribal nations consider all plants and minerals sacred, but some are especially significant because of their distinctive spiritual meanings and uses. Certain plants occupy a central place in the conduct of important religious observances. Some are used for ritual smoking, smudges, and petitions, while others attract love, fertility, and good fortune to their users, and still more help to protect people from danger or to repel enemies and malevolent influences. Many minerals also have multiple ceremonial uses. Some of the most widely used sacred plants for the Cheyennes and Lakotas are located at Wind Cave National Park, and at least one very important mineral is found here too. Several of the tribal cultural preservation officers we spoke with identified the park as an important location for plants with significant spiritual properties, and one Lakota officer urged that non-Indians be advised not to pick the sage that grows in the park (Albers and Kittelson 2002).

1. Plants/Stones with Ubiquitous Meanings and Uses

Two groups of plants, the sages and junipers, have ubiquitous spiritual uses among the tribal nations of the plains. According to Louis Kemnitzer (1970:65), these plants do not die off in the winter, a fact that is noted by some Lakotas in their discussions of the important ceremonial roles they play. According to Melvin Gilmore (1913b:369), the *ton* (immaterial essence) of sage was believed by the Lakotas to be repugnant to malevolent forces, and so was the *ton* of cedar or juniper. Both of these plant groups were considered potent spiritual purifiers and occupied a significant place in the spiritual life of many different tribal nations.

The sage, *Artemisia ludoviciana*, is especially revered and is still found at most of the Lakota's major religious ceremonies. It is used extensively in their Sun Dance, not only on the arm and ankle bracelets of

the dancers, but also to smudge the dance ground and altar (Dorsey, J. 1894:454; Densmore 1918:93, 122; Buechel 1970:439; Rogers 1980:36; Walker 1980:176-177, 184, 187-188, 190-192). It also appears in the *Hunka*, an adoption ceremony (Buechel 1970:439; Walker 1980:94, 197, 214, 224), and in the performances of *Hehaka Inhanblapi* [Elk Dreamers] (Fletcher 1887a:284). It is used as a smudge in sweatlodges, in hunting, and in homes to counteract evil forces (Gilmore 1919:135; Fire and Erdoes 1978:170). It is often identified as man's sage in contrast to *Artemesia frigida*, which is known as women's sage and used in the *Pte San Lowampi*, a girl's coming of age ceremony (Fire and Erdoes 1978:172; Walker 1980:244, 247-248, 250-251). The Cheyennes similarly identified sage along gender lines (Moore, J. 1974:174). *Artimesia ludoviciana* is probably the most important ceremonial plant for the Cheyennes who use it extensively in their Sun Dance and other major ceremonies as a ritual border. Like the Lakotas, they depend on it as incense to ward off malevolent influences (Hart 1981:18-19; 1992:44-55). The Arikaras once placed a wisp of this sagewort in placenta bundles, which were hung on fruit trees as an offering to ward off diseases in their children (Gilmore 1930:75). This variety of sage also holds a significant position in Kiowa and Plains Apache sweat lodges and many other ceremonial contexts (Vestal and Schultes 1939:56; Jordan 1965:99).

Artimesia tridentata, a woody variety of sagewort, is also considered another potent purifier for many ceremonial activities among the Lakotas. It is very important in *Yuwipi* where, among its many different roles, it covers the floor at the sacred spot where the ceremony is performed. It serves as a plug for the pipe, it is attached to the knots of thongs that tie up the medicine man, and it is placed on the water dish and on the kettle of dog soup (Kemnitzer 1970:64). This variety of sage is also spread on the floor of sweatlodges, and it is used in the Sun Dance to fill the orifices of the buffalo skull, to plug the pipes of dancers, and as a medicine to heal the wounds of those who make sacrifices (Kemnitzer 1970:65).

Juniper [*Juniperus scapularum* or *J. virginiana*] is considered highly sacred as well. Its twigs are burnt as a smudge for spiritual purification in many healing and religious ceremonies among all tribes in the northern Plains (Carlson and Schultes 1939:522 Vestal and Schultes 1939:13; Walker 1980:93; Hart 1992:36; Kindscher 1992:132). The Arikaras considered juniper one of their three sacred trees, and like other tribes in the area, they believe it is especially efficacious in warding off evil influences. For the Arikaras, cedar is the great protector, and annually, a ritual was held to show gratitude to the grandmother cedar. In this ritual, pasque-flowers and baby moccasins were hung on a cedar tree to insure the health and long life of their wearers (Gilmore 1987:186-87). The Cheyennes associate green cedar berries with the green colored hailstones of summer thunderstorms, and this may be one of the reasons why this tree is connected in their cosmologies to the thunders (Moore, J. 1974:171).

The Lakotas believe that the *Wakinyan*, Thunders, find the smell of cedar appealing, and whenever Lakotas wish to petition them, they make a *wazilya*, or incense, out of cedar (Walker 1980:77). They also place cedar boughs on tipi poles and in their houses as offerings to the Thunders to ward off their dangerous lightning strikes (Gilmore 1919:74; Standing Bear 1988:96-97). The Cheyennes burn cedar incense for the same purpose (Hart 1992:36). In 1926, Oscar Good Shot, a Lakota, told Thomas Marquis (and Limbaugh 1973:63) about this belief, which incidentally is widespread among tribal nations in the western United States. Referring to his grandmother, he said:

She told me a cedar tree is the safest place when lightning is flashing. It never strikes a cedar tree. She always kept some cedar branches in the house, and if lightning began to play she sprinkled the twigs upon the hot stove. The odor was supposed to prevent lightning from entering the house.

