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# Southeastern Recreation Research Conference

## Volume12

# Proceedings

# 1990 Southeastern Recreation Research Conference Volume 12

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1990 Conference Director
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U.S. Army Corps of Engineers

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FOREWORD

The 12th annual Southeastern Recreation Research (SERR) Conference was held on February 14-16, 1990, in Asheville, NC. The theme of the conference was *Ethics, Values, and Recreation Management.*

The purposes of the conference were threefold: to provide an environment for the exchange of information among researchers, managers, and students;

- to promote and present recreation research findings; and
- to discuss trends and directions in and for recreation research and management.

The Committee Chairmen provided the means to meet these goals by organizing this three-day conference. The first-day Management Symposium was arranged by Dr. Randy Botkin and Mses. Chris Cornell, Barbara McDonald and Kathleen Perales. The Poster Session, now a two-day event, was lead by the efforts of Drs. Jim Absher and Cary McDonald. The second day began with the presentation of Invited Papers, chaired by Dr. Randy Botkin and Ms. Debbie Klinko. The Contributed Papers Session was chaired by Drs. Jim Absher and Cary McDonald. The third-day forum was a Management Research Needs panel discussion, chaired by Messrs. John Titre and Phil Flood.

The work of the Proceedings editor, Dr. Dan Hope, began with the end of the conference. Without his efforts and those of Brenda Mattox and the staff of The University of Georgia's Institute of Community and Area Development, this document would not have been possible.

This Proceedings includes the papers presented at the conference, now reviewed. Our special thanks go to those persons who assisted in the manuscript review process:

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| Dr. James Absher | Dr. John Granrose | Dr. Gina Mcllelan |
| Ray Argo | Bill Hammitt | Dr. Forster Ndubisi |
| Dr. Randy Botkin | Dr. Tom Hodler | Dr. Dick Patterson |
| Tom Burkiewicz | Lou Hyman | Sharon Randall |
| Howard Clonts | Ray Kisiah, Jr. | Diane Ridenour |
| Dr. Walter L. Cook | Dr. Doug Kleiber | Howard Schretter |
| Dr. H. Ken Cordell | Bill Leuscher | Jim Youngquist |
| Phil Flood | Barbara McDonald | Karen Zera |

We would like to thank the conference co-sponsors and agencies that made this conference and proceedings possible. They include Southern Appalachian Research, Resource Management Cooperative (SARRMC); USDA Forest Service, Southeastern Forest Experiment Station (USFS); Society of American Foresters (SAF); South East Council of State Outdoor Recreation Planners (SECSORP); Nations Society for Park Resources (NSPR); Tennessee Valley Authority, Land Between the Lakes (TVA); US Army Engineer Waterways Experiment Station (CEWES); and the University of Georgia.

M. Kathleen Perales
1990 SERR Chairman

Daniel Hope III
1990 Proceedings Editor

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# WHAT IS ECONOMIC DEVELOPMENT FOR?

John Hodges-Copple[1]

Abstract. Economic development is too often regarded as an end in itself rather than the means to sustain and improve people's lives. Public opinion polls, recreation participation rates, and business climate surveys all indicate that Southerners highly value recreation and broader environmental concerns. Yet public investment levels indicate that these values are not reflected in the governing ethic of the South, which continues to emphasize what public goods and services cost rather than what they provide. Increasing attention to environmental concerns in the public consciousness, in state governments outside of the South, and in literature may herald greater state involvement in recreation and associated environmental concerns in the South in the 1990s.

Daniel Boorstin, who was the Librarian of Congress, once said that "the great obstacle to progress is not ignorance, but the illusion of knowledge." Yogi Berra, who was *not* the Librarian of Congress, said the same thing in a different way. He said, "what gets us into trouble isn't what we don't know, its what we know for sure that just ain't so."

Too much of what passes for conventional economic development thinking might fall into the category of what we know for sure that just ain't so. And this conventional thinking may especially detract from the role that recreation and broader natural resource concerns play in people's lives.

This conventional thinking is that "economic development" is an end in itself, a goal to be attained. The problem with this thinking was summed up by George Tindall, Kenan Professor of History at the University of North Carolina at Chapel Hill. Tindall posed the question, "what is economic development for if not to improve the quality of people's lives?" (Tindall, 1986). It makes little sense if, in pursuing economic development, the South ignores or even degrades the very aspects of people's lives and surroundings that society wants economic development to sustain and improve.

That is one of the reasons that the Southeastern Recreational Research Conference's focus on ethics and values is so timely. Values and ethics are not subjects practitioners in the economic development field spend much time on. But it is short-sighted to think of economic development apart from values and ethics, since an economic system arises out of, and can only be sustained by, shared values and ethics. And it is equally short-sighted not to see economic development as a means to sustain and improve what we value.

One of the things the Southern Growth Policies Board tries to do is inject this broader focus into public policy. The Board, for lack of a better term, is an economic development "think tank" for its 13 member states plus Puerto Rico. It is funded and governed by its members, with the governor, a state senator, a state representative, and two citizen members serving on the Board from each state. This combination of gubernatorial, legislative, and private sector membership gives the Board a unique strength and one critical in today's economy. The Board also has an associate membership program which includes over 250 corporations, universities, colleges, and non-profit agencies.

The Board defines "economic development" very broadly, with the aim of promoting economic development in addition to economic growth. The difference between growth and development is the difference between spurring short-term economic activity on the one hand—which is growth—and developing the long-term capacity to generate self-sustaining economic activity on the other—which is

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development. Now both are important, but too often the South has ignored the hard, long-term challenges of development and concentrated on short-term growth.

The Southern Growth Policies Board concentrates on state government policy—especially within a regional context—and the Board's audience consists of governors, state legislators, educators, state agency staffs, and corporate executives. The Board's staff, though small, is engaged in research on such issues as education, technology, international trade and finance, state and local government relations, and natural resources. The Board publishes research reports, creates networks—such as the Southern Technology Council devoted to issues of technology and innovation—and sponsors conferences.

One particularly important Board project was the Commission on the Future of the South, whose final report is titled, *Halfway Home and a Long Way to Go* (Southern Growth Policies Board, 1988). The Commission was made up of 20 distinguished Southerners, who developed ten regional economic development objectives, one of which was to enhance the South's natural and cultural resources. One of the companion documents to the final report was devoted to the quality of life in the South (Tindall, 1986).

Although the Board can and has played a number of roles, perhaps its most frequent is to take an important issue and frame it in terms of state economic development policy, then see that it gets before the eyes of the region's leaders—the governors, legislators, and others. Four general points that the Southern Growth Policies Board propounds in its work are:

- take a long term view,
- recognize interdependence,
- think globally, and
- emphasize quality.

This is the perspective from which the Board views public policy issues—a perspective that so far has said a lot about economic development and very little explicitly about values, ethics, and recreation. In discussing recreation, it may be helpful to also discuss broader conservation and natural resource issues of which recreation, and particularly outdoor recreation, is a part.

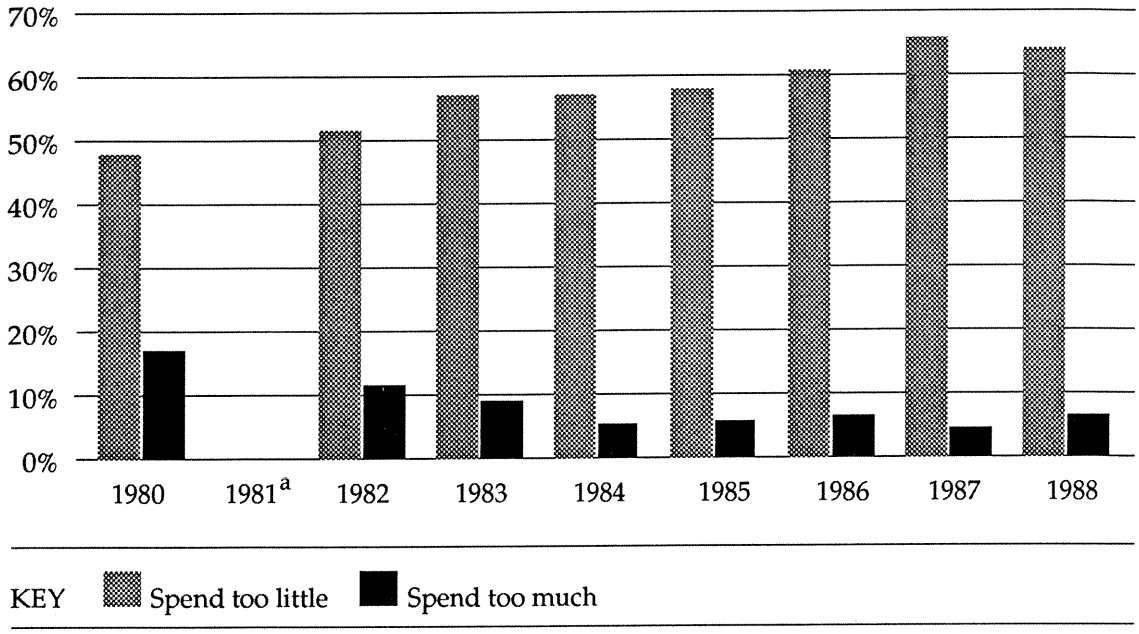
First, values, which—to the disgust of philosophers everywhere—Webster's defines as "principles, standards, or qualities considered worthwhile or desirable." In this simplified view, values can be thought of as "product-oriented" in an economic sense (if one can imagine that); people most often talk of valuing things or qualities. Well, one of the things Southerners value, one of the qualities considered worthwhile or desirable, is recreation, which, quite literally, means to re-create, "to create anew, to impart fresh life to, to refresh mentally or physically." John Shelton Reed, a sociologist at Chapel Hill and chronicler of southern tastes, makes clear that recreation, and the associated issues of open space and nature, are highly valued.

Writing for the Commission on the Future of the South, Reed noted that when asked what is the best thing about the South, two-thirds of survey respondents mentioned the South's climate, its forests, mountains, or coast, its lack of crowding and pollution, and the opportunities it offers for outdoor recreation (Reed, 1986).

These southern conservation values are reinforced by the statistics on participation by Southerners in various recreational pursuits and in annual polls that ask whether we spend too little, too much, or about the right amount on improving and protecting the environment. Figure 1 depicts southern environmental opinion in the South.

Figure 1. Southern Public Opinion on Environmental Spending

Are we spending too much, too little, or about the right amount on improving and protecting the environment?




[a] Data not collected.

People in the Census South who think we spend too little have always outnumbered those who think we spend too much, but during the 1980s the support for greater spending has become overwhelming. Perhaps more important, this support strengthened during and immediately following the steep 1981-82 recession, unlike the two recessions in the mid- and late-1970s following which such support waned (National Opinion Research Center, 1988).

And numerous studies of the business climate—the factors that attract businesses—identify "quality of life" in general, and pleasant natural surroundings in particular, as increasingly important to the business community. Although there is somewhat of a minor industry in business climate studies, which is not worth delving into here, they tend to find that—for many emerging technology and service industries—"ambiance" factors such as recreation, environment, and climate, frequently rank second in importance to personnel factors (supply of skilled workers, etc.) and well ahead of cost factors (land, water, labor, energy) (Rosenfeld, 1986). But the cost factor argument is frequently invoked to fight steps to improve the "ambiance" factors.

Which brings up ethics, a concept the great philosopher Webster defines as "principles of right and good conduct." If, in this simplified view, values can be thought of as product-oriented, then ethics can be thought of as more process-oriented.

The public policy process in the South, the reflection of the governing ethic, is one that too often dismisses recreation and conservation concerns by categorizing them as "amenities," with the connotation

that amenities are things that are extra, nice to have if you've got extra money lying around. Again turning to Webster, amenities are "things that increase physical or material comfort," things that could be viewed not as competing *with* economic development, but as the goal *of* economic development.

The nature of this governing ethic can be hinted at by contrasting the values espoused by Southerners with the values implied by the funds we devote to environmental and natural resource concerns.

Recent research by the Council of State Governments and the Bureau of Economic Analysis permit an analysis of state environmental and natural resource investments not previously possible. In 1988, the Council published a resource guide on state environmental management which, among other information, included 1986 state spending on an array of environmental and natural resources categories (Brown and Garner, 1988). Also in 1988, the Bureau published estimates of 1986 gross state product for each state (Renshaw, et. al., 1988). Gross state product, analogous to gross domestic product at the national level, is a measure of the gross market value of goods and services attributable to labor and property located within a state and serves as a measure of economic output.

Analyzing state environmental and natural resource spending relative to gross state product and other measures such as population, total personal income, and total state spending, permits comparisons between the South and the remainder of the nation on efforts to conserve and develop natural resources and protect the environment. The discussion below is taken from a longer analyses of state environmental and natural resource spending in the southern states (Hodges-Copple, 1989).

The spending totals reported by the Council of State Governments consist of all state, federal, and other monies *which have passed through the state budgetary process.* The Council notes that local government environmental spending is significant in many states, but is not reflected unless it passes through the state budget. Although each dollar of spending is assigned to a specific category, in reality it is difficult to narrowly classify environmental spending because environmental concerns overlap. Some water quality protection programs, for example, may have significant land management aspects although they tend to be primarily water resource related.

Figure 2 shows per capita environmental and natural resource (ENR) investments in each southern state and for the region as a whole. Southern states spent an average of 15 dollars per person on ENR in 1986 as compared to 24 dollars per person in states outside the region. There is a wide range of per capita spending among states in the South, from a low of $11.30 to a high of $24.08. Only Kentucky and West Virginia, with large mining reclamation expenditures tied to their mining industries, and Mississippi, with large spending related to its forestry industry, had per capita spending above the 22 dollar national average.

Figure 2. Environmental and Natural Resources Spending Per Capita (1986)

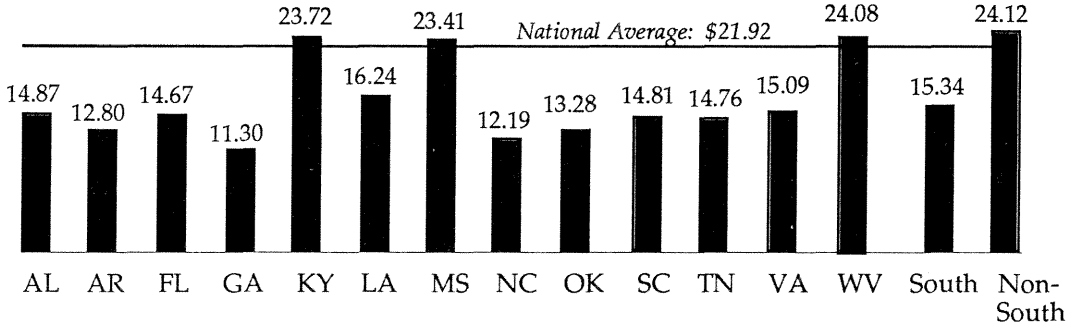



Figure 3 shows investments as a percent of one measure of the economic resources available to states, gross state product. This "ability to pay" measure may be a fairer indication of state efforts, because it recognizes that southern states tend to be poorer than states outside the region. On average, southern states spent an average of 10 cents per 100 dollars versus 13 cents per 100 dollars outside the South, a significant difference. Again, only Kentucky, West Virginia, and Mississippi exceed the national averages, although

other states register closer to the national average than under the per capita spending measure. Results were similar for ENR spending as a percent of total personal income, another ability-to-pay measure.

Figure 3. Environmental and Natural Resources Spending As a Percent of Gross State Product (1986)

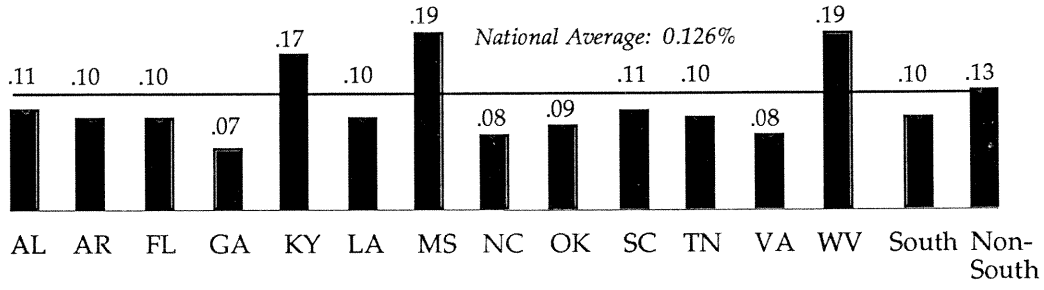



Figure 4 shows ENR spending as a percent of total state expenditures in each state, indicating the relative importance of natural resource conservation and development compared to other public concerns. On average, southern states devote $1.06 to the environment and natural resources out of every 100 dollars of total state spending. States outside of the South devote an average of $1.57 of every 100 dollars in total spending to the environment and natural resources.

Figure 4. Environmental and Natural Resources Expenditures Per $100 of Total State Expenditures (1986)

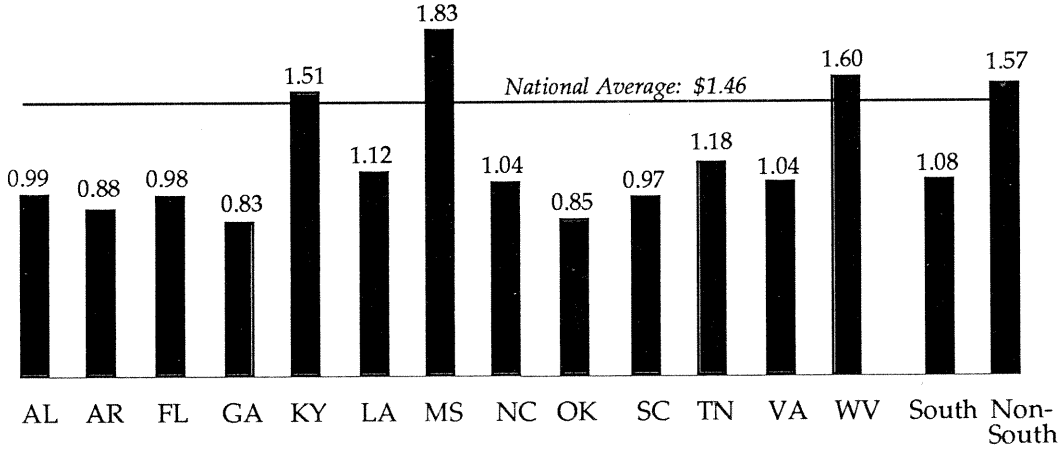



Figure 5 summarizes some demographic and economic measures in the South as a percentage of national totals, including investments in the environment and natural resources and investments in state parks, a category of spending not included in the Council of State Governments analysis (National Association of State Park Directors, 1988). As with all gross measures, care must be taken in interpreting the data on state parks system spending. Although the data indicate that southern states spend relatively more than other states on their state parks system (as measured by total operating budget), this is likely a reflection of a greater concentration of "resort" parks in the South, with attendant hotel, restaurant, marina, and other facilities that raise budgets but also bring in revenues. Another measure, the amount of state park

system land per capita, indicates a lower level of effort in the South. Even excluding Alaska's mammoth park system, states outside of the South average 1,500 square feet of park system per capita versus 900 square feet per capita in the South.

Figure 5. Demographic and Economic Measures of the Southern States as a Percent of the U.S. (1986)

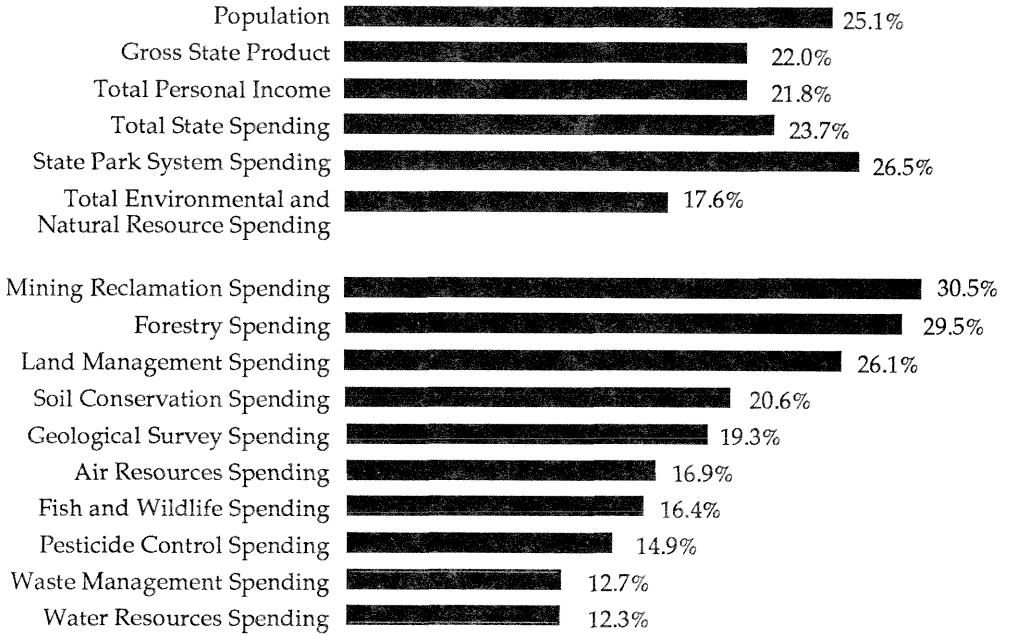



Figure 5 shows that relative to its economic resources—whether measured by gross state product or total personal income—the South invests relatively more than the rest of the nation in forestry, land management, and mining reclamation. In addition, the South invests almost the same relative to the rest of the nation in soil conservation. But in other critically important categories, such as air resources, water resources, and waste management, southern spending falls short of that outside of the South. For example, although 22 percent of the nation's personal income and gross domestic product is attributable to the South, only 12 to 13 percent of state investments in water resources and waste management occur in the South.

Care should also be used in drawing conclusions from the ENR data, since spending is a broad measure that may obscure the reasons behind and the results of the levels of investment in particular states. Some of the difference in ENR spending among states, for example, is due to the nature and condition of natural resources in the states. To use one example, Oklahoma, without a coastline and with less extensive forests than most other southern states, might be expected to spend less on the environment and natural resources unless other natural resources are more prominent in Oklahoma than other states. In other cases, resource abundance might lead to lower spending if threats to the resource are small or are thought insignificant relative to the quantity of the resource.

In addition, the data do not reflect the differences in "needs" among states for investments in other areas. For example, states with relatively large percentages of people living in poverty would not only have less resources to invest in ENR than relatively better off states, but would have a greater demand for

state investments in programs to reduce poverty. Similarly, states with relatively more school-age children would have greater education investment needs. A Representative Expenditure System developed to address these relative needs indicates that all of the southern states except for Florida and Virginia have investment needs greater than the national average (Rafuse, 1988).

Since the data include federal monies that pass through the state budgetary process, federal legislation and grants may influence state spending levels, regardless of state decisions on how much of their own funds to devote to environmental and natural resource spending.

Data on levels of spending also can not reflect how well money is spent—whether environmental and natural resource objectives are accomplished in the most efficient way. For example, North Carolina, with a long coastline and extensive estuaries, is generally considered to have one of the better marine and coastal programs in the nation, yet it spends relatively little on the program compared to some other coastal states.

The data include spending to both conserve and develop resources and states may differ over the proper division between the public and private sectors in paying the costs to develop or support the development of natural resources, forestry being one example. The data make no distinctions between conservation and development spending—to the degree such distinctions can be made—or whether a "proper balance" is being struck. For example, some state expenditures to develop a resource in the short term may be detrimental to the long term sustainability of the resource.

Finally, the data are for a particular point in time and for a broad but not necessarily all-inclusive array of environmental and natural resource categories. Periodic collection of the data for subsequent years would be necessary to show trends or fluctuations.

There is nothing inherently wrong with the South investing less in the environment and natural resources than other regions and in some instances, such as those described above, there may be ample justification for doing so. But the data do make clear that it is not the ability of the region to invest in ENR that prevents the region from doing so, but the will. And the relatively low investment levels could place the region at a disadvantage in ensuring high quality resources to provide future economic benefits.

If the problem *with* conventional economic development thinking is that it ignores what economic development is for—recreational opportunities and broader conservation concerns being two prime examples—the problem *of* this conventional thinking might be most succinctly summed up by the phrase, "read my lips."

People protect what they value. And public funds, managed and spent wisely, are how people pay for many of those things they value most: education for knowledge, police officers and fire fighters for protection, parks and open spaces for enrichment and recreation, roads and buses for mobility.

If people value parks and open space and environmental protection—which polls indicate they do—and if these qualities are provided through the public sector rather than the private sector—which in many cases they are—then strategies that the public can embrace are needed that can provide these qualities. If people can be assured that increased revenues would be applied to specific problems that they care about, they may be more likely to support tax increases or new fees, especially if the revenue source has a reasonable relationship to the problem to be solved (Haas, 1989). Examples might include using a real estate transfer tax to fund land acquisition, or a water bill surcharge to fund watershed protection.

The recent spate of sometimes massive bond issues for open space preservation and environmental protection at both the state and local levels in this country is one hopeful sign—$1.9 billion proposed for parks, historic preservation, and solid waste in New York in 1990, approximately $1 billion for environmental projects in Minnesota in 1988, $140 million for parks and $660 million for environmental projects in Michigan in 1988, $162 million in 1983 and $500 million in 1987 for open space in Massachusetts, $300 million for open space in New Jersey in 1988, $100 million in Pennsylvania for farmland preservation in 1987, $225 million for parks in two California counties in 1988, and approximately $190 million between 1985 and 1989 for watershed land acquisition and open space in tiny Rhode Island (Bureau of National Affairs, 1988a, 1988b, 1988c, 1989, 1990; American Planning Association, 1988, 1989; National Civic League, 1989; Lord, 1988).

The South is not generally a leader in this new around of conservation although there are exceptions. Florida, in particular, has aggressively targeted sensitive lands for acquisition. The state's "Save Our Everglades," "Save Our Coasts," "Save Our Rivers," and "Save Our Keys" initiatives are expected to result in over $800 million in land acquisition (Brisson and Hodges-Copple, 1987).

Another less concrete, but perhaps equally hopeful sign, is the re-emergence over the past few years of writers addressing the conservation ethic and being taken seriously. If the writings of the 19th Century naturalists John Muir and Henry Thoreau helped propel one stage of the conservation movement and the writings of Rachel Carson another, perhaps the serious attention given Bill McKibben's *The End of Nature* and Thomas Berry's *The Dream of the Earth* will launch the next phase (McKibben, 1989; Berry, 1988). Berry writes: "nature will not be bargained with. In its ever-renewing processes, it is enormously prodigal in the nourishment it provides all living creatures. This abundance is available for humans so long as we are sensitive to the needs of other life systems as well as our own, and so long as we accept nature's rhythms as...our own....significant achievements can and do come about when spiritual orientation, a sense of ecological integrity, and economic functioning come together..." (Berry, 1989).

In addressing the objective to Enhance the South's Natural and Cultural Resources, The Commission on the Future of the South stated, "Here, as in every objective of the Commission's report, the people of the South must declare their interdependence—not only with one another, but with the natural world" (Southern Growth Polices Board, 1988). Instilling this ethic, this principle of right and good conduct, into public policy may be one of the most important challenges facing the South's leaders.

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# CHANGING ROLE OF THE U.S. ARMY CORPS OF ENGINEERS IN THE PROVISION OF OUTDOOR RECREATION OPPORTUNITIES[1]

William J. Hansen

## INTRODUCTION

The US Army Corps of Engineers is one of the nation's largest suppliers of outdoor recreation opportunities. Although known primarily for the recreation opportunities provided at the multi-purpose reservoir projects it constructs and manages, the Corps is also involved in the planning, design and construction of recreation developments at a wide variety of non-reservoir type projects. Over 500 million recreation days[2] of use were reported at the 462 lake projects it managed during 1986. Estimates of the additional amounts of use that occurred on the non-reservoir projects in which the Corps participated in planning, design, and construction are unknown.

The Corps has been officially involved in the provision of outdoor recreation opportunities for less than one quarter of its 200 plus year history. During this period the Corps' role as a recreation provider expanded from simple accommodation of public use on project lands to provision of highly developed recreation areas. In addition, its stewardship of resource responsibility expanded from a general laissez-faire posture to conscious and deliberate management of existing and potential project resources. Throughout this period, state and local governments, quasi-public, and private organizations have also played an important, but ever changing, role in the provision of recreation opportunities at Corps water resource development projects.

Many individuals not familiar with the Corps often wonder how a "military" organization became involved in providing public recreation opportunities, or why the Corps is sometimes limited in the types of recreation developments it can provide. The purpose of this paper is to provide some insight into these issues by discussing the historical involvement of the Corps in providing outdoor recreation opportunities at new water resource development projects. Significant changes in the legislative and administrative environment under which the Corps has planned and developed recreation facilities are discussed. Factors influencing this political environment, such as increasing demand for recreation opportunities, public awareness of limitations on natural resources, and the nation's economic viability are identified. Also discussed are the changing information needs from social, behavioral and natural sciences that occurred during these periods.

## EVOLUTION OF CORPS INVOLVEMENT IN RECREATION

### Early History

The Corps was indirectly involved in recreation as far back as the 1870's, when it took part in the exploration, development, and maintenance of Yellowstone National Park (Verburg 1975, 76). It's first

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[1] The views expressed are those of the author and not of the Department of the Army or the U.S. Army Corps of Engineers. Adapted from forthcoming Policy Studies Review/Greenwood Press Publication on Outdoor Recreation Policy and paper presented at 1990 Outdoor Recreation Trends III Symposium.

[2] A recreation day is defined in Supplement No. 1 to Senate Document 97 as a visit by one individual to a recreation development or area for recreation purposes during any reasonable portion or all of a 24-hour period.

legislative involvement came with the Fletcher Act in 1932. This Act broadened the scope of the Federal interest in navigation to include as "commerce" the use of waterways by ". . . seasonal passenger craft, yachts, houseboats, fishing boats, motor boats, and other similar water craft, whether or not operated for hire" (47 Stat. 42, 33 U.S.C. 541). Although this Act acknowledged recreation as a user of navigation facilities, it did not involve the Corps in the provision of park-related recreation opportunities.

## New Deal Era

The period 1933-43 has been described by Holmes (1972, p. 13) as the "New Deal" era in water resources planning. An important initial consideration in New Deal planning was the need for immediate action in the form of public works projects to stimulate construction industries and provide jobs for the unemployed (Holmes 1972, 13). This was a period of severe unemployment, and public works projects were considered a means of creating jobs. In addition, partially as a result of severe floods in 1927 and again in the Spring of 1936, Congress recognized the need for increased Federal flood control assistance, to include larger structures, such as dams and reservoirs. The Flood Control Act of 1936 addressed both of these national problems.

The Flood Control Act of 1936 authorized $320 million for the construction of 250 projects and a number of investigations and surveys. Section 1 of the Act declared flood control to be a proper Federal activity, and one in which the Federal government should participate, ". . . if the benefits to whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected" (49 Stat. 1570, 33 U.S.C. 701a). Section 3 further stipulated what became known as the "a-b-c" requirements of local cooperation for projects authorized therein, that is: (a) provide without cost to the United States all lands, easements, and right-of-way required for project construction; (b) hold and save the United States free from damages due to the construction works; and (c) maintain and operate all the works after completion in accordance with regulations prescribed by the Secretary of the Army.

The 1936 Flood Control Act was important in several ways. First, by declaring flood control to be a proper Federal activity, it led to Corps participation in a wide variety of water resource development projects with significant recreational development capabilities. The stipulation that the Federal government should participate ". . . if the benefits . . . are in excess of the estimated costs" established an evaluation standard that was subsequently applied to the incremental costs of recreation developments. Finally, the requirements for local cooperation, delineated joint Federal and local responsibilities that were also, subsequently extended to the provision of recreation developments. Although there have been changes through the years to the particulars of the "a-b-c" requirements, the joint Federal and local cooperation continues to be an important integral part in the Corps' participation in the provision of outdoor recreation opportunities.

## Initial Authorization for Recreation

Following the enactment of the 1936 Flood Control Act, the Corps became involved in the construction of dams for flood control purposes. The lakes created behind these dams proved immediately attractive for fishing and other recreational uses. Project lands were also leased to local governments on a short-term basis. In 1944, the State of Ohio, generated interest in long-term leases. The State wanted the long-term leases at two Corps projects for recreation and wildlife management purposes. At that time, however, the Corps was short on authority to assist and sustain public outdoor recreation and was not prepared to enter long-term leasing arrangements (Lawyer 1970, 6). Congress eliminated these barriers with the first sentence of section four of the 1944 Flood Control Act, which authorized the Chief of Engineers to ". . . construct, maintain and operate public park and recreational facilities in reservoir areas . . . and to permit the construction, maintenance and operation of such facilities. . ." (58 Stat. 889, 16 U.S.C. 460-b).

The 1944 Act granted rather broad authority for the provision of recreation areas. Not only could the Corps provide recreation developments, but leases could be granted to other Federal or non-Federal government bodies, non-profit organizations, or commercial enterprises for developing and maintaining such areas. Preference was to be given to local, state, and other Federal governmental agencies, with monetary considerations waived when considered in the public interest. Any revenue received from leases were to be deposited in the United States Treasury as miscellaneous receipts (Verburg 1975, 77). The Act also stipulated that the water areas of all reservoirs were to be open to public use generally without charge.

With the authority of the 1944 Act and the pressing public demand for use of its lake areas, the Corps faced an immediate need to provide basic facilities for public access, health and safety. Early recreation planning efforts concentrated on the preparation of Master Plans, site plans, and facility designs to expedite construction. The primary concern was to provide access and sanitation facilities for health and safety; behavioral and motivational aspects of recreation planning were not of major concern.

In the years immediately following the 1944 legislation, recreation development was treated as an incidental use of project resources, or, in other words, a byproduct of the project. Recreation facilities could be provided, but only if a project was justified for other purposes (e.g., flood control or navigation). Recreation developments were, therefore, not subject to the test of economic feasibility (i.e., benefits exceeding costs), nor were they considered in the project formulation process. As such there was little impetus to determine the underlying factors affecting recreation demand and benefits.

Full Project Status

The 1950's and 1960's were periods of tremendous growth in the demand for outdoor recreation opportunities. Study after study cited increases in leisure time, mobility, and income of the American public and their effects on the demand for leisure services. During this period, reported recreation use at Corps' lakes increased from 16 million recreation days in 1950, to 109 million in 1960, to 250 million in 1970 (Lawyer 1970, 5). At the same time that recreation demand was increasing nation-wide, the supply of outdoor recreation resources was sharply and visibly decreasing because of water pollution, highway construction, drainage of wetlands, improper uses of pesticides, and many other factors (Foss 1971).

During the 1950's, the pressing problems of outdoor recreation was a matter of concern for Members of Congress and others. By 1958, Congress had decided that an intensive nationwide study should be made of outdoor recreation, involving all levels of government and private suppliers. On June 28 of that year with Public Law 85-470, Congress established the Outdoor Recreation Resources Review Commission (ORRRC) with the threefold mission to determine: the outdoor recreation wants and needs of the American people now and in the years 1976 and 2000; the recreation resources of the Nation available to satisfy those needs now and in the years 1976 and 2000; and what policies and programs should be recommended to ensure present and future needs are adequately met (ORRRC 1962a, 2).

As part of its comprehensive study, the ORRRC directed that a special analysis be made of the multiple use of land and water areas. In responding to this special study, the Department of the Army stated that, although the 1944 Flood Control provided wide latitude to the Secretary of the Army in the planning and construction of recreation facilities, several considerations have made it necessary, until about 1959, to treat recreation largely as a byproduct of the land and water resources of its civil works projects (ORRRC 1962b, 25). These considerations included: ". . . only in the last 3 years has Congress appropriated funds for urgently needed recreation improvements" and ". . . the position of the Bureau of the Budget[3], in the absence of an acceptable method for calculating recreation values, the decision to add recreation facilities . . . can be addressed only on a well informed opinion (ORRRC 1962b, 25)." The Department of the Army concluded in

[3] Now the Office of Management and Budget.

its statement to the Commission that "The principal barrier confronting the broader application of multiple-purpose theory and practice as it relates to recreation is general recognition of recreation as a purpose of Federal Resource development projects (ORRRC 1962b, 26)."

Partially in response to issues raised by the ORRRC, in 1962 Congress once again amended Section 4 of the 1944 Flood Control Act. The words "at reservoir areas" were replaced by "at water resource development projects," broadening the Corps authority to include recreation in all types of water resources projects, not just reservoirs. Adoption of Senate Document 97, also in 1962, gave recreation status equivalent to other project purposes in the determination of project benefits and provided a basis for estimating recreation values. This status was enacted into law in 1965 with the passage of the Federal Water Project Recreation Act (79 Stat. 213, 16 U.S.C. 460-1-12).

The 1965 Act was important, not only for authorizing recreation as a project purpose, but also for further delineating the Federal and non-Federal role in providing recreation opportunities. The Act stipulated that recreational use of a project will be coordinated with other existing and planned Federal, state, or local recreational developments. Non-Federal bodies will be encouraged to operate and maintain the project's recreational and fish and wildlife enhancement facilities. The Act further stipulated that such facilities will only be provided (and recreation and fish and wildlife benefits included in project benefits), if non-Federal bodies agree, in writing, to administer the facilities at their expense and to pay one-half their separable first cost. If non-Federal bodies do not agree, facilities for recreation and fish and wildlife may not be provided, except those justified to serve other purposes or as needed for public health and safety.

The Act contained additional provisions concerning types of projects affected, fee collection by non-Federal interests, methods for repayment of project costs, and options for purchasing land to preserve the recreation potential in the event non-Federal bodies did not agree to provide the necessary "cost sharing" required by the Act.

The implications of the 1965 Act were wide-spread. Recreation and fish and wildlife were given a new status, comparable to other project purposes, in the calculation of economic benefits and costs. In addition, the joint Federal and non-Federal role in providing recreation benefits was reaffirmed. The movement to absolve the Federal government from a large portion of the financial responsibility, and especially of the long term commitment to operation and maintenance, was somewhat of a turnaround from the initial authorization of recreation in the 1944 Act, but more consistent with the "a-b-c" of local participation contained in the original Flood Control Act of 1936.

Within the Corps' organizational structure, recreation resources planning was now established as an integral part of multiple-purpose project planning. This meant that the full complement of planning concerns for determining demand, need and supply, projecting use, and estimating economic costs and benefits were applicable. The need to advance the state-of-the-art of recreation resources planning and develop an in-house capability was also apparent. District Engineers responded by expanding their staff to include landscape architects, biologists, architects, recreation resource planners, and foresters. In most Districts, a Recreation Section was established within the existing Planning Branch.

Early efforts for projecting outdoor recreation demand, determining project use and estimating benefits were highly judgmental and depended heavily upon information provided by the National Park Service and Bureau of Outdoor Recreation. Projections for fishing and hunting use were provided by the U.S. Fish and Wildlife Service. These early visitation estimates proved later to be grossly understated (US Army Corps of Engineers 1978, 5).

During this period, the Corps acknowledged the need for improved information on visitors and visitor behavior for planning and managing its recreation resources. In 1965 the Corps Director of Civil Works authorized studies to be undertaken to develop theoretical models and methodologies to direct the Corps' water related outdoor recreation planning. Specific objectives were to: evaluate the recreation-use data collection

procedures currently used at Corps' lake projects and to develop methodologies for predicting recreation use, benefits and facility needs for proposed lake projects (Crane et al. 1974, i). Thus the Corp initiated research efforts to support its recreation planning and management functions which continue today.

### Increased Concern for Conservation

An increased awareness of the environment and conservation issues was observed in the nation during the 1960's and 1970's. Most notably, the National Environmental Policy Act (NEPA) of 1969 declared a national policy ". . . to use all practicable means and measures . . . to create and maintain conditions under which man and nature can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations of Americans." (83 Stat. 852, 42 U.S.C. 4331).

Partially in response to NEPA, the Corps, once again, broadened the types of social, biological, and economic issues that it addressed in the planning and management of its water resources development projects. The previous Recreation Sections were renamed Environmental Planning Sections, and staffs were expanded with increased expertise, especially in the biological and social sciences.

Also during this period, new multi-objective planning procedures were developed by the Water Resources Council (WRC) to guide the formulation and evaluation studies of the major Federal water resources development agencies (WRC 1983, 1). These guidelines, initially referred to as the Principles and Standards and subsequently as the Principles and Guidelines, established four accounts to facilitate the evaluation and display of the effects of alternative water resources development plans. The national economic development account displays changes in the economic value of the national output of goods and services and is required. Other information that is required by law or that will have a material bearing on the decision-making process should be included in the other accounts. These include: (a) the environmental quality account, which displays nonmonetary effects on significant natural and cultural resources; (b) the regional economic development account, which registers changes in the distribution of regional economic activity that result from each alternative plan; and (c) the other social effects account, which registers plan effects from perspectives that are relevant to the planning process, but are not reflected in the other three accounts.

### Current Legislative and Administrative Policies

During the 1980's, domestic concerns have included inflation, deficit spending, and the roles of the Federal and state governments in providing public services. Under President Ronald Reagan's administration, there has been a continued effort to reduce the role of the Federal government in the economic and political life of the nation. This effort has included reducing Federal expenditures, as well as increasing the role of the states (and in some instances the private sector) in providing public services. With respect to the Corps, this effort is reflected in the Omnibus, Water Resources Development Act of 1986 (WRDA) (PL99-662).

WRDA was the first major water project legislation passed in 16 years, and was, therefore, very important for revitalizing the Corps' Civil Works Program. An important component of WRDA is guidelines for, and congressional agreement to, an expansion of cost-sharing required by non-Federal project sponsors for many of the water resource development outputs. In addition, WRDA requires non-Federal sponsors to pay for one-half of the cost of feasibility studies. Thus, non-Federal sponsors will not only be participating to a larger degree in the construction and maintenance of water resource development projects, but they will also be sharing in the cost of planning for these projects.

With the increased cost-sharing requirements of WRDA, non-Federal sponsors will be even more concerned as to the impacts of projects on their constituents. Although national economic development will continue to be an important decision criterion, greater importance will likely be placed on delineating the

incidence of project benefits (including disbenefits) and their impacts on local and regional economies. There will be a greater need for understanding the impacts of recreation related expenditures on such factors as local and regional tax receipts, sales and employment.

Increased non-Federal cost sharing is one approach for decreasing the Federal role in the provision of water resources developments. Another, which may have an even greater impact on the Corps' provision of future outdoor recreation opportunities at new water resource developments, is to limit the purposes that are considered to be appropriate for Federal involvement.

One policy initiative of the previous Administration was to reduce Federal competition with private and non-Federal public sectors in providing recreation opportunities. This is reflected in the Corps' present policy for planning new water resource development projects. This policy is that Federal funds should only be used to support development of recreation facilities when the recreation benefits are less than 50 percent of the total benefits and, (a) are produced jointly with other project benefits (i.e., recreation costs are not separable), or (b) result from development of recreation potential created by projects formulated and justified for other purposes. This means that future projects which depend on separable recreation benefits to be economically justified or for which recreation benefits are greater than 50 percent of total benefits should not be part of the Corps' Civil Works program.

Partially because of limited Federal funds, recreation will once again be considered as a byproduct of the other water resource development outputs. Separable recreation facilities can still be included in a new project if economically justified and a local interest is willing to provide the necessary cost sharing. The separable recreation benefits from such facilities are not, however, to be used to justify a project that is not economically feasible without the recreation features. There will be less participation by the Corps in the provision of recreation opportunities at new water resource development projects under these conditions.

Corps Recreation Study

In addition to limiting further participation in the development of recreational opportunities at new water resource development projects, the Corps recreation Operation and Maintenance (O&M) program at existing projects is also experiencing budgetary pressures. As a result, the Assistant Secretary of the Army for Civil Works has recently requested the Corps to establish a Recreation Task Force to review its recreation O&M program. Specifically, the Task Force is to develop a proposal to maintain and/or enhance public recreational opportunities at Corps projects while reducing Federal expenditures and/or increasing revenues for recreation.

The proposed plan is to focus on development, enhancement, and operation of recreational facilities at Corps projects by non-Federal agencies and the private sector. One perception is that the broader flexibility of non-Federal entities may offer the potential for better serving recreation demands. In keeping with the objective of maintaining and/or improving public recreational opportunities, neither the closure of recreation areas nor the deferral of maintenance are to be considered as part of the Task Force Study. In addition, existing constraints in law, regulation, or policy are to be identified, but are not to limit proposals being considered.

The study will identify a series of management programs and strategies; their advantages, disadvantages, and potential applications; their probable impacts on recreation services and the Federal burden; and a recommended plan for implementation. In developing the plan, the Task Force is to consult with State and local officials, user groups, the private sector, and the academic community.

The overall Task Force effort is being directed by a Policy Steering Committee, comprised of the Executive Director of the Recreation Study, eight members of the Corps senior staff, and chaired by the Deputy Chief of Engineers. The one year study is due to be completed in September of 1990. As it is just underway,

there are no findings to report at this time. Again, however, the objectives are to identify O&M strategies and programs that will maintain and/or enhance public recreation opportunities at Corps projects, while reducing the Federal burden.

## CONCLUSION

The role of the Corps of Engineers in providing recreational opportunities is directed by legislative action and administrative policy, which in turn reflect the changing problems and needs of the nation. The Corps' initial involvement in recreation resulted when public work projects it built, to provide needed flood protection and jobs, also created lakes with substantial recreation opportunities. As the public began using these lakes, the Corps was authorized to develop, or have developed by others, the facilities necessary to support this use.

When the nation's economy improved and there was a tremendous increase in the demand for outdoor recreation opportunities, the Corps role in providing these opportunities also expanded; recreation was authorized as a project purpose and allowed to be included in all water resource development projects, and economic evaluation and cost-sharing requirements became formalized.

Following the dramatic increase in demand for recreation opportunities came a greater concern for conservation and an awareness of the limitations of our natural resources; the Corps' planning and evaluation procedures were expanded to provide for greater consideration of environmental and social impacts in the development of recreation, as well as other project outputs. Today, the concern is with budget deficits and the role of the Federal government in providing public services; policy constraints will limit the Corps' role in providing additional recreation opportunities at new water resources development projects. The Corps is also currently reviewing strategies and programs for its current O&M program that will maintain and/or enhance public recreation opportunities, while reducing the Federal burden.

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# A THEMATIC ANALYSIS OF THE EXPECTATIONS AND EXPERIENCES OF THE GREAT SMOKY MOUNTAIN VISITOR

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Abstract. The motivations involved in choosing a particular place to visit are reflected in the types of experiences and sensations that an individual expects to have. Within the entire Great Smoky Mountain region the potential for a person to express diversity in these motivations is great. Opportunities in the Great Smoky Mountain National Park include a variety of "nature" experiences like camping and hiking. Gatlinburg, TN, on the border of the Park, is a community primarily oriented toward tourism. In this community there exist opportunities for shopping, dining, and amusement activities. Forty-seven adults were interviewed to examine the expectations and experiences of visitors to these different locales. Semi-structured phenomenological interviews were conducted that included descriptions regarding the visitor's expectations, best and worst experiences, activities engaged in, and elements of the experience that were figural in the person's awareness. Thematic analysis revealed that individuals who visit primarily for either a "nature-oriented" or "tourism community-oriented" experience possessed differing expectations and perceptions of the region. These two groups also differed in the sensory modality they found to be most figural. Other comparisons and contrasts between these groups are also discussed within this paper.

## INTRODUCTION

This paper is a report of an investigation into the expectations and experiences of individuals visiting the Great Smoky Mountain region. The topic of needs is introduced as a theoretical backdrop for the discussion of expectations. Otherwise, this project represents an exploratory study without theoretical context.

Vacations are important to a majority of people. As a form of leisure, they represent opportunities to pursue freely chosen recreational activities. These activities may represent experiences that are difficult to obtain during the workday or even everyday life. Researchers (Beard and Ragheb 1983; Mehrabian and Russell 1974; Rubenstein 1980) have theorized that the desire to pursue these leisure activities may reflect unsatisfied individual needs. Needs that go unmet by routine daily activities may be fulfilled during leisure, in which the

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individual is able to pursue his or her own desires to a greater extent. These desires, or motivations, may reflect needs for social interaction, opportunities to enhance physical and personal competence, increase intellectual stimulation, and the need for simple rest and relaxation (Beard and Ragheb 1983).

Not only will these needs differ according to the person, but also, the type of activities perceived to meet those needs will vary. One person's need for rest and relaxation may be met by activities that are vastly different from another's activities. A basis for these differences lies in the perceptions an individual has regarding certain activities. A particular activity may possess vastly different meanings for different people. While it was not within the scope of this project to examine the origins of an individual's perceptions, the effect of these perceptions upon recreational choices was observed.

