

Proceedings of a Workshop on Unobtrusive Techniques to Study Social Behavior in Parks

**MAY 20 - 21, 1983
GREAT SMOKY MOUNTAINS NATIONAL PARK
GATLINBURG, TENNESSEE**



NATIONAL PARK SERVICE - SOUTHEAST REGION



Citation:

Peine, John D. (ed). 1984. Proceedings of a Workshop on Unobtrusive Techniques to Study Social Behavior in Parks, Great Smoky Mountains National Park, May 20-21, 1983. U.S. Department of the Interior, National Park Service, Science Publications Office, Atlanta, Georgia. 62 pp.

Editor's Note

These Proceedings contain original material of the authors. No material is to be reprinted without prior permission from its author. The opinions of the authors do not necessarily reflect the views of the National Park Service.

Additional copies of this publication can be obtained by writing:

Uplands Field Research Laboratory
Great Smoky Mountains National Park
Route 2, Box 260
Gatlinburg, Tennessee 37738

Cover photograph: Park visitors watch a black bear beside a scenic overlook at Great Smoky Mountains National Park. National Park Service photo by Richard Frear

PROCEEDINGS
OF A WORKSHOP ON
UNOBTRUSIVE TECHNIQUES TO STUDY
SOCIAL BEHAVIOR IN PARKS

May 20-21, 1983

Edited by
Dr. John D. Peine

Sponsored by
Uplands Field Research Laboratory
Great Smoky Mountains National Park
Route 2, Box 260
Gatlinburg, Tennessee 37738

Published October 1984

U.S. Department of the Interior
National Park Service
Southeast Regional Office
Natural Science and Research Division
75 Spring Street, S.W.
Atlanta, Georgia 30303

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Some Reactions to Nonreactive Research in Park and Recreation Settings - by Geoffrey Godbey	2
Applications of Unobtrusive Methods - by Lee Lane Burrus- Bammel and Gene Bammel	6
A Practical Guide to the Use of Observation in the Study of Urban Parks - by Thomas A. More	20
Ethnography as a Research Tool in Understanding Park Visitors - by Gary E. Machlis	28
Nonreactive Research--Unobtrusive Observation - by Gary W. Mullins, John L. Heywood, and Michael K. Maynard	39
Unobtrusive Observation in Recreation Research: An Application - by John H. Burde and Kevin A. Curran	50
Application of Unobtrusive Research Methods in a Communication Study at Great Smoky Mountains National Park - by John D. Peine and Craig A. Walker	54
Data for Interpretive Programming: A Case Study in Observation - by Laura B. Szwak	56

INTRODUCTION

In the late spring of 1983, a group of social scientists specializing in parks and recreation gathered at the Uplands Field Research Laboratory in the Great Smoky Mountains National Park (GRSM) to share their experiences using unobtrusive measures to study social behavior in parks. Unobtrusive measures refers to those means of evaluating human behavior that do not require direct contact and interaction with the recreator. Examples are direct observation, wear patterns on grounds or equipment, litter patterns, time lapse photography, traffic counters, etc.

The two day discussion was lively and enthusiastic. All agreed that unobtrusive measures can be very effective tools of social research and tend to be underutilized in park settings.

The workshop opened with a presentation by Dr. Geoffrey Godbey concerning why the time has come for greater use of unobtrusive techniques to study social behavior in parks. Drs. Gene and Lei Lane Bammel then summarized various ways that unobtrusive measures have been applied in park and recreation studies. More detailed analyses of specific types of techniques were then presented by Drs. Gary Machlis, Thomas More, Gary Mullins and John Heywood. Finally, discussion focused on three studies planned for the summer. The unobtrusive measures used in those studies are presented by Dr. John Burde, Dr. John Peine and Mrs. Laura Szwak.

It is hoped that this collection of papers will prove to be a valuable tool to both scientists and park managers concerned with social behavior in parks and recreation.

SOME REACTIONS TO NON-REACTIVE RESEARCH
IN PARK AND RECREATION SETTINGS

Geoffrey Godbey
Department of Recreation and Parks
The Pennsylvania State University

If an unobtrusive or non-reactive research technique is defined as "a research technique that can be used without the awareness of the subjects being studied" (Theodorson and Theodorson 1969), then a clear case can be made for their use in park and recreation settings. While a number of arguments can be developed for their use, I believe the two most compelling are these: 1) obtrusive research techniques violate and often temporarily destroy the essence of the park and recreation experience--play; and 2) obtrusive measures often yield wildly inaccurate or un insightful data due to the playful nature of the recreation and park experience. Let's examine these arguments.

Much of the park and recreation experience unfolds as play. The playful nature of the park and recreation experience is central in distinguishing it from other services of government. While "play" is an elusive concept (as most important concepts are), it has been identified as having the following characteristics:

"A free activity standing quite consciously outside ordinary life as being 'not serious,' but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner. It promotes the foundation of social groupings which tend to surround themselves with secrecy and to stress their differences from the common world by disguise or other means" (Huizinga 1950).

Frederick Law Olmsted himself stressed the playful nature of parks and their opposition to ordinary life. The pleasure grounds Olmsted envisioned would possess "a class of opposite conditions" from work and urban life (Cranz 1982).

If we examine the impact that obtrusive methods of research have on play in park and recreation settings, it is apparent that such effects are profound. Obtrusive methods of research tend to make the parks much more like "ordinary life." One more form to fill out. One more situation in which you provide demographic information about yourself for planning purposes in an impersonal manner. Survey research is ordinary life and its intrusion can spoil the magic. For the "player" who is "intensely and utterly absorbed," the intrusion of the survey researcher can devastate the experience.

Play, in park and recreation settings, involves many "secrets," both in terms of behaviors, modes of expression, and motives. Being asked to reveal these secrets is often insulting or threatening to the player, who may be forced to choose between giving away secrets or lying, either of which is degrading.

Obtrusive research insults and trivializes the park experience for many. Asking motivation-satisfaction questions, in particular, forces trivial responses. If you want to know what satisfaction I get from playing tennis, for example, it would be much more instructive to watch me play than to ask me. Even if park users do understand their motivations for visiting a park and are capable of enunciating them, they may be reticent to do so in the presence of a total stranger or a questionnaire administered by strangers.

Play, in the final analysis, is sacred, and obtrusive research techniques disrupt it as would a television reporter at a prayer meeting.

PROBLEMS OF RECALL

A second major problem with obtrusive techniques in park and recreation settings is that much of the data they produce, particularly where recall is involved, may be inaccurate or not insightful. Two recent studies (Chase and Godbey 1982) found that, when participants in a recreation activity were asked to report the number of times they had participated during the last 12 months, their responses were extremely inaccurate. Using situations in which actual rates of participation could be externally validated, it was found that participants showed a marked tendency toward overestimation and that this overestimation, often as great as 200 or 300 percent, makes the data essentially worthless for planning purposes.

Another source of inaccuracy in regard to participation data is due to the fact that park managers often lie when reporting such data on the assumption that higher attendance will mean a higher budget. The unobtrusive research measure can tell you, in many instances, how many people were in the park last week--not how many people perceived they were, or how many the park manager wanted to visit--but how many were physically present.

The unobtrusive research techniques are often threatening to managers because they uncover truths we don't like to have known or which are contrary to popular belief. Wade, for instance, using cinematography (1968), found that children visiting Philadelphia playgrounds were rarely in physical contact with any of the play equipment provided. Gold (1974), using direct observation, found that many urban parks were not used much of the time. A colleague in Britain, using observation, determined that the most frequent use of a large park was by dog owners who visited so their pet could go to the bathroom. Conversely, however, the unobtrusive technique can uncover data to the manager's liking. More (1980) found that problem behavior in urban parks was rare, accounting for less than one per cent of the behaviors observed.

The unobtrusive research techniques are frequently avoided by professors because they have been trained primarily in survey research methodology and in statistical techniques which are usually more appropriate for survey research analysis. Also, in a publish-or-perish era, one can't help but notice that most refereed journals dealing with recreation and parks seem to favor a conservative, quantitative, statistical approach to studying the subject. Park and recreation research, unfortunately, is often thought of as automatically involving inferential statistical tests. What an amazingly limited view of the search for truth!

We need to go in new directions in recreation and park research. Parks accommodate a huge diversity of behavior and meanings and we need a similar diversity of methods to understand them. We need to better understand what does exist in the park, not what we think should exist. In doing these things, we need to observe the players but not spoil the game. In all of these undertakings, the unobtrusive techniques are of increasingly great importance.

REFERENCES CITED

- Chase, David and Geoffrey Godbey. The Accuracy of Self-Reported Participation Rates: A Research Note. Leisure Studies, in press.
- Crantz, Galen. 1982. The Politics of Park Design: A History of Urban Parks in America. Cambridge: MIT Press.
- Gold, Seymour. 1972. Non-use of Neighborhood Parks, J. Amer. Inst. of Planners, 38. Huizinga, Johan. 1949. Homo Ludens. London: Paladin.
- More, Thomas A. 1980. Central City Parks: A Behavioral Perspective. Broomall, PA: USDA Forest Service.
- Theodorson, George A. and A. G. Theodorson. 1969. Modern Dictionary of Sociology. New York: Thomas Crowell.
- Wade, Glenn R. 1968. A Study of Free-play Patterns of Elementary School Aged Children in Playground Equipment Areas. Unpub. Master's Thesis, Penn St. Univ., University Park, PA.

APPLICATIONS OF UNOBTUSIVE METHODS

Lei Lane Burrus-Bammel

Gene Bammel

Division of Forestry, West Virginia University

Published with the approval of the West Virginia Agricultural
and Forestry Experiment Station as Scientific Article #1881

INTRODUCTION

Researchers gathering data on human behavior have primarily relied upon the obtrusive methods of interviews and questionnaires. These methods "intrude as a foreign element into the social setting they would describe, they create as well as measure attitudes, they elicit atypical roles and responses" (Webb 1966:1). The purpose of this paper is to (1) point out some of the limitations of traditional obtrusive methods, (2) systematically describe alternative types of unobtrusive methods, (3) indicate the values of cross-validation, plus (4) discuss the necessity for reliability and validity in research design. Numerous examples of past research have been given and/or referenced to help illustrate the various points.

Limitations of Obtrusive Methods

Obtrusive research methods have certain subject and event limitations which can be offset by appropriate unobtrusive methods. There are times when subjects are not willing or able to respond accurately to either an interview or a questionnaire due to physical, mental, or linguistic limitations. People have a limited capacity to recall past events. In a study designed to improve information and educational exhibits (Shiner and Shafer 1975) visitors were observed to determine average viewing time. Visitors remained at exhibits 15 to 64 percent of the actual time required to read or listen to the presented message. On a percentage basis, observational time decreased as the message length increased. Some method ought to be used to monitor the effectiveness of various interpretation programs and exhibits. Visitors, in the above case, would not have been able to accurately estimate their own viewing time at each exhibit.

Event Limitations

Certain event limitations, besides subject limitations, could cause the use of obtrusive methods to be inappropriate. An unobtrusive technique called "participant observation" was utilized by Campbell, Hendee, and Clark (1968) to investigate law and order in public parks, a national forest, a national park, and a state park. In this situation each researcher's true identity was hidden from the subjects under investigation while specific variables were being observed (Campbell 1970). They reported that depreciative behavior (e.g., theft, vandalism, destructive play, rule violations, littering) was "much more extensive" than they had been led to expect from

previous obtrusive interviews with managers and campers. Apparently, much of the depreciative behavior, such as theft, went unreported. Private property, however, was found to be the target of vandalism in only 10 percent of the cases. Sixty percent was directed at campground facilities and 30 percent at the natural environment. Eighty percent of all depreciative acts were in the presence of other campers. Obtrusive methods would not have been able to reveal the needed type of descriptive data. Campbell concluded that "participant observation should make an important methodological contribution to the advancement of leisure research" (1970:235).

It could be the case that certain situations are too dangerous, too demanding, or too enjoyable to allow for on-the-spot interviews or reaction to questionnaires. Should an individual motivated by solitude be bothered in a wilderness setting? Should happy, cold, hungry white-water rafters have to face researchers at the end of a trip when these same participants could be unobtrusively observed during their activity? Obtrusive research methods may be viewed in some cases as compromising the quality of users' experiences.

Reactivity

Even if one did not believe that either subject or event limitations pose a problem, the fact that obtrusive methods can be "reactive" would have to be accepted. Subjects know they are being investigated when obtrusive methods are employed and consequently their behavior may be modified. Personal attributes of the researcher (age, sex, race, prestige, warmth) may also affect the subjects' performance (Freidman 1967, Johnson 1976, Rosenthal 1966).

UNOBTRUSIVE METHODS

Some of the previously mentioned limitations can be offset by adopting procedures which have compensating strengths. Systematic unobtrusive methods can be used either in conjunction with obtrusive methods to cross validate results or by themselves. There are three main categories of unobtrusive methods: systematic observation, physical traces, and archives.

Systematic Observation

Observation can be conducted by individuals or by unobtrusive mechanical devices such as cameras, tape recorders, and various counting devices. Problems of gathering essential statistics can exist for unattended recreational sites. A process of double sampling was used by James and Ripley (1963) to estimate recreation visits and use. Pneumatic traffic counters were placed on site entrances to tally total vehicle crossing. Simultaneously, the number of people visiting the area and hourly use levels were determined by observers. This data then allowed future use levels to be determined by only continuing the automatic vehicle counts. This technique is very site specific - the prediction equation cannot be applied to a different location.

Unobtrusive observers sampled five trailheads in an investigation on compliance rates at unattended trailheads in the Selway-Bitterroot Wilderness. Only 28 percent of the visitors were found by Lucas (1975) to register - a rate much lower than previous studies had indicated. Lucas suggested that user estimates based on trail registers may be very unreliable and that such registration rates should be "spot-checked and periodically rechecked" (1975:5). Good pointed out that "only direct" observations of overt behavior can reveal what the subject actually does" (1972:243).

Observable behaviors can be divided into four areas: linguistic, extralinguistic, nonverbal, and spatial. People are constantly moving--yet the frequency, range and outcomes of these movements are seldom recorded (Weick 1968:388).

The significance of these movements has been demonstrated by analyzing the physiology of over-crowding, the cross-cultural comparisons of spatial relationships, and the general use of space by animals. This area of proxemics, the study of peoples' need to lay claim to and organize territory, as well as to maintain a pattern of discrete distances from one's fellows' (Hall 1963a:422) has illustrated that space is structured with surprising regularity and that when spatial boundaries are violated, significant behavior changes occur (Weick 1968:389). To facilitate encoding of "spatial observations," Hall (1963b) has developed a notation for proxemic behaviors (Bammel and Bammel 1979:209).