Sweetgrass [*Hierochloe odorata*] is not reported in the Black Hills, but it is mentioned here because of its widespread importance to tribes in the region. For the Lakotas, while sage repelled bad influences, sweetgrass attracted good ones (Gilmore 1919:66). The Lakotas use it whenever the spirits are petitioned for assistance (Buechel 1970:512; Walker 1980:113, 119), and as a result, it appears in many different

ceremonial contexts: whenever a pipe is consecrated or used in prayer (Walker 1980: 76-77, 81, 83, 87,89), whenever visions are sought (Walker 1980: 86), and whenever sweatlodges are held (Hassrick 1964:249; Walker 1980:94-95). It plays an important role in the adoption rituals of the *Hunka* ceremony (Walker 1980:194,197, 202, 209, 210, 214, 228-230, 235), in the Sun Dance (Hassrick 1964:244; Walker 1980:184), in the *Omaha Wacipi*, Grass Dance (Walker 1980:266), *Pte San Lowanpi* (Fletcher 1887; Hassrick 1980:266; Walker 1980:244-245, 247-248, 251), in the performances of Elk dreamers (Fletcher 1887b), in Spirit Keeping ceremonies (Densmore 1918:79; Hassrick 1964:262), and in the rituals that surround eagle trapping (Standing Bear 1988:79). It is also singled out in many sacred stories (Hassrick 1964:215). In modern times, sweetgrass continues to be used in a variety of ceremonial contexts including Sun Dances, vision seeking, and *Yuwipi* (Kemnitzer 1970:66). As James Walker (1980:76) wrote:

In their ceremonies the Lakotas make smoke with the pipe and also of sweetgrass and sage, and of cedar leaves, and of buffalo chips. Making smoke with these things is *wazilya* (incensing). In all ceremonies that have to do with *Wakan Tanka*, after smoking the pipe an incense of sweetgrass should be made. This is because that spirit that is in the smoke of sweetgrass is pleasing to the *Wakan Tanka* and will incline him to hear the ceremony with aver.

In Cheyenne creation stories, sweetgrass is mentioned as the first plant that the Creator laid down when he made this world, and it is also the plant that Sweet Medicine, a Cheyenne culture hero, burned to purify the world (Hart 1981:9). It remains an important ceremonial incense in the Cheyennes' Sacred Arrow and Sacred Hat ceremonies, in the Sun Dance, in protecting warriors and contraries before they enter battle, in healing rituals, and in warding off evil influences in homes (Hart 1981:9-10).

The cottonwood [*Populus deltoides*] was held sacred by several tribal nations in the region as well. The trunk of a young tree served as the center pole for Sun Dances among the Cheyennes (Grinnell 1972:2:229-232, 259, 287; Hart 1981:37) and the Lakotas (Standing Bear 1978:222; DeMallie 1984:287; Walker 1982:97). According to Luther Standing Bear (1988:94), "for all ceremonial purposes the cottonwood was favored" by the Lakotas. The Lakotas also made a stick from the cottonwood tree for hanging the buffalo hump that was given as an offering in the Sun Dance (Densmore 1918:118). The posts of the lodges, in which the Lakotas' *Wanagi gele'pi* [Spirit keeping] ceremonies were held, were made from cottonwood (Densmore 1918:81). Cottonwood was a symbol of fidelity for the Lakotas, and young girls burnt twigs from the tree during the *Pte San Lowanpi* to ward off the scheming of *Anog Ite* [Double Faced Woman], who was believed to foment "infidelity, scandals and strife" (Walker 1982:52). Among the Lakotas, cottonwood was the preferred wood for other ceremonial fires too (Walker 1980:76). Its bark was used during the performances of Elk Dreamers and in the rituals of the Owns White Society (Black Elk in DeMallie 1984:242-243, 340). Today, Lakotas use cottonwood saplings to construct their sweatlodges (Lewis, T. 1990:47). It was also featured in Black Elk's visions as the flowering tree (Black Elk in DeMallie 1984:109, 130).

Willow [*Salix*] was another important and ubiquitous plant used in Cheyenne and Lakota ceremonies. The Cheyennes drew on willow stems in making hoops for antelope hunting ceremonies, willow wood to make ceremonial drums, and willow charcoal to paint their faces when going into battle. They also employed willow for a variety of ritual purposes in the *Massaum* ceremony and in the Sun Dance (Grinnell 1972:1:284, 2:20, 229-32, 328-29; Hart 1981:37-38). More specifically, willow stems were wrapped around the arms, waists, and legs of Cheyenne Sun Dancers because they were believed to help ward off thirst (Grinnell 1972:2:265, 268, 277). The Lakotas mixed willow bark in their ceremonial tobacco mixtures, including those used for the *Hunka* and *Pte San Lowanpi* (Walker 1980:111, 119, 194, 202, 209, 210, 227, 244, 245, 295; DeMallie 1984:372; Standing Bear 1988:107). Today, *can sa'sa*, red willow, remains a basic ingredient in tobacco mixtures used for smoking pipes at *Yuwipi* (Kemnitzer 1970:67). It was also used as a gift at the final feast of spirit keeping ceremonies (Densmore 1918:81).

