AN ANALYSIS OF THE RECREATION LAND USE PROBLEMS OF THE MOUNT LEMMON AREA, CORONADO NATIONAL FOREST

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by

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ABSTRACT

AN ANALYSIS OF THE RECREATION LAND USE PROBLEMS
OF THE MOUNT LEMMON AREA, CORONADO NATIONAL FOREST

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The purpose of this study was to analyze the recreation land use problems of the Mount Lemmon area. This was done by identifying the causes of the present recreation land use problems through examination of past and present policy decisions of the U. S. Forest Service as well as examination and review of several dimensions of the local Tucson area. To arrive at this, a thorough study of the history of the area was conducted in conjunction with an in depth examination of the behavior of the Forest Service and its response to changing demands on the Coronado National Forest. The study concentrated on the recreational land use problems of the area but it also took into consideration other land uses and their conflicts with recreation use.

Several alternatives were considered as possible solutions to the recreational land use problems of the area. Each alternative along

with its probable consequences was identified and analyzed in detail. Appropriate corrective measures were recommended based upon an evaluation of the alternative solutions to help alleviate problems of the area.

The major recommendations of the study were that the Forest Service restrict the entire Mount Lemmon area to day-use activity. It was further recommended that the scenic Forest Drive, the Hitchcock Highway, be extended through the Santa Catalina Range to open up new areas for recreational use and to prevent conjestion along the present dead end route.

CHAPTER I

INTRODUCTION: SUBJECT AND APPROACH

Within the past two decades, outdoor recreation has become one of the most important uses of the National Forests. This was predicted in a letter dated September 27, 1932 from Chief Forester Robert Stuart to the regional foresters which stated:

> The importance of recreation as a social force and influence must be recognized and its requirements must be met. Its potentialities as a service to the American people, as the basis for industry and commerce, as the foundation of the future economic life of many communities, are definite and beyond question. Its rank in National Forest activities will in large degree be a major one and in a limited degree a superior one.[1]

And within twenty-five years, this prediction had certainly come true. The demand for outdoor recreation has now become overwhelming. Americans are now turning to the outdoors in increasing numbers. This is especially true in Arizona where the outdoors lies deep in American history and tradition.

However, there have been many complex, interrelated problems which have resulted from this rapid growth of recreation and now confront the administrators of public outdoor recreation areas. The largest single

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[1]Samuel T. Dana, Forest and Range Policy (New York: McGraw Hill Book Co., 1956), p. 228.

administrator of public recreation in Arizona that is faced with these problems is the U.S. Forest Service.

Purpose of Study

The purpose of this study is to examine the recreational land use problems which have arisen on the Mt. Lemmon recreation area. The study concentrates on the recreational problems of the area but it also takes into consideration other land uses and their possible conflicts with recreational use. The study also examines the behavior of the Forest Service and its response to changing demands on the Coronado National Forest. Several alternatives will be considered as possible solutions to the problems. Recommendations based on a thorough analysis of the alternatives will then be presented.

Guiding Hypotheses

The hypotheses upon which this study is based are as follows:

1. Causes of present recreational land use problems can be identified by examination of past and present policy decisions as well as examination and review of several dimensions of the local Tucson area.
2. If these problems can be delineated then appropriate corrective measures can be recommended to help alleviate problems of the area.

Definitions

Recreation on the National Forests means many things to many people. It may vary from a camping experience in a pristine wilder-

ness to a picnic in a well developed and supervised recreation site. To others, recreation may mean fishing, swimming, hunting, skiing or just a walk in the woods. But all of these activities have one thing in common - that is, the participant's main purpose is fun. In this respect, recreation differs from other uses of the National Forests because a tangible good is not removed from the premises by the user.

Although recreation has been defined by many people in a variety of ways, it is usually thought of as leisure time behavior freely chosen and subject to the usual legal and moral restraints. However, recreation can also be thought of as re-creation, a rebuilding of the body and the spirit through a close association with Nature.

This study is concerned with two broad types of recreation, day-use and overnight-use. Day-use can be defined as an activity which does not require overnight occupancy of the site. Activities such as picnicking, fishing, swimming and skiing are common day-use activities and usually require less than twelve hours. Overnight-use, on the other hand, usually infers some form of camping and occupancy of the site for two or more days is usually required. Camping may be done in tents, trailers, pickup campers, or sleeping bags and may include one or more of the above mentioned day-use activities as a part of the recreation experience.

Method of Collecting Data

The data contained in this study was obtained from a variety of sources. A large portion of the material was gathered from Forest Service publications including the manual, annual reports and several recreation

and multiple-use management plans for the Coronado National Forest and the Santa Catalina District. Forest Service correspondence files in the Supervisor's office relating to various land use decisions were quite helpful, especially those containing letters from Congressmen, interest groups, and private individuals. Interviews with key Forest Service personnel also contributed much additional information.

Files at the University of Arizona, Department of Watershed Management, were used to obtain basic data concerning the physical resources of the Mt. Lemmon area. Interviews with several faculty members at the University aided in the study. The local newspapers, the Tucson Chamber of Commerce and interviews with concessionaires on the Mt. Lemmon area also added valuable information. Several books on natural resource management and resource development were consulted along with Congressional records and documents pertinent to the study. Personal observations obtained from a thorough reconnaissance of the study area were drawn upon heavily throughout the report.

CHAPTER II

DESCRIPTION OF THE STUDY AREA

Location

The Santa Catalina area is but one segment of the twelve tracts of land which make up the Coronado National Forest. These tracts of land are of various sizes and are separated from each other by as much as thirty miles (See Figure 1). For the most part the Coronado National Forest is located in southwestern Arizona but a small segment overlaps into New Mexico. It contains most of the forested and higher elevation lands in this part of the State.[1]

These forested lands are virtual "Island in the Desert" which rise abruptly from the desert floor. Each group of "islands" was formed by a separate mountain range as a result of volcanic upheavals. The topography is extremely rugged and contains many striking geologic formations. This type of terrain is quite attractive to recreational users of the National Forests, especially if it is enhanced by the presence of running water.

The Santa Catalina recreation area is roughly triangular in shape with each side approximately twenty miles long (See Figure 2). The east-west base of the triangle forms a majestic backdrop directly north of the

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[1]"Coronado National Forest Recreation Management Plan" (Tucson: Forest Service files, 1965).

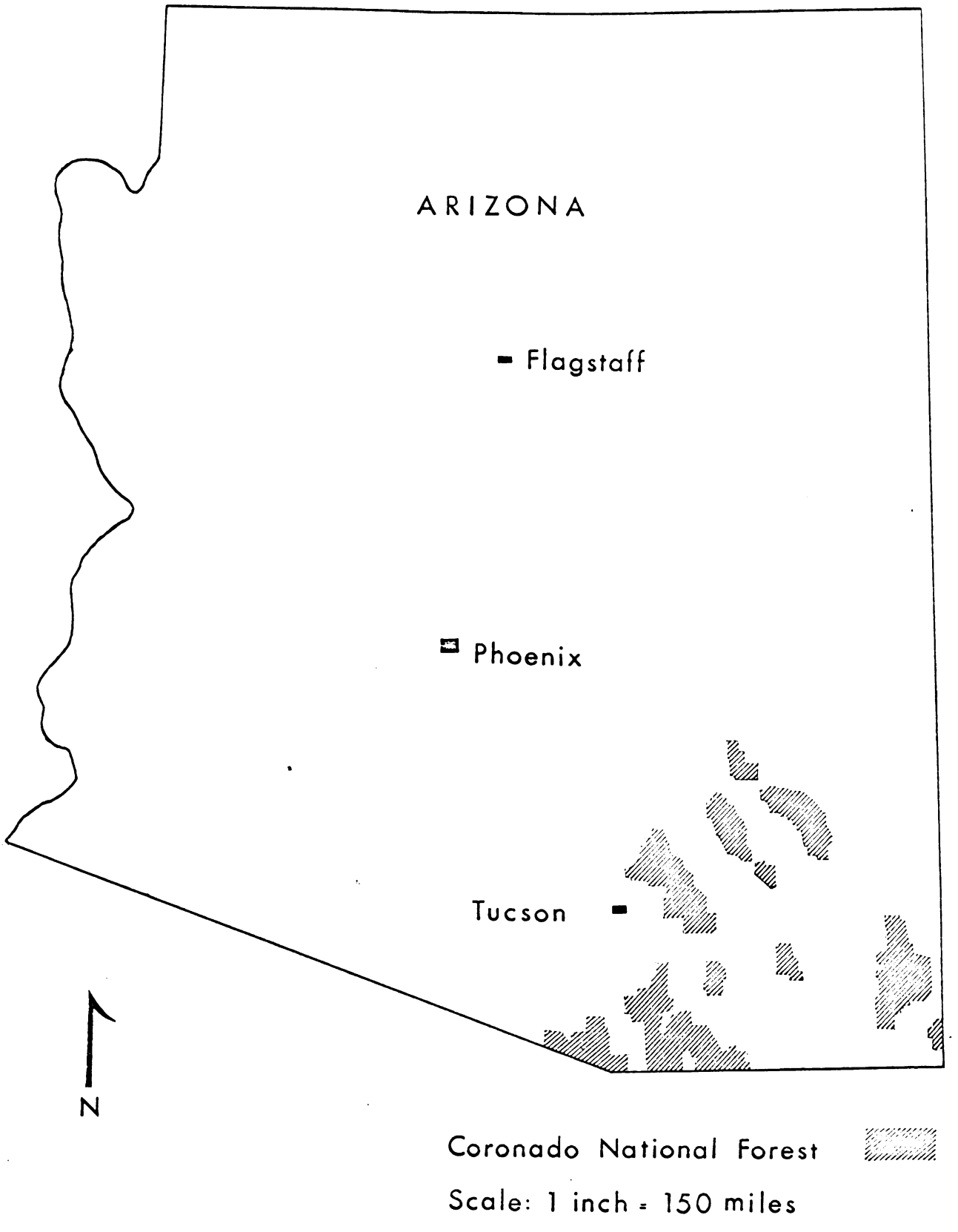


Figure 1. LOCATION – CORONADO NATIONAL FOREST

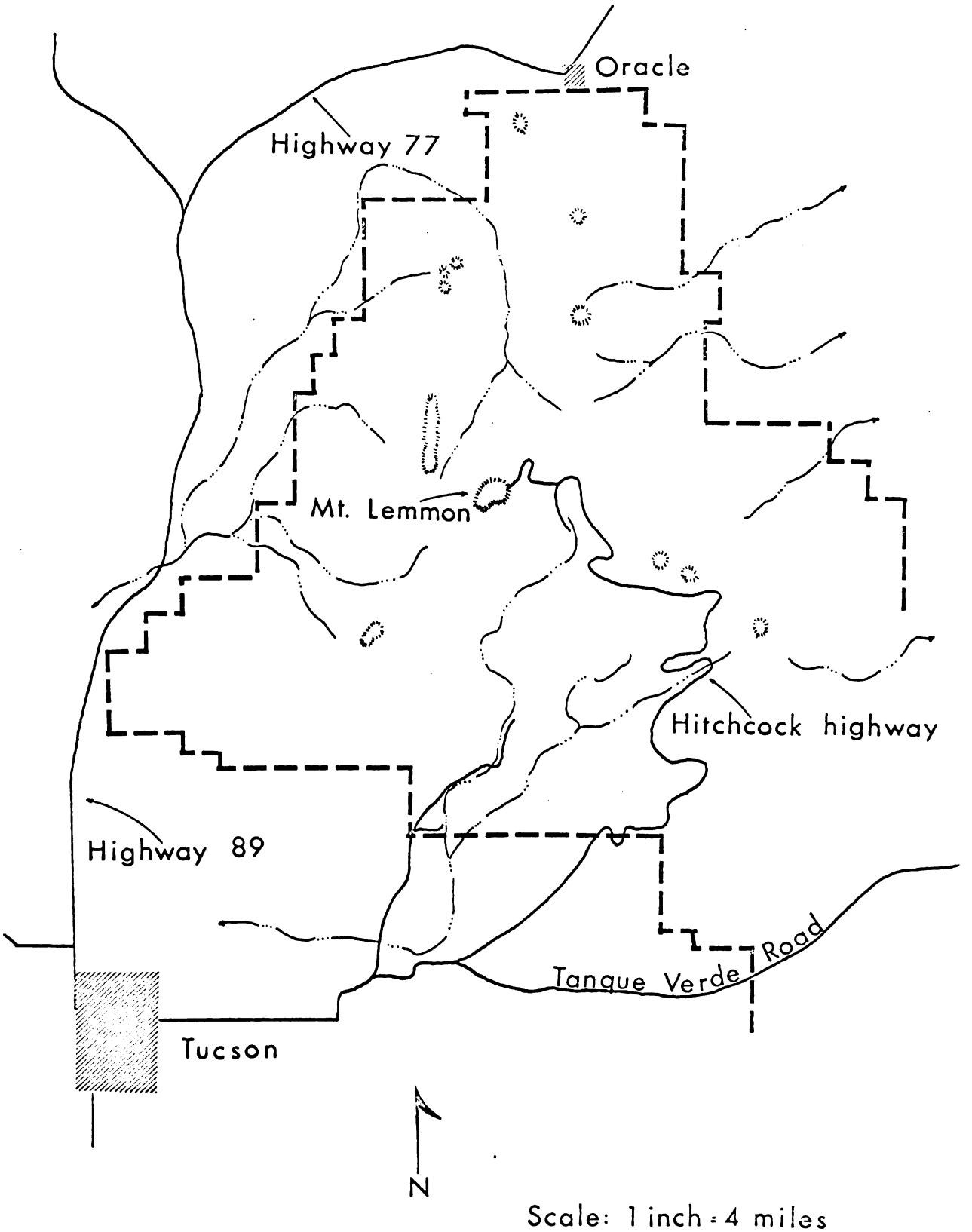
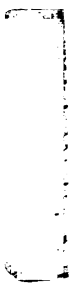


Fig. 2. ACCESSIBILITY — SANTA CATALINA RECREATION AREA



city of Tucson. Oracle, a small mining town, is located at the northern apex of the triangle. The southern and western sides of the triangle represent the fault lines along which the mountains were lifted. The mountains rise from the desert floor near Tucson at an elevation of 2,500 feet to the summit of Mt. Lemmon at 9,185 feet.[1] The total land area is approximately 140,000 acres.

Accessibility and Relation to Population Centers

The Santa Catalina Mountains are located in the most accessible portion of the Coronado Forest. But this was not always the case. Up until thirty years ago, the Catalinas and especially its southwest face was long regarded as an impenetrable wall as far as access to the top of the mountain was concerned. The first breakthrough was recorded in 1917, when the Forest Service built a control road up the backside of Mt. Lemmon. But this still required a four hour trip from Tucson.[2]

The main route into the Santa Catalinas is the General Hitchcock Highway which was completed in 1950. This route provides quick and easy access to the recreational facilities of the area. Other access routes into the area are foot and bridle trails and a few scattered jeep trails. But for all practical purposes, the Hitchcock Highway is the only route into the Catalinas.

This section of southeastern Arizona is crossed by two principal

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[1]R. H. Whittaker and W. A. Niering, "Vegetation of the Santa Catalina Mountains, Arizona: A Gradient Analysis of the South Slope," Ecology, XVIL (Summer, 1965), p. 430.

[2]"The American Forestry Association Motor Trip, Catalina Mountains" (Tucson: Forest Service Files, 1958), p. 3. (Mimeographed).

east-west highways, U.S. 70 and Interstate 10. Other main arteries into the area include U.S. 89 which runs from Nogales, Mexico through Tucson and joins State Highway 77 just north of the Santa Catalinas (See Figure 2).

The city of Tucson undoubtedly represents the largest single source of visitors to the Santa Catalinas. Tucson with a present population of 237,000, and the surrounding communities with a total population of about 60,000 are within easy driving distance of the Santa Catalinas and other portions of the forest. Although the city limits of Tucson are five miles from the forest boundary, housing developments and private business enterprises are ascending the foothills and encroaching upon the forest.

