

CHAPTER 5.

Plant Gathering, Game Hunting, Fishing, Mineral Collecting, and Agriculture

Kurt F. Anschuetz

Introduction

Native American populations have cut wood for shelters and fuel, gathered native plants, hunted game animals, and collected various other resources, such as obsidian for making chipped-stone tools, clay for crafting pottery vessels, and stone slabs for producing *piki* (corn meal paper bread) griddles, in the Valles Caldera National Preserve (VCNP) for countless centuries (chapter 2). Archaeological evidence recounted in chapter 2 documents that Pueblo groups from the upper Río Jémez Valley farmed the Banco Bonito within the VCNP during pre-Columbian times. Although the available evidence is scanty, it appears likely that Pueblo groups caught trout in the Valles Caldera's former marsh lands and in streams for immediate consumption while they were staying in the locale for other purposes.

Consisting of a relatively narrow assemblage of raw materials—primarily obsidian debitage, chipped stone tools, charred botanical materials, a few fragments of animal bone, and the remnants of stone fieldhouses—the archaeological record offers insights only into a fraction of the activities that took place in the past. Moreover, it is largely silent on the social and ideational contexts underlying the aboriginal use of the locale before the arrival of Europeans in the region in the sixteenth century. Consequently, archaeological constructions of the pre-Columbian occupation in the Valles Caldera, as presented in chapter 2, necessarily focus on economic issues.

The ethnohistoric and ethnographic records reveal that many Pueblo communities have maintained significant relationships with the VCNP throughout the Historic period. Like their pre-Columbian forebears, these peoples have gathered native plants, hunted game animals, fished, and collected various minerals. Similarly, their stays were comparatively brief; the Pueblos never built and occupied permanent habitations in the locality. Because Spanish colonial administrators generally failed to recognize Native Americans' traditional land use practices (Anschuetz 1998c), the continued occupation of the Valles Caldera by the Pueblos is underrepresented in the documentary record.

Historic Pueblo communities maintained cultural and historical affiliations with the Valles Caldera. These communities included neighboring settlements (e.g., the Pueblos of Jémez, Santa Clara, and Zía), as well as villages located at

great distances (e.g., the Pueblo of Zuni in west-central New Mexico) (chapters 1 and 9). Secrecy has effectively shielded specific detail of the Pueblos' activities in the Valles Caldera from the view of outsiders (e.g., Weslowski 1981:114). The keepers of indigenous cultural knowledge invoked confidentiality to protect the sanctity and power of their communities' age-old traditions (Anschuetz 2002a:3.35–3.37; Friedlander and Pinyan 1980). Ethnographic observations, however, indicate that the Pueblos' gathering, hunting, and collecting pursuits satisfied subsistence, social, and ritual needs (see chapter 9).

Other Native American groups known to have come to the Valles Caldera for their own purposes include the Apache, Navajo, and Ute. Just as with the Pueblos, available documentary evidence indicates that these visits were not necessarily undertaken for material needs or as a stopover along a journey from the north, northwest, or west to the Río Grande Valley. These nomadic groups also held the Valles Caldera in regard for important social and cultural reasons (chapter 9).

Wood cutting, plant gathering, hunting, and mineral collecting in the Valles Caldera by Hispanic soldiers and herdsmen date to the eighteenth century. At this time, raids by various Native American nomads prompted punitive military expeditions. In addition, the diversification of New Mexico's economy fueled the search for new livestock pastures (chapters 3 and 6). The Spanish colonial administration of New Mexico also began making land grants for settlers in the Río Jémez and Río Chama valleys in the early eighteenth century. Hispanic settlers from the Chama district farmed in high elevation settings northeast of the Baca Location No. 1's (Baca Location's) historical boundaries during the mid-early eighteenth-century drought cycle. For this reason, it is possible that other Hispanic, Pueblo, or *Genízaro* (i.e., hispanicized Native American) groups from the south or east similarly planted in selected, well-watered meadows in the Valles Caldera.

The activities undertaken by Hispanic visitors likely were completed at a relatively small scale. Most also probably were undertaken to fulfill some immediate need of individuals during their brief visits to the locale. Detailed information about their specific use of the Valles Caldera is lacking. Ethnohistorical accounts offered by lifelong residents of the locality, however, suggest that the Hispanic residents, like their Native American

counterparts, developed special relationships with this unique upland setting that transcended economic activity.

By the late nineteenth century, permanent settlement moved closer to the Valles Caldera. Hispanic and Anglo-American homesteaders settled around Battleship Rock near Jémez Springs some time after 1876. By 1880 there was a small ranching settlement east of the Baca Location in the setting now occupied by Los Alamos (**Scurlock 1981:138**). The village of Archuleta (subsequently renamed Perea and now Jémez Springs), located near the Jémez Hot Springs on the Cañon de San Diego Land Grant, was established about the same time near Archuleta's original 1850s cabin (Smith 1979, in **Scurlock 1981:138**). Archuleta built the first crude bath houses for commercial use (**Martin 2003:41**). Homesteads gave rise to the settlement of La Cueva near the southwest corner of the Baca Location. At about 1883, homesteaders, including John Kelly, Polito Montoya, N. R. Darey, Angeline Eagle, J. S. Eagle, and S. D. Thompson moved still closer to the Valles Caldera (**USDA Forest Service 1883–1913**; see also chapter 6). Meanwhile, Mariano Sabine Otero and his uncle, Miguel Antonio Otero, working with officials of the Atchison, Topeka, and Santa Fe Railroad, made plans to develop the Jémez Hot Springs—which they bought from Archuleta—and Sulfur Springs as resorts. The passage of the Enlarged Homestead Act (1909) and the Stock-raising or Grazing Homestead Act (1916) brought intense settlement by Hispanics and Anglo-Americans. This act quickly brought the establishment of at least 19 homesteads, occupied land claims, and ranches around La Cueva and Upper Vallecitos, which are just southwest and south of the VCNP, respectively (**Scurlock 1981:142**).

With this development in the last decades of the nineteenth century, local residents and entrepreneurs increasingly looked toward the Valles Caldera for the raw materials and recreational venues for their new communities and businesses. Recreational hunting increased and timber joined ranching, making these the dominant activities. Consequently, game animals, such as elk, rapidly became depleted and the construction of sawmills brought commercial timbering to the upper Río Jémez Valley in the 1890s (**Scurlock 1981:140**). Even as development resulted in increasingly dramatic physical and ecological changes to parts of the Jémez Mountains, traditional Native American and Hispanic hunting, fishing, plant gathering, and various mineral, rock, and other resource collecting activities persisted in comparative obscurity.

This chapter reviews historical and ethnohistorical evidence of plant gathering, game hunting, fishing, mineral collecting, and agriculture within the Valles Caldera. Except for a brief episode of commercial hay cutting in the mid-nineteenth century, small-scale fishing by a small number of Pueblo men to satisfy a limited demand in Santa Fe during the late nineteenth and early twentieth centuries, and a sport hunting business begun by James Patrick Dunigan in the 1960s during his tenure as the owner of the Baca Location, the land uses considered in this chapter were either traditional subsistence or vernacular (*qua* common indigenous practice) activities.

As I note in my preceding comments, gathering, hunting, and collecting pursuits undertaken by traditional Native American and Hispanic groups often have important social

and ritual meanings, as well as economic functions. To follow the structure of the chapters on the history of ranching (chapter 6), industrial timbering (chapter 7), and industrial mineral extraction and geothermal exploration (chapter 8) within the Valles Caldera, I primarily focus the following discussion on subsistence issues. I refer the reader to chapter 9, which addresses how the VCNP represents a multilayered ethnographic landscape, for insights into the social and ideational importance of native plant gathering, game hunting, fishing, and obsidian, clay, and other resource collecting among the Native American and Hispanic communities who maintain associations with this locality.

Native Plant Gathering

Collecting plants in the late summer and fall undoubtedly was an important draw for the people who have visited the Valles Caldera over countless centuries. Archaeological sites within the study area do not occur only in areas of the greatest diversity of mammals and birds. These locations generally also have high plant diversity (**Winter 1981:176**). Nevertheless, grinding stones, such as manos and metates, are rare. Excavations conducted in the Redondo Creek Valley for the Baca Geothermal Anthropological Project did not find storage pits, hearths, or other features expected at plant processing sites (**Winter 1981:177**). Investigators recovered small numbers of edible Chenopod and Monocot seeds from sites that also had ground-stone tools.

Secrecy has limited opportunities by anthropologists to observe plant gathering in the Valles Caldera first hand. In comparison, more is known of native plant gathering by Native American groups that used the VCNP. Much of what is known is owed to **Lois Vermilya Weslowski (1981)**, an anthropologist who reported on Jémez Pueblo's cultural and historical relationships with the Redondo Creek Valley nearly 25 years ago in anticipation of geothermal development. Although the entire Redondo Peak vicinity is important to the Pueblo, **Weslowski (1981:111–112)** states that the Redondo Creek watershed was especially important for the gathering of many plants and herbs traditionally used by the community's people. She offers useful context:

*Plant gathering is viewed as an integral part of community survival and is undertaken as a comprehensive activity. In earlier years, a rich assortment of plant species was collected, providing the village with wild food supplements, raw materials for household needs, building supplies, and fuel. Moreover, all plant collection was ritually tied to the societal gathering of herbs and medicines. These ceremonial plants continue to be regarded as extremely sacred and are still gathered with reverence. The entire Redondo Creek Valley is recognized as the main location for obtaining certain ritual herbs and medicines, as dictated by traditional religious practice (**Weslowski 1981:111**).*

The Redondo Creek Valley supports a large number of the native plants that were historically gathered by the people of

Jémez Pueblo and the other Pueblos for food. These resources include native grapes, strawberries, chokecherries, currants, oceanspray, Gambel oak acorns, white pine nuts, and clusters of pink New Mexico locust flowers. The latter taxon offers a delectable nectar when eaten raw (**Weslowski 1981:111**; citing **Castetter 1935:27, 42, 49**; **Cook 1930:27, 28**).

Betty Woods (1942) speculates that the people of Jémez Pueblo visited the Valles Caldera to harvest piñon nuts and to gather other native plant products. Writing for *New Mexico Magazine* in the early 1940s, she reported, “every day during the piñon season they [the Jémez] pass through [Vallecito de los Indios] on their way to the *mesa* tops, for they, too, are great nut hunters” (**Woods 1942:30**, emphasis in the original). Because the VCNP today supports only a small number (<100) of piñon trees near Redondo Meadow and has no landforms that fulfill the usual physiographic definition of mesas, it is difficult to imagine that extensive piñon stands existed in the VCNP even during pre-Columbian Pueblo times at elevations of 8,500 feet (2,591 m) (Dr. Bob Parmeter, personal communication, VCNP, Los Alamos, 2005).

The Jémez harvested mountain mahogany root, a highly resilient forest product found on the Valles Caldera’s mountainous slopes, for making rabbit sticks, clubs, baby cradles, fruit drying racks, and various tool handles (**Weslowski 1981:111**). The people prized the supple boughs of the chokecherry, currant, and New Mexico locust for use in making bows, and favored the hard wood of the Gambel oak as well as mahogany root for making clubs and rabbit sticks (**Cook 1930:27**; **Weslowski 1981:114**). The Jémez produced a red dye to color moccasins by boiling a mixture of alder bark, mountain mahogany, and birch (**Cook 1930:20**). The value of mountain mahogany root and Gambel oak further is illustrated by the fact that the Jémez today continue to use these woods as fuel for firing pottery (**Weslowski 1981:114**).

One of **Weslowski’s (1981:114)** male informants noted that the Redondo Creek Valley supports the growth of an unspecified tall grass that is used in basketry, and a marsh grass that is needed for weaving mats and pads for drying fruit. He also mentions that Jémez women use yucca, which occurs elsewhere in the Valles Caldera, in their basketry. This informant added that the Jémez also use marsh grass in some of the Pueblo’s dances. Finally, he notes that this people visit the Valles Caldera area to obtain ponderosa pine timbers for roof vigas and aspen branches for thatch (in **Weslowski 1981:114**).

The collection of the above resources was undertaken by the Jémez “in relation to the societal gathering of herbs and medicines,” which were procured from specific localities “in accordance with ritual procedures passed on by oral history” (**Weslowski 1981:114**). Native plant products used in Jémez Pueblo rituals include Douglas fir boughs and sprigs, which the people use in nearly every dance as part of their costumes. As stated by the Jémez themselves, Douglas fir branches “are commonly carried in the hand as well as tied to headdresses, collars, waist belts, and legs. On some occasions, entire trees are even set out in the plaza” (**Weslowski 1981:114**). After their use in ceremonies, the Jémez dispose of the Douglas fir

products that they had gathered for these observances with reverence and through ritual.

Other Valles Caldera plants used in Jémez rituals include blue flag (native iris) flowers dried for certain December dances, cinquefoil blooms for summer ceremonies, native grapes for producing body paints needed by dancers, and moss for costumes used in the sickle dance (**Cook 1930:22, 24, 28**; **Weslowski 1981:114**). The Jémez harvest aspen trunks from alpine settings for making drums and *wati* grass from around mountain springs for use as prayer sticks (**Ellis 1956:56–57**; **Parsons 1925:104**). Other species that grow around springs, such as sedges and rushes, as well as the algae that thrives in the water, are harvested for use in the kivas (**Weslowski 1981:114**). The significance of these resources lies in their association with spring water, which the Pueblos consider powerful medicine (**Parsons 1996 [1939]:352, 416, 453–454**; see chapter 9).

Given the ritual and power associated with medicinal herbs, comparatively little is known publicly about the traditional pharmacology of Jémez Pueblo. Weslowski observes:

Sage is documented as a remedy for stomach trouble.

Prepared lichens are applied to sores (Cook 1930:20, 28).

Other studies of Pueblo medicine in general describe uses for a few other plants found in the study [i.e., the Redondo Creek Valley] area, including mountain mahogany, white fir, aspen, and wild rose. Whether or not the Jemez actually utilize these same species for medicinal purposes is unknown (Weslowski 1981:114; bold added).

During their forays into the Valles Caldera, the people of Jémez Pueblo traditionally built temporary shelters of tree boughs and rocks. They occasionally also built more substantial log cabins for shelter, hunting rites, and related ceremonial purposes (**Weslowski 1981:111**).

Another anthropologist, **Leslie A. White (1962)**, offers a few additional insights into the use of Valles Caldera plants by nearby Pueblo communities. Reporting his study at Zia Pueblo, downstream of Jémez Pueblo in the lower Río Jémez Valley, White (1962) states that retreats into the Jémez Mountains remain an important part of this community’s ritual life. Members of Zia’s medicine societies, just as those from Jémez and other nearby Pueblo communities, were required by their respective community traditions to make pilgrimages into the Jémez Mountains in general and the Valles Caldera locality in particular. The duties of society members participating in these special expeditions often included the gathering of yucca leaves (used both for making whips and soapy water for blowing bubbles [cloud symbols] in medicine bowls), several unspecified kinds of grass, and oak for use in their respective community’s many rituals and ceremonies. During summer pilgrimages, society members collected decorative material, such as spruce and piñon boughs, for their kivas. They would also harvest willow branches for making prayersticks, and oak branches for kicksticks, if ceremonial races were involved in the upcoming ceremony (**White 1962:172, 232**).

The importance of these plant-gathering expeditions was not entirely lost on Frank Bond. From the time of his purchase of the Baca Location Land Grant until his death in 1945 (chapter 4), Bond “permitted the people of the surrounding pueblos various types of access to the property.” Through the 1940s, Jémez people received permission to conduct ceremonies on the property. Limited hunting was also allowed, and perhaps included the construction of traditional log structures (**Martin 2003:66**).

Native Americans were not the only people to gather native flora in the Valles Caldera. Hispanic residents of the surrounding valleys have a long, even if little reported, tradition of gathering plants in the Jémez Mountains. **Carrillo and others (1997:136–137)** briefly discuss Hispanic land use patterns along the length of the Public Service Company of New Mexico’s once-proposed Ojo Line Extension (OLE) construction corridor, which crosses the east margin of the Baca Location land grant boundaries. These authors note generally that area residents visited the Jémez Mountains, including the Baca Location, to gather herbs, berries, nuts, and broom grass for household consumption, medicinal use, and ritual practices (**Carrillo et al. 1997:137**). For example, one of their informants stated:

I recall gathering piñon nuts, broom grass, and other things in the area of the power line, especially the Baca Location. Broom grass was a sacred plant found in the Baca Location (Informant I, personal communication 1991, in Carrillo et al. 1997:137).

Another informant added that Hispanics actually harvested two kinds of broom grass.

“There is the traditional broom grass, which is out of a thin grass, which is straight stemmed and hard, and then there is another type of broom grass which is quite a bit taller, with a thicker stem” (Informant I, personal communication 1991, in Carrillo et al. 1997:137).

Carrillo and others (1997) note further that area Hispanic residents harvested wood for use as fuel and building material. An informant stated that they favored slower-burning piñon and oak during the winter. Both of these species, however, are much less common in the high elevations of the VCNP than in the surrounding areas (Dr. Bob Parmeter, personal communication, VCNP, Los Alamos, 2005). Local residents preferred “cedar” (possibly meaning tamarisk) and juniper for summer use (Informant B, personal communication 1991, in **Carrillo et al. 1997:137**). These fuels burn rapidly, thereby allowing the fires to cool more quickly.

Hispanic traditions refer to the acquisition of Jémez Mountain timbers for construction since the earliest colonial settlement in the area. Given the remote location of the Valles Caldera, however, lumber harvests were minimal until the twentieth-century (chapter 7). Instead, Hispanic shepherds and ranchers constructed sheds, corrals, lambing pens, and other structures of logs or milled lumber at their larger stock camps (**Winter 1981:178**, after **Scurlock 1981**).

Although **Carrillo and others (1997)** do not elaborate on any of these observations, Hispanic gathering traditions overlap markedly with those of the region’s Native American communities. That such a blending exists is not surprising, given the process of *mestizaje*—the hybridization of Indian, Mexican, and Iberian cultures through intermarriage—that has characterized northern New Mexico’s history and culture since Spanish colonization (e.g., Anzaldúa 1987:5; Lamadrid and Gandert 2001:66; see also Mörner 1967; Wolf 1959). Equally important is *syncretism*, which refers to melding of the structure and symbolic content of Indian and of Iberian (i.e., Catholic) religious belief (e.g., Anzaldúa 1987:25–39; Ingham 1986:180–193; Rodriguez 1994:143–148; see also chapter 9).