Red willow is also significant to the Cheyennes, who use it in their tobacco mixtures and associate it with male virility (Moore, J. 1974:173).

Another shrub used for ceremonial purposes is the chokecherry [*Prunus virginiana*]. Chokecherry stems are placed in a bundle and put in the fork of the cottonwood tree at Lakota Sun Dances, probably because of its associations with bison. The Lakotas also give Sun Dancers a tea prepared from the bark of this shrub (Densmore 1918:118; Walker 1980:178-179; Lewis, T. 1990:53). *Wasna*, a mixture of corn, tallow, and chokecherries, is typically served at Lakota naming ceremonies, and *cankpe ijapi*, a boiled pudding thickened with flour, is a popular dish the Lakotas serve at feasts and powwows (Albers 1966-1976; Kemnitzer 1970:73). A staff made of cherry wood was used in the *Pte San Lowanpi* (Fletcher 1887:266-267; Walker 1980:244). The Cheyennes also placed chokecherry branches in the crotch of their cottonwood center pole at the Sun Dance, and they used them in making their Sun Dance altar as well. In addition, chokecherry branches were part of many Cheyenne ceremonies, including the Sacred Arrows Ceremony, where one branch was placed on the altar for each of the 145 songs sung in this observance (Hart 1981:36). The closely related wild plum [*Prunus americanus*] also had important ritual uses. Among the Lakotas, the stems were made into prayer wands, called *waunyanpi*, for healing the sick (Gilmore 1919:87). The sprouts of the tree were used in making spirit banners for vision questing (Sword in Walker 1980:85), and the branches to construct invitation wands for the *Hunka* ceremony (Walker 1982:65). The Cheyennes also placed this tree's branches on their Sun Dance altar (Hart 1981:35).

A mineral of widespread ceremonial importance is gypsum, particularly important because it is a distinctive feature of the Red Valley or Race Track. The ceremonial significance of this mineral was first recorded in 1874 by William Ludlow (1875:15), who came across an outcropping in the Redwater Valley where beads and other offerings were left by the tribes who quarried the mineral. Gypsum was used by the Cheyennes to mark the line surrounding the altar of their Animal Dance, and it is still utilized this way in their Sun Dance (Grinnell 1972:2:292, Schlesier 1987:93; Whiteman in Schwartz 1988:54). It is also mixed with fat and painted on the small altar sticks that represent the Cheyenne people during the Sun Dance (Whiteman in Schwartz 1988:54), and it is used to whiten the feather plumes and buffalo robes worn in the dance (Grinnell 1972:1:163, 192, 2:202, 242, 262). In their Sacred Arrow ceremony, gypsum is ground into a fine powder and melted into a mold to represent the moon. This object is attached to a sacrificial bush outside the arrow tepee, which the Cheyenne call *vozem* or frost (Whiteman in Schwartz 1988:54). Gypsum is the mineral known as the "Sun Arrow," which gave birth to the culture hero, Stone Boy (Grinnell 1926:179). The Lakotas appear to have associated gypsum and other crystalline formations with frost and ice too (Bushotter in Dorsey, J. 1889:153-154). In James Walker's rendition of the Lakota creation cycle (1983:220-221, 222-223, 227-228), the spirits were said to have been invited to feast on *icage*, "white fruits" that grew under the earth, suggesting the crystalline formations in caves.³ *Taku Skanskan* made entrails from these fruits and molded a masculine father and feminine mother figure from them, the first *Pte Oyate*, and gave them the fruits as their source of eternal nourishment (Walker 1983:225-226, 249). Like the Cheyennes, the Lakotas sprinkled powdered gypsum on the ground to mark off the altar at their Sun Dance (Densmore 1918:122).

It is also important to reiterate again the importance of the pulverized soils that badgers, prairie dogs, and voles bring up from the earth (Grinnell 1972:1:140; Powers, W. 1982:13, 1986:113, 162; Black Elk in DeMallie 1984:135n25, 137, 337, 340; Schwartz 1995:55). Cheyennes and Lakotas consider these soils very sacred and use them in the construction of their ceremonial altars.

2. Plants and Stones with Distinctive Ceremonial Uses

³ The lodge of the old man, *Wazi* or *Waziya*, which is associated with a cave in many Lakota texts, had icicles for poles and snow as its covering (Walker 1983:334). George Bushotter (in Dorsey, J. 1889:153-154) wrote about a "myster-i-ous stone" that was white and looked like glass or ice.

There are many other plants that played important ceremonial roles too, but many of these are only reported for one or two tribes. Baneberry [*Actaea rubra*], which is located in the Black Hills but not at Wind Cave National Park, is one of the most sacred plants for the Cheyennes who believe that their culture hero brought this plant “to help the people save and bring up their children” (Grinnell 1972:2:174). To the present day they keep its roots in their Sacred Arrow, Sacred Hat, and Sun Dance bundles. They also use the root in the ‘throwing it at him’ ceremony, in which a spiritual leader bites tiny fragments of the root and spits it on his hands and those of others who conduct sacred tasks (Hart 1981:33). The Hidatsas also considered the root sacred and utilized it in their River Ceremony (Nickel 1974:57).