The total population of Tucson as a source of recreation visitors to the forest is somewhat misleading. The present population of 237,000 represents only the permanent residents of the city. Approximately 500,000 out-of-state visitors are drawn to the Tucson area each year during the winter and early spring months. Because these people are locally based and take advantage of the recreation opportunities of the forest, they cannot be considered as purely out-of-state recreationists.[1] However, the effects of having a large tourist oriented metropolis located adjacent to a National Forest recreation area can clearly be seen on Figure 3.

Climate

Tucson lies at an elevation of approximately 2,400 feet in a semi-arid desert valley. The valley is surrounded by the Santa Catalina, the

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[1]"Coronado National Forest Recreation Management Plan" (Tucson: Forest Service files, 1965).

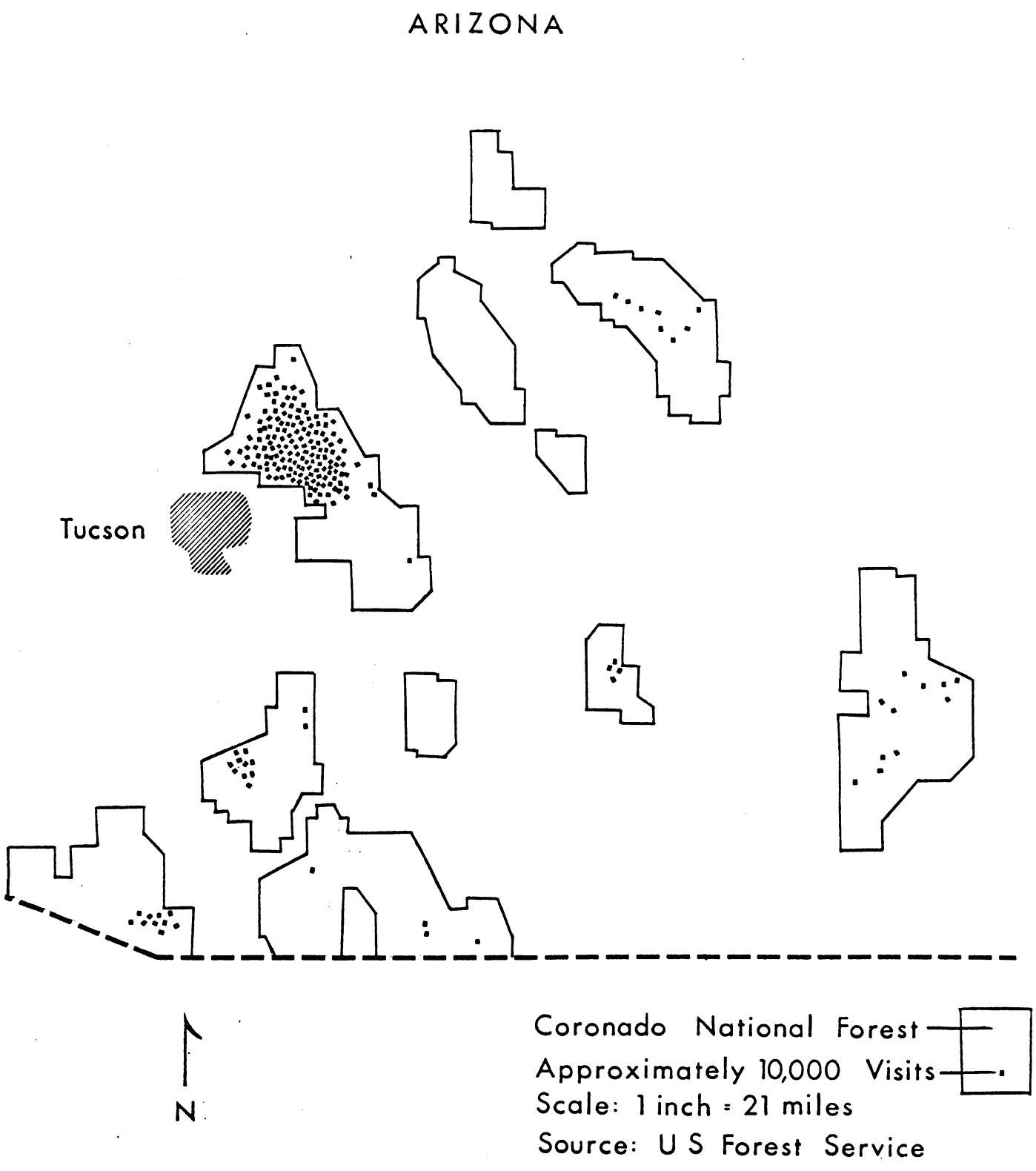

Figure 3. RECREATION VISITOR CONCENTRATION

Tucson and the Rincon Mountains which rise to an elevation of over 9,000 feet and greatly affect the climate of the city below. They intercept precipitation which supports vegetative cover and protect the city from excessive winds. Although Tucson has a semi-desert climate, the dryness and summer heat is not quite as extreme as is found in areas further to the west and northwest.[1]

Rainfall in the Tucson area comes during two distinct seasons, one from December to March and the other from July to September. The total rainfall for both seasons is about 10.5 inches per year. The Fall and Spring seasons are relatively dry.[2] As a result of relatively high temperature and low precipitation, the relative humidity is also quite low except during the periods of prolonged rainfall. It is a combination of these climatic factors plus a unique scenic location that makes Tucson so attractive to winter visitors.

The mountains surrounding Tucson contain an entirely different environment from the valley floor below. Within an hour's drive, one can go from the desert floor and the giant saguaros to a forest of spruce and fir. With an increase in elevation comes a corresponding increase in precipitation and a decrease in temperature. For each additional 1,000 feet rise in elevation an additional 1.9 inches of precipitation can be expected in the summer and 1.5 inches in the winter. There is also a corresponding decrease in temperature of approximately 3.5° F for each 1,000 feet rise in elevation.[3]

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[1] Christine R. Green and William D. Sellers, Arizona Climate (Tucson: The University of Arizona Press, 1964), p. 435.

[2] R. H. Whittaker and W. A. Niering, "Vegetation of the Santa Catalina Mountains, Arizona: A Gradient Analysis of the South Slope," Ecology, XVIL (Summer, 1965), p. 431.

[3] Ibid., p. 431.

These climatic elements have a great effect on the recreation use of the forest. In the summer, people can escape the heat of the desert by ascending to the cool, forested elevations. Almost any desired range of temperature can be experienced by moving from one elevational zone to the next. In the winter, the forest takes on an added attraction by offering snow and winter sports to the visitors of the almost snow free area below.

Natural Resources

Timber.--The Santa Catalina District contains a timbered area of 21,728 acres. Most of the timber is found at elevations above 5,000 feet. The major species found here are ponderosa pine, Douglas-fir, white fir, and Engelmann spruce. Other minor species found in the area are blue spruce, corkbark fir, limber pine, and quaking aspen.

Although much of the timber is of merchantable size, only 20,000 board feet are cut per year. Because of precipitous and unstable soils, logging is not permitted on many portions of the district. The total yearly receipts from timber sales and wood products amounts to about $285.[1]

One small portable sawmill is located on Mt. Lemmon and some timber is processed at the Federal prison camp. The sawmill operator and his crew plus inmates from the prison camp remove most of the timber. The maintenance operations in developed recreation sites are restricted primarily to the cutting of snags, removal of insect infested trees and the removal of trees hazardous to the general public. Harvesting and thinning operations are also

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[1]"Multiple Use Management Plan, Santa Catalina Ranger District, Coronado National Forest," (Tucson: Forest Service files, 1966).

carried out so as to enhance the value of recreation areas, roadside zones and streamside zones.[1]

Range.--Southeastern Arizona and the Coronado National Forest rank as one of the most important grazing areas of the United States. Although more than 37,000 cattle graze each year on the Coronado, grazing is a minor use of the Santa Catalina District.[2] At present there are seventeen permittees on the Catalinas which graze 2,736 head of cattle and produce about 750,000 pounds of beef each year. In addition, 65 horses are grazed under paid permit.[3]

Because of the rugged topography of the Catalinas and the thin erosive soil, grazing has been restricted to the lower elevations and the edges of the district. Use of range lands has also been reduced from year-long grazing to a seasonal basis. Grazing pressures must be regulated to protect the fragile range land from over use and to keep the watershed in a productive capacity.

Watershed.--The value of the Santa Catalina District as a watershed is extremely important. The forested portions of the district are composed of 143,735 acres of chaparral and woodland, 17,810 acres of pine and 3,198 acres of mixed conifers. In addition there are 56,325 acres of land classified as semi-desert. It is estimated that this portion of the Coronado produces 221,788 acre feet of water from the 20-30 inches of rain and snow

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[1] U.S. Forest Service, The Coronado National Forest Works For You (Washington: Forest Service, 1963).

[2] Ibid.

[3] "Multiple Use Management Plan, Santa Catalina Ranger District, Coronado National Forest," (Tucson: Forest Service files, 1966).

that fall on the area each year.[1]

A large portion of this water is used "on site" and is lost through evaporation, transpiration and human consumption. Water must be supplied to administrative sites, recreation areas and summer homes. The increasing volume of use by the recreating public puts a heavy demand on the available water resources. In fact, water must be stored in tanks so that it is available during the dry seasons (See Figures 4 and 5).

Since the Santa Catalinas are composed of shallow, granitic soils which are very susceptible to erosion, the watershed requires intensive management to maintain the water holding capacity of the soil. In 1940 the Forest Service had withdrawn 26,000 acres from grazing to protect the fragile watershed.[2] Timber harvesting operations are also carried out so as to create as little disturbance to the site as possible. Many lower elevation communities are wholly dependent upon ground water as a source of water for domestic use and it is for this reason that the forested watersheds are of such high importance. These higher elevation lands are responsible for contributing large amounts of water to the ever decreasing ground water supply.

Minerals.--Mining has long been one of the major sources of income for the State of Arizona. This is especially true in the area near the Santa Catalinas where the world's largest copper mines are located.

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[1] U.S. Forest Service, Facts - Southwestern Region National Forests (Albuquerque: Forest Service, 1958).

[2] U.S. Forest Service, Coronado National Forest (Washington: Forest Service, 1942), p. 4.

Figure 4. Water catchment tank in the Santa Catalinas.

Figure 5. Storage tank for water at recreation site.

History has shown that it was the quest for minerals that first brought explorers into the Coronado Forest and the Forest Service has been quite permissive in allowing prospecting and mining in the National Forests.[1]

There are at present approximately 3,000 acres of patented mining claims on the Santa Catalina District. Because the existing mining laws are quite vague and lax, some determined individuals have gained possession of forest lands for summer homes or hunting cabins under the guise of a mining claim. Many of these false mining claims were investigated by the Forest Service and in 1963, thirty mining claims on the Coronado National Forest were found to be contrary to the intent of mining laws.[2] Mineralization was found to be low on these areas and a portion of the claims have been sub-divided and sold for summer home sites.

Fish and Wildlife.--Fishing and hunting are very important activities on the Santa Catalina District. This area provides good hunting for such species as deer, javelina, turkey and small game. According to recent (1960) estimates there were 6,450 hunting visits for big game and 2,250 hunting visits for small game.[3] Hunting is restricted near established recreation areas but the conflict is minimized because the hunting season occurs at a time when other recreation use is at a low level. Also, the best hunting areas are located in remote areas away from the developed recreation sites.

The Forest Service in cooperation with the Arizona Game and Fish

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[1] Bernard Frank, Our National Forests (Norman, Oklahoma: The University of Oklahoma Press, 1955), p. 57.

[2] U.S. Forest Service, The Coronado National Forest Works For You (Washington: Forest Service, 1963).

[3] "Multiple Use Management Plan, Santa Catalina Ranger District, Coronado National Forest," (Tucson: Forest Service files, 1966).

Department has undertaken a program for wildlife improvement. Winter feed plots have been established, grazing by domestic livestock has been reduced and openings have been cleared in the forest for the use of wildlife. The estimated game population (1960) for the Santa Catalina District was 3,700 deer, 1,200 javelina, 30 bighorn sheep, 200 turkey and 5 bear.[1] This population will continue to be subjected to heavy hunting pressure.

Fishing is rather limited on the Santa Catalina District. Rose Canyon Lake, a 7 1/2 acre man-made lake at an elevation of 7,000 feet provides trout fishing for the general public. However, boating and swimming are not permitted on this lake. Lemmon Creek and Sabino Creek are the two live streams in the Catalinas and are stocked with trout at their upper reaches.

Recreation.--The importance of recreation on the Santa Catalinas has always been paramount. This was recognized as early as 1881 when an article on the Santa Catalina Mountains was published in a Tucson newspaper. The article read as follows:

> When adequate accomodations can be secured there is no doubt the region will be resorted to by ladies who seek to escape the tropical climate of our heated time. Wherever the ladies go the gentlemen will follow, and thus an attractive society will be gathered; and the expense of a long and tedious trip to distant states will be averted.[2]

It appears that this early prediction has come true in every way. The present status of recreation on the Santa Catalinas has been described as follows:

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[1] Ibid.

[2] Weldon F. Held, "The Santa Catalinas," Arizona Highways, XLI (Phoenix: January, 1965), p. 12.

> ....the Forest Service has steadfastly held that the most important resource on the Santa Catalina Mountains is human enjoyment, and that this intangible value is greater than all others combined. With this in mind, the Mount Lemmon Recreation Area has been established as a mountain playground open to all.[1]

In addition to the facilities listed in Table 1, the Mount Lemmon area offers opportunity for sightseeing, swimming, hiking, horseback riding, skiing, nature study or just plain relaxing. Almost any "forest type" recreation activity can be enjoyed on the Santa Catalinas sometime during the year.

The recreation opportunities offered by the Mount Lemmon recreation area are often cited as a major factor in drawing tourists to the Tucson area. Tourism is big business in Arizona, especially in the Tucson area. Only mining and manufacturing rank higher than tourism for producing income for the Arizona economy.[2] It has been estimated that $65 million is contributed annually to the local Tucson economy by the tourist industry.[3]

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[1] Ibid., p. 17.

[2] Interview with Robert Wier, Recreation and Lands Staff Officer, U.S. Forest Service, Tucson, Arizona, January 12, 1967.

[3] "Coronado National Forest Recreation Management Plan" (Tucson: Forest Service files, 1965), p. 3.

TABLE 1

DEVELOPED SITES - MOUNT LEMMON RECREATION AREA

CORONADO NATIONAL FOREST, ARIZONA

Picnicking and Camping Sites		Activities				Facilities			
Name	Approximate Elevation	Camping	Picnicking	Hunting	Fishing	Drinking Water	Tables and Fireplaces	Trailers Allowed	Season of Use
Overlook	2900		X				X		All year
Molino Basin	4500	X	X	X		X	X	X	All year
Bear Canyon	5800		X	X		X	X		Apr-Nov
Gen. Hitchcock	6000		X	X		X	X		Apr-Nov
Rose Canyon	7000	X	X	X	Lake	X	X	X	Apr-Nov
Bear Wallow	7600	X	X	X		X	X	X	May-Sept
Sykes Knob	7800		X	X		X	X		May-Sept
Inspiration Rock	7900		X	X			X		May-Sept
Loma Linda	8000		X	X			X		May-Sept
Marshall Gulch	7500		X	X	Stream	x	x		May-Sept
Spencer Canyon	7700	X	X	X		X	X	X	Apr-Nov

Source: U.S. Forest Service, 1966.

CHAPTER III

HISTORICAL BACKGROUND

Early Settlers

Pima County and the City of Tucson rank as one of the oldest settlements in the United States. Historians are uncertain as to who was the first white man to enter the State of Arizona. Actually, the first European white man to enter Arizona was neither European nor white. An African Negro, Estevan, entered Arizona in 1539 as an advance scout for Father Marcos de Niza, a missionary priest from Spain.[1] One of the purposes of the journey of Marcos de Niza was to locate the famous "Seven Cities of Cibola." The legend claims that up the Gila River was a large plain populated by a rich and prosperous people. It was claimed that gold was so plentiful that household utensils were made of it.

It is doubtful as to whether Marcos de Niza actually found the "Cities of Cibola" because so many mistakes have been proved to exist in the records of his journey that everything he wrote has been questioned.[2]

Another expedition for the conquest of Cibola left Mexico in 1540 and was led by the great conquistador, Francisco V. de Coronado. The

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[1] Stanley A. Jones, Arizona's Future (Tucson: Shandling Lithographing Company, 1964), p. 103.

