



## PROCEEDINGS

# 1980 National Outdoor Recreation Trends Symposium

### Volume I

U.S. Department of Agriculture, Forest Service  
Northeastern Forest Experiment Station  
370 Reed Road, Broomall, PA 19008

Sponsored by:

Northeast Agricultural  
Experiment Stations, NE-100

USDA Forest Service

USDI Heritage Conservation  
and Recreation Service

Recreation Working Group,  
Society of American Foresters

University of New Hampshire,  
Recreation and Parks Program

In cooperation with:

Clemson University

Journal of Leisure Research

Purdue University

USDA, Forest Service    General Technical Report NE-57

## FOREWORD

Most of us would probably endorse a one-year moratorium on meetings, conferences, conventions, workshops, and symposia. In fact, this planning committee was so reluctant to assemble another conference that it spent nearly 2 years identifying the needs and developing the program. When the rate of change is as great as it has been in outdoor recreation, conferences such as this one become essential. This is an exceptional conference because it focuses on that change, documents it, and attempts to determine what its future implications may be.

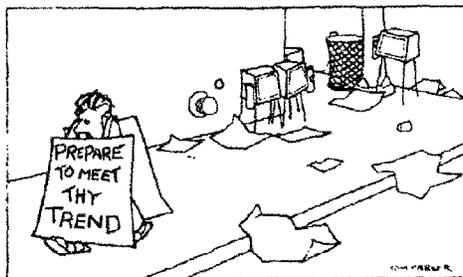
Ten years ago, a Forest Recreation Symposium was held at Syracuse, N.Y., for the purpose of "consolidating and synthesizing past research efforts in outdoor recreation." Even a hasty comparison of these proceedings with those from Syracuse suggests the enormous volume of research that has occurred over these 10 years. Equally apparent is the change in the kinds of research information that are available today; from the static descriptive and prescriptive studies of the late 1960's to examinations of trends, shifts, and changes in the outdoor recreation economy. Effective planning requires this dynamic view of outdoor recreation. Because planning, whether for corporate investment or public development, is a long-range activity, it needs information that goes beyond simple statements of "what is" into the realm of "what has been" and "what will be."

Statistical reporting is a critical function of government. Without this essential service, it would be difficult, if not impossible, to assess the state of the economy, the

quality of health care, or the adequacy of public education. Price indexes, business slumps, new construction, pollution levels, production facts, and employment figures pop out of Washington bureaus onto boardroom conference tables with almost biologic regularity. Agriculture, mining, housing, manufacturing, wholesale and retail trade, doctors, dentists, educators, butchers, bakers, and even high school guidance counselors have more federally-sponsored statistics to plan with than do the providers of America's outdoor recreation opportunities. We attempt to plan the future of the Nation's recreation resources in the absence of facts about the present level and rate of growth of private investment in leisure industries. We define policy on the basis of out-of-date data and ideas about public participation in recreation activities. And, we invest scarce research dollars in "problems" which may not exist, or might at least look different if we had adequate statistics with which to view them. This symposium will not correct the situation. It can only serve to heighten your present uneasiness over the quantity and quality of available trend data. But we hope it will instill an urgency within you to demand better, more current, and more comprehensive statistics on outdoor recreation in America.

Good planning has been described as a two-step process. "First you figure out what is inevitable. Then you find a way to take advantage of it." In assembling this collection of speakers and topics, we have provided you with the best available information on, if not the inevitable, at least that which is highly probable and highly improbable. Step 2 -- how you take advantage of that information -- is what recreation researchers will be monitoring in the years ahead.

WILBUR F. LAPAGE, Chairman  
Program Committee



*American Demographics*, September 1979.  
Used by permission.

THE 1980 NATIONAL  
OUTDOOR RECREATION TRENDS SYMPOSIUM

Held at the New England Center for Continuing Education  
University of New Hampshire  
Durham, New Hampshire  
April 20-23, 1980

SPONSORED BY

Northeast Agricultural Experiment Stations, Project Nh-100  
USDA Forest Service, Northeastern Forest Experiment Station  
USDI, Heritage Conservation and Recreation Service  
Society of American Foresters, Recreation Working Group  
University of New Hampshire, Recreation and Parks Program

PROGRAM COMMITTEE --

Wilbur F. LaPage  
Malcolm I. Bevins  
Robert D. Greenleaf  
Floyd L. Newby  
Gerald L. Cole  
A. Robert Koch  
Herbert E. Echelberger  
Douglas M. Knudson

CONCURRENT SESSIONS --

Floyd L. Newby  
Herbert E. Echelberger  
Douglas M. Knudson  
Kenneth J. Hock  
Marvin W. Kottke  
Mahmood Seyala

ADVISORS --

R. Duane Lloyd  
Earl Patric  
Basil J. F. Mott  
Roland Robinson  
Meg Maguire  
Robert McLellan  
Barry Tindall  
Hugo John  
Fred Knight

LOCAL ARRANGEMENTS --

Robert D. Greenleaf  
Herbert E. Echelberger  
Gus C. Zaso  
Lawrence A. Rondeau  
Patricia C. Merrill

COOPERATORS

Clemson University, Department of Recreation and Park Administration  
Journal of Leisure Research, NRPA  
Purdue University, Department of Forestry and Natural Resources

CONTENTS

|   |   |
|---|---|
| <b>DATA-DEFICIENT PLANNING: AN OVERVIEW</b>   | <b>TRENDS IN RECREATION ACTIVITIES/MARKETS</b>  |
| Social indicators and outdoor recreation:<br>the forgotten sector<br>John D. Peine, Robert W. Marans, and<br>Charles C. Harris ..... 1                            | Skiing trends<br>Charles R. Goeldner and Stacy Standley...105   |
| The role of futures forecasts in recreation:<br>some applications in the third nation-<br>wide outdoor recreation plan<br>Meg Maguire and Dana R. Younger .....19 | Hunting and fishing trends in the U.S.<br>J. John Charbonneau and James R. Lyons...121  |
| Trend indicators needed for effective<br>recreation planning--a statistical<br>blueprint for the 80's<br>H. Fred Kaiser, and George H. Moeller ...27              | Off-road vehicle trends<br>Garrell E. Nicholes.....127  |
| <b>TRENDS IN THE LEISURE ECONOMY</b>  | National boating trends<br>Albert J. Marmo .....135   |
| The growth of selected leisure industries<br>Elizabeth R. Owen .....33  | Trends in river recreation<br>Earl C. Leatherberry, David W. Lime and<br>Jerrilyn LaVarre Thompson .....147                       |
| Trends in financing and availability of<br>capital<br>Donald G. Schink .....41  | Camping and RV travel trends<br>Gerald L. Cole and Wilbur F. LaPage ....165   |
| Trends in private and commercial recreation<br>Arln Epperson .....47  | Trends in the market for privately owned<br>seasonal recreational housing<br>Richard L. Ragatz.....179                            |
| <b>FACILITATING TRENDS</b>  | Trends in hiking and backcountry use<br>Edward L. Spencer, Herbert E. Echelberger,<br>Raymond E. Leonard and Craig Evans .....195 |
| Travel Trends and energy<br>Thomas M. Corsi and Milton E. Harvey ....59   | Trends in emerging and high risk activities<br>Robert G. White, Richard Schreyer, and<br>Kent Downing .....199                    |
| Trends in state outdoor recreation from<br>periodic to process planning: the<br>Minnesota example<br>William H. Becker and George W. Orning ..71                  | Trends in day uses of parks and forests<br>Joseph T. O'Leary, John Peine, and<br>Dale Blahna .....205                             |
| Trends in land and water available for<br>outdoor recreation<br>Lloyd C. Irland and Thomas Rumpf .....77  | Trends in outdoor recreation activity<br>conflicts<br>John J. Lindsay .....215  |
| <b>TRENDS IN POLICY AND INFLUENCE</b>   | <b>TREND MEASUREMENT PROBLEMS</b>   |
| Trends in outdoor recreation legislation<br>George H. Siehl (Vol. II)   | Trends or methodological differences?<br>Daniel J. Stynes, Malcolm I. Bevins, and<br>Tommy L. Brown .....223                      |
| Trends in organizational memberships and<br>lobbying<br>William R. Burch .....89  | The trend of measuring public use of the<br>national parks<br>Kenneth E. Hornback .....233  |
| Trends in public policies and programs<br>Gerald Purvis and Darrell Lewis (Vol. II)   | Data banks for recreation supply and<br>participation<br>E. M. Avedon and S. L. J. Smith .....243                                 |

## SKIING TRENDS

Charles R. Goeldner  
Director, Business Research Division  
University of Colorado  
Boulder, Colorado

Stacy Standley  
Vice President of Special Projects  
Sno-engineering, Inc.  
Aspen, Colorado

---

Abstract.--A brief historical overview of skiing is presented, followed by a review of factors such as energy, population trends, income, sex, occupation and attitudes which affect the future of skiing. A. C. Neilson's Sports Participation Surveys show that skiing is the second fastest growing sport in the country. Skiing Magazine's study indicates there are approximately 14 million active skiers in the United States. The U.S. Forest Service's nation-wide study of the skier market indicates there are another 13 million potential skiers.

Demand is increasing at a much faster rate than supply is. Regionally the West is experiencing an imbalance of demand exceeding supply, while the East and Midwest are approaching equilibrium. Without an increase in supply, skiing may suffer a decrease in popularity. The paper concludes with a list of future trends.

---

### INTRODUCTION

#### Historical Overview<sup>1</sup>

Recreational skiing has ancient roots, with skiing being traced back to prehistoric times where man used primitive skis and sleds to cover vast snow covered areas in the Scandinavian countries. Archeological findings have placed skis in Sweden and dated them by pollen analysis at 2,000 B.C. Skiing provided a means of travel between isolated communities, provided a technique for the hunter which aided his survival in snow-bound regions, and was also used in conducting war in Norway as early as 1184 A.D. As could be expected, use of skis led to racing, and Norwegian military contests involving downhill racing were held during the late 18th Century.

<sup>1</sup> Smith, Kenard E. Location Analysis of High-Volume Skiing in Western United States, Xerox University Microfilms, Ann Arbor, Michigan 48106, 1975, pp. 1-55.

The Norwegians developed steering and stopping techniques, which elevated Alpine skiing and ski jumping in Scandinavia to the high status it holds today. Skiing as a sport followed the migration of Norwegian skiers around the world. Hannes Schneider from the Arlberg region of Austria developed techniques emphasizing speed, edging and the shifting of weight from ski to ski, which made skiing easier and more attractive for the average alpine visitor. Sir Henry Lunn, an Englishman, is credited with starting the promotion of winter tourism by inviting some influential British friends to France for a winter holiday in 1898.

Skiing was further enhanced by the military use of skis and by the first Winter Olympics at Chamonix, France, in 1924. Great improvements were made in ski equipment and in the development of transportation devices to carry a skier or pull a skier uphill--rope tows, T-bars, trams and chairs. The first chair lift in the U.S. was developed in 1938 at Sun Valley and its current popularity is well-known, as it dominates uphill transporta-

tion. Ski trains became popular in Winter Park, one of the first ski areas in Colorado, when the area was reached by skiers who came through the Continental Divide via the Moffat Tunnel.

As interest picked up in skiing, early ski resorts developed in response to the desire to ski, particularly at areas near large urban markets. A few ski resorts such as Sun Valley, were developed far from urban markets, offering complete lodging, dining and entertainment at the ski slopes--very typical of today's destination ski resorts. Eastern ski areas thrived on skiing's new popularity and efficient train service. Consequently, despite the depression, skiing grew from participation by a small hardcore group--ski jumpers and college club students--to a \$200 million enterprise prior to World War II.

The post-World War II impact was dramatic. The skiing industry capitalized on new equipment developed, ranging from snow vehicles and ski clothing to improved boots and skis. The members of the Tenth Mountain Division returned to the mountains where they trained to virtually build a major industry. Approximately 90 ski areas, primarily with rope tow installations, were in existence in 1947. During the 1950s, the number of ski areas grew to over 200, and this rapid growth has continued with skiing gaining mass appeal. It is an "in" thing to do, and leading ski resorts thrive. Skiing has become not only a form of recreation, but a big business. Resorts, ski clothing, ski equipment, transportation, and real estate have all become part of making skiing a major winter recreation industry.

During the 1960s and 1970s, skiing has reached high volume proportions. The 1960 Winter Olympic games held at Squaw Valley, California, received live television coverage which greatly enhanced the U.S. public's interest in skiing. Today we find that ski areas in the United States and Canada are catalogued in the White Book of Ski Areas, published by Interski Services, P.O. Box 3635, Georgetown Station, Washington, D.C. 20007. This book lists approximately 925 ski areas with 725 being in the United States and 200 in Canada. They acknowledge that there are additional areas of a small nature, primarily rope tow, which are not listed and which do not operate consistently from year to year.

Today, in 1980 we find that skiing closed out the 1970s with a rush. Recent studies put the number of U.S. residents skiing at over 14 million. In 1976, retail sales of snow and skiing equipment totaled over \$404 million. The 1977-78 ski season was the best in history all across the continent. The industry is

estimated to be growing at approximately 7.5-9 percent per year. In 1978-79, Colorado led the nation in lift tickets issued, with 7,215,316. Participation in skiing has been growing at a rapid rate. The A. C. Neilson Company's Sports Participation Survey conducted in 1979 shows an overall increase of approximately 40 percent from the numbers in the 1976 study and the 1976 study was up by approximately the same amount over the 1973 study.

#### FACTORS AFFECTING THE FUTURE OF SKIING

There are certain basic factors that affect the market for skiing. Since these are general factors, they also affect the market for other outdoor recreation activity to an almost equal degree. Since our task is to look at trends in skiing, we will focus on these factors from a skiing perspective. Readers should recognize they may apply equally as well to other forms of outdoor recreation.

Like any other product, skiing requires people with income and a willingness to spend in order to generate successful markets. Some of the major factors that affect the market for skiing are population trends, income, sex, education, occupation, time, attitudes, fashion, custom, habit, tradition, life styles, and energy. This brief list is illustrative of major factors affecting tourism that the ski area manager must be concerned with.

#### Population Trends

It takes people to create a skiing market, and as we all know the population in the United States has been increasing rapidly. Although the growth rate has slowed considerably in the last decade, the numbers are still increasing and will continue to do so. As of July 1, 1975, the U.S. population was estimated to be approximately 214 million. In 1980 it is expected to be 222 million; in 1985, 233 million; in 1992, 244 million. These population numbers indicate that the trend is favorable for the future of skiing. More important to the future of skiing than just sheer population numbers is the mix or profile of ages.

#### Age

The age factor is probably of greater interest to ski area managers than any other population figure. Here we have both some plusses and minuses.

Teenage Segment. The teenaged population is now declining after record growth in the 1960s. Even so, this group bears close exami-

nation. This is a group from where future skiers come. While the total population in the U.S. is projected to grow about 10 percent during the next ten years, there will be something like a 7 percent decrease in the number of teenagers. In spite of this decrease, they will still number around 25 million in 1990, versus approximately 29 million today.

The Young Adult Segment. The number of people 20-34 years old is expected to increase from about 57 million in 1980 to 62 million by 1985. The 20-34 year olds who now comprise the largest segment of the adult population will still be the largest group by 1985 and will continue to dominate up to 1990. These figures make the future of skiing very bright indeed, because this is the heart of the skiing market. This is the group that is important for ski marketers to get on the slopes, as evidence shows that they will continue to ski until they are approximately 50 years of age.

The 35-49 Segment. The 35-49 year old group will increase over 30 percent to approximately 46 million in the United States by 1987. This is another very important group for the future of skiing. This group tends to heavily populate destination ski resorts and travel by air.

Senior Citizen Segment. Another major population category that deserves to be watched is the Senior Citizen group. The number of people over 65 will increase about 20 percent to 27 million in the 1980s. This group tends to be the least mobile of our population, and tends not to ski. With the increasing numbers in this segment, perhaps it deserves more attention than it has received in the past, as the over-60 age group at ski areas show relatively steady percentages. Ski area operators need to examine how these numbers can be increased.

#### Income

Buying power is another critical factor affecting the demand for skiing. The skier typically tends to be high scale, earning above the average income of the U.S. population. The 1977 National Travel Survey shows a direct relationship between family income and travel. Families with incomes over \$25,000 per year were heavy travelers, taking almost five times as many trips as those with incomes of less than \$5,000. A similar situation exists in skiing, where income correlates closely with participation in the activity.

#### Sex

Throughout history, skiing has been

dominated by the male sex and it continues to be. However, the trend that should be observed is that more and more women are skiing, and the future will see larger and larger numbers of women on the slopes. Almost 53 percent of the adult population are women, and their longevity continues to increase. The women's movement has dramatically changed the role of women. During the past five years, the number of single adult women rose approximately 40 percent to over 8 million; 71 percent are 20-34 years old; half of them have incomes of \$10,000 or more; almost half have gone to college; and almost 70 percent are working. For many women, the home has ceased to be a full-time occupation. Women have earned increasing responsibilities in the traditional work of men, leading to new levels of female education and economic and social independence. Consequently, women represent a tremendous potential for skiing.

#### Education

Education has always been a factor which stimulated travel. It affects skiing the same way with skiers being a very highly educated group. Trends in education show greater and greater proportions of the adult population to complete additional years of education. The Census Bureau projects that by 1990, 74 percent of people 25 and over will have four years of high school, compared to 65 percent in 1977. In 1977, 29 percent of the adult population had completed one or more years of college, while at least 33 percent are expected to have done so by 1990.

#### Occupation

Occupation is a factor that is closely related to income and education. There are also certain life styles associated with occupations, and this has an impact on whether individuals are likely to ski or not. Studies have shown that the occupational classification of the household head producing the greatest number of ski trips were in the professional, technical and managerial areas. The 1977 National Travel Survey shows the same occupational classifications produced the greatest number of person trips, as well. During 1970 to 1980 there was a 40 percent increase in combined numbers of professional, technical and managerial workers--twice the percentage increase for the labor force as a whole. This obviously speaks well for the future of skiing.

However, there are more workers in other occupational categories. Income is growing more quickly among lower socioeconomic strata. This group typically has not skied. However, there is no question that today they are

moving into the same income classes that skiers come from. Market analysis shows that consumers no longer fit neatly into categories of income, age, sex, and occupation. Plumbers, for example, may now have the income of university professors, but their spending habits are quite different. The potential is there, however, for this market to emerge as active skiers.

#### Attitudes

Attitudes toward leisure and recreation have changed over the years. We have moved from a Protestant work ethic to a leisure ethic. The length of the work day in the United States has been compressed from about 12 hours to 8; the number of days worked per week has declined from 7 to 5 or even fewer; and the population's attitude toward travel, leisure and recreation has shifted from being a luxury to a necessity. It seems quite clear that future generations will view leisure quite differently than those of the past. They will view it as a right, as one of the most meaningful aspects of their lives, and this attitude change will greatly enhance skiing.

#### Time

Another factor affecting skiing is free time. Not only does it take money to ski, but it also takes time. The amount of free time or leisure time available to the average person in the U.S. will continue to increase, which will assist in the further growth of skiing. The practice of granting paid vacations and holidays will continue to grow, and it will be these blocks of free time that will assist the growth of the ski industry. The Uniform Monday Holidays Act provided additional blocks of time, and it is interesting to note that for most ski areas, the three-day weekend in February including President's day tends to be the peak ski day of the year. Christmas, another typical vacation period when the family is required to stay home because of school, is another major peak time.

#### Fashion

Fashion is another factor affecting skiing, as fashion is universal in U.S. marketing today. It applies not only to women's clothing, but virtually every product and service you can mention, including recreation and transportation. Skiing is a fashionable activity in today's society. Ski clothing has a definite fashion element. It appears that for the near term, skiing will continue to be a very fashionable and popular activity.

#### Energy

Energy is a factor we have not had to deal with in skiing until 1974. It is one of those irregular factors that can come into the picture and dramatically affect all the usual factors, such as population, buying power, etc. There is no question but what today one would be remiss in not talking about the energy situation as a major factor affecting skiing and other forms of outdoor recreation. The majority of skiers still arrive at the ski area by automobile. In the study, The U.S. Skiing Market: A Nation-Wide Study of Skier Behavior Attitudes and Motivations Among Alpine and Nordic Skiers, conducted by Opinion Research Corporation for Skiing Magazine in 1978, the personal car is shown as the most popular means of transportation used by eight out of ten current skiers. Each of the other means of transportation--bus, rental car and train--are used by less than four percent of skiers. Because of this, the fear of not being able to buy gasoline will be a major travel deterrent. Consequently, long-term trends that may result from energy problems are: (1) an increase in package tours and increased tour groups which are energy efficient and provide transportation security for the skier; (2) an increase in smaller, less comfortable, more energy-efficient automobiles; (3) an increase in travel to ski areas closer to home; (4) less frequent trips, but an increased length of stay.

An impact which may have considerable importance to the sport of skiing is the result of high heating costs in northern states changing the traditional school year pattern. There has been talk of having vacation time during the coldest winter months to save energy and to have four day school weeks during the winter with the times made up during milder weather. If these actions take place, it would provide additional time for ski vacations and could be a real boon for skiing. When it comes to energy priorities, it is believed that consumers will give up other activities before relinquishing their vacation and recreation activities.

#### Changing Life Styles

Income does not ski, occupation does not ski, education does not ski--people ski. The decision to ski or not to ski involves an intricate set of wants, needs, desires and expectations. These belong to people who are constantly changing. It is clear that skiing remains a major option for affluent, educated people to choose to occupy their free time, but skiing is only one of many options available. Today more people are concerned with self-fulfillment, trying out new life styles,

and searching out new pleasures. In this environment, skiing has become a competitor, bidding against other leisure time activities for the consumer's attention and a share of his time and dollars. Today there is a great merging of recreational life styles, with little distinction between social classes, as millions of people become more financially and physically mobile. While income is still a good indicator for marketers, an analysis of income is no longer a sure guide to the patterns of recreational usage.

The ski area planner must examine and keep up with changing life styles. The fact that young adults are a growing force in our economy, with their new values and attitudes, must be analyzed. Take marriage, for example. The attitude of young people is quite different from today's 35-49 year old age group when they were young. Today's young people are getting married later, if they get married at all, and this is creating growing numbers of single people. In the past five years, the singles market has grown from 10 million adults under the age of 35, to 15 million. This enormous singles market is continuing to grow. There is also the divorced segment of the singles market, approximately 11 million people in the U.S. are divorced or separated. Recent figures indicated that there was one divorce for every two marriages. The singles life style appears to be very compatible with outdoor recreation activities such as skiing.

#### Conclusion

The factors that have been sampled point out that in the skiing market place it is necessary to recognize that people will change in coming decades. Their customs, values and life styles will go through the usual metamorphosis of time. If the ski area planner is to forecast trends with a profitable foresight, he must be a student of the factors affecting the skiing scene.

#### SKIING TREND INFORMATION

It's time to move from the general to the specific and talk directly about skiing and what has been going on in the sport of skiing. When we talk about skiing, we typically think of alpine or downhill skiing, but today with the rapid growth of cross-country skiing, it needs to be included in any analysis of the sport.

Just as skiing has come a long way from its small beginnings, so has ski research and information on the industry. For years, skiing was plagued by the lack of good information, but today we are fortunate to have a

number of studies on the industry which provide valuable insights into the skier, the market place, actives, inactives, nonskiers, and potential skiers.

One of the benchmarks on the sport of skiing is provided by the A. C. Neilson Company with their 1979 Neilson Sports Participation Survey. This survey is the fourth in a series of three year measurements designed to monitor the participation of the public in major sports activities. Neilson conducted their first nation-wide sports participation study in 1970, covering 13 sports categories. In 1973 they launched their second survey, making it much more comprehensive measuring 25 sports and conducting the survey via telephone. In 1976, the third survey was conducted with the number of sports covered increasing to 27, and the project was patterned after the one in 1973 to enable trends in sports participation behavior to be traced. The 1979 survey follows the same data collection techniques that were designed in the 1973 and 1976 studies, and it covers 30 sports categories. The interviewing was performed during the March-April period, dovetailing the time of the data collection in the 1976 study. This had the advantage of holding seasonal variables to a minimum and being virtually the ideal time to collect skiing data. Consequently, Neilson's data provides an important benchmark from which to explore skiing.

In any study, it is important to learn what definitions are used, and the A. C. Neilson people note that a participant/player for the purposes of their study is defined as an individual who participates in an activity or plays a sport "from time to time" during the past year. Neilson's data indicates that snow skiing is a very popular sport increasing participation at a very rapid rate. There was approximately a 40 percent increase in participation in skiing in 1979 over 1976, on top of an approximately 40 percent increase between 1973 and 1976. This has brought current participation in this sport of snow skiing to a level of 6.8 percent among individuals, which projects to approximately 14.6 million skiers. This figure is very close to the figures published by Skiing magazine in their U.S. Skiing Market study and by the Forest Service in their Nationwide Skier survey. Slight differences in totals exist because different age groups were included, but when these differences are accounted for the study results are remarkably similar.

More important than the numbers participating is the makeup of those numbers. For example, a beer manufacturer wishes to know who his light, medium and heavy users are. The same should be true in skiing. You want

to attract the heavy skiers or serious skiers to your resort. About 20 percent of the skiers account for about 60 percent of the participation. Light skiers skiing 5 days a year or less amount to about 45 percent of the participants and account for about one-eighth of the participation. Heavy skiers ski twenty days or more per year.

Important benchmarks to remember are that of the approximately 76 million households in the United States, 12.4 percent have one or more family members who ski. This is up from 1976 when the incidence was 8.6 percent. On the average, each skiing household contains 1.6 members who ski.

Highlights show that the average downhill snow skier has been skiing for over six years, and cross-country participants have been skiing for about 3.75 years. In 1976 downhill skiers averaged slightly over six years of activity in skiing. The number of miles traveled in order to reach snow ranged from less than one mile, to 1,000 miles or more, with the average one-way trip representing a distance of slightly over 200 miles. This compares to a similar average of nearly 200 miles in 1976. Cross-country skiers do not travel quite as far--an average of 83 miles. The automobile continues to be the primary mode of transportation used to travel to the downhill snow skiing area, at 87 percent, while 73 percent of the cross-country skiers use the automobile. Each downhill trip lasts an average of nearly three days, while cross-country skiers average about 1.7 days per ski trip.

Fourteen percent of the downhill snow skiers and 24 percent of the cross-country skiers stated that they purchased skis during the past 12 months. The average price for a pair of downhill skis was \$170, while the average price for a pair of cross-country skis was \$90.

Another benchmark study was the previously mentioned U.S. Skiing Market Survey conducted for Skiing Magazine by Opinion Research Corporation. This study found that almost 10 million adults do some snow skiing each year, either Alpine or cross-country or both. In addition, there are over four million teenaged snow skiers, for an overall total of almost 14 million people aged 12 or over who skied during the 1976-77 season. They found that 58 percent of all adult skiers are male, and 42 percent are female. Skiers who ski alpine exclusively account for 72 percent of all skiers, while 11 percent engaged in cross-country only, and the remaining 17 percent skied both alpine and cross-country.

Skiing enthusiasts are demographically different from the total U.S. population, as

has been shown in many other studies. For example, their study showed that males account for 59 percent of all Alpine skiers, 53 percent of all cross-country skiers, but only 48 percent of total U.S. adult population. Approximately one-half of all skiing enthusiasts are single, compared to only one in five U.S. adults who are single. Approximately seven out of ten adult skiers are under 30, but only three out of 10 adults in the U.S. population are under 30. The skier has a higher level of education; approximately 20 percent of alpine skiers and 30 percent of cross-country skiers have achieved post-graduate levels of education, while less than 10 percent of adults in the total U.S. population have done any post-graduate work. Skiers also have high income levels compared to the U.S. population, with 32 percent of alpine skiers and 26 percent of cross-country skiers living in households with \$25,000 and over annual income, while only 16 percent of the total population live in such households. Employment dovetails income, and skiers tend to hold more prestigious occupations; approximately 60 percent of skiers are in a professional or managerial capacity while less than 30 percent of employed adults in the U.S. are in professional/managerial occupations.

This survey also covered motivations for skiing, which it grouped into three major categories: (1) those related to health/esthetic factors; (2) activity/sports related factors; and (3) personal/social factors. The three types of factors were about equally important to Alpine skiers while the health/esthetic factor was by far the most important to cross-country skiers. Skiing is a social activity, and the Skiing Magazine survey points out the importance of this, revealing that six out of ten skiers were introduced to skiing by friends and almost four out of ten by family members.

It is common in ski surveys to ask skiers to classify themselves according to their level of experience or ability. This is always an interesting exercise and one wonders how the rating would compare with an instructor or a ski patrolman's. In any event, in the Skiing Magazine survey, 25 percent of the Alpine skiers classified themselves as beginners, 25 percent as intermediates, and 50 percent as advanced or expert.

Well over 50 percent of the Alpine skiers took overnight skiing trips during the 1976-77 season and averaged close to eight skiing trips during the 1976-77 season, while cross-country skiers averaged over nine trips. Alpine skiers spent an average of 11 days, and cross-country skiers approximately 13 days, on skiing trips. As mentioned previously, the personal car is the most common means of transportation to the ski area, being utilized

in 82 percent of the cases.

The three leading states for Alpine skiers were Vermont, New York and Colorado, while the three leading states for cross-country skiers were Vermont, New York and New Hampshire. There were 6.5 million skiing households with one or more adults during the 1976-77 season. The average expenditure by these households on ski trips was \$395, for a total expenditure of approximately \$2.6 billion. Transportation and lodging each accounted for 25 percent of the total household expenditures on skiing trips, with fees, lifts and rentals accounting for 29 percent; and food, beverage, amusement, etc., accounting for the balance of 21 percent. Six percent of the skiers feel that the cost of skiing in the past five years has increased less than most things they buy, while 63 percent feel that it has increased as much as most things they buy, and 31 percent feel that it has increased more than most things purchased.

The Skiing Magazine survey also included information on past skiers. They estimated that there were 7 million past skiers--adults who skied during the four-year period of 1972 to 1976 but did not ski during the 1976-77 season. Comparing past skiers to current skiers, both differences and similarities showed up. The main differences were in sex, marital status and age, with past skiers more likely to be female (48 versus 42 percent); married (58 versus 42 percent); and over age 30 (37 versus 29 percent). There were no noticeable differences in education, income and employment. The past skier had been active in the market for approximately six years, and about half of them were at the intermediate or higher skiing level. Past skiers most often cited expense, 43 percent, and time, 36 percent, as their reasons for not having skied last season. Close to one-third of the past skiers reported not having skied because ski conditions were not good enough in the 1976-77 season. Fifty-five percent of the past skiers planned to resume their skiing during the 1977-78 season.

A final area explored was leisure time activities. This showed that the skier is a physically active person who engaged in numerous leisure time activities. The most popular other activity was swimming, followed by bicycling and tennis. In comparing the segments of the skiing market, the serious alpine, other alpine and cross-country skiers, all of them favor the same top five leisure time activities: swimming, tennis, bicycling, camping and fishing.

Another benchmark study is the Growth Potential of the Skier Market by the U.S. Forest Service, a nation-wide study of the

skier market conducted cooperatively in 1978 by the Northeastern Forest Experiment Station, U.S. Forest Service, under contract with Sno-Engineering Inc. and Opinion Research Corporation. This telephone survey in the spring of 1978 provided data from 2,191 active, potential, and inactive skiers drawn from 7,106 households. This comprehensive examination of skiing includes regional descriptions of the present skiers, former skiers and people who would like to take up skiing in the future. It also provides estimates of the sizes of the various skier market segments, detailed descriptions of public images and attitudes toward skiing, its cost, attractions, facilities and market needs.

This study essentially verified the results of the earlier studies regarding the number of active skiers in the U.S. In 1978, 11.2 million individuals considered themselves downhill skiers and another 1.7 million stated they were cross-country skiers, equalling a total of 12.9 million active skiers 16 years of age and over.

The inactive skiers were broken down into two groups: (1) the permanently inactives, and (2) the temporarily inactives. Among the latter group there were identified 6.4 million downhill skiers and 400,000 cross-country skiers, for a total of 6.9 million. This figure is over one-half as large as the active skier base.

The third major class, the high potential skier, was persons 26 years old or younger who expressed a strong interest in skiing and had friends who skied. A total of 7.3 million persons were identified as having a high probability of trying either downhill or cross-country skiing.

Collectively as many as 27.1 million people could be skiing in the future. This would represent an increase of over 100 percent in the number of currently active skiers. See Table 1.

The mobility of skiers has an important bearing on the future demand. Based upon the U.S.F.S. study, skiers in the East and West tend to ski within their region. Southern and Midwestern skiers visit areas out of their own region. About 80 percent of Southern skiers skied in areas other than the South in 1977-78. Thirty-nine percent visited the West and 32 percent skied in the East. Thirty percent of the Midwestern skiers went out of region to ski during the 1977-78 season, with 22 percent skiing in the West and 8 percent visiting the East. During that season, the West accounted for 43 percent of all vacation skier visits, while the East (32 percent) and Midwest (19 percent) hosted the bulk of the remaining

Table 1.--Regional distribution of major skier market classes and skier days, 1977-78

|                        | North |         |       |           |
|------------------------|-------|---------|-------|-----------|
|                        | West  | Central | South | Northeast |
| Potential <sup>a</sup> | 20%   | 30%     | 34%   | 16%       |
| Active                 | 31    | 25      | 14    | 30        |
| Inactive <sup>b</sup>  | 31    | 25      | 20    | 24        |
| Skier Days             | 38    | 15      | 3     | 44        |

<sup>a</sup> High potential only.

<sup>b</sup> Temporarily inactive only.

visits. The implication is that the West is the most highly used ski region of the country and among potential skiers it is the most frequently mentioned region in which this class of skier would like to ski.

#### SUPPLY OF SKIING

##### Introduction

As has been discussed in the previous section, the latent or potential demand as well as the existing demand for skiing as expressed by psychographics is very strong. Such factors as disposable income, competing activities, life style changes and age cohort shifts may act as mitigating forces holding back the realization of only the most optimistic projection for skier growth. However, the most severe constraint on demand will not come from the demand side of the equation at all, but rather from the supply side--the ski facilities being unable to meet the potential increase in skier activity. In assessing the future growth of skiing, capacity and utilization of existing areas must be considered as well as the probability of new areas coming on line with additional capacity.

A ski area is similar to an airplane--once the plane has left the ground, the empty seats can't be sold. Likewise, unused capacity that existed on a Saturday on a ski hill can't be saved for Sunday. Ski area capacity is a function of a multitude of variables: length of season, quality and quantity of snow, proximity to metropolitan areas, mountain terrain, capacity, lift capacity, availability of lodging and weather. All of these elements may cause a downward adjustment of the design capacity of an area.

Ski areas are capital intensive facilities that require long lead times for design, approval and construction. Historical performance of ski areas has not been good enough

to promote a strong and active investment pool for new areas. Energy, environmental consciousness, lack of competitively attractive sites and the high cost of capital are all potential deterrents to new area development.

Two questions arise which have a strong bearing upon the future growth of skiing. The first, "Does existing capacity meet the projected demand for skier visits?" Secondly, "Is the demand great enough to encourage developers to take the risks necessary to bring new areas on line?"

##### Historical Supply

In 1960 there were approximately 240 ski areas in the U.S. By 1968 the number had grown to 600, an increase of 360 areas or 150 percent in eight years. However, in the next ten years between 1968 and 1978 only 100 new areas were built. The 12 percent per annum growth rate which produced an average of 45 new areas per year during the early 1960s leveled off rapidly after 1968 and slowed to 1.5 percent per annum and 10 new areas annually through 1978.

In 1960 38 percent of the areas were in the East, 15 percent in the Midwest and 47 percent in the West. By 1968 with the rapid development of new areas, 52 percent of all areas were in the East, 17 percent in the Midwest, and only 31 percent in the West. Ten years later the percentages remain approximately the same due in part to the decreased activity in area development and also to the greater capacity of the Western areas.

The total number of ski areas expresses the availability of opportunity. If the number of areas is defined geographically, the relationship between ski areas and population centers can be generally related. However, while the number of new areas added over time may express the relative interest in ski development, it does not define the change that occurs in skier capacity. A more precise measurement tool is required if we are to accurately portray the increase in capacity as well as the geographic distribution of that capacity.

The most explicit measurement would come from the execution of a comfortable carrying capacity (CCC) analysis of each new area as well as each expanded area. Unfortunately, the data base does not exist in sufficient detail to undertake this approach, whereby the lift capacity, trail acreage and round trip interval of the skier are evaluated to arrive at an area's CCC.

Vertical Transport Feet per Hour (VTFH)<sup>2</sup> and total number of lifts installed provide a measure of capacity though not as definitive as CCC. Analysis of lift construction figures over the past 20 years provides a benchmark for evaluating the growth in capacity as it relates to the geographic dispersion of lifts. Coupled with VTFH, a fairly accurate picture of the industry's growth can be drawn.

Table 2, Historical Growth of Ski Lifts, depicts the last two decades activity of new ski lift development by region. During the nine-year period from 1960-1968, 1,140 new lifts were built, an average of 143 lifts per year. During the next 10 years, only 995 lifts were added, or 100 per year, a decrease of over 30 percent per year. The initial thrust of development activity (1960-1968) took place in the East where a 10 percent increase in total share of lifts was realized at the expense of the West during the period. By the end of 1978 the West's growth had once again outpaced the East's, as had the Midwest's, and the distribution of lifts was equal East and West, each accounting for 41 percent.

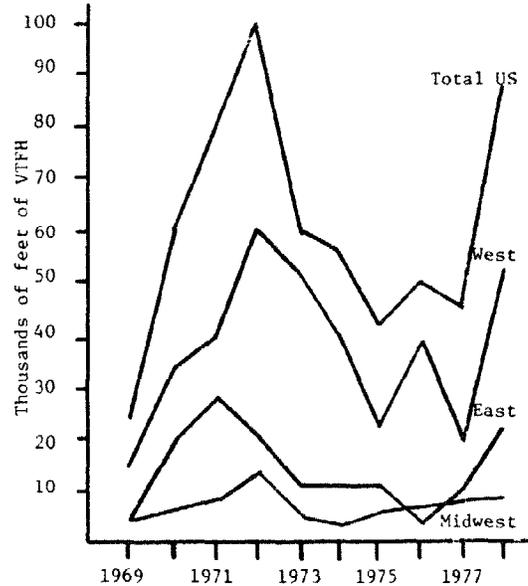
Table 2.--Historical growth of ski lifts.

|         | 1960 |     | 1968  |     | 1978  |     |
|---------|------|-----|-------|-----|-------|-----|
|         | #    | %   | #     | %   | #     | %   |
| East    | 175  | 36% | 740   | 46% | 1,067 | 41% |
| Midwest | 75   | 16  | 250   | 15  | 464   | 18  |
| West    | 225  | 49  | 625   | 39  | 1,079 | 41  |
| Total   | 475  |     | 1,615 |     | 2,610 |     |

VTFH is an expression of the quantity of uphill capacity provided by a lift or system of lifts. It therefore is the best estimate of the capacity increases that have occurred over time. From 1969 through 1978, 618,800 VTFH were added to the supply of U.S. skiing. Figure 1, Ten Year Growth Summary of VTFH, demonstrates the rate of growth by region that has occurred over the 10-year period. During this period the West has been adding an average of 12 lifts per year more than the East, and as is shown in the figure, the West added 150 percent more VTF during the period. The average capacity per new lift in the East was 579 VTFH, while in the West it was 983 VTFH per lift.

<sup>2</sup> Vertical transport feet per hour--the number of skiers who can be transported 1,000 feet in one hour.

Figure 1.--Ten year growth summary of VTFH



Source: Various Ski Area Management magazines.

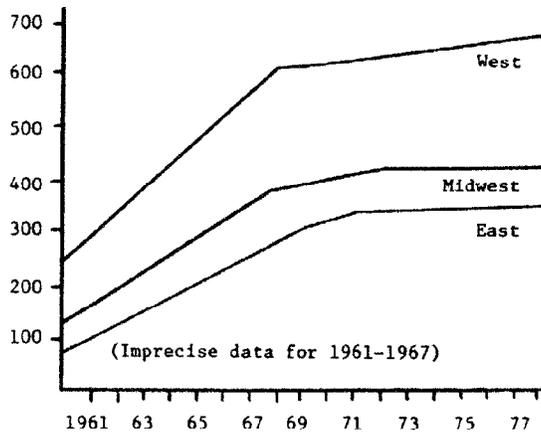
The sharp rises and falls of new VTFH construction by year demonstrates the industry has not added capacity at a steady rate either nationally or regionally. In attempting to correlate added VTFH/year with new areas coming on line, it was revealed that only in a very general way was there a positive relationship between the two. When many new areas were built, the average VTFH per area tended to be low. On the other hand, in years when few areas were added (as was the case in the middle 1970s) the average VTFH per area was much greater. New lifts at existing areas as well as replacement of old lifts diminish the total capacity increase as a result of additional VTFH.

This factor when coupled with the lack of a smooth growth curve VTFH suggests that the supply of skiing has not been empirically responsive to demand. Rather exogenous variables, such as availability of investment capital, expansion potential of existing areas, good snow years, Federal and local governments, approval of new areas and developer interest are factors contributing to the expansion of capacity.

Figure 2, Ski Area Development 1960-1978, depicts the growth and distribution of ski areas in the U.S. Coupled with Figure 3, Ski Lift Inventory 1960-1978, the picture of the historical development and current supply

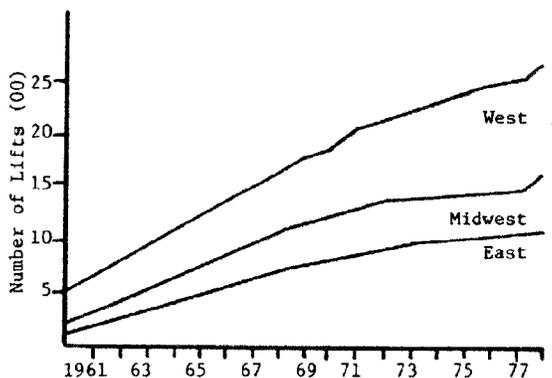
of ski facilities in the U.S. is portrayed.

Figure 2.--Ski area development, 1960-1978.



Source: Various Ski Area Management issues, Sno-engineering, and U.S.F.S.

Figure 3.--Ski lift inventory, 1960-1978.



Source: Various Ski Area Management issues, lift manufacturers, and Sno-engineering.

### Utilization

Understanding utilization of facilities is paramount to determining the need for additional capacity. It is also extremely difficult to define and accurately measure. The number of variables considered is great and the precision with which some of them can be measured is no better than judgmental. One must consider: total acreage of ski terrain, density per acre of skiers by

ability class, ability of lift systems to transport skiers, length of season, length of day, quality of snow, VTFH required by various skill levels of skiers, waiting time in lift lines, number of down days per season and availability of night skiing just to highlight the list.

The Forest Service has developed a scheme for estimating daily and seasonal capacity that is a reasonably good general model useful for analyzing the demand supply relationship. Under the U.S. Forest Service model, uphill capacity, slope capacity, food and beverage capacity and parking lot capacity are evaluated, calculated, and consensus daily capacity estimates derived. To arrive at seasonal capacity the 100 days generally agreed upon as constituting the "high season" (the period from December 16, 1978-March 25, 1979, for example) is multiplied by the daily capacity to yield a seasonal capacity estimate. Within the truncated season are two time periods which historically exhibit different use characteristics--weekdays comprising 71 percent of the season and weekends comprising 29 percent of the season.

The truncated season may, in fact, represent the entire season in some years for certain regions of the country such as the East and Midwest. In other parts of the country, primarily the far West, the truncated season may represent only 60 percent of the total season. An evaluation of utilization of areas during the truncated season by weekend and weekday as well as a comparison of the percent of total visits accommodated during the truncated season to the entire season produces an estimate of total utilization. Discussion of this analysis in light of future demand will begin to permit insight into future supply requirements needed to yield a balanced supply-demand equation for downhill skiing.

In Table 3, Analysis of Truncated Season, a representative sample of ski areas operating on U.S. Forest Service land is enumerated along with the operating characteristics of the areas during the truncated season. A selection of those areas and their operating characteristics are included in Table 4, U.S.F.S. Ski Area Operating Characteristics, in order to highlight the key findings of the skier visit data.

In the East and Midwest the 29 percent of the truncated season occurring on weekends produced an average of 50 percent of all skier visits. Those areas with destination skiing tended to have a lesser proportion of their skier visits occurring on weekends. Weekend utilization rates in the East fell in the 55-65 percent range and weekday utilization was in the mid- to high 30 percent

Table 3.--Analysis of truncated season.

| Area                 | Percent of Skier Visits Occurring on Weekends | Percent of Total Skier Visits | Area              | Percent of Skier Visits Occurring on Weekends | Percent of Total Skier Visits |
|----------------------|---|-------------------------------|-------------------|---|-------------------------------|
| <u>California</u>    |   |                               | <u>Michigan</u>   |   |                               |
| Holiday Hill         | 41%   | 89%                           | Caberfae          | 48%   | 95%                           |
| Sierra Ranch         | 48  | 80                            | Indianhead        | 50  | 85                            |
| Kirkwood             | 46  | 75                            | Blackjack         | 66  | 93                            |
| Mammoth              | 44  | 73                            | <u>Minnesota</u>  |   |                               |
| Heavenly Valley      | 38  | 85                            | Lutsen            | 54  | 90                            |
| <u>Washington</u>    |   |                               | <u>Colorado</u>   |   |                               |
| Alpental             | 48  | 92                            | Loveland          | 50  | 63                            |
| Crystal Mountain     | 56  | 82                            | Vail              | 33  | 86                            |
| Mt. Baker            | 74  | 83                            | Aspen             | 28  | 89                            |
| Ski Acres            | 47  | 88                            | Eldora            | 43  | 73                            |
| <u>Oregon</u>        |   |                               | Purgatory         | 41  | 88                            |
| Mt. Bachelor         | 47  | 76                            | Copper Mountain   | 39  | 85                            |
| Mt. Hood             | 49  | 91                            | <u>Montana</u>    |   |                               |
| Multorpor            | 56  | 98                            | Red Lodge         | 53  | 76                            |
| <u>New Hampshire</u> |   |                               | Big Mountain      | 38  | 80                            |
| Mt. Attitash         | 46  | 100                           | Big Sky           | 40  | 85                            |
| Loon                 | 56  | 98                            | <u>Wyoming</u>    |   |                               |
| Waterville           | 44  | 89                            | Medicine Bow      | 64  | 82                            |
| Wildcat              | 52  | 88                            | Jackson Hole      | 42  | 92                            |
| Bretton Woods        | 52  | 100                           | <u>New Mexico</u> |   |                               |
| Cannon               | 48  | 100                           | Taos              | 39  | 81                            |
| Gunstock             | 47  | 100                           | Red River         | 43  | 93                            |
| <u>Maine</u>         |   |                               | Sierra Blanca     | 50  | 87                            |
| Sugarloaf            | 50  | 93                            | <u>Arizona</u>    |   |                               |
| <u>Vermont</u>       |   |                               | Arizona Snow Bowl | 44  | 90                            |
| Bromley              | 46  | 92                            | <u>Utah</u>       |   |                               |
| Mt. Snow             | 48  | 96                            | Brianhead         | 50  | 84                            |
| Sugarbush            | 35  | 98                            | Alta              | 40  | 71                            |
| Mt. Mansfield        | 35  | 98                            | Snowbird          | 36  | 71                            |
| Killington           | 42  | 90                            | <u>Idaho</u>      |   |                               |
|                      |   |                               | Sun Valley        | 32  | 91                            |

Table 4.--U.S.F.S. ski area operating characteristics.

| Region/Area         | Skier Visits on Weekends | Weekend Utilization | Weekday Utilization | Overall Utilization | Total Visits Truncated Season |
|---------------------|--------------------------|---------------------|---------------------|---------------------|-------------------------------|
| <u>East</u>         |                          |                     |                     |                     |                               |
| Sugarbush, VT       | 35%                      | 49%                 | 39%                 | 41%                 | 98%                           |
| Loon Mountain, NH   | 56                       | 69                  | 35                  | 45                  | 98                            |
| Sugarloaf, MA       | 50                       | 56                  | 35                  | 45                  | 93                            |
| Cannon Mt., NH      | 48                       | 50                  | 23                  | 31                  | 100                           |
| Killington, VT      | 42                       | 65                  | 39                  | 47                  | 90                            |
| <u>Midwest</u>      |                          |                     |                     |                     |                               |
| Indianhead, MI      | 50                       | 71                  | 29                  | 42                  | 85                            |
| Caberfae, MI        | 48                       | 66                  | 28                  | 40                  | 95                            |
| Lutsen, MN          | 54                       | 86                  | 30                  | 47                  | 90                            |
| <u>West</u>         |                          |                     |                     |                     |                               |
| Aspen, CO           | 28                       | 56                  | 61                  | 59                  | 89                            |
| Vail, CO            | 33                       | 102                 | 87                  | 92                  | 86                            |
| Snowbird, UT        | 36                       | 68                  | 53                  | 57                  | 71                            |
| Mammoth, CA         | 44                       | 88                  | 48                  | 60                  | 73                            |
| Heavenly Valley, CA | 38                       | 71                  | 49                  | 55                  | 85                            |
| Mt. Baker, WA       | 74                       | 246                 | 37                  | 100                 | 83                            |

Source: U.S.F.S. Pricing Study Printout, August 1979.

range. Overall utilization levels were in the mid-40 percent range. Generally, the East is in a position of having excess skiing capacity over the entire season with weekday capacity allowing for more than a doubling in skier visits. It is apparent that the length of season in the East generally coincides with the 100-day truncated season and little opportunity to accommodate skiers outside this time period exists.

In the Midwest, weekend use of the areas was high and the weekday utilization extremely low. The net effect is that overall utilization was about the same as experienced in the East during the 1978-79 season. The greatest opportunity for accommodating additional skiers in the region occurred during the week when more than a doubling of skier visits can be realized before excessively high utilization would result. A secondary opportunity for additional skier visit accommodation would be to increase the use of the shoulder seasons on either end of the truncated season. Based on a rather limited sample of the Midwest areas (only those operating under U.S.F.S. leases) the supply of available skiing appears to be adequate to meet the current and projected demand assuming a shift in demand away from weekend use can be effected.