Besides the plants discussed earlier, the Cheyennes used many other species in their Sun Dance and *Massaum* ceremonies. Aspen logs went into the construction of their Sun Dance lodges (Hart 1992:37), and box elder wood was carved to make the ceremonial root digger for the Sun Dance (Grinnell 1972:2:260). This wood also went into the fabrication of ceremonial bowls (Grinnell 1972:1:249), and in the making spiritual fires for medicines, lighting tobacco pipes, and at the Sun Dance (Hart 1981:13,1992:5). The Cheyennes placed branches of the snowberry [*Symphoricarpos occidentalis*] at the four directions of their Sun Dance altar (Grinnell 1972:2:259; Hart 1981:17). Buffaloberry [*Shepherdia*] and woodbine [*Partheocissus vitacea*] branches were also laid at this altar (Hart 1981:25, 35). The flowering culms of June grass [*Koeleria*], which was named *naaseto-vo?estse*, “sacred plant,” were used in the Cheyenne Sun Dance to give the dancers strength, and they also served as brushes to apply paint on the dancers (Hart 1981:10). During the dance, the dancers chewed the roots of the purple coneflower [*Echinacea angustifolia*] and American licorice [*Glycyrrhiza lepidota*] to quench their thirst (Hart 1981:21, 22). A bed of field mint [*Mentha arvensis*] was laid out to cool the dancers (Hart 1981:27). The Cheyennes also chewed the roots of field mint for their cooling effect during sweatlodges and Sun Dances (Hart 1981:28). Sun dancers were served the wild thistle [*Cirsium edule*] as food (Hart 1981:20). Bent redosier dogwood [*Cornus sericea*] sticks formed the rain-bow at the Cheyenne Sun Dance altar because the tree symbolized the moisture needed to bring life to a dry land (Hart 1981:23-24).

The Cheyennes believed that the sedge, *Carex nebrascensis*, lived in waters that serpents inhabited, and they placed it in the cavities of the buffalo skull during the ceremonies of the Sun Dance and Animal Dance (Hart 1981:7). It was also inserted in the cavity of a yellow-faced wolf during the *Massaum* [Animal Dance]. Symbolically, it represented a prayer for an abundance of water and the growth of vegetation (Hart 1981:8-9). The sunflower [*Helianthus annuus*] and the wild turnip [*Psoralea esculenta*] had a place in the *Massaum* along with a wide variety of other plants that represented four of the near earth planes in the Cheyenne cosmos (Hart 1981:29; Schlesier 1987:81-82).

Two plants of special significance in the Lakotas’ Sun Dances are the sunflower [*Helianthus annuus*] and the wild bergamot [*Monarda menthafolia*]. Luther Standing Bear (1975:120) reports that the Lakotas used sunflowers in the Sun Dance because “it is the only flower that follows the sun as it moves on its orbit, always facing it.” The leaves of wild bergamot were smudged around the dance enclosure and chewed by the singers and dancers (Dorsey, J. 1894:454; Gilmore 1919, 111; Buechel 1970:521). In the Lakotas’ *Pte San Lowampi*, a girl’s coming of age ceremony, ceremonial plates were manufactured from hackberry wood (Fletcher 1887:266, 267; Walker 1980:244). Green ash wood went into the making of bowls used by Lakota hunting marshals; as James Walker (1982:31) writes:

Once upon a time the people tried all the wood of every kind of tree and they found that the wood of the ash was the most durable and strongest. So they made the ash the emblem of the marshals and the marshals made all their wooden utensils and implements of ash.

Cheyenne Contrary Warriors and Lakota *Heyoka* rubbed the mucilaginous substance of the scarlet globemallow [*Sphaeralcea coccinea*] over their arms and hands to prevent them from being burned when plunged into boiling water to gather up pieces of hot meat (Densmore 1918:167-168; Hollowhorn in Beckwith 1930:415-416; Gilmore 1987:55; Buechel 1970:174; Hart 1981:31; Schwartz 1988:53. Lewis, T. 1990:149).

Besides cottonwood, other woods were favored for use in ceremonial fires. The Lakotas burn-ed dried box elder wood for the fire at a young woman's coming of age ceremony (Walker 1980:244), and the Kiowas fueled most of their altar fires with it (Vestal and Schultes 1939:40). Hackberry [*Celtis occidentalis*], which is presently found in the neighborhood of Hot Springs, was also valued fuel among the Kiowas and Plains Apaches for ceremonial fires (Vestal and Schultes 1939:22; Jordan 1965:155).

a. For Warfare and Protection

Cheyenne and Lakota warriors used a wide variety of plants in protective ways. Baneberry [*Actaea rubra*] was employed in ceremonies to 'blind' the Cheyenne's enemies (Hart 1981:33), the sagewort, *Artemisia ludoviciana*, was gathered by Contrary Warriors to purify themselves, their horses and lances before battle (Hart 1981:18-19; 1992:44-55), and the arrowleaf balsamroot [*Balsamorhiza sagittata*] was tied to the lances of Bowstring Soldiers (Grinnell 1972:2:78). Pearly everlasting [*Anaphalis margaritacea*] was also employed as a war medicine. According to George Bird Grinnell (1972 :2:188):

In one of his little medicine bundles, each man carries some of the dried and powdered flowers of this plant; and formerly, when going into battle, he chewed a little bit and rubbed it over his arms, legs, and body, for the purpose of imparting strength, energy, and dash, and thus protecting him from danger.