Campground observers as early as 1932 (Meinecke) commented on the importance of locating roads and facilities properly. It has also been noted that the proper channeling of pedestrians and vehicles can reduce the wear on resources (Magill 1970). A Forest Service campground study in Tennessee showed that 26 percent of the participants' tents exceeded the dimensions of the provided pads (Cordell and Sykes 1969). The role of campground design in (1) reducing physical resource deterioration and (2) enhancing camper experiences has been discussed by Lime (1974).

Brown and Hunt (1969) were concerned with visitor distribution. An unobtrusive study, in which personal observations were combined with pneumatic traffic counters, was initiated to test the hypothesis that signs can influence facility use patterns. A significant change in vehicle stoppage attributable to the signs was reported.

Physical Traces

Unknowingly, often unconcernedly, people have left a host of primary and secondary sources of data for the keen observer--for the Sherlock Holmeses. The virtually untapped primary data sources of physical traces surviving from past behavior "is probably the social scientist's least-used source of data, yet because of its ambiguity, it holds flexible and broad-gauged potential" (Webb 1966:35). Two broad classes of physical evidence can be discriminated, accretion and erosion measures. Accretion measures are signs of material deposits whereas erosive measures are signs of selective wearing on some material.

Natural Accretion Measures.

"Littering is a pervasive problem of modern society that is aesthetically offensive, a health and safety menace, and increasingly expensive" (Clark et al 1972:22). Littering behavior was studied in the Lake Kachess Forest campgrounds on the Wenatchee National Forest in Washington. Two types of litter were measured--that thrown down by the campers plus that planted by the researchers. Planted litter was necessary to maintain a relatively constant level and to determine which types are most likely to be picked up. A map was used to keep records on the location and type of each litter. The first week of the study was used as a "control" time in which baseline values were established. Anti-litter incentives (patches, badges, comic books, etc.) were added the second week. Incentives were found to be effective for altering behavior in a natural setting just as they had been in an indoor environment (Clark et al. 1972). Litter with built-in value (deposit bottles), however, needed no additional incentives.

Forest managers have noted campers' predilection for constructing elaborate boat docks, shelves, coolers, lean-to's, fireplaces, etc. Analysis of these left-behind structures led Burch (1964:611) to comment that

such forest 'make-dos' have an intrinsic value far beyond their utility value and that part of the satisfaction is the sense of independence from the present and continuity with the resourcefulness imagined to have occurred in the past.

It is possible for researchers to intervene "in the data-production process without destroying the nonreactive gains characteristic of trace and erosive data" (Webb 1966:43). Nose and fingerprints used to determine relative popularity of glass front exhibits require that the glass be dusted each night for prints and then wiped clean for the next day. Viewer's age can be estimated "by plotting a frequency distribution of the heights of the smudges from the floor and relating these data to normative heights by age (minus of course, the nose-to-top-of-head correction)" (Webb 1966:46). Note the campground study by Hancock (1973) which will be discussed later in this paper under the subdivision of cross-validation.

Natural Erosive Measures.

The popularity of exhibits has been indicated by an analysis of erosive indicators. For example, someone at Chicago's Museum of Science and Industry realized that the floor tiles around a live exhibit of hatching chicks had to be replaced every six weeks or so while tiles in other areas of the museum had not been changed in years (Duncan 1963).

More recently, trail deterioration was investigated as an indicator of trail use (More 1980). The assumption tested was that the physical condition was directly correlated with use. Therefore the wider the trail--the greater the use. Pressure-plate trail traffic counters were used along with measurements of trail width (bare ground). Statistical analysis indicated a significant relationship, but only gross differences in light and heavy use could actually be predicted since moderately used trails did not differ from those receiving heavy use.

Analysis of erosive measures allowed Pruitt to conclude that the morphological and insulative changes caused in snow by 50 passes of people on snowshoes is equalled by only two passes of a snowmobile (Brander 1974). Quantitative effects of human trampling on vegetation were discussed by Burden and Randerson (1972) as an aid to the management of seminatural areas. At least one city park commissioner has estimated the use of fitness trails by the amount of soil compaction (Anderson 1983 Personal Comm. with Morgantown WV:BOPARC Superintendent).

Archives

The United States has numerous private and public continuing and episodic records. While this information is generally produced for non-research purposes, it does provide inexpensive, valuable data. Stankey and Baden pointed out that "careful analysis of records kept by wilderness managers is absolutely necessary to identify problem areas, their precise nature, and alternative solutions" (1977:16). On much the same note, Lime and Buckman (1974) commented that one of the major advantages of the mandatory wilderness permit system was that it would not only provide an accurate record of use and of developing trends but "a much improved assessment of conditions" (Stankey and Baden 1977:16).

The annual cost of providing a new facility such as a campground can be determined by using standard investment analysis which is dependent upon record keeping figures such as construction cost, annual maintenance and reconstruction cost (Lundgren 1974). Another type of archive material, letters sent by users, was mentioned in a study designed to evaluate visitor reaction (Magill 1974).

An easily available source of secondary data is the mass media. Potential sources of information include newspapers, consumer magazines, television programming, commercial films, radio programs, billboards, plays, speeches, photographs, books, etc. An analysis of wildlife in children's literature was conducted by More (1977) to ascertain the ways animals are portrayed in children's stories. A similar investigation looked at the impression that children's books gave about nature in the city (Marcus 1977).

Types of environmental information on television programs most frequently watched by children aged 2 to 11 was explored by Hamlin, Nelson-Schulman and West (1977). Each program was viewed and simultaneously videotaped for later analysis. Encoding included such items as setting description, frequency of settings, duration of internal or external shots, climactic conditions, plot developments, verbal references and so on.

Sales records have been used as one index to document the boom in leisure and recreation. Cordell and Hendee (1982) pointed out that outdoor recreation generates economic benefits. The expenditure by the federal government exceeds \$5 billion annually and the public spends almost \$250 billion for consumption of outdoor recreation. Records indicate that "at least three-fourths of all Americans participate in some form of outdoor recreation" (Cordell and Hendee 1982:ii) and Americans spend \$1 out of every \$8 for leisure pursuits.

CROSS-VALIDATION

The objection to obtrusive methods is not so much that they are used, but that they are used alone. The validity of an investigation can be increased by using a second technique to measure the same variable(s). "Once a proposition has been confirmed by two or more independent measurement processes, the uncertainty of its interpretation is greatly reduced" (Webb 1966:3). This process is referred to as cross-validation.

In a study to determine the relationship between stated preferences and actual recreation choices, campers' preferences for vegetation were compared to observations of their actual campsite selections (Hancock 1973). Five experimentally treated campsites in Utah's Cache National Forest varied from heavy screening and 80 to 85 percent ground cover vegetation to virtually zero levels by four successive 25 percent reduction cuts. Even though few campers had indicated that vegetation reductions would be acceptable, "season-long observations showed campers reacting increasingly favorably toward decreases in amounts of vegetation within campsites" (Hancock 1973:336) until the final reduction was made. Hancock concluded that these comparisons between "what campers said and their observed behavior tend to make opinions suspect as reliable indicators of preference" (Hancock 1973:337). If resource managers want to provide for expressed demand, researchers should be sure that the expressed opinions are consistent with actual behavior and desires.

Bryan (1977) developed a typology of trout fishermen by using both interviews and participant observation. Participant observation in the extensive fishermen network revealed behavioral information insights that were not touched by the more direct interview technique. Recreation has been described as having an enjoyment cycle which includes anticipation and planning, travel, on-site experience, plus reminiscence (Clawson and Knetsch 1966). The special importance of the first and last phases of the enjoyment cycle for the fishermen surfaced when the participant observer noted the "tackle shop, bar, and campfire 'bull sessions'" as key ingredients to the experience (Bryan 1977:183). After investigating campsite selection and visitor characteristics at a high mountain lake, Heberlein and Dunwiddie concluded that "a combination of both observational and interview data would be preferable to either method alone" (1979:315).

Cross-validation can involve more than two different methods. Two obtrusive methods of recall reports and requested diary keeping were combined with unobtrusive observation by Shelby and Colvin (1982) in a river carrying capacity study. Managers need to know how one management parameter, such as use levels, affects another parameter, such as encounters. Encounter data gathered by trained observers were used to determine the accuracy of recall reports and user completed trip diaries. Data analysis revealed that recall reports were accurate "only at the lowest encounter levels; at higher levels users under-report by about half" (Shelby and Colvin 1982:350). Similar findings were reported for the diary measures. Bishop, Jeanrenaud and Lawson (1975), in an earlier study, had also reported similar results when using the two techniques of diaries and recall questionnaires.

RELIABILITY

Regardless of the selected research method, reliability (consistency of results) is a venerable problem. For observational studies Gellert presented the general rule of thumb that "the fewer the categories, the more precise their definition, and the less inference required in making classifications, the greater will be the reliability of the data" (1955:194).

The reliability of each observational measurement technique ought to be determined before it is used in a given study, even if the procedure has been previously standardized. Medley and Mitzel (1963:253-254) pointed out that there are actually three types of reliability. The same set of behaviors, environments, and recording systems could produce a different value of each type of reliability. The three types include: (1) coefficient of observer agreement, (2) stability coefficient, and (3) the reliability coefficient. The difference is that the first one is determined by correlating different people observing at the same time, the second by correlating the same person observing at different times, and the third reliability coefficient results from different people observing at different times. Observer agreement, the first type mentioned, is the most common reliability measured. Even with high interscorer correlations, a given method may still be unreliable if there is always a consistent but equal difference between the two scorers, or when total scores are equal but differences exist on many items that were summed to provide the total. A correlation coefficient would not, could not detect those types of observer differences (Byrne 1964:49).

The following list of factors that can contribute to poor reliability was compiled by Gellert (1955:179) and published again by Pelegrino (1979:122):

1. Inadequate sampling
2. Lack of precision in definite behavior
3. Complexity of method of recording
4. Rapid, complex interaction
5. Difference in perspective of observers
6. Individual difference in degree of decisiveness of subjects observed
7. Constant errors due to observer bias (over-weighting, timing, "halo effects", etc.
8. Requiring high order inferences in classifying behavior
9. Demanding simultaneous observation of too many variables
10. Excessively long periods of observation without interspersed rest period
11. Inadequate training of observers
12. The effect of individual observer upon the behavior of the subject
13. Degree of acquaintance with the subjects.

Nonparticipant observers were trained, for a camp study, by means of videotapes which contained small group behaviors. Training sessions continued until "each could reliably agree on behavior coding with one of the investigators and the other observers at a level of .90 or above" (Wodarski, et al 1976:262). Three additional checks were made during the camp study in order to continue interobserver reliability. These procedures are very impressive--few studies have had such extensive checks for observer consistency. All too often, studies that use published instruments (tests, scales, etc.) fail to provide information on validity and reliability (Burch 1977:105).

After checking the reliability of his categorization, coding, interobserver agreement, internal consistency and content sampling, Buhyoff concluded that unobtrusive observation methodology was an accurate measure of the dynamic aspect of on-site recreation behavior (1979:340). Buhyoff made special mention of the fact that his methodology "required intensive training of the observers and a sampling scheme which minimized observer fatigue" (Buhyoff 1979:341). The observation periods lasted only two hours, and this time block was randomly distributed across the summer. Observers initialed each coding sheet so that the data could be checked for observer bias. The two trained observers sometimes worked alone and sometimes with each other. The questionable use of only one observer was pointed out by Heberlein and Dunwidde (1979).

VALIDITY

Validity, "the degree to which a test measures what it purports to measure" (Pelegrino 1979:165) is a more important consideration than reliability. A measurement technique can have a high degree of reliability (such as a measurement tape), yet it may not be valid (for determining weight). Whereas, a test with high validity automatically must also contain a high degree of reliability - consistency.

The task of operationalizing variables, that is, selecting a "form that permits some kind of measurement" (Hoover 1980:53) is a difficult process, especially with intangibles such as feelings, attitudes, values, and beliefs. Visitor attitudes towards crowding were compared to observed social interaction in a study of privacy in wilderness (Lee 1977). Social interaction was determined by both campsite choice and the coding of greeting intensity for trail encounters. A participant observer was trained to present the same stimulus situation to each encounter. This same individual later requested the questionnaire information about perceived crowding. Was the following coded behavioral criteria a valid indicator of how crowded a person felt?

No eye contact, gestures, or verbal interaction	0
Eye contact only	1
Any combination of eye contact and non-verbal elements (smile, head nod, wave, wink, etc.)	2
Any combination of eye contact and verbal elements (Hi, Hello, Good Morning, etc.)	3
A combination of eye contact, nonverbal and verbal elements	4

Do outdoor recreation participants really reflect their feeling when they encounter others or do they fall back on established habits? Maybe the shy hiker never makes any physical response. It might be for some people that density - the number of encounters - has nothing to do with their actions. People could still easily be quite civil (2-4 reaction) while feeling more crowded than desired. Those hikers might just make the best of it but declare that they will not return again to the given location or that they will focus their concentration on other aspects of the environment.

Is the coding system valid when no allocation is made for a negative response? Should a smile combined with an obscene gesture be coded the same as a smile accompanied by a wave? What about verbal abuses or avoidance movements? Were all participants capable of a verbal response? Maybe hikers would have reacted differently if the coder was with a group instead of being alone.

Campsite selection was another behavior observed to determine one's reaction to perceived crowding. This process involved measuring: "(1) extent of search behavior for a campsite; (2) relative screening by vegetation and boulders at the site selected; and (3) relative distance from the nearest neighbor at the site selected" (Lee 1977). Can avoidance behavior be determined by the following formula?

$$\text{extent of search} \left(\frac{\text{relative distance} + \frac{\text{relative screening}}{2}}{2} \right)$$

What about the variables of fatigue, party size, arrival time, etc.? Is it surprising that the study results showed "no association between visitor attitudes toward crowding and observed social interaction or behavior to avoid such social interaction" (Lee 1977:3).

Three types of instrument validity exist: content, criterion related, and construct. Content validity refers to the sampling adequacy, criterion related is determined by comparison with an established external technique and construct validity is related "to a 'construct' or characteristic which accounts for some aspect of human behavior" (Pelegrino 1979:179).

The internal validity of each study design is dependent upon controlling the following extraneous variables: history, maturation, testing, instrumentation, statistical regression, biases, experimental mortality, and selection-maturation interaction. External validity or representativeness is dependent upon controlling the reactive or interaction effect of testing, the interaction effects of selection biases and the experimental variable, and the reactive effects of experimental arrangements plus multiple-treatment interference (Campbell and Stanley 1963:5-6).

The rate of travel was selected by Gustke and Hodgson (1980) to be the measurement which indicated one's pleasurable response. All of their observed subjects were traveling as members of small groups, yet only the first adult member to enter the test section was observed. Is this first adult person representative of the party? It could be that the first

person is the designated party leader. Jubenville (1971) found that the party leader was not representative of the party group. Why were only groups used? Was a sample of 28 sufficient? Was the operationalizing of pleasure response to rate of travel valid?