The West, as would be expected, is the most difficult region to assess. The large geographic distribution of ski facilities coupled with the complex nature of the skier mix makes generalization of the regions ski facility analysis inappropriate. Those areas serving a predominately local day skier market exhibited characteristics similar to those experienced in the East and Midwest--a large proportion of overall skier visits occurred on weekends and weekend utilization rates were so high as to virtually preclude additional skier visits on weekends. Several areas in Washington, in addition to the example of Mt. Baker, realized greater than 100 percent utilization on weekends. Many of the California areas had mid-80 percent to low 90 percent utilization of facilities. In Colorado, Vail operated at 102 percent weekend use and most other front range areas operated above 80 percent on weekends.

Several destination areas realized higher midweek utilization and decreased weekend use. This is a result of the destination skier arriving on the weekend and not starting skiing until Sunday or Monday. At areas such as Aspen, weekend skiing accounted for only 28 percent of the total visits to the area. The destination areas in the West achieved better than 60 percent utilization during the weekday period. These areas will find it difficult to increase weekday skier

visits in the future.

Overall utilization for all types of areas in the West was generally found to be greater than 50 percent and at least 15 percent higher than in the East and Midwest. The percent of skier visits occurring within the truncated season was low enough to suggest that some limited growth in demand could be accommodated during the shoulder seasons.

Because of the same list of variables enumerated above regarding establishment of capacity such as snow conditions, equipment shutdowns, and difficulty of redirecting skier behavior to go skiing early and late season, 60 to 70 percent utilization is generally accepted as full utilization. Based upon this standard many areas have no excess capacity for future demand. The ski areas of the West have reached the situation where many of them have achieved effectively full utilization.

This region of the country has become the major supplier of skier visits for the demand created nationwide. If skier behavior continues to dictate Western skiing as the norm, additional facilities will be required to meet the future demand. If, on the other hand, and it seems unlikely, skiers can be persuaded to ski within their region--especially the Midwestern skier, then in the short run (3 to 5 years) existing capacity in the West along with new facilities to be discussed subsequently will be adequate to accommodate the anticipated growth nationwide.

#### New Development

In the next five years, daily capacity in the West could increase by 30,000 skiers per day through the development of five major areas and expansion of many existing facilities. If this projected new daily capacity comes on line, three million additional skier visits during the truncated season and as many as 600,000 skier visits during the shoulder season could be realized. The potential for several other areas presently in the planning stages to be developed exists. However, with the exception of Beaver Creek near Vail, Colorado, no other proposed Western area is a certainty. A myriad of issues cloud the future development of skiing in the U.S.

#### Constraints to Development

As has been noted, 1969 marked the leveling out of the rapid growth of ski facilities. The year the National Environ-

mental Policy Act (NEPA) went into effect was also 1969. This single piece of legislation heralded a new era in the U.S. and one that has had significant impact upon ski area development in the country. The environmental consciousness that has grown over the last ten years has placed new ski area construction in limbo all over the West. Questions are being asked, the answers to which often signal the demise of a new area proposal.

Through the Environmental Impact Statement Process, proscribed by the NEPA legislation, government agencies (primarily the U.S.F.S.) are being held accountable to the general public for all decisions regarding ski area expansion and new area development. No longer does an area operator sit down with the forest supervisor and prepare a plan for his area. The would-be developer since 1969 has had to enter into the NEPA process and be prepared to spend five or more years and invest upwards of \$1 million to reach a "go" or "no-go" decision.

All over the West the last decade has witnessed major new development proposed only to see them denied. In California, San Geronio, Mineral King and Moses Maggie have been turned down. Independence Lake is apparently headed towards the same fate. In Montana Ski Yellowstone successfully weathered the protests raised through the EIS process after nearly nine years, only to find the backers so strung out by the effort the project is in jeopardy of moving ahead. Heritage Mountain near Provo, Utah, has experienced similar problems in getting off the ground.

In Colorado the score card stands at one success and several losses with uncertain outcomes on many other proposals. Beaver Creek will open eight years after it was initially proposed. Little Annie, on the backside of Aspen Mountain, was first proposed in 1965, after entering into the Colorado Joint Review Process in 1978 a decision will be forthcoming by 1982. The Hospital Building and Equipment Corporation proposed Adam's Rib near Eagle, Colorado, in 1973. Six years and \$15 million later the project is at a virtual standstill. The Aspen Skiing Corporation, operators of four areas in Colorado, made the decision that no new areas were going to be approved in Colorado and began development of Early Winters in Washington. After five years the project was abandoned and the company took the development dollars to British Columbia where they will open the first phase of a 14,000 skier per day mountain in 1980, only four years after embarking upon the project.

The ten-year effect of the NEPA legislation has been to effectively stop ski area development on Federal land since 1971. This has occurred at a time when demand for skiing has been growing at 8-10 percent per year.

Recently a potentially more restrictive action was mandated by Congress--Rare II. Conceptually, Rare II, the Roadless Area Review and Evaluation program was based on a sound premise--inventory and evaluate U.S. Forest Service lands for Wilderness Consideration. Some 46,948,000 acres were evaluated and now are in a state of "defacto wilderness" until the management decisions are completed. The impact of Rare II has been to withdraw millions of acres of Federal land from consideration for ski area development. The myriad of conditions necessary for a successful ski facility hinge upon one virtually immutable key element--suitable terrain. Sno-engineering has inventoried ski terrain over the entire U.S. and Canada for over 25 years and its President, James Branch, has concluded that less than 0.1 percent of the mountainous terrain of the U.S. and Canada is suitable for commercially viable ski area development. Potential new ski sites are less likely to be found than new Wilderness areas. Yet identification of ski potential was not a charge of the Rare II program. Skiing was treated as a residual consideration in reaching recommendations for land use, but site inventories were not carried out as part of the Rare II process.

The NEPA, Rare II and a new-found consciousness directed towards environmental preservation has in ten years virtually brought ski area development to a standstill in the Western U.S. This has occurred at a time when strong demand for facilities has been documented through numerous studies. Additional demand has been directed towards the region most able to provide skiing--the West. The result of the demand curve's upslope and the supply curve's flattening has been overcrowding of existing facilities and a crushing pent-up demand for new areas. With 14 million skiers and approximately 700 ski areas, at present, there is one area for every 20,000 skiers.

#### Future Prospects

Demand has outstripped supply on a national basis. The Midwest and East appear to have sufficient capacity to meet regional demand for the next three to five years. In the West the need for immediate and major new facility development is apparent.

Without new development which if approved today could not come on line before 1983-84,

the East and Midwest will be over capacity in less than five years and millions of potential skiers will have been involuntarily rechanneled into other leisure time activities.

Ticket prices will most likely continue to increase at least the historical 7.9 percent rate due to the over demand that will continue to exist, and the increased operating costs that will be incurred by areas as a result of over-use and crowding of present facilities.

Cross-country skiing will increase in popularity in part because of the limited availability of downhill facilities and rising costs. Energy conservation measures may spur interest in cross-country skiing because of the ready access of ski touring terrain in many parts of the country. Emphasis on U.S.F.S. planning should focus on winter use of trails, picnic areas and campgrounds. Increase conflict between user groups primarily snowmobiles and cross-country skiers will become a major management problem in the future. Greater winter facilities and operating budgets will be required to meet the increased use of the forests by ski tourers.

The concept of winter multiple recreation use of federal lands will become increasingly important over the next five years. Planning and budgeting to accommodate this demand should have begun five years ago. A method to investigate the national priority that should be placed upon downhill ski development should be devised and implemented quickly.

#### HIGHLIGHTS AND TRENDS

The paper has covered a great deal of information on current trends in the demand for and supply of skiing. This section concludes the paper, highlighting some of the more notable findings and trends.

1. Skiers are demographically different from the U.S. population. Ski studies show males account for about 60 percent of the skiers and 48 percent of the adult population; about one-half of skiers are single, but only 20 percent of U.S. adults are single; about 70 percent of the adult skiers are under 30, while only 30 percent of the U.S. adult population is under 30; about 20 percent of adult skiers have post-graduate education, compared to less than 10 percent of the U.S. adult population; and about one-third of the alpine skiers live in households with \$25,000 and over annual income, while only 16 percent of the total population live in such households.
2. Present population and demographic trends favor the continued growth of both downhill and cross-country skiing.
3. The dramatic increase in singles will continue to boost the skiing market.
4. Women will move into skiing in greater and greater numbers.
5. Downhill skiing will continue to grow by 7 to 10 percent per year over the next five years.
6. The participation rate in the sport of skiing will continue to rise. The long-run growth of the industry will depend on increasing the participation rate as there will be a substantial decrease in the teenage segment of the population which has been feeding large numbers into the sport.
7. Cross-country skiing will grow at a faster rate than downhill skiing. As new equipment, clothing, etc., continue to develop, the growth of cross-country skiing will mirror that of downhill skiing in the 1960s. New cross-country ski centers and more abundant supply will spur this growth.
8. The fastest growing ski market in the country is the South.
9. The closer people live to skiing, the more likely they are to ski.
10. The automobile will continue to be the major method of transportation to the ski area; however, energy considerations will make air become a more important mode of transportation for the destination skier. Fly/drive packages will become more common.
11. The demand for skiing is outstripping supply. Utilization of ski areas will increase until limitation plans will have to be developed to match capacity with skiers.
12. Future supply will be constrained by environmental legislation, lack of capital and government regulation, and will not keep up with demand.
13. The West is the most highly used ski region in the country and the most frequently mentioned as the place potential skiers would like to go. The West must have expansion if growth in demand

is to be satisfied.

14. The Eastern and Midwestern ski areas can accommodate limited growth in activity.
15. The U.S. society is moving from a "work ethic" to a "leisure ethic." The youth of the country are demanding recreation and leisure as a right. Consequently, winter recreation planning is necessary if land use management policies are to be responsive to demand created by all user groups.

#### RECOMMENDED REFERENCES

1. THE AIRLINE SKIER: 1977-78 SEASON. C. R. Goeldner. Business Research Division, Graduate School of Business Administration, University of Colorado, Campus Box 420, Boulder, Colorado 80309. 1978. 77p. \$15.
2. THE AMERICAN SKIER IN CANADA. Contemporary Research Centre Limited, Toronto, Ontario, Canada. March 1972. 73p. plus appendix.
3. AN ANALYSIS OF THE MAINE SKIING INDUSTRY. Alvar K. Laiho and Thomas A. Palmberg. Maine Department of Economic Development, Research and Analysis Division, Augusta, Maine. April 1972. 91p. plus appendix.
4. ASPEN IN ROOM SURVEY, 1978-79. C. R. Goeldner and Jack Harrington. Business Research Division, University of Colorado, Campus Box 420, Boulder, Colorado 80309. 1979. 173p. \$100.
5. THE ASPEN SKIER: 1977-78 SEASON. C. R. Goeldner, Business Research Division, University of Colorado, Campus Box 420, Boulder, Colorado 80309. 1978. 80p. \$15.
6. BIBLIOGRAPHY OF SKIING STUDIES. C. R. Goeldner and Karen Dicke. Business Research Division, University of Colorado, Boulder, Colorado 80309. 1978. 62p. \$10.
7. THE BRECKENRIDGE SKIER. C. R. Goeldner and Yvonne Sletta. Business Research Division, University of Colorado, Boulder, Colorado 80309. 1975. 67p. \$10.
8. THE BRITISH COLUMBIA SKI INDUSTRY AND ITS ECONOMIC EFFECTS. British Columbia Department of Travel Industry, Parliament Building, Victoria, British Columbia, Canada V8V 1X4. October 1974. Various paging.
9. COLORADO SKI AND WINTER RECREATION STATISTICS, 1978. C. R. Goeldner and Karen Dicke. Business Research Division, University of Colorado, Boulder, Colorado 80309. 1979. 117p. \$20.
10. THE COLORADO SKIER: 1977-78 SEASON. C. R. Goeldner. Business Research Division, University of Colorado, Boulder, Colorado 80309. 1978. 92p. \$25.
11. COLORADO WINTER RESOURCE MANAGEMENT PLAN: MANUAL FOR THE COLORADO REVIEW PROCESS AND IMPACT ANALYSIS GUIDELINES. Division of Planning, Department of Local Affairs, 1313 Sherman Street, Denver, Colorado 80203. August 1976. 54p. Free.
12. CONFIDENTIAL REPORT ON THE SPORT OF SNOW SKIING. Nielsen Custom Research Service, A. C. Nielsen Company, Nielsen Plaza, Northbrook, Illinois 60062. 1979.
13. CONFIDENTIAL REPORT ON THE SPORT OF SNOW SKIING. Nielsen Custom Research Service, A. C. Nielsen Company, Nielsen Plaza, Northbrook, Illinois 60062. 1976. \$750.
14. THE COPPER MOUNTAIN SKIER, 1978-79. C. R. Goeldner and Jack Harrington. Business Research Division, University of Colorado, Boulder, Colorado 80309. July 1979. 68p.
15. ECONOMIC ANALYSIS OF NORTH AMERICAN SKI AREAS: 1977-78 SEASON. C. R. Goeldner and Ted Farwell. Business Research Division, Graduate School of Business Administration, University of Colorado, Boulder, Colorado 80309. 1978. 140p. \$30.
16. THE ECONOMIC IMPACT OF THE COLORADO RESORT INDUSTRY: AN ANALYSIS OF COUNTY PERSONAL INCOME. Cheryl Fellhauer. Business Research Division, University of Colorado, Boulder, Colorado 80309. January 1977. 47p. \$25.
17. THE ECONOMIC IMPACT OF A RECREATIONAL DEVELOPMENT AT BIG SKY, MONTANA. Ancel D. Haroldsen. Montana Agricultural Experiment Station, Montana State University, Bozeman, Montana. April 1975. 27p.
18. EFFECT OF TRAVEL CONSTRAINTS ON THE DISTRIBUTION OF SKIING IN NEW ENGLAND. Marvin Kottke and Stephen Libera. Storrs Agricultural Experiment Station, College of Agriculture and Natural Resources, University of Connecticut, Storrs, Connecticut 06268. November 1975. 19p.

19. EXPLORATION OF U.S. SKIER ATTITUDES TOWARD CANADIAN SKIING AND SKIING IN GENERAL. Market Facts, Inc., 100 S. Wacker Drive, Chicago, Illinois 60606. 1978. 65p. plus appendices.
20. GROWTH POTENTIAL OF THE SKIER MARKET. W. F. La Page and Stacy Standley. Northeastern Forest Experiment Station, Forest Service, U.S. Department of Agriculture, 370 Reed Road, Broomall, Pennsylvania 19008. October 1978. 60p. plus appendices. Preliminary draft.
21. THE IMPACT OF THE VAIL SKI RESORT: AN INPUT-OUTPUT ANALYSIS. Stacy Standley, III. Business Research Division, University of Colorado, Boulder, Colorado 80309. 1971. 91p. \$10.
22. LIFT INTERVIEW STUDY OF THE ASPEN SKIER. Stacy Standley, III. Tourism Research Associates, 2118 26th Avenue, San Francisco, California 94116. June 1972. 19p. plus appendix.
23. LIFT INTERVIEW STUDY OF THE BOYNE COUNTRY SKIER. SKI Magazine, 380 Madison Avenue, New York, New York 10017. March 1976. 32p. plus appendix.
24. LIFT INTERVIEW STUDY OF THE HEAVENLY VALLEY SKIER. Robert L. Lundy. Tourism Research Associates, 2118 26th Avenue, San Francisco, California 94116. May 1978. 32p.
25. LOCATION ANALYSIS OF HIGH-VOLUME SKIING IN WESTERN UNITED STATES. Kenard E. Smith. The University of Minnesota. 1974. Thesis, Doctor of Philosophy. 204p.
26. MORE PEOPLE ON SKIS. American Ski Federation, 3 Dearborn Road, Peabody, Massachusetts 01960. 1975. 146p. \$50.
27. 1970 VERMONT SKI AREA SURVEY. J. Robert Hill. Interagency Committee on Natural Resources, Montpelier, Vermont 05602. 1971. 96p.
28. THE 1977-78 STEAMBOAT SKIER SURVEY. Charles K. Mayfield, Steamboat LTV Recreation Development, Box 1178, Steamboat Springs, Colorado 80477. 1978. 88p.
29. NORTHEAST SKIER MARKET. State Planning Project, 34 Bridge Street, Concord, New Hampshire. November 1964. 48p.
30. THE OREGON SKI AREAS STUDY, 1967-1968 WINTER SEASON. Arthur Stonehill, Phillip Schary and James Noteboom. School of Business and Technology, Oregon State University, Corvallis, Oregon 97331. November 1969. 45p. \$2.50.
31. PARTICIPATION AND CHOICE OF SKIERS IN CENTRAL NEW YORK: CHARACTERISTICS, SPATIAL PATTERNS AND PREFERENCES. John Hewett Munson. Syracuse University. 1974. M. A. Thesis. 112p.
32. PROJECTED CHANGES IN NORTHEASTERN SKIING PARTICIPATION AND SUPPLY CAPACITY AS INFLUENCED BY A CHANGING ECONOMY. Marvin Kottke. Storrs Agricultural Experiment Station, College of Agriculture and Natural Resources, University of Connecticut, Storrs, Connecticut 06268. October 1979. 40p.
33. SKI UTAH! A REPORT OF THE INDUSTRY. John D. Hunt and Christie Anderson. Institute for Outdoor Recreation and Tourism, Utah State University, Logan, Utah 84322. February 1976. 111p. \$10.
34. SKIING IN THE GREAT LAKE STATES: THE INDUSTRY AND THE SKIER. William A. Leuschner. North Central Forest Experiment Station, Forest Service, U.S. Department of Agriculture, St. Paul, Minnesota 55101. 1970. 42p.
35. UTAH SKI MARKET STUDY, 1970-71. Center for Business and Economic Research, Brigham Young University, Provo, Utah 84601. September 1971. 60p.
36. VAIL PEAK DAY SURVEY. C. R. Goeldner and Jack Harrington. Business Research Division, University of Colorado, Boulder, Colorado 80309. August 1979. 130p. \$25.
37. THE VAIL SKIER: 1977-78 SEASON. C. R. Goeldner. Business Research Division, University of Colorado, Boulder, Colorado 80309. 1978. 106p. \$15.
38. THE WHITE BOOK OF SKI AREAS: U.S. AND CANADA. Robert G. Enzel and John R. Urciolo. Inter-Ski Services, Inc., P.O. Box 3635 Georgetown Station, Washington, D.C. 20007. 1978. 410p.
39. THE WINTER PARK SKIER, 1978-79 SEASON. C. R. Goeldner and Jack Harrington. Business Research Division, University of Colorado, Boulder, Colorado 80309. June 1979. 49p.
40. WINTER RECREATION VISITOR STUDY, WISCONSIN, 1979. Rollin B. Cooper, Sue Sadowske, and Mark D. Kantor. Recreation Resources Center, University of Wisconsin-Extension, 1815 University Avenue, Madison, Wisconsin 53706.

## HUNTING AND FISHING TRENDS IN THE U.S.<sup>1</sup>

J. John Charbonneau and James R. Lyons<sup>2</sup>

---

Abstract.--Trends in hunting and fishing participation are evaluated on the basis of responses to a telephone survey of the U.S. population conducted as a part of the 1975 National Hunting and Fishing Survey. Probability of participation in hunting and fishing is a function of the respondent's age, sex, income, place of residence, and a number of supply characteristics. The availability of forested acres and total public recreation acres in a participant's state are also significantly related to the probability of hunting and fishing. The probability of non-participation is also evaluated. The impact of future changes in population parameters and pertinent supply characteristics upon hunting and fishing trends and the related policy implications are discussed.

---

### Introduction

This paper will review hunting and fishing participation data to determine if any trends can be estimated and, to the extent possible, what causal factors influence these trends. In the traditional sense, a comprehensive analysis of hunting and fishing trends has not been undertaken. The scarcity of comparable time-series data is one probable cause for the paucity of trend analyses along with the small degree of success achieved by those who have tried. Another factor is that the underlying causal relationships which explain participation in hunting and fishing for the nation are just now being examined in a systematic way by Kellert at Yale in his study of American Attitudes Toward Animals. The fitting of a line through data points does not get the resource management information

necessary for decision making. We must look beyond the trend line to the causal relationships and especially those that have some degree of public control. This research area, which calls for a multidisciplinary approach, will be where answers are found to help decision makers in the management of wildlife resources for the future benefit of society.

This paper is divided into three sections. First, a review of the existing data from past recreational surveys and state license data will be undertaken; second, an analysis of the data to determine causal relationships that could provide some insights into future trends; and third, an analysis of the causal variables with conclusions regarding the future participation rates of hunters and fishermen.

---

<sup>1</sup>Paper presented at the National Outdoor Recreation Trends Symposium, Durham NH, April 20-23, 1980.

<sup>2</sup>Economist and biologist, U.S. Fish and Wildlife Service, Washington, D.C.

### Hunting and Fishing Participation Data

The most complete time series data on hunters and fishermen are the state license figures. Excluding saltwater anglers, these numbers are available on a state by state basis back to the year 1932. However, these figures are representative of all sportsmen who acquired a license to hunt or fish and do not include those categories of people who are exempt (e.g., for reason of age both young and old), those who hunt or fish on their own land, etc. Each of the 50 states has its own laws pertaining to exemptions from licenses. Figures 1 and 2 show the number of fishing and hunting license holders from 1955 to 1978. Projecting the number of license holders to the future would give us an estimate of participation rates but these figures would not include participation by the legally unlicensed group. The actual size of this latter group has not been estimated, but it most likely varies from state to state and may account for a considerable percent of participation in some parts of the country. For purposes of this paper, estimates of illegal hunting and fishing will not be included as it is unlikely it could be estimated from survey data.

A second source of statistics on hunters and fishermen comes from National Surveys. Since 1955 Hunting and Fishing surveys have been conducted by the Fish and Wildlife Service at 5 year intervals. Figure 3 shows the estimated total hunters and fishermen from 1955 to 1975. These figures represent participation by sportsmen 12 years of age and older. The upward trend evidenced by both hunting participation rates shows that increasing numbers of people are hunting and fishing. However, measured as a percent of population, the increased participation becomes a decreasing percentage of the U.S. population. This indicates that the relative popularity of fishing and hunting are declining. However, the relative popularity of any recreation is affected by changing preferences and trends in complementary activities and therefore may show up as some form of cyclical behavior over time. The difference between license holder trends and the national survey figures has not been completely reconciled. The National Surveys have not been designed in the past for direct comparability. License figures are a simple tally of sportsmen while the hunting and fishing survey estimates are based on population samples that are not restricted to that segment of the population that is required to have a license to hunt or fish. Therefore, it is expected that the survey estimates will be larger than the license figures. The expected magnitude of difference is unknown. Until such time as we fully

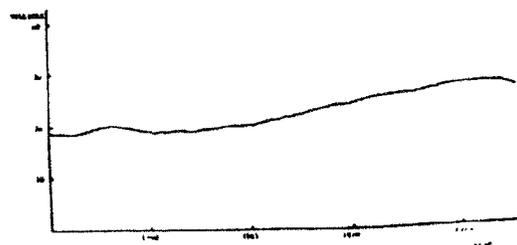


Figure 1.--Number of fishing license holders 1955-1978

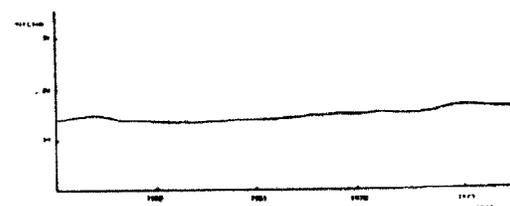


Figure 2.--Number of hunting license holders 1955-1978

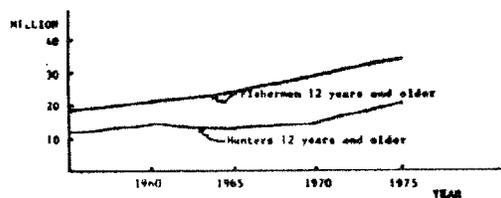


Figure 3.--Estimated number of fishermen and hunters in the U.S. 1955-1975

understand what is being measured by the National Surveys there is a reluctance to predict the future with this data base. This conclusion holds for the other national surveys as well.

A third source of hunting and fishing participation data comes from a screening survey used in the 1975 National Survey of Hunting and Fishing. Using random digit dialing the population sampled was asked if they hunted or fished in 1975, and if they had not in 1975 they were asked if they had done so in 1972, 1973, or 1974. Table 1 presents the findings from a 10 percent sample of the screening questionnaire.

Table 1  
A Comparison of Hunters and Fishermen who discontinued Hunting and Fishing in 1975

|                   | Hunted in 1975 | Hunted in 1972, 1973, or 1974 but not in 1975 | Fished in 1975 | Fished in 1972, 1973, or 1974 but not in 1975 |
|-------------------|----------------|---|----------------|---|
| Head of household | 61.9           | 62.1  | 41.8           | 41.8  |
| Spouse            | 9.4            | 20.6  | 20.0           | 27.5  |
| Children          | 28.7           | 17.3  | 38.2           | 30.7  |

In order to analyze these data the probability of not participating was estimated for both hunting and fishing in 1975. Data from sportsmen who had participated in the years 1972, 1973, or 1974 but not in 1975 and those who had participated in 1975 were used to estimate the probability that sportsmen would discontinue hunting or fishing. The independent variables used in the equation consisted of social, demographic and measures of availability of opportunity in the state that sportsmen lived in. This equation was estimated with cross-section data using ordinary least squares regression. The equation, estimated for hunters and fishermen separately, was:

$$\text{Non-Participants} = f(\text{AGE}, \text{AGE}^2, \text{SEX}, \text{INCOME}, \text{METRO}, \text{HEAD}, \text{WATER}, \text{COAST}, \text{FOR}, \text{TREC})$$

Where: Non-participants = 1 for those who did not go in 1975 but did go in 1972, 1973, or 1974.

Non-participants = 0 for those who went hunting (fishing) in 1975.

- AGE - the respondents age
- AGE<sup>2</sup> - the respondents age squared
- SEX - the respondents sex, 0=female  
1=male
- INCOME - the respondents family income before taxes
- METRO - 1 if the respondent lived in a metropolitan area  
0 if the respondent lived in a non-metropolitan area
- HEAD - 1 if the respondent is the head of the household and 0 otherwise
- WATER - the square miles of surface water in the state
- COAST - the coastal miles in the state of residence
- FOR - the forested acres in the state, in millions
- TREC - total acres of publicly-owned recreation land in the respondent's state, in thousands

The a priori expectation on the signs of the variables are given below the variables. The estimated coefficients are in table 2. The age of maximum probability of non-participation is 55 for fishermen. Without the age square term being significantly different from zero the age of maximum probability was not computed for hunters. Interpreted this means that with other factors held constant a fisherman's probability of discontinuing fishing decreases after age 55. The lack of a maximum probability for hunters is most likely due to a greater commitment that hunters included in

the sample may have to their sport. Therefore, there was not a specific age group where most hunters were discontinuing hunting.

Table 2  
Estimated Non-Participation functions for Hunting and Fishing

|                            | (1)                   |           | (2)                  |           |
|----------------------------|-----------------------|-----------|----------------------|-----------|
|                            | Fishing               | (t-value) | Hunting              | (t-value) |
| Intercept                  | .1980                 | (12.4)    | .3538                | (9.1)     |
| AGE                        | .0035                 | (4.2)     | .0042                | (2.2)     |
| AGE <sup>2</sup>           | -.00003               | (3.1)     | -.00002              | (.8)      |
| SEX                        | -.0999                | (10.7)    | -.2455               | (12.2)    |
| INCOME                     | -.4x10 <sup>-7</sup>  | (.2)      | .3x10 <sup>-7</sup>  | (.1)      |
| METRO                      | .0175                 | (2.3)     | .0483                | (3.8)     |
| HEAD                       | .0079                 | (.7)      | .0019                | (.1)      |
| WATER                      | -.44x10 <sup>-5</sup> | (1.2)     |                      |           |
| COAST                      | -.61x10 <sup>-5</sup> | (.3)      |                      |           |
| FOR                        | -.0014                | (2.6)     | -.0035               | (4.6)     |
| TREC                       |                       |           | .13x10 <sup>-5</sup> | (1.9)     |
| F-ratio                    | 25.9                  |           | 38.7                 |           |
| R <sup>2</sup>             | .0195                 |           | .0546                |           |
| N                          | 11,738                |           | 5,373                |           |
| Age of Maximum Probability | 55                    |           |                      |           |

The probability of discontinuing fishing (equation (1) in table 2) indicates the influence of being male is negative and living in a metropolitan area is positive. Both of these findings are consistent with other research results. Income and being head of the household had no apparent influence on discontinuing participation. Looking at the influence of surface water availability it is not surprising that those states with more square miles of surface water have a lower probability of non-participation once a fisherman had been fishing in the past. The influence is not strong with a relatively high standard error but nevertheless it is present. The presence of forested acres also decreased the probability of non-participation. This is most likely due to the high correlation between forest acres and watersheds.

The influence of the social and demographic variables on the probability of non-participation in hunting (equation 2) was somewhat stronger than for fishing with approximately 5.5 percent of the variation explained. The influence of residence in a metropolitan area increased the probability of discontinuing hunting with other factors held constant. It can be interpreted that from a cross-section of hunters the probability of discontinuing hunting is increased if the sportman lives in a metropolitan area. A likely cause of this result is that hunting requires more

travel time and cost for metropolitan residents than for non-metropolitan residents and therefore they may feel less committed to hunting as the costs rise over time.

As a measure of the availability of other outdoor recreation activities the variable TREC was included. Its positive coefficient indicates that hunters from states that have relative abundance of public recreation areas are more likely to discontinue hunting than hunters who live in areas where public recreation lands are less abundant. From the cross section of hunters in the sample it appears that income did not influence their decision about participation. It must be remembered that this data set contains only hunters and fishermen and the results only pertain to those who are already hunting or fishing and the factors that may influence their decision to continue in the future.

Looking to the future of participation in hunting and fishing activities the analysis shows that for fishermen the loss of currently available sites should increase the probability of non-participation. While the same is true for hunters, an increase in public recreation areas would further increase the probability of discontinuing hunting.

#### A Model for Determining Trends in Hunting and Fishing

The traditional models for extrapolating trend lines to the future do not capture the underlying relationships that cause trends to shift. Of particular interest are variables subject to policy manipulation by land management agencies. Specifically, it would be desirable to estimate the relationship between the availability of hunting and fishing opportunities and the probability of the general population becoming hunters or fishermen. To do a thorough analysis requires both cross-sectional and time series data on participants and non-participants, their social and demographic characteristics, the location of the hunting or fishing activity and a series of quantitative and qualitative variables describing both the sites used and others available nearby. Even though such a complete data base is not available to test hypotheses concerning determinants of fishing and hunting, this analysis will give insights into the practicality of pursuing this area of research.

The telephone screening survey used to determine participation for the 1975 National Survey of Hunting, Fishing and Wildlife Associated Recreation contains over 322,000 individual observations from 106,000 households. The screening questionnaire contains social and demographic characteristics of

participants as well as non-participants in hunting and fishing. The sample includes approximately 2,000 households per state. A 10 percent sub-sample taken randomly from the telephone screening survey was used to test a limited set of hypotheses concerning the influence of policy variables on the probability that an individual would participate in hunting or fishing. Future projections of the significant variables in a probability equation will give an indication as to the expected direction of the trend for hunting and fishing.

#### The Model

It is hypothesized that the probability of an individual going hunting or fishing is associated with their social and demographic characteristics and the abundance of the areas where hunting and fishing take place in the individual's state of residence. A model for fishing and hunting is specified to account for the difference in hunting and fishing opportunities. Each equation is given below with the expected sign of the coefficients to be estimated.

$$\text{Fish} = f(\text{AGE}, \text{AGE}, \text{SEX}, \text{INC}, \text{METRO}, \text{HEAD}, \\ \text{WATER}, \text{COAST}, \text{FOR})$$

+   -   +   +   -   +  
+   +   +

$$\text{Hunt} = f(\text{AGE}, \text{AGE}, \text{SEX}, \text{INC}, \text{METRO}, \text{HEAD}, \text{TREC}, \\ \text{FOR})$$

+   -   +   +   -   +   +  
+

Where: Fish - the probability of going fishing in 1975, 1 for fishermen and 0 for non-fishermen

hunt - the probability of going hunting in 1975, 1 for hunters, and 0 for non-hunters

The factors influencing the decision to either hunt or fish may not be fully captured by this limited set of variables. However, those variables that have policy significance (i.e., surface water, forested acres, recreation acres) are of the most interest from a management viewpoint. Table 3 contains the results of the estimation of the hunting and fishing equations. The equations were estimated with ordinary least squares. The dichotomous dependent variable violates the assumption of homoskedasticity of the error term ordinary least squares but the large sample size makes the cost of estimating the equations with probit or logit extremely expensive. The large sample size will minimize the OLS bias and for practical purposes the coefficients are not significantly different between OLS and logit

or probit. The findings of significance for the policy variables and the signs of the coefficients are of major interest at this stage in the analysis.

Table 3  
The Probability of Fishing and Hunting in 1975

|                            | (3)<br>Fishing        | (t-value) | (4)<br>Hunting        | (t-value) |
|----------------------------|-----------------------|-----------|-----------------------|-----------|
| Intercept                  | .098                  | (10.6)    | -.067                 | (10.3)    |
| AGE                        | .0089                 | (19.0)    | .0087                 | (26.5)    |
| AGE <sup>2</sup>           | -.00013               | (23.2)    | -.00012               | (30.7)    |
| SEX                        | .2204                 | (35.8)    | .1886                 | (43.4)    |
| INC                        | -.29x10 <sup>-6</sup> | (2.2)     | -.14x10 <sup>-6</sup> | (1.5)     |
| METRO                      | -.0479                | (9.1)     | -.0608                | (21.8)    |
| HEAD                       | .0133                 | (2.0)     | .0758                 | (13.9)    |
| WATER                      | .00003                | (11.9)    |                       |           |
| COAST                      | -.00012               | (8.4)     |                       |           |
| TREC                       |                       |           | .16x10 <sup>-5</sup>  | (6.8)     |
| FOR                        | .0014                 | (3.7)     | .0015                 | (6.2)     |
| F-ratio                    | 325.6                 |           | 720.5                 |           |
| R <sup>2</sup>             | .0888                 |           | .1609                 |           |
| N                          | 30,072                |           | 30,072                |           |
| Age of Maximum Probability | 33                    |           | 35                    |           |

The results in table 3 indicate that the probability of going fishing is at a maximum at age 33. That is, the probability increases until age 33 and then decreases as indicated by the negative sign on the age-squared variable. The probability is increased for males and for residents of non-metropolitan areas. Also, for those who indicated they were the head of the household the probability of being a fisherman increased. The results for hunting are the same as for fishing up to this point except the age of maximum probability is 35. Income had a negative sign for both hunters and fishermen. It appears that from a cross-section of respondents to the telephone interview the probability of going hunting or fishing decreased with increasing income levels.

The probability of fishing was positively related to the square miles of surface water in the respondents state and the quantity of forested acres. The forested acres variable was included as a proxy variable for other outdoor activities that may substitute for fishing. The positive sign on FOR indicates that states with a relative abundance of forest lands have an increased probability of fishing activity. The COAST variable was significant with a negative sign indicating that for this cross section of respondents those from states with considerable coastline had a lower probability of going fishing. All other variables held constant, the probability of a Rhode Island resident going fishing is higher than for a resident of

Maine.

Interpreting the results for hunting, the expected positive sign for FOR was statistically significant indicating that increased forest acreage increased the probability of hunting activities. However, the sign on TREC is also positive indicating that an increase in public recreation acreage increases the probability of hunting. This result may be related to the fact that many areas are managed for multiple use and the increase in acreage for public use may also serve as wildlife habitat for game species thereby increasing the probability of hunting.

#### Future Participation in Hunting and Fishing

The participation rates estimated for 1975 were 31.6 percent of the U.S. population for fishing and 13.5 percent for hunting. An analysis of some of key variables used in the participation equation will give some insights to future participation rates. Even though precision is not possible at this time at least a determination can be made as to the direction of the trend for the future. The variables used for this determination are AGE, METRO, WATER, FOR, AND TREC.

#### AGE

The median age of the U.S. population is gradually increasing. After the post WWII baby boom the birth rate began to slow down in the U.S. With increases in life expectancy the median age of the population in 1975 increased to approximately 29 years. For each 1 percent increase in the median age of the population the probability of going fishing will increase by .865 percent and hunting by 1.99 percent.

#### METRO

In recent years there has been a shift in the population growth rates of the metropolitan and non-metropolitan areas. The metropolitan areas have grown at a rate of 3.4 percent from 1970 to 1974 while non-metropolitan areas grew 5.5 percent during the same time period. This is a reversal in trend from the 1960's to 1970's that is expected to continue to the 1980's. For each 1 percent increase in non-metropolitan area population the probability of going fishing will increase by .046 percent and .252 percent for hunting.

#### WATER

The square miles of surface water for most

states varies only slightly over time. However, projects such as dams, canals, reservoirs, and man-made lakes are constantly being built. Most often such alterations of the landscape are a trade-off for running water at only a small net gain in surface acreage. For each 1 percent of net gain there is an increase in the probability of participation of .122 percent.

#### FOR

The trend in forested acreage across the country has been fairly constant for the past 10 years. Future demand for forest products may cause an increase in timber cutting. Increase in timber cutting and the shifting of private forest lands to other types of agricultural production may cause a decline in forested acres in the future. For each 1 percent loss of forest land the probability of going hunting will decrease by .117 percent. For fishing the probability will decrease by .047 percent.

#### TREC

The total acreage in publicly owned recreation lands which contains fish and game areas and natural wilderness that provide habitat for game species, is increasing over time. For each 1 percent increase in publicly owned recreation levels the probability of going hunting increases by .068 percent.

#### Summary

Over the next decade the U.S. population pyramid will show an increase in the number of U.S. residents in the age categories where participation in hunting or fishing is a maximum. Also, the population growth of non-metropolitan areas is expected to continue, therefore there should be an increase in the number of U.S. residents that have the highest probability of going hunting or fishing. The factors that ultimately influence the actual participation are only partially captured by the changing availability of the activity in the individuals state of residence. Such factors as square miles of surface water, forested acreage and public recreation areas, which include fish and game areas and wilderness areas, will contribute to increasing the participation in hunting and fishing in the future. However, the number of acres or miles of surface water, forests, or public recreation areas necessary to augment the current stock of these resources by 1 percent is not likely to have much impact on hunting or fishing over the next decade. The coefficients on these variables are trends only in an aggregate sense. However, if the specificity of these supply variables could be increased i.e., surface water of a

specific type or quality and forested acres that are the habitats for specific game species, perhaps the coefficients would show a larger impact and affect trends for the future in a more discernable way.

The usefulness of adding policy variables that can be affected by resource management agencies has been shown to be a promising tool to aid in predicting the future of hunting and fishing activities. Further refinement of the model specified and more precise policy variables awaits the results of the 1980 National Survey of Fishing, Hunting, and Wildlife Associated Recreation. The use of 1980 Survey data will enable us to test the robustness of the model and any change over time in the structural parameters. This study is in the developmental stage and clearly more work needs to be done before reliable projections can be made.

## OFF-ROAD VEHICLE TRENDS

Garrell E. Nicholes<sup>1</sup>

### INTRODUCTION

Today I would like to start this part of my program by generally describing the vehicles, the users, and the current problems. Later on I will break out specifically motorcycles and snowmobiles to discuss. When I was asked, approximately a year ago, to fill this assignment, I began by telephoning those I knew in public and private ORV management positions. I sent letters and made many personal contacts as I traveled around the United States. As material arrived at my desk, I realized that "surface trends" research information, separate from "in house", was grossly lacking for this form of outdoor recreation. This paper is my attempt to verbalize the information we received. I warn you that what you hear me say may not be today's popular thoughts. With approximately 500,000 miles of travel in my off-road vehicle business responsibilities, I have realized that lack of valid quantity and quality trends information has been one factor contributing to current emotionalism, false concepts, and gross biases both for and against this activity. Another problem has been that there are many who profess understanding in planning for this reaction because they have some specialized knowledge that merely relates to the off-road vehicle. However, in fact, only a few public and private planners and land managers, academic types and others know and understand the vehicle, the land base and the enthusiast well enough to be credible problem solvers. Most problem-solving efforts have been crippled by confusion and misunderstanding from lack of good problem solution models. Special interest groups have resorted to political infighting.

Let me give you an example of current research information which, if pursued in more

<sup>1</sup>Garrell E. Nicholes Associates, Incorporated, The People Planners, is a recreation planning and implementation consulting firm, which has worked with federal, state and local agencies of government, private industry and outdoor recreation enthusiasts. Mr. Nicholes' involvement with off-road vehicle equipment and its utilization spans over fifteen years involving most forms of recreation vehicles, e.g. 4-wheel drives, dune buggies, motorcycles and snowmobiles.

depth, could help solve some ORV problems we now face: Recreation, in and of itself, is a personal, multi-dimensional activity. It is done during one's leisure time and locates itself on a very broad continuum between the sharp contrast of furious involvement and contented relaxation. It may be backpacking, boating, horseback riding, tennis, exploring, camping or just eating, etc. As with each of these activities, motorized vehicle use is a dimensional extension of the individual that encompasses his physical performance. It rewards the participant for his skill and aptitude and he is further rewarded sociologically by his peers for his involvement. Lastly, he gains his own personal psychological growth as he reacts successfully to both positive and negative aspects of the experience.

I think we can sum up this very heavy, but important, concept by saying that recreation, and more specifically, off-road vehicle recreation, is different things to different people. It has to be researched, planned and provided for with this understanding.

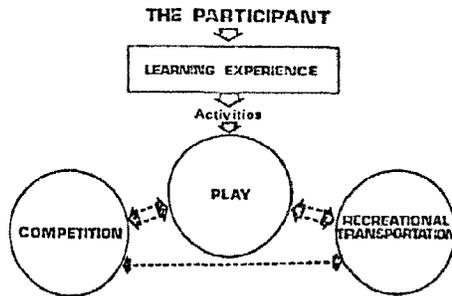
Emotionalism and related problems we see today break down into three major areas: (1) a stereotyped image leading to unrealistic attitudes and actions towards the vehicle and its operator by the uninformed; (2) no standard base of definition, resulting in (3) poor inter/intracommunication. For us to discuss this phenomenon more effectively, we must achieve a common level of understanding.

As previously mentioned, there are many kinds of "off-road vehicles" (ORVs): motorcycles, 4-wheel drive units, dune buggies, snowmobiles, etc. ORVs can be specifically designed for many uses, such as play activity, pseudo competition, structured competition, and recreational trail riding. The most common definition of ORV use implies only unstructured use of the equipment following no pathway on a resource. Knowledgeable viewers of the sport would expand the definition to acknowledge a substantial additional activity--that of using a lineal corridor, such as an unpaved, a graded or ungraded road, or a single wheel or similar pathway from Point A to Point B. (These definitions relate to both the design capabilities of the vehicle and how the enthusiast uses the machine.) The Statewide Planning Criteria chart will show relationships between machine and enthusiast for both definitions above. Who is

the enthusiast? He is:

- (1) One who is learning to operate the vehicle,
- (2) One who is engaged in a play and/or unstructured competition experience allowing him to use the machine to produce the recreation in and of itself, or
- (3) One who is involved in structured competition which enables him, after he masters the physical and mental requirements, to commit totally to the activity for a remunerative reward of some kind,
- (4) One who uses the vehicle also as a tool of transportation to participate in other recreation activities, such as camping, picnicking, fishing, photography, cultural sight-seeing, riding for pleasure, and many, many more opportunities.

## STATEWIDE PLANNING CRITERIA



As I travel around the United States, working with federal, state and local agencies on this phenomenon we call off-road vehicles, I sometimes wonder if the representatives of government bodies don't cringe just a little at the challenges these vehicles present to them. I am sure they are hoping that "change" will somehow alleviate the controversy between ORV users and non-users, and calm the political waves that seem to follow this activity.

Gerald Jacobs stated in his writing "Conflict in Outdoor Recreation" that:

While theories of conflict are varied, many do share the perception of incompatibility as a common concept. In outdoor recreation, this concept suggests two factors at work: the perception of differences among people's lifestyles and the evaluation that encountering such differences is undesirable.

Positive adaption to change when some react in an unbiased manner to ORVs takes effort, not so much "reactive effort" as merely becoming informed. The "uninformed" often emotionally criticize ORV activity saying it creates high "impact" and seriously question it as a form of legitimate recreation. Even though alive and flourishing today, this thinking seems to be academic and after the fact.

In his April 14, 1971 press release announcing the establishment of an Interior Department Task Force to study the use of off-road recreation vehicles (ORRV), Secretary of the Interior Rogers C.B. Morton said: "We recognize that off-road recreational vehicle use is one of the many legitimate uses of federally-owned lands." To my knowledge, that philosophy has never been changed.

Stereotypes of ORVs have emerged over the years and persist in the minds of a large portion of the population. Reason is often overshadowed with statements that the vehicles "eat land"; "create environmental havoc"; "initiate devastating effects"; "disrupt animal life"; "impact moose"; "conflict with other human uses of the land", etc. The vehicles may, in some circumstances be what the above stereotypes depict them to be; however, more knowledgeable persons feel that such references could be eliminated with responsible research, planning, and facility implementation and management. Dr. Stephen McCool, in a talk before the forty-third North American Wildlife Conference, said, "ORV use appears to be more a function of intuitive managerial expertise and judgment and political pressure than a direct result of systematic problem-driven research."

John D. Peine, Ph.D., in an article entitled "Land Management for Recreational Use of Off-Road Vehicles, 1972," said:

ORV owners are as diverse as their vehicle designs. Personal interest and use may influence land travel patterns and attitudes toward the landscape. To the performance-oriented vehicle owner, the vehicle may be an end in itself, with its mechanical development being its major recreational value. These attitudes are important to the land manager developing a plan to provide quality experiences for the various types of vehicle users. It appears doubtful that one management procedure would be adequate for all types of vehicle users.

Perhaps the definition of vehicles and user preferences should follow a multi-dimensional activity reasoning. Dr. Peine lists in priority activities popular among all off-roaders: hunting, seeing the countryside, challenging terrain, camping, fishing, exploring, picnicking, comparing performance, observing wildlife, taking photographs, etc.

Dr. McCool, in analyzing the 1977 national recreation survey, noted a few interesting facts about ORV users:

"Despite years of research, we really know very little about the behavior and needs of ORVers.  
\*ORVers tend to be much more recreation-ally active and diverse than non-ORVers.  
\*ORVers view outdoor recreation as having greater importance than non-participants."

Dr. Keir Nash, in his research for the State of Washington, 1979, entitled "Understanding and Planning for ORV Recreation," summarized participant communication of problem perceptions of the activity this way:

"An important feature of the off-road recreation policy debate is the frequency with which participants starting from different premises, talk past each other. Perceiving the problem quite differently, they interpret the relevant data differently."

Dr. Nash clarifies the communication breakdown between users and non-users this way:

"The argument is advanced that underlying the conflict over ORV recreation are very different, occupation-related attitudes toward the machine. It is suggested that the real inconsistency lies not in mechanically-oriented-by-trade ORVers finding no disjunction between 'using machine' and 'appreciating nature', but rather in attitudes of verbally and visually oriented 'non-mechanicals' (professors, environmentalists, etc.) who think it all right for themselves to bring their 'tools in trade' into nature (books, scientific instruments, etc.) but not for the mechanically-oriented to perform the equivalent act. The duality between machine and nature is arguably created in the minds of the opponents--not a demonstrable 'real entity'."

#### In Summary of the Introduction

A vast amount of emotionalism and stereotyping of the sport exists due to a lack of knowledgeable people in planning and management for these vehicles. Basic definition information is lacking. The off-road vehicle enthusiast, by policy, is participating in a legitimate recreation activity. Past and current research has not provided information for adequate problem solutions. A communication breakdown exists among users, as well as

between users and non-users. The ORV enthusiast is looking for social, physical, psychological recreational experiences, particularly "getting into nature". He is significantly more recreationally active in the out-of-doors than non-motorized participants, and because of his "mechanically-oriented-by-occupation attitudes", has difficulty communicating with or understanding non-machine-oriented resource recreators.

#### Government

Recently, while studying a number of state comprehensive outdoor recreation plans, I was able to put into words what the concerns of public policymakers and resource planners and managers were as they relate to off-road vehicles. Those thoughts about ORVs, generalized as simply as possible, are:

- \*The subject is controversial.
- \*ORV recreation legitimacy is still debated.
- \*Noise is a serious problem.
- \*ORV resource damage is evident.
- \*Illegal and unmanaged use is a major cause of damage to public and private lands.
- \*Planning to accommodate this recreation is necessary.
- \*A need exists for providing opportunities, but the enthusiasts' needs must be identified and evaluated.
- \*Few public agencies are providing opportunities, which encourages users to illegally trespass and operate their machines in unmanaged ways.
- \*Current environmental and social problems will be compounded by failing to provide for the needs of ORV enthusiasts.

Some other ORV concerns of state public officials are:

- \*Involvement of the federal government on public lands, as required by Executive Orders 11644 and 11989 continues to be a concern.
- \*Requests from special recreation interest groups for the recreation dollar to provide facilities and programs is outpacing the means to generate the funds.
- \*Questions of legitimacy of this activity arise as the availability and cost of recreation energy becomes a tradeoff with utilitarian and commerce activities.

Rogers C.B. Morton gave the legitimacy label to ORVs, but he also announced, in 1971, the establishment of an Interior Department task force to study the use of off-road recreation vehicles: "The need for planned action to reconcile the competing demands involved in the use of off-road vehicles is urgent." His charge to the task force was "to develop, in cooperation with the states and other federal agencies, conser-

vation interests and the industry, a management plan to assure an optimum of recreation use with a minimum of environmental conflict." Unfortunately, nine years later, that charge for the most part is unmet.

As documented in the 1978 nationwide outdoor recreation plan, task force report Phase I...the San Joaquin County Council of Governments said:

"It is obvious that off-road vehicles are not going to go away; therefore, there is a need for more areas where they can be appropriately used and conflicts minimized."

