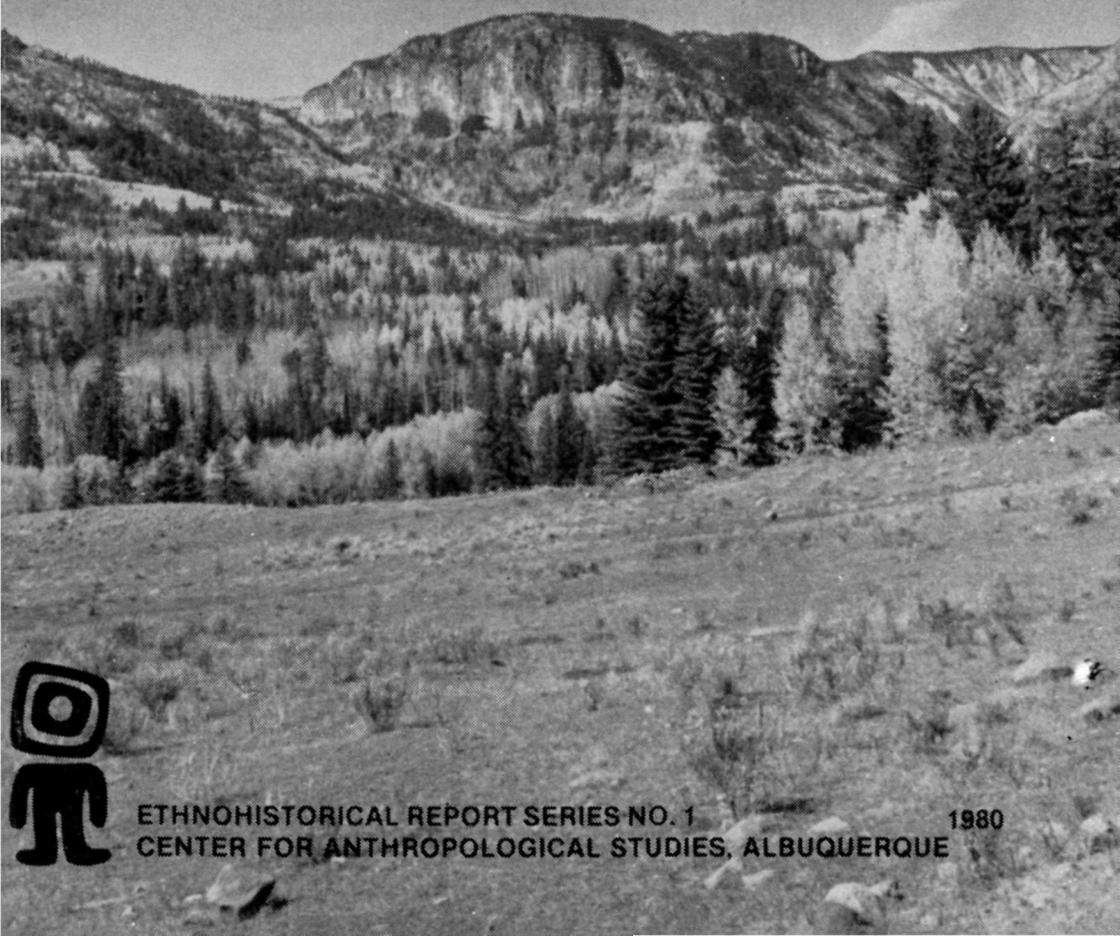


INDIAN USE OF THE SANTA FE NATIONAL FOREST: A DETERMINATION FROM ETHNOGRAPHIC SOURCES

Eva Friedlander
Pamela J. Pinyan



ETHNOHISTORICAL REPORT SERIES NO. 1
CENTER FOR ANTHROPOLOGICAL STUDIES, ALBUQUERQUE

1980

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A DETERMINATION FROM ETHNOGRAPHIC SOURCES**

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Various data for this report were collected with the aid of individuals employed by different institutions around the state. Reference materials were provided by the Laboratory of Anthropology in Santa Fe, librarians at both the Zimmerman and Clark-Field libraries on campus at the University of New Mexico (UNM), and by Dr. Harry W. Basehart, Professor Emeritus at UNM's Department of Anthropology. 1978-1979 census information was supplied by June Rock of the Northern Pueblos Agency in Santa Fe, Roberto Veneno of the Jicarilla Bureau of Indian Affairs, and Angie Loretta of the Albuquerque Bureau of Indian Affairs.

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Apologies are extended to anyone whose contribution to this project has been inadvertently omitted here. The senior author is presently out of the country however and, therefore, a more complete acknowledgement has not been possible. We are truly grateful though for all of the cooperation afforded this project.

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ABSTRACT

According to provisions of a contract agreement negotiated with the Santa Fe National Forest, the Center for Anthropological Studies has completed an initial literature search of how different resources of this forest have been used by several of the neighboring Indian groups. Ethnographic data were emphasized and the following groups were considered: the Cochiti, Jemez, Jicarilla Apache, Nambe, Pojoaque, San Ildefonso, San Juan, Santa Clara, Santo Domingo, Tesuque, and Zia Indians. This report concludes that most of these groups utilize the Santa Fe Forest for religious purposes; and that wood, clay, plants, animals, and rocks and minerals are the most often utilized natural resources.

INDIAN USE OF THE SANTE FE NATIONAL FOREST: A DETERMINATION FROM ETHNOGRAPHIC SOURCES

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I. INTRODUCTION AND SCOPE OF STUDY

The impetus of this project was a planning criterion of the National Forest Service that directs each forest to prepare overviews of known data relevant to the history, prehistory, and ethnography of its particular area. Accordingly, a contract was negotiated, on August 8, 1979, between the Santa Fe National Forest and the Center for Anthropological Studies (Center) to document the ethnographic use of the Santa Fe Forest by the 11 Indian groups that immediately surround it. As Forest Archaeologist, Landon D. Smith administered this contract for the Forest Service. James B. Rodgers served as the project Principal Investigator for the Center.

The first phase or core aspect of this project was completed by the senior author between August 8th and September 12th, 1979. It consisted mainly of the collection and documentation of the ethnographic information presented in Chapter III. Since Friedlander was previously scheduled to undertake anthropological research in India, the junior author was asked to edit her manuscript and to clothe it in an environmental setting which would also address, in general terms at least, the natural resource variability of the Santa Fe National Forest. The bulk of Pinyan's work is found in the following chapter.

Emphatically, this report is an overview of the literature, and as such it is the first and only attempt to review and synthesize material concerning the use of the Santa Fe National Forest by Indian groups in the locality. Limitations of the literature however, as well as of time and budget, sharply restrict the extent of our knowledge on the subject and consequently the scope of this report. The limitations are several in nature.

First, it must be emphasized that this entire report has been done solely from archival research, thus both Chapters II and III depend exclusively upon the work of others and neither of the authors performed any field work on their own. The Life Zone data were compiled primarily from the work of Bailey (1913) and that of Castetter (1956). Therefore, some of the conclusions drawn

may not hold true upon actual observation — the listed exclusive plant types of these Zones may not conform to the real environmental situation, and the faunal dispersion might be observed to differ from actual information presented herein.

Next, ethnographic work in the Southwest has, from its inception in the early part of this century, been restricted due to the reluctance of the Native American population to accept ethnographers on their reservations. Indeed, after initial research was published in the early part of the century, often revealing information given in confidence, reluctance became avoidance. The result was that the early and classic ethnographic work of Parsons (1929), White (1935), Stevenson (1894), etc., was followed by a gap of 30 to 40 years during which almost no field work was carried out. A few exceptions exist such as the work of Whitman (1947) at San Ildefonso, or Dozier (1961, 1964, 1969, 1970, 1972), himself a Santa Clara Indian, but such work was rare. In the late 1950's and 1960's we find research slowly beginning once again with the work of Lange (1959), Ford (1969), and Ortiz (1969), among others. Suspicions continued however, and the published literature is sparse.

In addition to a general reluctance on the part of the Indians to reveal information considered private, including often sacred and secret place names, ethnographic research for the most part does not necessarily concern itself with the exact location of hunting, fishing, and gathering spots or ritual sites. Again, some exceptions do exist. Harrington, in his linguistic prowess was at pains, often unsuccessfully, to discover, just where certain species of plants and animals could be found (Henderson and Harrington 1914; Robbins and Harrington 1916), and the exact location of the geographical terms he recorded for the Tewa. His ethnography of the Tewa provides one of the most detailed lists of relevant places in the literature (Harrington 1916). Later, Lange (1959) collected considerable locational data, but these are rare indeed. As for recent information, the most extensive comes from the tribes themselves prepared by historians and anthropologists for land claims testimony (Ellis 1956, 1962).

It should be clear, therefore, that the information for this report is sometimes sketchy and has been ferretted out of work not written with this purpose in mind. It has been gathered from sources ranging over one-half a century in time, and some inferences have been made by assuming a continuing present-day use of certain areas. These assumptions can only be verified through further investigation.

The tense of the source quoted or paraphrased is retained for the most part; that is the report is written in the ethnographic present, as if sources from the past were contemporary with those written more recently. As a result the report should be read as more suggestive in nature than as a body of hard data about present-day use. The extent of inference can largely be realized by looking at the dates of the sources used.

Another set of limitations has to do with the nature of land use. It will occur to the reader that if one only knew the vegetation of the forest area and the use made of various plant, animal, and mineral substances, then one could easily infer how the forest is used. This situation is not as straightforward as it might seem, however. First, many of these plants and animals also occur outside the Santa Fe National Forest, often on reservation land itself. Second, and perhaps more important, tradition, religion, and ritual often determine the use of one area over another such that they take precedence over what may appear to outsiders as the more practical choices. The most that may be said, in some cases, is that there is a possibility of Indian use of certain resources located within the Santa Fe National Forest. For example, the Cochiti Indians hunt in an area that they have traditionally used, in preference to other equally or more easily accessible areas with more extensive game (Lange 1959:138). The extent to which the mere presence of a resource determines its use is unclear. In short, a detailed resource map of the forest without knowledge of how the environment is perceived and categorized by the population utilizing it cannot be considered flawless. A model for the investigation of the interrelationships of culture and resource use is Ford's (1969) study of San Juan. Unfortunately for the purposes of this report, however, little locational data are provided in that study.

Utilization of the Santa Fe National Forest has also certainly changed over time. Access is frequently gained by obtaining permits from the Forest Service. For example, grazing permits have been provided when reservation land proves insufficient (Smith 1969; Lange 1959) and, similarly, permits are necessary for cutting timber for vigas and other purposes. Such usage shifts with need and, since much of the land is considered by the Indians to be rightfully theirs, one can expect that a considerable amount of illegal usage takes place. The extent to which trespass is possible depends on the stringency with which local district rangers enforce access. Information on this subject can, of course, only come from examination of permits over time, interviews with knowledgeable forest rangers, and court records where right to access has been under dispute. It was recognized that it would be beyond the scope of this particular report to deal with these sources, but that they would be fruitful avenues for further investigation.

Keeping these limitations in mind, then, and within the parameters of a purely ethnological search, a balancing of fact and inference provides an important first step in determining contemporary use of the area under question.

For the purposes of this report, the Indian groups will be dealt with in terms of their geographic location which roughly coincides with linguistic affiliation. The pueblos along the Rio Grande that are included here can be divided into those that speak Tewa and those that speak Keres. From north to south, the language of San Juan, Santa Clara, San Ildefonso, Nambe, Pojoaque, and

Tesuque is Tewa. Of the southern Rio Grande pueblos, to be dealt with here, Keres is spoken at Cochiti and Santo Domingo. Included in this Keres-speaking group is Zia, located farther west along the Jemez River. Last among the pueblos to be dealt with here is Zia's neighbor, Jemez, the only pueblo in which Towa is spoken today. Zia and Jemez will be dealt with together due to their geographic proximity.