The intent of the previous validity discussion was not to criticize past publications but rather to point out how one might question a given research design. Outdoor recreation research, like any area of science, must go through a developmental phase of building knowledge by trial and error learning. What was used once should be scrutinized and, if possible, improved before additional application. The works cited in this paper are important as much for their pioneer-like efforts as for their managerial conclusions. One could hardly accuse Henry Ford for not including automatic transmissions with the Model T.

SUMMARY AND CONCLUSION

Commonly used obtrusive research methods of questionnaires and interviews can have serious subject and event limitations besides being reactive. Those limitations and the reactivity can be offset by cross validating with unobtrusive methods.

Systematic observation, physical traces, and archives are the three main categories of unobtrusive methods. Four areas of observable behavior can be isolated for measurement: linguistic, extralinguistic, nonverbal, and spatial. Physical traces include accretion and erosive measures. Both continuing and episodic records produce archive material.

Investigators who cross-validate obtrusive with unobtrusive methods have reported that one should be suspect of expressed user attitudes since observed behavior has not conformed to verbal or written statements. There are times when two unobtrusive methods can be used for cross-validation. Obtrusive methods cannot and should not be used in all investigations.

All research methods, be they obtrusive or unobtrusive, need to have reliability and validity values established for each investigation. Otherwise, the results may not be due to the independent variable but rather due to extraneous variables. Thus, unless a study has reliable measurements derived from a valid design, the results and conclusions are questionable.

Schemes for structuring and observing social interaction have been criticized for (1) usually ignoring the complexity of interaction; (2) concentrating on sequential interaction and overlooking simultaneously occurring interaction; (3) showing biases of central tendency, coding relativism, and contamination from associated cues; and (4) using the word "interaction" since "interdependent interactions are not observed--rather, what one person says or does to another person is coded" (Smith 1975:205). These possible sources of weakness can be minimized by using a number of different methods--multiple measures.

LITERATURE CITED

- Bammel, L. and Bammel, G. 1979. Systematic unobtrusive measures. In Betty van der Smissen, Symposium on Evaluation Strategy: Assessing Outdoor Program Effectiveness. Penn State HPER Series No. 12. 204-228.
- Bishop, D., Jeanrenaud, C., and Lawson, K. 1975. Comparisons of a time diary and recall questionnaire for surveying leisure activities. *J. Leisure Res.* 7(1):73-80.
- Brander, R. B. 1974. Ecological impacts of off-road recreation vehicles. Outdoor recreation research: applying the results. USDA Forest Service Gen. Tech. Rep. NC-9, St. Paul, Minnesota.
- Brown, P.J. and Hunt, J.D. 1969. The influence of informational signs on visitor distribution and use. *J. Leisure Res.* 1(1):79-83.
- Bryan, H. 1977. Leisure value systems and recreational specialization: the case of trout fishermen. *J. Leisure Res.* 9(2):174-187.
- Buhyoff, G.J. 1979. A methodological note on the reliability of observationally gathered time-spent data. *J. Leisure Res.* 11(4):334-342.
- Burch, W.R., Jr. 1964. The play world of camping: research into the social meaning of outdoor recreation. *Am. J. Sociology*, 70(3):604-612.
- Burch, W.R., Jr. 1977. Urban children and nature: a summary of research on camping and outdoor education. In Children, nature, and the urban environment. USDA Forest Service Gen. Tech. Rep. NE-30 101-111.
- Burden, R.F. and Randerson, P.F. 1972. Quantitative studies on the effects of human trampling on vegetation as an aid to the management of semi-natural areas. *Appl. Ecol.* 9(2):439-457.
- Bryne, D. 1964. Assessing personality variables and their alteration. In P. Worchel and D. Byrne (Eds.), *Personality Change*. New York: Wiley. 38-68.
- Campbell, F. 1970. Participant observation in outdoor recreation. *J. Leisure Res.* 2(4):226-236.
- Campbell, L., Hendee, J.C. and Clark, R. 1968. Law and order in public parks. *Parks and Recreation* 3:28-31, 51-55.
- Campbell, L. and Stanley, J.C. 1963. Experimental and quasi-experimental designs for research. Chicago: Rand McNally and Company.
- Clark, R.N., Hendee, J.C. and Burgess, R.L. 1972. The experimental control of littering. *J. Environ. Education* 4(2):22-28.
- Clawson, M. and Knetsch, J. 1966. Economics of outdoor recreation. Baltimore, Md.: John Hopkins University Press.

- Cordell, H.K. and Hendee, J.C. 1982. Renewable Resources Recreation in the United States: supply, demand, and critical policy issues. American Forestry Assoc., Washington, D.C.
- Cordell, H.K. and Sykes, C.K. 1969. User preferences for developed-site camping. USDA Forest Service, Res. Note SE-122, Asheville, N.C.
- Duncan, C.P. 1963. Personal communication to Eugene J. Webb. In Eugene Webb, Unobtrusive Measures, Chicago: Rand McNally and Company.
- Friedman, N. 1967. The social nature of psychological research. New York: Basic Books.
- Gellert, E. 1955. Systematic observation: a method in child study. Harvard Educational Review, 25:179-195.
- Good, C. 1972. Essentials of educational research. N.J.: Prentice-Hall Inc.
- Gustke, L.D. and Hodgson, R.W. 1980. Rate of travel along an interpretive trail. Environment and Behavior 12(1):53-63.
- Hall, E.T. 1963a. Proxemics: the study of man's spatial relations. In I. Galdston (Ed.), Man's image in medicine and anthropology. New York: International University Press. 422-445.
- Hall, E.T. 1963b. A system for the notation of proxemic behavior. American Anthropologist, 65:1003-1026.
- Hamlin, G., Nelson-Shulman, Y. and West, S. 1977. Children's television: an environmental learning resource? In Children, nature, and the urban environment. USDA Forest Service Gen. Tech. Rep. NE-30 129-135.
- Hancock, H.K. 1973. Recreation preference: its relation to user behavior. J. For. June 336-337.
- Heberlein, T. and Dunwiddie, P. 1979. Systematic observation of use levels, campsite selection and visitor characteristics at a high mountain lake. J. Leisure Res. 11(49):307-316.
- Hoover, K.R. 1980. The Elements of social scientific thinking (2nd ed). New York: St. Martin's Press.
- James, G.A. and Ripley, T.H. 1963. Instructions for using traffic counters to estimate recreation visits and use. USDA Forest Service Res. Paper SE-8.
- Johnson, R.F.Q. 1976. The experimenter attributes effect: a methodological analysis. Psychological Record 26(1):67-78.

- Jubenville, A. 1971. A test of differences between wilderness recreation party leaders and party members. J. Leisure Res. 3(2):116-119.
- Lee, R.G. 1977. Alone with others: the paradox of privacy in wilderness. Leisure Sciences 1(1):3-19.
- Lime, D.W. 1974. Locating and designing campgrounds to provide a full range of camping opportunities. Outdoor Recreation Research: Applying the Results. USDA Forest Service Gen. Tech. Rep. NC-9.
- Lime, D.W. and Buchman, R.G. 1974. Putting wilderness permit information to work. J. For. 72(10):622-626.
- Lucus, R.C. 1975. Low compliance rates at unmanned trail registers. USDA Forest Service Research Note INT-200, Ogden, Utah.
- Lundgren, A.L. 1974. Economic bases for allocating resources in outdoor recreation. Outdoor Recreation Research: Applying the Results. USDA Forest Service Gen. Tech. Rep. NC-9, St. Paul, Minnesota.
- Magill, A.W. 1970. Five California campgrounds ... conditions improve after 5 years recreational use. USDA Forest Service Res. Paper PSW-62. Berkeley, Calif.
- Magill, A.W. 1974. Dispersal of recreationists on wildlands. Outdoor Recreation Research: Applying the Results. USDA Forest Service Gen. Tech. Rep. NC-9. St. Paul, Minnesota.
- Mascue, L.S. 1977. Within city limits: nature and children's books about nature in the city. In Children, Nature, and the Urban Environment. USDA Forest Service Gen. Tech. Rep. NE-30. 83-87.
- Medley, D.M. and Mitzel, H.E. 1963. Measuring classroom behavior by systematic observation. In N.L. Gage (Ed.), Handbook of Research on Teaching. Chicago: Rand McNally and Company 247-328.
- Meinecke, E.P. 1932. A campground policy. USDA Forest Service, Ogden, Utah.
- More, T. 1980. Trail deterioration as an indicator of trail use in an urban forest recreation area. USDA Forest Service Res. Note NE-292, Broomall, Pa.
- More, T. 1977. An analysis of wildlife in children's stories. In Children, Nature, and Urban Environment. USDA Forest Service Gen. Tech. Rep. NE-30 89-92.
- Pelegrino, D.A. 1979. Research Methods for Recreation and Leisure. Dubuque, Iowa: Wm. C. Brown Company.
- Rosenthal, R. 1966. Experimenter Effects in Behavioral Research. New York: Appleton-Century-Crofts.

- Shiner, J.W. and Shafer, E.L. 1975. How long do people look at and listen to forest-oriented exhibits? USDA Forest Service Res. Paper NE-325.
- Stankey, G.H. and Baden, J. 1977. Rationing wilderness use: methods, problems, and guidelines. USDA Forest Service Res. Paper INT-192, Ogden, Utah.
- Webb, E. 1966. Unobtrusive Measures, Chicago: Rand McNally and Company.
- Weick, K.E. 1968. Systematic observational methods. In G. Lindzey and E. Aronson, Handbook of Social Psychology. Vol. II. Reading, Massachusetts: Wesley Publishing Company.
- Wodarski, J.S., Feldman, R.A. and Pedi, S.J. 1976. Integrating antisocial children into prosocial groups at summer camp: a three-year study. Social Serv. Review June:256-272.

A PRACTICAL GUIDE TO THE USE OF OBSERVATION IN THE STUDY OF URBAN PARKS

Thomas A. More
USDA Forest Service, Burlington, Vermont 05401

ABSTRACT

Systematic observation is often one of the best ways to learn about the users of urban park resources. Although observation is a powerful research tool, its correct use requires careful planning and forethought. Before using the observation technique, follow these four steps. First, thoroughly define the nature of the research problem. Second, establish a time sample to ensure that all categories of users are represented. Third, decide which variables should be observed. Fourth, plan the mechanics of conducting the study.

INTRODUCTION

To really understand the dynamics of urban parks, there is no substitute for spending time in them, meticulously observing what goes on. No questionnaire study can ever convey the vivid detail and vibrance of a good park than observation can. Yet, to be truly useful, observation must be not only meticulous but also systematic. This paper is a practical guide for park managers and planners who want to use observation as a technique to learn about urban parks.

Before dealing directly with the problems of setting up an observational study, it is important to examine the special challenges posed to observation in urban areas. In the classical sense of the technique, an observer becomes intimately involved with the group under study and tries to objectively report the nature of the group's experience. Thus Applegate (1981) substantially increased our knowledge of hunting behavior by joining a group of hunters and participating in their rituals, disappointments, and triumphs. This type of study is, of course, a legitimate method for learning about any group, anywhere. However, for recreation it is most useful in situations where the users share common characteristics. In urban areas, by contrast, even a small park may serve entirely different users at the same time of day and in close physical proximity. Is the experience of an office worker on a lunchtime stroll similar to that of a couple of young men playing frisbee or children feeding pigeons? In urban areas, space is provided and people make what use of it they will: in one study of central city park users, 156 different activities were documented during July and August (More 1983). Such diversity makes it virtually impossible to use the traditional methods of participant observation to gather data about the nature of the experience within an individual group. Rather, in urban areas we must attempt to apply observation across groups to understand the behavioral dynamics of the setting.

Before using observation to learn about urban park visitors, a number of difficulties must be confronted. These include defining the problem, sampling, coding behavior (if applicable), and conducting the study. Although I have the luxury of presenting these serially here, there is no order to them; problems encountered when you are thinking through the mechanics may cause you to redefine the nature of the problem. As you plan your project you will find yourself making adjustments in all phases. Because defining the problem is basic, it may be best to begin here.

DEFINING THE PROBLEM

The most important part of any research project is defining the problem. State exactly what you are interested in and state specific objectives and hypotheses. This definition determines the methods you use in other steps. Be exact; failure to define the problem in detail is a major shortcoming of many research projects.

Detail ranges from head counts of the number of users to very minute information about who the users are and what they are doing, perhaps even what they are wearing. In general, the more detailed the information is, the more useful it will be. Unfortunately, it also will be more costly; each additional increment of detail will result in greater costs for data collection and processing and will require additional interpretation. So, there is a clear tradeoff between detail and cost. In defining the problem, state how much (or perhaps how little) detail is necessary to meet the objective of the study.

SAMPLING

Having specified the problem and decided on the appropriate level of detail you need, your next problem will be sampling. Since there is no fixed list of park attendees, you must use a time sample to decide on the dates and times when observations will be made. The first step in setting up a time sample is to decide what period (in weeks or months) you want the study to run. Generally, this should cover the period of maximum use, so you should know attendance patterns. Resource recreation studies commonly sample visitors during July and August. Following this pattern in urban areas may be a mistake, however, because use rates may be as high or even higher in other months. In a year-round study of six city parks in Northampton, Massachusetts, I found that attendance was high from May through August (Figure 1), and I would now recommend spreading sampling over these four months at least.

After fixing the duration of the study, the next task is to form the sample "strata." Sample strata are subdivisions in the total time period to ensure that you get an accurate picture of park users. For example, suppose you suspect a major difference between weekday and weekend visitors. Here, you naturally would be reluctant to draw major conclusions about total use from a sample of weekday users only; you need to be sure that both groups are represented. To accomplish this, divide the week into two strata: weekdays and weekend days, assigning some observations to each.