Direct observations of specific native plant gathering activity in the VCNP by Native American and Hispanic groups are limited. Nonetheless, an initial survey of key ethnobotanical reference materials illustrates the richness of this mountainous habitat in terms of the number of plant taxa important to the everyday secular and ritual lives of the region’s traditional communities that historically have maintained an association with this locality. This sample includes plant uses by the Río Grande Pueblos (i.e., Jémez, the northern Tiwa [Picuris and Taos], the southern Tiwa [Isleta and Sandia], the Eastern Keres [Cochiti, Santa Santo Domingo, and Zia], the Tewa [Nambe, Pojoaque, San Ildefonso, San Juan, Santa Clara, and Tesuque], the Western Keres [Acoma and Laguna], Zuni Pueblo, the Hopi Tribe, the Navajo Nation, the Jicarilla Apache Tribe, the Ute tribes of Colorado, and New Mexican Hispanics [chapter 1]). I also include references to archaeological samples collected from pre-Columbian Pueblo and seventeenth-century Spanish colonial assemblages because these resources establish the antiquity of certain plant uses, including some that are not known from direct ethnobotanical observation.

As shown in tables 5.1 and 5.2 (tables are at the end of the chapter), the VCNP may offer as many as 350 native plant taxa that at least one of the associated Native American and Hispanic communities is known to have used traditionally. Of this assemblage, 125 taxa represent plant species that ethnobotanical references identify explicitly. I base the identification of the use of the remaining 225 taxa on analogy. That is, when ethnobotanists identify a plant either by genera or a related species, I assume that the pertinent Valles Calderas botanical specimen(s) possess the potential for similar use(s) as those reported.

To simplify the task of compiling this diverse, rich body of information, I follow ethnobotanists **William W. Dunmire and Gail D. Tierney (1995, 1997)** and report plant uses in terms of seven general categories: (1) food or beverage; (2) medicine; (3) smoking or chewing (for recreation); (4) construction or fuel; (5) dyes, pigments, tanning, soap, or crafts; (6) fiber, cordage, basketry or matting; and (7) tools. In an attempt to document food uses and other ethnographic observations of interest more fully, table 5.1 offers a comment field that identifies edible plant parts and selected supplemental detail. Out of respect for the sensitivity of information related to Native American ceremony, I did not attempt to inventory ritual use

by taxa. The small number of published observations provided in the preceding paragraphs specific to the Jémez Mountains will have to suffice.

While table 5.1 reports uses by individual taxon, table 5.2 offers summary counts. Throughout table 5.1 I distinguish which uses are for plant species that exactly match reported Valles Caldera species and which applications are based on analogy. The reader should note that many of the Valles Caldera plant taxa have plant uses based on both direct observation and analogy. Table 5.2 does not attempt to discriminate between functions based on direct observation and analogy within individual taxa. Instead, I rely on the occurrence of any instance of direct observation within species in classifying my summary counts.

The information represented in tables 5.1 and 5.2 admittedly sacrifices much useful ethnobotanical detail. Nevertheless, it allows identification of several important patterns relevant to evaluations of the land use history of the VCNP before large-scale herding and industrial timbering reached the area.

First, the identification of 290 (82.9%) plants in the category “Foods and Beverages” might initially appear to suggest that the Valles Caldera was a virtual Garden of Eden at some times of the year for subsistence plant gatherers. This raw count is misleading, however. Of this diverse inventory, few species represent either high-quality foods or resources that people can depend upon to occur with unwavering abundance over time.

Dunmire and Tierney (1995:56) note that certain key resources, including “wild nuts and grains, cactus fruits, and amaranth and goosefoot seeds and leaves...are high in protein, their inclusion in early diets must have been critical to maintaining a healthy population.” In addition, they observe that aboriginal methods for gathering and preparing a variety of supplemental native foods found in the Valles Caldera, such as “wild celery and beeplant greens in the spring; amaranth greens, groundcherry pods, and wild onions in the summer; and...sunflower seeds in the fall” (**Dunmire and Tierney 1995:57**) helped to ensure that Native peoples included a beneficial mix of essential nutrients in their diets.

Native plant resources upon which traditional peoples depended either as staples or key supplemental foodstuffs, however, characteristically have a patchy distribution in high-altitude mountainous settings and/or exhibit a high degree of variability in productivity from year to year. They do not offer either the productivity or the reliability needed to sustain a large number of people in one place for a significant length in time. It is not surprising, therefore, that the archaeological and historical records alike document that the permanent settlement of the VCNP did not occur until the past century. Moreover, year-round habitation of this locality was finally made possible because of a reliance on commercial ranching operations (chapters 4 and 6). Even then, comparatively few people ever lived on the Baca Location year-round. Most of the land grant’s residents occupied it, usually from spring to late fall, as seasonal employees.

Equally important, as many indigenous Southwestern peoples became more dependent on corn and other cultigens for their livelihood:

... gathering became more seasonal and less of a factor in the people's diet. Today, except for piñon nuts, most gathering for food by Pueblo Indians [and all other traditional peoples of the northern Southwest] seems to be done in conjunction with other activities—tending crops, hunting for game, or management of livestock—rather than of itself... (Dunmire and Tierney 1995:56).

Area Hispanic residents probably followed the Pueblo model of plant gathering as primarily an adjunct activity during their visits to the Baca Location. As noted previously, the VCNP likely did not support the dense stands of piñon trees needed to sustain intensive nut gathering activity during the fall (Dr. Bob Parmeter, personal communication, VCNP, Los Alamos, 2005). Even among late nineteenth-century populations who still largely pursued hunting and gathering as a way of life, such as the Navajo, Apache, and Ute peoples, plant gathering in the Valles Caldera almost certainly was a periodic, short-term activity undertaken in combination with other transitory purposes.

One additional type of food gathering activity in the VCNP is mentioned because it serves to underscore the tenuous nature of the edible native plant resources in this high altitude forest habitat. Three tree species—Rocky Mountain maple, limber pine, and ponderosa pine—found in the Baca Location locality produce an edible inner bark, the cambium (table 5.1). High in calories because of the concentration of sugars contained in its fibrous mass, cambium was variously consumed by traditional Native American and Hispanic populations at any time of the year during times of need (**Dunmire and Tierney 1995:100; Hudspeth 1997:29**).

Writing of the ponderosa pine, whose bark can give the sweet scent of vanilla (especially when the trees are not drought stressed), **Dunmire and Tierney (1995)** add that people might simply chew pieces of raw cambium to release its sugars. “The cambium can be very bitter, so if used in quantity, it was probably processed by pounding or grinding and then leaching with water” (**Dunmire and Tierney 1995:100**).

Trees harvested for their cambium on a large scale yield telltale scars on their trunks. Rather than girdling and killing a tree, people would cut through the outer bark and pry off long, vertical planks of outer and inner bark. On mature ponderosa pine trees, the residual scars, which might date back more than a century, can extend from near the base the tree’s trunk to heights of nearly 10 feet (3 m) (Author’s personal observation, Río Grande Foundation for Communities and Cultural Landscapes, Santa Fe, 1998).

Surviving features of this type, which are part of the archaeological record because they represent a locus of human activity, are important in reaching an understanding of the land use history of the VCNP. They possess the potential to help students of natural and cultural history—archaeologists, historians, and ecologists—understand some of the circumstances that lead people to rely on so-called starvation foods in this setting. Through the adoption of a regional perspective and a multidisciplinary approach that includes climatological and dendrochronological information, investigators might be able to address an intriguing question:

Why did groups who visited the Baca Location over the past several centuries harvest cambium? Widespread drought stress is one possibility. The inherently low productivity of edible native flora in the Valles Caldera might have required groups visiting the locality to intensify their gathering if they were forced to stay in the mountains for extended periods due to times of open raiding and warfare. As noted in chapter 3, the Valles Caldera lies along major routes used by many Native American communities and Spanish and U.S. military forces alike to travel between the Río Grande valley and areas to the west and northwest.

Second, the large number of native plant species in the VCNP with one or more directly documented or inferred medicinal uses ($n = 286$ [81.7%]) simultaneously illustrates and strengthens the importance of observations made previously by Dunmire and Tierney:

Some medicinal plants associated with Pueblo people grow only at higher elevations. Not many of these are detailed... [in published works such as theirs because most of these taxa are not readily visible to the public]. But certain members of the medicine societies that use these plants still make regular forays to the mountains to collect them. Thus, many Pueblos are concerned about having continued legal access and rights to use these lands for medicinal herb collection, even though they may technically be outside the official boundaries of their Pueblo. These people also have a legitimate interest in such lands, which typically are within the national forests of New Mexico, not being developed for heavy recreational or commodity uses that might diminish the quality of habitat for their medicinal plants (Dunmire and Tierney 1995:59).

As shown in the studies by **Karen Cowan Ford (1975)** and **Michael Moore (1977)**, traditional Hispanic communities similarly possess extensive native plant pharmacologies, including numerous taxa found in the mountainous setting of the VCNP (table 5.1). Consequently, the argument that Dunmire and Tierney make for Pueblo concerns about their ability to continue their traditional relationship with the native medicinal plants within the former Baca Location applies to Hispanic communities equally. The same unquestionably holds true for the people of the Navajo Nation whose ethnopharmacology also is comparatively well studied (e.g., **Dunmire and Tierney 1997**; see also table 5.1). Although medicinal plant uses among the Jicarilla Apache and Ute are less well documented (table 5.1), it is reasonable to anticipate that Dunmire and Tierney's commentary would apply similarly to these communities.

The medicinal species identified in table 5.1 are included in the pharmacologies of one or more traditional associated communities because the people have long understood that certain plants by themselves, or particular combinations of plants, possess healing properties. (The persistent interest of today's pharmaceutical companies in ethnopharmacology indicates that the chemical basis of many indigenous cures remains to be discovered and quantified [after **Dunmire and Tierney 1995:58**].) The power of healing, however, is not

merely a secular matter. It concurrently enters the realm of ritual, a topic that is beyond the scope of this discussion.

Third, as documented in table 5.1, many of the medicinal plants used by Native Americans and Hispanics are also food plants. We can similarly expect that many of these medicinal plants also have important, highly sensitive ritual applications. It is conceivable that other plant species, which occur in the Valles Caldera but are not listed in table 5.1, might be used in community rituals (after **Dunmire and Tierney 1995:58**).

It is important to emphasize that some medicinal plants found in the Valles Caldera that ethnobotanists and other anthropologists have observed being used by associated communities in ceremonies such as private prayer, public dance, and healing ritual, cannot be collected anywhere else (**Winter 1981:177**). This does not mean that the occurrence of some plants is unique to the Baca Location, however. The geographical association of certain plants with the Valles Caldera contributes to traditional cultural knowledge and values, which specify the need for people to harvest particular plant taxa only from this location (chapter 9).

Fourth, plants that are native to the VCNP and are used for purposes other than food, beverage, or medicine illustrate the breadth of the traditional occupation of this locality by associated communities. The species represented among the five residual categories (i.e., "Smoking or Chewing," "Construction or Fuel," "Dyes, Pigments, Tanning, Soap, or Crafts," "Fiber, Cordage, Basketry or Matting," and "Tools") were necessary for sustaining diverse aspects of Native American and Hispanic people's lives. Although many of these uses are virtually invisible except through ethnographic and ethnobotanical investigation—just as is the case with the harvesting of edible tree bark—the active pruning of long-lived, woody species for certain tools, craft items, such as bows, cradle boards and pine resin, or even fuel wood can embody invaluable, although frequently often overlooked, archaeological evidence (Dr. Richard I. Ford, personal communication, Museum of Anthropology, University of Michigan, Ann Arbor, 1998; Louie Hena, personal communication, Pueblo of Tesuque, 2001; Felipe Ortega, personal communication, Owl Peak Bed and Breakfast, La Madera, NM, 1998). In the case of trees, whether dead or still living, dendrochronology may be used to determine the date when a piece of a trunk or limb was harvested. Moreover, the act of pruning living flora rather than unnecessarily killing an entire plant for certain desired products attests to traditional land use practices that may differ from those that have predominated in the locality over the past century.

Robert Nesbit and Hiram R. Parker's Hay Cutting Enterprise Revisited

The large-scale commercial harvesting of native plant products, other than trees for lumber and pulpwood, in the Valles Caldera was limited to a brief episode in the mid-nineteenth century. Persistent spring drought conditions and overgrazing had combined to deplete rangelands at lower elevations close to Santa Fe at the beginning of the 1850s. The

Army was becoming desperate for fodder to feed the horses and mules on which the Fort Marcy garrison depended. The Army looked toward the well-watered valleys of the Jémez Mountains for hay. The Army's resolution to improve the road between Santa Fe and the Valles Caldera, a distance of 40 miles (64 km), to facilitate the transport of hay harvested in the Jémez Mountains back to Santa Fe partly attests to the great need that the garrison faced. This road crossed the Río Grande at present-day Buckman, ascended the Pajarito Plateau via Mortandad Canyon, and traversed the Sierra de los Valles through Cañon de Valle. The 1851 contract award by Fort Marcy Quartermaster Alexander W. Reynolds to a civilian company headed by Robert Nesbit and Hiram R. Parker to cut and haul Jémez Mountains hay to Santa Fe at the premium rate of \$50.00 per ton also seems to attest to the severity of the hay supply shortage (Frazer 1983:50). Quartermaster Reynolds, however, had a history of making shady deals with Robert Nesbit that ensured the two men were among the wealthiest residents in the whole Territory of New Mexico (Jordan et al. 2000:465–468, 470, 494).

Nesbit and Parker expected a substantial profit. They bought a train of mule wagons from Pinckney Tully in Santa Fe. The partners apparently had hoped that they would find good hay in the lower elevation valleys closer to Santa Fe (McNitt 1972:184). Not only would their cartage costs be reduced (assuring them of an even larger profit), the hay crew would be less exposed to the threat of Navajo raiders who were moving through the Jémez Mountains upland valleys.

They found that prevailing drought conditions had stunted and browned the grasses in the lower valleys. Nesbit and Parker had to lead their crew higher into the Jémez Mountains (McNitt 1972:184). The Valle Grande, which they referred to as the “Grande Bioh” in a letter dated July 6, 1851, to Colonel Munroe, Commander, 9th Military Detachment, U.S. Army (Church n.d.), was “an emerald swatch surrounded by tall timber” (McNitt 1972:184).

Nesbit and Parker built a stout hay camp near several springs at the head of the East Fork of the Río Jémez. They built a blockhouse of “bottom wood logs” and an attached corral measuring 30 by 50 feet (9.1 by 15.2 m) constructed “of large, green cottonwood logs” (letter from Lieutenant Beverly H. Robertson to 1st Lieutenant L. McLaws, dated July 17, 1851, in Church n.d.) that were stacked a height of 4 or 5 feet (1.2 or 1.5 m) (McNitt 1972:184).

Historical documents call Nesbit and Parker's hay camp “Old Fort.” The camp apparently became “the site of Camp Valles Grandes, established by the U.S. Army as a deterrent to Navajo and Apache movement through the area during the final Navajo Wars of 1863” (Scurlock 1981:137; see also chapter 3). Nonetheless, Nesbit and Parker neither situated nor built their encampment for effective defense. It occupied a gently sloping hill within 50 yards (46 m) of a stand of trees. Nesbit and Parker also failed to provide loopholes for firing guns. The only opening in the blockhouse that faced the corral was too high to allow the hay men to protect their horses and mules.

The afternoon of July 2, 1851, saw the haying operation caught by a soaking rainstorm. Although the heavy rain gave

way to a steady drizzle at nightfall, the continuing inclement conditions reduced visibility to a minimum, with the two men posted on guard unable to see 20 paces into the night (letter from Robert Nesbit and Hiram R. Parker to Colonel Munroe [Commander, 9th Military Detachment, U.S. Army], dated July 6, 1851, in Church n.d.).

At about 1:00 AM on the morning of July 2, the man guarding the corral was struck in the neck by an arrow. The wounded guardsmen fired his rifle almost simultaneously, with his shot waking the other members of the hay party who were asleep in the cabin. Nesbit and Parker's team found themselves under attack by Navajo raiders (letter from Robert Nesbit and Hiram R. Parker to Colonel Munroe [Commander, 9th Military Detachment, U.S. Army], dated July 6, 1851, in Church n.d.).

According to Nesbit and Parker, 250 to 300 warriors besieged their camp for two hours. During this time the hay team engaged the raiders in:

... a continued fight...on three sides of the house, while another portion of the Indians were endeavoring to pull down the corral to get the animals out, which they succeeded in doing after three o'clock—when they drove off all the animals, consisting of over one hundred in all (letter from Robert Nesbit and Hiram R. Parker to Colonel Munroe, Commander, 9th Military Detachment, U.S. Army, dated July 6, 1851, in Church n.d.).

Colonel Munroe repeatedly asked Nesbit and Parker to make affidavits supporting their claims of losses (in McNitt 1972:185n4). He believed that the partners were planning to petition Congress for compensation, given their claim that their losses were so great that their business faced ruin. Colonel Munroe even warned the Commissioner of Indian Affairs in Washington against paying “greatly exaggerated” claims based on the “weakest proof” (Jordan et al. 2000:470–471).

Nesbit and Parker never submitted the affidavits that Colonel Munroe required (Jordan et al. 2000:471; McNitt 1972:185n4). The documentary record supports Colonel Munroe's conclusion that the two had greatly inflated their claimed losses.

Colonel Munroe sent Lieutenant Beverly H. Robertson from the Abiquiú Army Post to investigate the attack and to document Nesbit and Parker's claimed losses. As Robertson's patrol of dragoons entered the Valle Grande, they spied a group of 11 Jémez Pueblo men herding cattle on the opposite side of the valley (Martin 2003:19; McNitt 1972:184). Thinking that the herdsmen were Navajos, Robertson ordered his troops to fire their weapons.

The Native Americans immediately rushed on horseback across the valley toward the soldiers, frantically making signs of friendship. Robertson recognized the riders as being from Jémez Pueblo and ceased fire before anyone was hurt (Martin 2003:19).