The languages of Tewa and Towa (as well as Tiwa whose speakers will not be considered here) are related languages, part of one language family — the Tanoan — derived from the Azteco-Tanoan language stock. Keres is a distinct and unrelated language. In addition to the Pueblos, this report includes the Jicarilla Apache in northern New Mexico who speak a dialect of Southern Athabascan.

II. SANTA FE NATIONAL FOREST STUDY AREA

As indicated in Figure 1, the present study area forms a hexagonal area that occupies most of north-central New Mexico. Its total acreage of 17,204 square miles includes the 12,882 square miles that surrounds the 11 project Indian reservations (a cumulative total of about 1,848 square miles) and the 2,474 square miles of the Santa Fe National Forest itself. This tremendous area encompasses all of Rio Arriba, Taos, Los Alamos, and Santa Fe Counties; and at least a portion of the following: San Juan, Mora, San Miguel, Guadalupe, Torrance, Bernalillo, Sandoval, and McKinley.

The relative location of these counties and the major cities within them are shown in Figure 2. The latter include Pena Blanca, Cuba, Santa Fe, Pecos, Las Vegas, Mora, Taos, and Chama. In addition to the pueblos of the same name, the major towns within the different reservations are Dulce, Nambe, Espanola, Domingo, and Santa Clara. Gilman, Jemez Springs, Los Alamos, Jarosa, Gallina, Gallina Plaza, and Vallecitos de Los Indios are the principal towns across the western one-half of the Santa Fe National Forest; Lower and Upper Colonias, Lower and Upper La Posada, El Macho, Tres Lagunas, Tererro, Cowles, Rociada, Upper Rociada, and Glascon are the major ones across its eastern counterpart.

Figure 2 also shows the major roads and highways of the study area. Accordingly, it seems that the western part of the Santa Fe National Forest is the more accessible and therefore it is probably used more frequently by the Indian groups in question. The following routes provide the different Indian groups with the quickest access to the Santa Fe National Forest: State

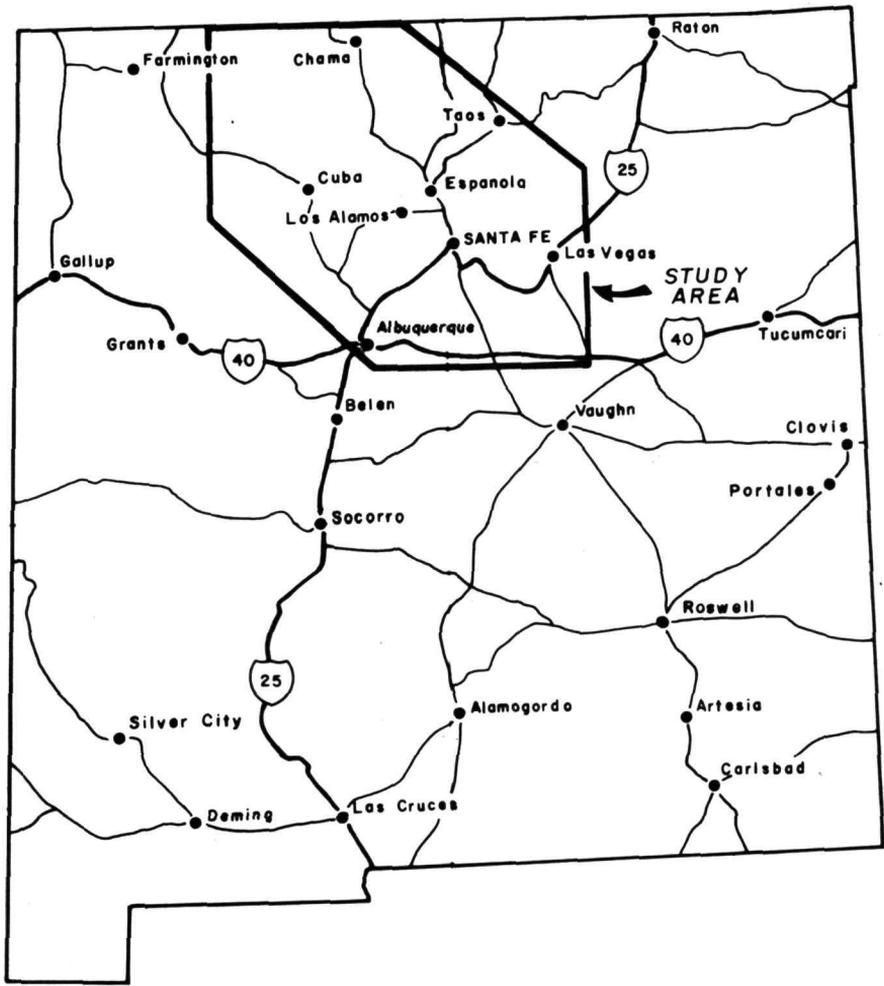


Figure 1. Geographic location of study area in northern New Mexico.

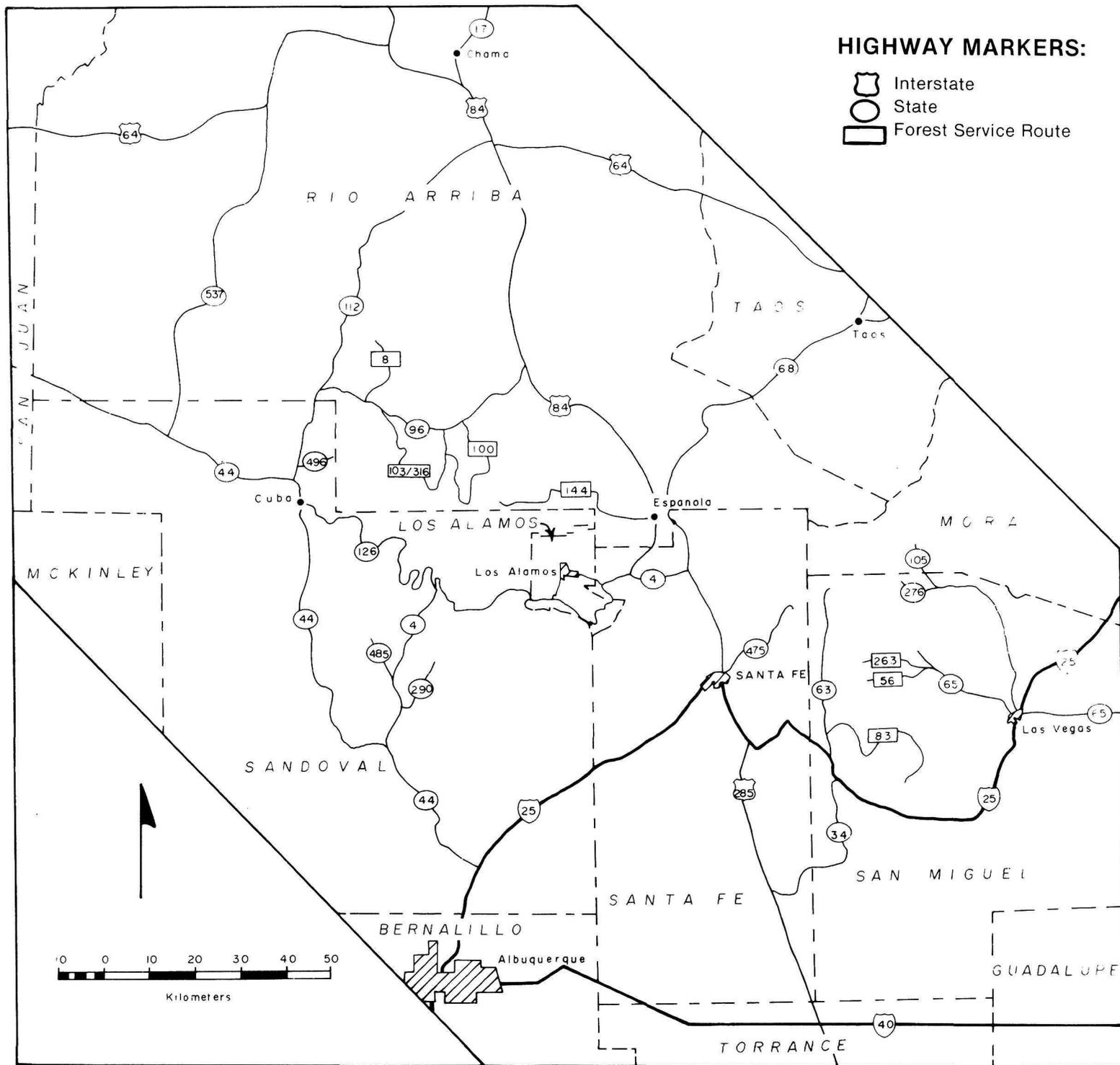


Figure 2. Counties, roads, and major cities of the study area.

highways 96,112, and 126 for the Jicarilla Apache; State 4, 290, and 485 for the Jemez; State 84 for the San Juan; State 4 for the Santa Clara, San Ildefonso, Zia, and Pojoaque; and State 34,50,63,223, and 475 for the Pojoaque, Nambe, and Tesuque Indians. Forest Routes 8, 100, 144, 268, 316, and 394 provide some additional access and; more indirectly, so do State highways 65, 105, 156, 263, and 276.

Physiographically, the study area includes at least a part of the four major provinces of New Mexico — the Great Plains, the Southern Rocky Mountains, the Colorado Plateaus, and the Basin and Range (Fenneman 1931). Lesser topographic features here include La Bajada, La Majada and Glorieta Mesas, and the Valle Grande and Valle Caldera in the Jemez Mountains. This region is generally mountainous with numerous river valleys, mesas, and plateaus. In elevation, it varies from about 4,920 feet to 13,102 feet above mean sea level (asl).

The major mountain systems of this region include the Sangre de Cristo, Nacimiento, Jemez, San Juan, San Pedro, and the Sandia Mountains. Within the Santa Fe National Forest, the major mountain peaks on the west side include Dead Man Peak, Polvadera Peak, Gallina Peak, Gallina Mountain, Capulin Peak, Chicoma Mountain, San Miguel Mountain, Aspen Peak, Bearhead Peak, Ruiz Peak, Bear Springs Peak, Boundary Peak, St. Peter's Dome, Guaje Mountain, San Antonio Mountain, Redondo Peak, Rabbit Mountain, Pajarito Mountain, Montoso Peak, Ortiz Mountain (Pankey Peak), Colorado Peak, Tetilla Peak, Caballo Mountain, Nacimiento Peak, Deer Mountain, Mining Mountain, Big Mountain, and Borrego Dome. Those on the east side include Middle Truchas Peak, Truchas Peak, the Dome, Pyramid Peak, Round Mountain, Pecos Baldy, East Pecos Baldy, Grass Mountain, Redondo Peak, Sierra Mosca, Santa Fe Baldy, Lake Peak, Penitente Peak, Aspen Peak, Thompson Peak, Atalaya Mountain, Rosilla Peak, El Cielo Mountain, Elk Mountain, Black Mountain, Hermit Peak, Spring Mountain, and Barillas Peak.

Parenthetically, it should be noted here that it is not clear whether Mount Redondo and Redondo Peak are one and the same. Also, it is assumed that Abiquiu Peak and Polvadera Peak are the same because the location of the former corresponds fairly well with the latter. There are some other geographical places mentioned later in this report that could not be located through any of the available sources. These include Rancho Viejo, Nipple Mountain, Hawk Mountain, Sandy Lake, Cochiti Mekernateku, and Santa Ana Creek.