In recent years hundreds of laws, executive orders, and outspoken environmental groups and sympathizers have brought about increased restrictions and constrictions on ORV use of federal lands. This pressure is putting a further increased burden on states and local governments to solve existing problems. States have, for the most part, been ill-prepared or have not wished to respond with responsibility to this emotion-ridden recreation activity. Fourteen federal government agencies and offices currently "guide" and "regulate" ORVs in approximately twenty-four areas of concern. One Department of the Interior agency said of the legislative mandates: "In many instances these laws and directives are conflicting. Regulations to date to implement the laws have not been fully promulgated. Enforcement authority has yet to be effectively delegated."

Two more areas are of vital concern in shaping the future of ORV activity in the U.S.--the economy and energy.

Present economic moves by federal and state governments are shifting the burden of funding from these agencies to outdoor recreationists themselves. Dr. Douglas Sessoms, futurist and chairman, Recreation Administration, University of North Carolina, has said, concerning future recreation funding, "We must look for alternative sources of funding...a more diversified pattern of funding must be developed, e.g. taxes, grants, user fees, all of these will be required to sustain our efforts." Outdoor recreation enthusiasts themselves seem to concur with Dr. Sessoms, as a recent Michigan household study has borne out. To the question, "In general, do you think Michigan's public recreation should be paid for mainly through fees and charges, through general taxes, or both?", they responded with:

|                  |                       |
|------------------|-----------------------|
| Fees and charges | 50 percent/households |
| General taxes    | 13                    |
| Both             | 36                    |
| Other            | 1                     |

Energy availability and future costs are another concern, not only of government suppliers, but of non-users who criticize motorized vehicle use on grounds that it may not be classed as a legitimate recreation.

Estimated motorized recreational fuel consumption from a recent Council of Environmental Quality (CEQ) "Off-Road Vehicles on Public Land" report can possibly put in perspective the energy question.

Snowmobiles:

53 gallons per year per vehicle  
2.2 million snowmobiles  
Fuel consumption = 116.6 million gallons

Motorcycles:

30 gallons per year per vehicle  
(1,500 miles per year divided by 50 miles per gallon)  
5.4 million ORV cycles  
Fuel consumption = 162 million gallons

Dune Buggies:

33 gallons per year per vehicle  
(500 miles per year divided by 15 miles per gallon)  
250,000 dune buggies  
Fuel consumption = 8.25 million gallons

Four-Wheel Drive Vehicles:

500 gallons per year per vehicle  
(5,000 miles per year divided by 10 miles per gallon)  
1.5 million 4x4s used off-road (very rough estimate)  
Fuel consumption = 750 million gallons

Subtotal 1,036.85  
& other ORVs 13.15

Total 1,040 million gallons

I think Mr. Russ Shay's comment as editor in the July Sierra Club ORV Monitor editorial on this subject best sets a perspective as the situation is today: "Is that less than one percent (of gasoline consumed by all off-road vehicles) a terrible waste? People who say YES usually yield to a prejudicial judgment that ORVs are non-productive and, therefore, non-essential, and eminently expendable...But, once you start advocating "fuel censorship" by government, watch out. It's a Pandora's box..."

The high interest in outdoor recreation of ORVs over non-motorized participants suggests, as does the McCool analysis of the nationwide survey, that motorized vehicle participants will take "shorter trips for outdoor recreation... and it is likely to lead to higher frequencies of conflict with other recreational experiences and land uses."

In a 1979 Utah State University Department of Forestry study of 1500 randomly-selected households in six major metropolitan centers...a large majority agreed they would take less frequent trips (79.2 percent) and select vacation locations closer to home (76.6 percent) if energy became scarcer.

#### Enthusiasts' Problems and Needs

While government, environmentalists, and the public stereotype users into increasing restricted programs, the ORVers generally identify their problems and needs to be these:

- \*Federal, state, county or community governments are developing no visible ORV programs or facilities.
- \*Existing facilities and programs are poorly maintained and crowded.
- \*Former riding areas have been closed with no new alternatives being provided.
- \*Public agency ORV policies are either inconsistent or nonexistent.
- \*Few trained ORV administrators currently implement and operate facilities or programs.
- \*Major communication gaps exist between ORVers and federal and local land planning and management agencies.
- \*Few educational programs are in existence to objectively teach users, non-users, legislators, administrators, land planners and managers about ORVs.
- \*Non-participants inaccurately perceive ORV impacts; users believe those perceptions are more emotional than reasonable.

#### The Motorcycle

Let's focus on one of these vehicles, the motorcycle, and make some observations. There are 7,305,000 motorcycles in the U.S. today. You may appreciate that approximately fifty percent of the cycles sold each year are road bikes, and the other fifty percent, or 3,978,400 are off-road bikes. On-road and off-road motorcyclists annually generate approximately \$6.1 billion in consumer sales and services, state taxes and licensing. In 1978, an estimated 4.7 million off-road capable motorcycles were used by 11.7 million people, which generated over \$3 billion in consumer sales and services, state taxes and licensing. Last year the sales of off-road bikes to Americans exceeded 600,000 units.

Off-road motorcycles accumulated 50 percent of the 4.3 billion miles traveled last year by off-road/off-highway cyclists combined. Off-highway dual purpose cycles accounted for 27 percent of the mileage, and on-highway

cycles accounted for 23 percent of the mileage. The number of cycles (on-road and off-road) retired each year (est. 1978) is 1.7 million. To put in perspective the 4.3 billion miles traveled by off-road, dual-purpose, and on-road bikes, all motorized vehicles in 1978 traveled an estimated 1,504 billion miles.

Motorcycle sales are increasing in response to the current energy crisis. Total sales through August 1979 look like this: under 125cc up 133.8 percent; 125 to 349cc, up 30.3 percent; 350 to 449cc, up 48.8 percent. The Motorcycle Industry Council says:

"The up-demand for motorcycles is due in part to some families buying a cycle for short shopping trips, etc., instead of buying a second car. Fuel cost is a major factor...cycles can get 80-90 miles per gallon, an important consideration."

Total sales this year are expected to increase about ten percent. Utilitarian and recreational use of the motorcycle will likely continue to promote increased consumer acceptance as the present economy and energy situation lasts.

According to the 1977 National Recreation Survey, among those who engaged in recreation activities more than four times during the past twelve months, "driving vehicles or motorcycles off road" was more popular than:

- \*Hunting,
- \*Camping in developed or primitive areas,
- \*Ice skating outdoors,
- \*Canoeing, kayaking, or river running, or
- \*Cross-country skiing, and was as popular as
- \*Boating

Cycle Magazine's 1977 subscriber survey indicated that their readers during the last twelve months personally participated in:

- \*Camping 49.6 percent
- \*Fishing 49.6
- \*Hunting 40.4
- \*Boating 39.3
- \*Bicycling 38.2

#### Demographics

The ORV user is typically a married male, average age of 29.8 years who has attended some college, and is in a craftsman or foreman position. His average income is \$18,928. Seventy-seven percent have previously owned a motorcycle; 23 percent of current owners have never owned one before.

Dr. Keir Nash, whom we have previously quoted, says:

"Underneath a surface of similar average education, income, family lifestyle, there appear to be important differences--

especially in regard to the percentages of college-educated ORV recreationists (low, and not increasing substantially over the generations) and to the percentages of those in skilled craftsman and manual labor occupations (high, as is also union membership). There are disproportionately few high-status professionals among the ORV recreationists, except for engineers."

Recent happenings in motorized vehicle sales have brought much speculation about future direction public agencies should take in research, planning, and management. Private industry is also looking closely at future market opportunities and problems that may arise from the economy, energy, federal and state laws and regulations.

#### Off-Road and Dual-Purpose Motorcycles According to the Motorcycle Industry

The off-road motorcycle, as well as the dual-purpose machine, has suffered from the new emphasis on the utility aspects, rather than the recreational aspects, of motorcycling. The off-road cycle decreased 4.3 percent in unit volume during the first half of 1979.

(and)

Dave Sanderson, Executive Director of the New England Trail Riders Association, says, "We are viewing the backside of a fad. We are seeing the maturation of a recreation activity and are witnessing a plateau of new enthusiasts."

Sanderson continued, "Unlike snowmobiling, whose users are concentrated in rural areas, motorcyclists in the northeastern United States are located in urban environments." He said, "I foresee that users will seek more recreational trail riding activity than play areas in the future."

#### Snowmobiles:

Snowmobiling has erupted from an insignificant activity in the early sixties, engaged in by enthusiasts mostly within the upper snowbelt states, to one of the most popular winter outdoor recreation activities today.

Currently, 1,900,000 (est.) snowmobiles are in use in the United States with approximately 14,200,000 snowmobilers participating in the sport. Snowmobiling and directly-related economic activity has reached over 1.6 billion dollars annually and generates in direct state tax and registration fee receipts

\$77.6 million dollars a year.

The present market appears to be basically a replacement one; approximately 85 percent of all snowmobiles are sold to those who already own at least one machine. This information is verified by A.C. Nielsen Research as interpreted by SnowGoer Magazine, which states, "The new buyer will likely come from present snowmobilers who do not own snowmobiles at the present time."

The past two sales years for snowmobiles have been most successful. The apparent reasons for two growth years back-to-back have been good snow conditions, a positive and growing economy, good positive dealer optimism, new areas of snowmobile use opportunities, and exceptional positive media coverage.

A November 9, 1979 Kiplinger Report states that "snowmobile sales are slumping...will be off ten to fifteen percent this season. Recession talk scares some buyers." Current government, industry, and users' comments followed: currently snow conditions are poor, a questionable economy, possible scarce energy availability, increased machine prices, and fewer available places to go. All these negatives are forging early unrest in the consumer's mind for purchasing snowmobiles in the 1979-1980 year.

Jerry Bassett, editor of SnowGoer Magazine states:

"The manufacturers that I've talked to think that recession, rather than fuel, will be the biggest determining factor to snowmobile sales, usage, etc. Overall, the industry outlook seems extremely optimistic in light of everything. Manufacturing levels are virtually in a 'sold-out' situation. This, of course, is a reflection of building to dealer orders--plus a percentage of increase."

#### Demographics

The typical snowmobiler is married and has 2.8 children over ten years of age. His average age is between 25 and 49 years. He is a skilled, blue collar worker, whose family income averages between \$15,000 and \$20,000 per year. More than eight out of ten live in what would be considered rural areas. He lives where he can use his equipment on or directly from his homesite.

A study conducted by the Montana Department of Fish, Game and Parks shows that snowmobilers have a higher rate of participation in many other outdoor winter recreation activities than does the average Montanan. Of the 140,000 snowmobilers in Montana, one out of five also participates in downhill skiing, one out of seven in

Nordic skiing, one out of ten in snowshoeing, and more than one out of three in ice fishing. Almost half also participate in winter wildlife observation; approximately one out of five enjoys winter wildlife photography.

Snowmobile acceptance on public lands continues to increase, as depicted in a recently released national park policy statement:

"Snowmobiles are viewed as a mode of transportation which provide an alternate form of access when snow cover interrupts normal vehicular access to a park. Snowmobiles can transport park users to and from areas which are set aside for non-motorized forms of winter recreation, such as ice fishing, snowshoeing and cross-country skiing."

Not only is this acceptance increasing with resource administrators, but with that positive image growth, enthusiast solidarity has grown through their active involvement in moving legislation and political action; they have sought improvement of the sport through making money available, park development, and most recently, private industry initiative to establish destination tourism opportunities.

#### Trends

Now that we have dissected a number of elements that make up the off-road motorcycle experience, let's piece back together what that information may be telling us. In other words, let's look at how we might perceive motorized vehicle trends.

\*The future of the off-road experience will depend on availability of land for specific ORV activities, the severity of regulations, and the capability of enforcement of federal laws dealing with the environment, resource conflicts, and consumer protection.

\*Because of diminishing energy availability and its increasing cost, ORV activities will soon move closer to the enthusiasts' residences, specifically in urban population areas.

\*Federal land management agencies will gain greater control over regulation ORV use on public lands; they will support increasingly fewer off-road recreation opportunities and provide less financial support in land acquisitions and programs. This leaves states, local communities, and enthusiasts responsible for increased acquisition, planning, and managing of these facilities.

\*As demand for facilities and services grows because of increased efforts by special interest groups of the recreating public, so will conflicts between motorized and non-

motorized recreation activities. Better planning and management by state and local government to meet these demands will be needed. Those activities that financially support their needs will enjoy the rewards of their efforts. Those who don't contribute financially to their sport will be looking for places to participate.

\*As public officials, enthusiasts, and non-enthusiasts are exposed to credible ORV people, information, and programs, adequate facilities will be identified, planned and developed. This will enable planners and managers to accommodate ORVs without environmental and user conflicts taking place.

\*Motorcycle enthusiasts in the future will consider this equipment more seriously as transportation alternatives to the automobile; therefore, we will see increased purchase consideration of on-road bikes and dual-purpose motorcycles.

\*Over the next decade we can expect to see shrinking of organized and semi-professional competition events, while those participating in recreational trail activities close to home will increasingly enjoy the out-of-doors in various forms.

\*Unmanaged off-road play experiences on public lands will be increasingly constricted.

\*Despite years of ORV research, lawmakers, resource planners and managers, and enforcement agencies know very little about the behavior, needs, and trends of this recreation group. During the first half of the 80's, researchers will be necessary by increased litigations over user and resource conflicts to take a more scientific approach to representing all outdoor recreators, as well as doing a better job in planning and managing public recreation lands for this activity.

#### Summary Brief

Stephen F. McCool seems to summarize what I want to say:

"Despite years and years of research, we really know very little about the behavior and needs of snowmobilers and off-road recreation vehicle (ORV) users."

We won't solve the existing problems until we know who the motorized vehicle user is and what he wants from his sport.

LITERATURE CITED

- Alexander, Steven J., and Gale C. Samsen. 1977. Off-road vehicles, gasoline consumption and patterns of use. Mich. Dep. Nat. Res.
- American Motorcyclist Association. 1978. Facts about trail riders. Ohio.
- Bury, Richard L., Stephen McCool, and Robert C. Wendling. 1976. Off-road recreation vehicles. A research summary 1969-1975. Texas A & M.
- Continuing Market Analysis of Snowmobile Owners. 1979. A profile of snowmobile households in the United States. Snowgoer, Minn.
- Council on Environmental Quality. 1978. Off-road vehicles on public land. U.S. Gov. Print. Off., Washington, D.C.
- Jacobs, Gerald. 1979. Conflict in outdoor recreation--the search for understanding. Utah Tourism and Rec. Review, Vol. 6, No. 4.
- Kiplinger Report. 1979. Ski sales will be strong this year...but snowmobile sales are slumping. The Kiplinger Washington Letter, Vol. 56, No. 45, Washington, D.C.
- McCool, Stephen F. Impacts of ORVs: Snowmobiles, animals and man. 43rd No. Amer. Wildlife Conf.
- McCool, Stephen F. 1978. Snowmobilers, off-road recreation vehicle users and the 1977 National Recreation Survey. Sch. For., U. Mont.
- Michigan Snowmobile Use Survey. 1976. Department of Natural Resources, Law Enforcement Division, Mich.
- Morton, Rogers C.B. 1971. ORRV off-road recreation vehicles. Taskforce Study, Dep. of the Int., U.S. Gov. Print. Off., Washington, D.C.
- 1979 Motorcycle Statistical Annual. 1979. Motorcycle Industry Council, Cal.
- Nash, A.E. Keir. 1979. Understanding and planning for ORV recreation. The 1978-1979 Washington Off-Road Rec. Survey, IAC, Washington, D.C.
- 1977 National Outdoor Recreation Survey. 1977. Opinion Research Corporation for HCRS 1977, New Jersey.
- The 1978 Nationwide Outdoor Recreation Plan. 1978. Taskforce Report Phase #7, issue compendium. U.S. Dep. Int. HCRS.
- Peine, John D., Ph.D. 1972. Land management for recreational use of off-road vehicles. Tuscon, Arizona study paper submitted to the U. Ariz., Dep. of Waterched.
- Public Preference for Financing Public Recreation. 1977. Recreation Planning Report #3, Mich. Dep. Nat. Res., Lansing Mich.
- Shay, Russ. 1979. From the back of the gas line. The ORV Monitor, Vol. IV, No. 3.
- Sessoms, H. Douglas. 1979. The future of recreation and parks. Parks and Recreation Magazine, Washington, D.C.
- Utah Tourism and Recreation. Gasoline prices and availability: What do they mean for tourism? Utah Tourism and Recreation Review, Vol. 8, No. 3.

## NATIONAL BOATING TRENDS<sup>1</sup>

Albert J. Marmo<sup>2</sup>

---

Abstract.--This paper examines the characteristics of recreational boats and boaters in the United States and the nature and extent of boating activities. The primary sources of the information presented are the United States Coast Guard's Nationwide Boating Surveys conducted in 1973 and 1976. The evidence indicates that boating is a major form of outdoor recreation with a broad base of participation which has experienced continuous growth.

---

### INTRODUCTION

We do not know when the first boat was built. We do know that primitive men made dugout boats and canoes from large logs. The North American Indians built birchbark canoes, and the Eskimos built kayaks using seal skins. In other parts of the world, wicker and reed boats were common. While these early boats were built for work, they served as models for the "pleasure" or "recreational" craft that began to appear hundreds of years later.

Nobody really knows when recreational boating began. Little was recorded about it until the mid-1600's, when Charles II introduced yachting into England, according to the World Book Encyclopedia. The first English yacht club was founded in 1775. In the United States, recreational boating began in the early 1800's. The first yacht club was organized in New York City in 1844. In the early 1900's it is estimated that there were not more than 100,000 recreational boats in the entire United States.

The growth in boating hit its peak stride immediately after World War II.

---

<sup>1</sup>Paper presented at the National Outdoor Recreation Trends Symposium, Durham NH, April 20-23, 1980.

<sup>2</sup>Chief, Policy Planning and Information Analysis Staff, Office of Boating Safety, U. S. Coast Guard, Washington, D.C.

Boating industry estimates reveal that there were approximately 2.4 million recreational boats in use in the United States in 1947. This number had doubled little more than five years later. There were various reasons for the rapid growth. As in other areas after World War II, technological advances in materials and building/assembly techniques permitted mass production of lightweight boats, and therefore brought down the cost of owning a boat. Improvement of the outboard motor, and new inventions such as electric starters made boat operation easier for many people, including women. Boat trailers were introduced for use with the fast growing automobile fleet. Boat financing and insurance were facilitated. Additionally, a wider variety of boats became available to meet buyer demands, and a market opened up for used boats, contributing to the perpetuation of this dynamic process. The population of the nation continued to increase, as did its mobility. Personal income was rising and lifestyles becoming more active. With longer vacations and more holidays, about one-third of the year became available to the average worker for leisure. Boating retail expenditures were estimated to be 1.23 billion dollars in 1955 for boats and equipment, fuel, insurance, maintenance and repairs, storage, docking, launching and club membership. These expenditures increased to \$2.68 billion in 1965, \$4.8 billion in 1975, and \$7.5 billion in 1979 (MAREX 1979). There are currently over 2,600 boat manufacturers in the United States producing a myriad of boats, and about 6,000 marinas, boat yards and yacht clubs providing essential waterfront services.

## THE COAST GUARD'S RECREATIONAL BOATING SAFETY ROLE

### Recreational Boating Safety Program

The United States Coast Guard's early involvement with recreational boating was primarily search and rescue after a mishap occurred. There was some involvement, however, in the preventive aspects of boating safety. Two Federal laws, passed in 1910 and 1918, dealt with motorboat regulation. The Coast Guard's role grew as boating grew. The Motorboat Act of 1940, which superseded the 1910 Act, expanded Coast Guard authority to regulate safety equipment such as life preservers and fire extinguishers on motorboats, also, it provided for penalties for reckless or negligent motorboat operation. The Federal Boating Act of 1958 provided for Federal and State cooperation in the interest of uniform boating laws and enforcement, making the states partners with the Federal Government in regulating recreational boating.

The Coast Guard was moved organizationally from the U. S. Treasury Department to the Department of Transportation in April 1967. There was growing recognition that boating was becoming a more diverse, complex and dynamic recreational activity. Congressional interest was running high. In his 1968 message to Congress on the American Consumer, President Johnson spoke to desired improvements in the area of recreational boating. All of this interest and review of boating safety led to passage of the Federal Boat Safety Act of 1971. This Act was intended by Congress to provide, in one statute, a comprehensive national program having three main objectives: cooperative Federal/State programs, improved boat design and construction, and, more flexible regulation of boat operators. This is the present basic authority for the Coast Guard's Recreational Boating Safety Program. The objective of the program is to reduce the risk of loss of life, personal injury and property damage associated with the use of recreational boats to provide boaters maximum safe use of the nation's waters. The program is broad-based, having direct impact on the states, manufacturers of boats and associated equipment, dealers, distributors, importers and the boating public.

### The Need for Data

As the Recreational Boating Safety Program responsibilities grew and became more complex, the need for data for the

Coast Guard to manage the program grew. The Coast Guard had been assigned the responsibility for promulgating regulations dealing with manufacturer requirements for safe boat construction. In order to determine where safety problems existed, more had to be known about the boat population. The Coast Guard had been collecting and publishing boating accident statistics since passage of the Federal Boating Act of 1958. Rates, not raw accident data, however, are needed to identify the relative magnitude of safety problems and to determine effectiveness of safety programs. The Coast Guard reports annually on the number of boats registered by the states. The registration or numbering data has limitations. Initially, only boats over ten horsepower had to be registered. Presently, all motorboats are registered. Although some states go beyond this, the large nonpowered fleet is essentially not covered in this system.

Education and enforcement are two other major elements of boating safety programs. Knowledge about the number, characteristics and activities of boaters is necessary to most effectively carry out these program responsibilities. The boat operator is the primary target of safety efforts.

### Boating Surveys

A Coast Guard sponsored survey was conducted in the Fifth Coast Guard District (Maryland, North Carolina, Virginia and the District of Columbia) in 1969 to determine the feasibility of collecting boating information from the general public. The regional survey proved successful, and the telephone methodology utilized was later expanded to nationwide scope. Based on cost and time considerations and the capability for immediate interaction between interviewer and respondent, the telephone survey was chosen over personal interviews and mail survey mediums. The Coast Guard has sponsored two comprehensive surveys of the boating public. They were conducted during the months of April and May 1974 and covered 1973 boating activities, and April, May and June 1977 and covered 1976 boating activities. A stratified sampling plan was employed in the surveys. The Continental United States was partitioned into 400 geographical strata consisting of one or more counties. Two telephone central offices were selected at random for each stratum, resulting in 800 Primary Sampling Units. Within each central office, the final four digits of each telephone number to be dialed were then randomly selected by computer. For the 1976 survey, 28,261 households were contacted by a contractor. Of these, 6,018 were boating households,

that is, one in which someone owned and/or operated one or more boats in 1976. There were 5,507 completed interviews of boating households.

The survey reports are compilations of answers by individuals, weighted at the completion of the interviewing period to give national estimates. These surveys were relatively modest attempts to gain some of the data required to carry out program responsibilities. We learn from each iteration and build upon this knowledge. The surveys have provided many valuable indications of the actual situation. While the Coast Guard surveys represent the most comprehensive national boating surveys known, there are other boating data developed principally by the boating industry, States and other Federal agencies. All provide valuable insights in the areas they were intended to address. This paper highlights much of the varied data on boats, boaters, and boating activities contained in the Coast Guard surveys. Unless otherwise noted, reference to "the survey" or "surveys" throughout the paper will mean the Coast Guard Nationwide Boating Surveys.

#### BOATING HOUSEHOLDS

##### Boat Operators per Household

The Coast Guard surveys looked at boating households. A boating household is defined as one in which at least one member actually operated a boat in the survey year. The surveys identified 10.6 million boating households in 1973 and 14.9 million in 1976. One out of every five households in the United States in 1976 had at least one boat operator. Table 1 shows numbers of operators per household. The share of households with only one operator decreased by about 10%. Households with two operators increased about 5%, and those with three or more operators increased by lesser amounts. This attests to a greater active family involvement in boating.

##### Boat Ownership

There were 7.3 million households in 1973 and 9.6 million in 1976 in which one or more recreational boats were owned. The latter survey indicated that the average number of boats per boat-owning household was 1.31, and 21.1% of boat owning households owned more than one boat. Table 2 shows the number of boats owned per household.

Table 1.--Boat operators per household (USCG 1978)

| Operators per household | Year | Number of boating households | Percent of operator households |
|-------------------------|------|------------------------------|--------------------------------|
| 1                       | 1973 | 5,529,000                    | 52.1                           |
|                         | 1976 | 6,373,000                    | 42.8                           |
| 2                       | 1973 | 2,985,000                    | 28.1                           |
|                         | 1976 | 4,965,000                    | 33.3                           |
| 3                       | 1973 | 1,119,000                    | 10.6                           |
|                         | 1976 | 1,800,000                    | 12.1                           |
| 4                       | 1973 | 563,000                      | 5.3                            |
|                         | 1976 | 1,010,000                    | 6.8                            |
| 5                       | 1973 | 258,000                      | 2.4                            |
|                         | 1976 | 409,000                      | 2.7                            |
| 6                       | 1973 | 116,000                      | 1.1                            |
|                         | 1976 | 233,000                      | 1.6                            |
| 7 or more               | 1973 | 43,000                       | 0.4                            |
|                         | 1976 | 105,000                      | 0.7                            |
| Total                   | 1973 | 10,613,000                   | 100.0                          |
|                         | 1976 | 14,895,000                   | 100.0                          |

Table 2.--Household boat ownership (USCG 1978)

| Number of boats owned | Year | Number of households | Percent of boat owning households | Percent change |
|-----------------------|------|----------------------|-----------------------------------|----------------|
| 1                     | 1973 | 5,893,000            | 80.6                              | 26.2           |
|                       | 1976 | 7,559,000            | 78.9                              |                |
| 2                     | 1973 | 991,000              | 13.6                              | 38.9           |
|                       | 1976 | 1,377,000            | 14.4                              |                |
| 3                     | 1973 | 260,000              | 3.6                               | 50.0           |
|                       | 1976 | 390,000              | 4.1                               |                |
| 4 or more             | 1973 | 165,000              | 2.2                               | 56.4           |
|                       | 1976 | 258,000              | 2.7                               |                |

There is almost an even division in the way owners obtained their boats in 1976. According to the survey, approximately 48% bought their boats new, and a nearly equal number bought used boats. The remaining 4% built their own boats, some from kits.

Owners of 64.5% of new boats indicated that they had no intention of selling their boats, 5.5% had already sold the boat they used in 1976; the remaining boats were going to be kept anywhere from one month to more than five years. About 18% of the households that operated a boat in 1973, and 25% in 1976, rented a boat one or more times. In 1976, 9.2% of these households rented only one time, 5.3% twice, 5.6% three to five times, and 5.0% more than five times.

A national study of consumer attitudes toward recreational boating sponsored by the boating industry indicated that the

median family size of boat owning household was 3.7 members (MAREX 1979).

### Participation in Boating Activities

A major finding of the Outdoor Recreation Resources Review Commission's report to the President was that, "Water is a focal point of outdoor recreation - most people seeking outdoor recreation want water - to sit by, to swim and to fish in, to ski across, to dive under, and to run their boats over" (ORRRC 1962). Boating provides a platform for these and other water activities.

Members of boating households participated in one or more of a variety of boating activities. The basic proportions were similar between 1973 and 1976. The percent of households participating in water skiing showed the biggest increase, about 8%. Canoeing and whitewater activities were not separately broken out in the 1973 survey. Table 3 shows the households participating and the percent of time spent in the various boating activities in 1976.

Table 3.—Household participation in boating activities in 1976 (USCG 1978)

| Activity                       | Households participating | Percent of households* | Percent of time spent |
|--------------------------------|--------------------------|------------------------|-----------------------|
| Pleasure cruising or sailing   | 9,312,000                | 62.5                   | 31.5                  |
| Water skiing                   | 5,617,000                | 37.7                   | 13.7                  |
| Recreational fishing           | 11,422,000               | 76.7                   | 44.7                  |
| Hunting                        | 1,023,000                | 6.9                    | 1.6                   |
| Racing                         | 712,000                  | 4.8                    | 1.3                   |
| Commercial use - incl. fishing | 391,000                  | 2.6                    | .8                    |
| Whitewater canoeing            | 1,044,000                | 7.0                    | 1.2                   |
| Other canoeing                 | 2,359,000                | 15.8                   | 4.6                   |
| Whitewater rafting             | 401,000                  | 2.7                    | .3                    |
| Whitewater kayaking            | 161,000                  | 1.1                    | .1                    |
| Other kayaking                 | 289,000                  | 1.9                    | .2                    |
|                                |                          |                        | 100.0                 |

\*More than one response is possible for each of the 14,895,000 boating households.

It is clear from the survey that boating households are also active in recreational activities other than boating, including camping, fishing, hunting, athletic sports, and other outdoor recreation. Ninety-eight and one-half percent of boating operator households participated in one or more of these activities; 24% were active in all five. Recreational fishing had the highest percentage of participants, 88.4%.

### BOATS

#### Number of Boats

The Coast Guard has been collecting data on numbered or registered boats since the passage of the Federal Boating Act of 1958. Only motorboats of 10 or more horsepower had to be numbered. Some states expanded boat numbering requirements in the intervening years. The Federal Boat Safety Act of 1971 required all motorboats to be registered. Some states have gone beyond this and register all watercraft. While the numbering data has limitations for trend analysis due to some variances in state numbering requirements, it does provide long term data regarding the basic composition of the motorboat fleet. A major thrust of the Nationwide Boating Survey was to provide data on the non-powered boats as well as powerboats. Over 8.1 million boats were numbered in 1978. The total number of all boats according to the 1976 survey was 12.75 million. The number of boats in the United States more than doubled in twenty years.

#### Characteristics of the Boat Population

Boats are generally characterized by a variety of factors, including type, length, hull material, engine type and horsepower.

Boat types. There are many terms used to identify boat type. Broad categories include open motorboats, cabin motorboats, rowboats, sailboats, inboard boats and outboard boats, for example. More specific classes include runabouts, cruisers, johnboats, and many others. A long list of specific boat types was used in the 1976 survey. Some people had problems placing their boats within the types. Many people simply refer to their small boat as a "fishing boat". Six major groupings of boat types are used in this paper. It is felt that these are most representative of the many boat types, and will be easily identifiable in the mind of the reader. There is no question that the small open boats, powered and nonpowered, comprise the lion's share of the boating fleet, about three-fourths.

The relative percentage share of each major grouping of boat types is as follows:

|   |     |
|---|-----|
| Rowboat, Johnboat, Skiff<br>and other open, undecked<br>lightweight boats | 42% |
| Open Runabouts (decked<br>and powered)                                    | 31% |

|                                     |    |
|-------------------------------------|----|
| Sailboats (powered and nonpowered)  | 9% |
| Canoes and Kayaks                   | 9% |
| Cabin Cruisers and Houseboats       | 5% |
| Inflatables, Rafts and Thrill Craft | 4% |

**Boat length.** The simplest and most direct measure of boat size is length. Classification of motorboats by length is established by Coast Guard regulations. These classes, set by the Motorboat Act of 1940, are:

|         |                         |
|---------|-------------------------|
| Class A | Less than 16'           |
| Class 1 | 16 to less than 26'     |
| Class 2 | 26 to less than 40'     |
| Class 3 | 40 to not more than 65' |

Pleasure boats over 65' are documented by the Coast Guard. Numbered boat data provides a wealth of trend information regarding motorboat length. According to the 1978 data, 62% of the numbered motorboats are less than 16', 97% are less than 26' (USCG 1979). Table 4 shows the percent of boats by length class for the past ten years.

Table 4.--Motorboat length (USCG 1969-1978)

| Length class | Percent by year |       |       |       |       |       |       |
|--------------|-----------------|-------|-------|-------|-------|-------|-------|
|              | 1978            | 1977  | 1976  | 1975  | 1973  | 1971  | 1969  |
| Class A      | 62.22           | 63.68 | 64.31 | 65.58 | 65.20 | 64.53 | 66.28 |
| Class 1      | 34.66           | 33.33 | 32.67 | 31.66 | 31.44 | 31.91 | 29.99 |
| Class 2      | 2.76            | 2.66  | 2.69  | 2.65  | 3.03  | 3.19  | 3.37  |
| Class 3      | .36             | .33   | .33   | .31   | .33   | .37   | .36   |

The 1976 survey showed that 55% of all boats, powered and nonpowered, were under 16', and 96% under 26'. The 1973 survey contained similar findings. The following percentage share of boat type by length were computed by excluding the other or unspecified types reported in the 1976 survey. The rowboats, johnboats, skiffs, dinghys and other open lightweight boats accounted for 61.4% of boats under 16', sailboats 8.3%, canoes and kayaks 7.5% and open runabouts 19.9%. The open runabouts also accounted for 49% of boats between 16 and 25', open lightweight boats 18%, canoes and kayaks 12.7%, cabin cruisers and houseboats 8% and sailboats 7.2%. There were 418,000 boats between 26 and 39', consisting primarily of cabin cruisers, sailboats and houseboats. These types also account for most of the 78,000 boats over 40' in length.

**Hull material.** That material which constitutes the majority of the shell of the vessel is its hull construction. One of the clearest trends available is hull material preference. From the ten-year boat numbering data reflected in Table 5 it can readily be seen that fiberglass has become the predominant hull material, replacing wood. Aluminum has pretty much held its own.

Table 5.--Hull material (USCG 1969-1978)

| Year | Hull material |            |          |       |       |
|------|---------------|------------|----------|-------|-------|
|      | Wood          | Fiberglass | Aluminum | Steel | Other |
| 1978 | 10.91%        | 67.28%     | 36.80%   | 1.43% | 3.58% |
| 1977 | 12.10%        | 65.66%     | 37.90%   | 1.47% | 2.87% |
| 1976 | 13.48%        | 64.54%     | 36.90%   | 1.47% | 3.61% |
| 1975 | 14.24%        | 63.07%     | 37.05%   | 1.68% | 3.96% |
| 1974 | 16.62%        | 61.68%     | 35.70%   | 2.32% | 3.88% |
| 1973 | 18.66%        | 60.75%     | 34.58%   | 2.10% | 3.91% |
| 1972 | 23.08%        | 58.37%     | 33.03%   | 2.26% | 3.26% |
| 1971 | 25.67%        | 57.06%     | 31.64%   | 2.20% | 3.43% |
| 1970 | 29.04%        | 55.29%     | 30.27%   | 2.39% | 3.01% |
| 1969 | 31.38%        | 53.41%     | 29.30%   | 2.45% | 3.46% |

Fiberglass overtook wood as the most used hull material in 1969. New, more exotic and efficient hull shapes made fiberglass' advantage of molding-ease attractive. Fiberglass is also lighter, and offers ease of maintenance. Aluminum is now the second most used hull material. It has more strength in relation to weight than fiberglass, but it is more difficult to form. The two nationwide surveys bore out this trend in hull material for all boats. Fiberglass accounted for 44% of the hulls in 1976, 40% in 1973, aluminum 33% and 34%; and wood 10% and 15% in the two survey years. Most of the open lightweight boats, 61%, in 1976 were aluminum; 20% fiberglass. Fifty-three percent of the canoes were aluminum, 32% fiberglass. Sixty-six percent of the sailboats were fiberglass, 14% wood. Seventy percent of the open runabouts were fiberglass, 12% aluminum and 9% wood. Forty-seven percent of the cabin cruisers and houseboats were fiberglass, and 31% wood.

Looking at hull material by boat length, the 1976 survey showed that aluminum is the predominant material for the smallest boats, such as johnboats, canoes and skiffs, accounting for 47% of the boats under 16'. Fiberglass is second at 32%. Fiberglass accounted for 60% of the boats 16 to 25',

aluminum 18%. Wood accounted for 47% of the boats 26 to 39', fiberglass 37%. Fiberglass accounted for 49% of the boats over 40', wood 42%.

Engine type. Marine engines are basically either inboard or outboard, jet, or inboard/outboard (outdrive). As the name implies, outboards are mounted outside the boat, on the transom. These are generally two-stroke engines designed specifically for boating. The inboards are built into the boat hull. These are usually four-stroke engines adapted from automotive engines. Inboard/outboards have the power unit inside the boat and the drive outside.

Most of the early recreational boats in the country were inboards or auxiliary-powered sailboats. The outboard was something of a novelty. The motors were bulky, heavy, hard to start, generally unreliable, and lacking in horsepower. The phenomenal growth in boating went along with the refinement of the outboard motor.

Coast Guard data on numbered boats for 1978 indicates that 84.75% are outboards and 15.25% are inboards, including inboard/outboards. The share of inboards has increased about 3% during the past ten years. The 1976 survey indicated that there were 7.8 million boats powered by outboards, including jets, 971,000 inboards, including jets, 844,000 inboard/outboards, and 123,000 other. Five and one-half percent of all boats had two or more engines for use with them. These engines were not necessarily mounted on the boat simultaneously.

Horsepower. The surveys showed, as one would expect, that the horsepower of the majority of open lightweight boats is under 30, as are the engines on auxiliary-powered sailboats. The majority of engines on the open runabouts and cabin cruisers were over 30 horsepower. A comparison of horsepower between the two survey years is made in Table 6.

Table 6.--Number of boats by horsepower (USCG 1978)

| Year | Horsepower |      |      |       |       |        |          | Total |
|------|------------|------|------|-------|-------|--------|----------|-------|
|      | None       | 1-5  | 6-10 | 11-30 | 31-50 | 51-100 | Over 100 |       |
| 1973 | 2166       | 1021 | 1276 | 1069  | 1420  | 1395   | 1257     | 9604  |
| 1976 | 3048       | 1208 | 1552 | 1293  | 1721  | 1867   | 2051     | 12750 |

Increases in the number of nonpowered sailboats and canoes accounted for the largest shares of the higher number of boats

with no engines in 1976. The growth of boats in the higher horsepower categories is higher than in the lower categories. Boating industry data indicates that the average horsepower of motors sold has increased steadily. In 1969, it was 33.1 HP, and in 1979 it was 47.0 HP (MAREX 1979).

Boat age. The 1973 survey found that the average age of a boat was 8.0 years. The 1976 survey showed an average age of 8.3 years. Rowboats were the oldest, an average of 10 years. Cabin cruisers were next at 9.7 years, open runabouts 8.7 years and sailboats 8.5 years. The average age of wooden boats was 11.6 years in 1973, and 13.3 years in 1976; aluminum 7.6 in 1973 and 8.4 in 1976; and fiberglass 6.4 in 1973 and 7.2 in 1976. Fiberglass boats are expected to last about as long as aluminum boats, 12 to 20 years. Fiberglass is more easily repaired. Wood boats require more maintenance and their durability is highly dependent on the quality of wood used.

Insurance. Both surveys showed that about 62% of the boats were insured. In 1976, 41.3% of the boats that were insured had special boat insurance, 48.4% were covered under a homeowners policy and 10.3% had some other insurance.

#### BOAT OPERATOR PROFILE

The participation rate of the U. S. population in boating as determined by various recreation surveys have averaged about 25%. The 1976 Coast Guard survey identified 50.4 million boaters. It is safe to say that at least one in four Americans participate in boating. The boat operator is ultimately responsible for the safety of his craft and its passengers. He is therefore the primary target of boating safety education and enforcement programs. The surveys found that there were 1.8 operators per household in 1973 and 2.0 in 1976. The number of operators was 19.5 million in 1973 and 30.1 million in 1976. The various characteristics of these operators create a composite profile.

#### Age and Sex

The average age of all boat operators was 34 years in 1973 and 31.5 years in 1976. Table 7 profiles boat operators by age and sex for the two survey years. From the table it can be seen that the number of operators grew significantly. The number of female operators almost doubled, increasing by 89%. The number of male operators

increased by 43%. In the 20 to 30 age groups, the increase in female operators was about 120%. Overall females made up 30% of the boat operator population in 1976, and 25% in 1973. The number of operators 30 years and younger relative to the total operators in each survey year increased from 49.4% to 55.9%. The trend is toward younger operators, and more female involvement. The industry-sponsored study of consumer attitudes toward recreational boating found that, "Somewhat contrary to the climate that many believe existed 10 or 20 years ago, women appeared to be generally supportive of boating as a recreational activity. Whether this stems from their recognition that boating has developed into an attractive and enjoyable family-centered recreational form, or is simply one of the corollaries of female liberation so evident in other cultural spheres, boating is no longer viewed as primarily a means of male gratification" (MAREX 1979). The Department of Commerce publication, "The Growth of Selected Leisure Industries", indicates that, "Sales of almost all types of recreational goods to women are an area of both current growth and future potential. Women of all ages and all socio-economic levels are taking up a variety of sports, many for the first time" (DOC 1979). The publication also indicated that, "The surge in the young adult population which will continue for the next few years is favorable for most segments of the recreation industry, especially for those selling equipment for active sports and outdoor activities".

Table 7.--Boat operators by age and sex (USCG 1978)

| Age      | Year | Male       | Female    | Total      |
|----------|------|------------|-----------|------------|
| Under 12 | 1973 | 324,000    | 99,000    | 423,000    |
|          | 1976 | 561,000    | 365,000   | 926,000    |
| 12-15    | 1973 | 956,000    | 415,000   | 1,371,000  |
|          | 1976 | 1,695,000  | 721,000   | 2,416,000  |
| 16-19    | 1973 | 1,561,000  | 779,000   | 2,340,000  |
|          | 1976 | 2,660,000  | 1,264,000 | 3,944,000  |
| 20-25    | 1973 | 2,082,000  | 839,000   | 2,921,000  |
|          | 1976 | 3,626,000  | 1,857,000 | 5,483,000  |
| 26-30    | 1973 | 1,960,000  | 604,000   | 2,564,000  |
|          | 1976 | 2,742,000  | 1,315,000 | 4,057,000  |
| 31-40    | 1973 | 2,553,000  | 933,000   | 3,486,000  |
|          | 1976 | 3,702,000  | 1,753,000 | 5,455,000  |
| 41-50    | 1973 | 2,604,000  | 627,000   | 3,231,000  |
|          | 1976 | 3,021,000  | 1,118,000 | 4,139,000  |
| 51-60    | 1973 | 1,562,000  | 357,000   | 1,919,000  |
|          | 1976 | 1,954,000  | 513,000   | 2,467,000  |
| Over 60  | 1973 | 1,033,000  | 173,000   | 1,206,000  |
|          | 1976 | 1,021,000  | 188,000   | 1,209,000  |
| Total    | 1973 | 14,635,000 | 4,826,000 | 19,461,000 |
|          | 1976 | 20,982,000 | 9,114,000 | 30,096,000 |

## Employment

The 1976 survey determined the labor force participation of primary boat operators over 16 years old. The primary operator is defined as that operator in a boating household who had the most operating time in the survey year. The employment status of primary operators as compared to the U. S. population is shown in Table 8. It shows that the percent of employed and full time student primary operators is much higher than the comparable segments of the U. S. population. The percent of houseworker primary operators is drastically lower. It is safe to assume that a great many are secondary operators, however.

Table 8.--Labor force participation of primary operators over 16 years old (USCC 1978)

| Employment status      | Primary operators   |                  |                                  |
|------------------------|---------------------|------------------|----------------------------------|
|                        | Number <sup>a</sup> | Percent of total | Percent census data <sup>b</sup> |
| Employed               | 11,162,000          | 77.6             | 59.0                             |
| Unemployed             | 270,000             | 1.9              | 4.7                              |
| Student, full time     | 1,599,000           | 11.1             | 5.3                              |
| Houseworker            | 248,000             | 1.7              | 22.3                             |
| Disabled (permanently) | 92,000              | 0.6              | 3.6                              |
| Retired                | 1,025,000           | 7.1              | 5.1                              |
| Total asked            | 14,396,000          | 100.00           | 100.00                           |

<sup>a</sup>Includes only those primary operators over 16 years old.

<sup>b</sup>Percent of U.S. population over 16 years old falling in each of these categories.

## Job or Occupation

The 1976 survey obtained information on the job or occupation of employed primary operators over 16 years old. Table 9 shows that the percent of primary operators in major job categories is comparable to the percent of that segment of the U. S. population, with the exception of the Service Worker occupational field. Census data indicate that 13.8% of the employed U. S. population over 16 years old in 1976 were service workers, but only 6.4% of primary boat operators were. There are some significant differences within the major occupational groupings. For example, the professional and managerial white-collar workers account for 43.5% of the employed primary operators, while their share of the U. S. population is 25.6%. On the other hand, the clerical white-collar workers accounted for only 2.5% of the primary

operators. Census data showed 17.8% falling in this category. Many of these are probably secondary boat operators in the household. The industry-sponsored survey of consumer attitudes found percentages in the major occupational groupings to be very close to those determined by the Coast Guard survey (MAREX 1979). The industry survey showed 52% of male boat owners to be white collar workers, 45% blue collar/farm workers and 9% retired/unemployed.

Table 9.—Job or occupation of primary operators (USCG 1978)

| Job or occupation                      | Number <sup>a</sup> | Percent of total | Percent census data <sup>b</sup> |
|--|---------------------|------------------|----------------------------------|
| White-collar workers                   | 5,400,000           | 52.8             | 49.8                             |
| Professional, technical                | 2,656,000           | 26.0             | 15.1                             |
| Manager or administrator (except farm) | 1,791,000           | 17.5             | 10.5                             |
| Sales worker                           | 701,000             | 6.8              | 6.4                              |
| Clerical or kindred worker             | 252,000             | 2.5              | 17.8                             |
| Blue-collar workers                    | 3,701,000           | 36.2             | 33.0                             |
| Craftsman or kindred worker            | 1,708,000           | 16.7             | 12.9                             |
| Operator (except transport)            | 634,000             | 6.2              | 11.4                             |
| Operator of transport equipment        | 528,000             | 5.2              | 3.8                              |
| Laborer (except farm)                  | 831,000             | 8.1              | 4.9                              |
| Farm workers                           | 474,000             | 4.6              | 3.4                              |
| Farmer or farm manager                 | 292,000             | 2.8              | 1.9                              |
| Farm laborer or foreman                | 182,000             | 1.8              | 1.5                              |
| Service worker                         | 655,000             | 6.4              | 13.8                             |
| Total <sup>c</sup>                     | 10,230,000          | 100.0            | 100.0                            |

<sup>a</sup>Includes only those primary operators over 16 years old who are employed.

<sup>b</sup>Percent of U. S. population over 16 years old falling in these categories.

<sup>c</sup>Does not include Armed Services - 197,000 and 'Other' - 735,000; this was done for comparison purposes.

### Schooling

A question regarding the highest grade or year of school completed by primary operators over 25 years old was asked in the 1976 survey. Table 10 portrays the results.

Primary operators have achieved a higher educational level than the comparable U. S. population. Over 50% have some education beyond high school. Almost one-third are college graduates. The industry consumer attitude survey had similar findings.

Table 10.—Highest grade or year of school completed (USCG 1978)

| Grade or Year                            | Primary operators   |                  |                                  |
|--|---------------------|------------------|----------------------------------|
|  | Number <sup>a</sup> | Percent of total | Percent census data <sup>b</sup> |
| Less than 8th grade                      | 251,000             | 2.3              | 11.6                             |
| Completed 8th grade                      | 436,000             | 3.9              | 10.3                             |
| Some high school                         | 1,165,000           | 10.4             | 15.6                             |
| High school graduate                     | 3,492,000           | 31.3             | 36.2                             |
| Some post-high school; no college degree | 2,643,000           | 23.7             | 12.4                             |
| College graduate, incl. graduate work    | 3,165,000           | 28.4             | 13.9                             |
| Total                                    | 11,152,000          | 100.0            | 100.0                            |

<sup>a</sup>Includes only those primary operators who gave their age and were over 25 years old.

<sup>b</sup>Percent of U. S. population over 25 years having completed these categories.

### Income

The 1976 survey did not include any question regarding income. The 1973 survey provided the following household income data: 28.5% under \$10,000 per year, 32.9% ten to \$15,000, 18.4% fifteen to \$20,000, 8.6% twenty to \$25,000, and 11.6% over \$25,000 per year. Nearly 62% of the boating households had income of less than \$15,000 per year in 1973. The boating households had slightly higher percentages in the income categories over \$10,000 as compared to the Census data for total U. S. households. The 1979 industry consumer attitude survey found a median income of \$23,500 for boat owning households.

### Boat Operating Experience

The 1973 survey found that 10.2% of primary boat operators had under 20 hours of operating experience. In 1976, 15% had under 20 hours, 23.3% had 21-100 hours, 26.0% had 101-500 hours, and 35.7% had over 500 hours. There was a slight downward trend in boat operating experience.

### BOAT USE

#### Boating Exposure

Determination of the amount of time boats are used is necessary to assess whether any particular types of boats are generally less safe than others.

Therefore, a major purpose of the surveys was to develop these estimates. Each boat owner was asked the number of months the boat was used during the survey year, the average number of outings per month, and the hourly length of an average outing.

Months used. There were 1,428,000, or 11.2%, of the 12,750,000 boats estimated by the 1976 survey not used at all during 1976. Of those that were used, 35% were used up to three months of the year, 79% were used six months or less. No particular type of boat stood out as to monthly use patterns.

Of the boats that were used during 1976, 11.5% were used only one time per month and 17.3% twice. Almost 70% of the boats were used six or less times. Seventeen percent were used more than ten times.

Outing length. The average number of hours per outing of boats used in 1976 was 5.3. Forty-six percent of the boat outings were from two to four hours, 22.3% were over six hours.

Boat hours. Based upon the monthly use and length of outing data, the number of boat hours was computed. The total number of boat hours in 1976 was 2.26 billion, and 1.55 billion in 1973. The exposure per boat went from 190 hours in 1973 to 199 hours in 1976. The runabout accounted for the largest single boat type percent share of boat exposure hours, 26.7% in 1976. The various types of open lightweight boats with motors accounted for 29.9%, and without motors 3.3%. Sailboats without motors accounted for 7.1%, and with motors 3.3%. Cabin cruisers accounted for 7.7% of the 1976 boat exposure hours.

Boats with motors accounted for 84% of the 1976 boat exposure hours, and 87% of the 1973 boat exposure hours. Boats without motors accounted for the remaining 16% of the boat exposure hours in 1976, and 13% in 1973. The largest single change between 1973 and 1976 in the boat type categories that are directly comparable is a 3% increase in the sailboat without motor exposure hours.

