USDA

United States
Department
of Agriculture
Forest Service

**Pacific Southwest
Research Station**

General Techncial Report
PSW-GTR-180

# Managing Outdoor Recreation in California: Visitor Contact Studies 1989-1998

**Deborah J. Chavez**

**Publisher**

Albany, California
Mailing address:
PO Box 245, Berkeley CA
94701-0245

(510) 559-6300

http://www.psw.fs.fed.us

**January 2001**

**Pacific Southwest Research Station**

Forest Service
U.S. Department of Agriculture

## Abstract

Chavez, Deborah J. 2001. **Managing outdoor recreation in California: visitor contact studies 1989-1998**. Gen. Tech. Rep. PSW-GTR-180. Albany, CA: Pacific Southwest Research Station, Forest Service, U. S. Department of Agriculture; 100 p.

Findings from 30 outdoor recreation visitor contact studies that were conducted in California between 1989 and 1998 are summarized. Analyses focus on recreationist profiles, patterns of participation, beliefs and opinions, communication patterns, and depreciative behaviors. Although the "typical" respondent to the survey sites was white, there were many sites where significant numbers of racial and ethnic minorities were recreating. Visitors chose the areas because the mountains and deserts are important to them. Some sites had moderately sized visitor groups; others had large groups, though the sites they were visiting did not necessarily have the facilities and amenities needed to serve them. Management guidelines and future research needs for outdoor recreation are highlighted.

*Retrieval Terms*: adaptive management, cultural diversity, outdoor recreation, recreation management, recreation participation, California

## The Author

**Deborah J. Chavez** is a research social scientist with the Station's Wildland Recreation and Urban Cultures Research Unit, 4955 Canyon Crest Drive, Riverside, CA 92507-6099. E-mail: dchavez@fs.fed.us.

# Managing Outdoor Recreation in California: Visitor Contact Studies 1989-1998

**Deborah J. Chavez**

**Pacific Southwest Research Station**

USDA Forest Service
General Technical Report
PSW-GTR-180

**January 2001**

## Contents

## In Brief...

Chavez, Deborah J. 2001. **Managing outdoor recreation in California: visitor contact studies 1989-1998**. Gen. Tech. Rep. PSW-GTR-180. Albany, CA: Pacific Southwest Research Station, Forest Service, U. S. Department of Agriculture; 100 p.

*Retrieval Terms*: adaptive management, cultural diversity, outdoor recreation, recreation management, recreation participation, California

In 1989 a research program was designed that measured outdoor recreation visitor profiles, recreation patterns, beliefs, development preferences, communication tools and preferences, and beliefs about depreciative behaviors.

This compilation presents generalizations about outdoor recreationists based on a series of recreationist contact studies conducted at various outdoor recreation venues (i.e., forests) in California (mostly southern California) between 1989 and 1998. Each of these studies was funded by the USDA Forest Service or jointly funded by the Forest Service and the USDI Bureau of Land Management. This information can be used by managers to enhance customer service to these visitors.

Although the "typical" respondent to the survey sites was white, there were many sites where significant numbers of racial and ethnic minorities were recreating. Current management techniques may need to be changed to serve these diverse visitor groups. For example, some sites may need to be redesigned for large groups, or some family oriented programs can be added. Also, cultural sensitivity training may be needed for all visitor contact employees, including seasonal employees. It is expected that visitations to outdoor recreation sites will increase for Hispanic and Asian groups.

The typical visitors, as measured by these site-specific studies, and based on these respondent opinions, chose the areas because the mountains and deserts are important to them. They may have many conflicting opinions about recreation site management, such as "set it aside" but "leave it open to me."

Not only do respondents report the importance of the various sites to them, but results indicate that most sites are repeatedly visited, with some being so crowded that managers are searching for ways to relieve the amount of use. Any attempts to relocate some people to other areas probably should incorporate locations in the mountains (especially where there is water) and desert sites where people can picnic in natural resource-based surroundings that can accommodate large groups of people, and sites where managers will feel comfortable visiting with and serving visitor groups who may not be English speakers. Managers have an array of tools from which to choose, such as indirect tools like signs and brochures, which are relatively inexpensive, but the tool used should fit the situation.

Many respondents came from urban areas, looking for a place to relieve stress. They went to particular outdoor recreation sites because they had been there before and knew that it was a good family experience. Some sites had moderately sized visitor groups; others had large groups, though the sites they were visiting did not necessarily have the facilities and amenities needed to serve them. It may be necessary to develop new sites or redesign old ones to serve family and large group configurations. This is particularly salient for areas where Hispanics recreate; they tend to recreate in large groups, and they prefer developed sites (i.e., picnic tables, barbecue grills, parking lots, etc.). Managers should consider the best environmental design practice when making these decisions.

The respondents were aware of some site problems (spraypaint on rocks and litter) yet found many pieces of the experience to be appealing (water, scenery, and quiet). They liked to tell others about their experiences and enjoyed contacts with local area managers. The communication tools respondents said would be

good were not necessarily the ones they actually used. Managers should consider the communications patterns and techniques of their visitors and use them. It might be useful to take information into the sites, directly to the site visitors, rather than expecting visitors to seek out information for themselves. There should be more emphasis on interpersonal on-site contacts, and on-site written communications should be in English and Spanish (or Korean, Japanese, or other languages as appropriate to site use).

Return visitors and people who say they plan to return to a favorite place offer a great opportunity to managers. These visitors have more reason to get involved in the management of sites and could serve as site hosts or get involved in public meetings.

Future research can address the following questions: Is California a bellwether state for predicting outdoor recreation use patterns in other states? Have redeveloped or redesigned sites achieved their purpose of serving larger, and often racially and ethnically diverse, visitor groups? How have outdoor recreation visitors been included in decision-making? What is the best process to include visitors in decision-making? Should site-proximate or site-distant people have the greater influence on management decisions? Is day use a southern California phenomenon? What are the impacts of the focus on day use for site management? How does perceived discrimination influence decision-making by outdoor recreationists? Do site factors influence perceived discrimination? Which visitor perceptions and differences are culturally based and which are racially/ethnically based? Is the ECO-Team (environmental education) model a good one for visitor communication? Which types of messages are best when utilizing the ECO-Team model? Which tools are best to ensure that outdoor recreation visitors do not engage in depreciative behaviors? Is there a "stadium effect" (expectation that others will clean the area) in urban proximate outdoor recreation areas? If there is a "stadium effect," then what can managers do to counteract it?

The research program began in 1989 has provided valuable information for outdoor recreation resource managers. This information can be used to serve various urban publics.

## Acknowledgments

I thank the following individuals for their assistance and contributions to the studies in this report:

- USDA Forest Service: Enoch Bell, Alan Ewert, James Space, and Barbara Weber for their invaluable efforts in establishing a cooperative relationship with the USDI Bureau of Land Management; John Baas, Debbie Carr, Janna Larson, Bob Pfister, Julia Parker, and Pat Winter for developing several of the studies reviewed in this report; Victor Caro, Lisa Caro, Sarah Ellinger, Kimberly Kueter, Tina Mainieri, David Olson, and Ginger Schilling for entering, validating the data collected, and contributing to reports.
- USDI Bureau of Land Management: Richard Barbar and Robert Laidlaw for their invaluable efforts in establishing cooperative research relations with the USDA Forest Service; Frances Berg, Henri Bisson, Paul Boos, Paul Brink, John Butz, Jim Eicher, David Eslinger, Greg Hess, Gerald Hillier, Dave Howell, Richard Johnson, Russ Kaldenberg, Eric Morgan, Mark Morris, Jean Rivers-Council, Tim Smith, Dean Swickard, Steve Uhles, Bob Wick, and Al Wright for developing and evaluating the studies cited; Maria Kammerer, James Pickering, and Michael Beaucage for their production work on the Mecca Hills and Imperial Sand Dunes publications.
- Universities: Jan Anderson, Jay Anderson, Dale Blahna, Perry Brown, Robert Gable, John Heywood, Ronald Hodgson, Steve Hollenhorst, Martha Lee, Michael Schuett, David Simcox, Dorceta Taylor, and Daniel Williams for the varied and excellent studies they conducted in California; Steven Dennis and Harry Dundore at California State University at Chico for their work on the Redding Resource Area Study; Robert Short of the Claremont Graduate School and K.C. Cheung and the Social Aspects of Resource Management Institute staff at California Polytechnic State University at Pomona for contributing to the sampling design, questionnaire construction, and data collection on several studies.

I also thank the following reviewers for their thoughtful comments about an earlier draft of the manuscript: Rene Dahl, Paul Gobster, Bob Laidlaw, Tim Smith, Gail van Der Bie, and Patricia Winter. I thank Laurie Dunn for her thoughtful editing of the manuscript.

**The Forest Service, U.S. Department of Agriculture, is responsible for Federal Leadership in forestry. It carries out this role through four main activities:**

- Protection and management of resources on 191 million acres of National Forest System lands;
- Cooperation with State and local governments, forest industries, and private landowners to help protect and manage non-Federal forest and associated range and watershed lands;
- Participation with other agencies in human resource and community assistance programs to improve living conditions in rural areas; and
- Research on all aspects of forestry, rangeland management, and forest resources utilization.

**The Pacific Southwest Research Station**

- Represents the research branch of the Forest Service in California, Hawaii, American Samoa, and the western Pacific.

United States
Department
of Agriculture

Forest Service

**Pacific Southwest
Research Station**

General Technical Report
PSW-GTR-180

# Managing Outdoor Recreation in California: Visitor Contact Studies 1989-1998

## Introduction

Traditionally, the management of natural resources has been geared toward rural Anglo-Saxon populations because they have been the greatest consumers of these resources (Simcox 1988). However, in California, particularly southern California, recreationists at wildland areas (such as forests) are increasingly from urban places and have diverse cultural and racial/ethnic affiliation. The socio-demographic variables and the changes found in California are very complex. Think about holding a kaleidoscope in your hands. When you turn it just the right way, you can see a picture of how things look based on that particular configuration, albeit a configuration based upon many facets. Some socio-demographic variables can be thought of as the facets or pieces of the kaleidoscope and can include gender, age, family composition, generational status, education, and income. Other pieces are cultural affiliation, race/ethnic identification, and place of residence. If you shift the kaleidoscope gently, you see the variation within just one of the facets, such as if you wanted to "see" the variation within ethnic groups. You'll find that a change in that one piece of the kaleidoscope will cause changes in the remaining pieces.

California is a state of changes, and continuing change is expected. For example, think of just one socio-demographic change found in the State—the growth of racial and ethnic minority populations. That growth has impacts on each of the other socio-demographic variables, such as average age, education, income of the population, family composition, and generational status. The growth will also cause changes in other variables, such as communication patterns, development preferences, and the like.

Growth of racial and ethnic minorities is expected to continue. The percent of Hispanics, for example, is estimated to rise from 30 percent of the population in California to 48 percent by the year 2040 (Lawrence 1998). How does this increase impact the management of natural areas, like outdoor recreation sites? Traditional natural resource management techniques may not be applicable to these urban, culturally diverse populations. Consequently, approaches to resource management may need to be changed (Chavez 1992). This paper will describe several studies that focus on diverse users of outdoor recreation sites in California and the management of those sites.

### *Purpose*

This compilation presents generalizations about urban outdoor recreationists based on a series of recreationist contact studies conducted at various outdoor recreation venues (i.e., forests and deserts) in California (mostly southern California) between 1989 and 1998.

It is important to note that this compilation will focus only on patterns. The purpose is not meant to provide the ultimate answers about California outdoor recreation visitors, their recreation styles, their preferences, or all the possible actions that managers might take. In part, the search for patterns in these studies is due to the changing social landscape of California. In other words, current solutions probably will not be the solutions in another 20 years because the social makeup of the State is in constant flux. However, the patterns that are identified in this compilation will assist in the current management of natural outdoor recreation sites in California today and will be especially useful for managing sites for visitation by urban, ethnic, and racial minority groups. For instance, several years ago an issue was identified at a site on the USDA Forest Service's San Bernardino National Forest in southern California. The managers there had noticed many changes at the site, including the increasing number of visitors (such as minority group members), the changing nature of 'picnicking,' (which changed from a 1- to 2-hour activity to an all day activity), and the need for additional workloads due to litter and filth. One of the concerns was the filth left

in the restroom facilities. The managers believed the Hispanics recreating at that site were "dirty" and "thoughtless" because they left soiled toilet tissue near the toilet and did not drop it into the vaults. The visitors to that site thought the managers were careless because they did not provide trash receptacles in the restrooms and, hence, left the visitors with no choice but to drop the soiled tissue on the floor of the restroom. The explanation for these disparate points of view is simple. In Mexico, where many of these Hispanics had been raised, one could not drop soiled tissue into the sewer system because of the limited sewer capacity, and hence, the soiled tissue went into receptacles in the restrooms. It became a matter of providing the managers with two choices: either put receptacles in the restrooms or provide communication with the visitors telling them that the soiled tissue could be dropped into the vault. The managers chose the latter, which cleared up what was a contentious issue and one filled with misunderstanding, distrust, and disdain on both sides. In addition to resolving this issue, it opened the door to understanding: it made the managers more aware of the need to understand their customers in order to better serve them, and it made the managers more receptive to social research.

This compilation discusses results of recreation research that studied issues associated with managing natural environments in the urban interface and patterns of visitors at National Forest and Bureau of Land Management (BLM) recreational areas in southern California; it also provides information that managers can use to enhance customer service and ideas for future research about recreation patterns on Federal lands.

## *Background*

The social environment for many outdoor recreation areas has been changing. In California, for example, the clientele is changing in several ways, such as in its ethnic composition. The number of visitors who reside in urban areas is also increasing. In 1990, California became the first state not to have an ethnic majority, with Hispanics (Chicano, Hispanic-, Latino-, Mexican-, and Central-Americans) and Asians (Asian-Americans and Pacific Islanders) demonstrating the most rapid growth among ethnic groups. Recently, the Census Bureau reported that since the 1990 census, California's Hispanic/Latino population increased by 2.4 million, which is the largest numerical gain of any state. They also reported that California had both the largest Asian population and the largest numerical increase in Asians of any state. Another change is that most Californians now live in urbanized areas (84 percent compared to 45 percent in 1970). It is likely that these "minority" and urban individuals bring a set of values and behaviors to public lands that differ from those of traditional users, and perhaps, land managers. These changes may be felt the strongest in resource programs dealing with visitor use such as recreation, cultural resources, and lands.

Race/ethnicity and residence (urban/rural) are two of the many socio-demographic variables that could be examined for their impacts on natural resource management. Other variables that should be considered include age, gender, generational status in the United States, family type, and household income. By understanding these variables individually and as a complex mixture, the challenge for managing shifting visitor populations can be met.

Some examples from California might serve to highlight impacts on public land management. BLM managers have recently reported the following activities: use of recreation facilities for soccer, ethnic festivals, and other recreational uses not experienced in the past; increased international tourism to public lands; increased packaged, outfitted tours by urban visitors; and urban recreational behaviors transferred to public lands. To meet the needs of these changing visitors, managers may need to develop new management strategies.

### *Benefits of the Compilation*

This compilation of research results provides guidance for managing changing visitation and focuses particularly on urban recreationists, many from minority populations. The compilation can be used to better understand some current outdoor recreationists and to evaluate what managers can do to better serve these recreationists now and in the future. The compilation is useful to the managers of the sites where the data were collected as well as to managers of other urban interface sites in California, especially those experiencing similar kinds of resource-user changes. In addition to management usefulness, researchers planning to conduct research in urban interface sites can use this compilation. This compilation may be useful outside of California as well. Other areas throughout the country also have large urban populations and associated interface issues. But California, particularly southern California, is the first to experience these problems and issues (Hartley 1986). Managers and researchers outside of California can use this compilation to plan for future uses and future studies in their areas.

### *Limitations*

It is important to note that while more than 30 studies are compiled herein, not all studies examined the same topics; for example, some topics might include recreationist responses from every study, while another topic might have been analyzed in only two studies. A potential problem is the sampling methodologies employed: some studies included in their sample every person who was at the site(s), while other studies randomly selected an individual from each group found at the site(s). In addition, some of the studies were on-site interviews; some used on-site self-administered questionnaires; while others used on-site contact followed by mailed questionnaires. The impacts of these differences are not known. Another limitation of this compilation is that most of the studies focused on particular racial and ethnic groups and were not meant to be generalizable to all the recreationists to these areas or to all recreationists. Many of the studies in this compilation focused on day use recreation sites (some were developed sites, and some were general National Forest or non-facility based sites), while some of the studies addressed camping or wilderness activities or other uses like mountain biking. Thus, the reader is cautioned to consider these limitations.

## Pacific Southwest Research Station/Bureau of Land Management Cooperative Research

Most of the studies described in this compilation occurred on recreation sites managed by the Forest Service. However, a significant number of them were conducted on recreation lands managed by the BLM. This section of the report will describe the relationship between the two agencies and will highlight the purpose of the joint studies.

In 1990, a cooperative research relationship was initiated between the Forest Service's Pacific Southwest Research Station (PSW) and the California State Office of the BLM. This agreement was entered into under the provisions of the Economy Act of June 30, 1932 (31 USC 1535, Sec 601). The cooperative agreement between PSW and BLM was developed so that these agencies could work together on specific management issues with broad implications for policy and service delivery in Federal resource management. Specific research topics included cultural diversity research, communications studies, changing recreation technologies, urban/rural interface issues, and land ethics.

By using this agreement, two research projects were initiated in southern California to examine factors affecting agency/visitor interaction. These factors, identified by BLM employees, included basic communication and outreach issues, the impact of increasing cultural diversity among public land visitors,

and the impact of heavily urbanized regions (e.g., Los Angeles and San Diego) related to management of public lands. The initial study sites, both located in southern California, were Mecca Hills (Coachella Valley) and the Imperial Sand Dunes (eastern Imperial Valley). The Mecca Hills study was meant to give an assessment of Hispanic community recreational needs and demands in southern California, while the purpose of the Imperial Sand Dunes study was to examine changing land use profiles and recreation ethics among off-road vehicle users.

Although these projects looked at two different management situations and publics, they demonstrated the utility of a management-derived research orientation and the potential for development of research data with direct application to planning, resource management, and management decision-making.

In 1993, another agreement under the provisions of the Economy Act of June 30, 1932 (31 USC 1535, Sec 601) was developed between BLM and PSW. It offered the opportunity to apply the research model developed in the first two pilot studies to a different geographic and management environment. Although the first studies were project oriented, the new agreement focused on a research program and moved the research beyond southern California. Certain facets of the previous relationship lent themselves to the new program focus. First, the previous projects as well as the new program had a focus on visitor research. Second, the previous projects as well as the new program had a similar purpose: to evaluate and develop management specific information. Third, the previous studies as well as the new program were meant as pilot studies wherein research was conducted, management options were outlined, action was taken, and additional research was conducted (today this process is termed "adaptive management"). The project approach was meant to devise the appropriate methodology both for collecting data and for management involvement. What is different between the project orientation and the program orientation was that rather than having a series of case studies, the goal was to look for broad patterns across studies and study sites. The research effort under the new agreement emphasized the versatility of the program. In one instance, we examined the validity of the area's recreation management plan in regards to understanding visitor needs (the Redding Resource Area).

One additional study was conducted by PSW in cooperation with the BLM that had a different focus. This study examined off-road vehicle user beliefs about the desert tortoise. These data were collected in the Mojave Desert. The purposes of this study were to identify the knowledge, attitudes, and behaviors of off-highway users regarding desert tortoise conservation and to determine the information sources used by these visitors.

### *Program Goals*

A number of goals were common to all of the specific projects conducted under the auspices of the BLM/PSW cooperative research program. They included the following:

- Each project undertaken was cooperatively identified by BLM and PSW researchers to address one or more significant management issues.
- Each project was implemented with the goal of developing research data that could be directly applied to solving management problems, increasing planning and management efficiency, and/or developing new approaches to agency/visitor interaction.
- Each project contributed to a consolidated comparative database that may be used by the BLM to develop new tools and service delivery strategies agency-wide.

### *Project Implementation*

Similarities can be found in the manner in which the visitor case studies were implemented. Each case study was based upon the identification of information needs and/or identified management problems at the field office level; implemented by PSW with frequent contact with the appropriate BLM Resource Area Office; designed to incorporate some key issues in addition to site specific ones; and regularly evaluated in conjunction with BLM management and program specialists. The case studies also identified specific management options for addressing interaction between the BLM and public land visitors. To the greatest extent possible, these options were developed within existing staffing and funding levels with the goal of increasing compliance and reducing workload; providing a comprehensive summary of findings; and providing formal or informal training for both managers and technical staff at the conclusion of each project.

### *Reporting*

One goal of the program orientation in 1993 was to look for broad patterns across studies and study sites. This review and compilation of the visitor research will examine those broad patterns. Of particular emphasis is understanding who the visitors are and offering service delivery strategies to accommodate diverse visitor populations.

## Background on All Study Areas

The physical and social mix was analyzed at the various research areas. While the descriptions vary slightly, most include acreage, proximity to urban populations, number of recreation visitor days, and types of recreation use available at the area. The National Forests included in this compilation are presented first, followed by the Bureau of Land Management sites or Resource Areas. Much of this information comes from the current management plans for those areas.

### *National Forests*

Four of the five most often visited National Forests in California (based on 1996 data) are included in this compilation. Those ranked at the top were placed there on the basis of recreation visitor days. A recreation visitor day is a statistical reporting unit consisting of 12 visitor hours. A visitor hour is the presence of a person on an area of land or water for the purpose of engaging in one or more recreation activities during a period of time aggregating 60 minutes. The top five most visited National Forests in California in 1996 were the Angeles (9.8 million recreation visitor days), the Inyo (7.4 million recreation visitor days), the San Bernardino (6.5 million recreation visitor days), the Tahoe (5.7 million recreation visitor days), and the Los Padres (5.2 million recreation visitor days). Of these, the Tahoe National Forest is not included in this compilation. The Cleveland National Forest was 10th on the list based on visitor recreation days (2.9 million).

This compilation describes in detail sites located at four urban National Forests (Angeles, Cleveland, Los Padres, and San Bernardino National Forests). Urban National Forests are forests located within 50 miles of populations greater than 1 million people and demonstrate unique management challenges. These challenges might include:

- Intense recreation use, day-use activities, and competition for open space.
- A forest used more as a regional park, with wildland opportunities.
- Urban development adjacent to the forest boundaries, complicating fire management, land use, and community relations.

- Urban social problems migrating to the forest: crime, vandalism, arson, and traffic congestion.
- High-use wilderness areas.
- Complex information strategies due to language, cultural, and class diversity.
- User expectations often based upon cultural experience gained in other countries. The proportion of users who are recent immigrants is high. User behaviors and resource ethics are not necessarily based upon traditional Forest Service values. User population is very diverse, and representation is significant: from several to many cultural and ethnic groups.
- Newest recreation activity fads on a forest. Administration is complicated because management guidelines do not yet exist.
- Public safety.

Four factors make recreation patterns on the urban southern California National Forests unique: year-round accessibility with high-use, including winter day use, wilderness day-use, concentrated dispersed use (Stikkers 1983), and "nocturnal" day use (these might include teen parties after the areas are supposedly closed for the night); cultural influences, including rapidly changing demographics, strong Hispanic influence, diverse social and recreational values, inexperienced users with an urban orientation, and the "southern California culture" including strong influence of the media and the automobile; emergence of new recreational activities in southern California that often develop before management policies are developed for them; and competition for open-space due to high land values, lack of room for expansion, and urbanization within the National Forests (Hartley 1986).

**Angeles National Forest**

The Angeles National Forest is adjacent to the Los Angeles metropolitan area and is within a 2-hour drive of more than 20 million people. Most of Los Angeles County is highly developed, with the Angeles National Forest making up about 72 percent of the open space. Like other urban areas, population is most dense near the central city, with suburban and semi-rural areas in the foothills adjacent to the Forest and in the north part of the County. The San Gabriel Mountains, which make up most of the Angeles National Forest's approximately 694,000 acres, have extremely rugged terrain with most of the Forest exceeding 60 percent slope. The lower and intermediate elevations have a Mediterranean-type climate characterized by relatively mild winters with limited precipitation and long, hot, dry summers.

At the time these studies were conducted, there were five Ranger Districts: Arroyo Seco, Mt. Baldy, Saugus, Tujunga, and Valyermo. They are now recombined as the Los Angeles River Ranger District, the San Gabriel River Ranger District, and the Santa Clara/Mojave Rivers Ranger District. The San Gabriel Canyon was located on the Mt. Baldy Ranger District and is now within the San Gabriel River Ranger District.

The Angeles National Forest is one of the most heavily-used in the nation and was ranked fifth in recreation use among National Forests in 1995, with 9.8 million recreation visitor days (it was ranked first in California). Recreation facilities available on the Forest include 55 family campgrounds, 7 group campgrounds, 36 picnic grounds, 6 visitor centers, 4 off-highway vehicle areas and 2 concession-managed target shooting areas. Some sites get "concentrated dispersed use" (Stikkers 1983), which means sites designated as general forest or non-facility based that actually receive many visitors.

**Cleveland National Forest**

The Cleveland National Forest includes three disjunct mountain ranges adjoining the urbanized lowlands of Orange, Riverside, and San Diego Counties. In 1990, the combined population of these counties was more than 6 million. Los Angeles County, with a population of almost 9 million people, is within an hour's drive of the northern part of the Forest. More than 420,000 acres in size, the Cleveland National Forest encompasses much of the Santa Ana, Palomar, and Laguna Mountains. Elevations range from 400 to 6,140 feet. Chaparral is the most abundant vegetation type, comprising about 88 percent of Forest lands.

The Cleveland National Forest has three Ranger Districts: Descanso, Palomar and Trabuco. The San Mateo Canyon Wilderness is on the Trabuco Ranger District. There are developed recreation complexes at Black Star Canyon, Blue Jay, El Cariso, Fry Creek Observatory, Laguna Mountain, San Juan Canyon, and Trabuco Canyon. The Forest's developed recreation facilities can accommodate about 4,200 persons at one time. These facilities include 5 picnic areas, 16 family campgrounds, 7 group campgrounds, and 2 information stations. The Forest has experienced great demand for general forest or non-facility based recreation opportunities, particularly for hiking and horseback riding.

**Inyo National Forest**

The Inyo National Forest contains 2,046,346 acres of which 1,931,155 are in National Forest System ownership. These lands are located in seven counties. Five counties are in California, and two are in Nevada. The primary zone of economic influence for the Inyo National Forest is in California's Inyo and Mono Counties. Nearly 85 percent of the Forest lies within those counties, and more than 95 percent of the Forest lies within the State of California.

Recreation is the most significant resource on the Inyo National Forest. Recreation opportunities include wilderness travel, fishing, hunting, driving for pleasure, hiking, riding, dispersed camping, and boating.

Recreational visitors place great demands on the area and have high expectations for their recreational pursuits. These individuals provide a major portion of the winter tourist economy and a substantial portion of the summer economy as well. These visitors value the broad range of recreational opportunities and the scenic attractions of the area.

**Los Padres National Forest**

The Los Padres National Forest is situated primarily in Monterey, San Luis Obispo, Santa Barbara, and Ventura Counties. Populations in these counties are extremely diverse. Land adjacent to the Forest includes urban, suburban, semi-rural and rural areas.

The Los Padres has more than 1,750,000 acres on the Coast and Transverse Ranges, providing a variety of terrain, vegetation and recreation settings including ocean beaches, forest, chaparral, and desert. Most of the Forest falls into Monterey, San Luis Obispo, Santa Barbara, and Ventura Counties. The Forest is characterized by a Mediterranean climate, with cool winters and hot, dry summers.

The Los Padres National Forest was one of the most heavily-used in the State and ranked fifth in 1995 for recreation visitor days, with 5.0 million recreation visitor days. The Los Padres National Forest is a major supplier of wildland recreation opportunities for central and southern California. About 30 percent of the recreation use in the Forest is in developed sites. These include public facilities such as campgrounds, picnic grounds, and observation sites. General Forest recreation opportunities include undeveloped areas and roads and trails. About 70 percent of recreation use occurs in general Forest areas. The most popular activities in 1982 were pleasure driving, viewing scenery, and hiking.

There are five Ranger Districts on the Los Padres National Forest: Monterey, Mt. Pinos, Ojai, Santa Barbara, and Santa Lucia.

### San Bernardino National Forest

The San Bernardino National Forest covers about 820,000 acres within San Bernardino and Riverside Counties. Of this area, about 162,000 acres are in private, county, State, or other Federal agency ownership. The Forest lies within 2 hours driving distance of more than 16 million residents in southern California.

Almost half of the San Bernardino National Forest exceeds 50 percent slope, with mountain ranges rising steeply on the coastal side facing the Los Angeles basin, and sloping more gradually to the north and east to the Mojave and Colorado deserts. The majority of the soils are of granitic origin and are highly erodible. The higher elevations of the Forest have a four-season year with an average annual precipitation of 30 inches. Winter snow, sometimes heavy, occurs above 5,000 feet. Annual rainfall in the lower elevations averages 16 inches. Rainfall on the desert side is sparse, averaging 2 to 5 inches per year.

The San Bernardino National Forest is one of the most heavily-used in the nation and was ranked 12th in recreation use among National Forests in 1995, with 6.3 million visitor days (it was ranked third in California). Developed recreation sites on the Forest frequently exceed their design capacity during weekends of high season use. General Forest recreation accounted for 4.5 million visitor days in 1982 and has increased since then.