Talking with the Jémez afterward, Robertson learned that they had been herding their cattle near the fort during the

night of the attack (McNitt 1972:184). The Jémez stealthily followed the raiders, who numbered perhaps 30 or 40 warriors, as they fled with about 50 of Nesbit and Parker's animals. The Jémez hid until the raiders started down a steep hill. While the Navajos were exposed, the Jémez herdsmen attacked, killing two of the raiders and capturing five mules (McNitt 1972:185).

Following Colonel Munroe's orders, Robertson pursued his investigation. He persuaded one of the Jémez herdsmen to accompany his dragoons to Nesbit and Parker's hay camp.

Robertson described the log house and corral. He examined the spot where the raiders had torn down the corral walls to steal the mules and horses. He saw the 40 to 50 arrows that the attackers had fired at the log blockhouse's doorway to prevent the hay men from breaking out. He also noted that there were no rifle loopholes in the blockhouse's walls, and the very high single opening in the wall on the structure's corral side that prevented the men inside from firing at the raiders as they pulled down the stacked log enclosure and drove off the livestock (McNitt 1972:185).

Robertson questioned the wounded guard, who said he wasn't sure, but that there were probably only a few more than 40 attackers, not the 250 to 300 warriors that Nesbit and Parker had claimed. Worse still, Nesbit and Parker's hay cutters testified that the raiders made off with only 43 mules and 6 horses, not 100 animals (McNitt 1972:185). In addition, besides the shot that the guard had fired to sound the alarm, Robertson learned that Parker fired his revolver only twice because the opening was too high for the defenders to see their targets. One of Parker's shots hit the topmost log on the opposite side of the corral; the other went even higher, into the trees beyond the corral. Robertson concluded that none of the other hay cutters fired their rifles (McNitt 1972:185).

Hunting

Hunting in the Valles Caldera has undoubtedly been an important activity for millennia, even though faunal remains were not recovered at pre-Columbian archaeological sites excavated in the Redondo Creek Valley during the Baca Geothermal Anthropological Project (Winter 1981:178). Broken dart and arrow points, other hunting tools, and a pattern of preferred site locations downwind from elk calving areas all suggest that the absence of animal bones at the excavated archaeological sites most likely is a product of poor conditions for bone preservation rather than an absence of hunting. In addition, the oral traditions of the region's Native American communities provide invaluable glimpses into the importance that game animals and the Valles Caldera have had since the beginning of human history in the northern Southwest (chapter 9).

Documentary history leaves no question about the value of the Valles Caldera's game animals to Indian, Hispanic, and Anglo-American groups since the time of first contact. Since the arrival of Spanish colonists at the end of the sixteenth century, the many communities that have been associated

with the Baca Location hunted elk, deer, bear, mountain lion, bobcat, mountain sheep, rabbit, beaver, and squirrel.

Oral histories of the people of Jémez Pueblo say that mule deer, white tail deer, and elk once were numerous (Weslowski 1981:108). As reported by historian Lansing B. Bloom (1946 [1922]:121), the Jémez held "community rabbit drives in the valley, and in the sierras they hunt the deer and bear, the wolf and fox, the gallina de tierra and the eagle of the sky" through the early decades of the twentieth century.

The Valles Caldera's lush meadows and forested mountain slopes also provided habitats favorable to a variety of birds. The principal game bird species favored by Native American, Hispanic, and Anglo-American hunters alike included turkey and grouse. Jémez Pueblo, and presumably other Native American communities, also hunted hawks, robins, and magpies for ritual purposes (Weslowski 1981:111; see also Tyler 1979). Moreover, ethnographic information documents that Jémez Pueblo designated lands around Redondo Peak as one of the places where the community captured eagles alive for community ceremonies (Weslowski 1981:111).

Again drawing from Jémez Pueblo ethnographic accounts, Native Americans traditionally relied upon bows and arrows, slings, bolas, traps, and snares in their hunts (Weslowski 1981:111). Before guns were available, the bow and arrow was the preferred weapon for hunting turkeys, rabbits, larger game animals, and many predators in wooded habitats. The Jémez reportedly also used the sling, which was thrown with a stone projectile encased in the weapon's pocket, to kill turkeys, bobcats, and even young cougars in open settings (Weslowski 1981:111).

As I note in my earlier discussion of plant uses, Jémez Pueblo (and presumably other Native American) hunters traditionally built temporary shelters of tree boughs and rocks for shelter while seeking game in the Valles Caldera. The Jémez occasionally built substantial log cabins as well, in which to observe the requisite rites that accompanied certain hunts (Weslowski 1981:111; see also Martin 2003:66). Other physical remains of Jémez hunting activity include eagle pit-snares (covered by brush) and hunting shrines. Archaeologically documented examples of seemingly analogous features occur at LA90470^{5.1}, which is about 8 miles (12.8 km) north of the Baca Location's northeast corner. The site's 14 features occur along a .3-mile-long (500-m) east-facing mesa edge.

[They] typically consist of rectangular pits, about 1.5 m [4.9 ft] long, 0.5 m [1.6 ft] wide, and as deep as 2 m [6.6 ft], excavated into solid tuff bedrock. Traces of suspected foot paths worn into the bedrock appear to connect some of the pits. Virtually no artifacts or other cultural manifestations were discovered. Capture of large animals such as deer, elk, or especially mountain sheep is seen as the probable function of the site with the pits serving as traps. Use of some of the features as eagle traps is also considered (Evaskovich et al. 1997a:597–598).

The broad, grass-covered valleys and the numerous clear streams of the Valles Caldera were probably first used

by Hispanic settlers for hunting and fishing by about 1800, when the expansion of sheep herding and cattle ranching in the territory drove a search for new pasturage (**Scurlock 1981:134–135**, citing Smith 1979; see also chapter 6).

Although Anglo-American and French trappers began operating in New Mexico as early as 1805, commercial fur trading between the territory and the United States was limited until Mexico achieved its independence from Spain with the signing of the Treaty of Cordova in 1821. The opening of the Santa Fe Trail the following year connected the relatively isolated New Mexican territory with U.S. markets and their insatiable demand for fur (**Scurlock 1981:135**).

Mexican law usually prohibited foreigners from trapping fur-bearing animals. The Nuevo Mexico colony, however, allowed nonresidents to obtain trading permits in Santa Fe that allowed them to trap for fur. Between 1821 and 1823, approximately 100 trappers, most of whom were either English or French, were operating along the Río Grande Valley (Hill 1923:4; Yount 1965:ix). Other English and French trappers, including George Yount and James O. Pattie, operated illegally in more remote areas of the colony. Their trapping territory apparently encompassed the Valles Caldera (**Scurlock 1981:135**).

Although documentary records do not directly attest to foreign trappers working the prime beaver country of the Valles Caldera, Historian **Dan Scurlock** bases his inference that Anglo-Americans were working the locality for furs shortly after New Mexico's independence from Spain on two incidents:

*One party of trappers headed by George Yount cached their beaver pelts on the banks of the Jémez River somewhere near the ruins of Gúsewa Pueblo and San José Church in the summer of 1828 to avoid confiscation by government officials. Later they retrieved the furs and smuggled them into Taos. Santa Fé merchant Thomas H. Boggs and Ramon Vigil were less fortunate, for in the spring of the same year 25 beaver pelts which they had bought from trapper James O. Pattie were confiscated by the alcalde of Jémez Pueblo (**Scurlock 1981:135**, citing Weber 1971:140, 167 and Yount 1965:63).*

Troubles caused by foreign trappers were not limited to the Valles Caldera; they were widespread throughout the territory. As noted in chapter 3, Luis María Cabeza de Baca, the original grantee of the Baca Land Grant, died in 1827 after being shot by a soldier who was trying to confiscate contraband furs that Baca was holding. According to documentary records, Baca had hidden these illegal pelts for American trapper Ewing Young at his house along the Gallinas River near the present-day town of Las Vegas (**Cleland 1950:219**).

By the beginning of the twentieth century, rifles became the preferred weapon for hunting among all of New Mexico's communities (**Van Ness 1991**). Up to this time, most of the region's Native American and Hispanic populations relied on the bow and arrow, including projectiles that were tipped with stone or metal points.

Subsistence hunting remained important throughout the late nineteenth and early twentieth centuries. Residents from the nearby Chama Valley relate that even though local Hispanic communities were running large numbers of cattle, the people did not eat beef. Cattle were for sale in the region's emerging market economy:

*Men would hunt deer, before the time of licenses, when they wanted meat for jerky (Informant G, personal communication 1991, in **Carrillo et al. 1997:135**).*

*We grew up eating carne del venado (i.e., venison)...In those days we hardly ever ate any beef, although we raised a lot. The beef was sold at auction, and the money used for paying bills and buying other food we could not raise (Informant H, personal communication 1991, in **Carrillo et al. 1997:135**).*

The large number of newly arrived Anglo-American settlers, who joined the area's established Native American and Hispanic residents, increased subsistence hunting. For example, Dick Cotton, a New Mexico Timber Company employee who arrived at Camp Redondo in 1937 from Missouri, built a cabin (whose remains are designated site BG-19) for his residence on the outskirts of the settlement (**Scurlock 1981:148**, citing Darnell 1979 and Smith 1979). Following Camp Redondo's closure in 1939 (chapter 7), Cotton supported himself by hunting, trapping and poaching (**Winter 1981:179**).

Even though many area residents, such as Dick Cotton, depended on hunting for subsistence, Anglo-American sports enthusiasts who prized hunting primarily as a recreational outlet soon embraced the introduction of efficient new weaponry to the consumer market. Together, increased levels of subsistence and sport hunting quickly led to the decimation of native game animal and bird populations. Mule deer and wild turkey were drastically reduced by the late 1800s and early 1900s. The popularity of elk hunting was so great that this species was eradicated across the State of New Mexico by 1910.

At the same time, a change in management policies adversely affected several other native and introduced animal populations that had become a traditional part of the Valles Caldera's ecology. As recalled by Homer Pickens (1979, in **Scurlock 1981:148**), a long-time trapper and wildlife specialist, ranchers and federal agents placed poisoned grain at Gunnison prairie dog towns on the Baca Location in the 1920s to rid pastures of these pests. Ranchers and government officials also regarded feral burros and horses as nuisances because they competed with cattle and sheep for pasturage. In a concerted effort to rid the Jémez Mountains of such unnecessary competition to the livestock industry, U.S. Forest Service personnel rounded up 1,500 burros and horses from the greater Jémez district area, including the Baca Location (**Tucker and Fitzpatrick 1972:81**).

With the depletion of elk, mule deer, turkey, horse, and prairie dog populations in the Jémez Mountains, gray wolves, mountain lions, and coyotes killed increasing numbers of sheep

and cattle around the Valles Caldera (**Winter 1981**:178). In 1916 the United States Forest Service initiated a new predator control program (**Scurlock 1981**:144). The U.S. Biological Service (now known as the Fish and Wildlife Service) sent trappers into the Jémez Mountains, including the Valles Caldera, to exterminate gray wolves and mountain lions. John Davenport, who once served as one of Frank Bond's Baca Location ranch managers, killed the last New Mexican gray wolf in the Valle Grande in 1932 (Pickens 1979, in **Scurlock 1981**:148).

In 1947, the New Mexico Department of Game and Fish worked to reintroduce elk by releasing 47 head imported from the Yellowstone, Wyoming, area into the Río de las Vacas Valley west of the Baca Location (**Martin 2003**:104, citing Allen 1997). Although the Jémez Mountains grasslands provided favorable habitat, the introduced elk herd increased at a slow rate, with the population reaching only an estimated 200 animals in 1961. The New Mexico Department of Game and Fish introduced another 58 elk from Jackson Hole, Wyoming, between 1964 and 1965. These populations continued their slow increase in the Valles Caldera over the next decade (**Martin 2003**:104, citing Allen 1997). Dramatic ecological change that had both an immediate and great impact on local elk demography occurred in 1977:

*In June of that year, the 25,000-acre [10,000-ha] La Mesa fire burned in the ponderosa pine forests on the Pajarito Plateau at Bandelier National Monument. The fire converted the forest into grassland and opened up considerable winter habitat for the Jémez elk population. With favorable climatic conditions, the elk herd expanded to about 7,000 in 1989. In 2001 it was estimated that between 4,000 and 6,000 elk used the Baca Ranch for summer range (**Martin 2003**:104, citing Allen 1997).*

The Baca Location's last private owners, Frank Bond, Franklin Bond, and James Patrick Dunigan, all were hunters. They hunted for sport and promoted sport hunting.

*Despite his hard-nosed attitude toward business, Frank Bond found pleasure in owning the Baca Location beyond its profitability. Bond loved to fish, and from 1917 until he no longer was able to make the journey, he spent two weeks a year in the central Jémez Mountains, trying his luck on the streams (**Martin 2003**:65).*

Frank Bond was also generous in granting permission to the students of the Los Alamos Ranch School to fish, hunt, and camp on the property through the 1930s (**Martin 2003**:66).

Ted Mather, who had worked for Frank Bond during the rancher's first year of leasing the property, was the head wrangler at the school and had an intimate knowledge of the Baca Location. Many of the boys, who mostly hailed from eastern cities, caught their first trout in the East Fork of the Jémez in the Valle Grande. Each year the school ran a summer camp that included a three-week trail ride through the Jémez. The route generally started at Camp May in

*the Sierra de los Valles above the school and descended a steep trail into the Valle de los Posos. A camp also was set up along the Rito de los Indios, and the route to the San Pedro Parks passed through the Valle San Antonio (**Martin 2003**:66–67).*

As noted previously, Frank Bond also allowed members of the various nearby Pueblos limited access to the ranchland for plant gathering, hunting, and ceremonial purposes even though he had rescinded their grazing privileges shortly after buying the property (after **Martin 2003**:66; see also chapter 6). This permission, however, apparently ended in the 1940s about the time of Bond's death.

It is uncertain if Frank Bond or his son, Franklin, ever formally extended recreational hunting and fishing rights during their lifetimes to the employees of New Mexico Lumber and Timber Company (later New Mexico Timber, Inc.), which began commercial logging operations on the Baca Location in 1935 (chapter 7). It is clear, however, that the Bond Estate at least tolerated the loggers' hunting and fishing during the early 1960s. James Patrick Dunigan bought the Baca Location from the Bond Estate in 1963 (chapter 4). When he filed suit against T. P. Gallagher, Jr., over the question of the land grant's timber rights, he forbade Gallagher's employees from fishing and hunting on the property (*Baca Co. v. NM Timber, Inc.* **1967**; see also chapter 7).

By the late 1970s, Dunigan's 1972 decision to decrease his cattle operations to promote the growth of the reintroduced Jémez Mountain elk herd, which he recognized was an important part of the ranch's ecology, began to realize fruition (see **Martin 2003**:104). Helped further by the La Mesa fire within the nearby Bandelier National Monument in 1977, the rapidly expanding Jémez Mountain elk herd provided Dunigan with a new business opportunity: guided elk hunts on the Baca Location.

By the late 1970s, a private operator, North Country Outfitters Company, had leased the hunting rights for the whole Baca Location. Under the terms of the lease, Dunigan issued 40 bull permits each hunting season, which was held in October during the fall rut, at a cost of \$4,000.00 per permit (**Winter 1981**:178). By 1998, the elk herd had grown to such an extent that the Baca Land and Cattle Company issued 265 hunting permits, with the fee for a trophy bull selling for \$10,000 (**Martin 2003**:105). In addition to the hunting permit fees, the Baca Land and Cattle Company received income for use of the Dunigan Casa de Baca as a hunting lodge.

Fishing

In comparison to most other southwestern Indians, the Pueblos of north-central New Mexico did not have broad proscriptions against catching and eating fish. Information concerning the Pueblos' dietary reliance on fish and their fishing practices is rare and incomplete, however.

Despite the paucity of published reports, the available evidence indicates that the proximity and productivity of large

streams traditionally were the primary factors determining the Pueblos' use of fish. For example, the Keres of Cochiti Pueblo (**Bandelier 1892:149; Lange 1959:140–141, 147–148**) and the Tewa from Santa Clara Pueblo (**Hill 1982:59–61**) were known to have organized communal fish seining operations along the Río Grande near their homes during the late nineteenth century. Given the river's productivity and the fact that the use of seining nets possesses the potential to harvest large quantities of fish, catches could be shared among the residents of the fishermen's villages. **Hill (1982)** reports that participants in the Santa Clara seining operations commonly took home between 5 and 20 fish to share with their families. **Lange (1959)** notes that the Cochiti fishermen probably similarly distributed the fruits of their work among their kin.

By the middle of the twentieth century, the communal fishing of the Río Grande and the broad sharing of catches had become a thing of the past. **Lange (1959)** tells that individuals and small groups of family members used bated hook-and-lines, small nets, hayforks, and hands to catch fish. **Ford (1992:175)** observed that by the time of his study in the 1960s, fish consumption among the San Juan Tewa was limited to harvests resulting from the use of private weirs along the Río Grande mainstem and the gathering of fish found stranded in the bottoms of canals after irrigating their fields. Moreover, given the typically small sizes of these catches, not all members of the Pueblo ate fish (**Ford 1992**). Men were the primary consumers. Children, who were likely to accompany the men while they worked their fields or checked their weirs, had greater access to fish than women, whose duties required them to be elsewhere.

The above patterns suggest that in the absence of opportunities for large and reliable harvests using nets in big watercourses, the Pueblos' consumption of fish was limited to the proceeds of small, and often opportunistic, catches. It is likely, therefore, that Pueblo fishing in the Valles Caldera usually was restricted to comparatively brief and informal episodes when individuals or small groups visited the locality for some other purpose. In addition, it is probable that these catches were consumed immediately as part of the group's foraging activity to sustain itself while traveling away from home, rather than a component of a major economic activity for the benefit of the community as a whole.

Before leaving the subject of fishing, a story that Clayto Tafoya, a Santa Clara elder, shared with Richard I. Ford when he was completing his doctoral studies in anthropology in the 1960s is worth retelling. Tafoya talked about how a small number of Santa Clara men would periodically fish the Valles Caldera's marshes (the caldera bottomlands were swampier back then and had larger standing ponds) and streams for trout as part of private entrepreneurial enterprise (Dr. Richard I. Ford, personal communication, Museum of Anthropology, University of Michigan, Ann Arbor, 2006). Riding into the Valles Caldera at night, they would use basket traps to catch trout, which they would then carry to Santa Fe via horseback for sale. Given Tafoya's age, the context of his remarks, and the time of their conversation, Ford (personal communication, Museum of Anthropology, University of Michigan, Ann Arbor, 2006) estimates that this resourceful

and industrious business activity took place between the late 1800s and 1940.