As individuals make plans for recreation, whether it be an extended vacation or one-day excursion, expectations are formed. The individual anticipates that he or she will have certain experiences, facilitated by the pursuit of particular activities (Rubenstein 1980). To some people, spending the day shopping and sight-seeing may be perceived as restful and relaxing; to others, spending an afternoon around a campfire may be perceived as ultimately facilitating relaxation. The perceptions a person has of an activity will determine the type of experiences that person expects that activity to offer. Based upon these expectations, the individual makes choices as to the type of recreational activity he or she will pursue.

These expectations are reflected in the broad decisions people make regarding vacations, such as locale. Many recreation locales tend to fall into general categories; they are stereotyped according to the leisure opportunities they are perceived to provide. The type of perceptions a person has about a locale and the leisure opportunities it affords can be assessed directly by inquiry and by discovering what types of experiences the person has or anticipates having while visiting that locale. For different people, the ability to experience relaxation or togetherness may be perceived to be more or less facilitated by some locales than others.

The Great Smoky Mountain (GRSM) region of eastern Tennessee provides an ideal area in which to study the differing perceptions and leisure motivations of individuals. Two recreational locations which appear to provide very different sets of opportunities are adjacent to one another. The Great Smoky Mountain National Park (GSMNP) provides opportunities for camping, hiking, picnicking, and sight-seeing. Immediately adjacent to the GSMNP are several communities; the most developed and publicized of these is Gatlinburg, TN, a town oriented toward tourism. Gatlinburg provides opportunities for shopping, amusements, dining, etc. (The abbreviation GRSM is used by the Park Service to refer to the entire Great Smoky Mountain region; GSMNP refers specifically to the Great Smoky Mountain National Park.)

The goal of this research was to examine the expectations and experiences of visitors to these areas, and to observe what differences existed between individuals choosing either a nature-oriented or tourist-oriented experience. A methodology that would allow the greatest amount of descriptive information was necessary; a semi-structured interview format which encouraged participant description was the methodology of choice. This type of interviewing is referred to as phenomenological, meaning "experience-near." In the phenomenological method, an attempt is made to classify and describe people's experiences without any attempt at metaphysical explanation, i.e., outside of a theoretical context. (The interested reader is encouraged to examine Existential-Phenomenological Alternatives for Psychology, cited in the references.) A variety of topics have been investigated using this technique, including death (Ross and Pollio 1988), time (Dapkus 1985), and language (Franz 1989). Using this methodology, participants were asked to provide descriptions of their experiences for analysis.

## METHOD

Forty-seven adults participated in this study. Their ages ranged from 21 to 59 years, with an average age of 40 years. Sixty percent were married, and the sample represented a variety of occupations. Ninety percent had visited the area previously on at least one other occasion.

Interviews were conducted in two locations. Gatlinburg interviews took place within outdoor mall areas, located centrally in the town, and National Park interviews took place within Elkmont campground, GSMNP. All National Park interviews were conducted with individuals staying at least one night in the campground, but no control was placed on the length or location of stay for visitors interviewed in Gatlinburg. However, none of the participants in Gatlinburg were staying overnight in the National Park, and several indicated they were staying at least one night within Gatlinburg. Although these groups were not matched in this respect, this did not appear to impact upon results of the interviews. Interviews were conducted with 37 individuals within Gatlinburg and 10 persons with the National Park. All interviews took place between the latter half of June and September 1, 1989, and represent only the summer visitor.

Participants were approached individually or in small groups (2-3 people), and invited to express their feelings concerning issues relating to Gatlinburg and the National Park. Consent was obtained to tape-record the interview, and participants provided demographic and relevant data.

These interviews were semi-structured, and participants were asked to provide a detailed description of: 1) what they were primarily aware of while in the area, 2) their best and worst experience while in the area, 3) activities they participated in or intended to participate in, and 4) other information specifically useful to Gatlinburg managers.

The interviews were tape-recorded and transcribed verbatim. As outlined by Colaizzi (1978), these verbatim transcripts were then reduced; redundant material, extraneous reports, and irrelevant responses were removed from the transcript, and the remaining content was categorized according to subject heading. The reduced transcripts were then thematically analyzed, a process which yields common patterns or descriptions of the event as provided by the interview participants. These common themes remain applicable to any one participant; in examining the transcripts, inferential analysis was not used--the final description of the particular topic remains true to the words of the participants. This method of analysis was successful in discovering several themes, or common perceptions that individuals possessed regarding the Great Smoky Mountain region.

## RESULTS

The themes that were disseminated from these analyses are grouped by interview topic.

### Topic: Awareness and Expectations of Visitors to the GRSM Region.

Questions regarding this theme included, "What were your expectations when visiting this area?," "What image do you have of this area?," and "What are you aware of while you're here?" Analysis revealed the following themes relating to this topic: sensory awareness and connection to others.

Theme: Sensory Awareness. For both Gatlinburg and Park visitors, experiences revolving around what could be categorized as "sensory awareness" became clear. However, these groups differed in the type of sensory modalities that were figural.

In Gatlinburg, people were aware of "things to see and do." Gatlinburg was perceived as stimulating and exciting, and the figural perceptual sense was visual. Visitors were enthusiastic about the variety of store window fronts, the decor and arrangement ("lay-out") of shops and malls, and enjoyed seeing decorations and lights. They liked to "people watch," and repeatedly talked about the beautiful scenery around Gatlinburg, particularly within the outdoor malls that are set away from the main street. Coupled with this visual awareness was a strong activity "things to do" theme. For people who had not visited before or had not visited in some years, the variety of opportunities within Gatlinburg was pleasantly surprising. Gatlinburg was described as "fun," as having a "festive" and even "carnival atmosphere." This pervading atmosphere included themes revolving around crafts, mountains, and a country setting. People also reported a general feeling of physical

safety within Gatlinburg. Overall, Gatlinburg appeared to be an adult-oriented carnival. People came to Gatlinburg with the expectation of being able to relax, and pursue activities at their own pace. Gatlinburg was perceived as a place that would deliver fun to the consumer in a relatively safe, contained environment.

As one participant described Gatlinburg:

> "I think they have a little bit of everything. If you can't find what you want on this corner, move on to the next, and it's there. It don't make no difference what you're going to do, it's here."

And another:

> "I like the carnival atmosphere. You have all these shops and everyone seems to be in such a good mood all the time. When I was a child this was what the carnival was like."

While a person in Gatlinburg was primarily aware of opportunities to "see and do," the Park visitor was perceptually aware of "sounds and smells." Park visitors described an "awakening of the senses," commenting repeatedly about the sound of the streams, the rain on the branches, the wind in the trees, the singing of birds, the chirping and buzzing of insects. People were particularly aware of these sounds at night, and many credited their good night's sleep to the sounds of the streams and insects. In addition to the cool fresh air, participants described the smell of the damp earth, the pines, and the smell of smoke from the campfire. The smell of the campfire was sought even in the height of summer; it was part of the "nature experience." In contrast to the festive excitement described by Gatlinburg visitors, Park visitors continually referred to the "peacefulness" of the Park. Camping within the Park brought them "peace of mind," a sense of "serenity." While some visitors anticipated hiking and other physically challenging activities, many reported that they expected to "do nothing" all day. These "do nothing" activities included reading, working on small projects, watching the river and small wildlife, and contemplation (described often as "just thinking"). Overall, the Park was described as a quiet, peaceful, relaxing place to get away from it all.

As one person reported, when asked what he was aware of while camping in the Great Smoky Mountain National Park:

> "Sounds and smells. The birds singing, the locusts. The campfire. I guess we wouldn't come up here without the campfire. We just like the fire, even when it's not necessary. I like to sit there and look at it. This is as far away from pressure as I can get. People who want to harass me will just have to wait a week to harass me. This week I am not going to worry about it."

And another:

> "Sounds, smells, certainly nothing that I'm aware of at home. It kind of awakens your senses."

Theme: Connection to Others. This category reflects the relationship described by visitors to their environment. Again, this category demonstrated clear differences between the two groups.

Visitors in Gatlinburg were connected to other people, including other visitors and service personnel. Repeatedly, participants described the "good mood" of people within Gatlinburg. Shop owners and other service workers were described as "helpful, friendly, pleasant." Visitors commented that the area was nice, and prices were generally reasonable, which contributed to the good feeling. Other visitors to Gatlinburg were described as "joyful," and participants felt that they could (and would) start a conversation with a stranger and feel comfortable. "Friendly" was probably the most common word used to describe the atmosphere of Gatlinburg.

In contrast, visitors to the Park emphasized that they were there "to get away from people." Although people were also perceived as being friendly within the Park, crowds and prolonged contact with strangers were not sought. Instead, the theme that kept arising for these visitors was a desire to "get back to nature/God." People described connecting with nature, God, and history/time. Seeing a tree growing out of a dead tree, seeing moss growing on a rock, were experiences that contributed to an appreciation of natural processes. Sitting on a settler's porch and imagining what life was like, realizing that the trees and earth have been here before one's birth and knowing they will continue on after -- these were reported as making the person feel a sense of history, of time, and of their place in it. Problems became smaller, and individuals felt that they were "a part of it;" they described "a sense of oneness," "wholeness," "becoming closer to God." These descriptions define what psychologists refer to as "grounding." "Being grounded" refers to the experience of greatness and insignificance; the security of feeling one with the world is held in contrast with the relative insignificance of everyday problems. In contrast to Gatlinburg, the Park does not offer a sense of controlled security; accidents happen, it rains, and animals get into food supplies. But these are generally not viewed negatively. The Park visitor is not expecting the packaged experience that the Gatlinburg visitor is expecting. There is a greater acknowledgement of risk, and of the potential experiences that can be found in the Park and not in Gatlinburg.

For example, one man commented:

> "We were at Cades Cove yesterday, and have been many times before...but this time I looked at the building differently. We got caught in a rain shower at Tipton place (a settler's house) and we sat on the front porch and listened to it rain. Sitting on that porch yesterday, looking out towards the Cove on the front of the porch...he built his barn and his wagon shed, all this kind of stuff. My wife commented that he kind of blocked his view of the mountains...anyway, it was tough. Self-sufficient. I wonder what they called a vacation in those days. I doubt they had one."

Topic: Best Experiences

Individuals were asked, "What has been your best experience during your stay here?," "What have you enjoyed the most?," and "What has been the highlight of your trip?" Analysis revealed the following themes relating to this topic: social, activities, and contact with wildlife.

Theme: Social. This category was very strong for both Gatlinburg and Park visitors, and contained similar themes for both groups.

Gatlinburg was the site for many reunions of family, friends, and loved ones. People had honeymooned here, and/or had long-standing traditions of gathering in Gatlinburg on an annual basis. Some had visited as children, and enjoyed the nostalgia associated with Gatlinburg. Many people could pinpoint no particular "best experience" but enjoyed all aspects of the visit, citing being with family and friends as being most important. Gatlinburg was for many the ideal place to gather, with opportunities for all interests, and again, the pervasive "good mood." The friendliness of Gatlinburg was often commented upon as being a "best" experience. Dining, drinking, and restaurant service was for many people the highlight of their stay in this area. Sitting on tree-shaded benches, talking with friends and watching those around them was also a favorite social activity.

For many people, camping in the Park was also the place for the reunions of family and friends. Many people had long-standing traditions of annual or seasonal visits to the Park, and viewed these as opportunities to re-establish ties with loved ones in a nature setting.

Theme: Activities. This category consisted of the instances in which people described activities as their best experience. Most of these had a "social" orientation to them.

The most frequent favorite activity for Gatlinburg participants involved dining at restaurants. For others, the variety of opportunities within Gatlinburg was the highlight. Other favorite activities included playing miniature golf, walking around Gatlinburg during the Christmas celebration, looking at the scenery, and visiting Christus Gardens.

Participants in the National Park reported their favorite activities included walking, hiking the Appalachian Trail, and fishing. For many people, there seemed to be an element of personal accomplishment. People talked about the self-competence of camping within the Park, of being able to be self-reliant while engaged in activities within the Park. For example, one man reported:

> "My most favorite experience was catching my first rainbow trout. Fly-fishing, cause I had never known how to fly-fish. And it was probably when I was 10 or 11 years old, and pulling it in and then actually being able to skin it there and then cook it on the grill, eating it for dinner. From start to finish. So that was pretty remarkable. I remember that well."

Theme: Contact with wildlife. This was probably the most dominant theme for Park visitors. Seeing a bear, deer, and other wildlife in their natural habitat was the highlight for many people. Others described the excitement of having a skunk in close proximity try to get into foodstuffs, and of patiently waiting for a squirrel to eat peanuts out-of-hand. Campers emphasized that they felt like visitors to the "home" of the wild animals, and so incidents involving stolen food, damaged coolers, etc., were generally viewed extremely positively. While interaction with the wildlife was a hoped-for experience for visitors to the Park, it was recognized that this might or might not happen; when there was experience involving a wild animal (excluding actual danger), the event was often a highlight for the visitor. Damaged gear was often a souvenir, and at the least, the individual had an experience which could be re-told to others. As one person related:

> "Every trip has something unique, just like that bear the other day. Well, I never would have believed I would get up at four in the morning and a bear would be in the back of the truck. He opened the truck [bed] himself. It was closed but not locked. So he opened it up and went in, just like if you would climb in over the bumper...and got in there at the two coolers and got him a pound of bacon out and ate it."

Topic: Worst Experience

Subjects were asked, "What was the worst experience you have had while visiting this region?," "What have you liked least about your stay here?," and "What was the least pleasant aspect of your visit?" Many participants could not recall a "worst" experience; many said there had been no bad experience for them during this visit or any previous visit. Quite often, "What was the least pleasant aspect of your visit?," was asked in order to obtain any response at all. From these responses, one central theme emerged: lack of control.

Theme: Lack of Control. For both Gatlinburg and Park visitors, there appeared one dominant theme relating to an individual's worst experience; these were events over which the visitor had no control. Physical injury to self or others was listed as a worst experience for both groups of visitors. The weather and bugs was also a common "worst" experience. For Park visitors, the intrusive noise of dogs and generators was a negative experience. For visitors to Gatlinburg, the heavy traffic, difficulty finding parking, large trucks passing next to the sidewalk, and crowds were reported to be the least pleasant aspect of their stay. "Good food and service" was often a best experience; conversely, bad food and poor service were listed as worst experiences, although in this study this was rarely indicated. Tired legs and feet was a common experience for Gatlinburg visitors (which led many people to suggest "more benches" when asked about improvements). Finally, for one couple camping within the Park, an interpretive hike to an "old grill cemetery" and the waste of resources they perceived, was a worst experience.

Topic: Activities

Participants were asked, "What activities will you do while you're here?," and "What kinds of things do you enjoy doing?" The results of these questions was a listing by the participant of all the things they had done or expected to do while on this visit. This category was difficult to thematize, as participants did not talk about the experience of doing the activity. The type of activities listed was predictable for each group of visitors; however, it was noteworthy that Gatlinburg visitors perceived Park opportunities differently than did Park visitors.

As noted in themes concerned with an individual's awareness or image of Gatlinburg, people stressed the opportunities to "see and do" within Gatlinburg, and an emphasis was placed on "window-shopping," "people watching," and "sight-seeing." The level of activity that people engaged in appeared quite high; with the exception of a few people who wished to simply sit and look, most people spent the day walking, shopping, playing miniature golf, and visiting attractions. While visitors who were staying in the Park also perceived the these same activities to be available in Gatlinburg, the affective connotation of these activities tended to be negative.

Perceptions of what opportunities existed within the Park differed according to the orientation of the visitor. Most Gatlinburg visitors who were interviewed perceived the Park primarily as an opportunity to view scenery while driving. The idea of hiking appeared to be foreign to some these visitors. Some did not believe any possibilities other than viewing scenery existed within the Park; for example, one man said "What's in the Park? ...other than the [aerial] tram, I don't know of any[thing]." For individuals camping within the Park, activities described were predictably nature-oriented. People walked, hiked, and watched wildlife. Most people who were interviewed intended to visit Gatlinburg only to find a restaurant or shop for crafts.

## DISCUSSION

This project involved two lines of inquiry. The first of these concerned the goal of this research, which was to explore people's expectations and experiences as they engaged in recreational pursuits. As one would assume, these expectations were directly linked to perceptions the individual held of the recreation locale and available activities. A secondary outcome of this research was the support of previous studies indicating that people possess common needs which may be satisfied through leisure activities.

People who intended to spend the primary part of their visit in the tourist community tended to have different perceptions of the National Park than those who were camping within the Park. It appeared that those staying in the Park possessed a significantly greater degree of knowledge about Park opportunities and hazards. Many visitors interviewed in Gatlinburg did not perceive the Park as an opportunity for anything other than viewing scenery while driving. The vague skepticism with which these participants viewed outdoor activities, such as hiking in the woods, was brought into sharper focus by the companion study to this project (VanCleave et al. 1990). In those results, it became apparent that outdoor Park activities were perceived by Gatlinburg visitors to be dangerous. This provides a clear contrast to descriptions of Gatlinburg (by Gatlinburg visitors) as a safe, secure place to have fun. In this respect, this study supports efforts directed toward the modification of people's perceptions by improving their knowledge base.

On the other hand, it appeared that Park visitors were knowledgeable about the opportunities Gatlinburg had to offer, but were largely uninterested in pursuing those activities. Park visitors tended to perceive Gatlinburg activities as too noisy, flashy, and irritating, rather than fun and exciting. Overall, the "carnival, festive" atmosphere of Gatlinburg contrasted sharply with the peaceful, "getting back to God/nature" feeling associated with camping in the GSMNP. While these are not surprising descriptions, they exemplify the differences that exist in individual perceptions and expectations.

In this small study, there were no instances of people's expectations being challenged or changed while visiting this area. For example, no Gatlinburg visitor reported,"I never realized there were so many things to do and see in the Park." Behavior appeared to follow expectations, so that even though a person might have visited the area several times, no action was taken that might have changed perceptions. This is not surprising; people rarely go out of their way to change their perceptions. However, in the future it would be worthwhile to focus this research upon visitors who were new to the area, in order to examine any differences in perceptions and expectations that occurred as a result of experience.

The differences in figural sensory modalities between these groups was not anticipated. The theme of Gatlinburg as a place to "see and do," with its emphasis upon the visual and kinesthetic senses, was pronounced. Equally strong among Park visitors was the focus upon olfactory and auditory modalities. While it is not within the realm of this research to propose a theoretical explanation for these differences, they become more interesting when reviewing research which investigates the link between emotions and sensory modalities (Stein 1986). Not only is the olfactory system the oldest evolutionary part of the human brain, but also the senses of smell and sound are the two systems most intimately associated with human emotion. It would be worthwhile to see whether or not these differences were replicated in future studies.

Although the activities these two groups pursued tended to differ, many of the desired outcomes were similar. Across both groups, individuals reported a desire to strengthen relationships with others, experience adventure, obtain intellectual stimulation, improve physical or personal competence, and to rest and relax. These resemble the leisure needs described by Beard and Ragheb (1983), Mehrabian and Russell (1974) and others. Individual perceptions and expectations dictated which activities best fulfilled these needs, so that the opportunities an individual perceived to be available within a specific locale determined the choices made.

Several potential research questions arose from this preliminary study. The first of these concerns the process by which perceptions are formed; it would be interesting to pursue the history which led to an individual's perception of Park opportunities as minimal or even dangerous. Lack of knowledge and experience account for the majority of these perceptions; however, some people attempt to overcome these deficiencies, while others do not. Currently this topic is being examined by the second author. Another interesting topic is the process by which perceptions and expectations shape experiences. Expectations may determine choices, but they also impact upon the experiences people have. The same situation is not experienced in the same manner for two individuals whose expectations toward that event may be vastly different. It would also be interesting to perform this study in another season, to examine whether any differences appeared between summer visitors and visitors during other seasons.

In closing, it is worthwhile to note the contributions of the phenomenological interview to a qualitative analysis of visitor data. The use of these and other phenomenological techniques allows for a much clearer and more detailed description of the information sought, and is valuable for researchers who are interested in human experience.

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# MONITORING IMPACTS AT BACKCOUNTRY CAMPSITES AND SHELTERS AT GREAT SMOKY MOUNTAINS NATIONAL PARK

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Abstract. Backcountry camping and hiking have become increasingly popular in the last 20 years. This cumulative use has caused both physical and social impacts on trails and campsites. According to Cole (1983), "wilderness use affects trails, meadows and lakeshores but impacts are usually most pronounced on campsites." Because campsites receive a high concentration of use, they need to be measured periodically to assess the changes that are occurring. Monitoring changes that occur in the backcountry is necessary in order to determine at what point impacts become a problem for managers and users. It is also necessary in determining at what point management should intervene, and what alternative management strategies might follow. An organized backcountry management plan that has specific objectives and standards will serve as a basis for these management decisions.

## INTRODUCTION

At Great Smoky Mountains National Park (GSMNP) in eastern Tennessee and western North Carolina, approximately 90 percent of the park is managed as backcountry. Uses that occur in the backcountry include hiking, backpacking, fishing, camping, photography and horseback riding. Camping, which is one of the most popular uses, is confined to 100 designated sites (82 campsites and 18 shelters) in the backcountry. This concentration of use causes physical impacts at these areas. These physical impacts are severe enough that a specific monitoring plan is needed that assesses the impacts to determine if changes are occurring, their acceptability and specific management alternatives to remedy the situation.

There have been three major attempts at monitoring in the past. In 1976, Bratton measured the physical impacts on all campsites and shelters using 15 variables. Site dimensions were measurements of the longest length multiplied by the widest width of the bare soil, using a tape measure.

From 1980 to 1985, Wightman (1981) monitored all backcountry campsites and shelters based on seven variables. A rating was given for each variable and a total score was summed for the site. A plane table was used to map the bare soil with a map prepared of the site showing the bare soil zones.

In 1983, Renfro (1985) measured the physical impact on all shelters along the Appalachian Trail. Eighteen variables were measured. The distance to the edge of the bare soil and to the undisturbed vegetation was measured using line transect mapping. Thirteen transects were established at 90 and 45 degrees from the corners of each shelter. A map was drawn showing the entire disturbed area and the location of the impacts on the site (trash etc.). In 1989, the bare soil measurement methods mentioned above were compared on a sample of 10 campsites and 6 shelters. Seventeen other variables were also used. (See Table 1 for a list of the variables used in each of the above mentioned studies).

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Table 1. Physical Impact Variables Used by Great Smoky Mountains National Park Researchers

| Bratton (1977) | Wightman (1980) | Renfro (1985) | Klein (1989) |
|---|---|---|---|
| bare soil | bare soil | bare soil | bare soil |
| mud | firewood | bare rock | damaged veg. |
| bare rock | bear incidents | fire scars | social trails |
| leaf litter | human waste | fire rings | fire rings |
| trampled veg. | horse waste | trash | fire scars |
| firewood | damaged veg. | springs | furniture |
| tree damage | compaction | exposed roots | hitch rail |
| erosion | | downed trees | trash |
| trash | | damaged veg. | horse waste |
| hog damage | | hog damage | human waste |
| horse damage | | drainage | # trees b.s. |
| attractions | | human waste | mutilations |
| developments | | stumps | downed trees |
| topography | | hitching rail | exposed root |
| water | | trails | stumps |
| | | signs | hog damage |
| | | shelter | bear damage |
| | | | hazard trees |

Sources: Wightman,B. 1981.BackcountryCampsiteEvaluation System. 25p. Bratton, S.P. et al. 1977.Trail and Campsite Erosion Survey for GSMNP. Part 1-Introduction and Methods.61p. Renfro, J.R. 1985. The Incidence and Intensity of Backcountry Trail and Campsite Impacts along the Appalachian Trail in GSMNP. 66p. Klein, J.M. 1989. Monitoring Physical Impacts at Backcountry Campsites and Shelters at GSMNP.

## STUDY OBJECTIVES

1. To determine the parameters that define physical impacts at backcountry campsites and shelters,
2. To determine the relationship between change in bare soil and change in use over a period of 10 years,
3. To determine the time and effort involved in different methods of measurements, and
4. To suggest a plan for monitoring impacts at backcountry campsites and shelters at Great Smoky Mountains National Park.

## LITERATURE REVIEW

### Impact and Use

Preliminary research on the measurement of backcountry impacts and their relationship to use was done by Wagar (1964). In "The Carrying Capacity of Wild Lands for Recreation", simulated recreation use was applied to a series of plots in the Brighton Recreation Area in southeast Michigan. Simulation was done by using a tamp, a wooden contraption that, when dropped, applied about 8 foot-pounds of energy per square foot of surface area. Results showed that survival of vegetation decreased as the amount of use increased. One of the conclusions drawn was: "relationships between vegetation, visitor use and site factors can be described and show promise as tools for predicting the impact of visitors on recreation areas."

Another primary study of impact on campsites is Frissell and Duncan's (1965) research on the Quetico-Superior Canoe Country. Twenty campsites were examined at Boundary Waters Canoe Area (BWCA) and Quetico Park. Control sites were also established to measure changes resulting from use. Some of the variables measured were: soil compaction, basal area, depth of litter and humus. Intensity of use was estimated from observation and communication with guides. Also, interviews were given out to 33 canoe parties to obtain information on campsite preferences.

Results showed that most campers preferred island sites and a pine vegetation. The campsites showed an immediate deterioration with any kind of use (light or heavy). The results showed that management needs to be directed at communication with users, dispersal of users or closure of heavily impacted sites.

In 1967, Merriam (1983) and students from the University of Minnesota began a study of changes at BWCA on newly developed campsites. After 2 years, soil compaction was measured and it had increased substantially as had the percentage of dead trees and exposed roots. The size of the site had increased about 10 percent. These same sites were again measured after 5 years. Compaction declined, but percentage of dead trees and exposed roots increased as did exposure of bare soil. Results of the study concluded that impacts are greatest the first 2 years and generally level off, but site enlargement continues. This study continued and in 1974 and 1981 measures were repeated on a small sample of these sites. Bare soil was still increasing, soil compaction had increased only slightly and tree mortality also continued. Root exposure did not increase. However, site enlargement was still increasing, but at a slower rate.

In 1982, D.N. Cole studied 26 campsites at the Eagle Cap Wilderness, Oregon. In "Wilderness Campsite Impacts: Effects of Amount of Use" (Cole 1982), several sites were sampled and different monitoring systems were examined to determine the most sensitive indicator of impact. Each site that was sampled also had a control site. Soil information was collected at 4 places on each campsite. Each site was also given a class rating based on a visual estimate of its condition. Twenty types of change were documented. Out of these 20 variables, 7 were more pronounced on heavily used sites. This shows that most of the change that occurs on these campsites can result from minimal use of the site (a few times a year). The campsite condition class rating (Frissell) was the most sensitive indicator of impact.

Marion and Sober, in "Environmental Impact Management in Boundary Waters Canoe Area Wilderness" (1987), state that more intensive visitor and resource management is necessary in wilderness. Both visitor dispersal and containment have been utilized, but according to Cole (1981) visitor containment is a more effective management tool. Also, campsite rehabilitation has been extended to sites currently in use to both restore areas and prevent further impact. This paper summarizes a few of the techniques employed as both preventative (indirect) management and intense, direct management of the visitors at backcountry campsites.

Monitoring Systems

A widely used monitoring system is the Code-A-Site system, proposed by Hendee et al. (1976). Important information about each site is collected and recorded. The system asks for a judgment of whether impact of previous use is extreme, heavy, moderate or light. As of 1983, the information was stored on edgepunch cards. However, much of the information obtained is irrelevant in the backcountry. Schreiner and Moorehead (1979), adapted the cards to wilderness.

In 1976, Bratton, Hickler and Graves measured visitor impact on backcountry campsites in GSMNP. The purpose of their study was "to investigate the backcountry campsite system of the park, look at the types and locations of damage and relate them to visitor use patterns( Bratton et al. 1978)." Both visitor use statistics and campsite conditions were studied. Use data were compiled by analyzing backcountry campsite permits. All legal sites (shelters and campsites as well as any illegal sites located on or near the trails) were sampled. The location, legal status, forest type, successional state and understory type were recorded. Disturbances were mapped and measured. These included soil, leaf litter, trampled vegetation, firewood clearing, tree damage and trash dispersal.

Some of the results of this study showed that intense backcountry use occurs from mid-March to late October. Group size tends to be small (1-3 people), with the average length of stay being 2 nights. The sites with the worst total disturbance were shelters, which also received more use, on the average, than campsites. It was found that visitation is the primary factor in campsite damage and deterioration. In campsites, amount of damaged area is closely correlated to visitation. From this information, they concluded that distribution of visitors is a primary problem of backcountry management at GSMNP. The majority of visitors frequent the more sensitive high elevation ecosystems. Some suggestions of alternative systems were: 1) establishment of a revised permit system to develop absolute carrying capacities for sites and sections, 2) replacement of shelters with tent platforms to keep the area less developed, 3) establishment of a zone system-dispersed management (to exclude certain areas from camping) and 4) establishment of a trailhead quota system. None of these were used but in 1974, rationing of the highly used sites was implemented. Overall, this research has provided a data base for future monitoring of effects of human impacts.

In 1978, Frissell defined different levels of impact in his condition class system. Five condition classes are recognized. From these, visual estimates are made and the condition of the site is determined. This method is more precise than the Code-A- Site system because of its specific stratification.

The Camp Area Inventory System was developed by Parsons and MacLeod in 1980 and applied at Sequoia-Kings Canyon National Park. It uses 8 visual criteria to evaluate the level and extent of impact in each backcountry campsite. Each variable is rated on a 5 point scale with 5 being maximum impact. In addition to the rating, descriptive information is recorded for each site (overstory, understory,distance to water, etc.). A freehand map is drawn of each site showing geographical features, direction and popular camping areas.

In his paper "Monitoring the Condition of Wilderness Campsites" (1983), D.N. Cole provides an overview of monitoring systems. Discussed are: desirable characteristics of a backcountry campsite inventory and monitoring system, evaluation of existing methods and suggestions for developing a system that builds on the existing techniques. Desirable characteristics of a system include meaningful measures of impact, reliable and sensitive measures, inventory all sites and precisely relocatable measurement units. According to Cole, many of the existing systems (1983), were too general. They asked for a visual judgment of impact and gave overall rating of the site, rather than ratings of specific variables. In his recommendations, Cole suggests that the most useful campsite inventory 1) evaluate a number of meaningful parameters, 2) records each parameter separately and 3) uses precise methods and inventory all sites (if money allows).

In 1986, Chilman designed a low-cost monitoring system for the Desolation Wilderness in California. This system included a set of 10 questions that were previously used in other research projects. The wilderness rangers were given the questionnaires to distribute in the backcountry in order to save time and money. Documentation was made of the visitor's perceptions of existing conditions and changes that are occurring. It was found that the rangers had the time to distribute the questionnaires and analyze the results of the questionnaires.

## METHODOLOGY

The procedures for this study began with a literature review of previous physical impact and monitoring research both generally and at the Smokies. A review of the existing data that has been collected on measurements of backcountry campsites and shelters at GSMNP (Bratton et al. 1978, Wightman 1980-1985, and Renfro 1985) was necessary. From the review of GSMNP literature and other research, a total of 19 variables were chosen (see Table 1). These consisted of some of those previously measured by Bratton, Wightman and Renfro . Additional variables were chosen according to level of importance to managers and researchers as well as ease of measurement (time and personnel constraints).

A sample of 10 campsites and 6 shelters were chosen, based on level of use, elevation, type of user and rationed vs. unrationeed sites. Sites are located throughout the park. Three primary methods of

measurement were used and methods compared to determine which provides the best information using the least time and personnel. Also, a combination of methods and variables may be suggested as a monitoring plan. A data sheet was developed to record the results of measurements on the sites. Also, a daily journal was kept which consisted of notes and thoughts about the sites and the different methods of measurements, observations and anything else that happened that day in the backcountry.

Use figures were collected from the sites measured. This was done either by the computer printouts of site occupancy reports, or by tallying the permits by hand when computer printouts weren't available. Use figures were analyzed to determine trends in use from 1980-1989 on the sites measured. These figures will be compared to the bare soil measurements from 1980-1989 obtained to determine the relationship between these two variables.

Correlations were run on the mainframe computer at Southern Illinois University using the Statistical Analysis System (SAS). Change in bare soil was correlated with change in use from 1985- 1989. Cumulative use from 1985-1989 was correlated with amount of bare soil. Other correlations will be done to determine which variables are related to amount of use and which are related to other factors such as type of user. By determining the best methods of measurement and current use trends, a monitoring plan can be established for backcountry campsites and shelters at Great Smoky Mountains National Park.

## RESULTS

The physical impacts at GSMNP campsites and shelters were evident in both the bare soil and the surrounding area. At campsites, the bare soil area ranged from 189.56 $m^2$ to 1176.55$m^2$, with an average of 525.71$m^2$. At shelters, bare soil ranged from 22.39 $m^2$ to 111.10 $m^2$, with an average of 55.93 $m^2$.

The surrounding disturbed area ranged from 150.41 $m^2$ to 6175.35 $m^2$ at campsites, while at shelters, the disturbed area ranged from 459.74 $m^2$ to 1768.03 $m^2$. All of the campsites sampled had more than one bare soil area. The average number of bare soil areas was 3.5 zones per campsite. At the shelters, impacts were more localized, but illegal campsites existed at all 6 that were sampled. Exposed roots in the bare soil was widespread at the campsites. At nine out of ten campsites measured, sixty percent or more of the trees had exposed roots. Tree mutilations were also evident at many sites. At three out of ten campsites measured, fifty percent or more of the trees had mutilations. Because there were no trees in the bare soil at the 6 shelters, number of exposed roots and mutilations were not a problem.

The correlation between amount of use and amount of bare soil for 1989 was -.25. This was not significant at alpha = .05. There was no significant relationship found between cumulative use (1985-1989) and amount of bare soil (1989), or between cumulative use and total campsite area (1989-bare soil + damaged vegetation).

As seen in table 2, use decreased on twelve sites, while bare soil decreased on thirteen sites from 1985 to 1989. These changes in use and bare soil from 1985-1989 were correlated. No significant relationship was found at the .05 alpha level.

The average time taken to measure bare soil using each method (Wightman, Renfro and Bratton) was analyzed. For the Wightman method, the average time was 25.2 minutes, the Renfro method averaged 71.8 minutes and the Bratton method averaged 6.4 minutes. A method that uses minimum cost and personnel will be most efficient and useful for managers. Although Bratton's method was the shortest, it didn't necessarily give the best information. Wightman's method only looked at the bare soil area and needed 2 people. Renfro's method looked at both bare soil and disturbed vegetation, and could be done with one person.

Table 2. Baresoil Trends at Campsites/Shelters Related to Visitor Use

| Campsite Number/ Shelter Name | Change in baresoil 1985-1989 Percent | Change in visitor use 1985-1989 Percent |
|---|---|---|
| 9 | -25 | -55 |
| 10 | -43 | -39 |
| 13 | -65 | -24 |
| 24 | -42 | -37 |
| 26 | -19 | -37 |
| 27 | -53 | -75 |
| 34 | -67 | -39 |
| 36 | 77 | 35 |
| 37 | 62 | -37 |
| 57 | 120 | -47 |
| Icewater Springs | -28 | 1.6 |
| Double Spring Gap | -9 | -20 |
| Spence Field | -27 | -6.5 |
| Russell Field | -66 | 8.4 |
| Kephart | -12 | 6 |
| Scott Gap | -85 | -51 |

Sources: North and South DistrictBackcountryRanger Office campsite monitoring program, 1985-1988. Communications-Backcountry Reservation Office-GRSMNP. Klein (1989) Physical Impact Monitoring at Backcountry Campsites and Shelters-GRSMNP.

## DISCUSSION

Besides amount and type of use at a site, there are other factors that are related to physical impact. Site durability is often related to slope steepness, position, topography, elevation and aspect (Hammitt and Cole 1987). At GSMNP, sites that are located on ridges and adjacent to streams are causing undue erosion and possibly polluting the water.

In determining the best method of measurement, the surrounding disturbed area as well as the bare soil area should be analyzed. Cole (1983), in the Eagle Cap Wilderness Study, measured from the center point of the bare soil to the edge of the bare soil and to the edge of the disturbed area. This gives an overall view of the impacts that are occurring at the site. Along with this, a detailed map showing all of the impacts on the site, not just the bare soil, will be more effective and useful in comparison over years.

Finally, to get an overall idea of impacts on sites, both physical and social impacts need to be measured. Physical impacts show the result of human activity on the site. Measuring the social impacts by interviews and observations will give managers an idea of what causes these impacts. "In most situations a variety of visitor use and behavioral variables must be examined to accurately determine the consequences of recreational use on resources" (Hammitt and Cole 1987).

Specific management objectives need to be outlined in the backcountry management plan, and standards set for the following categories:

Water: water quality, trash, horse and human waste
Wildlife: bear and hog damage or encounters
Soil: bare soil, fire rings
Vegetation: damaged vegetation, exposed roots, tree mutilations, hazardous trees, cut stumps
Social: visitor perceptions of impacts occurring

Other criteria for monitoring impacts in the backcountry are time, effort and practicality. A monitoring plan that takes as little time and personnel as possible and obtains results that are usable is a necessary part of a backcountry management plan.

A suggested plan for GSMNP is to measure all the sites approximately every 5 years using the Renfro method. This method measures both the bare soil and the surrounding disturbed area. Also on the map, other variables such as exposed roots, stumps, trash, social trails, human and horse waste should be indicated in order for comparison from year to year. Also,this method only takes one person and is most feasible with the low budget of the park.

Along with measuring all the sites, a sample of the sites should be monitored in-depth. Establishing control plots for comparison with similar disturbed areas, vegetation mapping, hazardous tree analysis, water quality samples, photo point establishment, and interviews and observations are some methods that have been used by other researchers (Cole 1982; Brewer and Berrier 1984; Parsons and MacLeod 1980) to monitor backcountry sites. This in-depth research on a sample of sites can be done to get an idea of the impacts occurring throughout the park. Also, cost and time can be kept at a minimum while obtaining more detailed information than what is presently being done.

## LITERATURE CITED

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# AN AUTOMATED MAPPING PROCEDURE FOR URBAN RECREATION PLANNING

Juikun Kuo and Hugh A. Devine[1]

Abstract. The purpose of this study was to evaluate the application of Geographic Information Systems and Computer Aided Design (i.e. computer mapping systems ) to urban recreation planning. To accomplish this evaluation, four tests were developed. These tests were as follows: **1) Address matching study for a recreation survey.** This test developed a spatial distribution of the characteristics, expressed needs, and preferences of recreation survey participants. That is, the test developed a demonstration comparison of participant home locations with survey response and facility locations. The test used actual survey data and facility information from the city of Raleigh, NC. **2) Accessibility study of transportation routes.** This test demonstrated a methodology to evaluate the public transportation systems in the context of recreation opportunity provision. It is important that urban recreation planners incorporate public transportation accessibility into their assessments of recreation potential. Better transportation to parks is not only an inexpensive means to expand recreation opportunities, but also can save consumption of energy and reduce provision barriers to special populations. Often minor changes in existing transportation systems can make a significant recreation opportunity differences. **3) Recreation service area study.** This test delimited recreation opportunities by "effective" time-distance zones from home locations for both walking and driving access. The effective service areas were calculated by measuring actual street distance as opposed to the normal method of drawing a straight line from the home to the boundary of the facility. That is, the facilities available to the respondents were those that fell within the estimated walking and driving time limits. **4) Efficiency study of a sample recreation site planning process.** This test demonstrated the potential of computer mapping procedures in the recreation site planning process. The purpose of this test was to suggest efficient procedures for site planning and to examine the advantages and disadvantages of different mapping approaches. The test focused on the development of a park design drawing accomplished by both manual and automated techniques.

The data base for the first three tests was constructed from the 1988 Citizen's Survey of Parks and Recreation, City of Raleigh, North Carolina[2]. The survey measured the expressed recreation "needs" of the Raleigh residents. For test 4, an existing Raleigh community park was used in the site planning test. The computer programs used included a

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[2] Source: The City of Raleigh Parks and Recreation Department. May 1989. 1988 City of Raleigh Parks and Recreation Department Market Analysis: A Survey of Resident Awareness and Use of Programs and Facilities Provided by the City of Raleigh Parks and Recreation Department. The report was prepared by Jonelle Nuckolls, Richard R. Perdue, Carter Betz, Cindy Trumbower, and Bill Cingletary.

Geographic Information System (LANDTRAK[3]) and a Computer Aided Design package (AUTOCAD[4] / LANDCADD[5]). Each of these tests proved successful and indicated that further investigations should be undertaken to incorporate computer mapping technology into urban recreation planning.

## STUDY BACKGROUND

There is considerable evidence that recreation is one of the largest industries in the United States. It was estimated that expenditure on leisure accounts for about $1 in every $8 spent by American consumers. There was an estimated 182.2 billion dollars of consumer recreation expenditures in 1986, a 58.4 percent increase from the 115 billion spent in 1980 (Manufacturers Hanover 1987). However, today's provision of recreation services is challenged by a number of significant difficulties caused by changes in political, social, and economic systems. Decision-makers are not only facing tighter budgetary limits, but also the challenging task of doing better both quantitatively and qualitatively with fewer resources (Goodale and Witt 1985).

Several studies have pointed out that in the context of the overall budgetary problems recreation agencies have major difficulties in especially facing planning problems. In fact, these studies ranked planning second among needed management skills for recreation professionals (Hunt and Brooks 1983; Minshall 1983). One study pointed out professionals fear the planning process, because it thrusts them into complex situations with a great degree of uncertainty (Chakraborty and David 1981). Further, once a plan is completed, it provides a yardstick for critique and evaluation (Reinharth et al. 1981), thus putting on more pressure for competent and effective planning.

Many authors (Reid, L. M. 1973; White and Patterson 1979; Gold 1980) have argued the importance of systematic recreation planning approaches to deal with both internal (e.g. resource characteristics, capability for development, etc.) and external (e.g. regional environment systems, transportation systems, etc.) characteristics of recreation areas. Hunt and Brooks (1983) emphasized that comprehensive recreation planning is a continuous process which is future-oriented and considers both short- and long-range alternatives. It is necessary, therefore, that planning be multidimensional and that it be integrated into all facets of recreation provision, thereby making it a very complex procedure.

Previous studies regarding recreation planning explored this complexity in three major areas. These include need assessment (Reid, D. G. 1985; More 1985), systematic planning (Seabrooke 1987; White and Patterson 1979), and participation motivation (Peine 1979; Godbey 1985). Each of these studies recognized the importance of the integration of spatial analysis into recreation planning process, because it is necessary to view people in a spatial context in assessing recreation needs. Spatial analysis in recreation planning enables the planner to consider all factors regarding recreation provision from a geographic or multi-dimensional perspective. It can help the planner to make a better decision. However, the above studies did not step into the domain of how to do this spatial analysis. Perhaps, this is because recreation researchers have not found an appropriate approach to apply spatial analysis in addressing planning problems.

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[3] LANDTRAK is a registered trademark of GeoBased Systems. The computer software used in this study was Version 3.4.3 in December, 1988.

[4] AUTOCAD is a registered trademark of Autodesk, Inc. The computer software used in this study was Release 10 of the AUTOCAD design package of November, 1988.

[5] LANDCADD is a registered trademark of LANDCADD, Inc. The computer software used in this study was Version 9.5 in July, 1988.

## THE IMPORTANCE OF SPATIAL ANALYSIS IN RECREATION PLANNING

Spatial analysis in this paper refers to any planning activity that includes portraying where participants live, where locations of available facilities for recreation uses are, and how these two are linked via a transportation system. It is broadly agreed that the primary purpose for practitioners to conduct surveys is that they are trying to know more about the users and the potential users of recreation facilities and programs. Most efforts, however, have been focused on a statistical summary of user characteristics rather than analyzing the networks of activity provision. Certainly, it is hard to integrate spatial analysis into a survey (i.e. people have difficulty reading maps). But beyond this, Gold (1980) stated "the lack of new ideas or successful examples results in perpetuating traditional techniques which may be part of the problem rather than part of the solution." It is, therefore, understandable why a spatial context is not often included in recreation surveys.

Why is it important to apply spatial analysis in recreation planning? Instead of focusing on numerical data, planners can view the study area from the geographic and multi-dimensional perspective. For example, planners can plot the home locations of the recreation participants and the locations of the existing recreation facilities on the map, then the service areas of facilities can be determined and the network of recreation facilities can be delimited thus providing an account of the distribution of services for each citizen. With this advantage, it is possible to allocate facilities to the needy communities, avoid duplicative investment, capture both internal and external characteristics of the study area, evaluate accessibility, assess visual aesthetics, and decide upon an appropriate land management strategies.

## COMPUTERIZED MAPPING IN RECREATION PLANNING

Salichtchev (1983) pointed out that cartography concentrates and stores in maps a tremendous amount of spatial information, a sum of knowledge about the location, the state, the interrelations, and the dynamics of natural and socioeconomic phenomena. He further argued that a comprehensive analysis of these phenomena is necessary for successful utilization of maps. Therefore, maps for spatial analysis could be defined as anything that can add insight into patterns of distribution, gradients, densities, and associations (Carter 1984). Recreation planning maps can be of two basic types: 1.) a resource base map, and 2.) a series of comprehensive resource facility maps "overlayed" to produce a composite map or maps (Devine 1979). In the past, manual drawing was the only way to produce any map. With advances in computers, today it is possible to produce maps more efficiently and accurately than can be done manually. It has been stated that any discipline that has to do with graphics can use computer cartography to their advantage (Carter 1984). Within the arena of computer cartography, two general mapping techniques may offer promise for urban recreation planning. These include *Geographic Information Systems* (GIS) and *Computer Aided Design* (CAD).

GIS technology, an analytic toolbox, provides a means for quantitative modeling of spatial relationships (Berry 1986). GIS can be defined as internally referenced, automated, spatial information system designed for data management, mapping and analysis. GIS processing functions allow spatial data base management, spatial statistics, and cartographic modeling within the automated environment. For example, if the planner needed to decide a new location that meets certain criteria, such as public-owned lands, appropriate soil types, recreation lands in land use plan, etc., it is relatively easy to identify all possible locations automatically with the GIS. Producing "overlayed" maps of multiple features (e.g. ownership, soil type, land use, etc.) is a major advantage of GIS.

On the other hand, CAD has been broadly applied to graphic design, engineering design, and architectural layouts in recent years. Essentially, CAD refers to any activity where a computer is used to design, construct, analyze, or store a map (Carter 1984). CAD enables users to concentrate on the creative role of planning and design as opposed to the tedious drafting of that design. However, CAD is not without limitations. The most obvious shortcoming of CAD is that data analysis is not automated. That is, the CAD map has no automated reference to the data it is displaying and the operator must create a new data set for each map. In the above example, if the planner was considering the ownerships, soils, and land uses, he would need

to map each layer separately and manually identify all possible development sites from these layer maps by overlaying the layer maps on a light table. Then, the composite map of suitable development locations would have to be manually digitized to a new map file. This process is rather tedious and mistakes may arise because it is very difficult to search through "overlayed" layers. However, the visual quality of CAD is generally excellent for presentation. This is because CAD allows more ease and flexibility in editing and changing any specified linetype, font, shading pattern, and thickness of the graphic elements. For most GIS to do the same visual job, it would involve more procedures and sometimes it would be very time-consuming.

## PURPOSE OF STUDY

A 1983 study indicated more than one-third of U.S. recreation agencies use computers (Stuyt and Siderelis 1984). But the uses of the computer have been limited to primarily business operations. Very little attention has been focused on mapping efforts. In addition, the exploration of computer mapping technology to assist broader recreation planning has also been very limited. As such, the purpose of this study is to evaluate the application of automated mapping procedures to urban recreation planning.

## FOUR TESTS TO ACCOMPLISH THIS STUDY

To accomplish the evaluation, several planning analyses tasks were examined through application of a computer mapping system in a representative test. That is, four tests were developed to demonstrate the applicability of computer mapping to urban recreation planning. The following tests were used to perform the evaluations.

1. Address Matching Study for a Recreation Survey.

This test was an attempt to relate expressed recreation needs to geographic location. Survey responses that indicated a desire for more facilities were analyzed from a spatial perspective. That is, survey respondents' answers were evaluated relative to their home locations and locations of the existing facilities. With this spatial perspective, planners are able to allocate recreation facilities and programs to the expressed needs more effectively. In addition, the survey participant's spatial distribution was also identified. This test included two measurements, 1.) time consumed for each sample address matching and 2.) distance from home location to the nearest park. All measures were performed manually and with a GIS automated procedure. The test compared both methods for efficiency and accuracy.