There were five Ranger Districts on the San Bernardino National Forest at the time of many of these studies: Arrowhead, Big Bear, Cajon, San Gorgonio, and San Jacinto. The Forest began administrative recombination of Ranger Districts in 1997 to three Ranger Districts--the Frontcountry, the Mountaintop, and San Jacinto. The Applewhite Picnic Area, previously located on the Cajon Ranger District, is located on the Frontcountry Ranger District.

### *Bureau of Land Management*

The BLM manages more than 14.5 million acres of California's public lands, from desert to snow-capped mountains. Developed by the BLM, "Recreation 2000: A Strategic Plan" identified eight specific challenges facing BLM and public land users through the year 2000. The plan also identified objectives for the resolution of these challenges. These resolutions include the enhancement of recreational experiences through visitor awareness, information, and interpretation; resource protection and monitoring to allow the management of the natural, cultural, and scenic resources on public lands to assure protection of sensitive resources; enhanced recreational experiences through land ownership adjustments, increased and improved access, and other acquisitions; expanded and strengthened partnerships and cooperative agreements with government and private agencies to enhance opportunities both on and adjacent to public lands; seeking and coordinating the efforts of citizen volunteers working to improve public lands and resources each year; developing and maintaining cooperative relationships with local communities and tourism agencies to provide a full array of multiple-use activities on nearby public lands; the development of appropriate recreation facilities, balancing public demand, protection of public land resources, and fiscal responsibility; and establishing and assessing equitable permits and fees for certain uses so that users can assume an appropriate share of the cost of maintaining facilities and protecting the resources.

BLM is currently managed by 15 field offices. When the studies in this report were conducted, BLM in California was managed by four districts: Ukiah, Susanville, Bakersfield, and the California Desert. These studies were conducted within two of these districts: Ukiah and the California Desert. The Ukiah District study was conducted within the Redding Resource Area, while the California

Desert District studies were conducted within the Palm Springs-South Coast, El Centro, and Ridgecrest Resource Areas. Under the new management design, which deletes a middle layer of management, the same units still report to the California Desert District, which then reports to the state office in Sacramento. In addition, there are 10 field offices that report directly to the state office: Bakersfield, Bishop, Folsom, Hollister, Redding, Arcata, Ukiah, Alturas, Surprise, and Susanville.

### Imperial Sand Dunes

The Imperial Sand Dunes is located within the El Centro Resource Area, just north of the border with Mexico. This is the largest mass of sand dunes in California. This dune system extends for more than 40 miles along the eastern edge of the Imperial Valley. The dunes are within a 2-hour drive of the San Diego area and are 3 hours from Phoenix, Arizona.

The Imperial Sand Dunes encompass the most intensively visited recreational area in the California Desert District, accounting for approximately one-sixth of the District's total recreational visitor use days. Use centers around the operation of off-road vehicles (ORVs), principally dune buggies and all-terrain vehicles (ATVs). There are three campgrounds available in the area, in addition to picnic sites, hiking trails, and an information center. During peak use, holiday weekends, as many as 100,000 recreationists visit the area.

### Mecca Hills

The Mecca Hills is located in the Coachella Valley, less than 1-hour drive from Palm Springs, and is within a 2-hour drive of the Los Angeles metropolitan area. The Mecca Hills comprises open areas and numerous canyons. The area does not have any developed campsites. ORV use is permitted over much of the area. Other available activities include mountain bicycling, horseback riding, hiking, and picnicking. Most recreation activity occurs in the Painted Canyon and along the Box Canyon road and adjacent side canyons. Most use occurs from October through May, with peak use occurring on major holiday weekends (for example, Thanksgiving, Easter, and Mother's Day), though local use occurs year round.

### Mojave Desert

The Mojave Desert is vast—about 3 million acres. The areas where data were collected are located off California State Highways 395 and 15 in the western Mojave. This area provides acres of ORV riding with wide, open spaces and dramatic hills on existing roads. The area has rough mountains, dry lake beds, winding canyons, and plants, including various cactus species and the Joshua Tree, which is the symbol of the Mojave Desert.

### Redding Resource Area

The Redding Resource Area encompasses about 9,914,000 acres within the north-central portion of California. BLM administers roughly 2.5 percent of this area. The entire area encompasses all or portions of five counties including Butte, Shasta, Siskiyou, Tehama, and Trinity. Major population centers within the planning area include Redding and Chico.

The Redding Resource Area has seven different emphasis areas: Scott Valley, Klamath, Trinity, Shasta, Sacramento River, Ishi, and Yolla Bolly. Two of these emphasis areas were studied. These were the Interlakes and Sacramento River. The Interlakes Area is proximate to Redding and adjacent to Shasta Lake. The Sacramento River Area, about a 2-hour drive from Sacramento, is characterized by seasonal heavy recreational use and year-round fishing. Recreation opportunities include camping, ORV sites, boating, rafting, hunting, horseback riding, sightseeing, and fishing.

### California Desert Protection Act

California Desert Protection Act, Public Law 103-433, was passed after the BLM desert studies were conducted. Parts of the Mecca Hills were designated wilderness. These areas were beyond the boundaries where the research was conducted. Also, all of the Imperial Sand Dunes north of Highway 78 were designated wilderness.

## Socio-demographic Profiling

### *California*

At the time of the 1990 census, there were about 29.7 million residents in California; by 1996 that number had exceeded 31.5 million. Data from the 1990 census indicate that residents of California live in urban settings. About equal numbers of Californians have high school educations or less (46 percent) as have some college or college degrees (54 percent). English is spoken in the home as the primary language by almost 7 in 10 California residents and Spanish is the primary language spoken in the home by another 2 in 10.

Data from the 1990 census also show that there is no clear "majority" race/ethnic group in California (*table 1*). Hispanics make up 26 percent of the population of California, and their numbers increase to 38 percent in Los Angeles County. The census data indicate a large proportion of California residents are native Californians and that a significant proportion of state residents were born outside the United States. The Hispanics in California consist primarily of those born in the United States, those born in Mexico, and those born in Central America. According to Chavez (1993b, 1993c, 1995), these subgroups may differ from each other on many attributes salient to outdoor recreation, such as visitation patterns, preferences, and attitudes (Chavez 1993b), and they may differ from Hispanics who come from other areas such as Cuba and Puerto Rico.

**Table 1**—*Selected socio-demographic characteristics of Californians, by county, 1990 census data*

| | State | Counties | | | |
|---|---|---|---|---|---|
| | California | LA[1] | SB | RS | OR |
| | *Percent* | | | | |
| Gender | | | | | |
| Male | 50 | 50 | 51 | 50 | 50 |
| Female | 50 | 50 | 49 | 50 | 50 |
| Urban residence | 93 | 99 | 93 | 86 | 99 |
| Educational attainment (persons over age 25) | | | | | |
| Less than high school diploma | 24 | 30 | 24 | 26 | 19 |
| High school graduate | 22 | 20 | 27 | 26 | 20 |
| Some college | 31 | 27 | 33 | 33 | 33 |
| College degree | 23 | 22 | 15 | 15 | 28 |
| Nativity and place of birth | | | | | |
| Percent born in California | 59 | 61 | 60 | 56 | 55 |
| Foreign-born | 22 | 33 | 13 | 15 | 24 |
| Language spoken at home | | | | | |
| English only | 68 | 56 | 76 | 75 | 69 |
| Spanish only | 20 | 31 | 18 | 20 | 19 |
| Asian or Pacific Island language | 7 | 8 | 3 | 2 | 8 |
| Race | | | | | |
| White | 69 | 57 | 71 | 76 | 78 |
| Asian or Pacific Islander | 10 | 11 | 4 | 4 | 10 |
| African American | 7 | 11 | 8 | 5 | 2 |
| Native American | <1 | <1 | <1 | 1 | <1 |
| Ethnicity--Hispanic origin of any race | 26 | 38 | 27 | 26 | 23 |

[1] LA—Los Angeles County, SB—San Bernardino County, RS—Riverside County, OR—Orange County

## *Demographic Shifts*

The demographic profile of the United States is changing toward a more ethnically and geographically diverse population. Although Asian-origin and African-American groups should increase significantly in numbers over the next 25 years, the ethnic transformation of the United States is primarily a result of the rapid growth of its Hispanic population (Gramann 1996). This growth is being experienced in a relatively restricted geographic region, composed of states adjacent to the United States-Mexico border. California, for example, became the first state without an ethnic majority in 1990. In addition, 25 percent of all immigrants who came to the United States in the 1980's came to California (Laidlaw 1991).

The pattern that managers and researchers have focused on is that whites, Hispanics, and Asians are the primary visitors to outdoor or natural environment recreation sites in California. However, because data about whites visiting recreation sites are widely available, the studies in this compilation sought to provide more information on visitation patterns of Asians and Hispanics. African-Americans are not mentioned as frequent site visitors to these forest and desert settings. There is scant information about the reasons for this, and more study of this topic is needed.

### Asians

O'Hare (1990a) indicated that Asian-Americans are the fastest-growing, richest, and most diverse minority group in the United States. Since 1980, Asian-Americans have grown from 1.7 percent to 2.8 percent of the U.S. population. This national figure masks the even more dramatic growth in some areas, like Los Angeles. Nearly 4 out of 10 Asian-Americans live in California. The following statistics are based on census information for Asians in California. The average age is 30. The median household income of Asians was $31,578 in 1988 (compared to $28,661 for non-Hispanic whites, $20,000 for Hispanics, and $16,004 for African-Americans). Fourteen percent of Asian-Americans have been to college for 5 or more years, compared with only 9 percent of all Americans. By the year 2000, California was projected to be home to more than 4.5 million Asians would constitute 13 percent of the state's population (Fost 1990). During the 1980's, three out of four new Asian residents of California were immigrants. The leading countries of origin were the Philippines, Vietnam, China, Korea, Iran, Taiwan, Cambodia, India, and Laos. Roughly three-quarters of California's Asians live in the Los Angeles basin or the San Francisco Bay Area.

Two salient points need to be raised. First, the groups are heterogeneous not homogeneous; thus, managers and researchers cannot treat one group the way they would another or assume that they "know" something about one group and apply that "knowledge" to the other group. Indeed, readers need to remember that there is heterogeneity within each subgroup. Second, everyone must be sensitive to language barriers for some groups. When communicating with Asian groups, managers (and their staffs) may need to use Cantonese, Mandarin, Vietnamese, Korean, Tagalog (spoken by many Filipinos), and Cambodian.

Some observations conducted on site revealed that Asians appear to spend time preparing for their site visit, as evidenced by the amount of home-prepared food that was observed in the studies (Chavez 1993b). In a few cases, dozens of plastic ware bowls with foods ready for consumption were noticed at the site. Researchers have also noticed these groups bringing some "traditional" or culturally-oriented items to the site like lawn chairs and rubber balls. Although this is not meant to be a "typical" portrayal because there were few observations of these groups over the years, these patterns were different compared to Hispanic visitors.

### Hispanics/Latinos

Hispanics/Latinos will account for one-fifth to one-half of the nation's population growth over the next 25 years (Exter 1987). If the Hispanic population grows at the slowest rate that the Census Bureau projects, Hispanics will account for 20 percent of the U.S. population growth. However, if Hispanics grow at the highest rate projected by the Census Bureau projects, they will account for 54 percent of the nation's growth. These projections are based on assumptions about Hispanic fertility, mortality, and immigration.

Income demographics of Hispanics show that they are not as affluent as Asians. O'Hare (1990b) defined affluence as household incomes $50,000 and above. More than 2.6 million Hispanics live in some 638,000 affluent households. Most of these affluent Hispanic households (42 percent) are in the western United States. Of the Hispanics living in the Los Angeles basin, 9 percent are affluent. It appears that they are under-represented in the affluent category; however, it cannot be assumed that all Hispanics are poor.

Families are important in influencing recreation patterns (Kelly 1977). Some research suggests that Hispanic visitors recreate with their family members; often these are nuclear (mother, father, and children) and extended family members (aunts, uncles, cousins, grandparents). Valdes (1991) suggested that Hispanic values (values are socially shared ideas about what is good, right, and desirable) need to be considered when managers serve Hispanics. For example, communication messages should not be simply translated to Spanish but must include Hispanic values. She discussed the value orientations of Hispanics in comparison to the American middle class (AMC; who are white). While Hispanics see themselves as part of a family, clan or group, the AMC are more individualistic. While Hispanics rely on family, friends, and community for help, the AMC look to themselves and institutions. While Hispanics value a person's background, the AMC values what a person can achieve through special skills. Hispanics stress differences in status and show respect for authority, while the AMC minimize differences and treat everyone as equals. These are generalities that differ by geographic location and the number of years of residence in the United States.

Some research has indicated the importance of family for the Hispanic visitors (Kelly 1977, Valdes 1991) and the importance of communication techniques (Chavez 1997a, Hodgson and others 1990). In part, this focus on family, and particularly recreation and family, means that Hispanics often recreate in large size groups. Managers need to be aware of these group sizes so that these customers can be provided with appropriate amenities to reduce impacts to the resources (Chavez 1998b).

Swenson (1990) suggested that Catholicism is a strong bond among Hispanics that crosses all lines of national origins. He suggested that the church could be used as an avenue to approach Hispanic groups since 70 percent of all Hispanics are Roman Catholic. He also suggested that one-time sponsorships could backfire: if managers agree to sponsor a specific event one year but not the next, the Hispanic community may deeply resent the pullout. This suggests that when managers decide to begin a program in an area (ECO-Teams, for example), they need to commit to the program for an extended length of time.

## *Recreation Style*

Recreation style is the unique quality of recreation behavior that arises from variation between ethnic groups in group size, participation motives, spoken language, and attitudes toward natural resources, including facility-development preferences (Gramann and others 1992). Recreation styles can vary across social status levels (Kelly 1987a), and socioeconomic status has an effect on recreation choices (Bultena and Field 1980; West 1977, 1982).

Interesting recreation styles of Hispanic groups have been noticed through the years. For example, a pattern of little or no planning before a recreation outing has been seen. Evidence of this has been people arriving in street clothing (and often church clothing) with bags of groceries from the store. These visitors usually spend the majority of the day at the site and a great deal of that time is spent in food preparation on-site. These same people will cool off by sitting in the rivers in their street clothes and often use cooking utensils as well as paper plates and cups as toys in the river.

### *Theories about Participation in Outdoor Recreation*

Carr and Williams (1991) described four general theories proposed and tested in attempts to explain patterns of minority participation in outdoor recreation. These include demographics, ethnicity, marginality, and compensation. The first three explanations are generally used to explain the lower participation rates of minority group members (compared to whites), while the latter is an explanation for increased minority participation. The demographic theory suggests that differences in participation rates by ethnic groups may be due to structural differences in the populations (such as family size and marital status). The ethnicity theory suggests that differences in participation rates may be due to distinctive cultural values held by the various groups. The marginality hypothesis suggests that differences in participation rates may be due to the marginal position often held by minority groups in society. The compensation theory suggests that minorities may recreate more to make up for disadvantages felt in other places in society.

Sometimes the ethnic makeup of a site can shift over time. For example, two sites that had previously been visited mostly by whites and have more recently been dominated by Hispanics include the San Gabriel Canyon on the Angeles National Forest and the Applewhite Picnic Area of the San Bernardino National Forest. To some extent, the Mecca Hills in the California Desert District also can be characterized this way (though Hispanic use tends to be on major holidays).

Regardless of the theory proposed or the numbers of minorities found at one particular site, it is important to note that resource managers in California will have minority group visitors at their sites, and these visitors may have different needs than the managers are currently prepared to meet. The first step is to know the demographics, value systems, and patterns of visitation to recreation sites.

## Individual Studies

This section presents the primary results of the 30 studies included in this compilation. More detailed information about all the aspects of the individual studies can be found in *appendices A and B*. The studies are listed in alphabetical order by author. The study sites, topics, and methods are identified for each study, and most of the studies included visitor profiles, recreation patterns, and visitor perceptions (*tables 2, 3*). In addition, many of the studies measured knowledge and information sources. Fewer studies addressed development preferences, management issues, or made racial/ethnic group comparisons. Most data collection was accomplished via self-administered questionnaires. Methods used less frequently were interviews, observations, and mailed surveys after contact was made on-site (mini surveys).

- **Evaluation of the 1995 Eco-Team Program** (Absher and Winter 1997): Sites were located on the USDA Forest Service's Angeles and San Bernardino National Forests: east and west forks of the San Gabriel Canyon, Big Rock, Jackson Lake, Little Rock, Basin, Juniper, Applewhite, and Bonita. Topics studied included a respondent profile, recreation

patterns, knowledge, and information sources. Multiple methods were used including results from on-site interviews, which are reported here. The 217 interviews were conducted in either English or Spanish.

- **Fern Gathering on the Arrowhead Ranger District, San Bernardino National Forest: An Evaluation** (Anderson and others 1997): Sites were located on the Arrowhead Ranger District of the San Bernardino National Forest. Topics studied included a visitor profile, recreation patterns, visitor perceptions, knowledge and information sources, ethnic group comparisons, and management issues. Multiple methods were used including interviews of experts, managers, and San Bernardino National Forest Association members; site observations; secondary information from permit data; and a mailed mini-survey (n = 102).
- **A Pilot Study of Off-Highway Vehicle Users' Attitudes, Beliefs, and Behaviors Toward Desert Tortoise Conservation on Bureau of Land Management Areas in Southern California** (Baas and Chavez 1992): Sites were located in the western Mojave Desert managed by the USDI Bureau of Land Management. Topics included a visitor profile and visitor perceptions. On-site questionnaires were utilized to collect data from 425 recreationists.
- **The Influence of Acculturation on Environmental Concerns: An Exploratory Study** (Caro and Ewert 1995): Sites were located on the USDA Forest Service's Angeles and San Bernardino National Forests, including the east and west forks of the San Gabriel River and Applewhite Picnic Area. Topics studied included a respondent profile and respondent perceptions. An on-site questionnaire was utilized. There were 398 respondents.
- **A Qualitative Approach to Understanding Recreation Experiences: Central American Recreation on the National Forests of Southern California** (Carr and Chavez 1993): Sites were located on the USDA Forest Service's Angeles, and San Bernardino National Forests, including San Gabriel Canyon, Lytle Creek, and Forest Falls. Topics included a respondent profile and recreation patterns. Multiple methods were utilized, including on-site observations and semi-structured interviews. There were 69 participants in this study.
- **Hispanic Recreationists in the Wildland-Urban Interface** (Chavez 1992, 1994, 1995, 1998b): Sites were on the USDA Forest Service's Angeles and San Bernardino National Forests at the east and west forks of the San Gabriel River, Applewhite Picnic Area and Forest Falls. Topics included a respondent profile, recreation patterns, respondent perceptions, and cultural group comparisons. The data were collected via on-site self-administered questionnaires, which were available in English and Spanish. Responses were provided by 550 people.
- **Leisure Experiences of Hispanic Families** (Chavez 1996a): Sites were on the USDA Forest Service's Angeles and San Bernardino National Forests at the Mt. Baldy and Cajon Ranger Districts, San Gabriel Canyon, and Applewhite Picnic Area. Topics included a respondent profile, recreation patterns, and respondent perceptions. This was a qualitative study conducted on-site using face-to-face interviews with an interview guide. Four families were contacted (61 people).
- **Bunny Hops or Vegetable Tunnels? Perceptions and Preferences of Mountain Bike Riders on the San Jacinto Ranger District** (Chavez 1997a): Sites were on the San Jacinto Ranger District and local

communities on the San Bernardino National Forest. Topics included a visitor profile, recreation patterns, visitor perceptions, development preferences, knowledge, and information sources. Data were collected on-site with a mini-survey followed by mailback questionnaires (n = 94).

- **Pilot Studies of Changing Urban Wilderness Recreation Use on the Cleveland National Forest: Past Wilderness Users and On-site Wilderness Users** (Chavez 1993a): Sites were located on the USDA Forest Service's Cleveland National Forest at trailheads to the San Mateo Canyon Wilderness. Topics included a visitor profile, recreation patterns, visitor perceptions, development preferences, knowledge and information sources, and trespass. Two samples were drawn: mailed survey to permit holders (n = 69) and an on-site mini-survey with mailed survey (n = 213).
- **Visitor Perceptions of Crowding and Discrimination at Two National Forests in Southern California** (Chavez 1993b): Sites were located on the USDA Forest Service's Angeles and San Bernardino National Forests at the west fork of the San Gabriel River, upper San Antonio Canyon, Applewhite Picnic Area, and Applewhite Campground. Topics included a respondent profile, recreation patterns, respondent perceptions, and information and knowledge sources. The study included on-site observations and on-site questionnaires completed by 312 recreationists.
- **Mecca Hills: Visitor Research Case Study** (Baas and others 1993, Chavez and others 1993): Data were collected at the USDI Bureau of Land Management's California Desert District at the Mecca Hills. Topics studied included a visitor profile, recreation patterns, visitor perceptions, development preferences, knowledge and information sources, and race and ethnic group comparisons. Data were collected on-site in two phases (n = 250 phase I and n = 92 phase II).
- **The Applewhite Picnic Area: Renovating an Outdoor Recreation Site** (Chavez 1998a, 1998c; Chavez and others 1995a): Data were collected on the USDA Forest Service's San Bernardino National Forest at the Applewhite Picnic Area. Topics studied included a visitor profile, recreation patterns, visitor perceptions, development preferences, and management issues. Data were collected from 334 visitors using a self-administered questionnaire.
- **Recreation Day Use Series—Report 1: The San Bernardino National Forest, Summer 1992** (Chavez and Mainieri 1995): Data were collected on the USDA Forest Service's San Bernardino National Forest at Lake Fulmor, Children's Forest, Bayles Park, Meadow's Edge, Switzer Park, Aspen Glen, and Jenks Lake. Topics studied included a visitor profile, recreation patterns, visitor perceptions, knowledge and information sources, and management issues. Data were collected from 157 visitors using a self-administered questionnaire.
- **Imperial Sand Dunes: Visitor Research Case Study** (Chavez and others 1993): Data were collected on the USDI Bureau of Land Management's California Desert District at the Imperial Sand Dunes. Topics studied included a visitor profile, recreation pattern, visitor perceptions, development, knowledge level and information sources, safety, and differences between first-time and repeat visitors. Two samples were drawn for a total sample size of 605. Data were collected on-site using self-administered questionnaires.
- **Recreation Day Use Series—Report 2: The Angeles National Forest, Summer 1993** (Chavez and others 1995b): Data were collected on the USDA Forest Service's Angeles National Forest at Crystal Lake, Charlton,

Glacier, Switzer, Chilao, Stoneyvale, Hidden Springs, and Wildwood. Topics included a visitor profile, recreation patterns, visitor perceptions, knowledge and information sources, and management issues. Data were collected from 168 visitors using self-administered questionnaires.

- **Recreation Day Use Series—Report 3: The Los Padres National Forest, Summer 1994** (Chavez and others 1995c): Study sites were located on the USDA Forest Service's Los Padres National Forest at Pfeiffer Beach, Arroyo Seco, Sand Dollar, White Rock, and Falls. The topics studied included a visitor profile, recreation patterns, visitor perceptions, knowledge, and information sources. Data were collected from 159 visitors using self-administered questionnaires.
- **Cross-cultural Land Ethics: Motivation, Appealing Attributes and Problems** (Ewert and Pfister 1991): Sites were on the USDA Forest Service's Angeles National Forest along the west fork of the San Gabriel River. Respondent perceptions were studied using on-site self-administered questionnaires available in English and Spanish. There were 473 participants in the study.
- **Pilot Fee Demonstration Project Evaluation: Visitor Surveys on the Enterprise Zone, Phase I—Before Fee Implementation** (Gable and others 1997): Study sites were located on USDA National Forests in southern California and termed the "Enterprise Zone." The National Forests were the Angeles, Cleveland, Los Padres, and San Bernardino. Topics included a visitor profile, recreation patterns, visitor perceptions, and knowledge and information sources. Data were collected from 593 recreationists using self-administered questionnaires.
- **Behavioral Conventions at the Wildland/Urban Interface** (Heywood 1993): The study site was on the USDA Forest Service's San Bernardino National Forest at the Applewhite Picnic Area. Study topics included a visitor profile, recreation patterns, and visitor perceptions. Data were collected from 215 visitors using self-administered questionnaires.
- **Communicating with Users of the Angeles National Forest: Report No. 2** (Hodgson and others 1990): Sites were on the USDA Forest Service's Angeles National Forest, west fork of the San Gabriel River. Topics included recreation patterns, knowledge and information sources, and race and ethnic group comparisons. Data were collected from 223 people via on-site self-administered questionnaires.
- **An Examination of the Characteristics, Preferences, and Attitudes of Mountain Bike Users of the National Forests** (Hollenhorst and others 1995): Study sites included various locations on National Forests in California, Texas, and West Virginia, though only California data are included in this report. Topics included a visitor profile, recreation patterns, and visitor perceptions. Data were collected from 274 visitors using self-administered questionnaires.
- **An Analysis, Interpretation, and Report of Recreational User Data Collected on the Inyo National Forest During Summer 1989** (Lee and Brown 1991): Study sites were on the USDA Forest Service's Inyo National Forest at the Bristlecone Pine Entrance Station, Convict Lake area, Oh! Ridge area, Mammoth Lakes Visitor Center, Minaret Vista, Mono Lake Ranger Station/Tioga Pass area, Rock Creek Entrance Station, and Whitney Portal. Some sampling and data collection also occurred on USDI Bureau of Land Management sites, including Crowley Lake, Horton Creek, Goodale Creek, and Tuttle Creek. (Those results are not available in the report provided by the authors.) Topics included a visitor profile, recreation patterns, visitor

perceptions, development preferences, knowledge, and information sources. Data were collected from 1,129 visitors via a mini-survey on-site followed by a mail-back questionnaire.

- **Angeles National Forest Wilderness Visitors' Characteristics and Values** (Parker and Winter 1996, 1998): The study sites were on the USDA Forest Service's Angeles National Forest at the Cucamonga, San Gabriel, and Sheep Mountain Wildernesses. Topics included a visitor profile, recreation patterns, perceptions, knowledge, and information sources. The data were collected from 141 people using an on-site mini-survey with mail-back questionnaires.
- **Hispanic Values and Behaviors Related to Outdoor Recreation and the Forest Environment** (Simcox and Pfister 1990): Sites were on the USDA Forest Service's Angeles National Forest along the west fork of the San Gabriel River. Topics studied included a respondent profile, recreation patterns, respondent perceptions, and race and ethnic group comparisons. Data were collected from 437 people via on-site self-administered questionnaires available in English and Spanish.
- **Communicating with Users of the Angeles National Forest: Report No. 1** (Simcox and others 1989): Data were collected on the USDA Forest Service's Angeles National Forest along the San Gabriel Canyon. Topics included a respondent profile, recreation patterns, and race and ethnic group comparisons. Data were collected from 231 people via on-site self-administered questionnaires.
- **A Preliminary Analysis of Environmental Dilemmas and Environmental Ethical Reasoning among Hispanic and Non-Hispanic Forest Visitors** (Swearingen and Pfister 1995): Study sites were on the USDA Forest Service's Angeles and San Bernardino National Forests. Topics included a visitor profile and visitor perceptions. Data were collected from 127 visitors on-site through interviews.
- **Environmental Values, Ethics, and Depreciative Behaviors in Wildland Settings** (Taylor and Winter 1995): Study sites were located on the USDA Forest Service's Angeles National Forest at Charlton Flat, Crystal Lake, Stoneyvale; the Cleveland National Forest at Desert View, San Luis Rey; and the Los Padres National Forest at Arroyo Seco Recreation Area, Pfeiffer Beach, and Santa Ynez Recreation Area. Topics included a visitor profile, visitor perceptions, and race and ethnic group comparisons. Data were collected from 308 visitors using a combination of a self-administered questionnaire for a portion of the sample and an on-site mini-survey followed by mailed questionnaire for the remainder of the sample.
- **Recreation at the Redding Resource Area in California** (Winter 2000): Study sites were on the USDI Bureau of Land Management's Ukiah District on the Redding Resource Area. Topics included a visitor profile, recreation pattern, visitor perceptions, development preferences, and information sources. Data were collected at three distinct areas using self-administered questionnaires (the Interlakes Special Recreation Management Area n = 234; Overlook [to Shasta Lake] n = 193; and Sacramento River Area n = 182).
- **Environmental Concern and Environmental Action: How Do Recreationists Fare?** (Winter 1996a): Data were collected from sites managed by the USDA Forest Service, the Lake Perris State Recreation Area, and from Riverside city parks. Topics included a visitor profile and visitor perceptions. Data were collected from 447 visitors using self-administered questionnaires.

- **San Gorgonio Wilderness Visitor Survey: Summer and Fall 1994** (Winter 1996b): The study sites were on the USDA Forest Service's San Bernardino National Forest on the San Gorgonio Wilderness. Data were collected from 228 visitors at wilderness trailheads (Aspen Grove, Fish Creek, Forsee Creek, Momyer, San Bernardino Peak, South Fork, and Vivian Creek) using a mini-survey with mail-back questionnaires. Topics included a visitor profile, recreation patterns, visitor perceptions, knowledge, and information sources.