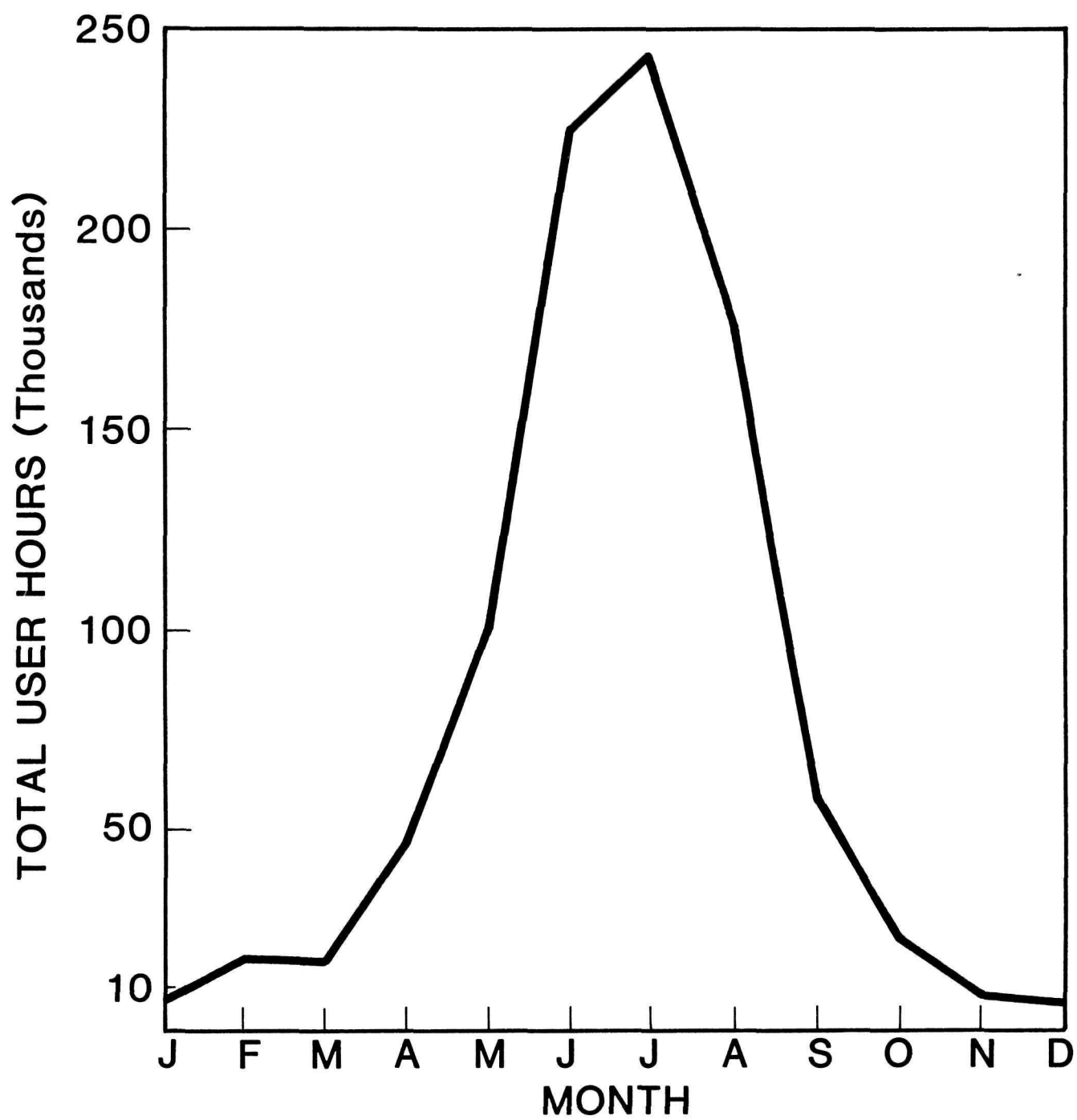


Figure 1.--Total of six urban parks by month.

Weekday/weekend-day sample strata are probably the most commonly used in recreation studies. However, you may wish to break down the days of the week into four categories. Monday through Thursday was one category because it was thought that visitors would be similar. Friday, especially Friday afternoon and evening, probably would differ and was categorized separately. Similarly, both Saturday and Sunday were treated separately. The times of the day were divided into nine strata in a similar manner. The result was 36 different sample strata over which to spread observations.

This sampling scheme is not magic; it is an elaborate one, designed to yield a very detailed picture of central city park users. In other studies, I have used a simpler scheme: mornings, afternoons, and evenings on weekdays and weekend days. The scheme that is best for you will depend on the study objectives, the nature of your park usage, and on the level of detail you are seeking. As before, increasing the level of detail also increases both the accuracy and the cost.

Once you have set the sampling strata, assigning the observations is easy. Make a list of all time periods in each stratum for the duration of the study (i.e., all Saturday mornings, all Thursday afternoons, etc.), assign each a number, and then select from them at random. This randomization is extremely important because it is your best assurance of avoiding bias. Once you have established a schedule, stick with it; avoid the temptation not to make the observation because of extraneous factors.

The number of observations needed in each stratum is questioned frequently. As before, there is no magic number; the more you make, the greater both the accuracy and cost will be. Some scientists establish a quota and try to have observations in 15 or 20 percent of each category. Or, observations may be assigned on a proportional basis with more being assigned to some strata than others. This can be used if you wish to concentrate your efforts to learn more about a particular stratum. For example, many central business district parks may have both more users and more different kinds of users during lunchtime than at 7:00 a.m. Therefore, in studying these areas, you might assign proportionally more observations to lunchtime strata than the early morning ones. Whatever the case, probably the very least you should have is a minimum of three observations per sample category.

As you think about the mechanics of setting up a time sampling scheme for an urban park, consider these practical points. First, in studies conducted in urban parks in the Northeast, I have found Saturday use patterns and users to be very different from those of other days. You might be well advised to make this a separate stratum. Second, if your sampling period extends beyond the summer, consider what effect school will have. For example, use may be high early in the afternoon on summer weekdays, but shift to later in the afternoon once school begins. This possibility ought to be anticipated when establishing your sampling strata.

WHAT TO OBSERVE

What you will observe is spelled out in the definition of the problem. In some instances, what you observe will be straightforward, as in head counts

Table 1.--Sampling strata for both day of week and time of day ^{1/}

Day of Week		Time of Day	
Stratum	Stratum	Time Range	Datapoints
Monday-Thursday	Night	12:00M - 5:00AM	12:50AM, 2:30AM, 4:10AM
Friday	Early Morning	5:00AM - 7:00AM	5:20AM, 6:00AM, 6:40AM
Saturday	Morning Rush Hour	7:00AM - 9:00AM	7:20AM, 8:00AM, 8:40AM
Sunday	Morning Shopping	9:00AM -11:00AM	9:20AM, 10:00AM, 10:40AM
	Lunch	11:00AM - 2:00PM	11:30AM, 12:30PM, 1:30PM
	Afternoon	2:00PM - 4:00PM	2:20PM, 3:00PM, 3:40PM
	Afternoon Rush Hour	4:00PM - 6:30PM	4:25PM, 5:15PM, 6:05PM
	Early Evening	6:30PM - 8:00PM	6:45PM, 7:15PM, 7:45PM
	Evening	8:00PM -12:00PM	8:40PM, 10:00PM, 11:20PM

Table 2.--Reliability for different variables studied ^{1/}

Variable	Reliability Coefficient
Age	0.82
Sex	0.94
Race	0.96
Sun/shade	0.93
Posture	0.86
Behavior	0.88
Pooled Reliability	0.90

^{1/}Source: More 1983.

of users. Other variables are almost as easy to observe. During daylight hours, it is fairly easy to determine user characteristics such as age, sex, race, number in group, etc. However, when it comes to observing what people are doing in the park--a key goal of many studies of urban parks--this issue is not straightforward and will require some thinking. The basic problem is what to code and how specific to be. It is possible to err on either end--too general or too specific. I have seen a number of studies that coded behavior generally; that is, they used very generic categories of behavior such as relaxing, thinking, hanging out, etc. The problem with categories this broad is that one can question their validity: what, for instance, is meant by "relaxing?" Some people relax by jogging, others sit under a tree. When you read a term like this in a technical report, just what image comes to mind? You should be able to reconstruct the activity from the information in the report.

Generalization can also allow our values to creep into data collection and interpretation very easily. In one study I was setting up, I used the category "hanging out" to describe a particular type of activity. When I looked at the findings of my pretest, I realized that I had applied this term almost exclusively to teenagers. In reality, their behavior differed little from that of groups of elderly men who gathered on a daily basis in the same park, but whom I never thought of coding as "hanging out." We can probably never totally exclude our values from this kind of process, but it is still best to strive to be as objective as possible.

The antidote to generalization is, of course, to report the specific activity--report someone lying under a tree rather than calling it relaxing. On the other hand, don't be too detailed; it may be important to know that a person is reading a book in the park, not that he/she is turning a page.

Reaching a middle ground may not prove too difficult. We must concentrate on directly observable, major behaviors and try to answer the question, "At the moment I look, exactly what is the person doing in the park?" Strive to answer that question as precisely as possible.

Another problem is that of multiple behaviors; people often do more than one thing at a time. Among the most common of these that I have observed in urban parks is a couple strolling hand-in-hand and talking. This embodies three behaviors: walking, conversing, and affectionate behavior. You must be prepared to code multiple behaviors for many individuals.

A related issue deals with the reliability of the observations--if two people look at something, do they see the same thing? Although there are a number of different conceptions of reliability (cf. Bammel and Bammel 1979), the type most commonly used in urban park studies is the coefficient of observer agreement. This is computed by having two observers code the same activity and then computing the coefficient by dividing the total number of agreements by the total number of observations. The ratio indicates how much faith you can have in your data. Table 2 shows some reliability coefficients from the study of central city park users. It is interesting that while the behaviors were among the least reliable of the data collected, even the judgments on the sex of an individual were never completely reliable.

Reliability should be checked a number of times throughout the study. Perhaps the most important of these times, however, is at the end of the

observer's training period, just before the start of the actual data collection. Continual checking is the only way to ensure high-quality data.

THE MECHANICS OF CONDUCTING THE STUDY

In addition to these issues, a number of other considerations may arise as you implement the study. After you have identified the variables that you want to study, you need to develop coding sheets that an observer can use quickly and easily in the park. It is perhaps best to number the categories of each variable so the observer can numerically code an observation. However, observations on behavior must be open ended; in urban areas particularly, it is virtually impossible to anticipate all the behaviors one might encounter. Observers must be permitted to remain flexible to establish new codes as needed.

Before starting the study, observers need extensive onsite training. They need to be thoroughly familiar with both the coding scheme and the parks. As stated before, reliability checks should be made at the end of the training period before the onset of data collection. In addition, there should be periodic spot checks throughout the study.

Some parks are small enough so that a properly located observer can make observations on the entire area. In fact, many small parks are suitable for analysis by time-lapse photography. This technique involves using cameras to take periodic pictures of the park area. It probably will be cheaper to use than an actual observer during the data collection phase of the study but requires more time in analyzing and interpreting the photos. You must consider whether the kinds of information you need will be available from a photograph. William H. Whyte (1980) has used this technique very successfully to study the use of small plazas in New York City and gives a good discussion of how to use it in his book, "The Social Life of Small Urban Spaces."

For larger parks, a stationary observer may not be appropriate. Larger parks need to be sectioned off, and an observer will have to move through the sections to collect the data. While a fixed route may be followed, it is important to choose the starting section at random to avoid any systematic time bias.

SOME LIMITATIONS

Again, there is no substitute for spending time observing what goes on in a park to develop a deeply detailed sense of understanding of and appreciation for it. At the same time, however, observation does have two substantial limits. First, you will find that you do reach a point where you must go directly to people and ask them questions if you want to further your understanding. Although you can learn a great deal from watching people, learning who they are, where they go, and what they do; their attitudes, opinions, and preferences are important to take into account also. These can be obtained only by asking them.

Second, in conducting this kind of study, you only learn about the park users. Although some inferences might be drawn indirectly about nonusers, the

inferences are not as powerful as information obtained from a systematic comparison of users and nonusers utilizing other research techniques.

My objective in this paper has been to acquaint park managers and personnel with some of the techniques used by researchers in observation studies. Properly used, systematic observation is a powerful and useful tool that can help us learn a great deal about urban park users. To use it correctly, however, takes planning and forethought; shoddy research design can only lead to problems and misleading results. Wherever possible, it is most desirable to incorporate project oversight by a qualified social scientist who will be able to address the kinds of issues I have raised in this paper. Working together, park managers and researchers can greatly increase our understanding of the parks and their users.

REFERENCES CITED

Applegate, J. 1981. Hunting: An American tradition. *Am. Hunter* 9(11): 14-15, 56-57.

Bammel, L., and G. Bammel. 1979. Systematic unobtrusive measures. Symposium on Evaluation Strategy: Assessing Outdoor Program Effectiveness. Pennsylvania State University, HPER Series #12, p. 205-228.

Moore, T. 1983. Central city parks: A behavioral perspective. Office Rep. On file USDA Forest Service, P.O. Box 968, Burlington, VT.

Whyte, W. 1980. The social life of small urban spaces. NY: The Conservation Foundation. 125 p.

ETHNOGRAPHY AS A RESEARCH TOOL IN UNDERSTANDING PARK VISITORS

Gary E. Machlis
University of Idaho
Moscow, Idaho

INTRODUCTION

If we consider a park as a system, we quickly find it composed of several subsystems--air, water, soil, animal life, and vegetation are major biological subsystems. Yet to be a park, and not simply a natural area or open space, there are social subsystems imposed upon the landscape--management and visitors being basic to the very definition of a park (Dubos 1980). And if visitors are an integral part of park systems, then to truly understand the functioning of a particular park, the superintendent, resource manager, maintenance chief, interpreter, and ranger must know something about visitors.

This "need-to-know" is becoming more crucial as management responsibilities, legal requirements, budget pressures and demand for services increase. In addition, the diversity of visitors to American national parks is increasing. More Americans are visiting national parks. The Gateways and National Recreation Areas are bringing the NPS to urban populations, and migration from the cities is bringing suburban communities near once-isolated NPS units. Demographic change within American society is altering the make-up of visitors as well, as our population ages, women join the workforce, and household arrangements fundamentally change. Foreign visitation is rising as the United States becomes a host nation for international tourism.

So at the very time managers need to know their visitors, doing so becomes more difficult. This paper offers a particular perspective and method for understanding visitor behavior--that of ethnography. Ethnography is usually practiced by anthropologists, and usually in distant, exotic, and non-industrialized societies. Yet it has specific and significant value to understanding contemporary park visitors and can be useful to managers in solving park problems.

First, the relationship between observation and science is discussed, along with what is meant by ethnography and the ethnographic perspective. Second, some examples of ethnographic work are mentioned. Third, the basis of ethnographic research is outlined; e.g. how one does ethnography and what its limitations are. Finally, the application of ethnography to solving park problems is discussed.

OBSERVATION AND THE ETHNOGRAPHIC PERSPECTIVE

Observation is the foundation of science, whether it be physics or sociology. In a useful book entitled The Scientific Approach: Basic Principles of the Scientific Method, Carlo Lastrucci notes:

The basic method of data gathering in science is observation. Whether the scientist looks at a lump of coal, at the stars, at an animal, at a plant, or at other human beings--and whether he looks directly or through a visual accessory such as a telescope or a microscope--observation is by far the most commonly employed method of ascertaining what is. (1967:158)

One of the great advances in science came early in this century, when Heisenberg, Einstein and other physicists explained that even the most common and concrete phenomenon (a train speeding by, the movement of the sun) must be seen differently by different observers. No observation could provide the single, factual Truth. The perspective of the observer became important to consider, first in physics and later in the social sciences.