Passenger hours. The average number of passengers on board boats was obtained through the surveys. These data were used to convert boat exposure data to passenger exposure information. There were 7.6 billion passenger hours in 1976. This is about 3 billion more than in 1973, when

approximately 3 million boats less operated. According to the 1973 survey data there were 3 passengers, on the average, for every hour of boat operation. This ratio increased to 3.4 in 1976.

The types of boats accounting for the greatest shares of passenger exposure hours in 1976 include: runabouts 27.5%, open lightweight boats 23.0%, cabin cruisers 13.8%, and sailboats 9.8%. Houseboats averaged the most passengers carried per boat, 6.6, however this type of boat only accounted for 1.7% of the total passenger exposure. Cabin cruisers averaged 6.1 passengers, and sailboats with motors 4.8.

#### Trailing of Boats

Trailing or carrying his boat gives the boater the flexibility to choose a boating area suitable to his purposes. The range and variety of boating locations afforded by trailing is appealing to a great number of boaters as evidenced by the 1976 survey data. The survey indicated that 62.7% of the boats, about 8 million, were trailed or carried to a launching site. Boats under 16 feet accounted for 58.8% of the boats trailed, and those 16 to 25 feet accounted for 40.6%. As to type of boat, 66.7% of the runabouts, 66% of the open lightweight boats, 46.4% of the sailboats, and 34% of the cabin cruisers are trailed or carried. Survey respondents were asked the number of miles, round trip, they normally trailed or carried their boat on each outing. The results were that 29.3% trailed less than 10 miles, 35.9% between 11 and 50 miles, 17.1% between 51 and 100 miles, and 17.7% over 100 miles. The effects of fuel prices and availability on the distances boats are trailed will be an interesting trend to observe.

#### BOATING ACCIDENTS

Boating is fun. Unfortunately, the fun in boating can be marred by the consequences of a boating accident. The unfamiliarity of the water environment which makes boating an enjoyable break from the daily routine, also poses a danger to those who may be unaware of the possible hazards. The Coast Guard has published annually for 20 years statistical information gleaned from boating accident reports received. This information, together with the boating survey and any other pertinent data available, is analyzed to determine safety problem areas and program effectiveness.

The reporting of fatalities is within the 95 to 100% range. Therefore, fatality data is the most complete and reliable source of boating safety trend data. The fatality rate per 100,000 boats is one overall indicator of boating safety. The rate of fatalities per 100,000 boats has been cut in half over the last ten years, going from 19.6 in 1968 to 9.4 in 1978. The actual number of boating fatalities in 1978 was 1,321. The highest rate computed was 21.4 fatalities per 100,000 boats in 1965. The major types of boating casualties are capsizings, which accounted for 35.5% of the boating fatalities in 1978; falls overboard, which accounted for 27.2% of the fatalities; collisions, accounting for 44.1% of the reported injuries and 35.6% of the reported property damage; and fires and explosions, accounting for 28.4% of the reported property damage.

#### Boats Involved

The prevalent characteristics of the boats involved in the largest share of the fatalities are generally not surprising having looked at the characteristics of all boats through the survey data. The percentages included in Table 11 reflect the number of fatalities in 1976 related to the particular boat characteristics listed. Factors referred to as "unknown" were eliminated. Only those characteristics accounting for at least 20% of their particular category were included in the table with the exception of the manual propulsion item which in 1976 was under 20%, but is included for comparative purposes.

Table 11.--1976 Fatalities by boat characteristics (USCG 1977)

| Primary boat characteristics | Percent of fatalities |
|------------------------------|-----------------------|
| <u>Type</u>                  |                       |
| Open motorboat               | 50.6                  |
| <u>Length</u>                |                       |
| Less than 16 feet            | 38.2                  |
| 16 to 26 feet                | 35.8                  |
| <u>Hull material</u>         |                       |
| Aluminum                     | 40.7                  |
| Fiberglass                   | 38.9                  |
| <u>Propulsion</u>            |                       |
| Outboard                     | 57.7                  |
| Manual (oars, paddle)        | 19.0                  |
| <u>Horsepower</u>            |                       |
| No engine                    | 30.3                  |
| 10 HP or less                | 20.7                  |
| Over 15 HP                   | 21.6                  |
| <u>Age</u>                   |                       |
| Under 5 years                | 54.0                  |
| Over 10 years                | 27.5                  |

#### Boat Operators

The following operator information was computed based upon those descriptors which were specified in the 1976 reports of fatalities. The age of the operator involved in 28.7% of the fatalities was 25 or under, 50.9% between 26 and 50 and 20.4% over 50 years. The 1976 survey indicated that the number of operators 25 or under was 13.7% higher than the number involved in fatalities in 1976, the 26 to 50 age category was 5.5% lower, and the over 50 years category was 8.2% lower. As for experience, 19.9% of the fatalities in 1976 involved operators with less than 20 hours of operating experience, 27.9% with 20 to 100 hours, 23.6% with 100 to 500 hours, and 28.6% with over 500 hours. These percentages are within five percentage points of the comparable categories of operator experience in the 1976 survey.

#### Exposure

Going a step farther in accident analysis, we can look at the fatalities in terms of boater exposure. Fatalities per million passenger hours dropped from .38 in 1973 to .17 in 1976. Based on the boater exposure by boat type data in the 1976 survey and the 1976 boating fatality statistics, fatality rates by boat type were computed. It was found that the open lightweight boats without motor topped the list with about 1.8 fatalities per million passenger hours. These are the types of boats on which most of the falls overboard and capsizings occur, and these types of casualties account for the greatest share of the fatalities.

#### Comment

These are but brief examples of how the data collected by the Coast Guard are used. Like virtually all data, these data have limitations. Reliance on individual reporting and availability of sufficient funds for more extensive data gathering are two constraints. We continuously strive to improve the information base using experience gained in collecting and working with the data. Other, valuable sources of data are sought out and considered in the interest of developing the most representative picture of boating in the United States. The picture that has emerged is one of a continuously growing form of outdoor recreation which enjoys a broad base of participation.

LITERATURE CITED

- International Marine Expositions, Inc. 1979.  
The non-boater: something of value, 29 p.
- International Marine Expositions, Inc. 1979.  
Boating '79, 8 p.
- Outdoor Recreation Resources Review Commission.  
1962. Outdoor recreation in America, 246 p.
- United States Coast Guard. 1969-1978. Boat-  
ing statistics. CG-357, 39 p.
- United States Coast Guard. 1978. Recreational  
boating in the continental United States in  
1973 and 1976: the nationwide boating survey,  
121 p.
- United States Department of Commerce. 1979.  
The growth of selected leisure industries,  
41 p.

## TRENDS IN RIVER RECREATION<sup>1</sup>

Earl C. Leatherberry, David W. Lime, and Jerrilyn LaVarre Thompson<sup>2</sup>

---

**Abstract.**--Participation in river recreation has been expanding at a rapid rate. This paper reviews selected phenomenon associated with the growing popularity of rivers as recreational resources. The paper will: (1) describe the river recreation resource (the supply situation); (2) present selected indicators of increased river recreation use (the demand situation); (3) present demographic and experience profiles of selected river recreation users; (4) describe some of the environmental and social impacts occurring from increases in river recreation activity; (5) present selected management strategies used to cope with impacts; and (6) speculate some future trends in river recreation.

---

Interest in rivers for recreation is expanding rapidly. All types of rivers--urban and rural, placid and fast flowing, polluted and clean--are being used increasingly for recreation. And, people are using rivers for a wider variety of leisure activities. Besides water activities such as swimming, fishing, boating, kayaking, and waterfowl hunting, other activities, such as camping, hiking, picnicking and relaxing are often pursued with rivers as an important backdrop.

Rivers used for recreational purposes vary in length and size, and traverse private as well as public lands. Management responsibility is often fragmented, or altogether absent. Recreation use often coexists (sometimes controversially) with nonrecreation uses such as hydroelectric power production, irrigation, timber harvesting, mining, grazing, and nonrecreational commercial traffic. Many of America's rivers, however, offer recreation in a relatively natural or naturally-appearing setting where there are few human-made features and the chance for solitude is fairly high.

The purpose of this paper is to assemble information on trends in river recreation, especially (1) supply, (2) demand, (3) who users are and what they are like, (4) environ-

mental and social impacts, (5) present management techniques, and (6) the future. We focus on those rivers with frequent canoeing, rafting, innertubing, motorboating, fishing, and a variety of shore uses such as hiking, camping, and picnicking. We did not include recreation on large rivers having substantial commercial traffic and large pleasure craft, such as the Lower Mississippi, Ohio, Hudson, Sacramento, and Columbia Rivers.

Despite the dramatic growth in the amount and variety of literature about river recreation (Anderson *et al.* 1978) in the last half decade, as well as interest by public administrators, planners, managers, researchers, and the public, there is little information on trends *per se*. Thus, the paper is intended to assemble much of what is known on this subject.

### SUPPLY OF RIVER RECREATION

There are more than 3.2 million linear miles of rivers and streams in the continental United States (Water Resources Council 1968). Alaska has another 365,000 miles. It is difficult to delineate those portions that are utilized for recreation. We do know, however, that most rivers and streams are too small to support on-water recreational activities. For example, only about 700 streams with a combined length of 100,000 miles have a minimum flow of at least 500 cubic feet per second--the minimum flow desirable for on-water recreational activities (Water Resources Council 1968).

---

<sup>1</sup> Paper presented at the National Outdoor Recreation Trends Symposium, Durham, NH, April 20-23, 1980.

<sup>2</sup> The authors are, respectively, Geographer, Research Social Scientist, Forester, U.S. Dep. Agric. For. Serv., North Central Forest Experiment Station, 1992 Folwell Avenue, St. Paul, MN 55108.

Obviously, not all of this is available for recreation. Much is exploited for nonrecreational uses, resulting in pollution or reduced flow. Other rivers are not readily accessible to the public. Some are far removed from population centers, and others, although near or in densely populated urban areas, are virtually inaccessible because they are bordered by private land, or access is limited, or both.

Because of the lack of "hard" data about the supply of river recreation resources nationwide, the Heritage Conservation and Recreation Service (HCRS) is conducting an inventory of rivers to provide a reliable data base for the nation's river resource. The inventory will also identify the highest quality rivers for possible consideration under federal, state, or local river preservation programs. The national inventory is being conducted in two phases. The first phase focuses on the natural qualities of rivers. All river segments over 25 miles in length are screened against various criteria, mostly factors relating to the extent of human intrusions. The second phase began in 1979 and will identify rivers greater than 5 miles in length with high recreation and aesthetic values that are readily accessible to urban areas.

Most national information comes from rivers specially designated under federal and state programs. The federal Wild and Scenic Rivers System preserves many of the nation's outstanding free-flowing rivers. The system was established in 1968 with eight rivers, and identified 27 additional rivers to be studied for inclusion in the system. Growth in the system was slow; a total of 15 rivers were authorized by 1975. Then between 1976 and 1978 13 additional rivers were authorized as components of the system. Currently the system contains 28 rivers or river segments, totaling 2,318 miles (Table 1). An additional 48 rivers have been designated for study as potential components. Other rivers or river segments including the Current and Jack Fork Rivers in Missouri and the Buffalo River in Arkansas have been designated National Scenic Riverways.

In addition to federal efforts to preserve river resources, 23 States have established river preservation programs (Table 2). The first statewide program was established in Wisconsin in 1965. States passing legislation jumped from 3 in 1968 to 19 in 1972. Since 1975 no new State legislated programs have been implemented, but there are indicators that 40 States are active in river protection efforts (Alling and Ditton 1979). To date, 19 States have designated over 200 rivers or river segments, totaling nearly 6,000 miles. Unlike the federal program, which is uniform in intent

and purpose, state programs range from active, dynamic planning to merely token efforts having minimal administrative responsibilities.

#### DEMAND FOR RIVER RECREATION

An extensive national survey by the U. S. Coast Guard revealed that the number of kayaks and nonmotorized canoes owned by Americans has grown disproportionately faster than any other type of craft (U. S. Department of Transportation 1978). Between 1973 and 1976, for example, there was a 68 percent increase in the number of canoes and a remarkable 107 percent increase in the number of kayaks. Presently there are an estimated 1 million canoes and 90,000 kayaks nationwide. In Minnesota the growth in canoe and kayak ownership is particularly dramatic. Between 1972 and 1978, the estimated state population increased 3 percent; during the same period the number of canoes and kayaks registered with the Department of Natural Resources increased 143 percent, from 41,675 to 101,322 (State of Minnesota 1979).

There are substantial regional differences in canoe and kayak ownership patterns in the contiguous 48 States. Data from the National Boating Survey in 1973 (U. S. Department of Transportation 1974) and population figures from the same year reveal that the number of canoes owned in the New England and Lake States per unit population is higher than average, while canoes per unit population in the Gulf Coast, East Central, and West Coast regions is lower than average. Kayak ownership per unit population in the New England, Mid-Atlantic, and West Coast regions is high compared to the average, while kayak ownership per unit population in the Gulf Coast, East Central, Midwest/Mountain, and Great Lakes regions is lower.

Some of the most striking ownership patterns are in the New England, Great Lakes, and West Coast regions. New England accounts for roughly 15 percent of the population but 26 percent of the canoe ownership and 29 percent of the kayak ownership. The Great Lakes region has 30 percent of the canoes but only 5 percent of the kayaks, while making up 21 percent of the population. Conversely, the West Coast region, with 13 percent of the population, has only 4 percent of the canoes but 36 percent of the kayaks.

All data, sketchy as they are, show a steady upward trend in river recreation from the late 1960's on (Table 3). On many rivers the number of visitors increased by as much as 20, 50, or even 100 percent per year. Rivers

Table I.-- River mileage classifications for components of the national wild and scenic rivers system as of December 1979<sup>a</sup>

| Rivers in the national system                         | Designated Year | Administering agency        | Wild          | Scenic | Recreational | Total         |
|---|-----------------|-----------------------------|---------------|--------|--------------|---------------|
| Miles   |                 |                             |               |        |              |               |
| 1. Middle Fork Clearwater, Idaho                      | 1968            | USFS                        | 54            | --     | 131          | 185           |
| 2. Eleven Point, Missouri                             | 1968            | USFS                        | --            | 44.4   | --           | 44.4          |
| 3. Feather, California                                | 1968            | USFS                        | 32.9          | 9.7    | 50.4         | 93            |
| 4. Rio Grande, New Mexico (Rio Grande Mgt. by Agency) | 1968            | BLM/USFS (BLM)              | 51.75 (43.90) | --     | 1 (0.25)     | 52.75 (44.15) |
|   |                 | (USFS)                      | (7.85)        | --     | (0.75)       | (8.60)        |
| 5. Rogue, Oregon (Rogue Mgt. by Agency)               | 1968            | BLM/USFS (BLM)              | 33 (20)       | 7.5    | 44 (27)      | 84.5 (47)     |
|   |                 | (USFS)                      | (13)          | (7.5)  | (17)         | (37.5)        |
| 6. St. Croix, Minnesota and Wisconsin                 | 1968            | NPS/FS                      | --            | 181    | 19           | 200           |
| 7. Middle Fork Salmon, Idaho                          | 1968            | USFS                        | 103           | --     | 1            | 104           |
| 8. Wolf, Wisconsin                                    | 1968            | NPS                         | --            | 25     | --           | 25            |
| 9. Allagash Wilderness Waterway, Maine                | 1970            | State of Maine              | 95            | --     | --           | 95            |
| 10. Lower St. Croix, Minnesota and Wisconsin          | 1972            | NPS                         | --            | 12     | 15           | 27            |
| 11. Little Miami, Ohio                                | 1973            | State of Ohio               | --            | 18     | 48           | 66            |
| 12. Chattooga, N.C., S.C., and GA.                    | 1974            | USFS                        | 39.8          | 2.5    | 14.6         | 56.9          |
| 13. Little Beaver, Ohio                               | 1975            | State of Ohio               | --            | 33     | --           | 33            |
| 14. Snake, Idaho and Oregon                           | 1975            | USFS                        | 32.5          | 34.4   | --           | 66.9          |
| 15. Rapid, Idaho                                      | 1975            | USFS                        | 24            | --     | --           | 24            |
| 16. New, North Carolina                               | 1976            | State of NC                 | --            | 26.5   | --           | 26.5          |
| 17. Lower St. Croix, Minnesota and Wisconsin          | 1976            | States of MN, WI            | 72            | 18     | 25           | 219           |
| 18. Missouri, Montana                                 | 1976            | BLM                         | --            | 40.7   | 80.4         | 149           |
| 19. Flathead, Montana                                 | 1976            | FS/NPS                      | 97.9          | --     | --           | 219           |
| 20. Obed, Tennessee                                   | 1976            | NPS/State of TN             | 45.2          | --     | --           | 45.2          |
| 21. Pere Marquette, Michigan                          | 1978            | USFS                        | --            | 66.4   | --           | 66.4          |
| 22. Rio Grande, Texas                                 | 1978            | NPS                         | 95.2          | 96     | --           | 191.2         |
| 23. Skagit, Washington                                | 1978            | USFS                        | --            | 99     | 58.5         | 157.5         |
| 24. Upper Delaware, New York and Pennsylvania         | 1978            | NPS                         | --            | 25.1   | 50.3         | 75.4          |
| 25. Middle Delaware, New York, PA and NJ              | 1978            | NPS                         | --            | 35     | --           | 35            |
| 26. American (North Fork), California                 | 1978            | USFS/BLM (USFS)             | 38.3 (26.3)   | --     | --           | 38.3          |
|   |                 | (BLM)                       | (12)          | --     | --           | --            |
| 27. Missouri, Nebraska, and South Dakota              | 1978            | Interior/Corps of Engineers | --            | --     | 59           | 59            |
| 28. Saint Joe, Idaho                                  | 1978            | USFS                        | 26.6          | --     | 46.2         | 72.8          |
| TOTAL   |                 |                             | 841.15        | 774.2  | 702.4        | 2,317.75      |

a.U.S. Department of the Interior, Heritage Conservation and Recreation Service.

Table 2.—Twenty-three state river protection programs<sup>a</sup>

| State          | Year legislation enacted | Rivers designated to date | River miles designated to date | Rivers considered for future designation | Ownership of majority of corridor | Protective features of the program |                   |                             |
|----------------|--------------------------|---------------------------|--------------------------------|--|-----------------------------------|------------------------------------|-------------------|-----------------------------|
|                |                          |                           |                                |  |                                   | Prohibit instream modifications    | Lead use controls | Management of use and waste |
| California     | 1972                     | 9                         | 1,030                          | M/A                                      | Both                              | Yes                                | Yes               | Yes                         |
| Georgia        | 1969                     | 0                         | 0                              | 115                                      | M/A                               | Yes                                | Yes               | Yes                         |
| Indiana        | 1973                     | 2                         | 59                             | M/A                                      | Private                           | Yes                                | Yes               | Yes                         |
| Iowa           | 1970                     | 1                         | 80                             | 0  | Private                           | No                                 | No                | No                          |
| Kentucky       | 1972                     | 8                         | 110                            | 0  | Public                            | Yes                                | Yes               | Yes                         |
| Louisiana      | 1970                     | 43                        | M/A                            | M/A                                      | Private                           | Yes                                | No                | Yes                         |
| Maryland       | 1968                     | 9                         | 441                            | 0  | Private                           | Yes                                | Yes               | No                          |
| Massachusetts  | 1971                     | 0                         | 0                              | 1  | Private                           | Yes                                | Yes               | Yes                         |
| Michigan       | 1970                     | 6                         | 641                            | 23                                       | Private                           | Yes                                | Yes               | No                          |
| Minnesota      | 1973                     | 4                         | 200                            | 14                                       | Private                           | Yes                                | Yes               | Yes                         |
| New York       | 1972                     | 70                        | 1,214                          | 60                                       | Private                           | Yes                                | Yes               | Yes                         |
| North Carolina | 1971                     | 2                         | 36                             | 4  | Both                              | Yes                                | Yes               | Yes                         |
| North Dakota   | 1975                     | 1                         | 213                            | 3  | Private                           | Yes                                | No                | No                          |
| Ohio           | 1968                     | 8                         | 415                            | 4  | Private                           | Yes                                | Yes               | Yes                         |
| Oklahoma       | 1969                     | 5                         | 131                            | 0  | Private                           | Yes                                | No                | No                          |
| Oregon         | 1970                     | 8                         | 523                            | 6  | 50/50                             | Yes                                | Yes               | Yes                         |
| Pennsylvania   | 1972                     | 0                         | 0                              | 112                                      | Private                           | Yes                                | Yes               | Yes                         |
| South Carolina | 1974                     | 2                         | 60                             | 20                                       | M/A                               | M/A                                | M/A               | M/A                         |
| South Dakota   | 1972                     | 0                         | 0                              | 2  | Private                           | Yes                                | Yes               | Yes                         |
| Tennessee      | 1968                     | 11                        | 350                            | 0  | Private                           | Yes                                | Yes               | Yes                         |
| Virginia       | 1970                     | 2                         | 53                             | 35                                       | Private                           | Yes                                | No                | Yes                         |
| West Virginia  | 1969                     | 5                         | 203                            | 0  | Private                           | Yes                                | No                | No                          |
| Wisconsin      | 1965                     | 3                         | 91                             | 0  | 50/50                             | Yes                                | Yes               | Yes                         |
| TOTAL          |                          | 199                       | 5,873                          | 401                                      |                                   |                                    |                   |                             |

<sup>a</sup>alling and Ditton (1979).

Table 3.—Recreation use, in visits, of selected U.S. rivers by region (1965-1979)<sup>a</sup>

| River by Region                   | Number of visits for years data have been collected <sup>b</sup> |        |       |       |       |         |        |        |        |         |         |        |         |         |         |       |
|-----------------------------------|--|--------|-------|-------|-------|---------|--------|--------|--------|---------|---------|--------|---------|---------|---------|-------|
|                                   | 1965   | 1966   | 1967  | 1968  | 1969  | 1970    | 1971   | 1972   | 1973   | 1974    | 1975    | 1976   | 1977    | 1978    | 1979    |       |
| <b>EAST</b>                       |  |        |       |       |       |         |        |        |        |         |         |        |         |         |         |       |
| Allagash River (Maine)            | —  | 4,141  | 4,539 | 3,789 | 4,820 | 5,460   | 6,345  | 8,260  | 8,337  | 7,477   | 9,447   | 8,619  | 9,278   | 9,734   | 8,932   |       |
| Youghiogony River (Pa.)           | —  | —      | —     | —     | —     | 17,000  | —      | —      | 80,000 | —       | —       | —      | —       | —       | —       |       |
| St. John's River (Maine)          | —  | —      | —     | —     | —     | —       | —      | —      | —      | —       | 1,151   | 1,294  | 2,408   | 2,639   | 2,971   |       |
| <b>MIDWEST</b>                    |  |        |       |       |       |         |        |        |        |         |         |        |         |         |         |       |
| Buffalo River (Ark.)              | —  | —      | —     | —     | —     | —       | —      | —      | —      | 15,305  | 18,748  | —      | —       | —       | —       |       |
| Current River, Ozark Nat.         | —  | —      | —     | —     | —     | —       | —      | —      | —      | —       | —       | —      | —       | —       | —       |       |
| Scenic Riverway (Mo-Ark)          | —  | 40,000 | —     | —     | —     | —       | —      | —      | —      | 164,500 | 202,857 | —      | 242,000 | —       | —       |       |
| Eleven Point River (Mo.)          | —  | —      | —     | —     | —     | —       | —      | —      | —      | —       | —       | —      | 10,328  | 11,128  | 9,906   |       |
| Fine River (Mich.)                | —  | 13,000 | —     | —     | —     | 90,000  | —      | 64,000 | —      | 80,000  | 90,000  | 96,000 | 76,341  | 69,836  | —       |       |
| Upper Iowa River (Iowa)           | —  | —      | —     | —     | —     | —       | 1,464  | 1,795  | —      | —       | —       | —      | —       | —       | —       |       |
| St. Croix River, Upper (Minn-Wis) | —  | —      | —     | —     | —     | —       | —      | —      | —      | —       | —       | —      | —       | 117,000 | 118,000 |       |
| St. Croix River, Lower (Minn-Wis) | —  | —      | —     | —     | —     | 356,000 | —      | —      | —      | —       | —       | —      | —       | 832,649 | —       |       |
| <b>WEST</b>                       |  |        |       |       |       |         |        |        |        |         |         |        |         |         |         |       |
| Colorado River, Cataract Canyons, | —  | —      | —     | —     | 585   | 889     | 1,670  | 2,439  | 4,422  | 4,096   | 4,042   | 4,869  | 4,809   | 5,595   | 5,786   |       |
| Canyonlands Nat. Pk. (Utah)       | —  | —      | —     | —     | —     | —       | —      | —      | —      | —       | —       | —      | —       | —       | —       |       |
| Colorado River, Grand Canyon      | —  | —      | —     | —     | —     | —       | —      | —      | —      | —       | —       | —      | —       | —       | —       |       |
| Nat. Pk. (Ariz.)                  | 547  | 1,067  | 2,099 | 3,609 | 6,019 | 9,935   | 10,885 | 16,432 | 15,219 | 14,253  | 14,305  | 13,912 | 11,830  | 14,356  | 14,576  |       |
| Colorado River, Westwater         | —  | —      | —     | —     | —     | 318     | —      | 500    | —      | —       | —       | —      | —       | 4,496   | 6,586   | 7,181 |
| Canyons, (Colo.-Utah)             | —  | —      | —     | —     | —     | —       | —      | 356    | —      | —       | 888     | 800    | 1,500   | 1,550   | 2,511   |       |
| Delta River, (Alaska)             | —  | —      | —     | —     | —     | —       | —      | —      | —      | —       | 500     | 433    | 433     | 500     | 607     |       |
| Gulkana River, (Alaska)           | —  | —      | —     | —     | —     | —       | —      | —      | —      | —       | —       | —      | —       | —       | —       |       |

(Continued)



showing the greatest increases are nearest large population centers in the Midwest, East, and far West.

The upward trend in river recreation has led public agencies to restrict use on some rivers. Rivers with some use restrictions increased from 8 in 1972 to 38 in 1977 (McCool et al. 1977, Utter 1979). As a result use on these rivers has been stable or has even declined (Table 3). We suspect, however, that measures to limit use, while effective at their intended locales, have caused corresponding dramatic increases on other rivers where no restrictions yet exist.

Closely associated with the trend toward greater regulation of use on rivers has been the trend toward potential users being denied access to rivers (Grimm and Wyman 1974). On many rivers the number of persons applying for permits has been four to five times the number receiving them. For instance, on the Selway River in 1978, only 62 of the 703 persons applying for a permit through a lottery system actually were awarded one--a 9 percent rate of success.

Growing membership in river-oriented organizations, sponsored river events, and the circulation of magazines oriented to river recreation all point to an accelerated interest in rivers for recreation. For example, membership in the American Canoe Association was 1,000 in 1965 and is expected to exceed 5,000 during 1980. The number of Sierra Club river outings has more than doubled since 1969, up to 47 in 1978. Circulation of Canoe Magazine, which began publication in 1973, jumped from 5,000 in that year to over 45,000 in 1979.

Commercial enterprises in river recreation have correspondingly increased. For example, the Grumman Rent-A-Canoe directories (Grumman 1973, 1978) show canoe rental agencies listed increased 115 percent between 1973 and 1978 (from 427 to 917). Enterprises and individuals that outfit or lead river trips also have increased. The newly formed National Association of Canoe Liveries and Outfitters report 168 businesses in 33 States in their 1979 directory. They expect the number of businesses to at least double in the 1980 directory (Couch 1979). In 1962, the Western River Guide Association counted only 15 members. By 1979, the number of members had risen to 1,374. The companion Eastern Professional

River Outfitters Association was founded in 1976 with 14 members. Three years later the organization had more than doubled to 29.

Full-time lobbyists for several conservation organizations with a vital interest in river protection as well as recreation use have been established. The American Rivers Conservation Council, for example, was founded in 1973, and is based in Washington, D. C. A major national lobby, they call for widespread river preservation programs and for informing a variety of interested persons about river planning, management, and conservation.

The growing number of regional, national, and international conferences and symposia focusing specifically on river recreation is another indicator of the widespread interest in river resources. During the 1970s, no less than 10 major gatherings focused on such topics as river planning and management, the impact of proposed dam construction on river resources, in-stream flow requirements for recreation and other uses, research on river recreation, and public programs to preserve river environments.

The following factors should be influential in keeping demand high: the crowded conditions associated with other recreation activities; the reduction in pollution on many waterways (especially in and near urban areas) resulting from legislation such as the Water Quality Act of 1965; the increased emphasis on physical fitness; a surge in interest by people in challenging, even dangerous recreation activities; the growing number of books, magazines, films, advertisements by commercial river outfitters, and television programs on the out-of-doors and rivers in particular; growth in the number of commercial outfitters and boat liveries that provide relatively inexpensive services to a broadening, inexperienced segment of society; and, new technology in outdoor recreation equipment and related industries (Lime 1977a).

#### THE RIVER RECREATIONISTS: WHO ARE THEY?

As river recreation has increased so have studies of river recreationists to determine their social and economic makeup, why they visit rivers, reactions to encountering various amounts and types of river users, opinions of specific river management practices, etc. (Anderson et al. 1978). Unfortunately,

most studies of river use and users have been one-time efforts without follow-up inquiry. And, most have been case studies of short duration using different survey techniques (Anderson et al. 1978). However, there is enough evidence from various studies to make some tentative observations about these recreationists. Generally, river recreationists are atypical of the population as a whole, as frequently reported in analyses of other outdoor recreationists. However, there are characteristics of river recreationists that distinguish them from other outdoor recreationists.

River recreationists here are defined as people who travel on rivers or streams in rafts, canoes, kayaks, innertubes, or relatively small motorboats, but not large motorized watercraft or sailboats. Fishermen, shore users, and riparian landowners are also excluded.

Most studies have shown that river recreationists are predominantly young (Hecock 1977). Data from the 1978 phase of the Forest Service's National River Recreation Study<sup>3</sup> revealed that 67 percent of the river recreationists surveyed were between the ages of 20 and 40, and 45 percent were between 20 and 30 years of age. Similar distributions are found in other studies of river recreationists (Bassett et al. 1972, Heberlein and Vaske 1977, Seitz 1974, Solomon and Hansen 1972).

Certain ages are associated with certain craft. Tubing enthusiasts tend to be younger than other river recreationists. On the Apple River in Wisconsin, for example, more than two-thirds of the tubers surveyed were under 25 years of age (Shaffer and McGool 1973). Youthfulness among tubers is further exemplified from a study on the Bois Brule

<sup>3</sup>The National River Recreation Study is a nationwide survey of river recreationists being conducted by the North Central Forest Experiment Station. The focus is to develop and apply standardized survey techniques for describing patterns of behavior, characteristics, and management preferences of recreation users across a variety of rivers and over time (Lime et al. 1979). So far, 39 different rivers or river stretches throughout the country (including Alaska) have been studied: 11 were studied in 1977, 13 in 1978, and 23 in 1979. Five rivers were studied in more than one use season.

River, also in Wisconsin (Heberlein and Vaske 1977). At least 30 percent of the tubers were judged to be under 14. In contrast, youthfulness is not a dominant characteristic of whitewater enthusiasts, perhaps because that activity requires considerable investment in equipment and/or commercial services (Hecock 1977). On the Colorado River in the Grand Canyon, for example, the average age of rafters was 36 (Shelby 1975). Similar patterns have been reported from other studies (Howard et al. 1976, Schreyer and Nielson 1978).

As with many outdoor recreational pursuits, river recreationists are often students and more educated than average. Most past age 18 have completed several years of formal training beyond high school. Half of those over 18 years in the National River Study (1978 data), for instance, had completed at least 4 years of post high school training. Similarly, Schreyer and Nielson (1978) found that about a third of the visitors surveyed on two whitewater rivers in Utah had completed more than 4 years of training beyond high school. And, Leatherberry (1979), found both canoe and kayak owners in Minnesota, on the average, had completed more than 2.5 years training after high school.

More river recreationists are professionals or white-collar workers than average and have higher incomes (Boster 1972, Heberlein and Vaske 1977, Howard et al. 1976, Leatherberry 1979, Pfister and Frenkel 1974, Seitz 1974, Solomon and Hansen 1972). The National Recreation Survey (Bureau of Outdoor Recreation 1973) found that canoeists have higher incomes than most other outdoor recreationists and the population as a whole. Leatherberry (1979) in Minnesota found that a fifth of the State's households had annual incomes in excess of \$25,000 in 1976 while about a third of the canoe and kayak owner families had incomes exceeding that figure.

In general, river recreationists begin participating at a later age than others such as hunters, fishermen, and wilderness visitors (Hendee et al. 1968, Klessig and Hale 1972). For example, canoe owners in Minnesota, on the average, went on their first canoe outing when they were 20 years old; kayak owners were 26 (Leatherberry, 1979).

River recreationists are unique in that so many are newcomers to a given river and to river recreation in general. In Hecock's

review (1977) he found no studies where first-time visitors accounted for less than a third of the total population studied. The pattern has remained constant in studies completed since then (e.g., Schreyer and Nielson 1978, Heberlein and Vaske 1977). In the National River Recreation Study (1978 data), 56 percent of all respondents had never before been on the river where they were sampled. However, there was considerable range in the percentage of first-time visitors—from 23 percent on the Salt River, a tubing river in Arizona, to 74 percent on the Colorado River, a whitewater stream, in central Colorado.

Many river recreationists are novice. In the National River Study, we asked respondents to identify other river trips they had taken by innertube, canoe, raft, kayak, or other watercraft. From the 1978 phase of the study, nearly a quarter were on their first river trip.

Partly because of their lack of experience, many participants rent rather than own their watercraft. On the Pine and Au Sable Rivers in Michigan and the Current and Jacks Fork Rivers in Missouri, about 80 percent of all canoes were rentals (Bassett *et al.* 1972, Marnell *et al.* 1978, Solomon and Hansen 1972). On many whitewater rivers, particularly in the West, most participants use rented watercraft or ride in crafts piloted by commercial guides. In 1978 on the Snake River in Hell's Canyon, for example, 63 percent of all visitors travelled in commercially outfitted groups (Shelby and Danley 1979).

Most river trips involve at least some preplanning, and most river recreationists decide to go on their trip at least a week in advance. Sometimes, especially where river camping is involved, the decision is made further in advance than for day trips. For example, 52 percent of the campers in the National River Study (1978 data) decided to go on their river trip more than a month in advance. By contrast, day trippers are much more spontaneous in their planning. From the National River Study, 43 percent of the day users planned their outing no more than a week in advance—11 percent of all day users surprisingly planning their trip within 24 hours. Heberlein and Vaske

(1977) found most tubers in Wisconsin did no advance planning or at most, planned 1 or 2 days ahead. Most canoeists on the Au Sable River in Michigan were day users and made plans for their trip no more than a week in advance (Bassett *et al.* 1972).

Although the size of groups can vary considerably among rivers and types of visitors (such as between kayakers and commercially outfitted rafters), group size tends to be considerably higher than in many other recreational pursuits such as hunting, hiking, wilderness camping, fishing, and snowmobiling. In the National River Recreation Study (1978 data), the median group size was 9 but ranged from 5 persons per group on the Salt River in Arizona to 20 persons on the Kings River in California; 11 percent of all visitors were in groups of more than 30 people. Organizational groups tend to be larger than groups of family members or friends (Marnell *et al.* 1978) and, in most instances groups that use commercial services are larger than privately outfitted groups. In a 1974 study of the Rogue River in Oregon, for example, 75 percent of the commercially outfitted parties ranged from 16 to 25 people while only 13 percent of the noncommercial parties consisted of that many (Pfister 1977).

River recreationists take river trips for a variety of reasons. The National River Recreation Study (1978 data) preliminary analysis suggested that among the most important reasons for taking river trips are: (1) to be with other people, (2) to escape the day-to-day demands at home, (3) to get exercise, and (4) to learn about nature. Similar results were found in other studies (Bassett *et al.* 1972, Heberlein and Vaske 1977, Solomon and Hansen 1972).

The reasons recreationists had for taking river trips are generally quite different than the reasons for participating in some other recreation activities. For example, data from the National River Study and from urban residents in three midwestern cities suggest that people who play sports, visit zoos and museums, or go to the theatre do so for different reasons than people who take river trips (Peterson *et al.* 1978). For example, people who take river trips had a stronger desire to get away from the day-to-day demands of life at home.

River recreationists often pursue activities far from home. The distance river recreationists travel may be related to the site attractiveness or site "demand" of the resource (Peterson et al. 1979). Data from the National River Study (1977 data) confirmed that whitewater rafters and kayakers tend to travel further from home than do the more casual canoeists. On the Main Salmon and Middle Fork of the Salmon Rivers in Idaho, visitors travelled an average of more than 800 miles (one way) to float those rivers. On the other hand, visitors to the Mohican River in central Ohio, a flat-water canoe stream, travelled an average of only 76 miles.

#### PROBLEMS ASSOCIATED WITH INCREASED POPULARITY

Multiple access and egress points, multiple land ownership patterns, variations in water flow, and a recreating public in search of a variety of outdoor experiences have caused headaches for resource administrators.

##### Social problems

Large groups of river recreationists often infringe on the enjoyment of smaller groups. Groups of over 120 people have been observed on Michigan's Pine River (Solomon and Hansen 1972). On Oregon's Rogue River, one party contained 38 rafts! Though only a small proportion of total use, they may have a disproportionate impact on the experience of others. Many large groups are organizations, clubs, and fraternal groups, and they float rivers primarily for a social experience. The value that large groups attach to their trip is often different from those of smaller groups (Stankey 1973, Lime 1972). Some studies have revealed that objection to seeing large groups is not so much related to their numbers but rather their inconsiderate behavior, such as yelling or shouting (Driver and Bassett 1975, Bassett et al. 1972). Often, inconsiderate behavior is related to the consumption of alcoholic beverages. On many rivers the stream bed and banks are littered with cans and bottles. Clean-up crews on the Pine River in Michigan reported 1,000 containers within a 1-mile section; most were beer cans and bottles (Marek 1979).

Congestion is a common problem on many rivers. Large "armadas" have been observed on one stretch of river while other stretches of

the same river are nearly deserted (Warren 1977). These large concentrations often occur because of the seasonal, weekly, and daily peaks in use. Most trips are taken between Memorial Day and Labor Day, during the latter part of the week and on holidays, and begin in mid-morning. Since most groups travel at about the same speed, they tend to create congestion at access and egress points, campsites, rapids, and other attractions.

The congested conditions on some rivers has led to animosity among different groups of recreationists. A common situation is heavy competition for campsites, often expressed in open hostility (Warren 1977). Some recreationists resent others who use different types of watercraft. Heberlein and Vaske (1977) found canoeists consistently disliked meeting other recreationists more than tubers did. In the Boundary Waters Canoe Area Wilderness (BWCAW), Lucas (1964) and Starkey (1973) found paddle canoeists strongly objected meeting motorboaters. On the Colorado River in the Grand Canyon, recreationists travelling in oar-powered rafts objected to motorized rafts because of their noise (Shelby 1975).

Research shows that while recreationists in nonpowered craft oppose meeting motorized groups, most motorized parties don't mind meeting nonmotorized groups. In the BWCAW, for instance, nearly half of the motorboaters studied said it wouldn't matter how many other parties they met per day (Lime 1977b). Significantly fewer motor canoeists (29 percent) and paddle canoeists (13 percent) felt that way.

Some river recreationists have altered their participation patterns because of what they perceive to be unacceptable conditions. In some areas such feelings have resulted in significant numbers of recreationists being displaced. Becker and his associates in studying the St. Croix and Mississippi Rivers in southeastern Minnesota (1979), for example, found that recreationists seeking social experiences tended to gravitate to one section of the river system while those seeking low density experiences went to another section. They also found that some recreationists were purposefully avoiding areas and times when use densities were highest.

Commercial outfitters and noncommercial users often compete for the opportunity to float rivers (Utter 1979). Competition has been particularly prevalent on western white-water rivers, but the problem is growing nationwide. The competition has resulted in direct and indirect conflicts among recreationists, expressed in threatened and actual lawsuits and Congressional inquiry. On the Colorado River in Grand Canyon, for example, a battle has been raging since the early 1970s over the 92:8 split in the allocation of use permits between commercial and private parties. The National Park Service, with support from private users, proposes to increase the proportion of private trip permits while most commercial operators want to maintain the status quo (U. S. Department of Interior 1979). Such intense debate inhibits management initiative and often results in long legal deliberations (Jensen 1979, Shelby 1979).

River recreation use causes conflicts with other uses and users of rivers. In Michigan, for example, there are several rivers with high quality trout fishing but canoeing on weekends has increased to where fishermen have found it difficult to fish. And, many have had to alter their regular fishing times or have stopped fishing those streams (Marek 1979, Bassett et al. 1972).

On some popular rivers there are conflicts between riparian landowners and river recreationists. Some of the most serious problems center around littering and trespassing (Countess et al. 1977, Cox and Argon 1979). Other conflicts arise from vandalism, invasion of privacy, and noise (Bassett et al. 1972). In some areas landowners respond by posting their land (Cox and Argon 1979) or have threatened to take or have taken the law into their own hands.

#### Ecological problems

Destruction of native ground vegetation is common along many streams and rivers (Aitchison et al. 1977, Manning 1979, Marnell 1978). The most common cause of vegetation destruction is trampling; but, since recreationists spend a large portion of their time on the river, impacts to ground vegetation does not occur uniformly throughout the river corridor. Instead, impacts usually are concentrated at accesses, campsites, and near other popular stopping points.

In areas where use is especially concentrated such as at campsites, studies have determined that after the first few seasons when ground vegetation is fairly rapidly reduced to some low point, there is a natural recovery or adjustment in the vegetation (Settergren 1977). Generally, however, there is a shift to more recreation-tolerant species (Merriam and Smith 1974). But under sustained use, the ground vegetation will be progressively reduced until it cannot recover naturally. On heavily used areas along the Current and Jacks Fork Rivers in Missouri, for example, researchers found that the rise in density of replacement species moderated the decline in original ground cover vegetation (Marnell et al. 1978). However, with further increase in recreation all ground vegetation was eventually lost.

The removal of trees and shrubs by recreationists is a problem where impacts are concentrated. Numbers of smaller seedlings and saplings decrease and vegetation patterns are affected over prolonged periods (Schmidly et al. 1976). Recreationists sometimes cut or remove vegetation to enlarge campsites. In the BWCAW, Merriam and his associates (1973), found that newly constructed campsites approximately doubled in size during a 3-year period.

Malicious chopping of exposed roots, trunks, or limbs, and live-tree cutting late in the use season when deadwood becomes scarce, can reduce standing vegetation (Marnell et al. 1978, Schmidly and Ditton 1978).

Loss of vegetation often results in soil erosion. On riverbanks soil erosion is accelerated because of the contour of the land and/or the properties of the soil. The sandy or depositional nature of the soil can contribute to the lack of stabilizing vegetation and erosion often is rapid and devastating. Hansen (1975), for example, found on the Pine River in Michigan that streambank erosion was dramatic as a result of recreationists sliding down steep sandy banks. Merriam and Smith (1974) found in the BWCAW that campsites were subject to considerable recreation-induced erosion. On footpaths along the Colorado River in Grand Canyon, Dolan and his associates (1974) found surface erosion up to two feet deep. The season, duration, and intensity of use influences the extent and nature of erosion in such arid environments. A site

may be very durable during drier months, but heavy use during spring when the water table is higher can result in greater and more pronounced erosion.

Motor vehicle use in river corridors and in the stream bed also causes soil erosion. Tracks left by vehicles roughens the soil which accelerates erosion. Such traffic can alter the natural form and distribution of gravel deposits in stream beds and affect normal shifting and development of gravel bars (Marnell *et al.* 1978). Riverside campsites accessible by road also are particularly vulnerable to heavy use followed by erosion. On the Rio Grande River in Big Bend National Park, riverside auto campsites were among the most heavily used (Ditton *et al.* 1977); the same along Michigan's Pine River (Hansen 1975).

Sedimentation from erosion in turn affects the water quality. Increased sedimentation causes increased turbidity, nutrient enrichment, and the smothering of bottom flora and fauna. On some high quality, sensitive trout streams, for example, sedimentation has destroyed the fishery resource. In most instances, however, recreational impact is localized (Merriam and Smith 1974), and does not contribute significantly to sedimentation (Marnell *et al.* 1978).

Along many recreational rivers, the disposal of human waste is a serious and growing problem and a potential public health hazard. Sanitation facilities are generally not available. Improper disposal of human waste can cause biological contamination or nutrient enrichment of rivers. Merriam and his colleagues (1973) found that recreational use of some campsites increased coliform bacteria and phosphate concentrations in lake water to a point higher than public health standards allowed for drinking water. On some rivers, especially those in canyon settings, the area available for sewage burial is very limited. Aitchison and his associates (1977) report that on the Colorado River's most popular beaches in Grand Canyon National Park, it was not uncommon to uncover previous human waste sites. A number of cases of infectious illness due to inadequate sanitation practices occurred among recreationists on the river (Knudsen *et al.* 1977).

The severity of the human waste problem and the attendant health hazard is related, in part, to the character of the local ecosystem. On the Current River in Missouri, for instance, the warm humid climate, rich vegetation, and porous soil lessens the problem because decomposition is so rapid. Also, periodic flooding leaches residual wastes from the floodplain (Marnell *et al.* 1978). In contrast, on the Colorado River, the hot, dry climate prohibits the proliferation of decomposer bacteria. Harmful bacteria accumulate in beach sands, partly because an upstream dam has eliminated floods that formerly scoured and shifted beaches. Even after a year, fecal coliform bacteria of unacceptable levels were present in beach sands (Aitchison *et al.* 1977).

Litter or solid waste poses another challenge to river recreationists, resource administrators, and the general public. Managers on Michigan's Pine River estimated 20,000 beverage containers were strewn along a 40-mile stretch (Doehne 1977). Recreationists there are sensitive to this problem. When a sample of canoeists were asked what was "the low point of your river trip", litter was the most frequent complaint (Solomon and Hansen 1972). Besides being aesthetically unpleasing, litter or solid waste is a potential human health hazard because it creates a potential food supply for insects and animals. The artificial food supply may lead to unnaturally high densities of some mammals which can lead to poor health among populations and transmittal of diseases (Aitchison *et al.* 1977).

#### RESPONSE TO RIVER RECREATION POPULARITY

Before the 1960s, active river recreation management was virtually nonexistent. However, some federal agencies and state governments did attempt to protect free-flowing rivers in their natural state, but most efforts were rather passive with few or no provisions for recreation management. Any management that was done was largely secondary or incidental to other concerns such as watershed protection, irrigation, and hydroelectric production. Some State and Federal agencies that owned riparian lands, did provide facilities such as boat ramps, campsites, and picnic tables. State agencies and the U. S. Coast Guard were responsible for management, most of which centered on

enforcing compliance to federal and state water regulations, license requirements, and site maintenance.

As river recreation use grew during the late 1960s and early 1970s, the need for strong management became evident. In 1968 the national Wild and Scenic Rivers Act (Public Law 90-542) was established to preserve certain selected rivers in a free-flowing condition. That same year the President's Council on Recreation and Natural Beauty (1968) recommended a nationwide protection of natural rivers through State action. Legal efforts such as the national Wild and Scenic Rivers Act, and State programs, helped focus attention on rivers as recreational resources but they did not mandate specific actions. These were left to the field units.

During the 1970s, management activities proliferated—especially establishing management objectives. Managers tried to define the type of recreation experience the river environment would provide by deciding what kinds and amounts of use to allow on the river.

Management ranged from trying to change behavior by rules and regulations to trying to change it by suggestion through printed and spoken media. Some approaches used to deal with increased use are presented below.

Use has been restricted where the demand is judged to exceed supply. An allocation or rationing scheme is used. Typically, an upper limit is set on use (i.e., on the number of people, number of groups or visitor days). Use opportunities are systematically allocated to competing river recreationists. As mentioned, on some western whitewater rivers commercial outfitters and private users compete heavily, so managers must establish use ratios between competing groups. Generally, ratios have been determined either by past use in a given year or are arbitrarily chosen (Elliott 1977). On the Colorado River in Grand Canyon, the current ratio is a 92:8 commercial to private split, the Selway River in Idaho has a 20:80 commercial to private split. Most rivers under the control of the Bureau of Land Management have a 50:50 split (Elliott 1977).

Many rationing mechanisms can be used (Stankey and Baden 1977). Most commonly potential recreationists and commercial outfitters apply for a use permit. From the pool of applicants a predetermined number of permits

are issued. For example, managers of the BWCAW established daily entry point quotas for overnight campers by travel zones. The quotas were computer generated using a travel behavior model that predicted the number of people that could be allowed at an entry point without exceeding a predetermined capacity (Peterson 1977). Recreationists are encouraged to apply for a permit before their trip. When a zone reaches capacity no other recreationists are permitted to enter. Instead they must wait another day or until an entry permit becomes available, or select another entry not yet at capacity (Higgins 1977).

Managers sometimes prohibit certain uses to reduce conflicts. When attempts are made to prohibit an activity it often is debated in the political arena and decided by the legislative process. These attempts have had varying degrees of success. In the BWCAW, for example, efforts by conservationists and others were only partly successful in prohibiting motorized craft on waterways, and only after a lengthy legislative process. In Michigan, the Department of Natural Resources sought, among other things, to reduce the number of canoes allowed on the Pine River by 40 to 60 percent. Opposition by local canoe outfitters resulted in a 7-year legal battle over the authority of the State to restrict use (Marek 1979).

Zoning techniques have been used to reduce conflicts among recreationists. On a major portion of the Lower St. Croix River between Minnesota and Wisconsin, "no wake zones" have been established to lessen the conflict between canoes and motorized craft. Horsepower limitation zones have also been used; e.g., 10 horsepower on the majority of motorized routes in the BWCAW.

Time zoning is another way to separate incompatible users. On some trout streams in Michigan fishermen are encouraged to use the river in the early morning and late afternoon hours when canoeing is prohibited. Another popular use of time zoning is the scheduling of trip departure times—from the day down to the hour. On the Chattooga River, for example, commercial outfitters are limited in the number of trips they can make on weekends and are assigned departure times at least an hour apart (Craig 1977).