**Table 2**—*Summary of topics and methods found in the compilation studies*

| Study names[1] | Vis Profi [2] | Rec Patt | Visit Perc | Dev Pref | Knowl Info | EthRa Comp | Mgmt Issue | Method |
|---|---|---|---|---|---|---|---|---|
| ECO-Team | X | X | | | X | | | I [3] |
| Brack Fern Coll | X | X | X | | X | X | X | I<br>O<br>Mail |
| Des Tort | | X | X | X | | X | | SAQ |
| Influ of Accul | X | | X | | | | | SAQ |
| Centr Ameri Rec | X | X | | | | | | I<br>O |
| Hisp Rec | | X | X | X | | | X | SAQ |
| Leisu of Hisp Grps | X | X | X | | | | | I |
| San Jac MtnB | X | X | X | X | X | | | Mini<br>Mail |
| San Mateo C Wil | X | X | X | X | X | | X | Mini<br>Mail |
| Crowd Discr | X | X | X | | X | | | O<br>SAQ |
| Mecca Hills | X | X | X | X | X | X | | SAQ |
| Apple Renov | X | X | X | X | | | X | SAQ |
| Day Use 1992 | X | X | X | | X | | X | SAQ |
| Imper Sand Dunes | X | X | X | X | X | | X | SAQ |
| Day Use 1993 | X | X | X | | X | | X | SAQ |
| Day Use 1994 | X | X | X | | X | | | SAQ |
| Cross Cultl Ethic | X | | | | | | X | SAQ |
| Pilot Fees | X | X | | X | X | X | | SAQ |
| Beh'l Conv | X | X | X | | | | | SAQ |
| Commu Rep 2 | | X | | | X | X | | SAQ |
| Mtn B on NF | X | X | X | | | | | SAQ |
| Inyo | X | X | X | X | X | | | Mini<br>Mail |
| Ang Wild | X | X | X | | X | | | Mini<br>Mail |
| Hisp Value | X | X | X | | | | X | O<br>SAQ |
| Commu Rep 1 | X | X | | | | X | | SAQ |
| Env'l Dil | | X | | X | | | | SAQ |
| Env'l Value | X | X | | | | X | X | SAQ<br>Mini<br>Mail |
| Redding | | X | X | X | X | X | | SAQ |
| Env'l Conce | X | | X | | | | | SAQ |
| San Gor Wild | X | X | X | | X | | | Mini<br>Mail |

[1] ECO-Team = **Evaluation of the 1995 eco-team program** (Absher and Winter 1997).

Brack Fern Coll = **Fern gathering on the Arrowhead Ranger District, San Bernardino National Forest: an evaluation** (Anderson and others 1997).

Des Tort = **A pilot study of off-highway vehicle users' attitudes, beliefs, and behaviors toward desert tortoise conservation on Bureau of Land Management areas in southern California** (Bass and Chavez 1992).

Influ of Accul = **The influence of acculturation on environmental concerns: an exploratory study (**Caro and Ewert 1995).

Centr Ameri Rec = **A qualitative approach to understanding recreation experiences: Central American recreation on National Forests of southern California (**Carr and Chavez 1993**)**.

Hisp Rec = **Hispanic recreationists in the wildland-urban interface** (Chavez 1992).

Leisu of Hisp Grps = **Leisure experiences of Hispanic families** (Chavez 1996a).

San Jac MtnB = **Bunny hops or vegetable tunnels? Perceptions and preferences of mountain bike riders on the San Jacinto Ranger District** (Chavez 1997a).

San Mateo C Wil = **Pilot studies of changing urban wilderness recreation use on the Cleveland National Forest: past wilderness users and on-site wilderness users** (Chavez 1993a).

Crowd Discr = **Visitor perceptions of crowding and discrimination at two National Forests in southern California** (Chavez 1993b).

Mecca Hills = **Mecca Hills: visitor research case study** (Chavez and others 1993a).

Apple Renov = **The Applewhite Picnic Area: renovating an outdoor recreation site** (Chavez and others 1995a).

Day Use 1992 = **Recreation day use series—report 1: the San Bernardino National Forest, summer 1992** (Chavez and Mainieri 1995).

Imper Sand Dunes = **Imperial Sand Dunes: visitor research case study** (Chavez and others 1993b).

Day Use 1993 = **Recreation day use series—report 2: the Angeles National Forest, summer 1993** (Chavez and others 1995b).

Day Use 1994 = **Recreation day use series—report 3: the Cleveland National Forest, summer 1994** (Chavez and others 1995c).

Cross Culti Ethic = **Cross-cultural land ethnics: motivations, appealing attributes and problems** (Ewert and Pfister 1991).

Pilot Fees = **Pilot fee demonstration project evaluation: visitors surveys on the Enterprise Zone, phase 1—before fee implementation** (Gable and others 1997).

Beh'l Conv = **Behavioral conventions at the wildland-urban interface** (Heywood 1993).

Commun Rep 2 = **Communicating with users of the Angeles National Forest—report no. 2** (Hodgson and others 1990).

Mtn B on NF = **An examination of the characteristics, preferences, and attitudes of mountain bike users of the National Forests** (Hollenhorst and others 1995).

Inyo = **An analysis, interpretation, and report of recreational user data collected on the Inyo National Forest during summer 1989** (Lee and Brown 1991).

Ang Wild = **Angeles National Forest wilderness visitors' characteristics and values** (Parker and Winter 1996).

Hisp Value = **Hispanic values and behaviors related to outdoor recreation and the forest environment** (Simcox and Pfister 1990).

Commun Rep 1 = **Communicating with users of the Angeles National Forest—report no. 1** (Simcox and others 1989).

Env'l Dil = **A preliminary analysis of environmental dilemmas and environmental ethical reasoning among Hispanic and non-Hispanic forest visitors** (Swearingen and Pfister 1995).

Env'l Value = **Environmental values, ethics, and depreciative behavior in wildland settings (**Taylor and Winter 1995).

Redding = **Visitor research case study: the Redding resource area final report** (Taylor and Winter 1995).

Env'l Conse = **Environmental concern and environmental action: how do recreationists fare?** (Winter 1996a).

San Gor Wild = **San Gorgonio wilderness visitor survey: summer and fall 1994** (Winter 1996).

[2] Vis Profi = Visitor Profile, Rec Patt = Recreation Patterns, Vis Perc = Visitor Perceptions, Dev Pref = Development Preferences, Knowl Info = Knowledge/Information, EthRa = Racial/Ethnic Comparisons, Mgmt Issue = Management Issue, Meth = Methods

[3] I = interviews, Mini= mini-survey conducted on-site, Mail = mailed survey, O = observation, SAQ = self-administered questionnaire

## Respondent Profiles

It is important to recognize the diversity of people who recreate in California. Much of that diversity is found by comparing the various outdoor recreation sites studied, though diversity within particular sites may be lacking (*table 3; appendices A, B*). The diversity could be manifested in age, gender, race or ethnicity, education, language preferences, many other variables, and often, a combination of those variables. How are managers to know whom they are serving and if they are serving everyone they could? Understanding of visitor characteristics is essential to providing services. To highlight the importance of this, we can examine how particular visitor characteristics impact recreation style. If site visitors are younger Hispanic groups with lower levels of education and income, then managers can expect them to visit day use sites (developed and general forest/desert areas), and they may arrive in large "family" groups (immediate and extended family members), they may stay for 8 to 10 hours, and visit particular recreation sites because they heard about the sites from other Hispanic visitors. Managers at sites where visitors are white, late thirties, well educated, and moderate to high incomes might expect these visitors to recreate at day use areas and trails or designated wilderness and be traveling in small groups of friends. The kind of visitation pattern, the choice of activity, and the reasons to recreate may all be linked to visitor profiles.

### *Socio-demographic Variables*

Socio-demographic characteristics of visitors were measured in the 30 studies (*table 3*). In California, 69 percent of the population in 1990 was white, and 26 percent were Hispanic. At some sites we find more whites than the population statistics would suggest (Inyo, for example) and at some sites we found many more Hispanics than the State statistics would suggest (for example, Applewhite Picnic Area).

In comparison to California state statistics, analyses of other socio-demographic characteristics indicate more males as questionnaire respondents than we would expect (we would expect half to be male and half to be female if respondents matched the State statistics). However, we found more male than female respondents, suggesting either more males visit the sites or more were survey respondents, even when using random selection methods for deciding survey respondents. There is also a clear over-representation of males in particular activities, such as off-road vehicle riding and mountain biking.

California state statistics indicate that most residents speak English, and analyses of the various studies show that many respondents are English speakers. The data also show that many visitors use Spanish as their primary language.

California state statistics indicate most Californians over the age of 25 have had some college experience. Though the studies reported here did not include only those respondents over age 25, it is clear that a significant number of respondents had a high school education and no college experience. This is particularly true with the younger populations (such as Hispanics), and less true with higher age respondents (such as mountain bike riders).

Fewer studies examined other socio-demographic variables including household income, place of birth, residence, marital status, and employment status.

A few studies requested information about the annual household income of the respondents. While it is difficult to make generalizations (because of the varied measures used by the researchers), it appears that most of those respondents reported between $20,000 and $60,000 dollars annually for their households (Chavez 1997a; Chavez and others 1995b, 1995c; Chavez and Mainieri 1995; Gable and others 1997; Hollenhorst and others 1995; Lee and Brown 1991; Taylor and Winter 1995; Winter 1996b).

**Table 3—***Visitor profile characteristics (score of the majority of the respondents per study)* [1]

| | Gender | Age | Language | Race/Ethnicity | Education |
|---|---|---|---|---|---|
| Calif [2] | event | | English | white | college |
| ECO-Team | male | <30 | Spanish | | |
| Brack Fern Coll | | | Korean | | |
| Des Tort | male | | | white | college |
| Influ of Accul | female | | English/Spanish | Hispanic | |
| Centr Ameri Rec | | | Spanish | Hispanic | |
| Hisp Rec | male | 26-34 | English | Hispanic | high school |
| Leisu of Hisp | | | Spanish | Hispanic | elem school |
| San Jac MtnB | male | 34 | | | college |
| San Mateo C Wil | male | 38 | English | white | college |
| Crowd Discr | male | 31 | | Hispanic | high school |
| Mecca I | | 33 | Spanish | Hispanic | high school |
| Hills II | | 44 | English | white | college |
| Apple Renov | female | 22 | English | Hispanic | high school |
| Day Use 1992 | female | 37 | English | white | college |
| Imper Sand Dunes | male | | English | white | high school |
| Day Use 1993 | male | 35 | English | white | college |
| Day Use 1994 | female | 35 | English | white | college |
| Pilot Fees | male | 18-35 | | white | college |
| Beh'l Conv | female | | | Hispanic | high school |
| Mtn B on NF | male | 31 | | | college |
| Inyo | male | 43 | | white | college |
| Ang Wil | male | | | white | college |
| Hisp Value | male | <30 | Spanish | Hispanic | high school |
| Comm Rep 1 | | | English<br>Spanish | Hispanic | |
| Env'l Dil | male | 35 | | white<br>Hispanic | high school |
| Env'l Value | | 26-40 | | white | college |
| Redding | | 40 | English | white | college |
| Env'l Conc | male | 33 | | white | college |
| San Gor Wil | male | 37-38 | English | white | college |

[1] The descriptive words reflect the majority of the respondents to that study. For example, for ECO-Teams, not all respondents were male, but the majority of respondents were male. Census statistics of the State of California are included for comparison.

[2] Calif = California. See *table 2* for other acronym definitions.

The results from studies measuring place of birth showed that most of the respondents were born in the United States (Chavez 1993b; Chavez and Mainieri 1995; Chavez and others 1995b, 1995c; Heywood 1993; Winter 2000, 1996a), or Mexico (Caro and Ewert 1995; Chavez and others 1995a; Simcox and Pfister 1990; Swearingen and Pfister 1995).

Results from studies examining home residence indicate that most respondents are California residents (though at least one study also had a significant number of Arizona residents), and most live in large cities, like Los Angeles.

In the few studies that measured marital status, we found that most respondents are currently married (Chavez 1992, 1993b; Swearingen and Pfister 1995).

Studies that asked about employment status showed that many adults were employed full-time outside the home (Chavez 1996a) and were in either manual labor positions (Simcox and Pfister 1990) or in skilled or semi-professional occupations (Chavez 1993b, Taylor and Winter 1995).

### *Discussion*

In a study conducted in the Los Angeles basin, Tierney and others (1998) found that people significantly less likely to visit an outdoor recreation site were those with low levels of socio-economic status, low levels of assimilation (e.g., English language skills), who had moderate to high perceived discrimination (said they were discriminated against at recreation sites or while traveling there), and who were of African-American descent. In the studies in the compilation, findings of more or fewer racial/ethnic groups than census data suggest may indicate either place preferences (perhaps the place itself has meaning to the visitors, and hence higher visitation) or communication influences (perhaps visitors go to particular places because they lack knowledge about other places). It is not clear why place preferences may exist or why communication may be lacking. There may be other barriers to outdoor recreation, such as lack of time, money, and transportation.

Findings about language spoken suggest a need for communications in multiple languages, particularly verbal communications should be in English and Spanish. It is less clear how many site visitors read Spanish (in the studies where written language was measured a large number of those who spoke Spanish as a primary language also read Spanish, but not all of them did). It would be appropriate, then, to have written communications available in Spanish (signs, brochures, etc.). Far fewer survey respondents mentioned other languages, such as Korean. Managers need to be aware that their site visitation may require the use of languages other than English (for example, managers of a fern gathering site are correctly using Korean and English, but may want to also have literature and signs in Japanese; Anderson and others 1997).

What do the socio-demographic findings mean for outdoor recreation management? In part, it means that managers should expect whites and minorities, particularly Hispanics and Asians to visit the sites they manage. They can expect mostly English speaking visitors but also those who speak Spanish and other languages. Managers can expect some of the visitors to have college experience but also a significant number of visitors who have not had any college experience.

When cultural diversity is found at sites, managers should consider how this might impact management decisions and service delivery. Managers may find differences between whites and minorities in recreational activities such as picnicking (Carr and Chavez 1993), preferences for degree of development at some sites (Chavez and others 1993a, 1995a), differences in methods of communication (Hodgson and others 1990, Simcox and others 1989), and any number of different issues. The easiest management tool is to look for the

commonalities between groups and try to serve best as many visitors as possible. At the same time, managers cannot afford to overlook some differences because these may inadvertently cause an agency to under-serve some visitors.

Because the probability of participating in certain types of outdoor recreation activities is influenced by a person's race and ethnicity, it is important to be aware of geographic patterns as well as major trends in the growth of different ethnic groups (Gramann 1996).

Managers should also be aware that people are more than their ethnicity or race. People are influenced by their upbringing, their area of residence, their value systems, etc. Because people are very difficult to neatly categorize, managers should not base decisions on stereotypes. However, if outdoor recreation managers make an honest effort to understand their customers and serve them, they should be successful. At a minimum, managers ought to be racially and culturally sensitive. This suggests training may be needed for all visitor contact employees, even seasonal employees.

How can outdoor recreation managers receive information about their current visitors? Sometimes the on-site staff can estimate a minimum of information about site visitors; sometimes permits or other paperwork are available to estimate current visitation patterns. To get specific details managers should have social science studies conducted. These kinds of studies can tell managers if they are serving the populations equally or if some sub-populations (African Americans, for example) are under-served or not served at all. How can outdoor recreation managers do these studies? There are several sources, such as social scientists at the Pacific Southwest Research Station in Riverside and at local colleges and universities. At the colleges and universities managers should look for departments of leisure studies, recreation, social psychology or sociology, as they are the departments likely to have social science methods courses and are often looking for projects for their students in the "real world." Ideally, the colleges and universities will conduct the studies at no cost to managers. However, if Federal funds are expended for research or if Federal managers are involved in deciding the sampling plan or research instrument (e.g., questionnaire) development, then Office of Management and Budget (OMB) approval must be sought in advance of the research (use OMB Form 83-I). The rules about this are related to the Paperwork Reduction Act of 1995 (5 CFR 1320). Included under these rules are that the work is necessary for the proper performance of agency functions, it avoids unnecessary duplication, it informs the respondent why the information is being collected, and tells how it will be used. Paperwork Reduction Act submissions are sent to the Federal agency's paperwork clearance officer for processing before they are sent to OMB.

Socio-demographic results are also theoretically important. Since California is a diverse state and is often viewed as the bellwether for other states, it is important to not gloss over the changing recreation visitation patterns seen in the state. Rather, it would be important to follow these demographic changes as they occur in other areas and determine if the changes and recreation patterns are similar to those in California. Also, more work is needed to ensure that people are not reduced to their race/ethnicity, age or gender, or some other ascribed (born with) or achieved (earned) characteristic but are seen as a complex mix of many interacting parts.

## Respondent Recreation Patterns

In addition to acquiring information about the outdoor recreation visitors, it is important for managers to know the kinds of activities that visitors engage in, their motivations to recreate, and their patterns of recreation visitation.

The 1994-1995 National Survey on Recreation and the Environment (NRSE) (Cordell and others 1996) does not represent California recreation only, but includes responses from 17,000 individuals 16 years of age and older who reside

in the U.S. The NRSE respondents participated in the following outdoor activities: family gatherings (62 percent), sightseeing (57 percent), picnicking (49 percent), visiting a nature center (46 percent), visiting a visitor center (35 percent), wildlife viewing (31 percent), hiking (24 percent), camping in developed areas (21 percent), camping in primitive areas (14 percent), off-road driving (14 percent), and backpacking (8 percent). Kelly (1987b) suggested that recreation in natural environments might include such activities as backpacking and hiking, boating, camping, fishing, hunting, sailing, cross-country skiing, and downhill skiing. Other resource-based activities might include birdwatching, canoeing and kayaking, horseback riding, snowmobiling, and waterskiing (Kelly 1987b). Many of the activities found in the NRSE (Cordell and others 1996) and in Kelly's list (1987b) are the activities seen on-site in these California studies. In this section are the findings from the studies for respondent recreation patterns including the main activities in which respondents engaged, the primary reason or purpose for recreating, repeat visitation patterns, visitation with family and friends, and group size. Other recreation patterns will also be addressed, though these were asked in fewer studies and include trail use, travel time, club membership, day use, alcohol present, animals present, picnicking, non-holiday weekend use, and outdoor recreation trends. Several studies also examined particular activities (mountain biking, off-road vehicle riding, and wilderness travel), and some of these findings are included here.

### *Variables*

The main activities of the California survey respondents were determined *(fig. 1)*. Responses are influenced by the sites selected for study (many are day use only) and the opportunities afforded by those sites (such as picnic grounds). In order from most to least mentioned in the studies, the respondents were at the sites to picnic, relax *(fig. 2),* day hike, enjoy or play in the water, off-road ride, sightsee, car camp, and have family gatherings.

The primary activities were often site-specific. For example, respondents at the Applewhite Picnic Area were there to picnic, relax, and play in the creek (Chavez and others 1995a), while those at the San Jacinto Ranger District trails were there to mountain bike ride, day hike, backpack, and car camp (Chavez 1997a). A few differences were found when comparing Hispanics to whites: Hispanics participated most in group sports, picnicking, hiking/walking while whites participated most in hiking/walking, ORV riding, relaxing, and camping (Chavez and others 1993b).

The reasons people go to the outdoor recreation sites studied were also determined. Some of these reasons can be categorized as experiences (solitude

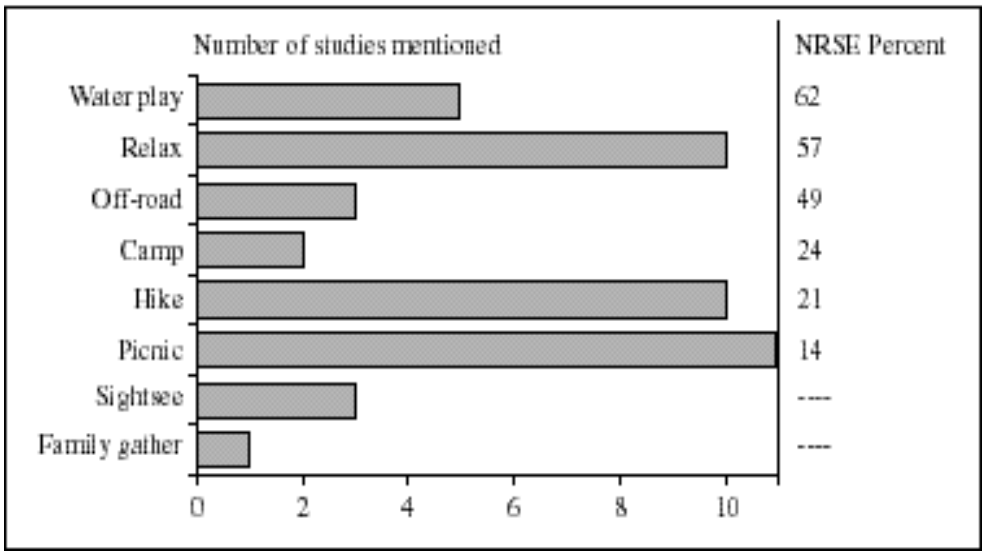



**Figure 1**—Main activities of various California respondents and National Survey on Recreation and the Environment (NSRE) respondents.

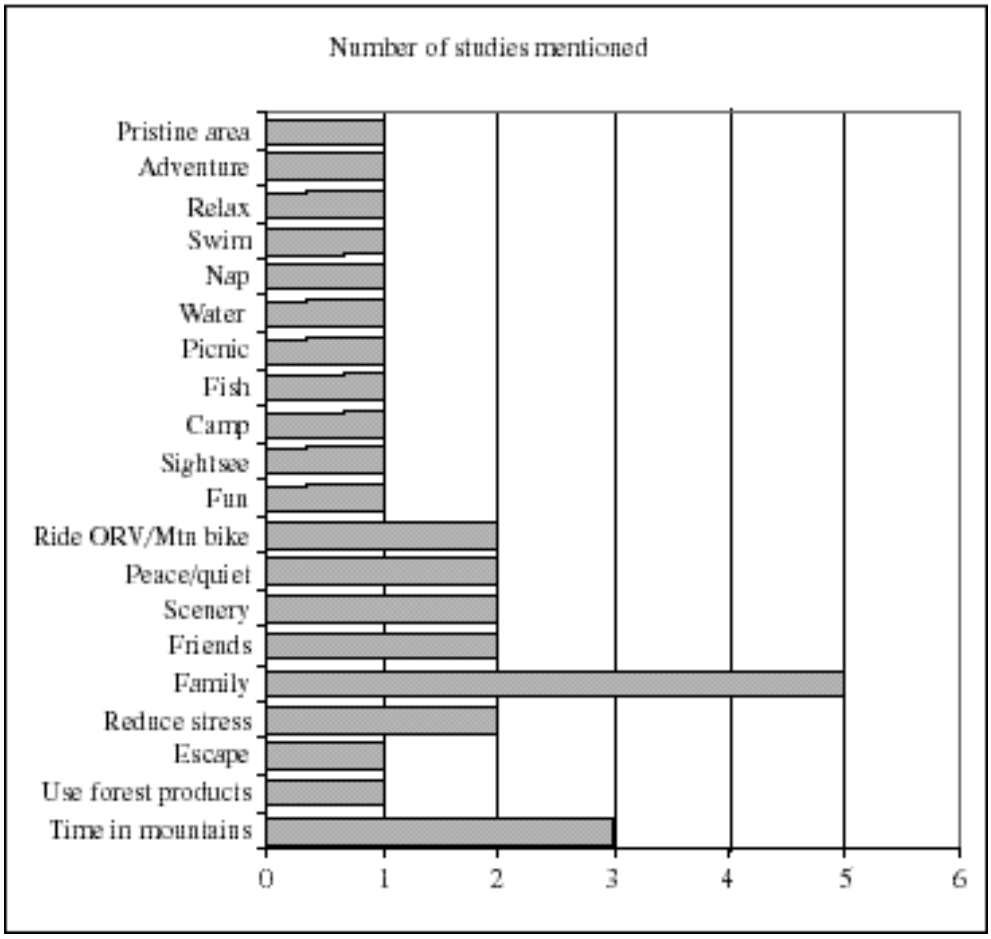
**Figure 2**—Often visitors go to the sites for relaxation. (USDA Forest Service photo)

and relaxation, for example) or benefit outcomes (improved social condition or family bonding, for example; Driver and others 1991). Respondents had many different reasons for choosing these particular sites *(fig. 3).* From most to least mentioned, these included being with family members, spending time in the mountains, reducing stress, seeing friends, enjoying the scenery, seeking peace and quiet, riding off-road or mountain bicycles, to escape the city, use forest products, for fun, to sightsee, to camp, to fish, to picnic, to be near water, to nap, to swim, to relax, for adventure, and to see a pristine area. These are a mix of activities (e.g., riding off-road), settings (e.g., time in the mountains), experiences (e.g., reduced stress), and benefit outcomes (e.g., family bonding) (Driver and others 1991).

Three of the studies found some differences between racial and ethnic groups on motives for participation in outdoor recreation. The first one indicates that United States-born whites and Hispanics had diminished motivations and less positive perceptions of the site compared to Mexico-born and Central America-born Hispanics (Ewert and Pfister 1991). Another study indicated that Mexico-born and Central America-born Hispanics rated "learning about nature" as a more important participation motive than did whites (Simcox and Pfister 1990), and the Hispanics rated "talking to and meeting new people" and "eating and drinking" as more important reasons for their recreation than did whites. The third study compared Korean and Japanese fern gatherers and found that Koreans were more likely to use ferns in holiday meals and to use the experience to teach children or others about their cultural heritage (Anderson and others 1997).

In many studies, the majority of respondents were on repeat visits (Absher and Winter 1997; Baas and Chavez 1992; Chavez 1992, 1993a, 1993b, 1996a, 1997a; Chavez and others 1995a, 1995b, 1995c; Chavez and Mainieri 1995; Gable and others 1997; Heywood 1993; Hollenhorst and others 1995; Lee and Brown 1991; Parker and Winter 1996; Winter 1996a, 1996b), and some data indicates that visitors had been going to the sites for several years (3 to 11 years; Absher and Winter 1997; Chavez 1993a, 1997a; Chavez and others 1995a, 1995b, 1995c; Chavez

**Figure 3—**Experiences, benefits, and reasons to recreate at the study sites.




and Mainieri 1995; Hollenhorst and others 1995; Winter 1996b ) and that they made multiple visits per year (as often as six times per year; Gable and others 1997). One study indicated that almost all respondents planned to return to the sites (Chavez 1993b). In another study (Baas and Chavez 1992) respondents appeared to recreate year-round.

Two studies found some differences between race and ethnic groups regarding recreation use patterns. These studies found that Asians were the newest recreationists at the study sites, followed by Hispanics, and that Europeans had been recreating at the site the longest (54 percent of Asians, 38 percent of Hispanics, and 26 percent of Caucasians were on their first visit; Hodgson and others 1990; Simcox and others 1989). Two studies found several differences between those respondents who were visiting a site for the first time and those who were repeat visitors (Chavez and others 1993b, 1995a). Included in those differences were that first time visitors were more likely to go to the site to visit friends, while repeat visitors were more likely to go for off-highway vehicle riding; first time visitors preferred on-site information in brochures at the site entrance and signs along the road, while repeat visitors preferred signs along the road and notes on bulletin boards; first time visitors preferred information about things to see and do and natural features of the area, while repeat visitors preferred information about safety and agency management practices that could affect off-road vehicle riding; and repeat visitors were more likely to be aware of the visitor center, be aware of new regulations, and were more likely to rate the site as moderately to very crowded (Chavez and others 1995a). In the second study repeat visitors were more likely to report the recreation site as crowded and had stronger preferences for recreating in shady spots (Chavez and others 1995c).

Several studies examined visitation at the sites with family and/or friends (Chavez 1996; Chavez and others 1995b, 1995c; Chavez and Mainieri 1995; Parker

and Winter 1996; Simcox and Pfister 1990; Winter 2000). Sites were thought to be very important either because they provided a place for family recreation or because they enhanced family togetherness (Chavez 1996a; Chavez and others 1995b, 1995c; Chavez and Mainieri 1995).

Respondents in several studies were asked the size of the group with which they were recreating, or data collection team members evaluated group size. About half of these studies indicate average group sizes of six or fewer (Absher and Winter 1997; Anderson and others 1997; Chavez and others 1995b, 1995c; Chavez and Mainieri 1995; Lee and Brown 1991; Winter 1996b), while another half indicate average group sizes of more than six (Carr and Chavez 1993; Chavez 1992, 1993a; Chavez and others 1995a; Heywood 1993; Simcox and others 1989; Simcox and Pfister 1990). In three studies comparisons of group size were made between groups. In one study the average group size was bigger for Hispanics and Asians compared to whites (Simcox and others 1989). We do not have much information on the Asian groups yet, but the Hispanic groups tend to recreate with immediate (usually mom, dad, and kids) and extended family members (aunts, uncles, grandparents, cousins). Typical group size for Hispanics range from 7 to 15 (Chavez 1992). Another study also found that group sizes were larger for Hispanics than for whites (10 compared to 7, Chavez 1992). The third study examined group size differences between Korean and Japanese fern gatherers and found slightly larger group sizes for Japanese respondents (Koreans 4 and Japanese 5, Anderson and others 1997).

In a few studies the respondents were asked their preferences for trail length and trail difficulty. Most respondents preferred trails that were 30 minutes or so in length and trails that were easy to somewhat challenging (Chavez and others 1995c, Chavez and Mainieri 1995). In one study respondents reported that trail and road use was mainly for walking/jogging (Winter 2000). In two studies of trail use by mountain bike riders it was found that most riders preferred single track and abandoned roads (Hollenhorst and others 1995), or that while use of trails was dispersed throughout region, the most difficult trails were the ones frequented most by the respondents (Chavez 1997a). One of the studies found that respondents thought that the number of people encountered on trails was at an acceptable level and that user limits were not necessary, and in fact, they believed that trail use could be increased (Chavez 1997a).

A few studies examined the time it took respondents to travel to the recreation sites. Most traveled an average of 1 hour or less (Chavez and others 1995c, Chavez and Mainieri 1995, Simcox and others 1989).