2. Accessibility Study of Transportation Routes.

This test evaluated the effectiveness of existing public transportation routes in serving the recreation needs of the public. To determine transportation service area manually, two circles with a radius of 0.25 and 0.50 miles[6] respectively were drawn from the respondent's home location. If there was a park within the 0.50 mile radius, it was assumed that people could walk to the park without transportation. However, if there was no park within 0.50 mile radius, it was assumed that they could get to the park by bus and that 0.25 miles was a comfortable distance to get to the stop from both home and park locations. On the other hand, to determine the transportation service area automatically, polygons as opposed to circles were drawn by connecting actually reachable street links within 5 and 10 minutes. That is, in addition to comparing the efficiency of manual and automated transportation analysis procedures, this test also demonstrated an approach to assessing the existing public transportation system's effectiveness in affording residents access to parks.

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[6] 0.25 and 0.50 mile radii were derived from converting 5 and 10 minutes walking distances based on 3 miles/hours.

3. Recreation Service Area Study.

This test evaluated community-setting recreation opportunities through "effective" time-distance zones from home locations by walking and driving. If the resident could walk to the park in 10 minutes, it was assumed that they could get to the park without driving. Otherwise they would probably need to drive to get to the park. The effective service areas were determined by actual street distance as opposed to drawing a straight line centered on the facility. That is, the effective service area was derived by connecting the end points of street links reached in 10 minutes driving. In this test, if a survey response of "Too Far" to get to a specified facility was encountered, then this response was checked against the actual traveling distance to the closest facility and compared with the effective recreation service area.

4. Efficiency Study of a Sample Recreation site Planning Process.

This test was to experiment with the different mapping procedures in a recreation site planning process. The purpose of this test was to suggest the most effective procedure for site planning and to examine the advantages and disadvantages of different mapping approaches. The test focused on the development of a park design drawing accomplished by both manual and automated techniques. The test emphasized a map production effort. It combined manual and automated drafting procedures to produce a draft recreation site plan. Time and quality measurements of manual and automated elements of these efforts were recorded.

The construction of street data for the first three tests of automated procedures was based on the 1980 DIME (Dual Independent Map Encoding) files, developed by the Census Bureau. A digital DIME map files related to households by the appropriate block face, block, and tract (Monmonier 1985). For the purpose of computerized map accuracy and distance calculation, DIME files use latitude/longitude coordinates for geographic reference. TIGER (Topologically Integrated Geographic Encoding and Referencing) files are the updated and improved version of DIME. It is foreseeable that any discipline that needs to deal with geographic relationships would benefit from the release of 1990 TIGER files by the Census Bureau. TIGER is a nationwide, non-confidential, and publicly available data base for the general user community (Cooke 1990).

A good way to characterize the relationships between recreation planning and these mapping tasks is to consider the National Recreation and Park Association's (NRPA) planning activities (Reed and Perdue 1979) and Gold's (1983) recreation planning principles. NRPA stated that there are four major planning tasks. They are:

1. Regional Analysis. establishing the function of the park in relation to the community, region, state or nation.
2. User Analysis. identification of social and behavioral characteristics of users.
3. Management Analysis. analysis of the agency or organization process for planning and operation of the park.
4. Resource Analysis. analysis of site characteristics to determine developmental capability and recreational suitability.

Gold identified the following six recreation planning principles as basic to the success of any planning effort. They are:

1. All people should have access to activities and facilities.
2. Public recreation should be coordinated with other community recreation opportunities.
3. Public recreation should be integrated with other public services.
4. Facilities should be adaptable to rapidly changing and special populations.
5. Citizens should be involved in the planning process throughout all stages.
6. Facilities should make the most efficient use of land; should be designed and managed for the welfare of intended users; and should represent a concern for people and the environment.

TABLE 1 describes the correspondence of each of the four tests in this study to Gold's planning principles and NRPA's analysis tasks.

Table 1. The correspondence of each of the four tests in this study to Gold's planning principles, and NRPA's four analysis tasks.

| Contents of Four Tests | Software Package | NRPA's Four Analysis Tasks | Gold's Principles |
|---|---|---|---|
| Test 1 Address matching study for a recreation survey. | | | |
| Purpose: To identify | | | |
| 1. recreation participant's spatial location.<br>2. characteristics and opinions of participants in a spatial context.<br>3. spatial distribution of recreation facilities. | GIS | 1, 2, 3 | 1, 4, 5 |
| Test 2 Accessibility study of transportation routes. | | | |
| Purpose: To evaluate | | | |
| 1. public transportation systems in the context of recreation opportunity provision.<br>2. effectiveness of public transportation service. | GIS | 1, 3, 4 | 1, 2, 3, 4, 5 |
| Test 3 Recreation service area study. | | | |
| Purpose: To evaluate | | | |
| 1. spatial distribution of recreation opportunities.<br>2. effectiveness of recreation opportunity provision.<br>3. spatial perspective of users needs and demands. | GIS | 1, 3<br>4, 5 | 1, 2, 3, |
| Test 4 Efficiency study of a sample recreation site planning process. | | | |
| Purpose: To evaluate the efficiency of | | | |
| 1. preliminary analysis of site plan.<br>2. upgrading and modifying existing facilities. | CAD | 1, 2, 3,<br>4 | 3, 4, 5<br>6 |

Study Results and Discussion

The software packages used included a Geographic Information System (LANDTRAK[7]) for the first three tests and a Computer Aided Design package (AUTOCAD[8] / LANDCADD[9]) for the final one. All of these four tests were performed on a 386 workstation (20 MHz). The software selection factors considered included ease of use, training, cost of software, and intention of software application. LANDTRAK, a vector-based package, was selected because of its excellent characteristics with more networking and manipulating capabilities. It can easily provide an optimal path between two or more locations as well as time-distance allocation of street network from one or multiple selected locations. Once data is completed, it is possible to train an operator to perform basic functions of LANDTRAK in less than two hours. On the other hand, there were two reasons to use AUTOCAD incorporated with LANDCADD. One was because most of the design firms use CAD in their operation. AUTOCAD is the overwhelming leader among CAD software in the planning marketplace. Therefore, recreation planners should take advantage of this software when involved in a drafting project. In addition, LANDCADD, a site planning third party software package of AUTOCAD, provides many useful tools for recreation planners to analyze the feasibility of new facility development in conceptual site planning process. In short, it is more efficient for the recreation planner to operate an user-friendly drafting package for site planning than to bear the overhead (i.e., difficulty of use) of employing a full GIS where it is not needed.

Test 1. Address Matching for a Recreation Survey.

Address matching for a recreation survey is a very useful approach for a researcher to view participant location in relation to existing facilities and survey responses (FIGURE 1). In this evaluation a manual and an automated procedure were compared. The automated procedure was more efficient in terms of time consumed. To manually measure the distance of each participant's home location to its nearest park, it took approximately 5.3 minutes. To measure the same distance with a computer procedure, it took approximately 2.6 minutes (TABLE 2).

In terms of accuracy of the distance measurements, manual results were longer than those of the automated technique by an average of 0.3 miles. This is because the manual measuring process often did not find shortest path. That is, the shortest path of manual measurements was determined by operator's intuition. On the other hand, the automated procedure's results were derived through a computer based search process to find the actual optimal path.

In general, to locate the home locations on the base map manually was a tedious task. First of all, it depends on researcher's familiarity with the city. It is still hard to find street names on the map. Second, not every block is equipped with address ranges on the map. It was only possible to locate the home address through approximate location. Accuracy is a major weakness of the manual approach. Third, it is difficult to analyze simultaneously several variables from the survey data on the same geographic sheet. Therefore the process includes considerably more time and complexity by requiring multiple sheets. Finally, reproduction of an analysis map is another labor consumptive task.

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[7] LANDTRAK is a registered trademark of GeoBased Systems. The computer software used in this study was Version 3.4.3 in December, 1988.

[8] AUTOCAD is a registered trademark of Autodesk, Inc. The computer software used in this study was Release 10 of the AUTOCAD design package of November, 1988.

[9] LANDCADD is a registered trademark of LANDCADD, Inc. The computer software used in this study was Version 9.5 in July, 1988.

FIGURE 1. Address matching of survey responses, spatial distribution of recreation facilities, and delineation of effective recreation service area within 10 minutes driving time of Marsh Creek Park.

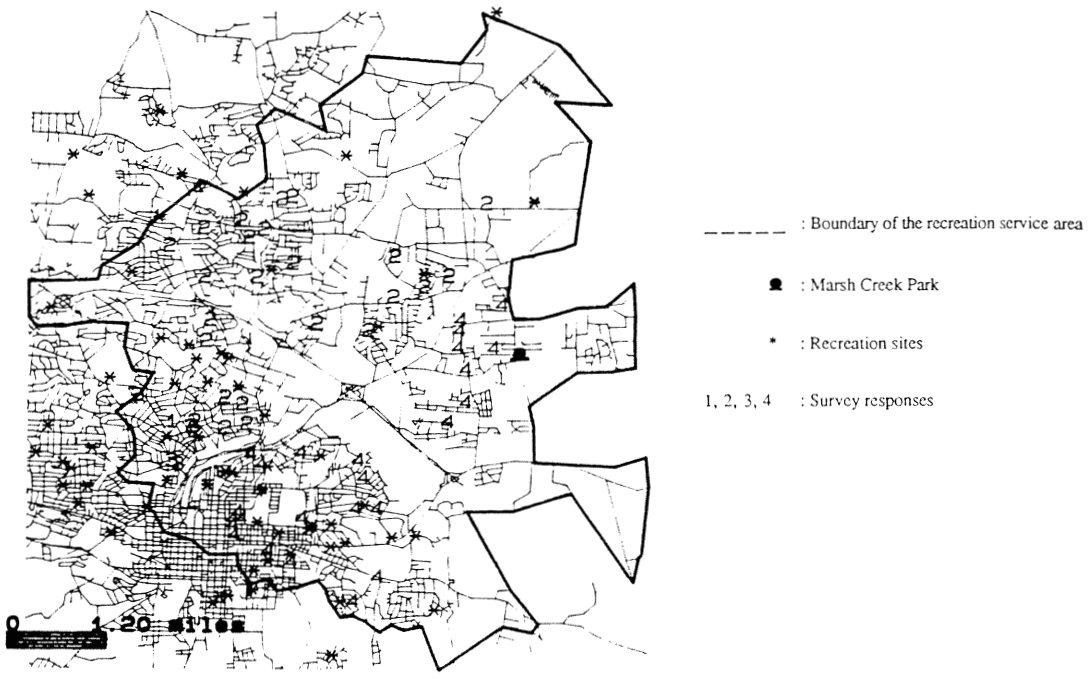



Table 2. An efficiency evaluation of address matching by manual and automated procedures.

| Procedure: | Time Consumed* (minutes) Manual | Automated | Distance Measurement** (miles) Manual | Automated |
|---|---|---|---|---|
| Point: | | | | |
| 3143 | 5.1 | 2.2 | 1.6 | 1.4 |
| 2054 | 4.5 | 1.5 | 0.5 | 0.4 |
| 1068 | 5.6 | 2.1 | 3.4 | 2.3 |
| 2115 | 5.4 | 2.6 | 1.6 | 1.5 |
| 116 | 6.3 | 4.3 | 2.5 | 2.5 |
| 3132 | 4.8 | 1.6 | 0.2 | 0.1 |
| 2113 | 5.0 | 3.8 | 1.3 | 1.1 |
| 1224 | 5.2 | 2.3 | 0.6 | 0.4 |
| 1201 | 5.7 | 2.9 | 2.1 | 1.6 |
| 1184 | 5.8 | 2.7 | 1.7 | 1.3 |
| Average | 5.3 | 2.6 | 1.6 | 1.3 |

* : time consumed in measuring each participant's home location to its nearest park by both procedures.
**: actual street distance measured between participants home location and its nearest park by both procedures.

Locating street addresses by automated procedures did show some advantages. First, it eliminated the painful effort of finding street links and labels manually on the map. The most time-consuming process of the automated procedure was typing in these addresses. Second, it is possible to analyze certain spatial relationships very quickly. For example, it enabled the researcher to compare survey requests for more tennis courts to the locations of existing tennis facilities in 10 seconds. This is important and useful when considering the allocation of new facilities. Third, it is very likely that accuracy would be the most important advantage. The automated method was not only able to locate the survey responses to the DIME-based sample links accurately, but also relieved the problems due to uncertainty of street address ranges. That is, the DIME procedure reasonably located address positions on the street map in one step. Most manual procedures would require the cataloging of the all address ranges for each street link prior to location. Finally, map reproduction is another important advantage of the automated procedure. A new map can be produced (i.e., a new question evaluated) in as little as 30 minutes.

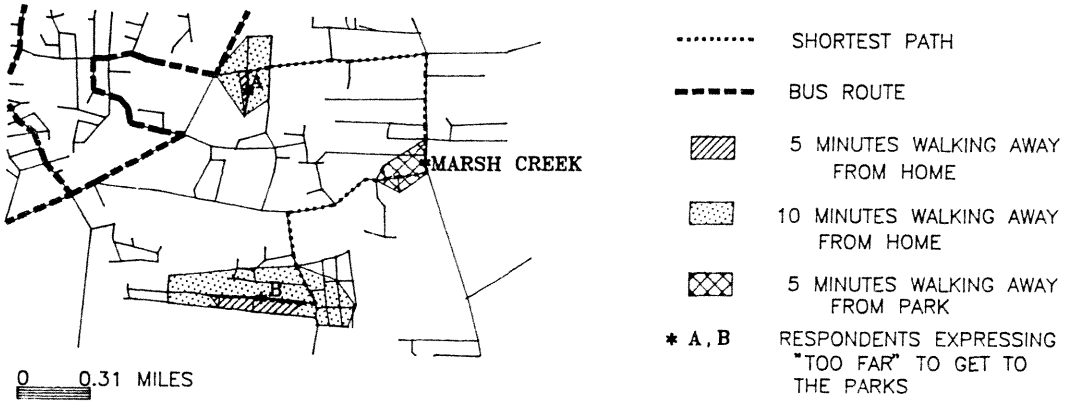
In terms of measuring distances, the automated procedure was far better than the manual procedure. It easily provided a "Shortest Path" with a detailed street description (TABLE 3 & FIGURE 2). These results were accomplished by using the GIS to make geographic searches. This unique function will be a very helpful tool for recreation agencies which may wish to establish an "Information Division for Recreationists", similar to an emergency dispatch system.

Table 3. An example of shortest path street listing

| Direction | Street | Dist. | Time* |
|---|---|---|---|
| Starting | on SKYCREST DR | 0.00 | 0.00 mins |
| Turn left | on E TRAWICK RD | 0.25 | 0.61 mins |
| Turn right | on MARSH CREEK RD | 0.78 | 1.51 mins |
| Ending | on MARSH CREEK RD | 1.43 | 3.07 mins |

*: Driving time is derived from automated procedure, based on the following speed standard:
Interstate: 55 miles/hour U.S. Routes: 45 miles/hour
Primary: 35 miles/hour Secondary: 25 miles/hour

FIGURE 2. Shortest paths to the recreation site, effective walking zones, and accessibility study of transportation routes.



Automated procedures are not without shortcomings. It is extremely important to acquire an accurate and up-to-date data base for street links. It is very common for a computerized data base of street links to be far behind the actual street system. For example, in this demonstration study 323 survey samples were used. However, only 126 sample addresses were matched. The matching rate was only 39% (100% for recreation sites with accurate detailed addresses). Those unmatched samples were due to bad addresses or the rapid growth of the city. That is, the data base of streets acquired in 1980 did not keep track of the tremendous changes of the city after that date. This could be improved by periodic editing the street link file or perhaps by using the software to create a list of unidentified addresses (LANDTRAK is able to identify and assign to an individual file those with address errors).

Test 2. Accessibility Study of Transportation Routes.

To integrate the public transportation system into recreation opportunity provision, it is essential to process existing bus routes. To place these routes in a map took about 15 minutes manually and 29 minutes with an automated procedure for routes with a 13 mile average service length (TABLE 4). Continuously changing view windows to connect street links explained the time difference for the automated procedure. However, this process was an one-time only effort. For further analysis and map production, only a little effort (e.g. 10 seconds for a new map display) was needed.

In this representative accessibility evaluation, there were no existing recreation facilities within a 10 minute walking zone of the home locations of the two survey sample participants (FIGURE 2). That is, the respondents have to walk more than 10 minutes to get to the nearest park. In addition, the most likely way for them to get to the park is driving, because the existing public transportation system does not stop within a 5 minute walking zone of the nearest park. It took 6 minutes for respondent A to get to the nearest bus stop and 32 minutes for respondent B. With this analysis, it was understandable why the respondents complained that existing facilities were "Too Far".

Table 4. Efficiency of bus Route entry by manual and automated procedures

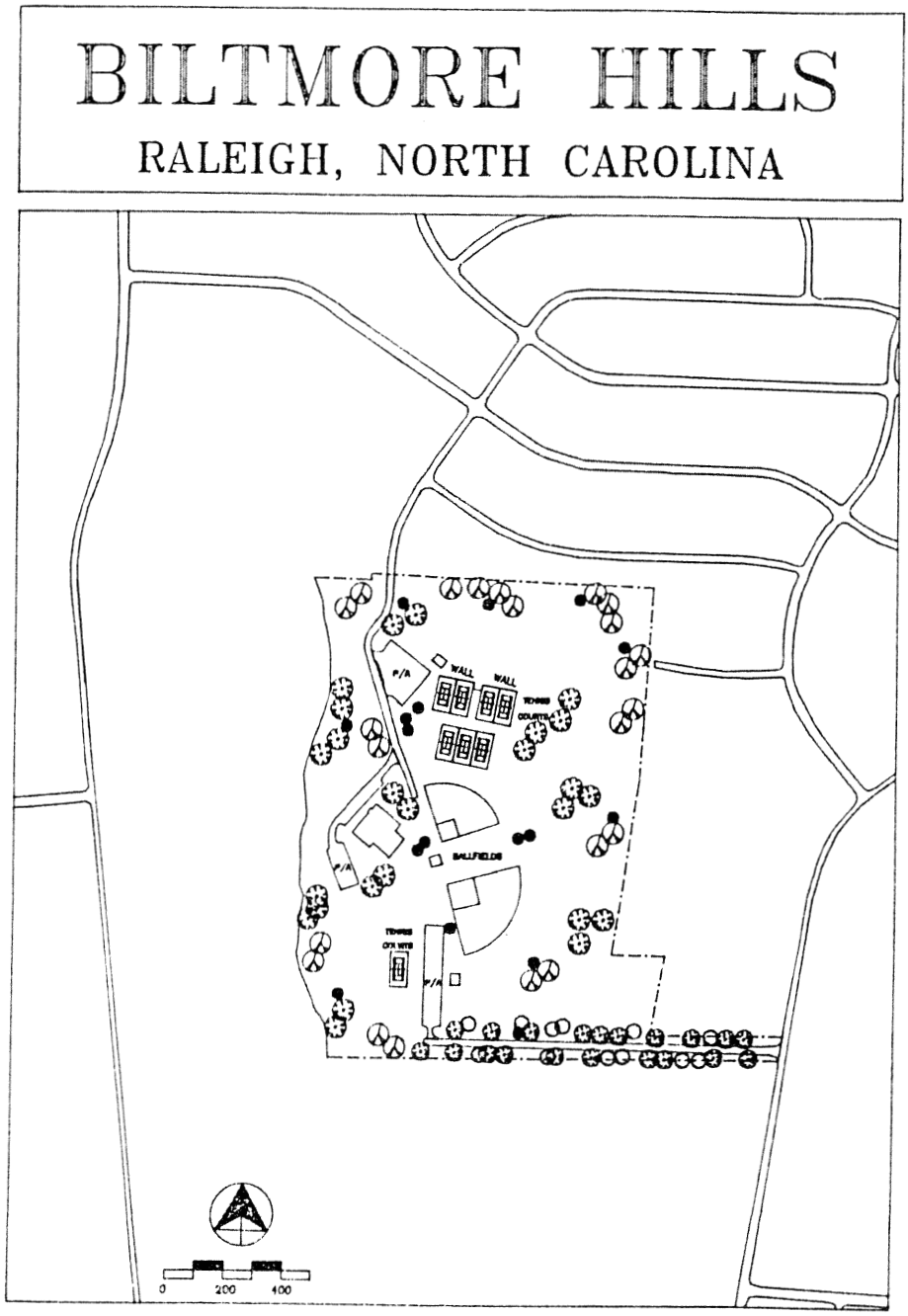
| Procedures: | Bus Route Entry (minutes) Manual | Automated | Bus Route Measurement (miles) Manual | Automated |
|---|---|---|---|---|
| Route: | | | | |
| 10 | 12.4 | 23.0 | 6.4 | 6.7 |
| 3 | 11.5 | 22.6 | 7.0 | 7.8 |
| 17 | 17.3 | 33.4 | 14.6 | 17.4 |
| 6 | 14.7 | 35.0 | 15.7 | 18.5 |
| 11 | 17.1 | 29.1 | 12.6 | 14.3 |

Test 3. Recreation Service Area Study.

Evaluating the public's expressed desires in relation to existing recreation facilities is a very helpful method in determining development priority. This exercise calculated the service needs of survey respondents relative to the "street" distance to existing facilities. For demonstration it was assumed that a respondent was "served" by an existing facility if the facility was 10 minutes or less driving time from the respondent's home.

Therefore the computer system was queried for a sample set of respondents who answered that they needed "more" of a facility. For each selected respondent a determination was automatically made that identified facilities within the 10 minute driving service polygon (FIGURE 3).

FIGURE 3. Application of computer mapping techniques to recreation site planning.



The effective service polygon discussed in this study is an attempt to define the service area on the basis of actual time that it takes for a participant to reach the facility from the participant's home with the participant driving or walking. Here, it is important to identify the difference between service radius and effective service polygon or zone. The service radius technique has been extensively adopted by recreation planners to determine effective service area. The service radius method merely delimits a service area via a radius of fixed length. A circle defined by this radius is centered on the facility and is assumed to be the service area of the facility. For example, a tennis facility might be deemed to serve all residents within a 0.50 mile radius. The advantage of this technique is ease of use. Planners may draw many different radii to assess different facilities' service areas on the same site. However, in terms of actual accessibility, the service radius is likely not accurate. First of all, it assumes the actual geographic distance is a straight line from center to the end point reached. This is generally not true. People walk drive, or ride public transportation on the roads; that is, follow the street links. Only very few shortcuts exist for people to walk in a straight line to a facility. Second, it does not take into account the differences of road types. It is unlikely that a visitor could drive with a constant speed on different standard roads.

The effective polygon (i.e. calculated service area via street links) was derived from two steps. It first used a computer program to identify every possible street link within defined time-distance criteria. Then, the effective polygon was formed by connecting the end points of each reaching street link. This approach seemed to be reasonable given real world driving conditions. However, the major shortcoming of this technique is difficulty of use. It is very difficult to conduct manually. Even with advantage of computer capability, it still took a considerable period of time to identify all possible street links (e.g. it may take up to 1 hour to determine the 10 minute driving range over a computerized street network). This problem may be improved by the arrival of faster computers.

The majority of the respondents who requested more facilities were within 10 minutes driving time of an existing facility (TABLES 5-7). This implies that either the existing facilities are very crowded or the respondents are unaware of their presence assuming that 10 minutes is an acceptable service range.

Table 5. Distance and time to the nearest facility for respondents expressing the need for "more" tennis courts

| Point | Distance (miles) | Driving Time (minutes) | Location of NearestFacilities |
|---|---|---|---|
| 3132 | 0.62 | 1.48 | Chavis |
| 1212 | 1.53 | 2.76 | Millbrook |
| 1196 | 0.55 | 1.28 | Cedar Hills |
| 1201 | 1.53 | 3.11 | Brentwood |
| 1145 | 2.13 | 4.41 | Lions |
| 2305 | 0.89 | 1.86 | Jaycee |
| 288 | 2.82 | 4.83 | Glen Eden |
| 1207 | 1.95 | 3.88 | Eastgate |
| Average | 1.50 | 2.95 | |

Table 6. Distance and time to the nearest facility for respondents expressing the need for "more" swimming pools

| Point | Distance (miles) | Driving Time (minutes) | Location of Nearest Facilities |
|---|---|---|---|
| 3132 | 0.62 | 1.48 | Chavis |
| 1212 | 1.53 | 2.76 | Millbrook |
| 1196 | 1.33 | 2.55 | Optimist |
| 1201 | 3.52 | 6.16 | Millbrook |
| 1145 | 3.19 | 6.85 | Pullen |
| 2305 | 1.25 | 2.63 | Pullen |
| 2013 | 3.20 | 7.12 | Pullen |
| 3191 | 1.75 | 3.75 | Chavis |
| Average | 2.05 | 4.16 | |

Table 7. Distance and time to the nearest facility for respondents expressing the need for "more" ball fields

| Point | Distance (miles) | Driving Time (minutes) | Location of Nearest Facilities |
|---|---|---|---|
| 3132 | 0.62 | 1.48 | Chavis |
| 1212 | 1.53 | 2.76 | Millbrook |
| 2098 | 2.42 | 4.49 | Kentwood |
| 2113 | 1.05 | 2.24 | Pullen |
| 156 | 4.31 | 7.26 | North Hills |
| 2220 | 2.02 | 4.13 | Jaycee |
| 3030 | 2.56 | 5.25 | Green Road |
| 1207 | 1.32 | 3.17 | Kiwanis |
| Average | 1.98 | 3.85 | |

Test 4. Efficiency Study of a Sample Recreation Site Planning Process.

In this evaluation study, different approaches to site mapping were tested by the following criteria to determine the best procedure.

1. Initial drafting. To produce the base map with initial characteristics, including streets, property boundaries, and existing facilities took 3.5 hours with a entirely computerized process (FIGURE 3). It is estimated from the former experience that it would take 6 hours to manually draft the base map. In the manual effort, most of the time was spent referencing maps of different scales to the appropriate base map (4 hours minimum). The most advantageous element of the computer process was the construction of curved lines. A smooth curved line can be accomplished easily with computer. On the contrary, to derive smooth curve lines manually is a complicated and time consuming process.

2. Change Scale. To change scale by computer is simple. It can be accomplished within less than half hour in the plotting process. That is to assign the desired scale in the plotting set-up step. However, it is a significant

effort to change scale manually. The time required for manual change is about the same as to draw a new map (i.e. 6 hours).

3. Addition of New Facilities. To locate a new facility on an existing site or to modify existing facilities to function better is part of the recreation planning effort. In addressing these potential changes, Computer Aided Design (CAD) is a very helpful tool to handle these tasks. For example, to locate new facilities on an existing site, planners can get a quick view about how the new facilities may impact the site and its spatial relation to the other facilities by automatically moving them around the site. On the other hand, doing the same tasks manually would require drawing several maps.

In general, the computerized map was characterized by precision and the capability of mass production. A unique time-saving advantage was its powerful data bank of various hatch patterns and plant symbols. These elements are important factors in successful map communication. Although some critics may view them as non-human symbols, they do give designer more free time for creative thinking instead of tedious and repetitive manual drawing. In addition, in terms of map reproduction, the manual drawing technique is far behind the capabilities of computers. Combination of both procedures may soften the mechanical image of a computerized map and improve the precision of manual drawing.

In summary, CAD can not only assist planners to produce high-quality maps more efficiently, but also can facilitate more comprehensive decision-making. This is because CAD enables the planner to have more time in creative thinking instead of focusing on time-consuming drafting. For recreation planners to achieve effective planning efforts, it will be a wise choice to computerize existing recreation site plans.

## CONCLUSION

To achieve effective recreation planning, it is essential to have a better understanding of the recreation participants. In addition to standard information concerning people's needs, a spatial context is indispensable in considering recreation opportunity provision. With a spatial perspective, it is more likely that a well-balanced recreation system can be built and participants' needs can be met.

The purpose of this study was to demonstrate how computer mapping techniques could be applied by recreation planners to view people and people's needs from a spatial perspective. In addition, the study demonstrated the efficiency of computer mapping in the recreation site planning process. Computer mapping techniques will enable the planner to conduct more explicit analyses with less effort.

In the address matching test, the geographic distribution of survey respondents and existing recreation facilities was analyzed. This analysis provided insight into the correspondence of survey responses to participant and facility location.

A comprehensive recreation plan not only has to take internal factors into account, but also has to consider external factors and cooperation with other public services. Better transportation could be a very useful facilitator for urban dwellers to access recreation opportunities. Meanwhile, it is important for recreation planners to explore how other public services can best assist in the provision of recreation opportunity. For example, more uses of a greenway system could potentially be served if it was planned in concert with the transportation system. Participants could perhaps experience and easily access different segments of greenways without taking time to find a parking space nor walking back to where they parked on the same greenway. This objective may be easily accomplished by analyzing the greenway system and public transportation system from a spatial context to determine appropriate service zones.

Perhaps geographic needs are one of the most important determinants in recreation opportunity provision. By analyzing the spatial relationship of user's needs and existing facility locations, unbalanced locations of facilities were identified in the sample test. To determine an effective service radius, it is better to employ a time-distance approach instead of drawing a circle from recreation site with specified radius. This is because actual street links are not always straight lines stretching from recreation sites to home locations. Geographic Information Systems (GIS), with geographic search capabilities are a useful tool for the recreation planner to determine more explicit effective service radius.

With advances in Computer Aided Design (CAD), manual drafting in the site planning process should become automated. The efficiency of the use of CAD systems in the recreation design was demonstrated in this study. This efficiency advantage allows planners to concentrate more on the quality of planning instead of on the details of drawing. In addition, it enables the planner to reproduce colorful and dependable maps more easily. With the editing ability of CAD, it also provides considerable time-saving in up-dating procedures

Recreation planners can benefit from the existing computer mapping technology. However, it is also important to explore the application of similar technology to more comprehensive activities than just map production. For example, computer programs to handle visualizations of new designs, formulation of design hypothesis, and intelligent CAD systems are very likely. In this study, computer mapping technology did provide some favorable results which without the computer would be very hard to derive. Further research should be undertaken to apply these experiments on a larger scale and with more extensive applications.

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# ESTIMATING DISPERSED RECREATION USE IN MULTIPLE ACCESS SETTINGS USING PARKED VEHICLES

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Abstract. Limited research has been conducted on the amount and nature of dispersed recreation use with multiple access points such as lakes and reservoirs. This research outlines a six-step procedure used to estimate the number and type of recreators found in this type of area.

## INTRODUCTION

In order to make informed planning and management decisions, resource managers need accurate information regarding the amount, type, and distribution of recreation use on their lands. This information is often essential for determining such things as facility and road construction, redistribution of use pressures, and allocation of personnel and money. In addition, government agencies are placing more emphasis on obtaining accurate visitation figures from their sites.

While use estimation techniques for developed areas such as campgrounds, swimming areas, and picnic grounds exist, those from the low density or dispersed use areas are limited. Dispersed recreation can be defined as "those forest, range, and desert- oriented recreation activities that normally take place outside of sites or areas that are developed or managed to concentrate recreational use" (Shafler and Lucas 1978). Estimating a park's dispersed recreation use can be difficult since this type of use is usually thinly scattered over large expanses of land and water and use is highly mobile and constantly in flux (James 1971).

Previous techniques have estimated visitation in dispersed use settings by identifying visitors as they enter or exit a roadway (Cushwa and McGinnes 1964), a trailhead (Lucas et al. 1971; Leatherberry and Lime 1980), a launch site (James et al. 1971), or as they pass a given segment of waterway (Marnell 1977). In these studies, access to the dispersed use areas is limited. Well-defined accesses, such as trailheads, channel visitors through a controllable entrance or exit which aids in estimating visitor use.

In some dispersed use settings access to the resource is not limited thereby making use estimation more difficult. An example of this type of multiple access area would be large public lakes and reservoirs. These areas usually have a narrow band of shoreline around a body of water and parcels of land managed for low-density recreation or wildlife. Usually a number of paved roads and jeep trails crisscross the area allowing visitors to park their vehicles in a variety of places such as roadsides, ends of bridges, small parking areas, and roadends. Once access to these lands is obtained, recreation use is not limited to these areas and can easily extend to the water resource.

The purpose of this paper is to outline a technique that was developed to estimate visitation at Corps of Engineers (COE) dispersed recreation settings with multiple access points. From the Corps perspective it was essential that any visitor estimation technique satisfy the following four criteria:

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1) Be standardized for wide-spread use but adaptable enough to accommodate a variety of areas. (COE manages about 472 projects.)

2) Integrate well with existing use estimation techniques used for developed areas such as campgrounds and swimming beaches to avoid double counting.

3) Meet reporting requirements that specify use in terms of visitor hours. (Visitor hour is defined as the presence of one or more persons on an area of land or water for the purpose of engaging in one or more recreation activities during continuous, intermittent, or simultaneous periods of time aggregating 60 minutes.)

4) Possess a mechanism for periodically updating visitation figures.

The test site for this procedure was John H. Kerr Reservoir which is located in the Piedmont region along the border of Virginia and North Carolina. The project encompasses approximately 50,000 acres of water and supports significant levels of dispersed recreation use.

## METHODS

In studying dispersed use settings with multiple access points and fluctuating use patterns, it became readily apparent that covering all possible access points or trying to locate recreators in the field would be extremely difficult. Therefore, it was decided that finding the recreators[1] parked vehicle would be the most reasonable means of identifying use in an area. The use of a combination of mail-back surveys placed on the recreator's vehicle and car counts was proposed. Returned surveys would provide information on the number of people per vehicle, visitor's length-of-stay, type of recreational pursuits, and other information of interest. The vehicle counts conducted by surveyors would provide the total number of vehicles in area during a specified time. Visitation figures could be generated by correlating these two sources of information and then expanding the estimate to the entire area. The six step procedure used at John H. Kerr Reservoir to accomplish this task is described below:

### 1. Defining Dispersed-Use Seasons

Since the amount and type of dispersed recreation use differs throughout the year, the first step is for knowledgeable project personnel to group significant use patterns into "seasons." At Kerr, these "seasons" were not based solely on seasons of the year (i.e. spring, summer) but also reflected various hunting and fishing seasons (i.e. fall deer/turkey hunting season and spring turkey hunting season). It should be emphasized that other dispersed uses could take place during these seasons but these were believed to remain constant or were negligible in extent. Also due to time and budget constraints, the Kerr study was limited to October 1986 through May 1987 despite the year-round occurrence of dispersed recreation use.

### 2. Designating the Dispersed-Use Areas and Mapping the Road Network

The second step was to identify all Kerr's dispersed use areas. These areas lay outside developed project lands that are monitored by traffic counters or other means of determining use. Based on aerial photographs and project personnel knowledge, Kerr was divided into ten dispersed use sampling areas. Whenever possible, these areas were divided at county and state boundaries which proved to be useful since hunting seasons varied by state and county. Since an extensive road network traversed the areas, all roadways and jeep trails that visitors might use were identified and marked. Checkpoints, such as roadends, roadsides, and bridge crossings where users parked and dispersed to recreate were likewise identified. Each of the ten areas and their associated checkpoints were designed to be patrolled in two to three hours based on heavy use. Based on past research of visitor length-of- stay, this would capture most recreators.

3. Preparing a Sampling Plan

Sampling was conducted using a stratified random sampling approach. Potential sample days (N) from October to May were stratified into nine nonoverlapping strata based on expected similarities in dispersed recreation use. Strata were based on a combination of hunting and fishing seasons and days of the week as follows:

Stratum 1 - Saturdays/holidays/opening days during fall deer/turkey season (N =134)
Stratum 2 - Weekdays during fall deer/turkey season (N =421)
Stratum 3 - Sundays during fall deer/turkey season (N =110)
Stratum 4 - Saturdays/Sundays after hunting season (N =260)
Stratum 5 - Weekdays after hunting season (N = 700)
Stratum 6 - Saturdays/opening days during spring turkey season (N=57)
Stratum 7 - Weekdays during spring turkey season (N = 235)
Stratum 8 - Saturdays/Sundays after spring turkey season (N =103)
Stratum 9 - Weekdays after spring turkey season (N =120)

A simple random sample of the resulting sampling units in each stratum was then taken. The number of sample units chosen from each stratum were determined by an optimal allocation process.

4. Conducting the Survey

Researchers with the help of project personnel designed a survey appropriate for Kerr Reservoir. On the specified sampling day, surveyors drove through the designat area on a continuous and regular basis from sunrise to sunset completing each round every two to three hours. Whenever parked vehicles were encountered at or near designated checkpoints, a survey was left on the drivers door handle. Each survey was numbered and pre- stamped so it could easily be returned by mail or by the readily available drop boxes. Observational data such as vehicle type, license number, and educated guesses about the number of recreators per vehicle and their activities were recorded on data sheets. Vehicle description and license numbers were used to ensure that vehicles were not surveyed twice in a given day.

5. Analyzing the data

Survey and data sheet data were entered into a database management system and analyzed using a computer package called SAS (Statistical Analysis System) and Lotus 123. Of chief interest were visitation estimates from each strata that were totaled to yield project estimates for the study period. Other information such as recreational activities, distance traveled from vehicles, perceptions of land ownership, and home town information were also analyzed.

6. Monitoring Future Use

In order to estimate future recreation use, load factors generated from survey information. These load factors can then be applied to future vehicle counts within each startum using similar sampling strategies.

RESULTS

A total of 1,753 surveys were given out to visitors during the study period from October 1986 to May 1987. Since the recreators' names and addresses were unknown no follow-up reminders could be sent. Of the surveys given out, 535 surveys were returned for an overall response rate of 30.5%. Much of this low response rate was attributed to the high rate of return visitors. Through comparing license plate numbers, it was found that some visitors were counted and surveyed as many as five times. Persons receiving more that one survey had an increasingly higher chance of not responding to the survey than these receiving their first

survey. Most of the surveys were returned by mail (80%) although drop boxes were often available in the dispersed use areas where visitors parked. These boxes were used more frequently at the beginning of the study than towards the end. Reduced use of the drop boxes could be traced to vandalism and problems revolving around the maintenance and transport of the boxes.

Kerr's dispersed use recreators were largely day-users (98%) that came from the six counties surrounding the lake. Although hunting was believed to be the primary dispersed use activity, it was found that persons fishing were actually more prevalent. Table 1 illustrates how the various recreational activities were distributed over the nine strata. As shown, hunting was largely a fall activity while fishing picked up in the spring. Walking was the next most popular activity (8% of respondents) followed by picnicking, boating, nature study and collecting. "Other" activities included such things as sighting in rifles, bait fishing, sunbathing and off-road-vehicles (ORVs).

Visitors spent an average of 4.3 hours recreating at Kerr's dispersed use areas although 2 hours was the most common length- of-stay. Roughly 13.8 vehicles were found in each sampling unit (i.e. any possible sampling area on any possible sample day). Each vehicle contained an average of 1.69 persons. When asked how far they dispersed from their cars to recreate, many of the respondents (47%) reported traveling less than 0.2 miles, although there were a number of visitors (28%) that traveled over a mile from their vehicles. Most of these long distance travelers were either hunters or fishermen using boats. In comparing the first two strata, which were composed largely of hunters, persons recreating on weekends/opening hunting days (strata 1) were more likely to disperse farther from their vehicles than those recreating on traditional weekdays (strata 2). Also fishermen tended to stay closer to their vehicles than hunter unless they had a boat with which to disperse.

In looking at when the respondents arrived at the lake, a peak was noticed around seven to eight in the morning with a drop-off around noon and a smaller resurgence of arrivals in early afternoon (Figure 1). Hunters differed slightly from this pattern in that most came before noon with few arriving after lunch. In the winter season (stratas 4 and 5), the peak arrival time occurred shortly after lunch, probably corresponding to warmer afternoon temperatures.

Departure times of visitors from the lake showed a peak just prior to noon with a larger peak around four to five in the afternoon (Figure 1). Figure 2 shows the total number of parties that recreated in dispersed areas during each daylight hour. This total use of dispersed areas peaks between ten and eleven in the morning and remains high in early afternoon.

Visitation estimates were obtained using the following formula:

| | | | | | | |
|---|---|---|---|---|---|---|
| TOTAL VISITOR HOURS PER STRATUM | = | TOTAL # REC. VEH. PER STRATUM | * | MEAN NUMBER OF PERSONS PER VEHICLE | * | MEAN LENGTH-0F-STAY PER PERSON |

In this fomula, the total number of recreation vehicles was obtained form the data sheets recroded by surveyors. The mean number of vehicles counted in each sample unit was multiplied by the total number of available sampling units within that stratum. In order to reflect only vehicles containing recreators, an adjustment to the estimate was calculated removing non-recreational vehicles. The mean number of recreators per vehicle and length-of-stay were calculated from responses to survey questions.

Once visitation for each stratum was calculated, the figures for each stratum were added together to obtain the project-wide visitation estimate for the study period. It was was estimated that Kerr received 262,952.7 visitor hours of use during the eight-month study.

Table 1. Number of parties' participating in each activity by strata.

| | NUMBER OF PARTIES PARTICIPATING IN EACH ACTIVITY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Fish | Hunt | Walk | Picnic | Boat | Nature Study | Collec | Hike | Trap | Other |
| 1 Sat./Holidays; Fall Deer/ Turkey Season | 21 | 106 | 10 | 4 | 2 | 5 | - | 2 | 1 | 5 |
| 2 Weekdays; Fall Deer/Turkey Season | 22 | 51 | 4 | - | 3 | 2 | 3 | 1 | - | 5 |
| 3 Sundays; Fall Deer/Turkey Season | 3 | 1 | 3 | - | 1 | - | 1 | - | - | 1 |
| 4 Sat./Sundays; No Hunt | 44 | 3 | 3 | - | 4 | 2 | 4 | - | - | 4 |
| 5 Weekdays; No Hunt | 8 | 3 | - | 1 | - | 1 | 1 | 1 | - | 2 |
| 6 Sat./Opening Day; Spring Turkey Season | 68 | 2 | 6 | 4 | 5 | 1 | 1 | 3 | - | 0 |
| 7 Weekdays; Spring Turkey Season | 61 | 6 | 5 | 4 | 5 | 2 | 2 | - | - | 3 |
| 8 Sat./Sunday; No Hunt | 36 | - | 8 | 4 | 1 | 2 | 3 | 1 | - | 8 |
| 9 Weekdays; No Hunt | 27 | 2 | 4 | 2 | - | 2 | - | 1 | - | 0 |
| All Strata | 290 | 174 | 48 | 23 | 21 | 17 | 17 | 6 | 1 | 29 |

## CONCLUSIONS

Little was known about the amount and nature of dispersed recreation use on lands with multiple access points. The technique outlined in this paper helped capture a mobile, fluctuating group of recreators by targeting their parked vehicles. Observational data taken by surveyors was correlated with data from returned mail-back surveys left on the recreator's vehicle. Estimates of project-wide visitation for the eight-month period were obtained for reporting purposes. Rather than guess use, resource managers now have accurate estimates of visitation and could plan for and manage their dispersed areas accordingly.

While estimates of dispersed recreation use were obtained, several cautions should be stated. The first caution concerns trying to obtain specific site information from the estimates. The survey strategy used did not sample extensively enough in any given area to draw any specific conclusions about its amount and type of use. This technique is geared toward project-wide visitation only.

Second, seasons and strata for this technique must be carefully selected. At Kerr, winter stratas 4 and 5 may have extended too far into the warm weather of March and April and the onset of spring fishing since visitation picked up dramatically during this time. Since a basic assumption in Kerr's stratification was that each of the nine strata exhibit a similar type and level of recreational use, this flux of use created more variability withing the strata than was desirable.

A final caution involves use of this technique at other dispersed recreation areas with multiple access points. Due to the variety of potential sites and type of use, this technique should serve as a guide only with the realization that certain adaptations may be to be made in order to accommodate a particular project.

In addition to use estimates, this study also provided valuable insights about the dispersed recreation user. Resource managers at Kerr were interested to find out that while more vocal, hunters were not the largest group of dispersed recreators on the lake. As a result, resource managers may be more attuned to the needs of anglers and other identified recreators. Knowing when recreators characteristically use dispersed areas could also be useful to managers. During busy seasons and daily peaks of use, managers may wish to concentrate additional ranger patrols if necessary.

In the future, it is hoped an entire year of data will be obtained from Kerr Reservoir or some other site so that yearly use patterns can be examined. Also, more work should be done on using observational data obtained by surveyors to get such information as length-of-stay and number of people per vehicle. This may serve to reduce or eliminate in some cases the cost and time involved in surveying visitors. With additional refinement, this technique will hopefully be used for obtaining visitation estimates and use patterns in a variety of dispersed use settings with multiple access points.

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# EXAMINING OUR BASIC ASSUMPTIONS

Dr. Michael Lewis McGowan[1]

Abstract. This presentation examines the theological assumptions of Humanism and Positivism and proceeds with a dialectical consideration of the philosophical ramifications of operationalizing these assumptions. Past and current environmental policy and attitudes are discussed in light of wide spread adoption of the humanist-positivist theology.

## INTRODUCTION

The crisis before us today encompasses the state of the entire biosphere. Whole ecosystems are being disrupted, multitudes of species are being extinguished and the fundamental ability of the planet to sustain the cosmic miracle of life is being systematically compromised. We appear to have encountered a problem that modern methods and practices of control and power cannot handle. No application of technological, political or economic know how applied to a specific aspect of the problem appears to offer a solution that does not in some way result in de-stabilizing, compromising or otherwise exacerbating some other aspect of the situation.

The difficulty in developing viable and workable solutions to the present conundrum, I believe, lies in the fact that various and vastly different definitions of the problem have been formulated . Defined as a technological problem, we have pumped vast resources and billions of dollars into research and development, assuming that there must be a technological fix for a technological problem. Defined as an economic problem we have assumed it can be addressed by stronger economic growth and a world wide diffusion of production that will provide the wealth to address the problem. Defined as a political problem we create political policies assuming that politics at least will allow us to balance the effects of technology and economics. Consequently, the current administration appears to be intent upon performing the impossible alchemy of having it's cake and eating it too. More and better education has been proposed as a solution to the problem. As a former high school teacher, camp director and presently a member of the higher academic community, I can assure you that the present system of environmental education is inadequate to the task of addressing a problem of this magnitude. Environmental education and school camping programs are the first areas of study to suffer attrition from political and economic pressure. It appears that our scientific, economic and political institutions are unable to agree upon a clear definition of the problem.

I respectfully submit that we have not defined the problem accurately and that all our attempts to address the problem have been ineffective for that very reason. I also contend that this has been due largely to the fact that we have confined our attempts at defining the problem to currently fashionable and extremely narrow minded methods of examination and definition. I further contend that limited and narrow minded methods of examination and definition have resulted in the development and exacerbation of the problem as it exists today. These methods have caused us to point at symptoms and pronounce that we have found causes. Some other method of examination and definition must be found which will allow us to accurately define the problem and thus take effective action toward ameliorating the situation.

It has been said that theological and philosophical arguments are meaningless and in no way practical. After all theologians and philosophers argue about silly things such as: How many angels may dance on the head of a pin? Physicists on the other hand argue about important things such as how many atoms may dance in the head of a pin. The practicality of such discussions and whether either argument affects us personally,

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individually in our daily lives is clearly in doubt. But theology, philosophy and physics all affect us in important ways. Certainly the effects of these disciplines are more far reaching than the absurd examples I have chosen. They were, however, chosen purposefully to illustrate that theological, philosophical and scientific inquiries all are subject to absurdity if they are put to ends beyond their inherent capacities.

To understand the inter-related roles that theology, philosophy and science play in our lives we must examine the relationship between them and the methods by which they inform each other and as they therefore inform us. The first point in this examination is rather striking for we find that the logical methods of inquiry in theology, philosophy and science are more similar than they are different in their essential characters. Indeed, the logical method was first developed in theology then philosophy and has been borrowed by science.

Theology is the root of philosophy for it is concerned with the pivotal assumptions that color our view of the universe. Is there a God? What is the character of God? What is man's relationship to God? What is God's role? What is man's responsibility to God. Theology thus informs philosophy with a set of assumptions regarding the universe. Primary theological assumptions underpin the philosopher's logic and influences his experiential search for truth, goodness and beauty. For example; What should the universe look like if there is a God? What should it look like if there isn't? Through personal observation and experience the philosopher tests these truths for validity. Philosophy then informs, directs and controls scientific inquiry. It is impossible to alter the order of this hierarchy with out destroying also, the reliability and validity of ones experiential findings. Objections have been raised to this principle and attempts to circumvent it have been tried but the principle itself has never been invalidated. Indeed the modern experiment with psychology and technology has served to provide a mass of evidence regarding the fundamental connection between truth, goodness and beauty.

Pursuing truth requires the choosing of the truth from among various lesser truths. Similarly, the pursuit of "the good" implies choosing among various lesser goods. The idea is to choose the greatest truth that will enable the greatest good. Ethics which is concerned with behavior becomes possible only in the act of choosing a specific good from among various goods. Means and ends are inextricably mixed. To engage in good behavior one must choose the greatest truth of the matter for the greatest good will always arise out of the greatest truth.