[2] Historical and Biographical Record of the Territory of Arizona (Chicago: McFarland and Poole, 1896), p. 131.

Coronado party crossed the 32nd parallel into the unknown territory of Arizona. Although Coronado may not have passed through Pima County, his expedition was significant in that it did open up the territory to future exploration. During the next one hundred years, the Territory of Arizona was explored and exploited by the Spanish, but the area of Pima County was relatively untouched.[1]

The first missionary to enter the area now occupied by the City of Tucson was Father Eusebio Kino. Father Kino visited a Papago Indian village in 1697 and christened it Santa Catalina Cuitchibaque in honor of Saint Catherine. The mountain range to the north was also given this name.[2]

In 1776 Tucson became a key Spanish military garrison. For the next one hundred and thirty-six years, the City of Tucson was destined to fly the seven flags of Spain, the Republic of Mexico, the United States, the Confederate States, New Mexico Territory, Arizona Territory, and the State of Arizona. The future of Tucson and Pima Country seemed secure when the area was included as part of the Gadsen Purchase in 1853.[3]

Around 1880, gold, silver, copper and other metals were discovered in the Santa Catalina Mountains north of Tucson. The town of Oracle was founded as a mining town and a crude road was built up the mountain range from the north. Several mining claims were located along this road.

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[1] Arizona - A State Guide (New York: Hastings Hourse, 1940), p. 103.

[2] Weldon F. Held, "The Santa Catalinas", Arizona Highways, XLI (Phoenix: January, 1965), p. 114.

[3] Historical and Biographical Record of the Territory of Arizona (Chicago: McFarland and Poole, 1896), p. 106.

Meanwhile, the first hint of the recreational value of the Santa Catalina area came in the form of a rest camp for the soldiers of Fort Lowell. The soldiers were stationed at the base of the mountain range and conducted many campaigns against the warlike Apaches. Soldier Camp, located in the cool pine forest, was used as a rest and rehabilitation camp for the weary soldiers. The blue-coated cavalrymen of Fort Lowell were the first vacationists in the Santa Catalina area.[1]

With the exception of the mining claims, the first permanent settlers in the high mountains were Jim and Barbara Westfall who homesteaded a quarter-section of forested land on upper Sabino Creek in 1906. Although access was limited to the area, vacationists soon came to the area and the little resort became the town of Summerhaven in 1924.[2] At present there are many private homesites in the Summerhaven area with an additional 270 summer home permitees on adjacent National Forest land.

Creation of a National Forest

At the turn of the century, the Territory of Arizona had yet to become a State. But the forest now known as the Coronado had already begun to evolve. The legal basis for the formation of the Coronado stems from the Forest Reserve Act of 1891. A pertinent passage of the act stated:[3]

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[1] Weldon F. Held, "The Santa Catalinas," Arizona Highways, XLI (Phoenix: January, 1965), p. 16.

[2] Ibid., p. 14.

[3] March 3, 1891 (26 Stat. 1095).

> That the President of the United States may, from time to time, set apart and reserve, in any State or Territory having public lands wholly or in part covered with timber or undergrowth, whether of commercial value or not, as public reservations, and the President shall, by public proclamation, declare the establishment of such reservations and the limits thereof.

The first portions of the Coronado to be set aside in 1902 by President Theodore Roosevelt were the Santa Rita Forest Reserve, the Santa Catalina Forest Reserve, and the Chiricahua Forest Reserve. These were followed by the Baboquivari, Huachuca, Tumac and Peloncillo Forest Reserves which were set apart in 1906. In 1907, the Dragoon National Forest was set aside by President Roosevelt and the "Forest Reserves" were changed to "National Forests" in name to correct the impression that they were withdrawn from use. At this time, 1,370,910 acres of land had been withdrawn from the public domain and were to become the greater portion of the Coronado National Forest.

In addition to being changed to National Forests, several Forest Reserves were consolidated into single units. In 1908, three separate forests were formed. The Garces National Forest was created from the Baboquivari, Huachuca, and Tumacacori Forest Reserves. The Santa Rita, Santa Catalina and Dragoon National Forests were consolidated under the name of Coronado National Forest. In that same year, the Chiricahua National Forest was formed from the Chiricahua and Peloncilla Forest Reserves.[2]

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[1]U.S. Forest Service, Facts-Southwestern Region National Forests (Albuquerque: Forest Service, 1958), p. 33.

[2]Ibid.

Further consolidation came about in 1911 when the Garces and the Coronado National Forest were merged under the name of Coronado National Forest. Then in 1917, the Chiricahua National Forest was added to the Coronado National Forest. The last major addition to the Coronado came in 1953 when the Santa Teresa, Galuiro, Mt. Graham, and Winchester Divisions were transferred from the Crook National Forest, an addition of 425,674 acres.[1]

In many ways, the Coronado National Forest is still very similar to the "Islands in the Desert" as viewed by Coronado when he entered the area nearly 400 years ago. Located only a short distance from the sprawling metropolis of Tucson are two wilderness areas - the Chiricahua (18,000 acres) and the Galuiro (55,000 acres) which are protected under the Wilderness Act.[2] In addition, the Santa Catalina Natural Area (4,464 acres) is easily accessible by foot from the Hitchcock Highway.[3]

Responsibilities of the Forest Service

Under the Forest Reserve Act of 1897 the Secretary of the Interior was instructed:

> ....to make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction.[4]

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[1] Ibid.

[2] A wilderness as defined by the Wilderness Act of 1964 "is an area where the earth and its community of life are untrammeled by man, where man himself is a visitor and does not remain."

[3] U.S. Forest Service, Coronado National Forest (Washington: Government Printing Office, 1942), p. 13.

[4] June 4, 1897 (30 stat. 35).

The act further provided that:

> ....no public forest reservation shall be established except to improve and protect the forest within the reservation for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States.[1]

These duties have long since been turned over to the Secretary of Agriculture and have been carried out by the U.S. Forest Service.

It should be noted that the Forest Reserve Act recognizes only the two values of timber and water and makes no mention of range, recreation or wildlife values. However, the above passage of the law is quite permissive and has allowed recreation, grazing, and other activities to take place on the National Forests. In fact, Congress in 1915 authorized the Secretary of Agriculture to grant permits for the constructing of summer homes, hotels, stores or other structures needed for recreation or public convenience. It was at this time, contends Samuel T. Dana, that Congress first recognized recreation as a legitimate use of the National Forests.[2] However, it was not until the passage of the Multiple Use - Sustained Yield Act of 1960 that recreation was officially and legally recognized as a legitimate use of the National Forests.

As a result of the Multiple Use - Sustained Yield Act and previous legislation, the Forest Service is responsible for applying sound conservation and utilization practices to the natural resources of the National Forest. In addition, the Forest Service is responsible for

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[1] Ibid.

[2] Samuel T. Dana, Forest and Range Policy (New York: McGraw Hill Book Co., 1956), p. 188.

promoting scientific forest management among all forest land owners through example, cooperation, and research.[1]

The basic work of the Forest Service is included in three major activities: (1) management of the National Forests and Grasslands; (2) cooperation with States and private forest owners; (3) research. These basic activities and their subdivisions are outlined on the following page. With respect to the Coronado National Forest, wood, water, wildlife, range and recreation resources are being "managed and utilized in the combination that best meets the needs of the American people",[2] according to Clyde Doran, Forest Supervisor.

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[1] U.S. Forest Service, "Forest Service Work--Fact Sheet" (Tucson: Forest Service Files).

[2] U.S. Forest Service, The Coronado National Forest Works For You (Washington: Forest Service, 1963), p. 2.

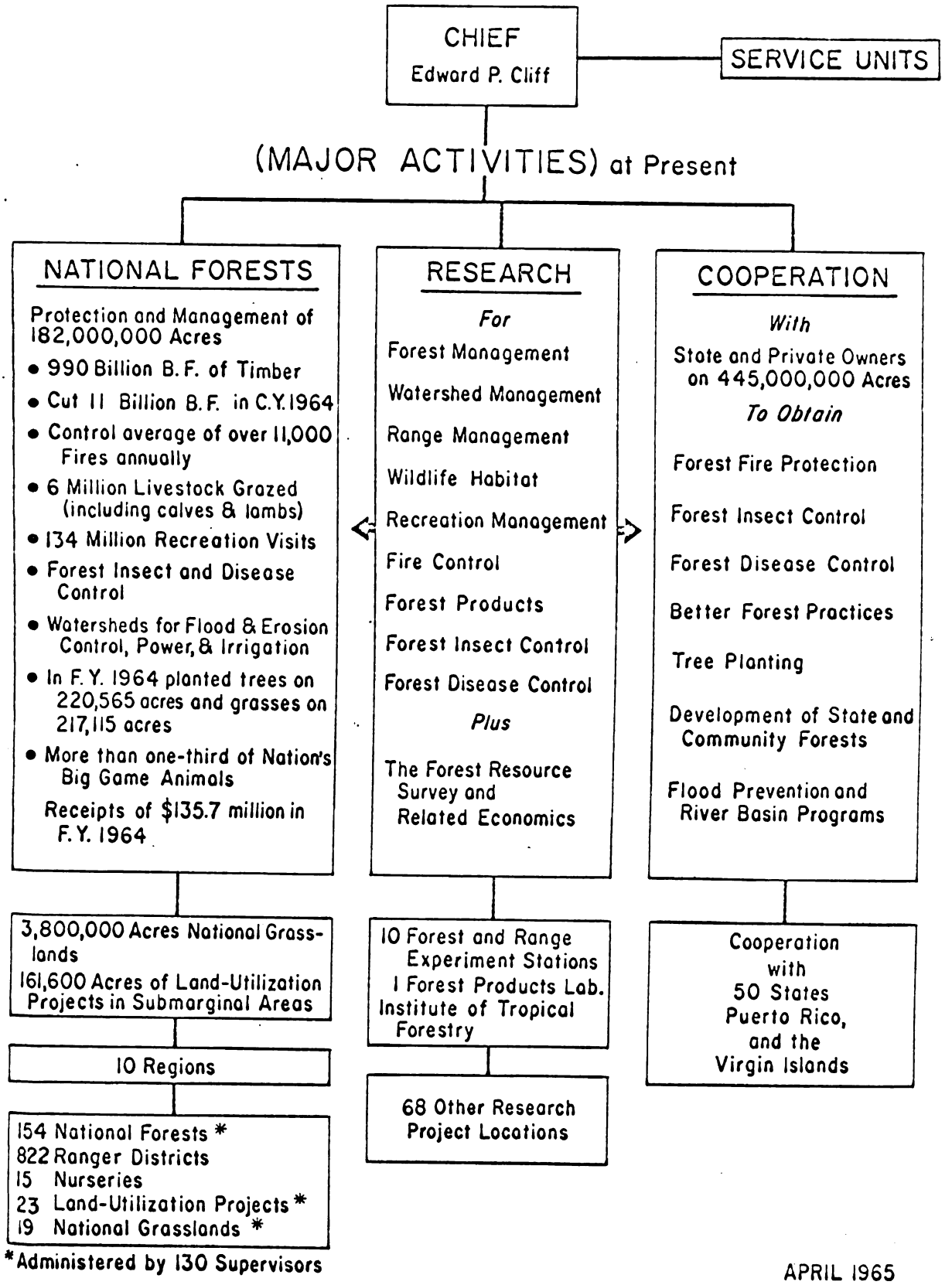

Figure 6. Major Activities - U.S. Forest Service.

CHAPTER IV

GROWTH OF RECREATION ON THE MOUNT LEMMON AREA

The Growth of Recreation from 1900-1950

In the early years of its existence the Coronado Forest experienced a minimum of recreational use. Few roads led into the rugged Catalinas but the forests were open to the hardy individuals who could enter on horseback or on foot. Resorts and dude ranches located near the forest were quite popular with the eastern tourists and a camping trip into the mountains was always a popular activity.

Because of its proximity to Tucson, the Coronado was often looked upon as a vast outdoor playground. Upon completion of the control road from Mount Lemmon to Oracle, the headlines of the January 11, 1920 edition of the Tucson Daily Citizen read as follows: "Ambitious Plans to make the Catalina Mountains the Playground of the State have been mapped out by the U. S. Government."[1] A few of the projects included a lake and a golf course on top of Mount Lemmon along with intensive use of the area adjacent to the road for summer home sites.

Although recreational use of the National Forests increased at a steady rate, it was not until the advent of the automobile that the true impact of recreational use was felt. "Travel by automobile has increased

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[1] Tucson Daily Citizen, January 20, 1920.

enormously within the past decade while travel on foot or horseback has decreased"[1] states H. D. Burrall in the 1930 Forest Recreation Plan for the Coronado National Forest. With a nation on wheels, camping, picnicking and sightseeing were now available to the general public. Figures 7 and 8 show the phenomenal increase that occurred during this period not only on the Coronado Forest but throughout the entire nation. Congress also recognized this upsurge in recreational use and in 1923 it allotted $10,000 as the first appropriation for recreation facilities.[2]

Along with the 1930's came the depression and with it came the Civilian Conservation Corps (CCC) which was responsible for constructing many camp and picnic grounds on the National Forests. During the period from fiscal year 1934 through 1938, the Coronado Forest Division received "New Deal Money" amounting to $1,323,440, the majority of which was used to open new recreation areas.[3] The intricate masonry walls in many of the camp and picnic grounds were a result of the CCC work on the Coronado. Sabino, Lower Sabino, Bear Wallow and Marshall Gulch areas were all constructed during this period. "The completion of the Sabino Canyon Road and Dam will make this one of the most beautiful and accessible recreational areas in the Southwest",[4] according to the

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[1] H.D. Burrall, "Forest Recreation Plan" (Tucson: Forest Service files, 1930), p. 5.

[2] U.S. Forest Service, Outdoor Recreation in the National Forests (Washington: Forest Service, 1965), p. 13.

[3] Arizona Daily Star (Tucson), November 20, 1938.

[4] Southwestern Labor Record (Tucson), June 11, 1936.