Informing future visitors about past use in the BWCAW has been successful in reducing congestion and crowding. A brochure pointed out heavily used places so recreationists can avoid crowded areas and peak use periods (Lime and Lucas 1977).

Simulation modeling is a useful tool for managing river recreation use. Lime and his associates (1978) perfected a simulation model to predict patterns of river use occurring under a variety of conditions on the Green and Yampa Rivers in Dinosaur National Monument. The simulation and actual patterns of use were compared to test the simulator's validity and were found to be in close agreement.

To control ecological impacts, limiting party size and assigning campsites are widely used. The assignment of campsites provides an opportunity for vegetation to recover from previous use. On the Middle Fork of the Salmon River in Idaho, trips are scheduled so a particular site is vacant at least 4 of every 10 nights. In the BWCAW only 67 percent of the campsites in a travel zone are expected to be occupied at any one time based on the distribution system now in use. Other techniques used to control ecological impacts include the requirement that recreationists carry fire pans and portable toilets (Mak *et al.* 1977). In many locales either a ban on cans and bottles or a pack-in - pack-out policy are in force. In the BWCAW, the can and bottle ban has been successful in reducing visual blight. On the Eleven Point River in Missouri, the pack-in - pack-out policy has been reported to be successful (75 to 90 percent of empty cans are removed) (Craig 1977).

Because rivers have common management problems most resource administrators recognize the need for coordinated management among rivers. In response to this need, river managers in the West in 1973, formed the Interagency Whitewater Committee (IWC), composed of representatives from the Forest Service, Bureau of Land Management, Park Service, and Coast Guard. For the most part, the IWC membership is made up of field managers not upper management. The IWC's primary function is to serve as a forum for the exchange of ideas and experiences and to foster a unified interagency approach to river management. The IWC has been instrumental in coordinating western whitewater management activities through the development of the Interagency Management Guidelines (Yearout *et al.* 1977).

The U. S. Forest Service and the Bureau of Land Management are drafting river recreation management supplements to their manuals. In addition both agencies have conducted fact finding reviews concerning river recreation management activities.

Between the 1960s and late 1970s river recreation management activities grew from largely passive efforts to rigorous innovative activities. But, much management was done by intuition alone. There is now a generation of river managers who have gotten their "feet wet" and who recognize the need for comprehensive and systematic information to assist in the decision process. In fact, the Forest Service and Bureau of Land Management have been given legislative mandates to manage in a more systematic fashion (Lime *et al.* 1979). As a result, management is now more active and managers are searching for information from research and/or public involvement to establish objectives and solve problems.

#### FUTURE PERSPECTIVES

In the years ahead the "supply" of river recreation will be threatened by our expanding consumptive needs. Government at all levels, and conservation and other organizations will continue their efforts to identify and protect river recreation resources. But, the intensity of urban and second home development, farming, lumbering, mining, manufacturing, and energy production along rivers will probably reduce recreation opportunities.

Opposition to the administrative designation of rivers for recreation, will increase, especially from local landowners and residents. We suspect that opposition will be based, in part, on people's mistrust and misunderstanding of government intentions in designating rivers for recreation. The cry of "public land grab" will persist and become louder. And, in areas where private land adjoins rivers posting will increase.

Management intervention will increase. In the "near" future, demand for river recreation will continue to increase at a rapid rate. More inexperienced recreationists will be creating safety hazards for themselves and for others. Conflicts among different river recreationists will increase along with increased competition for use of the resource. Some recreationists will probably shift their use to lesser used rivers while others will

stop participating altogether. Rationing of use opportunities will become more widespread and will remain controversial and challenged.

Over the long term--20-30 years--demand will level off. The leveling off is expected because the nation's population growth declined markedly in the last decade and will continue to do so. The post World War II "baby-boom" generation makes up the bulk of current river recreationists. As they age and as the effects of a lower birth rate is felt, river managers will be serving a "different" and less rapidly expanding clientele (Marcin and Lime 1977). Future research and management will be oriented towards determining and serving the needs and preferences of the changing clientele.

In the future many management decisions will be decided through the legal and legislative process. Managers will be directed to devise strategies that will insure a spectrum of opportunities. Regional coordination will become more important so that use can be allocated uniformly and efficiently.

Technological innovations will influence demand. Although we will not predict what innovations might occur, some speculation is possible. Technology will assist managers as well as create new problems. Computer technology will be used more widely to aid managers. Technology will also cause management problems by creating equipment that will be capable of performing beyond current expectations.

Energy costs will affect participation in river recreation. People will probably limit their visits to more distant rivers and will probably stay longer. Day trips to rivers closer to home will become more prevalent.

Research will become more important to management. The demands placed on the resource necessitate more systematic evaluation. Pioneer research by academicians and others will assist in setting policy. Also, research by field agencies will increase. Field agency research will monitor the river management to evaluate its success.

#### REFERENCES

- Anderson, Dorothy H., Earl C. Leatherberry, and David W. Lime. 1978. An annotated bibliography on river recreation. USDA For. Serv. Gen. Tech. Rep. NC-41, 62 p.
- Aitchison, Stewart W., Steven W. Carothers, and R. Roy Johnson. 1977. Some ecological considerations associated with river recreation management. In *River recreation management and research Symp. Proc.* USDA For. Serv. Gen. Tech. Rep. NC-28, p. 222-225.
- Alling, Curtis E., and Robert B. Dutton. 1979. Obstacles to creation of state river protection systems. *J. Soil & Water Conserv.* 34(5):229-232.
- Bassett, John R., Beverly L. Driver, and Richard M. Schreyer. 1972. User study: characteristics and attitudes on Michigan's AuSable River. *Sch. Nat. Resour., Univ. Michigan.* 78 p.
- Becker, R. H., B. J. Niemann, and W. A. Gates. 1979. Displacement of Users within a river system: social and environmental trade-offs. Paper presented at the Second Conference on Scientific Research in the National Parks, San Francisco, CA., November 26-30.
- Boster, Mark A. 1972. Colorado River trips within the Grand Canyon National Park and Monument: a socio-economic analysis. *Dep. Hydrol. Water Resour. Rep. 10, Univ. Arizona.* 83 p.
- Bureau of Outdoor Recreation. 1973. *Outdoor recreation: a legacy for America.* USDI Bureau of Outdoor Recreation. 89 p. Washington, D. C.
- Couch, P. Roy. 1979. Personal Correspondence. Executive Director, National Association of Canoe Liveries and Outfitters.
- Countess, Michael L., Walter L. Criley, and B. R. Allison. 1977. Problems and conflicts associated with river recreation programming and management in the East. In *River recreation management and research Symp. Proc.* USDA For. Serv. Gen. Tech. Rep. NC-28, p. 147-150.
- Cox, William E., and Keith A. Argow. 1979. River Recreation: Public Access vs. Riparian Rights. *Water Resources Bulletin* 15(3):728-739.
- Craig, William S. 1977. Reducing impacts from river recreation users. In *River recreation management and research Symp. Proc.* USDA For. Serv. Gen. Tech. Rep. NC-28, p. 155-162.

- Ditton, Robert B., David J. Schmidly, William J. Boeer, and Alan R. Graefe. 1977. A survey and analysis of recreational and livestock impact on the riparian zone of the Rio Grande in Big Bend National Park. In River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 256-266.
- Doehne, Harry A. 1977. Experiences in managing river recreation, and river use in Michigan. In River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 110-116.
- Dolan, Robert, Alan Howard, and Arthur Gallenson. 1974. Man's impact on the Colorado River in the Grand Canyon. Am. Sci. 62(4):392-401.
- Driver, B. L., and John R. Bassett. 1975. Defining conflicts among river users: a case study of Michigan AuSable River. Naturalist 26(1):19-23.
- Elliott, Robert L. 1977. Commercial river outfitting: its educational role and responsibilities to the future. In River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 213-219.
- Grimm, Gary, and Richard Wyman. 1974. Public rights to rivers. Public wild River Environmental Project, Eugene, Oregon. 21 p.
- Grumman Boats. 1975. Rent-a-Canoe Directory. 21 p. Grumman Allied Industries, Marathon, NY.
- Grumman Boats. 1978. Rent-a-Canoe Directory. 21 p. Grumman Allied Industries, Marathon, NY.
- Hansen, Edward A. 1975. Does canoeing increase stream bank erosion? USDA For. Serv. Res. Note NC-186, 4 p.
- Heberlein, Thomas A., and Jerry J. Vaske. 1977. Crowding and visitor conflict on the Bois Brule River. Tech. Rep. WIS--WRC-77-04, 100 p. Univ. Wisconsin.
- Hecock, Richard D. 1977. Recreational usage and users of rivers. In River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 279-284.
- Hendee, John C., William R. Catton, Jr., Larry D. Marlow, and Frank Brockman. 1968. Wilderness users in the Pacific Northwest--their characteristics, values, and management preferences. USDA For. Serv. Res. Pap. PNW-61, 92 p.
- Higgins, Joseph H. 1977. A distribution program for the Boundary Waters Canoe Area. Naturalist 28(4):22-29.
- Howard, Gordon, John Bethea, Jr., Dee Kiger, and Rebecca Richardson. 1976. Chattooga River visitor survey. 75 p. Dep. Recreation and Park Administration. Coll. For. and Recreation Resour. Clemson Univ.
- Jensen, Marvin O. 1979. Information from the social sciences: a critical need of back-country managers. Paper presented at the Second Conference on Scientific Research in the National Parks, San Francisco, CA., November 26-30.
- Klessig, Lowell, and James Hale. 1972. A profile of Wisconsin hunters. Tech. Bull. 60, 24 p. Wisconsin Dept. Nat. Resources.
- Knudsen, A. B., R. Johnson, K. Johnson, and N. R. Henderson. 1977. A bacteriological analysis of portable toilet effluent at selected beaches along the Colorado River, Grand Canyon National Park, Arizona. In River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 290-295.
- Leatherberry, Earl C. 1979. Minnesota canoe and kayak owners: their characteristics and patterns of use. USDA For. Serv. Res. Pap. NC-171, 8 p.
- Lime, David W. 1972. Large groups in the Boundary Waters Canoe Area--their numbers, characteristics, and impact. USDA For. Serv. Res. Note NC-142, 4 p.
- Lime, David W. 1977a. Research for river recreation planning and management. In River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 202-209.
- Lime, David W. 1977b. When the wilderness gets crowded...? Naturalist. 28(4):1-7.
- Lime, David W., Dorothy H. Anderson, and Stephen F. McCool. 1978. An application of the simulator to a river recreation setting. In Simulation of Recreational use for Park and Wilderness management. Chapter 9, p. 153-174. Resources for the Future, John Hopkins University Press, 220 p.
- Lime, David W., Richard C. Knopf, and George L. Peterson. 1979. The national river recreation study: growing new data base with exciting potential. Paper presented at the Second Conference on Scientific Research in the National Park, San Francisco, CA., November 26-30.
- Lucas, Robert C. 1964. The recreational capacity of the Quetico-Superior area. USDA For. Serv. Res. Pap. LS-15. 34 p.

- Mak, Kenneth R., Marvin O. Jensen, and Thomas L. Hartman. 1977. Management response to growing pressures in western whitewater rivers--the art of the possible. *In* River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 102-109.
- Manning, Robert E. 1979. Impacts of recreation on riparian soils and vegetation. *Water Resources Bulletin* 15(1):30-43.
- Marek, Gary. 1979. Environmentalist at large: paddling the Pine to death. *Audubon*, 81(5):132-144.
- Marein, Thomas C., and David W. Lime. 1977. Our changing population structure: what will it mean for future outdoor recreation use? *In* Outdoor recreation advances in application of economics. USDA For. Serv. Gen. Tech. Rep. WO-2, p. 42-52.
- Marnell, L. F., D. Foster, and K. Chilman. 1978. River recreation research at Ozark National Scenic Riverways. National Park Service. 139 p.
- Merriam, L. C., Jr., C. K. Smith, D. E. Miller, Ching tiao Huang, J. C. Tappeiner, II, K. Goeckerman, J. A. Bloemendal, and T. M. Costello. 1973. Newly developed campsites in the Boundary Waters Canoe Area. *Univ. Minnesota Agric. Exp. Stn., Bull.* 511, For. Ser. 14, 27 p.
- Merriam, L. C., Jr., and C. K. Smith. 1974. Visitor impact on newly developed campsites in the Boundary Waters Canoe Area. *J. For.* 72(10):627-630.
- Peterson, George L. 1977. The computer takes a canoe trip. *Naturalist*. 28(4):9-11.
- Peterson, G. L., A. Anas, F. S. Kappleman, and P. R. Stapher. 1978. Prediction of urban recreation demand. Final Report, NSF Grant No. Apr.-19086, Northwestern University, Evanston, IL.
- Peterson, George L., David W. Lime, and Dorothy H. Anderson. 1979. Attraction of recreationists to rivers: a nationwide view. Paper presented at Second Conference on Scientific Research in the National Parks, San Francisco, CA., November 26-30.
- Pfister, Robert E., and Robert E. Frenkel. 1974. Field investigations of river use within the wild river area of the Rogue River, Oregon. *Rogue River Study Rep.* 1, 108 p. Dep. Geogr., Oregon State Univ.
- Pfister, Robert E. 1977. Campsite choice behavior in the river setting: a pilot study on the Rogue River, Oregon. *In* River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 351-358.
- President's Council on Recreation and Natural Beauty. 1968. From sea to shining sea: a report on the American environment--our natural heritage. 304 p. Washington, D.C.
- Schmidly, David J., Robert B. Ditton, W. J. Boer, and A. R. Graefe. 1976. Interrelationships among visitor usage, human impact, and the biotic resources of the riparian ecosystem in Big Bend National Park. Paper presented at the First Conference on Scientific Research in the National Parks, New Orleans, LA.
- Schmidly, David J., and Robert B. Ditton. 1978. Relating human activities and biological resources in riparian habitats of western Texas. *In* Proceedings of the Symposium on Strategies for Protection and Management of Floodplain Wetlands and Other Riparian Ecosystems, Callaway Gardens, Georgia. December 11-13, 1978.
- Seitz, William K., III. 1974. Patterns of recreational use and characteristics of users on the Upper Iowa River. Ph.D. diss. 193 p. Iowa State Univ.
- Settergren, Carl D. 1977. Impacts of river recreation use on streambank soils and vegetation--state-of-the-knowledge. *In* River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 55-59.
- Shaffer, Ron E., and Stephen F. McCool. 1973. Who's tubing down the Apple? *Tech. Rep.* 4, 31 p. Univ. Wisconsin.
- Shelby, Bo. 1975. Social-psychological effects of motorized travel in wild areas: the case of river trips in the Grand Canyon. 66 p. Human Ecol. Res. Serv., Inc.
- Shelby, Bo. 1979. Politics and research utilization: a case study of river research in Grand Canyon. Paper presented at Second Conference on Scientific Research in the National Parks, San Francisco, CA, November 26-30.
- Shelby, Bo, and Mark Danley. 1979. Allocating river use. 130 p. Oregon State University.
- Shreyer, Richard, and Martin L. Nielson. 1978. Westwater and Desolation Canyons: white-water river recreation study. 196 p. Institute for the Study of Outdoor Recreation and Tourism. Dept. of Forestry and Outdoor Recreation. Utah State University.

- Solomon, Michael J., and Edward A. Hansen. 1972. Canoeists suggestions for stream management in the Manistee National Forest of Michigan. USDA For. Serv. Res. Pap. NC-77, 10 p.
- Stankey, George. 1973. Visitor perception of wilderness recreation carrying capacity. USDA For. Serv. Res. Pap. INT-142, 62 p.
- Stankey, George H., and John Baden. 1977. Rationing wilderness use: methods, problems, and guidelines. USDA For. Serv. Res. Pap. INT-192, 20 p.
- State of Minnesota, Office of Hearing Examiners. 1979. Report of the hearing examiner for the Department of Natural Resources on the proposed inclusion of the Cannon River in the Minnesota Wild, Scenic, and Recreational Rivers system. DNR-79-021-AK.
- U. S. Dept. of Interior. 1979. Colorado River Management plan. Grand Canyon National Park, Arizona, Final Environmental Statement.
- U. S. Dept. of Transportation, Coast Guard. 1974. Recreational boating in the continental United States in 1973: the nationwide boating survey. 104 p. Office of Boating Safety.
- U. S. Dept. of Transportation, Coast Guard. 1978. Recreational boating in the continental United States in 1973 and 1976: the nationwide boating survey. 121 p. Office of Boating Safety.
- Utter, Jack G. 1979. Wild river recreation management: a case study of the use allocation issue. Ph.D. dissertation. University of Montana, 305 p.
- Warren, Sam E. 1977. How to ration river floating use: the Middle Fork of the Salmon experience. In River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 151-154.
- Water Resources Council. 1968. The nation's water resources. Washington, D. C.
- Yearout, Robert, Arthur Seamans, and Larry Lee. 1977. Regional river recreation management. In River recreation management and research Symp. Proc. USDA For. Serv. Gen. Tech. Rep. NC-28, p. 188-192.

## CAMPING AND RV TRAVEL TRENDS<sup>1</sup>

Gerald L. Cole and Wilbur F. LaPage<sup>2</sup>

---

**Abstract.**--This paper summarizes the results from industry sources and several regional and national camping market surveys conducted between 1960 and 1979. Growth of the industry, together with pricing practices, energy impacts and occupancy data was also examined. By 1978, the number of inactive campers outnumbered active campers nationwide with persons less than 30 showing the greatest tendency to become inactive. Growth of the industry slowed in the 1970's, but franchised campgrounds provided an increased share of sites. A decline in campground occupancy was noted in 1979 and appeared to be correlated with gasoline shortages.

---

### INTRODUCTION

The popularity of camping and RV travel continues to grow. According to a 1979 survey, camping now ranks third behind swimming and bicycling among outdoor recreation activities. The purpose of this paper is to explore numerous trends, primarily in the 1970's which have affected the camping market including number of active, inactive and potential campers. We will examine socio-economic characteristics of the general population and campers in particular. Trends in changing patterns of camper participation are discussed, including annual days of participation, adoption of new activities and new camping locations. Related to participation changes are the types of equipment used and preferences for private and public campgrounds. Perceptions and images of camping will round out the recent trends from the standpoint of the camping public.

---

<sup>1</sup>Paper presented at the National Outdoor Recreation Trends Symposium, Durham, NH, April 20-23, 1980.

<sup>2</sup>Gerald L. Cole is a professor of resource economics at the University of Delaware, Newark, DE. Wilbur F. LaPage, principal recreation scientist with the Northeast Forest Experiment Station, Durham, NH.

On the supply side, recent trends in the number of campgrounds and campsites per campground in both the public and private sectors will be examined. Closely associated is the growth in franchising of campgrounds. Trends in camping fees at both private and public campgrounds will be related to facilities offered.

Energy cost and availability will be discussed with respect to camper reaction during the mid or late 1970's.

Finally, occupancy data for 1978 and 1979 will be utilized as an indication of the economic viability of the industry.

### THE CAMPING MARKET

Numerous regional and national surveys have been completed since 1960. While direct comparisons are sometimes ruled out by different methodologies, a clear pattern of growth in number of campers and camping households emerges.

The earliest national survey, conducted in 1960 found 3-4 million acting camping households in the U.S. (ORRRC, 1962). The number had increased to six million by 1965. A series of three comprehensive national camping market surveys was conducted in the 1970's (LaPage 1973, Kottke and others 1975, LaPage and Cole 1979).

The first in 1971, found 12.4 million active households; the second in 1973, 14.3 million; and the third in 1978, 17.5 million. While camping participation grew at an average annual rate of 20 percent in the 1960's, growth slowed to less than 8 percent in the early 1970's, and to less than 5 percent in the late 1970's, Table 1.

Growth in total numbers of people was at a somewhat slower rate since average household size declined from 3.33 persons in 1960 to 2.79 in 1979. Three Nielsen surveys (1979) conducted in 1973, 1976 and 1979 support this contention. The number of camping participants increased 7 percent between 1973 and 1976, but the rate declined to 4 percent between 1976 and 1979.

Table 1.—Average annual growth in the numbers of active, inactive, and potential campers, and new households in the United States, during the periods 1971-1973 and 1973-1978, in percent

| Market class                    | Average annual growth |           |
|---------------------------------|-----------------------|-----------|
|                                 | 1971-1973             | 1973-1978 |
| <b>Camper:</b>                  |                       |           |
| Active                          | + 7.6                 | + 4.5     |
| Temporarily inactive            | + 42.4                | + 9.8     |
| Permanently inactive            | + 14.7                | + 10.4    |
| All campers                     | + 14.9                | + 7.2     |
| <b>Noncamper:</b>               |                       |           |
| High and medium potential       | - 10.4                | - 5.2     |
| Low and zero potential          | - 2.5                 | 0         |
| All noncampers                  | - 3.9                 | - 1.0     |
| New households in United States | + 2.3                 | + 2.4     |

Source: LaPage and Cole 1979.

The total camping market picture is not complete without looking at the number of inactive campers and potential campers. Nationally, the inactive camper market (former campers) is growing at almost twice the rate of the active segment, Table 2. Between 1971 and 1978 active campers only increased from 19 percent of all households to 23 percent.

In 1971, one-third of all households had at least one adult who had camped; by 1978 the proportion had increased to one-half. Consequently, the pool of "potential campers" - in the high and medium potential category - declined from 12 percent of all households in 1971 to 6 percent in 1978. Growth in the number of active campers is reducing the supply of high potential campers since the active market continues to increase at nearly twice the rate of new household formation in the U.S.

Table 2.—Size of the American camping market in 1971, 1973, and 1978, as a percentage of total households

| Market class         | 1971 | 1973 | 1978 |
|----------------------|------|------|------|
| <b>Camper:</b>       |      |      |      |
| Active               | 19   | 21   | 23   |
| Temporarily inactive | 5    | 9    | 12   |
| Permanently inactive | 9    | 11   | 15   |
| <b>Noncamper:</b>    |      |      |      |
| High potential       | 3    | 1    | 1    |
| Medium potential     | 9    | 8    | 5    |
| Low potential        | 4    | 17   | 18   |
| Zero potential       | 51   | 33   | 26   |

Source: LaPage and Cole 1979.

Camping market growth is not shared among the four major regions in the U.S. in accordance with population distribution, Table 3. Over half of the nation's new campers entering the market between 1973 and 1978 live in the North Central region. Concurrently, there were almost no losses in potential campers or increases in the number of temporarily inactive campers from that region. While the Northeast gained nearly one million campers during the same period, losses to the temporarily inactive category were nearly as great. The pattern in the Western region was similar to that of the Northeast. Meanwhile, the Southern region experienced a net loss in the number of campers even though the largest supply of prospective campers resides there.

An important conclusion may be drawn from the camping market analysis. By 1978, for the first time, the total of permanent dropouts and temporarily inactive campers exceeded the number of active campers. There were two active campers for every inactive in the late 1960's and early 1970's; by 1973-74 the two groups were about equal and today former campers outnumber active campers by over 2 million households.

#### Characteristics of campers

Demographic characteristics of the population change rather slowly and since camping is a rather broad based participant activity, a similar pattern prevails.

**Age.** Historically, campers have predominantly been persons less than 40 years of

Table 3.--Distribution of active, temporarily inactive, and potential camping households, by region, 1973-1978<sup>a/</sup>, in millions

| Region                      | Camping market households |      |        |      |                                    |      |                         |      |
|-----------------------------|---------------------------|------|--------|------|------------------------------------|------|-------------------------|------|
|                             | Total households          |      | Active |      | Temporarily inactive <sup>b/</sup> |      | Potential <sup>c/</sup> |      |
|                             | 1973                      | 1978 | 1973   | 1978 | 1973                               | 1978 | 1973                    | 1978 |
| Northeast                   | 16.4                      | 17.3 | 2.3    | 3.3  | 1.0                                | 1.8  | 2.1                     | 1.1  |
| North Central               | 18.4                      | 20.1 | 3.2    | 4.9  | 2.1                                | 2.2  | 1.2                     | 1.1  |
| South                       | 21.2                      | 24.2 | 4.8    | 4.6  | 2.0                                | 3.0  | 2.2                     | 1.9  |
| West                        | 12.3                      | 14.4 | 4.0    | 4.7  | 1.2                                | 2.1  | 0.6                     | 0.4  |
| United States <sup>d/</sup> | 68.3                      | 76.0 | 14.3   | 17.5 | 6.1                                | 9.1  | 6.1                     | 4.5  |

<sup>a/</sup> For an approximate estimate of total persons (campers), multiply 1973 households by 3.01 persons per household, and 1978 households by 2.81.

<sup>b/</sup> Temporarily inactive campers have not camped for 3 years or longer. If longer, they said that they had not quit. In 1973 there were an additional 7.5 million permanently inactive households which had increased to 11.4 by 1978.

<sup>c/</sup> This includes "high" and "moderate" potential for camping; that is, those who plan to camp or who have a distinct interest in trying it. In 1973 there were an additional 34 million households with little or no interest in camping--by 1978 this figure had not changed significantly.

<sup>d/</sup> Northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania.

North Central: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.

South: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas.

West: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California.

Source: LaPage and Cole 1979.

age reflecting in part the experiences of young campers, and camping by young families on vacation or weekend outings, Table 4. However, between 1973 and 1978, a large increase in inactivity occurred among heads of households less than 30 years of age. The inactivity may be temporarily due to formation of new households (young children, etc.), but if it becomes permanent this will tend to support the contention made earlier about the increased supply of inactive campers. Furthermore, additional survey results indicate a decline in the participation of children under 12 and teens 12-17 between 1976 and 1979, -13 percent and -11 percent, respectively (Nielsen 1979). This further adds to underrepresentation of young persons under 30 years of age in the active market and skews the age distribution in favor of those over 30.

Education, occupation and income. These three demographic characteristics are highly intercorrelated and it is difficult to separate a meaningful cause and effect relationship between one variable and camping participation. Since 1960, some trends have emerged, however. Campers have consistently tended to have higher than median educational levels. For example, A KOA survey (1976) pointed out that 88 percent of camping heads of households have at least a high school education compared to 63 percent of the U.S. public.

Higher than average educational levels among campers transcends into overrepresentation of professional and white collar occupations among active campers. Conversely, in 1978, the largest proportion of potential campers came from the blue collar or semi-skilled categories.

Table 4.--Age distribution for active, temporarily inactive, and potential campers in 1973 and 1978, in percent

| Head-of-household's age | United States |      | Active |      | Inactive |      | Potential |      |
|-------------------------|---------------|------|--------|------|----------|------|-----------|------|
|                         | 1973          | 1978 | 1973   | 1978 | 1973     | 1978 | 1973      | 1978 |
| 18-29                   | 27            | 30   | 44     | 41   | 38       | 55   | 42        | 39   |
| 30-39                   | 19            | 19   | 25     | 28   | 23       | 15   | 26        | 22   |
| 40-49                   | 15            | 14   | 12     | 14   | 15       | 14   | 17        | 20   |
| 50-59                   | 15            | 14   | 10     | 9    | 15       | 8    | 8         | 14   |
| 60 or older             | 24            | 23   | 9      | 8    | 9        | 8    | 7         | 5    |

Source: LaPage and Cole 1979.

Finally, the educational levels and occupational groupings for active and inactive campers results in higher than average incomes. In 1976, 44 percent of camping households reported incomes in excess of \$15,000, while nationally only 37 percent of households reported incomes in the same category (KOA).

Families vs. singles: Camping has primarily been a family activity and remains so; however, a new trend began to emerge between 1973 and 1978. There was a notable increase in the proportion of single campers and a decline in married campers, with even a more pronounced increase in singles in the temporarily inactive category, (LaPage and Cole 1979).

#### Changing patterns of participation

Another dimension on the camping market, in addition to the number of participants, is the frequency of participation. Also, a trend analysis of the frequency variable is useful in interpreting total growth of the market. One national survey reports a slight increase in average days of participation from 1973 to 1976, while the rate held steady between 1976 and 1979 (Nielsen 1979). Regionally, a gain was indicated in the North Central states between 1976 and 1979, while the Northeast registered a loss in average days of participation.

In the 1978 Forest Service Survey more active campers said they had recently increased their participation level compared to a decrease or the same level (LaPage and Cole 1979). Average days of participation were 15.98 and very similar to the 1979 Nielsen survey. The 1978 median participation rate was only two weekend trips of three days each. Thus, the heavy half phenomenon reported previously (LaPage 1969) continues to be important. In 1978, one

half of the active campers accounted for 78 percent of all camping trips and 77 percent of the total camping days. The 1979 Nielsen survey reported that 32 percent of the active campers participated 20 or more days each year, accounting for 68 percent of total participation.

Travel patterns. The 1976 National Travel Survey indicated that camping trips tend to be longer, in miles, than other trips taken by Americans (U.S. Travel Data Center). In the 1977 NE-100 survey, campers said they were traveling farther from home than in previous years (Bevins and others 1979a). They were seeking new types of experiences or new campgrounds. As of 1977, energy concerns or costs apparently did not deter campers.

#### Equipment and facility preferences

Tents and recreational vehicles (RV's) were equally preferred in 1971, while in 1973 and 1978 surveys, RV's had gained slightly with motor homes showing the greatest percentage change, Table 5. Tents tend to be the preferred shelter for beginning campers (59 percent in the 1973 study).

RV shipments from manufacturers have been sensitive to general economic conditions and to the energy situation. For example, the gasoline shortage and the recession in early 1974, both likely contributed to a 41 percent decline in shipments compared to the previous year, Table 6. However, shipments regained momentum in late 1974 and the trend continued until 1976, followed by a decline in 1977 and 1978. Truck campers and camping trailers have exhibited a declining market share since 1970, and travel trailers a slight increase. Motor homes have captured the major increase.

Table 5.--Type of shelter used by active campers on last camping trip, 1971, 1973, and 1978, in percent

| Shelter <sup>a/</sup> | 1971 | 1973 | 1978 |
|-----------------------|------|------|------|
| Tent                  | 50   | 41   | 42   |
| Camping trailer       | 13   | 11   | 11   |
| Travel trailer        | 17   | 17   | 19   |
| Truck camper          | 15   | 15   | 12   |
| Motor home            | 3    | 7    | 9    |
| Van or converted bus  | 6    | 10   | 10   |
| Pickup cover          | 6    | 5    | 11   |
| Other                 | -    | 5    | 4    |
| Unknown               | -    | 1    | 1    |

<sup>a/</sup> Totals exceed 100 percent because some campers use more than one type of shelter on a camping trip.

Source: LaPage and Cole 1979.

Table 6. Recreational vehicle shipments, 1970-1978

| Year | Camping trailer | Truck camper | Motor home | Travel trailer | Total shipment | Change from preceding year |
|------|-----------------|--------------|------------|----------------|----------------|----------------------------|
|      | percent         |              |            |                | thousands      | percent                    |
| 1970 | 31              | 25           | 8          | 36             | 380            | - 5.2                      |
| 1971 | 21              | 24           | 13         | 42             | 451            | + 18.7                     |
| 1972 | 19              | 18           | 20         | 43             | 583            | + 29.3                     |
| 1973 | 19              | 17           | 24         | 40             | 529            | - 9.3                      |
| 1974 | 19              | 15           | 23         | 43             | 296            | - 44.1                     |
| 1975 | 14              | 13           | 29         | 44             | 340            | + 14.9                     |
| 1976 | 12              | 10           | 35         | 43             | 441            | + 29.7                     |
| 1977 | 13              | 8            | 39         | 41             | 414            | - 6.1                      |
| 1978 | 12              | 6            | 40         | 41             | 390            | - 5.8                      |

Source: LaPage and Cole 1979.

A KOA study (1976) indicates that RV owners camp more nights per year than do tent users. RV users averaged 16 nights per year, tent users 9 nights. Greater convenience and a greater fixed investment may encourage more use of RV equipment.

Little difference in incomes has been reported between tent and RV users; however, a Delaware study concluded that campers earning more than \$10,000 per year preferred less campsite development than did those earning more than \$10,000 (Brokaw and Cole 1977). The standard level of development included picnic tables, level parking, flush toilets and showers.

Although public campgrounds were used more than private campgrounds in both the 1973 and 1978 studies, the market share for private campgrounds appears to be growing. This trend is likely associated with greater use of RV's since private campgrounds offer a greater opportunity for utility hookups.

#### Perceptions and images of camping

Americans' perceptions of camping as an outdoor recreation activity were utilized in the 1973 and 1978 national surveys as one means of assessing the market's growth potential. A series of word pairs on a 5-point

rating scale ranging from very favorable to very unfavorable were used to develop a composite image. For example, respondents could rate camping as convenient or inconvenient, safe or unsafe, etc. The general public perceived camping to be substantially more favorable than unfavorable, Table 7. Furthermore, there were very few changes in those images between 1973 and 1978.

A major concern was whether perceptions of camping might act as barriers to participation. If potential campers view camping as "difficult" or complex then they may be unlikely to try the activity. In 1973, 50 percent of all prospective campers thought camping would be easy, but by 1978 the percentage had declined to 41 (LaPage and Cole 1979). Also, "comfortable" dropped from 54 percent to 39 percent and "fun" from 57 percent to 42 percent for the same group. Perceptions of crowding increased from 35 percent to 43 percent. The same kinds of perceptual limitations will likely prevent temporarily inactive campers from returning to the active market.

Most importantly, increasingly favorable perceptions among active campers could reflect increased satisfaction and a reduced likelihood of their dropping out of the market. Of the image factors included in the surveys, eight showed higher positive images and four higher negative images in 1978, compared to 1973 (LaPage and Cole 1979). For example, active campers in 1978 felt that camping was less crowded (+10 percent), more convenient (+8 percent), interesting (+5 percent), easier (+3 percent) and more comfortable (+3 percent) than in 1973. Conversely, active campers felt it was less safe (-9 percent) and less fun (-5 percent).

Camper's satisfaction with the last camping trip was quite stable between 1973 and 1978, Table 8. The data collected suggest that the accelerating dropout rate is apparently not due to a decline in the quality of the experience. One possible exception may be the availability of utility hookups which may not be keeping pace with the increased use of self-contained units. Also, a minor decline (4 percentage points) was noted among active campers in satisfaction with the level of camping fees. However, reaction to fee levels was more favorable among temporarily inactive campers in 1978, compared to 1973.

The "cost image" of camping is apparently changing for the better among all

market segments except potential campers. Among temporarily inactive campers, the belief that camping is a more economical way of traveling and vacationing was much more prevalent in 1978 than in 1973, Table 9. The discrepancy between potential campers and those who have actually camped suggests that an industry sponsored cost comparison could be a source of market growth.

#### THE CAMPGROUND INDUSTRY - IS IT REACHING MATURITY?

##### Growth in the private and public sectors

The campground industry was young and exhibited rapid expansion during the 1960's. In the Northeast region, private campgrounds increased 800 percent between 1961 and 1967 and outnumbered public campgrounds by 4 to 1 (Moeller 1971).

Currently, there is no all inclusive inventory of tent and trailer campsites in the U.S. Inventories have been made periodically by the National Association of Conservation Districts - the most recent in 1974. Annually several commercial publishing firms monitor the industry for inclusion of public and private firms in their directories. However, many directories attempt to maintain certain quality standards for the benefit of their clientele. Hence, there is no intent to include all campgrounds. Also, in an industry which has been as dynamic as the campground industry, it is extremely difficult to be aware of all firms entering and exiting.

While there is no agreement on the number of campgrounds and campsites among the various potential sources of information, there is agreement that the industry growth rate has diminished in the late 1960's and during the 1970's. In the Northeast, the growth rate slowed to 12 percent per year between 1967 and 1971 (Bevins and others 1974). This was in part due to a conscious effort by public administrators to reduce the rate of campground expansion.

Two commercial sources indicate that the number of private campgrounds decreased by approximately 10 percent between 1973 and 1978 (Bevins and others 1979b). There is a discrepancy on public sector data; one source indicates a 25 percent increase, another a 27 percent decrease.

Data from Federal resource management agencies indicate a relatively stable supply

Table 7.--Percentage of camping market households with a positive image of camping, 1973-1978

| Image description     | Camping Market Household |       |        |      |                      |      |                      |      |                           |      |                        |      |
|-----------------------|--------------------------|-------|--------|------|----------------------|------|----------------------|------|---------------------------|------|------------------------|------|
|                       | All                      |       | Active |      | Temporarily inactive |      | Permanently inactive |      | High and medium potential |      | Low and zero potential |      |
|                       | 1973                     | 1978  | 1973   | 1978 | 1973                 | 1978 | 1973                 | 1978 | 1973                      | 1978 | 1973                   | 1978 |
| Environment:          |                          |       |        |      |                      |      |                      |      |                           |      |                        |      |
| Interesting           | 55 <sup>a/</sup>         | 57    | 86     | 88   | 79                   | 77   | 65                   | 56   | 83                        | 74   | 30                     | 34   |
| People friendly       | 59                       | 59    | 78     | 79   | 66                   | 75   | 69                   | 59   | 64                        | 57   | 47                     | 44   |
| Refreshing            | 44                       | 47    | 73     | 71   | 70                   | 68   | 47                   | 41   | 62                        | 58   | 21                     | 26   |
| Pleasant              | 52                       | 57    | 81     | 84   | 73                   | 79   | 63                   | 59   | 81                        | 81   | 27                     | 32   |
| Composite             | 52                       | 55    | 80     | 81   | 72                   | 75   | 61                   | 54   | 72                        | 68   | 31                     | 34   |
| Conditions:           |                          |       |        |      |                      |      |                      |      |                           |      |                        |      |
| Clean                 | 34                       | 34    | 54     | 52   | 39                   | 36   | 40                   | 30   | 47                        | 49   | 21                     | 21   |
| Safe                  | 43                       | 42    | 64     | 62   | 60                   | 53   | 45                   | 44   | 45                        | 49   | 30                     | 27   |
| Uncrowded             | 25                       | 26    | 29     | 34   | 26                   | 30   | 36                   | 25   | 35                        | 26   | 19                     | 21   |
| Inexpensive           | 37                       | 37    | 50     | 52   | 44                   | 42   | 41                   | 37   | 40                        | 41   | 28                     | 27   |
| Composite             | 35                       | 35    | 49     | 50   | 42                   | 40   | 40                   | 34   | 42                        | 41   | 24                     | 24   |
| Attraction:           |                          |       |        |      |                      |      |                      |      |                           |      |                        |      |
| Easy                  | 35                       | 35    | 56     | 62   | 47                   | 40   | 36                   | 37   | 50                        | 41   | 21                     | 18   |
| Fun                   | 40                       | 39    | 62     | 57   | 56                   | 46   | 45                   | 45   | 57                        | 42   | 23                     | 25   |
| Convenient            | 27                       | 32    | 47     | 53   | 40                   | 39   | 31                   | 36   | 35                        | 37   | 15                     | 16   |
| Comfortable           | 39                       | 39    | 65     | 67   | 56                   | 49   | 43                   | 43   | 54                        | 39   | 20                     | 20   |
| Composite             | 35                       | 36    | 58     | 60   | 50                   | 44   | 39                   | 40   | 49                        | 40   | 20                     | 20   |
| Number of respondents | 2,199                    | 2,013 | 450    | 423  | 214                  | 238  | 281                  | 318  | 198                       | 109  | 1,056                  | 908  |

<sup>a/</sup> In 1973, 55 percent of the U.S. public felt that camping was interesting; that is, they assigned a 1 or 2 on a scale of 1 to 5 (1 being the most positive, 5 being the most negative).

Source: LaPage and Cole 1979.

situation in Forest Service and Park Service campgrounds and a modest increase at Corps of Engineer operated facilities during the 1979's (Bevins and others 1979b).

Utilizing the various sources of information, it appears that in 1978 we had approximately 7,000 public campgrounds and 9,000 privately operated enterprises.

It is also important to look at the trend in numbers of campsites. One source indicates an annual 20 percent increase nationally in the number of private sites between 1967 and 1973, and a 12 percent in-

crease in public campsites (Bevins and others 1979b). Growth slowed between 1973 and 1978 to a five percent increase in the private sector and less than one percent increase in the public sector, Figure 1.

The trend is towards larger campgrounds. Private campgrounds averaged 88 sites in 1978, compared to only 28 sites in 1967, a 214 percent increase, Figure 2. In a Northeast regional study, private campgrounds averaging fewer than 50 sites were much less likely to be financially successful than larger units (Bevins and others 1974). Public campgrounds exhibit a similar

Table 8.--Camper satisfaction or dissatisfaction with last camping trip, 1973, and 1978, in percent

| Degree of satisfaction <sup>a/</sup>            | Active |      | Temporarily inactive |      | Permanently inactive |      |
|---|--------|------|----------------------|------|----------------------|------|
|   | 1973   | 1978 | 1973                 | 1978 | 1973                 | 1978 |
| <b>Overall trip:</b>                            |        |      |                      |      |                      |      |
| Generally satisfied                             | 93     | 93   | 89                   | 91   | 73                   | 78   |
| Generally dissatisfied                          | 4      | 5    | 8                    | 8    | 16                   | 14   |
| Does not apply to my camping style              | 2      | 1    | 2                    | 1    | 6                    | 4    |
| <b>Campsite availability:</b>                   |        |      |                      |      |                      |      |
| Generally satisfied                             | 78     | 78   | 75                   | 83   | 63                   | 71   |
| Generally dissatisfied                          | 9      | 11   | 12                   | 9    | 13                   | 15   |
| Does not apply to my camping style              | 12     | 10   | 11                   | 8    | 18                   | 9    |
| <b>Hookup availability:</b>                     |        |      |                      |      |                      |      |
| Generally satisfied                             | 53     | 48   | 54                   | 54   | 39                   | 52   |
| Generally dissatisfied                          | 5      | 8    | 7                    | 8    | 7                    | 9    |
| Does not apply to my camping style              | 38     | 43   | 33                   | 33   | 40                   | 36   |
| <b>Recreation facilities:</b>                   |        |      |                      |      |                      |      |
| Generally satisfied                             | 73     | 72   | 71                   | 72   | 55                   | 66   |
| Generally dissatisfied                          | 11     | 11   | 12                   | 14   | 14                   | 15   |
| Does not apply to my camping style              | 15     | 15   | 15                   | 13   | 24                   | 13   |
| <b>Cleanliness and condition of campground:</b> |        |      |                      |      |                      |      |
| Generally satisfied                             | 78     | 80   | 76                   | 76   | 65                   | 72   |
| Generally dissatisfied                          | 12     | 9    | 13                   | 13   | 15                   | 13   |
| Does not apply to my camping style              | 9      | 11   | 9                    | 8    | 15                   | 10   |
| <b>Level of camping fees:</b>                   |        |      |                      |      |                      |      |
| Generally satisfied                             | 70     | 66   | 70                   | 75   | 54                   | 65   |
| Generally dissatisfied                          | 9      | 11   | 8                    | 6    | 5                    | 8    |
| Does not apply to my camping style              | 17     | 20   | 16                   | 13   | 25                   | 16   |

<sup>a/</sup> Totals do not equal 100 percent in most cases because of nonresponses.

Source: LaPage and Cole 1979.

Table 9.--Attitude toward the total cost<sup>a/</sup> of camping compared with other ways of traveling and taking a vacation, 1973 and 1978, in percent<sup>b/</sup>

| Camping group               | <u>More economical</u> |                  | <u>Less economical</u> |                  |
|-----------------------------|------------------------|------------------|------------------------|------------------|
|                             | 1973                   | 1978             | 1973                   | 1978             |
| U.S. public                 | 43                     | 46 <sup>b/</sup> | 14                     | 14 <sup>b/</sup> |
| Active                      | 66                     | 67               | 13                     | 13               |
| Temporarily inactive        | 51                     | 72               | 18                     | 9                |
| Permanently inactive        | 45                     | 49               | 18                     | 19               |
| High-potential households   | 51                     | 40               | 15                     | 5                |
| Medium-potential households | 53                     | 47               | 9                      | 13               |
| Low-potential households    | 36                     | 32               | 16                     | 15               |
| Zero-potential households   | 27                     | 24               | 11                     | 16               |

<sup>a/</sup> Respondents were asked to visualize the total cost of camping as including taxes on equipment, campsite fees, extra tolls, insurance, and other equipment costs.

<sup>b/</sup> Totals for each year do not equal 100 percent due to many respondents reporting "no opinion."

Source: LaPage and Cole 1979.

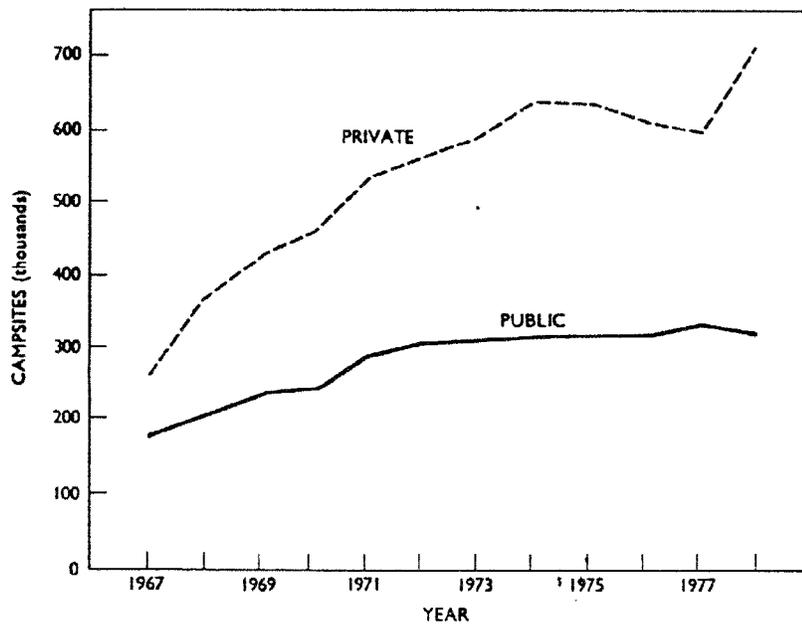


Figure 1.--Public and private developed campsites in the United States. Woodall management has indicated that 1977 private campsite numbers may be low because of changes in campground inventory procedures and not because there were fewer private campgrounds.

Source: Bevins and others 1979b.

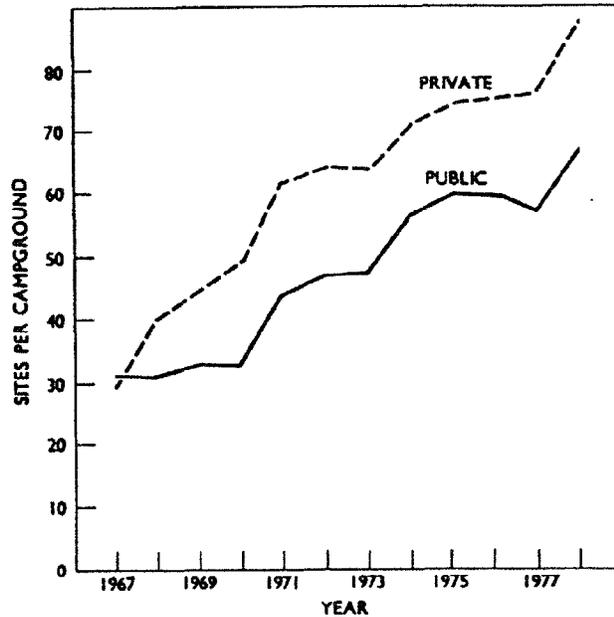


Figure 2.--Average number of campsites per campground listed by Woodall Publishing Co., 1967-1978.

Source: Bevins and others 1979b.

trend, more than doubling from 31 sites in 1967 to 67 in 1978 (Bevins and others 1979b).

Private campgrounds have grown out of economic necessity and in some areas due to zoning regulations that prevented establishment of new campgrounds but allowed existing businesses to expand. Growth has not occurred uniformly throughout the U.S. There was over twice the resident population per campsite (333) in the Northeast region compared to the Western region (154) in 1977 (Bevins and others 1979b). This ignores interregional travel among campers, but illustrates the disparity in available sites especially if energy concerns increase.

Growth in the private sector was likely stimulated by an additional trend which emerged during the 1970's - franchising. While the number of franchisers decreased from 27 in 1970 to 6 in 1977, franchised campgrounds grew to occupy an impressive market share (Oertle 1977). The 1976 Woodall's Campground Directory indicated that 12.1 per-

cent of the private campgrounds were franchisees, providing 21 percent of the available private campsites. By comparison, this was over four times as many spaces as provided by the National Park Service and National Recreation Areas combined.

The franchisers stressed a package of services and amenities that couldn't be found in the public sector and that would appeal to the destination type camper. Included in the service package by some of the chains was a nationwide reservations service similar to that provided by motel chains.

#### Pricing practices

Fee structures in the private and public sectors are not always based on the same management goals. Traditionally, public agency managers have adopted the philosophy that public campgrounds should be only partially supported from rental fees.

Recent studies in Oregon, Pennsylvania and Rhode Island suggest that costs per site per night exceed fees charged by up to \$12.00 (LaPage 1978). A few states, notably New Hampshire, have directed state park managers to adjust fees upward to recover full costs of development and operation. This is the exception, however. A Northeast study found that between 1960 and 1971 state park fees barely kept pace with increases in the price level, with no allowance for increased development costs (Bond and others 1973).

Private campground owners have often criticized the public agencies as a source of unfair competition when less than full cost fees are charged. However, it appears that the private sector has attempted to carve out a segment of the market not being served by public campgrounds, and adjusted their fees accordingly. By 1977, more than three-fourths of all sites at private campgrounds had electricity and water, while only one-fourth of public sites had electricity and only one-tenth had water (Bevins and others 1979b).

An analysis of fees in the Northeastern states indicated that trailer site fees at private campgrounds were 43 percent higher than public fees for similar sites in 1977 (Bevins and others 1979b). The basic fee was \$4.60 at private campgrounds, compared to \$3.22 at public campgrounds. Both the private and public sectors increased fees between 1973 and 1977 with a slightly greater increase in the private sector (30 percent) compared to the public sector (27 percent). Fee increases varied considerably among states in the region. There was no increase at Connecticut's public campgrounds but a 95 percent increase occurred in New Jersey. Private fee increases ranged from 25 percent in Vermont to 40 percent in New Jersey. The variation in trends noted suggests that numerous forces were at work, including differing public policies concerning fees and variations in willingness to pay among campers. The highest fees were recorded in Delaware and New Jersey, two states near to major population centers with camping available to ocean beaches.