In the social sciences, two fundamentally different perspectives to observation evolved. The first could be called the sociological perspective. In this sociological perspective, human behavior is observed and described from the point of view of the observer. Let us take, for example, the relationship between visitors and park rangers. The sociological observers interpret what they see based on a set of assumptions, preconceptions, theories, knowledge of previous studies and so forth. Perhaps, having worked on law enforcement problems in parks and being trained in criminology, they focus upon conflict between visitors and rangers and how this conflict is managed by both groups. The actions observed are studied through the "filter" of the observer's training and beliefs.

The second perspective is the ethnographic perspective. It is based upon understanding behavior from the point of view of the subjects. The anthropologist James Spradley writes:

Ethnography...is a systematic attempt to discover the knowledge a group of people have learned and are using to organize their behavior. This is a radical change in the way many scientists see their work. Instead of asking, "What do I see these people doing?" we must ask, "What do these people see themselves as doing?" (1972:9)

What a difference this shift in perspective makes! In the hypothetical example, it is not assured that rangers and visitors even categorize themselves as such. Certainly, rangers have a variety of categories for visitors--from "chicken-eaters" to "scroats." And not all visitors conceive of rangers as different from maintenance staff or concession employees. Hence, one of the most basic rewards of the ethnographic perspective is an understanding of taxonomies used by subjects.

Spradley, in his ethnographic analysis of transient, derelict men, provides us with a real example (1970). Most people classify these individuals as "bums," "vagrants," or "drunks." But as Figure 1 shows, this group of men had a much more complex set of categories. Each type, be it a "box car tramp" or a "professional nose diver," describes individuals with special characteristics and behaviors. Knowledge of taxonomy is the first step in ethnographic analysis: imagine trying to understand tramps and tramp behavior without such knowledge.

In addition to understanding how people categorize themselves, the ethnographic perspective attempts to understand the social meaning of behaviors. Why do visitors behave the way they do? What activities are important to them, and how are they accomplished? For example, in a study of family camping in the Pacific Northwest, a visitor described why she preferred to camp:

We like the tent because we have more room and everything is always ready--don't have to fold things in and out all the time. Also, with a tent we can go away and leave things--taking the camper means somebody might take our spot. (Machlis 1975:45)

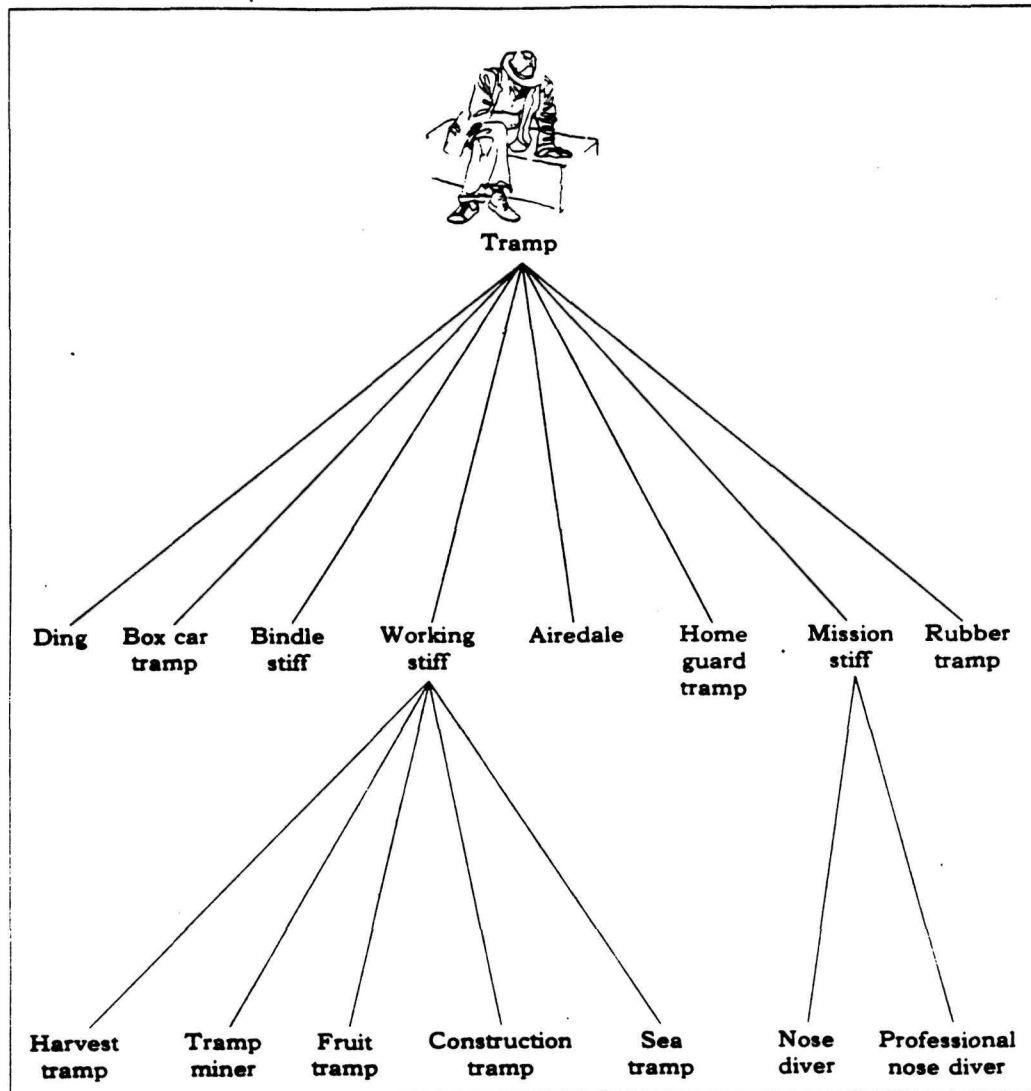


Fig. 1. Kinds of Tramps

Adapted by permission from James P. Spradley, You Owe Yourself a Drunk: An Ethnography of Urban Nomads, p. 74. Copyright © by Little, Brown, and Company (Inc.).

By interviewing visitors, learning their taxonomies and describing their behavior, the ethnographic perspective can provide a unique profile of how visitors interact with the park as a system. We now examine ethnography in more detail.

THE ETHNOGRAPHIC LITERATURE

Ethnographic studies have a long history in the social sciences. Classic studies include Franz Boas' The Central Eskimo (1888), Malinowski's Argonauts of the Western Pacific (1922), Evans-Pritchard's The Nuer (1940), Robert Redfield's The Folk Culture of Yucatan (1941), and Rappaport's Pigs for the Ancestors (1967). Applying the ethnographic perspective to industrialized societies produced William F. Whyte's Street Corner Society (1943), and Leibow's Tally's Corner (1967), as examples.

Ethnographies of contemporary people at play are rare, but some do exist. Hollingshead dealt with leisure in Elmtown's Youth (1949) and an edited volume by Smith, Hosts and Guests (1977), examined the ethnography of tourism. Ethnographic studies of taverns (Gottlieb 1957), pool halls (Polsky 1967), surfing and mountaineering (DeVall 1973), and jogging (Nash 1978) are further examples. Even rarer are studies of national park visitors that employ an ethnographic perspective. Machlis (1975) used a partially ethnographic approach in studying family camping. Wedel (1981) has described tourist experiences in Yellowstone National Park, and Robertson and Wilson (1982) have begun an ethnographic analysis of visitors to Yosemite.

Machlis et al., in describing the human ecology of parks, call for increased attention to ethnography:

We suggest a "natural history" of the various visitor populations is the first step to understanding their role in parks and similar settings. Not surprisingly, the anthropologists provide useful research strategies. Participant observation, time-budget studies, ethnographic surveys, and content analysis of written materials are all appropriate research techniques and should provide the descriptive evidence needed to understand the ecological relationships that bind park ecosystems together.

(1981:207)

THE ETHNOGRAPHIC METHOD

Unlike the laboratory experiment, or the large questionnaire survey, the ethnographic method of learning about people requires a very flexible approach. Yet there are a series of general steps necessary for ethnographic study, and these are briefly described below. More detailed discussions are available by Pelto (1970), Lofland (1976), and Spradley (1979).

1. Choosing a Cultural Scene

The ethnographer must carefully choose the setting for research. Is he or she interested in all visitors to the park? Summer visitors? A special kind of visitor--backpackers, senior citizens, foreign tourists? The setting may be a large or small geographical locale--the Yosemite Valley, a small

ruin at Wupatki, Independence Hall, or the backcountry of Olympic National Park. The official boundaries of the park may not always be useful--nearby communities like Gatlinburg, Tennessee, or Estes Park, Colorado, may be "part of the Park" to visitors. Often, the choice of scene will reflect managers' need to know about a specific visitor group or place within the park.

2. Collecting Information

Once a particular cultural scene is selected for study, data must be collected on visitors and their behaviors. A variety of techniques are available. First is interviewing key informants. Spradley writes:

Working with informants is the hallmark of ethnographic field work. It involves an ongoing relationship. In other kinds of social research, one may never even set eyes on questionnaire respondents, and even interviews are limited in number. But the ethnographic field worker must locate helpful people, win their cooperation, and establish a close, personal relationship with them. (1972:41)

The choice of informants is a critical one--their view of the cultural scene will represent the wider population. Hence, an informant should be someone knowledgeable (if interested in fly fishing, an experienced angler is preferable to the novice), cooperative (are they willing to share the "park experiences"?), and representative (the more common their experiences, generally the more useful they are as an informant). The number of informants usually is a function of the ethnographer's resources and time--for Coming of Age in Samoa (1928), Margaret Mead interviewed 25 adolescent girls.

The ethnographic interview can be loosely structured, like a conversation around the campfire, or carefully organized. Table 1 provides some general questions that might be asked of park visitors; as the interviews proceed the questions become more detailed. Several methods of taking notes are acceptable--a tape recorder, journal, note cards and so forth. The key is to respect the informant's need to be comfortable during the interview. The ethnographic interview requires good manners and curiosity; rather than "studying people," ethnography means "learning from people."

Table 1. Typical Ethnographic Questions for Park Visitors

-
1. Could you describe your visit to this park?
 2. Could you describe a typical day in the park?
 3. Please tell me about your last park visit.
 4. Could you use this map and trace your visit to the park?
 5. What do you do when you first enter a park? Then what?
 6. What different kinds of people do you meet in a park?
 7. Can you describe the people you interact with while at the park?
 8. Are there different kinds of parks? How are they different?
-

A second approach to collecting data is participant observation. Here, the researcher participates in the cultural scene as a member of the group under study. Participant observation has been used in several outdoor recreation studies (Burch 1964; Burch and Wenger 1967; Clark et al. 1971; Field 1973). Campbell states:

Its flexible format maximizes discovery, while its subjective character and attention to broader aspects of a problem make it well suited for descriptive and taxonomic purposes. (1970:227)

To learn about visitors and rangers, the ethnographer observes social behavior as an insider. As an example, Robertson and Wilson describe one incident at Yosemite:

Wheeling our bikes across the bridge which connects Housekeeping with Lower River Campground, we ran the gauntlet of a dozen young blacks, lounging against the rail and ragging each other but not us or other white pedestrians, as a rule. Then we stopped, took some pictures, and then went back across the bridge. This time we had comments made to us, which, when we ignored them, were repeated together with vocal observations about our not having responded. We inferred that in photographing Housekeeping and them on the bridge we trespassed in a way that more matter-of-fact pedestrians did not, and thereby violated some code of their Park. (1982:10)

Participant observation requires that note taking be done unobtrusively, usually after participation. A detailed journal, including description of events and reflections on their meaning is effective if maintained carefully.

A third technique is photography. Anthropologists and sociologists often take cameras along during field work and take pictures of the visual scenes that interest them. These photographs are then used to illustrate verbal data. But can the camera do more than highlight special events? The anthropologist John Collier suggests:

The camera's machinery lets us see without fatigue; the last exposure is just as detailed as the first. The memory of the film replaces the notebook and ensures complete notation under the most trying circumstances. (1967:5)

In one study of Northwest family camping (Machlis 1975) over three hundred photographs were taken. Photographs of beach activity showed distinct spatial ordering, and pictures of family reunions were used to analyze kin networks.

In addition, the camera can aid in recording the material culture of park-going. Joseph Honigman explains the value of inventorying material culture:

The selection of objects and the nature of their grouping constitute non-verbal expressions of thought, needs, conditions, or emotions. Thus when people shape their surroundings, they introduce man-made order. (1954:134)

The camera can provide reliable and reusable observations of things people take with them when they go to parks. Such a record is invaluable in constructing an ethnographic profile.

Table 2 compares the three techniques and lists major advantages and disadvantages of each. In most cases, some combination of technique is useful--key informants familiarizing the researchers with important group activities, participant observation used to gather data on behavior, and photographs collected to document visitor activities. The techniques can also be used to check the reliability of data--participant observation of activities described by informants may reveal a bias in informants' reporting.

Table 2. Comparison of Three Ethnographic Techniques

Technique	Perspective	Advantages	Disadvantages	Park Example
Interviewing key Informants	As an outsider wanting to learn.	Quick access to knowledge.	Choice of informants may bias results.	Interviewing group leaders of hiking clubs to learn their management preferences.
Participant Observation	As a member of the group under study.	Empathetic understanding of behaviors and norms.	Objectivity can be lost through participation.	Attending interpretive programs as a visitor to evaluate effectiveness.
Photography	As an outsider recording visual images.	Enables documentation of visual information.	Choice of scene is difficult.	Photographing backcountry camping scenes to document use of low impact equipment.

3. Writing the Ethnographic Profile

In this step, the collected data is used to prepare a written report. The report may include a careful description of the physical and social setting--maps and photographs are useful. The taxonomies used by subjects should be explained. In our example of understanding visitors and rangers, we might describe the different categories of visitors held by rangers and vice versa. A glossary of special words is often insightful.

The profile may also describe the behavior of subjects. Are there common patterns in how visitors and rangers deal with each other? A typical sequence of behaviors may be described, and special circumstances noted. The importance of certain activities or places to the participants is also described. An example is the following analysis of extended families:

Many of the extended families observed in the National Parks were more than recreational camping. They were staging an intricate and important ritual--the family reunion. For these groups, camping in the park environ was an enjoyable medium, but not the central focus for their stay in the parks. They came to meet their relatives, to talk over recent times, to share in family fun and traditions. It is hard to over-emphasize the importance of this change in motivation. (Machlis 1975:76)

The ethnographic profile then serves as a "natural history" of a particular cultural scene within the park. As ethnography describes people at a particular locale and time, revisions and updates are required if contemporary knowledge is needed about current visitors.