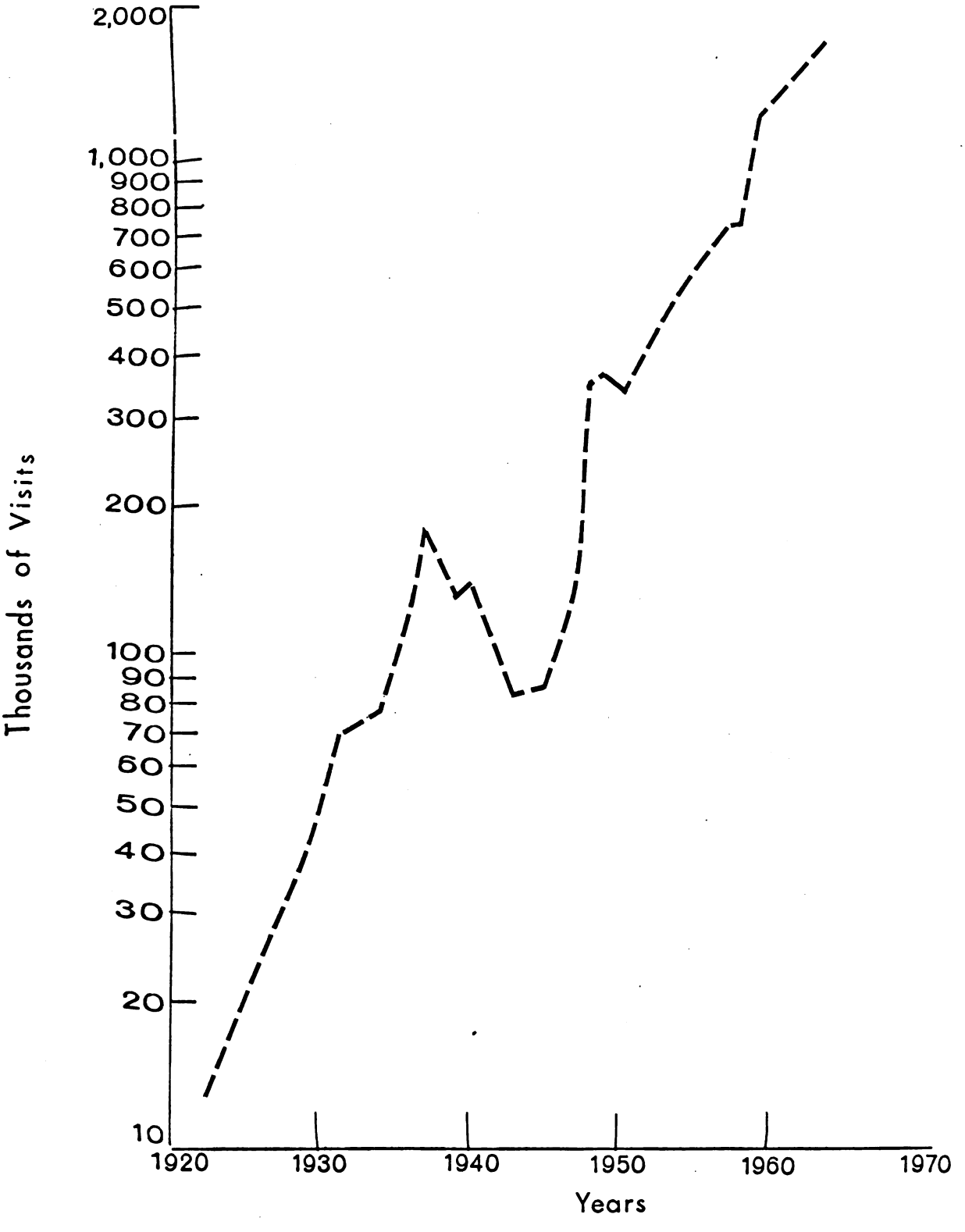

Figure 7. RECREATION VISITS TO THE CORONADO

(Source: U. S. Forest Service)

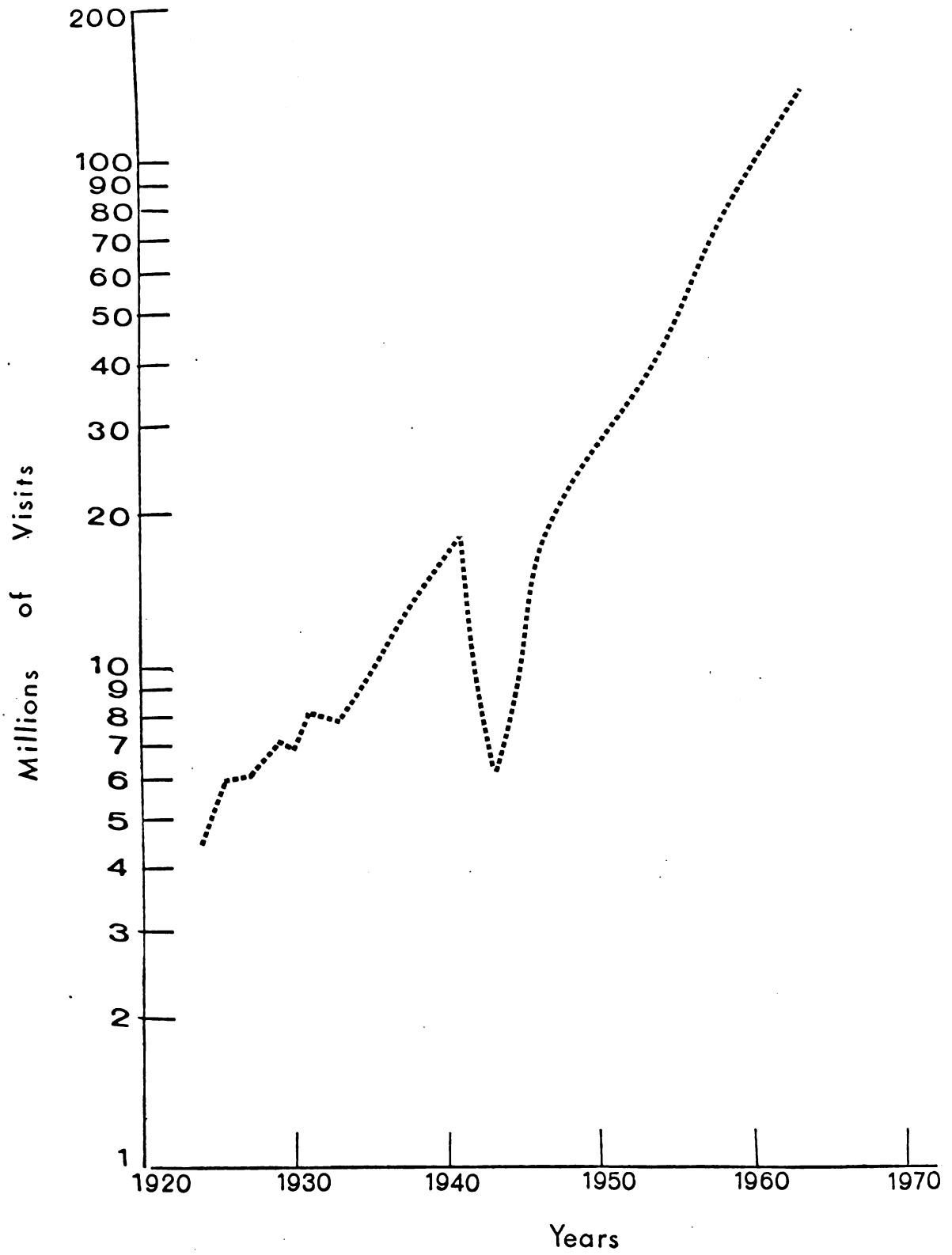

Fig. 8. RECREATION VISITS TO THE NATIONAL FORESTS

(Source: U. S. Forest Service)

Southwestern Labor Record. At this time developed recreation facilities were adequate to meet the demands but the volume of recreation visits to the National Forests continued to increase until it more than doubled during the thirties.[1]

As would be expected, recreational use of National Forests fell off sharply with the coming of World War II. Facilities were neglected or worn out during the war and were totally inadequate to meet the recreational needs of the American public following the war. But people again returned to the National Forests in record breaking numbers in spite of the shortage of facilities. "More automobiles and persons were in the Santa Catalina Mountains Sunday, June 10, 1946, than in the history of the resort area",[2] according to Howard Hunts, U.S. Forest Service District Ranger. The people of Tucson, however, were anxiously awaiting the completion of the Hitchcock Highway which was delayed during the war years. This highway held promise of opening up new vistas of recreational opportunities for the population below.

The Hitchcock Highway

For years people in Tucson had looked up to the cool pine forests of the Catalinas and dreamed of a short route up the south side of the mountain. The opening of the control road from Oracle to Summerhaven in

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[1] U.S. Forest Service, Outdoor Recreation in the National Forests (Washington: Forest Service, 1965), p. 13.

[2] Arizona Daily Star (Tucson), June 11, 1946.

1917 renewed this dream but this steep, winding, dirt road was so narrow that one way traffic was the rule and it left much to be desired. Tucson newspaper files indicate that prior to World War I there was much interest in constructing a road on the "short route" up the mountain.

As early as 1916, a survey was made by the Bureau of Public Roads for a road of ten percent grade with an estimated cost of $354,000. In 1928 a proposal to build a road up the mountain through Sabino Canyon at a cost of $500,000 was defeated by the public in a bond election. After the cost issue for the proposed forest highway was again defeated, it received the personal support of Frank Harris Hitchcock, the former Postmaster General and then editor of the Tucson Daily Citizen.

Frank Hitchcock campaigned tirelessly for the highway through his newspaper and in 1931 a meeting of the Forest Service, Bureau of Public Roads and State Highway Department was held to review the proposal. As a result of this and many other meetings, a recommendation was approved in 1933 by the Secretary of Agriculture to include the Hitchcock Highway as a part of the Forest Highway System.[1]

At this time an agreement was reached between the Forest Service and the Bureau of Prisons to set up a camp in the Catalina Mountains to construct the road using prison labor. This participation by the Bureau of Prisons had been authorized by an Act of Congress as a means of rehabilitating inmates with the expectations of making good citizens of them.[2] Because of a lack of funds for recreation projects, cheap

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[1] Speech by Clyde Doran, Forest Supervisor, Coronado National Forest at the retirement dinner for prison camp officials, December 30, 1966.

[2] Ibid.

labor was a necessity for construction of the road.

Although the Forest Service held fast to the theory that aesthetic and recreational values were paramount, economic, scientific and military pressures for the use of the land were tremendous. The Forest Service was aided by Public Law No. 436 which was "An Act to protect the scenic value of the Catalina Highway within the Coronado National Forest".[1] This law protected all surface resources from utilization on a line 400 feet on either side of the center of the highway. It was originally authorized to deter prospecting and mining claims by prohibiting any improvements of any character except recreational improvements for public use.[2]

As the Hitchcock Highway was nearing completion, Arizona and the City of Tucson were entering the first stages of a massive population explosion. It was the tremendous influx of people into the area that completely overwhelmed the available recreation facilities. The phenomenal growth of Tucson and the State of Arizona can be seen on Figure 9. Pima County has recorded a population increase of 130% since 1950 while the State of Arizona has increased 113% as compared to the increase of 23% for the United States for the same time period. Tucson had grown from a sleepy desert town of 45,000 in 1950 to a booming resort metropolis of 235,000 by 1965.

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[1] Public Law No. 70-436, March 15, 1940, Stat. 2152.

[2] Ibid.

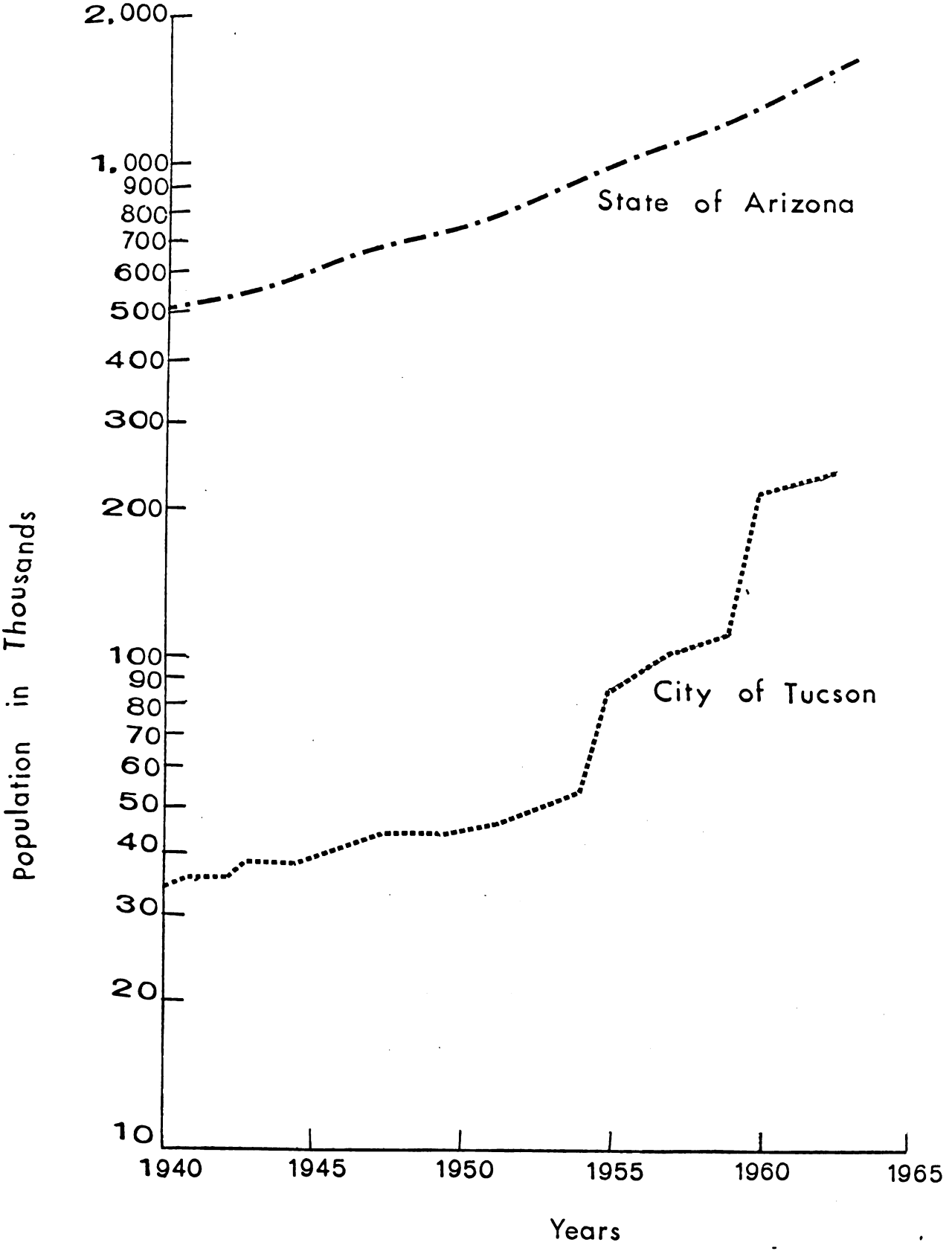

Figure 9. POPULATION GROWTH

(Source: U.S. Census Bureau)

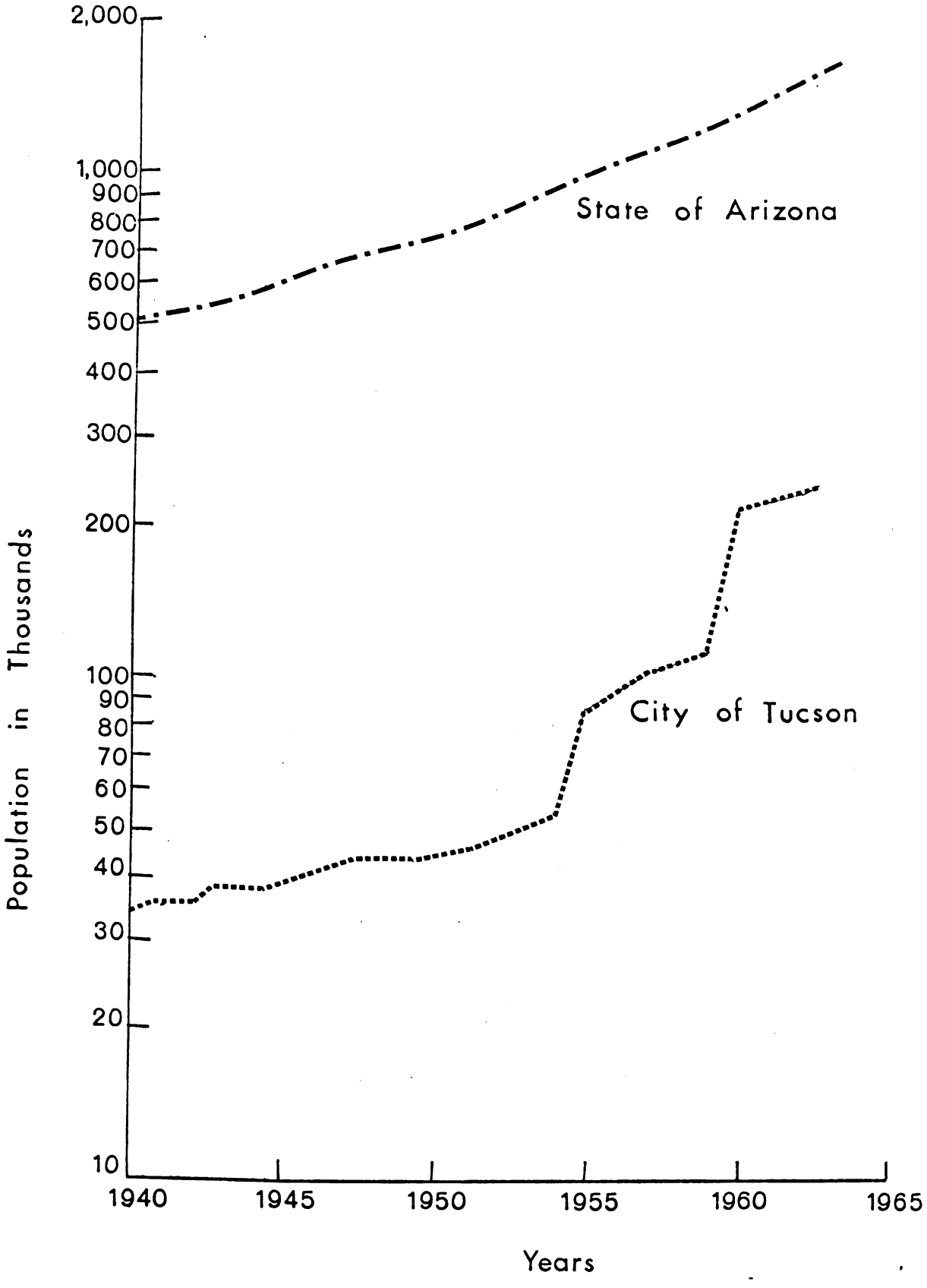

Figure 9. POPULATION GROWTH

(Source: U.S. Census Bureau)

The completion of the Hitchcock Highway in 1950 was marked by the placement of a bronze plaque at Windy Point in honor of General Frank Hitchcock. The opening of the highway transformed the Catalinas from a virtually inaccessible wilderness to suburban mountains. And, all of the recreational facilities of these suburban mountains were heavily used during the next ten years.