This brings us to the heart of the problem. Not only do we choose means but we also choose the ends to be served by those means. It is the fundamental principle of freedom that lies at the heart of the matter. Man either has freedom or he doesn't. If we make the theological assumption that he does possess free will to choose we may then proceed to a discussion of his ethical responsibility or irresponsibility toward the truth. If he has no free will then any such discussion will not only be fruitless it will be absurd.

The fact that science by design is insensitive to questions of right and wrong makes it impossible for science to answer questions regarding right and wrong, good and evil in our treatment of fellow creatures and the environment. Science can only deliberate upon questions of efficacy, predictability and congruence. These deal with "Know How" not "Know Why." Science develops technology! This places technology rightly and squarely under scrutiny by theology and philosophy which are concerned with matters of means of bringing about the good. I am reminded of a quote from an Indiana Jones movie. "Archaeology is about facts. If you are looking for truth try Dr. So and So's philosophy class down the hall.

The scientific age does not exist in a theological and philosophical vacuum but possess it's own theological dogmas and philosophical creeds. In the last 400 years we have replaced humane theology and philosophy with scientific humanism. As with all philosophies, the basic theological assumptions determine the character of the ethics that are derived through the action of theology upon philosophy. Judging from the outcomes, it appears that there is a fundamental problem with humanism in that it's basic assumptions are metaphysically unsound.

For a striking example one has only to contrast political philosophies that were arrived at through both theistic and positivist dialectical processes, in this example; Soviet Marxism and American democracy. One was founded upon positivist assumptions which permitted and provoked the dehumanization of subjects. The other was founded upon principles of justice, grounded in theological assumptions of rights and responsibilities which are held to inalienable and self evident because they are the gifts of God. The house of Soviet Marxism is now crumbling for it's lack of substantial foundation. We in the west, however, should not be smug at this turn of events, for our own theological-political foundation appears to be eroding from within and our house is certainly not in order.

Without a humane theology and philosophy to guide them, the logical sciences--politics, economics, psychology and technology--inevitably run rough-shod over people. Science is oblivious to human rights and dignity. Put to ill informed use, technology devastates not only humanity but the biosphere as well. The irony is that man pursues social science and technology in order to gain quality of life, as though quality of life was something that can be measured by the Stanford Binet, net income, political affiliation or gross national product (GNP). The theological assumptions of positivism serve as the foundation for the pursuit by humanistic sciences for developments in medicine, economics, engineering and psychology. How ironic that they succeed only because they permit us to view man and the universe as functioning like a machine within a big machine. Efficacy, prediction, and congruence are the tools applied by humanistic logic to understand how the machine works. Closer examination of these methods proves them to be not logical tests of validity but tests of reliability. Efficacy is neither good nor bad. Prediction does not evaluate the process it predicts. A fact's congruence to currently held theory does not evaluate the justness of it's consequences in reality.

The philosophy of Humanism allows us to make great strides in science and technology. But in doing so we have come to view the earth as merely a mine of resources and it's inhabitants as nothing but material for our self indulgent exploitation. The humanistic world is not a humane world. Animals are rationalized into mechanisms, metaphorically made into something less than they are in actuality. Even man himself is subject to degredation by the rationalizing action of this philosophy. Human states of being such as gender, growth, love, marriage, family, and community are reduced to mechanisms of survival. Human endeavors such as service, leadership, stewardship, craftmanship and art are reduced to economic functions. Human virtues such as courage, compassion, sensitivity, self discipline and self sacrifice are reduced to idiosyncratic behavioral attractants for insuring opportunities to copulate. Worship of the sacred and any attempt at striving for spirituality is diagnosed as an an obsessional neurosis.

These are all outcomes that have been derived from viewing the world from a philosophy grounded in a logical positivist assumption that denies the very essence and holism of man in nature. Therein lies the rub and the great danger. Humanism and positivism are not benign philosophies. They constitute a religion founded upon a limited set of theological assumptions. The most striking of which is the arrogant and anthropocentric assumption that by virtue of his location on the evolutionary ladder, man is the highest being in the universe and may therefore play at being god.

For mankind to apprehend an Environmental ethic he must begin by being sensitive to his place in the scheme of life in this world. This must be fundamentally an humble rather than violent interaction with the world. He must look more than he acts. He must contemplate more than he tinkers. He must gaze upon more than he dissects and experiments. Despite our attempts to become so, man is not the center of the universe, not the master of nature and certainly not it's possessor. He must live in and with it. He has limited dominion not mastery. With dominion comes noblesse oblige, the obligation of his position as a sentient and spiritual being to render justice to the rest of creation. He must extend his concept and practice of justice and render to the earth that which is it's due. The earth can be explained as a mechanism but it cannot be appreciated, loved and preserved when viewed as a machine. Nor can it be revered and held holy. One need not render justice to a machine.

Each person carries out the actions of the theologian and the philosopher whether he wills to or not. Therefore, we must seek after truth, staring it in the face, unashamedly, openly, not winnowing out that which

is uncomfortable, unprofitable or inconvenient to us. We must strive to perceive the world with out the trappings of biased theories, dogma, and self serving interest: We must perceive utterly defenseless the awefullness of our situation. We must examine our methods of knowing the truth for their veracity. We must recollect that there are other valid methods of knowing what is true besides the empirical. Life speaks to our hearts, bodies and our spirit and not just our minds. We must listen if we are to consider our obligation to render justice on this earth. Only then can we begin to discuss ethical behavior.

Last August a daughter, Kathleen Lacey McGowan, was born to my wife and I and my view of the universe has been fundamentally shaken and changed. What will I leave her. How can I render to her that which is her due. If we will not render justice to the earth we must at least demand justice for the children. To do anything less will bring about their total despair born of a living hell of our own creation. The sins of the fathers really will be visited upon their children," Yea even unto the third and fourth generation."

Ethics cannot and do not operate in a vacuum. They do not spring fully formed from the forehead of Leopold, Muir, Rouseau, Ghandi, Spinoza, or The Wilderness Society. We must proceed with fear and trembling for we trod upon a path where a misstep will result in the damnation of our children and the annihilation of our brother creatures on the earth.

Philosophical maps are being drawn and policy stances are being taken that exclude the humane from deliberations upon the use of resources and people. The "progress of civilization" is referred to and applauded but never described in detail. Errors made today in the development of economic and political policy will be extended throughout the future and will result in very real consequences for real people. The consequences if we are in error will be dire.

Thus stated the problem becomes painfully clear and personal. We must change our fundamental assumptions of how we will treat the earth and the inhabitants therein. The solution lies with each individual and his freedom to choose. If I choose an ostentatious life style for myself, my children will suffer for my selfishness. And not only my children but yours as well. If I choose to view the earth as merely a mine of materials for my self indulgent exploitation it will become a slag heap. If I choose to view the rhino's horn only as a potential knife handle then the rhino will go the way of the dodo.

Our present rights and freedoms are constrained by responsibilities to the earth and future generations. If we fail to live up to those responsibilities and duties our rights and freedoms will be taken from us, first through scarcity, necessity, and eventually through political force. Choosing a solution that is based upon economic growth is doomed to failure. Greed is a fundamental cause of the problem. Choosing a purely political solution will damn ourselves and our children to political maneuvering for industrial resources and wars arising out of resource scarcity. We must choose to become wise rather than clever. We must choose to become good rather than rich. We must choose self control and cultivate the sensitivity to recognize when enough is enough rather than choosing personal wealth, personal power and personal prestige. Above all we must recognize: "All that is necessary for the triumph of evil is that good men do nothing."

# ENVIRONMENTAL ETHICS AND RECREATION RESOURCE MANAGEMENT: AN ACADEMIC PERSPECTIVE

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Abstract. The need for an Environmental Ethic (EE) is briefly examined, followed by a discussion of how this need affects users, managers and the recreation resource base itself. Emphasis is placed on the role of values as they are translated into the duties and obligations that are the substance of ethics. A number of examples are given to illustrate the issues involved in defining an EE. The paper concludes with discussions of the philosophical underpinnings of EE and their application to weakly anthropocentric and non-anthropocentric issues such as scenic beauty and animal "rights".

## THE NEED FOR ENVIRONMENTAL ETHICS IN RECREATION RESOURCE MANAGEMENT.

It seems increasingly clear that the last decade of this millennium is going to be one of limits, especially from an environmental perspective. Having failed to find sufficient impetus for change in a widening stream of environmental protest human culture is now faced with the need for more radical changes in many of its institutions. And this applies not just locally, but globally. How can it be that ideas so simply and persuasively stated so many years ago by Leopold, Carson, or the Club of Rome have failed to result in a true environmental ethic (EE)? I won't try to answer all this, but I'd like to point out how this need for a new EE does concern us in the parks and recreation movement.

The search begins with the fact that resource-based recreation management is an offshoot of the conservation movement. And as such it shares not only the pragmatic value premises of the conservation movement but also at least one essential shortcoming. As Wengert (1964) pointed out over a quarter of a century ago, there is no clear ideological basis to conservation. Rather, it is a series of historical reactions to societal exigencies, all more or less resolved through application of Bentham-esque (or for foresters, Pinchotian) pragmatism. Nonetheless, conservation mindedness has resulted in a useful set of solutions to resource decision-making problems (Atfield 1983). I'm willing to agree that on the whole (and up till recently) the "greatest good for the greatest number" has been served. I'm not, however, willing to complete the Bentham-Pinchot phrase by adding "...over the long run." The point is, of course, that pragmatism is not the root of the problem, but is nonetheless inextricably tied to it. It served us well in earlier, perhaps simpler, times. But now its usefulness is more circumspect.

Therefore, I wish to argue that many of these "correct" pragmatic solutions have been for "all the wrong reasons." In a nutshell, pragmatic recreation resource management (RRM) must shift its basis away from utilitarian anthropocentcism (if that is possible). In an environmentally aware era, general societal forces, if not our own profession, are pushing us to re-examine our relationship with nature. An EE, unlike the pre-Leopold conservation ethic that preceded it, must account for a wider set of duties and obligations. This will not be easy but it is necessary and possible.

The starting point is with ethics themselves as a concept[2]: Passmore (1974,7n) has argued that an EE "...is not the sort of thing one can simply decide to have... A new ethic will arise out of existing attitudes, or

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[2] The following passages are presented in the opening discussion of philosophical attitudes in Hargrove's book (Hargrove 1989).

not at all." Or as Leopold (1970,246) stated in his famous "Land Ethic" essay: "No important change in ethics was ever accomplished without an internal change intellectual emphasis, loyalties, affection, and conviction." The clear implication is that we must be more critical about the value base from which our actions or decisions come.

For many it is extremely difficult to do this without envisioning the antithesis of much of what we hold dear, either as part of the established way to do things or as part of "the good life." It has certainly not been popular for politicians to tell the American public to consume less, lower their standard-of-living expectations, or alter their life style goals. (If you doubt that, I only ask you to tell me what Jerry Brown, Jr. is doing today.) But society is changing: New values are supplanting old ones. And many times these new values put politicians and citizens alike in self-contradictory roles. This seeming paradox of "more is less" is resolved not by castigating lifestyles, pointing fingers, or arguing for the futility of, say, "economic reasoning," but by examining how existing decision making structures are changed by fundamental shifts in values or valuing. And there is reason for optimism and hope! I'm sure many of you were as shocked as I was to receive the new Society of American Foresters bumper sticker that proclaims, "For a forester, every day is Earth Day." Assuming the value shift is sincere, the question emerges: What shifts in management decision making does this presage? The idea of a profession devoted to a perpetual Earth Day is not the same one that seemed to dominate the "old forestry." Just what changes might be ahead in RRM?

Don't get me wrong: The "system" is intact: recreation managers must still work with old line politicians, and they must still know costs and prices and work within budgets. Nonetheless, the search must begin for the ethical premises of an EE, and avoid the syndrome that Ansel Adams once imputed to our former president: that he "knows the price of everything and the value of nothing." The first step in this search process is to recognize the values toward nature are the fundamental building blocks of an EE, and begin to look at how and whey they occur. The values that underly our EE are therefore the first aspect to examine.

Among sociologists there is a famous dictum that "If a situation is defined as real, it is real in its consequences." If society chooses, by whatever cause, to value something it will find ways to promote, save, use, protect, act on, the thing that is valued. And not surprisingly recreation managers or researchers are part of this process. These values, in nature, inform our ethics which in turn shape our decisions. Even though there can be arguments about how much of the value, or "good" there is, or when it occurs--it is, by definition, a "good."

It seems obvious that placing value on human life is in all respects no different than asserting there is "good" in say, a wilderness experience. And, of course, valuing is dynamic; it is subject to change over time. Environmental ethics, no less than any other type, includes a need to establish norms of behavior relative to whatever values exist. They are a part of our social history and our cultural development. In as much as this is dynamic, EE will develop in response to changes in valuing nature, and will never be static or universal. People must constantly learn these values and act on them in a process of reaffirmation and intergenerational transmission.

The second aspect is less metaphysical but perhaps even more complex for any given situation. By their nature EE involve trade-offs and situated decision-making. Once the basic beliefs are established, the incorporated values or "goods" are rarely absolutes and whatever moral force they have involves establishing them in various structures throughout society. Religions, civic groups, user groups, professional societies, legislatures, etc., all give direction and legitimacy to the values that comprise our ethics. In practice many fundamental values are learned through participation or socialization and thus can become prescriptive: they take on a moral force and dictate proper action. They are the "oughts" and the "duties" we feel toward, in this case, the environment.

In summary, the emergence of environmental ethics can be modeled as a sequential two-step process. The first aspect allows for change in the value premise(s) of the ethics. Subsequently, such values must be incorporated into social institutions that can achieve the translation of the "good" into an "ought." Social

change almost invariably involves such value shifts - consider for a moment ethics that are anachronistic (paternalistic attitudes toward women, or burying garbage on wilderness trips), or under rapid change (abortion, or eco-tourism). Thus, our relationship to nature is really no different than the traditional human-centered relationships that form the bulk of classical ethics. It is just more difficult to know the metaphysics involved. This is especially true for recreation management, in large part because the value premises of recreationists are not often questioned and resist inspection/discovery. Often such values become known only after a "problem" is recognized through the emergence of some managerial anomaly or conflict (e.g. crowding, vandalism, new activities). But, lest we expect too much, it is useful to remind ourselves that ethics, while normative, are not prescriptive in detail: they are only general guides to actions.

So it is with environmental ethics. The basic readings are general. The application is up to us as managers or researchers. I exhort you to (re-)read Leopold, Muir or Passmore, or perhaps if we're seeking a more explicit exegesis, Hargrove or Callicot or Rolston. And then the next time a recreation management conundrum comes before you try to envision an altered decision-making scheme based on different ethical premises. Did the manager, user, etc. have a different role to play, a different obligation? How could things have been done differently? More fundamentally, why should things have been done differently? What values or "goods" are really at stake?

## PRINCIPLES OF ENVIRONMENTAL ETHICS WITH RECREATION RESOURCE MANAGEMENT EXAMPLES

Most of this is not going to mean much unless we can apply it, so below are some very general examples. Some of you may be familiar with Rolston's approach to these issues. (Perhaps you've even been fortunate to have taken a class from him.) While there are many from which to choose, here are a couple he has told:[3] The first case is one where a buffalo has fallen through the thin ice of Yellowstone Lake near a place where a group of snowmobilers can witness the agony of the animal in its futile attempts to climb out of the frigid water. The park rangers are insistent that the proper policy is to "let nature take its course" and even threaten the spectators with legal sanctions if they interfere. Was the policy a correct one? The animal suffered and died. The spectators were aghast and certainly suffered in their own way as well. But ecological principles as well as National Park Service policy forbid undue human interference. What was the value of that one buffalo? What was our duty toward it as an individual?

In case you did feel that we should have done more for that "unfortunate, thrashing, suffering" animal how about asking yourself a question that goes one step further. Would it make a difference if the object of concern neither moved nor thought nor felt pain? A second example might be the loss of wild flowers due to picking or trampling. In this case the loss is not "natural," i.e. nature is not taking its own course. People are the agents of change and we may feel well justified to erect a sign that says "do not pick the flowers." It may be better, says Rolston, to not merely prohibit a behavior but put up a sign that exhorts the visitor to "let the flowers live." A subtle difference at first glance, but there is a strong difference in the underlying philosophy. This is a positive affirmation of the value of those flowers as organic individuals in their own right. No need for them to feel pain or to be cognizant of a world around them. They just are, so let them be.

And if you see the logic in that example, whether you agree with it or not, please consider one more. Both of the first two were at least organic individuals living out (or attempting to) some genetically programmed existence. If the ever broadening circle of environmental concern is correct (and many ecologists believe it is) then our EE must also reflect some concern for non-living environmental attributes as well. A good example of this might be a resource management holistic "entity" like the Greater Yellowstone Ecosystem. How do we extend ethical concern to this level of environmental function? What recreation management decisions must be

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[3] Although they may be published, these are abstracted from an oral presentation given to the University of Georgia Environmental Ethics Certificate Program, February 21, 1989.

made to ensure that this large, nebulous and poorly understood entity carries out its "mission"? Strict minimum impact? No fires? No waste disposal? No visitors at all? What sorts of limitations on human behavior are crucial to this level of ethical concern?

Now, what is to be learned from these examples? It is possible to generalize from these and other examples to propose a system (or process actually) for deciding the proper ethical stance based on the structural arrangement of the elements? This is not intended to promote EE as a kind of situational ethics, but instead to put forward a simple model that helps one think through the different aspects of EE for parks and recreation managers. The system is a three cornered arrangement: user/visitor, manager, and resource base. Rights, duties and obligations flow somewhat differently in each of the bivariate relationships.

Try to envision how this occurs for a concrete example you might be familiar with. Now note that even with one channel, multiple relations are possible when different statuses or social relationships are involved. It is obvious that ethics reside in the individual, but each person has a multiplicity of roles and each of these may pose a radically different set of obligations. ("Things" in this system have no self or cognition to be concerned with, they "act" amorally). The resource manager is charged with promoting recreation opportunities, but also with efficient management or perhaps preserving some species. Visitors on the other hand are often at once convenience oriented and concerned about their impact. And the better we understand/recognize these roles or statuses, in ourselves and others, the more efficient and effective we will be as managers. This is true whether we are making strategic planning and policy decisions, or are out in the field trying to cope with limited budgets, trail erosion, and conflicting user groups.

## DISCOVERING AN ENVIRONMENTAL ETHIC: SOME PRACTICAL COMMENTS

### The Social and Professional Context

So far it has been argued that ethical consideration of some "object" is both relationship-, and status-, dependent. It begins with the recognition of the good in the object and proceeds to emerge in various policy or decision making structures as the ethical basis for actions. The channels for these actions are the relationships that roughly conform to the familiar user-manager-resource model of recreation resource management. Admittedly this threeway model is too simple. Obviously one can enumerate many objects, statuses, or roles so as to make the whole project hopelessly complex. But in as much as the purpose here is to explore values placed on nature, it is necessary to only recognize a few crucial roles to make an improvement over what we do now. These were briefly illustrated by example. It should be clear that the resource may be separated into numerous components: plants, rocks, even ecosystems, join animals in a panolopy of possible "considerable" units. How many are truly morally considerable: which distinctions must be made? There is no correct answer. For now those four seem to represent the major philosophical differences based on cognition, life force, and life sustaining criteria.

People pose another set of philosophical choices. For instance, the manager acts in different capacities--as a "professional," an "agent," as a "citizen," and as a "human being." Here there are potentially at least four different levels of obligation that might make a difference relative to other system components, especially the users (recreationists) themselves. (e.g. should you turn in nudists? flower-pickers? Why?) Which policy predominates when two conflict? Similarly, the user acts out obligations based on multiple roles as well-citizens, human, as a member of a group such as a church or on behalf of the friends or family they are with, or perhaps more broadly as a member of something like a "community of hikers."

In short, there may be as many types of obligations as there are social entities (i.e. moral identities) that can be defined. Some of these will be written out in laws or regulations that govern use. The moral obligation that is due from less institutionally crystallized roles may only have sanctioning from informal or broadly held cultural norms, but these are nonetheless "real" in their consequences. And they may be just the ones that need to be addressed most in order to understand a use issue. Moreover, these types of roles are

perhaps harder to identify or act from a manager's perspective because they may be from users that are new or ephemeral or localized (space or time) and consequently less known or not easily incorporated into existing policy or regulatory structures.

Finally, focus again on the users or park visitors as a general group of people, or a subset of society. Viewed this way, the users constitute a "value-oriented social movement" which has implications for how managers approach the job of norm-recognition or rule making (if they approach this problem at all). In fact, it is the discovery of such commitments to values available in our recreation lands (e.g. of being outdoors, peace and quiet, etc.: the "motives" for use) that "creates a moral identify and thus justifies and sustains participation" (Broom and Selznick, 264). And experiencing such values thereby creates the sense of being part of an important (to them) "subsociety." The danger inherent in such a situation is that as a manager focuses on behavior norms for such a group (e.g. their outdoor ethics, or their preference for group size), the focus is narrowed (to these norms) and the actual experience may inadvertently become inauthentic to some (e.g. the effect of burdensome regulations) or trivialized through external imposed "ethic-like" rules or settings rather than lived or emergent ones.[4]

Under these circumstances it is reasonable to expect reformers and radicals for whom the norms are extremely salient to reestablish their moral agency by either breaking the onerous rules or organizing/working for their demise/change. Either way, the structural conclusion is that the manager has not initially been equitable or effective, instead he/she has only caused more trouble down the road.

## PHILOSOPHICAL PRINCIPLES IN RECREATION RESOURCE MANAGEMENT?

Having laid out the broad implications of the manager-user-resource relationship, let's turn our attention to the philosophical principles by which EE emerge or are put into practice. Specifically, it is instructive to ask for whom or for what reason an ethical stance is taken. The for whom question was discussed above relative to a person's role in the situation in question (agent, user, etc.). The "for what" question is a matter of determining the value, or end state, being served by the proposed standard of behavior. As with the "for whom" questions, the possibilities are manifold. Examples might include individual survival, for the good of the country, to promote agency goals, and so on.

From a purely philosophical point of view the clearest distinction is whether or not the values served are anthropocentric or non-anthropocentric, and secondarily whether or not they are intrinsic or instrumental in nature. Confounding an easy assessment of the role of values is our faith in science and technology. Because belief in a value has its roots in philosophy, it isn't necessary to turn to science for an explanation. For example, indignation over resource exploitation gave rise to a "progressive conservation movement." Initially the principle came from a social philosophy in the form of Pinchot's "Greatest good for the greatest number over the long run." In turn this principle was wedded to the logical positivism of the day to yield a "scientific professionalism." Unfortunately the progress of our scientific rigor and analysis have not made it easier to separate out the necessarily metaphysical foundations of the profession's ethic. That is, in order to "study" the ethical dimensions of a management problem it is not necessary to resort to a scientific process. A scientific analysis may solve the management problems against benchmarks such as equality or efficiency, but will leave the metaphysical dimensions untouched. The facts we seek from science are meant to serve the more constrained imperatives of who can do what to whom (or what) under what conditions. The search for an EE requires a wider ranging inquiry.

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[4] This might be particularly true where the majority of users define a given use standard whereas substantial minorities have different needs or motives that are inconsistent with those of the first group.

Thus discovery (or re-discovery) of an EE is more of a problem for moral philosophy, i.e. metaphysics rather than science. With due respect to the limitations of Hume's work, it is a problem of ends, not means. Second, the greatest debate between the major competing forms of resolving some recreation use issues--the preservationists and utilitarian conservationists--are useful at one level, that of "practical" decision making. But in order to build a strong EE there is a larger issue that must be accounted for. Most contemporary management decisions are based solely on "strong anthropocentism," i.e. an argument that only human life has intrinsic value. But as was noted above many examples suggest a need to go further.

If nature, or in a more modern rendition, ecosystems, were not accorded more than instrumental value we would have no problem. But the more progressive versions of an EE propose moral considerability and even rights be extended to non-living units. This approach seems to have some limitations. The argument for a transcendental reality or deep ecology doesn't resolve the role of intrinsic values. It merely takes a rhetorical high ground relative to the material use or definition of resources. That is, it remains strongly anthropocentric. Recognition must be given to non-anthropocentric principles, especially for instrumental values (e.g. ecosystem functions independent of humans, the relationship of frogs and peccaries in Rain Forests). Weak anthropocentism is another possibility. It is a variant of its "strong" sibling that allows for intrinsic value of some parts of nature so long as human ends are served. It also has a role in as much as intrinsic value does occur and is of value to man (e.g. aesthetics).

### Wither Ethical Concerns in OR?

Where do we go from here? There doesn't seem to be one clear way to reform recreation resource management so as to conform to a new EE. The economic determinism of the dominant resource conservation ethic is very ingrained in policy law and practice. And it has served agencies well so far. But to go forward, it would be prudent not to do as Ehrenfeld (1978) has admonished us and "put all our ecologic eggs in the economic basket."

The ecological imperatives of today and (tomorrow) require that decisions be based on a wider range of end values or "goods." This is not to argue that the economic logic of decision-making that has emerged over the past century must be thrown out because its utilitarian roots are at odds with the emergent moral imperatives of non-anthropocentric metaphysics, but rather that such logics-in-use must be accorded a more circumspect status. Economic rationality should be allowed to work out problems (ethical or otherwise), assist decisions, etc. in the context of a fully non-anthropocentric, or ecological, land ethic. As Callicot (1989) tells us, "ecological integrity...is a normative ideal." It is not just a scientific fact, but a question of goodness, too. Once valued, such a finding of goodness provides a far reaching set of moral imperatives (ethical standards to be worked out?) without relying on either anthropocentric value (vs. instrumental nature) or the need to extend/grant some inherent rights to objects beyond humans.[5]

## BEAUTY AND THE BEAST

One possible implication of the last point made above has to do with the issue of "animal rights." It is argued by some people, especially those concerned about the use of animals for laboratory experiments, is that if animals have moral considerability due to their sentience, cognition, or even more broadly, their organic organization, then they have "rights:" that is, rights to exist, or even more specifically, to not feel pain by our (peoples') hand. The logical extension of this is that if they do have such rights then perhaps people should not kill and eat such creatures. This takes us a bit away from recreation resource management, but there are situations that incorporate some of these concerns. So it is useful to review it briefly. Philosophically, this notion of rights relies on the assumption (finding) that there are no morally relevant differences between people

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[5] Indeed, some philosophy "rich" systems might argue that even unborn generations or fetuses or children under 7 years old can't have these rights, let alone animals, biotic systems, etc.

and animals, especially since it is possible to live our lives without inflicting such pain. That is, it is needless and people shouldn't do it. But in arguing for a wider basis for ecological ethics the moral distinction among animals, plants, rocks and other entities in nature is not easily drawn--as we noted in the examples above some sort of "rights" might need to be granted to vegetative material as well...and people must eat something.

The problem is with the notion of "rights" not the moral considerability of the organism or natural entity. Considerability precedes both rights and obligations. Don't throw the baby out with the bathwater. As argued above, concern for animals, plants and even ecosystems is much more than an anthropocentric exercise. People must work out their duties to people, other organic life, inorganic structures and ecosystems as well. These different levels require separate arguments.

One solution to this conundrum comes from a finding of "goodness" in the notion of organization. Rolston (1988) prefers to use a sense of "life project;" Callicot (1989) talks about, "intrinsic value." In either case it is a sense of value founded on the inherent organizational complexities, rather than reference to any use mankind has found for, or ascribed to, it. This accords status to the object without resorting to an anthropocentric hegemony. Even though people can (and should) be more cognizant of their role vis a vis the environment, the EE under which they operate should not position them as the sole "keeper" for all life. As Rolston (1988,218) has grimly noted:

> "Earth is a slaughterhouse, with life a miasma rising over the stench.. nothing recognizes anything else's rights.. blind and ever urgent exploitation is nature's driving scheme."

The importance of this idea is not to suggest that managers should embrace a chaotic and Hobbesian vision in their professional ethics. Rather, valuing non-human entities means that there is a way to give importance to the disentropic nature of organization/project. Intrinsic value and instrumental value can even be over the same object/process. The crucial distinction is that rights belong to cultural or "traditional" (inter-human) ethics, not environmental (nature) ethics. Humans must find the good in nature to limit the excesses of their own actions.

So what of animal "rights"? The problem is with the concept of rights, not our duty to furry creatures. By extension, it is unnecessary to argue for the "rights of rocks", or for "chicken liberation" (Rolston's terms) on the basis of rights. In short, do not try to make people out of other entities. These other things don't have to feel pain to be morally considerable. Once rights are distinguished from duties, the projective imperatives can be realigned and the conundrum disappears. And, nicely, duties can be established whether the unit is some "individual component necessity" like the food, freedom, etc. or a less tractable unit like "ecological harmony."

## CONCLUSION

A reformed EE should strive for what Rolston (1988) calls a "situated fitness in the global ecosystem." Human relationships should be just, fair, right, and compassionate. Leopold's land ethic relies on integrity, life support, and a sense of community to balance the greed and rapaciousness with which its "highest" members have traditionally based their actions (Flader 1974). It is founded on beauty and truth, where such intrinsic and value-laden entities are known to exist. A manager's duty is to know where such beauty and truth exist in the resource base and to make decisions accordingly. Duty--what one ought to do--is tied to some "good"--what ought to be." The duty to promote and preserve natural beauty arises out of the recognition that beauty, whether experienced or not, [i.e. not necessarily anthropocentric], is a good. Rolston goes on to argue that this is generally non-controversial--all cultures contain an element of reverence for beauty, artistic or otherwise. Thus, "humans, as moral agents are expected to take these factors into consideration." Recreation is an activity that depends upon the existence of organic/ecosystem integrity and scenic beauty in order to provide enjoyment to its participants. Moreover, much satisfaction for the existence of such conditions lies beyond the immediate experience (pleasure) of the participants.

Thus, the duty of recreation resource managers is multiple: 1) to "create" beauty, 2) to "defend" it from unnecessary loss (e.g. visual quality programs, carrying capacity decisions), 3) to provide conditions where/when it can be apprehended (visual satisfaction) and even 4) to promote it where it can be discovered anew, or be shown to exist (info, programs, interpretation).

Notice that much of what is done as recreation resource managers is tied up with the business of natural beauty. An EE based in part on this idea of natural beauty focuses us on decisions more akin to the traditional meaning of the word conservation, or as many prefer to phrase it, stewardship, over the land. Managers will not want to be reduced to creating playscapes and taking tickets at the gate. Rather, an initial assumption is that the creation of the "good" has occurred, and is on-going, and that it is his/her duty to discover, promote, and protect the "essence" of that existing form. Such an EE is tied to the "good" attributed to nature. In this line of reasoning there is no need to be constantly concerned with "rights" that might be due to either individual animals or elements of nature. But we must seek out a detailed inventory of the "goods" we manage. John Muir reportedly admonished us not to hike but to saunter, to place our attention so as to gather as much input from nature as we can comprehend. Little has changed in 100 years in the value of his dictum, but much has changed in the importance of doing it! Modern living gives us few opportunities to carefully consider the "details of life at our feet." Appreciation of natural beauty and natural processes, thus construed, has a kind of moral force: An objection to not just pass through oblivious to all the natural values that exist.

In the final analysis this paper is but a reconstruction of the obvious: A clarion call to consider that, as they used to say in school "neatness does count." The details are fundamental, at least when they're tied to a manager's moral duty to the environment. Simple decisions and simple pleasures placed in a matrix of ethical understanding is the crux of the EE in this paper. And such an EE in RRM will lead to a surer attainment of agency goals and "truer" meanings for participants.

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# PROFESSIONAL ETHICS: HOW ARE THEY DEFINED, TAUGHT, ENFORCED

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Abstract. Professional ethics are more accurately called codes of professional conduct and are usually adopted by a formal organization of like professionals. The Society of American Foresters adopted such a code in 1948 and rely primarily on education and less so on enforcement to promote compliance. Actual results are at best, uneven.

## INTRODUCTION

"Ethics" is one of the most widely discussed topics of our times. The recent scandals that have rocked our political establishments have prompted new campaign laws at all levels of government. Similar codes of ethics covering business practices (the private sector) are unlikely to ever be legislated but they too are receiving increased public exposure and support. Another ethical consideration, that of the environment, is also generating considerable attention as the general public becomes more aware of the environmental fragility of our planet. This topic is the principal ethics focus of this symposium.

While this paper touches on the environmental ethics theme, it primarily addresses a fourth category of ethical behavior: the code of conduct followed by an organization of professional persons. As an example, the Code of Ethics of the Society of American Foresters is examined with regard to its history, definition, and implementation. Of particular interest will be its relationship to professional policies, how it differs from other professional codes of ethics, and the likelihood of incorporating environmental or land ethics.

## THE DEVELOPMENT OF A PROFESSION

### A History of Forestry in America

America's forest resources have been exploited for as long as man has resided in them. This exploitation became more intensive with European man's concentrated arrival over three centuries ago. However, until less than two centuries ago there was little or no knowledge about the management of forests for sustained production of benefits. Another century went by before there was any interest in conserving, protecting and maintaining the forests of America.

Professional forestry was recognized in America with the appointment of a forest agent in the U. S. Department of Agriculture in 1876. A Division of Forestry was established in 1881. Meanwhile, a society of lay persons, The American Forestry Association, had already been founded in 1875 and was instrumental in the promotion of conservation practices and the reservation of public domain forests from sale to private interests. In 1897, management policies were enacted for these 38 million acres of Forest Reserves. They had grown to 86 million acres when, in 1905, they were transferred from the Department of Interior to USDA's new Forest Service. Today the National Forests total 191 million acres and millions more are being managed by federal foresters in such agencies as the Bureau of Land Management, The Fish and Wildlife Service, and the Corps of Engineers.

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By the middle of the Twentieth Century, the last of the virgin forests in private ownership had been harvested and the public forests were once again being exploited for their timber products. With no new lands to conquer, the forest products industry was forced to become a manager of its resource base instead of just an exploiter. Thus, the demand for the skills of professional foresters spread from the public sector to the industrial sector and eventually to the non-industrial private sector, as this ownership became an important source of raw materials. Today there are an estimated 500 million acres of commercial forest lands under all ownerships in the United States.

### The Society of American Foresters

The demand for forest management attracted European professionals to America and enticed Americans to obtain forestry training in Europe. By 1900 two forestry schools in America were graduating foresters and several score of them were in practice -- most under the direction or influence of the head of the USDA Forestry Division, Gifford Pinchot. In that year, the Society of American Foresters (SAF) was founded by Pinchot, Bernhard Fernow (Pinchot's predecessor at USDA and then Dean of the Cornell Forestry School), and four of their associates.

As may be surmised from the history of forestry in America, in the early years, SAF members were almost exclusively government foresters and academicians. The Society now numbers about 20,000 members from all sectors of forestry. It is recognized as the national organization representing the forestry profession and is the accreditation authority for professional forestry education in the United States.

At this point it is useful to note what constitutes a profession and what differentiates it from other groups of people with certain specified skills. In 1915 Flexner stated that professions must: (1) involve intellectual operations, (2) derive material from science, (3) involve definite and practical ends, (4) possess an educationally communicable technique, (5) tend to self-organization, and (6) be altruistic. That definition is still appropriate and may be used to compare the SAF with say, the Teamsters Union. The key elements are organizational objectives and responsibilities. The union's are directed towards its members; the profession's, towards society at large.

## DEVELOPMENT OF A PROFESSIONAL CODE OF ETHICS

### What Are Ethics?

I have heard ethics defined as "personal values in action." If this is accepted as an accurate definition, then it is no wonder that the subject of ethics can elicit such vigorous discussion, for nothing is so variable as personal values. It is a human characteristic to be free thinking and individualistic. Adding to the complexity is that actions are judged from at least three perspectives: an "official" view (is it legal?), a societal view (is it fair or balanced?), and a personal view (do I feel good about my action?).

While ethics may be difficult to define, they cannot be dismissed. That would be analogous to ignoring non-market benefits because they have no monetary value. As Absher noted in his presentation, "ethics are not always obvious, but they are always there." And, as McGowan stated in his presentation, "they do not spring fully formed from the forehead of Leopold, Muir, Rouseau, Ghandi, Spinoza, or The Wilderness Society." Clearly then, obtaining general agreement on a code of ethics can be a formidable task.

### Developing SAF's Code of Ethics

The difficulty in establishing a code is illustrated in the SAF's failure to adopt a code of ethics until 1948 -- even though one was proposed as early as 1914. Of course the small size and homogeneity of the

Forest Service-dominated profession in its early years also obviated the need for a formal code of conduct. After nearly fifty years, professional forestry in America had both diversified in its application and unified in its foundations and objectives. At this point a code of ethics was not only possible but essential to guide the conduct of individuals, if indeed they could be accepted as members of a carefully defined profession. Thus, Lammi stated in his 1968 assessment of professional ethics in forestry, "a code of ethics is the mark of a mature profession."

Lammi also notes that the goals of the profession form the basis of a professional code of conduct, but it is also desirable to relate professional objectives to the goals of the society of which the profession is a part. He states that, "ethical practices of a professional man can then be described as those which contribute to progress toward the goals of the profession or the human society. Unethical practices are those which hinder this progress." He notes that such violations may arise from intentional misconduct, from lack of knowledge or from lack of resources.

The goals of the Society of American Foresters are most succinctly stated in one paragraph of its Forest Policy statement as adopted in 1989 (SAF, 1990):

> Forestry is the science and art of attaining desired forest conditions and benefits. As professionals, foresters develop, use, and communicate their knowledge for one purpose: to sustain and enhance forest resources for diverse benefits in perpetuity. To fulfill this purpose, foresters need to understand the many demands that forests must satisfy and the potential for forest ecosystems to satisfy these demands now and in the future.

The current Code of Ethics for members of the Society of American Foresters, most recently amended in 1986, is presented in the Appendix. As noted in the preamble to the code, the canons are intended to guide professionals in their relations with the public, their employers, their clients and each other. Consistent with the lack of quantitative goals in the Society's policies, there are no measurable standards of performance in the Code.

The recent amendments to the Policies and the Code reflect the dynamic nature of both documents. Current discussion within the Society is focusing on the addition of an environmental or land ethic to the Code. This was proposed by Leopold in 1933. Its exclusion was addressed by H. A. Smith (1936) and Lammi (1968) and was proposed again by Coufal in 1989. Numerous letters, pro and con, have been received by the editor of the Journal of Forestry, but one of the most perceptive began, "an SAF land ethic is desirable, but definition and enforcement of standards are difficult."[2] I would concur that until the Policy and Code are rewritten as quantitative standards instead of general guidance, a land ethic may only be included in the preamble of the Code, but, the debate continues.

## TEACHING A CODE OF ETHICS

### Can Ethics be Taught?

It follows from the definition of ethics as "personal values in action" that teaching ethics would be a difficult task. It would appear to be possible only with the young and very impressionable whose personal values have not been firmly established. Professionals are not likely to change those values that were imprinted during childhood. Such changes would only occur over long periods of time as societal views change or as a result of very dramatic events. The best that can be hoped for in ethics training of adults is that the ethical interpretations of actions which Absher noted may be obscure, are clearly identified and understood.

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[2] Smith, J.H.G. 1990. Letter to the editor. Journal of Forestry 89(1):9 - 10.

## Awareness, Discussion and Experience

An almost universally held thought is that everybody wants to do the right thing. When they do not, it may be that they simply do not know how or they are unaware of the negative consequences of their seemingly correct actions. An awareness of the consequences and interpretations of alternative actions is often sufficient to identify the "right" action. Discussion among different viewpoints can expand the number of alternatives and locate a better solution. While experience is always the "best teacher" it may be less traumatic to learn from someone else's experience.

The position of the professional forester with regard to the ethics of his or her actions can be treacherous. It is not uncommon for at least four divergent interests to be represented in a decision to conduct a forestry practice (such as a timber sale), and a single forester may be the only professional involved. These interests could be the forest user (buyer), forest owner (seller), society (represented by laws and regulations), and the forester, who is trying to make a living. Other professionals face similar dilemmas. While there are many decisions which may be clearly labelled as unethical, there is seldom a single decision that is ethical from every perspective. More likely, there are decisions which best reflect the ethical viewpoint of one party (the forester's employer) and are neutral with respect to the ethics of the other parties.

SAF (1989) has published an Ethics Guide which presents its Code of Ethics, canon by canon with some narrative explanation and questions for discussion. This is a very good way for an individual member to gain initial familiarity with the Code. Or this part of the Guide may be used for group discussion on the intent and implications of each canon. Another useful teaching vehicle is a set of six case studies. These describe hypothetical situations which cover the range of professional settings. Following each description are several questions about the actions of the individuals involved. The answers may be found in one or more of the canons of the Code.

## Courses in Professional Ethics

Most of the ever expanding cornucopia of courses, symposia, workshops, etc. on ethics (including this one), tend to focus on definition, and once a definition is reached, to convince society at large -- beginning, presumably with the participants in the workshop, symposium, etc. -- to adopt it. Professional ethics training certainly involves some of this, but limits the population to be convinced to the appropriate fraternity of professionals.

The Society of American Foresters and the Association of Consulting Foresters periodically conduct sessions which pursue the awareness-discussion-experience approach to teaching professional ethics. These are usually part of a larger meeting or series of meetings, or part of a formal continuing education program. Professional ethics training may also be included in the undergraduate education of forestry students.

The University of Georgia's Center for Continuing Education has recently added an ethics course to its program of continuing professional education for foresters. This course is provided along with each short course offering, whether it is conducted in Athens or elsewhere in Georgia. It is open to short course participants and other local foresters. The SAF Ethics Guide is the text, and discussion focuses on the case studies. However, it is not uncommon for participants to discuss their own experiences. This strengthens an individual's ethical foundations and leads to understanding among the diverse interests that are invariably represented at these sessions.

## ENFORCING A CODE OF ETHICS

### Methods of Enforcement

A new graduate was said to have noticed a similarity between his chosen profession's code of ethics and the alleged code embraced by pirates on the Spanish Main. In response to his question as to the difference between the two, he was told -- enforcement. Violators of the pirates' code could expect to lose a hand or their head. It would be safe to say that most professionals are not familiar with their code, the procedures for investigating violations, nor the penalties for unethical behavior. Should one or two violators be shot for their infractions, more attention would likely be gained.

Enforcement procedures fall into three categories: legal, professional, and public opinion. To pursue legal enforcement, a code must have the force of law. Such is the case with some professions in some states, notably the legal profession. The American Bar Association's Code of Professional Responsibility and Model Rules of Professional Conduct have been adopted by a number of state legislatures, making them legally binding on practitioners. Of course, to investigate and prosecute an alleged violation one would probably have to hire a lawyer! Penalties vary according to the infraction but disbarment, fines, and imprisonment would certainly be the most severe.

While a few other professional codes of ethics are incorporated into state laws, most are not, and as such must be enforced by the professional organization which has sanctioned them. The Bylaws of the Society of American Foresters has a detailed procedure for receiving, investigating, judging, and punishing violations of its Code. It establishes a standing Committee on Ethics, ad hoc investigating committees, and two separate decisions by the SAF governing Council. Sustained charges may result in expulsion of the member from the Society and the publication of that action in the Journal of Forestry.

Expulsion from SAF for unethical conduct has occurred no more than twice in the last 20 or more years. Lesser penalties such as censure and reprimand have been a little more frequent, but with only two or three reported allegations of unethical conduct each year, there are very few cases. Such a low case load is more likely to indicate lack of reporting than it is general achievement of ethical behavior. Unfamiliarity with the Code and the exposure and counter accusations that may be faced by an accuser undoubtedly contribute to this low reporting rate. A recent change to receive and investigate allegations from non-members (general public) against SAF members has not increased the number of cases appreciably. Finally, membership in SAF is not a requirement for employment in the forestry profession and there are probably more practicing non-members than there are members. Non-members are under no obligation to abide by the SAF Code of Ethics.

If there is an order of magnitude between the effectiveness of the first and second forms of enforcement, the third form, public opinion, may be another order of magnitude down the scale. On the other hand, this is ultimately the way to achieve the first form: regulatory laws result from public demands. Professionals must be sensitive to their publics. As one letter to the Journal of Forestry stated, "codes of ethics have very little to do with the behavior of individuals, but rather are a way of communicating to persons outside a profession the standards that a majority within the profession deem as ethical behavior."[3] If a profession's goal is to serve the public purpose, then its accepted standards of behavior must be at least as high as the general public, if not much higher. As society embraces "higher order" ethics, such as an environmental ethic, so must the professional. This practice is consistent with the definition of a profession.

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[3] Hicks, R.A., Jr. 1989. Letter to the editor. Journal of Forestry 87(9):10.

## Compliance without Enforcement

The previous paragraph recognizes that values and ethical standards are constantly changing and evolving. The ethics of the general public and a profession are not the same, but they must be consistent if that profession is to serve society. Perhaps the best way to achieve both currency and compliance in a professional code of ethics is through education. The more that members of a profession are involved in the development of, discussions about, and the testing of its ethical standards, the more they will understand the consequences of their actions from a variety of professional and public points of view. Ultimately, this will result in a code that is consistent with the public's expectations and is uniformly followed by the profession.

This compliance through education is the means advocated by the Society of American Foresters and the Association of Consulting Foresters. This approach was recently embraced by the Georgia State Board of Registration for Foresters by including training in professional ethics in the continuing education requirements for a forester's licensure renewal. This approach replaced the Board's unsanctioned code of ethics (taken from an early form of the SAF Code) that could not be legally enforced.

To illustrate how this approach works, a participant in a recent ethics course at the Georgia Center told the instructor afterwards that even though the Code of Ethics had hung on his office wall since he began practicing, he had not paid it much attention. Recently, he discovered that he was being unjustly criticized in public by a new competitor in his area. Until the discussions that evening, he was unsure how to approach this person, whom he was sure was speaking from ignorance, but without malice. The Code of Ethics, which they had in common, could be the basis for resolving this problem. While there would be no attempt to reduce competition, it would reduce the presentation of erroneous information to the public such that the public could make a more informed decision with regard to forestry practices.

## CONCLUSIONS

A professional code of ethics is a documented consensus of the expected conduct of that profession's practitioners. A society's ethics are its undocumented beliefs as reflected in the actions of its people. A professional code may be enforced through disciplinary action, education and perhaps legal avenues, if it has been adopted as law. A societal code is defined by practice, some of which may be dictated by certain laws, but as a whole, it is not enforceable.

The professional code must be consistent with the societal code if that profession is to serve that society. However, stricter standards for the professional, while exemplary and generally expected, pose the risk of being more extreme than the public would tolerate if all things are considered. The public expects to be objectively advised by the professional, but at the same time it has no desire to be led astray by the biased expert.

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APPENDIX

## CODE OF ETHICS FOR MEMBERS OF THE SOCIETY OF AMERICAN FORESTERS[4]

### Preamble

The purpose of these canons is to govern the professional conduct of members of the Society of American Foresters in their relations with the public, their employers, including clients, and each other as provided in Article VIII of the Society's Constitution. Compliance with these canons helps to assure just and honorable professional and human relationships, mutual confidence and respect, and competent service to society.

The canons have been adopted by the membership of the Society and can only be amended by the membership. Procedures for processing charges of violation of these canons are contained in Bylaws established by the Council. The canons and procedures apply to all membership categories in all forestry-related disciplines, except Honorary Members.

All members upon joining the Society agree to abide by this Code as a condition of membership.

### Canons

1. A member's knowledge and skills will be utilized for the benefit of society. A member will strive for accurate, current and increasing knowledge of forestry, will communicate such knowledge when not confidential, and will challenge and correct untrue statements about forestry.

2. A member will advertise only in a dignified and truthful manner, stating the services the member is qualified and prepared to perform. Such advertisements may include references to fees charged.

3. A member will base public comment on forestry matters on accurate knowledge and will not distort or withhold pertinent information to substantiate a point of view. Prior to making public statements on forest policies and practices, a member will indicate on whose behalf the statements are made.

4. A member will perform services consistent with the highest standards of quality and with loyalty to the employer.

5. A member will perform only those services for which the member is qualified by education or experience.

6. A member who is asked to participate in forestry operations which deviate from accepted professional standards must advise the employer in advance of the consequences of such action.

7. A member will not voluntarily disclose information concerning the affairs of the member's employer without the employer's express permission.

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[4] Adopted by the Society of American Foresters by Member Referendum, June 23, 1976, replacing the code adopted November 12, 1948, as amended December 4, 1971, and November 4, 1986.

8. A member must avoid conflicts of interest or even the appearance of such conflicts. If, despite such precautions, a conflict of interest is discovered, it must be promptly and fully disclosed to the member's employer and the member must be prepared to act immediately to resolve the conflict.

9. A member will not accept compensation or expenses from more than one employer for the same service, unless the parties involved are informed and consent.

10. A member will engage, or advise the member's employer to engage, other experts and specialists in forestry or related fields whenever the employer's interest would be best served by such action, and members will work cooperatively with other professionals.