Few studies examined recreation club membership; the ones that did examine membership found that few people belonged to clubs, whether it was for mountain biking (Chavez 1997a, Hollenhorst and others 1995) or for off-road vehicle riding (Baas and Chavez 1992, Chavez and others 1993b).

In a few studies where day versus overnight (or more) use was measured, most people were found to be on day trips to the sites (Chavez 1993a, Hollenhorst and others 1995, Winter 1996b). In two of these studies the day users were contacted at wilderness trailheads (Chavez 1993a, Winter 1996b), and one other study found day users at mountain bike trailheads (Hollenhorst and others 1995).

In only three studies the presence or absence of alcohol at the sites was examined. In one study about half the groups encountered had alcohol at the site (Simcox and Pfister 1990), while the other two studies found far fewer cases of alcohol present (24 percent, Chavez and others 1995c; 12 percent, Chavez and Mainieri 1995). The first study was site specific while the latter two studies were forest-level studies.

Two studies examined the presence or absence of animals at the sites. Both found that a few respondents brought dogs to the sites with them (Chavez and Mainieri 1995, Heywood 1993). One of those studies also noted that respondents prefer pets to be leashed (Heywood 1993).

A few studies looked at the activity of picnicking for Hispanic visitors (Carr and Chavez 1993, Chavez 1996a). In the first study the activity was described in-depth. Picnicking for those respondents was an entire-day activity. They often arrived at the site by 9 a.m. and stayed until early evening. Food was cooked throughout the day and many items were made on-site from scratch. Items prepared included carne asada (a spicy beef dish), tortillas, salsa, beans, rice, salads, and desserts *(fig. 4)*. In the latter study Chavez (1996a) found a similar picnicking pattern and found that the respondents considered this experience to be very important to maintaining family cohesiveness. Other studies have indicated that Hispanic visitors to picnic sites (e.g., Mecca Hills and Applewhite) have preferences for developed amenities and facilities: they would like tables that seat 8 to 10 people, a barbecue and trash receptacle nearby the table, parking spaces, and flush toilets.

A couple of studies queried respondents about typical use periods. Both found that the majority of visitors recreated at sites on non-holiday weekends (Chavez 1993a, Chavez and others 1993a). The study that compared white respondents to Hispanics found that whites were more likely to visit on non-holiday weekends while Hispanics were more likely to recreate on holiday weekends (Chavez and others 1993a).

One study showed that Hispanic respondents did little advance planning for their recreational outing (Simcox and others 1989). Site observations support this finding; many visitors show up on site in street clothing (sometimes church clothing) and with bags of items from the grocery store, including barbecues that needed to be put together (Chavez 1993b).

One study examined many different types of activities that were tried by respondents or those they desired to try (Chavez 1992). Activities in adventure travel (heli-skiing, bungee jumping, hang gliding), conservation travel (green vacations, volunteer hosting), traditional activities (horseback tours, natural history hikes), and non-traditional activities (camera safaris, mountain biking) were addressed. Results showed big gaps between what respondents (particularly Hispanics) tried and what they might do in the future (for example, few had tried horseback riding tours, while almost half thought they would try these in the future).

**Figure 4**—This Central American family is cooking carne asada (a beef dish) at creekside. (USDA Forest Service photo.)

A couple of the studies focused on mountain bike riders in California (Chavez 1997a, Hollenhorst and others 1995). Respondents in these studies typically were male, white, and were in their early thirties. Most had a college education and resided in large cities. They were an active group who considered themselves to be advanced mountain bicyclists. In addition, they reported participation in other outdoor recreation activities such as hiking, car camping, and backpacking. Some of the respondents were club members; almost all were repeat visitors. Most rode with friends and preferred single-track trails and abandoned roads for riding. They reported riding to enjoy nature, for the challenges they find, and for the adventure.

Two other studies focused attention on off-road vehicle use (Baas and Chavez 1992, Chavez and others 1993b). Respondents of the studies typically were male and white, and many were in family groups. There were also several Hispanic respondents, suggesting this is not a "white only" activity. Most respondents were English speaking, and respondents either had high school education levels or also had some college experience. Several were club members, and almost all were repeat visitors. In one study the majority were day users; in the other study they were camping. Many expressed interest in safety measures, such as speed limits near camps and safety flags on their vehicles.

Three studies of urban-proximate wilderness visitors were conducted (Chavez 1993a, Parker and Winter 1996, Winter 1996b). Despite the fact that these wildernesses are located in the highly racially/ethnically diverse southern California area, the majority of respondents were white (Chavez 1993a, Parker and Winter 1996, Winter 1996b). In one study, many of the respondents had witnessed wilderness trespass by mountain bikers, motorbike riders, and all-terrain vehicle riders (Chavez 1993b). However, it was also found that many visitors to this urban-proximate wilderness were not aware that they were recreating within a federally designated wilderness (Chavez 1993b). In another study, respondents said that desirable wilderness characteristics included a natural setting, observing scenery, emotional satisfaction, and clean water (Parker and Winter 1996). In another study the respondents supported the following management actions: prohibit glass containers, limit permitted groups to 12 people, and relocate campsites to distribute impacts to soil and vegetation (Winter 1996b). One wilderness was thought not to be crowded but would be considered crowded if the respondents encountered eight or more groups in a day's trip (Chavez 1993a). Another wilderness was thought to be overcrowded if the respondents encountered more than 10 people (Parker and Winter 1996). The majority of visitors to one of the wildernesses were on a day trip rather than a traditional overnight backpacking trip (Chavez 1993a).

### *Discussion*

Water is one of the most salient physical features of some of these sites and has been mentioned as being very important to the outdoor recreation experience. Also, many people go to the sites for picnics and relaxation. Thus, settings are as important as experience preferences (Ulrich and others 1991). To enable recreationists these opportunities, managers should either keep the current sites open and/or develop additional opportunities near water. This may not be an easy task, especially in southern California where there are not many other water-related options, and where endangered species protected under the Endangered Species Act (ESA; 16 U.S.C. 1531) may curtail or preclude recreation at some water-proximate outdoor recreation sites (because of the presence of endangered species). Also, because some of the survey sites are very crowded, managers are searching for ways to relieve the amount of use. Any attempts to relocate some people to other areas probably should incorporate locations in the mountains (where there is water) and desert sites where people can picnic in natural resource-based surroundings, such as those that can accommodate large

groups of people and where managers will feel comfortable visiting with and serving non-English as well as English speakers.

Even if managers serving Hispanic groups cannot provide all the amenities and facilities that Hispanics prefer (flush toilets, large tables in group configurations, etc.) they should provide as many as are feasible.

It is also important to provide for family experiences (Tierney and others 1998). This may mean adding programs that are family oriented or advertising existing programs with emphasis on the family message. Because adding programs or increasing awareness may mean increasing use levels, managers will need to consider their course of action carefully. Perhaps continued and increased use of volunteers and partnerships should be considered to accomplish this.

Consistent with most outdoor recreation research, people have a desire for fun, relaxation, stress relief, and experiences with nature (Sheffield and Dawson 1999). Managers of outdoor recreation sites should be mindful that they are providing more than land upon which people can gather; they are providing social experiences and providing outlets for personal growth and family bonding. Other considerations for managers of outdoor recreation sites are group size, return visitors, and day use of sites.

Some groups will be the "traditional" size of four to six, but others will be larger. Most outdoor recreation sites are built with the traditional group size in mind. For some sites, such as picnic areas that offer only sites for groups of four to six or campgrounds that have only single group sites, renovations can be made to better suit larger groups. Picnic tables could be placed in group configurations or larger tables could be used. Campground managers can take sites that are already close together and label them as multiple family sites. Some changes will be costly, but others will be less costly.

People who return to sites, particularly people who say the site is their favorite place, offer a great opportunity to managers. These people have good reason to get involved in the management of sites and perhaps serve as site hosts. Many people also reside nearby the outdoor recreation sites and may have expectations of the areas being in their "backyard." This may influence how they use and think about these areas. They may have a special interest in keeping visitor use restricted; conversely, they may have a desire to serve as an area host or community liaison.

In several studies more day use was found than managers had expected, particularly at wilderness trailheads where the traditional use is overnight, not day use. This finding suggests that people seek different experiences and may not always fit managers' expectations for how people should use sites.

Another key message from visitation patterns is that many people may not plan their outing. It may be difficult for managers to "plan" for spontaneity, but it is worth consideration. For example, managers may want to have gas powered barbecues available for checkout, and they may want to have extra personnel on hand to provide important area information (e.g., fire danger messages or where to go if recreating in a large group). Managers should also consider how much effort should go into newspaper and other external communications (which would be used if managers desire increased use).

Managers of mountain biking sites should consider providing challenges on single track trails or abandoned roads, and they may want to contact riders via mountain biking clubs or local bike shops. It would be useful to have local mountain bike clubs involved in trail development and maintenance and have information available at local bike shops.

Managers of sites with off-road use should provide safety measures or enforce those already in existence. Managers can provide information to some off-road vehicle riders via clubs and should involve local off-road vehicle clubs in management decision-making and site development.

Day users of wilderness may be quite different from overnight users, and additional research is needed to make that determination. It is worth considering that many day users of designated wilderness did not realize they were in the wilderness; hence, they are less likely to comply with wilderness rules and regulations. Managers of wildernesses should provide information about wildernesses and nearby sites, both to inform visitors of where they are recreating and to inform visitors of other options, which could ease the heavy use (especially day use) of wilderness trails.

## Respondent Opinions, Perceptions, and Beliefs

In several studies respondents were asked their opinions, perceptions, and beliefs on various topics. These topics can generally be categorized into settings (place, level of development, etc.), activities (hiking, camping, etc.), experiences (solitude, excitement, relaxation, etc.), and benefit outcomes (improved conditions; Driver and others 1991). Opinions, perceptions, and beliefs can provide powerful information to managers because value systems are the basis from which behavior can be understood. Managers can use that knowledge and make decisions about the best management tools to use for particular situations. For example, managers may not want to use direct management, or regulation of visitor behavior, to handle situations that could be managed by indirect techniques such as signs. However, if managers had a trail used by mountain bike riders that provides an exciting ride but one which hikers have complained about the speed of mountain bikes, then what should the managers do? Trail managers probably should not close a trail (direct management) to mountain bike riders (who are seeking adventure) without first trying to inform the mountain bike riders of the situation and perceptions of those hiking the trail. It would be best to try signs and brochures and then perhaps move to collaboration with mountain bike groups and trail groups. If the same issues continue and the activity becomes too dangerous for sharing the trail, then managers could consider a more direct management tool (e.g., alternate use or close to one group). It is important to note that mountain bike riders often think about the activity as being a part of who they are, and steps to close off that use will be met with resistance. Similarly, there are many issues that arise in outdoor recreation management, and knowing what settings, activities, experiences, and outcome benefits mean to outdoor recreationists will enhance management decision-making.

### *Settings*

In several studies respondents noted the importance of natural settings, such as mountains, beaches, lakes, and sand dunes (Chavez 1992, 1996a, 1997a; Chavez and others 1993b; Lee and Brown 1991). For some respondents settings are important because of the scenery or beauty they provide or because the setting provides for family togetherness (Chavez and others 1993a, Ewert and Pfister 1991, Lee and Brown 1991, Simcox and Pfister 1990). Some respondents thought the setting could be visited by more people (Chavez 1993b) and could be developed more (by adding facilities and amenities, and adding more natural features like trees, grasses, and boulders; Chavez and others 1995b).

In one study that examined the value of leisure activities in the home, the community, and natural environments, it was found that the most important environment for leisure for these respondents was natural areas (Chavez 1996a). In another study (Hollenhorst and others 1995) mountain bike riders expressed a strong interest in having access to public lands (specifically National Forests) and keeping trails open to use by mountain bicycle riders.

In one study (Parker and Winter 1996), most respondents said that some areas in the United States should be set aside to prevent development and that protection of the land from human impact is necessary. In another study (Baas

and Chavez 1992) just over half the respondents noted that managers should do all they could to conserve habitat for the desert tortoise. However, respondents in another study did not see any danger to the natural environment from recreational activities (Chavez and others 1993b).

There is some support for conservation of areas and protection of wildlife habitats. However, there is also real concern for people's needs and for access to recreation sites. This "set it aside" and "keep it open to me" attitude is very complex, and managers will need to consider carefully all options before setting aside spaces that have been previously open to use.

### *Activities*

A few studies examined opinions, perceptions, and beliefs about specific activities. In two studies about mountain bike riding, most respondents noted that mountain bike riding was one of the most satisfying things they did (Hollenhorst and others 1995, Chavez 1997a). Off-road vehicle riding was very important to some respondents (Chavez and others 1993b), while gathering, using, and sharing forest products (fiddleheads from bracken ferns) was very important to other respondents (Anderson and others 1997). Clearly people engage in activities that have meaning to them personally.

### *Experiences*

Several studies asked respondents about their beliefs about outdoor recreation experiences (such as solitude and excitement). In one study it was found that recreation experiences in natural settings were important to respondents (Lee and Brown 1991). The study also indicated that being able to view the mountains and lakes, being close to nature, and viewing scenic beauty were important.

Respondents in another study reported enjoying the scenery and the peace and quiet (Taylor and Winter 1995). Though some people seek a solitude experience, in another study we found that respondents had expected more people at the sites than were actually there and that even adding more people to the site would not detract from the outdoor recreation experience (Chavez 1993b).

In a study of mountain bike riders (Hollenhorst and others 1995), it was found that mountain bike riding is important to respondents: they rode for enjoyment and fun, for physical health, and for adventure and excitement. A study of off-road vehicle riders found they rode for fun and adventure (Chavez and others 1993b). In another study it was found that most respondents were very satisfied with their recreation experiences (Lee and Brown 1991).

### *Outcome Benefits*

Outcome benefits can be categorized as improved individual, social, economic, or environmental conditions. Examples include health improvements, family bonding, and resource protection; and some respondents choose activities and sites for personal health development (Hollenhorst and others 1995).

A few other studies addressed family bonding. Two studies showed that the appealing aspects of the sites included being with the family, watching children play, and being near the water (Ewert and Pfister 1991, Simcox and Pfister 1990). Respondents said that natural area visits provided a good family outing and the areas reminded them of their family homeland (Chavez 1996a).

In a few studies the respondents were asked if they would recommend the sites to different groups of people (Chavez and others 1995b, 1995c; Chavez and Mainieri 1995). It was found almost uniformly that respondents would recommend the outdoor recreation sites to family members, people with small children, people who are deaf, and people who are elderly. They were less inclined to recommend these sites to people using walkers and those in

wheelchairs. American Disability Act (ADA) standards were not measured in these studies, but respondent perceptions suggest managers could do more at several sites to meet access needs.

A few studies addressed issues related to resource protection or environmental improvements. Researchers saw environmentally responsible behaviors on-site and attested to by respondents (Winter 1996a). However, there is also evidence of depreciative behaviors on-site (Taylor and Winter 1995, Winter 1996a). Activities and occurrences that bothered respondents included spraypaint on rocks and trees, litter on trails/along the road, and litter at picnic sites. In this study respondents suggested penalties for depreciative behaviors, which varied by the behavior: fines were suggested most often for throwing garbage on trails/roads, carving/spraypainting trees, lighting barbecues/fires in unauthorized areas; verbal warnings were suggested most often for playing loud music, camping/picnicking in undesignated areas, parking or driving in unauthorized areas; while no penalties were suggested most often for collection of fallen branches/twigs and hanging hammocks from trees (Taylor and Winter 1995).

### *Discussion*

Recreation sites were deemed important in people's lives, as well as the various recreational activities in which people engaged. Respondents relayed the importance of natural settings in their lives, the importance of outdoor recreation activities, and the experiences gained. Although some respondents were hoping for a solitude experience, others were content to be at relatively crowded sites; indeed, they would not be bothered by additional visitation. It is important to note that what may seem like a "crowded" area to a site manager may not be perceived as "crowded" by recreationists. There are also many recreationists seeking either relaxation or excitement or both from a particular activity.

Managers should strongly consider how important various activities are to individual recreationists before disallowing that use. For example, before closing trails to one group or another, they need to know who is using that trail and what other options exist nearby for the displaced group(s). In some cases, environmental legislation may direct outdoor recreation managers to consider site closures (e.g., similar to ESA's in southern California for the protection of endangered species). Managers should consider an array of management tools: can the site continue to be used, or can it continue to be used in particular seasons? Under these conditions managers may focus on indirect management tools (signs, education, interpretation, for example) and collaboration or "bridge building" (Chavez 1996b, 1997b). In cases where managers must restrict or close use they can consider resource hardening options or direct management tools (regulation of visitor behavior). These actions should be taken in conjunction with educational, interpretive, and collaborative tools. In other words, let the visitors know what management actions are being taken, why, and for how long.

It is clear from several of these studies that outdoor recreation respondents understand the importance of environmental conditions; in some cases they would restrict their own recreation activities. It is also clear that many respondents believe that the public lands upon which they recreate have not suffered damage and could take more use. Managers will want to engage both groups of people in management decision-making, perhaps enticing some as collaborators, should restrictions or closures of sites or places become necessary.

## Respondent Site Development Preferences

Between 1989 and 1998 several studies addressed site development issues. In some of these studies, development was measured in general (for example: do you think more development is needed at this site?), while other studies asked some site-specific questions related to facilities and amenities (for example, are

more picnic tables needed here?). Facilities are items that are built, such as picnic sites and restrooms, while amenities are items of convenience, such as telephones.

Over the years we have found that people like to recreate at relatively developed sites; they want restrooms, picnic tables, and the like. This preference is stronger for Hispanic respondents than for white respondents.

At one site in southern California we are engaged in "adaptive management." Adaptive management is a technique that uses scientific information to help formulate management strategies (Halbert 1993). It is a process for continually improving management practices by learning from the outcomes of operational programs. What have we learned from doing this? First, questions about development are best included in survey instruments when managers are actually considering engaging in site development (because asking questions about development causes respondents to have expectations that the development they request will actually occur). For example, at one site we asked respondents about development, and no development has occurred at that site. Eventually respondents at that site grew dismayed with our queries because they perceived that nothing had changed. In another example, we asked respondents about levels of development, and found that most site respondents would like a very high level of development. Later, the site managers decided that the area could not support the highest level of development (as desired by the respondents) and developed based on what the respondents wanted and what the land could sustain. A follow-up study showed that respondents were not as happy with all the changes as we might have expected, and this may be due to asking about high levels of development and following through with lesser levels of development. It would have been more advantageous to only ask about the highest level of development that the managers would have implemented.

We have also found that some "lessons" need to be learned repeatedly by the site managers. In this case, we found that site managers have not used all the indirect tools (communications) that were previously suggested (such as bilingual signs). We also learned the value in using adaptive management.

## *Results*

Facility and amenity preferences were determined by the various studies (*fig. 5*). The Applewhite Picnic Area on the San Bernardino National Forest is an area of adaptive management: managers sought public input through social science research (Chavez and others 1995a); used that to design the new picnic area; after renovation, the social scientist checked again with site visitors about the specific developments (Chavez 1998a, 1998c); then managers made more site changes based upon what they learned through practice and from the social science research. Researchers and managers continue to work together, with visitor input, to manage the site.

As already noted, at the adaptive management site some respondents desired high levels of site development (Chavez and others 1995a), and still others desired additional development after a site had been renovated (Chavez 1998a, 1998c). Some of the site improvements initially listed as desirable included more and larger picnic tables (tables that seat 8 to 10 people; *fig.6*), tables in group configurations (two large tables paced side-by-side), trash receptacles placed near each table, barbecue grills, additional parking, locating picnic sites near the water (Lytle Creek), having "creekettes" (small creek-fed waterways), adding flush toilets, adding rocks/boulders, adding trees and grasses, adding a playground, and providing area maps. Site development included many of these changes, though fewer tables (*fig. 7*), barbecue grills and trash receptacles were added than respondents requested, vault toilets were installed (rather than flush toilets), grasses were added to one side of the picnic area (rather than throughout), and a playground was not added.

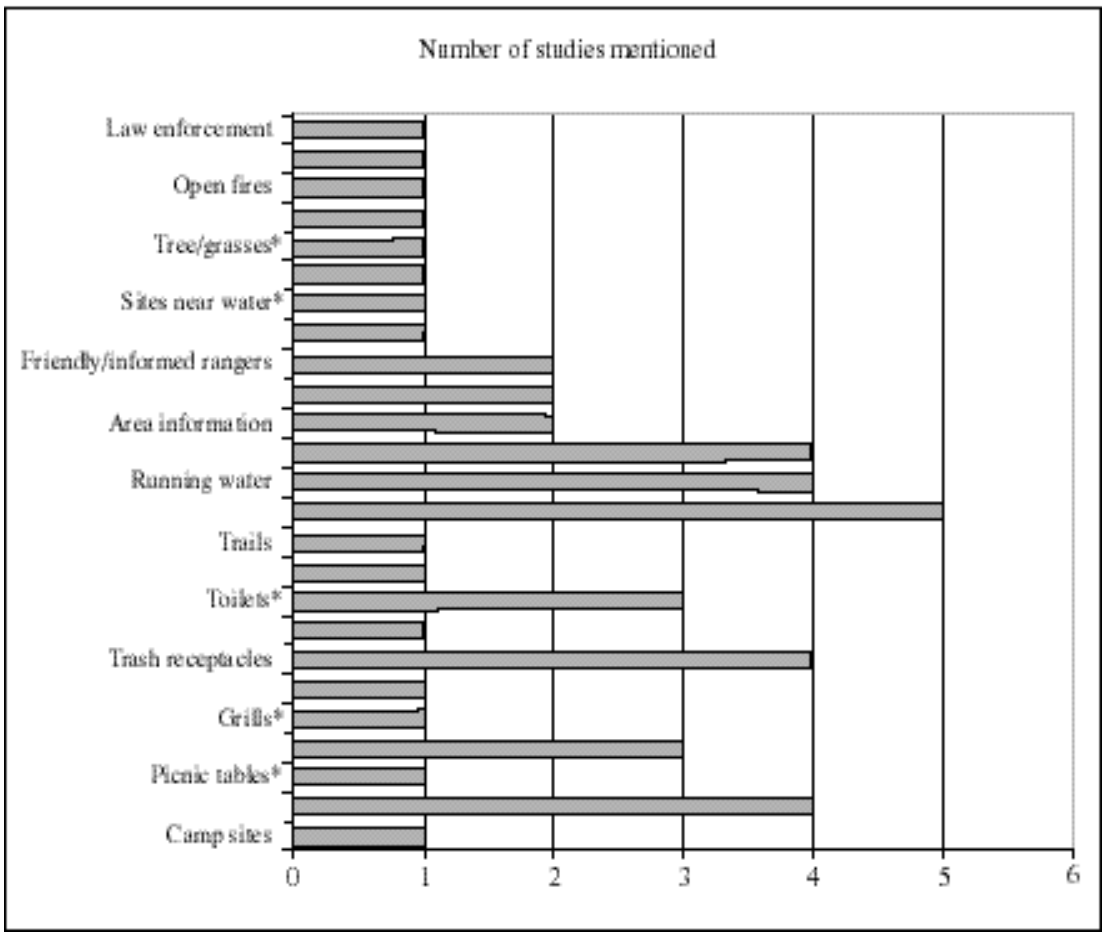



**Figure 5**—Facility and amenity preferences. * = Specific to the Applewhite Picnic Area on the Frontcountry Ranger District on the San Bernardino National Forest (Chavez and others 1995a; Chavez 1998a, 1998c).

**Figure 6**—Picnic tables before site renovation were often in the sun and were often covered in graffiti. (USDA Forest Service photo)

At the other sites studied (Chavez 1992, 1997; Chavez and others 1993a, 1993b, 1995a, 1995b, 1995c; Chavez and Mainieri 1995; Lee and Brown 1991), a mixture of facilities and amenities were preferred. From most to least mentioned of facilities were picnic areas, trash receptacles, running water, parking areas, restrooms, camp sites, showers, trails, and open fire pits (*fig. 5*). From most to least mentioned of amenities were signs, maps, area information, a clean area in which to recreate, friendly and informed rangers, telephones, and law enforcement on site.

Results from a couple of studies show that Hispanic respondents tend to have greater preferences for development than white respondents (Chavez 1992, Chavez and others 1993a). Hispanics had greater preferences for the following developments: picnic areas, parking spaces, toilets (especially flush toilets), trash receptacles, signs, friendly and informed rangers, trails, and law enforcement.

Interestingly, mountain bike riders who responded to development questions showed little desire for facility development (they did not want showers or commercial concessionaires), but mentioned amenities they would like to have (maps of the trails with mileage included and signs that indicate allowed and prohibited use of the trails).

## *Discussion*

Knowing what the respondents might like to have developed or not developed at sites is very salient information for managers. The information can guide development that may occur, or it can be used in the development proposal stage and perhaps assist managers in acquiring funds, as was done at the Applewhite Picnic Area (Chavez 1998a).

Before the renovation using adaptive management at the Applewhite Picnic Area, the managers reported cleanup of the site to take three people 4 to 5 days each week. After the renovation, the managers reported that one or two people could accomplish the task in 1 to 2 days each week. This difference in time allocation frees some personnel to do other work at the site. The renovation is said to have changed management significantly. This is just one example of the power of social science research and management collaboration.

Some user groups (Hispanics, for example) desire development of amenities and facilities, while other user groups (mountain bike riders, for example) have less desire for development. The differences in development preferences between whites and Hispanics is important information for managers serving Hispanic groups, as well as to those who might serve them in the near future. Managers

**Figure 7**—Picnic tables after site renovation were large in size, fitting 8 to 10 people, and were often in group configurations to serve large numbers of visitors. (USDA Forest Service photo)

may want to redesign some current facilities and/or they may want to build new ones, perhaps focusing on picnicking and camping facilities and facilities suited to large family gatherings. Managers may want to consider including larger tables, more tables, tables in group configurations, barbecue grills, trash receptacles near tables, and plenty of parking spaces. Managers of mountain bike sites may not want to offer a highly developed site but may want to offer amenities such as maps with trail mileage listed.

What is missing from the data collected are resource degradation issues related to developed outdoor recreation sites. An example would be stream bank erosion near picnic areas in urban proximate locations. How might managers best handle such situations? First, some research needs to be conducted to adequately respond, but perhaps wooden or rock steps down to the water at several locations (with other sections re-vegetated) would relieve the problem, as is the case at an urban-proximate site in Utah. The managers there now report less degradation of the stream banks. Another renovation at the Utah site provided paved pathways. Because urbanites are used to seeing them, they tend to stay on the paved pathways and not trample the vegetation. Current soil-stabilization practices (known as best management practices) perform the basic function of stabilizing areas that have sustained heavy use. In some cases these practices are useful; however, when managing sensitive-ecosystem situations, best environmental design practices (BEDP; Juarez, personal communication) should be considered. BEDP include use of effective interpretive signs and techniques and information signs and symbols that clearly depict sensitive areas. BEDP also account for visitors from a variety of racial/ethnic backgrounds and who speak and read languages other than English. Managers at outdoor recreation sites in California should consider best management practices and BEDP when undertaking site development.

## Respondent Communication Patterns and Preferences

A few lessons learned about communication in California show that the managers are attempting to communicate with various user groups, though not always successfully. The first lesson is a sign found at a desert area known to be used by Los Angeles County residents that reads "Pack it in, Pack it out." To the managers who wrote the sign it meant if you carry trash into an area, then you also need to carry the trash out again. To some people from the Los Angeles basin, "packing" something means to carry a weapon. Thus, the first lesson is that signs should not use jargon. The "cultural" meaning may not be the intended meaning.

The second lesson comes from a wilderness trail setting where the managers noted a lack of use by Hispanics. The sign in English said that mountain lions were a potential danger, that they were unpredictable. The Spanish version, translated by an employee, said that mountain lions were hiding behind rocks and might jump out at you. Thus, it made sense that people reading the Spanish version might be reluctant to take that trail. Managers should rely on more than one person to translate signs, use what has been termed "back translations" (Marin and Marin 1991), and use one person to translate English language information into Spanish (or other language). Ideally, this would be someone whose career is to write translations. Then another professional should be hired to translate the Spanish (or other language) version into English. Lastly, the two English versions should be compared to ensure they match.

A third example comes from a forest roadway sign. This sign told English readers that no campfires or barbecues were allowed without a permit. It told those who could read Spanish that campfires were not allowed without permission. Although not appearing to be a big difference, this sign was located near an area known to be used primarily by Hispanics for barbecues. In addition,

the sign failed to tell either reader group where to purchase permits (*fig. 8*). Although "where" to get a permit may seem obvious to the manager, imagine the newer visitors to the forest setting and how little information they may have so that they do not know that information and permits/permission can be found at Ranger offices. Thus, managers should provide as much information as possible and not assume that other people have the same amount of knowledge as the staff. Each of these forest and desert examples has been corrected.

Another communication tool that managers should consider is the international sign (one that uses a picture to tell the message). These are useful because they prevent the need to do and pay for many translations for various user groups, and they do not assume literacy of site visitors. However, those signs tend to give little information and may be culturally specific in their message.

### *Results*

In several studies respondents were asked how they first learned about a site. In these studies respondents reported getting their information through informal channels, specifically via family and friends (Chavez 1997a; Chavez and others 1993a, 1993b, 1995b, 1995c; Hodgson and others 1990; Lee and Brown 1991; Winter 2000). They did not learn first about the sites from formal communication channels, such as newspapers, television or magazines. Thus, off-site communication for these respondents tended to be interpersonal.