Response of the Forest Service

Recreational use of the National Forests continued to increase at a record breaking rate not only on the Coronado but throughout the nation. And, outdoor recreation participation on the national level was growing at a much faster rate than the population. High level Forest Service officials were aware of this problem and made a vain attempt to alleviate it. The Forest Service had repeatedly asked Congress for increased appropriations for recreation facilities. In a hearing before the Subcommittee of the House Appropriations Committee in 1953, Edward Cliff, then Assistant Chief of the Forest Service described the situation in the National Forests as follows:

> You will notice that in 1947, following the war, we received a rather substantial increase for this work to rehabilitate those facilities that deteriorated during the war period when no maintenance was done at all. Since that time, the funds available has been on an even keel at about $1,200,000 total. Contrasted to this chart, showing recreational use, you can see the funds available have not kept pace with the great increase in recreational use. These improvements are getting older all the time. Most of them were built during the early days. A lot of them are wooden structures. They are falling to pieces pretty fast. The increased use also creates serious problems of sanitation. The Public Health Service has examined a number of areas and called our attention to hazardous health conditions. Local public health authorities have made similar observations in some areas where they are working with us. We are really in

a bad way, and something is going to have to give soon.[1]

The facilities in the National Forests were becoming so overwhelmed and overused by visitors that Forest Service Chief, McArdle referred to the proposed increase in recreation funds as "almost a desperation request".[2] When asked what would have to be done to meet the present demands, Cliff replied:

> The facilities we have now are completely inadequate to take care of the 33 million visits we are getting. They are geared to take care of about half that number. Additional capital investments needed to provide satisfactory facilities for sanitation, public health and safety, and rehabilitate all essential existing public use areas, would total about $7 million. Capital investment needed to expand the capacity, totaling about $17 million, and the total additional capital investment needed to meet the problem would be about $24 million. That could be done over a period of years.[3]

The $24 million asked for was over and above the $2,268,000 that would be needed for operation and maintenance of existing recreation facilities.

In 1958 the Forest Service response to the growth of recreation was "Operation Outdoors", a five year program (1958-62) to maintain and repair old public use facilities and to provide new ones. The program called for an expenditure of $85 million for the five year period. Although Congress did not appropriate all of the money

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[1] U.S. Congress, House, Department of Agricultural Appropriations for 1954, Hearings before the Subcommittee of the Committee on Appropriations, 83rd Cong., 1st Sess., March 31, 1953 (Washington: Government Printing Office, 1953), Part 3, p. 1287.

[2] Ibid, p. 1293.

[3] Ibid., p. 1289.

requested for Operations Outdoors, substantial increases were received. The Forest Service had asked for $11.5, $15.5, $19.5 and $19.5 million and had received $9, $11, $10, and $14.5 million for the years 1958-61 respectively.[1] But by 1960 the use of the National Forests for recreation had increased even faster than predicted and because adequate funds had not been provided, Operation Outdoors fell far short of its objectives.[2]

Shortly thereafter, Operation Outdoors was superceded by the recreational phase of "Operation Multiple Use". Operation Multiple Use was a plan to spend more than a billion dollars over a 40 year period to develop forest resources and values. The recreation phase of this plan included all aspects of forest recreation and is based on the predictions that recreation visits to the National Forests would double in 10 years and increase nine fold by the year 2,000.[3]

In 1960 the Multiple-Use and Sustained Yield Act was passed. This Act gave recreation its much needed legal status and recognized it as one of the major uses of the National Forests.[4] This was an important response of the Forest Service, not that it had failed to recognize the importance of recreation in the past, but because it now had the firm

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[1]U.S. Forest Service, Operation Outdoors: Part 1, (Washington: Government Printing Office, 1957), p. 8.

[2]Outdoor Recreation Resources Review Commission. Federal Agencies and Outdoor Recreation. (Report to the Outdoor Recreation Resources Review Commission by the Frederic Burk Foundation for Education, San Francisco State College, ORRC Study Report 13; Washington: Government Printing Office, 1962), p. 21.

[3]Donald Francis Cate, "Recreation and the U.S. Forest Service--A Study of Organizational Response to Changing Demands" (unpublished Ph.D. dissertation, Dept. of Political Science, Stanford University, 1963), p. 228.

[4]Public Law 86-517, June 12, 1960, 74 Stat. 214.

legal authority it needed to meet future recreation demands.

Although the response of the Forest Service at the Regional or Forest Level to increasing recreation demands was not as apparent as at the National level, it nevertheless took place. The administrators of the Coronado had shown a very definite desire towards increasing the recreation facilities of the forest. They had plans to develop the mountains into "one of the best summer and winter resorts found anywhere in the Southwest".[1]

But the officials of the Coronado were plagued by a lack of funds for developing the facilities of the area. In a letter to Representative John Murdock, Regional Forester P.V. Woodhead describes the situation by saying "It has taken a long time (13 years) to build this beautiful Forest Highway and, even so, we find ourselves far behind in the planning and construction of recreational developments due to lack of Forest Service appropriations to carry on much needed recreational programs, particularly in this area".[2]

The Forest Service was quite fortunate in that it had access to a cheap source of labor in the form of the Federal prison camp. The prison camp was scheduled to be removed upon completion of the Hitchcock Highway. But, Forest Service officials who were hampered by lack of funds recognized the need for cheap labor and urged that the prison camp remain.[3]

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[1] Tucson Daily Citizen, July 20, 1948.

[2] Letter from P. V. Woodhead, Regional Forester to Hon. John R. Murdock, House of Representatives, Washington, April 3, 1946.

[3] Tucson Daily Citizen, June 10, 1947.

In another attempt to obtain additional funds for recreation, the Forest Service entered into an agreement with the Board of Supervisors of Pima County in 1951, whereby the County would appropriate $20,000 per year for use by the Forest Service to maintain and provide recreation facilities on the Coronado. These two events are quite significant because they point out the sincere but unsuccessful attempts of the local Forest administrators to meet the increasing demand for forest recreation.

CHAPTER V

PROBLEMS ENCOUNTERED BY THE GROWTH OF RECREATION USE ON THE MOUNT LEMMON AREA

Resource Oriented Problems

Water--The protection of watersheds was one of the fundamental purposes of the Forest Reserve Act of 1897 which set aside the National Forests. A passage from the act stated:

> No public forest reservation shall be established except to improve and protect the forests within the reservation for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States.[1]

Water production has always been given high priority on the Coronado. Runoff and the addition of surface water to the water table plays a critical role in meeting the urban population's increasing water needs. Research is now underway to determine the effects of vegetation manipulation on water yield and other resource uses. Possible practices to increase water yield include thinning of dense forests, clearcutting of pine and fir timber along stream bottoms or converting pinyon juniper stands to grass.[2] At the present time, the results of the research are inconclusive as to the amount of increased water yield obtained and the possible side effects of vegetation manipulation. A very serious conflict would arise between

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[1] June 4, 1897 (30 stat. 35).

[2] John S. Spencer, Jr., Arizona's Forests (Ogden, Utah: Forest Service, January, 1967), p. 21.

recreational use of the forests and watershed management if some of the above mentioned practices were applied to the Catalinas where water for recreational use is also a scarce commodity.

Although logging, mining and grazing disturb the soil and vegetation in mountainous terrain, road construction causes more damage to the quality of water than most of man's other activities. And, roads built for recreation purposes are no exception. These roads often penetrate into areas for recreation sites and summer homes where logging would not be permitted. The construction of these roads exposes mineral soil which compacts under travel and resists infiltration of water. Excess soil from road cuts often erodes and finds its way into stream channels.[1] To combat these problems in the Catalinas, the Forest Service is blocking, draining and reseeding all roads not needed for administration, protection or use of the resources.[2]

Compaction and erosion o f soil resulting from increased use of developed recreation sites also affects the quantity and quality of the water produced on the area. A lack of level ground and the erosive characteristics of the soil have forced the Forest Service to construct elaborate retaining walls and other erosion control structures to protect the recreation sites. Figures 10 and 11 show typical recreation sites on the Coronado National Forest.

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[1] Paul E. Packer and Harold F. Haupt, "The Influence of Roads on Water Quality Characteristics," Proceedings, Society of American Foresters (Detroit, Mich., 1965), pp. 112-115.

[2] "Multiple Use Management Plan, Santa Catalina Ranger District, Coronado National Forest," (Tucson: Forest Service Files, 1966), p. 8.

Figure 10. Retaining wall used to hold back unstable soil.

Figure 11. Masonry wall to prevent erosion at picnic sites.

Timber, Grazing and Minerals--Increased recreational use on the Santa Catalina District has created no real conflict with good timber management practices. Much of the timber on the district is growing in inaccessible canyon bottomlands or on steep slopes. Although much of this timber is of commercial size, the high cost of building roads and the danger of excessive erosion prohibits its utilization. For the most part, it would not be economically feasible to harvest these areas.

Timber harvesting is usually limited to snags, diseased or dangerous trees or trees that must be removed for recreation purposes. Extreme care must be exercised during logging operations to protect the fragile soil and to leave the remaining vegetation intact. Many areas have been excluded from harvesting operations primarily for watershed protection. If small timber harvesting operations are carried out they would be done at times when recreational use was quite low to reduce problems of traffic and dust.

The present policy of the Forest Service is to harvest only those trees that are potentially dangerous to the public and to the health and productivity of the forest. Present plans call for timber harvesting methods which will "protect, improve and maintain stands of timber which will be adequate for the recreation uses to be made of the area".[1] As a result of this policy roadside and streamside zones are protected from logging as well as all recreation areas. Stumps are cut flush with the ground and 100% slash disposal is practiced.[2]

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[1] "Multiple Use Management Plan, Santa Catalina Ranger District, Coronado National Forest", (Tucson: Forest Service Files, 1966), p. 6.

[2] Ibid.

A minor conflict may exist on some areas of the Coronado between recreation and grazing. But this conflict has been held to a minimum on the Catalina District. The majority of the grazing allotments have been restricted to the lower elevations and to the edges of the district while most of the recreation areas are located at the higher elevations where climatic relief is sought. There is actually very little overlapping between these two uses. The simultaneous uses of a developed recreation site by both the public and livestock is not permitted on the Catalina District.[1]

Mining claims have long been the cause of much difficulty in administering the National Forests. Most National Forests including the Coronado are open to unrestricted mineral exploration and the patenting of valid claims under the Act of May 10, 1872. In fact, the Forest Service encouraged prospecting for minerals on the forests and development of the resources.[2] Valid mining claims patented by conscientious individuals present no real conflict with recreation or other uses of the forest if the surface resources are used only to the extent necessary to extract the mineral.

Large amounts of land containing valuable timber have been tied up for years under mining claims. Hunting cabins have also been built on the Coronado and other National Forests under the guise of mining claims.[3]

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[1] U.S. Forest Service, National Forest Recreation Survey (Albuquerque: Forest Service, 1960).

[2] U.S. Forest Service, The National Forests of Arizona (Washington: Government Printing Office, August, 1924), p. 4.

[3] Bernard Frank, Our National Forests (Norman, Oklahoma: The University of Oklahoma Press, 1955), p. 8.

All mining claims on the Coronado have been inventoried during 1963 to determine the right of the Forest Service to manage and use the surface resources in accordance with the Multiple Use Mining Law of 1955. As an additional measure to protect the aesthetic and recreational values of the area, all existing developed recreational sites will be withdrawn from mineral entry by no later than 1968.[1] Also, all surface resources were withdrawn from use along the roadside zone of the Hitchcock Highway in accordance with Public Law 70-436.[2]

People Oriented Problems

Shortage of Recreation Facilities--One of the main objectives of this study is to delineate the recreational land use problems of the Mount Lemmon area, and, the most obvious problem is that of a general shortage of recreation facilities. Overcrowded campgrounds, overuse of hiking and riding trails, fishermen lining the banks of streams and lakes plus a long procession of sightseers slowly winding up the Hitchcock Highway are common sights on a summer weekend. A lack of parking facilities often causes visitors to park on the edge of the road creating additional disruptions to the slow moving traffic.[3] Picnickers are often forced to wait for a table or use an undeveloped area when they find that all of the facilities are occupied.

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[1] "Coronado National Forest Recreation Management Plan" (Tucson: Forest Service Files, 1966), p. 19.

[2] Public Law No. 70-436, March 15, 1940, Stat. 2152.

[3] L. D. Love, Summer Recreational Use of Selected National Forest Campgrounds in the Central Rocky Mountains (Fort Collins, Colorado: Rocky Mountain Forest and Range Experiment Station, April, 1964), p. 17.

This problem of overuse has become critical on certain peak weekends. More than 24,000 people visited the Mt. Lemmon area over the (Labor Day, 1962) holiday weekend, according to John Waters, District Ranger.[1] Headlines such as "Picnickers Crowd Recreation Sites"[2] and "Catalinas Swamped"[3] or "Anglers Crowd Canyon"[4] are quite common in the local Tucson newspapers. Figures 12 and 13 show conditions at recreation sites on a typical weekend in the Santa Catalina Mountains.

This tremendous overuse of the facilities has left its mark on many a reas. The subsequent abuse of the site and the facilities can be seen in Figure 14. It has become necessary for the Forest Service to periodically close recreation sites and allow them to "rest" while the natural vegetation recovers[5] (See Figure 15). However, this practice becomes difficult to carry out as many of the lower elevation areas are open on a year-long basis. Site rehabilitation practices are very slow and costly in a semi-arid region so every effort must be made to hold the soil and vegetation intact while the site is in use.

In addition to camping and picnicking, the Santa Catalinas offer a variety of recreational opportunities ranging from hiking and riding to snow skiing or swimming. The graph on Figure 16 shows the relative amounts

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[1] Tucson Daily Citizen, Sept. 5, 1962.

[2] Arizona Daily Star (Tucson), July 6, 1965.

[3] Tucson Daily Citizen, July 6, 1965.

[4] Arizona Daily Star (Tucson), May 10, 1962.

[5] "Coronado National Forest Recreation Management Plan" (Tucson: Forest Service Files, 1965), p. 19.

Figure 12. Crowded conditions at a recreation site.

Figure 13. Sightseers on the Hitchcock Highway.

Figure 14. Recreation site deteriorated from overuse.

Figure 15. Recreation site closed for rehabilitation.