11. A member will not by false statement or dishonest action injure the reputation or professional associations of another member.

12. A member will give credit for the methods, ideas, or assistance obtained from others.

13. A member in competition for supplying forestry services will encourage the prospective employer to base selection on comparison of qualifications and negotiation of fee or salary.

14. Information submitted by a member about a candidate for a prospective position, award, or elected office will be accurate, factual, and objective.

15. A member having evidence of violation of these canons by another member will present the information and changes to the Council in accordance with the Bylaws.

# ETHICAL DILEMMAS IN ECONOMICS

George L. Peterson[1]

Abstract. Economics is a useful tool in an important game, the outcome of which counts, but to avoid ethical problems and undesirable results in application to public policy decisions, the tool must be well understood and correctly applied. This paper identifies some important ethical dilemmas and troublesome questions.

## INTRODUCTION

Economics is the science of production, distribution, and consumption of resources. The principal concern in this paper is the use of economics in public land management decisions to achieve efficient allocation and fair distribution of outdoor recreation resources. The efficiency objective is to reject choices that do not produce more value than they consume, and to seek the alternative that produces the greatest possible net gain. The equity objective seeks to distribute the gains and losses fairly among the people.

Efficiency is a technical concern. Given the assumptions, theories, and methods of microeconomics, one can measure values and calculate and compare the relative efficiency of alternative management actions. Equity, however, is a political concern. Describing the distribution of gains and losses is a technical exercise, but deciding whether a given distribution is fair requires the assignment of relative weights to the conflicting desires of different people. A sometimes advocated rule is to assign equal weights to all people, but the processes that decide fairness, i.e., political and market conflict resolution, generally distribute resources unevenly. The technical responsibilities of economics are thus (1) to compare alternative resource allocations in terms of economic efficiency, and (2) to describe how those allocations distribute gains and losses.

On face value, these are simple tasks. In application, however, they create some chaos. The reasons include ignorance, politics, and even guile. Economics is a complicated science. To become a competent economist requires years of study, and even well-versed economists sometimes get confused. To make matters worse, the all too complicated technical issues are often inseparable from political judgments.

Most people who work with economics have good intentions. Blunders, if any, are caused by the darkness of the forests in which they work. We must all strive for clearer knowledge and better maps. Lurking in the shadows, however, are the glowing eyes of predators who take advantage of ignorance and complexity to feed their political offspring. Of these we must beware.

Also lurking in the shadows are some perplexing ethical dilemmas. These dilemmas do not invalidate the usefulness of the economics tool, but they do raise flags of caution. As we examine these dilemmas, be careful not to criticize hammers that can't drive screws, or complain about trains that don't go to Australia. Because of the limitations of the science, it is easy to be critical and reject the game out of hand, but the game of economics is real, and the outcome counts. It is important to play it well.

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## THE POLITICAL PLATFORM OF PUBLIC ECONOMICS

A traditional dilemma in economics is whether the science is normative or descriptive. Neoclassical microeconomics is an exploration of the implications of positive, axiomatic, deductive theory. The intent of the theory is to model human behavior, but the rational behavior of "economic man" is sometimes unrealistic. The underlying axioms also reflect some political assumptions. To use the tool well, we first need to see what lies in the hidden compartments of the box in which it came.

### A Person's Values, or the Value of a Person?

The technical calculations of benefit-cost analysis operate on the monetary values people assign by their choices to alternative goods and services. The implied political criterion is thus "one dollar one vote." Only with uniform distribution of wealth among the people is this criterion consistent with the American political ideal of "one person one vote." People with more money get more votes, both in the marketplace and in the economist's technical calculations. If we agree with the existing distribution of wealth in society, this criterion is fair. It does imply, however, that the rich are more deserving of public service than the poor, and that their desires are more important.

The "trickle down" theory presents a countering argument. By that theory, people get wealthy because they manage resources more effectively. This effective management serves a stewardship role for society at large. Not only do the wealthy become wealthier; so does all of society, including the poor. Whether one accepts this argument is a political choice, because the empirical facts are incomplete. It is generally accepted, however, that efficiency is an insufficient criterion on which to base public policy. Other objectives are also important, including objectives that call for redistribution of wealth.

### Consumer Sovereignty

Do we desire a thing because it is good, or is it good because we desire it? Economics infers the monetary value of things from the actual choices people make. These values are thus defined and justified by "consumer sovereignty," which is to say that things are good because we desire them. This criterion is political because it says the "will of the people" decides the value of things, a very democratic approach. It is apolitical because within a free market system, it imposes no value judgments on free choice.

This absence of normative evaluation of free choice, given the democratic premise, is troublesome in some respects. People sometimes choose things that the majority of us feel are bad. We correct this problem in part by imposing laws that invalidate certain choices. For example, the legal value of marijuana is zero, although it is a big cash crop on some national forests. Thus, things are good because we choose them, but subject to the constraint that by social choice, we define some things to be bad.

Another problem is that people are not always well informed. We sometimes make choices we would not make if we had better knowledge of the consequences. Again, we sometimes agree to impose paternalistic legislation on ourselves to protect us from our own ignorance. Still another problem is that people are not always rational. We sometimes make choices that we believe are bad, choices that are not consistent with our held values. Such choices may be compulsive or simply foolish, but they demonstrate inconsistency between operative and conceived values.

The alternative to consumer sovereignty is to assign economic values by some normative ethic, or simply by the whim of an individual or organization that has the power to impose its will on the people. Consumer sovereignty is thus like "life" and "democracy," which sometimes seem like the worst things we could have, except for the alternatives.

### Incompleteness

Which has greater value, $100 worth of candy, or $100 worth of education? To the economist, both have the same value, because one can sell the candy for $100 and buy the education. When asked this question, however, people invariably say that the education is more valuable. The economic criterion takes second place behind a value judgement that the increased productivity and quality of life obtained by education has greater worth than the monetarily equivalent temporary pleasure derived from candy. The result suggests that the answer comes from some criterion other than economics.

Part of the apparent difference in worth between $100 in candy and $100 in education is demonstrated by the diamonds and water paradox. Diamonds (as jewelry) perform a trivial function, but command high prices. Water is essential to life, yet is virtually worthless in most everyday situations. Diamonds command high prices, because they are scarce and demand is high. A glass of water has zero value, because water is not scarce, and that glass of water will make no difference to life. The monetary value of either the diamond or the glass of water has little to do with the value of the function it performs. Consumers demand candy, and they demand education. That demand, in interaction with supply, determines the price each will command, no matter what our moral beliefs may be about education versus pleasure.

What is the value of a meal? Ask an economist, and the answer will be a sum of money, say $15. Ask a nutritionist, and the answer will be a description of the nutritional constituents of the meal and the physiological consequences of consuming it. The economist's information ($15) answers some important questions, but is unimportant to the information needs of the nutritionist, whose job it is to make dietary prescriptions. The two have different objectives.

Thus, economics is an important but incomplete criterion. Quarterbacks get a lot of money because they are scarce and demand for their services is high, although we could all live very well without them. School teachers and police officers provide essential services for which we pay very little. Most people agree that school teachers are more important than quarterbacks, but consumer sovereignty and supply and demand decide the wage rates.

### Discounting

One must pay interest on borrowed money. The interest covers risk and the opportunity cost of goods and services forgone by the lender. Money is like a seed. When planted, it grows. It can also purchase things that people enjoy. Thus, discounting makes sense in relatively short-term financial markets. A dollar is worth more now than later.

Intergenerational investments raise ethical questions, however. A dollar invested now in long-term productive growth produces wealth, new technology, more knowledge and skill, and expanded options for future generations. A dollar invested in pleasure by this generation may provide no such benefit to future generations. Irreversible commitments of scarce resources now may deprive future generations of the option to use those resources later in other ways. Thus disfranchised, future people suffer "taxation" without representation. The economics of market rate discounting is therefore insufficient for long-term commitments of scarce resources. Something more is required. In some cases a zero or negative discount rate may be appropriate.

## THE POLICY ROLE OF BENEFIT-COST ANALYSIS

What is the proper role of technical benefit-cost analysis (BCA) in public policy decisions? Should it be a sovereign decision rule that determines choices, or is it merely an information system clamoring for attention in political and market conflict resolution? Before addressing these questions, we must consider the purpose of government.

## Market Equilibrium and Market Failure

What is the proper role of government in private affairs? The answer is a political statement. At the conservative extreme is an argument that government should do no more than define human rights, enforce contracts among individuals, and litigate disputes. The other extreme argues that government should provide information to protect consumers, regulate the private market, deliver goods and services, and redistribute income. In a democratic society, the proper role of government is whatever we agree to have it do.

Welfare economists sometimes argue that the free market is imperfect. Some goods and services have characteristics that make them unprofitable to private enterprise. Without these goods, however, society as a whole is less wealthy, and many of us as individuals are worse off. Sometimes the signals received by individuals encourage poor choices. Such conditions, if they exist, require some form of social agreement by which we constrain ourselves to make more beneficial choices. One way to achieve such constraint is through government intervention. Thus, our government provides national defense, public education, consumer protection, police and fire protection, and so on.

But how far should such services go? When does the inefficiency of government intervention (internality) overbalance the inefficiency of market failure (externality)? One of the most perplexing questions on this controversial front is whether government should provide only those goods and services that it can justify on the grounds of direct net revenue. In other words, should government act as a profit-maximizing private firm?

The extreme conservative says, "Yes, let the user pay full value for value received, and let government support itself by its own direct revenues." The dilemma raised by this position is that there is no justification for government to provide those goods and services that it can support and justify by direct net revenue--goods and services that could, in other words, be provided effectively by private enterprise.

The middle road argument is that there are valuable and important goods and services that a free market cannot produce efficiently. For that reason we institute governments and ask services of them. In order to make those services efficient and effective, we try to analyze and compare the costs and benefits of alternative programs through benefit-cost analysis. The free market tries to maximize economic efficiency by equilibrating supply (marginal cost) with demand (marginal willingness to pay). Under perfect competition, this condition simultaneously maximizes private profit and social (economic) welfare, because marginal willingness to pay and marginal revenue are equal. When competition is less than perfect, however, marginal revenue (the private firm's carrot) departs from marginal willingness to pay (society's carrot), and the result is departure from economic efficiency. Benefit-cost analysis is intended to show the better way.

## Sovereign Decision Rule?

Some economists argue that public policy decisions should be determined by rational economic analysis. Let economists measure all the costs and benefits and select the alternative with the maximum net economic benefit. This position sets an attractive ideal, but there are problems with it.

First, the constitution does not give BCA a blanket grant of power. The "due process" that gives equal protection under the law is generally something other than BCA. Second, BCA is blind to distribution and equity. Two equally efficient policies can produce different distributional consequences. Therefore, BCA is an insufficient criterion for social choice if equity is important. Third, the state-of-the-art is imperfect. It is not always possible to identify and measure the economic value of nonpriced costs and benefits. Indeed, these nonpriced costs and benefits are the very reasons why government should be involved, and they are the least susceptible to equal representation in the BCA. Not only are they difficult to identify and measure, the measurements tend to lack credibility in policy circles. Priced commodities tend to dominate the analysis and bias it toward the inefficient conclusion that motivated the analysis in the first place.

### Information System?

Public policy determined by perfect BCA would be efficient, but BCA is not perfect, and efficiency is not an exclusive social objective. We often choose to sacrifice efficiency for the sake of other social objectives, such as income redistribution. Perhaps BCA is better seen as an information system by which to consider the efficiency objective. Public policy decisions are reviewed and ultimately determined by political conflict resolution in any case, but that process can only improve as the participants become more informed. To make good decisions where some of the alternatives require a sacrifice of efficiency, we need to know the magnitude of that sacrifice.

### Political Exclusion Rule?

Another view of BCA is as a tool of conservative government to impede approval of certain kinds of programs. Those programs that produce direct net revenue are easiest to justify. Those that enhance social welfare without producing net revenue are most difficult to defend, because the social benefits are the most difficult to measure and the least credible. Thus, BCA can act as a filter to exclude the services that justify government intervention in the first place.

### Local Concerns versus National Interests

Mention economics to government officials, and they generally think of balance of payments, expenditure, income, and employment. Their concern is to attract as much economic activity into their jurisdiction as possible. Each nation, state, and municipality tends to act as a feudal kingdom, seeking to expand its productive territory and capture as much wealth as possible therefrom. These concerns are primarily matters of economic distribution, with equity being decided by intergovernmental competition.

Efficiency is also important, however. Efficient use of resources within a jurisdiction makes that jurisdiction more competitive in attracting expenditure and allows more of the imported expenditure to be retained as profit. Efficiency between jurisdictions makes more wealth available for all. Someone has to prevent war among the states, for example, and ensure that one state's gain is not another's loss. There is thus a tug of war between local and national interests, just as there is a struggle between national and global interests. The ethical challenge is to figure out how to represent the broader public interest effectively in a social choice process driven by special interests.

## CONSUMER SURPLUS

Consumer surplus (CS) is the usual measure of nonpriced value. Although a valid concept, CS has low credibility among many public decision makers. The reasons include: (1) analysts sometimes measure and apply consumer surplus incorrectly, (2) CS is money not spent or captured as revenue and therefore not taxable, and (3) giving credence to CS tends to justify government expenditures that do not produce direct revenue.

An interesting contradiction surfaces when we compare derived-demand CS with final-demand CS. A timber harvester who makes abnormal profit purchasing stumpage from a forest and selling sawlogs to a wood processor retains derived-demand CS. His demand for the stumpage is derived from the demand for the sawlogs he produces. The total value of the stumpage to the harvester is the revenue he can obtain from the sawlogs. If he does not have to pay all the revenue in harvest costs, he retains some of it as surplus, and that surplus appears as real monetary profit.

A recreationist "harvests" recreation opportunity and produces recreation experience. She is both producer and consumer of the experience. The total value of the experience to her is analogous to the timber harvester's revenue from sawlogs. The cost of producing the recreation experience is analogous to the timber harvester's expenditures for stumpage. The trouble with the recreation situation is that the recreationist retains the derived product, rather than selling it to someone else, so in effect she both pays and receives the total revenue that otherwise would change hands. Although the final demand surplus is no less real than for derived-demand, it is more difficult to demonstrate and measure accurately. Correctly measured, however, CS is real monetary value whether captured by derived demand or by final demand.

The ethical dilemma surrounding final-demand CS is a matter of technical honesty. On the one hand, we must not pervert CS measurements to inflate nonpriced values. On the other hand, we must not use incorrect or fuzzy arguments to discredit CS for the purpose of achieving political ends. Both are common occurrences. Most often the cause is well-intentioned ignorance, but sometimes CS is the victim of political predators.

A "political predator" is someone who knowingly abuses truth to achieve political ends. To aggressively pursue political objectives is a basic human right and responsibility. To exploit ignorance or distort truth to achieve those objectives is unethical. For example, a political choice to sacrifice economic efficiency for the sake of some other objective, say balancing the federal budget, is legitimate, but such a choice should be made with knowledge of the price as exposed by efficiency analysis. To choose to base public policy decisions on direct returns to the treasury and ignore consumer surplus is a legitimate political choice, but to try to discredit consumer surplus for incorrect reasons in order to avoid having to consider technically correct information about the public cost of the choice is unethical.

## BELOW-COST PUBLIC RECREATION

Some recreation opportunity on public land is provided "below cost," meaning that the supplier does not receive sufficient direct revenue from the users to cover the cost. There are several complex reasons for this situation, and to analyze these reasons is beyond the scope of this paper. The simple reality is that "there is no such thing as a free lunch." Where there is a cost, someone has to pay it.

Some of the recreation that occurs on public land may impose no marginal cost. Viewing the sunset, appreciating a natural view from the highway, and listening to the song of birds are examples. Consumption of these goods imposes no costs on the supplier. Such goods are and should be free to the public. Much recreation does impose cost, however, in the form of direct services, congestion, environmental depreciation, and the opportunity cost of forgone alternative use. Who should pay these costs, and should they pay the full value of benefits, or only the cost of producing those benefits?

One argument is that the user should pay. This position leads to marginal or average cost pricing, market economics, and revenue-driven policy. Such policy may be appropriate in many situations, but as previously discussed, policy driven by direct revenue may not satisfy social objectives. For example, what if the recreation delivers benefits to people who are not users? We justify some of the investment in public education by the argument of social merit, that educating children provides benefits to society beyond the value received by the individual child. Does recreation have social merit? If it does, and we charge all the supply cost to the users, the external beneficiaries receive something for nothing.

Another question is whether recreation should be a channel for redistribution of income. Is recreation like nutrition, shelter, education, and health care--something we feel is essential to adequate quality of life? Should we ask the rich to subsidize opportunities for the poor? This happens to some extent already through public school programs, city parks, etc. How far it should go is an ethical dilemma.

## THE DISCRIMINATORY EFFECTS OF PRICING POLICY

The allocation of costs among users and beneficiaries should consider the discriminatory effects of the allocation. We often hear it said that fees in national parks and wilderness areas don't discriminate against the poor. The users of those areas, it is said, are mostly well-educated middle to upper income people. Fees, therefore, don't discriminate against the poor, because the poor don't use these areas in the first place.

This argument has a flaw. Most poor people live so far away from national parks and wilderness areas that the travel cost excludes them. Most such areas are in western states, far from the urban centers of the midwest and east coast. Is this locational inequity ethical? We can't change geography, but should we provide "recreation stamps" to low income groups to compensate for the travel cost discrimination, or simply charge fees that are inversely proportional to travel cost, thereby making the cost equal to all?

Travel cost filters demand by income and specializes the use of an area as distance increases. Visitors from afar tend to have higher income, and to come to an area for higher valued, more specialized purposes. Local people tend to make "backyard" use of the area for more general, diversified, and lower valued uses. An increase in travel cost, such as through rising energy costs, thus tends to aggravate locational inequity and localize the market.

Site fees have the opposite effect. For distant users, a site fee is a small proportion of total cost, but for local users, a site fee is a large proportion. The effect of an increase in site fee is to regionalize the market by filtering out local low-valued uses and local low-income users. In neighborhood parks, for example, walking distance defines the market area, usually less than a half mile radius. Where such parks are ubiquitous throughout a city, everyone is within walking distance of one, and travel cost is not a significant component of price. Under such conditions, a site fee has a strong discriminatory effect on the poor.

Pricing policy thus creates distributional currents in society, whether it is a decision of location price or a decision of site price. Both effects need to be examined on ethical grounds, because they help to determine how the costs and benefits are distributed among various social groups and geographic areas.

## THE TROUBLE WITH OBSERVED DEMAND

The usual approach used to design and deliver public recreation services and facilities is to observe participation patterns and let manifest demand guide policy. Manifest demand is also a common basis for economic valuation. There are two problems with this approach. One is that observed differences in preference among different subcultures suggest the possibility of negative adaptation to unequal opportunity. A related problem is that manifest demand may simply be the result of choices among poor alternatives. In either case, to let observed choices drive policy may be at best a quest for mediocrity and at worst, a deliberate reenforcement of injustice.

### Subcultural Preferences

Assume an ethnic subgroup of urban society has had long-standing inferior access to recreation opportunity because of low income. This subgroup therefore learns over several generations to use and enjoy those opportunities that are close at hand in the urban environment. Children grow up without experience with forests, western national parks, and wilderness areas, and the more exotic and expensive forms of recreation. To them, recreation means hanging out with the gang on a local street corner, fooling around in the vacant lot, turning on fire hydrants on a hot summer afternoon, or doing whatever you can do in the neighborhood park or on the basketball court. Observe their choices, and you will see a limited set of things happening. Ask them their preferences, and they will tend to prefer the things they have learned to enjoy.

The ethical question is whether the Department of Parks and Recreation should give them more of the things they prefer or teach them to desire other kinds of opportunity. Responding to existing preferences reinforces patterns of social inequity, while teaching the children of the ghetto to desire things they can't obtain changes deeply rooted cultural values and may cause increased dissatisfaction.

### Choosing Among Poor Alternatives

Both the rich and the poor face a common dilemma. Both must choose among available alternatives, given constraints on time and income. A person whose principal leisure activity is TV will probably watch a poor quality program on a given evening when only poor quality programs are available. Likewise, one who likes to fish may go to a neighborhood pond when that is the only alternative available, given constraints on time and income. The fisherman may knowingly prefer clean, cold water full of native cutthroat, but bluegills are the only available choice.

Many people ski at local areas around Chicago on winter evenings and weekends. Most of these areas have a vertical rise of less than three hundred feet and are often crowded and icy. Ask these people where they would prefer to ski, and they will mention places like Colorado, Utah, or Switzerland. Ask them what kind of snow they prefer, and they will describe the champaign powder of Steamboat or Alta, but there they are, skiing on little hills under questionable conditions. They go to these places in great numbers because they like to ski, and nothing else is available within a feasible distance.

We also see large numbers of people at crowded Chicago beaches on hot summer days. Does this observed demand tell us to develop more crowded city beaches for people to enjoy? A majority of the people at these beaches would prefer more solitude at scenic natural beaches, such as one finds in Hawaii, in the Caribbean, in Door County, Wisconsin, or along the eastern shore of Lake Michigan. They know what they want, but they take what they can get on a hot summer day. How do we know people prefer solitude at scenic natural beaches? Because that's where they go when they have enough time and money. We must be careful catering to observed demand, because what we see people doing is not always what they really want.

## THE TEST OF REASON

We conclude this excursion through ethical dilemmas and troublesome questions with a look at the recreation visitor day (RVD) and the "test of reason." Forest management tradition measures recreation use in terms of the recreation visitor day (RVD). One RVD consists of twelve hours spent by one person in the recreation activity in question. One RVD of fishing, for example, means twelve hours of actual fishing time, not twelve hours at the fishing site. A family of five might spend three days and two nights camping, picnicking, viewing scenery and wildlife, socializing, and fishing on a Forest Service District. Total time on site is 320 person-hours (two 24-hour days and one 16-hour day). The total number of RVD's on site is 26.7.

Not all of this time was spent fishing, however, so these are not RVD's of fishing. They are RVD's on site. Assume only two members of the family went fishing and that they spent an average of 4 hours each day. The number of fishing RVD's is thus 2 (persons) times 3 (days) times 4 (hours/day) divided by 12 (person-hours/RVD) or 2 RVD's of fishing.

Reporting economic value in terms of the RVD as the unit measure of the good often leads to confusion. Assume in the above example that the total consumer surplus value of the trip is $50. Given that fishing was the primary purpose of the trip, the analyst assigns the full trip value to fishing, and reports the value of fishing as $25 per RVD.[2]

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[2] This logic is valid under the weak complementarity argument that the trip would not have occurred without fishing opportunity at the site, and that the policy context is with versus without the fishing opportunity at the site.

Later a policy maker decides to apply a "test of reason" to the reported value. His analysis goes like this: If my family of four goes on a 5-day fishing trip, our net WTP should be 4 (persons) times 5 (days/person) times 2 (RVD's/day) times $25/RVD = $1,000. He concludes that the result is absurd. The reported value is much too high, because he is not willing to pay that much in addition to the trip cost for a few hours of fishing. The conclusion is convincing but fallacious, because it uses an incorrect definition of the RVD. The mistake is legitimate if caused by ignorance. In that case, the analyst has a responsibility to correct the misunderstanding. The policy maker is unethical, however, if he deliberately takes advantage of confusion about the definition of the RVD to twist facts for political reasons.

## CONCLUSION

Economics is an important and useful tool for policy analysis and resource allocation. It is a complicated tool, however, and correct use requires skill. Because of the demanding requirements, misunderstanding and misapplication are common, especially where nonpriced goods and services are involved in questions of economic efficiency and income distribution. Economic issues also tend to intermingle with political value judgments, thereby making correct application still more difficult. Some of these judgments come with the tool as baggage carried by theoretical roots. Other issues arise in application of the tool, because economics is, after all, a science of human values, and human values are the substance of ethical concerns.

The principal concern of this paper has been to identify and discuss some of the ethical questions that surround the application of economics to the management and allocation of public recreation resources. The intent is not to discredit economics, but rather to sharpen its blade and call for more wisdom, skill, good communication, and intellectual honesty on the part of those who wield it.

# MORAL DEVELOPMENT AND ENVIRONMENTAL ETHICS: MANAGERIAL IMPLICATIONS

Thomas C. Swearingen[1]

Abstract. Partridge (1982) related environmental ethical reasoning to a theory from developmental cognitive psychology, Kohlberg's theory of moral development. Christensen and Dustin (Christensen and Dustin 1989; Dustin 1985) suggest that Kohlberg's theory can be used as a guide to designing interpretive visitor communications. Previous research indicates that additional study of development of environmental ethical reasoning would be desirable prior to using Kohlberg's theory in the design of communications about environmental protection. This paper reviews research by Swearingen (1989) investigating the development of environmental ethical reasoning. The results indicate that environmental ethical reasoning is a developmental psychological construct related to both age and education. The practical implications for resource management and interpretive message design are discussed.

Keywords: moral development, environmental ethics, depreciative behavior, resource management.

## INTRODUCTION

Whether managed by state or Federal agencies, most recreation areas face dual managerial objectives of visitor access and resource protection. Human use of an area will cause impacts to the natural environment. Management is charged with the responsibility for minimizing these human impacts so that the ecological integrity of the natural environment will be preserved for future generations.

Rules of appropriate visitor behavior are promulgated by resource agencies to protect the natural environment of recreational areas. In some cases of extreme resource degradation, the authority of the agency to enforce rules may be exercised. When faced with a visitor population that lacks the desired ecological sensitivity, however, motivating the visitor to engage in appropriate behavior through persuasive communication and other indirect management approaches is preferred by resource managers for both practical economic and philosophical reasons (Hendee et al. 1978; Manning 1986). Direct managerial strategies such as rule enforcement are generally avoided by resource agencies.

An ethical theme of ecological protection is common to many persuasive interpretive communications to visitors.[2] Managers assume that communications can influence park visitors' ethical decisions and behavior toward the natural environment. The success of this communication strategy is dependent on both the effectiveness of the message in prompting behavior and the ability of the visitor to comprehend the message.

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[2] The messages frequently discuss desired environmentally sensitive visitor behavior using such terms as "minimum impact camping" and "low impact ethics."

The target population of problematic visitors who might engage in depreciative behavior[3] has never been clearly identified in any research literature. Furthermore, it is unclear whether the ability to comprehend an ethical message about the natural environment exists among the intended visitor audience. The message may not be appropriate to the level of comprehension or reasoning ability (cognitive development) of this unidentified target audience.

Message design logic[4] can be based on an understanding of the cognitive abilities of the target audience (message recipients). If the message to be disseminated by resource management is to emphasize ethical concern for the environment, then investigation into the development of cognitive abilities in the context of environmental ethics will aid in understanding the thought processes of the target audience and in formulating appropriate interpretive communication strategies. This paper reviews preliminary research (Swearingen 1989) on this subject.

## LITERATURE REVIEW

Cognitive development can be studied in various domains or contexts, such as logico-cognitive reasoning[5] (Piaget and Inhelder 1969), cognitive mapping[6] (Moore 1973, 1979), prosocial reasoning[7] (Eisenberg 1982; Eisenberg-Berg et al. 1983), or moral reasoning (Colby and Kohlberg 1987; Kohlberg 1984; Kohlberg et al. 1983). The intent of structural stage theories of cognitive development is to differentiate between values, norms, and other affective components of thought and the underlying levels and constructs of thought organization. Stages of development are defined according to the evolving ability of the individual to recognize and utilize higher level constructs of thought organization.

Kohlberg (Colby and Kohlberg 1987; Kohlberg 1984; Kohlberg et al. 1983) concentrated on measurement of cognitive development in the domain of morality or ethics. From Kohlberg's perspective, moral development refers to moral judgements at progressively more abstract, comprehensive, and universal levels of cognition (Colby and Kohlberg 1987; Kohlberg 1984; Kohlberg et al. 1983). A person at a lower level of development of moral reasoning may make an ethical decision based on reasoning only about egocentric motives such as personal gain and benefits or avoidance of negative repercussions such as fines. A person at a higher level of moral development may comprehend more abstract ideals of society and justice in making decisions about behavior in moral situations. It is not the ethical decision but the cognitive processes which predicate and impute meaning to the decision that are relevant to classification according to a stage theory of cognitive development of moral reasoning. Kohlberg maintained that ontogenetic cognitive development of moral reasoning can be measured in six stages of development into adult life (Colby and Kohlberg 1987; Kohlberg 1981; Kohlberg et al. 1983).

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[3] Depreciative behavior is defined as any act by the visitor which has a negative impact on the resource. The undesirable behavior may be inadvertent, intentional, or even malicious. Malicious behavior would constitute vandalism.

[4] In speech communication theory, the message design logic is the level of complexity, abstraction, and construct differentiation employed by the communicator in designing a message (O'Keefe 1988).

[5] The ability to reason using logical abstractions, as in mathematical or scientific problems.

[6] The ability to reason in an abstract spatial context, such as the ability to draw a map of a familiar area based entirely on cognition (i.e., memory).

[7] Prosocial reasoning is reasoning about positive social actions based on altruistic motives.

Kohlberg's stages are arranged such that each stage is the logical prerequisite of the next. The logical social and justice concepts of the earlier stage are incorporated into the next stage. According to Kohlberg (Kohlberg 1984, Kohlberg et al. 1983), the majority of a subject's reasoning about moral decisions will consistently occur at a single dominant stage of development. The six stages of Kohlberg's theory of moral development are further categorized into three levels of reasoning. The descriptive labels assigned to the levels of reasoning are indicative of their social context and perspectives -- preconventional (Stages 1 and 2), conventional (Stages 3 and 4), and postconventional (Stages 5 and 6). The social perspective of the preconventional level of reasoning is initially an egocentric social perspective (Stage 1) which then develops more broadly to recognize the rights of another individual in instrumental social interaction (Stage 2). Early conventional reasoning might recognize family and close relations (Stage 3). The broader social perspective of later conventional reasoning (Stage 4) recognizes consideration for the larger collectivity (nation, society). Postconventional reasoning (Stages 5 and 6) is characterized by a prior-to-society perspective of comprehension that ethical principles transcend (precede) social arrangements. All persons do not necessarily achieve the postconventional level of reasoning. Kohlberg felt that social and personal circumstances could arrest development at any stage (Kohlberg et al. 1983).

Kohlberg held that the stages of moral development were invariate and universal. The theory has received considerable validation through longitudinal study of Kohlberg's original subjects (Colby and Kohlberg 1987; Kohlberg 1984). Assertions of universality have also been substantiated (with reservations) through cross cultural research (Colby et al. 1987a; Kohlberg 1969, 1984; Nisan and Kohlberg 1982; Snarey et al. 1985; Snarey and Reimer 1987; Turiel et.al 1978; White 1975).

Partridge (1982) argued that Kohlberg's model of moral development offered insight into the development of environmental ethics. More recently, Christensen and Dustin (Dustin 1985; Christensen and Dustin 1989) have suggested that moral development and cognitive abilities may influence the way people understand messages concerning environmental protection. These authors extend Kohlberg's theory of moral development into both the field of communications and an environmental ethical context.

Communication research indicates that cognitive development theories can be related to development of communication abilities (Burleson 1985; Clark and Delia 1979; Delia et al. 1979; O'Keefe and Delia 1982). However, Burleson (1987) cites multiple studies where speech communications exhibit different developmental patterns when measured in different domains or contexts. O'Keefe (1988) found evidence of a developmental progression of message logics (individual's communication strategies) in the study of regulative communication situations.[8] O'Keefe emphasized, however, that communication reasoning is specific to the situation and context. Burleson (1984) noted that role taking ability is context specific in the development of communication abilities. Role taking ability is theoretically linked to moral development (Colby and Kohlberg 1987; Kohlberg 1984; Piaget 1965).

This literature indicates that cognitive development and development of communicative abilities are context specific. Thus a model of traditional (social) moral development derived from interviews (i.e., Kohlberg's theory) may have limited relevance to the comprehension of written or oral messages about environmental ethics.[9] Applying social theories of cognitive development to communication in an

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[8] Regulative communications are used in situations in which the speaker is confronted with the necessity of controlling the undesirable behavior of another. This is the circumstance confronting a resource manager who must influence visitors prone to engaging in depreciative behavior.

[9] To illustrate this point, one of the dilemmas used in Kohlberg's interviews is contained in the Appendix. For comparison, examples of items or dilemmas from other instruments discussed in this paper are also included in the Appendix.

environmental context without research into the underlying cognitive representations (structure) in that specific context is a questionable approach to the design of interpretive communications.

Extensions of Moral Development Theory

Kohlberg's scoring procedure (Colby et al. 1987b) accepts global moral orientations (higher level cognitive constructs such as fairness and perfectionism) which influence moral perspectives. Different persons and cultures structure their reasoning in the moral domain using moral orientations other than or in addition to the justice orientation. Other researchers have cited other orientations to morality that characterize the development of moral reasoning among diverse peoples and cultures (Dien 1982; Gilligan 1982; Snarey et al. 1985; Snarey and Reimer 1987).

Empirical evidence indicates that the lower stages of Kohlberg's theory are accurate with most populations. Divergence occurs at the postconventional level of reasoning when subjects use different orientations to morality other than justice reasoning. Levels of moral development based on an orientation of care and responsibility to close relations diverge from Kohlberg's model primarily at the postconventional levels of reasoning (Gilligan 1982). It is at this level that most cultural differences are also apparent (Dien 1982; Snarey and Reimer 1987; Tietjen and Walker 1985). Different orientations to morality may differ in content somewhat at the lower stages, and will differ in structure and content at the postconventional level of reasoning (Dien 1982; Eisenberg-Berg et.al 1983; Gilligan 1982; Snarey and Reimer 1987; Tietjen 1986; Tietjen and Walker 1985). This research indicates that the study of additional orientations to moral reasoning must by definition include different descriptions of stage content.

The extension of Kohlberg's model into an environmental context is consistent with a broader theoretical perspective which would interpret environmentalism as an additional orientation of moral reasoning. The essential structural elements of Kohlberg's stage theory can be viewed as an appropriate model within which to conduct research on the cognitive development of moral reasoning using an environmental orientation.

Extension of Kohlberg's theory of moral development into the domain of environmental ethics has not been adequately investigated (Dunlap 1987; Partridge 1982). Dispoto (1977) found a relationship between principled moral reasoning and environmental attitudes among college aged subjects. Most of this correlation, however, was explained by academic ability. Iozzi (1976) compared social moral judgement and moral judgement in an environmental context using an existing objective test of principled moral reasoning. He modified the test to measure environmental ethical judgement with no theoretical consideration of the content and ontogenesis of environmental ethical positions or any previous investigation of subjects' moral reasoning about the natural environment. Iozzi did not find a significant correlation between environmental ethical reasoning and principled (social) moral reasoning. He concluded that moral reasoning in different contexts (social and environmental) would develop at different rates. All of the instruments used in the studies by Iozzi and Dispoto fail to measure environmental concerns other than anthropocentric considerations about pollution.[10]

Vander Stoep and Gramann (1987) tested the effect of prosocial verbal messages[11] in deterring depreciative behavior among youth groups. Park personnel made different verbal appeals to describe desired prosocial behavior[12] to youth groups at the outset of their hiking trips in an historical military park. The

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[10] See Appendix for examples.

[11] Prosocial messages would be designed to appeal to altruistic motives in an attempt to influence behavior ("Good Campers Help XYZ Agency Protect The Park"). In contrast, prescriptive messages would rely on explanation of rules and norms to affect behavior ("You Ought To Protect The Park").

[12] The messages used in the experiment made no mention of the natural environment.

experimental treatments (messages) significantly reduced instances of depreciative behavior in the study population. Gramann and Vander Stoep (1986 1987) did not discuss how cognitive developmental theory might relate to their message design logic.[13] They cited Kohlberg's work but made no reference to the developmental aspects of prosocial reasoning. However, Gergen, Gergen, and Meter (1972) reported numerous studies which found a relationship between age or education and prosocial behavior. A developmental process in prosocial reasoning similar to Kohlberg's structural theory has been documented by Eisenberg and others (Eisenberg 1982; Eisenberg-Berg et al. 1983; Tietjen 1986).

Dunlap (1987) used Kohlberg's interview procedure to investigate moral reasoning toward animals among male youths. Dunlap found that subjects' reasoning about animal ethics follows a developmental progression closely related to Kohlberg's stages of moral reasoning. Differences in the subjects' level of moral reasoning about humans and animals indicated that moral reasoning in the different contexts developed at different rates.

## Research Design

The decision to study Kohlberg's theory in an environmental context was prompted by the results of a preliminary field experiment to determine the effectiveness of trailside sign texts (Johnson and Swearingen 1986; Swearingen and Johnson 1986). Contrary to expectations based on earlier research (c.f., Heberlein 1971), a threatened sanction sign was most effective in deterring off-trail hiking in a front country national park setting. The idea that those persons who might otherwise hike off-trail respond to authoritarian messages was intriguing. This result also implied that others (who stayed on the trail regardless of which sign text was present) are motivated by different thought processes (such as prosocial reasoning). Kohlberg's theory extended to an environmental context could be used to explain both behaviors. Replication of the sign experiment in 1987 (Swearingen and Johnson 1988) offered the opportunity to pursue this idea.

Several experiments to test the effectiveness of various social control techniques for deterring such minor rule breaking activity were administered in a popular subalpine meadow area of Mount Rainier National Park (Swearingen and Johnson 1988). The behavior of 17,416 visitors was observed in a sign experiment at three sites in the area, and a barrier experiment included behavioral data on 6,006 subjects. In conjunction with these applied experiments, a visitor survey was also conducted at the park to develop a descriptive profile of visitors who hiked off-trail into the meadow (Johnson and Swearingen 1988). The agency questionnaire was administered by mail to matched samples of compliers and noncompliers (N = 1606) contacted at the experimental sites. A series of reminder letters resulted in a 72% percent response rate (N = 1152) to the questionnaire (Johnson and Swearingen 1988).

Thereafter, a second experimental questionnaire, designed to measure development of environmental ethical reasoning, was mailed to the 1152 respondents to the agency questionnaire. A total of 568 responses was received to the second questionnaire, a 49 percent response rate. There was no attempt to achieve a higher response rate because the park visitors had previously been subjected to a lengthy questionnaire and reminder procedure in connection with the agency questionnaire. The purpose of the subsequent study was instrument development and theoretical investigation of moral reasoning in an environmental context. There was no intent to generalize to a universe of park visitors from a representative sample of respondents.

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[13] The treatment messages used in the experiment could be construed as prototypical messages appealing to the social perspectives of Stage 3 reasoning ("good boy-good girl") or to a Stage 2 social perspective of instrumental relations from Kohlberg's theory.

Instrument Development

Kohlberg's methods (Colby et al. 1987b) rank individuals' levels of moral development with a lengthy interview procedure which requires highly trained personnel. However, an objective test of moral development called the Defined Issues Test (DIT) has been developed by Rest (1979, 1986a, 1986b). The test involves a recognition task using prototypical issue statements representative of stages of reasoning to resolve a series of hypothetical moral dilemmas.[14] The subject's ranking of most important issue statements is used to determine an index of principled moral reasoning (the P score). The P score measures the degree of importance the subject assigns to items that are considered representative of higher level (postconventional) reasoning. Scores on the DIT are only moderately correlated with Kohlberg's score (Rest 1979). This is not unexpected given the difference in the assessment methods and the cognitive tasks involved.

Since the research design dictated a mail questionnaire, an instrument similar to Rest's DIT was developed reflecting an environmental orientation to moral reasoning. A theoretical formulation of cognitive development in an environmental ethical context was required because the research was to be based on an objective instrument rather than subjective interviews. To derive a theoretical stage model of development of environmental ethical reasoning, an a limited series of phenomenological interviews and an extensive literature reviews of related subjects were conducted (Swearingen 1989). This proposed model was used to design the experimental instrument. The experimental questionnaire was scored by deriving an index of principled environmental ethical reasoning analogous to Rest's P index. Other scores derived include raw stage scores for Stages 2 through 6 based on individual item ratings summed by stage content.[15]

RESULTS

To establish that environmental ethical reasoning is subject to a cognitive development process, two questions were addressed. The first question was whether the hypothesized stages of environmental ethical development were representative of subjects' moral reasoning about environmental issues. To address this question, a factor analysis and tests of consistency of reasoning were performed. The purpose of these analyses was to consider whether subjects' reasoning exhibited patterns that would satisfy theoretical stage criteria.[16] The second question to be addressed in the research was whether the hypothesized stage model of environmental ethical reasoning would be related to other measures indicative of cognitive development. To consider this issue, subjects' scores of principled environmental ethical reasoning derived from the research instrument were compared with measures of cognitive or moral development.

Both cognitive and moral development theories consider qualitative differences in consistency of reasoning to be indicative of structural stages of reasoning (Kohlberg et al. 1983; Piaget 1960). A series of factor analyses were performed to test whether subjects' reasoning (as expressed by ratings of the importance of the issue statements from three moral dilemmas) was consistently related to the theoretical stages of development. The outcome of the factor analyses offered support for the hypothesis that subjects consistently

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[14] See the Appendix for examples of issue statements.

[15] See the Appendix for examples of dilemmas and issue statements.

[16] Due to the fact that the subjects for this study were park visitors, the majority have demonstrated some degree of appreciation (and presumably ethical concern) for the natural environment by the choice of their recreational activity. It is reasonable to expect that these subjects are more likely to have a developed sense of moral consideration for the natural environment than the general population. Thus any variance measured in environmental ethical reasoning capabilities by the respondents to the survey may well understate the expected relationships in the general public.

adhered to predicted stages of reasoning. Consistency in stage of reasoning among all subjects is demonstrated by the fact that most issue statements loaded on factors according to theoretical stage content. Twenty-seven of thirty issue statements (90 percent) loaded on factors of the same or adjacent stage content.[17] These results indicated that subjects' reasoning is consistent across moral conflicts, and their reasoning conforms to theoretically predicted stages.

To further investigate whether subjects' environmental ethical reasoning was consistent at a dominant stage or adjacent stages, additional analyses were performed. There was a significant difference ($T = 23.78$; $p \leq .000$, $N = 567$) between subjects' cumulative mean scores by level of reasoning (conventional and postconventional scores). These results would also support the hypothesis that subjects' reasoning is consistent, and the levels of reasoning are significantly different among the subjects.

Tests of criterion group reliability also supported the assertion that subjects were consistent in their stage of reasoning. The agency questionnaire (Johnson and Swearingen 1988) that preceded administration of the environmental instrument[18] contained two scales which were significantly related to off-trail hiking behavior. These scales were: (1) motivation to comply to agency norms, and (2) attitude toward the harmfulness of behavior (off-trail hiking) to the natural environment. First, one would expect that those persons viewing off-trail hiking as undesirable and environmentally destructive would also score highest on a test of principled environmental ethical development. Behavioral attitude scores were weakly correlated with environmental P scores ($r = .1187$, $p < .01$, one-tailed). Thus principled environmental ethical reasoning is characteristic of the "expert" criterion group with above average ecologically sensitive behavioral attitudes.

Ascription to agency norms would be an orientation characteristic of Stage 4 reasoning, with concerns for social norms and authority. Persons with high postconventional principled reasoning scores would be expected to have a lower normative identity with the agency than persons with high Stage 4 scores. Subjects with high principled reasoning scores are presumed to be motivated by ethical principles rather than social norms. Thus postconventional reasoning should not be characteristic of subjects with above average motivation to comply to agency norms.

The results of statistical analyses testing criterion group reliability clearly supported these arguments. Conventional reasoning (Stage 4 scores) was significantly higher among subjects concerned about conforming to agency expectations (higher than average agency norm scores).[19] Subjects with above average agency norm scores had slightly lower environmental P scores. Principled ethical reasoning was not related to motivation to comply with agency expectations.[20]

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[17] Of the 30 issue statements conceived as representative of a specific stage of reasoning, 22 items (73 percent) loaded on factors of the same theoretical stage content. Five items (17 percent) loaded on factors of adjacent stage content, and only three items (10 percent) loaded on other factors. The three items which didn't load on expected factors were not used in compiling the ENV P index. These three problematic issue statements were all Stage 3 items.

[18] It is important to note that the two instruments were administered from several weeks to several months apart.

[19] Higher Stage 4 scores are significantly but weakly associated ($F = 8.6994$, $p = .0033$, $Eta = .1251$, $N = 549$) with higher motivation to comply to agency norms.

[20] There was not a significant difference in environmental P scores between those subjects with above and below average agency norm scores.

In summary, the results of these analyses demonstrated that subjects' environmental ethical reasoning exhibited patterns of thought organization similar to the hypothesized stages. These patterns of thought organization (stages) were significantly different. Further, subjects' reasoning was consistent across related ethical situations (dilemmas). These conditions satisfy the basic Piagetian criteria of structural stages (the first research question). The second question is whether these patterns of reasoning are indicative of a process of cognitive development.

The first test for developmental characteristics of the environmental instrument was a comparison of scores from that instrument with DIT scores (pretest data only). There was a significant correlation between environmental P scores (ENV P) and DIT P scores ($r = .6423$, $p \leq .001$, one-tailed) among pretest subjects. This result offers support for the research hypothesis that environmental ethical reasoning is related to a developmental process in cognition (and some evidence of content validity of the environmental instrument). The significant correlation between ENV P and DIT P scores also offers tentative support for the research assumption that development of environmental ethical reasoning is related to "social" moral development.[21]

Age is strongly related to cognitive development among children and younger adults (Piaget 1960; Rest 1979; Rest and Deemer 1986). As age increases, adult development depends less on age than on life experiences (Rest 1979; Rest and Deemer 1986). Higher education is commonly associated with broader and more responsible occupational and social roles in society. Thus years of education is a variable used to indicate broader social experiences that would tend to enhance cognitive development among adults. Support for the hypothesis that environmental ethical reasoning reflects developmental aspects of cognition was found in analysis of principled environmental ethical reasoning by age (younger subjects) and years of education (all subjects). Age was significantly related to principled environmental ethical reasoning among subjects to 25 years of age ($r = .4069$, $p < .001$, one-tailed, $N = 60$). Education was significantly related to principled environmental ethical reasoning among all subjects ($r = .1848$, $p < .001$, direction predicted, one-tailed, $N = 535$). Regression analyses indicated that age has a greater effect on the environmental P index than education for younger subjects. Education has a greater effect among subjects of all ages (16 and up). Both trends indicate a developmental process is involved in changes (increases) in the environmental P index. These analyses satisfy the second research question with evidence that environmental ethical reasoning is a developmental psychological construct.

In order to be relevant to resource management, there should be some relationship between environmental ethical reasoning and behavior toward the natural environment. There was a significant relationship between principled environmental ethical reasoning and behavior toward the natural environment.[22] Mean P scores on the environmental instrument were significantly higher for subjects who stayed on-trail at experimental sites than the mean ENV P scores of those subjects who deviated off-trail ($F = 6.550$, $p = .011$, $N = 449$, Eta = .1202).

In summary, the theoretical conclusions of this study based on the statistical analyses are:

1. Environmental ethical reasoning is a developmental process in cognition related to traditional ("social") moral development. While the two moral orientations are related, developmental paths are held to be separate.

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[21] These observations should be tempered with the caveat that the sample of subjects who took both tests was very small ($N = 23$). Whether the reported statistical relationship would be replicated in a larger random sample is unknown.

[22] Visitor behavior was measured by compliance or noncompliance to the experimental treatments during the related sign experiment (Swearingen and Johnson 1988).

2. The hypothesized stages of environmental ethical development are representative of the structure and content (thought organization) of moral reasoning about the environment among the sample population.

## RESOURCE MANAGEMENT IMPLICATIONS

In an applied context in a natural resource setting, the implications of Kohlberg's theory are important in terms of understanding visitor motives and behavior. The theory could be used in planning information dissemination strategies and in design of other social control techniques for resource protection. This preliminary research indicates that visitors who engage in depreciative behavior in the natural environment have a different level of moral development than the rest of the visitor population. Interpretive messages directed toward visitors who engage in depreciative behavior might be designed to appeal to their level of development of reasoning capabilities (cognitive development). However, Rest (1979) cautioned against reliance on the assumption that ethical communications can be directed toward specific stages of moral reasoning. Rest cited research which has indicated that different methods of measuring moral development result in considerable variation in stage assessment. Thus the design of a communication to appeal to a specific stage of moral development is confounded.

Moral development theory might also provide a theoretical explanation for the relative effectiveness of different sign texts and other managerial strategies for protection of natural areas. For instance, the reason a threatened sanction sign has been shown to be a more effective deterrent to off-trail hiking in some park settings (Johnson and Swearingen 1986; Martin 1987; Swearingen and Johnson 1988) might be related to the level of moral development of the target population. Similarly, prosocial messages may be effective with certain younger age groups (Gramann and Vander Stoep 1986) because these age cohorts are at a level of moral or cognitive development to be receptive to this type of message.