Mineral Collection

Weslowski (1981:114) reports that the people of Jémez Pueblo gather manganese and iron ore, both of which are rare, from locations in the Valles Caldera for use as pigment in painting pottery. One of her informants added that clay might also be collected (**Weslowski 1981:114–115**). While this informant claimed that pottery clay was usually found closer to the villages, **Parsons (1996 [1939]:352**; see also **Ferguson and Hart 1985:127**) observes that the Pueblos sometimes use clay and mud collected from springs as ritual body paint. As I note in my earlier discussion of the importance of plants and algae gathered from the same springs, the significance of these resources derives from their association with spring water, which the Pueblos consider powerful medicine (**Ellis 1956:56–57; Parsons 1996 [1939]:352, 416, 453–454**; see also chapter 9). In fact, the Jémez, like the other Pueblos, gather spring water for use in purification rites and other solemn rituals (**Weslowski 1981:115**).

Other Pueblo similarly visited the Valles Caldera for decorative pottery clay and pigment. For example, **Carl E. Guthe (1925**; see also **Friedlander and Pinyan 1980**) notes that the San Ildefonso residents made trips to the Baca Location for orange-red slip and black ware paint for firing their ceramics. He identifies the location, procurement, and use of these resources:

Orange Red Slip

This substance is a yellow clayey earth, in texture somewhat like the two white slips. It occurs in the "Valle" to the west, beyond the first Jémez range, near Ojo Caliente. It was dug with a stick...and is carried home in shawls and bags. Before being stored it is put out into the sun to dry thoroughly, then placed in ollas and kept until needed. Like the other slips, it is prepared for use by being mixed with water. A saturated solution is made, but the consistency remains that of water.

This material, which in solution is a brilliant yellow, is used for two purposes—as a slip to color the bases of bowls and ollas, and as a paint to supply the red elements of polychrome designs. After being fired it assumes an orange-red or burnt-sienna color...

Black Ware Paint

This is a paint used for making matte designs on polished black ware, a new departure in decorative technique first used by Maria and Julian Martinez of San Ildefonso, in June, 1921. The substance is a hard yellow stone, said to occur in the "Valle," west of the Jémez range, near Ojo Caliente, in the same district as the orange-red paint.

The first step in preparing the paint for use is to scrape the stone with a knife. The resulting powder is mixed with

water, and there is then added about one-fourth as much dissolved "guaco" [powdered roots of the Rocky Mountain Beeplant {*Cleome serpulata*}]...as there is paint. It is said that the purpose of the guaco is to make the paint "stick" to the polished surface. This paint, when ready for use, is kept in a small earthenware or china dish. The consistency of the mixture, like the other paints, is that of water (*Guthe 1925:24–25*).

The Pueblos, the Navajo, and other Native American groups traditionally harvested obsidian for ceremonies, including its use as a prayer offering (*Ellis 1956:56–57; Van Valkenburgh and Begay 1938:30*; see also *Harrington 1916*). *Weslowski (1981:115)* states that the Jémez continue to collect obsidian from the Redondo Creek Valley. She speculates further that they might also harvest the higher-quality volcanic glass present in the neighboring Valle Grande (*Weslowski 1981:126n20*). The Tewa collect obsidian from the slope of *Tsikumu* (Obsidian Covered Mountain [a.k.a. Cerro Chicoma]) at the northeast corner of the Baca Location Land Grant, among other places (*Harrington 1916*).

Acklen and others (1997:301) refer to regional archaeological evidence that demonstrates the great importance of Jémez Mountains obsidian for tool use among the Navajo throughout the early Historic period. Because fine-grained obsidian source information is unavailable, the question whether Valles Caldera obsidian is represented in these archaeological samples cannot be answered. Archaeological surveys in the Chama district similarly report finding rich evidence of Jémez Mountains obsidian use among Historic period sites with Navajo, Apache, and/or Ute cultural components (e.g., *Anschuetz 1993, 1995, 2000; Schaafsma 1975, 1976, 1979*). Of particular relevance to the management of cultural resources in the VCNP, *Anschuetz (1993, 1995, 2000)* reports that among the rich assemblage of Jicarilla Apache sites in the nearby Río del Oso Valley, Jémez Mountains obsidian is the predominant raw material used in the manufacture of chipped stone lithic tools. He notes that the lithic reduction technologies are identical to those used by Archaic period (ca. 5500 B.C.–A.D. 600) hunters and gatherers (chapter 2).

The Jémez quarry flagstone slabs, which they use to make *piki* griddles, in the Valles Caldera (*Weslowski 1981:115*). *Piki*, the Pueblos' renown paper-thin bread made of finely ground corn meal, embodies essential cultural tradition. *Piki* griddles and the baking of this bread alike are rich in symbolic meaning (e.g., *Anschuetz 1992*). Consequently, finished *piki* stones and their quarries are significant traditional cultural properties that the Jémez treat with considered reverence.

Certain pebbles found along watercourses that originate on Redondo Peak (an extremely important summit [chapter 9] for many Pueblo and Navajo communities) and other peaks in the Jémez Mountains were collected for ritual use. According to *White (1962:232)*, the Zia and other Pueblos placed four waterworn pebbles collected from sacred mountains on each of the four sides of a medicine bowl, which, in turn, is placed on sand and corn meal paintings used in summer rain ritual. This act is highly meaningful because the medicine bowl is a representation of the Pueblos' respective worlds. The terraces

formed on the bowls rim and these special stones, which were worn smooth by the water that flowed off these peaks, denote the mountains of cardinal direction and their essential relationship to rain and snow (chapter 9). Although White does not say so, it is probable that within this highly patterned system of significant cultural meaning and associations, at least some of the Pueblos, especially Jémez and Zia, use stones gathered from Redondo Peak to symbolize one of their mountains of cardinal direction during the celebration of these rites. Similarly, *Richard F. Van Valkenburgh (1940:9; Van Valkenburgh and Begay 1938:30)* describes the ritual use of various stones by the Navajo (besides obsidian) as prayer offerings when visiting mountaintop shrines, such as those that occur within the Valles Grande (see chapter 9). Just as White, Van Valkenburgh does not mention Redondo Peak, but given that some Navajo communities historically considered this summit their Mountain of the East (chapter 9), it is a certainty that some Navajo groups collected pebbles from Redondo Peak and other Valles Caldera area summits in their rites.

People from the Pueblo of Zuni are known to have visited two locations, *He:mushina Yala:we* and *K'ya:k'yatna' K'ya:kwayinna*, at the southwest margin of the Valles Caldera (*Ferguson and Hart 1985:127*). The Zuni collected white powder medicine, hunted, and obtained materials used in kiva initiations, as well as gathered medicinal herbs, at *He:mushina Yala:we*. The Zuni traditionally collected mud and silt at *K'ya:k'yatna' K'ya:kwayinna*.

The use of obsidian in the Historic period for profane and sacred activities was not limited to Native Americans. One of the informants with whom *Carrillo and others (1997)* consulted about the proposed construction of the OLE power line revealed that Hispanic residents used bow and arrows, including projectiles tipped with obsidian points, until the time that firearms became broadly available at the turn of the twentieth century:

I remember hearing stories of people hunting with bows and arrows. There were badgers in those days. The tips of the arrows were made from metal. I remember also seeing some made from obsidian (Informant F, personal communication 1991, in Carrillo et al. 1997:135).

Hermanos (members of the Penitente Brotherhood) living near Abiquiú also collected obsidian for use in Penitente ritual:

Most of the obsidian for the Hermanos came from the Polvadera area, because the obsidian from around Abiquiú was not the glass type, the clear type. It was cloudy and pitted. I remember that they would bring in some obsidian, although I was not there to see them gather it...I haven't been to the area of Mesa Pedregosa [which is just 1.5 miles {2.4 km} north of the Baca Location Land Grant]...but I have heard the people say that there is a place up there that you cannot even walk because there is so much obsidian, on the Mesa Pedregosa (Informant B, personal communication 1991, in Carrillo et al. 1997:137).

Agriculture

As recounted in chapter 2, Jémez farmers planted on the Banco Bonito during the Classic period (ca. A.D. 1350–1600) (after **Martin 2003**:13). There is no further mention of farming in the Valles Caldera until the late nineteenth century. Two citations are of interest because they discuss why the production of commercial agricultural crops was climatically and/or economically not feasible.

First, reporting their survey of the Baca Location in June 1876, U.S. Deputy Surveyors Daniel Sawyer and William H. McBroom stated that while the soils in the Valles Caldera area were rich, the locale's high elevation brought temperatures "too cold to raise any kind of grain or vegetables" (**Sawyer and McBroom 1876**: 14–15). As a result, no settlers were living upon the Baca Location at this time.

Second, **Adolph F. Bandelier** similarly noted during his explorations in New Mexico in the 1880s that the Valles Caldera offered little inducement for agriculture, "for although the soil is fertile, ingress and egress are so difficult that even potatoes, which grow there with remarkable facility, cannot be cultivated profitably" (**1892**:200).

Final mention of farming in the Baca Location dates to about 1917. This account, retold by **Martin (2003:52)**, builds on Bandelier's preceding remark that area residents were highly successful in growing root crops for their own consumption in this high altitude environment. According to **Martin (2003:52; see also chapter 4)**, James Leese filed entry for George White's 1912 homestead claim in the Valle de los Posos in 1915. Leese continued to work elsewhere but made frequent trips to see his wife and three children who occupied the homestead over the next two summers.

*Little was done to improve the land as required by the Homestead Act. The family continued to plant potatoes on three or four acres [1.2–1.6 ha] but did no additional clearing nor did they attempt to irrigate their field, which were required improvements for those seeking to patent a homestead. However, their farming was successful enough for them to grow 15,000 pounds [6,804 kg] of potatoes in the summer of 1917! (**Martin 2003**:52).*

It is worth noting that documentary evidence of agricultural land use in the Valles Caldera—just as discussed for traditional subsistence or vernacular plant gathering, game hunting, and mineral collecting activities—might be incomplete. While

I doubt that agricultural practice ever was intensive outside the Banco Bonito, archaeological investigations along the proposed OLE power line documented the existence of two small eighteenth-century farm sites, LA66859 (Acklen et al. 1997:298–299; Evaskovich et al. 1997b:357–373; Holloway et al. 1997:97–98, 104, 107) and LA66869/LA66870 (Acklen et al. 1997:299–302; Evaskovich et al. 1997a:537–597; Holloway et al. 1997:99–101, 104, 107). It is significant that the agricultural functions of these sites were not suspected based on survey documentation alone; their identification as seasonal farming settlements was made following excavation and analysis of botanical samples.

LA66859, which is at an elevation of 7,660 feet (2,426 m) in an open meadow that enjoys southern exposure and receives runoff, has a poorly preserved fieldhouse, pottery that dates between 1700 and 1760, relatively high maize pollen concentrations, and sheep bone. Although faunal analysts could not determine if the sheep bone represents native bighorn or domesticated species, its presence indicates that the site's occupants either hunted or ran sheep during their stay. Based on the site's dates and artifact assemblages, the excavators suggest that Tewa likely occupied this seasonal farm site (Acklen et al. 1997:298–299; Evaskovich et al. 1997b:357–373; Holloway et al. 1997:97–98, 104, 107).^{5.1}

LA66869/LA66870, at a slightly higher elevation of 7,860 feet (2,396 m), yielded the severely eroded remnants of several temporary dwellings, ash pile deposits that date between roughly 1760 and 1800, and comparatively high corn pollen concentrations. Given the artifact assemblage recovered and settlement trends in the local area, this site's inhabitants were probably Hispanic (Acklen et al. 1997:299–302; Evaskovich et al. 1997a:537–597; Holloway et al. 1997:99–101, 104, 107).

The significance of these sites is that the eighteenth century was characterized by repeated severe but short-term drought cycles (Dean et al. 1985:fig. 1). During a similar climatic regime, which lasted from about the mid-A.D. 1300s to the mid-A.D. 1500s, Pueblo populations throughout much of the northern Río Grande region occupied and farmed higher-elevation settings, including the Banco Bonito (e.g., see **Ansuetz 1998b**:9–22, 216–242; Ansuetz et al. 1997). Therefore, it is possible that a record of subtle archaeological traces related to the occupation of the Valles Caldera for comparatively small-scale, seasonal farming by various Native American and Hispanic groups remains to be recognized.

^{5.1} See Endnote 1.1 for explanation of the "LA" number designation.

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Table 5.1. VCNP ethnobotanical inventory.

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Abies concolor</i>	White fir	Yes		Northern Tiwa (Krenetsky 1964); Tewa (Robbins et al. 1916); Western Keres (Swank 1932)		Pre-Columbian (Winds and Ford 1996); Most Historic Pueblos (Dunmire and Tierney 1995)	Most Historic Pueblos (Dunmire and Tierney 1995)		Tewa (Robbins et al. 1916)	
<i>Acer glabrum</i>	Rocky Mountain maple	Yes	Navajo (Dunmire and Tierney 1997)						Southern Tiwa (Jones 1931)	Cambium and shoots are edible (Hudspeth 1997).
<i>Achillea millefolium</i>	Western yarrow, common yarrow	No	Northern Tiwa (Krenetsky 1964)	Eastern Keres, Northern Tiwa, Tewa, and Zuni (Dunmire and Tierney 1995); Navajo (Dunmire and Tierney 1997); Ute (Chamber-lin 1909); Hispano (Moore 1977)						Entire aboveground part of plant may be dried, boiled in water, and strained for nutritious broth; also, may be used as remedy for disordered indigestion and run-down feeling (Kirk 1970).
<i>Agoseris aurantiaca</i> var. <i>purpurea</i>	Mountain dandelion	Yes		Navajo (Dunmire and Tierney 1997)						Rootstocks may be dried and ground, with meal then baked into bread (Kirk 1970). Seeds also are edible (Hudspeth 1997).
<i>Agropyron cristatum</i> var. <i>cristatum</i>	Crested wheatgrass	Yes	Yes (See comments)							
<i>Allium cernuum</i>	Nodding onion	Yes		Hispano (Ford 1975; Moore 1977)						
<i>Allium geyeri</i> var. <i>geyeri</i>	Geyer's onion	No	Most Historic Pueblos (Dunmire and Tierney 1995); Most Four Corners Groups (Dunmire and Tierney 1997)	Tewa (Ford 1992); Southern Tiwa (Jones 1931); Zuni (Dunmire and Tierney 1995); Hispano (Moore 1977)						Bulbs may be eaten raw, boiled, or steamed. Wild onions often are ingredients for soups or as seasoning (Kirk 1970). Seeds also are edible (Hudspeth 1997).
		No								

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Alnus incana</i> var. <i>occidentalis</i> / <i>Alnus incana</i> ssp. <i>tenuifolia</i>	Thinleaf alder	Yes		Hispano (Ford 1975)						
		No								
<i>Alnus tenuifolia</i>	Mountain alder	Yes	Western Keres (Dunnire and Tierney 1995)				Most Historic Pueblos (Dunnire and Tierney 1995); Navajo (Dunnire and Tierney 1997)		Pre-Columbian (Magers 1986a); Northern Tiwa (Dunnire and Tierney 1995)	
<i>Amaranthus powellii</i> var. <i>powellii</i>	Powell's amaranth	Yes	Zuni (Bohrer 1960)							Leaves may be eaten as greens. Seeds may be eaten in a variety of ways, from raw to cooked (Hudspeth 1997; Kirk 1970).
<i>Amaranthus retroflexus</i>	Redroot pigweed	Yes	Most Historic Pueblos (Dunnire and Tierney 1995)	Hispano (Ford 1975)						
<i>Amaranthus hybridus</i>	Smooth pigweed	Yes	Yes (See comments)	Hispano (Ford 1975)						Leaves may be eaten as greens. Seeds may be eaten in a variety of ways, from raw to cooked (Hudspeth 1997; Kirk 1970).
<i>Amaranthus wrightii</i>	Wright's amaranth	No	Pre-Columbian (Dunnire and Tierney 1995, 1997); Western Keres (Swank 1932); Most Four Corners Groups (Dunnire and Tierney 1997)	Navajo (Dunnire and Tierney 1997); Western Keres (Swank 1932); Hispano (Ford 1975; Moore 1977)						
<i>Amelanchier alnifolia</i> var. <i>pumila</i>	Serviceberry, Rocky Mountain juneberry	No	Pre-Columbian (Stevenson 1915); Hopi, Navajo, and Ute (Dunnire and Tierney 1997) Southern Tiwa (Jones 1931)							All species produce edible berries, which may be eaten raw, dried, or cooked (Kirk 1970).
<i>Androsace septentrionalis</i>	Rock jasmine	No	Southern Tiwa (Jones 1931)	Navajo (Fewkes 1896)						
<i>Apocynum cannabinum</i>	Dogbane, Indian hemp dogbane	No		Navajo (Dunnire and Tierney 1997); Hispano (Ford 1975)	Southern Tiwa (Jones 1931)					
<i>Aquilegia elegantula</i>	Red columbine	Yes		Western Keres (Jones 1931)						