Women were not allowed to touch men who had this medicine on their body because this would nullify its effects.

Broom snakeweed [*Gutierrezia sarothrae*] was one of the major war medicines of Lakota warriors, who rubbed it on their body before battle (Densmore 1918:350), and the prairie sandreed [*Calamovilfa longifolia*] is associated with Crazy Horse, the famous Oglala war leader, who wore the top of this plant on his head as a *wotawe* [war charm] instead of a feather (Buechel 1970:452).

The Lakotas kept small stones for protection because these were widely believed to be cap-able of holding *sicun*. As William Powers (1982:11) writes:

Inhering in each stone is a spirit called *sicun*, understood as that aspect of the soul that lasts forever and is capable of being reinvested in another object, human or non human, animate or inanimate, at one's death. Not all *sicuns* are reinvested, so there is always a surplus, some of which may be called upon in a ritual to perform certain acts dealing mainly with curing or to reveal information necessary for the welfare of the people.

The *sicuns* exert their own force. They are able to move on their own, but they can also function as messengers for spirits (Kemnitzer 1970:63). Each *sicun* has its own name, special rules for its care, and reveals itself to *Yuwipi*, who, under the proper circumstances, may transfer it to another for their protection and well-being (Kemnitzer 1970:63; Powers 1982:12). People who wish to acquire a stone may undergo a ritual called an *Inktomi Lowanpi* [Spider Sing] (Powers 1982:12).

Small stones were also carried as offerings and left at Bear Butte to memorialize the deceased, and this site was the origin of another stone that Lakotas quarried and kept for protection (Odell 1942:23-24). In 1874, Samuel Burrows (in Krause and Olson 1974:208), a journalist on the Custer expedition, reported small pieces of white quartz atop Inyan Kara Mountain that had no geological reason to be there. Today,

Lakotas still travel to this site to collect stones for use in the *inipi* (sweatlodge) before the Sun Dance (Black Elk, C. 1992:51). Also spiritually important to the Lakotas and Cheyennes are the crystallized stones that ants bring up from under the earth (Grinnell 1972:1:223; Powers, W. 1982:160, 1986:113). Francis Densmore (1948:200) reported that the Lakotas made necklaces from stones gathered on ant hills. In general, most crystalline stones are considered sacred and good repositories for holding *sicun* (Bushotter in Dorsey 1889:153-154). Among the Lakotas, stones are ubiquitously present in a wide variety of ceremonial contexts, even though they are most often associated with *Yuwipi*. The Cheyennes employed stones in ritual ways too, but there is very little detail about their particular functions and meanings (Whiteman in Schwartz 1988:54).

b. Romance and Fertility

A variety of different plants are also associated with romantic attraction and fertility. The plant most widely linked to romance was the wild bergamot, especially the variety *Monarda menthafolia*, which is found in the Black Hills but not at Wind Cave National Park. The Plains Apaches believed this plant had properties that could attract and arouse the opposite sex (Jordan 1965:148-149), and the association of this plant with elk, known for its seductive powers, suggests a similar belief among the Lakotas (Densmore 1918:178). The Cheyennes used the stems and flowers of wild bergamot to make pillows for young girls to insure their health and fertility (Grinnell 1972:2:186), but there is no mention of it serving as a love medicine. Instead, the gum from the spruce tree [*Picea glauca*] was known to have powers to attract members of the opposite sex (Grinnell 1972:1:134), and field mint [*Mentha Arvensis*] was believed to have aphrodisiac properties (Hart 1981:27). Young Lakota women searched for four headed spears of grama grass [*Bouteloua*] to bring them good fortune in love and romance (Hassrick 1964:241).

Fruit-bearing trees, especially wild plums, chokecherries, and hackberries, were commonly associated symbolically with fertility and reproduction, not only in the Sun Dances of the Cheyennes and Lakotas, as already described, but also in many other ritual contexts. All of them occupied important symbolic places in the Lakota's *Pte San Lowanpi*, the celebration of a young girl reaching womanhood (Fletcher 1887:266-267; Walker 1980:244). They also appear to have played a role in Lakota women's rock art shrines connected with the Double-Woman, *Winyan Nunpa* (Sundstrom 2002:112). The Arikaras chose wild plum and hackberry trees to hang the bundles containing the placentas of their infants (Gilmore 1930:75).