Most interpretive communications involve very short periods of interaction and communication with the visitor. However, research has shown that short-term educational interventions are usually not successful in enhancing levels of moral development (Blatt and Kohlberg 1975; Lawrence 1980; Rest 1979; Rest and Thoma 1986). Given the failure of short-term educational intervention strategies in enhancing moral development, attempts to influence visitor behavior through education about environmental ethics may be unsuccessful with persons at certain levels of development. The visitors may not be capable of understanding an ethical appeal about resource protection. Short-term interaction with agency personnel or exposure to agency communications may not be sufficient to enhance cognitive development. In such situations where communication may not be expected to affect behavior, direct management strategies such as rule enforcement may be necessary to deal with depreciative behavior.

In elaboration on these observations, there are two issues relevant to resource management that should be considered. The first issue is the relationship of environmental ethical reasoning to behavior. The second topic to be discussed is the implications of the results for interpretive communication design.

A significant difference between mean environmental P scores by behavior category (compliance and noncompliance) was noted during statistical analyses. However, the measure of the strength of this relationship (measure of association) is weak (Eta = .1202). The research design may have resulted in an understatement of the strength of this relationship. The observed measure of behavior has an indeterminant degree of measurement error because some proportion of the visitors classified as compliers during the applied experiments almost certainly engaged in some type of (unobserved) depreciative behavior elsewhere during their park visit. Further, park visitors could be more sensitive to environmental ethical issues than the general population. This circumstance would also tend to understate the relationship between environmental ethical reasoning and behavior (in comparison to the expected relationships in the population at large). Given these

observations, the relationship between principled environmental ethical reasoning and behavior toward the environment may have more substantive meaning in resource protection than the statistical results indicate.[23]

As a result of the methodological limitations of the current instrument and research design, a definitive assessment of the substantive importance of environmental ethical reasoning to behavior toward the natural environment cannot be stated with confidence. Research is at a preliminary stage, and practical applications are limited. Given improvement in the environmental instrument, the current research offers an avenue of theoretical inquiry as promising as any behavioral study yet conducted concerning explanations for depreciative behavior in a park environment.

The results have importance in consideration of interpretive communication design. The current research indicates that reasoning about environmental ethics is developmental and specific to the context. Using stage descriptions from Kohlberg's theory to develop interpretive communications about environmental issues is questionable. More research specific to the environmental context is needed before moral development theory can be confidently applied to an environmental context to interpretive communications.

It is also important to consider the differences in methods of stage assessment in the design of communications (Rest 1979, 1986a). It is unclear how the differences in issue statement recognition (on tasks such as the DIT or the environmental ethics instrument) and spontaneous interview thought processes (on tasks such as Kohlberg's interview) relate to comprehension of interpretive communications or to behavior toward the natural environment.

The stage descriptions which were the basis for design of the research instrument used in this study are preliminary. Extending this theoretical model into interpretive message design would be questionable at this time. There is some degree of relationship between principled environmental ethical reasoning and behavior. Messages designed to appeal to this level of reasoning may be "preaching to the saved." However, the stage of environmental ethical development of the visitors engaging in depreciative behavior has not been adequately investigated. Since these visitors would constitute the target audience of a resource protection message, it is unclear at what stage of reasoning an interpretive message should be directed to increase effectiveness in influencing behavior. If these visitors are at a lower level of development of moral reasoning, what "stage" of messages will they be able to comprehend? Is the interpretive message recognition task easier than the stage assessment task? Questions of this nature must be addressed before practical applications of interpretive communications are recommended.

Research Note

Since the most recognized criticism of Kohlberg's theory has concerned a potential bias against female moral orientations (Gilligan 1982), an analysis of principled environmental reasoning (mean ENV P scores) by gender was performed. There was not a significant difference in principled environmental ethical reasoning by gender ($p = .10$). However, the mean score of females (36.82) was higher than men (34.88) in the sample of all valid respondents ($N = 535$). The conclusion was that the test does not exhibit a gender bias.

[23] Further refinement and standardization of the environmental instrument will be required before development of a measure comparable to Thoma's U. This measure, derived from the DIT, is more highly correlated to behavior than the P index of principled ethical reasoning. Preliminary research has indicated that such a measure could double the correlation scores of derived from the DIT to behavior (Thoma 1985).

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# APPENDIX

## EXAMPLES FROM RESEARCH INSTRUMENTS

A well known dilemma from Kohlberg's interview is the Heinz dilemma, which describes a conflict between individual economic freedom and the right to life:

In Europe a woman was near death from a special kind of cancer. There was one drug that doctors thought might save her. It was a form of radium that a druggist in the same town had discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost to make. He paid $200 for the radium and was charging $2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about $1,000, which is half of what it cost. He told the druggist that his wife was dying, and asked him to sell it cheaper or let him pay later. But the druggist said, "No, I discovered the drug and I'm going to make money from it." So Heinz got desperate and began to think about breaking into the man's store to steal the drug for his wife. Should Heinz steal the drug? (Rest 1986b).

Using Kohlberg's procedures, subjects first respond to the initial question. The interviewer then conducts a relatively unstructured interview to ascertain the basis for the subject's decision about the dilemma. The purpose of the interview is an in-depth analysis of the subject's reasoning about the dilemma which will allow classification of underlying thought patterns according to Kohlberg's model of cognitive development.

Rest's DIT uses the Heinz dilemma and other similar dilemmas in an objective test. Subjects rank and rate the importance of twelve items of theoretical stage content for each dilemma. The P index is derived from subjects' ranking of the four most important items. Examples of items from the Heinz dilemma in the DIT are:

Whether a community's laws are going to be upheld. [Stage 4]

Whether the law in this case is getting in the way of the most basic claim of any member of society. [Stage 5] (Rest 1986b).

In contrast to the short temporal horizon and more anthropocentric perspective of the dilemmas in the DIT, the environmental instrument (Swearingen 1989) contained dilemmas designed to address issues such issues as intergenerational equity (The National Welfare) or environmental preservation (The Photograph):

### The National Welfare

The researchers at the Science Institute have discovered a method of exploiting an underground reservoir (an aquifer) that will give their nation a higher standard of living by increasing the nation's manufacturing capability. However, to sustain that standard of living, the aquifer would be drained within one generation. The next generation may face a declining standard of living as a result of the proposed increases in use of the water. The chief scientist is faced with the choice of selling the technology to a company that will exploit the resource or not releasing the technological information. Should the scientist release the information?

### The Photograph

A park ranger saw a person go off a hiking trail to take a picture of a mountain. The ranger went over to the hiker, and explained to her that she would have to stay on the trail because some of the plants growing off the trail were very fragile and might be trampled. The hiker felt that she had been very careful to step on rocks and bare earth to reach the spot where she wanted a photograph. She explained that the view of the mountain was only accessible by hiking off the trail, and she promised to take only one picture. The ranger insisted that she return to the trail. Later that day, the ranger saw the same hiker go off the trail to take another picture. Should the ranger give the hiker a citation? (Swearingen 1989)

The issue statements in the instrument also reflect the broader view of enviromental ethical responsibility evident in these dilemmas. The environmental instrument is scored exactly like the DIT to allow more direct comparison across domains of moral reasoning.

The test used by both Iozzi (1976) and Dispoto (1977) to measure environmental attitudes contained 36 items -- 22 items measured response to concerns about pollution in human terms:

It frightens me to think that much of the food I eat is contaminated with pesticides.

I get depressed on smoggy days.

I rarely ever worry about the effects of air pollution on myself and family. (Iozzi 1976)

Iozzi (1976) also used a modified version of the DIT to consider environmental ethical development. He did not develop a theoretical basis for his extension of ethics. The modified DIT used dilemmas with a great emphasis on the effects of pollution on the human population:

Environmental Strike

The heating plant and incinerator at Central High School are very old. Each time they are used large amounts of smoke and air pollutants are produced. The faculty at Central High is very concerned about pollution and the environment. They feel that this pollution is harmful to the health of their students and everyone in the community. The faculty demanded that the Board of Education do something to stop this pollution.....(Iozzi 1976).

# ECONOMIC AND SOCIAL IMPACTS OF HUNTING LAND ACCESS

H. A. Clonts, S. A. Randall, M. S. Wallace and H. L. Stribling[1]

Abstract. Hunting as a recreational activity is generally thought to provide economic benefits which exceed the costs of providing access and opportunity for the sport. At issue, however, is whether those benefits differ across communities providing alternative types of land access. Additionally, the social implication of increased hunting by non-residents and whether marketing wildlife resources to "outsiders" through land access is an ethical practice are of concern.

A statewide survey of licensed hunters in Alabama (N=1,856) revealed that the economic impacts of recreational hunting are significant. Over $500 million were injected into the Alabama economy in 1986-87, $30 million of which went directly to landowners for land leasing and access fees. Non-resident hunters made up about 9 percent of the 1986-87 hunter population and accounted for approximately 5 percent of total hunter spending.

Land supply was a key factor in the type of land accessed for hunting. Convenience rather than expressed preference was important in that most hunters chose areas close to home without strong regard to the type of access available. Annual hunter expenditures by chosen land types were: PUBLIC - $1,564, FREE - $1,195, OWNED - $1,083, and FEE - $2,330.

## INTRODUCTION

Public lands throughout the United States are known for the opportunity to pursue a variety of recreational activities. Most activities are "non- consumptive" in that no product is taken from the land. However, some activities, such as hunting, do result in capturing a portion of the resource base. In recent years, many large timber companies in the southeastern United States have begun viewing wildlife as an "economic product" of the land and hence have moved toward land use practices which would "produce" greater quantities of wildlife (McKee et al. 1983). Whether such consumption has a negative or positive environmental impact is widely debated. However, it is generally assumed that the economic benefits of encouraging greater participation in those activities are sufficient to justify management expenses. An additional issue which is seldom addressed is the social implication of increased participation in hunting, especially when those who hunt are not residents of the area hunted. Increasingly, there are debates as to whether encouraging non-resident hunters is really an acceptable practice; and whether marketing wildlife resources to "outsiders" is an ethical practice (Stribling et al. 1989).

Hunting is one of the more popular "consumptive" recreational activities on both public and private lands, despite the fact that hunter numbers are decreasing generally (Lichtkoppler 1989, Wallace et al 1989c). This is especially true in the southern states where environmental conditions are excellent for wildlife habitat and population expansion. Hunting pressure accompanied by reduced areas of accessible lands and wildlife habitat has contributed to the creation of a market for fee hunting and land leasing in the United States. In western portions of the Continental United States, the relative abundance of public lands has tempered the

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pressure for private land access. But, in the east, the general "scarcity" of public lands has meant an expanded market for land leasing and fee hunting. This is true particularly in the south central region of the U.S. where the most highly developed fee hunting system is reported to exist (Wiggers and Root 1986).

The importance of public land access, especially in the South, is increasing in part because of the greater quantities of private lands being closed to public access except on a fee basis. As landowners move from "free" to "fee" access hunting, greater numbers of hunters may be displaced by those able and willing to pay the price for exclusive hunting privileges.

## RESEARCH QUESTION

If the trend toward more fee or lease hunting continues, there remains a question regarding the impact that restricted access may have on the economy of an area. If in fact "fee" or "lease" hunters are displacing others and pushing them to public lands, what are the social and economic impacts? Is there any difference in the value to the economy of lands in private or public ownership? The controversy over fee or lease hunting as opposed to free hunting is not new (Noonan and Zagata 1982, Swenson 1983, Thomas and Adams 1985, and Geist 1988). Most of theses studies dealt with questions regarding the social or economic exclusion of various groups or the effects of land access on recreation participation. This paper reports the comparable economic and social impacts of hunting based on land access opportunities.

Additionally, there is the question of participation barriers in selected recreational activities which may establish the opportunities open to individuals (Burch 1969, Field and O'Leary 1973, and Buchanan et al. 1981). Use of various types of land areas may rest on the available opportunities for such use. Niepoth (1973) called various social and economic characteristics an individual's "opportunity framework." This framework is said to guide the individual's orientation, decisions, and behavior. Thus, a secondary question was whether access choice was a function of opportunity as well as preference for specific access types.

## METHODS

A survey was conducted to estimate the land use, expenditures, and recreational patterns of hunters in Alabama. All non-resident hunters and residents of Alabama between the ages of 16 and 65 (unless hunting on owned lands) are required to purchase a license. Thus, a mail survey of hunters who purchased 1986-87 Alabama hunting licenses was used. A disproportionate random sample of resident (N = 3,736) and non-resident (N = 1,403) licensed hunters was sent questionnaires with two follow-up reminders. Completed questionnaires totaled 1,856 (1,283 residents and 573 non-residents). Randomness in the sample was achieved by using numbered license sales receipts and following a sample number pattern established with a random numbers table. The sample return rate was 40 percent. The disproportionate sample was purposely drawn to be certain that non-residents would be well represented. Weighting was used to establish sample responses on a basis proportional to the number of state and out-of-state licensed hunters. Tests for homogeneity indicated sample size and distribution was adequate and representative. To further verify this, a separate telephone survey (N = 200) of non-respondents was made to determine if response bias had occurred. No significant difference was found between respondents and non-respondents.

Hunter frequency and spending by Alabama residents in other states was not considered in this study. Rather, only within state expenditures were considered relevant for economic impacts.

Comparisons of hunters were made on the basis of dispersions about the mean, analysis of variance, Chi Square, and by using a hierarchical log-linear model to identify structural relationships among a hunter's type of land access. Log-linear models can be designed to predict cell frequencies within a given cross-classification table. The technique is comparable to analysis of variance in that single variable effects are functions of a "grand mean" and interactions are accounted for by the relationship of two or more variables

(Fienberg 1981). The objective of hierarchial log-linear modeling is to simplify the interpretation of variable associations by eliminating interactions within the model that do not significantly contribute to the "rebuilding" of the observed counts in the cross-classification table. Relationships were evaluated across four types of land access: PUBLIC, FREE, OWNED, AND FEE. The hierarchical model allowed identification of structural relationships between land access, hunter income, commitment to hunting, and region of residence in the state.

## RESULTS

Respondents were distributed unevenly with respect to access types. Over half, 52 percent, of the respondents in the statewide survey used FREE lands, 28 percent used FEE/leased access, 15 percent chose PUBLIC access, and the remaining 6 percent hunted on their OWN lands, Table 1.

Table 1. Distribution of Hunters and Hunter Expenditures by Land Access, Alabama Statewide Hunter Survey, 1986-87.

| Variable | Hunter Distribution | Per Capita Spending | Total Annual Spending | Total Spending |
|---|---|---|---|---|
| Primary Access Type | pct | dol | dol | pct |
| PUBLIC Lands | 15.0 | 1,564 | 50,836,256 | 15.1 |
| FREE Lands | 51.7 | 1,195 | 133,964,280 | 39.7 |
| OWN Lands | 5.8 | 1,083 | 13,554,828 | 4.1 |
| FEE/lease Lands | 27.5 | 2,330 | 138,781,790 | 41.1 |
| **TOTAL** | 100.0 | 1,521* | 329,580,927 | 100.0 |

* *Weighted averages, column totals not equal to sum due to weighing. Total spending does not include expenses for vehicles, land purchases, or land maintenance for hunting.*

Hunters also were found to be rather active recreationists who spent comparable amounts of money across all types of land access. Statewide, hunters reported spending approximately $1,521 per hunter with expenditures distributed across the various land access types as: PUBLIC - $1,564, FREE - $1,195, OWNED - $1,083, and FEE - $2,330, Table 1. In comparison with hunter expenditures nationwide, Alabama hunters as a group were found to spend nearly twice as much as the national average hunter, Table 2 (USDI Fish and Wildlife Service 1988).

Expenditures for hunting on fee or owned lands tend to stay in the local area since a major expenditure is the access fee itself. Hence, areas with high concentrations of fee or "own land" hunters should be expected to have a greater direct impact from hunting. This isn't always the case, however, since hunting trip expenditures are incurred primarily where the "supply" of land may be found (Wallace et al. 1989b). Table 2 shows that a major hunting cost is equipment. Primary, secondary, and special equipment accounted for about $1,200 per hunter in the statewide survey. Since hunting is done in rural "remote" areas, most of these items

tend to be purchased in more urban settings where distribution centers are located. This purchasing pattern was confirmed in a study of visitors to the Bankhead National Forest in northeast Alabama (Clonts and Randall 1989). In that study on-site expenditures represented a nominal portion of total trip costs. Because of an absence of "supply" outlets, most expenditures were incurred prior to departure or enroute to the hunting site.

Table 2. Estimates Average Annual Expenditures of Hunters by Land Access Class, United States and Statewide Hunter Survey, Alabama, 1987-88.

| *EXPENDITURE ITEMS* | *UNITED STATES* | *ALABAMA* | | | | |
|---|---|---|---|---|---|---|
| | | PUBLIC | FREE | OWN | FEE | TOTAL |
| | ----------DOLLARS---------- | | | | | |
| Total, all items | 603 | 1,564 | 1,195 | 1,083 | 2,330 | 1,521 |
| Trip related | 223 | 129 | 70 | 93 | 189 | 114 |
| Hunting Equipment | 165 | 446 | 633 | 628 | 903 | 643 |
| Auxiliary Equipment | 41 | 789 | 305 | 157 | 298 | 367 |
| Special Equipment | 90 | 149 | 133 | 81 | 295 | 177 |
| Other Expenditures | 85 | 54 | 54 | 124 | 545 | 220 |
| Land Leasing and Owndership | 55 | 14 | 16 | 74 | 476 | 145 |

* *Column and row totals may not sum due to weighting.*

***Source: USDI Fish and Wildlife Service, 1985 National Survey of Fishing, Hunting, and Wildlife Associated Recreation. Washington, D.C., 1988.*

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In the statewide survey, urbanized areas accounted for nearly 90 percent of all expenditures. Hence, the more economically developed counties tend to retain a considerable portion of the "hunting activity" dollars by local residents (Wallace et al. 1989c). Rural communities, those without large population concentrations, had a higher rate of "leakage" from the economy. That is, money tended to flow out of the area to more urbanized centers where hunting supplies could be found, Table 3. Inter-community transfers were measured by respondent indication of where expenditures occurred.

Table 3. Inter-community Monetry Transfers Between Hunter Residence Community and Hunting Access Community, Statewide Hunter Survey, Alabama, 1986-87.*

| Residential Community Type | Metro | Urban | Alabama Rural Communities | |
|---|---|---|---|---|
| | | | North | South |
| | ----------Percent---------- | | | |
| Metropolitan | 77.8 | 12.0 | 23.8 | 49.7 |
| Urban | 13.1 | 84.3 | 9.8 | 48.2 |
| North Rural | 23.3 | 6.9 | 96.0 | 17.3 |
| South Rural | 14.9 | 20.8 | 2.0 | 94.6 |
| Non-residents | 15.0 | 14.1 | 12.7 | 68.2 |

** Columns and rows will not sum to 100% due to the opportunity to utilize multiple hunting areas.*

Hunting Opportunity

The data above illustrate the impact that hunters may have within a local area as well as throughout the state. For example, most public land areas in Alabama are concentrated in national forests and state wildlife management areas. These type hunting lands are in turn more concentrated in north Alabama counties. On the other hand, the limited number of wildlife management areas and state or national forests in the southern portion of the state means hunters must turn to the other land access classes for hunting opportunities. Consequently, most lease opportunities are found in the southern portion, whereas most public land access opportunities are in the northern counties.

Although the largest land access class is FREE, that type of access is dispersed throughout the state without specific concentrations. Thus, it appears initially that the greatest impact of hunters will be in the northern region of the state because major metro and urban centers are located there. Yet, when hunter effort and hunter expenditures are compared, other areas of the state also feel the impact of hunting rather significantly. Table 3 shows that the rural south portion of the state receives a positive net transfer of wealth from other areas even though the area is less populated and contains fewer urban centers. No transfer of funds from any given region to places outside the state was included. Thus, the transfers are "net" within the state only.

This phenomenon results from the relative level of hunting effort in the respective areas, Table 4. The rural southern portion of the state receives a disproportionately greater hunting pressure than other areas. Taken together, the level of effort and spending indicate that there is significant transfer of wealth toward urbanized areas and to the rural south. Both these circumstances bring important social implications. The transfer of wealth from rural to urbanized areas generally is considered a negative impact on the local rural economy. Typically, rural areas do not have the financial resources to afford substantial and consistent losses. Yet, the rural south counties are recipients of 68 percent of non-resident expenditures, most of which is in land access and equipment expenses. Hence, a major portion of the income transfer to southern rural areas is a direct payment to landowners and is most likely to remain within the local region, if not the county. Paradoxically, residents of these areas protest loudest about the influx of "outsiders" and the loss of wildlife to "outsider" over hunting (Stribling et al. 1989).

Table 4. Distribution of Hunter Effort by Community Type and Hunter Population, Statewide Hunter Survey, Alabama, 1986-87.*

| Residential Location Type** | Hunter Population | Hunter Effort | Location of expended hunter effort | | | |
|---|---|---|---|---|---|---|
| | | | Metro County | Urban County | North Rural | South Rural |
| | ----------Percent---------- | | | | | |
| Metro County | 44.5 | 43.5 | 56.6 | 3.5 | 10.3 | 29.6 |
| Urban County | 13.7 | 15.3 | 6.1 | 62.5 | 4.6 | 26.8 |
| North Rural | 16.3 | 17.1 | 7.2 | 0.8 | 85.4 | 6.6 |
| South Rural | 18.6 | 21.2 | 6.2 | 4.5 | 0.7 | 88.7 |
| Non-Resident | 6.9 | 2.9 | 12.9 | 9.4 | 10.9 | 66.8 |
| TOTAL | 100.0 | 100.0 | | | | |

* *Hunter effort was expressed in hunter days. Total greater than 100 due to the opportunity to utilize multiple hunting areas.*

** *Metro and urban locations refer to counties in which these areas are found. Thus, hunter effort in such an area is contained within the geographic boundaries of those counties.*

Interestingly, a review of success rates in hunting effort by Stribling, et al. revealed that non-residents made up seven percent of the hunter population, but harvested only five percent of the deer taken; although they did harvest 10 percent of the turkeys in 1986-87.

An important observation with respect to the attitudes against non-resident hunters is that 18 percent of Alabama hunters also went outside the state to hunt. Furthermore, these hunters made numerous trips to other states. In terms of the number of hunters, there were about 1.5 times as many hunters from Alabama going elsewhere as there were coming into the state. Hence, there is actually less "import" of hunters than "export". Non-residents accounted for approximately 9.5 percent of the licensed hunter population in 1986-87 and 5.1 percent of total hunter spending. It should be noted also that the USDI estimates only 79 percent of all residents and 21 percent of all non-residents who hunted in Alabama purchased a hunting license (USDI 1988). If over three-fourths of non-resident hunters truly were not licensed, the impact of hunting by both groups on the Alabama economy was significantly greater than estimated here. Hence, the actual impacts likely are somewhat greater than reported for licensed hunters only.

Expenditures by the sample of non-residents were heavily concentrated on FEE lands, Tables 5 and 6. Thus, a major portion of expenditures by this group were in land use fees paid directly to landowners in the areas hunted; primarily south Alabama rural counties. Equipment and supply purchases by non-residents were not as much a part of total spending as was the case for resident hunters (47 percent versus 78 percent), but the impact was nevertheless important.

Table 5. Distribution of Non-Resident Hunters and Hunter Annual Expenditures by Land Access, Alabama Statewide Hunter Survey, 1986-87.

| Variable | Hunter Distribution | Per Capita Spending | Total Spending | Total Spending |
|---|---|---|---|---|
| Primary Access Type | pct | dol | dol | pct |
| PUBLIC Lands | 8.5 | 543 | 943,734 | 5.6 |
| FREE Lands | 51.8 | 336 | 3,566,640 | 21.0 |
| OWN Lands | 1.6 | 224 | 75,712 | 0.4 |
| FEE/Lease Lands | 38.1 | 1,586 | 12,375,558 | 73.0 |
| **TOTAL** | 100.0 | 828 | 16,969,032 | 100.0 |

** Weighted average, total not equal to sum due to weighing.*

Table 6. Estimated Average Annual Expenditures of Non-Resident Hunters in Alabama by Land Access Class, Statewide Hunter Survey, 1987-88.

| Expenditure Items * | Public | Free | Own | Fee | Total |
|---|---|---|---|---|---|
| | ----------dollars---------- | | | | |
| Total, all items | 543 | 336 | 224 | 1,586 | 828 |
| Trip related, Total | 225 | 54 | 17 | 322 | 171 |
| Hunting Equipment, Total | 81 | 109 | 101 | 261 | 164 |
| Auxiliary Equipment, Total | 161 | 34 | 45 | 290 | 142 |
| Special Equipment, Total | 0 | 6 | 0 | 211 | 83 |
| Other Expenditures, Total | 76 | 133 | 61 | 502 | 268 |
| Land Leasing and Ownership | 0 | 12 | 0 | 295 | 119 |

** Column Total will not sum due to weighing. Individuals were classified as to primary hunting access area. The opportunity was present to utilize multiple type access areas. All expenditures reported represent purchases in Alabama.*

Land Access Selection

While it is difficult to project what impact fee hunting systems hold for Alabama's future, the benefits seem to outweigh the costs. To test this hypothesis, a hierarchical log-linear model was used to identify structural relationships among hunter's land access types. Three demographic factors for hunters were analyzed for relationship across the access types: income, commitment to hunting, and region of residence. The results showed that hunter commitment did not vary significantly across residential regions. As expected, however,the

hierarchical relationships showed that hunters with high commitment to the sport were more strongly associated with FEE hunting; although, high commitment hunters also had high levels of satisfaction from PUBLIC access areas. Conversely, low commitment hunters were more associated with FREE and OWNED areas. Since FEE hunting was also associated with higher income groups, the study suggests that high commitment PUBLIC lands users would not to pay charges for FEE land access, Tables 7, 8, and 9.

Table 7. Distribution of Hunters by Selected Variables, Alabama Statewide Hunter Survey, 1988-89.

| VARIABLE | PERCENTAGE DISTRIBUTION |
|---|---|
| *ACCESS TYPE* | |
| PUBLIC Lands | 15.0 |
| FREE Lands | 51.7 |
| OWN Lands | 5.8 |
| FEE/Lease Lands | 27.5 |
| **TOTAL** | **100.0** |
| *HUNTER INCOME* | |
| Low, 0 - $25,000 | 33.6 |
| Medium, $25 - 40,000 | 37.5 |
| High, $40,000 + | 28.9 |
| **TOTAL** | **100.0** |
| *HUNTER COMMITMENT* | |
| Low-not important as other activities | 28.0 |
| Medium-more important than most other activities | 36.2 |
| High-more important than other activities | 34.8 |
| **TOTAL** | **100.0** |
| *REGION OF RESIDENCE* | |
| North | 50.1 |
| South (including non-resident) | 49.9 |
| **TOTAL** | **100.0** |

Table 8. Tests of Partial Association Among Combination of Variable Interactions, Alabama Statewide Hunter Survey, 1988-89.

| INTERACTION | DF | PARTIAL CHI-SQUARE | PROBABILITY |
|---|---|---|---|
| ACCESS*COMMITMENT*INCOME | 12 | 9.72 | 0.6404 |
| ACCESS*COMMITMENT*REGION | 6 | 3.33 | 0.7671 |
| ACCESS*INCOME*REGION | 6 | 1.59 | 0.9532 |
| COMMITMENT*INCOME*REGION | 4 | 6.37 | 0.1734 |
| ACCESS*COMMITMENT | 6 | 48.76 | 0.0000 |
| ACCESS*INCOME | 6 | 32.48 | 0.0000 |
| COMMITMENT*INCOME | 4 | 13.22 | 0.0102 |
| ACCESS*REGION | 3 | 59.59 | 0.0000 |
| COMMITMENT*REGION | 2 | 1.74 | 0.4192 |
| INCOME*REGION | 2 | 1.18 | 0.5551 |

Table 9. Lambda Parameters Showing the Relationships Among Selected Associations, Alabama Statewide Hunter Survey, 1988-89.

| ASSOCIATION | Type of Access | | | |
|---|---|---|---|---|
| *ACCESS*COMMITMENT* | **PUBLIC** | **FREE** | **OWN** | **FEE** |
| Level of Commitment | | | | |
| Low | -0.08 | 0.29** | 0.30 | -0.50 |
| Medium | -0.09 | -0.14 | 0.04 | 0.19* |
| High | 0.18 | -0.15 | -0.34* | 0.31** |
| *ACCESS*INCOME* | | | | |
| Level of Income | | | | |
| Low | 0.37** | 0.22* | -0.26 | -0.33** |
| Medium | -0.01 | -0.08 | 0.03 | 0.06 |
| High | -0.36* | -0.14 | 0.23 | 0.27* |
| *ACCESS*REGION* | | | | |
| Region of Residence | | | | |
| North | 0.53** | -0.17* | -0.12 | -0.24** |
| South & Nonresident | -0.53** | 0.17 | 0.12 | 0.24** |
| | **Level of Income** | | | |
| *COMMITMENT*INCOME* | | | | |
| Level of Commitment | Low | Middle | High | |
| Low | -0.12 | 0.08 | 0.04 | |
| Medium | -0.10 | -0.08 | 0.18 | |
| High | 0.22* | 0.00 | -0.22* | |

* *Indicates significance at 0.05 level.*

** *Indicates significance at 0.01 level.*

Finally, the supply of land access in various categories is a significant determinant in decisions regarding access choices. When public access is limited or less convenient, hunters must choose between remaining access types. PUBLIC hunting areas in Alabama are concentrated more in the northern regions, hence they are more convenient to residents there. Most southern regions are in private ownership and therefore, accessible as FREE, FEE, and OWNED. Yet, since commitment did not vary across regions, fee hunting systems in Alabama do not appear to have decreased the individual's commitment/interest in hunting. Further analysis of selected hunter socioeconomic variables showed a striking similarity of hunters

characteristics throughout the state. There was no significant difference ($P > .05$) between hunters living in various regions which suggests that the primary variable determining the type of land accessed is the "supply" of hunting land in the region of residence, whether that land be PUBLIC, FEE, FREE, or OWNED. This does not mean that supply creates its own demand. Rather, it shows that hunters will avail themselves to whatever opportunities are available with respect to their place of residence and preference for travel to other areas.

## DISCUSSION

In this study, variables representing the "opportunity framework" identified by Niepoth (1973) were evaluated to determine if there were distinguishable differences in the impact of hunters who frequented various land access areas. Special attention was given to hunter expenditure patterns in order to estimate the economic impact of land access type. Hunters as a proportion of the population were almost identical throughout the state in that approximately eight percent of the state population in both northern and southern regions purchased licenses in the survey period. Strikingly, hunter commitment did not vary across regions of the state although, fee hunting systems are more numerous in the south and public land access is more prominent in the north. Land access type did not seem to have decreased the individual's interest in the sport. This conclusion was supported also by the relative expenditure levels of hunters who frequented other alternative land access areas such as free or owned. Basically, convenience of the land supply is a key factor in hunter choice of access types. Additionally, "hunter commitment" is likely the outcome of an individual's early life experiences, personal community factors, and perceived barriers to hunting opportunities (Wallace et al. 1989c)

The economic impact of hunting is significant. Alabama hunters made approximately $330 million in direct expenditures during the period, 1986-87. To get the full impact, direct spending levels must be adjusted to account for any respending that occurs once an initial purchase is made. Since most spending occurred in urban and metropolitan areas, a multiplier of 1.9 was used to estimate the total impact (Holmes 1988). Thus, over $625 million were injected into the total Alabama economy by hunters in 1986-87. If the amount of spending for vehicles such as four-wheel drive trucks, etc. used primarily for hunting were added to this amount, the total impact would exceed $900 million. Obviously, most of these vehicles are used for purposes other than hunting, but one can see that at least a portion of the $275 million added by vehicle purchases could be accounted for by hunters. Additionally, approximately $30 million ($476 per fee hunter) were allocated to land leases and ownership costs. Yet, despite the lack of public lands and the conflicts among recreational activities and between recreation and competing land uses, approximately 15 percent of all expenditures for hunting were made on public land. Thus, just over $50 million were spent in 1986-87 by hunters in Alabama on public lands, Table 1.

Social impacts were equally important. Rural counties, especially in the southern portion of the state received an influx of both in-state and out-of-state non-resident hunters. Whereas, these hunters did inject a significant monetary amount into the counties, they also utilized FEE lands, which of course meant they leased land which otherwise might have been used by the local population. Negative opinions about non-resident hunters probably are based somewhat on real experiences by individuals being denied access to lands formerly hunted. However, to date, non-residents have not been shown to harvest greater quantities of wildlife nor occupy excessively large quantities of land. In fact, in an aggregate sense, Alabama actually is "exporting" more hunters to other states than it is receiving. Thus, the social reality is that non-residents do not pose an immediate problem with respect to lands accessed or wildlife taken. Rather, the immediate situation is an economic benefit to the state and especially to communities in which expenditures are made.

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# RECREATIONAL INCENTIVES IN THE ADOPTION OF A FOREST LAND MANAGEMENT PROGRAM BY NON-INDUSTRIAL PRIVATE LANDOWNERS: MARKETING THE TREASURE FOREST PROGRAM IN ALABAMA

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**Abstract**: This paper examines the use of recreation benefits as a means of increasing the adoption of forestry management practices among non-industrial private forest (NIPF) landowners. Data are presented from a survey of participants in an innovative multi-use forestry management program in a Southern state. Evidence from the study indicates that participants obtained more satisfaction from recreational benefits, than production or investment related benefits. Implications for marketing strategies are discussed.

## INTRODUCTION

Though nonindustrial private forest landowners (NIPF) control and supply the majority of timber volume produced in the Southeastern United States, this is not a reflection of effective management practices (Straka and Doolittle 1988). Because the capacity for increased timber growth through improved management is considered to be quite large among this group, numerous educational and incentive programs have been aimed at NIPF landowners (Royer and Convery 1981). Likewise, NIPF landowners have been the subjects of numerous studies over the past 50 years focused around the issues of increased production and the adoption of management practices (Royer 1979).

A criticism of much of this research has centered upon understanding the "productive" objectives of NIPF landowners, addressing landowner characteristics, economic and technical management issues (Binkley 1981). Non-economic motives for landowner behavior have not been investigated as extensively. As Royer (1979) concludes, much of previous literature has concentrated on landowner characteristics and attitudes, but provides very little conclusive evidence of the relationship between landowner behavior and timber availability.

More recently, investigators have concluded that many NIPF landowners have non-economic or recreational objectives for their woodland, as opposed to purely productive objectives (Doolittle and Straka 1987; Reed 1989). Carpenter et al (1986) and Birch et al (1982) found emphasis on "non-market" benefits such as recreation, aesthetics and wildlife to dominate objectives. Marler and Graves (1977) found "satisfaction," recreation and wildlife to be major objectives of NIPF landowners. Lee (1986) found that New England landowners valued scenery, personal recreation, privacy and wildlife habitat considerations more than commodity benefits such as income or timber production. Doolittle and Straka (1987) concluded that differences between adopters and non-adopters of regeneration practices are explained in terms of socioeconomic characteristics, personality variables and communication behavior. Reed (1989) found that Landowners in Minnesota expressed a need for more wildlife and fisheries information.

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This study examines the motives for participation in an NIPF landowner management program from a "consumptive" or marketing approach. Benefits from participation are considered to be related to a variety of human needs. A landowner management program which is offered by a state agency for no charge (which is described below) is viewed as a "product" which is offered to NIPF landowners, who are viewed as customers. The product is viewed as possessing a "bundle" of benefits, the values of which are each defined by the user. This study attempts to identify the relative importance of various benefits for the landowner associated with involvement.

The specific landowner management program examined in this study is referred to as the TREASURE Forest Program. The issue of increased adoption/use of the program among landowners was the underlying reason for seeking the information which the study yielded. The information will be applied in the development of more effective marketing strategies for the program, particularly in the areas of product development and promotion.

## The "TREASURE Forest" Program

The "TREASURE Forest" Program was introduced by the Alabama Forestry Commission in 1975 as a multi-disciplinary forest land management program for NIPF landowners in that state. TREASURE is an acronym for: Timber - Recreation - Environment - Aesthetics - Sustained - Usable - Resource.

The program's objectives are multiple in nature including the traditional focus on increased production through the adoption of better management practices. However, other objectives such as environmental management resource conservation, wildlife/game management, developing recreational opportunities, soil and water management, and community recognition are also important parts of the program.

Though the program was developed and initiated by the Alabama Forestry Commission, a group of related cooperating State and Federal agencies assist in the administration of the program. For a landowner to be recognized as a "Certified TREASURE Forest," he/she must achieve objectives for the land specified in a management plan based upon the desired usage and benefits of the landowner. The plan is designed by a team whose members could be personnel from the Alabama Forestry Commission, the Alabama Cooperative Extension Service, The Soil Conservation Service (USDA), the Alabama Conservation Department (Wildlife/ Game Management), the U.S. Forest Service and the Agricultural Stabilization and Conservation Service (USDA). If the landowner meets the criteria agreed upon by himself and the "team" based upon inspections over several months/years, that landowner is awarded the TREASURE Forest Award.

Less than 600 landowners have been granted the award as Certified TREASURE Forests (CFT's) since the programs inception, which means they completed the management plan designed for their land. About 1500 more have adopted the program and are at various stages of completion. Adoption of the program since its inception and current participation is below desired/anticipated levels. The Alabama Forestry Commission is therefore undertaking an analysis of the program and current situation.

The TREASURE Forest concept has been adopted by the U.S. Forest Service for use in a similar program which has been introduced on a national level.

## Application of the "Marketing Concept" to a State Forestry Program

Though marketing is defined as a business management function and conventionally perceived as a business activity practiced by profit making firms, the marketing concept has gained wide acceptance and employment in the non-profit and governmental sectors (Kotler 1988). Marketing has been defined recently as:

> The process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods and services to create exchanges that will satisfy individual and organizational objectives (Boone and Kurtz 1989).

The "marketing concept," which emerged in academics during the 1950's, is described as a management philosophy based upon the premise that customer satisfaction is the key to organizational success and/or profit (Levitt 1960). The notion is that the better the customer's needs can be identified and understood, the more effectively products and services can be developed to meet those needs, and, therefore, the more the organization's product will be demanded or sought.

A basic component of this management philosophy is that customers' needs are researched before and during product development as well as during distribution and promotion. Another important premise of marketing science is that the motives that lead to want satisfying exchanges are complex and varied, meaning that a customer derives a "bundle" of various benefits from a given product, and that each customer's benefits, or motives for purchase may differ (Boone and Kurtz 1989).

Using the marketing concept, this study examines the want satisfying attributes of the Alabama TREASURE Forest Program, just as customer satisfaction is measured on product features sold by profit making corporations.

## Objectives

This study was conducted to gain information useful in developing more effective marketing strategies for the TREASURE Forest Program. Though the program had been in effect for several years, no systematic or scientific effort had been made to evaluate the program from the user's perspective. This effort was designed to determine what attributes the users "liked" about the program, as well as the strength of such feelings. The specific objectives of the study were:

> To determine which features/attributes of TREASURE Forest were salient in leading to user satisfaction, and to determine the relative magnitude of satisfaction from each attribute as perceived by adopters.

## METHODOLOGY

Data were collected through a structured mail questionnaire administered to TREASURE Forest participants. Mail was used due to the clearly defined and relatively small size of the population, as well as the characteristics and nature of the subjects. A mailing list with names of all landowners who had adopted the program, referred to as "Creedsigners" because they had signed a creed confirming their values with regard to forestry management, as well as those who had completed the program, referred to earlier as Certified Treasure Foresters (CTFs) existed.

The questionnaire was pretested prior to mailing. Questionnaires were then mailed to all 600 CTF's and 500 Creedsigners in order to obtain adequate response for statistical reliability. The 500 Creedsigners were selected at random from the 1900 names available.

Respondents returned 402 questionnaires after one mailing for a response rate of almost 37 percent (CTF's returned 287 or 48 percent, while Creedsigners returned 115 questionnaires or 23 percent) This sample size provided a 95 percent confidence level and sampling error of +/- 5 percent.

Responses were entered into a computer for tabulation using SPSS-PC V.2 software on an IBM model 80 computer.

## RESULTS

### Sample Demographics

Prior to this effort there was no available information on the demographic characteristics of participants in this program other than acreage owned. The sample's average age was about 60, with a range of 19 to 87 years. The average size of the forest land holdings owned by respondents was 1146 acres, ranging from 12 to 35,000 acres. In terms of formal education the average respondent had 15.4 years. Fifty-nine percent had college degrees and about 27 percent had post graduate education. The mean annual household income was about $45,000. Eighty-nine percent of the sample was male and 99 percent was white.

### Benefits/Motives for Participation in the Program

In order to determine the salient attributes of the program influencing the decision to participate, respondents were presented a list of possible benefits derived from participation in the program, and were asked to rate the level of importance of each based on their own personal experience. Responses are shown in Table 1.

Stewardship. There were two benefits which appeared dominant in terms of importance: "being a good steward of my land" and "the enjoyment of getting out on my land." As seen in Table 1, 87 percent felt that being a "good steward" was very important, and 94 percent felt it was either very important or somewhat important.

At issue here is whether stewardship should be classified as a productive objective, or is it a recreational objective? "Stewardship" certainly is related to production, as it implies responsible care for the land. However, it is also related to the "higher order" human needs originally identified by Maslow (1954) as self-actualization. It can certainly be argued that "giving something back" to society by caring for land which will be productive for many years is quite a different behavioral motive than financial returns associated with economic motives. It could therefore be argued that stewardship is a form of recreation for a segment of the population, in that it satisfies the "higher order needs." The suggestion here is that after the more basic human needs are met, individuals want to "give something back."

The fact that the average age of respondents was 60 indicates that many of those in the program would receive very little or no financial gain during their lifetime. CTF's were also of higher education and income than average for the State of Alabama.

These findings are consistent with recent research findings of the Stanford Research Institute referred to as the Value Lifestyle Studies, in which values of the U.S. population were studied. This major study, ongoing for several years, has identified a group referred to as the "societally conscious" as the fastest growing segment of the U.S. culture, based upon the shared values of being concerned about the earth (Engle et al. 1990). This group is older, better educated, and has higher income than the average population.

"Getting Out On My Land". Seventy three percent of those in the sample indicated this was a very important source of satisfaction they derived through participation in the program. This is clearly a recreational activity. Another 18 percent felt "getting out" was somewhat important, meaning that 91 percent felt this benefit was either somewhat or very important. The evidence seems clear that recreation is a major reason for participation in the program.

Table 1. Perceived Benefits (Motives for Participation) in the TF Program by Level of Importance (Percentage Responses).

| | EXTENT OF IMPORTANCE (%) | | | | |
|---|---|---|---|---|---|
| BENEFITS/MOTIVE | Very Important | Somewhat Important | Not Important | No Responses | Total |
| Satisfaction in being a good steward of my land | 87 | 7 | 1 | 5 | 100 |
| I enjoy getting out on my land | 73 | 18 | 3 | 6 | 100 |
| Because I enjoy learning about forest management | 60 | 30 | 3 | 7 | 100 |
| Better soil control | 60 | 27 | 4 | 9 | 100 |
| Better hunting/more game | 52 | 31 | 11 | 7 | *101 |
| It makes my land a nice place for recreational activities | 51 | 30 | 10 | 9 | 100 |
| Financial security to my dependents | 39 | 39 | 12 | 10 | 100 |
| More financial returns for me | 35 | 40 | 15 | 10 | 100 |
| Recognition as a good citizen | 33 | 36 | 20 | 11 | 100 |
| Publicity which might help my business and my image in the community | 11 | 18 | 58 | 12 | 99 |
| Other - (specify)_____ | 3 | 0 | 2 | 95 | 100 |

* not = 100% due to rounding of decimals.

Learning. Another recreational activity which was considered to be an important benefit associated with participation was learning. Ninety percent indicated that learning was either somewhat or very important as a source of satisfaction derived from participation (Table 1).

Better Hunting/More Game. Hunting and game management are recreational activities which most participants felt were important benefits of involvement. Eighty two percent felt that this was either somewhat or very important (Table 1).

Developing My Land for Recreation. Though less important to the respondents than actually "getting out" (direct involvement in recreation), development of land for future recreation was considered important. Eighty one percent felt that this was either important or very important.

Non-Recreational Benefits

Financial Gains/Security. Several benefits presented to participants could be considered non-recreational or "productive" in nature. Financial returns, financial security for my dependents, and publicity beneficial for my business image were all considered of lesser importance than the recreational benefits, as seen in Table 1. It is interesting to note that publicity was not important to most respondents (58 percent).

Better Soil Control. This attribute associated with productive activities was considered very important by most participants. Sixty percent of the sample felt this was a very important benefit and another 27 percent felt it was somewhat important.

Recreation Benefits by Demographic Groups

Cross tabulations of the data were conducted to determine if differences existed across demographic groups in regard to the importance of recreation as a benefit. It was interesting to note that only minor differences existed. Though the data is not presented here, "stewardship" was a "very important" benefit to all age groups, all income groups, all education groups, all land size groups, and all groups by population of residence!

"Getting Out" on the land was also very important to all demographic groups. Only minor differences existed in age groups, acreage size groups, education level groups and even location of residence groups in regard to the importance of getting out. It is interesting to note that those residing in small towns and rural areas placed just as much importance in getting out on the land as those who lived in urban areas! A slight difference in the importance of getting out was reported by those with higher income who felt this was a more important benefit than did those with lower income.

Non-Recreation Benefits by Demographic Group

Moderate differences among groups were observed with regard to the importance of non-recreational benefits. Various income groups differed on the importance of financial returns as a benefit. Younger, less educated, rural landowners with less income felt financial returns were a moderately more important.

## CONCLUSION

In order to learn what motivated landowners to participate in a NIPF landowner management program referred to as the TREASURE Forest Program, participants were asked to rate the importance level of various possible benefits of participation. Responses indicated two recreational benefits were the most important benefits to landowners of all types. These were "stewardship" and the opportunity of "getting out on the land." Other recreational benefits such as learning and hunting/game management were more important than non-recreational benefits such as financial returns or publicity.

These results are consistent with other recent investigations into the objectives NIPF landowners have for owning and managing their land.

Marketing strategy implications from the data apply to both development and modification of the program, as well as in promotion and communication efforts to potential new participants. The program can be modified to ensure that it most effectively meets the needs of participants by ensuring that recreation benefits are "designed in" to each individual landowners program, based on the specific recreation interest of that landowner. It is well documented in the marketing literature that products successful at satisfying customers are successful in terms of increased use (sales).

County personnel who have face to face contact with present and potential participants should be made aware of the benefits which are important to landowners because they represent the "sales force" of the organization. Individuals in cooperating state and federal agencies who are involved in selling and designing these programs should also be made aware of the benefits landowners are most interested in.

Recreation benefits should be clearly featured in promotional messages about the program (brochures, speeches, sales presentation interviews, new articles/releases, magazine articles, etc.) due to the fact that services have the characteristic of being "intangible" as products. A significant body of literature (Lovelock 1984) suggests that when marketing services, benefits must be clearly pointed out due to the difficulty the buyer/prospect has in evaluating intangible products.

Another strategy implication applies to the concept of market segmentation, which means finding sub-groups of the total market based upon certain needs or characteristics. Data from this study indicate that a market segmentation approach based upon needs is required as a marketing strategy, because recreational benefits were important to all demographic groups.

Stewardship, outdoor recreation and learning are appealing benefits which are not only consistent with the values of our society (Engle et al. 1990), but would seem compelling to many prospective participants for this program.

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# FAMILY PARTICIPATION IN AUXILIARY ACTIVITIES ASSOCIATED WITH DEVELOPED CAMPING

Christine Cornell and Joseph T. O'Leary

Abstract. This research deals with family participation in activities auxiliary to family camping. The premise is that leisure behavior is determined by the social group and the structure of that group will add on activities which are auxiliary to the primary purpose of visit. This concept was applied to Indiana families involved in developed camping. The data are from the 1985-1986 Public Area Recreation Visitor survey. Cluster analysis was used to subgroup families and identify sets of activities. It was concluded that auxiliary sets of activities exist for developed camping and that specific family members appear to be indicators of family participation in different auxiliary sets. Several activities were identified as core activities and an extension of the concept of auxiliary activities is suggested. It is suggested that these activities be integrated into existing and future camping facilities and that the concept of auxiliary activities be expanded.

## INTRODUCTION

Family participation in recreation may be better understood in some situations as participation in a group of activities rather than a specific activity. Burch (1964) suggested that the social group with whom one engages in leisure activity will influence a host of activities which are auxiliary to the primary purpose of visits. Burch borrowed ideas from Simmel's (1922) work on 'social circles' which eventually led him to develop his concept of the personal community hypothesis (PCH). Although the concept of PCH was not labeled as such until 1969, traces of the concept are found in earlier works (Burch 1964, 1965; Burch and Wegner 1967). This research suggested that the organizing social group shapes auxiliary activities and the main activity may be a subordinate pursuit as measured by relative time spent (Burch 1964).