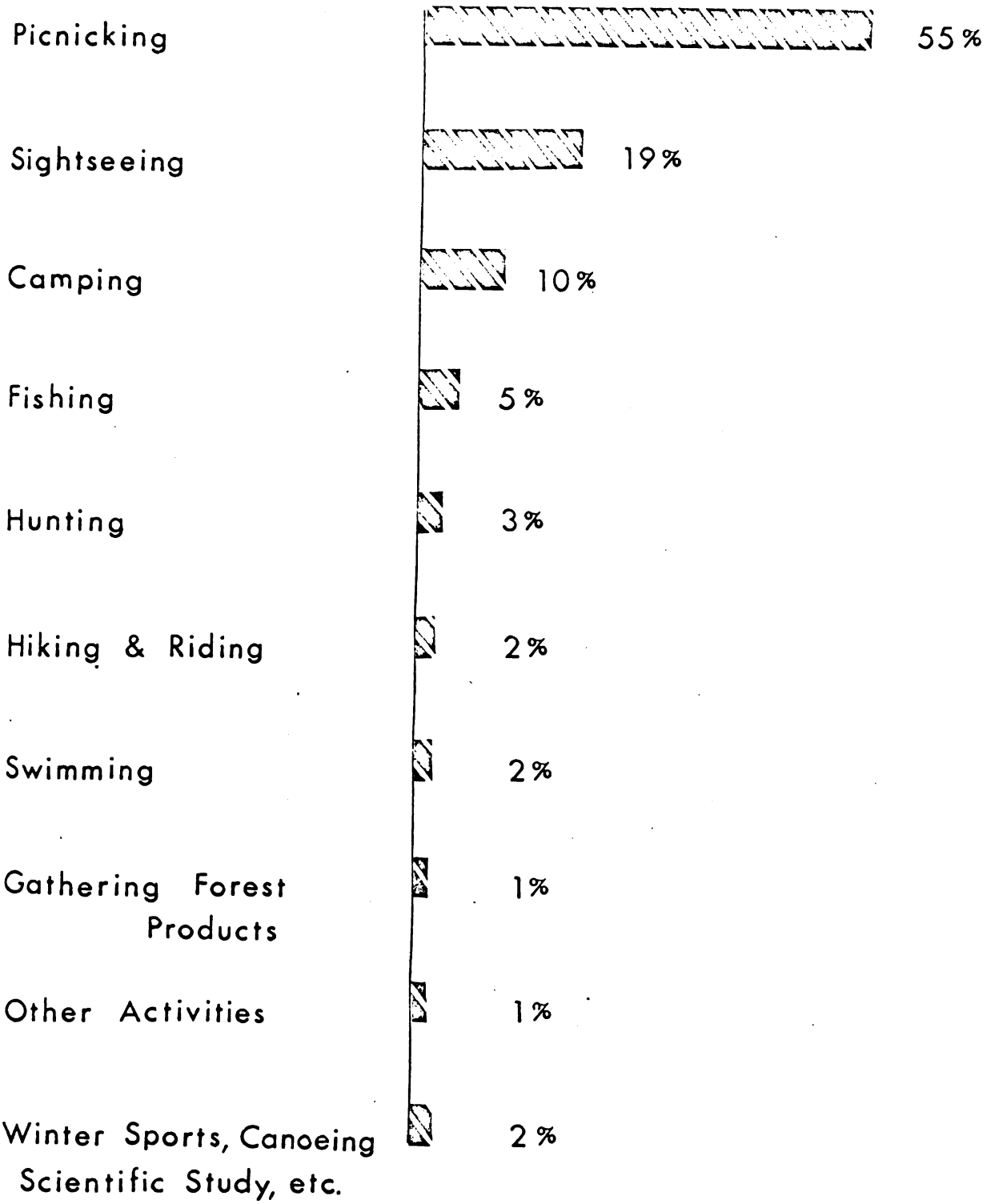

Figure 16. RECREATION USE ON THE CORONADO

(Source: U.S. Forest Service)

of each type of use on the Coronado. The graphs are based on use estimates obtained from Forest Service files. Picnicking now ranks as the greatest use but sightseeing is expected to increase as better access roads are built into the area. However, more recent recreation surveys have shown that the number of sightseers has been greatly underestimated and that sightseeing probably ranks now as the highest recreational use on the forest.[1] Hiking and riding are also very popular activities while the demand for swimming and other water oriented uses is increasing at a rapid rate.[2]

The Forest Service had added new recreation facilities within the past five years in an attempt to relieve the pressure on the existing areas. But, many of the old facilities which were built during the CCC days had to be replaced, so in effect, the total number of new recreation areas has increased very slowly.[3]

Two recreation areas within the zone of influence of the Santa Catalinas which offer somewhat similar facilities are the Saguaro National Monument and the Tucson Mountain Park. The Saguaro National Monument is administered by the National Park Service to preserve the forest of giant saguaro cacti. A few picnic facilities are available within the monument but sightseeing and nature studies are the main attractions.

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[1] Interview with Robert Wier, Recreation and Lands Staff Officer, U.S. Forest Service, Tucson, Arizona, January 12, 1967.

[2] "Coronado National Forest Recreation Management Plan" (Tucson: Forest Service Files, 1965), p. 19.

[3] Ibid.

The Tucson Mountain Park is a 11,000 acre recreation area located just west of the city in the Tucson Mountains and is administered by the Pima County Parks and Recreation Department. The park offers picnic sites and general outdoor recreation facilities and is the setting for "Old Tucson", the location of many western movies. The visitation to Tucson Mountain Park, as on the Catalinas, is very heavy. Over 500,000 people visited the park in 1963.[1] However, "There is a general shortage of park sites in the Tucson metropolitan area,"[2] according to Gilbert Ray, Pima County Parks and Recreation director. In general, adjacent recreation areas can be expected to offer little assistance in relieving the recreational pressure on the Santa Catalinas in the near future.

Even if the number of these facilities were increased, they would not reduce the use on the Catalinas because their season of use is during the winter while the Catalinas have a high summer use.

Conflict of Recreational Uses--One of the problems resulting from the overcrowded conditions on the Mount Lemmon area has been a conflict between day-use and overnight-use on the developed recreation sites. Day-use usually encompasses activities such as hiking, picnicking, fishing and swimming or other recreational activities where overnight occupancy of the site is not required. Overnight-use of the forest usually infers some form of camping (tent, trailer, pickup camper or just sleeping out-of-doors) and may include many of the day-use activities as part of the camping experience.

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[1] Arizona Daily Star (Tucson), February 13, 1964.

[2] Ibid.

The graphs on the following page (See Figure 17) show the increase of both day-use and camping on the forest. The data for the graphs was obtained from Forest Service Files for the Coronado National Forest and may be somewhat inaccurate due to difficulties encountered in determining the number of visitors and the purpose of their visit. In many cases, the District Ranger had to estimate the number of users and the purpose of their visit.

Part of the difficulty in determining the purpose of recreational visits results from having picnic sites situated in the immediate vicinity of campgrounds. The relationship between picnic sites and campgrounds was so close in past years that these areas were combined in reporting statistics on National Forest recreation facilities.[1] Even if campgrounds are separated from picnic sites within the same area they will not necessarily be used exclusively for their intended purpose. If day-use becomes very heavy on a certain area, the overflow will more than likely occupy the adjacent campgrounds. The reverse is also true.

Campers and picnickers often interfere with each other's activities if they are both allowed on the same site. Campers often desire a more natural setting and some privacy which is difficult to attain in a high density day-use area. Picnickers on the other hand, may be resentful of a few people occupying a site for several days or even weeks while they are subjected to overcrowded conditions. And, campers may object to the continuous traffic in and out of a recreation area as a result of the

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[1] U.S. Forest Service, Outdoor Recreation in the National Forests (Washington: Forest Service, 1965), p. 36.

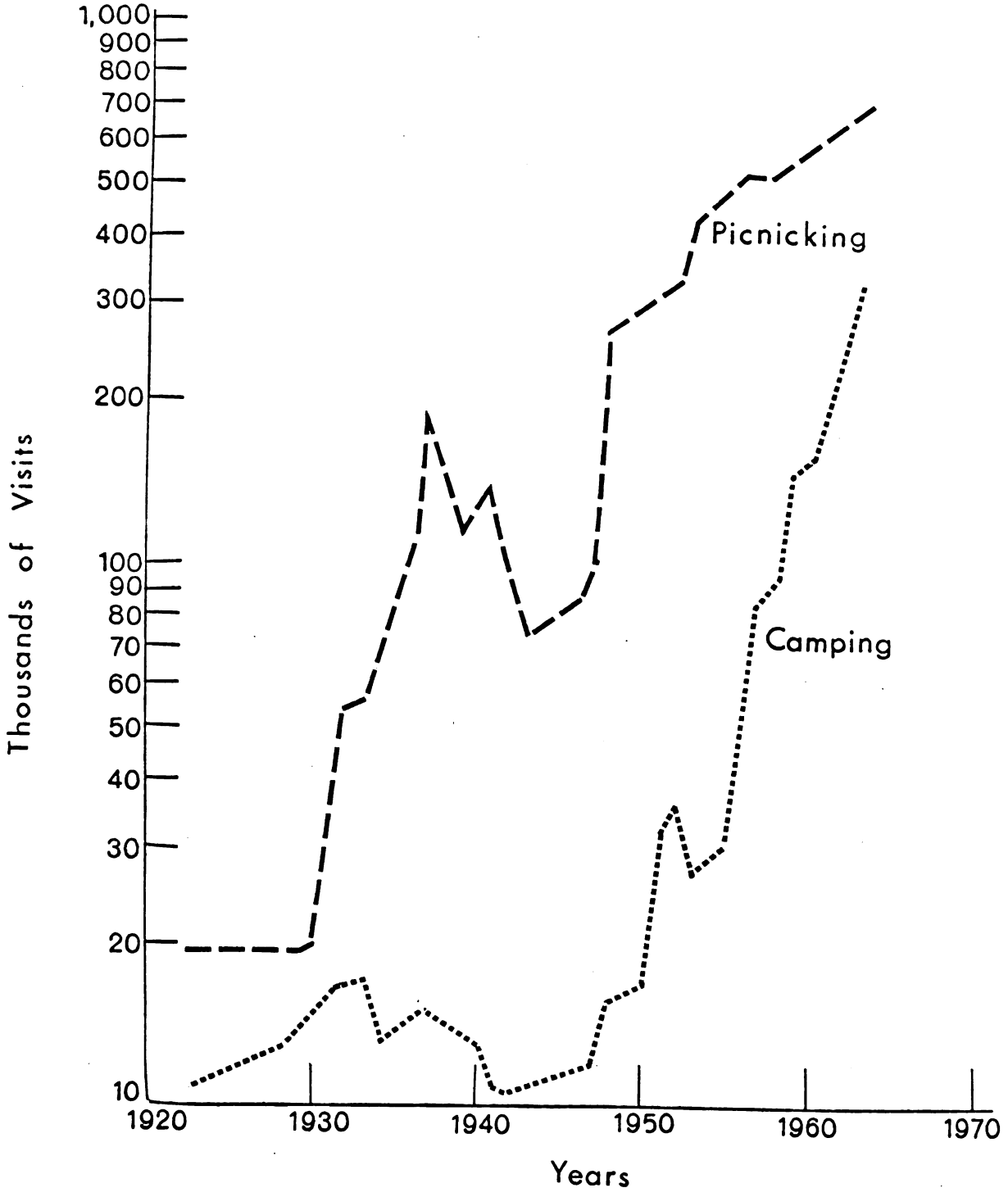

Figure 17. CAMPING AND PICNICKING ON THE CORONADO

(Source: U.S. Forest Service)

turnover of day-users.

The problem of whether to manage the Mt. Lemmon area for day-use or for overnight camping or for both is becoming more important as the use increases on the forest. The trends shown in Figure 17 indicate that the demand for all types of forest recreation is increasing and will continue to do so in the foreseeable future.

In previous years, the Forest Service did not make a distinction between day-use and overnight-use when facilities were being constructed in the Santa Catalina Mountains. Therefore, these facilities were used by both day-users and campers simultaneously. The Forest Service made an attempt to meet the needs of the people although these needs were probably never clearly identified.

The present policy of the Forest Service is to "accommodate the day-use inasmuch as possible."[1] Although day-use appears to be given priority on the Mount Lemmon area, camping is still being allowed adjacent to day-use "mass recreation" areas. Spencer Canyon is a recreation area which was constructed in 1965 to accommodate day-use but camping is also permitted on the area. Rose Canyon Lake is an example of a recently developed (1958) recreation area which has sites that were developed for both camping and day-use.

In essence, the Forest Service is attempting to accommodate the increasing demand for day-use activities on the Santa Catalinas but it

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[1]"Coronado National Forest Recreation Management Plan" (Tucson: Forest Service Files, 1965), p. 16.

is setting a precedent that may be difficult to reverse by allowing camping and day-use on the same sites thereby prolonging and possibly increasing the conflict between the two uses.

CHAPTER VI

ALTERNATIVE SOLUTIONS AND THEIR CONSEQUENCES

In this section of the study several possible alternatives will be evaluated which could apply towards solving the interrelated problems of a lack of developed recreation facilities and the conflict between day-use and camping on the Mount Lemmon Recreation Area. Since it would be impossible to evaluate every possible alternative solution within the scope of this study, only a few of the more feasible alternatives will be discussed in detail. The alternatives presented will be confined to a consideration of the demand for "forest type" recreation. Even though a high demand may exist for such facilities as swimming pools, golf courses and tennis courts, it is felt that the demand for this type of activity can and should be accommodated in the Tucson metropolitan area and the outlying resort establishments.

The consequences of these alternatives described below will all be limited to the study area and the immediately adjacent portions of the Coronado National Forest, all of which are under the control of one government agency - the U. S. Forest Service.

However, before any solutions can be considered, two basic assumptions must be made concerning the study area.

(1) The population growth of the Tucson area will continue as projected[1] and day users will continue to dominate the recreation facilities of the Mt. Lemmon area.

(2) The Forest Service will develop all potential recreation areas adjacent to the Hitchcock Highway before any new areas are considered for development. It is only natural to assume that all areas that can be developed by extending a spur road from the main highway will be developed first because of the high cost of building new roads into the area.

Upgrade the Control Road from Oracle to Summerhaven and Create a Scenic Forest Drive

The present road (cited hereafter as the control road)[2] from Oracle to Summerhaven was constructed by the Forest Service in 1917. The control road intercepts the Hitchcock Highway just below the summit of Mt. Lemmon, about 1/4 mile east of Summerhaven (See Figure 18). The road descends the northeast side of Oracle Ridge and is characterized by extremely steep grades, hairpin curves and numerous switchbacks.[3] Wash

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[1] Population projections were calculated by the Research Department of the Valley National Bank of Arizona and were based on U. S. Census Bureau data (See Figure 9).

[2] The road is referred to as a control road because it was so steep and narrow when it was first constructed that the direction of traffic had to be controlled. Cars were allowed to go up the road only during certain hours and to descend only at certain hours. Thus, the road became commonly known as the control road.

[3] Weldon F. Held, "The Santa Catalinas," Arizona Highways, XLI (Phoenix: January, 1965), p. 16.

outs along this dirt road are common and one-way traffic is often the rule. The average grade for the first six miles from the top is in excess of eight percent, therefore sedan travel is not recommended.

At an elevation of approximately 5,200 feet, the road leaves the pine region and enters an area characterized by chaparral. This area contains most of the livestock grazing permits for the district. The control road continues through the chaparral area for twenty-four miles until it reaches the Town of Oracle. The total length of the road is thirty miles and requires approximately two hours travel time.

If the control road could be paved and upgraded to meet present Forest Service recreation highway standards, it would provide a loop road through the Santa Catalinas which could be used by the general public. This route would also be more attractive to the residents of Phoenix. The congestion along the dead-end Hitchcock Highway would be eliminated and sightseers could return to Tucson or Phoenix via Oracle and State Highway 789.

However, it does not seem likely that paving and upgrading of the control road would contribute much towards relieving the recreational pressure on the rest of the Santa Catalinas. There is very little potential for new recreation sites along this route. One potential area of 140 acres is located at the upper end of the control road but it is actually adjacent to the Hitchcock Highway.[1] The route contains a very few sites which could be developed as vista points or scenic overlooks, which are desirable developments along a scenic highway.

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[1] Wesley Suhr, "National Forest Outdoor Recreation Resources Report," Form No. 17 (Tucson: Forest Service Files, Coronado National Forest), April 5, 1960.

A complete realignment of the control road would be necessary to bring it up to Forest Service scenic highway standards. In essence, this would mean the construction of an entirely new road. If the same general route were followed, the traveler would still descend the back side of Oracle Ridge quite rapidly and then be subjected to a relatively long and indirect route to Oracle. Using an estimated cost of $275,000 per mile for the proposed road,[1] the total cost for the thirty mile road would be $8,250,000.