VCPN Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Aquilegia triemata</i>	Southwestern red columbine	No		Navajo (Wyman and Harris 1951)						
<i>Arabis fendleri</i> var. <i>spatifolia</i>	Fender rockcress	Yes	Navajo (Dunmire and Tierney 1997); Western Keres (Swank 1932)	Navajo (Dunmire and Tierney 1997)						
<i>Arctostaphylos uva-ursi</i> var. <i>adenotricha</i>	Bearberry, manzanita	Yes	Navajo (Dunmire and Tierney 1997)	Navajo (Dunmire and Tierney 1997); Hispano (Ford 1975; Moore 1977)	Jémez (Cook 1930); Northern Tiwa (Krenetsky 1964); Tewa (Ford 1992)					Acidic berries may be eaten and sometimes are used in beverages. Seeds also may be ground for cooking (Kirk 1970). Shoots also are edible (Hudspeth 1997).
		No	Navajo (Dunmire and Tierney 1997); Tewa (Ford 1992)	Navajo (Dunmire and Tierney 1997)	Eastern Keres (Dunmire and Tierney 1995)					
<i>Arnica chamissonis</i> var. <i>foliosa</i>	Arnica	No		Hispano (Moore 1977)						
<i>Artemisia carruthii</i>	Carruth's sagewort	Yes	Zuni (Stevenson 1915)							All species may be used for food, although <i>A. tridentata</i> , which is not present in the study area, is the best. Seeds and fruits may be dried, pounded into a meal to make pinole, or eaten raw (Kirk 1970). The Hopi use <i>A. frigida</i> as a seasoning.
<i>Artemisia dracunculoides</i>	Tarragon	Yes	Yes (See comments)	Hispano (Ford 1975)						
<i>Artemisia franserioides</i>	Ragweed sagebrush	Yes	Yes (See comments)	Southern Tiwa (Jones 1931); Tewa (Robbins et al. 1916); Zuni (Stevenson 1915); Hispano (Ford 1975; Moore 1977)	Pre-Columbian (Dunmire and Tierney 1997)	Pre-Columbian (Dunmire and Tierney 1997)	Navajo (Bryan and Young 1940)	Ute (Dunmire and Tierney 1997; Smith 1974)	Pre-Columbian (Magers 1986a); Navajo (Elmore 1944)	
<i>Artemisia frigida</i>	Fringed sagebrush	Yes	Yes (See comments)							
<i>Artemisia ludoviciana</i> var. <i>ludoviciana</i>	Louisiana sagebrush	Yes	Yes (See comments)	Tewa (Dunmire and Tierney 1995); Western Keres (Swank 1932); Hispano (Ford 1975)						

VCPN Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments	
<i>Artemisia campestris</i> var. <i>pacifica</i>	Pacific wormwood	No	Pre-Columbian (Stiger 1977); Hopi (Whiting 1939); Navajo (Dunmire and Tierney 1995); Tewa (Robbins et al. 1916); Most Historic Groups (Dunmire and Tierney 1995, 1997); Hispano (Moore 1977)	Pre-Columbian? (Dunmire and Tierney 1995); Eastern Keres (Dunmire and Tierney 1995); Navajo (Dunmire and Tierney 1995); Tewa (Robbins et al. 1916); Most Historic Groups (Dunmire and Tierney 1995, 1997); Hispano (Moore 1977)	Pre-Columbian (Dunmire and Tierney 1997)	Pre-Columbian (Dunmire and Tierney 1997)	Navajo (Bryan and Young 1940)	Ute (Dunmire and Tierney 1997; Smith 1974)	Pre-Columbian (Magers 1986a); Navajo (Elmore 1944)	All species may be used for food, although <i>A. tridentata</i> , which is not present in the study area, is the best. Seeds and fruits may be dried, pounded into a meal to make pinole, or eaten raw (Kirk 1970). The Hopi use <i>A. frigida</i> as a seasoning.	
<i>Artemisia campestris</i> ssp. <i>borealis</i> var. <i>scouleriana</i>	Northern wormwood	No									
<i>Asclepias subverticillata</i>	Horsetail milkweed	No	Hopi (Fewkes 1896); Northern Tiwa (Krenetsky 1964); Tewa (Ford 1992); Most Historic Pueblos (Dunmire and Tierney 1995)	Jémez (Dunmire and Tierney 1995); Hopi (Whiting 1939); Navajo (Dunmire and Tierney 1997); Southern Tiwa (Jones 1931); Tewa (Ford 1992; Stevenson 1912); Western Keres (Swank 1932); Hispano (Moore 1977)	Southern Tiwa (Dunmire and Tierney 1995); Western Keres (Swank 1932); Zuni (Dunmire and Tierney 1995)			Pre-Columbian (Kent 1983)	Buds, young shoots, and young leaves may be eaten as greens, seeds and inner pod may be eaten raw or cooked, and sugar may be boiled from flowers (Kirk 1970).		
<i>Aster ascendens</i> / <i>Symphotrichum ascendens</i>	Western American aster	No	Northern Tiwa (Krenetsky 1964)	Navajo (Vestal 1952); Zuni (Stevenson 1915)						Leaves of these species possibly boiled as greens (Kirk 1970).	
<i>Aster falcatum</i> var. <i>commutatum</i> / <i>Symphotrichum falcatum</i> var. <i>commutatum</i>	White prairie aster	No									
<i>Aster foliaceus</i> var. <i>canbyi</i>	Leafy-bract aster	No	Northern Tiwa (Krenetsky 1964)	Navajo (Vestal 1952); Zuni (Stevenson 1915)						Leaves of these species possibly boiled as greens (Kirk 1970).	
<i>Aster laevis</i> var. <i>geyeri</i>	Smooth aster	No									
<i>Aster lanceolatus</i> spp. <i>hesperius</i>	Panicle aster	No									

VCPN Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Astragalus gillensis</i>	Milkweed	No	Hopi (Fewkes 1896); Jémez (Castetter 1935); Zuni (Stevenson 1915)	Navajo (Dunmire and Tierney 1997); Zuni (Camazine and Bye 1980)						Fruits are edible (Hudspeth 1997).
<i>Bahia dissecta</i>	Yellow ragweed	Yes		Western Keres (Swank 1932); Zuni (Stevenson 1915)						
		No	Navajo (Dunmire and Tierney 1997)							
<i>Berberis fendleri</i>	Colorado barberry	Yes	Jémez (Cook 1930)							Berries may be eaten. Leaves also potentially are edible (Hudspeth 1997).
		No	Yes (See comments)	Hopi (Whiting 1939); Navajo (Dunmire and Tierney 1997); Hispano (Moore 1977)			Navajo (Dunmire and Tierney 1997)		Pre-Columbian (Whiting 1939); Hopi (Whiting 1939)	Brilliant yellow dye may be obtained by boiling roots and bark (Kirk 1970).
<i>Bessya plantaginea</i>	Kittentails	Yes	Navajo (Vestal 1952)							
<i>Betula fontinalis</i>	Water birch	No								
<i>Betula occidentalis</i>	Western waterbirch	Yes					Jémez (Cook 1930)		Pre-Columbian (Magers 1986a)	
<i>Bouteloua gracilis</i> var. <i>gracilis</i>	Blue curly grama	No	Yes (See comments)						Tewa (Robbins et al. 1916); Eastern Keres (Lange 1959)	Seeds are edible (Hudspeth 1997).
<i>Brickellia californica</i> var. <i>californica</i>	California brickellbush	Yes		Hispano (Ford 1975)						
<i>Brickellia eupatorioides</i> var. <i>chlorolepis</i>	Shinnery false boneset	No		Navajo (Dunmire and Tierney 1997)						
<i>Brickellia fendleri</i>	Fendler's brickellbush									
<i>Brickellia grandiflora</i> var. <i>grandiflora</i>	Tasselflower brickellbush									
<i>Bromus ciliatus</i>	Fringed brome	No	Yes (See comments)	Navajo (Dunmire and Tierney 1997)					Western Keres (Swank 1932)	Seeds are edible (Hudspeth 1997).

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Calamagrostis canadensis</i> var. <i>canadensis</i>	Canadian reedgrass	Yes	Yes (See comments)							Seeds are edible (Hudspeth 1997).
<i>Calochortus gunnisonii</i> var. <i>gunnisonii</i>	Mariposa lily	Yes	Yes (See comments)	Western Keres (Swank 1932)						Bulbs may be eaten raw or after roasting over a smoky fire. They also may be dried and ground into flour (Kirk 1970).
<i>Campanula parryi</i> var. <i>parryi</i>	Parry's bellflower	Yes		Navajo (Vestal 1952); Zuni (Stevenson 1915)						
<i>Carex aquatilis</i> var. <i>aquatilis</i>	Water sedge	No	Yes (See comments)	Navajo (Dunnire and Tierney 1997)						Seeds and roots of these many sedges are edible (Hudspeth 1997).
<i>Carex brunnescens</i>	Brownish sedge	No								
<i>Carex canescens</i> var. <i>canescens</i>	Brownish sedge	No								
<i>Carex conoidea</i>	Field sedge	No								
<i>Carex deweyana</i>	Dewey's sedge	No								
<i>Carex disperma</i>	Softleaf sedge	No								
<i>Carex douglasii</i>	Douglas' sedge	No								

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Carex foenea</i> var. <i>foenea</i>	Bronze-headed oval sedge	No	Yes (See comments)	Navajo (Dunnire and Tierney 1997)						Seeds and roots of these many sedges are edible (Hudspeth 1997).
<i>Carex geophila</i>	Dryland sedge	No								
<i>Carex lanuginosa</i>	Woolly sedge	No								
<i>Carex microptera</i> var. <i>microptera</i>	Mackenzie small-wing sedge	No								
<i>Carex norvegica</i> var. <i>steverii</i>	Steven's Scandinavian sedge	No								
<i>Carex obtusata</i>	Obtuse sedge	No								
<i>Carex occidentalis</i>	Bailey western sedge	No								
<i>Carex pensylvanica</i> var. <i>digyna</i>	Sun sedge	No								
<i>Carex petasata</i>	Liddon's sedge	No								
<i>Carex rossii</i>	Ross' sedge	No								
<i>Carex simulata</i>	Short-beak sedge	No	Hopi (Whiting 1939); Navajo (Dunnire and Tierney 1997); Tewa (Dunnire and Tierney 1995); Jémez (Cook 1930)	Tewa (Stevenson 1915); Hispano (Ford 1975; Moore 1977)			Navajo (Bryan and Young 1940); Zuni (Stevenson 1915)			Although most species have edible raw flowers, <i>C. lineata</i> is the best (Kirk 1970).
<i>Carex stenophylla</i>	Mackenzie sedge	No								
<i>Carex stipata</i> var. <i>stipata</i>	Owlfruit sedge	No								
<i>Carex utriculata</i> / <i>C. rostrata</i>	Beaked sedge	No								
<i>Castilleja lineata</i>	Greene marshmeadow Indian paintbrush	No								
<i>Castilleja miniata</i> var. <i>miniata</i>	Scarlet Indian paintbrush	No	Western Keres (Swank 1932)	Navajo (Dunnire and Tierney 1997)						Leaves and flowers may be used for tea, although some species are better for this use than others. The bark may be used to make a tonic, while fresh flowers produce an excellent lather (Hudspeth 1997; Kirk 1970).
<i>Castilleja sulphurea</i>	Sulphur Indian paintbrush	No								
<i>Ceanothus fendleri</i>	Bulkbrush	Yes								

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Cercocarpus montanus</i>	Mountain mahogany	Yes		Navajo (Dunmire and Tierney 1997); Tewa (Robbins et al. 1916); Western Keres (Swank 1932)		Pre-Columbian (Dunmire and Tierney 1995)	Hopi (Colton 1965); Most Historic Pueblos (Dunmire and Tierney 1995); Jicarilla (Dunmire and Tierney 1997)		Pre-Columbian (Dunmire and Tierney 1995, 1997); Hopi (Colton 1974); Navajo (Dunmire and Tierney 1997); Most Historic Pueblos (Dunmire and Tierney 1995); Ute (Callaway et al. 1986)	
<i>Chenopodium fremontii</i>	Fremont's goosefoot	Yes	Yes (See comments)	Hispano (Moore 1977)						All species are edible, but <i>C. fremontii</i> is the best species for food use. Leaves may be cooked as greens. Seeds may be eaten raw but best when mixed with other grain for mush or baked cakes (Hudspeth 1997, Kirk 1970).
<i>Chenopodium graveolens</i>	Fetid goosefoot	Yes	Yes (See comments)	Zuni (Stevenson 1915)						
<i>Chenopodium leptophyllum</i>	Narrowleaf goosefoot	Yes	Most Historic Pueblos (Castetter 1935)							
<i>Chenopodium atrovirens</i>	Piñon goosefoot	No	Pre-Columbian (Dunmire and Tierney 1995, 1997); Hopi and Navajo (Dunmire and Tierney 1997); Tewa (Ford 1992); Western Keres (Swank 1932); Hispano (Ford 1975, Moore 1977, Trigg 1999)	Navajo (Dunmire and Tierney 1997); Tewa (Ford 1992); Western Keres (Swank 1932); Hispano (Ford 1975, Moore 1977, Trigg 1999)					Pre-Columbian (Magers 1986b)	All species are edible, but <i>C. fremontii</i> is the best species for food use. Leaves may be cooked as greens. Seeds may be eaten raw but best when mixed with other grain for mush or baked cakes (Hudspeth 1997, Kirk 1970).
<i>Chenopodium berlandieri</i> var. <i>zschackei</i>	Pitseed goosefoot	No								
<i>Chenopodium neomexicanum</i>	New Mexico goosefoot	No								
<i>Chenopodium overi</i>	Over's goosefoot	No	(Castetter 1935; Dunmire and Tierney 1995); Hispano (Trigg 1999)							
<i>Cicuta maculata</i> var. <i>angustifolia</i>	Golden aster	Yes		Navajo (Chinle Curriculum Center 1995)						

VCNP Species ^a	Common Name	Exact Species Match? ^{2b}	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Cirsium arvense</i>	Creeping thistle	No	Yes (See comments)	Hopi (Whiting 1939); Navajo (Dunmire and Tierney 1997); Tewa (Ford 1992); Western Keres (Swank 1932); Zuni (Camazine and Bye 1980); Hispano (Ford 1975; Moore 1977)						All species have edible roots, which may be eaten raw, boiled, or roasted. Peeled stems may be eaten as greens (Kirk 1970). Seeds also are edible (Hudspeth 1997).
<i>Cirsium parryi</i>	Parry's thistle	No								
<i>Cirsium undulatum</i>	Wavyleaf thistle	Yes								
<i>Cirsium vulgare</i>	Bull thistle	No								
<i>Cirsium wheeleri</i>	Thistle	No								
<i>Clematis columbiana</i> var. <i>tenuiloba</i>	Virgin's bower	No		Navajo (Dunmire and Tierney 1997); Hispano (Moore 1977)						
<i>Commelina dianthifolia</i>	Dayflower	Yes		Navajo (Vestal 1952)						
		No		Navajo (Dunmire and Tierney 1997)						
<i>Contoselinum scopulorum</i>	Hemlock-parsley	Yes		Navajo (Wyman and Harris 1951)						
		No		Navajo (Dunmire and Tierney 1997)						
<i>Corallorhiza maculata</i> var. <i>occidentalis</i>	Spotted coral root	Yes		Navajo (Wyman and Harris 1951)						
<i>Cornus sericea</i> var. <i>sericea</i>	Red-osier dogwood	No		Navajo (Dunmire and Tierney 1997)					Jémez (Cook 1930)	
<i>Corydalis aurea</i> var. <i>aurea</i>	Golden corydalis	Yes		Navajo (Dunmire and Tierney 1997)						

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Cryptantha cinerea</i> var. <i>cinerea</i>	Hidden flower	No	Pre-Columbian (Dunmire and Tierney 1997)	Hopi and Navajo (Dunmire and Tierney 1997); Tewa (Stevenson 1912); Zuni (Camazine and Bye 1980; Stevenson 1915)						
<i>Cymopterus alpinus</i>	Alpine parsley	No	Eastern Keres (Swank 1932); Tewa (Ford 1992); Zuni (Dunmire and Tierney 1995); Most Historic Groups (Dunmire and Tierney 1995, 1997)	Navajo (Dunmire and Tierney 1997); Tewa (Hill 1982); Western Keres (Swank 1932); Hispano (Moore 1977)						In spring, the edible roots are sweet. Roots become less sweet later in the year (Kirk 1970).
<i>Cymopterus lemmonii</i> / <i>Pseudocymopterus montanus</i>	Mountain parsley	No								
<i>Cyperus fendlerianus</i>	Fendler's flatsedge	No	Western Keres (Castetter 1935)			Hispano (Trigg 1999)		Hispano (Trigg 1999)		Tubers have a nutty flavor when eaten raw (Kirk 1970).
<i>Descurainia pinnata</i> ssp. <i>filipes</i>	Western tansy mustard	Yes	Hopi (Dunmire and Tierney 1997); Navajo (Vestal 1952)	Navajo (Wyman and Harris 1951); Hispano (Ford 1975)			Pre-Columbian (Peckham 1990; Robbins et al. 1916); Hopi (Whiting 1939)			All species are edible, but some are better than others. Stems and leafy parts may be eaten as greens. The seeds may be parched, ground and eaten as mush, or in other ways (Kirk 1970).
<i>Descurainia incana</i> var. <i>macroserma</i>	Tansy mustard	No								
<i>Descurainia incana</i> var. <i>viscosa</i>	Mountain tansy mustard	No	Pre-Columbian (Dunmire and Tierney 1997)							
<i>Descurainia incana</i> ssp. <i>incisa</i>	Mountain tansy mustard	No								
<i>Descurainia sophia</i>	Flixweed tansy mustard	No								
<i>Draba aurea</i>	Golden draba	No								
<i>Draba helleriana</i> var. <i>helleriana</i>	Greene Heller's whitlowgrass	No								
<i>Draba rectiflora</i>	Mountain draba	No		Navajo (Dunmire and Tierney 1997)						
<i>Draba spectabilis</i>	Showy draba	No								

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Echinocereus coccineus</i> var. <i>coccineus</i>	Hedgehog cactus	No	Pre-Columbian (Dunnire and Tierney 1995, 1997); Eastern Keres (Castetter 1935); Hopi (Castetter 1935); Navajo (Castetter 1935); Western Keres (Castetter 1935); Southern Tiwa (Dunnire and Tierney 1995); Hispano (Trigg 1999)							Fruits, buds, and stems are edible (Kirk 1970).
<i>Eleocharis acicularis</i>	Needle spikerush	No		Navajo (Vestal 1952)						
<i>Eleocharis palustris</i>	Common spikerush	No								
<i>Eleocharis quinqueflora</i>	Fewflower spikerush	No								
<i>Elymus elongatus</i> var. <i>elongatus</i>	Rough tridens	No								
<i>Elymus elymoides</i> var. <i>brevifolius</i>	Bottlebrush squirreltail	No								
<i>Elymus elymoides</i> var. <i>elymoides</i>	Bottlebrush squirreltail	No								
<i>Elymus hispidus</i> var. <i>hispidus</i>	Intermediate wheatgrass	No	Yes (See comments)							All species yield edible grains, but hairs on seeds must first be singed (Kirk 1970).
<i>Elymus hispidus</i> var. <i>ruthenicus</i>	Intermediate wheatgrass	No								
<i>Elymus smithii</i> / <i>pascopyrum smithii</i>	Western wheatgrass	No								
<i>Elymus trachycaulus</i> var. <i>andinus</i>	Slender wheatgrass, slender wild rye	No								
<i>Elymus trachycaulus</i> var. <i>trachycaulus</i>	Slender wheatgrass	No								
<i>Elymus x macounii</i>	Quack grass	No	Yes (See comments)							All species yield edible grains, but hairs on seeds must first be singed (Kirk 1970).
<i>Elymus x pseudorepens</i>	Thickspike wheatgrass	No								
<i>Elymus x saxicolous</i>	Wild rye	No								