The major hydrologic systems of this region are the Mora River Basin (of the Arkansas River Basin), the Pecos River Basin (above the Gallinas River),

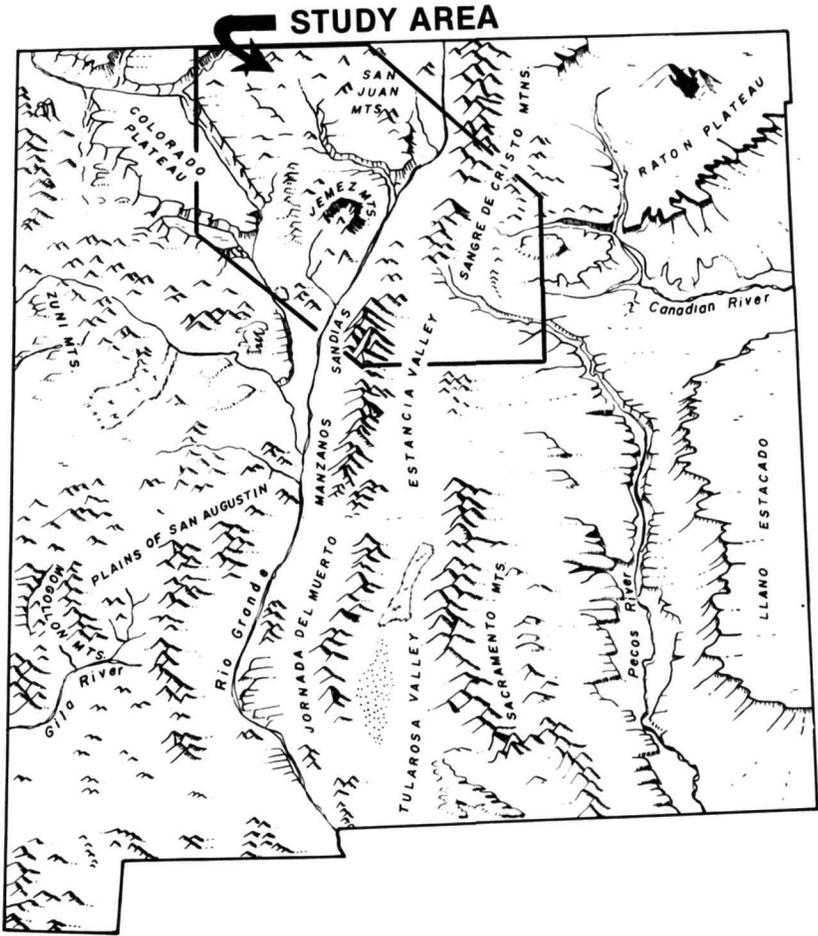


Figure 3. Physiographic location of study area in northern New Mexico (adopted from Beck and Haase 1969).

the Rio Chama Basin, the Rio Puerco Basin (above the Rio San Jose), the Jemez River Basin, and the Rio Grande Basin System (Bachman 1977:389-390). The major rivers are thus, the Rio Grande, Rio Chama, Rio Puerco, Pecos River and Jemez River. Minor rivers include the Rio de las Vacas, Rio Cebolla, Rio Gallina, Santa Fe River, Pojoaque River, and Rio Nambe (Figure 6).

The major lakes and reservoirs on the west side of the national forest are Fenton Lake, Salazar Lake, Williams Lake, Dry Lake, San Gregorio Reservoir, Guaje Reservoir, and Portales Pond. Those on the east side are Monastery Lake, Stewart Lake, Katherine Lake, Spirit Lake, Lake Johnson, Nambe Lake, Santa Fe Lake, Joe Vigil Lake, Truchas Lake, Middle Fork Lake, North Fork Lake, Lost Bear Lake, Pacheco Lake, Santiago Lake, Enchanted Lake, Lost Lake, Pecos Baldy Lake, McClure Reservoir, Nichols Reservoir and Twomile Reservoir.

Geologic materials within the project area date from the Precambrian to the Quarternary. Within the Santa Fe National Forest, the available minerals include silver, lead, zinc, copper, sulfur, limestone and dolomite (Bachman 1977). The major rock types found here are granite, limestone, and sandstone (Puffer 1978:1). The surface soils within this region are mostly loams with some rock outcrops and also a little loamy sand and clay. All Indian reservations and the Santa Fe National Forest itself contain outcrops and loams. Loamy sands are found within the western part of the forest and all of the reservations. Clay is found in the western part of the study area, that is, in the western part of the forest and in the reservations of the Jicarilla Apache, Jemez, and Zia Indians (Maker et al. 1971a, 1971b, 1971c, 1972, 1973).

The study area can be divided into at least three major climatic zones: the semi-arid, sub-humid, and humid. Depending on the elevation, the amount of precipitation may range from 8 to 35 inches annually with the greater part falling in the summer months. Also, the growing season ranges from 80 to 160 days per year, again depending on elevation. The average annual temperature is 48°F.

Semi-arid areas are generally those places above the desert and below the mountains, i.e., the grassland or steppe areas. Sub-humid areas are hilly to mountain forested areas (woodlands), and humid areas are generally found

above timberline on the highest mountains (Tuan et al. 1973). Therefore, the study area is mostly sub-humid with a fair-sized area being semi-arid. A very small proportion of it may be designated humid. The Santa Fe National Forest itself is sub-humid for the most part and most of the reservations in question are within semi-arid zones.

In northern New Mexico there exist five Life Zones. As defined by Bailey

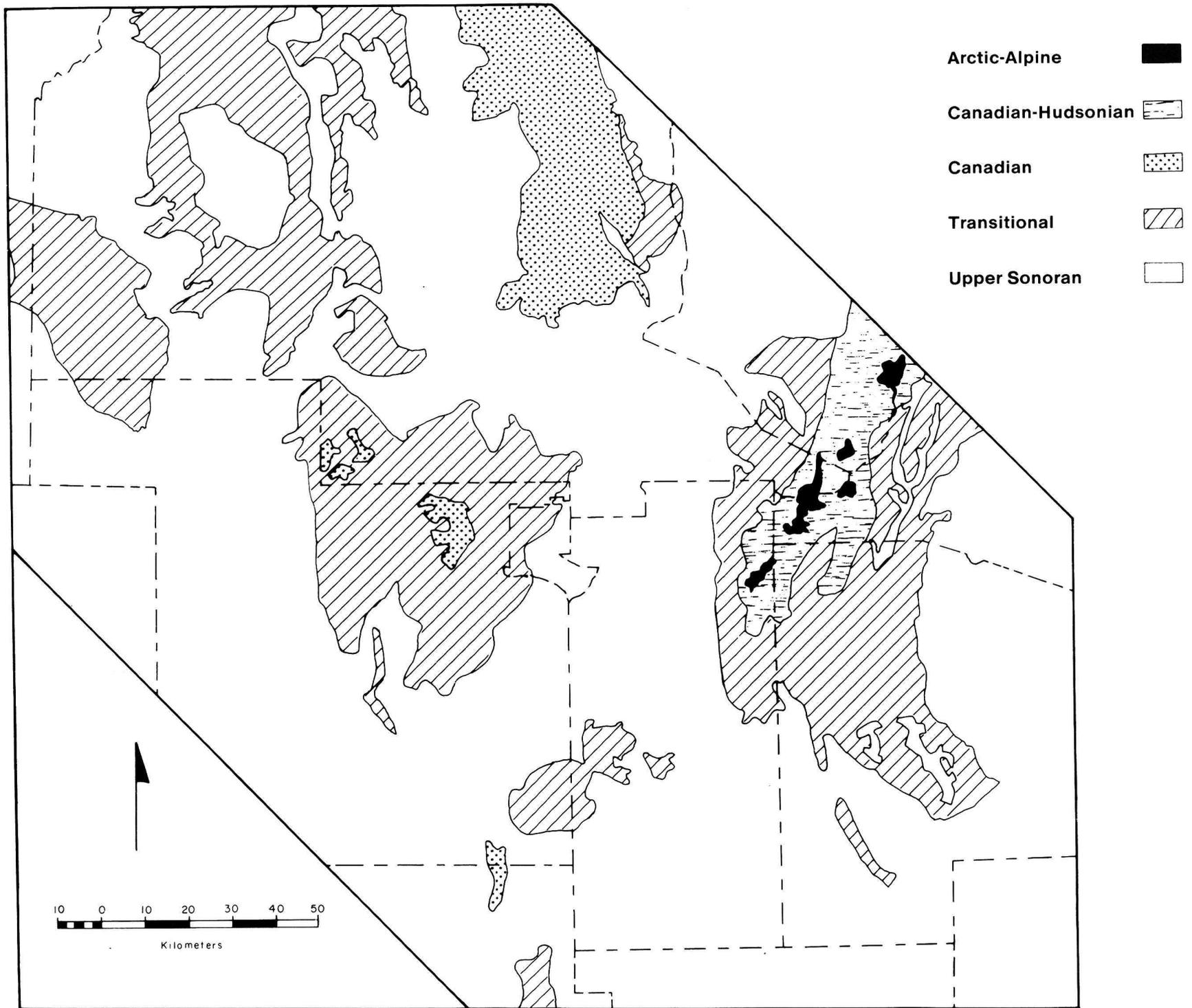


Figure 4. Major life Zones of the study area.

TREES

UPPER SONORAN

Juglans sp. (walnut)
Platanus sp. (sycamore)
Negundo sp. (elder)
Fraxinus sp. (ash)
Cercocarpus sp. (mountain mahogany)
Morus sp. (mulberry)

TRANSITION

Cupressus sp. (cypress)
Betula sp. (birch)
Robinia sp. (locust)

CANADIAN

HUDSONIAN

ARCTIC-ALPINE

SHRUBS

Forestiera sp. (adelia)
Celtis sp. (hackberry)
Cowania sp. (rose)
Fallugia sp. (Apache plume)
Choisya sp. (starleaf)
Farsellesia sp.
Garrya sp. (silk-tassel)
Philadelphus sp. (mock orange)
Fendlera sp.

Rhamnus sp. (buckthorn)
Grossularia sp. (gooseberry)
Physocarpus sp. (ninebark)
Crataegus sp. (thornapple)

Pachystima sp. (myrtle)
Berberis sp. (Oregon grapes)
Arctostaphylos sp. (kinnikinnick)
Sorbus sp. (ash)
Lonicera sp. (honeysuckle)

Ptela sp. (trefoil)
Ephedra sp. (mormon tea)
Lycium sp. (boxthorn)
Sarcobatus sp. (greasewood)
Atriplex sp. (salt bush)
Chrysothamnus sp. (rabbit brush)
Chrysoma sp. (rabbit brush)
Gutierrezia sp. (snakeweed)
Tetradumia sp. (horse brush)
Crassinia sp.
Ximenesia sp.
Mamillaria sp. (cactus)
Echinocereus sp. (hedgehog)
Sclerocactus sp. (cactus)
Yucca sp. (yucca)

HERBS

Eurotia sp. (winterfat)
Croton sp. (croton)
Stillingia sp. (spurge)
Argemone sp. (poppy)
Mimosa sp.
Acacia sp. (catclaw)
Sphaeralcea sp. (globe mallow)
Chamaecrista sp.
Guara sp.
Hoffmanseggia sp.
Parosela sp. (dalea)
Meibomia sp. (trefoil)
Polygala sp. (milkwort)
Dolicholus sp.
Purshia sp.
Coloradoa sp.
Mentzelia sp. (stickleaf)
Cologania sp.
Cirsium sp. (thistle)
Petalostemum sp. (clover)
Liatrus sp. (blazing star)
Parryella sp.
Krameria sp.

Holodiscus sp. (ocean spray)
Monarda sp. (horsemint)
Edwinia sp. (Edwinia)
Svida sp. (cornel)
Jamesia sp.
Solidago sp. (goldenrod)
Humulus sp. (hop)

Drymocallis sp. (cinquefoil)
Veratrum sp. (hellebore)
Aconitrum sp. (monkshood)
Linnaea sp. (twinflower)
Pyrola sp. (wintergreen)
Moneses sp. (moneses)
Chimaphila sp. (pipsissewa)
Parnassia sp. (grass-o-parnassus)
Frasera sp. (frasera)
Aragallus sp. (vetch)
Elephantella sp. (elephant head)
Actaea sp. (baneberry)
Viola sp. (violet)
Dodecatheon sp. (shooting star)
Sisymbrium sp. (mustard)
Arnica sp. (arnica)

Agoseris sp. (dandelion)
Helianthella sp.
Caltha sp. (elks-lip)
Zigadenus sp. (camas)
Haplopappus sp.
Stellaria sp.
Primula sp. (primrose)
Cerastium sp. (chickweed)
Allium sp. (onion)
Arenaria sp. (sandwort)
Dugaldea sp. (Dugald)
Veronica sp. (speedwell)
Heuchera sp. (alum root)
Antennaria sp. (pussy toes)

Eritrichium sp. (alpine forget-me-not)
Claytonia sp. (arctic spring beauty)
Ranunculus sp. (buttercup)
Paronychia sp. (Whitlow-wort)
Papaver sp. (Colorado poppy)
Saxifraga sp. (saxifrage)
Leptasea sp. (saxifrage)
Besseyia sp. (kitten tails)
Sedum sp. (stonecrop)
Oxyria sp. (sorrel)
Silene sp. (catchfly)
Alsinopsis sp. (sandwort)
Androsace sp.
Aragallus sp. (Parry loco)
Draba sp. (Whitlow cress)
Ligusticella sp. (angelica)
Oreoxis sp. (cymnopteris)
Tonestus sp.