In several studies respondents expressed their on-site information method preferences (Chavez 1997a; Chavez and others 1993b, 1995b, 1995c; Chavez and Mainieri 1995; Hodgson and others 1990; Parker and Winter 1996; Winter 2000). These preferences were brochures, signs, and in some cases, bulletin boards or notes on bulletin boards. Also mentioned in two studies were trail signs/maps, and in one study each were maps, information center, and rangers. Off-site preferences, measured in a few studies (Chavez 1997a, Chavez and others 1993a, Gable and others 1997, Hodgson and others 1990), were not clear-cut. In two studies respondents mentioned newspapers, and in one study each were flyers, radio, television, magazine, guidebook, club newsletter, bike shop display, and family/friends.

In several studies respondents were asked the type of information they would like to receive. In some of these studies respondents said they would like to know what to see and do in the area (Chavez and others 1995b, 1995c; Chavez and Mainieri 1995; Winter 2000). Respondents from some of the studies said they


**Figure 8**—Though this sign has information in both English and Spanish, it does not have a complete translation or sufficient directions on how to acquire permits. (USDA Forest Service photo)

would like to know more about the natural features of the area. Some respondents also wanted to know more about the natural features of the area (Chavez and Mainieri 1995; Chavez and others 1995b, 1995c; Parker and Winter 1996), cultural features of the area (Chavez and Mainieri 1995, Chavez and others 1995c, Winter 2000), safety (Chavez and others 1993b, 1995b), off-road vehicle use (Chavez and others 1993b), area rules and regulations (Chavez and others 1993b), low-impact information (Chavez 1997a), location of trails (Parker and Winter 1996), and similar places (Parker and Winter 1996).

In some studies respondents were asked some questions to measure their knowledge level. The questions were about specific rules and regulations, specific programs, new regulations, new programs, or about conservation measures.

The majority of respondents correctly identified rules and regulations, such as use of household soaps in rivers, cutting of trees, collection of cultural artifacts (Parker and Winter 1996), bringing dogs to the forest, hunting during some seasons (Chavez and others 1995b), and permit requirements in wilderness for day use (Winter 1996b). In a study of mountain bike riders, it was found that they had some general knowledge about low-impact biking, but they were less familiar with some specific programs related to low impacts (for example Tread Lightly; Chavez 1997a). In another study, some mountain recreation respondents had trouble recalling information they had received on-site that day (Absher and Winter 1997). Some respondents at a desert area were unsure of some newly implemented rules and regulations concerning minors (Chavez and others 1993b). Many respondents in another study (Baas and Chavez 1992) correctly answered desert conservation questions (for example, most knew it was illegal to remove a desert tortoise from its burrow), though fewer know that the survival of the desert tortoise as a species in the western Mojave Desert requires that large tracts of land be reserved as habitat.

In a study of recreation fees, few respondents had heard of the recreation fee program that was about to be implemented (Gable and others 1997).

In a few studies respondents were asked to name the managing agency of the site or to describe who manages it. In one study half the respondents correctly identified the managing agency (Parker and Winter 1996); in another most respondents were able to correctly identify the managing agency (Chavez 1993a); while in two other studies few respondents correctly identified the managing agency (Chavez and others 1993a, Absher and Winter 1997).

### *Discussion*

Results from the various studies indicate the average outdoor recreation respondent learned about the area through interpersonal channels (family and friends), preferred on-site information sources to be brochures and signs (one-way communication), and probably is not aware which agency manages the area. Thus, how respondents actually get information and how they say they wish to get it may not match.

Given that visitors are engaged in informal networking, it appears the best technique is to ensure satisfied customers, because the recreationists will tell other people about their experiences.

Results point out several management opportunities, including the need for information services for newer visitors and the need for multiple languages. Because communication is so important, managers of outdoor recreation sites should do all they can to inform the recreating public. Ideas to consider include: when dealing with racially/ethnically diverse visiting publics, managers will need signs, brochures, and other written materials in multiple languages, and should use back translations; communicating on an interpersonal level, such as face-to-face communications; speaking the client's primary language; awareness that someone who looks like they speak another language may speak English; using international signs when feasible because people may not be literate in

their native language (Keefe and Padilla 1987); and having employees who speak more than one language (this may also require an emphasis on employee recruitment and retention). Also, when making decisions about sites/areas, managers should include people of color in an advisory capacity or as equal partners in the decision-making process.

Though not measured in these studies, it makes sense for managers to communicate several messages to visitors: say "hello," welcome people to the site, and tell them "thanks" (especially salient if fees are paid).

On the basis of some early studies that included communication topics (Hodgson and others 1990, Simcox and others 1989), the managers of the Angeles National Forest cooperated with others to develop a Forest information van (FIV). Rather than using the traditional method of having people seek information, the FIV seeks people where they are recreating. The van drivers go to a site, park the van near the recreationists, set up the attached colorful tent (which uses colors attractive to some Hispanics), and hand out information. The FIV had been available for several years and had been staffed by members of the California Environmental Project. It is no longer available. Interestingly, the department store, Sears, in an effort to attract Hispanic customers, has recently developed a "FiestaMobile." The "FiestaMobile" is a 30-foot recreational vehicle that is used to provide credit card applications and prizes to Hispanic customers and potential customers of Sears. The van is intended to show Hispanic shoppers that Sears is a friendly place. Although it is not being recommended to use the FIV to provide presents, the idea of a FIV is a sound one and does show outdoor recreation visitors that the Forests are a friendly place to be.

The ECO-Team model also takes information to visitors. This model brings environmental messages to visitor groups on-site and uses the native language of the visitor group. Results suggest that managers should focus on one major message and two at most. Future research can assist in identifying the messages best served by such a model.

Managers should also consider taking more time to tell the story of an area. Many respondents would like more information about sites. With the pilot fee program in California and the ESA impacts in southern California, there may be no better time to tell the agency's story to visitors.

## Depreciative Behaviors

Depreciative behaviors include destruction and defacement of facilities, natural features, and vegetation; graffiti; litter; rowdyism; intimidation of other users; destruction and theft of private property; and other crimes (Stikkers 1983). Some depreciative behaviors are purposeful and others are incidental: a purposeful act may be when someone throws trash on the ground, while an incidental act is when a paper flies off a table and is not picked up (Stikkers 1983).

Depreciative behaviors are important to visitors and managers. Hartley (1986) identified four concerns or issues identified by Angeles National Forest visitors. These were vandalism, litter, the lack of visibility or presence of Forest Service employees, and the proliferation of off-road vehicle use. These responses were quite similar to the issues identified by managers of the Angeles National Forest who identified five issues: off-road vehicle use and the resulting resource damage and user conflicts, vandalism, litter, problems associated with recreational shooting, and under-staffing.

At some outdoor recreation sites, the litter is seen as so problematic that all employees have days where they set aside normal duties so they can spend the time cleaning up the area. The costs of depreciative behaviors are also quite high, and it can be very discouraging to managers to clean a place of graffiti and then find graffiti has occurred again.

### *Results*

In a few studies respondents were asked about problems encountered at the sites. In two of the studies respondents indicated that litter in the riverbanks, litter in the river, and too few garbage cans were site concerns (Ewert and Pfister 1991, Simcox and Pfister 1990). In another study (Taylor and Winter 1995) respondents disliked litter/dirt, inaccessibility, inadequate facilities, and vandalism (*fig. 9*) found at some sites.

In several studies respondents were asked about safety issues (Chavez 1997a; Chavez and others 1993a, 1993b), and in others respondents focused on the need for more information about safety at the sites (Chavez and others 1995b, 1995c; Chavez and Mainieri 1995). Another interesting focus was on security and safety: managers may need to consider respondent desires for a safe and secure experience, while also considering resource protection.

In one desert study the respondents said there were many safety problems: they had seen at least one off-road vehicle accident during a recent visit (Chavez and others 1993b), and they suggested speed limits in camping areas as well as the need for more safety measures at two locations in the area. Safety at another desert site was important to many respondents, who reported a need for law enforcement presence and a safe area to recreate (Chavez and others 1993a). In a study of mountain bike riders it was found that they do not perceive their activity as dangerous to themselves, others, or the natural environment (Chavez 1997a).

In some studies conducted at three National Forests in southern California, when respondents had an opportunity to suggest particular kinds of things they would like more information about, many respondents—for example, 46 percent of the respondents on the Angeles National Forest—said they would like more information about safety at the site (Chavez and others 1995b, 1995c; Chavez and Mainieri 1995).

Several studies addressed various aspects of rules and regulations at various sites. In three studies conducted at three National Forests in southern California (Chavez and others 1995b, 1995c; Chavez and Mainieri 1995), most of the respondents said that rangers should do more to enforce rules and regulations. In an off-highway vehicle study, the respondents had a specific suggestion: managers should not allow glass containers at the site (Chavez and others

**Figure 9**—This young man, found carving a tree, said that the carving of this particular tree was necessary because his older siblings had also carved their names there. (USDA Forest Service photo)

1993b). In a study of mountain bike riders, the respondents said it was important that all mountain bike riders yield to pedestrians, stay on established trails, and clean up after others at camp sites (Chavez 1997a).

### *Discussion*

Why do people engage in depreciative behaviors? The typical recreationist may notice evidence of depreciative behaviors at the sites, though they may not necessarily commit depreciative behaviors themselves. If they do commit depreciative behaviors, it may be done inadvertently. Others may engage in learned depreciative behaviors. It may be that the "urban" mind-set is involved in some depreciative behaviors. One example of an urban mind-set is the use of log versus small curbs to indicate parking sites. Urbanites are more likely to recognize the curb as a parking indicator and may not recognize chunks of wood (though these are closer to the natural makeup of the area) as a parking indicator. They may violate regulations simply because they do not recognize the clues that managers have left for them. There is also the urbanite potential for the "stadium effect," which is when others clean up after people. This may be an expectation of recreationists who have no reason to expect anything else, even in outdoor recreation sites. Managers need to recognize the gaps between their expectations and the behaviors they may see, and they should strive to bridge those gaps.

At the adaptive management site discussed previously, depreciative behavior continues to be problematic, even after site renovation. The continuing problems are trash on the ground (though this has been significantly reduced after the renovation), graffiti, and vandalism of picnic tables and restrooms. Managers are enacting some suggestions, and research will evaluate the results from those changes. The ideas include these:

- Get partnerships—Local Boy and Girl Scouts groups have asked for projects and can clean graffiti off tables or pick up trash on a monthly basis. Local community groups may be enlisted to assist with area cleanup and to "adopt" the picnic area on alternate weeks (i.e., one groups adopts it the first week of the month, another the second week, and so on).
- Add a graffiti log—This is a log set aside for people to write on, paint, or carve. The log will be displayed as artwork and a new log used when it is finished.
- Add more sports areas—Remove some tables from a large grassy area and allow space to be used for games, such as volleyball or soccer. This may otherwise engage people's time and leave less time for depreciative behaviors.

Finally, the studies on safety indicate that some respondents have a willingness for additional regulation of behavior (direct management), such as speed limits or additional enforcement of current rules and regulations, while many others would like more information about their safety at the sites.

## Applications

In 1989 a line of research was designed that measured outdoor recreation visitor profiles, recreation patterns, beliefs, development preferences, communication tools and preferences, and beliefs about depreciative behaviors. That research has been followed for several years.

This compilation has presented generalizations about urban outdoor recreationists based on a series of recreationist contact studies conducted at various outdoor recreation venues in California (mostly southern California) between 1989 and 1998. As measured by these site-specific studies and based on respondent opinions, the typical visitors chose the areas because the mountains

and deserts are important to them. For example, the mountains often offer a water experience for the family. Many visitors come from the urban areas and look for a place to relieve stress. They visit the sites because they have been there before and know it is a good family experience. The respondents are aware of some site problems, yet find many pieces of the experience to be appealing. They like to tell others about their experiences and enjoy contacts with local area managers.

Return visitors and people who say they plan to return to a favorite place offer a great opportunity to managers. These visitors have more reason to get involved in the management of sites and perhaps serve as site hosts (Chavez 1998b) or get involved in public meetings.

Results from specific studies reported in this compilation have previously been used in various capacities. Some managers have used specific survey information to redevelop or refocus programmatic efforts (for example, the bracken fern gathering program), and others have used the data to redevelop their recreation sites (for example the Applewhite Picnic Area) or not redevelop them (for example, Mecca Hills). Other managers have used the demographic and use pattern information when developing use plans (either regionally or locally) or have used the respondent beliefs information and communication patterns to develop interpretive plans and develop forest newsletters. The potential use of the data results is limited primarily by the resources (time, money, personnel) necessary to carry them out.

Outdoor recreation managers have various tools they can use (direct, indirect, resource hardening, bridge building, or collaboration) and each has different costs associated with it. Managers will also want to consider best environmental design practices, which will, in the long run, protect the natural resources. Although adaptive management is costly to both outdoor recreation managers and social science researchers, it has certainly proven to be a worthwhile tool.

While the easiest presentation of results from the various studies is through compartmentalizing within categories (which is the tool used here), it is really the combination of variables that provides the best knowledge base. It is necessary to view the entire kaleidoscope, not just a facet of it. Recreation style, for example, is a combination of many variables, which can vary by ethnic group membership, age, education, income, etc. These and many other combinations are the best tools managers can use to understand the recreationist base. Nonetheless, the information contained in this compilation provides a wealth of information that shows the shifts in visitor populations, the importance of various issues for managers, and the importance theoretically and for future research.

Hartley (1986) found that most of the successful recreation management practices used by the Forest Service were developed in traditional National Forests (usually rural in character) and remote from large urban centers, and in such settings, recreation values were relatively easy to define and maintain. For many years National Forest managers in southern California have commented repeatedly that "things are different here" (Hartley 1986). According to Hartley (1986), the challenge to managers is to find ways to maintain traditional recreation values and keep public recreation appropriate to the forest/desert environment, while continuing to be flexible enough to respond to the changing recreation needs of an urban population.

Both the Forest Service and Bureau of Land Management in California should not try to be a "Type E" agency, that is, "everything to everybody." They manage within a milieu of Federal, State, local and private agencies and entities and should focus on services befitting their respective missions. It would be advisable to form bio-regional partnerships to be sure that California's many diverse residents get as much from their outdoor recreation opportunities as possible.

## Future Research

Future research may address how recreation visitors have been included in decision-making at the various sites. It would also be useful to know the best ways for managers to get recreating communities involved in decision-making, and it would be important to know if and how these processes differ across racial and ethnic minority groups. Another topic to address would be whether site-proximate or site-distant people should have greater influence on management decisions. Because day use is prevalent in California, it would be useful to know the impacts of such use for managing sites and whether or not this phenomenon is restricted to California.

As with many research efforts, more questions are raised than are answered by the studies in the compilation. One suggestion is to continue the line of research started in 1989, especially focusing on studies that enhance management of outdoor recreation sites. This research would include evaluation of the various management tools suggested (direct, indirect, resource hardening, bridge building, adaptive management, and best environmental design practices). How effective and efficient are these tools?

Research on acculturation and its relationship to outdoor recreation style and behavior is important. Gramann (1996) suggested that some sources of difficulty in the relationships between recreation resource managers and some immigrant groups may be less an issue in subsequent years, as the cultural assimilation of these groups progresses. This hypothesis can be tested. In addition, assimilation may happen later, not sooner, in California (and other border states) because of the proximity of the border. This too can be tested.

It was also suggested that California can be a bellwether state—changes found here may be found elsewhere later (for example, mountain biking trails began here, and some sites are primarily visited by ethnic minorities). Being a bellwether is also a researchable hypothesis. Also, more work is needed to be sure that people are not reduced to their race/ethnicity, age, gender, or some other ascribed or achieved characteristic, but are considered a complex mix of many interacting parts. Dwyer (1994) emphasized the importance of multivariate analyses that include the examination of age, residence (urban or rural), and ethnicity. Determining which variables need to be included in the kaleidoscope to give managers the most salient information needed to serve their customers is another potential topic.

Future research may also focus on return visitors to sites. People who return to sites have good reasons to get involved in the management of sites. They may consider sites to be in their backyard. This may influence how they use and think about these areas.

Studies of how to decide on site closures (as is happening in southern California) would be important to undertake. Because some respondents feel so strongly about the sites, it would be imperative to understand and measure the appropriate processes to complete necessary closures.

Another important finding that has implications for academicians is the differences found within groups. These findings suggest that managers cannot treat all members of the same group similarly, nor can they assume that these visitors all want and desire the same things. These findings are worth studying to see if they can be replicated.

An interesting theoretical issue is day use of wilderness. Day users of wilderness may be quite different from overnight users, and additional research is needed. Also, it is worth considering that many day users of designated wilderness did not realize they were in the wilderness, and perhaps communication of other options would ease the heavy use of wilderness trails. In other words, perhaps these visitors were not looking for a wilderness experience, only a trail experience. Also, perceived discrimination needs more research at these California sites and other outdoor recreation places.

Some user groups (Hispanics, for example) desire development of amenities and facilities, while other user groups (mountain bike riders, for example) have less desire for development. Although it is difficult to ascertain if these findings are race/ethnicity or culturally caused, this information is important theoretically and it does appear to have practical implications. Future studies should replicate these findings for Hispanic group preferences for development. It would also be useful to ascertain if other racial/ethnic groups (Koreans, for example) have similar development preferences. Also, more research should examine development preferences of various user types (hikers and mountain bikers, for example). It would also be valuable to examine whether or not race/ethnicity, culture, or some other set of variables is best for understanding visitor behaviors, preferences, and beliefs.

Several items could be addressed in additional research: the use of multiple languages and visitor beliefs about the need and utility of multiple language signs; the value of interpersonal communication, its costs, and other equally effective options; and testing whether or not employees who speak more than one language is beneficial for serving various visitor populations. Researchers might want to examine some of the items identified in the studies for management action and should also examine how different respondents react to and understand international signing. We also need to know more about how to communicate with racial and ethnic minority groups on-site, and we need more information about off-site communication. In addition, we don't know enough about what kinds of information are sought by racial and ethnic groups.

Finally, more research is needed on depreciative behaviors to understand why people engage in depreciative behaviors. Researchers could test for inadvertent and deliberate behaviors. Is an urban mind-set involved in some depreciative behaviors? Is there one urban mind-set or many? How is the media involved? Is there a "stadium effect"? Is there a feeling or perception of ownership by recreationists? What impacts might these have? Are graffiti problems reversed or reduced by graffiti logs or open spaces for group sports?

Ideally, future research will focus on some of these issues, replicate the current studies, and other studies will move beyond the specific sites of forests and deserts. Perhaps watershed level studies or bio-regional studies should be the next step. Future studies might strive to highlight a continuum of recreation experiences in California that incorporates more than one agency and serves various user groups.

## References


Absher, James; Winter, Patricia L. 1997. **Evaluation of the 1995 eco-team program.** Unpublished draft supplied by authors.

Anderson, Janet A.; Blahna, Dale J.; Chavez, Deborah J.; Anderson, Jay A. 1997. **Fern gathering on the Arrowhead Ranger District, San Bernardino National Forest: an evaluation.** Unpublished draft supplied by authors.

Baas, John M.; Chavez, Deborah J. 1992. **A pilot study of off-highway vehicle users' attitudes, beliefs, and behaviors toward desert tortoise conservation on Bureau of Land Management areas in southern California.** Unpublished draft supplied by authors.

Baas, John M.; Ewert, Alan W.; Chavez, Deborah J. 1993. **Influence of ethnicity on recreation and natural environment use patterns: managing recreation sites for ethnic and racial diversity.** Environmental Management 17(4): 523-529.

Bultena G. L.; Field, Donald R. 1980. **Structural effects in national parkgoing.** Leisure Sciences 3(3): 221-240.

Caro, Victor; Ewert, Alan W. 1995. **The influence of acculturation on environmental concerns: an exploratory study**. Journal of Environmental Education 26(3): 13-21.

Carr, Deborah S.; Chavez, Deborah J. 1993. **A qualitative approach to understanding recreation experiences: Central American recreation on the National Forests of southern California.** In: Ewert, Alan W.; Chavez, Deborah J.; Magill, Arthur W., editors. Culture, conflict, and communication in the wildland-urban interface. Boulder, CO: Westview Press; 181-194.

Carr, Deborah S.; Williams, Daniel R. 1991. **Outdoor recreation and ethnic group membership: a literature review.** Unpublished draft supplied by authors.

Chavez, Deborah J. 1992. **Hispanic recreationists in the wildland-urban interface.** Trends 29(4): 23-25.

Chavez, Deborah J. 1993a. **Pilot studies of changing urban wilderness recreation use on the Cleveland National Forest: past wilderness users and on-site wilderness users**. Unpublished draft supplied by author.

Chavez, Deborah J. 1993b. **Visitor perceptions of crowding and discrimination at two National Forests in the southern California.** Res. Paper PSW-RP-216. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 17 p.

Chavez, Deborah J. 1993c. **The wildland-urban interface: Hispanics in the National Forests.** In: Gobster, Paul H., compiler and editor. Managing urban and high-use recreation settings. Selected papers from the urban forestry and ethnic minorities and the environment paper sessions at the fourth North American symposium on society and resource management; Madison, WI; 1992 May 17-20; 107-108.

Chavez, Deborah J. 1994. **Travel and tourism trends.** In: Proceedings of the 1994 northeastern recreation research symposium, April 10-12, Saratoga Springs, NY. Gen. Tech. Rep. NE-198; Radnor, PA: Northeastern Forest Experiment Station, Forest Service, U.S. Department of Agriculture; 243-244.

Chavez, Deborah J. 1995. **Demographic shifts: potential impacts for outdoor recreation management.** In: Thompson, Jerrilyn L.; Lime, David W.; Gartner, Bill; Sames, William M., compilers. Proceedings of the fourth international outdoor recreation and tourism trends symposium and the 1995 national resource planning conference; 1995 May 14-17; St. Paul, MN: University of Minnesota College of Natural Resources and the Minnesota Extension Service; 252-255.

Chavez, Deborah J. 1996a. **Leisure experiences of Hispanic families**. In: Abstracts from the 1996 symposium on leisure research and the 1996 Congress for Recreation and Parks; Kansas City, MO; 1996 October 23-27; 67.

Chavez, Deborah J. 1996b. **Mountain biking: direct, indirect, and bridge building management styles.** Journal of Park and Recreation Administration 14(4): 21-35.

Chavez, Deborah J. 1997a. **Bunny hops or vegetable tunnels? Perceptions and preferences of mountain bike riders on the San Jacinto Ranger District.** Western Journal of Applied Forestry 12(2): 44-48.

Chavez, Deborah J. 1997b. **Mountain bike management: resource protection and social conflicts.** Trends 34(3): 36-40.

Chavez, Deborah J. 1998a. **The Applewhite Picnic Area: renovating an outdoor recreation site.** Unpublished draft supplied by author.

Chavez, Deborah J. 1998b. **California recreation roundtable southern California pilot project: the San Gabriel Canyon.** Unpublished draft supplied by author.

Chavez, Deborah J. 1998c. **Redesigning social spaces to serve ethnic diversity: the case of the Applewhite Picnic Area.** In: Book of abstracts, seventh international symposium on society and resource management; Columbia, MO; 1997 May 27-31; 43.

Chavez, Deborah J.; Baas, John M.; Winter, Patricia L. 1993a. **Mecca Hills: visitor research case study.** BLM/CA/ST-93-005-9560. Sacramento, CA: Bureau of Land Management California State Office; 47 p.

Chavez, Deborah J.; Larson, Janna; Winter, Patricia L. 1995a. **To be or not to be a park: that is the question.** In: Chavez Deborah J., compiler. Proceedings of the second symposium on social aspects and recreation research. Gen. Tech. Rep. PSW-GTR-156. Albany, CA: Pacific Southwest Research Station; 29-33.

Chavez, Deborah J.; Mainieri, Tina. 1995. **Recreation day use series—report 1: the San Bernardino National Forest**, **summer 1992.** Unpublished draft supplied by authors.

Chavez, Deborah J.; Winter, Patricia L.; Baas, John M. 1993b. **Imperial Sand Dunes: visitor research case study.** BLM/CA/ST-93-014-9560. Sacramento, CA: Bureau of Land Management California State Office; 54 p.

Chavez, Deborah J.; Winter, Patricia L.; Mainieri, Tina. 1995b. **Recreation day use series—report 2: the Angeles National Forest, summer 1993.** Unpublished draft supplied by authors.

Chavez, Deborah J.; Winter, Patricia L.; Mainieri, Tina. 1995c. **Recreation day use series—report 3: the Los Padres National Forest, summer 1994.** Unpublished draft supplied by authors.

Cordell, H. Ken; McDonald, Barbara L.; Briggs, J. Alden; Teasley, R. Jeff; Biesterfeldt, Robert; Bergstrom, John; Mou, Shela H. 1996. **Emerging markets for outdoor recreation in the United States.** On file: http://www.outdoorlink.com/infosource/nrse/.

Driver, B. L.; Brown, Perry J.; Peterson, George L. 1991. **Benefits of leisure.** State College, PA: Venture Publishing, Inc.; 483.

Dwyer, John, F. 1994. **Customer diversity and the future demand for outdoor recreation.** Gen. Tech. Rep. RM-252. Fort Collins, CO: Rocky Mountain Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; 58 p.

Ewert, Alan W.; Pfister, Robert E. 1991. **Cross-cultural land ethics: motivations, appealing attributes and problems.** In: Proceedings, 56th North American wilderness and natural resources conference; Edmonton, Canada. Washington, DC: Wildlife Management Institute; 146-151.

Exter, Thomas. 1987. **How many Hispanics?** American Demographics 9(5): 36-39.

Fost, Dan. 1990. **California's Asian market.** American Demographics 12(10): 34-38.

Gable, Robert; Chavez, Deborah J.; Short, Robert. 1997. **Pilot fee demonstration project evaluation: visitor surveys on the enterprise zone, phase I—before fee implementation.** Unpublished draft supplied by authors.

Gramann, James H. 1996. **Ethnicity, race, and outdoor recreation: a review of trends, policy, and research.** Miscellaneous Paper R-96-1. U.S. Army Corps of Engineers; 72 p.

Gramann, James H.; Floyd, Myron F.; Ewert, Alan W. 1992. **Interpretation and Hispanic American ethnicity.** In: Machlis, Gary E.; Field, Donald R., editors. On interpretation: sociology for interpreters of natural and cultural history. Corvallis, OR: Oregon State University Press; 161-177.

Halbert, C. L. 1993. **How adaptive is adaptive management? Implementing adaptive management in Washington State and British Columbia.** Reviews in Fishery Science 1: 261-283.

Hartley, Marilyn S. 1986. **An analysis of recreation management on southern California National Forests.** Unpublished draft supplied by author.

Heywood, John L. 1993. **Behavioral conventions at the wildland-urban interface.** Unpublished draft supplied by author.

Hodgson, Ronald W.; Pfister, Robert E.; Simcox, David E. 1990. **Communicating with users of the Angeles National Forest—report no. 2.** Unpublished draft supplied by authors.

Hollenhorst, Steven J.; Schuett, Michael A.; Olson, David; Chavez, Deborah J. 1995. **An examination of the characteristics, preferences, and attitudes of mountain bike users of the National Forests.** Journal of Park and Recreation Administration 13(3): 41-51.

Juarez, Trinidad. 2000 June 7. [Personal communication with Deborah Chavez].

Keefe, S. E.; Padilla, A. M. 1987. **Chicano ethnicity.** Albuquerque, NM: University of New Mexico Press; 238 p.

Kelly, John R. 1977. **Leisure socialization: replication and extension.** Journal of Leisure Research 9(2): 121-132.

Kelly, John R. 1987a. **Freedom to be: a new sociology of leisure.** New York: MacMillan Publishing Company; 248 p.

Kelly, John R. 1987b. **Recreation trends toward the year 2000**. Champaign, IL: Sagamore Publishing; 157 p.

Laidlaw, Robert. 1991. **Diversity and changing land use in California.** California Parks and Recreation (Spring): 29-31.

Lawrence, Steve. **State forecasts population rise to 58.7 million.** The Press Enterprise 18 December 1998; A3.

Lee, Martha E.; Brown, Perry J. 1991. **An analysis, interpretation, and report of recreational user data collected on the Inyo National Forest during Summer 1989.** Unpublished draft supplied by authors.

Marin, Gerardo; Marin, Barbara VanOss. 1991. **Research with Hispanic populations.** Applied Social Research Methods, vol. 23. Newbury Park, CA: Sage Publications; 130 p.

O'Hare, William. 1990a. **A new look at Asian Americans.** American Demographics 12(10): 26-30.

O'Hare, William. 1990b. **The rise of Hispanic affluence.** American Demographics 12(8): 40-43.

Parker, Julia D.; Winter, Patricia L. 1996. **Angeles National Forest wilderness visitors' characteristics and values.** Unpublished draft supplied by authors.

Parker, Julia D.; Winter, Patricia L. 1998. **A case study of communication with Anglo and Hispanic wilderness visitors.** Journal of Interpretation Research 3(1): 55-56.

Sheffield, Emilyn; Dawson, Michelle. 1999. **Playing the outdoors market.** Parks and Recreation 34(10): 36-41.

Simcox, David E. 1988. **Cross-cultural land ethics and implications for management of southern California's National Forests.** Unpublished draft supplied by author.

Simcox, David E.; Pfister Robert E. 1990. **Hispanic values and behaviors related to outdoor recreation and the forest environment.** Unpublished draft supplied by authors.

Simcox, David E.; Pfister, Robert E.; Hodgson, Ronald W. 1989. **Communicating with users of the Angeles National Forest report no. 1.** Unpublished draft supplied by authors.

Stikkers, Donald E. 1983. **An examination of depreciative behavior and management options in San Gabriel Canyon.** Unpublished draft supplied by author.