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Epilobium brachycarpum</i>	Field willow herb	No	Yes (See comments)	Navajo (Wyman and Harris 1951)						Young shoots may be boiled or mixed with other raw greens for salad. Fresh or dried leaves may be used for tea. Stems also may be used to make broth (Kirk 1970).
<i>Epilobium ciliatum</i> var. <i>ciliatum</i>	Fringed willow herb	Yes								
<i>Epilobium halleanum</i>	Hall willow herb	No								
<i>Epilobium leptophyllum</i>	Alpine fireweed	No								
<i>Equisetum laevigatum</i>	Smooth horsetail	Yes	Eastern Keres (Castetter 1935); Western Keres (Swank 1932)	Navajo (Dunnire and Tierney 1997); Hispano (Ford 1975; Moore 1977)						Cones and sweet pulp are edible (Hudspeth 1997; Kirk 1970). Silica-covered stems may be used from scrubbing cookware (Kirk 1970).
		No	Hopi (Fewkes 1896); Eastern Keres (Castetter 1935); Western Keres (Swank 1932)	Navajo (Dunnire and Tierney 1997); Hispano (Moore 1977)						
		No								
<i>Equisetum arvense</i>	Field horsetail	Yes	Yes (See comments)	Hispano (Ford 1975; Moore 1977)						
<i>Erigeron acris</i> var. <i>asteroides</i>	Bitter fleabane	No	Navajo (Dunnire and Tierney 1997)							
<i>Erigeron divergens</i> var. <i>divergens</i>	Spreading fleabane	No								
<i>Erigeron eximius</i>	Sprucefir fleabane	No								
<i>Erigeron flagellaris</i>	Trailing fleabane	No								
<i>Erigeron formosissimus</i>	Beautiful fleabane	No								
<i>Erigeron glabellus</i> var. <i>glabellus</i>	Streamside fleabane	No								
<i>Erigeron lonchophyllus</i>	Shortray fleabane	No								
<i>Erigeron modestus</i>	Prairie fleabane	No								
<i>Erigeron speciosus</i>	Oregon fleabane	No								
<i>Erigeron subtrinervis</i> var. <i>subtrinervis</i>	Threenerve fleabane	No								

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Eriogonum racemosum</i> var. <i>racemosum</i>	Redroot buckwheat	Yes	Yes (See comments)	Jémez (Dunmire and Tierney 1995); Hispano (Ford 1975)						Many species have edible seeds. Stems may be eaten raw or cooked before plant flowers (Hudspeth 1997; Kirk 1970).
		No	Pre-Columbian (Dunmire and Tierney 1995, 1997); Hopi (Castetter 1935)	Navajo (Dunmire and Tierney 1997; Wyman and Harris 1951); Northern Tiwa (Krenetsky 1964); Tewa (Ford 1992); Ute (Chamberlin 1909); Western Keres (Swank 1932); Zuni Stevenson 1915)			Navajo (Bryan and Young 1940)			
<i>Erodium cicutarium</i>	Red-stem filaree	Yes	Yes (See comments)	Jémez (Cook 1930); Zuni (Camazine and Bye 1980); Hispano (Ford 1975; Moore 1977)						Leaves and stems may be eaten raw as greens or cooked as potherbs (Kirk 1970). At Jémez, leaves were pounded and mixed with watermelon seeds to prevent fungus during storage (Cook 1930).
		No		Navajo (Wyman and Harris 1951); Hispano (Trigg 1999)						
<i>Erysimum capitatum</i> var. <i>capitatum</i>	Western wallflower	Yes		Hopi (Colton 1974); Navajo (Dunmire and Tierney 1997); Western Keres (Swank 1932); Zuni (Camazine and Bye 1980); Hispano (Ford 1975; Moore 1977)			Western Keres (Swank 1932)			

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Eupatorium herbaceum</i>	Western thoroughwort	Yes		Navajo (Vestal 1952); Zuni (Stevenson 1915); Hispano (Ford 1975)			Tewa (Stevenson 1912)			
		No			Eastern Keres (Lange 1959)					
<i>Euphorbia brachycera</i>	Horned spurge	No	Pre-Columbian? (Dunmire and Tierney 1997; Eastern Keres (Dunmire and Tierney 1995))	Eastern Keres (Lange 1959); Hopi (Whiting 1939); Navajo (Dunmire and Tierney 1997); Southern Tiwa (Dunmire and Tierney 1995); Tewa (Stevenson 1912); Western Keres (Swank 1932); Zuni (Camazine and Bye 1980; Stevenson 1915); Hispano? (Trigg 1999)						Used as livestock feed; <i>Euphorbia</i> sp. said to increase milk production in cows and goats (Trigg 1999).
									Hopi (Whiting 1939); Navajo (Vestal 1952)	
<i>Fallugia paradoxa</i>	Apache plume	Yes		Eastern Keres (Mathews 1992); Navajo (Vestal 1952); Hispano (Moore 1977)						
<i>Festuca arizonica</i>	Arizona fescue	Yes	Yes (See comments)							Seeds are edible (Hudspeth 1997).
<i>Festuca thurberi</i>	Thurber fescue	Yes								
<i>Fragaria vesca</i>	Woodland strawberry	Yes	Most Historic Pueblos (Dunmire and Tierney 1995)							Berries are edible raw or cooked. Leaves may be used for tea (Kirk 1970).
		No	Navajo and Ute (Dunmire and Tierney 1997)	Navajo (Vestal 1952)						
<i>Fragaria virginiana</i>	Virginia strawberry	No								

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<i>Galium aparine</i> var. <i>echinospermum</i>	Cleavers goosegrass	No	Yes (See comments)	Navajo (Vestal 1952); Hispano (Ford 1975)						Seeds may be roasted, ground, and used to make a drink resembling coffee. Stems may be used for bedstraw. Roots of many species may be used for making purple dye (Kirk 1970).
<i>Galium boreale</i>	Northern bedstraw	No								
<i>Galium trifidum</i> var. <i>subbiflorum</i>	Small bedstraw	No								
<i>Gayophytum diffusum</i> var. <i>strictipes</i>	Gayophytum	No		Navajo (Dunnire and Tierney 1997)						
<i>Geranium caespitosum</i>	Purple geranium	Yes	Yes (See comments)	Western Keres (Swank 1932); Hispano (Ford 1975)				Jémez (Cook 1930)		Leaves are edible (Hudspeth 1997).
<i>Geranium richardsonii</i>	Richardson geranium	No	Yes (See comments)	Navajo (Dunnire and Tierney 1997); Northern Tiwa (Krenetsky 1964)				Jémez (Cook 1930)		
<i>Geum aleppicum</i>	Yellow avens	No	Yes (See comments)							Roots may be boiled to make a beverage (Kirk 1970).
<i>Geum macrophyllum</i> var. <i>perincisum</i>	Largeleaf avens	No								
<i>Geum triflorum</i> var. <i>ciliatum</i>	Mountain smoke	No								
<i>Glyceria striata</i> var. <i>stricta</i>	Fowl manna grass	Yes	Yes (See comments)							Seeds yield an excellent flower. They also may be cooked similar to rice (Kirk 1970).
<i>Gnaphalium exilifolium</i>	Slender cudweed	No		Navajo (Vestal 1952); Western Keres (Swank 1932)						
<i>Hackelia floribunda</i>	Many-flowered stickseed	Yes		Tewa (Ford 1992)						

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<i>Helianthus rigidus</i> ssp. <i>subrhomboides</i>	Showy sunflower	No	Pre-Columbian (Dunmire and Tierney 1995, 1997); Most Historic Groups (Dunmire and Tierney 1995, 1997); Hispano? (Trigg 1999)	Hopi (Colton 1974); Most Historic Pueblos (Dunmire and Tierney 1995); Navajo (Dunmire and Tierney 1997); Hispano (Moore 1977; Trigg 1999)			Hopi and Navajo (Dunmire and Tierney 1997)		Pre-Columbian (Magers 1986a)	Seeds may be eaten raw or roasted. Tubers may be eaten raw, boiled, or roasted. Seeds yield a black or purple dye; flowers produce a yellow dye (Kirk 1970).
<i>Hieracium sphondylium</i> var. <i>lanatum</i>	Cow parsnip	Yes		Hispano (Moore 1977)						
<i>Heterotheca villosa</i> var. <i>nana</i>	Hairy false goldenaster	No		Hispano (Ford 1975)						
<i>Heuchera parvifolia</i>	Common alumroot	No	Yes (See comments)	Navajo (Dunmire and Tierney 1997)						Raw roots may be used to treat diarrhea (Kirk 1970).
<i>Hieracium fendleri</i> var. <i>fendleri</i>	Hawkweed	Yes	Yes (See comments)	Navajo (Dunmire and Tierney 1997)						Green plant parts and coagulated juice may be chewed as gum (Kirk 1970).
<i>Holodiscus dumosus</i> var. <i>dumosus</i>	Bush mountainspray	Yes	Navajo (Vestal 1952); Tewa (Castetter 1935); Southern Tiwa (Jones 1931)				Zuni (Underhill 1979)			One-seeded fruits may be eaten (Kirk 1970).
<i>Humulus lupulus</i> var. <i>neomexicanus</i>	Hops	Yes		Hispano (Moore 1977)						
<i>Hymenopappus newberryi</i>	Newberry white ragweed	Yes		Southern Tiwa (Jones 1931)						
		No	Jémez (Cook 1930); Southern Tiwa (Jones 1931)	Zuni (Stevenson 1915)	Zuni (Stevenson 1915)					
<i>Hymenoxys hoopesii</i>	Orange sneezeweed	No		Hopi and Navajo (Dunmire and Tierney 1997); Northern Tiwa (Krenetsky 1964); Zuni (Stevenson 1915)			Navajo (Bryan and Young 1940)			

VGNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Hymenoxys richardsonii</i> var. <i>floribunda</i>	Pingue rubberweed	Yes		Zuni (Camazine and Bye 1980); Hispano (Ford 1975; Moore 1977)	Most Historic Pueblos (Dunmire and Tierney 1995)					
		No		Hopi and Navajo (Dunmire and Tierney 1997); Northern Tiwa (Krenetsky 1964); Zuni (Stevenson 1915)			Navajo (Bryan and Young 1940)			
<i>Ipomopsis aggregata</i> subsp. <i>formosissima</i>	Scarlet gilia	No		Hopi and Navajo (Dunmire and Tierney 1997); Tewa (Dunmire and Tierney 1995; Stevenson 1912); Western Keres (Swank 1932); Zuni (Camazine and Bye 1980)			Hopi (Colton 1974)			
<i>Iris missouriensis</i>	Blue flag	Yes		Navajo (Dunmire and Tierney 1997); Zuni (Camazine and Bye 1980)			Navajo (Elmore 1944)			
		No		Hispano (Ford 1975)						
<i>Iva axillaris</i> var. <i>robustior</i>	Marsh-elder, poverty-weed	No		Navajo (Dunmire and Tierney 1997); Ute (Chamberlain 1909)						

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<i>Juncus arcticus</i> var. <i>balticus</i>	Arctic rush	No	Pre-Columbian (Adams 1980)	Navajo (Mayes and Lacy 1989)		Southern Tiwa (Jones 1931)				
<i>Juncus balticus</i> var. <i>montanus</i>	Baltic rush	No								
<i>Juncus bufonius</i>	Toad-rush	No								
<i>Juncus dudleyi</i>	Dudley's rush	No								
<i>Juncus ensifolius</i> var. <i>montanus</i>	Dagger-leaf rush	No								
<i>Juncus interior</i>	Inland rush	No								
<i>Juncus longistylis</i>	Longstyle rush	No								
<i>Juncus nevadensis</i>	Sierra rush	No								
<i>Juncus torreyi</i>	Torrey's rush	No	Pre-Columbian (Adams 1980)	Navajo (Mayes and Lacy 1989)		Southern Tiwa (Jones 1931)				
<i>Juniperus communis</i> var. <i>depressa</i>	Common juniper	Yes		Hispano (Ford 1975; Moore 1977)						All species produce edible berries, which may be eaten raw or dried, ground into meal, and cooked as mush or baked as cakes (Kirk 1970). <i>J. communis</i> bark also is edible (Hudspeth 1997).
		No	Pre-Columbian (Dunnire and Tierney 1995; Hopi 1997); Navajo and Ute (Dunnire and Tierney 1997; Tierney 1997; Vestal 1952)	Pre-Columbian (Dunnire and Tierney 1995); Navajo and Ute (Dunnire and Tierney 1997); Hispano (Moore 1977)		Pre-Columbian (Dunnire and Tierney 1995, 1997)	Navajo (Bryan and Young 1940)	Navajo and Ute (Dunnire and Tierney 1997)	Pre-Columbian (Dunnire and Tierney 1995, 1997); Navajo and Ute (Dunnire and Tierney 1997)	
<i>Juniperus scopulorum</i>	Rocky Mountain juniper	Yes	Jémez (Cook 1930); Tewa (Castetter 1935); Ute (Callaway et al. 1986); Western Keres (Swank 1932)	Navajo (Dunnire and Tierney 1997); Hispano (Ford 1975; Moore 1977)					Pre-Columbian (Magers 1986b)	
<i>Koeleria macrantha</i>	Junegrass	No	Southern Tiwa (Jones 1931)						Jémez (Cook 1930)	Seeds are edible (Hudspeth 1997).
<i>Lactuca serriola</i>	Prickly lettuce	Yes	Yes (See comments)	Navajo (Vestal 1952)						Aboveground part of plant may be eaten as greens. Gum present in the roots may be chewed (Kirk 1970).
		No			Zuni (Stevenson 1915)					
<i>Lappula occidentalis</i> var. <i>occidentalis</i> / <i>L. redowskii</i>	Flatspine stickseed	No		Navajo (Dunnire and Tierney 1997)						

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<i>Lathyrus arizonica</i>	Arizona peavine	No	Eastern Keres (Castetter 1935); Navajo (Wyman and Harris 1941); Tewa (Ford 1992); Western Keres (Swank 1932)	Navajo (Wyman and Harris 1941)						Seeds may be used as seasoning. Shoots and leaves collected from young plants may be used as edible green (Hudspeth 1997; Kirk 1970). Pods also are edible (Hudspeth 1997).
<i>Lepidium densiflorum</i>	Common peppergrass	Yes		Southern Tiwa (Jones 1931); Hispano (Ford 1975)						
<i>Lepidium ramosissimum</i> var. <i>bourgeauianum</i>	Bourgeau's pepperweed	No	Pre-Columbian (Dunmire and Tierney 1997; Stiger 1977)	Pre-Columbian? (Stiger 1977); Navajo (Dunmire and Tierney 1997); Southern Tiwa (Jones 1931)						
<i>Lepidium virginicum</i> var. <i>pubescens</i>	Clasping pepperweed	No		Hispano (Ford 1975)						
<i>Lesquerella ovalifolia</i>	Roundleaf bladderpod	No	Yes (See comments)	Navajo (Dunmire and Tierney 1997); Western Keres (Swank 1932)						Leaves and seeds are edible (Hudspeth 1997).
<i>Linum lewisii</i> var. <i>lewisii</i>	Prairie flax	No	Yes (See comments)	Hopi and Navajo (Dunmire and Tierney 1997); Zuni (Stevenson 1915)						Seeds may be roasted, dried, and ground for use alone or mixed with other foods (Kirk 1970).
<i>Lithospermum multiflorum</i>	Southwestern stoneseed	No	Yes (See comments)	Hopi (Whiting 1939); Navajo (Dunmire and Tierney 1997); Zuni (Camazine and Bye 1980)						Cooked roots are edible (Kirk 1970).
<i>Lonicera involucrata</i>	Bracted honeysuckle	No		Navajo (Dunmire and Tierney 1997)						

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<i>Lotus wrightii</i>	Wright's deervetch	Yes	Navajo (Dunmire and Tierney 1997)	Zuni (Camazine and Bye 1980)						
<i>Lupinus argenteus</i> var. <i>argophyllus</i>	Stemless dwarf lupine	No		Navajo (Dunmire and Tierney 1997; Wyman and Harris 1941)			Navajo (Wyman and Harris 1941)			
<i>Lupinus argenteus</i> var. <i>fulvomaculatus</i>	Stemless dwarf lupine	No								
<i>Lupinus kingii</i>	King's lupine, silky lupine	No								
<i>Machaeranthera bigelovii</i> var. <i>bigelovii</i>	Bigelow's tansy-aster	No	Western Keres (Swank 1932)	Hopi (Whiting 1939); Jémez (Cook 1930); Navajo (Dunmire and Tierney 1997); Tewa (Stevenson 1912); Zuni (Camazine and Bye 1980; Stevenson 1915)			Western Keres (Swank 1932)			
<i>Mahonia repens</i>	Creeping barberry	Yes		Hispano (Moore 1977)						
<i>Malva neglecta</i>	Common mallow	Yes	Yes (See comments)	Navajo (Mayes and Lacy 1989)						Leaves and stems may be boiled (Kirk 1970).
		No		Tewa (Ford 1992); Hispano (Moore 1977)						
<i>Marrubium vulgare</i>	Blue verbena	Yes	Yes (See comments)	Hispano (Ford 1975; Moore 1977)						The dried plant, made into a tea, makes a nutritious tonic. In large quantities, however, the tonic has laxative qualities (Kirk 1970).
<i>Matricaria discoidea</i>	Disc mayweed	Yes		Hispano (Ford 1975)						
<i>Medicago sativa</i>	Buffalo grass	No	Yes (See comments)							Seeds may be parched and eaten, or ground into flour (Kirk 1970).