GRASSES

Buchloe sp. (buffalo grass)
Erioneuron sp.
Nazia sp.
Epicampes sp.
Eatonia sp. (Eaton grass)
Puccinella sp. (meadow grass)
Chloris sp. (prairie chloris)
Trichloris sp.
Eriocoma sp. (Indian millet)

Savastana sp. (holy grass)
Blepharoneuron sp. (pine dropseed)
Melica sp. (melic grass)
Panicularia sp. (manna grass)
Danthonia sp. (oat grass)
Alopecurus sp. (foxtail)

Calamagrostis sp. (reed grass)
Avena sp. (oat grass)

Figure 5. Exclusive occurrence of plants in the study area, by Life Zones.

(1913), they are known as the Upper Sonoran, Transition, Canadian, Hudsonian and Arctic-Alpine. The definitions of these zones are based primarily on flora but they also include fauna. Their relative locations have been shown in Figure 4.

The Upper Sonoran Zone occurs generally from about 4,000 to 8,000 feet asl and it consists mainly of plains and foothills. Its climate is mild and arid with enough precipitation to support grassland communities but little else. Characteristic plants that occur exclusively in this zone include the following: pinon, mountain mahogany, walnut, apache plume, mormon tea, rabbit brush, yucca, winterfat, acacia, dalea, blazing star, buffalo grass, prairie chloris, and Indian millet (Fig. 5).

The Transition Zone consists of middle to upper mountain slopes, about 7,000 to 9,500 feet asl, and is uniform not only in climate but also in flora and fauna as well. Typical exclusive flora here include yellow pine, birch, locust, buckthorn, gooseberry, thornapple, ocean spray, edwinnia, cornel, goldenrod, pine dropseed, melic grass, and oat grass.

The Canadian Zone occurs in the higher parts of the mountains, from about 8,500 to 12,000 feet asl, and has a fairly humid and cool to cold climate. Some exclusive plants in this zone include hellebore, frasera, vetch, baneberry, violet, shooting star, and mustard. This zone is heavily forested by trees also found within lower and higher zones, including spruces, firs, and aspens (Figure 6).

The Hudsonian is a narrow zone encompassing the area just before and after timberline on very high mountains and is often combined with either the Canadian or Arctic-Alpine. It can range from 11,000 to 13,000 feet asl and is buried in deep snows seven to eight months each year. Its trees (spruce, fir, pine) are stunted and gnarled and its exclusive plants include elk slip, camas, chickweed, onion, and speedwell.

The Arctic-Alpine Zone is the last and smallest of the Life Zones represented in the study area. Generally, it begins at about 11,500 feet asl and extends upward to encircle or cap the highest of the regional mountains. Frostless nights here are rare and this area is buried under deep snows for eight or nine months yearly; New Mexico has no mountains that are snowbound year-round. Although it is treeless, tundra plants abound, including (exclusive) alpine forget-me-not, arctic spring beauty, buttercup, saxifrage, stonecrop, sorrel, sandwort, and angelica (Bailey 1913; Castetter 1956).

TREE TYPE	Upper Sonoran	Trans- ition	Can- adian	Hud- sonian	Arctic- Alpine
<i>Pinus edulis</i> (pinyon pine)	X				
<i>Pinus ponderosa</i> (ponderosa pine)		X			
<i>Pinus scopulorum</i> (yellow pine)		X			
<i>Pinus flexilis</i> (rocky mountain or white pine)			X		
<i>Pinus aristata</i> (foxtail or bristlecone pine)				X	
<i>Juniperus monosperma</i> (one-seeded juniper)	X				
<i>Juniperus scopulorum</i> (silky or rocky mountain juniper)	X	X			
<i>Juniperus sibirica</i> (shrubby juniper)			X		
<i>Juniperus communis</i> (prostrate juniper)			X		
<i>Quercus</i> sp. (oak)	X	X	X	X	
<i>Populus wislizeni</i> (Rio Grande cottonwood)	X				
<i>Populus angustifolia</i> (narrow-leaved cottonwood)		X			
<i>Populus acuminata</i> (lance-leaf cottonwood)	X				
<i>Populus tremuloides</i> (aspen)		X	X		
<i>Salix</i> sp. (willow)	X	X	X	X	X
<i>Pseudotsuga menziesii</i> (Douglas fir)		X	X		
<i>Abies concolor</i> (white fir)		X	X		
<i>Abies lasiocarpa</i> (subalpine fir)			X	X	
<i>Abies arizonica</i> (cork-barked fir)			X	X	
<i>Picea pungens</i> (blue spruce)		X			
<i>Picea engelmannii</i> (Engelmann spruce)			X	X	

Figure 6. Life Zone distribution of some selected common trees.

ANIMAL RESOURCES

	Upper Sonoran	Trans- ition	Can- adian	Hud- sonian	Arctic- Alpine
<i>Sorex</i> sp. (shrew)			X	X	
<i>Myotis</i> sp. (bat)	X	X	X	X	
<i>Lasionycteris</i> sp. (bat)	X	X	X		
<i>Pipistrellus</i> sp. (bat)	X	X			
<i>Eptesicus</i> sp. (bat)	X	X	X		
<i>Lasiurus</i> sp. (bat)	X	X	X		
<i>Euderma</i> sp. (bat)	X	X			
<i>Idionycteris</i> sp. (bat)	X	X			
<i>Plecotus</i> sp. (bat)	X	X			
<i>Antrozous</i> sp. (bat)	X	X			
<i>Tadarida</i> sp. (bat)	X	X	X		
<i>Ochotona</i> sp. (pika)			X	X	X
<i>Sylvilagus</i> sp. (rabbit)	X	X	X		
<i>Lepus</i> sp. (hare)	X	X	X	X	X
<i>Eutamias</i> sp. (chipmunk)	X	X	X	?	?
<i>Marmota</i> sp. (marmot)		X	X	X	?
<i>Ammospermophilus</i> sp. (antelope squirrel)	X	X			
<i>Spermophilus</i> sp. (ground squirrel)	X	X	X		
<i>Cynomys</i> sp. (prairie dog)	X	X	X		
<i>Sciurus</i> sp. (squirrel)	X	X	X		
<i>Tamiasciurus</i> sp. (squirrel)		X	X	X	
<i>Thomomys</i> sp. (pocket gopher)	X	X	X	?	X
<i>Perognathus</i> sp. (pocket mouse)	X	X			
<i>Dipodomys</i> sp. (kangaroo rat)	X	X			
<i>Castor</i> sp. (beaver)	X	X	X		
<i>Reithrodontomys</i> sp. (harvest mouse)	X	X			
<i>Peromyscus</i> sp. (mouse)	X	X	X		
<i>Onychomys</i> sp. (grasshopper mouse)	X	X			
<i>Neotoma</i> sp. (woodrat)	X	X	X		
<i>Clethrionomys</i> sp. (red-backed mouse)		X	X		
<i>Phenacomys</i> sp. (vole, meadow mouse)	X	X	X		
<i>Microtus</i> sp. (vole)	X	X	X	?	X
<i>Ondatra</i> sp. (muskrat)	X	X			
<i>Mus</i> sp. (house mouse)	X	X			
<i>Zapus</i> sp. (jumping mouse)	X	X	X		
<i>Erethizon</i> sp. (porcupine)	X	X	X		
<i>Canis</i> sp. (coyote, wolf)	X	X	X		
<i>Vulpes</i> sp. (fox)	X	X	X	?	?
<i>Urocyon</i> sp. (fox)	X	X			
<i>Ursus</i> sp. (bear)	X	X	X		
<i>Bassariscus</i> sp. (ringtail)	X	X			
<i>Procyon</i> sp. (raccoon)	X	X			
<i>Martes</i> sp. (marten)		X	X		
<i>Mustela</i> sp. (ermine, weasel, ferret, mink)	X	X	X	?	?
<i>Taxidea</i> sp. (badger)	X	X	X		
<i>Spilogale</i> sp. (spotted skunk)	X	X			
<i>Mephitis</i> sp. (striped skunk)	X	X	X		
<i>Felis</i> sp. (jaguar, mountain lion)	X	X	X		
<i>Lynx</i> sp. (bobcat)	X	X	X		
<i>Cervus</i> sp. (elk)	X	X	X		
<i>Odocoileus</i> sp. (deer)	X	X	X		
<i>Antilocapra</i> sp.	X	X			
<i>Ovis</i> sp. (mountain sheep)	X	X	X	X	X

X - documented presence

? - inferred presence

Figure 7. Distribution of mammals within the study area.

Most fauna are not confined to a particular life zone, but rather must be seen as belonging to a series or group of Life Zones. Most mammals exist in the lower zones, particularly the Upper Sonoran and Transition, diminishing somewhat in the Canadian and then greatly in the Hudsonian and Arctic-Alpine. Most reptiles exist in the Upper Sonoran, none above the Transition. No amphibians exist above the Upper Sonoran. Birds seem to be the widest-ranging, therefore Bailey (1913) defines their zonal range in terms of the breeding season rather than throughout the year.

Of the mammals, refer to Figure 7, those ranging in the Upper Sonoran and Transition zones include many bats, antelope squirrels, pocket mice, kangaroo rats, harvest mice, grasshopper mice, muskrats, house mice, ringtails, raccoons, spotted skunks, and antelope. From the Upper Sonoran to Canadian Zones are rabbits, ground squirrels, prairie dogs, beavers, woodrats, jumping mice, porcupines, coyotes, bears, ermines, weasels, minks, badgers, striped skunks, mountain lions, bobcats, elk, and deer. Ranging over all five zones are hares, pocket gophers, and sheep (Bailey 1913; Findley et al. 1975). It should be noted here that wolves and peccarys are considered to inhabit only the southernmost parts of New Mexico and have not been documented within the project area in modern times (Findley et al. 1975) As mentioned in the next chapter, their use by the Indian groups in question therefore, seems to be historic rather than present day.

III. INDIAN GROUPS AND RESOURCE UTILIZATION

INTRODUCTION

The 11 Indian groups considered in this study belong to either of two major American cultural traditions. The first is the Apachean, represented herein by only a single group — the Jicarilla Apache. The Apache are an Athabascan-speaking people who entered the Southwest from the Plains and, prior to the middle of the sixteenth century, lived only in Texas and east of the Rio Grande in New Mexico. Today the Jicarilla are mainly farmers and ranchers who inhabit parts of their large reservation in Rio Arriba and Sandoval County.

In contrast, the Pueblo Indians are the direct descendants of the late prehistoric people of northern New Mexico. Most of them occupy reservation land situated along the Rio Grande between Taos and Albuquerque. The remaining 10 groups of this study speak either of the two main languages. The first is Keresan spoken at Cochiti, Santo Domingo, and Zia. The second is Tanoan of which only two of its three linguistic subdivisions are of concern here. Tewa-speaking Pueblos occupy a central position around Santa Fe. They include the inhabitants of San Juan, Santa Clara, San Ildefonso, Tesuque, Pojoaque, and Nambe. Towa is spoken only by the Jemez Indians who live along the Jemez River west of the Rio Grande.