c. Signs

Several plants are reported to have functioned as signs to mark important seasonal activities and movements in the lives of tribal people in the northern plains. Melvin Gilmore (1926:14) noted that when the dotted gayfeather [*Liatris punctata*] started to bloom, the bison-hunting tribes took this as a sign to travel to the Arikara villages because the corn would be ripe and ready for trade. When the goldenrod [*Solidago*] bloomed, it was time for the Poncas to return home from the buffalo hunts to tend to their ripening corn fields (Gilmore 1919:133). When the annual sunflower [*Helianthus annuus*] was ripe, the Lakotas believed that bison were fat, and therefore, their meat was good (Gilmore 1919:130). The flowers of the pasqueflower [*Pulsatilla patens*] blossom on the high plains before the snows completely melt and were a harbinger of spring, renewal and rebirth for several tribal nations in the region. The Arikaras hung pasqueflowers each spring on their sacred cedar tree to mark the return of spring and the renewal of life (Gilmore 1987:188), and the Dakotas (and probably the Lakotas too) had many songs about this flower that they sang to celebrate its appearance in the early spring (Gilmore 1919:81, 1987:205-208).

Stones could also function as markers. Jenney and Newton (1875:302) noted how stones were set in the forks of trees to mark trails in the interior regions of the Black Hills, and Odell (1942:152) wrote how

the Cheyennes stacked stones in a special way to give directions to the locations of their camps. Finally, Joseph Nicollet (in Bray and Bray 1976: 68-69) described how stones were stacked in the fashion of a pyramid to mark gravesites.

d. Gifts and Petitions

Certain plants were singled out to use as offerings whenever spirits were petitioned. Besides sage, cedar, and sweetgrass, pearly everlasting [*Anaphalis margaritacea*] was one of the plants commonly used for this purpose by the Cheyennes (Grinnell 1972:2:188). Many more plants, however, were dried and combined in tobacco mixtures to create a smoke that carried petitions to the spirit world. Redosier dogwood [*Cornus stolonifera*], bearberry a.k.a. kinnikinnick or larb [*Arctostaphylos uva-ursi*], and willow bark [*Salix humilis*] were among the more important plants used for this purpose (Gilmore 1919:108, 1987:106; Buechel 1970:123, 520; Kemnitzer 1970:67; Grinnell 1972:2:183; Finger in Walker 1980:111; Tyon in Walker 1980:119; No Flesh in Walker 1980:194; Blunt Horn in Walker 1980:202; Bad Wound in Walker: 1980:209, 210; Walker 1980 227, 244, 245, 295; Hart 1981:23, 40-41, 1992:20; Black Elk in DeMallie 1984:372; Standing Bear 1988:107; Black Elk, W. and Lyon 1990:189; Lewis, T. 1990:46-47). Robert Hall (1997: 157-158) suggests that their importance is related to the fact that they maintained a distinctive coloration during the winter, a fact that led tribes to connect them with immortality. Dogwood stems turn bright red during the winter months, and it was only during this time of the year that they were taken by the Lakotas for their tobacco mixtures (Goodman 1992:7). The Cheyennes, Lakotas, Arikaras, and Poncas removed the inner bark of the dogwood from its outer bark to make shavings that were placed in tobacco mixtures for pipe-smoking on diplomatic and ceremonial occasions (Gilmore 1919, 1987:106, Grinnell 1972:2:183; Buechel 1970:123; Hart 1981:23, 1992:20; Lewis, T. 1990:46). The Lakotas also used it in their tobacco mixtures for fasting and seeking visions (Sword in Walker 1980:85; Walker 1980:132), in the consecration of their pipes (Sword in Walker 1980:87), and in the *Hunka* Ceremony (Walker 1980:209).

Bearberry was another important plant added to Cheyenne and Lakota tobacco mixtures (Hart 1981:25, 1992:40-41; DeMallie 1984:240, 334, 337, 339-340; Standing Bear 1988:103; Black Elk and Lyon 1990:189; Lewis, T. 1990:46-47), and like cedar and sage, it does not drop its leaves in the wintertime. The Lakotas used this plant as an offering when picking medicinal plants (Black Elk in DeMallie 1984:236). Luther Standing Bear (1988:103) explained its origin among the Lakotas, when he wrote:

Long ago the wolf came to the medicine man and told him how to use the tobacco plant. The things that grow up from the soil, so he told the medicine man that if the tobacco plant was burned in the tipi, it would keep away disease and purify the air. The women threw the leaves of this plant on the fire and the smoke would rise up and fill the tipi. Long before pipes had been invented, the men would draw coals from the fire and sprinkle the dried leaves over the coals. As the smoke arose, they covered their heads with their blankets and bent over the coals so they could breathe in the smoke. A little later, men learned to smoke another way. Lying on the ground they drew the smoke into the mouth through a hollow reed. The next pipe was more convenient, for it was the small leg bone of the deer hollowed out. A piece of charcoal was put in one end of the bone and on this the tobacco. It was carried in the mouth and smoked like a cigar...