Willingness to pay studies have indicated that campers supported higher fees in both public and private campgrounds, although acceptable increases in private campgrounds were approximately half the level at public campgrounds (Bevins and others 1979b). This probably reflected the higher fees already being charged at private campgrounds.

#### Energy and economic conditions

The two Forest Service national surveys, conducted in 1973 and 1978, both attempted to learn of the impact of the gasoline situation and/or economic conditions on camping trips. Gasoline availability or cost, together with the total anticipated trip cost, were insignificant reasons given for either cancelling or shortening a planned camping trip. While shipments of recreational vehicles cited earlier appear to be sensitive to economic conditions, the above results do not suggest that camping participation has been affected.

#### Participation in relation to industry capacity based on occupancy data

One of the key indicators of the economic health of the hotel-motel industry is percent occupancy. Similar statistics should be beneficial to the campground industry. For the first time, in 1978, the National Campground Owners' Association coordinated a nationwide effort to monitor weekly occupancy data from a sample of campgrounds. The effort was successful and was expanded from 94 campgrounds in 1978 to include 259 in 1979. Consequently, two years of data are available for the period from Memorial Day to Labor Day.

Nationally, average daily occupancy declined from 58 percent for the 1978 season to 47 percent in 1979, representing a 19 percent loss in business (LaPage and Cormier 1979). While in prior studies campers said they had not curtailed trips because of gasoline cost or availability, it appears that they were influenced in 1979. The decline in occupancy was greatest in the Western region. Seasonal 1979 slumps appeared to coincide with the appearance of gasoline shortages in California. Likewise a decline in occupancy in other regions appeared to be correlated with gasoline availability.

Occupancy levels for both years were highest in the Northeast, followed closely by the Western regions. Levels were significantly lower in the North Central and Southern regions. Because of greater driving distances in the West, there was a smaller proportion of weekend only camping or less variation between weekday and weekend occupancy rates. In the Northeast, the smallest of the four regions, higher occupancy rates overall and weekend peaking reflect lesser distances from population

centers to tourist attractions. Also, during 1979, seasonal rentals were up in all regions except the West.

While two years of data are insufficient to establish a trend, nationwide a 14 percent decline in occupancy between 1978 and 1979 was noted. Continued monitoring will be useful to evaluate the impact of energy and economic considerations.

#### SUMMARY AND CONCLUSIONS

Several national and regional market surveys and industry sources were utilized to establish trends in camper participation, characteristics of campers, attitudes about camping, travel patterns and equipment preferences. Growth of the industry, both in terms of campgrounds and the number of campsites, was also examined together with pricing practices, energy impacts and occupancy data.

By 1978, the number of inactive campers nationwide outnumbered active campers. Persons from 27 percent of U.S. households had tried camping and dropped it. Furthermore, there are fewer potential campers as viewed by the public's image of camping. Younger persons (less than 30) have become inactive in a greater proportion than other age groups in the population.

Camping still retains a favorable cost image as an economical means of traveling and vacationing among active and inactive campers, but to a lesser degree among potential campers. This may indicate a need for an industry sponsored cost comparison campaign to educate potentials.

Camper satisfaction with the last camping trip remained quite stable in the 1970's. A minor decline was noted in satisfaction with fee levels.

A noticeable slowdown in the rate of campground growth occurred during the 1970's. By the end of the decade, there were indications that the number of campgrounds could even be declining. However, it was apparent that the number of campsites continued to increase, reflecting expansion of existing campgrounds into more economically sized units. The number of campsites relative to population remained smallest in the Northeast region and largest in the Western region of the U.S. By 1976, franchised campgrounds provided over 20 percent of private sector sites.

Fees charged in the public sector often represented a management philosophy of recovery of less than full costs. Fee increases were greater in the private sector during the 1970's, perhaps out of economic necessity. Private campgrounds provided a greater share of utility hookups than the public sector.

Prior to 1979, there was no indication that energy availability or prices had been a deterrent to campers' planned trips. However, occupancy data for 1979 compared to 1978 clearly indicate a decline nationwide among a sample of reporting campgrounds. Declines in occupancy appear to be correlated with regional gasoline shortages. Occupancy levels were highest in the Northeast for both years and lower in the Southern and North Central regions. There was more weekend peaking in the Northeast, reflecting shorter driving distances and the least amount in the West because of greater distances. The question of energy prices and availability looms as a major challenge to the industry in the 1980's, particularly in view of a decline in the growth rate of the camping market.

#### LITERATURE CITED

- Bevins, Malcolm I., Tommy L. Brown, Gerald L. Cole, Kenneth J. Hock and Wilbur F. LaPage. 1974. Analysis of the campground market in the Northeast. Report II. Privately owned areas. Vermont Agric. Exp. Stn. Bull. 679.
- Bevins, Malcolm I., Tommy L. Brown, Gerald L. Cole, Kenneth J. Hock, Marvin W. Kottke, Wilbur F. LaPage, Richard W. Stammer and Daniel J. Stynes. 1979a. Changing patterns of outdoor recreation participation in the Northeast. Delaware Agric. Exp. Stn. Bull. 427.
- Bevins, Malcolm I., Wilbur F. LaPage and Daniel P. Wilcox. 1979b. The campground industry: Recent national trends. USDA For. Serv. Gen. Tech. Rep. NE-53.
- Bond, Robert S., Malcolm I. Bevins, Tommy L. Brown and Paul R. Fiske. 1973. Analysis of the campground market in the Northeast. Report 1, Public policy. Massachusetts Agric. Exp. Stn. Bull. 601.
- Brokaw, Marion J and Gerald L. Cole. 1977. An economic analysis of camper equipment preferences, facilities and fees in relation to income. Delaware Agric. Exp. Stn. Bull. 422.

- Kampgrounds of America. 1976. 1976 camper survey. Billings, Mont.
- Kottke, Marvin W., Malcolm I. Bevins, Gerald L. Cole, Kenneth J. Hock and Wilbur F. LaPage. 1975. Analysis of the campground market in the Northeast. Report III. A perspective on the camping involvement cycle. USDA For. Ser. Res. Pap. NE-322.
- LaPage, Wilbur F. 1969. Campground marketing: The heavy half strategy. USDA For. Ser. Note NE-93.
- LaPage, Wilbur F. 1973. Growth potential of the family camping market. USDA For. Ser. Res. Pap. NE-252.
- LaPage, Wilbur F. 1978. The camping market and the campground industry: trends and research. In Campgrounds and camping 1980 conference proceedings, Southern Illinois Univ., Carbondale.
- LaPage, Wilbur F. and Gerald L. Cole. 1979. 1978 national camping market survey. USDA For. Ser. Res. Pap. NE-450.
- LaPage, Wilbur F. and Paula L. Cormier. 1979. The national campground occupancy index. A report to the Board of Directors, National Campground Owners Assoc. USDA For. Ser. unnumbered report.
- Moeller, George H. 1971. Growth of the camping market in the Northeast. USDA For. Ser. Res. Pap. NE-202.
- Nielsen, A. C., Company. 1979. Sports participation study. Camping.
- Oertle, V. Lee. 1977. The franchising phenomenon. In Woodall's trailer and RV travel. Woodall Publishing Co., Highland Park, Ill.
- Outdoor Recreation Resources Review Commission. 1962. National recreation survey. Study report 19. U.S. Gov. Print. Off., Washington, D.C., p. 31.
- U. S. Travel Data Center. 1977. 1976 National travel survey: full year report. Washington, D. C.

TRENDS IN THE MARKET FOR  
PRIVATELY OWNED SEASONAL RECREATIONAL HOUSING<sup>1</sup>

Richard L. Ragatz,<sup>2</sup> Ph.D.

**Abstract.** The market for privately owned seasonal recreational properties, such as vacation homes, recreational lots, and resort condominiums has encountered many peaks and declines during the past 15 years. While demand for traditional types of recreational property has recently fallen off due to inflation and lack of financing, other alternatives such as resort timesharing are again beginning to stimulate the market.

INTRODUCTION

Since the late 1960's this nation has encountered a great proliferation in the supply of and demand for privately owned property for seasonal-recreational purposes. Included in this market are the three traditional commodities of vacant recreational lots, single family detached vacation homes, and resort condominiums and more recent innovative commodities such as timeshare units, lots sold as camping and recreational vehicle sites, and undivided interests.

While the market has gone through a series of peaks and declines in the 1970's, recent events indicate interest is being created anew by both producers and consumers. New products are being created and it appears the market will continue to be part of the lifestyle of many Americans.

It is estimated that somewhere between 12 and 15 million recreational lots and about 3.5 million vacation homes currently exist in this country. The market for vacation homes is oriented toward a user product as owners purchase these secondary shelters to enjoy during weekends and vacation periods throughout the year. The larger market for recreational lots

is more complex in nature, being created by two major causal factors. The first relates to those persons who buy such lots for the immediate or future siting of a vacation home. The second relates to those persons who buy such lots for speculative purposes in the hopes of realizing equity appreciation on their invested capital.

TRENDS IN MARKET FOR RECREATIONAL PROPERTIES

Early History

In order to set the market for seasonal-recreational properties in proper perspective, it is useful to back up and describe how this phenomenon has evolved in recent years.

Seasonal occupancy of land and housing can be traced through the history of the United States. During the early colonial period, the land-holding aristocracy in the South frequently maintained their primary residence on the plantation, but owned second and third homes in other communities or areas that provided recreational amenities. This multiple home ownership pattern existed in the Northern states, where wealthy families are known to have owned additional homes for recreation before the Revolutionary War (Fenton 1965).

During the late 19th and early 20th centuries, peaks in vacation home ownership corresponded with periods of affluence and improvements in transportation. Such occupancy patterns influenced the development of traditional recreational areas such as Newport Beach, Palm Beach, the Adirondack Mountains,

<sup>1</sup>Paper presented at the National Outdoor Recreation Trends Symposium, Durham NH, April 20-23, 1980.

<sup>2</sup>Richard L. Ragatz is President, Richard L. Ragatz Associates, Inc., Consultants in Vacation Housing and Recreational Communities and Professor of Urban and Regional Planning, University of Oregon, Eugene, Oregon.

and the mountains of North and South Carolina and Virginia.

Many factors have contributed to a tremendous expansion of the market for recreational properties during the past 2 decades. Although popular for generations, lack of both publicity and low-cost production methods seemed to maintain the traditional association between this type of property and affluence. Few marketing programs were directed at middle-income families until the early 1960's.

Historically, there have been 2 basic types of recreational land development occurring in this country. One was simply the scattered lot found in a rather secluded area not too far from a city. Favorite spots were around lakes, in mountains, and on the seashore. Typically purchase of the lot was made from an individual farmer or rancher who was selling off marginally productive or nonproductive land. Lots were usually small, density frequently high, with very few if any, public facilities being provided. Houses constructed on these lots often were small and usually were not built for permanent living quarters, e.g., the hunting cabin in the Maine woods or the lake cottage in the Adirondacks. Scattered lot development is still occurring today, but the mass market has shifted to a more organized type of sales promotion and land development.

A second type of historical development was a series of platted lots in scenically attractive areas. Again, lots were small (usually at urban densities) and public facilities and services were minimal. For the most part, locations were close to existing metropolitan areas in an attempt to tap the mass market. Many of these areas have evolved to the point where, today, they are communities of primary residences. Typical examples are found on Cape Cod, the Jersey Shore, and St. Petersburg, Florida.

#### Recreational land projects

During the late 1950's and early 1960's mass merchandising of recreational land began. As noted by one researcher (Burlingame 1973):

Developers found that they could sell land by direct mail like soap. All that was required was to tie up the land by the purchase of options, make some minimal improvements, hire a sales force, launch an advertising campaign, and start selling. Many developers got rich on down payments alone. At first developers were selling retirement lots; later they switched from a retirement to an investment pitch, and the real abuses

began. By 1970, this land merchandising business had become a gigantic industry selling between four and five million dollars worth of lots annually.

Probably nothing harmed the land development industry and created as negative an image in the public's eye as did these land merchandising projects. Land was prematurely subdivided, few amenities or services were provided, promises often were broken, consumers have been frequently dissatisfied, and buildout has remained extremely low.

The vacation home "subdivision" began to occur in the mid-1960's and has been described as follows (Burlingame 1973):

Here, land is marketed more toward a user market within a certain distance of metropolitan areas. Often some recreational amenities were built such as man-made lakes, swimming pools, golf courses, etc. The general philosophy of developers was to construct the beginnings of a real community by making general site improvements, constructing some housing, and providing some developed recreational amenities. However, the business was still one of merchandising land. Every major metropolitan area in the United States has at least a few and often as many as 20 or more second-home communities nearby. This market was essentially a user market aimed at people who actually intended to use the property for leisure time pursuits, as opposed to those interested merely in speculative land investment.

The vacation home subdivision has a great range of quality as a large number of both good and poor projects exist throughout the country.

#### Recreational communities

A development frequently referred to as a recreational "community" began to occur in the late 1960's as is described as (Burlingame 1973):

While developers are still making most of their money off of land sales, their time frame is greatly extended (5 to 20 years) and their plans for extensive development often include the construction of housing. The market is predominantly a user market of home buyers, rather than lot buyers. These developments are high amenity projects with developed recreational facilities such as golf courses, marinas, ski

slopes, and so on. Front end investments in recreational amenities and site improvements are high, and the companies either building or financing such projects are generally large corporate enterprises.

The market group is high income and often can afford to fly into their project from some considerable distance rather than get to their property via auto. Speculative investment still occurs, although often in housing rather than just land alone. These projects exhibit the greatest likelihood of financial success in terms of establishing a lasting and viable community or real worth.

Usually limited only to the very affluent consumer, community-type projects are fairly complete in almost every public service and facility aspect, in addition to offering a wide variety of recreational amenities. Many are advertised as "new towns," and while usually high in quality, they frequently still do not have the complete infrastructure associated with a well developed urban environment.

#### Resort condominiums

Resort condominiums started to become popular in the late 1960's. When compared with total acres devoted to recreational land use and the total number of vacation home units, the resort condominium market is still relatively small. However, in many parts of the country, (e.g., Lake Tahoe, the Florida coast, the Caribbean, and Hawaii) they have become extremely popular. For the most part, resort condominiums are found as part of a vacation home community-type of development, along with single-family detached vacation homes and individually owned recreational lots, though some have developed apart from these areas.

#### Timesharing

Other opportunities in recreational land also have become available to the consumer in the past few years including properties of shared ownership. It now is possible to buy a portion of a recreational shelter rather than the entire unit. Called "timesharing," this concept allows purchases to be made not only for units of space but also for units of time. Thus, a consumer can pay 1/52 of the total selling price of a condominium unit and be entitled to its use for 1 week of the year. This approach opens up the market to more persons of course since entry cost is considerably lower than for other

types of recreational real estate.

The timeshare concept is described in more detail as follows (American Land Development Association 1978):

Timesharing is a way for you to use or own resort accommodations when you want them, and forget about them when you don't. The term "timesharing" is pure American -- borrowed from the computer industry; but the concept is European -- and more than a decade old.

Thousands of Frenchmen, Germans, Italians, and Englishmen vacation in their places in the Alps, or along the Mediterranean coast for a week, two weeks, or more each year, then return home comfortable in the knowledge that when they come again next time, their condominiums, hotel units or villas will be clean, well cared for and ready for them to move into. Each owns the right to exclusive use of anything from 300 square foot efficiency apartment to a luxury villa for a certain period of time each year, for anywhere from 20 to 50 years.

In the early 1970's, two things combined to open the gates in the United States to this European immigrant timesharing. Condominiums for sale at major resort areas threatened to become so expensive as to preclude purchase by any except the well heeled; Americans began to realize that one did not have to own a condominium or other lodging to be able to depend on having it available to use when they wanted it -- just what the Europeans, who had long been limited in their real estate purchases by scarcity and high cost, had known for years.

In this realization lies the central element of the resort timeshare: it is a means for the guaranteed use of resort accommodations and facilities and not an investment in real estate.

Types of timesharing fall into two broad categories:

Where you may buy an ownership interest in real estate (the building and common area)

Where you may buy a right to

use the living space for a specified number of years but you do not have an ownership interest in real estate

As a timeshare owner, you would generally be free to sublease or allow friends or family to use your timeshare in your absence. Or you can trade use informally, or formally through trading networks or exchange programs.

Exchange programs are attractive for many reasons. Especially popular are the external exchange services, which offer maximum flexibility, and variety of choices, plus the help of an operating service in making arrangements.

As part of an exchange program, without selling your timeshare, you may spend time in various kinds of resorts from the seashore to the mountains to foreign countries. You could, conceivably, go to a new place each year.

#### Undivided interest

Another recent concept being employed in the recreational property industry is undivided interest which refers to a system of conveying usufructuary rights wherein all members share equally in the use and ownership of the entire property.

Closely related to timesharing, the use of undivided interest as a means of dividing property on a share-and-share-alike basis is not a new phenomenon. It has been utilized in intentional communities, collective agriculture endeavors, hunting and ski groups, and as a common basis for partnership arrangements. What is new, however, is the application of this form of ownership to the development and marketing of large-scale recreation properties. Unfortunately, the newness and uniqueness of the concept makes it practically impossible to undertake a productive analysis of the state-of-the-art. Several undivided interest projects directed to the RV camper were initiated in the early 1970's. For the most part they were unsuccessful due to an economic recession, gasoline shortage, and probably the newness of the concept. During the past two years, several such projects have been attempted with varying degrees of success.

The main difference between timesharing and undivided interest is that in the latter alternative, the buyer has unlimited access to the recreational property (whether it be

actual shelter or a campsite) while the former alternative only allows access during a specific time period. Also, undivided interest always gives the consumer shared ownership of the whole (land and improvements) while the opportunity of ownership may or may not be applied to timesharing.

An example of a recent undivided interest project is being implemented in Idaho. Here, 500 buyers will share equally in the ownership of a 4,000 acre ranch, cattle, an extensive set of recreational amenities, and 40 cluster housing units. For \$40,000 apiece they receive 1/500 ownership in addition to unlimited access to the housing units throughout the year, on a first-come-first-served basis.

#### Summary of market trends

As indicated by the wide variety of products brought onto the recreational land market in the late 1960's and early 1970's, it once appeared that the demand for such items was almost insatiable. Between 1967 and 1973, millions of properties were created and purchased.

However, in late 1973 the market for recreational properties encountered a plethora of problems and went into a severe downturn for several years. Causes included such items as extensive negative publicity about consumer ripoff, a national economic recession and the tightening of financial resources, the energy crisis, environmental concerns, and a mass of new public regulations imposed upon the private land development process.

During about the middle of 1976, the market began to again become more active due to:

1. more discretionary income;
2. more faith on the part of the buyer that the many new consumer and environmental regulations assured a safer and more usable product;
3. availability of additional alternatives such as timesharing and undivided interest; and
4. traditional motivational factors such as status, familism, desire to participate in outdoor recreation, desire for ownership of real property, the frontier fantasy with open space and scenic areas, desire to escape urban disamenities, opportunity for equity appreciation, and a variety of other reasons.

While demand for privately owned recreational properties (especially vacant lots) may never again reach comparable proportions as during the 1967 to 1973 period, the market

will most certainly always exist in this country to some degree.

MAGNITUDE AND LOCATION OF EXISTING RECREATIONAL PROPERTIES

Recreational lots

Reliable figures for the number of recreational properties are not available. Fragmented estimates are found in several sources, however, and can be used to provide some approximate base figures.

Since 1968, all recreational land projects in the United States containing more than 50 lots and that are advertised outside of the state in which they are located, have to be registered with the Office of Interstate Land Sales Registration (OILSR), in the U.S. Department of Housing and Urban Development.

In reviewing the OILSR data, it is found that almost 5 million lots were registered in 4,388 projects during the 10 years from 1968 to June 1977. Contained in these projects are about 4.4 million acres of subdivided land. Table 1 shows the location of these registered projects on a state-by-state basis.

Table 1.--Distribution of Projects, Acres, and Lots Registered With OILSR, By State, 1968 to 1977

| State         | Projects | Acres     | Lots      |
|---------------|----------|-----------|-----------|
| United States | 4,388    | 4,363,620 | 4,862,478 |
| Alabama       | 28       | 12,812    | 14,601    |
| Alaska        | 11       | 2,789     | 2,494     |
| Arizona       | 443      | 464,745   | 392,336   |
| Arkansas      | 72       | 90,270    | 149,451   |
| California    | 399      | 415,130   | 287,652   |
| Colorado      | 256      | 399,679   | 190,929   |
| Connecticut   | 5        | 2,747     | 2,079     |
| Delaware      | 34       | 3,067     | 7,340     |
| Florida       | 665      | 1,426,065 | 1,716,898 |
| Georgia       | 59       | 30,862    | 32,859    |
| Idaho         | 47       | 10,175    | 9,192     |
| Illinois      | 31       | 22,657    | 37,325    |
| Hawaii        | 57       | 26,668    | 27,552    |
| Indiana       | 45       | 16,741    | 32,515    |
| Iowa          | 20       | 8,429     | 12,357    |
| Kansas        | 18       | 7,434     | 16,238    |
| Kentucky      | 65       | 11,493    | 23,680    |
| Louisiana     | 19       | 10,451    | 11,811    |
| Maine         | 27       | 10,827    | 10,814    |
| Maryland      | 40       | 12,992    | 23,680    |
| Massachusetts | 30       | 8,249     | 11,363    |
| Michigan      | 86       | 41,341    | 51,090    |
| Minnesota     | 17       | 9,634     | 11,978    |
| Mississippi   | 55       | 28,372    | 52,067    |
| Missouri      | 111      | 33,204    | 63,025    |
| Montana       | 22       | 5,896     | 3,726     |
| Nebraska      | 7        | 2,693     | 7,218     |

Table 1.--(Continued)

| State          | Projects | Acres   | Lots    |
|----------------|----------|---------|---------|
| Nevada         | 39       | 70,527  | 45,339  |
| New Hampshire  | 53       | 14,756  | 10,784  |
| New Jersey     | 16       | 5,295   | 12,031  |
| New Mexico     | 94       | 390,108 | 422,477 |
| New York       | 17       | 9,150   | 17,321  |
| North Carolina | 153      | 69,409  | 87,301  |
| Ohio           | 40       | 15,652  | 39,359  |
| Oklahoma       | 13       | 3,983   | 8,603   |
| Oregon         | 79       | 50,639  | 23,676  |
| Pennsylvania   | 166      | 113,135 | 157,680 |
| South Carolina | 44       | 18,646  | 20,855  |
| South Dakota   | 3        | 167     | 198     |
| Tennessee      | 63       | 30,956  | 59,701  |
| Texas          | 510      | 269,679 | 531,465 |
| Utah           | 72       | 32,031  | 28,329  |
| Vermont        | 26       | 12,250  | 8,319   |
| Virginia       | 111      | 61,871  | 93,072  |
| Washington     | 117      | 41,824  | 51,924  |
| West Virginia  | 23       | 4,957   | 15,788  |
| Wisconsin      | 64       | 29,806  | 23,284  |
| Wyoming        | 16       | 3,357   | 3,070   |

Source: U.S. Department of Housing and Urban Development, Office of Interstate Land Sales Registration, Washington, D.C. Unpublished material obtained from the office.

It is found that a very significant concentration of projects occurs in a small number of states. Almost 1/2 (46.1 percent) of the 4,388 projects are located in only 4 states (Florida, Texas, Arizona, and California). Over 1/4 (26.8 percent) are located in Florida and Texas alone.

Table 1 also provides information on the distribution of lots and acres in these projects. The 6 states of Florida, New Mexico, Arizona, Texas, Colorado, and California contain 77.2 percent of all the acres and 73.1 percent of all the lots. In absolute figures, we find that in these 6 states alone, about 3.3 million acres and 3.5 million lots have been subdivided in the past 10 years for recreational use.

When analyzing the location of recreational land projects registered with OILSR on a county-by-county basis, it is found that 1,310 counties have such projects. This represents about 1/3 of all the counties (3,115) in the United States.

Some 682 counties contain either: (1) 5 or more recreational land projects registered with OILSR; (2) 1,000 or more lots in such projects; and/or (3) 1,000 or more acres in such projects. Most noticeable locations for recreational subdivision activity are counties either: (1) along the major coast lines

(Pacific, Atlantic, Gulf, and Great Lakes); (2) in mountain ranges (Poconos, Ozarks, Rockies, Cascades, and Sierras); (3) throughout the southwestern states of Colorado, Utah, New Mexico, Arizona, and Texas; (4) in traditional recreation-oriented states such as Florida, Vermont, New Hampshire, California, etc.; and (5) surrounding major metropolitan areas and containing some type of natural recreational amenity.

While the preceding discussion indicates that recreational land development was very rampant between 1968 and 1977 as measured by the large number of projects filed with OILSR, it is estimated that perhaps only 2/3 of all recreational land subdivisions in the country actually have been registered. If these non-registered projects were included, the totals would probably be closer to 6,000 projects, 7.5 million lots, and 6 million acres.

It also is known that only a portion of all recreational lots are found in subdivided recreational land projects. Many more are found as scattered lots sold off by individual land owners during the past many decades.

A national opinion survey by Opinion Research Corporation of Princeton, New Jersey, found that 8.5 percent of all households in 1973 owned a recreational lot. In absolute terms, this represents some 5.4 million lots. It is impossible to accurately estimate the total number of both sold and unsold recreational lots. However, some surveys indicate that only between 1/3 and 1/2 of all subdivided recreational lots have been sold. If this is true, it would mean that somewhere between 12 and 15 million recreational lots currently exist in this country, which is probably a conservative estimate.

Vacation homes

For vacation homes, the most reliable figures on existing stock are available from the 1970 United States Census of Housing. Frequent estimates have been made by other researchers, but they represent only fragmentary, educated guesses. Unfortunately, not even the Census has provided a well-defined count of vacation homes.

Within the vast array of information from the Census are 2 sets of data that relate directly to vacation housing. The first set is concerned with the vacation homes themselves.<sup>1/</sup> The second set is concerned with the number of households which own vacation homes.<sup>2/</sup> Thus, the second set of data shows numbers of households (i.e., families), while the first set shows a physical count of housing units.

In looking at the two Censuses, we find that the count for the physical units themselves is only 2,143,434 (U.S. Bureau of the Census 1972). On the other hand, the count of households owning vacation homes is 2,889,771 (U.S. Bureau of the Census 1972). It is the author's opinion that the latter number more closely approximated the true extent of the existing market in this country as of 1970 since it compares favorably with previous estimates from other surveys, including: (1) 1,897,882 "vacation" homes from the 1960 Census of Housing; (2) 2,350,000 households owning "second" homes from a 1964 Michigan Survey Research Center Study (Lansing 1964); and (3) 2,970,000 households owning "vacation" homes from an American Telephone and Telegraph Company Study in 1965. If assuming an approximate increase of 150,000 new homes during the past few years, it appears the total standing stock of vacation homes in the United States is now about 3.5 million. This would mean that slightly over 5 percent of all households own a vacation home, and that this type of unit accounts for slightly less than 5 percent of the total housing stock.

As shown in Table 2, over 50 percent of the vacation homes are found in only 10 states, with almost 1/3 being in the five states of Texas, Michigan, New York, Wisconsin, and California. For the most part, states with large numbers of vacation homes have some major recreational amenities, contain or are in close proximity to established metropolitan areas, or are very large in area.

Table 2.--Distribution of Vacation Homes, By State, 1970

| State | Total Housing Units | Vacation Homes <sup>a/</sup> | Percent of Total Housing Units | Percent of Total Vacation Homes (% of 2,143,434) |
|-------|---------------------|------------------------------|--------------------------------|--|
| U.S.  | 68,418,094          | 2,143,434                    | 3.1                            | 100.0  |
| AL    | 1,120,219           | 32,663                       | 2.9                            | 1.5  |
| AK    | 88,428              | 6,705                        | 7.6                            | .3   |
| AZ    | 584,116             | 16,380                       | 2.8                            | .8   |
| AR    | 675,593             | 27,658                       | 4.1                            | 1.3  |
| CA    | 6,994,533           | 96,639                       | 1.4                            | 4.5  |
| CO    | 757,053             | 35,467                       | 4.7                            | 1.7  |
| CT    | 980,849             | 15,325                       | 1.6                            | .7   |
| DE    | 180,212             | 8,134                        | 4.5                            | .4   |
| FL    | 2,526,536           | 41,735                       | 1.7                            | 2.0  |
| GA    | 1,471,132           | 33,683                       | 2.3                            | 1.6  |
| HI    | 216,066             | 3,053                        | 1.4                            | .1   |
| ID    | 244,681             | 15,335                       | 6.3                            | .7   |
| IL    | 3,701,866           | 38,722                       | 1.1                            | 1.8  |

Table 2.--(Continued)

| State | Total Housing Units | Vacation Homes <sup>a/</sup> | Percent of Total Housing Units | Percent of Total Vacation Homes (% of 2,143,434) |
|-------|---------------------|------------------------------|--------------------------------|--|
| IN    | 1,730,020           | 45,367                       | 2.6                            | 2.1  |
| IA    | 958,560             | 29,192                       | 3.1                            | 1.4  |
| KS    | 791,022             | 20,724                       | 2.6                            | 1.0  |
| KY    | 1,064,436           | 33,332                       | 3.1                            | 1.6  |
| LA    | 1,150,313           | 30,833                       | 2.7                            | 1.4  |
| ME    | 397,140             | 73,562                       | 18.5                           | 3.4  |
| MD    | 1,248,747           | 28,014                       | 2.2                            | 1.3  |
| MA    | 1,890,319           | 51,746                       | 2.7                            | 2.4  |
| MI    | 2,954,451           | 188,864                      | 6.4                            | 8.8  |
| MN    | 1,276,082           | 83,855                       | 6.6                            | 3.9  |
| MS    | 699,168             | 28,364                       | 4.1                            | 1.3  |
| MO    | 1,673,332           | 64,330                       | 3.8                            | 3.0  |
| MT    | 246,603             | 16,225                       | 6.6                            | .8   |
| NE    | 514,617             | 18,521                       | 3.6                            | .9   |
| NV    | 172,558             | 4,277                        | 2.5                            | .2   |
| NH    | 280,962             | 43,908                       | 15.6                           | 2.1  |
| NJ    | 2,387,535           | 61,033                       | 2.6                            | 2.9  |
| NM    | 325,715             | 14,527                       | 4.5                            | .7   |
| NY    | 6,298,385           | 181,138                      | 2.9                            | 8.5  |
| NC    | 1,641,131           | 66,811                       | 4.1                            | 3.1  |
| ND    | 256,222             | 14,301                       | 5.6                            | .7   |
| OH    | 3,465,161           | 47,936                       | 1.4                            | 2.2  |
| OK    | 925,238             | 27,758                       | 3.0                            | 1.3  |
| OR    | 744,602             | 20,946                       | 2.8                            | 1.0  |
| PA    | 3,924,503           | 92,813                       | 2.4                            | 4.3  |
| RI    | 317,193             | 9,974                        | 3.1                            | .5   |
| SC    | 812,148             | 36,242                       | 4.5                            | 1.7  |
| SD    | 225,183             | 15,000                       | 6.7                            | .7   |
| TN    | 1,300,183           | 32,680                       | 2.5                            | 1.5  |
| TX    | 3,825,299           | 130,580                      | 3.4                            | 6.1  |
| UT    | 315,734             | 7,979                        | 2.5                            | .4   |
| VT    | 165,068             | 27,291                       | 16.5                           | 1.3  |
| VA    | 1,492,887           | 46,525                       | 3.1                            | 2.2  |
| WA    | 1,220,447           | 45,010                       | 3.7                            | 2.1  |
| WV    | 597,266             | 26,230                       | 4.4                            | 1.2  |
| WI    | 1,472,257           | 100,336                      | 6.8                            | 4.7  |
| WY    | 116,323             | 5,711                        | 4.9                            | .3   |

<sup>a/</sup>"Vacation Homes" are enumerated by combining the United States Bureau of the Census categories, "Rural Seasonal Vacant" and "Other Rural Vacant." This combination basically includes housing units which are intended for occupancy during only certain seasons of the year

Source: U.S. Department of Commerce, Bureau of the Census, U.S. Census of Housing, 1970, Detailed Housing Characteristics, (Washington, D.C. U.S. Government Printing Office, 1972), Final Report HC(1)-B1-52, Table 32.

At the other end of the spectrum are 18 states which contain less than 10 percent of the total vacation homes. For the most part, these are either: (1) isolated in location or very sparsely populated (e.g., Montana, Idaho, Utah, Wyoming, etc.); (2) void of many outdoor recreational amenities (e.g., Kansas, Nebraska, Nevada, etc.); (3) small in land area and highly urbanized (e.g., Connecticut, Rhode Island, Delaware, etc.).

All of the top 20 states contain some outstanding attractions important for the location of vacation homes. Only Missouri and Colorado do not have frontage on an ocean, the Gulf of Mexico, or the Great Lakes. Eight have mountains to provide year-round recreation, and most have a good climate. Also, all top 20 states are located fairly close to large metropolitan areas. When combining these factors, it becomes apparent that population density is not the only location determinant. Of course, many of the same amenities which attract vacation home buyers also attract permanent residents. When considering this fact, it is interesting to note that most of the top 20 states in the absolute ranking increased considerably more in total population between 1960 and 1970 than did the lower 30 states.

Another way of analyzing the distribution of vacation homes is to calculate the percentage of total housing units comprised of vacation homes in each state. In looking at the relative comparisons between vacation homes and total housing units in Table 2, it is noted that only 3.1 percent of all housing units in the United States are classified in the 1970 Census as "vacation homes."

On an individual state basis, the three New England states of Maine, Vermont, and New Hampshire had rates more than twice as high as any other state. Here, year-round population density is low, and vacation homes have been accumulating for decades due to a combination of outdoor recreational amenities and close proximity to large metropolitan areas. In fact, except for Michigan, the top 20 states are generally rural and have relatively small populations.

The 1970 Census of Population included for the first time extensive data describing the owners of vacation homes. These data are "historical" in nature in that the 1970 Census count represents years of accumulation. In other words, the data describe persons already owning vacation homes instead of those who are currently buying or even, more importantly, those who plan to buy in the future. Thus, the count represents thousands of families who have owned vacation homes for

many years. Significant variations most assuredly occur between the different sets of buyers, but it is not possible to determine these differences in any great detail.

The 1970 Census only asked questions about vacation home ownership and neglected to include anything on recreational lot ownership, so that few insights are available on ownership patterns for recreational lot owners.

The Census data show that the vast majority of owners (68.0 percent) reside within SMSAs, and that 31.0 percent reside within central cities. However, the rate of ownership (4.1 percent) is lower for central city residents than for any other area. This, of course, is due to the fact that central city populations are weighted by a great number of low-income families who are non-participants in the vacation home market. Some 33.3 percent of all households in the United States live in central cities, whereas only 31.4 percent of all vacation home owners do. However, if family income were cross-tabulated with location, it would probably show that the rate of ownership among higher-income families living in central cities is considerably higher than for comparable income families living elsewhere.

Rate of vacation home ownership is highest (4.8 percent) in the urban balance, which is caused by the high percent of affluent families living in suburbs in comparison with the overall population in those areas. The rate of vacation home ownership outside SMSAs (4.7 percent) also is higher than the national average. Here, the reason is not desire to escape the urban disamenities but, more importantly perhaps, the closer proximity and ease of travel between primary home and vacation home. In other words, families living outside SMSAs for the most part do not encounter congested weekend traffic and find it easier to get back and forth to the vacation home.

The concentration of vacation home owners within a few states is quite evident as shown in Table 3. The top five states (New York, California, Michigan, Texas, and Pennsylvania) contain over 1/3 (36.7 percent) of all households in the country who own vacation homes. The top 10 states (adding Florida, Massachusetts, Illinois, Ohio and New Jersey) contain over 1/2 (56.7 percent) of the vacation home households. On the other end of the spectrum, the bottom 5 states contain only 1.5 percent of the total and the bottom 10 states only 3.8 percent. For the most part, there is a direct relationship between population size and number of vacation home owners.

Table 3.--Distribution of Households Owning a Vacation Home, By State, United States, 1970

| State                | Total Households | Households Owning a Vacation Home <sup>a/</sup> | Percent of Total Households | Percent of Total Households Owning a Vacation Home (2 of 2,889,771) <sup>a/</sup> |
|----------------------|------------------|---|-----------------------------|---|
| United States        | 63,446,641       | 2,889,771                                       | 4.6                         | 100.0   |
| Alabama              | 1,034,113        | 43,108  | 4.2                         | 1.5   |
| Alaska               | 79,059           | 8,389   | 10.6                        | .3  |
| Arizona              | 539,157          | 36,674  | 6.8                         | 1.3   |
| Arkansas             | 615,424          | 19,863  | 3.2                         | .7  |
| California           | 6,573,861        | 264,342   | 4.0                         | 9.1   |
| Colorado             | 690,928          | 34,775  | 5.0                         | 1.2   |
| Connecticut          | 933,269          | 45,777  | 4.9                         | 1.6   |
| Delaware             | 164,804          | 9,517   | 5.8                         | .3  |
| District of Columbia | 262,538          | 12,905  | 4.9                         | .4  |
| Florida              | 2,284,786        | 146,020   | 6.4                         | 5.1   |
| Georgia              | 1,369,225        | 50,380  | 3.7                         | 1.7   |
| Hawaii               | 203,088          | 8,463   | 4.2                         | .3  |
| Idaho                | 218,960          | 12,641  | 5.8                         | .4  |
| Illinois             | 3,502,138        | 110,933   | 3.2                         | 3.8   |
| Indiana              | 1,609,494        | 59,506  | 3.7                         | 2.1   |
| Iowa                 | 896,311          | 30,104  | 3.4                         | 1.0   |
| Kansas               | 727,364          | 22,925  | 3.2                         | .8  |
| Kentucky             | 983,665          | 32,601  | 3.3                         | 1.1   |

Table 3.--(Continued)

| State          | Total Households | Households Owning a Vacation Home <sup>a/</sup> | Percent of Total Households | Percent of Total Households Owning a Vacation Home <sup>a/</sup> (% of 2,889,771) |
|----------------|------------------|---|-----------------------------|---|
| Louisiana      | 1,052,038        | 46,877  | 4.5                         | 1.6   |
| Maine          | 302,923          | 35,666  | 11.8                        | 1.2   |
| Maryland       | 1,175,073        | 42,990  | 3.7                         | 1.5   |
| Massachusetts  | 1,759,073        | 112,962   | 6.4                         | 3.9   |
| Michigan       | 2,653,059        | 185,778   | 7.0                         | 6.4   |
| Minnesota      | 1,153,946        | 77,099  | 6.7                         | 2.7   |
| Mississippi    | 636,724          | 20,154  | 3.2                         | .7  |
| Missouri       | 1,520,567        | 55,750  | 3.7                         | 1.9   |
| Montana        | 217,304          | 15,983  | 7.4                         | .6  |
| Nebraska       | 473,304          | 15,207  | 3.2                         | .5  |
| Nevada         | 160,052          | 8,139   | 5.1                         | .3  |
| New Hampshire  | 225,378          | 17,345  | 7.8                         | .6  |
| New Jersey     | 2,218,182        | 101,680   | 4.6                         | 3.6   |
| New Mexico     | 289,389          | 18,671  | 6.5                         | .6  |
| New York       | 5,913,861        | 289,164   | 4.9                         | 10.1  |
| North Carolina | 1,509,564        | 56,265  | 3.7                         | 1.9   |
| North Dakota   | 181,613          | 10,562  | 5.8                         | .4  |
| Ohio           | 3,289,432        | 105,129   | 3.2                         | 3.6   |
| Oklahoma       | 850,803          | 31,151  | 3.7                         | 1.1   |
| Oregon         | 691,631          | 30,032  | 4.3                         | 1.0   |
| Pennsylvania   | 3,702,304        | 153,311   | 4.1                         | 5.4   |
| Rhode Island   | 291,965          | 13,337  | 4.6                         | .5  |
| South Carolina | 734,373          | 34,829  | 4.7                         | 1.2   |
| South Dakota   | 200,807          | 9,410   | 4.7                         | .3  |
| Tennessee      | 1,213,187        | 38,451  | 3.2                         | 1.3   |
| Texas          | 3,433,996        | 164,785   | 4.8                         | 5.7   |
| Utah           | 297,934          | 12,222  | 4.1                         | .4  |
| Vermont        | 132,098          | 11,835  | 9.0                         | .4  |
| Virginia       | 1,390,636        | 53,133  | 3.8                         | 1.8   |
| Washington     | 1,105,587        | 65,376  | 5.9                         | 2.3   |
| West Virginia  | 547,214          | 23,999  | 4.4                         | .8  |
| Wisconsin      | 1,328,804        | 76,216  | 5.7                         | 2.6   |
| Wyoming        | 104,600          | 7,340   | 7.0                         | .3  |

<sup>a/</sup>"vacation home" is considered synonymous with the United States Bureau of the Census category "second home," which is defined as, "...a single family house, vacation cottage, hunting cabin, ski lodge, etc., which is owned and held for use sometime during the year by the owners or members of his household."

Source: U.S. Department of Commerce, Bureau of the Census, U.S. Census of Housing, 1970, Detailed Housing Characteristics (Washington, D.C., U.S. Government Printing Office, 1972) Final Report HC(1)-B1-52, Table 37.

Of the top 10 states in terms of absolute number of vacation home owners, only Michigan remains in the top 10 for rate of vacation home ownership. Of the top 20 in terms of absolute number of vacation home owners, only 5 (Michigan, Massachusetts, Florida, Washington, and New York) reappear in the top 20.

The primary reason for this variation is quite simple. The most populous states have the greatest number of vacation home owners

simply because there are more people to participate in the market. At the same time, however, these densely populated states usually contain several large urban centers. Due to population shifts and economic opportunities, most urban centers contain high proportions of low- to middle-income households that normally are eliminated from participation in the vacation home market. All of these households are included when calculating ownership rates and explain the

lower ranking for most of the densely populated states.

States ranking highest in terms of vacation home ownership tend to be concentrated in a few regions of the country. Specifically, these regions are: (1) Northern New England, where vacation home ownership has traditionally been a cultural occurrence; (2) the Great Lakes states; and (3) the Rocky Mountain states. On the other end of the spectrum are many of the southern and mid-western states where average incomes are relatively low and few natural recreational amenities exist.

Other recreational properties

Due to either their recentness and/or smallness, it is almost impossible to estimate the existing magnitude of the markets for resort condominiums, timeshares, and undivided interest. According to most reliable estimates, as will be expanded upon in the following section, it is estimated that roughly 600,000 wholly owned resort condominium units exist in this country. At the same time, it is known that perhaps only a handful of undivided interest projects exist; probably not involving more than 100,000 owners.

The timeshare market has burgeoned tremendously since its initiation in the late 1970's. Increased demand for timeshare is evidenced by the following gross estimates:

| Year | Existing Timeshare Projects | Annual Dollar Volume | Existing Consumers |
|------|-----------------------------|----------------------|--------------------|
| 1977 | 175                         | \$125 million        | 100,000            |
| 1978 | 275                         | \$300 million        | 200,000            |
| 1979 | 350                         | \$750 million        | 300,000            |

FUTURE DEMAND FOR RECREATIONAL PROPERTIES

Methodology

Any numerical projections for recreational properties are certainly subject to question. Since recreational property is not a basic necessity such as food, clothing, and primary lodging, it is open to major changes in demand. Most certainly, demand decreases during economic recessions and increases during periods of economic expansion.

As noted earlier, demand for new recreational property has decreased tremendously since 1973 due to negative publicity, market saturation, negative status, environmental concerns, public regulations, the energy crisis, etc. While it appears that demand has again increased since 1976, it seems unlikely that it will ever again reach the proportions realized between 1967 and 1973. At any rate,

all numerical projections made in 1980 will be subject to many unforeseen parameters in the future. The reader is cautioned to remember these limitations in applying the following projections for the three major submarkets of recreational lots, detached vacation homes, and resort condominiums. No attempt is made to project demand for the timeshare and undivided interest projects, although it is quite possible that in future years, demand for these commodities will far outstrip the other three.

Steps involved in making the projections include the following:

1. The estimated number of households for the 4 Census regions in 1980 and 1985 were derived from the Bureau of the Census (U.S. Bureau of the Census, 1973).

2. Propensity for future ownership of recreational properties was obtained primarily from a nationwide opinion survey conducted by the Opinion Research Corporation of Princeton, New Jersey. The survey was conducted on a personal interview basis in the homes of the respondents. It involved a weighted sample of 7,190 households throughout the United States.

3. These numerical projections were then reconsidered in light of several other nationwide projections of future demand for recreational properties. These projections were less detailed in regard to type of property or future data and were used simply as benchmarks to ascertain whether the projections derived in (2) were reasonable.

4. The 4 sets of projections were then integrated with subjective interpretation based upon knowledge and insights gained from supporting research. Though the discrepancies between the various sets of projections were surprisingly small, the final projections are somewhat more conservative than those in the 4 mentioned sets of projections. It is felt that persons tend to be overly optimistic about their future plans for purchasing recreational properties. In many instances, such plans are never realized and the discretionary income is allocated to other household items. Recent literature published concerning the market also was reviewed.

Numerical projections

Table 4 presents demand in the United States for various types of recreational properties (as an aggregate), vacant recreational lots purchased for the purpose of building a future vacation home, recreational lots occupied by a single-family detached

vacation home, and resort condominium units. Both absolute and relative figures are included in the table. Table 4 presents absolute projections for the four types of recreational properties on a regional basis, while Table 5 presents the same material with relative figures.

Table 4.--Demand for Recreational Properties  
By Type of Property, United States,  
Estimated for 1980 and Projected  
for 1985.

| Type of Property   | 1980       | 1985       |
|--|------------|------------|
| Number of Households   | 77,000,000 | 84,000,000 |
| Number of Households Owning Recreational Properties                            | 8,085,000  | 10,080,000 |
| Percent of Total Households  | 10.5       | 12.0       |
| Number of Households Owning Vacant Recreational Lot for Speculation/Investment | 1,694,000  | 2,100,000  |
| Percent of Total Households  | 2.2        | 2.5        |
| Number of Households Owning Vacant Recreational Lot for Future Building        | 1,309,000  | 1,680,000  |
| Percent of Total Households  | 1.7        | 2.0        |
| Number of Households Owning Single Family Detached Vacation Home               | 4,466,000  | 5,376,000  |
| Percent of Total Households  | 5.8        | 6.4        |
| Number of Households Owning Resort Condominium Unit                            | 616,000    | 924,000    |
| Percent of Total Households  | .8         | 1.7        |

For 1980, it is estimated that about 8,085,000 households (or about 10.5 percent of the total) in the United States own one of the 4 primary types of recreational property. Most of these properties (almost 4 million) represent a recreational lot occupied by a single-family detached vacation home. The type with the lowest frequency was the resort condominium (about 400,000).

It is projected that by 1985, the number of recreational properties will increase to over 10 million, which means that about 12 percent of all households will own such property. Significant increases will occur between 1980 and 1985 as the post World War II baby boom reaches the time in the family life cycle when propensity for purchase of

recreational property is greatest.

In terms of the type of recreational properties to be demanded, it appears that least increase will be realized in the demand for vacant recreational lots, especially those purchased primarily for speculation or investment purposes. Most significant increases in demand will be for recreational shelter, both single-family detached vacation homes and resort condominiums. In absolute terms, the greatest increase will occur in the detached units, from about 4.5 million to about 5.4 million. In relative terms, the greatest increase will occur for resort condominiums, increasing from .8 percent to 1.7 percent of the households.

On a regional basis, as shown in Table 5, a wider dispersion will occur, partly due to regional shifts in population and household formation and partly due to changing regional propensities for purchase of recreational properties.

It is anticipated that relatively little increase in demand will occur in the Northeast for recreational lots purchased only for speculation or investment purposes. At the same time, the most significant growth for this commodity will occur in the West. Such conditions reflect availability of land, saturation of the market, etc. Similar regional trends are projected to occur for recreational lots purchased for future building of a vacation home, although the variations are less severe. For the latter type of recreational property, most significant increases in absolute terms are anticipated in the South and fewest increases in the Northeast.

For single-family detached vacation homes, the greatest absolute growth will occur in the South and West. The anticipated regional growth patterns for resort condominium units will be even more exaggerated, with very significant increases to occur in the South and West. Such patterns again reflect market saturation, availability of land, lack of consumer opportunity, etc.

Table 6 presents changes in the percent of total households in the region which will own the various types of recreational properties. These figures were derived from the previously mentioned surveys and were utilized in the preparation of Table 6.