The Pueblos, although often spoken of as a culturally distinct and single unit, vary considerably among themselves on the basis of environment and economic circumstances, as well as their unique histories and traditions. At the same time certain generalizations can be made about the way of life and philosophy which, through time, has had a pervasive effect on their utilization of the natural environment (Smith 1969:81).

The Pueblos were and continue to be an agricultural village people whose subsistence has been based largely on farming, grazing, and (depending primarily on proximity to the mountains and adequacy of other food supplies) hunting, fishing, and gathering. Nevertheless, the Pueblos have to a greater or lesser extent all been drawn into the cash economy. Erosion of land due to overgrazing and poor overall conservation planning has decreased the productivity of land (Harper et al. 1943), and it has created a dependence on wage labor (Smith 1969:5). Some Indians have migrated to urban areas for jobs and, consequently, the tribal governments have attempted to create job opportunities on the reservation by developing recreational and tourist facilities, small industries, etc. Efforts are also being made to train and educate the

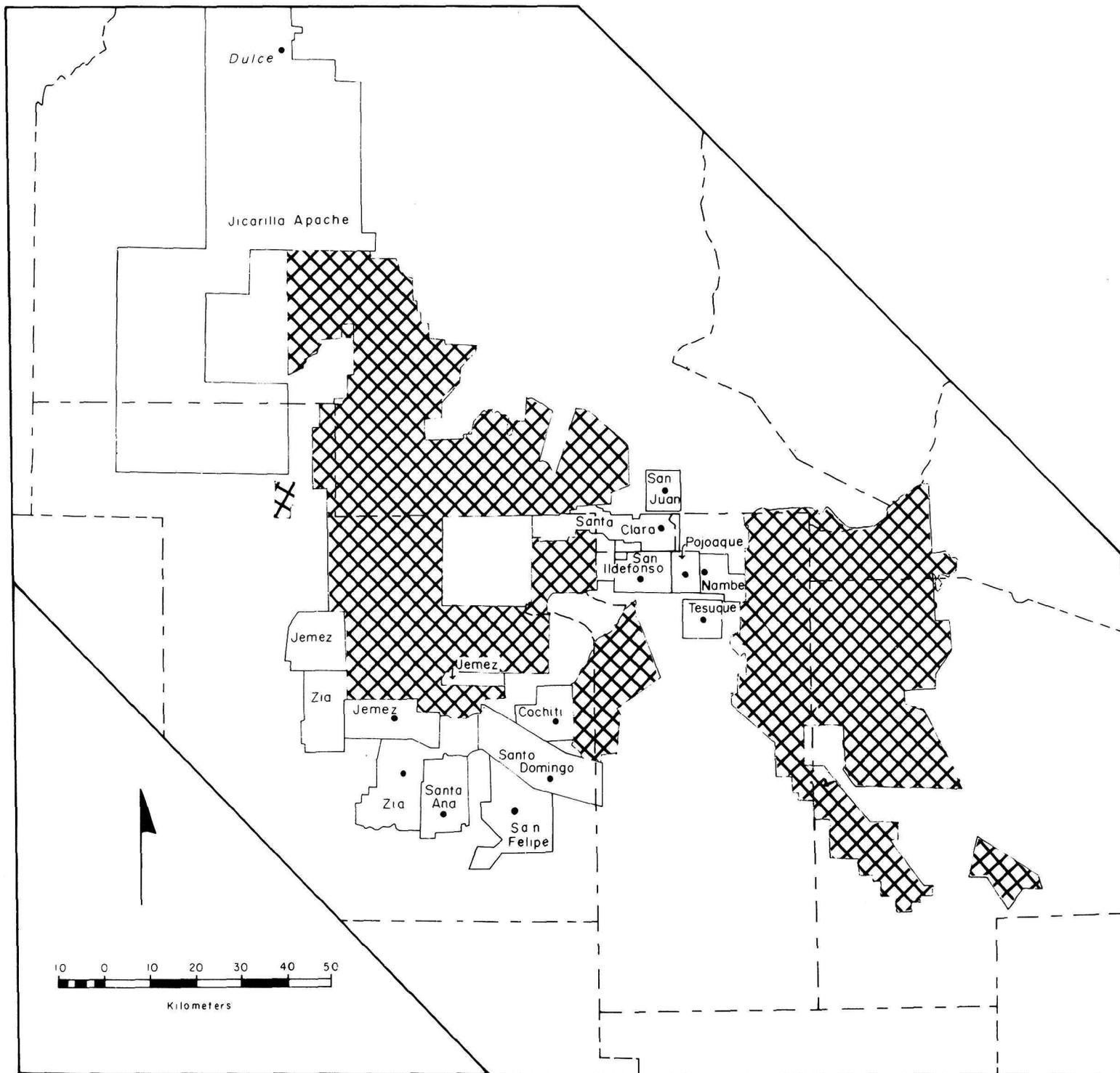


Figure 8. Indian pueblos and reservations surrounding the Santa Fe National Forest.

population. Nevertheless, unemployment remains high and poverty is widespread (Smith 1969:5). This alone suggests that environmental resources in the vicinity of the pueblos are intensely utilized.

According to Ford (1969, 1972), a precarious subsistence base over the centuries has played an important role in developing institutions and strategies intended to prevent misuse of resources. Such a philosophy would have as its basic concern the maintenance of harmony between man and nature. Nature is viewed as pervaded with life and spirit which must be treated with respect and consideration, never abused. To this end the villages were and continue to be organized into many societies, each with responsibilities for different aspects of life — hunting, curing, weather, etc. There is, of course, variation from one pueblo to another, but essentially the same range of responsibilities is covered in each. Utilization of timber, game, and fish was, in pre-reservation times, regulated with care for overuse and depletion. Although today these societies have lost some of their functions they continue to be a potent force in village life (Dutton 1975; Smith 1969).

The way in which specific areas are utilized relates directly to perception and classification of that environment. For San Juan Pueblo, there is a detailed account of how people delimit different geographic areas. "This system approximates the physiographic areas of the San Juan territory, but is not similar to the life zone system which anthropologists and botanists often employ in describing the environment of the Eastern Pueblos" (Ford 1969:134). The Pueblos have, then, an overarching world view that structures the way they perceive and relate to the world around them. Many of the mountains, lakes and shrines that dot the Santa Fe National Forest are sacred; and rituals connected with them are an integral part of what were formerly life-sustaining activities: hunting, gathering, farming. To separate the ritual and non-ritual, the sacred and non-sacred areas and uses of the forest is, therefore, a fundamental distortion. The very basic interrelation of man and nature, the interconnection of all aspects of life is basic to Indian philosophy.

It follows from this philosophy that nature is not the domain of single individuals, or of groups of individuals. The concept of individual ownership of land is foreign; "land is to be used, not to be owned outright, by individuals" (Smith 1969:3). We will see in what follows that tribes that lie in close proximity to one another tend to utilize the same general region. Particular hills, mountains and lakes are often visited for specific purposes by people of more than one tribe. For this reason, the Tewa villages will be dealt with first together and then, depending on the extent of data available, separately. It should be noted, however, that where the use of a resource by only one particular village is noted, it does not necessarily follow that other pueblos do not also make use of it. The recording of use merely reflects existing literature on the subject at the present time.

THE TEWA

Tewa-speaking Indians occupy six villages along the upper Rio Grande drainage north of Santa Fe. These villages include those of San Juan, Santa Clara, San Ildefonso, Nambe, Pojoaque, and Tesuque Pueblos. Specific information pertaining to the use of the Santa Fe Forest by these groups is presented below. Since no reference was found discussing such use by the Indians of the San Juan, Pojoaque, or Tesuque Pueblos; only the geography and environmental setting of these pueblos will be discussed.

In a more general sense, however, the Tewa pueblos share veneration of four sacred peaks which bound their world: Conjilon Peak to the north, Tsikomo (Chicoma or Tschicoma) Mountain to the west, Sandia Crest to the south, and Truchas Peak to the east. Harrington (1916:125) mentions Pelado as the sacred mountain of the west, worship being performed at its summit. The base of Abiquiu Peak (Polvadera Peak) is also mentioned by him as being sacred. Some report that Lake Peak in the Sangre de Cristo Mountains is the most important mountain of the east (Ford 1969:237; Ortiz 1969: 19,141); others report that Nambe venerates only two sacred mountains — Lake Peak and Santa Fe Baldy (Ellis 1962:47). Additionally, Ortiz (1969:19) suggests that each Pueblo gives greater importance to the peak closest to it, making more frequent pilgrimages to it and emphasizing it in religious life.

Each of these mountains has a lake or pond associated with it in which the spirits, recognized as the highest deities, dwell. In addition there is an "earth navel" on top of each peak, which is a place of communication with the spiritual underworld, and a place from where blessings originating in the earth flow to the villages (Ford 1969:123; Ortiz 1969:21, 141; Parsons 1929:213, 214). These are represented by stone structures in the shape of a keyhole. Earth navels are also found "on hill tops at about the same elevation as the sacred hills or in the open places in lowlands, but these are addressed exclusively to game animals." There is also a Mother Earth navel at the center of the village (Ortiz 1969:24).

In addition, four flat-topped mountains, believed to be inhabited by supernaturals, surround the pueblo, as are four shrines close to the pueblo associated with cardinal directions. Others are scattered over the landscape (Ellis 1962, 1956; Harrington 1916; Ortiz 1969). A shrine may take the form of a single stone, or stones placed in a pile or circle. Many of the shrines exist where a person has died since the objects a person has used in his life become associated with his soul and after death with the sacred past, thereby becoming sacred themselves (Ortiz 1969:20).

The lakes and ponds, the earth navels, and the shrines are points at which communication with the spirits may take place (Ford 1969:123; Ortiz 1969:23, 141). Here offerings may be presented and ceremonies performed. Lake Peak, for example, is the site of summer ceremonies for some of the Tewa villages (Ellis 1962:77; Harrington 1916:347). Spirit Lake or *Tang si wga Okwinge*, on top of Lake Peak, was and probably continues to be the place of initiation into a woman's curing society. Medicine men from a variety of Tewa pueblos visit Sandy Lake (*Tamayoge Okwinge*) (Ellis 1962:76). The exact location of numerous other shrines remains largely undisclosed.

As for utilization of material resources, gypsum rock is used for whitewashing the adobe walls of their houses. It is found by the Tewa opposite La Bajada and on the upper Rio Chama (Harrington 1916:47). Specific places are frequented for clay, but the location of these beds is jealously guarded. In several instances the area around Truchas is mentioned with regard to pottery clay, and Hewett (1945:41) mentions a place a few miles southwest of Picuris, near Truchas village. The best red pottery clay known to the Tewa occurs one or two miles southeast of the town of Truchas; cooking vessel or Apache clay one or two miles south of Truchas (Guthe 1925:22), and in the Santa Fe Canyon (Guthe 1925:22; Harrington 1916:340). These several locations near Truchas may in fact be the same place. Red slip is obtained in the Santa Fe Canyon, according to some, just below the Apache clay beds. But Guthe (1925:23) thinks that this may be the paint mentioned by Harrington (1916) as used for body painting, collected by the Jicarilla and sold to the Tewa. Volcanic sand, used as temper for pottery, is found by some of the Rio Grande Pueblos (San Juan, Santa Clara, as well as Santo Domingo and Cochiti) in the neighboring hills (LeFree 1975:6; Underhill 1945:86). Black ware paint, used for matte designs on polished black ware is made from a yellow stone said to occur just west of the Jemez Range in the Valle (probably Valle Grande) near Ojo Caliente (Ojo Caliente here is probably used to mean "hot springs" rather than as a specific name), in the same district as orange-red paint (Guthe 1925:25). This was first used by Maria Martinez in San Ildefonso in 1921. The most common black paint is obtained from rocky mountain bee weed (Stinking clover), or guaco, which grows in profusion on the flats of the region (Guthe 1925:25). The white earth used for sizing pottery can be found east of Santa Fe (Harrington 1916:555).