TABLE 10. Plants and Minerals at Wind Cave National Park with Special Spiritual and Symbolic Significance to the Cheyennes, Lakotas, and/or Arapahos

| <u>common name</u> | | <u>taxonomic name</u> |
|------------------------------------|--|------------------------------------|
| | <u>Woody Plants</u> | |
| Bearberry | | <i>Arctostaphylos uva-ursi</i> |
| Broom snakeweed | | <i>Gutierrezia sarothrae</i> |
| Buffaloberry | | <i>Shepherdia</i> , spp. |
| Chokecherry | | <i>Prunus virginiana</i> |
| Cottonwood | | <i>Populus deltoides</i> |
| Hackberry (found near Hot Springs) | | <i>Celtis Occidentalis</i> |
| Leadplant | | <i>Amorpha canescens</i> |
| Redosier dogwood | | <i>Cornus stolonifera</i> |
| Rocky Mountain juniper | | <i>Juniperus scopulorum</i> |
| Sagewort | | <i>Artemisia</i> , spp. |
| Skunkbush | | <i>Rhus aromatica</i> |
| Smooth Sumac | | <i>Rhus glabra</i> |
| Snowberry | | <i>Symphoricarpos occidentalis</i> |
| Wild plum | | <i>Prunus americana</i> |
| Willow | | <i>Salix</i> , spp. |
| Woodbine | | <i>Partheocissus vitace</i> |
| | <u>Flowering Forbs</u> | |
| American Licorice | | <i>Glycyrrhiza lepidota</i> |
| Blazingstar | | <i>Liatris punctata</i> |
| Breadroot scurfpea | | <i>Psoralea esculenta</i> |
| Dotted gayfeather | | <i>Liatrus punctata</i> |
| Field Mint | | <i>Mentha arvensis</i> |
| Pasqueflower | | <i>Pulsatilla patens</i> |
| Pearly Everlasting | | <i>Anaphalis margaritacea</i> |
| Purple Coneflower | | <i>Echinacea angustifolia</i> |
| Sagewort | | <i>Artemisia</i> , spp. |
| Scarlet Globemallow | | <i>Sphaeralcea coccinea</i> |
| Sunflower | | <i>Helianthus annus</i> |
| | <u>Grasses and Moss</u> | |
| Grama Grass | | <i>Bouteloua</i> , spp. |
| Junegrass | | <i>Koeleria</i> |
| Juniper moss | | <i>Polytrichum juniperinum</i> |
| Prairie Sandreed | | <i>Calamovilfa longifolia</i> |
| | <u>Minerals and Soils</u> | |
| | <i>Gypsum and Quartzite</i> | |
| | <i>Stones on which lichens grow</i> | |
| | <i>Red clay and earth</i> | |
| | <i>Soils unearthed by prairie dogs, badgers, and voles</i> | |

Surrounding the Lakotas' Sun Dance altar, an indented line is traced, where bearberry tobacco or larb is laid down, after which red clay paint is added, and on top of this, gypsum is sprinkled (Densmore 1918:122). This is reminiscent of the appearance of the Red Valley where gypsum strata are laid down in this red sandstone formation, appearing as ribbon-like lines encircling the Hills where their tobacco (bearberry) was commonly gathered.

Two other plants were associated with ceremonial smoking by the Cheyennes, Comanches, Kiowas, Plains Apaches, and the Lakotas. One of these, skunkbush [*Rhus aromatica*], was widely used and considered an especially important ceremonial plant among the Kiowas (Vestal and Schultes 1939:40; Grinnell 1972:2:180; Jordan 1965:128; Hart 1981:14; Lewis, T. 1990:47). It is another plant that keeps some of its foliage and also its berries over the winter months. Another widely used and closely related shrub was the smooth sumac [*Rhus glabra*], whose leaves were combined in tobacco mixtures by many different tribal nations (Gilmore 1913b:367, 1919:48; Carlson and Jones 1939:524; Vestal and Schultes 1939:39; Jordan 1965:128; Buechel 1970:127 Grinnell 1972:2:180; Hart 1981:14). Finally, the Lakotas added the leaves from the leadplant [*Amorpha canescens*] to some of their tobacco mixtures too (Gilmore 1919:48).

It should also be mentioned that the descendants of European American settlers in the vicinity of Wind Cave National Park recall their families gathering kinnikinnick and evergreens to make wreaths and other decorations for the Christmas holiday season (Sundstrom, J. 1977:379, 412). This is the only ritual and symbolic use of plants that we could find for the region's European American populations.

VII. WIND CAVE NATIONAL PARK: PLANTS AND MINERALS

The Black Hills remain a renowned place for Lakotas and Cheyennes to seek plants, soil, earth, clay, and water for spiritual and practical uses. Historically, the incredible variety, richness, and abundance of these natural resources must have reinforced Lakota and Cheyenne ideas about the special and sacred nature of this place. This chapter has summarized information mostly on plants located today at Wind Cave National Park.⁴ It reveals a number of things, the most important of which is that the park's flora represent a substantial proportion of the plants collected by the Lakotas and also the Cheyennes for practical and spiritual purposes.

With only a few exceptions, Wind Cave National Park contains most of the plant staples in the traditional diets of the Lakotas, Cheyennes, and Arapahos. Even more impressive are the number and variety of plants on park properties used for traditional medicinal treatments. The park is a veritable pharmacy when it comes to healing herbs supplying remedies for injuries and ailments. Over fifteen different flora in the park treat colds and respiratory ailments, and more than twenty plants cure gastrointestinal, liver, and kidney problems. A similar number of species have obstetrical and gynecological applications. Many different plants have antiinflammatory uses. A large number of plants treat dermatological conditions, and at least fifteen handle headaches, dizziness, and psychogenic complaints. Wounds, injuries, and bites are doctored with more than twenty-five distinct plants. At least five separate plants attend to heart, back, and chest pains, more than ten heal inflammations of the eyes, ears, nose, and mouth, and over five serve as elixirs and stimulants or work as compounds. A wide variety of the plants that grow on park properties are reported as fodder or remedies and stimulants for horses.