Swearingen, Thomas C.; Pfister, Robert E. 1995. **A preliminary analysis of environmental dilemmas and environmental ethical reasoning among Hispanic and non-Hispanic forest visitors.** In: Chavez Deborah J., compilers, Proceedings of the second symposium on social aspects and recreation research. Gen. Tech. Rep. PSW-GTR-156. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 51-57.

Swenson, Chester A. 1990. **How to speak to Hispanics.** American Demographics, February. Reprint; 2 p.

Taylor, Dorceta; Winter, Patricia L. 1995. **Environmental values, ethics, and depreciative behavior in wildland settings.** In: Chavez Deborah J., compilers, Proceedings of the second symposium on social aspects and recreation research. Gen. Tech. Rep. PSW-GTR-156. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 59-66.

Tierney, Patrick; Dahl, Rene; Chavez, Deborah J. 1998. **Cultural diversity in Los Angeles County residents using undeveloped natural areas**. Res. Paper PSW-RP-236. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 76 p.

Ulrich, Roger; Dimberg, Ulf; Driver, B. L. 1991. **Psychophysiological indicators**. In: Driver, B.L.; Brown, Perry J.; Peterson, George L., editors. Benefits of leisure. State College, PA: Venture Publishing, Inc.; 72-89.

Valdes, Isabel. 1991. **Understanding Hispanic consumers**. American Demographics. A Marketing Insights Report; 16 p.

West, Patrick C. 1977. **A status group dynamics approach to predicting participation rates in regional recreation demand studies**. Land Economics 53: 196-211.

West, Patrick C. 1982. **A nationwide test of the status group dynamics approach of outdoor recreation demand**. Leisure Sciences 5(1): 1-18.

Winter, Patricia L. 1996a. **Environmental concern and environmental action: how do recreationists fare**? In: Abstracts for the sixth international symposium on society and resource management, 1996 May 18-23; University Park, PA; 217-218.

Winter, Patricia L. 1996b. **San Gorgonio wilderness visitor survey: summer and fall 1994**. Unpublished report supplied by author.

Winter, Patricia L. 2000. **Recreation at the Redding Resource Area in California.** Res. Paper PSW-RP-244. Albany, CA: Pacific Southwest Research Staion, Forest Service, U.S. Department of Agriculture; 72 p.

# Appendix A–On-Site Results

This appendix presents the results from the various studies in this compilation. The studies are listed in alphabetical order by first author's surname, and complete citation information is found in the "References" section of the document. Each study includes the following information: the study site, the topics covered, the research methods used, and the results (which are listed by topic). The study site includes the agency (if applicable) as well as specific site names. The methods section includes the methods used as well as the language of the instrument. Unless otherwise noted, the instrument was in English only. Many instruments were available in English and Spanish. The topics are divided into those addressed in the paper (visitor profile, for example). The response provided is that of the majority of respondents (for example, "male" for gender indicates that the majority of the respondents were male). Because most studies addressed two to four topics, not every topic is listed for each author. A list of additional publications based on the study results is also included, if any exist.

**Citation:**
Absher and Winter 1997

**Subject**:
Program evaluation

**Study Site:**
USDA Forest Service, Angeles National Forest: east and west forks of the San Gabriel Canyon, Big Rock, Jackson Lake, Little Rock, Basin, and Juniper; San Bernardino National Forest: Applewhite and Bonita

**Topics:**
Respondent profile, recreation patterns, communication patterns and preferences

**Methods:**
Multiple methods.
Results from on-site visitor interviews. Interviews conducted in either English or Spanish.

**Results:**
Respondent Profile:
n = 217
Male = 60 percent
Under the age of 30 = 57 percent
Spanish-speaking = 71 percent

**Recreation Patterns:**
Repeat visitors = 67 percent.
Visiting the site 3 or more years = 33 percent.
Groups of 3 or 4 = 40 percent.
Groups of 5 or 6 = 40 percent.

**Communication Patterns and Preferences:**
Recalled being informed about using trash bags and not littering = 80 percent.
Recalled information about water contamination = 45 percent.
Recalled a message about fire = 20 percent.
Described the study area as: a recreation area = 58 percent, a National Park = 21 percent, a National Forest = 20 percent.
Others described site as a wilderness, a playground, or a city park.
Recalled seeing the ECO-Team members picking up trash = 8 percent.
Could not recall the ECO-Team members doing anything other than talking to people = 91 percent.

**Citation:**
Anderson and others 1997

**Subject**:
Bracken fern gathering

**Study Site:**
USDA Forest Service, San Bernardino National Forest, Arrowhead Ranger District

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, communication patterns and preferences, racial and ethnic group comparisons, management issues

**Methods:**
Multiple methods were used, including interviews of experts, managers, and association members; site observations; secondary information from permit data; and mailed mini-survey (31 percent response rate, n = 100).

**Results:**
Respondent Profile:
Association sold 535 permits in a 7-week season. At 40 pounds per permit, they sold the right to collect 21,400 pounds of ferns.
Korean mailed survey respondents = 83 percent
Japanese mailed survey respondents = 13 percent

**Recreation Patterns:**
Average group size = 4.
Pickers per group = 77 percent.

**Respondent Perceptions:**
Survey: Motivations were spending time in the mountains, sharing ferns with family or friends in the United States, using ferns in holiday meals, using ferns in everyday meals, and teaching children or others about the cultural background.
Expert beliefs: Some experts said the plant is used everyday in meals (after it is processed), while others said it is used only for special meals like the celebration of ancestor birthdays and Thanksgiving.
Koreans faced many wars in Korea. Many starved. The mountains were the one place they could go and harvest food. There was no regulation of the activity and no cost. Forest Service charges and has regulations.
The red flagging used may be inappropriate for Koreans (because of the reminder of Communism and blood, etc).

**Racial and Ethnic Group Comparisons:**
Survey: Most pickers were Korean.
Korean group size = 3.9.
Japanese group size = 4.8.
Korean group members who picked = 75 percent.
Japanese group members who picked = 86 percent.
Koreans were more likely to use ferns in holiday meals.
Koreans were more likely to consider the experience an opportunity to teach children or others about their cultural heritage.

**Management Issues:**
Area has many in-holdings, so it was difficult for customers to differentiate between areas (public) where it was okay to harvest ferns and areas (private) where it was not allowed.
Association: Flags (red) along the main highway now delineate appropriate harvesting sites.

Area residents were concerned about many issues, including large numbers of people, trash, and the destruction of the natural resources.

Site observations: Few people were seen at any one time, and the season runs only 6 to 8 weeks during the Spring; saw almost no littering; the plants do continue to grow after the fiddlehead is harvested.

A sensitive species (rubber boa) was found near one prime fern site.

Experts: Koreans may be attracted by snakes, particularly the light colored ones (like the rubber boa).

**Citation:**
Baas and Chavez 1992

**Subject:**
Off-highway vehicle users

**Study Site:**
USDI Bureau of Land Management, California Desert District, Mojave Desert, four sites along Highways 395 and 15, and an American Motorcycle Association Meeting

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, communication patterns and preferences

**Methods:**
Self-administered questionnaire (n = 426).

**Results:**
Respondent Profile:
Male
White
College education

**Recreation Patterns:**
Most rode dirt bikes, others rode four-wheelers.
Tend to ride year-round.
Many respondents were club members (likely due to gathering some data from the American Motorcycle Association meeting).

**Respondent Perceptions:**
Just over half said that managers should do all they can to help conserve the desert tortoise.

**Communication Patterns and Preferences:**
Many respondents correctly answered desert tortoise conservation questions. For example, most knew it was illegal to remove a desert tortoise from its burrow and most knew that ravens sometimes eat young desert tortoises. However, fewer knew that the survival of the desert tortoise as a species in the western Mojave Desert requires that large tracts of land have been reserved for habitat.

**Citation:**
Caro and Ewert 1995

**Subject**:
Environmental concerns

**Study Site:**
USDA Forest Service, Angeles and San Bernardino National Forests, east and west forks of the San Gabriel River and Applewhite Picnic Area

**Topics:**
Respondent profile, racial and ethnic group comparisons

**Methods:**
On-site questionnaire.

**Results:**
Respondent Profile:
n = 398
Female = 52 percent
Whites = 12 percent, U.S. born-Hispanic = 24 percent, Mexico-born Hispanic = 52 percent, Central America-born Hispanic = 13 percent
English- and Spanish-speaking = 54 percent
Mexico-born Hispanics resided in U.S. an average 13 years.
Central American-born Hispanics resided in U.S. an average 8 years.

**Racial and Ethnic Group Comparisons:**
The closer an individual's birthplace to the U.S., the more alike were his or her levels of environmental concern compared to U.S.-born whites. This was true for nuclear waste dumping, oil spills, and car emissions.
U.S.-born whites reported higher level of concern than did either Mexico-born or Central-American born respondents.
Hispanic groups are not homogeneous in their perceptions: those born in the U.S. have similar perceptions to U.S.-born whites, and those born in Central America are the least similar to U.S.-born white perceptions related to the environment.

**Citation:**
Carr and Chavez 1993

**Subject:**
Hispanic recreation

**Study Site:**
USDA Forest Service, Angeles and San Bernardino National Forests, four riparian sites

**Topics:**
Respondent profile, recreation patterns

**Methods:**
On-site observations using an observation form designed to collect information about group composition and activities, equipment, and semi-structured interviews.

**Results:**
Respondent Profile:
n = 69
Most were Central American, though some whites were recreating with the groups.
Most spoke Spanish only.

**Recreation Patterns:**
Average group size = 15 (7 adults, 8 children).
All-day visit.
Engaged in food preparation.
Foods included hot dogs and chips, carne asada (thinly sliced spicy beef) wrapped in tortillas, tacos, refried beans, and tamales.
Meals prepared entirely on-site.
Recreation styles included picnicking, creek play, stream walking.
Shade was used, little sunbathing, full clothing worn in creek, children played with implements brought for picnics (like plastic cups and spoons).
Church attendance.

**Citation:**
Chavez 1992, 1994, 1998b

**Subject**:
Hispanic recreation

**Study Site:**
USDA Forest Service, Angeles and San Bernardino National Forests, east and west forks of the San Gabriel River, Applewhite Picnic Area and Forest Falls

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, racial and ethnic group comparisons.

**Methods:**
On-site self-administered questionnaires available in English and Spanish.

**Results:**
Respondent Profile:
n = 550
Slightly more than half were male.
Hispanic = 82 percent
Average age for Hispanics = 26; for whites = 34
Average education = 11 years for Hispanics; for whites = 14 years
English was primary language (88 percent; of those 31 percent also spoke Spanish).

**Recreation Patterns:**
Favorite activities were picnicking and relaxing.
Repeat visitors = 75 percent.
Group size for whites = 7; for Hispanics = 10.

**Respondent Perceptions:**
Mountains were favorite place to visit (60 percent), also beaches and lakes.
Respondents were asked if they had participated in or would like to participate in several activities, including some that are adventure travel (hang gliding, bungee jumping, heli-skiing), conservation travel (green vacationing, volunteer hosting), traditional (horseback touring, natural history hiking), and nontraditional (camera safaris, mountain biking). More people desire to do an activity in the future than actually participate in the activities.
For example, 20 percent had tried horseback tours, while 50 percent would desire to try them in the future.

**Racial and Ethnic Group Comparisons:**
Amenities and facilities: Hispanics had greater desire for picnic areas, parking, signs, and friendly rangers.
Hispanics had the biggest gaps between participation in activities and their desire to try those activities in the future, such as adventure activities (heli-skiing), conservation travel (green vacationing, volunteer hosting), traditional (horseback tours, natural history hikes), and non-traditional (camera safaris, mountain biking).
These gaps are greater than 20 percent, and in some cases 30 percent or greater (natural history hikes, camera safaris, and horseback touring).

**Citation:**
Chavez 1996

**Subject:**
Hispanic recreation

**Study Site:**
USDA Forest Service, Angeles and San Bernardino National Forests, Mt. Baldy and Cajon Ranger Districts, San Gabriel Canyon and Applewhite Picnic Area

**Topics:**
Respondent profile, recreation patterns, respondent perceptions

**Methods:**
Qualitative study conducted on site.
Face-to-face interviews with an interview guide.

**Results:**
Respondent Profile:
Four Hispanic groups were interviewed; all had ancestral ties to Mexico.
Groups were immediate and extended family members.
Nine of the 61 people from all the groups had a high school diploma; none had a college diploma.
Most of the adults were employed outside the home full-time.
All adults were fluent and literate in Spanish; few were fluent and literate in English.

**Recreation Patterns:**
All four groups were repeat visitors to the sites.
All the groups said they like to picnic, relax, and enjoy the water.
A few group members mentioned these outdoor activities: hiking, downhill skiing, birdwatching, horseback riding, snowmobiling, camping, hunting, backpacking, fishing, canoeing, and kayaking.
All groups said the outing was good for visiting with family.

**Respondent Perceptions:**
All groups said they were there to have a family experience and to picnic.
Water play, napping, swimming, and relaxation were also important.
All four groups reported leisure to be very important in their lives.
All groups believed the outing they were on was important for family bonding.All groups said that most important to them was their leisure time in natural environments (rather than leisure at home or in the community).
All the groups mentioned that the site where they were interviewed reminded them of their ancestral homeland.
All four groups said they were very close to other family members.

**Citation:**
Chavez 1997

**Subject**:
Mountain biking

**Study Site:**
USDA Forest Service, San Bernardino National Forest, San Jacinto Ranger District and Idyllwild

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, development preferences, communication patterns and preferences

**Methods:**
On-site mini-survey; mailed questionnaire; n = 94 (76 percent response rate).

**Results:**
Respondent Profile:
Male
Reside in a large town
Average age = 34
Average education = 15 years
Annual household income = $20,000 - $39,999

**Recreation Patterns:**
All contacted were mountain bike riders.
Day hike on the National Forest = 70 percent.
Backpack, car camp, take photos = 30 percent.
Rock climb, picnic, bike camp, and/or fish on the National Forest = 20 percent.
Experience camp in campgrounds (scale of 1-5, 1 = low) = 3.9.
Experience mountain biking (scale of 1-5, 1 = low) = 3.9.
Experience hiking in remote areas (scale of 1-5, 1 = low) = 3.5.
Mountain bike experience/skill level (scale of 1-5, 1 = low) = 3.5.
Half said mountain biking was most important activity.
Stayed overnight = 30 percent; 7 hours average day visit.
Had been riding one to two times previously = 40 percent.
Rode more than 6 times previously = 40 percent.
Years biking = 15, years mountain biking = 5.
Averaged 42 trips in last year, 14 miles, 3 hours, 10 areas.
On National Forest: 5 years biking, 4 years mountain biking, 25 trips, 13 miles, 3 hrs, 14 areas.
Use of trails dispersed throughout region, though the most difficult trails were the most frequented by the most respondents (high end trails).
Most rode with friends.
Purchased bike 1990 or later = 70 percent.
Belonged to National Off-Road Biking Association = 20 percent, International Mountain Biking Association = 7 percent, California Off-Road Biking Association = 1 percent, local clubs = 13 percent.

**Respondent Perceptions:**
Respondents who said number people encountered on trails is at an acceptable level = 53 percent.
Respondents who said trail use could be increased = 34 percent.
Respondents who said user limits on trails are not necessary = 62 percent.
Mostly encountered hikers and other mountain bikers on the trails.
Respondents who said that physical impacts from recreation use are at acceptable levels = 60 percent.
Respondents who said that impacts are low enough that use can be increased = 30 percent.

It was important to users to maintain the natural character of the area (4.6 on a scale of 1-5 1, = low).
Respondents who said bike and vehicle travel should be limited to designated routes to protect soils, scenic vistas, and vegetation = 90 percent.
Mountain biking was important to respondents.
Mountain biking was one of the most satisfying things they do.
Most do not perceive mountain biking as a dangerous activity.
Most said it was important to yield to pedestrians, stay on established trails, and clean up after others at campsites.

**Development Preferences:**
Desired amenities were: map of trail with mileage, sign indicating permitted trail users, sign indicating prohibited trail users, drinking water.
Didn't want showers or commercial concessionaires.

**Communication Patterns and Preferences:**
Respondents had low levels of familiarity with "Tread Lightly," "Leave No Trace," National Off-Road Bicycling Association code, International Mountain Bicycling Association code.
Respondents who said they were familiar with low-impact mountain biking = 80 percent.
Respondents who said they would be receptive to more low-impact information = 90 percent.
Learned about the area from friends, came upon it, or live in the area.
Additional information sources: trail maps, bike shop displays, guidebooks, club newsletters, information centers.

**Citations:**
Chavez 1993a

**Subject:**
Wilderness

**Study Site:**
USDA Forest Service, Cleveland National Forest, Trabuco Ranger District, San Mateo Canyon Wilderness

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, development preferences, communication patterns and preferences, trespass

**Methods:**
Mailed survey to permit holders (n = 69; 59 responses) on-site mini-survey with mailed survey (n = 288, 213 responses).

**Results:**
Respondent Profile:
Male
38 years old
White
English-speaking
College education
Married

**Recreation Patterns:**
Majority of use on non-holiday weekends
Return visitors = 61 percent.
Averaged nine wilderness visits in past year.
Averaged seven years of wilderness visits.
Average size group was seven: four adults, three kids.
Travel with friends.
Activities included day hike, wildlife observation, picnicking.

**Respondent Perceptions:**
Why they recreate here: enjoyed the experience; it is a clean, pristine area; it is a place with beautiful scenery; wanted to be close to nature; absence of manmade objects; for solitude; get away from home; to plan for a future trip; hike.
Few problems encountered on last visit; wilderness was not crowded.
Prefer to hike with two people but never more than seven people.
Respondents are bothered when they encounter parties greater than 10 and feel the area is crowded if they encounter 8 or more groups in a day's trip.

**Development Preferences:**
Desire a map of the area displaying other nearby sites.

**Communication Patterns and Preferences:**
Knew that motorized use is prohibited in wilderness = 65 percent.
Knew they were in a federally designated wilderness = 61 percent.

**Trespass:**
Saw other visitors trespassing on their last trip (such as mountain bike riders, motorcycle riders, all-terrain vehicle riders) = 30 percent.

**Citations:**
Chavez 1993b

**Subject:**
Visitor perceptions

**Study Site:**
USDA Forest Service, Angeles and San Bernardino National Forests, west fork of the San Gabriel River, upper San Antonio Canyon, Applewhite Picnic Area, Applewhite Campground

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, communication patterns and preferences

**Methods:**
On-site observations and on-site questionnaires.

**Results:**
Respondent Profile:
n = 312
Male = 54 percent
Hispanic = 52 percent
Average age = 31 years (range 11-75)
High school diploma = 46 percent
Married = 46 percent
Skilled or semi-professional jobs = 38 percent
Most were U.S.-born; most born outside U.S. were Mexico-born.

**Recreation Patterns:**
Activities enjoyed most = picnic (30 percent), hike (23 percent), visit with others (10 percent).
Repeat visitors = 68 percent.
Plan to return to the site = 95 percent.

**Respondent Perceptions:**
Area was not crowded (4.3 on a scale of 1 to 9, 9 = extremely crowded).
Most (57 percent) expected the area to be more crowded.
Crowd size did not affect enjoyment at site.
Larger crowd size would not make any difference toward enjoying the site.
Respondents who said a Forest Service employee discriminated against them at that site = 10 percent; most who reported the employee as Hispanic = 52 percent.
Respondents who said another visitor discriminated against them at this site = 4 percent; most who reported the visitor to be white = 60 percent.

**Communication Patterns and Preferences:**
About half (46 percent) identified the Forest Service as the managing agency.

**Citations:**
Baas and others 1993, Chavez and others 1993a

**Subject:**
Visitor perceptions

**Study Site:**
USDI Bureau of Land Management, California Desert District, Palm Springs-South Coast Resource Area, Mecca Hills

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, development preferences, communication patterns and preferences, racial and ethnic group comparisons

**Methods:**
On-site self-administered questionnaires; English and Spanish available.
Two phases of data collection occurred: phase I was holiday weekends and phase II was non-holiday weekends.

**Results:**
Respondent Profile:
Sample size: phase I, n = 50; phase II, n = 92.
Phase I: white = 16 percent; Hispanic = 76 percent; n = 250.
Phase II: white = 64 percent; Hispanic = 25 percent; n = 92.
Phase I: English spoken = 29 percent; Spanish spoken = 36 percent; n = 250.
Phase II: English spoken = 70 percent; Spanish spoken = 12 percent; n = 92.
Phase I: average age = 33; n = 234.
Phase II: average age = 44; n = 90.
Phase I: average years of education = 10; n = 236.
Phase II: average years of education = 13; n = 90.

**Recreation Patterns:**
Phase I site activities (n = 250): group sports (57 percent), hiking (49 percent), picnicking 41 percent).
Phase II site activities (n = 92): hiking (92 percent), relaxing (85 percent), picnicking (83 percent).

**Respondent Perceptions:**
Most important site attributes:
Phase I: Safe area, clean and non-littered, beautiful area, and a place to recreate with family.
Phase II: Clean and non-littered area, beautiful area, and a place to recreate with family.

**Most satisfaction with site attributes:**
Phase I: Beautiful area, a place to recreate with the family, and a place that is easily accessible.
Phase II: Low cost recreation area, beautiful area, and a place to recreate with family.

**Development Preferences:**
To make the recreational outing more enjoyable:
Phase I: 46 percent said to develop the area more (such as adding telephones, electrical outlets, grass, water or restrooms); n = 250.
Phase II: 35 percent said to develop the area more; n = 92.

**Communication Patterns and Preferences:**
Learned about area from informal sources:
Phase I: 71 percent; n = 250
Phase II: 66 percent; n = 92

**Preferred sources of information:**
Phase I: print media (flyers) (35 percent); n = 250
Phase II: informal sources (39 percent); n = 92

**Recognition of managing agency:**
Phase I: 9 percent said BLM; n = 250
Phase II: 25 percent said BLM; n = 92

**Racial and Ethnic Group Comparisons:**
Whites visit most during non-holiday; Hispanics visit mostly on holidays.
Whites prefer few amenities; Hispanics prefer many amenities.
Hispanics participated most in group sports, picnicking, hiking/walking.
Whites participated most in hiking/walking, off-road vehicle riding, relaxing, and camping.
Hispanics relied most on word of mouth, friends, and family for information.
The following attributes were ranked as more important to Hispanics than to whites in both phases: law enforcement, friendly and informative rangers, well cared for facilities, parking spaces, signs, picnic areas, trails, garbage disposal, toilets, and a place to use equipment.

**Citation:**
Chavez and others 1995a; Chavez 1998a, 1998c

**Subject:**
Hispanic recreation

**Study Site:**
USDA Forest Service, San Bernardino National Forest, Cajon Ranger District, Applewhite Picnic Area

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, development preferences, management issues

**Methods:**
On-site self-administered questionnaire.

**Results:**
Respondent Profile:
Sample size n = 334; 44 percent response rate
Hispanic = 78 percent
Born in U.S. = 43 percent
Female = 54 percent
Average age = 22
Average education = 11 years
Spoke and read English = 6 in 10

**Recreation Patterns:**
Activities: picnic, relax, play in creek, wade, hike, visit with others.
Repeat visitors = 72 percent.
Averaged five visits in past, averaged 6 years going to site.
Average group size = 15.

**Respondent Perceptions:**
Wanted managers to make the greatest degree of changes at the site = 53 percent.
Wanted the managers to continue managing the site (as opposed to having a concessionaire managing the site) = 53 percent.
Expressed an interest in acting as a picnic site host = 1 percent.
Preferred recreating in the shade = 70 percent.
Preferred to recreate near the water = 76 percent.
Preferred features include creeks, trees, picnic tables, rocks/boulders, and easy access to the road.

**Development Preferences:**
Desired more picnic tables and placement closer to water = 81 percent.
Desired picnic tables in large group configurations = 49 percent.
Desired trash containers near the picnic tables = 90 percent.
Reported a lack of barbecue grills = 79 percent.
Preferred flush toilet facilities = 88 percent.
Parking was rated the most important improvement.

**Differences Between First Time and Repeat Visitors:**
More repeat visitors preferred recreating in the shade.
More repeat visitors rated the site as crowded.

**Management Issues:**
The site was built in 1929 to accommodate 250 customers, and most were small family groups. There were few grills provided and only vault toilets. The customers had to carry out their own trash, and picnic tables were located away from the creek.

In 1994 the site gets as many as 1,700 customers, and average group size is 15. Many customers cook food from scratch on-site. Customers prefer trash cans near the tables and often picnic by the creek.

In 1996 renovation of the site began. Plans were to accommodate 800 persons, provide 250 parking spaces; picnic tables in large-group and small group clusters, with a play area for small children; two creekettes; shade trees; and the reintroduction of native plants.

**Citation:**
Chavez 1995

**Subject:**
Day use

**Study Site:**
USDA Forest Service, San Bernardino National Forest, Lake Fulmor, Children's Forest, Bayles Park, Meadow's Edge, Switzer Park, Aspen Glen, and Jenks Lake

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, communication patterns and preferences, management issues

**Methods:**
On-site self-administered questionnaire.

**Results:**
Respondent Profile:
n = 157
U.S.-born = 86 percent
White = 65 percent; Hispanic = 20 percent; Asian = 5 percent
English speaking = 87 percent; English readers = 93 percent
Women = 54 percent
Average age = 37 years
Education = 14 years; high school diploma = 75 percent
Annual household income = $30,000-$60,000

**Recreation Patterns:**
Most came to picnic = 33 percent; relax = 17 percent; hike = 14 percent.
Repeat visitors = 56 percent; averaged twice in past year; averaged 5 years.
Traveled less than 1 hour to the site = 42 percent.
Day use only = 60 percent; camp = 12 percent; cabins = 16 percent.
Recreated in groups of 4-5.
Brought dogs = 6 percent.
Alcohol present = 12 percent.

**Respondent Perceptions:**
Wanted place to recreate with family and a place where they could be alone with friends and family.
Respondents thought managers should enforce rules and stop by and visit.
Important amenities included maps and signs.
Preferred hiking trails that are 30 minutes in length (51 percent) or 15 minutes or less (45 percent) and somewhat challenging (41 percent) or an easy walk (36 percent).
Respondents recommend site to family (98 percent), people with small children (92 percent), deaf individuals (87 percent), and elderly individuals (82 percent).

**Development Preferences:**
The most important site attributes were trash receptacles near the recreation site, picnic areas, and running water.

**Communication Patterns and Preferences:**
Prefer to get information from brochures (73 percent), bulletin boards (64 percent), and signs (62 percent).
Interested in information on the Forest's natural features (62 percent), things to see and do (60 percent), and the forest's cultural features (53 percent).

**Management Issues:**
Prefer to have forest newspaper available at the Ranger Station (64 percent).
Prefer ranger lead talks on animals and habitat (73 percent), mountain history (60 percent), and effects of pollution (44 percent).

**Citation:**
Chavez and others 1993b

**Subject:**
Visitor perceptions

**Study Site:**
USDI Bureau of Land Management, California Desert District, El Centro Resource Area, Imperial Sand Dunes

**Topics:**
Respondent profile, recreation pattern, respondent perceptions, development, knowledge level and information sources, safety, differences between first-time and repeat visitors

**Methods:**
On-site self-administered questionnaires; English and Spanish available.
The instrument was so long that two samples and two instruments were used.
Some questions were asked on both instruments.
Results are presented with sample size.

**Results**:
Respondent Profile:
Sample size: 605 (two samples: 307 and 298)
Male = 66 percent; white = 68 percent; n = 605
High school education or higher = 92 percent; n = 605
English speaking = 82 percent; n = 605
California residents = 82 percent; n = 605
Off-road vehicle club members = 8 percent; n = 307
Repeat visitors = 77 percent; n = 298

**Recreation Patterns:**
Activity—off-road vehicle riding = 90 percent; n = 298.
Activity—recreation = 40 percent; n = 298.
Activity—relaxing = 17 percent; n = 298.
Primary purpose—off-road riding = 57 percent; n = 307.
Primary purpose—fun = 27 percent; n = 307.

**Respondent Perceptions:**
Visit for off-road vehicle riding = 35 percent; n = 298.
Visit to see sand dunes = 17 percent; n = 298.
Visit to see friends = 16 percent; n = 298.
Agreed that visitors should build open fires; n = 307.
Agreed that it is a good idea to have a safety flag on off-road vehicles; n = 307.
Agreed that managers should leave dunes the way they are; n = 307.
Agreed that there should be speed limits in camping areas; n = 307.
Agreed that managers should not allow glass containers; n = 307.
Did not agree to allow camping on highway shoulder; n = 307.
Did not agree that some animals and plants were threatened and endangered; n = 307.

**Development Preferences:**
Water availability an important site amenity; n = 298.
Telephones an important site amenity; n = 298.

**Communication Patterns and Preferences:**
Learned about area from family and friends = 94 percent; n = 298.
Wanted information signs along the road (625); n = 298.
Wanted notes on bulletin boards = 57 percent; n = 298.
Wanted brochure at entrance to area = 51 percent; n = 298.
Wanted information about safety = 51 percent; n = 298.
Wanted agency management info related to off-road vehicle use = 46 percent; n = 298.

Want information about area rules and regulations = 45 percent; n = 298.
Aware of visitor center = 32 percent; n = 298.
Visited the visitor center (125); n = 298.
Aware of new regulations concerning minors = 55 percent; n = 307.
Correctly described part of new regulations = 25 percent; n = 168.

**Safety:**
Highway 78 safety problems = 35 percent; n = 307.
Glamis store safety problems = 30 percent; n = 307.
Saw accident in last two visits to dunes = 32 percent; n = 307.