Witchwood, or *kadjurna* (American Mountain Ash), and witchroot or *bakurli* (used against witches) are found in the hills and on the riverbanks at Jemez (Dumarest 1919; Ellis 1964b:29-31). The mountains are also frequented to obtain various medicines necessary for curing and items used in rituals and ceremonies. The spruce and pinon, for example, used in most of the ceremonial dances are most likely obtained in the Santa Fe National Forest (Fergusson 1957). The stone used for baking bread is found east and north of the upper Rio Chama. The kind of stone used for baking wafer bread, *guayave*, is obtained north of Black Mesa in the upper Chama drainage (Harrington 1916: 119, 579).

As may be seen from the discussion of Nambe, for which the most information exists, it is likely that the Tewa in general hunt, fish, gather berries, and collect firewood and beams for vigas in the Santa Fe National Forest although no direct references were found to support this belief.

Nambe Pueblo

As a result of the extensive material collected by Ellis (1956, 1962) in support of the Nambe land claims, there exists what is perhaps the most extensive data on this particular pueblo.

The village of Nambe, or Nambe Pueblo, was established about A.D. 1400. Its inhabitants occupied a fairly well-defined area around the village for farming, grazing, hunting, gathering, etc. This pueblo is located approximately 5 miles east of the village of Pojoaque and about 15 miles north of Santa Fe. It occurs at an altitude of 6,045 feet asl, and it supports a population of 416. It is close to Pojoaque River and Rio Nambe. The reservation covers 19,113 acres and an additional 2,160 acres is leased for grazing from the Bureau of Land Management, the U.S. Forest Service, and the State of New Mexico (Smith 1969:115). The four mile-long eastern boundary of the Nambe Indian Reservation borders directly on the Santa Fe National Forest.

Because of the altitude at this pueblo, the frost-free growing season is too short to permit cultivation of cotton. Therefore, Nambe Indians have traditionally relied less on farming than the southern Pueblo Indians, and instead, have supplemented their needs to a greater extent with hunting and gathering. Water, wildlife, grazing lands, and minerals were found in the mountains to the east, large portions of which lie in what is today the Santa Fe National Forest (Ellis 1956:397).

Nambe has only two sacred mountains, unlike the four mentioned in relation to the other Tewa Pueblos (Ellis 1962:47). One of these is Santa Fe Baldy, the other is Lake Peak. About 100 yards east of the peak of Santa Fe Baldy is Lake Katherine or *Kate Okwinge*, one of the two major shines of the Nambe. It was here that initiation of at least one society took place. On the second mountain, as already mentioned, is Spirit Lake and Sun Blue Lake, *Tsepem-bu*, where initiations for the women's society (a curing society) took place. Ceremonialists from San Juan, Tesuque, and Jemez used this lake as well (Ellis 1962:7).

Friedlander and Pinyan

The other major shrine is Sandy Lake, also central to initiation rites. Both Lake Katherine and Sandy Lake are visited by medicine men of the Bear society which is found in each of the Tewa villages. As late as 1928, initiations were reported to have taken place at the lakes, and "even today ceremonialists of the same societies in the other Tewa Pueblos and Jemez Pueblo come to Nambe and go up to one or another of the three sacred lakes for religious activities" (Ellis 1962:79). It should be pointed out that these lakes were not used for fishing. Fishing here is considered a sacrilege.

Ellis (1956:400) also writes of shrines both near and far from the pueblo. Sixteen were identified for the claims case, scattered throughout the area claimed. These were visited for religious rites and to bring good luck for particular endeavors. While many of the rites have died out, the shrines continue to be maintained.

A fairly detailed overview of the areas used for hunting, fishing, gathering, and grazing in the past is provided by Ellis (1956), and it may be assumed that although for the most part subsistence is no longer based on these activities, some of the areas are still in use. Deer were hunted in the higher elevations to the ridge of the Sangre de Cristo Mountains near Sierra Mosca, Puerto Nambe, and south to Lake Peak, as well as at Rancho Viejo. Turkey was hunted in this same area as were bear and elk. Eagles could be found especially on Santa Fe Baldy and also in the canyons around Lake Katherine, Sandy Lake, and Sun Blue Lake. Rabbits, quail, squirrel, bluebirds, locust, and chipmunks were found throughout the area, but particularly in the south central part where the Rio Nambe and Rio Capulin meet.

In the higher elevations between Sierra Mosca and Lake Peak native blueberries, wild currants, wild grapes, oregano, and a variety of medicinal plants were gathered (Ellis 1956:399). Chokecherries, wild strawberries, juniper berries, wild onions, wild celery (tape grass), and cactus fruit occur across the intermediate elevations and foothills. Juniper wood and sumac for bows, juniper bark and pine pitch for medicine, and acorns for food and dyes were also obtained in this area. At the lower elevations they found rocky mountain bee weed, juniper berries, and yucca for food. Yucca was also used for soap and fiber, willows were gathered for basketmaking, punye for brooms and arrow shafts, and cottonwood bark for medicinal purposes. Wood for house beams was obtained from around Frijoles Canyon and wood for fences, posts, and firewood, east of Nambe Falls (Ellis 1956:398).

The Nambe Indians used clay found in deposits near Spirit Lake (Dog Lake) for painting, and red clay from the foothills served as pottery paint (Ellis 1962:64). They found and used mica along the upper Rio Nambe.

In the spring, livestock was driven up Rio Nambe, past the falls, and into the

Santa Fe National Forest

mountain area to the east. They grazed northward from Lake Peak to Puerto Nambe and Santa Fe Baldy and up to Sierra Mosca. The livestock was then driven down Capulin Canyon back to the village. At Puerto Nambe a permanent herding cabin still exists (Ellis 1956:366).

Santa Clara Pueblo

Santa Clara lies on the west bank of the Rio Grande, 20 miles north of Santa Fe, and 15 miles northeast of Los Alamos at an altitude of about 5,500 feet asl. The Santa Clara Pueblo Grant and the Indian reservation consist of 45,742 acres. Of this 44,818 acres are used as range land, including 10,742 forested acres having an undetermined amount of commercial timber (Smith 1969:135). The current population of Santa Clara is 1,351. Approximately 10 miles of the northern and 12.5 miles of the southern boundary of the Santa Clara Indian reservation border the Santa Fe National Forest. Since such a considerable amount of forest land lies within the bounds of this reservation, it is particularly unclear to what extent the Santa Claras utilize areas of the Santa Fe National Forest.

For both Santa Clara and San Ildefonso, most of the information that exists, aside from that given in the general introduction to the Tewa, is in regard to locations for collecting materials for pottery making. In 1966 there were more than 75 potters who sold to wholesalers, traders, and tourists (Smith 1969:138). The reddish clay is obtained about one mile to the west of the Santa Clara Pueblo (LeFree 1975:7). The temper, is a volcanic sand obtained approximately seven or eight miles to the northwest of the village; the tuff comes from near highway 76 (LaFree 1975:15; Underhill 1945:86).

San Ildefonso

San Ildefonso lies 22 miles northwest of Santa Fe near the east bank of the Rio Grande at an altitude of 5,457 feet asl. The pueblo has a total of 26,192 acres which support a population of 503. This acreage includes 55 acres of irrigated farmland, 11,265 open grazing land, and 8,773 acres of timberland (Smith 1969:128). One and one-half miles of the reservation's western edge borders on the Santa Fe National Forest.

As already mentioned, pottery making is an important activity at San Ildefonso, Maria Martinez having given the pueblo an international reputation. Also mentioned earlier is that the black ware paint is made from a rare yellow stone that occurs in the Valle, west of Jemez, near Ojo Caliente (Guthe 1925:25), and guaco paint is made from rocky mountain bee weed, found on the moist flats of the region.

By the time of Whitman's (1947:115,116) study, communal hunting had disappeared and individual hunting had become a sport. In the fall, deer were hunted on the mesa, but hides for mocassins were bought from traders. Duck, dove, and quail were rarely shot and there was little mountain trapping.

As previously noted, this study was unable to locate any reference that specifically linked either the San Juan, Pojoaque, or Tesuque Indians with any resource utilization of the Santa Fe National Forest. Nevertheless, a basic geographic-environmental description of these pueblos is provided below, for the sake of continuity and general management purposes.

San Juan Pueblo

The Pueblo of San Juan is located just off of U.S highway 64, about 25 miles northwest of Santa Fe. and 4 miles north of Espanola. Topographically, this village occurs about 5,601 feet asl, and it is situated along the east bank of the Rio Grande, about 2 miles north of its confluence with the Chama River. San Juan is the largest of the Tewa-speaking pueblos (Smith 1966:130), having a population of 1,783. Of its total 12,234 acres, 1,200 are farm lands, 9,701 are for grazing, and 1,176 constitute commercial timber land. None of the land of the San Juan borders directly on the Santa Fe National Forest.

Pojoaque Pueblo

Pojoaque Pueblo on the other hand, is the smallest of the Tewa pueblos and has a population of only 147. Situated at 5,750 feet asl, this village is located 18 miles northwest of Santa Fe on U.S. highway 64. According to Smith (1966:122), the 11,599 acres of this reservation are composed of 36 for farming, 11,412 for grazing, and 151 remain unclassified. None of this reservation borders the Santa Fe National Forest either.

Tesuque Pueblo

Tesuque is located along Rio Tesuque at about 6,760 feet asl. It occurs along U.S. highway 285 and six miles north of Santa Fe. It has a population of 290 and a total reservation of 17,027 acres. Most of its land, 15,547 acres, consists of non-commercial timber, although it includes 600 acres for farming, 392 for grazing, and 350 acres for commercial timbering. Also, this reservation is not contiguous with the Santa Fe National Forest.

THE KERESAN AND TOWA

Keresan-speaking Indians are usually divided into an eastern and western

group. This report is concerned only with three of the eastern Keresan Pueblos — Cochiti, Santo Domingo, and Zia. San Felipe and Santa Ana complete the list of pueblos at which eastern Keresan is spoken, but they were excluded from consideration in this study because their reservations are not that close to the Santa Fe National Forest. Since Jemez, the extant Towa-speaking pueblo, lies in close proximity to Zia and has traditionally shared much land with Zia, these two pueblos will be dealt with together.

Cochiti Pueblo

Considerable material exists for Cochiti, due to the work of Goldfrank (1927) and Lange (1959), while research for land claims testimony has produced some material for Zia and Jemez. Very little data, however, are available on Santo Domingo.

Cochiti is the northernmost of the eastern Keresan pueblos. It is situated on the west bank of the Rio Grande, about 23 miles southwest of Santa Fe at an altitude of 5,170 feet asl. The reservation consists of more than 28,157 acres, of which 880 are farm land, 17,059 grazing land, and 10,152 non-commercial timberland (Smith 1966:98). It has a population of 942. It is bordered on the west, for seven and one-half miles, by the Santa Fe National Forest.

For the Keresans, a sacred mountain exists for each of six directions (Hewett 1945:36). Mountain retreats are held periodically by different societies for specific occasions. There are retreats for the solstice, for the equinox, during drought, before masked kachina dances, for rain, and for crops. Curing societies go on summer retreats. From Nipple Mountain, *Gasickurtz*, about nine miles from Cochiti, observations are made for winter and summer solstice (Goldfrank 1927:59; Parsons 1929:533, 534). There are other retreats here as well. For spring equinox, a retreat is held in the mountains (Fergusson 1957:55). Again, shrines dot the landscape and are frequented for a variety of purposes. At a place near Seely, a man scatters grain when “he asks for the favor of a particular girl” (Goldfrank 1927:1).

Communal hunting no longer takes place, and it is reported that, with an increase in non-Indian hunters in the Jemez Mountains and the decrease in game, the Cochiti have largely stopped hunting altogether. When they hunt, it is in the Jemez where they have gone for generations. “Despite the availability of trucks and other transportation to areas of more plentiful game, there is little interest in hunting elsewhere” (Lange 1959:138).