LIMITATIONS OF THE METHOD

Ethnography, like other research methods, has several weaknesses. When an ethnographic profile is based on only a few informants, and the "representativeness" of these informants is not clear, the data may be misleading, if not false. A current controversy surrounds Margaret Mead and her ethnographic work in Samoa. Derek Freeman, in his Margaret Mead and Samoa: The Making and Unmaking of an Anthropological Myth, writes:

The explanation most consistently advanced by the Samoans themselves for the magnitude of the errors in her depiction of their culture and in particular of their sexual morality is, as Gerber has reported, "that Mead's informants must have been telling lies in order to tease her." (1983:290)

In addition, the ethnographer, in constructing a subjective picture of a cultural scene, runs the risk of "seeing what they want to see." Again, Freeman's critique of Margaret Mead's research is instructive, for her Coming of Age in Samoa has been so influential in anthropology.

We are thus confronted in the case of Margaret Mead's Samoan researches with an instructive example of how, as evidence is sought to substantiate a cherished doctrine, the deeply held beliefs of those involved may lead them unwittingly into errors. (1983:292)

Finally the ethnographic method is time consuming. The choosing and description of a cultural scene, locating and interviewing informants, participating in activities, analyzing data, and writing a profile is a

labor-intensive form of research and requires the ethnographer's careful attention. In spite of these limitations, and in part because of its subjective nature, ethnography offers an important way to learn about visitors to national parks.

APPLICATION TO PARK MANAGEMENT

What application does ethnography have for park managers? What usable knowledge can it provide? First, an ethnographic understanding of visitors can correct biases managers have about visitors. At Cuyahoga National Recreation Area, law enforcement rangers and young visitors had strong misconceptions about each other, and their lack of knowledge about "how the other side thinks" increased conflict (Machlis et al, 1981). Ethnographic profiles can provide new managerial perspectives, clear up misconceptions, alter stereotypes, and hopefully improve agency-visitor interactions. Learning park visitors' views can also be useful in policy-making, and interviewing visitors regarding policy changes can provide a systematic form of public participation.

Second, ethnography can reveal the "ecological imperatives" of park-going. Why do some visitors ask the same questions, treat the restrooms as highest priority, act territorial about the campsites, and avoid a late evening campfire? The ethnographic perspective can provide managers with specific explanations. At a Northwest campground, participant observation revealed that the lack of a lighted trail made attending evening programs difficult for seniors.

Ethnography can also reveal cultural norms and allow managers to improve the park's ability to meet visitors' needs. For example, a study of Japanese tourists found that souvenir shopping was so important to those visitors because the custom of giving gifts to travelers meant that Japanese tourists had obligations to bring gifts to many, many friends back home (Machlis et al. 1982). Since buying souvenirs was, to the Japanese, an integral part of the park experience, managers were advised to adapt their interpretive efforts to this need.

How can ethnography in parks be practiced? Certainly, park managers could attract anthropologists and their graduate students to conduct ethnographic studies of contemporary park visitors--applied anthropology is currently regaining favor in academe. The practical problems of OMB regulations, informants' right to privacy, and cost can all be overcome (within 1983 OMB guidelines for research, ethnographic studies may often be exempted from the regulations, depending on how they are conducted).

Managers can also conduct ethnographic studies themselves, and this approach may have the most significant potential for solving park problems. Perhaps a staff member with an interest in anthropology could spend one day a week interviewing informants, or a seasonal or VIP could be trained and assigned the task. Their new insights could be used in training, planning, and problem solving.

In this paper, ethnography has been suggested as a valuable research tool for understanding park visitors. For superintendents, interpreters, seasonal employees, and concessionaires to adopt the ethnographic perspective is to have them learn from visitors about themselves and their jobs. The resource managers of the 1980s will need to do just that.

REFERENCES CITED

- Boas, F. 1888. The central Eskimo. Sixth Annual Report of the Bureau of American Ethnology, 1883-1885. Washington, D.C.
- Burch, W.R., Jr. 1964. 'Observation as a technique for recreation research.' Portland: U.S. Forest Service Res. Paper.
- Burch, W.R., Jr.; and Wenger, W., Jr. 1967. The Social Characteristics of Participants in Three Styles of Family Camping. Portland: U.S. Forest Service Res. Paper PNW-48.
- Campbell, F.L. 1970. Participant observation in outdoor recreation. J. Leisure Res. 3(3):Summer.
- Clark, R.; Hendee, J.C.; and Campbell, F.L. 1971. Depreciative Behavior in Forest Campgrounds. USDA Forest Service Res. Paper, August.
- Collier, J., Jr. 1967. Visual anthropology: Photography as a research method. New York: Holt, Rinehart, and Winston.
- DeVall, W. 1973. The development of leisure social worlds. Humboldt J. Social Relations 1(1):53.
- Dubos, R. 1980. The wooing of earth. New York: Charles Scribner and Sons.
- Evans-Pritchard, E.A. 1940. The Nuer. New York: Oxford University Press.
- Field, D.R. 1973. The telephone interview in leisure research. J. Leisure Res. 5.
- Freeman, D. 1983. Margaret Mead and Samoa: The making and unmaking of an anthropological myth. Cambridge: Harvard University Press.
- Gottlieb, D. 1957. The neighborhood tavern and the cocktail lounge: A study of class differences. Am. J. Sociology 62:559-562.
- Hollingshead, A.G. 1949. Elmtown's youth. New York: Wiley.
- Honigmann, J.J. 1954. Culture and personality. New York: Harper and Row.
- Lastrucci, C.L. 1967. The scientific approach. Cambridge: Schenkman Publishing Co., Inc.
- Liebow, E. 1967. Tally's corner. Boston: Little, Brown.
- Lofland, J. 1976. Doing social life: The qualitative study of human interaction in natural settings. New York: Wiley.
- Machlis, G.E. 1975. Families in parks: An analysis of family organization in a leisure setting. M.S. thesis, Univ. of Washington.

- Machlis, G.E.; Converse, R.S.; and Jensen, K.L. 1981. Social conflict at Virginia-Kendall Park Cuyahoga Valley National Recreation Area. Cooperative Park Studies Unit Rep., National Park Service, Univ. of Idaho, Moscow. CPSU/UI S-81-3.
- Machlis, G.E.; Field, D.R.; and Van Every, M.E. 1982. Foreign visitors and interpretation: A sociological look at the Japanese tourist. Cooperative Park Studies Unit rep., National Park Service, Univ. of Idaho, Moscow. CPSU/UI S-82-1.
- Machlis, G.E.; Field, D.R.; and Campbell, F.L. 1981. The human ecology of parks. *Leisure Sciences* 4(3):195-212.
- Malinowski, B. 1922. *Argonauts of the western Pacific*. London: Routledge.
- Mead, M.M. 1928. *Coming of age in Samoa*. Magnolia, MA: Peter Smith.
- Nash, J.E. 1978. Weekend racing as an eventful experience: Understanding the accomplishment of well being. *Urban Life and Culture* 6.
- Pelto, P.J. 1970. *Anthropological research: The structure of inquiry*. New York: Harper and Row.
- Polsky, N. 1967. *Hustlers, beats and others*. Chicago: Aldine.
- Rappaport, R.A. 1967. *Pigs for the ancestors: Ritual in the ecology of a New Guinea people*. New Haven: Yale University Press.
- Redfield, R. 1941. *The folk culture of Yucatán*. Chicago: The University of Chicago Press.
- Robertson, D.A.; and Wilson, D.S. 1982. Toward a "natural history" of people in Yosemite National Park. Unpubl. manuscript. The Univ. of California, Davis.
- Smith, V., ed. 1977. *Hosts and guests: The anthropology of tourism*. Philadelphia: University of Philadelphia Press.
- Spradley, J.P. 1970. *You owe yourself a drunk: An ethnography of urban nomads*. Boston: Little, Brown.
- Spradley, J.P. 1979. *Participant observation*. New York: Holt, Rinehart, and Winston.
- Spradley, J.P.; and McCurdy, D.W. 1972. *The cultural experience: Ethnography in complex society*. Chicago: Science Research Associates, Inc.
- Wedel, J. 1981. I didn't think it would be so wild and so preserved: tourist experiences in Yellowstone National Park. Unpubl. manuscript. Berkeley, California.
- Whyte, W.F. 1943. *Street corner society*. Chicago: University of Chicago Press.

NONREACTIVE RESEARCH -- UNOBTUSIVE OBSERVATION

Gary W. Mullins
John L. Heywood
Michael K. Maynard

The Ohio State University
Columbus, Ohio 43210

INTRODUCTION

To more effectively administer public recreation areas, managers need usable and relevant information about the resources they manage. Those resources include natural, organizational, and social elements. While natural resource inventories and agency capabilities are usually well known to decision-makers, systematically gathered information about the social element--clientele of recreation areas--has not been readily or inexpensively available. Consequently, decisions regarding public use of these sites are sometimes made without the benefit of pertinent information about their primary customers. What is needed in the field is a research tool which is relatively uncomplicated to apply and can provide managers with necessary baseline data to aid in decision-making.

Unobtrusive visitor observation is one such tool which holds promise for yielding systematic descriptions of visitor characteristics and behaviors, while being fairly straightforward and relatively inexpensive to apply. This technique allows trained observers--be they staff, consultants or volunteers--to systematically gather data regarding visitors without affecting what those visitors do while onsite.

Unobtrusive visitor observation is useful in two ways: (1) as a tool for gathering descriptive baseline data, and (2) for the development of initial hypotheses concerning visitor characteristics and behaviors. Unobtrusive observation cannot examine visitors' internal, psychological makeups, nor can it describe persons who are not directly observed, such as non-visitors. The technique offers the advantages of relatively low cost when compared with questionnaires and interviews, ease of application, flexibility in terms of types of data which may be collected, freedom from visitor self-reporting bias, and lack of disruption of visitor activities. Although potentially useful, a review of recreation literature indicates that unobtrusive observation has not been widely utilized.

The study reported in this paper applied the unobtrusive observation methodology in four central Ohio State Nature Preserves. The study was authorized by the Ohio Department of Natural Resources - Division of Natural Areas and Preserves (DNAP) with the goal of developing a more user-oriented marketing approach to natural area management. State Nature Preserves are designed for both preservation and use. The purposes of the study were (1) to describe and explore the relationships between selected characteristics of peak-season visitors at the four sites, (2) to develop from these findings a visitorship profile for each site and examine the relevant management implications, and (3) to test a method for future visitor assessment.

LITERATURE REVIEW

The importance of studying not only the resources managed for recreation, but also the clientele who directly or indirectly purchase the associated services and make use of facilities, has been emphasized by Cheek, Field and Burdge (1976). The need for such studies in organizations which provide interpretive/visitor-information programs in the State of Ohio has been documented by Maynard (1979). That study indicated that over 50 percent of the respondent organizations used few or no procedures for systematic visitor data collection.

Unobtrusive observation is an effective means for gathering baseline data to be used in the investigation of behaviors related to public uses of various settings. These measures have been well documented, especially in the fields of cultural anthropology and sociology, where they have been applied to diverse situations (Friedrichs and Ludtke 1975; Webb et al. 1966). A number of authors have reported successful applications of unobtrusive observation techniques specifically to recreational settings (Burch 1964, Campbell 1970, Buhyoff 1979).

Burch (1964) in studying visitors in recreational settings concluded that unobtrusive observation, when properly employed, can enhance behavioral studies. Campbell (1970:227) pointed out that "Participant observation can be most useful in studying questions for which there is not already a fund of theoretical and empirical knowledge, like that which characterizes many areas of social research." According to Buhyoff (1979:341) "Other research should concentrate on investigating the relationship between the accuracy and precision of observationally gathered data with specific attention to criterion or predictive validity."

Unobtrusive observation has been applied to interpretive settings by several researchers, including Hanna and Silvy (1977), Lime (1979), Mullins (1979), and Nelson (1980). Hanna and Silvy (1977) found that the technique permitted viewing visitors in three relationships to parks and interpretive programming: interpretive participants, interpretive nonparticipants and park visitors in general. Lime (1979:54) concluded from studies at two Minnesota interpretive centers that, when combined with other measurement techniques, observation could be "... a useful aid to appraising interpretive activities and programs." Mullins (1979), using questionnaires and unobtrusive observation jointly, found that a variety of factors such as visitors' residence, group size, group composition, and resource type were related to the onsite behaviors of National Parks visitors. Nelson (1980) reported that factors relating to placement of roadside interpretive signs, among other things, were observed to influence whether visitors would stop to read the signs.

Sufficient literature exists for formulating and administering baseline visitor studies using unobtrusively collected data. If indeed, characteristics such as social group or system-level data can be reliably measured via this technique, the data may be more meaningful in relation to visitor behavior than would data collected on individual visitors' attributes (Cheek and Burch 1976, Rappoport and Rappoport, 1979). The unobtrusive measurement

of behavioral characteristics may be free from self-report bias, in that it records what visitors were actually observed doing, not what they say they did (Friedrichs and Ludtke 1975).

METHODOLOGY

The research design utilized in this study was an exploratory/descriptive one, following observational techniques developed by Webb et al. (1966) and Hanna and Silvy (1977). It yielded a "slice-of-time" profile of peak-season visitorship at four DNAP Preserves as personally observed and recorded by two trained observers who remained inconspicuous to the subjects of the observation.

The four study sites were selected to represent a mix of administrative types with maximal numbers of peak season visitors. Two nonurban sites, Clifton Gorge and Conkle's Hollow, are administered and managed by the DNAP, while two urban sites, Highbanks and Tucker Preserves, are managed by the Metropolitan Park District of Columbus and Franklin County, Ohio. They each represent a different resource type, consisting respectively of a dolomitic gorge, a sandstone canyon, a relic prairie ridge, and a swamp forest, all of which are easily accessible to over two million central Ohio residents.

Observations were carried out systematically so that each visitor group was measured for precisely the same set of characteristics. These characteristics included overt, external characteristics which were directly observable and measurable by the observers. No assumptions were made by the observers regarding possible visitor perceptions, satisfactions or other internal, mental dimensions of visitorship; however, any vocalized visitor reactions were noted when overheard by the observers. The sections which follow detail the specific procedures employed in the study.

The population that was studied consisted of peak-season visitors to the four study sites in 1982. Limitations on funding, man-hours and travel available to the project resulted in an accessible population of only those visitors who could be observed onsite between the hours of 8:00 a.m. and dark, at selected times between Memorial Day and mid October. These same limitations further dictated that a total of approximately 200 hours of observation were to be undertaken. Consequently, it was necessary to adopt a sampling strategy which would both maximize the number of groups observed and represent the peak-season visitation as a whole, given the partitioning of 200 hours among four sites, over 12 hours of potential daylight and across 21 weeks.