Once the concept of the PCH was refined, researchers began to focus on select recreational activities and ignore the hypothesis that the nature of the social group may direct participation in a set of auxiliary activities which could, in fact, supersede time spent participating in the main activity. The varying goals of family members may have an influence on the number and types of auxiliary activities in which they will participate. Understanding this participation may be particularly helpful in the case of camping, where the camping resource often provides opportunity for participation in additional recreational activities.

Identifying activities as groups or in sets has been advantageous in the past because it condenses the larger, more complex, numbers of activities that might occur at a recreation site into manageable units. Identifying sets of activities participated in by different family groups will allow management to better provide manageable units of activities for those different family types.

McCool (1978) suggested that grouping activities into packages by their meaning may help managers and planners: (1) gain a better understanding of the kinds of opportunities visitors are seeking and their consequent behavior; (2) develop facilities and visitor contact programs to enhance those opportunities arranged around activity sets; and (3) identify those packages of activities which may conflict with other packages in the use of a recreation site.

Tatham and Dornoff (1971) clustered respondents on the basis of nine demand-related characteristics. Their work found that "no one socioeconomic characteristic discriminated among market segments, but different recreational participation patterns may be linked to combinations of socioeconomic characteristics" (Tatham and Dornoff 1971,15).

Field (1971) introduced the analysis of leisure setting, leisure activity and social group simultaneously. He found that a clustering of activities by group type became evident. Field found that regardless of setting, specific groups selected similar activities. As the dimensions of the group changed various activities were dropped out and were replaced by others. This new activity set then remained constant for each leisure setting. Thus, it appears that several activities may equally satisfy objectives established by a group when they arrive at a leisure setting. It is possible that families may participate in sets of identifiable activities regardless of the leisure setting.

Again, Field (1971) noted that as the dimensions of the social group change various activities were dropped out and were replaced by others. The dimensions which make up the family such as marriage, childbirth, divorce, aging and child rearing are not static, but in constant change as Field suggested. This change may encourage and or inhibit family participation in various sets of auxiliary activities.

## METHODS

The purpose of this work was to evaluate the concept of auxiliary activities and to investigate their presence in a campground setting. To investigate the presence of auxiliary activities, this study used the 1985-1986 Indiana Public Recreation Visitors Survey data. Two hypothesis were developed. First, auxiliary sets of activities associated with developed camping would not be similar in their composition and second, different family group types participating in developed camping would participate in different auxiliary activity sets.

Secondary data were obtained from the Southeastern Forest Service station in Athens, Georgia. Respondents to the PARVS survey were asked to identify a main activity, defined as the primary or overriding purpose of the respondent's visit to the area, from a list of 53 activities. PARVS respondents could identify "camping in primitive grounds" or "camping in developed grounds" as a main activity. "No definition or clarification of any activity was provided by the interviewers to the respondents in order to eliminate a possible source of interviewer-induced bias" (Hartmann 1989,84). Therefore, the definition of "camping in developed campgrounds" was left to the respondent.

Burch (1964) suggested that groups will add on activities auxiliary to the reported purpose of visit. For the purpose of this study those activities that will be considered added on or auxiliary are those participated in by the respondent, but not identified as the main activity (developed camping).

### Data Analysis

In this study, family groups were identified using the number of adults under 65, the number and ages of children under 20 and the presence of senior citizens (65 years old or older). These classifications were based on Hartmann's (1989) study of social group variables.

Burch (1964,1965), King (1965) and Hendee et al. (1971) investigated activities associated with camping. Based on their work the following activities were included in analyses: fishing, water skiing, outdoor games and sports, swimming (both pool and other kinds of swimming), sightseeing, hiking, walking for pleasure, boating, nature study, canoeing and wildlife observation (and photography). The PARVS data also contained information about participation in interpretation activities, family outings, attending special outdoor events, driving for pleasure and jogging that were included in the study. Excluded due to lack of data in the developed camping data set and interview seasons were dining for fun, picnicking, hunting, downhill skiing, cross-country skiing, ice skating and sledding.

A modified list of seventeen activities was then developed based on work by Daigle (1989) and intuitive assignment. These activities were included in a cluster analysis to determine activity sets. All

PARVS activities were associated with a unique variable name. If the value of the variable equaled 1, participation was recoded as "yes." If the value of the variable equaled zero (.) participation was recoded as "no."

Once activity sets were identified, family variables and activity sets were included in a cluster analysis with identified activity sets to distinguish patterns of leisure behavior (Cornell 1989; Ditton et al. 1975; Punj and Stewart 1983; Romesburg 1979). This study used Wards minimum variance (see SAS, Inc. (1985) for details).

## RESULTS

Although compositions for each auxiliary set were similar, the percentage of individuals belonging to the set that participated in an activity differed significantly. For example, in the active auxiliary set 73% of the cases belonging to that cluster participated in pool swimming, in contrast to the observing set in which only 1 percent of the cluster participated in pool swimming. If a family was a member of a particular activity cluster, it did not necessarily follow that they participated in all activities within the cluster nor was their participation exactly the same as other members of the cluster. Cluster members had similar participation based on participation or non-participation in different combinations of activities. Table 1 presents the proportion of the cluster participating in activities.

Four auxiliary activity sets were found. First, traditional auxiliary activities, are represented by participation in hiking, biking and fishing. Second, family water based auxiliary activities, are represented by swimming, boating, fishing, biking, and hiking. Third, an active auxiliary set is identified, with heavy participation in biking, pool swimming, hiking, observing, historical activities, and self-guided interpretation. Lastly, a set of auxiliary activities is represented by participation in swimming, hiking, fishing with a strong preference for viewing activities, the observing auxiliary set.

Table 1. Auxiliary activities.

| Cluster/auxiliary activity set | n | Percent of Cluster |
|---|---|---|
| Traditional | (102) | (%) |
| Motorized boating | 2 | 2.0 |
| Other boating | 5 | 4.9 |
| Pool swimming | 9 | 8.8 |
| Nature activities | 3 | 2.9 |
| Hiking | 43 | 42.2 |
| Jogging | 1 | 1.0 |
| Biking | 21 | 20.6 |
| Horseback riding | 5 | 4.6 |
| Fishing | 29 | 28.4 |
| Special events | 6 | 5.9 |
| Family gathering | 1 | 2.0 |
| Historical visits | 2 | 2.0 |
| Agency interpretation | 2 | 2.0 |
| Self-guided interpretation | 2 | 2.0 |

Table 1. (Continued) Auxiliary activities.

| Cluster/auxiliary activity set | n | Percent of Cluster |
|---|---|---|
| Family Water Based | (165) | (%) |
| Motorized boating | 29 | 17.6 |
| Other boating | 6 | 3.6 |
| Pool swimming | 1 | .6 |
| Other swimming | 135 | 81.8 |
| Nature activities | 26 | 15.8 |
| Hiking | 99 | 60.0 |
| Jogging | 1 | .6 |
| Biking | 47 | 28.5 |
| Horseback riding | 1 | .6 |
| Fishing | 71 | 43.0 |
| Outdoor sports | 17 | 10.3 |
| Observing | 8 | 4.8 |
| Special events | 4 | 2.4 |
| Family gathering | 51 | 30.9 |
| Historical visits | 9 | 5.5 |
| Agency interpretation | 4 | 2.4 |
| Self-guided interpretation | 5 | 3.0 |
| Active | (100) | (%) |
| Other boating | 4 | 4.0 |
| Pool swimming | 73 | 73.0 |
| Other swimming | 3 | 3.0 |
| Nature activities | 33 | 33.0 |
| Hiking | 63 | 63.0 |
| Jogging | 3 | 3.0 |
| Biking | 83 | 83.0 |
| Horseback riding | 6 | 6.0 |
| Fishing | 16 | 16.0 |
| Outdoor activities | 9 | 9.0 |
| Observing (sightseeing and pleasure driving) | 57 | 57.0 |
| Special events | 4 | 4.0 |
| Family gathering | 28 | 28.0 |
| Historical visits | 60 | 60.0 |
| Agency interpretation | 19 | 19.0 |
| Self-guided interpretation | 30 | 30.0 |
| Observing | (165) | (%) |
| Motorized boating | 4 | 4.0 |
| Other boating | 10 | 10.0 |
| Pool swimming | 1 | 1.0 |
| Other swimming | 56 | 56.6 |
| Nature activities | 12 | 12.1 |
| Hiking | 82 | 82.8 |

Table 1. (Continued) Auxiliary activities.

| Cluster/auxiliary activity set | n | Percent of Cluster |
|---|---|---|
| Jogging | 8 | 8.1 |
| Biking | 43 | 43.4 |
| Horseback riding | 2 | 2.0 |
| Fishing | 45 | 45.5 |
| Outdoor sports | 18 | 18.2 |
| Observing (sightseeing and pleasure driving) | 93 | 93.9 |
| Special events | 13 | 13.1 |
| Family gathering | 39 | 39.4 |
| Historical visits | 28 | 28.3 |
| Agency interpretation | 9 | 9.1 |
| Self-guided interpretation | 18 | 18.2 |

Family Participation

Previously, research has tested social group participation in an individual activity and ignored social group participation in a set of activities. This study hypothesized that different family groups would participate in different sets of activities. The above activity sets were placed in a cluster analysis with family groups variables and six groups were identified. After frequencies of family composition and activity set participation were generated, families could be characterized as new families, adult families, transitional families, and intergenerational families. In addition, two separate clusters of established families were found. A group of established families with youth and teens were found to participate in the active and observing activity sets. A second group of established families with youth and teens were found to participate in traditional and water based activities. Below is a detailed description of each family type and the activities they participate in (see Table 2 for a summary).

Table 2. Auxiliary participation and group composition of family camping clusters.

| Family Type | Composition | Auxiliary activities |
|---|---|---|
| New Families | Adult pairs with infants, toddler, and youth. | Active and observing. |
| Adult Families | Adults without or with few children. | Traditional and water based. |
| Active Established Families | Adult pairs with youth and teens. | Active and observing. |

Table 2. (Continued) Auxiliary participation and group composition of family camping clusters.

| Family Type | Composition | Auxiliary activities |
|---|---|---|
| Intergenerational | Some adults will be over the age of 65. Some adults may be single. Some children. | Traditional and water based. |
| Traditional Established Families | Adult pairs with teens and youth. | Traditional and water based. |
| Transitional | Adult pairs with some youth. | Water based and observing. |

Cases belonging to the new families cluster (n=45) camped with infants, toddlers, and youth. Toddlers were present in all families. Teens and senior citizens were absent in the majority of cases. These families participated in active and observing activities. Families did not participate in the traditional set and few participated in the water based set.

Adult families (n=147) camped in parties containing two adults between 20 and 64. However, 16% of the cluster members contained more than 2 adults. Persons over 65 were absent from this cluster and children occurred in less than 30% of the families. Infants occurred in 11% of the families, toddlers in 29% of the families, and youth in 21%. These families participated in traditional auxiliary activities and water based activities.

Established families contained youth, teens, and adult pairs. Only three percent of the families in this cluster contained infants and/or toddlers. These families did not participate in traditional or water based activities. Forty-eight percent participated in the active set and 51% were found in the observing set.

Established families similar in composition to the established families above, but they participated in the traditional auxiliary set and water based auxiliary set more often. Water based activities were the most popular with families in this cluster, with 75% participating in swimming. These families were composed of youth, teens, and adult pairs. Teens were represented in 87% of the clusters and youth in 61% of the clusters.

Intergenerational families (n=46) were over represented with senior citizens and under represented by infants. Teens were in 15% of the cluster, and 11% of the cluster contained toddlers and/or youth. Adults over 65 were present in 67% of the families. Fifty-four percent of the families had no adults under the age of 65, and 46% of the families only contained one adult under 65. This appeared to be a cluster of families composed of older members, some with children. Intergenerational families participated in all activity sets. The most commonly participated in auxiliary sets were traditional and water based (44% and 33% of the families respectively). These families also participated in the active set and observing set (13% and 11% respectively).

Transitional families (n=53) were all camping with youth and slightly over 10% of these families were camping with toddlers and/or teens. Absent from this cluster were infants and only a small proportion camped with senior citizens. Water based pursuits were the most popular auxiliary set with 49% of the cluster participating. Of these families, 15% participated in the active set, 17% in traditional set, and 19% in observing.

## DISCUSSION AND IMPLICATIONS

Historically, leisure researchers have been concerned about identifying sets of activities for several reasons. First, identifying sets of activities collapses numerous activities into smaller, more manageable units. Second, these units have been identified for the purpose of determining if various activities could be substituted for one another. Lastly, sets of activities are investigated in order to determine participants with similar participation interest.

This work has extended the concept of activity sets by identifying specific sets of auxiliary activities related to family camping. Early leisure research sought to identify activity sets pursued by the general population. The identification of auxiliary sets seeks to identify sets of activities associated with a specific activity. Limited attention has been given to participation in auxiliary activities. Results of this study indicate that patterns of activities auxiliary to developed camping do exist and that family groups may be associated with distinct auxiliary sets.

The results of this study encourage the application of the concept of auxiliary activities to other activities, resource settings, and data sets to determine if this phenomenon is unique to camping or if there are other activities and/or resources where this phenomenon occurs. Would we find that auxiliary sets of activities could be associated with activities such as picnicking or fishing? Further, the concept can be extended to include specific sets of activities auxiliary to resources or facilities. This identification allows a further understanding of the "recreationists definition of the resource system" (Burch 1964) and discourages one dimensional management of recreation activities. The very nature of auxiliary activities creates unique implications for this work and future studies regarding auxiliary activities. The link between a primary activity and a set of auxiliary activities determined by a particular social group allows for:

1) better management and research of the total experience desired by that group (many of these research and management implications are discussed later);

2) further definition of the manageable unit of the recreation experience;

3) a list of activities which are vital to the management of a specific activity and a list of activities which can be substituted for each other while the recreationists is in pursuit of the primary activity.

The identification of auxiliary activities associated with developed camping demonstrates the diversity of the camping activity. Previous studies have concentrated on camping as a single recreation activity and differentiated participants based on style of camping (Burch and Wegner 1967; McEwen 1986) and sociodemographics (King 1965). The ability to cluster family campers based on participation patterns in activities and composition of family members provides a foundation for a typology of family campers. Current family types include adult pairs and intergenerational families along with families containing children of all ages. These families and their participation in different auxiliary activities are important target groups for public and private campground operators.

Provisions for the primary pursuit will always be a main concern of management, yet not far behind on a priority list should be those activities auxiliary to the primary pursuit.

Sets of auxiliary activities could be identified for a resource, overnight or day use facilities, and/or a number of specific activities.

The results of this study imply that as ages of children shift within the family, different sets of auxiliary activities are pursued. This type of information will allow management to provide auxiliary activities for their clientele as the family membership changes, regardless of whether those changes are based on the presence or absence of family members or the ages of those family members. Specialized programming may be centered on the types of auxiliary activities desired. For example, programming a weekend for new families would

include hike, bike and fish activities. A weekend for established families might center around a number of observing, historical and nature activities. Family camping programs can also be directed at family campers with different incomes, education levels, employment status and group size using pricing strategies, educational programming, and large group camping facilities.

Attracting the support or dollars of families with children over age six will include the provision of or the opportunity to participate in activities included in the active and traditional/observing auxiliary sets. Providing satisfactory experiences for families with infants, toddlers, and senior citizens will include provisions of activities in the traditional and water based auxiliary sets. In particular, the activities of hiking, biking and fishing were participated in by a large percentage of participants belonging to each cluster. These activities appear to be core activities auxiliary to family camping and should be incorporated into new and existing campground designs.

In conclusion, this study provides some further insight into social group research. We have found that auxiliary activities are associated with family camping in developed areas. We can conclude that Burch's assertion that the social group will direct participation in auxiliary activities has merit and is particularly true in the case of family camping. We hope these findings will encourage further social group analysis with respect to family leisure and/or auxiliary activities.

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# ATTITUDES, PERCEPTIONS, AND CHARACTERISTICS OF SUMMER VISITORS TO THE GREAT SMOKY MOUNTAINS REGION

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Abstract. The goals of this research were twofold: 1) to provide descriptions of typical summer visitors to the Great Smoky Mountain region, and 2) to establish a cooperative program for visitor research between the Uplands Field Research Laboratory of the Great Smoky Mountains National Park (GRSM) and the Gatlinburg Chamber of Commerce. Surveys from 412 individuals were collected in Gatlinburg and the National Park. They were analyzed using descriptive statistics, T-Tests, and factor analysis. Analyses revealed that visitors to Gatlinburg and visitors to the National Park differ in many ways, including demographic characteristics and in the perceptions and attitudes they possess regarding this region. At the same time, some of the needs that both groups of visitors hope to fulfill when visiting this region are quite similar. For example, many described this area as a favorite place for reunions of family and friends. This research also supports the hypothesis that visitors choosing either a tourist-oriented or nature-oriented experience differ significantly in many ways. These results should prove beneficial to managers of both locales, not only in understanding the motivations and expectations of visitors, but also in forming policy decisions regarding the interface of these two very different areas. It is hoped that this research marks the beginning of a longstanding, mutually beneficial cooperative program between GRSM and surrounding communities.

## INTRODUCTION

Until now, surveys conducted in the Great Smoky Mountains National Park (GRSM) concentrated on demographics and trip plans of visitors to the Park. The surveys did not assess attitudes or perceptions of the visitor about the Park nor did they collect data from people who were primarily visiting the tourist communities (VanCleave R. and Beard 1990; Peine and Renfro 1988; Renfro 1986; Curran 1983). Research conducted in the surrounding communities also concentrated on demographics and intentions. The primary purpose of this project was to obtain descriptive information regarding summer visitors to the Great Smoky Mountain region.

Managers of natural recreation areas, such as National Parks, are faced with the problem of balancing protection of the environment with accessibility to and use by the public. If policy for doing these things is not based on visitor perceptions and attitudes, these managers can not optimize on either mission (VanCleave A. 1988). Managers of the adjacent tourist communities are concerned with attracting more people into their communities. Information concerning the perceptions of visitors to both their communities and the adjacent National Park can be valuable in doing so.

GRSM and the surrounding communities, existing in the same region and drawing on the same population for visitors, are interdependent. Decisions made in GRSM impact on the tourist communities, and vice versa. To date, however, there has been little communication or coordination in research or in policy making. In order to establish a precedent of cooperation and coordination, representatives of the Uplands Field

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Research Laboratory contacted policy makers in the surrounding communities. The Gatlinburg Chamber of Commerce agreed to co-sponsor a joint research effort.

It is hoped that this sharing of information will lead to policy coordination. With the growth in the tourism industry in the area, it is important to understand the underlying dynamics of recreational choices in both areas. Policy decisions for managers of both National Parks and tourist communities should be directly affected by visitor perceptions and attitudes if those policies are to be effective and if those policies are to respect the needs and interests of the other group.

## METHODS

There were two procedures for data collection, a survey and phenomenological interviews. This paper will report only the results from the survey. Results from the phenomenological interviews are reported by Franz et al (1990).

The written survey was designed to obtain attitudinal and demographic characteristics of summer visitors, as well as information regarding decisions made by the individual in visiting this area. This information was collected in Gatlinburg and the Great Smoky Mountains National Park between June and August of 1989. Data collection ceased just prior to Labor Day weekend, 1989. The total number of surveys collected was 412. In Gatlinburg, 282 surveys were collected, and 130 were collected within the National Park.

Surveys were collected from three central locations within Gatlinburg and three central locations within the National Park. Within Gatlinburg, one cumulative collection location included motels, hotels and chalets. The response rate from the motels was very low, about ten percent. Another collection location included outdoor mall areas and a pavilion adjacent to Arrowmont School. The third location at which surveys were collected was within the lobby of the Gatlinburg Chamber of Commerce/Visitor Center. In the latter two locations, souvenir pens were awarded in exchange for the completion of surveys, which increased the response rate to about ninety percent.

Within the National Park, three campgrounds, Elkmont, Smokemont, and Cades Cove, were used as collection points. The rangers passed out surveys to campers at registration, and campers returned them to a drop box. The response rate was about thirty percent for all campgrounds.

### Respondent Population

The surveys collected in Gatlinburg came primarily from visitors who were staying at least one night in Gatlinburg. Surveys collected in the National Park were all from visitors staying at least one night in National Park campgrounds. Although this paper will categorize people into "Gatlinburg visitors" and "Park visitors," both groups planned activities in the other locale to some degree.

This is especially true for Gatlinburg visitors, most of whom were interested in driving into the National Park, and some of whom were involved in several Park activities. Others in Gatlinburg commented that the view of the mountains from Gatlinburg was of prime importance. Some National Park visitors made trips into Gatlinburg for shopping or seeing local crafts.

For ease of presentation and discussion of the data collected, the tables and graphs contained in this paper, as well as discussions of the results, will divide the entire population of respondents into "Gatlinburg respondents" and "Park respondents." The reader should remember that there is overlap between these two populations and not conclude that each group had no intention of visiting the other locale. However, even though there is overlap in visiting both Gatlinburg and the National Park, there are distinct differences between visitors who come to the region primarily to visit one locale or the other.

## SURVEY RESULTS

Because of the wide variety of types of questions asked in the survey, several different statistical analyses were used in analyzing the data. All analyses separated respondents, by location of survey collection site, into Gatlinburg visitors and National Park visitors. Comparisons were made on responses to most items between these two groups. The results are reported for each section of the survey.

### Characteristics of Visitors

Refer to Table 1. The survey items assessing the characteristics of visitors to both Gatlinburg and the National Park were analyzed by computing frequencies and percentages of responses and testing for significance using the Chi-square analysis. As can be seen in Table 1, demographics of Gatlinburg visitors and Park visitors are similar for the most part, with the exception of education, residence as a child, and occupation.

Number of males and females, mean age, percent married, income, and race tended to be similar for both Gatlinburg and Park visitors. Park visitors have obtained higher educational levels than Gatlinburg visitors. A greater percentage of Park visitors came from large cities, while a greater percentage of Gatlinburg visitors came from small towns and rural areas. When examining the occupational categories, it is apparent that for both Gatlinburg and the Park, managers, clerical workers and teachers made up a fairly large percentage of visitors. The Park had a greater percentage of retired people than did Gatlinburg. This greater percentage of retirees is reflected in the difference in mean age between the two locations. Although not statistically significant, the average age in the Park was higher than in Gatlinburg.

The origins of Gatlinburg and Park respondents, by home state, were determined. As is shown in Table 2, the majority of visitors came from the Southeastern part of the country, and most were from Tennessee.

### Characteristics of the Trip

Visitors were asked to rank order the importance of visiting different locations in the Smoky Mountains region from least to most important with a rating of '1' being the most important and '8' the least important. The frequencies and percentages of the ratings for each location are given in Table 3. As is apparent from examining the table, Great Smoky Mountains National Park and Gatlinburg were rated as the most important locations to visit. This is not unexpected, since the only population of visitors surveyed were from these two locations. Dollywood, Townsend, and the Discount Outlet Malls tended to receive very low ratings of importance for both Gatlinburg and Park visitors. Ober Gatlinburg was rated very low in importance for Park visitors and moderately low by Gatlinburg visitors. This is not surprising, since it was not ski season, and people were not aware of the summer activities there.

Refer to Table 4. Several items in the questionnaire related to characteristics of the visitor's trip itself. Frequencies and percentages were calculated for each item for both Gatlinburg and Park visitors. For both Gatlinburg and the Park most respondents were with family on the trip. The most outstanding difference between the two groups is in the length of the entire trip and length of stay in the area. A much greater percentage of Gatlinburg visitors spend 2-5 days (probably weekends), while Park visitors spend a longer period of time, 6-10 days (probably vacations). These differences were statistically significant.

The majority of visitors to both Gatlinburg and the Park had the Smoky Mountain region as their primary destination. The majority of both Gatlinburg and Park visitors were repeat visitors, although there was a higher proportion of first-time visitors to Gatlinburg than to the Park. Visitors to the Park come to the area more often in a year than do visitors to Gatlinburg. An interesting result occurred with the question "Do you know how to get to the Smoky Mountain National Park?" About seven percent of Gatlinburg visitors said

Table 1. Characteristics of Visitors to the Great Smoky Mountain Region

| | Gatlinburg | Park |
|---|---|---|
| **Demographics** | | |
| Mean Age | 39.10 | 42.91 |
| Percent Male | 50.00 | 56.25 |
| Percent Female | 50.00 | 43.75 |
| Percent Married | 82.53 | 84.50 |
| Percent Single | 17.47 | 15.50 |
| **Educational Levels** ** (percent) | | |
| 8th grade or less | 2.58 | 3.94 |
| 9th - 11th grade | 4.06 | 7.72 |
| High School Graduate | 38.38 | 21.26 |
| 13 - 15 years | 26.20 | 24.41 |
| College Graduate | 14.76 | 20.47 |
| Post-Graduate | 14.02 | 24.41 |
| **Income** (percent) | | |
| less than $5,000 | 6.67 | 4.92 |
| $5,000 to 9,999 | 1.96 | 3.28 |
| $10,000 to 14,999 | 6.67 | 2.46 |
| $15,000 to 19,999 | 9.80 | 6.56 |
| $20,000 to 24,999 | 9.80 | 12.30 |
| $25,000 to 29,999 | 11.76 | 13.93 |
| $30,000 to 34,999 | 13.33 | 15.57 |
| $35,000 to 39,999 | 8.63 | 5.74 |
| $40,000 to 44,999 | 7.84 | 10.66 |
| $45,000 to 49,999 | 5.49 | 6.56 |
| $50,000 to 75,000 | 11.37 | 11.48 |
| more than $75,000 | 6.27 | 6.56 |
| **Race or Cultural Category** (percent) | | |
| Hispanic | 1.13 | 0.00 |
| Asian | 0.38 | 0.79 |
| Black | 0.38 | 0.00 |
| American Indian | 2.63 | 2.38 |
| Caucasian | 93.61 | 94.44 |
| Other | 1.50 | 1.59 |

Table 1. (cont.)

| | Gatlinburg | | Park | |
|---|---|---|---|---|
| Residence as child (percent) | | | | |
| Major Metropolitan | 11.03 | | 14.06 | |
| Metropolitan | 11.03 | | 17.97 | |
| City | 25.37 | | 26.56 | |
| Small Town | 29.04 | | 18.75 | |
| Rural - Non farm | 8.46 | | 7.81 | |
| Rural - Farm | 15.07 | | 14.84 | |
| Occupational Categories | Frequency | Percent | Frequency | Percent |
| Accountant | 2 | .85 | 1 | .79 |
| Architech | 1 | .43 | 0 | .00 |
| Computer Science | 5 | 2.13 | 4 | 3.17 |
| Engineer | 9 | 3.83 | 4 | 3.17 |
| Forester | 1 | .43 | 1 | .79 |
| Lawyer | 1 | .43 | 1 | .79 |
| Librarian | 0 | .00 | 1 | .79 |
| Physical Scientist | 2 | .85 | 0 | .00 |
| Research Analyst | 0 | .00 | 1 | .79 |
| Physician | 0 | .00 | 2 | 1.59 |
| Nurse | 5 | 2.13 | 3 | 2.38 |
| Health Technician | 2 | .85 | 3 | 2.38 |
| Religious Worker | 2 | .85 | 2 | 1.59 |
| Social Scientist | 1 | .43 | 2 | 1.59 |
| Teacher - College | 1 | .43 | 3 | 2.38 |
| Teacher - Public School | 21 | 8.94 | 7 | 5.56 |
| Technician | 2 | .85 | 5 | 3.97 |
| Artist/Writer | 3 | 1.28 | 4 | 3.17 |
| Research Worker | 1 | .43 | 0 | .00 |
| Manager/Administrator | 28 | 11.91 | 17 | 13.49 |
| Sales | 15 | 6.38 | 6 | 4.76 |
| Clerical | 30 | 12.77 | 9 | 7.14 |
| Craftsman | 12 | 5.11 | 4 | 3.17 |
| Factory Worker | 20 | 8.51 | 1 | .79 |
| Transportation | 4 | 1.70 | 1 | .79 |
| Laborer | 3 | 1.28 | 2 | 1.59 |
| Farmer | 2 | .85 | 1 | .79 |
| Service Worker | 17 | 7.23 | 3 | 2.38 |
| Self Employed | 9 | 3.83 | 2 | 1.59 |
| Homemaker | 15 | 6.38 | 6 | 4.76 |
| Student | 10 | 4.26 | 8 | 6.35 |
| Retired | 10 | 4.26 | 21 | 16.67 |
| Unemployed | 0 | .00 | 1 | .79 |

** Difference between percentages is statistically significant. Chi-squares $p. < .01$.

Table 2. Origin of Visitors to Great Smoky Mountain Region

| | |
|---|---|
| **Southeast** | |
| Tennessee | 60 |
| Florida | 33 |
| Kentucky | 31 |
| North Carolina | 26 |
| South Carolina | 20 |
| Georgia | 17 |
| Alabama | 16 |
| Louisiana | 16 |
| Virginia | 15 |
| Mississippi | 12 |
| Total | 246 |
| **Midwest** | |
| Ohio | 34 |
| Indiana | 23 |
| Illinois | 15 |
| Michigan | 14 |
| Missouri | 4 |
| Wisconsin | 3 |
| Arkansas | 1 |
| Iowa | 1 |
| Total | 95 |
| **West** | |
| Texas | 12 |
| California | 2 |
| Colorado | 1 |
| Utah | 1 |
| Total | 16 |
| **Northeast** | |
| Pennsylvania | 8 |
| New York | 3 |
| New Jersey | 1 |
| Delaware | 1 |
| Total | 13 |

Table 3. Ranking of Importance of Visiting Different Places in the Great Smoky Mountains Region

| Location | Mean Ranking * | |
|---|---|---|
| | Gatlinburg Respondent | Park Respondent |
| Great Smoky Mountains NP | 2.60 | 1.22 |
| Gatlinburg | 1.82 | 3.74 |
| Pigeon Forge | 3.45 | 4.71 |
| Cherokee | 5.07 | 4.71 |
| Townsend | 6.35 | 5.35 |
| Ober Gatlinburg | 5.33 | 5.99 |
| Dollywood | 5.74 | 6.36 |
| Discount Outlet Malls | 5.44 | 5.91 |

* Locations were ranked on a 1 to 8 scale with 1 being the most important and 8 being the least important. The lower the mean ranking, the more important that location is to visit.

they did not. However, it is interesting that three percent of visitors staying the Park said they did not know how to get there. Hopefully, this was just due to confusion about the question.

A surprising result is that only 4.6% of respondents used public transportation in Gatlinburg. Despite numerous complaints about traffic and parking (discussed in another section), the vast majority of visitors used their own car as the primary means of transportation while in the community. Perhaps this reflects the use of their own cars to and from Gatlinburg as well as while staying in the town.

## Decisions about and perceptions of visit to the region

Several questions were asked regarding specific choices made and perceptions visitors had while staying in the region. Responses to these questions were also analyzed for differences between Gatlinburg and Park visitors. The results are presented in Table 5.

The average amount of money spent was considerably greater for Gatlinburg visitors ($575) than for Park visitors ($445). This difference is even more pronounced when the length of stay is considered. The length of the trip in Gatlinburg is shorter than the length of the trip in the Park, making the amount spent per day even less for Park visitors than is reflected in the figures.

There were few differences between Gatlinburg and Park visitors in their perceptions of prices and services in the area. Generally, both groups rated services as good to excellent, and prices are rated slightly high. There are several differences in how the two groups chose the place where they stayed, as can be seen by examining the table. Cost was rated as more important in Gatlinburg than in the Park, though cost may have been what caused some Park campers to stay in the campgrounds, rather than in Gatlinburg. This informal observation is based on the experience of one of the data collectors as a ranger at Elkmont, where people often stated they preferred Elkmont over other campgrounds because of its closer proximity to Gatlinburg.

## Attitude Scale

One section of the survey asked the respondents to rate 48 items relating to features and activities of both the National Park and the tourist communities. The purpose of this section was to assess visitors' attitudes and feelings towards the items, and to study how those attitudes are interrelated. The respondent rated each item on a scale from '1' to '10' with '1' being a very negative feeling, '10' being a very positive feeling, and '5' being a neutral feeling. Any number from 1 to 10 could be used depending on the strength of the feeling a respondent had toward an item.

The items were statistically analyzed in several ways. First, the mean (average) ratings for each item were calculated for both Gatlinburg and Park visitors. T-tests were used to test for significant differences in ratings on the items between Gatlinburg and Park visitors. Second, a frequency of response for the ratings on each item was graphed for both Gatlinburg and Park visitors. (These graphs are not included in this paper, as there are 48 of them, but are available from the authors.) Third, a factor analysis was run to assess how the items clustered together.

In Table 6, the results from both the analysis of the item ratings by Gatlinburg and Park visitors and the factor analysis are presented. These are on the same table for ease of presentation. The mean ratings for each item are presented for both Gatlinburg respondents and Park respondents. Those with a '*' beside the last column were found to be significantly different.

Table 4. Trip Characteristics of Visitors to the Smoky Mountain Region

| | Gatlinburg | Park |
|---|---|---|
| Type of Group With (percent) | | |
| Friends | 8.86 | 7.75 |
| Family | 77.86 | 79.07 |
| Organized Group | 2.21 | 0.00 |
| Family and Friends | 7.75 | 12.40 |
| Alone | 2.95 | 0.78 |
| Length of Entire Trip ** (percent) | | |
| 1 day | 5.17 | 1.54 |
| 2 - 5 days | 53.51 | 23.08 |
| 6 - 10 days | 30.26 | 50.77 |
| more than 10 days | 10.33 | 23.85 |
| Length of Stay in Area ** (percent) | | |
| 1 day | 10.99 | 2.31 |
| 2 - 5 days | 68.50 | 40.00 |
| 6 - 10 days | 16.12 | 46.15 |
| more than 10 days | 3.66 | 11.54 |
| Is Area Primary Destination ** (percent) | | |
| Yes | 86.67 | 93.85 |
| No | 13.33 | 4.62 |
| First Visit to Area ** (percent) | | |
| Yes | 19.48 | 10.08 |
| No | 80.52 | 88.37 |

Table 4. (cont.)

| | Gatlinburg | Park |
|---|---|---|
| Times a Year Visit Area (percent) | | |
| Once a year | 67.01 | 52.25 |
| Twice a year | 13.20 | 21.62 |
| 3 times a year | 9.64 | 9.91 |
| 4 times a year | 2.03 | 4.50 |
| 6 or more times a year | 7.11 | 11.71 |
| Average Length of Each Trip ** (percent) | | |
| 1 day | 9.81 | 3.48 |
| 2 - 5 days | 71.96 | 37.39 |
| 6 - 10 days | 15.42 | 54.78 |
| More than 10 days | 2.80 | 4.35 |
| Route to Get to Area (percent) | | |
| From Knoxville via 441 | 46.12 | 35.71 |
| From Foothills Pkwy 321 | 7.35 | 7.94 |
| From Cherokee via 441 | 17.96 | 17.46 |
| From Newport via 321 | 2.45 | 0.00 |
| From Maryville | 10.20 | 19.84 |
| From I-40 | 15.92 | 19.05 |
| Know how to get to GRSM (percent) | | |
| Yes | 91.95 | 96.09 |
| No | 7.28 | 3.13 |
| Primary Form of Transportation (percent) | | |
| Own car | 81.23 | 94.49 |
| Public transportation | 4.60 | 0.79 |
| Walk | 14.18 | 4.72 |

** Differences between percentages is statisically significant. Chi-squares p. < .05 or less.

Table 5. Decisions and Perceptions of Stay in Great Smoky Mountains Region

| | Gatlinburg | Park |
|---|---|---|
| Amount of Money Spent * | | |
| Mean amount on spent on trip | $575.25 | $445.88 |
| Prices in Area (percent) | | |
| Inexpensive | .37 | 3.91 |
| Reasonably priced | 54.07 | 61.72 |
| Overpriced | 45.56 | 34.38 |
| Services in Area (percent) | | |
| Very courteous | 54.31 | 52.76 |
| Adequate | 40.07 | 43.31 |
| Rude | 5.24 | 3.94 |
| Choice of Place Staying (percent) | | |
| Cost | 10.43 | 2.50 |
| Recommended | 9.57 | 2.50 |
| Location | 12.17 | 15.83 |
| Advertisements | 9.13 | 0.00 |
| Appearance | 4.78 | 4.17 |
| Previous satisfaction | 13.04 | 15.83 |
| Other | 5.65 | 24.17 |
| Several checked | 35.22 | 35.00 |
| Found out about Place Staying (percent) | | |
| TV/Newspaper | 4.78 | 0.00 |
| Travel Agency | 5.22 | 2.73 |
| Telephone yellow pages | 1.74 | .91 |
| Chamber of Commerce | 10.43 | 2.73 |
| Decided while driving | 32.17 | 11.82 |
| Other | 45.22 | 81.82 |

* Note: The length of the trip in Gatlinburg was shorter than the length of the trip in the park, making the per day spent less in the park.

Table 6. Factor loadings and mean ratings of items in attitude scale

**TOURIST RELATED FACTORS**

| **AMUSEMENT ORIENTED** | | **MEAN RATING** | |
|---|---|---|---|
| Item | Factor Loading | Gatlinburg | Park |
| Water slides and rides | .64 | 5.41 | 3.87 * |
| Theme museums (like wax museums) | .53 | 3.79 | 2.91 * |
| Feeding bears in the NP | .42 | 3.10 | 1.72 * |
| Playing miniature golf | .36 | 5.86 | 4.89 * |
| Billboards with local information | .62 | 5.28 | 4.01 * |
| Souvenir shops | .64 | 4.81 | 3.56 * |
| Shops in Gatlinburg | .53 | 6.61 | 5.08 * |
| Local visitor center - Chamber | .40 | 7.63 | 6.12 * |
| Using tour services to see NP | .40 | 6.04 | 4.27 * |
| Shops in Pigeon Forge | .56 | 5.92 | 4.51 * |
| Amusement centers (like go-carts) | .64 | 5.00 | 3.50 * |
| Walking alone in the woods | -.35 | 5.77 | 7.55 * |
| Solitude | -.33 | 7.82 | 9.04 * |

| **COMMUNITY ORIENTED** | | **MEAN RATING** | |
|---|---|---|---|
| Item | Factor Loading | Gatlinburg | Park |
| Visiting local craft shops | .64 | 7.12 | 6.32 * |
| Visiting art studios | .40 | 4.67 | 4.73 |
| Convenient fast food | .48 | 5.36 | 4.78 |
| Staying at budget hotels | .54 | 6.03 | 4.86 * |
| Going to a country music concert | .55 | 6.00 | 4.91 * |
| Shopping at P.F. outlet malls | .51 | 5.97 | 4.72 * |
| Eating at Family style restaurants | .56 | 7.40 | 6.35 * |
| Shops in Gatlinburg | .47 | 6.61 | 5.08 * |
| Local visitor center - Chamber | .51 | 7.63 | 6.12 * |
| Using tour services to see NP | .43 | 6.04 | 4.27 * |
| Using trolleys to get around town | .49 | 7.23 | 5.59 * |
| Camping in commercial campgrounds | .33 | 4.76 | 4.23 |

| **LUXURY VACATION EXPERIENCE** | | **MEAN RATING** | |
|---|---|---|---|
| Item | Factor Loading | Gatlinburg | Park |
| Water slides and rides | .36 | 5.41 | 3.88 * |
| Dining in a fine restaurant | .52 | 7.16 | 5.72 * |
| Visiting art studios | .37 | 4.67 | 4.73 |
| Staying at luxury hotels | .66 | 5.51 | 4.40 * |
| Playing miniature golf | .50 | 5.86 | 4.89 * |
| Bars | .47 | 3.20 | 2.45 * |
| Staying at chalets | .64 | 6.31 | 5.03 * |
| Condominiums | .60 | 5.38 | 4.18 * |

Table 6. (cont.)

**PARK RELATED FACTORS**

| **PARK ACTIVITIES ORIENTED** | | **MEAN RATING** | |
|---|---|---|---|
| Item | Factor Loading | Gatlinburg | Park |
| Hiking 10 miles in the mountains | .64 | 5.77 | 7.25 * |
| Bears in the backcountry | .48 | 8.72 | 8.79 |
| Having a picnic in the NP | .41 | 8.49 | 9.39 * |
| Walking alone in the woods | .62 | 5.77 | 7.55 * |
| Hiking a short nature trail | .51 | 7.96 | 8.59 * |
| Trout fishing | .43 | 5.81 | 6.08 |
| Camping in the NP | .65 | 6.02 | 9.51 * |
| Appalachian culture | .48 | 6.90 | 7.74 * |
| Interpretive programs in the NP | .55 | 6.91 | 8.33 * |
| Backpacking overnight in the NP | .72 | 4.76 | 6.61 * |
| Wilderness | .71 | 8.39 | 9.25 * |
| High Mountain peaks | .62 | 8.69 | 9.30 * |
| Swimming in mountain streams | .58 | 6.31 | 8.29 * |
| Dense forests | .56 | 7.98 | 9.10 * |
| Solitude | .38 | 7.82 | 9.04 * |
| Mountain roads | .40 | 7.38 | 8.40 * |
| Visitor Center in NP | .38 | 8.15 | 8.80 * |

| **CONSERVATION MINDED** | | **MEAN RATING** | |
|---|---|---|---|
| Item | Factor Loading | Gatlinburg | Park |
| National Park rangers | .49 | 8.39 | 8.80 |
| Seeing animals in the wild | .48 | 9.28 | 9.50 |
| Bears in the backcountry | .45 | 8.72 | 8.79 |
| Having a picnic in the NP | .50 | 8.49 | 9.39 * |
| Viewing park scenery while driving | .46 | 8.88 | 8.99 |
| Digging plants in the NP | -.38 | 2.06 | 1.58 |
| Hunting animals in the NP | -.67 | 1.83 | 1.39 * |
| Cutting trees for firewood in NP | -.60 | 1.82 | 1.57 |
| Feeding bears in the NP | -.35 | 3.10 | 1.72 * |

* Difference between means is statistically significant, t-test p. < .05 or less.

Factor Analysis

In this survey five factors were found, three related to the local tourist communities and two related to the National Park. The items that made up each factor and their factor loadings are given Table 6. The factors were labeled based on the theme reflected by the types of items within each factor.

People in the Amusement Oriented factor tended to give consistent ratings to items having to do with activities found in the local tourist communities such as water slides, theme museums, miniature golf, souvenir shops, etc. "Walking alone in the woods" and "solitude" received negative loadings, indicating that the people who rated the 'tourist' items high did not like the idea of walking alone in the woods. People who rated the tourist items low rated the wilderness items high.

Additional statistical analyses revealed that people with lower educational levels rated the positive-loading items more positively than did those with higher educational levels. Gatlinburg visitors rated items in this factor more positively than did Park visitors, and younger respondents rated the items more favorably.

Items in the Community Oriented factor reflect consistent ratings for activities revolving around the tourist communities and local culture, such as craft shops, art studios, country music concerts, shops in Gatlinburg, tour services, etc. Items that relate to more budget-minded recreation also loaded on this factor, such as budget motels, fast food and outlet malls. Females, less educated people and Gatlinburg visitors rated the items more positively than did males, highly educated people, and Park visitors. The inclusion of cultural attractions and budget vacations may mean that people view cultural attractions as a low-cost alternative for recreation. This may have important implications for the people who operate cultural attractions.

Ratings of more expensive attractions formed the Luxury Vacation factor. Items that loaded on this factor included dining in fine restaurants, luxury hotels, chalets, and condominiums. Water slides also appeared in this factor but the factor loading was much lower than in the Amusement Oriented factor. Gatlinburg visitors, females and younger respondents rated these items more favorably than did Park visitors, males and older respondents.

The Park Activities Oriented factor reflects the ratings given to activities found specifically in the National Park. Response patterns were similar for hiking, backpacking, walking alone in the woods, fishing, camping, interpretive programs, etc. People who rated these items highly like active, involved activities in a natural environment. Park visitors, males, repeat visitors, and younger visitors rated the items in this factor higher than did Gatlinburg visitors, females, first-time visitors and older people.

Items related to concerns about the environment make up the Conservation Minded factor. Items in this factor include a few park activities such as picnicking and viewing scenery, but the major theme is conservation of the park. Rangers and bears received positive ratings, while activities which are illegal in the park loaded negatively on this factor. These were items such as digging up plants, hunting, cutting trees, and feeding bears. It is interesting to note that feeding bears had a positive loading in the Amusement Oriented factor, but a negative loading in this one. Park visitors rated these items as more important than did Gatlinburg visitors, as evident in both more positive ratings for items that loaded positively and more negative ratings for items that loaded negatively on the factor.

Open-ended Questions

The responses to the eight open-ended questions were clustered into themes, and the frequency of the responses to each theme was calculated. These themes or response categories, the number of responses in each category and the percentage of responses are illustrated in Table 7. The responses are those given by all respondents, whether staying in the Park or in Gatlinburg. Note that the percentages for some questions do not

equal 100%, as some people gave responses which fell into more than one response category. Also, the number of people responding to each question varies between questions. Some people elected to answer only a few of the questions, and there were several people who just did not fill out this section of the survey.

Although the table is self explanatory, a few of the more interesting results will be discussed. It is suggested that the reader examine the response categories for all questions, as only a few are presented here.

The overwhelming response to the question "Plants and animals in the National Park should:" was preservation and protection, followed by a category of responses revolving around leaving them alone and not bothering them. These types of responses were given by both National Park and Gatlinburg visitors, indicating that preservation of resources in the National Park is an important issue to the majority visitors to the region, no matter where their primary destination.

Despite the fact that people want to insure that the Park is protected, there is a large fear component to a lot of visitors' perceptions about the wilderness. This fear is shown in the responses to the question "When in the wilderness a person should:" The most frequent responses revolved around fear and caution, with responses such as "never be alone," "use extreme caution," or "be on guard all the time." To a large number of visitors the wilderness of the National Park is perceived to be something foreign and dangerous, something external to themselves which has the potential for harm. However, the category of preservation still was the second most frequent response on this item.

The most frequent response to the question "The highlight of my visit here was:" involved park activities, driving to the park, picnicking, hiking, etc. Responses relating to interacting with nature and viewing scenery were the second most frequent. Seeing animals was the highlight to about twelve percent of visitors. The rest of the responses involved Gatlinburg related activities.

Responses to the question "The National Park Service should:" showed that most visitors to the area think that the Park Service is doing a good job, should continue to be concerned with preservation, and should insure that rules and regulations are enforced. Visitors are concerned that preservation is not possible without good enforcement of the rules, and many times suggested that more rangers patrol for violations.

The most common reason that visitors come to the Smoky Mountain region is to escape, relax, "get away from it all" and to experience nature in the National Park. This was the most frequent type of response given by both Gatlinburg and National Park visitors. However, the type of escape and relaxation discussed by Gatlinburg visitors was geared more towards the "package vacation" with lots of activities to do, while the Park visitors were content to "do nothing" but experience the Park for their form of escape.

Responses to "My worst experience here was:" were mixed. The most common response was traffic and parking, primarily in Gatlinburg. A lot of visitors could think of no bad experience at all. Visitors reporting animal interactions as their worst park experience had usually encountered a skunk or an aggressive bear. Most of the time the visitor was afraid of the animal which had encroached upon the visitor's space just a little too much, particularly in the case of skunks.

Table 7. Responses to Open-ended questions

**PLANTS AND ANIMALS IN THE NATIONAL PARK SHOULD:**

| Response Category | N | Percent |
|---|---|---|
| protected/preserved | 185 | 65.8 |
| left alone/not bothered | 40 | 14.2 |
| enjoyed/looked at/appreciated | 23 | 8.2 |
| natural/part of nature | 12 | 4.3 |
| free/wild existance | 9 | 3.2 |
| increased in number | 4 | 1.4 |
| accessible | 4 | 1.4 |
| controlled better | 3 | 1.1 |

**WHEN IN THE WILDERNESS A PERSON SHOULD:**

| Response Category | N | Percent |
|---|---|---|
| fear/caution | 103 | 30.7 |
| preservation/protection | 74 | 22.1 |
| experience nature/enjoy wilderness | 58 | 17.3 |
| respect environment/nature/wildlife | 42 | 12.5 |
| rule awareness/obey laws | 36 | 10.7 |
| guest in someone's house | 7 | 2.1 |
| spiritual | 5 | 1.5 |
| activity related | 5 | 1.5 |
| "...leave only footprints" | 5 | 1.5 |

**THE HIGHLIGHT OF MY VISIT HERE WAS:**

| Response Category | N | Percent |
|---|---|---|
| activities in the National Park | 107 | 34.5 |
| nature related/scenery | 79 | 25.5 |
| amusements and attractions | 37 | 11.9 |
| seeing animals | 36 | 11.6 |
| shopping | 21 | 6.8 |
| family/social | 13 | 4.2 |
| atmosphere of local culture | 10 | 3.2 |
| eating | 7 | 2.3 |

Table 7. (cont.)