**Differences Between First-time and Repeat Visitors:**
First time visitors more likely to go to dunes to visit friends = 50 percent; n = 28.
Repeat visitors more likely to go for off-road vehicle riding = 36 percent; n = 270.
First time visitors preferred information in brochure at entrance = 64 percent, and signs along the road = 61 percent; n = 28.
Repeat visitors preferred signs along the road = 62 percent, and notes on bulletin boards = 58 percent; n = 270.
First time visitors preferred information about things to see and do (57 percent), and natural features of the area = 57 percent; n = 28.
Repeat visitors preferred information about safety = 52 percent, and agency management practices that could affect off-road vehicle riding = 47 percent; n = 270.
Repeat visitors more likely to be aware of visitor center (35 percent versus 4 percent); n = 298.
More repeat visitors aware of new regulations (60 percent versus 32 percent); n = 298.

**Citation:**
Chavez and others 1995b

**Subject:**
Day use

**Study Site:**
USDA Forest Service, Angeles National Forest, Crystal Lake, Charlton, Glacier, Switzer, Chilao, Stoneyvale, Hidden Springs, Wildwood

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, communication patterns and preferences, management issues

**Methods:**
On-site self-administered questionnaire.

**Results:**
Respondent Profile:
n = 168
U.S.-born = 53 percent
White = 51 percent; Hispanic = 30 percent; Asian = 9 percent
English speaking = 57 percent; English readers = 76 percent
Men = 56 percent
Average age = 35 years
Education = 14 years
Annual household income = $39,999 or less

**Recreation Patterns:**
Most came to picnic = 31 percent; relax = 27 percent; hike = 13 percent.
Repeat visitors = 70 percent; three times in past year; averaged 4 years.
Traveled less than one hour to the site = 42 percent.
Recreated in groups of four.
Averaged one and one-half hour travel to the site.

**Respondent Perceptions:**
Wanted place to recreate with family.
Rangers should enforce rules and regulations.
Important amenities included maps and signs.
Prefer hiking trails that are 60 minutes in length (35 percent) or 30 minutes or less (27 percent) and somewhat challenging (57 percent) or an easy walk (37 percent).
Recommend site to family (90 percent), people with small children (90 percent), deaf individuals (77 percent), and elderly individuals (71 percent).

**Development Preferences:**
The most important site attributes were picnic areas, trash receptacles near the recreation site, grills, running water, and flush toilets.

**Communication Patterns and Preferences:**
Learned about site from family and friends = 72 percent.
Preferred to get information from brochures (79 percent), bulletin boards (76 percent), and signs (76 percent).
Interested in information on the forest's natural features (61 percent), things to see and do (57 percent), and safety (46 percent).
Most said they were aware of forest rules and regulations (54 percent) and these respondents correctly identified regulations regarding the cutting of vegetation (91 percent), requirement for fire permits (81 percent), bringing dogs to the forest (74 percent), and allowance of hunting during some seasons (62 percent).

**Management Issues:**
Preferred to have forest newspaper available at the Ranger Station = 48 percent.
Preferred ranger lead talks on animals and habitat (67 percent), mountain history (59 percent), and effects of pollution (43 percent).

**Citation:**
Chavez and others 1995c

**Subject:**
Day use

**Study Site:**
USDA Forest Service, Los Padres National Forest, Pfeiffer Beach, Arroyo Seco, Sand Dollar, White Rock, and Falls

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, communication patterns and preferences

**Methods:**
On-site self-administered questionnaire.

**Results:**
Respondent Profile:
n = 159
U.S.-born = 80 percent
White = 64 percent; Hispanic = 22 percent; Asian = 4 percent
English speaking = 80 percent); English readers = 86 percent
Women = 54 percent
Average age = 35 years
Education = 15 years
Annual household income = $30,000-$60,000

**Recreation Patterns:**
Most came to relax = 28 percent; swim = 13 percent.
Repeat visitors = 66 percent; twice in past year; averaged 5 years.
Traveled less than one hour to the site = 37 percent.
Day use only = 42 percent; camp = 47 percent.
Recreated in groups of three.
Alcohol present = 24 percent.

**Respondent Perceptions:**
Wanted place to recreate with family.
Thought managers should enforce rules and regulations.
Important amenities included maps and signs.
Preferred hiking trails that are 30 minutes in length (51 percent) or 15 minutes or less (45 percent) and somewhat challenging (41 percent) or an easy walk (36 percent).
Recommend site to family (98 percent), people with small children (92 percent), deaf individuals (82 percent), and elderly individuals (65 percent).

**Development Preferences:**
The most important site attributes were trash receptacles near the recreation site, flush toilets, and running water.

**Communication Patterns and Preferences:**
Learned about site from family and friends = 70 percent.
Preferred to get information from bulletin boards (73 percent), brochures (72 percent), and signs (64 percent).
Interested in information on the forest's natural features (79 percent), things to see and do (71 percent), and the forest's cultural features (69 percent).

**Citation:**
Ewert and Pfister 1991

**Subject:**
Environmental concerns

**Study Site:**
USDA Forest Service, Angeles National Forest, West fork of the San Gabriel River

**Topics:**
Respondent perceptions, depreciative behavior

**Methods:**
On-site questionnaire, English and Spanish versions available.

**Results:**
Respondent Perceptions:
n = 473
Motivations to recreate included escape, reduction of stress, and enjoyment of family and scenery.
Appealing features included being with the family, watching children play, water, preparing food, and shade.

**Depreciative Behavior:**
Concerned with litter on the riverbank, litter in the river, too few garbage cans, inadequate toilet facilities, graffiti and vandalism, and water pollution.

**Citation:**
Gable and others 1997

**Subject:**
User fees

**Study Site:**
USDA Forest Service, Angeles, Cleveland, Los Padres and San Bernardino National Forests

**Topics:**
Respondent profiles, recreation patterns, development preferences, communication patterns and preferences, racial and ethnic group comparisons

**Methods:**
On-site questionnaire, English and Spanish versions available.

**Results:**
Respondent Profiles:
n = 593
Male
White
Most were ages 18-35
Some college education
Median income = $38,001-$58,000

**Recreation Patterns:**
Hiking, sightseeing, picnicking were most popular.
Most visit six or more times per year.

**Development Preferences:**
Preferences were to use fee funding for litter removal, wildlife protection, preservation of trees, cleaner toilets, road maintenance, and cleaner water.

**Communication Patterns and Preferences:**
Prefer to get information via newspapers and magazines.
Few knew about the proposed fee program.
Few thought the implementation of the fee program would negatively impact either their number of visits or the types of activities in which they engaged on National Forests.

**Racial and Ethnic Group Comparisons:**
"Minority" groups were more supportive of the planned fee program.

**Citations:**
Heywood 1993, Heywood and others 1995

**Subject:**
Hispanic recreation

**Study Site:**
USDA Forest Service, San Bernardino National Forest, Applewhite Picnic Area

**Topics:**
Respondent profile, recreation patterns, respondent perceptions

**Methods:**
On-site self-administered questionnaires, English and Spanish.

**Results:**
Respondent Profile:
n = 215
Female = 55 percent
Hispanic = 54 percent
Education = between 9 and 13 years
U.S.-born = 57 percent

**Recreation Patterns:**
Repeat visitors = 83 percent.
Visited other sites on National Forests in southern California = 65 percent.
Group sizes = average from 7 to 12.
Brought a dog with them to the site = 9 percent.

**Respondent Perceptions:**
Expectations for behaviors were measured.
Some general conventions were found, which included leashing large dogs, recycling trash, using a trash can on site, cooking food at formal picnic sites, playing radios at lowest volume, and leashing medium size dogs. These are expectations held by almost everybody.
Some "simple majority" conventions were found, which included never play radios at their highest volume, leashing small size dogs, and entering other's sites in the stream. These are expectations that most agreed to but were not strongly held expectations.
Some other ambivalent expectations were for behaviors such as entering others' stream bank sites, playing radios at moderate volumes, eating prepared foods at formal picnic sites, and entering others' formal picnic sites.

**Citation:**
Hodgson and others 1990

**Subject:**
Communication

**Study Site:**
USDA Forest Service, Angeles National Forest, San Gabriel Canyon, general forest recreation sites, developed day-use sites, and campgrounds

**Topics:**
Recreation patterns, communication patterns and preferences, racial and ethnic group comparisons

**Methods:**
On-site self-administered questionnaires.

**Results:**
Recreation Profile:
n = 223
First time visitors or made their first visit to the site in that year (1988) = 62 percent.

**Communication Patterns and Preferences:**
Heard about the site through interpersonal channels = 70 percent.
Talked to someone else about their recreation outing = 60 percent.
On-site information preferences are brochures (33 percent), signs (25 percent), rangers (22 percent), bulletin boards (20 percent), and radio (24 percent).
For Canyon recreation information respondents prefer newspapers (35 percent), radio (29 percent), television (27 percent), and magazines (10 percent).

**Racial and Ethnic Group Comparisons:**
Europeans report visiting the canyon for more years than had other groups.
Latinos were most likely to tell others about their recreation outings.

**Citation:**
Hollenhorst and others 1995

**Subject:**
Mountain biking

**Study Site:**
National Forests in California, Texas and West Virginia; only California data is included in this report; sites in California include the Cleveland, Inyo, and San Bernardino National Forests

**Topics:**
Respondent profile, recreation patterns, respondent perceptions

**Methods:**
On-site self-administered questionnaire.

**Results:**
Respondent Profile:
California n = 274
Male = 80 percent
Average age = 31 years
Education = 15 years
Household incomes = $30,000-$69,999
Reside in large cities (population size 150,000-499,999)

**Recreation Patterns:**
Primary activities were mountain biking, day hiking, car camping.
Rode with friends = 56 percent, rode with family = 20 percent, rode alone = 24 percent.
Rode informally = 87 percent, rode in organized events = 13 percent.
Day users = 61 percent, overnight or longer = 39 percent.
Did not belong to clubs = 81 percent, club members = 19 percent.
On a 1 to 5 scale (1 = low), self-rated 3.2 skill level at mountain bike riding.
Preferred trails = 42 percent, abandoned roads = 23 percent, gravel roads = 19 percent, paved roads = 16 percent.
Bike riding = 13 years, mountain bike riding = 4 years.
Overall averaged 76 mountain bike trips in 12 months, averaged 6 riding areas, averaged 13 miles per trip.
On National Forests averaged 23 mountain bike trips in 12 months, averaged 4 riding areas and averaged 11 miles per trip.

**Respondent Perceptions:**
Respondents rode a mountain bike for enjoyment/fun/love it, physical/exercise, nature/environment, and challenge/adventure/excitement.
Ride mountain bike in the National Forest for nature/environment, trails, and challenge/adventure/excitement.
Mountain biking has become popular on National Forests because of trails, nature/environment, and access.
Important issues and problems facing mountain biking on the National Forests include access, impacts, and social conflicts.
California mountain bike riders agreed with the following statements:
Mountain biking is very important to me.
Natural conditions free from human sights and sounds are very important to me while mountain biking.
The type of bike equipment I use means a lot to me.
Mountain biking is one of the most satisfying things I do.
Mountain biking on the National Forest is important to me.

**Citation:**
Lee and Brown 1991

**Subject:**
Visitor perceptions

**Study Site:**
USDA Forest Service, Inyo National Forest, Bristlecone Pine Entrance Station, Convict Lake area, Oh! Ridge area, Mammoth Lakes Visitor Center, Minaret Vista, Mono Lake Ranger Station/Tioga Pass area, Rock Creek Entrance Station, Whitney Portal; USDI Bureau of Land Management sites: Crowley Lake, Horton Creek, Goodale Creek, and Tuttle Creek. USDI results are not available in the report provided by the authors.

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, development preferences, communication patterns and preferences

**Methods:**
On-site contact and mini-survey with mailback questionnaires.

**Results:**
Respondent Profile:
n = 1,129 (75 percent response rate based on those agreeing to fill out the mailed survey and those actually doing so; significantly fewer ethnic minorities returned their completed surveys).
More males (64 percent) than females (36 percent) filled out the survey.
White = 91 percent
Average age = 43 years
College education = 88 percent
California residents = 90 percent
Household incomes between $20,000 and $60,000 = 60 percent

**Recreation Patterns:**
Main activities included hiking (70 percent), sightseeing (67 percent), fishing (58 percent), wildlife viewing (45 percent), picnicking (43 percent), tent camping (42 percent).
Repeat visitors = 77 percent.
Between 1-5 days on the National Forest = 64 percent.
Overnight accommodations at a Forest Service campground = 64 percent.
Visited other nearby National Forests in the previous year (Los Padres = 20 percent, Cleveland = 23 percent, Sequoia = 29 percent, Angeles = 35 percent, and San Bernardino = 46 percent).

**Respondent Perceptions:**
Primary purposes included fishing (28 percent), camping (18 percent), sightseeing (15 percent), hiking (12 percent).
The following were rated as "important" recreation experience outcomes:
being in a natural setting, viewing the mountains and lakes, being close to nature, viewing the scenic beauty, getting away from the usual demands of life, and experiencing peace and quiet.
On a 1 to 7 scale (7 = important) family togetherness was rated 5.7.
Very satisfied with their overall trip = 53 percent.

**Development Preferences:**
Managers couldn't change anything at the sites to make them more satisfied = 3 percent.
Add showers at campgrounds = 7 percent.
Add more campsites, campgrounds = 6 percent.
Provide cleaner, better, more restrooms = 8 percent.
Provide more information and interpretation = 7 percent.

**Communication Patterns and Preferences:**
Learned about the area from family or friends = 83 percent.

**Citation:**
Parker and Winter 1996

**Subject:**
Wilderness

**Study Site:**
USDA Forest Service, Angeles National Forest, Cucamonga, San Gabriel, and Sheep Mountain Wildernesses

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, communication patterns and preferences

**Methods:**
On-site mini-survey, mailed follow-up survey.

**Results:**
Respondent Profile:
n = 141
White = 73 percent
Male = 72 percent
Household income between $20,000-$59,999
College education = 87 percent

**Recreation Patterns:**
Repeat visitors = 80 percent.
Visited there with family and friends = 73 percent.

**Respondent Perceptions:**
Most took offense if they saw groups of 10 or more people.
Most considered the area overcrowded if they saw groups of 10-30 people.
Most strongly agreed (83 percent) that some areas of the United States should be set aside to prevent development by people.
Most strongly disagreed (65 percent) that protection of the land from human impact is not necessary.
Most strongly disagreed (78 percent) that there is very little value in undeveloped land.
On a scale of 1-4, where 4 = very desirable, the respondents rated the following characteristics the highest: natural setting (3.8), observe scenery (3.7), emotional satisfaction (3.7), and clean water (3.7).

**Communication Patterns and Preferences:**
Get information from friends or family members = 50 percent.
Desired communication sources include brochures (82 percent), maps (73 percent), and trail signs (48 percent).
Topics of interest for additional wilderness information include the location of trails and features of the landscape (79 percent), similar places (70 percent), and types of plants animals in the area (70 percent).
Knew the rules regarding use of household soap in rivers = 96 percent.
Knew the rules regarding fire permits = 94 percent.
Knew the rules regarding all-terrain vehicles = 89 percent.
Knew the rules regarding cutting tree branches to start campfires = 95 percent.
Knew rules regarding collection of cultural artifacts = 75 percent.
Knew rules regarding the carrying of wilderness permits = 74 percent.
Knew the rules regarding mountain biking = 46 percent.
Most (51 percent) knew the Forest Service was the managing agency; others identified the National Park Service (21 percent), the State of California (4 percent), or the Wilderness Society (less than 1percent) as the managing agency.

**Citation:**
Simcox and Pfister 1990

**Subject:**
Hispanic recreation

**Study Site:**
USDA Forest Service, Angeles National Forest, west fork of the San Gabriel River

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, depreciative behavior, racial and ethnic group comparisons

**Methods:**
On-site self-administered questionnaire in English and Spanish; participant observation.

**Results:**
Respondent Profile:
n = 437
Male = 54 percent
Hispanic = 87 percent; Mexican-American = 44 percent, Hispanic-American = remainder
Education = 11 years
Under the age of 30 = 60 percent
Spoke Spanish only = 45 percent, English-Spanish speakers = 37 percent
Born in Mexico = 41 percent, U.S. = 33 percent, Central America = 23 percent
Most were employed as manual laborers = 36 percent.

**Recreation Patterns:**
Average group size = 9.
Family groups = 72 percent.
Brought alcohol to the site = 49 percent.

**Respondent Perceptions:**
Primary reason to recreate: reduce stress, view scenery, give the mind a rest.

**Depreciative Behavior:**
The problems considered serious at site included litter on the riverbanks, litter in the river, too few garbage cans, inadequate toilet facilities, graffiti and vandalism, and water pollution.
The most appealing aspects of the site included being with family, watching children play, water, barbeque and prepare food, and shade.

**Racial and Ethnic Group Comparisons:**
The majority of U.S.-born whites spoke English only; U.S.-born Hispanics spoke English as their primary language. About one-third of the Mexico-born Hispanics spoke English or were bilingual, while about one-quarter of the Central America-born Hispanics were bilingual.
Hispanic group was not homogeneous.
Non-U.S.-born respondents had greater concerns for law enforcement and communication issues.
Tendency for U.S.-born whites and Hispanics to have diminished motivations and less positive perceptions of the study area as compared to those born in Mexico and Central America.

**Citation:**
Simcox and others 1989

**Subject:**
Communication

**Study Site:**
USDA Forest Service, Angeles National Forest, San Gabriel Canyon, general forest recreation sites, developed day-use sites, and campgrounds

**Topics:**
Respondent profile, recreation patterns, racial and ethnic group comparisons

**Methods:**
On-site self-administered questionnaires.

**Results:**
Respondent Profile:
n = 231
Hispanic = 65 percent
Spoke Spanish as their primary language = 45 percent, spoke English as their primary language = 45 percent
Resided in the city of Los Angeles = 25 percent

**Recreation Patterns:**
First visit or made the first visit that year = 35 percent.
Traveled an hour of less to the site = 76 percent.
Average group size = 8.
Little planning for their trip = 70 percent.

**Racial and Ethnic Group Comparisons:**
Average group size is larger for Hispanic (9) and Asian (11) groups compared to whites (6).
Most groups do little planning in advance of the trip, though Asians appear to plan furthest ahead
Asians were the newest users of the study sites, followed by Hispanics.

**Citation:**
Swearingen and Pfister 1995

**Subject:**
Environmental concerns

**Study Site:**
USDA Forest Service, Angeles and San Bernardino National Forests

**Topics:**
Respondent profile, respondent perceptions

**Methods:**
On-site interviews, English and Spanish

**Results:**
Respondent Profile:
n = 127
Male = 61 percent
Hispanic = 42 percent, white = 42 percent
Average age = 33
Average years of education = 10
Most were born in Mexico = 54 percent
Married = 57 percent

**Respondent Perceptions:**
Visitors were given moral dilemmas to consider: one involved a conflict between species preservation and resource extraction, while the other scenario compared preferences for personal freedom to hike off trails to efforts of the managing public agency to prevent such behavior to protect the park environment.
The species versus resource dilemma elicited the most elaborate moral arguments by the respondents.
No differences were found between ethnic/racial groups.

**Citation:**
Taylor and Winter 1995

**Subject:**
Environmental concerns

**Study Site:**
USDA Forest Service, Angeles National Forest: Charlton Flat, Crystal Lake, Stoneyvale
Cleveland National Forest: Desert View, San Luis Rey; Los Padres National Forest: Arroyo Seco Recreation Area, Pfeiffer Beach, Santa Ynez Recreation Area

**Topics:**
Respondent profile, respondent perceptions, depreciative behavior, racial and ethnic group comparisons

**Methods:**
On-site self-administered questionnaire for portion of sample, on-site mini-survey followed by mailed questionnaire remainder of sample.

**Results:**
Respondent Profile:
n = 308
Female = 51 percent
White = 68 percent
Between the ages of 26 and 40 = 48 percent
College education = 51 percent
Household incomes between $20,000 and $49,999 = 40 percent
Employed as professionals/managers = 33 percent.

**Respondent Perceptions:**
Reasons to visit sites included scenery/wildlife/being in the forest (22 percent), for peace and quiet (18 percent), for outdoor activities (15 percent), to rest and relax (14 percent), for get-togethers (12 percent), to camp (11 percent).
Respondents like the scenery (25 percent) and peace and privacy at sites (16 percent). They disliked litter/dirt (25 percent), inaccessibility (17 percent), inadequate facilities (14 percent) and vandalism (8 percent).

**Depreciative Behavior:**
Respondents reported seeing litter at picnic sites/along the roads (83 percent), carvings on trees (75 percent), other recreators making loud noises (71 percent), other recreators playing loud music (68 percent), other recreators walking dogs without a leash (68 percent), paintings or graffiti on rocks (67 percent), writing on the walls of toilets (64 percent).
Activities and occurrences that bothered respondents included spraypaint on rocks and trees (90 percent), litter on trails/along the road (89 percent), litter at picnic sites (86 percent), evidence of barbecues/campfires in undesignated areas (58 percent), trampled plants (57 percent), and people picking flowers, plants, or catching animals (55 percent).
The majority of respondents reported they had picked up litter at the site (90 percent) and looked for a cleaner spot to recreate (73 percent).
Respondents suggested penalties for some depreciative behaviors, which varied by the behavior: fines were most often suggested for throwing garbage on trails/roads, carving, spray-painting trees, and lighting barbecue/fires in undesignated areas; verbal warnings were most often suggested for playing loud music, camping/picnicking in undesignated areas, and parking or driving in unauthorized areas.
No penalties were suggested most often for collection of fallen branches/twigs and hanging hammocks from trees.

**Racial and Ethnic Group Comparisons:**

White = 68 percent, Hispanic = 18 percent, Asian = 10 percent, Native American or African American = 4 percent.

White, Native American, and African American were visiting to see scenery and wildlife. Asians visited to see family and friends, and Hispanics to camp.

Whites and Asians enjoyed visiting the Forest because of access and peace/privacy, Native Americans and African Americans enjoyed being by the water.

Asians and Hispanics disliked the Forest because of litter and poor maintenance; whites, Native Americans and African Americans disliked overuse.

Latinos picked up litter and Asians looked for cleaner areas to recreate, but both groups were most likely to have littered.

Asians were most likely to suggest fines as penalties for depreciative behaviors.

**Citation:**
Winter 2000

**Subject:**
Visitor perceptions

**Study Site:**
USDI Bureau of Land Management, Ukiah District, Redding Resource Area

**Topics:**
Respondent profile, recreation pattern, respondent perceptions, development preferences, communication patterns and preferences

**Methods:**
On-site self-administered questionnaire
Results from three areas are presented:
1) Interlakes Special Recreation Management Area (ISRMA); n = 234
2) Overlook (to Shasta Lake); n = 193
3) Sacramento River Area (SRA); n = 182

**Results:**
Respondent Profile:
White: ISRMA= 71 percent; Overlook = 75 percent; SRA = 69 percent.
English: ISRMA = 93 percent; Overlook = 89 percent; SRA = 97 percent
Some college experience: ISRMA = 69 percent; Overlook = 72 percent; SRA = 66 percent
Average age: ISRMA = 41; Overlook = 46; SRA = 39
Household income under $70,000: ISRMA = 74 percent; Overlook = 71 percent; SRA = 68 percent
Visited with family and friends: ISRMA = 82 percent; Overlook = 88 percent; SRA = 82 percent

**Recreation Patterns:**
Main activities participated in:
ISRMA: watersports = 21 percent, motorcycle/all-terrain vehicle riding = 18 percent; Overlook: sightseeing = 29 percent, watersports = 26 percent; SRA: fishing = 29 percent, watersports = 18 percent.
Trail and road use was mainly for walking/jogging: ISRMA = 54 percent; Overlook = 37 percent; SRA = 53 percent.

**Respondent Perceptions:**
Regardless of site, most thought the agency should leave things pretty much the way they were.
Regardless of site, most thought the agency should provide more information about the area.
Regardless of site, most thought the agency should not limit access to the area. Land acquisition by the agency for purposes of increased resource protection, access, and recreational opportunities were strongly favored by some (ISRMA = 35 percent; Overlook = 23 percent; SRA = 36 percent).
Scenery/aesthetics were the most favored feature of the areas (ISRMA = 54 percent; Overlook = 65 percent; SRA = 48 percent.

**Development Preferences:**
Regardless of site, most were neutral about providing more facilities.

**Communication Patterns and Preferences:**
Learned about the area from friends or family: ISRMA = 60 percent; Overlook = 42 percent; SRA = 69 percent.

While not all respondents were asked specifically, those who were said they were most interested in things to see and do in the area: ISRMA = 51 percent of 126; Overlook = 62 percent of 113; SRA 45 percent of 113.

Most respondents preferred to receive information through brochures and signs along the road.

ISRMA: brochures = 49 percent; signs along the road = 41 percent.

Overlook: brochures = 60 percent; signs along the road = 47 percent.

SRA: brochures = 43 percent; signs along the road = 39 percent.

**Citation:**
Winter 1996a

**Subject:**
Environmental concerns

**Study Site:**
USDA Forest Service sites, Lake Perris State Recreation Area, Riverside city parks

**Topics:**
Respondent profile, respondent perceptions

**Methods:**
On-site, self-administered questionnaires.

**Results:**
Respondent Profile:
n = 447
White = 42 percent, Latino = 34 percent
Male = 54 percent
Age = 33 years
Education = 13 years
U.S.-born = 76 percent

**Respondent Perceptions:**
Unemployment and the economy were seen as possible issues in southern California.
Few environmentally irresponsible behaviors were seen by respondents on-site.
Environmentally responsible behaviors were seen on-site by the majority of respondents.

**Citation:**
Winter 1996b

**Subject:**
Wilderness

**Study Site:**
USDA Forest Service, San Bernardino National Forest, San Gorgonio Wilderness, trailheads included Aspen Grove, Fish Creek, Forsee Creek, Momyer, San Bernardino Peak, South Fork, and Vivian Creek

**Topics:**
Respondent profile, recreation patterns, respondent perceptions, communication patterns and preferences

**Methods:**
On-site mini-survey followed by a mailed questionnaire; summer and fall.

**Results:**
Respondent Profile:
Mailed questionnaire n = 228 (153 summer, 65 for fall)
Male = 71 percent summer, 54 percent fall
White = 90 percent summer, 86 percent fall
Average age = 37 for summer, and 38 in the fall
Some college education = 87 percent summer, 89 percent fall
English as their primary language = 90 percent summer, 100 percent fall.
Household incomes between $30,000 and $59,999.

**Recreation Patterns:**
Repeat visitors = 56 percent summer, 75 percent fall.
Number of visits to any wilderness = 7 for summer,10 for fall.
Summer visitors averaged 13 years of visitation and fall was 11 years.
Most were on a day trip = 58 percent in summer, 82 percent in fall.
Recreating with friends = 46 percent summer, 40 percent fall.
Group size was 3 (summer and fall).

**Respondent Perceptions:**
Respondents from both samples supported or strongly supported the prohibition of glass containers, limiting permitted groups to 12 people, and relocation of campsites to distribute impact on soils and vegetation.
Respondents try to hike with one other person.
Respondents try to hike with no more than five other people.
The area was considered crowded in the summer when more than 28 people were encountered, and 24 people for fall.

**Communication Patterns and Preferences:**
Respondents correctly noted that a permit is required for overnight use (99 percent for summer, 95 percent for fall), that a permit is required for day use (80 percent for summer, 85 percent for fall), and that the area is designated wilderness (82 percent for summer, 82 percent for fall).

## Appendix B—Study Results by Topic

This appendix presents the various topic areas of the studies discussed in this compilation, including respondent profiles, recreation patterns, respondent opinions, perceptions, beliefs, development preferences, communication patterns and preferences, depreciative behaviors, differences between first-time and repeat visitors, and racial and ethnic group differences.