Virtually everything a Lakota, Cheyenne, or Arapaho might need to keep their person, dwelling, and articles of clothing clean and fragrant was available in the park's selection of plants, from sageworts and soapweed to bedstraws and cattails. Many of the flora at the park provided necessary materials for constructing lodges, making mats, containers, and utensils, fashioning tools and weapons, constructing musical instruments, toys, and recreational objects, and mixing dyes, paints, and tanning agents. Several

⁴ Again, a more detailed body of information on plants and minerals for the Black Hills as a whole is found in Appendix B. The material presented in this chapter and the appendix does not represent a complete coverage of the knowledge that Lakotas, Cheyennes, and other tribal people possess about plants in the Black Hills. What appears here is restricted to material found in published sources.

grasses and woody plants also served as tinder and fuel, including sagewort, cottonwood, green ash, and box elder.

Some of the most important and sacred plants for religious observances grow in the park from cedar, bearberry, dogwood, and sagewort to the pasqueflower, cottonwood, globemallow, and broom snakeweed. Most of the specific locations where these and other plant resources were procured in historic times is not identified in the literature, but the southeastern area of the Hills, the region of Wind Cave and the Race Track and the neighboring Buffalo Gap and Hot Springs, played some role in this procurement because of their relationship to landforms associated with sacred stories of bison, an animal widely connected with healing herbs and spiritual renewal. The plants in this area no doubt have significance because they grow on *Tatanka makalpaya* [the Stomping Ground of the Bison Bull] near the cave of the bison's origin. Lakota and Cheyenne cultural resource officers confirm the importance of this area in the collection of plants for medicine and religious observance.

It should also be noted that the plants associated with the North Wind, *Waziyata*, and his grandfather, *Waziya*, including dogwood and bearberry, are gathered in this area. Both plants were singled out by the tribal people we interviewed. In fact, most of the plants associated with these two spiritual figures either remain green over the winter months or else they take on a red coloration. As mentioned previously, they symbolize immortality because they do not die over the winter months. The name *Waziyata* is sometimes translated "towards the pine." *Wazi* is the generic word for pine, and it is used specifically in reference to the ponderosa pine. The land of the pines is commonly mentioned in Lakota stories about *Waziyata* and his grandfather, *Waziya*, and although many of the references (Afraid of the Bear in Walker 1980: 200-201; Blue Thunder in Walker 1980: 208; Bad Wound in Walker 1980: 210; Walker 1983: 125, 136, 194, 201, 208) may very well apply to locations in the northwoods of Minnesota and neighboring Wisconsin, where most historians agree the Lakotas originated, they can easily apply to the pine-laden Black Hills, which after the late eighteenth century would have been the area that most Lakotas associated with pine.

Lakotas and Cheyennes link specific varieties of plants to particular animals and the landscapes in which they dwell. The plants (i.e., fetid marigold) that grow around prairie dog towns, for example, are important given the cleansing properties of the soils in which they grow. Park properties contain numerous springs, and they stand in proximity to the thermal waters at Hot Springs, which are highly valued for their healing properties. The plants that grow around these water sources are considered especially potent.

Historically, the area of Wind Cave National Park was probably a locale to find knappable stone. There is certainly prehistoric evidence of quarrying not only at nearby Battle Mountain, but also inside the boundaries of the park itself. The procural of flint for making arrowheads declined after the introduction of European trade metal, but it no doubt remained a prominent activity in tribal life until the beginning of the nineteenth century, the time when French traders began to stay in the area for extended periods. Also, the general spiritual importance of the region, described in greater detail in the next section, recommends it as a location to collect minerals, clays, and soils for ceremonial uses. Although present in other places, the dirt brought up from the deep earth near Wind Cave by prairie dogs, badgers, and voles would have special significance for constructing ceremonial altars because the soil comes from the earth that is the home to the buffalo and the place of human emergence. The red soils and gypsum formations along the Race Track also have significance in the Sun Dance and other ceremonies linked to the story of the Great Race (see next section for a fuller explication).

Wind Cave National Park and its surrounding environments are resource rich areas for animals, plants, waters, minerals, and soils used in traditional culture contexts, and many of these resources continue to play a role in contemporary religious observances. It is little wonder that the general area of the park remains contested. In the past, it was a place where tribal nations once battled each other to

acquire or protect their access to its riches and where, after 1874, the Lakotas and Cheyennes launched attacks on the incoming prospectors and settlers. It is also understandable that the Cheyennes, Lakotas, and Arapahos eventually came to share access to the lands, that it became a popular camping area for the Lakotas for short or extended stays, that Spotted Tail wanted his agency nearby, and that Red Cloud refused to part with this section of the Hills. Nor is it surprising that today it is one of many areas in the Black Hills where Lakotas continue to conduct some of their most sacred religious observances.