**THE NATIONAL PARK SERVICE SHOULD:**

| Response Category | N | Percent |
|---|---|---|
| keep up good work/be commended | 58 | 22.8 |
| preserve/protect environment | 50 | 19.7 |
| install showers/hookups | 34 | 13.4 |
| increase patrols/enforce rules | 26 | 10.2 |
| improve visitor services | 26 | 10.2 |
| no changes necessary | 19 | 7.5 |
| increase budget/land/staff | 15 | 5.9 |
| more information/interpretation | 11 | 4.3 |
| more signs at trails/roads | 7 | 2.8 |
| advertize/be visible | 6 | 2.4 |

**WHEN I THINK OF WINTER IN GATLINBURG:**

| Response Category | N | Percent |
|---|---|---|
| snow | 69 | 23.0 |
| skiing | 66 | 22.0 |
| beauty of winter/snowy mountains | 48 | 16.0 |
| negative/wouldn't come | 31 | 10.3 |
| cozy atmosphere/peace/quiet | 18 | 6.0 |
| romance/positive feelings | 14 | 4.7 |
| Christmas | 13 | 4.3 |
| desire to go in winter | 13 | 4.3 |
| hard to drive/icy roads | 11 | 3.7 |
| too cold | 11 | 3.7 |
| less crowds | 6 | 2.0 |

**ONE IMPROVEMENT I WOULD RECOMMEND TO GATLINBURG WOULD BE:**

| Response Category | N | Percent |
|---|---|---|
| improve traffic conditions | 64 | 22.5 |
| improve parking | 58 | 20.4 |
| reduce number of tacky shops | 39 | 13.7 |
| reduce prices | 28 | 9.9 |
| nothing/its great as is | 27 | 9.5 |
| improve visitor services | 24 | 8.5 |
| more restaurants/groceries | 12 | 4.2 |
| more entertainment | 11 | 3.9 |
| more benches/better sidewalks | 9 | 3.2 |
| increase "mountain" atmosphere | 6 | 2.1 |
| bomb/bulldoze/nuke | 6 | 2.1 |

Table 7. (cont.)

**I CAME TO THE SMOKY MOUNTAIN REGION TO:**

| Response Category | N | Percent |
|---|---|---|
| escape/relax | 124 | 32.6 |
| experience nature/see mountains | 91 | 23.9 |
| park activities | 46 | 12.1 |
| vacation | 43 | 11.3 |
| have fun/enjoy | 32 | 8.4 |
| shops/crafts | 17 | 4.5 |
| family/social | 16 | 4.2 |
| local attractions | 11 | 2.9 |

**MY WORST EXPERIENCE HERE WAS:**

| Response Category | N | Percent |
|---|---|---|
| traffic/parking | 68 | 24.5 |
| nothing/no bad experiences | 57 | 20.5 |
| dissatisfaction with services | 51 | 18.3 |
| animal interactions | 20 | 7.2 |
| social interactions | 18 | 6.5 |
| personal discomfort/injury | 16 | 5.8 |
| weather/rain | 16 | 5.8 |
| crowds | 12 | 4.3 |
| prices in area | 11 | 4.0 |
| things not going as planned | 9 | 3.2 |

Percentages do not necessarily equal 100%, some questions had more than one response category.

## DISCUSSION

The preceding results represent a successful initial assessment of the summer visitor to the Great Smoky Mountain region, specifically the National Park and Gatlinburg. One of the main goals of this research was to provide managers in Gatlinburg and the National Park a profile of visitors to this region; this research provides information that may assist these managers in making more effective policy decisions. It also lays ground for continued cooperative research and for methodological development to facilitate that research.

This study indicates that there are significant differences between visitors who travel here intending primarily to visit one locale or the other. While it was demonstrated that the National Park is an important factor in the decision to visit Gatlinburg, individuals intending to participate primarily in a "Gatlinburg experience" have expectations and perceptions that are quite different from those individuals intending to remain primarily within the National Park. One of the most descriptive analyses of these differences was found within the open-ended statements. The responses demonstrated that Gatlinburg is perceived as an "adult carnival" -- a secure, packaged vacation with something to do and see for everyone. Individuals with this perception typically view the National Park with some amount of ambivalence. By these visitors, the Park may be perceived as an opportunity for sight-seeing and nothing more; more commonly, the Park was also seen as an opportunity for misfortune -- several individuals expressed the need for caution while in the National Park. The National Park does not offer the same degree of safety and "packaged fun" as Gatlinburg does to these visitors.

On the other hand, those intending primarily to visit the National Park possessed dissimilar perceptions. Gatlinburg was often perceived as a "tourist trap," frequented only for supplies or when shopping for a specific item, often crafts. While visitors to the Park also maintained the attitude that the Park contained opportunities for unforeseeable and uncontrollable events, these tended to be viewed less negatively. Indeed, many individuals stay within the Park with the expectation that something different and unusual may happen.

Interactions with wild animals are generally a hoped-for event, with a different connotation than displayed by the "Gatlinburg visitor." While factor analysis demonstrated that the "Amusement-oriented" visitor viewed feeding the bears as a desired activity, visitors staying within the Park often demonstrated more respect and knowledge of appropriate behaviors concerning wildlife. Campers expressed a desire to observe but not interfere; "we're the visitors here -- this is the animals' home" was often a statement expressed by campers within the Park. Potential misfortunes were perceived as part of the National Park package; for example, a mangled food cooler was a souvenir for one family.

## MANAGEMENT IMPLICATIONS

These and other differences, as well as similarities between these two groups of visitors, provide a potentially useful description of the types of perceptions and expectations that these individuals possess. Other information may provide avenues for policy decisions. For example, Park managers may wish to provide more information within Gatlinburg describing interpretative programs offered by the Park, as this was an item commeted upon by respondents. Other policy decisions may be aided by a program which includes longitudinal research of visitors to this area. Park administrators need to know the dynamics between casual and hard-core visitors, what their proportions are, how this changes over time, what their basic attitudes, perceptions, and values are, and so on.

This knowledge is important to natural resource managers because they are faced with two objectives in managing their areas. First, they have the directive of conserving the natural resources. Second, they are tasked with providing use for people. These are not mutually exclusive, but they do conflict. In reconciling this conflict, managers often structure use for minimum physical impact on resources (VanCleave A. 1988).

In addition to minimizing physical impact, managers are now beginning to recognize the need to study other impacts, such as social impacts of use levels. Carrying capacity is the operationalization of impact

minimization-- how many persons a system can absorb during a use period without creating an adverse impact. This recognition of important social variables in management of resources represents a first step in turning from a strictly place orientation in management strategies and a turning towards a person and place interaction orientation.

Gatlinburg promoters need to know what their visitors want and expect from the Park, because this has implications for how to manage the impression and image of the park in their promotions. They can benefit from knowing the attitudes, perceptions and needs of park visitors, too, as this information can help them more effectively provide the services and facilities to meet those needs.

## RESEARCH IMPLICATIONS

This research described only the summer visitor, and out of necessity several items of potential interest remain unexplored. Future research, utilizing these methodologies, should not only examine the summer visitor in more detail, but should also extend to other seasonal visitors.

Concerning a longitudinal program of research, several items within the present survey could be retained or modified for comparative purposes. This would include demographic information, attitudinal rating scales, and open-ended questions. Those items which provided little information, were ambiguous, or would yield more meaningful information in another format could easily be modified. Fixed format items could be developed based on the findings of the open-ended items, tested against their open-ended roots, and tailored into an instrument for long term use.

### Future of Cooperative Research

Finally, this research fulfills one of the primary goals of the study: the potential success of cooperative research efforts among National Park social scientists and community managers. This research was able to provide information useful to managers of both locales -- without this cooperation, the amount of description and the ability to compare these groups would not have been possible. Researchers representing the Uplands Field Research Laboratory and the University of Tennessee, and members of the Gatlinburg Chamber of Commerce have demonstrated that cooperative research efforts can be mutually beneficial. With further cooperative efforts an even greater understanding of visitors to both areas can be gained.

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# DESIGNING RECREATION MONITORING SYSTEMS: SOME COMMENTS ON THE PARTICIPANT OBSERVER DESIGN

Kenneth Chilman, David Foster, and Alan Everson[1]

Abstract. Monitoring is an important step in recently-developed recreational carrying capacity processes. Monitoring provides current information on whether objectives are achieved and whether changes in conditions are occurring. Design of recreation monitoring systems for large wildland areas is complex because both physical-biological and social information are needed; the areas are large and diverse; and very little funding is available. Participant observation, negative case analysis is the research design used in the research reported here. This approach begins with the identification of recreation monitoring situations where field level managers are willing to actively participate in developing monitoring systems. The researcher works with the managers as a participant in the management process, testing hypotheses and revising them (negative cases) as the research progresses.

## INTRODUCTION

As recreational carrying capacity planning processes become more widely tested and used, monitoring becomes important as the last step in these processes (Chilman et al. 1990; Shelby and Heberlein 1986; Stankey et al. 1985). Monitoring provides current information on whether the carrying capacity objectives are being achieved and whether changes in conditions are occurring that will require management attention. Design of monitoring systems is complex because both physical-biological and social information is needed; the areas are large and diverse; and very little funding is available for monitoring data collection.

Participant observation, negative case analysis is the research design used in the research reported here for developing recreation monitoring systems (Kidder and Judd 1986). Participant observers begin with a preliminary hypothesis, then look for data that disconfirms the hypothesis. When a single negative case is found, the participant observer revises the hypothesis in light of that case and applies it again in another case. For design of recreation monitoring systems, various parts of the monitoring systems were tested in a series of studies at three recreation areas (Land Between The Lakes, Ozark National Scenic Riverways, and Lake Tahoe Basin) to develop a generalized model that integrates the various factors involved.

The purposes of this paper are to discuss 1) the use of participant observation, negative case analysis for developing a six-step process model for recreation monitoring systems on large wildland areas, and 2) advantages and disadvantages of using this research design.

## METHODS

Campbell (1970) indicates that participant observation is more than a single method of data collection and may include a variety of techniques for gathering quantitative and qualitative data. Clark (1977) suggests that participant observation generally involves the investigator directly taking part in the activity to be studied.

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The observer is able to observe his/her own reactions to events as well as reactions of others. Through this interaction with participants and continual data processing and evaluation, the investigator can reformulate the problems as the study proceeds.

Kidder and Judd (1986) state that field researchers begin with observations and generate hypotheses that fit the data. Then they proceed to revise these hypotheses by the method of negative case analysis, a procedure that takes the place of statistical analysis in field work. Kidder and Judd (1986) suggest a parallel with a series of experiments, where the hypotheses undergo revisions.

How does participant observations, negative case analysis work in the design of recreation monitoring systems? First, we became involved in situations where monitoring information was needed by recreation area managers. Because recreation research funding was limited (and because, by definition, monitoring extends over periods of time), we agreed to work cooperatively with the managers to work out a monitoring system if they would actively participate with us in the design studies and if they agreed to provide small amounts of funding ($3000-5000/year) and assist with expenses in other ways, such as housing and transportation on-site. Specifically, we agreed to participate with them in an interactive capacity as social science advisors to their management staff because social monitoring methods were especially needed.

Kidder and Judd (1986) indicate that the field researcher must make detailed records, or field notes, of everything he or she hears or sees. Clark (1977) notes that a major disadvantage of participant observation is the possibility of becoming overwhelmed with large amounts of information. Notetaking in this project was focused by specific interest in monitoring methods and systems and how they worked in field situations. Hypotheses (for monitoring systems, models in the form of a series of steps to follow) were developed that helped to focus our research documentation. Continuing dialogue with the managers was maintained during study design and data collection. We prepared study reports annually (and sometimes more often) and discussed these with the manager participants (see, for example, Chilman and Everson 1985). We also used management feedback questionnaires in some situations to learn whether managers understood the procedures used and considered them useful (Molla 1984; Ladley 1985). Research papers prepared for various meetings and publications were also discussed with the participating managers.

Finally, to aid generalization of our findings, we worked on a series of monitoring studies on three different kinds of wildland areas - an off-road vehicle riding area, a national scenic riverway, and a western wilderness area - as described below. Kidder and Judd (1986) state that external validity is acquired by gathering and analyzing field data so that similarities to other situations become clear. They also suggest that a large sample size can be viewed as a small number of cases (as the three we have researched) studied over a long period of time. If that is true, the following series of monitoring studies should qualify as a reasonably large sample.

## RESULTS

The monitoring was initiated by field level managers who faced court cases or possible appeals of decisions they had made or were going to make. The research began with an interest in describing visitor populations in specific areas, then progressed to obtaining visitors' perceptions of area conditions. As changes in conditions over time were noted, a need for monitoring remeasurements was recognized. Systems of measurements for large areas were then designed to organize data collection with limited resources for large land areas.

## AN OFF-ROAD VEHICLE RIDING AREA

Land Between the Lakes (LBL) is a 170,000-acre area of forested hills administered by Tennessee Valley Authority (TVA) in western Kentucky and Tennessee. In 1973, a 2500-acre portion of LBL was

designated as an off-road vehicle (ORV) riding area. Because that use was controversial, a monitoring plan was developed (McEwen 1978). Biologists at LBL developed a system of site impact measurements.

Researchers at Southern Illinois University (SIU) were asked to develop social measurements of the ORV rider population. A short interview - mail questionnaire method was utilized. A short interview was conducted with ORV riders on-site, then a follow-up mail questionnaire was sent to the riders' home addresses. A 61% response rate was obtained on the mail questionnaires. Important findings were that the motorcyclists were not stereotypical 'black leather jacket' young males: over 60% of the questionnaire respondents were members of family groups (Chilman and Kupcikevicius 1973). Several riders indicated they preferred off-road riding to highway riding because off-road was safer.

The original monitoring plan used a traffic counter on the main access road. Counts of visitors using that method appeared high - around 50,000 per year, so in 1975 a year-long study was conducted by stationing an interviewer along the access road on two weekdays and two weekend days per month (Chilman and Mize 1976). The actual number of visitors was found to be approximately 17,000 annually (visitors staying overnight often made trips in and out of the area) and 59 percent of the visitors were found to be non-ORV riders (sightseeing, etc.). Various other information (length of visit, amount of ORV riding, information on accidents, etc.) was also obtained by this method.

In later studies, the questionnaire was shortened to a one-page set of questions, focusing on visitors' perceptions of conditions (Chilman 1976). So a useful counting method and short set of interview questions had been developed. These were used when monitoring measurements were repeated in 1984 (Ladley 1985) and are being used now for another round of measurements in 1989-90. Types and amounts of ORV use continues to change - from initial trailbike use to four-wheel drive vehicles to all-terrain vehicles.

## A NATIONAL RIVERWAYS

At about the same time (1972) that the LBL monitoring research was initiated, we began what was to be the first monitoring measurement of visitor perceptions of crowding. Ozark National Scenic Riverways (ONSR) encompasses 134 miles of the Current and Jacks Fork rivers in Missouri. A variety of ecological and scenic conditions exist, along with multiple river accesses, more than 300,000 canoeists in 1983, and other river users including johnboats, jetboats, and inner tube floaters.

Ozark Riverways was established in 1964 and administered by the National Park Service (NPS) as the nation's first National Scenic Riverways. It was established because of scenic attractiveness and to maintain the rivers as free-flowing rivers. Numbers of canoe floaters increased rapidly, from an estimated 40,000 in 1964 to 140,000 by 1972. At that time, a five-year research program was initiated, focused on recreational carrying capacity for ONSR. A variety of physical-biological and social studies were undertaken (Marnell et al. 1978).

The ONSR research program began with initial focus on the most visible and rapidly changing element - the numbers of river floaters. Although ranger counts and estimates indicated increases, no systematic counting of total use had been done. Recognizing diverse conditions, ten river zones (usually from major launch to take-out accesses) were identified, and time-lapse photography was used to make counts from 1972 through 1975. During the same period, several studies of impacts of river floating on vegetation, soil, water quality, and fish populations were undertaken. Physical-biological impacts appeared to be minimal and localized, because most canoe stops were on gravel bars. It appeared that carrying capacity would need to be based on social conditions.

During the period 1972-1979, several visitor surveys were conducted at ONSR. These studies included canoeists' visit expectations, perceptions of crowding (1972, 1977, 1979), effects of large groups of floaters, and comparisons of ONSR with other float rivers. These studies occurred during a period of increasing social research in wildlands, when researchers were developing survey methods for these large and diverse areas and

searching for appropriate theories and questions to use in recreation management situations. An important aspect of the ONSR visitor studies, however, was that several studies were done on one management area, and findings discussed in light of the total ONSR research and management program (Marnell et al. 1978).

Following that period of research, activities to prepare a General Management Plan for ONSR took place from 1978 to 1981. Unfortunately, an adverse court decision in 1976 limited the NPS's authority to control commercial canoe rental operations on ONSR. In 1982 that issue was taken to federal court in St. Louis, and a decision favorable to NPS control was obtained in 1984. Results of that decision were that: (1) the total number of rental canoes available (which constitute approximately 90% of total ONSR canoe use) was reduced an estimated 20% by NPS control over unlicensed rental businesses, and (2) a new configuration of use was established. The NPS needed to know just what the new configuration of use was, in terms of number of canoes and which concessioners were operating where. The NPS also wanted to know canoeists' reactions, by zones, to the new configuration.

Two research technicians were hired allowing a sampling design of counts at the eight most heavily-used river accesses in 1984. Along with counts, short interviews were conducted with randomly selected canoeists to determine their reactions to conditions on the river zone they had just floated. The one-page interview format was designed to obtain responses about the visitors' experience and present visit, choice of recreation setting, perceptions of changes occurring, perceptions of river use densities, and comments for the NPS managers. The format was developed from efforts over several years at ONSR and other wildland areas to design a short set of questions for management field use (Chilman 1976; Chilman and Kao 1982).

Findings about the changed ONSR river use configurations were that (1) a range of use densities existed on various zones, and (2) visitors reacted favorably to the reduced use limits, i.e., that the new use configuration was generally acceptable. A river use plan (carrying capacity plan) was developed in 1985, based on maintaining three distinctly different use densities on various river zones and providing information to visitors about the range of choices available.

Monitoring was specified in the river use plan to determine (1) by counts whether the maximum canoe use by zones was within established limits, and (2) by interviews how visitors perceived conditions by zones and how improvements in visitor experience quality could be achieved. Because research funding was limited, it was decided to monitor conditions on each on the three river districts (Upper Current, Lower Current, Jacks Fork) every third year. We have now completed our fourth summer of those monitoring measurements, i.e., our second round of monitoring remeasurement on the Upper Current District. Refinements in the monitoring system occurred between the first and second measurements as we learned more about the system. Also during the second round of monitoring, we began integrating interviews of river users at sites along the river away from main accesses and remeasurement of site impacts.

## A HEAVILY-USED WILDERNESS AREA

Later, in 1982, we had an opportunity to apply some of the monitoring concepts to Desolation Wilderness, a 64,000-acre area on the southwestern edge of the Lake Tahoe Basin in California. The area is predominantly granite rock, glaciated into expanses of open, bare rock, with scattered stands of trees. It is a very heavily-used area because of its proximity to Lake Tahoe and its easy accessibility. Wilderness use conditions were well- documented by an earlier study (Shechter and Lucas 1978).

A management plan for Desolation Wilderness was prepared by the U.S. Forest Service in 1978. In 1982, a Regional Office inspection report called for implementation of monitoring, as called for in the plan. Procedures for monitoring were needed and the managers called on researchers at Southern Illinois University to help.

No funding was available for new monitoring information collection, so it was initially proposed to integrate the procedures into the work activities of the wilderness rangers. Studies in 1983 and 1984 (of short duration because no research funding was available) examined the work activities of the rangers and demonstrated that short interviews could be conducted during patrol activities in a small percentage of work time (1-2 hours per week). It was hoped to obtain 400 interviews per summer.

In 1985, two rangers and three volunteers conducted 104 interviews (Chilman 1986). Although visitors generally indicated satisfaction with existing conditions, the amount of interviews conducted was disappointing. Also a need was indicated for counts of visitors in specific areas of Desolation Wilderness; accordingly, monitoring procedures were redesigned.

The portion of Desolation Wilderness within Lake Tahoe Basin was divided into four zones. Reconnaissance of the zones was done in 1986 and 1987 to determine major travel routes and appropriate locations for counts and interviews. Trailheads were not used because of congestion of other recreation traffic; locations at the first trail junctions within the wilderness were found to provide better information. In 1988 and 1989, counts and interviews were done at these locations along the four major access trails.

Count information included numbers of visitors by group, whether they were backpackers or dayhikers (increases in dayhikers appear to be occurring), origin-destination, time spent in Desolation, and residence of visitors. For example, 696 visitors were recorded entering and leaving Desolation on the Eagle Lake trail near Emerald Bay during 11 hours on Saturday, August 12, 1989. But seventy-eight percent only dayhiked to Eagle Lake one mile within the wilderness. Destinations provided by the others indicated relative distribution of use within the wilderness.

The questions asked of visitors exiting the wilderness provided additional information about their perceptions of conditions, such as crowding. Because responses were obtained by zones, comments on specific problems (signing, camp conditions, etc.) enabled immediate corrections to be made. In addition, eighty-three percent of respondents indicated solitude was important to them on that particular trip; eighty-four percent of those respondents indicated they had obtained the type of solitude experience they were seeking.

A monitoring system has been designed that enables specific information to be obtained for specific portions of Desolation Wilderness at predetermined times and locations by wilderness rangers and volunteers. Data collection and data analysis can be coordinated by the wilderness manager. Monitoring data thus collected can be used for immediate actions to improve visit experiences, and for long term planning. Also, in 1990, we are beginning to integrate the social monitoring with site impact monitoring and priorities to form a management action plan.

## DISCUSSION

As a result of the above series of studies, a monitoring system which provides considerable useful information at low costs was developed. The research design used allowed modification of the hypothesis and the monitoring system as problems were encountered.

Problems included low management budgets, design of measurement systems for large and diverse areas, lack of specific management objectives, and lack of long-term commitment to data collection and analysis. To deal with the constraint of low budgets, available field personnel such as rangers and volunteers were utilized for data collection. Also, following reconnaissance of management areas, priority areas for data collection were identified rather than trying to measure all recreation use sites within large areas.

The problem of lack of specific management objectives will be more manageable as new systems of carrying capacity planning, such as Limits of Acceptable Change (Stankey et al. 1985), are utilized. For other areas, including Desolation and ONSR, monitoring information can help in replanning efforts toward more

specific objectives. Problems of lack of long-term commitment should be resolved as we develop more evidence of the utility of the monitoring information.

Although we are still moving ahead with research and refining monitoring procedures, the outline of our basic system is as follows:

1. Divide large wilderness or wildland areas into management zones or subunits.

2. Reconnaissance of individual subunits for patterns of recreation use and site impact areas.

3. Identify priority areas for management attention within subunit, design system of measurements to monitor amounts and types of use and visitors' perceptions of conditions.

4. Decide on critical use season, usually summer months, for sampling.

5. Monitoring measurements recorded by management personnel, supplemented by research assistants.

6. Analysis of measurements, reporting, management actions, follow-up monitoring.

Again, the social monitoring measurements developed are of two kinds: (1) count recording forms, which in addition to numerical counts of visitors include observational information about types of visitors (dayhikers, backpackers, canoeists, boaters, gender and estimated ages, etc.) as well as a few brief questions about length of stay, origin-destination, and residence; and (2) short interviews about visitors' perceptions of conditions.

The short set of questions we use is designed for field use to minimize interference with recreation visits and to minimize field time needed to administer. The questions are related to concepts of improving "quality" of recreation opportunities and include questions about what visitors think is important about the setting for their particular experiences and how these aspects may be changing over time. We also ask visitors for comments they would like to pass along to managers, and these sometimes include specific ideas for improvement of the recreation opportunities. The basic set of questions is short enough that one or two questions dealing with special conditions or current situations may be added (for example, the solitude questions added for the 1988 Desolation Wilderness study) while the basic questions are replicated to provide monitoring information on changes occurring.

During 1988-89, we began work on integrating these social measurements with site impact measures. Recreation use sites, mostly campsites, have been inventoried along the 140 miles of Ozark Riverways (Mendiola 1986). In 1988, researchers visited all the sites with district management personnel and established priorities for management attention of sites for each of the three districts. Then as social monitoring proceeded on the Upper Current District in 1989, monitoring of campsite use along the river was initiated, with special attention given to priority sites. Recommendations will be made for rehabilitation or other management of the priority campsites, based on both social and site impact monitoring information.

For implementation of monitoring systems on recreation areas, training will be necessary for managers who will institute and coordinate the monitoring measurements. Basic aspects of questionnaire development, sampling design, and data handling and reporting may need to be reviewed, depending on the previous training of managers involved.

## RESEARCH IMPLICATIONS

Research on new kinds of recreation management systems, such as recreation monitoring, need not proceed only on an ad hoc basis. Participant observation, negative case analysis is a research design that can speed up development of needed management systems. Yet there appears to be little interest in using this research design. There are probably several reasons why this is so.

First of all, participant observation is a very labor intensive research design. It requires that the principal researcher spend considerable time in the field and in discussions with the management personnel. It is much simpler to design survey research projects where graduate students can do the field data collection - and often the data analysis. Given current pressures in universities for more research (which includes more proposal writing) - and often more teaching, it is unlikely that many researchers will choose labor intensive research approaches.

Another drawback is that funding is difficult to obtain for long-term studies. Even when managers recognize the needs for long-term studies, funding available for field level research is very limited and competition for these funds is strong. Also government requirements for competitive bidding of research contracts make it difficult to maintain continuing relationships with one university. At ONSR, the low level of funding of studies in the $3000-5000 range, and some ingenuity in meeting regulations, have enabled the studies to continue.

Another difficulty with using this design is finding managers who want to actively participate (think about/discuss) in the research situation. Managers often say they have a problem they would like to have researched but either do not want to get involved or do not know how. In our research at Ozark National Scenic Riverways (ONSR) since 1973, the managers anticipated having to defend their findings in court; they also had a Ph.D. biologist with research training and experience on staff to help initiate and organize the research. An associated difficulty in maintaining this type of long-term research is that managers who are interested in participating get transferred to other locations, and their replacements may not have similar interests.

Other difficulties, including the qualitative nature of the research and getting journal articles published, probably preclude the participant observer design from wide use. However, the benefit of the occasional series of studies over several years is recognized; National Park Service researchers noted the well-known twenty years of studies by Purdue University researchers of moose-wolves relationships at Isle Royale as the classic example. Perhaps as recreation research matures, the value of using a range of research designs including participant observation will become more widely recognized.

## MANAGEMENT IMPLICATIONS

If the participant observer design has so many difficulties, why bother with it? What are the advantages for management?

Hammitt and Cole (1987) state that "Reliable data are needed to manage recreation just as reliable inventory data are needed to manage other natural resources, such as timber. Unfortunately, they are seldom available. In recreation, management has too frequently had to rely on guesswork or the personal experience and intuition of managers. While a manager's professional opinion is important, it is no substitute for reliable and systematically collected inventory and monitoring data. This is particularly true when turnover in personnel is frequent, as it is in many governmental land-managing agencies."

Simply stated, recreation monitoring systems can provide a systematic, information-based foundation for management. For recreation management this means obtaining current information for resolving conflicts, making decisions about site development and management, and for the manager's frequent need for responding

to questions about what is going on at specific locations. This information can also be useful in decisions involving multiple resources, where recreation is now at a disadvantage.

However, monitoring systems do constitute a new job task for managers, if they are to become involved in data collection and utilization. As with any change in routine, there is resistance, especially in these times when management budgets have been getting cut back for several years. Participant observation enables researchers to work closely with managers to identify barriers to implementation and ways to deal with these barriers. Participant observation is a long and time-consuming process, but a necessary one to bring recreation management up to par with other fields of management.

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# THE ROLE OF INVOLVEMENT IN IDENTIFYING USERS' PREFERENCES FOR SOCIAL STANDARDS IN THE COHUTTA WILDERNESS[1]

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**Abstract**. This study examined the relationship between Cohutta Wilderness users' level of involvement with the area, and their perceptions of acceptable social wilderness conditions. It was hypothesized that users showing higher levels of involvement with the wilderness resource would be more restrictive with regard to the number of alternative positions they were willing accept in relation to their most preferred wilderness conditions. Concepts taken from social judgment theory, in conjunction with past research conducted with the concept of involvement, were used to test these assumptions. Results showed that although Cohutta users are highly involved with the area, this finding did not strongly correlate with the number of alternative positions they were willing to accept. Possible explanations for this finding are discussed.

## INTRODUCTION

Planning methods such as the increasingly popular Limits of Acceptable Change (LAC) approach to wilderness planning place great emphasis on establishing measurable indicators that are considered important by managers and users, and then developing standards that are reflective of acceptable conditions for the indicators. Stankey et al. (1985) recognized both "social" and "resource" conditions as the major areas of emphasis for planners to focus upon when developing appropriate indicators and standards. This paper focuses upon social conditions and the relationship between involvement and wilderness users' perceptions of acceptable standards for social conditions in a wilderness area.

An important step in identifying standards for social conditions is understanding the preferences users have for the conditions. Many of the past research efforts have taken a normative approach to identifying users' preferences for acceptable conditions (Shelby and Heberlein 1986). Typically, users are asked to indicate the highest level of some impact that they can tolerate before their experience reaches unacceptable conditions. Strong agreement among users, or subgroups of users, may indicate the existence of a social norm that can be used as a standard to guide planning and managing efforts.

However, the social norm concept may hold only limited potential for understanding users' preferences for social conditions, and in some cases a social norm may not be present at all (Roggenbuck et al. 1989). The

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concept of social judgment theory seems to have the potential to provide planners and managers with additional information on users' feelings toward social conditions.

## SOCIAL JUDGMENT THEORY

The concept of social judgment theory recognizes that in addition to a most preferred condition, users are likely to have a range of conditions which they find acceptable - the latitude of acceptance. Furthermore, at some point along a continuum users may recognize a level of conditions which are unacceptable - the latitude of rejection. Finally, there may be a level of conditions which are neither acceptable nor unacceptable about which users are unsure of their feelings - the non-committal range (Petty and Cacioppo 1981; Sherif and Hovland 1961; Sherif et al. 1965). An advantage of using this approach for identifying social standards is that it provides a basis for understanding the reaction users may have toward a range of possible standards for social conditions.

Inherent in the social judgment approach is the assumption that people order stimuli along a psychological dimension in a meaningful manner, relative to an internal reference scale. This reference scale is developed, as are norms, through social interaction, and is also influenced by significant people in one's life, as well as one's own feelings. This reference scale affects the stand, or "anchor point," one will take on any given issue. The anchor point serves as a reference point from which alternative positions are evaluated, and can be thought of as the ideal level of acceptability for a given situation. A person's judgments of alternative positions on the issue are subject to contrast and assimilation effects relative to the anchor point (Petty and Cacioppo 1981).

A contrast effect occurs when one shifts a judgment away from the anchor point. An assimilation effect refers to a judgment shift toward an anchor point. Thus, relative to one's most preferred condition (or anchor point), some alternative positions on an issue may be seen as being more similar, and hence more acceptable, to the anchor point than they actually are, while others may be interpreted as being more unlike, or unacceptable, from one's anchor point than they actually are. The latitudes of acceptance, non-committal, and rejection establish the boundaries, or extremes, for determining whether or not an assimilation or contrast effect is likely to occur.

According to Sherif et al. (1965), if an issue occupies an important part of one's scheme of things, that person may be more "ego-involved" than others for whom the issue is considered less important. As a result, for a person more highly involved in an issue, that person's attitude should serve as a stronger anchor point, rendering it less susceptable to contrast or assimilation effects and causing the user to discriminate more sharply between acceptable and unacceptable conditions when evaluating alternative positions on an issue. The important influence involvement is believed to have upon the latitude of acceptance indicates that an understanding and appreciation of involvement is important to any attempt to use the social judgment concept to identify and better understand users' standards for social conditions.

## INVOLVEMENT

McIntyre (1989) has described "enduring involvement" as a uni-dimensional concept that is considered by many as being synonymous with "commitment." Selin and Howard (1988) use the term "ego involvement," and describe the concept as "the state of identification existing between an individual and a recreational activity, at one point in time, characterized by some level of enjoyment and self expression being achieved through the activity."

Recreation researchers have recognized the importance involvement may play in better understanding recreationists' preferences and evaluations of social and managerial conditions by including measures of involvement in studies relating to specialization (Wellman et al. 1982), and in the field of recreation choice

behavior (Williams 1985; McIntyre 1989). The role of involvement is also commonly included in studies of consumer behavior (Houston and Rothschild 1978; Zaichkowsky 1985). However, some researchers have noted that the use of the involvement construct in research has suffered from a lack of conceptual understanding and theoretical development (Buchanan 1985; Selin and Howard 1988; McIntyre 1989).

Selin and Howard (1988) have identified five dimensions that they consider important to a better understanding of the concept of involvement. These five dimensions are: 1) centrality, 2) importance, 3) pleasure, 4) interest, and 5) self-expression. McIntyre's (1989) treatment of "enduring involvement" explicitly recognized all of these dimensions except "interest." He found that factor analysis of twelve questions thought to lie in the domain of these dimensions resulted in three major factors which he termed: 1) attraction, 2) self-expression, and 3) centrality. Application of these three dimensions were found to be slightly predictive of choice of camping sites at three alternative locations in Cooloola National Park in Queensland, Australia (McIntyre 1989).

In regard to social judgment theory, Sherif et al. (1965) have noted that those more highly involved with an issue typically have a larger latitude of rejection than those less involved. However, Markley (1971) has pointed out that the distance between the most preferred condition and the beginning of the latitude of rejection is a more accurate reflection of involvement as it is less susceptable to bias in cases where the latitude of acceptance tends to lie along the extremes of the continuum of alternative positions on an issue. The width of the latitude of acceptance was not considered reflective of involvement as experiments showed it tended to remain consistent among individuals with varying degrees of involvement. Yet, it should be noted that the issues studied were bipolar, where people often took extreme positions in favor of one end over the other, whereas measures of social standards typically deal with polarities on a single issue, where preferences for more or less of some feature of the environment are usually measured.

The research reported in this paper attempts to assess the relationship between involvement and measures of standards for acceptable social conditions based upon social judgment theory. The results of studies reported above indicate that it can be hypothesized that wilderness users showing higher levels of involvement will also be more restrictive toward the number of alternative positions they will accept in relation to their most preferred conditions. Consequently, it is felt that this should result in more highly involved wilderness users having shorter distances from their most preferred conditions to the point were conditions become unacceptable to them.

## METHODS

### Study Area

The area chosen for this study was the Cohutta Wilderness, located on the Chattahoochee and Cherokee National Forests in northcentral Geogia and extreme southeastern Tennessee. The area consists of 37,042 acres of rugged Southern Appalacihan mountain forest. The Cohutta Ranger District estimates a use level for the area of about 70,000 recreation visitor days per year. Much of this use appears to be from the rapidly growing Atlanta region.

### Sampling

Over a time period of approximately 7 months, from May through November 1989, a total of 265 groups containing a total of 797 visitors were contacted at area trailheads. Information concerning arrival and departure times, number of previous visits, alternative sites considered, group type, and location of planned travel routes and camping sites were collected on an onsite contact form. Those visitors age 16 and over were asked if they would complete a mailed questionnaire which would be sent to them about 2 weeks after the initial

contact was made. Of the 677 visitors age 16 or over, only 4 refused to participte, resulting in a sample size of 673.

However, due to time delays involved in completion of data coding and transfer, the data reported here are based on a sub-sample of the users surveyed. The research reported here is based on data available from 222 of the individuals returning the mailback questionnaires during the period from May through early September. This time period covered about 63 percent of the total number of addresses collected over the entire sampling period. This resulted in a response rate of about 52 percent. Due to the liklihood that not all of the questionnaires distributed to those visiting the area over the Labor Day weekend were received at the time the data reported here were analyzed, it is probable that the actual response rate will eventually be greater than 52 percent.

## Measures of Involvement

In order to measure involvement, five items considered relevant to the involvement components described by Selin and Howard (1988), and used in past research efforts (Wellman et al. 1982; McIntyre 1989; Williams and Roggenbuck 1989), were included in the mailback questionnaire (Table 1). These items included: "I get greater satisfaction out of visiting wilderness than other recreation places"; "I find that a lot of my life is organized around wilderness use"; "One of the major reasons I now live where I do is that it has opportunities for visiting wilderness"; "I feel like wilderness is a part of me"; and "I seldom take time to visit wilderness areas."

Table 1. Means and standard deviations for involvement measures.

| Involvement Measure | n | mean* | s.d. |
|---|---|---|---|
| I get greater satisfaction out of visiting wilderness than other recreation places | 221 | 4.38 | 0.79 |
| I find that a lot of my life is organized around wilderness use | 221 | 3.39 | 1.02 |
| One of the major reasons I now live where I do is that it has opportunities for visiting wilderness | 221 | 3.20 | 1.12 |
| I feel like wilderness is a part of me | 221 | 4.10 | 0.83 |
| I seldom take time to visit wilderness areas | 221 | 4.11 | 0.95 |
| Involvement** | 221 | 3.84 | 0.71 |

* Based on a scale ranging from 1 to 5
** Aggregation of the previous five measures

The involvement items were measured on a 5-point Likert scale ranging from "strongly agree" to "strongly disagree." Because there seemed to be no convincing basis for assigning various weights to the five items, all were considered of equal importance and aggregated into a scale ranging from 5 to 25. This scale was then divided by the number of involvement items to produce a final index ranging from 1 to 5, with 1 being least involved and 5 being most involved.

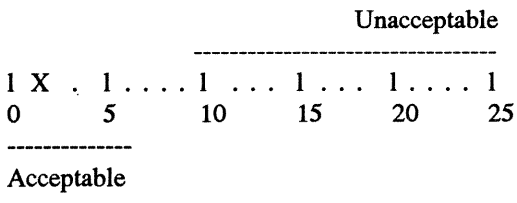
## Social Conditions

The survey also included 10 items relating to social conditions encountered in the wilderness (Table 2). The questions were formatted in a manner designed to measure the users': 1) most preferred conditions; 2) other conditions that were acceptable; 3) those conditions considered unacceptable; and 4) those conditions for which the respondents were non-committed. This was accomplished by using equal interval scales ranging from zero to fifty, zero to twenty-five, or zero to one-hundred percent, depending on the type of attribute and determined through pilot testing for the range of conditions typically considered by the users.

The respondents were asked to place an "X" on the scales indicating their most preferred conditions. A line drawn below the scale represented other conditions which the respondent found "acceptable." Finally, the respondents placed a line above the scale over those conditions which they found "unacceptable." Conditions which were not included in any of these three categories were considered to be non-committal. Figure 1 shows an example of the format used, and was also included in the questonnaire.

Figure 1. Example of equal interval scale measure for social condition standards.

The number of hiker groups that camp within sight or sound of my campsite.




Because it was felt that the large number of resulting scale items would possibly discourage the respondents from completing the entire questionnaire, the social condition items were separated into two groups. Thus, users were mailed one of two types of questionnaires with half the group receiving "Form A," and the other half receiving "Form B."

## Data Analysis

In order to test the hypothesis that users more highly involved with wilderness would report smaller latitudes of acceptance than those less involved with wilderness, scores on the involvement index were correlated with the ranges of widths between the most preferred condition, and the point where conditions become unacceptable for each of the ten social conditions measured. Those respondents failing to answer four or more of the social condition items were discarded from the sample because it was felt that these people may have misunderstood the directions. In addition, those failing to answer one or more of the five involvement measures were discarded.

Table 2. Means/standard deviations for social conditions (n in parenthesis).

| Social Condition | Preferred Level | Lower Limit Unacceptable | Pre./Unaccep. Range |
|---|---|---|---|
| The number of people hiking on trail in a day | 11.53/7.24 (81) | 25.05/9.37 (80) | 12.68/7.65 (79) |
| The number of large groups hiking on trail in a day | 3.37/2.92 (81) | 8.28/5.63 (80) | 4.51/4.20 (77) |
| The number of hiker*** groups camped in sight or sound of campsite | 2.22/3.23 (77) | 6.49/4.85 (84) | 3.67/3.03 (77) |
| The number of hiker groups walking past campsite | 3.74/3.89 (78) | 8.51/5.12 (82) | 4.58/3.96 (76) |
| The number of horse groups seen on trail in a day | 2.43/3.28 (70) | 5.75/5.18 (79) | 3.81/3.81 (68) |
| The number of horse groups camped in sight or sound of campsite | 1.73/3.16 (73) | 4.35/4.95 (81) | 3.07/3.50 (70) |
| The percent of time other people are in sight while on trail | 13.91/13.31 (80) | 31.54/20.62 (83) | 17.52/15.94 (79) |
| The number of groups of hikers seen on trail in a day | 3.87/3.66 (67) | 10.98/4.73 (65) | 7.78/4.24 (65) |
| The number of hiker*** groups camped in sight or sound of campsite | 1.58/2.65 (69) | 5.71/4.14 (70) | 4.38/3.65 (71) |
| The number of horse groups that travel past my campsite | 1.22/1.89 (67) | 5.09/4.35 (69) | 3.53/3.36 (67) |

*** Item used in both Form A and Form B

## RESULTS

The aggregate measure of involvement resulted in a mean rating of 3.84, with a standard deviation of 0.71 (Table 1). The measure with the highest rating was "I get greater satisfaction out of visiting wilderness than other recreation places," which had a mean of 4.38. The question "One of the major reasons I now live where I do is that it has opportunities for visiting wilderness" resulted in both the lowest rating among the group of involvement measures (3.20), and the highest standard deviation (1.12).

The social conditions concerning "The number of people I see hiking along the trails in a day" and "The percent of time other people are in sight while on the trail" showed the greatest distance from the preferred condition to the beginning of the unacceptable range (Table 2). The ranges were 12.68 people and 17.52 percent respectively. These were also the only two measures showing a significantly negative correlation with the level of involvement index (Table 3). In the former case, the correlation was -0.254 while the latter case had a correlation of -0.219. Both were significant at $p < .05$. None of the other items showed significant correlations, positive or negative, with the involvement measure.

## DISCUSSION

The results reported here seem to be largely inconclusive. This can be concluded from the lack of many significant items in either the hypothesized direction, opposite direction, or neutral position. Of the items that did show significance, "the number of people I see hiking along the trail in a day," and "the percent of time other people are in sight while on the trail" were both significant in the hypothesized direction. That is, the more involved users tended to have a smaller distance between their most preferred level, and the point were conditions become unacceptable than those less involved with wilderness. These items also had the highest preferred and beginning of unacceptable range values.

Correlations were also analyzed for the range of acceptability, as well as the non-committal range. The results in both cases were similar to those found for the preferred/lower limit unacceptable distance. The only item that consistently appeared significant was "the percent of time other people are in sight while on the trail." Correlation analyses for the individual involvement items did not show any of the five items as being more significant than the others.

The unexpected results of this study may have been influenced by the relatively small amount of variation found among the involvement measure. It is possible that this resulted from a somewhat homogeneous sample of users as far as involvement is concerned. Our sample was drawn from primarily summer visitors, most of whom appeared highly involved with the concept of wilderness. Inclusion of autumn visitors, including those participating in hunting activities, may well introduce more diversity to the overall sample. For example, some of the hunters may be found to be more "functionally" involved than involved with the concept of wilderness. This may increase the variation in our involvement measure and result in an increase in the number of significant correlations between wilderness involvement and social condition preferences. Of course, functional involvement is likely to be present in various degrees with many of the summer users as well (i.e. involvement with fishing, backpacking, etc., rather than with wilderness per se). However, the small sample sizes that resulted from dividing our overall sample by activities prevented us from exploring this possibility.

Another potential problem with our study concerns the reliability of our involvement measure. An attempt was made to include items representative of the various dimensions of the involvement concept identified by past researchers (Wellman et al. 1982; Selin and Howard 1988; McIntyre 1989). However, for the most part, our overall index of involvement was based on a single item for each of these dimensions. This was due in part to our greater focus on the application of social judgment theory as a means of obtaining realistic measures of users' opinions regarding social standards than with the role involvement plays in social judgment theory, but also, in part, due to the lack of guidance on appropriate measures for the involvement

Table 3. Correlations between involvement and social conditions based on the distance between the most preferred condition, and the lower limit of the unacceptable range (number of correlations per item shown in parenthesis).

| Social Condition | Involvment |
|---|---|
| The number of people I see hiking along the trails in a day | -0.254 * (79) |
| The number of large groups (more than 6 people) that I see along the trails in a day | -0.087 (77) |
| The number of hiker groups that *** camp within sight or sound of my campsite | -0.009 (77) |
| The number of hiker groups that walk past my campsite | -0.080 (76) |
| The number of horse groups I see along the trails in a day | -0.152 (68) |
| The number of horse groups that camp within sight or sound of my campsite | -0.035 (70) |
| The percent of time other people are in sight while I am on the trail | -0.219 * (79) |
| The number of groups of hikers I see along the trails in a day | 0.070 (65) |
| The number of hiker groups that *** camp within sight or sound of my campsite | 0.103 (71) |
| The number of horse groups that travel past my campsite while I am there | -0.130 (67) |

* = p </= .05
** = p </= .01
*** = item included in both form A & B

dimensions. More research is needed to develop items that are specific to, and reliably measure each of the involvement dimensions.

Attempts to measure involvement may also need to be more specifically directed toward the particular social conditions of interest. Our measure of involvement was focused upon the general concept of wilderness. Perhaps we should have asked users questions more directly indicative of their involvement with each of the social conditions we measured. Users were asked about the extent to which they "care about" the specific social conditions that were evaluated. When these items were correlated with the coresponding social condition scales, the result was both greater numbers of significant items, and relatively higher negative correlations (Table 4). However, the extent to which users "care about" these social conditions is not likely a thorough indicator of all the dimensions of involvement as identified by past researchers (Selin and Howard 1988; McIntyre 1989). Furthermore, this measure may be so issue specific as to be circular in nature, thus potentially resulting in the higher correlations.

## Management Implications

Based on the concept of social judgment theory, level of involvement should play a key role in determining the relative strength that recreationists hold for their attitudes toward preferred social conditions, and the degree to which they are willing to accept other alternative positions. To the extent that wilderness users are homogeneous in terms of involvement with wilderness, this concept may not be as important for wilderness managers as it is for other types of more diverse recreation. However, involvement on an activity level may show more diversity, and hence, place greater importance on the role of involvement in identifying social standards.

If this potential finding turns out to be true, it will be important that wilderness planners and managers not only determine the acceptable extremes of social conditions for the population of wilderness users as a whole when developing standards for social indicators. In such a situation, establishment of social standards based upon the averaged measures of wilderness users' opinions of acceptable conditions may not satisfy those users that have more restrictive latitudes of acceptance due to their higher degree of involvement. Conversely, social standards based upon the acceptable extremes of the more highly involved wilderness users would likely also be satisfactory to those users that show less involvement. This should be true as long as the preferred conditions of the less involved wilderness users lie within the acceptable extremes of those more highly involved.

Table 4. Correlations between degree to which respondents stated they "care about" specific social conditions, and their evaluations of preferred conditions and distance between preferred levels and the lower limit of the unacceptable range (n in parenthesis).

| Social Condition | Preferred Level | Preferred/Lower Limit Unacceptable Range |
|---|---|---|
| The number of people seen hiking on trail in a day | -0.311 ** (90) | 0.003 (79) |
| The number of large groups seen hiking on trail in a day | -0.272 ** (88) | -0.119 (76) |
| The number of hiker *** groups camped within sight or sound of campsite | -0.322 ** (85) | -0.336 ** (77) |
| The number of hiker groups walking past campsite | -0.281 ** (87) | -0.400 ** (76) |
| The number of horse groups seen on the trail in a day | -0.448 ** (77) | -0.340 ** (68) |
| The number of horse groups camped within sight or sound of campsite | -0.365 ** (80) | -0.363 ** (70) |
| The percent of time other people are in sight while on trail | -0.321 ** (89) | -0.378 ** (79) |
| The number of groups of hikers seen on the trail in a day | -0.193 (80) | 0.051 (64) |
| The number of hiker *** groups camped within sight or sound of campsite | -0.205 (82) | -0.012 (70) |
| The number of horse groups that travel past my campsite | -0.121 (76) | -0.151 (65) |

* = p </= .05
** = p </= .01
*** = item included in both form A & B

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