Deer, antelope, and mountain lion are rare today. As for birds, the important ones were eagle, hawk, owl, turkey, duck, road runner, quail, and dove. Bull snakes, king snakes, rattlesnakes, lizards, toads, and turtles all inhabit this area (Lange 1959:6). Numerous items still used in dances come from these

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and other animals: eagle (feathers and claws), fox (tails), turtle (shells), cow (hoofs), skunk (skin), sheep (skin), turkey (feathers), mountain lion (skin), goat, deer (horns), bear (skin), and duck (bills) (Goldfrank 1927:108).

Gathering has not declined to the extent that hunting has. Pinons are utilized in a number of ways. The nuts are considered very desirable and are specifically mentioned to occur in the elevated portions of the northwestern corner of the reservation and farther north in the Santa Fe National Forest where they are gathered. Pinon wood is used for fuel, as is juniper, and the resin is utilized for glue or cement. Juniper is used for firewood and, since living trees are not supposed to be cut on the reservation, the Cochiti go to the national forest for fuel. Corral fences and fence posts are also most commonly constructed from juniper. Juniper berries are eaten raw or boiled and tea is made from their leaves. Since western yellow pine or ponderosa pine have not grown on the reservation for many years, roof vigas are cut in the national forest with permits. Pine is also used for firewood (Lange 1959:141, 145, 146).

Douglas fir, or "red spruce" as it is known in Cochiti, is very important in ceremonial life for the Cochiti as well as for neighboring Indians. Its twigs are carried by dancers and used for the collars of many katchina masks. The highly sacred pole used in the Tablita dance is douglas fir as well (Lange 1957:70, 1959:146). Although Lange does not mention where it is cut, it is probably from the national forest for the same reason that juniper is cut there. Mountain mahogany, used in a number of ways, is found in the mountains north of Cochiti. Reddish-brown dye for moccasins and leggings is made from the bark and the roots are used for tanning (Lange 1959:147).

Like the Tewa, gypsum is used for whitewashing house walls and the interior and exterior kiva walls during the annual feast. It is found primarily near old La Bajada on the mountain slopes. Reddish sandstone used as the base of a reddish paint for the lower portion of interior house walls is found near the mouth of Canada de Cochiti. Basalt and tuff are found in the mountains. Basalt is used in the lower part of house walls and for grinding implements, in particular the metates on which chili is ground. (Lange 1959:141, 144).

The location of pottery clay beds is often kept a secret, but it is known that some deposits exist near the mouth of Canada de Cochiti and on the slopes of the big mesa east of Pena Blanca (La Majada Mesa) (Lange 1959:144). Red paint may be found in Cochiti *Mekernateku* (*mekerna* means red paint), located 12 miles southwest of Cochiti (Harrington 1916:454). Volcanic sand, used as temper for pottery, is found in nearby hills (Underhill 1945:86).

Finally, cougar medicine is mentioned as being collected in the Jemez, and witchroot (used against witches by women and for potency on certain occasions by men) is obtained along riverbanks near Zia and in the hills near Jemez

(Ellis 1964b:29,31).

Herding used to be communal and the favorite pastures were Bear Head Peak, Canada and Frijoles Canyon, and Pena Blanca (Lange 1959:107). It is unclear when communal herding stopped.

Santo Domingo

Santo Domingo is located on the eastern bank of the Rio Grande, 17 miles north of Bernalillo at an altitude of 5,190 feet asl. It is the largest of the eastern Keres pueblos. Santo Domingo Pueblo contains 69,262 acres, including 3,611 of farm land, and 64,965 of grazing land. It has a population of 2,735. The economy is based largely on farming and ranching. Only a small portion of Santo Domingo's northwest corner borders on the Santa Fe National Forest (approximately one and one-half miles) and while one can assume that the forest is utilized, there is little specific reference to such use.

White (1935:31), quoting Bandelier, wrote that the Sandia Mountains and the mountains north of Cochiti are considered the home of twin mythological figures. The white mineral from which beads are made comes from the nearby mountains. Volcanic sand, used for pottery temper, is found in the neighboring hills (Underhill 1945:86).

Zia and Jemez Pueblos

Zia occurs 17 miles northwest of Bernalillo on the north bank of the Jemez River. The pueblo contains 110,267 acres; 516 farm land, 57,025 acres of open grazing land, 900 acres of commercial timber, and 51,670 acres of non-commercial timber land. It has a population of 627. Except for five miles on the northwest, the entire northern part of the Zia reservation borders on the Santa Fe National Forest. The land suffers from water shortage and much of the grazing land is simply waste. Given its poor land, pottery has been exchanged with other pueblos for food. A high-quality pottery was developed and continues to be manufactured (Smith 1969:150).

Jemez Pueblo is situated on the bank of the Jemez River only seven and one-half miles north of Zia. Geographically, it occurs 45 miles from Albuquerque and 30 miles northwest of Bernalillo. This community of 2,105 people has 88,387 acres; 1,828 are irrigated farm land, 27,114 open grazing land, 13,700 commercial timber, and 45,625 non-commercial timber land. The Jemez Indians lease 1,225 acres of land from the state for grazing (Smith 1969:105). All but one and three-quarter miles of Jemez's eastern boundary is surrounded by the Santa Fe National Forest. The basis for Jemez economy has always been agriculture, but land is under-utilized today because of the small inefficient

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farms and scattered fields (Smith 1966:106).

One of the most important shrines of the Jemez Indians is located on the peak of Mount Pelado. The mountain and its surrounding area are considered highly sacred. At one time this used to be a favorite area for herding. Another sacred shrine for the Jemez lies on the Sangre de Cristo Mountains (Ellis 1956:57,58). Some ceremonies are carried out on Lake Peak (Ellis 1962:77; Harrington 1916:347).

Retreats into the mountains are an important part of ritual life here as well. In 1930, initiation into one of the societies required the shamans from several pueblos to go into the mountains and gather soapweed (yucca) whips, different kinds of grass, and oak for use in the ceremony. For their summer retreats the societies go to collect decorative material for the ceremonial chamber: spruce or pinon tree boughs, willow branches for prayersticks, oak for kicksticks, if a race is involved, and waterworn pebbles to be placed on sand paintings (White 1962:172, 232).

Water is especially sacred and many of the shrines are springs where groups go for ceremonies or where individuals visit periodically to deposit prayer offerings. Other shrines are caves or mesa hills. Although most of these are off reservation territory, they are visited secretly and people lament having lost them. In the data gathered for land claims testimony, Zia claimed 23 shrines and Jemez claimed 26. A number of these overlap, but there are innumerable places of lesser importance (Ellis 1956:57).

Given the proximity of Zia, Jemez, and Santa Ana Pueblos, the locations of shrines and gathering areas often overlapped and many activities were carried out jointly. For example, Zia, Jemez, and Santa Ana usually hunted together (Ellis 1956:58). Hunts were usually held in the Jemez Mountains (White 1962:310). Deer were hunted in the high altitudes to the north and west; antelope on the plains, east of Mesa Prieta (Ellis 1956:58). The Jemez had community rabbit drives in the valley and hunted deer, bear, wolf, fox, and eagles in the sierras (Bloom 1922:21). White (1962:182) recorded that when a mountain lion was killed, the ceremony required that the bones be buried at *Tsapacroma*, north of Zia at Hawk Mountain.

Specific places were frequented to collect paint materials, petrified wood, obsidian, basalt, sandstone, volcanic tuff, and other stones and minerals to be used for implements and pottery making. These places were often many miles from the pueblo (Ellis 1956:56). Santa Ana Creek is a source of volcanic rock used as temper for pottery (Underhill 1945:86). At Zia, black paint for pottery is found a few miles northwest of the pueblo and blue-green paint for katchina masks is made of azurite or malachite found in the nearby mountains

(White 1962:56,249). The Jemez probably collect cougar medicine, a root, from the high valleys of the Jemez Mountains, and witchroot (probably also used by the Zia) is found near Jemez and across the river banks near Zia (Ellis 1964b:29,31).

THE JICARILLA APACHE

The Jicarilla Apache live on a reservation of 750,000 acres which support a population of 2,212 individuals in northern New Mexico. This reservation is located on the western limit of their pre-reservation territory. They claim to have roamed an area of more than 61,000 square miles to the north and east during pre-reservation times (Wilson 1964:297). The southern edge of the northern portion of the reservation borders on the Santa Fe National Forest for 11½ miles. Hunting buffalo and gathering was an important part of pre-reservation life, but the Jicarilla also had extensive contact with the upper Rio Grande Pueblos and cultivated corn prior to American occupation, developing a corn complex important in their ritual life. They have been described as having a culture that combines Southern Athabaskan, Plains, and Pueblo culture (Opler 1936:202; Wilson 1964:297).

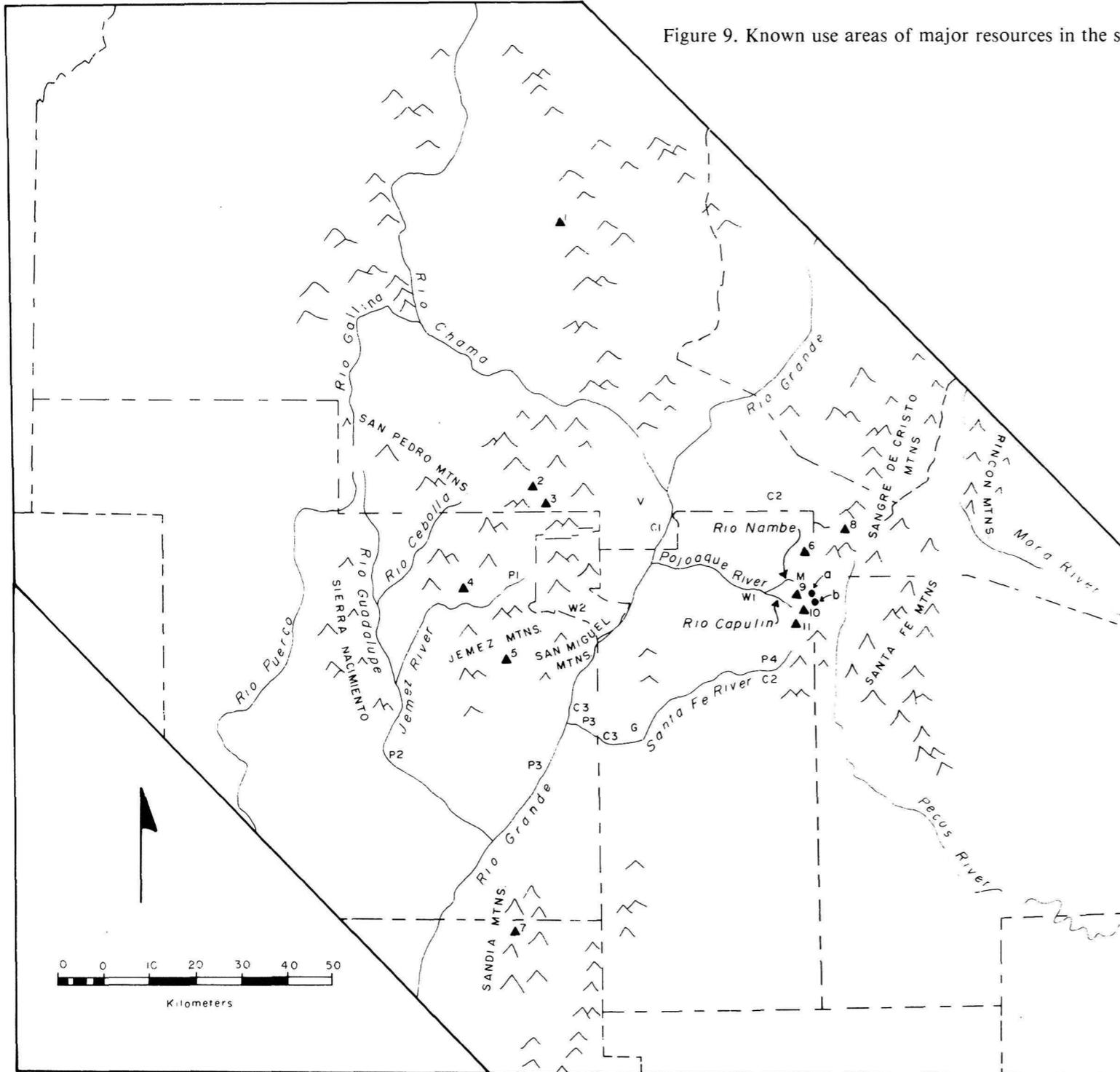
In post-reservation times, sheep were introduced between 1915 and 1920 and they then became the major source of livelihood. The town of Dulce grew at the northern end of the reservation and by 1964, 80 per cent of the population lived there (Smith 1966:62). In the winter, however, people moved with their sheep to the southern part of the reservation where the climate is milder. Recently, cattle have almost entirely taken the place of sheep and the migratory and sheep-herding life style has, with few exceptions, disappeared. Here too, wage labor has made important inroads in recent years.