Table 5.--Demand for Recreational Properties, By Type of Property, By Region, United States, Estimated for 1980 and Projected for 1985.

| <u>A. Number of Households (Percent of Total in Parenthesis)</u> |                   |                   |
|--|-------------------|-------------------|
| Region   | 1980              | 1985              |
| Northeast  | 16,600,000 (21.5) | 17,500,000 (21.0) |
| North Central  | 20,500,000 (26.0) | 22,000,000 (26.0) |
| South  | 25,000,000 (32.5) | 28,000,000 (33.0) |
| West   | 16,500,000 (20.0) | 17,000,000 (20.0) |
| United States  | 77,000,000(100.0) | 84,000,000(100.0) |

| <u>B. Number of Households Owning Recreational Properties</u> |                  |                   |
|---|------------------|-------------------|
| Region  | 1980             | 1985              |
| Northeast   | 1,746,400 (21.6) | 2,167,200 (21.5)  |
| North Central   | 1,827,200 (22.6) | 2,318,400 (23.0)  |
| South   | 2,482,100 (30.7) | 3,255,600 (32.0)  |
| West  | 2,029,300 (25.1) | 2,683,800 (23.5)  |
| United States   | 8,085,300(100.0) | 10,080,800(100.0) |

| <u>C. Number of Households Owning Vacant Recreational Lot for Speculation/Investment</u> |                  |                  |
|--|------------------|------------------|
| Region   | 1980             | 1985             |
| Northeast  | 347,200 (20.5)   | 336,000 (16.0)   |
| North Central  | 406,600 (24.0)   | 420,000 (20.0)   |
| South  | 457,400 (27.0)   | 703,500 (33.5)   |
| West   | 482,800 (28.5)   | 640,500 (30.5)   |
| United States  | 1,694,000(100.0) | 2,100,000(100.0) |

| <u>D. Number of Households Owning Vacant Recreational Lot for Future Building of Vacation Home</u> |                  |                  |
|--|------------------|------------------|
| Region   | 1980             | 1985             |
| Northeast  | 255,600 (18.0)   | 285,000 (17.0)   |
| North Central  | 274,900 (21.0)   | 369,600 (22.0)   |
| South  | 432,000 (33.3)   | 571,200 (34.0)   |
| West   | 366,500 (28.0)   | 453,600 (27.0)   |
| United States  | 1,309,000(100.0) | 1,680,000(100.0) |

| <u>E. Number of Households Owning Single Family Detached Vacation Home</u> |                  |                  |
|--|------------------|------------------|
| Region   | 1980             | 1985             |
| Northwest  | 1,036,100 (23.2) | 1,236,500 (23.0) |
| North Central  | 1,107,600 (24.8) | 1,290,200 (24.0) |
| South  | 1,357,600 (30.4) | 1,585,900 (29.5) |
| West   | 964,700 (21.6)   | 1,263,400 (23.5) |
| United States  | 4,466,000(100.0) | 5,376,000(100.0) |

| <u>F. Number of Households Owning Resort Condominium Unit</u> |                |                |
|---|----------------|----------------|
| Region  | 1980           | 1985           |
| Northeast   | 129,400 (21.0) | 194,100 (21.0) |
| North Central   | 163,200 (26.5) | 240,200 (26.0) |
| South   | 194,000 (31.5) | 300,300 (32.5) |
| West  | 129,400 (21.0) | 189,400 (20.5) |
| United States   | 616,000(100.0) | 924,000(100.0) |

Table 6.--Demand for Recreational Properties, By Type of Property,  
By Region, United States, Estimated for 1980 and Pro-  
jected for 1985.

| A. Percent That Households Owning<br>Recreational Properties Are of Total Households |      |      |
|--|------|------|
| Region   | 1980 | 1985 |
| Northeast  | 10.5 | 12.4 |
| North Central  | 8.9  | 10.5 |
| South  | 9.9  | 11.5 |
| West   | 12.3 | 13.9 |
| United States  | 10.5 | 12.0 |

| B. Percent That Households Owning Vacation Recreational Lot<br>For Speculation/Investment Are of Total Households |      |      |
|---|------|------|
| Region  | 1980 | 1985 |
| Northeast   | 2.0  | 1.9  |
| North Central   | 1.9  | 1.9  |
| South   | 1.8  | 2.5  |
| West  | 2.9  | 3.8  |
| United States   | 2.2  | 2.5  |

| C. Percent That Households Owning Vacant Recreational Lots for<br>Future Building of Vacation Home Are of Total Households |      |      |
|--|------|------|
| Region   | 1980 | 1985 |
| Northeast  | 1.4  | 1.6  |
| North Central  | 1.3  | 1.7  |
| South  | 1.7  | 2.0  |
| West   | 2.2  | 2.7  |
| United States  | 1.7  | 2.0  |

| D. Percent That Households Owning Single Family Detached<br>Vacation Homes Are of Total Households |      |      |
|--|------|------|
| Region   | 1980 | 1985 |
| Northeast  | 5.2  | 7.1  |
| North Central  | 5.4  | 5.9  |
| South  | 5.4  | 5.7  |
| West   | 5.8  | 7.4  |
| United States  | 5.8  | 6.4  |

| E. Percent That Households Owning Resort Condominium<br>Units Are of Total Households |      |      |
|---|------|------|
| Region  | 1980 | 1985 |
| Northeast   | .8   | 1.1  |
| North Central   | .8   | 1.1  |
| South   | .8   | 1.1  |
| West  | .8   | 1.1  |
| United States   | .8   | 1.1  |

### Influencing Factors

Despite the preceding effort, it is difficult to derive any concrete conclusions about future demand for recreational properties. It appears that the realization of short-term demand will be definitely affected by a series of issues which may or may not be in evidence several years from now. Such current crises facing the recreational land and vacation housing industries as a bad public image, unavailability of financing both for the developer and consumer, the exorbitant costs of building supplies, etc., may continue to exist in the future. However, these items all appear rather inconsequential when assuming a long-range perspective of the markets. For instance, financing rates and availability have traditionally changed drastically within short periods of time; the negative image could be reversed if and when the industry begins to monitor its members; and costs of building supplies and labor have always fluctuated according to the economic climate of the country.

However, when stepping back and considering the long-range future of the markets for recreational properties, a somewhat more complicated picture is portrayed, basically because the influencing parameters become more hazy and confusing and simultaneously more critically influential.

Many long-range indicators portray an optimistic future for increased demand. For instance, it is anticipated that additional discretionary income will become available not only in greater amounts, but also for a larger proportion of the population. Leisure time also will increase and, most significantly, will be available in larger aggregations such as three-day weekends or for extended weeks or even months. Retirement will be possible earlier, and older people will live longer. They also will have more monetary resources available to them, be healthier, and more acquainted with recreational and travel experiences from past participation. The post-World War II baby boom will be reaching the age in the 1980's when propensity for purchase of recreational properties is highest. Interest in nature, ecology, the natural environment, and participation in so-called "healthy and youthful" outdoor recreational activities will continue to increase for wider segments of the population. Thus, most predictions for the so-called opportunity and facilitating factors portray a situation where more and more families will be able to purchase recreational properties.

While these variables are relatively easy to project into the future, at least in numerical terms based upon past trends, a series of other variables also will be very influential. For the most part, these variables are more subjective and thus more difficult to quantify. Their influences will be more subtle but perhaps more critical for long-range future demand for recreational properties.

For instance, the uncertainties of the international situation complicate projections for future personal income in the United States. If the less developed nations of the world begin to demand a more equitable distribution of wealth and resources, either through political or economic coercion, negative effects will most certainly be realized on the GNP of this country. An increasingly larger segment of the population in the United States may perceive the work ethic in a different light in the future and be less motivated toward higher incomes and associated availability of goods and services. Thus, fewer persons may actually have the anticipated discretionary income to buy a second home just for seasonal-recreational purposes, at least in the manner in which many leisure homes are being produced today.

The concern with ecology and preservation of a quality environment does not appear to be a passing fad, but rather one that will continue to increase in the future. More and more communities and states will consider no-growth or limited-growth policies. More and more decision-makers will become more sophisticated about the land development process and will use criteria to determine what type of new land development will prove beneficial to their community in the long-range future. No longer will the only criterion be the possibility of increased contribution to immediate return to the property tax base, but rather more subtle criteria will be used such as costs and benefits related to social, environmental and long-term economic impacts.

Quality land in appropriate proximity to population centers will become less available and much more expensive. More of this land will be maintained in the public domain or placed under much stricter and more rational public control. More land in marginal productivity might have to be used for the support of agriculture and other primary industry in order to satisfy world demands for a more equitable distribution of wealth and resources.

The energy crisis most certainly will effect the future of the market for recreational properties. In the foreseeable future, it seems likely that certain segments of society including legislators and the public

at large will question the morality and rationality of allowing some persons to own and develop property simply for seasonal-recreational purposes. The question will most certainly be raised as to why should a select group of people be able to afford two relatively expensive homes when a much larger segment of society has never been able to realize the government's 30-year old goal of a "safe and decent" living environment.

Related to the inequitable distribution of wealth in this country are the current income tax practices which in some instances make owning a condominium or rental vacation home a very profitable venture. It would appear that public pressure will influence additional restrictions to be made in regard to these allowed tax benefits and write-offs.

A whole series of additional changes could occur in the cultural context of our society which might affect the future markets for recreational properties. It appears that a growing segment of the population is less motivated by status attainment and the fee simple ownership of real property. Although perhaps currently restricted to the youth, there are indications that such changes slowly are penetrating other age-groups. At the same time other subtle factors appear to be gaining in popularity. Included are such difficult to define items as sense of community, togetherness, sharing, family, concern with nature, etc. These factors do not necessarily imply changes in demand for recreational properties, but perhaps a change in the type of property which is of interest to the consumer.

Related to these comments, is the fact that our society seems to be ever-increasing in its demand for variety, flexibility, desire for new experiences, etc. More attractions are becoming available for the utilization of leisure time, and the public seems to be responding in terms of buying these new concepts and commodities. Travel clubs, camping clubs, new concepts in land ownership, etc., all appear to be increasing in popularity. The opportunity to experience a variety of recreational activities at relatively inexpensive costs has definite implications for the recreational land industry as we know it today. It would appear that the singular alternative of the fee-simple, single-family detached house on a half-acre lot in a location with one limited set of recreational activities will encounter more and more consumer competition in the future from other forms of recreational pursuits.

In sum, the future for recreational properties is complex. The continuation of past trends and the converging of time,

money and attitude seem to suggest a growing market. However, certain unpredictable, long-range factors, such as redistribution of wealth and a heightened energy crisis, may dampen the possibility for an ever-expanding, high-volume market.

#### LITERATURE CITED

- American Land Development Association. 1978. Resort Timesharing. American Land Development Association, Washington, D.C.
- Burlingame, Carl. "Evolution of recreational properties," Recreational Land and Leisure Housing Report, (April 17, 1973), p. 1.
- Fenton, John. "The second home is a common thing," New York Times, (August 8, 1965), Section 8, p. R.
- Kokus, John. 1973. Projections for Future Housing Demand: 1970-1990. National Association of Home Builders, Washington, D.C.
- Lansing, John. 1964. Residential Location and Urban Mobility. Survey Research Center, Institute of Social Sciences, University of Michigan, Ann Arbor.
- U.S. Bureau of the Census. 1973. Demographic Projections for the United States. U.S. Government Printing Office, Washington, D.C.
- U.S. Bureau of the Census. 1972. U.S. Census of Housing, 1970, Detailed Housing Characteristics. U.S. Government Printing Office, Washington, D.C.

#### Footnotes

1/According to the Bureau of the Census, a vacation home (called second home in the Census), "...may be a single-family house, vacation cottage, hunting cabin, ski lodge, etc., which is owned and held for use sometime during the year by the owner or members of his household." Second homes may also be owned in partnership with members of a different household. The figures indicate second homes which are sometimes rented or leased on a short-term basis to other persons but are principally held for the owner's occasional use during the year. The statistics refer to the number of households that own (one or more) second homes. The data therefore, do not reflect the number of owned second homes.

2/The count for vacation home households represents both an undercount and overcount due to: (1) the fact that while a household could own more than one vacation home, the actual number does not appear; and (2) the fact that while more than one household may jointly own the same vacation home, each family could claim it as their own for purposes of the Census count. It is impossible to determine from the data whether the undercount or overcount is more significant or whether, in fact they come close to balancing out one another.

## TRENDS IN HIKING AND BACKCOUNTRY USE<sup>1</sup>

Edward L. Spencer  
Herbert E. Eichelberger  
Raymond E. Leonard  
Craig Evans<sup>2</sup>

---

Pedestrian movement in backcountry settings has increased dramatically in the past 20 years. But the rate of increase seems to be levelling. Some indicators of this trend include the publishing business, the number of equipment manufacturers and outlets, the number of backcountry outfitters, and consultation with entrepreneurs.

---

For more than a decade there has been an increase in the number of people hiking and camping in backcountry areas. Are there really more people hiking and backpacking or do the same number of people hike and camp more often? Is the trend continuing upward or is it changing? Each year backcountry managers record the use that these areas receive. This data is useful as a guideline for the next year's operational procedures, budgetary concerns and staff assignments. Rarely, however, does the opportunity arise for managers to compare data and establish long-term trends for the use of a large regional area. Such a comparison could provide valuable information for backcountry managers in anticipating their future needs. This paper addresses the issue of trends in backcountry use in the northeast, identifies some indicators of national hiking and backpacking trends, and speculates on possible future pedestrian activities. As was the case with most of the other papers, it was very difficult to assemble comparable and meaningful data on hiking and backpacking trends.

A public survey conducted in 1965 by the U.S. Bureau of Census for the BOR showed that

<sup>1</sup>Paper presented at the National Outdoor Recreation Trends Symposium, Durham NH, April 20-23, 1980.

<sup>2</sup>Edward L. Spencer, Chief, Park Planning, Adirondack Park Agency, Box 99, Ray Brook NY  
Herbert E. Eichelberger, NEFES, U.S. For. Serv., Durham NH  
Raymond E. Leonard, NEFES, U.S. For. Serv., Durham NH  
Craig Evans, American Hiking Society, Washington, D.C.

9.9 million Americans hiked or backpacked. A similar survey, done in 1977 by Opinion Research Corp. under contract to the HCRS (BOR's successor) revealed that 28.1 million Americans backpacked or hiked--nearly a threefold increase.

Similar increases are reflected in actual visitor-use statistics. For example, in the White Mountains of New Hampshire, records of visitors to backcountry facilities are maintained by the Appalachian Mountain Club (AMC). In the 19-year period from 1960 to 1978, AMC hut use quadrupled, increasing from approximately 7,000 visitor nights to approximately 28,000 visitor nights per year (Table 1). In that period, average hut use increased by over 1,000 people per year. Part of this increase is due to an extended hut season and AMC officials feel that the general increase in hut use may have begun to plateau. Comparing use increases for the past ten years with use increases for the past four years shows that use has increased at a much slower rate in the past four than the past ten years.

Records of shelter and rentsite use for the months of July and August in the White Mountains go back only to 1974. Shelter use has remained relatively stable and it is difficult to establish any trends. In 1974, shelter use ran unusually high and was then followed by lower use. Now use is fluctuating around an average of 7,500 visitors. Most of the drop in the 1979 shelter use occurred during the month of July. It is speculated that gasoline uncertainties accounted for most of this decrease.

The Allagash Wilderness Waterway in Maine has records dating back to 1966. Visitor use

of this area increased rapidly compared to other northeastern areas such as Baxter State Park, White Mountains, and Green Mountains. However, there was a drop in use in 1974. The rapid increase in use during the early seventies may have been due to the state acquisition of the Waterway in 1966 resulting in greater publicity. Starting in 1973, however, the Allagash Advisory Committee suggested that publicity agents not publicize the Allagash, that a fee system be established in 1974 to discourage large group use, and that restrictions be imposed to limit party size to twelve persons or fewer. This led to the leveling and decline in use during 1973 and 1974. However, in the next four years, an upward trend was again established. Despite this recent increase measures taken by the Allagash Advisory Committee appear not only to have initially decreased visitor days, but also to have decreased the rate of the following increase.

icials feel that this trend may be the result of new camping facilities that were added to the Club's total shelter system. They do not notice a drop in day use, but agree that the rate of increased hiker and backpacker traffic has leveled considerably. They observed a distinct extension of the hiking season into the foliage season.

At the national level, the U.S. Forest Service has kept records of national forest recreation use by types of activities. This data is summarized in Table 2. As an activity, hiking and mountain climbing has increased steadily from 4 to 11 million visitor-days between 1966 and 1979. As a portion of total recreation use on all national forests, it seems to be increasing in popularity. In 1966, hiking and mountain climbing was 2.8 percent of the total use; by 1970, it had gone up to 3.2 percent; in 1975, it was 4.5 percent; and by 1979, it was 5.1 percent of total forest recreation use.

Table 1.--Visitor use of backcountry areas.

| Year | White Mountains<br>New Hampshire |                             | Allagash Waterway<br>Maine | Baxter State Park<br>Maine | Green Mountains<br>Vermont    |
|------|----------------------------------|-----------------------------|----------------------------|----------------------------|-------------------------------|
|      | AMC Huts                         | AMC Shelters<br>(JUL & AUG) |                            |                            | 8.GMC Shelters<br>(JUL & AUG) |
| 1960 | 6,927                            |                             |                            |                            |                               |
| 1965 | 13,176                           |                             |                            |                            |                               |
| 1966 | 14,722                           |                             | 4,141                      |                            |                               |
| 1967 | 12,861                           |                             | 4,539                      |                            |                               |
| 1968 | 13,501                           |                             | 3,786                      |                            |                               |
| 1969 | 14,411                           |                             | 4,820                      |                            |                               |
| 1970 | 17,299                           |                             | 5,460                      |                            |                               |
| 1971 | 18,856                           |                             | 6,345                      |                            |                               |
| 1972 | 21,693                           |                             | 8,260                      |                            |                               |
| 1973 | 23,587                           |                             | 8,337                      | 11,684                     | 4,726                         |
| 1974 | 24,471                           | 8,187                       | 7,477                      | 10,811                     | 5,053                         |
| 1975 | 25,719                           | 7,196                       | 9,477                      | 9,683                      | 5,765                         |
| 1976 | 28,426                           | 6,983                       | 8,619                      | 8,983                      | 6,391                         |
| 1977 | 26,915                           | 7,705                       | 9,278                      | 7,988                      | 5,138                         |
| 1978 | 28,032                           | 7,435                       | 9,734                      | 10,221                     | 5,067                         |
| 1979 |                                  | 6,250                       | 8,932                      | 10,082                     | 4,816                         |
|      |                                  |                             |                            |                            | 4,449                         |

At Baxter State Park in Maine, use decreased dramatically between 1973 and 1977. This also was the result of management restrictions. Seasonal use decreased at a rate of approximately 900 people per year. However, in 1978 the trend changed and instead of the expected decrease of 900, use increased by 2,233 compared to 1977.

In Vermont, records for eight of the Green Mountain Club's (GMC) shelters for the months of July and August show use peaking in 1975. Then a downward trend began. GMC off-

The only other activity that has captured this increasingly large share of the total national forest system recreation use market is winter sports. It increased from 3.5 percent in 1966, to 3.8 percent in 1970, to 4.7 percent in 1975, to 6.6 percent in 1979. Projections indicate that snow-based activities will continue to dominate the growth scene in the 1980's, followed closely by water and then land-based activities.

The overall long-term trends seem to confirm the folk wisdom that hiking and backcountry

use have been increasing over the past decade, but that they may be stabilizing. It is clear that year to year trends do not show any consistency from one recreation area to another, but that over the long-term, most areas have experienced this growth and leveling-off.

The causes for the levels of use and their changes over time are not at all clear. It is a complex interaction of available leisure time, money, accessibility, faddism and more. Each individual processes these variables and makes his decision to go hiking or not. Moreover, this long-term pattern of growth and its more recent leveling-off does not in itself presage future use levels. The leveling-off may continue, dip into a long-term downtrend or merely mark a hesitation in longer term growth. One year does not make a trend. Even two or three years do not. The year-to-year changes are as likely to be in one direction as in the other.

One of the shops in this marketplace is the publishing business. Magazines and books about this subject can be found in almost any bookstore. This was not so a decade or two ago. Publishers such as Scribners, Funk and Wagnalls, Harper and Row, and many others are answering the demand for books on hiking and backpacking. Periodicals such as Appalachia Bulletin, Sierra Club Bulletin, and Living Wilderness have been joined by Backpacker/Wilderness Camping, Mariah, New England Outdoors and Nordic Skiing. Tote books, walk books, and hike books describe thousands of hikes people can take in just about every state in the Nation.

Other shops in this marketplace are the equipment industry and outfitters. Where once hiking and backpacking equipment could be obtained only in large cities or through a few mail-order houses, now many hardware stores carry equipment, many small towns have a sporting goods store and the long-established mail-

Table 2.--National forest recreation use by activity  
(thousands of visitor-days)

| Activity                              | -----1966----- |                  | -----1979----- |                  |
|---------------------------------------|----------------|------------------|----------------|------------------|
|                                       | Use            | Percent of Total | Use            | Percent of Total |
| Camping                               | 39,564.5       | 26.2             | 54,780.3       | 24.9             |
| Recreational travel (mechanical)      | 31,301.1       | 20.7             | 49,536.5       | 22.5             |
| Fishing                               | 14,709.1       | 9.7              | 16,776.0       | 7.6              |
| Hunting                               | 13,118.6       | 8.7              | 15,327.9       | 6.7              |
| Recreational residence use            | 7,960.5        | 5.3              | 6,651.6        | 3.0              |
| Picnicking                            | 7,887.5        | 5.2              | 8,874.2        | 4.0              |
| Winter sports                         | 5,219.6        | 3.5              | 14,485.0       | 6.6              |
| Hiking & mountain climbing            | 4,277.8        | 2.8              | 11,176.9       | 5.1              |
| Organizational camp use               | 4,287.2        | 2.8              | 4,086.8        | 1.8              |
| Boating                               | 4,006.5        | 2.6              | 7,072.1        | 3.2              |
| Viewing scenes & sports entertainment | 3,926.8        | 2.6              | 8,321.1        | 3.8              |
| Resort use                            | 4,003.5        | 2.6              | 4,308.9        | 1.9              |
| Swimming & scuba diving               | 3,076.9        | 2.0              | 4,632.3        | 2.1              |
| Horseback riding                      | 2,065.9        | 1.4              | 3,166.4        | 1.4              |
| Visitors information services         | 2,058.8        | 1.4              | 4,121.8        | 1.9              |
| Gather forest products                | 1,241.7        | .8               | 3,916.1        | 1.8              |
| Nature study                          | 796.4          | .5               | 1,210.9        | .5               |
| Waterskiing & other water sports      | 641.0          | .4               | 888.0          | .4               |
| Games & team sports                   | 585.5          | .4               | 832.8          | .4               |
| Total                                 | 150,728.9      | 99.6             | 220,165.6      | 99.6             |

So how does one find indicators of national hiking and backpacking trends, accurately assess them, and meaningfully interpret what they tell us? One way might be to check the marketplace--the place that might profit from an increase in hiking and backcountry interest.

order houses are under severe competition from hundreds of newly-established businesses. Similarly, perusal of any hiking or backpacking magazine invariably provides one with numerous opportunities for signing up with backcountry and wilderness outfitters. All these entrepreneurs have recognized an expanding market

and, in the American tradition, are here to satisfy the demand for these goods and services.

A third way to conjure hiking and backpacking trends is to consult with a panel of people "in the know". If nothing more, this technique should tell us how much agreement or disagreement there is about the future.

James Kern, president of the American Hiking Society, recognizes that the bloom is off the hiking fad, that membership in hiking organizations is not increasing at the same rate it was a few years ago, but that people joining clubs these days are probably doing so after making a more sincere appraisal of their interest in hiking and the individual club.

William Kemsley, Jr., editor of Backpacker/Wilderness Camping magazine also sees only a slight yearly increase in the number of hikers and backpackers. But he foresees a definite increase in snowshoeing, ski camping and family backpacking. As we get more and more into the 1980's, he sees greater interest in "group" camping in the backcountry and use of lean-tos, shelters, and White Mountain-type "huts".

David A. Richie, project manager of the Appalachian Trail for the NPS, sees an expanding role for volunteers in protection and management of trails and an increase in the responsibilities of trail clubs. He sees them helping decide where trails will go, what land will be bought, and monitoring activities of visitors and landowners to head off conflicts. He also sees them expanding their presence on trails to educate and influence hikers and backpackers on compatible behavior, and taking on added maintenance and construction work, even offering to replace government crews in national parks and forests.

William E. Rennebohm, the Trails Coordinator of the HCRS sees greater use of urban trails, multi-purpose trails, and health or exercise trails. He also feels that low-cost public transportation to distant trails is not beyond the realm of possibilities.

There seems to be general agreement that hiking and backcountry use has experienced a short-term shot in the arm, that the immediate effects of that shot are wearing off, and that the growth rate in this activity will be much less dramatic for the next few years. In summary, we see the American experience paralleling the European experience in pedestrian activity. We see more day hiking and more families hiking. We see more general awareness of walking in our lifestyle, even a trend toward walking as a legitimate mode of trans-

portation for short commutes. We see more of an emphasis on development of the 50- to 250-mile trails rather than on the 1000-mile and over trails; and less emphasis on trail studies and more on-the-ground trail developments.

It seems clear that management policies which are designed to manage use, do in fact have that result. For example, the AMC Hut System, where it has become more and more important to make a reservation to assure oneself a bunk, does not exhibit the dramatic year to year shifts in use that the AMC shelters show. Likewise, Baxter Park's policy restricting use and the Allagash Waterway's policies for discouraging overuse.

Managers and recreationists, for the past decade, have had to cope with the problems posed by rapid increases in use. This has forced difficult decisions, sometimes necessarily made without much data. The problem has been to protect the resource in the face of this increased use. The opportunity now is at hand to review these decisions in the light of experience without the problem of immediate increases and to take stock. Which policies have been successful; which less so? What options should be pursued to make the next decade a successful one for both managers and recreationists?

## TRENDS IN EMERGING AND HIGH RISK ACTIVITIES<sup>1</sup>

Robert G. White, Richard Schreyer and Kent Downing<sup>2</sup>

---

Abstract.--Newly emerging and high risk activities have increased markedly in the last generation, yet little is known about trends in participation. Factors such as technological innovation and creative experimentation with traditional activities appear to play a major role in the development of new activities. Christy's criteria for mass demand in recreation are used to examine the growth potential of different emerging activities. The participation histories of three characteristic activities--skydiving, sport ballooning, and hang gliding--are explored in detail. Trends in activity growth are also seen to be influenced by activity and risk sport image, and by potential for government regulation.

---

New recreational activities appear to be emerging at an exponential rate, particularly those involving an element of risk. Yet, little is known about either their participants or the activities. Where and how do new activities originate? What determines their popularity? What trends are evident? What special problems do they have?

### THE EMERGENCE OF OUTDOOR RECREATIONAL ACTIVITIES

The origins of new activities can be traced to two different, though related

<sup>1</sup> Paper presented at the National Outdoor Recreation Trends Symposium, Durham, NH, April 20-23, 1980.

<sup>2</sup> Robert G. White is a graduate research assistant at Utah State University. He received his B.A. degree in psychology from Rutgers University, and his M.S. degree in outdoor recreation from Utah State University. Richard Schreyer is an Associate Professor at Utah State University. He received his B.S. degree in forest recreation from Utah State University, and his M.S. and Ph.D. degrees in resource planning and conservation at University of Michigan. Kent Downing is an Associate Professor at Utah State University. He received his B.S. and M.S. degrees in forest management from Colorado State University and his Ph.D. in forestry from the University of Missouri.

sources: innovations in equipment or experimentation with participation.

Several activities owe their entire existence to the development of a specific type of equipment or to a breakthrough in equipment materials. In most cases, the critical technology has come from outside the recreational industry. The first hang gliders were adaptations of the Rogallo para-wing, a design developed by a NASA engineer. SCUBA diving resulted from the invention of the aqualung, a piece of equipment originally intended for scientific and military purposes. For some activities, the right material was the essential missing ingredient. The kayak and the hot air balloon, for example, have existed for well over a hundred years, yet were rarely used for recreation. Nylon and fiberglass can receive much of the credit for changing that situation. New activities can also result from combining or modifying existing equipment. Surfing and skateboarding together with sailing have yielded board sailing and wind skating, respectively. The addition of motors to hang gliders has spawned the sport of microlight aviation.

Not all activities originate from equipment innovations, though specialized equipment tends to follow if an activity generates enough interest. Rather, a few individuals will explore new techniques and new environments, simultaneously, opening the way for new specialized patterns of participation. Rock climbers are making progress with solo ascents; skydivers are jumping from cliffs;

and SCUBA divers are seeking underwater caves. It is difficult to predict at what point these experiments will create spin-off activities, though the potential for growth likely parallels popularity for emerging activities in general. Three examples of currently emerging spin-offs are out-of-bounds skiing, speed skiing, and free climbing.

#### DETERMINANTS OF POPULARITY

Christy (1974) outlined five elements that he felt were important for predicting the popularity of a recreational activity, particularly those that would stimulate mass demand. The following sections will apply these criteria to evaluate the potential of several emerging activities.

##### Ease of Participation

A number of factors are subsumed under this element, including initial costs, operating costs, training, and environmental prerequisites. Although many of the emerging activities require expensive equipment relative to tennis or cross country skiing, they are fairly inexpensive when compared to activities that offer similar experiences. Before hang gliding, the only gliding or soaring aircraft were sailplanes which sell for \$10,000 to \$35,000. The upper end of the price range for today's hang glider is around \$1500. The modern day hot air balloon is one-fourth the purchase price of a gas balloon (the traditional sport balloon) and costs approximately \$50 to operate as opposed to \$2000 per flight for gas balloons.

The subject of operating costs and hidden costs deserves further discussion. For some activities (hang gliding, board sailing, and rock climbing) the primary expense is equipment, followed by transportation to and from the recreational site. For others such as skydiving there are additional expenses: aircraft fuel and pilot fees.

As Christy points out, the nature of the necessary training can be an important variable for an activity's popularity. Is it short and pleasant or long and difficult? Board sailing involves little or no formalized training. Prospective enthusiasts can often rent a board and practice on their own at their own speed. Would-be skydivers, on the other hand, must adhere to a rigid training program that can be long and costly. To eliminate some of these difficulties, commercial schools (similar to the successful ski schools) have been established to streamline instruction and make it as comfortable as possible.

Environmental prerequisites also affect capacity for growth. Board sailors can use a variety of water resources unsuitable for larger sailing craft; and hang glider pilots can fly almost anywhere without worrying about paved landing strips. At the other end of the spectrum, cave explorers and rock climbers are faced with the relative scarcity of adequate resources.

##### Desirable Image

It is no accident that Madison Avenue has capitalized on the eye catching qualities of hang gliding, river rafting, sport ballooning, and skydiving. In contrast to everyday life, they portray adventure, excitement, and challenge. The transatlantic balloon crossing, the man powered flight across the English Channel, and the conquest of Everest without oxygen were prime examples of individual achievement. Today's recreationists can likewise experiment with new activities in unfamiliar environments, challenging their own frontiers. Undoubtedly, these pursuits can have a powerful effect on self-image as well as on one's public image. The quality of that image, however, may range from envy to bewilderment to charges of being foolhardy and irresponsible. Perception of risk is often a focal point of these images. The influences of safety concerns and perceptions of risk will be discussed subsequently.

##### Ability for Strong Identification

According to Christy (1974:103), "there must be some paraphernalia, costume, badge or trophy that identifies its holder as a participant in that activity." Nearly all emerging would score high on this element, given the proliferation of t-shirts, hats, belt buckles, patches, and decals sporting slogans and manufacturers names. Distinctive equipment (large and small) can serve the same purpose. Hang gliders, kayaks, and hot air balloon baskets are difficult to miss on car racks and trailers. On a smaller scale, channel locks hung from belts usually identify whitewater rafting guides. Certainly, many participants use these symbols to demonstrate their uniqueness, which becomes a problem when nonparticipants purchase such items as souvenirs or to be fashionable.

##### Opportunities for Demonstrating Skills

There are considerable differences among activities on this element. Sport ballooning, skydiving, and hang gliding are highly visible;

especially when close to public areas. They also lend themselves quite readily to exhibitions and demonstrations. Likewise, board sailors, jet skiers, and Hobie Cat sailors are almost always found near high use areas: beaches, lakes, and reservoirs. Cave explorers, rock climbers, and SCUBA divers are not so fortunate. More so than other activities, they have to depend on the media or on fellow participants for demonstrating their skills.

#### Comfortable and Efficient Use of Leisure Time

New designs and materials have had an enormous effect on comfort and efficiency. However, there are some factors beyond the scope of technology, as recreationists who depend on weather are painfully aware. Beginners, in particular, are susceptible to weather since they are the least able to handle even marginal conditions. Where weather tends to be unstable, they can expect to spend much of their training time waiting for conditions to improve. For those reluctant to invest precious leisure time for future rewards, the training period can be extremely frustrating. This feeling may be further compounded by a sense of social isolation that frequently accompanies beginner status. Experts tend to be possessive of their activity, especially when forced to share resources, putting beginners in the uncomfortable position of intruders. Where weather and social isolation combine, the popularity of an activity is likely to suffer. Although it is hard to generalize, skydiving and hang gliding tend to fall in this category.

#### ACTIVITY TRENDS

Now that we have examined those aspects of various emerging activities pertaining to mass demand, let us take an in-depth look at the past, present, and future of three activities: skydiving, sport ballooning, and hang gliding. These particular activities were chosen because of 1) their popularity, 2) their adventure/excitement image, 3) their growth curves, and 4) the availability of relevant background information. Board sailing was to be considered due to its recent phenomenal growth,<sup>1</sup> but was dropped due to an almost total lack of hard historical data.

<sup>1</sup>The spokeswoman for Windsurfer brand sailboards, the world's oldest and largest manufacturer, predicted they would sell 30,000 sailboards worldwide in 1980 compared to 125,000 sold since 1969.

#### Source of Data

Since data on actual participation is simply not available, an alternative approach was taken--the national organizations for the three activities were contacted and questioned about the participation of their membership. When pressed about previous years, however, most were reluctant to make retrospective estimates. Therefore, the growth curves presented in Fig. 1 represent organizational membership and not total participation. Yet, according to the officials of all three organizations, these figures do reflect what was happening yearly to the total community of participants.

#### Skydiving

A spokesman for the United States Parachute Association estimates that 35,000 individuals will make a total of about two million jumps this year. Included in that number are first time parachutists--less than 10% of which will make a second jump. Further, only about 1% to 2% will go on to become experienced skydivers. Currently, the USPA has a membership of approximately 16,000 to 17,000 skydivers<sup>2</sup> or about one half of the total participants. The turnover rate (50% per year) indicates that few skydivers remain active for very long, either in USPA or in the sport.

Skydiving dates back to the early barnstorming days, but it was not until the late 1950s that the sport caught on as a general recreational activity. In 1956, the Parachute Club of America was founded with sixty members. (In 1967, the PCA became the United States Parachute Association). Growth was gradual until 1960 when it increased rapidly (Fig. 1). Between that year and 1973, membership rose from 1417 to 17,624 individuals. This period of growth can be traced to three related factors: equipment, mass media exposure, and skydiving schools. Although surplus military equipment was in widespread use in the 1960's, it was either being modified or replaced, resulting in safer and more reliable parachutes. This period also saw its first extensive exposure to skydiving, including the television program--Ripcord. Concomitantly, commercial schools and independent clubs began to multiply, making skydiving readily accessible to thousands of potential customers.

<sup>2</sup>The figures since 1975 are approximate because membership is on a revolving basis, i.e., members renew the month their membership expires rather than for the calendar year.

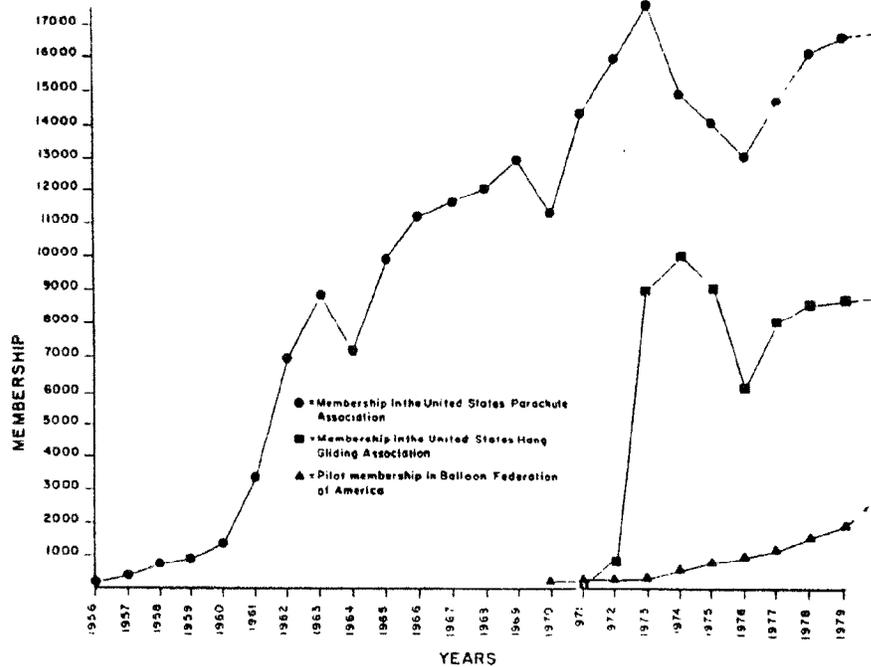


Figure 1.--Membership growth in three activity organizations.

Between the high point of 1973 and 1976, membership declined. A combination of an increase in dues and a general disenchantment with USPA was probably responsible. Therefore, the amount of this dip may not have been indicative of the entire skydiver population. By 1979, membership was again above 16,000. USPA officials believe that membership will stay around this figure for the next few years and that the total number of participants is stabilizing.

#### Sport Ballooning

Fifteen hundred balloon pilots currently belong to the Balloon Federation of America. According to the membership director, this figure represents 85% of all balloon pilots in the United States. In 1978, there were 1162 thermal or hot air balloons and 12 gas balloons registered with the BFA. During the same year, 38,791 hot air balloon flights were made by members, averaging 13.6 kilometers and about one hour per flight. In addition, the twelve gas balloons made 18 flights.

Sport ballooning in the United States began in the early 1960s with gas balloons, but the hot air balloon soon became more popular. As mentioned earlier, the hot air balloon is considerably cheaper to buy and operate. In 1967, the BFA was founded with 58 members. Three years later there were still only 66 members (Fig. 1). That slow rate of growth continued for several more years until 1973. From then until the present, membership has increased markedly. As with skydiving, better equipment, media exposure, and ballooning schools have all contributed to its growth. Certainly, the media exposure surrounding the successful transatlantic balloon flight (as well as the previous attempts) can be credited with much of ballooning's popularity. Officials of the BFA, in fact, believe that the number of participants will increase for some time to come, though the rate and time frame are uncertain.

Although the sport of ballooning is increasing in popularity, it is unlikely it will ever become a mass demand activity. Besides the initial cost of a balloon and

auxiliary equipment, it requires a support crew to aid in launching and retrieving the balloon. To apply for a private balloon pilot's license, a student needs ten hours of free flight with at least six flights under the supervision of an instructor--that training can cost between \$1000 and \$1500.

#### Hang Gliding

Compared to sport ballooning and skydiving, hang gliding is a new activity (barely a decade old). The national organization for hang glider pilots is the United States Hang Gliding Association which claims 8600 members for 1979. Actual participants, however, may be as high as 40,000. Beyond that estimate little is known. The problem with estimating participation is that hang gliders are easy to transport and can be used in a variety of environments--from backyard hills to beachside cliffs to mountain ridges. There are even portable, power winches that will pull hang gliders airborne for those without an elevated launch site. Wills (1979:20) summarizes the situation well: "No one can or will ever know that figure (the number of hang gliding flights) until every pilot on the planet punches in on a computer when he launches ... We can't even say how many pilots there are in a country, or even state, in a given month. Association and club membership is only a rough index. Some members fly, some don't. Some pilots are joiners, some anti-organization. Some fly--and die--all by themselves in remote areas."

Despite the inherent difficulties in calculating participation, the staff of the Whole Air Catalog collected some interesting data from their readership. Using this data, they estimated that 1,300,000 flights were made in 1978 with the majority of pilots making 9 to 15 flights per month (Johnson 1978a). They also discovered that the highest percentage (24.5%) of pilots still flying today began in 1976 (Johnson 1978b).

The growth curve of the USHGA is truly astounding. In its first three years, membership increased from 25<sup>3</sup> to 10,000 individuals (Fig. 1). In September of 1974 alone, 4000 people became new members. Two years later it dropped to 6000 and then rose gradually to its present level of 8600.

<sup>3</sup> The original organization was the Southern California Hang Gliding Association.

There are several possible explanations for this curve. In the early years of the sport (1971 to 1974), the majority of hang gliders were built at home from plans that cost between five and ten dollars. Entire gliders could be built for under \$100. As one would expect, the combination "man's oldest dream" at an affordable price attracted everyone from the merely curious to the serious recreationist. By 1974, designers began to turn away from selling plans to manufacturing pre-built gliders. As a result, prices rose to around \$500. Today, plans are all but absent and prices are in the \$1200 to \$1500 range. Undoubtedly this change was responsible for weeding out many would-be flyers. At the same time, new designs were cropping up so rapidly that many became obsolete soon after they were released--a discouraging situation for someone who just invested several hundred dollars. By 1976, most of the radical design changes were over, and manufacturers turned towards refining the hang glider. According to USHGA officials, the chaotic days of hang gliding growth are in the past. The curious and the thrill seekers have dropped out and are being replaced (albeit at a slower rate) by dedicated pilots. In fact, they predict that the present level of participants will remain much the same for the decade ahead.

#### SPECIAL PROBLEMS

Many of the emerging activities and high risk activities find themselves faced with two problems that could affect future trends: safety and the perception of risk, and government regulations.

The very term--high risk recreation--implies that the activities themselves are inherently unsafe. Many outsiders who might otherwise become participants believe that hang glider pilots, skydivers, rock climbers, etc. are at the mercy of fate, probability, or the elements. Few recognize that the majority of accidents are the result of participant error, not faulty equipment or factors related to the activity itself. For instance, a study of hang gliding accidents (Tongue 1977) found that those most susceptible to fatal injury were pilots with a cavalier attitude towards their participation. Freak accidents do occur, but these are rare. Unfortunately, the mass media tends to overplay the risks involved, giving many activities an undeserved bad image. While the potential for serious injury or even death does exist, the risks can be controlled through skill and experience

(Schreyer and White 1979). The image may nevertheless discourage many while encouraging others attracted out of a sense of bravado or thrill seeking. These persons often become the stereotypes reinforcing negative images (and often become through carelessness the accident statistics that maintain those images).

The other factor that may influence future trends is the proliferation of government regulations. Generally, these are of three types: 1) to protect participants from injury; 2) to protect nonparticipants from injury; and 3) to protect the environment. In some cases, national organizations have headed off government intervention by either instituting self-regulations or by lobbying against regulations that could severely curtail participation. Such battles emphasize that there are factors affecting an activity's future which may have little to do with its actual potential for growth. The current use limits on many of the nation's wild rivers is a good example.

#### CONCLUSION

While the novelty and excitement of new recreational activities, particularly those involving an element of risk, have captured the interest of the mass media, there is an amazing lack of solid information about participation in these activities. Much more is known about the backpacker than the skydiver and the balloonist. In a world governed by priorities, that is perhaps understandable--there are more backpackers than skydivers and balloonists combined. However, if public and private planners are to provide a diversity of opportunities for satisfying different recreational preferences, emerging activities will have to receive the attention they deserve.

The need for information is underscored by the fact that certain emerging activities may be the answer to potential future constraints on recreation participation. Many of today's more popular activities are highly consumptive of precious natural resources. As these resources become scarce, recreational activities will have to change. That change, however, can be as exciting as it is needed. Activities such as hang gliding, board sailing, and free climbing not only use simple, functional equipment that is relatively nonconsumptive; but they are challenging and stimulating as well.

#### LITERATURE CITED

- Christy, Francis T., Jr. 1974. The elements of mass demand for outdoor recreation resources. Pp. 99-103 in B. L. Driver, ed., Elements of outdoor recreation planning.
- Johnson, Dan. 1978a. Hang gliding statistics. Whole Air Catalog 1(3):12-13.
- Johnson, Dan. 1978b. Hang gliding statistics. Whole Air Catalog 1(4):16-17.
- Schreyer, Richard and Robert White. 1979. A conceptual model of high risk recreation. Proc. of 1st Annual Nat. Conf. Recr. Plan. and Devel. Vol. 1, Snowbird, Utah.
- Tongue, John R. 1977. Hang gliding injuries in California. J. Trauma 17(12): 898-902.
- Wills, R. V. 1979. 1979 hang gliding fatalities: A preliminary look. Hang Gliding 82:20-22.

TRENDS IN DAY USES OF  
PARKS AND FORESTS<sup>1</sup>

Joseph T. O'Leary<sup>2</sup>    John Peine<sup>3</sup>    Dale Blahna<sup>4</sup>

---

Abstract.--Trends for seven day use activities were compared from national recreation survey data collected in 1965, 1972 and 1977. General increases in involvement of the total population was found for the 1965-1977 period. Little change in participation was found for racial and sex characteristics, but shifts in participation were found for age and education groups that could have significant impacts on the future of outdoor recreation.

---

INTRODUCTION

The United States is a nation that maintains almost a demonic interest in collecting data about just about everything. Participation in outdoor recreation has not escaped this gaze, with several national and many regional, state and local surveys being done since the 1950's. Of all the outdoor involvement that has been measured, day use activities done in parks, forests and other recreation places represent one area that has received substantial attention perhaps because they are pursuits that can be done both locally and regionally and impact almost every facility level.

Unfortunately, it has often been difficult to monitor changes over time in participation because the data needed to do it were not available or exactly comparable. The Bureau of Outdoor Recreation, now known as Heritage Conservation and Recreation Service, has been involved in several national surveys of outdoor recreation.

---

<sup>1</sup>Paper presented at the National Outdoor Recreation Trends Symposium, Durham NH, April 20-23, 1980.

<sup>2</sup>Joseph T. O'Leary, Associate Professor, Purdue University, West Lafayette, Indiana 47907.

<sup>3</sup>John Peine, Project Leader, HCRS, Ann Arbor, Michigan 48107.

<sup>4</sup>Dale Blahna, Research Assistant, University of Michigan, Ann Arbor, Michigan.

Leisure scientists have found it difficult obtaining the data to allow secondary analysis. This tendency appears to have been changed with the 1977 national survey. Several scientists acquired actual copies of the original data tapes or participated in preparing an assortment of papers that explored various relationships of other data with the 1977 survey results or exclusively concentrated on the survey itself. As the research community learned more about this national data, there was an increasing interest to gain access to actual data tapes of some of the other original national surveys. Beyond initial reporting in the official publications describing results, very little additional study appears to have been made of this information and there has been an absence of comparative analysis. However, three of these national surveys (1965, 1972 and 1977) have become available to researchers at Purdue University and the University of Michigan. Since the surveys contain much information about day use involvement and can be compared for selected questions, this paper will examine seven selected activities and the manner in which involvement is distributed within the population for 1965, 1972 and 1977. The orientation of the paper concentrates on using activity involvement to examine day-use of parks and forest because use has normally been measured in most studies via the activity route. Similarly, the nature of the variables in the data available could be compared most satisfactorily in this way. The material is seen as being exploratory in that no explicit hypotheses are tested, yet because of the absence of previous comparative work, this effort can set the stage for subsequent in-depth secondary analysis.

## PROCEDURE

Copies of the data tapes for the 1965 Bureau of Outdoor Recreation National Recreation survey, the 1972 Audits and Surveys National Recreation Survey and the 1977 Bureau of Outdoor Recreation National Outdoor Recreation Survey were obtained for analysis of the day use activities, bicycling, other boating, fishing, hunting, picnicking, sailing and swimming (pool and other outdoor). Information describing the features of the three surveys is presented in Table 1. Computer analysis of the 1965 and 1972 surveys was done at the University of Michigan and analysis of the 1977 survey was done at Purdue University using similar SPSS statistical package programs. For each year, the activities were examined to obtain the total percent of those who had reported participating. Then five socioeconomic/demographic variables (income, age, race, sex, and education) were used to examine the percent distribution of participation by categories that were common to the three surveys.

In the 1977 survey respondents were asked whether or not they participated in the activities during the previous year and a yes/no response was obtained. However, in both the 1965 and 1972 surveys the respondents were queried about their activity involvement using several different questions. To obtain an aggregate measure of participation in an activity during a year, each question was searched. If there was a positive response to any of the questions, then that respondent was identified as a participant for calculation of percent of the population that was participating in an activity. There should be no double counting.

It is important to note this strategy. After considerable thought this procedure was selected. It appeared to be the logical way to examine the data for the aggregated measure of involvement we needed. However, when the final results are examined, none of the final results are the same as those reported in the "official" 1965 and 1972 publications. In most cases, the data reported here is slightly higher. Thought was given to why these differences might exist, but in the absence of documentation about procedures used in the original tabulations it was impossible to do any type of complementary analysis.

### Comparability of the Three Surveys

One of the key issues that needs examination in any use of different data sets is the comparability of the material. In the case of the three national surveys used

in this paper there are at least two sources of information that have been consulted. Kirschner Associates (1975) prepared an in-depth review for the then Bureau of Outdoor Recreation of five nationwide citizen surveys dealing with outdoor recreation. Included in this discussion was a comparison of the 1965 BOR Survey and the 1972 Audits and Surveys survey used here. In addition, Blahna (1979) has reviewed and compared the 1972 survey work with the 1977 Outdoor Recreation Nationwide survey.

The Kirschner Associates document is an extensive review (close to 300 pages) that makes comparisons, provides copies of questionnaires and makes recommendation for subsequent work in the citizen survey area. In their comparison of the 1965 and 1972 surveys, a basic finding was that because of the nature of the 1972 instrument the reporting of participation would probably tend to be conservative or underestimated because of the redesign for use in demand equations. Based on their review it does appear that gross comparisons (% of people participating) and types of persons participating in specific activities are possible. Since this was the goal of the "day-use" activity orientation in this paper the comparisons we made seemed reasonable.

Blahna's (1979) review of the 1972 and 1977 surveys also pointed to areas of concern. First, the activity participation reported in the 1977 survey appear to be high based on reviews of other surveys done between 1973 and 1978. This may be related to the low response rate encountered in the telephone interviewing and the tendency of this procedure to include those who are most interested in the subject area.

Of the activities that were examined, the phrasing of the question for swimming created a problem. In the 1977 survey the question linked the activity "sunbathing" to swimming thus identifying two activities and confounding the issue of involvement. We would assume that this would inflate the response to the question.

Finally, to construct a participation percent for each activity in the 1972 survey, the data had to be accumulated from four questions. The first three questions addressed the three summer months of 1972 and inquired about activity involvement on vacations, overnight trips, recreational outings that took the better part of a day, and finally for other short recreation outings. Then another question was posed to ask about a nine month period from September to May and the activities done in that period.