The sampling strategy devised was a stratified random cluster technique, by which the allotted hours were equally divided among the four sites, then randomly assigned to weeks/days/times-of-day based upon estimates of attendance for each site. All visitors onsite during those assigned hours were then sampled. Since no detailed attendance figures existed for the four preserves that were studied, probable attendance patterns for each site were estimated based upon conversations with DNAP, Metro Parks staff and Ohio State University faculty familiar with the sites. Indications were that Clifton Gorge and Highbanks could be expected to receive significant

autumn visitation, that Clifton Gorge and Conkle's Hollow would probably receive heavy tourist overflow from adjacent state parks on weekends and holidays, and that Highbanks and Tucker preserves would likely see significant weekday visitation as well as weekends and holidays. Four blocks of 56 observation-hours each were partitioned into 112 two-hour periods, and these were then randomly assigned to days and times identified as likely peaks for each site. Sampling then consisted of observing all visitors who were onsite during the prescribed observation periods. Between Memorial Day and October 17, 1982, some 478 visitor groups, totalling 1,735 individuals were observed.

Because the results of this study are not intended for generalization to larger populations beyond the sample, and because highly accurate attendance information on which to base stratification were not available, a sampling which generally reflected visitation levels was considered sufficient for the purposes of this study.

The observers participated in a prestudy training session, field reconnaissance and pretest of the instrument conducted by the Principal Investigators. Potential inter-rater reliability threats were minimized by having the data verified by the volunteer assistant and by having the assistant observe the data collector for inconsistencies in procedure and bring those to the collector's attention.

Face validity of the instrument was maximized through the use of characteristics/measures used by other researchers (Hanna and Silvy 1977, Burch 1964, Maynard 1979) and by keeping the levels of measurement relatively "gross," as suggested by Burch (1964).

Instrument reliability was assessed using the Statistical Package for the Social Sciences. The reliability coefficient for the overall instrument was .64 (standardized alpha), a level which is similar to results obtained in other observational studies (Buhyoff 1979). Site-related factors were the most consistently measured data; visitor behaviors were also measured with high internal consistency. Sociodemographic characteristics were moderately reliably measured, and social group characteristics were found to have the lowest reliability coefficients (.35 - .40). Overall, the reliability was found to be sufficiently high to allow for meaningful interpretation of the data.

Observation of visitors at the four study sites followed a single procedure throughout the study. That procedure involved the following steps:

1. On the appointed day, the data collector and assistant would arrive at the assigned site one-half hour prior to the beginning of the assigned observation period. Any potentially significant site-related factors were noted, and observation sheets were attached to clipboards, with the topmost sheet covered by a site map to conceal observation forms underneath.
2. As observing commenced, the observers (wearing jeans, tee shirts, and tennis shoes, and carrying clipboards, writing tools, a pair of binoculars, and a bird field guide) would observe all groups

- then would note distinctive characteristics to ensure consistent, positive identification of each group.
3. Visitor characteristics were entered onto forms while the visitors were onsite and usually while the groups were within the observers' line of sight, but such data entry was done as discreetly as possible so that no indication would be given to visitors that they were the subjects of study. Indeed, the intent of the observers' dress and equipment was to give the impression of a pair of nature enthusiasts noting natural features of the site rather than researchers collecting visitor data.
 4. The two observers kept together at all times, alternating between entry points and major attractions along trails in order to maximize the amount of time spent observing each group and to note new groups as soon as possible after their arrival at the trailhead(s). As previously noted, the data collector and assistant conferred about--and verified--the characteristics of each group.
 5. At the end of the observation period, no new groups were observed. The observers adjourned to the parking lot, performed final data checks, then left the site until the next assigned observation period.

Based upon the literature reviewed and data desired by DNAP managers, the following characteristics were chosen to be unobtrusively measured at the four sites:

- a. Visitor Sociodemographics--age, sex, race, estimated socioeconomic status;
- b. Visitor Social Group--group size, composition, stage in family life cycle, presence of adults, level of parental control, and levels of interaction (interunit sociability), cohesion and leadership within the group.
- c. Visitor Behaviors--apparent purpose of visit (dominant behavior), possession of specialized clothing or equipment, trail utilization, recreational behaviors, depreciative behaviors, and interpretive opportunities missed.

In addition, site related factors were monitored during each observation (i.e., site, day, time, weather conditions). The observation form used in the study is presented in Figure 1.

MAJOR FINDINGS

The major findings were restricted to the description of the events observed; caution was taken not to project causality. Significant differences in visitorship were found to exist among the sites with respect to sociodemographic, social group, and visitor behavior characteristics (tabular presentation of statistical results are available from the authors). Furthermore, visitorship segmentation profiles revealed substantial commonalities as well as differences among the sites, posing several management implications.

Figure 1

Site: _____

VISITOR OBSERVATION FORM

Date: ____/____/____

Sampling Ratio: 1/____

NUMBER OF PERSONS IN GROUP
(Enter real number)AGES/SEXES OF GROUP MEMBERS:
(Enter real numbers of each.)

	Male	Female
Und. 6		
6-12		
13-17		
18-24		
25-35		
36-50		
51-65		
66-up		

ESTIMATED SOCIOECON. STATUS

1. Low
2. Lower Middle
3. Middle
4. Upper Middle
5. Upper
9. Unknown

APPARENT PURPOSE OF VISIT

1. General
2. Nature Obs.
3. Fitness
4. Sports
5. Group Outing
6. Other _____
9. Unknown

ARE PETS PRESENT WITH GROUP?

1. No
2. Yes, dog(s)
3. Yes, other _____
4. Yes, but pet(s) were left in vehicle
9. Unknown

PET-RELATED PROBLEMS
(Check all that apply.)

1. Not on leash
2. Straying off trail
3. Damaging vegetation
4. Noisy
5. Annoying other visitors
6. Chasing wildlife
7. Other _____
8. No problems observed
9. Not applicable

PHOTOGRAPHY BY VISITORS

1. None observed
2. People only
3. Natural features (specify) _____
4. People + Nature
9. Unknown

FITNESS/SPORTS ACTIVITY

1. None Observed
2. Aerobic Walking
3. Backpacking
4. Jogging
5. Running
6. Rockclimbing
7. Bicycling on trail
8. Other _____
9. Unknown

OTHER RECREATION ACTIVITIES

TIME OF DAY
a.m./p.m.

WEATHER

1. Clear
2. Partly Cloudy
3. Overcast
4. Inclement
9. Unknown

VISITORS' RESIDENCE

1. Ohio 2. IN 3. KY 4. PA
5. WV 6. Other _____ 9. Unknown

GROUP COMPOSITION

1. Lone individual
2. Young couple
3. Peer group
4. Family
5. Extended Family
6. Family + friends
7. Organized Group
8. Other _____
9. Unknown

MODE OF TRAVEL TO SITE

1. Subcompact Car
2. Compact Car
3. Midsize Car
4. Fullsize Car
5. Luxury Car
6. Van
7. Truck
8. Trk./Camper
9. 4WD/RV
10. Motorhome
11. Bus
12. Motorcycle
13. Bicycle
14. Walking
15. Multiple Vehicle
16. Other _____
55. N/A

VISITORS' CLOTHING

1. Light walking
2. Heavy hiking
3. Street (dressy)
4. Jogging
5. Rockclimbing
6. Other _____
9. Unknown

NATURE STUDY BY VISITORS

1. None Observed
2. General Sightseeing
3. Vegetation
4. Animals
5. Geologic Features
6. Other _____
7. Multiple of Above
9. Unknown

LEVEL OF COHESION
WITHIN GROUP

1. N/A 5. High
2. Very low 6. V. High
3. Low 9. Unknown
4. Med

DAY OF WEEK

1. Sun 2. Mon 3. Tue 4. Wed
5. Thurs 6. Fri 7. Sat

°F TEMPERATURE

FAMILY STAGES PRESENT
WITHIN GROUP

1. Non-family
2. Contracting couple
3. Young family (youngest child under 6 yrs.)
4. Middle family (youngest child 6-12 yrs.)
5. Older family (youngest child over 12 yrs.)
6. Established family (no children present)
7. Pre-retirement (51-65 yrs. old)
8. Post-retirement (over 65 yrs.)

TRAILS UTILIZED

1. None
2. Less than shortest
3. Shortest one
4. More than shortest
9. Unknown

VISITOR DEPRECIATIVE BEHAVIORS
(Check all that apply to area rules)

- Off trail _____ Wading _____
- Wheeled vehicle _____
- Picknicking _____ Noise _____
- Littering _____ Vegetation damage _____
- Geologic damage _____
- Alcoholic bev. _____
- Annoying others _____
- Other _____
- None observed _____

INTERPRETIVE OPPORTUNITIES MISSED
(Check all that apply)

- Visitors unaware of/ignoring rules _____
- Visitors confused about trails _____
- Visitors missed natural feature specify _____
- Visitors wanted interpretive message (specify _____)
- Visitors seemed unaware of site's purpose _____
- Visitors did not read bulletin board/signs _____
- Other opportunities missed _____
- No opportunities missed _____

VISITORS' EQUIPMENT

1. None
2. Camera
3. Binocs
4. Radio
5. Carrier (pack)
6. Field Guides
7. Climb/Rappel
8. Other _____
9. Unknown

LEVEL OF PARENTAL CONTROL
WITHIN GROUP

1. No kids 5. High
2. Very low 6. V. high
3. Low 9. Unknown
4. Med.

With respect to visitor sociodemographics, the results of the data analysis indicated that the overall visitorship was primarily Caucasians between the ages of 18 and 50, with an average male-to-female ratio of 1.2-to-1. The most commonly observed age cohorts were 18-25 year olds. There were significant differences among the four individual sites with respect to the distributions of each of these characteristics. About 93 percent of the observed visitor groups were estimated to be of middle socioeconomic status, a factor which was not significantly different among the four sites. It should be noted that observations of complex factors such as socioeconomic status may be reaching the limits of observability.

Analysis of social group data indicated that, overall, group sizes were small with a mean of 3.6 persons, although groups of as many as 22 were occasionally seen. Family groups outnumbered nonfamilies (i.e., peers, lone individuals, organized groups) at three of the sites, while at the fourth they were nearly equal. Most of the observed groups (61.1 percent) consisted of one or two stages in the family life cycle, with contracting couples most common and young families (i.e., adults with children under six) being next most frequent. Over 89 percent of all groups contained at least one adult member. Of the 204 groups which contained children, 42.2 percent were rated low in parental control, and 29.4 percent were rated medium on the three-point scale used for this study. Interpersonal interaction levels within most of the rated groups were high (65.2 percent) or medium (31.9 percent) on a three-point scale. Group cohesion levels were typically rated high (62.6 percent of rated groups) or medium (24.5 percent) on a three-point scale. All of these social group characteristics were found to be significantly distributed by site. Additionally, group cohesion was significantly correlated with group size ($r=.54$), parental control level ($r=.37$) and level of interaction ($r=.64$); i.e., the larger the group the weaker the cohesion.

Results of data analysis regarding visitor behavior characteristics indicated the following tendencies:

- a. Most of the groups wore nonspecialized clothing (83 percent of all groups), brought no recreational equipment with them (66.5 percent of all groups), had no pets along (96 percent of all groups), did no obvious nature study or photography (88 percent of all groups), did not engage in any active physical fitness activities (90 percent of all groups), and did not participate in any sport activities (95 percent of all groups).
- b. At the three sites where a number of different foot trail options were available to visitors, the segment most commonly used was whichever one was shortest in length (78 percent of all visitor groups at these sites used the shortest). Nature study and fitness groups tended to significantly utilize longer trails, rock climbers tended to walk in only as far as the desired cliff face (i.e., less than the shortest trail), and organized groups either walked less than the shortest or more than the long trail.
- c. Overall, nearly 70 percent of all observed groups did not engage in any depreciative behaviors as defined in this study. About

26 percent did engage nonrepetitively in one or two depreciative actions, and 4 percent engaged in a number of depreciative actions. Nature study and fitness groups were significantly nondepreciative, rock climbers were moderately depreciative, and organized groups were significantly overrepresented among the highly-depreciative visitor groups.

- d. Few of the visitor groups were observed to overtly express any indication of interpretive opportunities missed (as defined in this study). About 31 percent of the groups seemed to disregard rules, about 9 percent showed obvious confusion about trail destinations or conditions, and about 6 percent appeared not to notice obvious natural features of the site. There were no significant differences between the sites relative to these characteristics.

In addition, several visitor behavior characteristics were found to be significantly related to social group characteristics. Groups participating in photography or fitness activities were found to be significantly overrepresented in the low-to-moderately interactive categories, organized groups were moderately interactive, and rock climbers were highly interactive. Nature study, fitness, and rock climbing groups tended to be significantly high in cohesion, while organized groups were overrepresented in the lowest cohesion rating.

DISCUSSION AND APPLICATION

Possibly the most striking of the study findings was that in these four State Nature Preserves, each featuring unique and often scenic natural resources and each adjacent to recreational parks, the most apparent focus of visitors' attention was not upon either natural features or active recreation. Most groups seemed to be focused inward, concentrating on group-related outcomes rather than outwardly focusing on the site. The visitor groups observed in this study tended to be unspecialized in dress, equipment and activity and, while onsite, they engaged in what might best be described as "being with the group and walking for pleasure."

The notion that visitors may focus on group relationships rather than active appreciation of the recreation place has been supported by research findings in settings other than nature preserves (Cheek, Field and Burdge, 1976), as has the idea that nonspecialized recreation may be site-independent (Bryan, 1979). Further research is needed to determine whether these observed tendencies hold for most natural areas and preserves. If they do, then marketing of the sites might most appropriately take the form of appealing to group needs first and resource constraints secondarily. For example, the sites could be advertised as places "...where you can be with your family or friends in a scenic natural setting..." with organizational responsibilities for directing certain visitor behaviors, promoting visitor awareness or disseminating visitor information all met through the use of onsite interpretation.

Where highly specialized segments of site visitorship do occur (e.g., rock climbing groups at Clifton Gorge State Nature Preserve in this study),

they may be expected to be dependent in some way upon the site for specific facilities, activities, or features (Bryan, 1979). Natural area decision makers must understand both the characteristics of these visitors and the degree to which the given site is required for their activities. If their activities are deemed to be inconsistent with agency objectives, then they may be actively discouraged, providing that the decision-makers realize that negative reactions may be directly proportional to the strength of the site dependency which exists.

A second important finding of the study was that very little intentional or repetitive depreciative behavior was observed. In fact, most of the depreciative actions measured in this study appeared to occur as a consequence of the benign activities in which visitors engaged. Persons stepping off trails in order to photograph the members of their groups inadvertently trampled vegetation or damaged rock formations. Children whose parents were engrossed in conversation ran ahead of the group, often being noisy, travelling off trails, or wading. Visitors who were strolling along would pick up fallen branches or cut off green limbs to use for walking sticks, and they would take them along when leaving the site. Joggers and hikers would detour around muddy spots, creating new paths through former stands of native plants. Rock climbers were seen to clean out handholds by tearing vegetation or soil out of cliff faces. All these depreciative behaviors were in general not prevalent, and intensive forms were rare.