In summary, the consequences of constructing a scenic highway along the present route of the control road would be somewhat disappointing. Aside from engineering difficulties, the road would not be particularly scenic, it would not open up any new potential recreation sites and it would do very little towards solving the problem of over-use on the Santa Catalinas.

Construct a Scenic Forest Highway Along Oracle Ridge

In 1963, a comprehensive study was prepared by the Forest Service to inventory and evaluate potential areas which could be developed as scenic forest highways. According to the Outdoor Recreation Resources Review Commission:[2]

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[1]U. S. Forest Service, National Forest Recreation Ways (Washington: Government Printing Office, December, 1963), p. 14.

[2]Outdoor Recreation Resources Review Commission, Outdoor Recreation for America (A Report to the President and to the Congress by the Outdoor Recreation Resources Review Commission, Washington: Government Printing Office, 1962), p. 25.

> ...it is the simple pleasures Americans seek most. By far the most popular are pleasure driving and walking; together they account for 42 percent of the total annual activity. The Sunday drive through the countryside is one of the great experiences that families share, and for those who live in the city it is anything but passive; they will often put up with an extraordinary amount of intervening traffic to break their way out.

The study, National Forest Recreation Ways, was one attempt to meet this increasing demand.

One segment of the National Forest Recreation Ways program was a proposal for a Santa Catalina Forest Drive by the Southwestern Region of the Forest Service. The proposed forest drive would actually be a continuation of the Hitchcock Highway. The road would travel north from Summerhaven high along Oracle Ridge to the Town of Oracle (See Figure 18). Magnificent views of Canada del Ora Basin as well as the surrounding mountains would be possible from this route.[1] Because of the extremely heavy use on the Hitchcock Highway and the estimated visits to the Santa Catalina Mountains, this proposal was given first priority over twenty-five other potential forest drives in Region Three (Arizona and New Mexico) of the Forest Service.[2]

Approximately sixteen miles of new road would have to be constructed along Oracle Ridge at an estimated cost of $3,200,000.[3]

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[1] U. S. Forest Service, Proposed Santa Catalina Forest Drive, (Southwestern Region: April 23, 1963), p. 1.

[2] U. S. Forest Service, National Forest Recreation Ways (Washington: U. S. Government Printing Office, December, 1963), p. 15.

[3] U. S. Forest Service, Proposed Santa Catalina Forest Drive, (Southwestern Region: April 23, 1963), p. 1.

The crest of Oracle Ridge is very narrow and irregular so the main portion of the road would have to be built just below the crest on the west side of the ridge. The entire route would fall within the present forest boundaries so no additional land would have to be acquired.

If a scenic highway were constructed along Oracle Ridge, some of the traffic would be diverted from the Hitchcock Highway. And, a very scenic loop road would be available for both the residents of Phoenix and Tucson as well as the many out-of-state visitors. This route would be very attractive to sightseers because of its elevation (8,000 ft.) and the climatic relief it would offer.

However, the construction of a scenic highway along this route would do little towards alleviating the overuse of the recreation facilities on the Santa Catalinas. And, a road of this nature could possible increase the use by providing better access to the already overcrowded areas. Since the road would be perched on a narrow mountain ridge, there would be virtually no potential for new recreation sites for either camping or picnicking. Three vista points could be constructed adjacent to the proposed route which would accommodate a total of 65 cars but the potential for other recreation sites is extremely limited.[1]

At present, no action has been taken by the Forest Service on the proposed Santa Catalina Forest Drive with the exception of the study made in 1963.

Construct a Scenic Forest Highway Via Canada del Oro

Canada del Oro is a large forested basin located in the northwest

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[1] Ibid., p. 16.

portion of the Santa Catalina Mountains. The basin is bordered on the east by Oracle Ridge and on the west by Samaniego Ridge (See Figure 18). A live stream flows north through the basin for approximately ten miles to the forest boundary. The stream then turns and flows southwest into the desert. The area is "densely wooded (primarily oaks) and has benches and terraces extending laterally directly above Canada del Oro."[1] The basin rises from 4,000 feet at the forest boundary to 8,400 feet as it approaches Mt. Lemmon.

One alternative for reducing the use on Mt. Lemmon would be to construct a scenic forest drive through Canada del Oro Basin. The road would be an extension of the Hitchcock Highway from its present terminus at the summit of Mt. Lemmon. The proposed scenic highway would travel southwest from Mt. Lemmon along the Samaniego Ridge which then swings abruptly northward. After following the Samaniego Ridge for approximately three miles, the road would slowly descend the east side of the ridge into Canada del Oro. The highway would then travel adjacent to the stream until it reached the forest boundary. It would then be necessary for the road to cross private property to join State Highway 77.

In addition to providing a scenic drive through the Santa Catalinas, the road would open up many new potential recreation sites in or adjacent to the Canada del Oro Basin. A portion of the basin is described by Wesley Suhr, Forest Service Recreation Specialist as follows:[2]

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[1] Wesley Suhr, "National Forest Outdoor Recreation Resources Report," Form No. 17 (Tucson: Forest Service Files, Coronado National Forest), April 5, 1960.

[2] Ibid.

> This is the most attractive woodland type potential recreation site the evaluator has encountered. Tall deciduous trees (sycamore, oak, ash) predominate along the entire channel length. At the lower end (north) huge juniper and cypress are mixed with the hardwoods; at the upper end (south) pine and fir occur occasionally. The upper five miles of stream (straight line distance) has continuous flow according to maps. Many white-tail deer are in the area.

More than 1,250 acres have been inventoried and classified as potential recreation sites along this basin.[1] Included in these areas are picnic sites, campsites, vista points and other areas of scenic or geologic importance. Many other potential recreation sites can be reached by extending a short spur road from the main route. Samaniego Ridge and Charouleau Gap are examples of such areas.

The cost of building a scenic highway from Mt. Lemmon to the forest boundary (north) would be approximately $3,300,000. This figure does not include the cost of developing the recreation facilities along the twelve mile segment of the scenic drive and is based on a Forest Service estimate of $275,000 per mile.[2]

The consequences of building a proposed scenic road through the Santa Catalinas via Canada del Oro Basin would be two-fold. First, the road would relieve the congestion resulting from the present dead-end Hitchcock Highway and provide a loop road for sightseers from Phoenix or Tucson. Secondly, the road would open up many potential

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[1]U. S. Forest Service, "District Recreation Plan, Inventory of Potential Development Sites, "Form No. 13 (Tucson: Forest Service Files, Coronado National Forest), August 11, 1960.

[2]U. S. Forest Service, National Forest Recreation Ways (Washington: U. S. Government Printing Office, December, 1963), p. 14.

recreation sites which would help to relieve the pressure of day-use and/or camping on the rest of the Santa Catalinas. Canada del Oro is probably the largest untapped potential recreation area in the Santa Catalinas and if it were developed properly, it would be a valuable supplement to the Mt. Lemmon recreation area.

One disadvantage of this route is that the scenic highway would have to cross six miles of private property in order to intercept State Highway 77. Since this portion of the route would be outside of the forest boundary, additional land would have to be purchased or an easement procurred for the route by the Pinal County Highway Department. Because the forest highway would cross county lines, a cooperative agreement would have to be reached with both Pinal and Pima Counties and the Forest Service. Or, the entire road could be financed with federal funds and included as part of the proposed National Forest Recreation Ways Program.[1]

Phase Out the Summer Homes on the Coronado National Forest

In the early years of the National Forest administration the Forest Service was quite generous in granting many special uses on the National Forests. Grazing, mining and many outdoor recreation uses including the construction of permanent summer homes were openly encouraged.[2] The general policy towards summer homes at that time is stated in the 1930 Coronado National Forest Recreation Plan as follows:[3]

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[1] Ibid., p. 7.

[2] U. S. Forest Service, The National Forests of Arizona (Washington: Forest Service, August, 1924), p. 16.

[3] H. D. Burrall, "Forest Recreation Plan" (Tucson: Forest Service Files, 1930), p. 6.

> Applications for summer home permits may be filed with either the Supervisor or the Ranger. It is one of the recognized activities of the Ranger to assist applicants in locating suitable lots and this is recognized as a high type of public service tending not only to increase the recreational income of the Forest, but also in promoting public relations work, making friends for the Service and locating city dwellers in the Forest.

Today many summer homes throughout the National Forests are being looked at by the Forest Service as areas which could have been developed for public reareation use. Federal agencies are spending vast amounts of money to acquire new lands from private people while there are lands in public ownership but under private control. Consequently, the Forest Service is attempting the difficult task of eliminating some of these summer homes.[1]

In 1958, the last summer home permit was issued on the Coronado and no additional permits were to be granted after that time. Clyde Doran, the Present Forest Supervisor, stated recently that the Forest Service is now considering amortizing some of the 270 summer homes over a period of several years. But, a close look at some of these summer homes shows that they are located on some very steep slopes and often inaccessible areas (See Figures 19 and 20). Even if these houses were removed, it is doubtful as to whether the sites could be developed for public recreation.

Any attempt by the Forest Service to expel summer home permittees would be met with severe opposition, as has been the case on other National Forests.[2] The permittees, many of whom are influential

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[1] Charles E. Randall, "National Outlook, Summer Home Permits," Journal of Forestry LXIV (Washington: November, 1966), p. 765.

[2] Ibid., p. 765.

Figure 19. Summer home in the Santa Catalinas.

Figure 20. Summer home located on a steep mountain slope.

Tucsonans, would use every legal device available to fight the Forest Service who would be depicted as trying to evict them from"their homes" and "their land". The permitees would undoubtedly enlist the support of the majority of the Tucson population and their legislators who are admittedly "anti-federal". The public image of the Forest Service would be severly damaged.

Since most of the summer homes are located near the community of Summerhaven, undue hardship would be inflicted upon the entire community if the summer home permits were cancelled. Business establishments in Summerhaven are tied economically to the summer home residents and would be adversely affected by their removal. This would have to be taken into consideration.

Another method of removing summer homes from the Coronado National Forest would be to use an escalating price for the summer home permits. The initial fee for a summer home had been $25 per year and has since been increased in recent years to $100 per year. If the fee was increased a considerable amount each year, many of the permittees would be forced to vacate their summer homes for economic reasons. Again, the Forest Service could expect a long series of legal battles from the summer home permittees if such an action was taken.

In summary, it appears that the removal of summer homes from the Coronado National Forest would do little towards relieving the recreation pressure on the area. In view of the adverse consequences, it would not be advisable for the Forest Service to try to eliminate summer home permits at the present time. If it did become necessary to cancel the permits, it should be done on an individual basis over

many years, e.g. the lifetime of the present permitee.

Allow Camping on the Santa Catalinas on a Weekday Only Basis

One alternative for reducing the conflict between recreation uses would be to separate day-use and overnight-use on the basis of time. That is, day-use would be allowed on weekends (Friday evening, Saturday and Sunday) while camping would be allowed only on weekdays (Monday through Friday afternoon). It would also be possible to allow camping on certain areas during the week while other sites are reserved exclusively for picnickers.

If this proposal were accepted and both campers and picnickers used the same site but at different times, the design of the site would dictate which use would be best accommodated. If the site was originally designed for picnicking it would have a central parking lot and campers would have to carry their tents and camping equipment away from the parking area to obtain privacy. Pickup campers and trailers would have to remain in the lot. An area designed for camping, however, would be equipped with separate parking spurs for campers. Picnickers would have no problem using the area but only to the extent that the parking spurs allowed unless additional picnickers parked along the road.

Proper signing would be necessary if this proposal were to be carried out. Signs would have to spell out very clearly just when people could camp or picnic and at what areas. At best, they would be confusing and separation of recreational uses would be difficult to obtain through the use of signs.

It would appear that the consequences of separating day-use and camping on the basis of time would be rather futile. In fact, separation on the basis of time may only increase the conflict between the uses. Campers may be unwilling to leave a recreation site on a Friday afternoon regardless of what the sign says. Policing of the area and strict enforcement of the rules might become necessary but certainly not desirable.

Furthermore, it would not be safe to assume that the bulk of the day-users would come to the Catalinas on the weekends while the campers would use the facilities primarily during the weekdays. A look at the population of Tucson reveals that a large number of tourists and retired people have the available leisure time to picnic and go sightseeing at a time when the Catalinas are least crowded - during the week.[1] Although many tourists and out-of-state visitors camp in the Catalinas during the week, many of the campers are local Tucsonans who enjoy their leisure time primarily on the weekends.[2] Under this alternative the local campers would be denied camping on the Catalinas.

One major drawback of this alternative is that it would not effectively solve the conflict between day-use and camping. There would be very little to prevent one use (if it became heavy enough) from over-flowing into an area designed or restricted for another

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[1] Interview with Robert Wier, Recreation and Lands Staff Officer, U. S. Forest Service, Tucson, Arizona, January 12, 1967.

[2] L. D. Love, Summer Recreational Use of Selected National Forest Campgrounds in the Central Rocky Mountains (Fort Collins, Colorado: Rocky Mountain Forest and Range Experiment Station, April, 1964), p. 11.

use. And, a precedent would be set of allowing both uses on the same site that would be difficult to reverse if a single use were desired on the Santa Catalinas at some future time.

Briefly, the administrative problems of policing the areas while maintaining a good public image and keeping the two uses separated on a weekend or a weekday only basis would soon prove to be insurmountable.

Develop the Santa Catalina Mountains for Day-use Only, Divert Camping to Other Areas of the Forest

The idea of managing the entire Santa Catalina area for day-use only is not new to the Forest Service. In fact, the Forest Service is moving somewhat in that direction by stating that "the objective of management will be to accommodate the day-use inasmuch as possible."[1] Although greater day-use activity is being advocated, camping is still allowed on the area.

If the Mt. Lemmon area were restricted to day-use activity, a big step would be taken towards solving the problem of overuse. By allowing only picnickers into the area, more people could be accommodated on each site and more sites per acre would be possible than if the area were restricted to campers. Also, a higher turnover rate would occur at picnic sites thereby serving a larger total number of people.

Management of the area would undoubtedly be simplified. Central parking would eliminate the need for costly parking spurs needed by

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[1] "Coronado National Forest Recreation Management Plan". (Tucson: Forest Service Files, 1965), p. 16.

campers and would accommodate more cars per unit of area. The water shortage problem could also be alleviated to some degree. While campers usually require a considerable amount of water at the site for cooking, washing dishes, shaving, etc., picnickers would not require as much water. Some sites could even be developed without water because people living in the arid Southwest are aware of the scarcity of water and usually carry their own water.

Another advantage of this alternative is that the conflict between day-users and campers would be eliminated. Since the uses are separated by many miles instead of a few hundred feet, there is no possibility of overlapping uses. Fortunately, there are several excellent areas to which the camping use could be diverted.

The Graham and the Chiricahua Mountains could accommodate the bulk of the campers which would be diverted from the Santa Catalinas. The Grahams and the Chiricahuas are located about 120 miles northeast and southwest of the Santa Catalinas respectively and are accessible from the Benson Highway (Interstate 10). The Chiricahuas have eleven developed recreation sites where camping is allowed and the Grahams have six developed camping areas. According to the recreation resource inventory of 1960, the Chiricahua Mountains have over 400 acres which could be developed as future recreation areas. These areas were listed as having outstanding potential because of the scenery, terrain and their almost continuous water supply. The potential of the Rucker Canyon Forest Camp located in the Chiricahua

Mountains is described by Frank Johnson of the Forest Service as follows:[1]

> ...A series of retention dams could be constructed which could be planted to fish, also affording water for larger forms of wildlife. With treatment this water could be used for extensive recreation and administrative use for developments further down the canyon.