Table 1. Features of the 1965, 1972 and 1977 Survey Samples

|                       | Y E A R                     |   |   |
|-----------------------|-----------------------------|---|---|
|                       | 1965 <sup>a</sup>           | 1972 <sup>b</sup>   | 1977 <sup>b</sup>   |
| Type of Interview     | Personal                    | Personal  | Telephone   |
| Time Period Coverage  | 3 summer months             | 3 summer months plus rest of year                               | entire year   |
| Number of Respondents | 7194                        | 4029  | 4029  |
| Response rate         | 91%                         | 54%   | 51%   |
| Respondent Age        | 12+                         | 12+   | 12+   |
| Sample Selection      | persons from CPS households | 1 person/household in a systematic cluster sample of households | random systematic sampling of counties and random digit dial technique (up to 4 callbacks for no answers) |

<sup>a</sup>Kirschner Associates (1975)

<sup>b</sup>Blahna (1979)

Table 2. Comparison of 1972 and 1977 survey questions about swimming.

|                       | Y E A R |   |
|-----------------------|---------|---|
|                       | 1972    | 1977                                      |
| Outdoor pool swimming |         | Swimming or sunbathing in an outdoor pool |
| Other swimming        |         | Other outdoor swimming or sunbathing      |

The subjects in the 1977 survey were read a list of activities and asked whether or not they had done any of those in the last 12 months. This was done on the first page of the survey instrument while respondents were still fresh. The complexity of the 1972 questions may have caused those not particularly interested in the survey to respond negatively simply to get the whole process over with.

#### RESULTS

Analyses of the overall percent of the population reporting involvement in the period 1965-1972. These decreases are rather dramatic, in some cases indicating that there was a drop in participation of almost 50%. Of course, this is inconsistent with contemporary gospel about recreation use. Yet even in the published material that provided summaries of the 1965 and 1972 data, decreases or relative stability in the amount of use was reported (Kirschner, 1975: Appendix D). There are at least two explanations for these apparent changes. One is that there actually was a downward change in the nation's involvement in outdoor recreation. This is a difficult hypothesis to accept since most on site visitation data suggests continuing growth. Perhaps the more likely reason for the changes is related to the methodological changes that suggest an underestimation of involvement. Yet the differences are still somewhat unusual.

It is important to note that two of the activities - fishing and hunting - showed mild increases in the same period that the other activities were decreasing. The subtle upward change found for fishing (30% to 31%) in our analysis is in opposition to the information that was published describing a decrease from 30% to 24%.

While the analysis done here points toward questions about the original analysis of these two data sets, there is at least a general observation to be made. Although the absolute numbers are not the same, the tendency to report decreases from 1965 to 1972 is consistent for five of the seven activities examined.

In light of the 1972 data, comparing it to the 1977 data is somewhat easier. In every case, participation reported from the 1977 survey shows a dramatic to moderate increase. For example the portion of the population involved in bicycling went from about 21% in 1972 to 50.4% in 1977. Boating involvement doubled; fishing increased 23% over the 1972 level; picnicking rose to a

Table 3. Percent involvement in all activities, 1965, 1972, 1977.

| Activity      | YEAR |      |      |
|---------------|------|------|------|
|               | 1965 | 1972 | 1977 |
| Bicycling     | 29.4 | 20.9 | 50.4 |
| Fishing       | 30.2 | 31.2 | 54.2 |
| Hunting       | 13.5 | 14.8 | 18.7 |
| Other Boating | 30.4 | 17.4 | 36.3 |
| Picnicking    | 62.2 | 52.4 | 73.8 |
| Sailing       | 7.1  | 3.0  | 13.2 |
| Swimming      | 51.3 |      |      |
| Pool          |      | 21.2 | 66.7 |
| Other outdoor |      | 36.4 | 49.2 |

level 20% higher. One of the most intriguing changes is in swimming at a pool which showed 300% growth. A companion activity - other outdoor swimming - increased about 13% over its 1972 level. The swimming changes are particularly confounding because sunbathing was included as part of the activity description. The changes reported suggest measurement of two activities and it is impossible to disaggregate the results to reflect the contribution of each to the overall number. Finally, hunting is the only activity demonstrating a subtle upward movement from 14.8% in 1972 to 18.7% in 1977.

Again an earlier point should be reemphasized. The change in the manner in which questions were asked about participation (one question in the 1977 instrument vs. several questions in 1965 and 1972) and the location of the question right at the beginning of the 1977 instrument may have had a significant effect on response. Similarly, the response rate for the 1977 survey may show some selection of respondents most interested in outdoor recreation.

#### Participation and Descriptive Population Characteristics

Tables 4 thru 12 provide descriptive socioeconomic and demographic information for those individuals reporting involvement in the day use activities being examined. An initial observation that can be made about this data is that in every activity there are persons from every socioeconomic/demographic category involved. The number of characteristics provided make summary difficult. In addition, the income categories that are used in each of the three surveys are difficult to compare. First, \$6000 in 1965 is valued much differently than it is in 1977.

Similarly the 1972 (15,000-24,999; >25,000) and 1977 (25,000-50,000; >50,000) surveys added additional categories to the >\$15,000 figure used as the upper level in 1965.

Comparison of the data appears to show that non-white involvement in these activities has changed little in the 12 year period. In some activities there actually appears to be a minor decrease (e.g., hunting, other outdoor swimming, pool swimming, boating and sailing). Small increases or no change in non-white involvement are apparent in bicycling, picnicking and fishing. Similarly, there are significant differences between some activities by sex, but within activities there appear to be few shifts (an exception to this is in hunting).

Age and education appear to be the most complementary categories that can be compared in the three surveys. While there are differences within each group over time, the general shape of these distributions is similar. It is interesting to note that the 1977 data appears to show lower levels of involvement for the younger age groups for virtually all the activities. It also shows higher levels of involvement than ever reported before in the 25-44 age groups for all the activities. This latter observation is especially true for bicycling. Involvement by persons in the 25-44 age group has almost doubled since 1972, and shown a sizeable change since 1965.

Sailing appears to have been a particularly volatile activity (if you can use the word to describe the process) decreasing in involvement for every age group except for those 25-44. Other boating demonstrates a similar tendency.

When involvement in the activities is compared by education levels, the results from the 1965 and 1972 surveys are quite similar. Sharp peaks are apparent in the percent of those with a high school education doing an activity. The 1977 data shows evidence that those reporting a college education are more involved in these day-use activities than ever before. The distributions are rather similar in their general shape. Almost all of these changes represent 100% increases over either the 1965 or 1972 situation. Sailing is an interesting activity in that the 1972 and 1977 data for those with college education and above virtually coincide.

#### DISCUSSION

The trends in the seven day-use activities provide a point of departure for

discussing longitudinal data examinations. It is interesting to consider that we were not able to replicate the exact results that had been officially published. Although a number of attempts to duplicate the original fundings were made, none of these seemed to work. While the results from these analyses appear to be close, it has taken this retrospective review to raise questions about possible differences. The Kirschner Associates report suggested some other considerations that would also lend themselves to possibly clarifying the survey results and making them more useful (exploring selected differences between variables; changing the weighting scheme; evaluation of preferences, etc.). It seems clear that more adequate documentation is necessary for these data sets, something which goes beyond a listing of variables and their column locations.

More research (and secondary analysis at that) should be directed at the surveys to explore in greater detail the complexity of the relationships in the data. For example, the observation that for almost all the day-use activities younger persons (12-17; 18-24) are not participating as a group at the same level as they did in 1965 or 1972 is rather intriguing. Even if we were to disregard the 1972 survey, a change in the 12 years from 1965 to 1977 appears to have taken place. The immediate question to be asked would be if this pattern is the same for all the other activities that could be compared. It would be possible to explore some of the possible reasons for change based on additional questions asked in the 1977 survey. It is also interesting to speculate on what will happen to this group as they become older since some literature appears to suggest that early recreation experiences will impact involvement later on in one's life.

Perhaps one of the more interesting observations from the trend data is the increase in the proportion of the population with college education participating in day-use activities. The change is so dramatic that at least some consideration should be given to the alteration. We would anticipate that this group would maintain an above average income with more of it available for leisure expenditures. Therefore, we might anticipate that there would be greater interest in the acquisition of accoutrements associated with the activities. Similarly we would anticipate a more knowledgeable group of users pursuing the activities under consideration. This would potentially impact the view of the participating public on the management activities undertaken to provide the activities. Managers may find that they will be increasingly questioned about their activities because of the increased involvement

Table 4. Socioeconomic/demographic characteristics for Bicycling, 1965, 1972, and 1977 outdoor recreation survey.

| Characteristic   | YEAR |             |             |
|------------------|------|-------------|-------------|
|                  | 1965 | 1972        | 1977        |
| <b>Income</b>    |      |             |             |
| <6000            | 44.9 | 16.4        | 7.6         |
| 6000-9999        | 31.0 | 27.7        | 15.6        |
| 10000-14999      | 17.2 | 28.3        | 25.1        |
| >15000           | 6.8  | 20.6        | 34.2        |
|                  |      | 15000-24999 | 25000-49999 |
|                  |      | >25000      | >50000      |
|                  |      | 7.0         | 14.4        |
|                  |      |             | 3.0         |
| <b>Age</b>       |      |             |             |
| 12-17            | 35.0 | 43.1        | 25.3        |
| 18-24            | 14.9 | 18.6        | 19.8        |
| 25-44            | 28.4 | 26.6        | 39.4        |
| 45-64            | 16.1 | 9.4         | 12.2        |
| over 65          | 5.6  | 2.2         | 3.3         |
| <b>Race</b>      |      |             |             |
| White            | 88.4 | 82.6        | 86.1        |
| Nonwhite         | 11.6 | 12.6        | 10.8        |
|                  |      | Black       | Other       |
|                  |      | 4.8         | 3.1         |
| <b>Sex</b>       |      |             |             |
| Male             | 46.9 | 44.1        | 49.0        |
| Female           | 53.1 | 55.9        | 51.0        |
| <b>Education</b> |      |             |             |
| Grade School     | 7.2  | 6.9         | 3.6         |
| Junior High      | 21.4 | 18.1        | 11.1        |
| High School      | 55.8 | 50.4        | 44.7        |
| College          | 14.1 | 19.9        | 33.4        |
| Graduate         | 1.4  | 4.7         | 7.3         |

Table 5. Socioeconomic/demographic characteristics for Fishing, 1965, 1972, and 1977 outdoor recreation survey.

| Characteristic   | YEAR |             |             |
|------------------|------|-------------|-------------|
|                  | 1965 | 1972        | 1977        |
| <b>Income</b>    |      |             |             |
| <6000            | 42.5 | 21.2        | 9.5         |
| 6000-9999        | 32.8 | 32.6        | 16.7        |
| 10000-14999      | 17.5 | 27.9        | 26.1        |
| >15000           | 7.2  | 13.7        | 32.0        |
|                  |      | 15000-24999 | 25000-49999 |
|                  |      | >25000      | >50000      |
|                  |      | 4.6         | 13.1        |
|                  |      |             | 2.6         |
| <b>Age</b>       |      |             |             |
| 12-17            | 23.2 | 19.6        | 19.0        |
| 18-24            | 15.3 | 16.0        | 15.9        |
| 25-44            | 33.4 | 36.7        | 37.7        |
| 45-64            | 22.7 | 22.8        | 19.9        |
| over 65          | 5.4  | 4.0         | 7.6         |
| <b>Race</b>      |      |             |             |
| White            | 92.8 | 88.3        | 88.5        |
| Nonwhite         | 7.2  | 8.8         | 8.8         |
|                  |      | Black       | Other       |
|                  |      | 2.9         | 2.7         |
| <b>Sex</b>       |      |             |             |
| Male             | 57.6 | 61.2        | 58.1        |
| Female           | 42.4 | 38.8        | 41.9        |
| <b>Education</b> |      |             |             |
| Grade School     | 6.8  | 6.3         | 3.9         |
| Junior High      | 18.2 | 16.1        | 10.9        |
| High School      | 57.1 | 55.2        | 48.1        |
| College          | 15.7 | 18.9        | 31.1        |
| Graduate         | 2.2  | 3.6         | 6.0         |

Table 6. Socioeconomic/demographic characteristics for Hunting, 1965, 1972, and 1977 outdoor recreation survey.

| Characteristic   | YEAR |             |      |
|------------------|------|-------------|------|
|                  | 1965 | 1972        | 1977 |
| <b>Income</b>    |      |             |      |
| <6000            | 49.7 | 18.5        | 8.4  |
| 6000-9999        | 30.8 | 37.0        | 14.5 |
| 10000-14999      | 14.5 | 27.7        | 24.9 |
| >15000           | 5.0  | 12.6        | 35.3 |
|                  |      | 15000-24999 | 12.6 |
|                  |      | >25000      | 4.2  |
|                  |      | 25000-49999 | 13.7 |
|                  |      | >50000      | 3.2  |
| <b>Age</b>       |      |             |      |
| 12-17            | 20.5 | 15.9        | 17.0 |
| 18-24            | 19.7 | 17.9        | 18.5 |
| 25-44            | 35.8 | 39.8        | 40.1 |
| 45-64            | 19.6 | 21.2        | 18.7 |
| over 65          | 4.4  | 5.3         | 5.6  |
| <b>Race</b>      |      |             |      |
| White            | 92.7 | 91.4        | 96.1 |
| Nonwhite         | 7.3  | 6.7         | 3.8  |
|                  |      | Black       | 1.8  |
|                  |      | Other       | 2.1  |
| <b>Sex</b>       |      |             |      |
| Male             | 87.8 | 81.8        | 79.9 |
| Female           | 12.2 | 18.2        | 20.1 |
| <b>Education</b> |      |             |      |
| Grade School     | 8.8  | 5.7         | 3.8  |
| Junior High      | 17.2 | 15.0        | 9.6  |
| High School      | 57.7 | 58.9        | 52.7 |
| College          | 14.4 | 18.3        | 29.8 |
| Graduate         | 1.9  | 2.2         | 4.1  |

Table 7. Socioeconomic/demographic characteristics for Boating (Other), 1965, 1972, and 1977 outdoor recreation survey.

| Characteristic   | YEAR |             |      |
|------------------|------|-------------|------|
|                  | 1965 | 1972        | 1977 |
| <b>Income</b>    |      |             |      |
| <6000            | 37.8 | 13.0        | 6.7  |
| 6000-9999        | 33.8 | 26.6        | 14.9 |
| 10000-14999      | 20.2 | 31.7        | 23.1 |
| >15000           | 8.3  | 22.4        | 34.5 |
|                  |      | 15000-24999 | 22.4 |
|                  |      | >25000      | 6.3  |
|                  |      | 25000-49999 | 16.9 |
|                  |      | >50000      | 3.9  |
| <b>Age</b>       |      |             |      |
| 12-17            | 20.9 | 20.6        | 18.4 |
| 18-24            | 17.7 | 17.8        | 17.0 |
| 25-44            | 33.4 | 37.1        | 40.7 |
| 45-64            | 22.5 | 21.1        | 17.1 |
| over 65          | 5.6  | 3.2         | 6.8  |
| <b>Race</b>      |      |             |      |
| White            | 95.5 | 93.3        | 92.6 |
| Nonwhite         | 4.5  | 4.8         | 5.1  |
|                  |      | Black       | 1.9  |
|                  |      | Other       | 2.3  |
| <b>Sex</b>       |      |             |      |
| Male             | 54.1 | 49.8        | 55.3 |
| Female           | 45.9 | 50.2        | 44.7 |
| <b>Education</b> |      |             |      |
| Grade School     | 4.8  | 4.3         | 2.6  |
| Junior High      | 16.1 | 11.7        | 8.2  |
| High School      | 56.9 | 52.2        | 45.0 |
| College          | 19.9 | 26.0        | 36.0 |
| Graduate         | 2.3  | 5.9         | 8.1  |

Table 8. Socioeconomic/demographic characteristics for Picnicking, 1965, 1972, and 1977 outdoor recreation survey.

| Characteristic   | YEAR |             |      |
|------------------|------|-------------|------|
|                  | 1965 | 1972        | 1977 |
| <b>Income</b>    |      |             |      |
| <6000            | 44.4 | 20.4        | 10.3 |
| 6000-9999        | 33.0 | 32.8        | 17.2 |
| 10000-14999      | 16.7 | 26.8        | 24.8 |
| >15000           | 5.9  | 15.4        | 32.1 |
|                  |      | 15000-24999 | 13.1 |
|                  |      | >25000      | 2.4  |
|                  |      | 25000-49999 |      |
|                  |      | >50000      |      |
| <b>Age</b>       |      |             |      |
| 12-17            | 18.3 | 16.0        | 14.9 |
| 18-24            | 15.4 | 16.9        | 14.7 |
| 25-44            | 37.7 | 36.0        | 40.0 |
| 45-64            | 21.6 | 24.2        | 21.3 |
| over 65          | 7.1  | 6.8         | 9.1  |
| <b>Race</b>      |      |             |      |
| White            | 91.4 | 86.2        | 87.4 |
| Nonwhite         | 8.6  | 10.1        | 9.7  |
|                  |      | Black       | 2.9  |
|                  |      | Other       |      |
| <b>Sex</b>       |      |             |      |
| Male             | 46.0 | 43.9        | 47.5 |
| Female           | 54.0 | 56.1        | 52.5 |
| <b>Education</b> |      |             |      |
| Grade School     | 5.7  | 5.8         | 2.7  |
| Junior High      | 17.2 | 14.3        | 9.6  |
| High School      | 57.1 | 54.4        | 46.2 |
| College          | 17.2 | 20.4        | 33.1 |
| Graduate         | 2.9  | 5.1         | 8.3  |

Table 9. Socioeconomic/demographic characteristics for Sailing, 1965, 1972, and 1977 outdoor recreation survey.

| Characteristic   | YEAR |             |      |
|------------------|------|-------------|------|
|                  | 1965 | 1972        | 1977 |
| <b>Income</b>    |      |             |      |
| <6000            | 36.8 | 7.2         | 4.6  |
| 6000-9999        | 31.5 | 10.6        | 11.9 |
| 10000-14999      | 20.0 | 31.7        | 15.9 |
| >15000           | 11.8 | 26.1        | 35.2 |
|                  |      | 15000-24999 | 26.6 |
|                  |      | >25000      | 5.7  |
|                  |      | 25000-49999 |      |
|                  |      | >50000      |      |
| <b>Age</b>       |      |             |      |
| 12-17            | 19.5 | 22.9        | 19.9 |
| 18-24            | 16.2 | 23.5        | 19.2 |
| 25-44            | 33.7 | 31.5        | 43.8 |
| 45-64            | 21.4 | 18.9        | 14.4 |
| over 65          | 9.3  | 3.2         | 2.7  |
| <b>Race</b>      |      |             |      |
| White            | 93.7 | 97.5        | 91.3 |
| Nonwhite         | 6.3  | 2.0         | 6.5  |
|                  |      | Black       | 2.1  |
|                  |      | Other       |      |
| <b>Sex</b>       |      |             |      |
| Male             | 51.9 | 54.3        | 52.2 |
| Female           | 48.1 | 45.7        | 47.8 |
| <b>Education</b> |      |             |      |
| Grade School     | 7.1  | 3.2         | 2.3  |
| Junior High      | 18.9 | 10.0        | 7.1  |
| High School      | 46.8 | 29.2        | 33.4 |
| College          | 23.8 | 44.9        | 43.9 |
| Graduate         | 3.5  | 12.7        | 13.4 |

Table 10. Socioeconomic/demographic characteristics for Swimming, 1965, 1972, and 1977 outdoor recreation survey.

| Characteristic   | YEAR |                       |                       |
|------------------|------|-----------------------|-----------------------|
|                  | 1965 | 1972                  | 1977                  |
| <b>Income</b>    |      |                       |                       |
| <6000            | 38.2 |                       |                       |
| 6000-9999        | 34.3 |                       |                       |
| 10000-14999      | 19.1 |                       |                       |
| >15000           | 8.4  | 15000-24999<br>>25000 | 25000-49999<br>>50000 |
| <b>Age</b>       |      |                       |                       |
| 12-17            | 25.1 |                       |                       |
| 18-24            | 19.4 |                       |                       |
| 25-44            | 36.0 |                       |                       |
| 45-64            | 16.7 |                       |                       |
| over 65          | 2.9  |                       |                       |
| <b>Race</b>      |      |                       |                       |
| White            | 93.3 |                       |                       |
| Nonwhite         | 6.7  | Black                 | Other                 |
| <b>Sex</b>       |      |                       |                       |
| Male             | 50.1 |                       |                       |
| Female           | 49.9 |                       |                       |
| <b>Education</b> |      |                       |                       |
| Grade School     | 4.2  |                       |                       |
| Junior High      | 15.3 |                       |                       |
| High School      | 57.7 |                       |                       |
| College          | 19.7 |                       |                       |
| Graduate         | 3.1  |                       |                       |

Table 11. Socioeconomic/demographic characteristics for Other Outdoor Swimming, 1965, 1972, and 1977 outdoor recreation survey.

| Characteristic   | YEAR |                       |                       |
|------------------|------|-----------------------|-----------------------|
|                  | 1965 | 1972                  | 1977                  |
| <b>Income</b>    |      |                       |                       |
| <6000            |      | 15.8                  | 7.2                   |
| 6000-9999        |      | 29.3                  | 15.9                  |
| 10000-14999      |      | 28.1                  | 25.3                  |
| >15000           |      | 15000-24999<br>>25000 | 25000-49999<br>>50000 |
|                  |      | 18.9                  | 33.1                  |
|                  |      | 7.9                   | 15.5                  |
|                  |      |                       | 2.9                   |
| <b>Age</b>       |      |                       |                       |
| 12-17            |      | 25.3                  | 19.3                  |
| 18-24            |      | 21.2                  | 18.5                  |
| 25-44            |      | 38.5                  | 42.9                  |
| 45-64            |      | 13.5                  | 15.7                  |
| over 65          |      | 1.6                   | 3.7                   |
| <b>Race</b>      |      |                       |                       |
| White            |      | 89.1                  | 91.5                  |
| Nonwhite         |      | Black                 | 5.8                   |
|                  |      | Other                 | 2.7                   |
| <b>Sex</b>       |      |                       |                       |
| Male             |      | 46.8                  | 50.1                  |
| Female           |      | 53.2                  | 49.9                  |
| <b>Education</b> |      |                       |                       |
| Grade School     |      | 3.6                   | 2.0                   |
| Junior High      |      | 12.9                  | 9.1                   |
| High School      |      | 54.9                  | 44.1                  |
| College          |      | 23.0                  | 36.0                  |
| Graduate         |      | 5.6                   | 8.8                   |

Table 12. Socioeconomic/demographic characteristics for Pool Swimming, 1965, 1972, and 1977 outdoor recreation survey.

| Characteristic   | YEAR        |      |            |
|------------------|-------------|------|------------|
|                  | 1965        | 1972 | 1977       |
| <b>Income</b>    |             |      |            |
| <6000            |             | 15.1 | 7.4        |
| 6000-9999        |             | 29.1 | 15.9       |
| 10000-14999      |             | 28.4 | 24.0       |
| >15000           | 15000-24999 | 19.4 | 33.4       |
|                  | >25000      | 8.0  | 16.1       |
|                  |             |      | >50000 3.2 |
| <b>Age</b>       |             |      |            |
| 12-17            |             | 31.2 | 19.6       |
| 18-24            |             | 20.5 | 18.1       |
| 25-44            |             | 32.4 | 40.9       |
| 45-64            |             | 14.2 | 17.0       |
| over 65          |             | 1.8  | 4.4        |
| <b>Race</b>      |             |      |            |
| White            |             | 87.3 | 90.3       |
| Nonwhite         | Black       | 8.0  | 7.0        |
|                  | Other       | 4.7  | 2.6        |
| <b>Sex</b>       |             |      |            |
| Male             |             | 47.9 | 49.0       |
| Female           |             | 52.1 | 51.0       |
| <b>Education</b> |             |      |            |
| Grade School     |             | 5.0  | 2.7        |
| Junior High      |             | 13.4 | 9.3        |
| High School      |             | 51.7 | 44.9       |
| College          |             | 24.1 | 34.6       |
| Graduate         |             | 5.8  | 8.6        |

of this group. These are issues that at this point can only be speculated upon. More specific investigation within this group may provide better understanding of the process.

#### CONCLUSION

The examination of the seven day-use activities suggests both increases in overall recreation involvement since 1965 and shifts within the population of those involved in the activities. However, because of the differences between some of the results reported here and the "official" published data, care must be exercised in the interpretation. A helpful clarification of this analysis could come from within group studies, especially where significant shifts appear to have occurred. Additional secondary analysis of other data may provide further insight into these changes and assist planners and managers in understanding the future of day-use activity involvement and the subsequent resource impacts.

#### LITERATURE CITED

- Blahna, Dale J. 1979. Comparability Report: The 1972 and 1977 Bureau of Outdoor Recreation Nationwide Surveys. University of Michigan, School of Natural Resources. 22 pp.
- Kirschner Associates, Inc. 1975. Interim Report Evaluation of Five Previous Nationwide Citizen Surveys. Washington, D.C. 180 pp and Appendices.

## TRENDS IN OUTDOOR RECREATION

### ACTIVITY CONFLICTS<sup>1</sup>

John J. Lindsay<sup>2</sup>

---

**Abstract.**--Conflict caused by outdoor recreation activity groups competing for the same physical and psychological space has given rise to recreation resource planning, allocation and management problems. Research has shown recreation managers can expect certain types of users to be involved in significant conflict about 25 percent of their occupancy time. Well planned and managed outdoor recreation space can significantly reduce or even prevent conflict.

---

#### DEFINITIONS

Outdoor recreation conflict is defined as any physical, social or psychological obstruction arising within or between participants and their recreation goals.

Conflict may be inter- or intra- group in nature and can be identified with cause and effect relationships.

Conflict is directly related to the quality of the outdoor recreation experience and sets dynamic parameters on the social and psychological carrying capacity of an outdoor recreation environment.

Outdoor recreation carrying capacity is defined as the physical, biological, social and psychological capability of the outdoor recreation environment to support recreation activity without diminishing user satisfaction or site quality (Figure 1). It may be further conceptualized as a function of the quantity of the recreation resource, the tolerance of the site to use, the number of users, the type of user, the design and management of the site and the attitude and behavior of users and managers (Figure 2).

A second type of physical conflict occurs when participants' use of a recreation site

---

<sup>1</sup>Paper presented at the National Outdoor Recreation Trends Symposium, Durham, NH, April 20-23, 1980.

<sup>2</sup>Social Scientist and Outdoor Recreation Research Specialist, Recreation Management Program, School of Natural Resources, University of Vermont, Burlington, Vermont.

#### RECREATION CARRYING CAPACITY

INVOLVES THE PHYSICAL  
AND BIOLOGICAL COMPONENTS  
OF THE SITE AS WELL AS  
THE SOCIAL AND PSYCHO-  
LOGICAL ATTITUDES AND  
BEHAVIOR OF THE RECREA-  
TION USERS.

Figure 1.--Outdoor recreation carrying capacity - a definition.

results in various kinds of impact on the natural environment.

A third type of conflict which may be termed political, takes place between opposing factions of outdoor recreation vested interests and involves land use allocation decisions. These conflicts are greatly complicated when non-recreation groups such as timber, water, cattle, and mineral interests conflict over the use of the same acreage sought by recreationists.

Finally, a fourth type of conflict exists between the philosophies and practices of natural resource owners and managers and the attitudes and behavior of the recreation seeking public.

## CCF(QTNU,DMAB)

CARRYING CAPACITY IS A FUNCTION OF QUANTITY OF THE RECREATION RESOURCE, TOLERANCE OF THE SITE TO USE, NUMBER OF USERS, USER TYPE, DESIGN AND MANAGEMENT OF THE SITE, AND THE ATTITUDE AND BEHAVIOR OF THE USERS AND MANAGERS.

Figure 2.--A functional definition for outdoor recreation carrying capacity.

This paper will deal only with encounters of the first kind: those that involve inter- or intra-group conflict occurring when participants engage in recreation activity.

### The Problem

The conflict problem simply stated, is that recreationists tend to compete for the same physical, social and psychological space during the same time period.

Its causes are many but perhaps the most serious is that the supply of outdoor recreation space, particularly in the eastern region of the United States is diminishing (primarily because of urbanization) while recreation demand for that same space is increasing both in the number of participants and kinds of activities which are often incompatible with one another. Shafer (1975) states in his paper, Impact of Human Needs on the Natural Environments for Recreation, that urban sprawl may consume 19.7 million more acres of potential recreation land by 2000, an area equivalent to the states of New Hampshire, Vermont, Massachusetts, and Rhode Island. Three and a half million acres may possibly go to highways and airports; 5 million acres of hunting and scenic areas from agriculture to public facilities and second homes and in 17 years 2 million more acres will be allocated to power line right-of-ways. At stake in this land reallocation are our recreation resources.

The second major cause of outdoor recreation conflict is the difference in perception, attitude and behavior between motorized and pedestrian users of recreation environments. The growth in the numbers of users of each type is impressive.

The Council of Environmental Quality estimates there are now (1979) 10 million off-road vehicles and snowmobiles being used in the

United States by some 43.6 million Americans. Seventy percent of the snowmobiles in the United States are used in the northeast region which has the highest population density and the least amount of public land (Figure 3).

1977

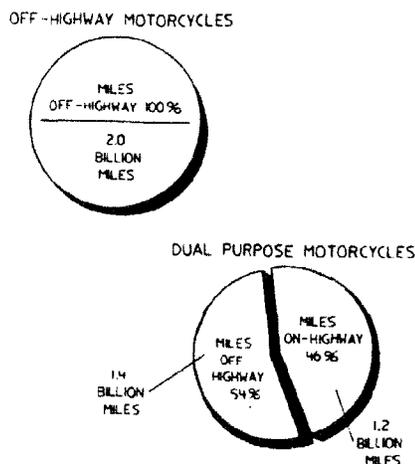


Figure 3.--Miles traveled by off-highway and dual purpose motorcycles in 1977.

There were 670,000 motorcycles sold in the United States in 1969 and 1,050,000 more sold in 1976 accounting for a 57 percent sales increase in 7 years. Motorcycle registrations for these same two years increased from 1.4 million in 1965 to 5 million in 1976 (about a four fold increase).

Pedestrian recreation activity shows similar growth. The National Park Service reports that backcountry use in eastern National Parks has tripled since 1967. The Bureau of Outdoor Recreation estimated there were 10 million hikers 12 years of age and older in 1965, or about 7 percent of the population of the United States. Lucas 1971, quotes a "walking for pleasure" statistic of 68 million people or 48 percent of the population. He then sums the occasions of nature walks, walking for pleasure and hiking and estimates that 1.4 billion pedestrian recreation occasions occur in 1 year in this country. The Bureau of Outdoor Recreation statistics for 1970 estimate 30 million people in the United States have participated in nature walks. The Department of the Interior estimates in the 1974 National Outdoor Recreation Plan Draft that there were 1.9 billion walking activity occasions in 1965 and projects 2.8 billion in 1980 and 4.4 billion in 2000 (U.S.D.I. 1974).

It is possible to conclude from these pedestrian and vehicular recreation statistics that

based on numbers of participants, limited space and competing activities, the potential for outdoor recreation conflict both within and between recreation groups is substantial.

#### A Brief History

In their haste to bring the imbalance between demand and supply to the attention of the American public, the Outdoor Recreation Resources Review Commission (1962) did not deal with conflict or potential conflict between activity groups over the use of recreation resources except for a limited reference in their Report #5 entitled the Quality of Outdoor Recreation as Evidenced by User Satisfaction. In a study of participants using 11 selected outdoor recreation areas in the country ranging from ski areas to National Parks, the Commission reported that respondents indicated under development and overcrowding as problems they felt needed attention.

The next conflict references in the literature dealt with crowding in wilderness areas and conflicts between backpackers and horseback campers, and motorboaters conflicting with canoeists (Stankey 1971, Lucas 1964).

Lucas's 1964 Quetico-Superior report contained accounts of conflict between motorboat and canoe use of this wilderness waterway. He reported that canoeists "usually wanted no motorboats on the waterway" and felt crowded by them (Lucas 1961). Lime and Stankey (1971) state that the perception of the recreation environment is different between user types and what is a quality recreation experience to one may be entirely undesirable to another (Lime and Stankey 1971). Also, Lucas, Hendee and others (1964, 1968) report that what the recreationist perceives as acceptable or desirable may be quite different from what the recreation manager perceives.

Prusa stated in his 1971 paper on Multiple-Use Management for Recreation in the East that besides multiple-use conflicts there is another conflict much more difficult to resolve. It is the people vs. people conflict and concerns the conflicts brought about by growth and diversity of various recreation uses of wild lands.

Stankey's Ph.D. thesis dealing with wilderness recreation carrying capacity reported that "Over half of the hikers in three western wilderness areas preferred not to meet horsemen and that loss of solitude at campsites because of crowding, reduced satisfaction for his study participants" (Stankey 1971).

Wagar (1964) concludes in his Carrying Capacity of Wild Lands for Recreation report that "recreation management procedures may

allow both high-quality recreation and high rates of use if they: a) reduce conflicts between competing uses, b) reduce the destructiveness of people, c) increase the durability of areas, or d) provide increased opportunities for enjoyment".

The next group of noticeable conflict references in the literature came with the surge in the sale and the public's use of snowmobiles, trailbikes and other off-road vehicles. I have previously stated selected statistics on their use and you have heard Garrell Nichole's discussion of them. Suffice to say that the frequency and magnitude of the social, legal, and environmental impacts caused by off-road vehicles has been cataclysmic and that it is only in the last decade that recreation managers, governments and industry have begun to control their use within acceptable social standards. But the problem is far from solved.

Federal land management agencies have differed in the rate and nature of their response to Presidential Executive Order 11644 dealing with ORVS and their use and impact on federal land, but all are currently implementing regulations resulting from the Order (CEQ 1979).

In a well designed effort to bring to light current knowledge concerning the recreation resource carrying capacity problem, Stankey and Lime in 1973 released an annotated bibliography entitled Recreational Carrying Capacity containing 208 citations related to the subject.

Finally in the historical mode, outdoor recreation researchers have recently come under some criticism from sociologists and psychologists for not using established precepts from those disciplines. Bryan (1979) has just released a study report entitled Conflict in the Great Outdoors which is a conceptual framework of outdoor recreation behavior based on sociological and psychological principles.

#### Concepts From The Literature

In this section of my paper I have annotated key postulates and concepts from the literature to familiarize you with current thinking on the conflict problem.

- In order to manage an area under the carrying capacity concept, managers and the public must set recreation use and environmental impact objectives prior to area utilization. Unless this is accomplished, carrying capacity becomes enmeshed in a sliding scale of uncontrolled use detrimental to site quality and user satisfaction (Lindsay 1979).

- Recreation space demand may be thought of as a sphere whose diameter is set by the greatest space demanding factor associated with that

activity such as noise, speed, distance traveled, solitude or numbers of users per unit area (Figure 4) (Lindsay 1979).

RESOURCE CONSUMPTION SPHERE

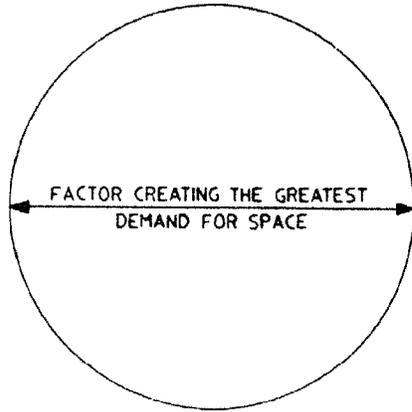
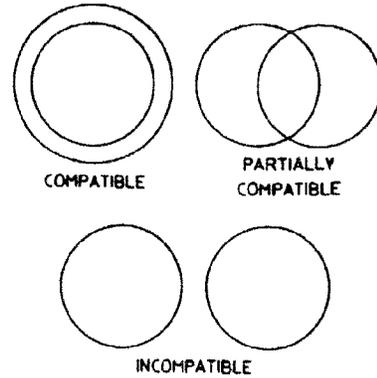


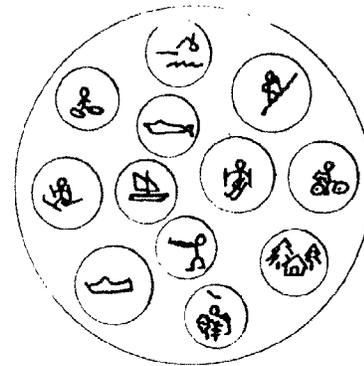
Figure 4.--The outdoor recreation space consumption sphere.

- Recreation activity space demand spheres may be completely compatible and concentric on the same site such as those created by nature observers and fly fishermen, or partially compatible and partly overlapping such as those created by sailboaters and boat fishermen, or they may be totally incompatible and demand separate space spheres such as those created by trailbikers and backcountry hikers (Figure 5). Such activities involve single use resource allocations. When the various activity space spheres fill the entire recreation space site sphere, the site is said to be at its point of carrying capacity for a specific period in time (Figure 6) (Lindsay 1979).
- Recreation encounters or path intersects can be measured, predicted and managed (Colton and Pitt 1979).
- Outdoor recreation space occupancy and utilization may be managed by using electronic monitoring and data systems (McCurdy and Wilkens, Shechter and Lucas 1979).
- Activity displacement, for example trailbikers displacing hikers in a recreation management unit, may take place without the area managers' knowledge (CEQ 1979).
- Outdoor recreation plans and objectives must be written for target areas or visitor destination areas (NPS 1976).



ACTIVITIES CAN OCCUPY THE SAME PART, OR TOTALLY DIFFERENT SPACE. THEREFORE SPACE DEMANDS DIFFER BETWEEN ACTIVITIES.

Figure 5.--Compatible, incompatible and partially compatible outdoor recreation space demand spheres.



VERMONT'S TOTAL RECREATION RESOURCE ENVIRONMENT

Figure 6.--The outdoor recreation space resource at capacity.

- Recreation managers are being compelled, often unwillingly, to perceive man-environmental relationships as complex ecological entities. It is becoming too costly and too dangerous to perceive them any other way (Schafer 1975).
- Human spatial behavior must be understood before a recreation planner allocates acres to recreation use. The diffusion or circ-

lation of humans in space in order to gain access to recreation facilities or experience space is a major part of this understanding (VanDoren 1975).

- Two major ski areas in Vermont have limited their sale of weekend lift tickets because lift lines were constantly exceeding lift capacities resulting in dissatisfied and non-returning customers (Lindsay 1975).
- Recreationists must lower their threshold of sensitivity to other users (Stankey 1973).
- The number and type of recreationists that can use a recreation area at the same time without destroying user satisfaction or area quality is a basic management decision (Tribe 1972).
- How people perceive outdoor recreation experiences and environments is basic to their levels of actual enjoyment, frustration or conflict (Lime and Stankey 1971, Moeller et al. 1974).
- Users will accept regulation of conduct and movement if (1) they don't know they are being regulated, or (2) if they are educated through sound information and interpretive techniques (Lime and Stankey 1971).
- Defining what is acceptable outdoor recreation behavior is a value choice rather than a technical issue (Lime and Stankey 1971).
- Recreation use can be rationed through pricing, queing, reservations or lottery (Lime and Stankey 1971).
- Recreation use may be separated by space and time (Lucas 1971, Tribe 1972).
- Depreciative behavior describes behavior that violates institutional restrictions, accepted social norms or both. Too many people on a recreation site may be worse than a littered campsite (Clark 1971)
- Undesirable (high conflict) uses may be prohibited through closure (Hetherington 1971).
- Outdoor recreation conflict intensity is greatest on urban fringe areas because of limited space, dense populations and a greater diversity of outdoor recreation interests (Lucas 1971).
- Through direct regulation of where visitors may go, how long they may stay and when they may enter the area, management can attain a desired intensity of a use for a particular site. Implicit in these techniques is a trade-off between the loss in the recreationists' freedom of choice and the gain in ability of the site to more nearly meet visitor

needs and objectives (Lime and Stankey 1971).

- Use zoning and experience level zoning become critical tactical tools in the effort to manage for high quality recreation experiences (Wagar 1964, USFS 1970).
  - Signing (the proper use of signs) can be effectively used to reduce or prevent outdoor recreation conflict (Brown and Hunt 1969).
  - Differential fee charges may be used to shift use of off-peak times (LaPage 1968).
  - Conflicting uses must be physically separated by distances that depend on the nature of the activity (Lucas 1964, Hendee et al. 1968).
  - Some uses should be concentrated while others dispersed over the recreation management unit. This depends on user numbers, facilities needed and potential impact on hardened or natural sites (Lucas 1964).
  - Users concepts of crowding are important for managers to understand if they are interested in providing environments in which quality recreation experiences take place (Lucas 1964).
  - Managers must decide on the quality of the recreation experience planned for an area and then consciously manage for that experience level (Anon.).
- and finally...
- Trophy recreation experiences are legitimate management objectives to which managers must be committed (Anon.).

#### The Vermont Conflict Study

Even though there are ample references to conflict and carrying capacity in the literature very few researchers have attempted to measure its frequency and magnitude. Over the past 5 years we have attempted to do this at the University of Vermont with the following results.

Our 1974 exploratory study entitled Outdoor Recreation Conflict in Vermont, revealed that, (1) conflict was a problem in Vermont, (2) most recreation activity groups experience conflict but some more than others.

Of the 15 recreation activities studied, 6 were identified as "high conflictors" found to be involved in outdoor recreation conflict at significantly higher rates than the other activity groups. These were snowmobilers, trailbikers, motorboaters, hikers, hunters and

fishermen. Private landowners, as a separate study group, incurred the highest rate of conflict as recipients of outdoor recreation use impact.

Our study showed that certain user groups can be predicted to conflict and that the type and cause of their conflict can be forecasted. Based on our findings we were able to recommend conflict solution and prevention measures.

Forty percent of all the recreationists interviewed in our study experienced some sort of outdoor recreation conflict during the 1972-73 season. Twenty-seven percent experienced conflict as recreation participants and 13 percent experienced conflict as landowners conflicting with recreationists using their land.

Recreation participants living in urban areas experienced a slightly higher rate of conflict (29%) than participants living in rural areas (24%). Fifty-eight percent of the conflict occurred in rural areas compared to 42 percent in urban areas.

Subsequent studies of snowmobilers, trailbikers, and motorboaters revealed the following information. Snowmobilers did not believe they were much of a problem to other user groups. Over half (53%) of the sampled snowmobilers said they had experienced no problems while using their snowmobile in 1975. About one-quarter of the respondents cited poor trail and trailside facilities as being their only complaint. Only 4 percent cited conflicts with other recreation groups and these were mostly with cross-country skiers. If you compare these results with our base report, however, other recreation groups and landowners had a much more significant conflict with snowmobilers than the snowmobilers felt they had with these other groups. Lucas, in his 1964 Quetico-Superior study refers to this same phenomenon when he found that motorboaters did not mind having canoeists on the waterway, but the opposite was true for canoeists who did not wish to have motorboaters on "their" waterway and cited many conflicts with their form of motorized recreation activity. The other explanation for the low conflict incidence reported (4%) by Vermont snowmobilers may be that at the time of the study, there had been several thousand miles of approved trails constructed by and for snowmobilers in Vermont and when such a single use, sanctioned facility is built, conflict tends to decrease appreciably.

Thirty-one percent of Vermont trailbikers reported conflict with other groups; 19 percent conflicting with equestrians, 8 percent with law enforcement officials, and 4 percent with hikers and hunters.

Twenty-six percent of Vermont motorboaters studied experienced conflict while boating in our state during 1977. Most of their conflicts were with water skiers and other motorboaters, but included other water recreationists, landowners and law enforcement officials.

If you average the number of Vermont snowmobile, trailbike and motorboat participants that experienced conflict, about 25 percent acknowledged conflict serious enough to report. Data from Vermont hikers is just being analyzed, but at this point in the study it looks safe to say that, based on the "high conflict" sports studied, one out of four participants experience conflict during their activity season.

We further conclude that the intensity, frequency and type of conflict varies considerably with the activity, participant characteristics and the time and place the activity takes place.

#### Conclusion Statement

Outdoor recreation planners and managers not only have the responsibility to provide high quality natural environments for recreation activity, but perhaps more importantly, they must control or prevent conflict between participants. It is only by such dual objective efforts that high levels of user satisfaction and site quality can be maintained and that managers can feel confident that the recreation product consumed on their lands will be of a superior nature.

#### Literature Cited

- Brown, Perry J., and J.D. Hunt. 1969. The influence of information signs on visitor distribution and use. *Journal of Leisure Research* 1(1):79-83.
- Bryan, Hobson. 1979. Conflict in the great outdoors. *Sociological studies* No. 4. Bureau of Public Administration, University of Alabama. 98p.
- Clark, Roger N. 1971. Undesirable behavior in forest campgrounds. In *Recreation Symposium Proceedings*. Northeastern Forest Experiment Station, U.S.D.A. Forest Service, Upper Darby, PA. pp 96-102.
- Colton, Craig W., and D.G. Pitt. 1979. Examining recreational boating patterns with aerial photographs and interviews. Research paper presented at the Recreation Research Symposium, National Recreation and Park Association Conference, New Orleans, October 1979. Department of Recreation, University of Maryland, College Park. 17p.
- Council on Environmental Quality. 1979. Off-road vehicles on public land. Superintendent of Documents U.S.G.P.O., Washington, DC. 84p.
- Hendee, John C., W.R. Colton, Jr., L.D. Marlow, and C.F. Brockman. 1968. Wilderness users in the Pacific northwest - their characteristics values, and management preferences. *Research*

- Paper PNW-61. U.S.D.A. Forest Service. 92p.
- Hetherington, John W. 1971. The snowmobile. In Recreation Symposium Proceedings. Northeastern Forest Experiment Station, U.S.D.A. Forest Service, Upper Darby, PA. pp 143-148.
- Jacob, Gerald. 1977. Conflict in outdoor recreation - the search for understanding. Utah Tourism and Recreation Review 6(4);5. Utah State University, Logan.
- Lime, David W. 1977. Principles of recreation carrying capacity. In Proceedings of the Southern States Recreation Research Applications Workshop. Gen. Tech. Rep. SE-9. Southeastern Forest Experiment Station, U.S.D.A. Forest Service. Asheville, NC. p.302.
- Lime, David W., and G.H. Stankey. 1971. Carrying capacity; maintaining outdoor recreation quality. In Recreation Symposium Proceedings. Northeastern Forest Experiment Station, U.S.D.A. Forest Service, Upper Darby, PA. pp 174-183.
- Lindsay, John J. 1974. Outdoor recreation conflict in Vermont. Res. Report SNR-RM2. Recreation Management Program, School of Natural Resources, Univ. of Vermont, Burlington, VT. 46p.
- Lindsay, John J. 1975. Snowmobiling in Vermont. Res. Report SNR-RM3. Recreation Management Program, School of Natural Resources, Univ. of Vermont, Burlington, VT. 23p.
- Lindsay, John J. 1978. Vermont trailbike study. Res. Report SNR-RM5. Recreation Management Program, School of Natural Resources, Univ. of Vermont, Burlington, VT. 30p.
- Lindsay, John J. 1979. Boating conflict in Vermont. Res. Report SNR-RM8. Recreation Management Program, School of Natural Resources, Univ. of Vermont, Burlington, VT. 12p.
- Lucas, Robert C. 1971. Hikers and other trail users. In Recreation Symposium Proceedings. Northeastern Forest Experiment Station, U.S.D.A. Forest Service, Upper Darby, PA. pp 113-122.
- Lucas, Robert C. 1964. The recreational capacity of the Quetico-Superior Area. Res. paper LS-15. Lakes States Forest Experiment Station, U.S.D.A. Forest Service. St. Paul, MN. 34p.
- McCurdy, Dwight R., and R.S. Wilkins. 1973. A complete approach to determining outdoor recreation capability of a large tract of land, Shawnee National Forest, Ill. Dept. of Forestry Pub. #13, Southern Illinois Univ., Carbondale.
- Moeller, George H., R. MacLachlan, and D.A. Morrison. 1974. Measuring perception of elements in outdoor environments. Res. Paper NE-289. Northeastern Forest Experiment Station, U.S.D.A. Forest Service, Upper Darby, PA. 9p.
- Motorcycle Industry Council. 1978. Motorcycle statistical annual. Motorcycle Industry Council, Newport Beach, CA. 47p.
- Outdoor Recreation Resources Review Commission. 1962. The quality of outdoor recreation: as evidenced by user satisfaction. ORRRC Study Report 5. Washington, DC. p 44.
- Prausa, Robert L. 1971. Multiple-use management for recreation in the east. In Recreation Symposium Proceedings. Northeastern Forest Experiment Station, U.S.D.A. Forest Service, Upper Darby, PA. pp96-102.
- Shafer, Elwood L., Jr. 1975. The impact of human needs on the natural environments for recreation. Proceedings: Indicators of Change in the Recreation Environment - A National Research Symposium. Penn State HPER Series No. 6. Pennsylvania State University. pp327-334.
- Shechter, Mordechai, and R.C. Lucas. 1979. Simulation of recreational use for park and wilderness management. Published by John Hopkins Press for Resources for the Future.
- Stankey, George H. 1971. The perceptions of wilderness recreation carrying capacity: a geographic study in natural resources management. Ph.D. dissertation, Michigan State University. 351p.
- Stankey, George H. 1973. Visitor perception of wilderness recreation carrying capacity. Research Paper INT-142, 1973. Intermountain Forest and Range Experiment Station, U.S.D.A. Forest Service, Ogden, UT. 57p.
- Stankey, George H., and D.W. Lime. 1973. Recreational carrying capacity: an annotated bibliography. Gen. Tech. Rep. INT-3. Intermountain Forest and Range Experiment Station, U.S.D.A. Forest Service. 45p.
- Tribe, Charles B. 1972. Recreation carrying capacity. Division of Recreation and Lands, Northern Region, U.S. Forest Service. 23p.
- U.S. Department of the Interior. 1974. The recreation imperative: a draft of the nationwide outdoor recreation plan. Committee on Interior and Insular Affairs.
- U.S. Department of the Interior. National Park Service. 1976. Planning process. National Park Service, Washington, DC. 56p.
- U.S. Forest Service. 1970. The west slope of the Wind River range: recreation campsite plan. Bridges National Forest, Intermountain Region, U.S.D.A. Forest Service. 65p.
- Wager, J. Alan. 1964. The carrying capacity of wildlands for recreation. Forest Service Monograph 7. Society of American Foresters. Washington, DC. 24p.
- Wager, J. Alan. 1974. Recreational carrying capacity reconsidered. Journal of Forestry. Vol. 72, No. 5. Society of American Foresters. Washington, DC. pp274-278.