The four sacred rivers of the Jicarilla are the Pecos, Canadian, Rio Grande and Chama (Harrington 1916:84). Opler (1971:310, 315) lists the Arkansas instead of the Chama, recognizing that sometimes the Chama is also considered sacred. Water from at least two of these rivers is needed for the ceremony performed over an infant (Opler 1971:310).

Friendly supernaturals are said to dwell at Abiquiu Peak and a lake near Colmor. Opler (1971:315) comments on the religious nature of their attachment to the territory, writing "It is not surprising that many Jicarilla have asserted that various ills have befallen them because they were removed from territory where they had so many supernatural helpers and protectors".

Living as they do in the heart of mountainous terrain and a heavily forested area, one can expect intense use of forest resources. In the past, deer, elk, and buffalo were the principal game animals, but the Jicarilla also hunted moun-

Figure 9. Known use areas of major resources in the study area.



LEGEND EXPLAINING FIGURE 9

Religious Use Areas:

Mountainous Locations (▲)

- 1 Conjilon Peak
- 2 Polvadera Peak
- 3 Chicoma Mountain
- 4 Redondo Peak
- 5 Bearhead Peak
- 6 Sierra Mosca
- 7 Sandia Crest
- 8 Truchas Peak
- 9 Santa Fe Baldy
- 10 Puerto Nambe
- 11 Lake Peak

Bodies of Water (●)

- a Katherine Lake
- b Spirit Lake

Natural Resources:

Clay (C)

- 1 Santa Clara
- 2 Tewa
- 3 Cochiti
- 4 Nambe

Pigment (P)

- 1 Tewa, San Ildefonso
- 2 Zia
- 3 Cochiti
- 4 Jicarilla Apache

Miscellaneous

- M (Mica) Nambe
- G (Gypsum) Tewa, Cochiti
- V (Volcanic sand) Santa Clara
- W (Wood)
 - 1 Nambe
 - 2 Nambe, Tewa, San Ildefonso

tain sheep, porcupine, beaver, prairie dogs, squirrels, chipmunks, ground hogs (woodchucks or marmots), chief hares (pikas or conys), woodrats, rabbits, skunks, peccaries, horses, burros, weasels, minks, wolves, and wild cats. Of birds, they hunted turkey, dove, grouse, quail, and "snow birds" or juncos (Opler 1936:207).

Hunting has decreased as it is no longer an important source of subsistence. Still, deer hunting does take place, as does fishing in the local streams and ponds. Gathering for medicinal and ritual items, as well as for food is also common. Since, however, the plant and animal resources are largely available on the reservation itself, it is difficult to know the extent to which it is necessary or customary to use the Santa Fe National Forest. Only a few references to specific locations exist.

Red paint, used for body painting, was obtained two miles east of Santa Fe and north of the Santa Fe River (Harrington 1916:354; Guthe 1925: 23). Another kind of ceremonial paint, made of a particular white clay, was found 18 miles southeast of Taos (Opler 1971:315).

These few references are suggestive of an intimate knowledge of the land in the area and that it is probably far more widely used than immediately evident. But conversely, within the past decade, the increasing stability of residence patterns on the northern end of the reservation and a decline in the use of the southern end, may have led to fewer forays into the Santa Fe National Forest.

SUMMARY

Overall, it is not clear how heavily the Santa Fe National Forest is used by the nearby Indian groups, but it is plain that it is used, at least to some extent, for a large variety of resources.

All the Indian groups in question seem to use the Santa Fe National Forest area for religious purposes and to collect minerals, particularly paint materials. Most appear to use the forest area for other resources, such as wood (fuel, construction), clay, plants and animals (food, ritual), and rock (tools). Nambe is the only group that has been documented as using forest area for grazing, though it is certainly possible that many of the other groups do also.

Indian use is quite likely to be concentrated within the lower three Life Zones with particular emphasis on the Upper Sonoran and Transition for floral resources and the Upper Sonoran, Transition, and Canadian for faunal resources (Figs. 11 and 12). It may be expected that the upper two zones are used both florally and faunally but not as heavily. There would, obviously, be a seasonal variation of use. Shrines and religious areas usually seem to be found

RESOURCE	TEWA			INDIAN GROUP			KERESAN			TOWA	ATHA— BASKAN
	Nambe	Pojoaque	Tesuque	San Ildefonso	San Juan	Santa Clara	Santo Domingo	Zia	Cochiti	Jemez	Jicarilla
Wood	X	I	I	I	I	I	?	?	X	?	?
Clay	X	I	I	X	I	X	?	?	X	?	?
Plants	X	I	I	I	I	I	?	X	X	X	I
Animals	X	I	I	I	I	I	?	X	X	X	X
Minerals	X	I	X	I	X	X	X		X	X	X
Rock	X	I	I	I	I	I	?	X	X	X	?
Shrines	X	I	I	I	I	I	X	X	X	X	X
Pasture	X	?	?	?	?	?	?	?	?	?	?

X - use documented

I - use implied

? - use unknown

Figure 10. Indian use of resources in the Santa Fe National Forest.

ANIMAL RESOURCES	LIFE ZONES				
	Upper Sonoran	Trans- ition	Can- adian	Hud- sonian	Arctic- Alpine
	(captive	herds	only)		
Buffalo	(captive	herds	only)		
Elk	X	X	X		
Deer	X	X	X		
Antelope	X	X			
Cow	(domestic)				
Sheep	(domestic)				
Goat	(domestic)				
Horse	(domestic)				
Burro	(domestic)				
Bear	X	X	X		
Mountain Lion	X	X	X		
Wildcat	X	X	X		
Wolf	X	X	X		
Fox	X	X	X		
Peccary	X	X			
Rabbit	X	X	X		
Chief Hare (pika or cony)			X	X	X
Weasel	X	X	X		
Mink	X	X	X		
Skunk	X	X	X		
Porcupine	X	X	X		
Beaver	X	X	X		
Squirrel	X	X	X		
Chipmunk	X	X	X		
Ground Hog		X	X	X	X
Praire Dog	X	X	X		
Wood Rat	X	X	X		
Hawk		X			
Eagle		X			
Owl	X	X			
Turkey		X			
Duck	X	X			
Quail	X				
Dove	X				
Grouse		X	X		
Snow Bird (Junco)		X	X	X	
Bluebird		X	X		
Bull Snake	X				
King Snake	X				
Rattlesnake	X				
Lizard	X	X			
Toad	X				
Turtle	X				
Fish	X	X			

Figure 11. Documented Indian use of animals in the Santa Fe National Forest.

		LIFE ZONES				
PLANT RESOURCES		Upper Sonoran	Trans- ition	Can- adian	Hud- sonian	Arctic- Alpine
TREES	Pinyon	X				
	Juniper	X	X	X		
	Willow	X	X	X	X	X
	Cottonwood	X	X			
	Ponderosa Pine		X			
	Douglas Fir		X	X		
	Mountain Mahogany	X	X			
	Oak	X	X			
	Spruce		X	X	X	
	American Ash (witchwood)			X		
CACTI	Cactus (general)	X	X			
	Yucca	X				
SHRUBS AND HERBS	Blueberry			X	X	
	Wild Currant	X	X	X	X	
	Wild Grape	X	X			
	Chokecherry		X	X		
	Wild Strawberry		X	X		
	Wild Onion				X	
	Wild Celery	(unknown)				
	Oregano	(unknown)				
	Rocky Mt. Bee Weed	(unknown)				
Sumac	X	X				
GRASSES		X	X	X	X	
UNKNOWN	Witchroot	(unknown)				
	Punye	(unknown)				
	Cougar Medicine	(unknown)				

Figure 12. Documented Indian use of plants in the Santa Fe National Forest.

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upwards from the Canadian Zone (mountains, lakes), but it is not readily apparent whether religious use clusters seasonally (though it is quite likely).

IV. RECOMMENDATIONS

This study has been the first attempt to outline different usages of the Santa Fe National Forest by neighboring Indian groups. Although limitation of time and budget did not permit research into sources of information beyond the published ethnographic record, the information provided suggests that this forest is widely used today and that further research would be extremely helpful. It is recommended that the next step be ethnographic research among the people involved — informant interviews. The greatest potential is from a conceptual approach that goes beyond (though includes) specific locations frequented, in order to understand underlying perception and classification of the environment and man's relationship to it (best exemplified by the work of Ford (1969) for San Juan). Such an approach would permit one to hypothesize use and attitudes toward use even in the absence of other concrete data. In addition, there are other sources that could be profitable.

1. Local forest rangers who have worked an area over an extensive period of time should have a body of knowledge that could be tapped. Systematic interviews of rangers, especially those who have been in the service for a considerable length of time, would be worthwhile.
2. Court records of land conflicts (over usage) could be fruitful.
3. Correspondence between the Bureau of Indian Affairs and the Forest Service would reveal information concerning the use of particular area, especially where a conflict was involved.
4. Permits given by the Forest Service would provide some information concerning the location and purpose of use by particular groups through time.

It is also recommended that Santa Ana be included in such a study. Although physically somewhat farther from the forest area than Zia and Jemez, the close association of these three pueblos suggests they be dealt with as a unit. San Felipe Pueblo might also be included since, geographically at least, it is in fairly close association with the area and groups in question.

Additionally, the more subtle aspects of Indian use should be studied. One step toward this would be by restating the objective so as to include Indian employees of the Santa Fe National Forest as an Indian group and thus examine their relationships with the National Park Service and the effects of such (more specifically, their relationships with non-Indian employees and the forest itself). This in itself is an important aspect of the relations between the Santa Fe National Forest staff and Indian groups.

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In conclusion, this document should be regarded as a mere scratch across the surface of information needed to understand fully the resource variability of the Santa Fe National Forest and actually how such resources were used by neighboring Indian groups. Admittedly, aspects of it are deficient. In order for such a project as this to be more comprehensive and more useful, however, more avenues of information must be explored, more aspects must be emphasized, more research time must be allotted, and more money must be invested. Hopefully though this work will have served well to inspire and, if necessary, to justify a continuation of this project by the Santa Fe or other Forests of the National Forest System.

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By way of introduction, this study undertook an extensive search of published ethnographic records pertaining to the different Indian groups under investigation here. Nevertheless, due to limitations of time and accessibility, as well as questions of judgement, this search does not claim to have been exhaustive. Certain material, for example, was omitted because it was considered too dated to be of any relevance (e.g. the diaries of Bandelier). Also, unpublished manuscripts for the most part, such as Master's theses or Doctoral dissertations, were not included. The most extensive ethnographic bibliography that exists on the Southwest is George Peter Murdock's *Ethnographic Bibliography of North America*, the most recent edition of which was printed in 1975. Frances Swadesh has a shorter annotated bibliography, *20,000 Year of History: A New Mexico Bibliography*, that was used. And finally, Lyle Saunders' *A Guide to Materials Bearing on Cultural Relations in New Mexico*, now somewhat dated, was of help.

To facilitate later research on the Santa Fe National Forest, all of the sources considered during this project are coded so as to inform the reader as to their particular usage. Sources not prefaced with an asterisk are those most heavily relied on for this report. The following coding system was used throughout.

- * - source reviewed but considered not to be specifically relevant
- ** - possible information source but could not be located or was located to late to use
- *** - recommended for further reading and additional information
- **** - source for certain general environmental information

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