In addition to the six developed camping sites in the Graham Mountains, 320 acres have been designated as potential camping sites according to the National Forest Outdoor Recreation Resources Report.[2] Water is available at most of the sites. According to Dr. David A. King, "This is the nicest forest environment for camping that I have visited in southeast Arizona. There are six live streams located in the area."[3]

Apparently many campers in the Graham Mountains agreed with Dr. King. A large number of the campers that were interviewed in the area in a recent study indicated that they come to the Grahams to go fishing, to enjoy scenery and to get away from the crowded conditions in the Santa Catalinas. About half of the campers interviewed were from the Tucson metropolitan area. The general consensus was that the people liked the area and did not feel that it was too far a drive for a camping trip.[4]

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[1] Frank Johnson, "National Forest Outdoor Recreation Resources Report," Form No. 17 (Tucson: Forest Service Files, Coronado National Forest), April 5, 1960.

[2] U. S. Forest Service, "District Recreation Plan, Inventory of Potential Development Sites," Form No. 13 (Tucson: Forest Service Files, Coronado National Forest), August 11, 1960.

[3] Interview with Dr. David A. King, Associate Professor at the University of Arizona, Tucson, February 10, 1967. Dr. King is the head of the outdoor recreation research at the University of Arizona and had conducted a study of campers in the Graham Mountains during the summer of 1966.

[4] Unpublished results of a study of campers in the Graham Mountains (Files, The University of Arizona, Department of Watershed Management, 1966).

Nevertheless, this alternative could have some unfavorable consequences. Because camping has always been allowed on the Santa Catalinas, campers may not be too willing to leave their favorite campgrounds. Since a precedent has been set, it may be hard to change. A change to day-use activities only would have to be done over a period of time. Then the campers would be subjected to driving 120 miles to either the Graham or the Chiricahua Mountains. Although this is not an exceptionally long distance with todays modern automobiles, some campers might object.

But, before the Graham and the Chiricahua Mountains can be further developed, good access roads must be constructed. The present gravel road in the Graham Mountains is very narrow and winding and is certainly inadequate for the present recreation demands. The lack of guard rails and other safety features makes the road quite dangerous, especially for automobiles pulling trailers. "The greater portion of the Forest road system is low standard and not designed for modern transportation needs".[1] Good access roads are a must if these areas are to meet their true potential in meeting the recreation needs.

Initiate a User Fee on the Mt. Lemmon Area

One alternative for reducing the overuse on the Mt. Lemmon area would be to limit the use by initiating a user fee on the forest. Although a user fee may have several objectives, the main purpose here

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[1] "Coronado National Forest Recreation Management Plan" (Tucson: Forest Service Files, 1965), p. 1.

would be to ration the resource through pricing. Since most people allocate their income on the basis of price and personal preference, some may choose other forms of recreation if a fee were charged for use of the facilities on Mt. Lemmon.

But, in order for a fee to be effective in reducing demand, it must equate the value of the recreation experience received with the cost. This is difficult to do at best because each individual assigns a different value to his particular recreation experience. The present Land and Water Conservation Fund fee of $7 per automobile per year may not equate the value of a recreation experience with the cost because once the $7 pass has been purchased, no additional costs are incurred to the user for each visit. Therefore, the decision to visit an area is no longer influenced by the cost.[1] One of the big reasons for the rising demand for recreation on the Mt. Lemmon area has been due to users not paying for the cost of their use. This is exemplified by a headline in the Arizona Daily Star which stated: "Picnickers Crowd Recreation Sites, New Fees Don't Stop Holiday Fun."[2]

Another objective of a user fee would be to help towards the operation and maintenance of recreation facilities. People may be more willing to accept a fee if they knew that the money was being used to

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[1] Jack L. Knetsch, Financing Public Outdoor Recreation (A paper prepared for the Third National Conference on Outdoor Recreation, Logan, Utah, September 8, 1966), p. 16.

[2] Arizona Daily Star (Tucson), July 6, 1965.

maintain an area (and the area was well maintained) rather than having the money used for some other purposes. If a fee is not charged for the use of a facility, then an arbitrary price of zero is placed on the resource and people tend to use the resource wastefully as if it actually had a zero value.[1]

The amount of the fee charged, however, should reflect in part the cost of operation and maintenance. If the objective of the fee system is to limit the use of an area to some predetermined carrying capacity, then the price charged must be at some point between zero and the short run marginal costs of operation and maintenance. It would not be justifiable for a public land managing agency to charge a fee above the marginal cost, thereby playing the economic role of the monopolist. But, even if the fee were raised to the allowable maximum - the marginal cost of operation and maintenance, the fee system may not necessarily limit the use effectively because people may be willing to pay an even higher fee depending upon the value they place on their particular recreation experience.

If an additional fee were charged on the Mt. Lemmon area, some very unfavorable consequences could be expected. A review of the files in the Supervisor's office of the Coronado National Forest gives a good insight as to the attitude of the general public towards outdoor recreation fees. When the Land and Water Conservation Fund fee was first put into effect in the Spring of 1965, considerable opposition

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[1] Marion Clawson, "How Much Should Users of Public Lands Pay," The Public Lands (Washington: Resources for the Future, Inc., 1965).

arose from local Tucsonans. "There was more opposition to the recreation fees in the Tucson area than in any part of the U. S." stated Robert Wier, Recreation and Lands Staff Officer on the Coronado National Forest.[1] Telegrams, letters and petitions poured into the Forest Supervisor's office. A local State Representative, Neal Justin, circulated a petition calling for a repeal of the Land and Water Conservation Fund Act.[2] Local Tucson newspapers also reflected the views of the public towards the new fees. Changes of discrimination against the impoverished people of the Southwest, encroachment upon State's rights and an invasion of personal freedom were levied at the Forest Service. "You have struck a blow at the heart and pocketbook of people of limited means" wrote an unidentified citizen to the Forest Supervisor.[3]

Thus, the opposition to an additional fee would certainly be overwhelming. The local people have had free access to the public lands for decades and have come to regard the National Forests as "their land" and not necessarily a part of the public domain. Dr. Mann, formerly of the University of Arizona describes the political situation in Arizona as follows:[2]

> ...A sense of individualism permeates the thinking of the members of many of the most important interest groups. On the whole, this attitude promotes an almost instinctive negative response to governmental activity, in spite of the

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[1] Interview with Robert Wier, Recreation and Lands Staff Officer, U. S. Forest Service, Tucson, Arizona, January 12, 1967.

[2] U. S. Forest Service (Tucson: Forest Service Files, Supervisor's Office, Coronado National Forest).

[3] U. S. Forest Service (Tucson: Forest Service Files, Supervisor's Office, Coronado National Forest).

[4] Dean E. Mann, The Politics of Water in Arizona (Tucson: The University of Arizona Press, 1963), p. 68.

> remarkable degree to which these very same interest groups have been and are dependent on governmental policy for their well being. It is this which produces the anomaly of Arizonans asking the federal government to finance such things as the Central Arizona Project (and federally financed recreation projects), while at the same time electing and re-electing people who express continued fears about "the federal government taking over."

Because of the expected opposition to any new recreation fees, the Forest Service would also encounter difficulty in actually collecting the fees in the field. Recent Tucson newspaper articles and editorials such as "Recreation fee ignored: U. S. cites first violator"[1] or "Forest Service speaks with forked tongue"[2] describe the attitude of a segment of the population towards paying recreation fees.

Other problems are also inherent in the administration of a fee system. Although the Mt. Lemmon area has essentially only one entrance, the Forest Service would encounter difficulties in collecting fees because it would be almost impossible to distinguish the sightseers and summer home residents from those who would use the developed recreation sites. An entrance station would have to be set up at each picnic or camp site thereby increasing the cost of collecting the fee.

Assuming that a fee would be used as a management tool to regulate recreational use on the forest, one of the more difficult problems would be to determine how much to charge. Then, the question would also arise of who to charge, when, and for what. Much more is involved than simply a decision to introduce user fees or not. A thorough analysis of these and other related problems would have to be conducted before

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[1] Tucson Daily Citizen, June 4, 1966.

[2] Arizona Daily Star (Tucson), July 6, 1965.

a decision could be made.

Another alternative for reducing the overuse on the Mt. Lemmon area would be to limit the use through a quota system. Once a carrying capacity has been determined for the area, only a limited number of automobiles would be allowed to enter on a first come - first served basis. Again, it would be difficult to distinguish the residents of Summerhaven and the summer home owners from the general public if a check station was established at the beginning of the Hitchcock Highway. Therefore, as with the fee system, an entrance station would have to be installed at the entrance of each recreation site and a quota would have to be determined for each site.

CHAPTER VII

RECOMMENDATIONS AND CONCLUSIONS

The following recommendations are based primarily upon an evaluation of the alternatives described in the preceding chapter. It should be kept in mind that these recommendations are directed towards alleviating the major recreational land use problems which were delineated in the study, namely, the over-use of recreation facilities and the conflict between day-users and campers on the Mt. Lemmon area.

It must also be emphasized that the results of this study cannot be generally applied to other areas because of the uniqueness of the study area. Many factors, including the social, economic and political aspects of the Tucson community as well as the actual land and water resources of the area have a direct bearing on the recreational land use problems and are not likely to be duplicated elsewhere. Therefore, taking into consideration these and other pertinent factors associated with the Mt. Lemmon area, the recommendations of this study are as follows:

Construct a Scenic Forest Drive via Canada del Oro

(1) In order to meet the present and the projected future demand for day-use recreation on the Mt. Lemmon area, additional recreation facilities must be developed. Assuming that all potential areas within access of the Hitchcock Highway will be developed first, it is recommended that a scenic forest drive be constructed from the summit of Mt. Lemmon via Canada del Oro Basin to its interception of State Highway 77.

A scenic forest highway of this nature would serve two purposes. First, more than 1,250 acres of potential recreation land would be made available for future development, thereby alleviating the problem of over-use on the present facilities. Second, a scenic forest highway through the Santa Catalina Mountains would reduce the congestion caused by the many sightseers on the present dead end Hitchcock Highway.

Findings by the Outdoor Recreation Resources Review Commission have shown that driving for pleasure is the foremost outdoor recreation activity in the United States. A scenic drive through the Santa Catalina Mountains and returning to Tucson via the Arizona-Sonoran Desert would provide an extremely enjoyable three hour drive for both Arizona residents and out-of-state visitors. This road would undoubtedly enhance the recreational opportunities of the Mt. Lemmon area.

Although a scenic forest highway along Oracle Ridge would also solve the problem of congestion along the Hitchcock Highway, it would have little to offer towards alleviating the overuse of the present recreation facilities. Because of its proposed location high upon Oracle Ridge, virtually no new areas could be developed as recreation sites. This proposal has considerable merit as a scenic forest highway but the Canada del Oro route must be recommended primarily because of its superior location and proximity to potential recreation sites.

An upgrading of the control road would not solve any of the problems. The road would be extremely difficult and expensive to upgrade to present Forest Service highway standards, it would not be particularly scenic and it would not provide access to any new potential recreation sites. It should probably be designated and used as a jeep road.

Restrict the Santa Catalina area to Day-use Activity

(2) The Forest Service must recognize the fact that because of their proximity to Tucson, the Santa Catalina Mountains have been transformed over the years into little more than a large city park in a forest environment. Because of this, the Santa Catalinas have often been described as "surburban mountains." Therefore, it is recommended that the entire Santa Catalina area be restricted to day-use activity. Until this is done, the Forest Service cannot hope to meet the anticipated demand for day-use recreation on the area.

Appropriate measures will have to be taken to convert all remaining campgrounds on the Mt. Lemmon area to day-use areas. Management will have to be intensified in heavily used areas and campers will of necessity be diverted to other portions of the forest. If the recreational potential of the Graham and the Chiricahua units of the forest can be realized, then the overnight use can be adequately accommodated on these and other portions of the forest. A transition of this nature should be carried out gradually, preferrably over a period of several years and after adequate facilities are provided for the displaced campers. This would allow sufficient time to develop comparable facilities on other districts of the forest and allow the campers time to adjust to the new areas.

Far worse than attempting to displace the campers from the Mt. Lemmon area would be an attempt to displace the 270 summer home permittees. There is at present a proposal, H.R. 740 introduced by eight Congressmen which states:

> ....that any person who...acquires and constructs... any structure, fixture or improvement on any national forest lands shall have a possessory interest therein ...Such possessory interest shall not be extinguished by the expiration or other termination of the permit and may not be taken for public use without just compensation...[1]

It can be expected that the summer home permittees would use every legal device including the proposed H.R. 740 to oppose Forest Service efforts to evict them. And, as can be seen in Figures 19 and 20, many of the summer homes are located on steep and inaccessible mountain slopes that would not be suitable for public recreation sites. Therefore, in view of the expected opposition by summer home permittees and subsequent legal battles along with the unfavorable location of the summer homes as public recreation sites, it is not recommended that the Forest Service try to revoke summer home permits at this time.

It would also be unwise for the Forest Service to attempt to solve the conflict between day-users and campers by allowing only camping during the week and day-use during the weekend. As was mentioned previously, separation of uses on the basis of time may only increase the conflict between the uses. Signing would be ineffective in separating the uses and policing of the area would be undesirable. In short, the administrative problems of trying to accommodate both day-users and campers on the same area while maintaining a good public image would soon prove to be insurmountable.

Although the use of a user fee as a means for reducing overuse has

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[1]Kenneth B. Pomeroy, "A $1 Billion Mistake," American Forests, LXXIII (April, 1967), p. 23.

considerable merit, it would not be advisable to initiate a fee at this time because of the intense public opposition that would result. Residents of Arizona and especially the Tucson area are admittedly antifederal in their political views. The use of a user fee would be feared as but another step by the Federal government in "taking over" and not as a means of financing additional recreation areas.

Recommended Research

As a result of this analysis of the recreation land-use problems of the Mt. Lemmon area, the need for additional research has become apparent. Further research in many fields is essential if intelligent decisions are to be made concerning the planning and management of future recreation sites. Detailed studies in the following areas should prove to be very beneficial in providing needed information for recreation land management decisions.

Determination of Carrying Capacity.--It would be very helpful in the planning of recreation areas to know the carrying capacity for various kinds of areas for different kinds of uses. The concept of the carrying capacity of a recreation site can be thought of in two ways - biological and sociological. A biological carrying capacity refers to the maximum number of people that can use or abuse an area without causing permanent deterioration. It is related to the physical and biological characteristics of the site (e.g. trees, shrubs, grass, rocks and soil) and their ability to withstand human activity.

A sociological carrying capacity is related to crowding or the number of people that can use a given site at a given time and still enjoy a

recreation experience. How can the carrying capacity be determined for a given recreation site? What would be the effects of various types of site design, buffer zones or recreational improvements on the carrying capacity of an area? How will user satisfaction be affected by various site layouts or structures used to increase carrying capacity? Answers to these and other questions relating to carrying capacity are necessary in all phases of recreation planning.

Characteristics of National Forest Visitors.--Very little is known about the socio-economic characteristics of the campers or the day-users of the Mt. Lemmon area. Research is needed to identify such socio-economic characteristics as age, sex, income, family composition, etc. and their relationship to recreation demand. It would also be very helpful to know the origin, length of stay, purpose of visit and the particular recreational preferences of the National Forest visitors. This type of information is necessary in providing for the present and the future potential demand for new recreation areas.

Effects of a User Fee.--A user fee is advocated by many as an answer to the problem of overcrowding at recreation areas. Studies are needed to determine the effects of various user fees as a rationing device. How much are people willing to pay to enter a recreation area? How effectively can user fees or the lack of them be used to divert people to a particular recreation area? Does the use of a fee change the behavior of the participants? The answers to these and other related questions are becoming increasingly important as the demand for outdoor recreation grows.

Use Estimation.--Since recreation land-use decisions often rely heavily upon past and present recreation use trends, accurate data on use estimation

is a necessity. Very little data is available on past use of the Coronado National Forest except in very general terms. Almost everyone agrees that recreation demand is increasing but it is not known to what degree. Better techniques for determining the amount of use in terms of visits, visitor days and party visits are needed. Electronic instruments such as photoelectric cells and pressure sensing devices could be used on individual sites in conjunction with the latest recording devices to determine patterns of use over time and spatial patterns of use on the area. It is also desirable to know total use on an area as well as to know when the peak loads of use occur and where they are concentrated.

These are but a few of the areas that should receive future recreation research. Uncertainties will always be with us. However, answers to these questions through detailed research will go a long way towards providing adequate solutions to the recreation land-use problems of the Mt. Lemmon area.

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