The studies are identified in the sections by an abbreviated title, which is presented at the beginning of the appendix with the author-date citation (complete citation information can be found in the "References" section of the compilation). These abbreviations are used throughout this appendix to identify the results of the studies by topic.

| Authors | Year | Abbreviated Title |
|---|---|---|
| Absher and Winter | 1997 | ECO-Teams |
| Anderson and others | 1997 | Bracken Fern Harvesting |
| Baas and Chavez | 1992 | Desert Tortoise |
| Caro and Ewert | 1995 | Influence of Acculturation |
| Carr and Chavez | 1993 | Central American Recreation |
| Chavez | 1992 | Hispanic Recreationists |
| Chavez | 1993a | San Mateo Wilderness Study |
| Chavez | 1993b | Crowding and Discrimination |
| Chavez | 1996 | Leisure of Hispanic Groups |
| Chavez | 1997 | San Jacinto Mountain Bike Study |
| Chavez and others | 1993a | Mecca Hills (Phase I and Phase II) |
| Chavez and others | 1993b | Imperial Sand Dunes |
| Chavez and Mainieri | 1995 | Day Use 1992 |
| Chavez and others | 1995a | Applewhite Renovation |
| Chavez and others | 1995b | Day Use 1993 |
| Chavez and others | 1995c | Day Use 1994 |
| Ewert and Pfister | 1991 | Cross-Cultural Land Ethics |
| Gable and others | 1997 | Pilot Fees |
| Heywood | 1993 | Behavioral Conventions |
| Hodgson and others | 1990 | Communication Report 2 |
| Hollenhorst and others | 1995 | Mountain Biking on National Forests |
| Lee and Brown | 1991 | Inyo |
| Parker and Winter | 1996 | Angeles Wildernesses |
| Simcox and Pfister | 1990 | Hispanic Values |
| Simcox and others | 1989 | Communication Report 1 |
| Swearingen and Pfister | 1995 | Environmental Dilemmas |
| Taylor and Winter | 1995 | Environmental Values |
| Winter | 2000 | Redding |
| Winter | 1996a | Environmental Concern |
| Winter | 1996b | San Gorgonio Wilderness |

| Area of Study | Sample Size |
|---|---|
| Inyo | n = 1,129 |
| Redding | n = 609 |
| Imperial Sand Dunes | n = 605 from two samples |
| Pilot Fees | n = 593 |
| Hispanic Recreationists | n = 550 |
| Cross-Cultural Land Ethics | n = 473 |
| Environmental Concern | n = 447 |
| Hispanic Values | n = 437 |
| Desert Tortoise | n = 426 |
| Influence of Acculturation | n = 398 |
| Applewhite Renovation | n = 334 |
| Crowding and Discrimination | n = 312 |
| Environmental Values | n = 308 |
| Mountain Biking on National Forests | n = 274 for California |
| Mecca Hills | n = 250 phase 1; n = 92 phase II |
| Communication Report 1 | n = 231 |
| Communication Report 2 | n = 223 |
| San Gorgonio Wilderness | n = 228 |
| Behavioral Conventions | n = 215 |
| Day Use 1993 | n = 168 |
| Day Use 1994 | n = 159 |
| Day Use 1992 | n = 157 |
| Angeles Wildernesses | n = 141 |
| Bracken Fern Harvesting | Six interviews of experts, five interviews of managers, site observations on 5 days, permit data, mailed mini-survey n = 10 |
| San Jacinto Mountain Bike Study | n = 94 |
| Central American Recreation | n = 69 |
| San Mateo Wilderness Study | n = 69 |
| Leisure of Hispanic Groups | n = 4 groups; 61 people |

## *Respondent Profiles*

### Gender

**Majority of Female Respondents**:
Applewhite Renovation
Behavioral Conventions
Day Use 1992
Day Use 1994
Environmental Values
Influence of Acculturation

**Majority of Male Respondents**:
Angeles Wildernesses
Crowding and Discrimination
Day Use 1993
Desert Tortoise
ECO-Teams
Environmental Concern
Environmental Dilemmas
Hispanic Recreationists
Hispanic Values
Imperial Sand Dunes
Inyo
Mountain Biking on National Forests
Pilot Fees
San Gorgonio Wilderness
San Jacinto Mountain Bike Study
San Mateo Canyon Wilderness

### Race/Ethnicity

**Majority of White Respondents**:
Angeles Wildernesses
Day Use 1992
Day Use 1993
Day Use 1994
Desert Tortoise
Environmental Concern
Environmental Values
Imperial Sand Dunes
Inyo
Mecca Hills Phase II
Pilot Fees
Redding
San Gorgonio Wilderness
San Mateo Canyon Wilderness

**Majority of Asian Respondents**:
Bracken Fern Harvesting

**Majority of Hispanic Respondents**:
Applewhite Renovation
Behavioral Conventions
Central American Recreation
Communication Report 1
Crowding and Discrimination
Environmental Dilemmas

Hispanic Recreationists
Hispanic Values
Influence of Acculturation
Leisure of Hispanic Groups
Mecca Hills Phase I

**Average Age**
Mecca Hills Phase II: 44
Inyo: 43
San Mateo Canyon Wilderness: 38
San Gorgonio Wilderness: 37 (estimate)
Day Use 1992: 37
Day Use 1993: 35
Day Use 1994: 35
San Jacinto Mountain Bike Study: 34
Mecca Hills Phase I: 33
Environmental Concern: 33
Environmental Dilemmas: 33
Mountain Biking on National Forests: 31
Crowding and Discrimination: 31
ECO-Teams: 30
Hispanic Recreationists: 29
Applewhite Renovation: 22

**Other Age:**
Environmental Values: Between 26-40
Hispanic Values: Under age 30
Pilot Fees: Between 18-35

**Average Years of Education**
San Jacinto Mountain Bike Study: 15
Day Use 1994: 15
Mountain Biking on National Forests: 15
Day Use 1992: 14
Day Use 1993: 14
Hispanic Recreationists: whites 14, Hispanics 11
Mecca Hills Phase II: 13
Environmental Concern: 13
Hispanic Values: 11
Mecca Hills Phase I: 10
Environmental Dilemmas: 10

**Other Education (Average):**
Angeles Wildernesses: Some college education
Desert Tortoise: Some college education
Environmental Values: Some college education
Inyo: Some college education
Pilot Fees: Some college education
Redding: Some college experience
San Gorgonio Wilderness: Some college education
San Mateo Canyon Wilderness: Some college education
Imperial Sand Dunes: High school education or higher
Crowding and Discrimination: High school
Leisure of Hispanic Groups: Some had high school, few had diplomas
Behavioral Conventions: Between 9 and 13 years
Applewhite Renovation: Less than high school diploma

**Primary Language Spoken**

**English**:
Applewhite Renovation
Day Use 1992
Day Use 1993
Day Use 1994
Imperial Sand Dunes
Mecca Hills Phase II
Redding
San Gorgonio Wilderness
San Mateo Canyon Wilderness

**Mixed**:
Communication Report 1: Equal numbers spoke Spanish as primary as English as primary
Hispanic Recreationists: English and Spanish
Influence of Acculturation: English and Spanish
Mecca Hills Phase I: English and Spanish

**Spanish**:
Central American Recreation
ECO-Teams
Hispanic Values
Leisure of Hispanic Groups

**Other—Respondent Profiles**

**Household Income:**
Redding: Under $70,000
Day Use 1993: Under $40,000
Pilot Fees: $38,001 - $58,000
Mountain Biking on National Forests: $30,000-$69,999
Day Use 1992: $30,000-$59,999
Day Use 1994: $30,000-$59,999
San Gorgonio Wilderness: $30,000-$59,999
Angeles Wilderness: $20,000-$60,000
Inyo: $20,000-$60,000
Environmental Values: $20,000-$49,999
San Jacinto Mountain Bike Study: $20,000-$39,999

**Place of Birth:**
Applewhite Renovation: Outside the U.S.
Behavioral Conventions: U.S.
Crowding and Discrimination: U.S., followed by Mexico
Day Use 1992: U.S.
Day Use 1993: U.S.
Day Use 1994: U.S.
Environmental Concern: U.S.
Hispanic Values: Mexico, followed by U.S., Central America
Environmental Dilemmas: Mexico
Influence of Acculturation: Mexico

**Residence:**
Communication Report 1: Los Angeles
Imperial Sand Dunes: California
Inyo: California
Mountain Biking on National Forests: Large cities (population size: 150,000-499,999)
San Jacinto Mountain Bike Study: Large cities

**Marital Status:**
Crowding and Discrimination: Married
Environmental Dilemmas: Married
Hispanic Recreationists: Married
San Mateo Canyon Wilderness: Married

**Employment:**
Crowding and Discrimination: Skilled or semi-professional occupations
Environmental Values: Professional or managerial occupations
Hispanic Values: Manual workers
Leisure of Hispanic Groups: Employed full-time

**Racial and Ethnic Group Comparisons:**
Hispanic Values: Language continuum—U.S.-born whites, U.S.-born Hispanics, Mexico-born Hispanics, and Central America-born Hispanics.
Hispanics were not a homogeneous group.
U.S.-born whites and Hispanics had diminished motivations and less positive perceptions of the site compared to Mexico-born and Central America-born Hispanics.

### *Respondent Recreation Patterns*

#### Main Activities

Applewhite Renovation: Picnic, relax, play in creek
Bracken Fern Harvesting: Harvest fiddleheads from bracken ferns
Central American Recreation: Picnic, relax, creek play, church
Crowding and Discrimination: Picnic, hike, visit with others
Day Use 1992: Picnic, relax, hike
Day Use 1993: Picnic, relax, hike
Day Use 1994: Relax, swim
Desert Tortoise: Ride dirt bikes, ride four-wheelers
Hispanic Recreationists: Picnic, relax
Imperial Sand Dunes: Off-road vehicle riding, recreation, relaxing
Inyo: Hiking, sightseeing, fishing
Leisure of Hispanic Groups: Picnic, relax, enjoy the water
Mecca Hills Phase I: Group sports, hike, picnic
Mecca Hills Phase II: Hike relax, picnic
Mountain Biking on National Forests: Mountain biking, day hikes, car camping
Pilot Fees: Hike, sightsee, picnic
Redding: Main activities were site specific
- Interlakes Special Recreation Area: Watersports, motorcycle/all-terrain vehicle riding
- Overlook: Sightseeing, watersports
- Sacramento River Area: Fishing, watersports

San Jacinto Mountain Bike Study: Mountain biking, day hike, backpack, car camp
San Mateo Canyon Wilderness: Day hike, wildlife observation, picnicking

#### Primary Reason or Purpose to Recreate

Bracken Fern Harvesting (survey): Spend time in the mountains, share ferns with family and friends in the U.S., use ferns in holiday meals, use ferns in everyday meals.
Cross-Cultural Land Ethics: Escape, reduction of stress, enjoyment of family
Day Use 1992: Recreate with family, be alone with friends and family
Day Use 1993: Recreate with family
Day Use 1994: Recreate with family
Environmental Values: Scenery/wildlife/being in the forest, peace and quiet, outdoor activities

Hispanic Values: Reduce stress, view scenery, give the mind a rest
Imperial Sand Dunes: Ride off-road vehicles, have fun, see sand dunes, see friends
Inyo: Fishing, camping, sightseeing
Leisure of Hispanic Groups: Family experience, picnic, water play, nap, swim, relax
Mountain Biking on National Forests: Nature/environment, trails, challenge/ adventure/ excitement
San Jacinto Mountain Bike Study: Mountain biking was most important activity in which they engaged and the most satisfying.
San Mateo Canyon Wilderness: Enjoy the experience; it is a clean, pristine area; it is a place with beautiful scenery.

**Repeat Visitation**

Angeles Wildernesses: Repeat visitors
Applewhite Renovation: Repeat visitors, five visits in past year, going there 6 years.
Behavioral Conventions: Repeat visitors to that site, visited other sites on National Forests in southern California.
Communication Report 1: First visit or their first visit was within the last year.
Communication Report 2: First visit or their first visit was within the last year.
Crowding and Discrimination: Repeat visitors, most visited three or more times previously, almost all planned to return to site(s).
Day Use 1992: Repeat visitors, two visits in past year, average was 5 years.
Day Use 1993: Repeat visitors, three visits in past year, average was 4 years.
Day Use 1994: Repeat visitors, two times in past year, average was 5 years.
Desert Tortoise: Repeat visitors, visit year-round.
ECO-Teams: Repeat visitors, 33 percent have visited 3 or more years.
Hispanic Recreationists: Repeat visitors
Imperial Sand Dunes: Repeat visitors
Inyo: Repeat visitors
Leisure of Hispanic Groups: All four groups were repeat visitors.
Mountain Biking on National Forests: Repeat visitors, 23 rides in past year, average was 3 years.
Pilot Fee: Visit six or more times per year.
San Gorgonio Wilderness: Repeat visitors, average 7 to 10 visits to any wilderness in past year, and 11-13 years to San Gorgonio Wilderness.
San Jacinto Mountain Bike Study: Many said they were experienced mountain bike riders. They averaged 15 years of bike riding experience and five years mountain bike riding experience. They averaged 25 mountain biking trips in the past year with most of those trips about 13 miles in length taking about 3 hours. Most were there for a day visit.
San Mateo Canyon Wilderness: return visitors; averaged 7 years of wilderness visits and nine wilderness visits in past year.

**Visitation With Friends and Family**

Angeles Wildernesses: Recreating with family and/or friends
Day Use 1992: Site provides a place to recreate with family
Day Use 1993: Site provides a place to recreate with family
Day Use 1994: Site provides a place to recreate with family
Hispanic Values: With family
Leisure of Hispanic Groups: All four groups with family
Mountain Biking on National Forests: Rode with friends
Redding: Family and friends
San Gorgonio Wilderness: Friends
San Jacinto Mountain Bike Study: Friends
San Mateo Canyon Wilderness: Friends

### Group Size

Applewhite Renovation: 15
Central American Recreation: 15: 7 adults and 8 children
Hispanic Values: 9
Communication Report 1: 8
Behavioral Conventions: 7 to 12
Hispanic Recreationists: 7 for whites and 11 for Hispanics
San Mateo Canyon Wilderness: 7: 4 adults, 3 kids
ECO-Teams: 3-4 or 5-6
Day Use 1992: 4-5
Bracken Fern Harvest: 4; 77 percent of all group harvested fiddleheads from ferns
Day Use 1993: 4
Day Use 1994: 3
San Gorgonio Wilderness: 3
Inyo: 1 to 5

### Trails

Day Use 1992: Trails should be 15-30 minutes in length, easy to somewhat challenging.
Day Use 1993: Trails should be 30-60 minutes in length, easy to somewhat challenging.
Day Use 1994: Trails should be 15-30 minutes in length, easy to somewhat challenging.
Mountain Biking on National Forests: Respondents preferred single track trails and abandoned roads.
Redding: Respondents reported that trail and road use was mainly for walking/jogging.
San Jacinto Mountain Bike Study: Though use of trails was dispersed throughout region, the most difficult trails were the ones most frequented by the respondents. Most said the number people encountered on trails is at an acceptable level, trail use could be increased, user limits on trails are not necessary, and that they mostly encountered hikers and other mountain bikers on the trails.

### Other Recreation Patterns

**Travel Time:**

Day Use 1992: Less than 1 hour to reach the site
Day Use 1994: Less than 1 hour to reach the site
Communication Report 1: 1 hour or less to get to the study site
Day Use 1993: 1 and 1/2 hours to site

**Club Membership:**

Desert Tortoise: 32 percent
Mountain Biking on National Forests: 20 percent
Imperial Sand Dunes: Few were off-highway vehicle club members.
San Jacinto Mountain Bike Study: Few belonged to clubs.

**Type Use:**

San Gorgonio Wilderness: Day trip
Mountain Biking on National Forests: Day users
San Mateo Canyon Wilderness: Non-holiday weekends, day use

**Alcohol:**

Day Use 1992: Few had alcohol present.
Day Use 1994: Alcohol present in one-quarter of the groups.
Hispanic Values: About half had alcohol present.

**Dogs:**
Behavioral Conventions: Few brought dogs, people prefer dogs to be leashed.
Day Use 1992: Few brought dogs.

**Picnicking:**
Central American: Recreation all-day activity, food preparation on-site, church activity.
Leisure of Hispanic Groups: All-day activity, important to maintaining family cohesiveness.

**Non-holiday Weekend Use:**
Mecca Hills: Non-holiday weekends, especially white respondents.
San Mateo Canyon Wilderness: On non-holiday weekends.

**Experience Level:**
San Jacinto Mountain Bike Study: Multiple outdoor experiences including camping in campgrounds, mountain biking, and hiking in remote areas.

**Advance Planning:**
Communication Report 1: Most did little planning in advance of their trip.

**Trends:**
Hispanic Recreationists: Found various types of activities in which groups may be interested but in which they had not participated.

**Differences Between First-Time and Repeat Visitors:**
Applewhite Renovation: Repeat visitors preferred to recreate in the shade and rated the site as moderately to very crowded.
Imperial Sand Dunes: First-time visitors were more likely to go to dunes to visit friends, while repeat visitors were more likely to go off-road vehicle riding. First-time visitors prefer information in brochure at entrance and signs along the road, while repeat visitors prefer signs along the road and notes on bulletin boards. First-time visitors prefer information about things to see and do and natural features of the area, while repeat visitors prefer information about safety and agency management practices that could affect off-road vehicle riding. Repeat visitors more likely to be aware of visitor center and aware of new regulations.

**Racial and Ethnic Group Comparisons:**
Bracken Fern Harvesting: Korean respondents more likely than Japanese respondents to use ferns in holiday meals and to use the experience to teach children about their cultural heritage.
Cross-Cultural Land Ethics: U.S.-born whites and Hispanics have diminished motivations and less positive perceptions of site than Mexico-born and Central America-born respondents.
Communication Report 1: Average group size was bigger for Hispanics and Asians, compared to whites. Most groups do little planning in advance of their trip, though Asians appear to plan further ahead. Asians were the newest visitors of the study sites, followed by Hispanics.
Communication Report 2: Europeans had been recreating at the site the longest. Latinos were most likely to tell others about the site.
Hispanic Recreationists: Hispanics were recreating in larger groups than whites.
Hispanic Values: Mexico-born and Central America-born Hispanics rated "learning about nature" as a more important participation motivation than did whites. Hispanics rated "talking to and meeting new people" and "eating and drinking" as more important reasons for their recreation than did whites.

Mecca Hills: Whites visit most during non-holidays; Hispanics mostly on holidays. Whites prefer few amenities; Hispanics prefer many amenities. Hispanics participated most in group sports, picnicking, hiking/walking; whites participated most in hiking/walking, off-highway vehicle riding, relaxing, camping. Hispanics relied most on word-of-mouth, friends, and family for information. The following attributes were ranked as more important to Hispanics than to whites in both phases: law enforcement, friendly and informative rangers, well-maintained facilities, parking spaces, signs, picnic areas, trails, garbage disposal, and toilets.

#### Wilderness

Angeles Wildernesses: Desirable characteristics included a natural setting, scenery, emotional satisfaction, and clean water. Area is overcrowded if encountered more than 10 people.

San Gorgonio Wilderness: Support for the following management actions: prohibit glass containers, limit permitted groups to 12 people, relocate campsites to distribute impacts to soil and vegetation.

San Mateo Canyon Wilderness: Prefer to hike with two people but never more than seven people. Respondents are bothered when they encounter parties greater than 10 and feel the area is crowded if they encounter 8 or more groups in a day's trip. Few problems encountered on last trip; site not viewed as crowded; more knew that motorized use is prohibited than knew they were in a federally designated wilderness; most saw groups trespassing on their last trip (including mountain bikers, motorcycles, all-terrain vehicles).

### *Respondent Opinions, Perceptions, and Beliefs*

#### Settings

Cross-Cultural Land Ethics: The appealing part of the visit included being with family, watching children play, and the water. Problems at the site included litter on the riverbanks, litter in the river, and too few garbage cans.

Hispanic Recreationists: Mountains were a favorite place for most; other favorite places were beaches and lakes. All these places were good for family gatherings.

Hispanic Values: Appealing aspects of the site included being with family, watching children play, and the water. Problems considered serious at the site included litter in the riverbanks, litter in the river, and too few garbage cans.

Imperial Sand Dunes: Respondents agreed that managers should leave the dunes the way they are.

Inyo: Important recreation experiences were to visit a natural setting.

Leisure of Hispanics: Leisure is important in their lives-- especially in the natural environment, and it's a good family outing and reminds them of their homeland.

Mountain Biking on National Forests: Issues included access, impacts, and social conflicts. Mountain biking is popular on National Forests because of trails, nature/environment, and access.

San Jacinto Mountain Bike Study: The natural character of the area was important.

#### Activities

Bracken Fern Harvesting: Gather fiddleheads from bracken fern to share with others and to use at home.

Imperial Sand Dunes: Go to the dunes to ride off-road vehicle; riding is important.

Mountain Biking on National Forests: Mountain bike riding is important to respondents: they want natural conditions free from human sights and

sounds; the type of equipment they used was important to them; and mountain biking is one of the most satisfying things for them.

San Jacinto Mountain Bike Study: Mountain biking says a lot about who they are.

**Experiences**

Crowding and Discrimination: Area(s) were not crowded, and respondents expected more people. Number of people did not take away from enjoying the experience, nor would adding more people. Most said they encountered no law enforcement or other visitors who discriminated against them at this site(s). Those who did said the law enforcement agent was Hispanic and the visitor was white.

Environmental Values: Respondents liked scenery and peace and quiet and disliked inaccessibility and vandalism.

Inyo: Important recreation experiences were to visit a natural setting. Most were very satisfied with their recreation experience.

Mountain Biking on National Forests: Rode mountain bikes for enjoyment/fun, physical health, fun/adventure.

**Outcome Benefits**

Angeles Wildernesses: Most respondents said that some areas in U.S. should be set aside to prevent development by people and that protection of the land from human impact is necessary.

Day Use 1992: Recommend area to family, people with small children, people who are deaf, and people who are elderly.

Day Use 1993: Recommend area to family, people with small children, people who are deaf, and people who are elderly.

Day Use 1994: Recommend area to family, people with small children, people who are deaf, and people who are elderly.

Desert Tortoise: The majority (51 percent) said managers should do all they can to help conserve the desert tortoise.

Environmental Concern: Environmentally responsible behaviors were seen by researchers on-site and attested to by respondents.

Environmental Values: Saw litter at picnic sites/along the roads, carving on trees, other recreators making loud noises. Activities and occurrences that bothered respondents included spraypaint on rocks and trees, litter on trails/along the road, and litter at picnic sites. The majority picked up litter at the sites, looked for a cleaner spot to recreate, and suggested penalties for depreciative behaviors, which varied by the behavior: fines were suggested most often for throwing garbage on trails/roads, carving/spraypainting trees, and lighting barbecues/fires in unauthorized areas; and verbal warnings were suggested most often for playing loud music, camping/picnicking in undesignated areas, and parking or driving in unauthorized areas. No penalties were suggested most often for collection of fallen branches/twigs and hanging hammocks from trees.

Imperial Sand Dunes: Most respondents did not see any danger to the environment from recreational activities and did not agree that some animals and plants were threatened and endangered.

Mountain Biking on National Forests: Respondents rode mountain bikes for enjoyment/fun, physical health, and fun/adventure.

San Jacinto Mountain Bike Study: Respondents did not perceive mountain biking as a dangerous activity. They considered it important to yield to pedestrians, stay on established trails, and clean up after others at camp sites.

**Racial and Ethnic Group Comparisons:**

Influence of Acculturation: Hispanics born in the U.S. were most like U.S.-born whites, and those Hispanics born in Central America had perceptions least like

U.S.-born whites. The continuum was supported for perceptions about nuclear waste dumping, oil spills, and car emissions and somewhat supported for other environmental perceptions.Central America-born were least like U.S.-born white perceptions. The hypothesis was supported for nuclear waste dumping, oil spills, and car emissions and somewhat supported for other environmental perceptions. Differences were found within the "Hispanic" population; they are not homogeneous.

### *Respondent Development Preferences*

#### General

Applewhite Renovation: Most respondents wanted a high level of development.
Mecca Hills Phase I: Most said to develop the area more.
Mecca Hills Phase II: Many said to develop the area more.
Redding: Regardless of site, most were neutral about providing more facilities.
San Jacinto Mountain Bike Study: Respondents prefer to maintain the natural character of the area.

#### Facilities

Applewhite Renovation: Most important site attributes included picnic tables, trash cans near tables, more grills, flush toilets, additional parking, and creekettes.
Day Use 1992: Trash receptacles near sites, picnic areas.
Day Use 1993: Picnic areas, trash receptacles near sites.
Day Use 1994: Trash receptacles near sites, flush toilets.
Hispanic Recreationists: Picnic areas, parking.
Inyo: A few said managers could provide showers at campgrounds, add campsites and campgrounds.
Mecca Hills: Parking, picnic areas, trails, trash receptacles, toilets.
San Jacinto Mountain Bike Study: Respondents didn't want showers or commercial concessionaires.

#### Amenities

Applewhite Renovation: Respondents wanted more creekettes, playground, rocks/boulders, grass, near water, easy access to main road, shade, trees.
Day Use 1992: Maps, signs, running water.
Day Use 1993: Maps, signs, running water.
Day Use 1994: Maps, signs, running water.
Hispanic Recreationists: Signs, friendly and informed rangers.
Imperial Sand Dunes: Water availability, telephones, and open fires should be allowed.
Inyo: A few said managers could provide more information and interpretation, and they wanted a clean non-littered area.
Mecca Hills: Signs, information, clean and well cared for facilities, low cost, law enforcement, and friendly and informed rangers.
Pilot Fees: Preference to use fee funds for litter removal, wildlife protection, preservation of trees, cleaner toilets, road maintenance, and cleaner water.
San Jacinto Mountain Bike Study: Preferences for maps of trails with mileage, sign indicating permitted trail users, sign indicating prohibited trail users, and drinking water, and they didn't want commercial concessionaires.
San Mateo Canyon Wilderness: Desired a map of the area displaying other nearby sites.

#### Racial and Ethnic Group Comparisons

Applewhite Renovation: More Hispanics than whites preferred development.
Hispanic Recreationists: Hispanics wanted more amenities and development than did whites—specifically picnic areas, parking, signs, friendly rangers.

Hispanics had a greater gap between activities participated in and those they desired to try, including adventure travel (heli-skiing), conservation travel (green vacations, volunteer hosting), traditional activities (horseback tours, natural history hikes), and non-traditional activities (camera safaris, mountain biking).

Mecca Hills: Hispanics preferred development; whites preferred no changes.

## *Communication Patterns and Preferences*

### Learned About Area from Family and/or Friends

Communication Report 2: Most learned about the area from interpersonal channels, and most had talked to others about their last recreation outing.

Day Use 1993: Family and friends.

Day Use 1994: Family and friends.

Imperial Sand Dunes: Family and friends.

Inyo: Family and friends.

Mecca Hills Phase I: Family and friends.

Mecca Hills Phase II: Family and friends.

Redding: Regardless of area, many learned about the area from friends or family.

San Jacinto Mountain Bike Study: Most from friends.

### Preferred Methods for Information

Angeles Wildernesses: Brochures, maps, and trail signs.

Communication Report 2: Brochures, signs, and rangers.

Day Use 1992: Brochures, bulletin boards, and signs.

Day Use 1993: Brochures, bulletin boards, and signs.

Day Use 1994: Bulletin boards, brochures, signs.

Imperial Sand Dunes: Information signs along the road, notes on bulletin boards, and brochure at
entrance to area.

Mecca Hills Phase I: Print media (flyers).

Mecca Hills Phase II: Informal sources such as word of mouth, friends and family.

Pilot Fees: Newspapers and magazines.

Redding: Brochures and signs along the road.

San Jacinto Mountain Bike Study: Trail maps, bike shop displays, guidebooks, club newsletters, and information centers.

### Type of Information Sought

Angeles Wildernesses: Location of trails, features of landscape, similar places, and types of plants and animals in the area.

Day Use 1992: Forest natural features, things to see and do, and forest cultural features.

Day Use 1993: Forest natural features, things to see and do, and safety.

Day Use 1994: Forest natural features, things to see and do, and forest cultural features.

Imperial Sand Dunes: Information about safety, agency management information related to off-highway vehicle use, and information about area rules and regulations.

Redding: Interested in things to see and do in the area.

San Jacinto Mountain Bike Study: Receptive to more low-impact information.

### Knowledge

Angeles Wildernesses: Majority knew rules regarding use of household soaps in rivers, campfire permits, ATVs, cutting trees, collecting cultural artifacts, and carrying wilderness permits, but less than half knew mountain bike rules.

Day Use 1993: Most aware of rules and regulations, and they answered correctly about rules for these items: cutting of vegetation, requirement for fire permits, bringing dogs to the forest, and hunting during some seasons.

Desert Tortoise: Most (43 percent) correctly answered desert conservation questions; most knew it was illegal to remove a desert tortoise from its burrow, and most knew that ravens sometimes eat young desert tortoises. Fewer knew that the survival of the desert tortoise as a species in the western Mojave Desert requires that large tracts of land be reserved as habitat.

ECO-Team: Most respondents recalled receiving information about trash pickup (use trash bags, don't litter), fewer recalled information on water contamination, and fewer recalled information about fire.

Imperial Sand Dunes: Aware of new regulations concerning minors; few correctly described part of new regulations.

Pilot Fees: Few knew about the soon-to-be implemented fee program.

San Gorgonio Wilderness: Most correctly said that permits are required for overnight visit, that permits are required for day use, and that the area is a designated wilderness.

San Jacinto Mountain Bike Study: Respondents had low levels of familiarity with "Tread Lightly," "Leave No Trace," National Off-road Biking Association code, and International Mountain Biking Association code. Most said they were familiar with low-impact mountain biking.

**Awareness of Managing Agency**

Angeles Wildernesses: Half knew the Forest Service was the managing agency.

Crowding and Discrimination: Many correctly identified the Forest Service as the managing agency.

ECO-Team: Visitors described the study site as a recreation area; fewer said National Park or National Forest. Some said wilderness, a playground, or a city park.

Mecca Hills Phase I: Few correctly identified the managing agency.

Mecca Hills Phase II: Few correctly identified the managing agency.

**Depreciative Behaviors**

Cross-Cultural Land Ethics: Respondents concerned with litter on the riverbank, litter in the river, too few garbage cans, inadequate toilet facilities, graffiti and vandalism, and water pollution.

Day Use 1992: Almost half said they would like to have more information on safety and that rangers should enforce rules and regulations.

Day Use 1993: Almost half said they would like to have more information on safety and that rangers should enforce rules and regulations.

Day Use 1994: Just over half said they would like to have more information on safety, and that rangers should enforce rules and regulations.

Environmental Values: Respondents rated several depreciative behaviors as bothersome, including spraypaint on rocks and trees, litter on trails/along the road, and litter at the picnic sites. Respondents suggested penalties for some depreciative behaviors: for example, fines were most often suggested for throwing garbage on trails/roads and verbal warnings were most often suggested for playing loud music.

Hispanic Values: Problems considered serious at recreation site included litter on the riverbanks, litter in the river, and too few garbage cans.

Imperial Sand Dunes: Specific safety problems were identified along Highway 78 and the Glamis store: many saw accidents in their last two visits to the dunes and agreed it is a good idea to have a safety flag on off-road vehicles. There should be speed limits in camping areas, and managers should not allow glass containers.

Mecca Hills Phase I: A safe area is important.