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<i>Melilotus albus</i>	White sweet clover	Yes	Yes (See comments)	Hispano (Ford 1975; Moore 1977)						Greens and seeds are edible (Hudspeth 1997).
<i>Melilotus officinalis</i>	Yellow sweet clover	No	Yes (See comments)							
<i>Mentha arvensis</i>	Field mint	Yes	Eastern Keres (Castetter 1935); Zuni (Dunmire and Tierney 1995)	Navajo (Dunmire and Tierney 1997); Southern Tiwa (Jones 1931); Tewa (Ford 1992); Western Keres (Swank 1932); Hispano (Ford 1975; Moore 1977)						Leaves, used either fresh or dried, make teas (Kirk 1970).
<i>Mentha spicata</i>	Spearmint	Yes	Yes (See comments)	Tewa (Ford 1992); Hispano (Ford 1975; Moore 1977)						
<i>Mimulus glabratus</i> var. <i>jamesii</i>	Wild lettuce, roundleaf monkeyflower	Yes	Southern Tiwa (Jones 1931)							
		No	Navajo (Wyman and Harris 1951)							
<i>Mimulus guttatus</i> var. <i>guttatus</i>	Wild lettuce, common monkey-flower	Yes	Southern Tiwa (Jones 1931)							Greens may be eaten raw (Kirk 1970).
		No	Navajo (Wyman and Harris 1951)							
<i>Mirabilis oxybaphoides</i>	Smooth spreading four-o'clock	Yes		Navajo (Dunmire and Tierney 1997)						
		No		Hopi (Colton 1974); Navajo (Dunmire and Tierney 1997); Tewa (Dunmire and Tierney 1995); Zuni (Camazine and Bye 1980); Hispano (Moore 1977)						
<i>Mirabilis comata</i>	Hairy-tuft four-o'clock	No	Yes (See comments)							
<i>Mirabilis decipiens</i>	Broadleaf four-o'clock	No			Western Keres (Swank 1932)		Navajo (Dunmire and Tierney 1997)			Roots are edible (Hudspeth 1997).
<i>Mirabilis linearis</i>	Narrow/leaf four-o'clock	No								

V CNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Monarda fistulosa</i> var. <i>mentifolia</i>	Mintleaf bee balm	Yes	Yes (See comments)	Most Historic Pueblos (Dunmire and Tierney 1995; Hispano (Ford 1975; Moore 1977)	Tewa (Dunmire and Tierney 1995)					The entire aboveground portion of the plant may be used as a potherb (Kirk 1970).
		No	Hopi (Whiting 1939)	Navajo (Dunmire and Tierney 1997)						
<i>Muhlenbergia andina</i>	Foxtail muhly	No	Yes (See comments)						Zuni (Dunmire and Tierney 1995)	Seeds are edible (Hudspeth 1997).
<i>Muhlenbergia filiformis</i>	Pullup muhly	No								
<i>Muhlenbergia minutissima</i>	Annual muhly	No	Yes (See comments)							
<i>Muhlenbergia montana</i>	Mountain muhly	No								
<i>Muhlenbergia pauciflora</i>	New Mexico muhly	No								
<i>Muhlenbergia ramulosa</i>	Green muhly	No								
<i>Muhlenbergia richardsonis</i>	Mat muhly, soft-leaf muhly	No								
<i>Muhlenbergia wrightii</i>	Spike muhly	No							Zuni (Dunmire and Tierney 1995)	Seeds are edible (Hudspeth 1997).
<i>Oenothera caespitosa</i>	Stemless evening primrose	Yes	Yes (See comments)	Southern Tiwa (Jones 1931)						Spring roots may be cooked (Kirk 1970).
		No		Hopi (Whiting 1939); Navajo (Dunmire and Tierney 1997); Western Keres (Swank 1932); Zuni (Camazine and Bye 1980; Stevenson 1915); Hispano (Moore 1977)						
		Yes		Zuni (Camazine and Bye 1980)						
<i>Oenothera coronopifolia</i>	Sand evening primrose	No	Yes (See comments)							

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<i>Opuntia phaeacantha</i> var. <i>phaeacantha</i>	Plains prickly pear	No	Pre-Columbian (Dunmire and Tierney 1995, 1997); Most Historic Pueblos (Dunmire and Tierney 1995); Zuni (Stevenson 1915)	Hispano (Ford 1975; Moore 1977)						Fruits and joints may be peeled and eaten raw, boiled and then fried, or stewed (Kirk 1970).
<i>Orobanche ludoviciana</i>	Louisiana broomrape	No	Jémez (Dunmire and Tierney 1995); Navajo (Wyman and Harris 1951); Tewa (Stevenson 1912); Zuni (Stevenson 1915)	Navajo (Dunmire and Tierney 1997)					Western Keres (Swank 1932)	Entire plant, including its roots, is edible raw but is best if first roasted (Kirk 1970).
<i>Oryzopsis hymenoides</i>	Indian ricegrass	No	Pre-Columbian (Dunmire and Tierney 1995, 1997); Most Historic Groups (Dunmire and Tierney 1997); Zuni (Stevenson 1915)							Seeds are edible raw but are best if dried and then ground for mush or baked cakes (Kirk 1970).
<i>Osmorhiza depauperata</i>	Sweet cicely	No	Southern Tiwa (Jones 1931)							Roots may be used for anise-like flavoring (Kirk 1970).
<i>Oxalis violacea</i>	Violet wood sorrel	Yes	Yes (See comments)	Hispano (Ford 1975)						Leaves and stems may be eaten either raw or after slight fermentation (Kirk 1970).
<i>Parietaria pensylvanica</i>	Pennsylvania pellitory	Yes		Hispano (Ford 1975)						

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<i>Penstemon barbatus</i> var. <i>trichander</i>	Scarlet penstemon	Yes		Hispano (Ford 1975)						
		No	Tewa (Ford 1992)	Tewa (Robbins et al. 1916); Western Keres (Swank 1932)						
<i>Penstemon inflatus</i>	Crosswhite inflated beardtongue	No		Navajo (Dunnire and Tierney 1997); Tewa (Robbins et al. 1916); Western Keres (Swank 1932); Hispano (Ford 1975)						
<i>Penstemon rydbergii</i> var. <i>rydbergii</i>	Rydberg's penstemon	No	Tewa (Ford 1992)							
<i>Penstemon whippleanus</i>	Whipples penstemon	No								
<i>Pericome caudata</i>	Mountain leaftail	Yes		Navajo (Dunnire and Tierney 1997)						
<i>Phacelia alba</i>	White scorpionweed	No		Tewa (Stevenson 1912); Western Keres (Swank 1932); Zuni (Camazine and Bye 1980)						
<i>Phacelia heterophylla</i> var. <i>heterophylla</i>	Varileaf phacelia, scorpionweed	No		Tewa (Stevenson 1912); Western Keres (Swank 1932); Zuni (Camazine and Bye 1980)						
<i>Philadelphus microphyllus</i>	Mock orange	Yes	Navajo (Wymann and Harris 1951); Southern Tiwa (Jones 1931)	Navajo (Dunnire and Tierney 1997)			Tewa (Hill 1982)			Fruits are edible (Hudspeth 1997).
<i>Picea engelmannii</i> var. <i>engelmannii</i>	Engelmann spruce	No		Navajo (Dunnire and Tierney 1997)		Pre-Columbian (Windes and Ford 1996)				
<i>Picea pungens</i>	Colorado blue spruce	Yes	Western Keres (Swank 1932)							
		No		Navajo (Dunnire and Tierney 1997)		Pre-Columbian (Windes and Ford 1996)				

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Pinus edulis</i>	Piñon pine	Yes	Pre-Columbian (Dunmire and Tierney 1995, 1997); Most Historic Groups (Dunmire and Tierney 1995, 1997); Hispano (Trigg 1999)	Hopi and Navajo (Dunmire and Tierney 1997); Tewa (Hill 1982); Southern Tiwa (Dunmire and Tierney 1995); Western Keres (Swank 1932); Zuni (Camazine and Bye 1980); Hispano (Ford 1975; Moore 1977; Trigg 1999)	Eastern Keres (Lange 1959)	Pre-Columbian (Dunmire and Tierney 1995, 1997); Most Historic Pueblos (Dunmire and Tierney 1995); Navajo (Elmore 1944)	Hopi (Colton 1965); Most Historic Pueblos (Dunmire and Tierney 1995); Navajo (Dunmire and Tierney 1997)		Pre-Columbian and Navajo (Dunmire and Tierney 1997); Hopi (Whiting 1939); Ute (Smith 1974)	Nuts are edible and nutritious either raw or cooked (Kirk 1970).
<i>Pinus flexilis</i>	Limber pine	Yes	Yes (See comments)	Navajo (Dunmire and Tierney 1997)						Nuts are edible. Cambium may be eaten as starvation food (Hudspeth 1997).
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	Ponderosa pine	Yes	Zuni (Castetter 1935)	Navajo (Dunmire and Tierney 1997); Tewa (Ford 1992)		Pre-Columbian (Dunmire and Tierney 1995, 1997); Turney 1948); Most Historic Groups (Dunmire and Tierney 1995, 1997)			Pre-Columbian (Dunmire and Tierney 1995, 1997); Most Historic Pueblos (Dunmire and Tierney 1995); Navajo (Mayes and Lacy 1989)	Cambium may be eaten as starvation food (Hudspeth 1997).
<i>Plantago lanceolata</i>	Narrowleaf plantain	No	Yes (See comments)	Navajo (Dunmire and Tierney 1997); Western Keres (Swank 1932); Zuni (Camazine and Bye 1980)						Young plants may be used raw as a salad green or used in cooking as a potherb. Seeds may be parched and ground into meal (Kirk 1970).

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<i>Plantago major</i> var. <i>major</i>	Common plantain	Yes	Western Keres (Casteretter 1935)	Northern Tiwa (Krenetsky 1964); Southern Tiwa (Jones 1931); Western Keres (Swank 1932); Hispano (Ford 1975; Moore 1977)						Young plants may be used raw as a salad green or used in cooking as a potherb. Seeds may be parched and ground into meal (Kirk 1970).
<i>Poa fendleriana</i>	Bluegrass	Yes	Pre-Columbian (Bohrer 1975)							Seeds are edible (Hudspeth 1997).
<i>Polygonum aviculare</i>	Doorweed	Yes		Hispano (Ford 1975)						Seeds of many species may be eaten whole or ground into meal, however, <i>P. aviculare</i> is the best. Some species have peppery leaves that may be used as a seasoning, while others may be eaten raw as salad greens or cooked as potherbs. Roots also are edible (Kirk 1970).
<i>Polygonum amphibium</i> var. <i>stipulaceum</i>	Water buckweed	No	Yes (See comments)	Navajo (Dunnire and Tierney 1997)						
<i>Polygonum convolvulus</i> var. <i>convolvulus</i>	Wild buckwheat, black bindweed	No								
<i>Polygonum douglasii</i> var. <i>douglasii</i>	Douglass knotweed	No								
<i>Polygonum erectum</i>	Erect knotweed	No								
<i>Polygonum lapathifolium</i> var. <i>lapathifolium</i>	Curlytop knotweed	Yes		Western Keres (Swank 1932); Zuni (Stevenson 1915)						
<i>Populus angustifolia</i>	Narrow/leaf cottonwood	Yes	Yes (See comments)	Hispano (Ford 1975; Moore 1977)			Eastern Keres (Lange 1959)			Catkins in some species are edible raw or boiled in stews. Inner bark may be eaten as starvation food (Kirk 1970). Aspen flowers also are edible (Hudspeth 1997).
		No	Pre-Columbian (Williams-Dean 1986)			Pre-Columbian (Dunnire and Tierney 1997)			Pre-Columbian (Dunnire and Tierney 1997); Hopi (Colton 1974)	
		Yes	Hopi (Whiting 1939); Most Historic Pueblos (Dunnire and Tierney 1995); Ute (Smith 1974)	Southern Tiwa (Jones 1931); Tewa (Robbins et al. 1916); Hispano (Ford 1975)		Hopi (Whiting 1939); Navajo (Elmore 1944); Tewa (Ford 1992)	Most Historic Pueblos (Dunnire and Tierney 1995); Ute (Smith 1974)		Pre-Columbian and Navajo (Dunnire and Tierney 1997); Hopi (Whiting 1939); Ute (Smith 1974)	
<i>Populus tremuloides</i>	Quaking aspen	Yes								

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<i>Potentilla anserina</i> / <i>Argentina anserina</i>	Silverweed cinquefoil	No	Yes (See comments)	Navajo (Dunmire and Tierney 1997)						Roots of <i>P. anserina</i> are good either boiled or roasted; they are similar to parsnips (Kirk 1970).
<i>Potentilla fruticosa</i> / <i>Dasiphora floribunda</i> / <i>Pentaptylloides floribunda</i>	Shrubby cinquefoil, bush cinquefoil	No								
<i>Potentilla gracilis</i> var. <i>pulcherrima</i>	Soft cinquefoil	No								
<i>Potentilla hippiana</i> var. <i>hippiana</i>	Woolly cinquefoil	No								
<i>Potentilla norvegica</i> subsp. <i>monspeliensis</i>	Norwegian cinquefoil	No								
<i>Potentilla pennsylvanica</i> var. <i>pennsylvanica</i>	Pennsylvania cinquefoil	No								
<i>Prunus virginiana</i> var. <i>melanocarpa</i>	Common choke cherry	Yes	Pre-Columbian (Dunmire and Tierney 1995, 1997); Most Historic Pueblos (Dunmire and Tierney 1995); Navajo (Dunmire and Tierney 1997); Ute (Callaway et al. 1986); Jicarilla (Opler 1936)	Navajo (Dunmire and Tierney 1997); Western Keres (Swank 1932); Hispano (Ford 1975)			Navajo (Dunmire and Tierney 1997); Jicarilla (Dunmire and Tierney 1997)		Pre-Columbian (Nichols n.d.); Most Historic Pueblos (Dunmire and Tierney 1995); Ute (Dunmire and Tierney 1997)	Sour berries are edible raw or cooked. Leaves may be used to make refreshing beverage (Kirk 1970).
		No	Navajo (Castetter 1935); Ute (Callaway et al. 1986)				Navajo (Bryan and Young 1940)			
<i>Pseudotsuga menziesii</i> var. <i>glauca</i>	Douglas fir	Yes	Yes (See comments)	Most Historic Pueblos (Dunmire and Tierney 1995); Navajo (Dunmire and Tierney 1997)		Pre-Columbian (Dunmire and Tierney 1995, 1997)			Pre-Columbian (Dunmire and Tierney 1997)	Fresh needles may be steeped for tea (Kirk 1970).
		No		Most Historic Pueblos (Dunmire and Tierney 1995)		Pre-Columbian (Dunmire and Tierney 1995)				

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<i>Peridium aquilinum</i> var. <i>pubescens</i>	Western bracken	Yes	Yes (See comments)	Navajo (Chinle Curriculum Center 1995)				Navajo (Chinle Curriculum Center 1995)		Young fronds are edible raw or cooked. Rootstock may be eaten after roasting or boiling (Kirk 1970).
<i>Pterospora andromedea</i>	Pinedrops	Yes		Western Keres (Swank 1932)			Navajo (Bryan and Young 1940)			
<i>Pyrola chlorantha</i> var. <i>chlorantha</i>	Green wintergreen	Yes		Navajo (Wyman and Harris 1951)						
<i>Quercus gambelii</i>	Gambel oak	Yes	Most Historic Pueblos (Dunmire and Tierney 1995); Navajo (Dunmire and Tierney 1997)	Eastern Keres (White 1942); Southern Tiwa (Jones 1931); Tewa (Ford 1992); Hispano (Ford 1975; Moore 1977)			Navajo (Dunmire and Tierney 1997)		Pre-Columbian (Magers 1986b); Hopi (Colton 1974); Navajo (Dunmire and Tierney 1997; Tierney 1948)	Sweet acorns may be eaten raw or cooked (Kirk 1970). Leaves also are edible (Hudspeth 1997).
		No	Pre-Columbian (Dunmire and Tierney 1997); Ute (Callaway et al. 1986); Jicarilla (Opler 1936)			Pre-Columbian (Dunmire and Tierney 1997)			Pre-Columbian (Dunmire and Tierney 1997)	
<i>Ranunculus aquatilis</i> var. <i>diffusa</i> / <i>Ranunculus longirostris</i>	Water buttercup	No								
<i>Ranunculus cardiophyllus</i>	Heart-leaved buttercup	No	Navajo (Dunmire and Tierney 1997); Western Keres (Swank 1932)	Hispano (Ford 1975)						Buttercups are toxic raw but are edible when cooked. Seeds may be parched and ground for baked cakes, and roots may be boiled. Crushed and washed flowers yield yellow dye (Kirk 1970).
<i>Ranunculus cymbalaria</i>	Northern seaside buttercup	No								
<i>Ranunculus inamoenus</i>	Graceful buttercup	Yes								
<i>Ranunculus macounii</i>	Macoun's buttercup	No								

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<i>Ratibida columnifera</i>	Prairie coneflower	Yes	Zuni (Stevenson 1915)	Northern Tiwa (Krenetsky 1964); Tewa (Stevenson 1912); Zuni (Stevenson 1915)						Leaves and flowers may be brewed for tea (Kirk 1970).
		No	Navajo (Vestal 1952)	Hispano (Moore 1977)						
<i>Ribes cereum</i>	Western red currant	Yes	Pre-Columbian (Dunmire and Tierney 1997; Stiger 1977); Hopi (Fewkes 1896); Navajo and Ute (Dunmire and Tierney 1997)	Hopi (Kirk 1970)			Hopi (Whiting 1939)		Pre-Columbian (Nichols n.d.); Hopi (Whiting 1939); Navajo (Wyman and Harris 1951)	All species produce edible berries, but some are better than others. Leaves of some species may also be eaten (Hudspeth 1997).
<i>Ribes inebrians</i>	Whiskey currant	Yes	Most Historic Pueblos (Dunmire and Tierney 1995)							
<i>Ribes inerme</i> var. <i>inermis</i>	Whitestem gooseberry	Yes	Most Historic Pueblos (Dunmire and Tierney 1995)							
<i>Ribes leptanthum</i>	Trumpet gooseberry	No	Pre-Columbian (Dunmire and Tierney 1997; Stiger 1977; Turney 1948); Hopi (Fewkes 1896); Navajo and Ute (Dunmire and Tierney 1997)	Hopi (Kirk 1970)			Hopi (Whiting 1939)		Pre-Columbian (Nichols n.d.); Hopi (Whiting 1936); Navajo (Wyman and Harris 1951)	
<i>Ribes montigenum</i>	Red prickly currant	No								
<i>Ribes wolfii</i>	Wolf's currant	No								
<i>Robinia neomexicana</i> var. <i>neomexicana</i>	New Mexico locust	Yes	Jémez (Cook 1930)	Hispano (Ford 1975)					Pre-Columbian (Turney 1948); Jémez (Cook 1930); Tewa (Ford 1992); Western Keres (Swank 1932)	Flowers are edible (Hudspeth 1997).

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<i>Rorippa nasturtium-aquaticum</i>	Common watercress	Yes		Hispano (Ford 1975)						Leaves and stems may be eaten as greens (Hudspeth 1997).
		No								
<i>Rorippa curvipes</i>	Bluntleaf yellowcress	No	Yes (See comments)	Zuni (Stevenson 1915)						
<i>Rorippa sphaerocarpa</i>	Roundfruit yellowcress	No								
<i>Rosa nutkana</i>	Nootka rose	No	Yes (See comments)	Northern Tiwa (Krenetsky 1964); Southern Tiwa (Jones 1931); Tewa (Ford 1992); Hispano (Ford 1975; Moore 1977)						Rose hips may be eaten raw or cooked. Flower petals, bark, shoots, and leaves also may be eaten (Hudspeth 1997 ; Kirk 1970).
<i>Rosa woodsii</i>	Woods rose	Yes	Yes (See comments)	Navajo (Dunnire and Tierney 1997); Northern Tiwa (Krenetsky 1964); Southern Tiwa (Jones 1931); Tewa (Ford 1992); Ute (Fowler 1986); Hispano (Ford 1975; Moore 1977)	Navajo (Elmore 1944)				Ute (Smith 1974)	
<i>Rubus parviflorus</i> var. <i>parviflorus</i>	Western thimbleberry	Yes	Southern Tiwa (Jones 1931)							All species produce edible berries, which may be consumed either raw or cooked (Kirk 1970). Shoots and greens also are edible (Hudspeth 1997).
		No	Navajo (Castetter 1935); Ute (Dunnire and Tierney 1997)							
<i>Rudbeckia laciniata</i> var. <i>amplea</i>	Cutleaf coneflower	Yes	Eastern Keres (Castetter 1935)	Hispano (Moore 1977)						

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<i>Rumex acetosella</i>	Wild dock, red sorrel	No	Navajo (Elmore 1944); Eastern Keres (Castetter 1935); Southern Tiwa (Dunmire and Tierney 1995)	Hopi (Whiting 1939; Kirk 1970); Navajo (Dunmire and Tierney 1997); Tewa (Ford 1992); Western Keres (Swank 1932); Zuni (Stevenson 1915); Hispano (Moore 1977)			Hopi and Navajo (Dunmire and Tierney 1997; Kirk 1970)			All <i>Rumex</i> species bear edible leaves and stems, but some are more acidic than others. Cooking removes toxins (Kirk 1970).
<i>Rumex salicifolius</i> var. <i>triangulivalvis</i>	Triangle-valve dock	No								
<i>Rumex crispus</i>	Curlyleaf dock	Yes	Southern Tiwa (Jones 1931); Tewa (Castetter 1935)	Zuni (Camazine and Bye 1980); Hispano (Ford 1975; Moore 1977)						
<i>Sagittaria cuneata</i>	Arrow-leaved arrowhead, northern arrowhead	Yes		Navajo (Elmore 1944)						
<i>Salix bebbiana</i>	Bebb willow	No	Navajo (Elmore 1944); Southern Tiwa (Jones 1931); Zuni (Camazine and Bye 1980)	Hispano (Moore 1977)	Pre-Columbian (Dunmire and Tierney 1995)	Pre-Columbian (Dunmire and Tierney 1995); Most Historic Pueblos (Dunmire and Tierney 1995); Ute (Dunmire and Tierney 1997)	Southern Tiwa (Jones 1931); Ute (Dunmire and Tierney 1997); Zuni (Camazine and Bye 1980)	Pre-Columbian, Jicarilla, Navajo, and Ute (Dunmire and Tierney 1997)	Pre-Columbian, Jicarilla, Navajo, and Ute (Dunmire and Tierney 1997)	Inner bark is edible with minimum processing as emergency food, but it is more palatable if dried and ground into flour (Kirk 1970).
<i>Salix eriocephala</i> var. <i>ligulifolia</i> / <i>S. ligulifolia</i>	Strapleaf willow	No								
<i>Salix scouleriana</i>	Scouler willow	Yes	Yes (See comments)	Southern Tiwa (Jones 1931); Zuni (Camazine and Bye 1980)		Pre-Columbian (Dunmire and Tierney 1995)	Pre-Columbian (Dunmire and Tierney 1995); Most Historic Pueblos (Dunmire and Tierney 1995)			Inner bark is edible with minimum processing as emergency food, but it is more palatable if dried and ground into flour (Kirk 1970).
<i>Sambucus racemosa</i> var. <i>microbotrys</i>	Red elderberry	No	Ute (Callaway et al. 1986)	Hispano (Moore 1977)					Pre-Columbian (Nichols n.d.); Ute 30	Berries are edible, especially if cooked. Bark may be used as diuretic or purgative (Kirk 1970).

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<i>Senecio atratus</i>	Tall blacktip ragwort	No		Jémez (Cook 1930); Hopi and Navajo (Dunmire and Tierney 1997); Western Keres (Swank 1932); Zuni (Stevenson 1915); Hispano (Moore 1977)					Pre-Columbian (Magers 1986b)	
<i>Senecio bigelovii</i> var. <i>bigelovii</i>	Nodding ragwort, Bigelow's groundsel	No								
<i>Senecio bigelovii</i> var. <i>hallii</i>	Hall's ragwort	No								
<i>Senecio eremophilus</i> var. <i>kingii</i>	King's ragwort	No								
<i>Senecio wootonii</i>	Wooton's ragwort	No								
<i>Shepherdia canadensis</i>	Buffalo berry	No	Ute (Dunmire and Tierney 1997)	Navajo (Dunmire and Tierney 1997)						Bitter berries are edible if cooked and sweetened (Kirk 1970).
<i>Sidalcea candida</i> var. <i>candida</i>	White checkerberry	No	Yes (See comments)	Navajo (Dunmire and Tierney 1997)						Aboveground part of plant is edible as cooked green (Kirk 1970).
<i>Silene drummondii</i> var. <i>drummondii</i>	Drummond's campion, catchfly	No								Young shoots may be used as a potherb.
<i>Silene menziesii</i> var. <i>menziesii</i>	Menzie catchfly	No	Yes (See comments)	Navajo (Dunmire and Tierney 1997)						The complete aboveground part of plant of some species is edible if boiled (Kirk 1970).
<i>Silene scouleri</i> var. <i>pringlei</i>	Hall's catchfly	No								Seeds may be parched and ground. Young plants may be used as a potherb (Kirk 1970).
<i>Sisymbrium altissimum</i>	Tumble mustard	No	Yes (See comments)	Navajo (Dunmire and Tierney 1997)						
<i>Sisymbrium loeselii</i>	Loesel thimble mustard	No								

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<i>Solanum pycnanthum</i>	Eastern black nightshade	No	Eastern Keres (Castetter 1935; White 1942); Hopi (Dunmire and Tierney 1997); Navajo (Dunmire and Tierney 1997); Southern Tiwa (Dunmire and Tierney 1995; Jones 1931); Western Keres (Swank 1932); Zuni (Stevenson 1915); Most Historic Pueblos (Dunmire and Tierney 1995)	Navajo (Elmore 1944); Zuni (Stevenson 1915); Most Historic Pueblos (Dunmire and Tierney 1995)	Eastern Keres (Lange 1959)					Tubers are edible when cooked (Kirk 1970). Zuni eat <i>S. triflorum</i> berries even though they are said to be poisonous.
		Yes	Western Keres (Castetter 1935); Zuni (Stevenson 1915)							
<i>Solanum triflorum</i>	Cutleaf nightshade	No	Eastern Keres (Castetter 1935; White 1942); Hopi (Dunmire and Tierney 1997); Navajo (Dunmire and Tierney 1997); Southern Tiwa (Dunmire and Tierney 1995; Jones 1931); Western Keres (Swank 1932); Zuni (Kirk 1970; Stevenson 1915); Most Historic Pueblos (Dunmire and Tierney 1995)	Navajo (Elmore 1944); Zuni (Stevenson 1915); Most Historic Pueblos (Dunmire and Tierney 1995)	Eastern Keres (Lange 1959)					Tubers are edible when cooked (Kirk 1970). Zuni eat <i>S. triflorum</i> berries even though they are said to be poisonous.
		Yes								

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<i>Solidago missouriensis</i> var. <i>missouriensis</i>	Missouri goldenrod	No	Hopi (Castetter 1935)	Hopi (Whiting 1939); Navajo (Dunmire and Tierney 1997); Western Keres (Swank 1932); Zuni (Stevenson 1915)			Western Keres (Swank 1932)			Young leaves may be used as a potherb. Dried leaves and fully expanded flowers may be brewed for tea (Kirk 1970).
<i>Solidago nana</i>	Baby goldenrod	No								
<i>Solidago nemoralis</i> var. <i>longipetiolata</i>	Gray goldenrod	No								
<i>Solidago wrightii</i> var. <i>adenophora</i>	Wright's goldenrod	No								
<i>Sonchus arvensis</i>	Field milk thistle	Yes	Yes (See comments)	Hispano (Ford 1975)						Young leaves and stems may be used for greens (Kirk 1970).
<i>Sparganium angustifolium</i>	Narrow-leaf bur reed	No	Pre-Columbian? (Jones and Fonner 1954)							Bulbous stem base and rhizome tubers are edible when cooked (Kirk 1970).
<i>Sparganium emersum</i>	Common bur reed	No								
<i>Sphaeralcea fendleri</i> var. <i>fendleri</i>	Fendler's globe mallow	No	Pre-Columbian? (Dunmire and Tierney 1995, 1997); Hopi (Whiting 1939); Navajo (Dunmire and Tierney 1997)	Pre-Columbian (Dunmire and Tierney 1995); Hopi (Dunmire and Tierney 1997); Most Historic Pueblos (Dunmire and Tierney 1995); Navajo (Dunmire and Tierney 1997); Hispano (Moore 1977)						Buds are edible (Hudspeth 1997).
<i>Sporobolus cryptandrus</i>	Sand dropseed	No	Pre-Columbian (Dunmire and Tierney 1995, 1997); Hopi (Dunmire and Tierney 1997); Navajo (Vestal 1952)	Navajo (Vestal 1952)					Pre-Columbian (Magers 1986a)	Seeds may be eaten raw but are best if parched and ground into flour for baking (Kirk 1970).
<i>Stellaria longipes</i> var. <i>longipes</i>	Long-stalk chickweed	No	Yes (See comments)							Tips of young plants may be boiled like spinach (Kirk 1970). Roots also are edible (Hudspeth 1997).
<i>Stipa comata</i> var. <i>intermedia</i>	Needle-and-thread	No	Pre-Columbian (Bohrer 1975)							

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<i>Stipa lettermanii</i>	Letterman's needlegrass	No	Pre-Columbian (Bohrer 1975)							
<i>Symphoricarpos oreophilus</i>	Mountain snowberry	No	Pre-Columbian (Minnis and Ford 1977)	Navajo (Wyman and Harris 1951)						
<i>Taraxacum laevigatum</i>	Red-seeded dandelion	No	Tewa (Robbins et al. 1916)	Tewa (Robbins et al. 1916); Western Keres (Swank 1932); Hispano (Ford 1975; Moore 1977)						Flowers are edible if boiled to remove bitterness. Roots are edible raw or cooked. They also may be used to make tonics, mild laxatives, and diuretics (Kirk 1970).
<i>Taraxacum officinale</i>	Common dandelion	Yes								
<i>Taraxacum taraxacum</i>	Common dandelion	No								
<i>Thalictrum fendleri</i>	Fendler's meadow rue	Yes	Yes (See comments)	Navajo (Wyman and Harris 1941); Western Keres (Swank 1932); Hispano (Ford 1975)						Plants produce edible greens (Hudspeth 1997).
<i>Thelypodium wrightii</i> var. <i>wrightii</i>	Wright's mustard	Yes	Most Historic Pueblos (Dunmire and Tierney 1995)				Tewa (Robbins et al. 1916)			
		No		Navajo (Vestal 1952)						
<i>Townsendia eximia</i>	Townsend's aster	No		Navajo (Dunmire and Tierney 1997)			Navajo (Bryan and Young 1940)			
<i>Trifolium longipes</i> var. <i>reflexum</i>	Long-stalked clover	No		Hispano (Ford 1975)						
<i>Trifolium pratense</i> var. <i>pratense</i>	Red clover	No								
<i>Trifolium repens</i>	White clover	No								
<i>Trifolium wormskoldii</i> var. <i>artzoniticum</i>	Springbank clover	No								

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<i>Typha angustifolia</i>	Narrow-leaf cattail	Yes	Yes (See comments)					Pre-Columbian (Lang 1986)		Starchy root is edible if roasted, boiled, or dried and ground into meal (Kirk 1970). Pollen and greens also may be eaten (Hudspeth 1997). Cattail down may be used to dress wounds, pad cradleboards, and stuff pillows (Kirk 1970).
		No	Hopi (Whiting 1939); Navajo (Vestal 1952)	Navajo (Dunnire and Tierney 1997)				Navajo (Vestal 1952); Ute (Dunnire and Tierney 1997)		
<i>Urtica dioica</i> var. <i>procera</i>	Common stinging nettle	No	Yes (See comments)	Navajo (Wyman and Harris 1941)				Ute (Callaway et al. 1986)		Boiled young shoots and stems may be eaten like spinach. Roots yield yellow dye (Kirk 1970).
<i>Vaccinium myrtillos</i> var. <i>oreophilum</i>	Myrtle whortleberry	Yes	Yes (See comments)							Berries are edible either raw or cooked (Kirk 1970). Leaves also may be eaten (Hudspeth 1997).
<i>Valeriana edulis</i> var. <i>edulis</i>	Thickleaf valerian, tobacco root	Yes	Yes (See comments)							Roots are edible if roasted for a day. Cooked roots then may be eaten without further processing or may be used to make soup or ground into flour for bread. Seeds edible raw but best if parched (Kirk 1970).
<i>Verbascum thapsus</i>	Common mullein	Yes		Hispano (Ford 1975; Moore 1977)						
<i>Verbena macdongalii</i>	Mountain blue vervain	Yes	Yes (See comments)	Hispano (Ford 1975; Moore 1977)						Seeds may be roasted and ground; best if first leached (Kirk 1970).
		No		Navajo (Dunnire and Tierney 1997)						
<i>Veronica americana</i>	American brooklime	No	Yes (See comments)	Navajo (Vestal 1952)						Leaves and stems may be used as salad greens and potherbs (Kirk 1970).
<i>Veronica peregrina</i> var. <i>xalapensis</i>	Purslane speedwell	No								

VCNP Species ^a	Common Name	Exact Species Match? ^b	Food or Beverage	Medicine	Smoking or Chewing	Construction or Fuel	Dyes, Pigments, Tanning, Soap, or Crafts	Fiber, Cordage, Basketry or Matting	Tools	Edible Parts and Other Comments
<i>Vicia americana</i> var. <i>americana</i>	American vetch	Yes	Eastern Keres (Castetter 1935); Western Keres (Swank 1932)	Pre-Columbian? (Jones and Fonner 1954); Navajo (Vestal 1952)						Young stems and seeds may be boiled or baked (Kirk 1970).
<i>Viguiera multiflora</i> var. <i>multiflora</i> / <i>Helioeris multiflora</i> var. <i>multiflora</i>	Showy goldeneye	No		Navajo (Vestal 1952)						
<i>Viola adunca</i>	Early blue violet, western dog violet	No	Yes (See comments)	Hispano (Ford 1975)						Leaves and stems may be eaten as greens (Kirk 1970). Buds also are edible (Hudspeth 1997).
<i>Viola canadensis</i>	Canadian violet	No								
<i>Viola pedatifida</i>	Birdfoot violet	No		Navajo (Vestal 1952)						
<i>Woodсия oregana</i> var. <i>cathartiana</i>	Western cliff fern	No								
<i>Yucca baccata</i> var. <i>baccata</i>	Broadleaf yucca	Yes (See comments)	Pre-Columbian (Fry and Hall 1986); Most Historic Groups (Dunmire and Tierney 1995)	Hispano (Ford 1975; Moore 1977)			Most Historic Pueblos (Dunmire and Tierney 1995); Hopi, Navajo, and Ute (Dunmire and Tierney 1997)	Pre-Columbian (Adovasio and Gunn 1986; Dunmire and Tierney 1997); Hopi (Dunmire and Tierney 1997); Most Historic Groups (Bell and Castetter 1941; Dunmire and Tierney 1995)	Pre-Columbian (Dunmire and Tierney 1997); Most Historic Pueblos (Dunmire and Tierney 1995)	Large, pulpy fruits may be eaten raw, roasted, dried, or ground into meal. Seeds, flowers, buds, and young flower stalks also are edible raw, boiled, or roasted (Kirk 1970).
<i>Zigadenus elegans</i>	Mountain death camas	No	Navajo (Wyman and Harris 1951)	Navajo (Dunmire and Tierney 1997)						

^a Genera are listed in alphabetical order. Species within genera usually follow alphabetical order; however, some deviations from this rule occur to simplify data presentation among taxa with similar documented uses.

^b "Exact Species Match" signifies whether the published ethnobotanical references specifically identify plant species known to occur in the VCNP ("yes") or describe plant uses documented by genera or a closely related species ("no").

Table 5.2. Summary VCNP ethnobotanical inventory.

VCNP species		Exact species match? ^a	
Major Uses	Raw Count	Yes	No
Raw Count	350	125	225
Food or Beverage	290	87	203
Medicine	286	104	183
Smoking or Chewing	25	11	14
Construction or Fuel	30	12	18
Dyes, Pigments, Tanning, Soap, or Crafts	67	27	40
Fiber, Cordage, Basketry or Matting	18	8	10
Tools	58	22	36

^a “Exact Species Match” signifies whether the published ethnobotanical references specifically identify plant species known to occur in the VCNP (“yes”) or describe plant uses documented by genera or a closely related species (“no”).