The implication of these findings for natural areas management may be that a public relations approach is needed with regard to both facility design and visitor contact. When depreciative actions are related to design elements such as muddy trails, lack of photographic vantages, or trails which do not go near enough where people wish to be, then observational studies can help to reveal the appropriate corrective management actions. When depreciative behavior is a consequence of noncommunication between the organization and the visitor, then interpretive efforts will have to be instituted to correct the situation. It will be imperative to determine whether personal or nonpersonal interpretive media will meet the needs of the specific segments at each site and which media can effectively address the problem.

A final major finding of this study was that unobtrusive observation can be a valuable tool in developing working hypotheses for further research as well as describing patterns of visitor behavior. Using this relatively inexpensive technique, it was possible to draw valid and reliable conclusions regarding the characteristics and behaviors of peak season visitors to four Ohio natural areas. Visitor segmentation profiles and various area-specific problems were identified from the data analysis and are presently being used by Ohio natural areas managers, administrators and planners.

This study, in addition to providing a description of select behaviors in Ohio natural areas, has also provided the impetus for two other natural area studies. Those studies, which hypothesize about perceptions of managers and visitors toward natural areas, are being based on the unobtrusively

gathered data and existing theoretical concepts. The outcomes of these studies will permit a comparison of the findings of similar studies which utilize different methods of inquiry.

Unobtrusive observation, when planned and executed systematically, can provide useful information. Like all research strategies, its abilities to aid researchers in finding answers are limited. Unobtrusive observation should be limited to describing a phenomenon and helping to raise researchable questions about that event for future studies. As pointed out by Buhyoff (1979), observation techniques might best be used in conjunction with other methods. Its merits lie in its unobtrusive nature, its efficiency in administering the instrument, and the ability to record actual observable events. Limitations are what cannot be measured--the psychological element and past events--and questions concerning reliability and validity. The method was useful in fulfilling the objectives of the Ohio natural areas study.

REFERENCES CITED

- Bryan, Hobson. 1977. "Leisure Value Systems and Recreational Specialization: The Case of Trout Fisherman." J. Leisure Res. 9 (3).
- Buhyoff, Gregory J. 1979. "A Methodological Note on the Reliability of Observationally Gathered Time-Spent Data." J. Leisure Res. 11 (4).
- Burch, William R. 1964. A New Look At An Old Friend--Observation As A Technique For Recreation Research. Portland, OR: USDA Forest Service.
- Campbell, Frederick L. 1970. Participant Observation in Outdoor Recreation. J. Leisure Res. 2 (4).
- Cheek, Neil H., Jr. , Donald R. Field and Rabel J. Burdge. 1976. Leisure and Recreation Places. Ann Arbor: Ann Arbor Science.
- Friedrichs, Jurgen and Harmut Ludtke. 1975. Participant Observation Theory and Practice. Lexington, MA: Lexington Books/Saxon House.
- Hanna, John W. and Valeen Adams Silvy. 1977. Visitor Observations for Interpretive Programming. Office of Interpretation, National Park Service, Washington, D.C.
- Lime, David W. 1979. Visitor Observation: A Tool For Appraising Interpretive Activities. Proceedings of 1979 Assoc. of Interpretive Naturalists Workshop. Bloomington, MN: AIN.
- Maynard, Michael. 1979. Collection and Non-Collection of Visitor Information: A Study of Ohio Interpretive Organizations. Unpub. Honors Res. Paper. School of Natural Resources, The Ohio State Univ., Columbus.
- Mullins, Gary W. 1979. Participation and Nonparticipation in Interpretation: A Study of People, Places and Activities. Unpub. Ph.D. dissert. Texas A&M Univ., College Station.
- Nelson, Tamara Lynn. 1980. Assessing Visitor Participation/Nonparticipation in Interpretive Activities Through Unobtrusive Measures. Unpub. Master's Thesis. The Ohio State Univ., Columbus.
- Rappoport, Rhona and Robert N. Rappoport. 1975. Leisure and The Family Life Cycle. Boston: Routledge & Kegan Publishers.
- Webb, Eugene J., Donald T. Campbell, Richard D. Schwartz and Lee Sechrest. 1966. Unobtrusive Measures: Nonreactive Research in the Social Sciences. Chicago: Rand McNally.

UNOBTRUSIVE OBSERVATION IN
RECREATION RESEARCH: AN APPLICATION

John H. Burde
Kevin A. Curran
Southern Illinois University at Carbondale
Carbondale, Illinois 62901

INTRODUCTION

Managing wildland areas can no longer be accomplished using a "seat of the pants" approach. Decisions on the allocation of scarce resources in areas managed for recreation, for example, must be based on analyses of users and their behavior. Further, an evaluation of the effectiveness of management policies requires input from users involving some contact with park visitors.

Too frequently in the past, such input and interaction have relied heavily on the use of direct questionnaires. To be sure, this method is quite useful in collecting most forms of data. There are, however, three major gaps that are likely to occur when the questionnaire/personal interview is the sole instrument used. They are:

- (1) If the questionnaire is administered before the recreation activity being studied is completed, respondents will answer based on intended behavior rather than actual behavior. The actual behavior may, in fact, be substantially different from intended behavior.
- (2) Respondents are likely to be less than candid when responding to questions concerning illegal or immoral behavior. Researchers are usually identified with the managing agency, perhaps with some degree of law enforcement authority. This is especially true when the researcher is in uniform.
- (3) Questions relating to the lack of skill or knowledge may be answered untruthfully if the respondent feels he will be shamed in front of his peers or family.

To overcome these gaps, a questionnaire used in conjunction with unobtrusive observation can give a more complete picture of the recreation behavior being studied.

This paper describes the application of unobtrusive observation in conjunction with a questionnaire administered in a personal interview to study the behavior of backcountry users at Great Smoky Mountains National Park. Included here are descriptions of the methodology used, the type and quantity of data collected, problems encountered, and an assessment of unobtrusive observation as a research tool in backcountry management. Actual results of the research will not be presented here but will be available from Uplands Field Research Laboratory, Great Smoky Mountains National Park.

PROBLEM STATEMENT

Management policies administered at park areas are the result of an evolutionary process. However, these policies do not necessarily evolve into a state identical to that most appropriate for the visitor. Frequently, policies result from what Lucas (1982) calls the bandwagon effect, i.e., adopting what is currently fashionable. Further, policies often reflect ease of management rather than the optimum visitor experience. Regulations may be adopted that minimize management and/or staff costs rather than visitor enjoyment. Research has shown that manager and visitor perceptions are frequently widely divergent (Peterson 1974).

The problem addressed in the study reported here was to assess how visitors to the backcountry at Great Smoky Mountains National Park perceive current management policies and to determine how they would react to proposed changes in those policies. In addition, the effectiveness of the park's delivery of information concerning these policies was evaluated.

METHODOLOGY

The study objectives were met by means of a questionnaire administered on site in the backcountry and by observing recreation behavior at campsites, popular backcountry destinations, and along trails. The interviewing and observing were scheduled so that an individual visitor probably would not come in contact with both. This discussion will focus on the observation methodology and its results.

The survey and observations were made from May to September, 1983 at selected sites throughout the park. While conducting personal interviews, the researchers were clearly identified as being affiliated with the National Park Service. However, during observation periods the identity of the researcher was not revealed.

Day users and overnight users were included in the study. The backcountry destinations accessible in a one-day trip such as Charlie's Bunion, and along trails leading from popular trailheads including Deep Creek and Alum Cave. Overnight observation sites were selected shelters and backcountry campsites geographically distributed throughout the park. Each site was visited at least twice during the summer though most were visited much more frequently.

Specifically the following information was noted during each period of observation:

- (1) At shelters and campsites:
 - Group description, including group size, age, sex of each group present
 - Arrival and departure time of each party
 - Time budget of activities of each party
 - Notation of any behaviors that were illegal, depreciative, or inappropriate for backcountry areas
 - Notation of type and quality of equipment of each party
 - Notation of compliance with park permit regulations
 - Any statements made concerning park policy or management activities

- (2) At backcountry destinations:
 - Group description
 - Arrival and departure time
 - Time budget of activities
 - Notation of equipment
 - Notation of inappropriate behaviors
- (3) Along trails:
 - Group description
 - Notation of equipment

RESULTS OF OBSERVATION

The observation portion of the study contributed much to meeting the objectives of the research. In fact, the results can be considered an overwhelming success. The methodology did prove to be more effective at campsites and destinations than along trails.

Overnight users.

Using unobtrusive observation to collect information about backcountry campers proved to be very positive. The time budget showed that conversation among and within groups was the most common activity at campsites and shelters. Conversation topics included itineraries, background such as hometowns, weather, wildlife encounters, and exchange of trail condition information. This fact made data collection much easier since researchers acting as participants were able to spend a great deal of time with respondents. Informal discussions were very common yielding valuable information for future backcountry decisions.

Observation was easier at shelters since all parties were forced to be in close proximity. At campsites, camping parties were farther apart but still tended to interact. The number of people at a shelter or campsite was always 20 persons or less so that no problems were encountered in keeping track of each group.

In recreation areas where backcountry camping is allowed in a large geographical area rather than specific sites, or where there are no restrictions, application of observation would be more difficult. Much more effort would be required to get the same amount of data.

As noted earlier, two objectives of observation are to identify depreciative or unsafe behavior caused by lack of knowledge or skill. Both of these behaviors were commonly encountered. Some examples are noted. One hiker carried rat traps in his pack to rid shelters of rodents in direct violation of park wildlife regulations. Consumption of marijuana and/or alcohol were commonly encountered. Even some cases of violent behavior caused by alcohol and drugs were observed. Violations of permit regulations were routinely found.

Further, the incidence of lack of skill and/or knowledge was very apparent. Many overnight campers were ill-prepared equipment-wise for their backcountry trip. Also common was the apparent ignorance of (or rejection of)

park suggestions concerning bear safety in the backcountry. Knowledge of hypothermia was woefully inadequate. Many visitors had no rain gear, map, or first aid kit. Most of this type of information would not be available from questionnaire results.

Day users.

Observing visitors to backcountry destinations proved to be rewarding as well. In contrast to overnight users, data gathered on day use tended to be more visual than verbal. Opportunity for discussion with visitors was more limited due mainly to the length of stay by visitors. However, the information gathered will be most useful.

One problem that occurred, though infrequently, was the arrival of so many visitors to study sites at one time that the observer was overwhelmed. It became difficult to keep groups separate. To repeat, this problem occurred very infrequently.

Observations along trails were less fruitful. Hikers rarely stopped or even slowed down making it difficult to obtain sufficient data. Conversations between hikers and observers were extremely infrequent. Some information could be obtained visually. Researcher time would be much better spent at campsites or destination points.

CONCLUSIONS

Unobtrusive observation was found to be an extremely useful technique in gathering data about backcountry users. The nature of backcountry camping lends itself very well to observational research where observers can become active participants (Campbell 1970). Day users at destination points in the backcountry also are very observable. The technique is especially useful when applied in conjunction with personal interviews. We feel that our study was extremely successful with few problems encountered. We would highly recommend the use of unobtrusive observation in other wildland areas where researchers are attempting to study recreation behavior.

LITERATURE CITED

- Campbell, F. L. 1970. Participant observation in outdoor recreation. J. Leisure Res. 2(4):226-236.
- Lucas, R. C. 1982. Recreation regulations - when are they needed? J. Forestry 80(3):148-151.
- Peterson, G. L. 1974. Comparison of the sentiments and perceptions of wilderness managers and canoeists in the BWCA. J. Leisure Res. 6: 194-206.

APPLICATION OF UNOBTRUSIVE RESEARCH METHODS
IN A COMMUNICATIONS STUDY AT
GREAT SMOKY MOUNTAINS NATIONAL PARK

John Peine
Craig Walker
Uplands Field Research Laboratory
Great Smoky Mountains National Park
Gatlinburg, Tennessee 37738

Immediately following the Workshop on Unobtrusive Measures to Study Social Behavior in Parks, a research project was launched at Great Smoky Mountains National Park to evaluate the effectiveness of selected media utilized by park management. Study topics were limited to those media applications generated at the park level: the park newspaper, short range radio system, bulletin boards, and touch screen computer. The study was designed to assess: (1) information needs as perceived by visitors and managers; (2) visitor awareness of the media; (3) when, where, and by whom was the media used; and (4) which messages were received, retained, and/or used. Design changes were made on a radio message, a bulletin board, and a computer menu to test for the effect of the application of design principles. Unobtrusive measures were used in conjunction with personal interviews for the assessment of both the bulletin board and touch screen computer.

Observation of bulletin board use at the Sugarlands Visitor Center provided valuable insight. The observation periods, lasting three hours at a time, were randomly distributed over 27 mornings, afternoons, and evenings during the summer months. Data collected on 1430 individuals included the following: whether visitors glanced or stopped at the board; whether they ignored, scanned, or read specific articles; the time spent at the board; and the user's sex, age class, and affiliation with group size. This data proved to be a useful comparison with a recall question posed to people after their viewing of the bulletin board. Results dramatically demonstrated that posting a message on a bulletin board does not necessarily mean it has been communicated to the park visitor. When the design was changed, the pattern of time spent at the board and topics of interest changed significantly. This kind of assessment was just as important to the study as that gained through personal interview.

Observation of users of the touch screen computers also proved quite insightful. The three-hour observation periods for the touch screen were distributed over 14 days in the summer, resulting in 797 observations. In this case, the interest was to establish the flow pattern of computer users while in the visitor center. What point did users come from and where next did they go? Time spent at the computer was also recorded, as was sex, age class, and relationship to a group. In addition, personal interviews were conducted to assess interest, usefulness, and the need for further information. The combination of interviews and observations provide a more complete picture concerning how the computer would best fit into a visitor center operation.

One discrepancy appeared between the unobtrusive and questionnaire data after the design change. A higher percentage of people remembered seeing some of the articles than was observed viewing them.

Insight into the application of unobtrusive techniques was gained from the study. Comparison of answers from opinion questions and related observation data generally provided cross-validation of study findings. In one case, however, comparison proved contradictory. After the design change was made on the bulletin board, observation (686 cases) revealed a lower percentage of user interest in some posted articles than did a recall question of what people

remembered from the board (220 interviews).

The mechanics of recording unobtrusive data were not that smooth initially. The volume of traffic to observe was greater than anticipated and therefore multiplied the expected volume of data collected. The length of sampling periods was probably too long as a result. Transferring the voluminous data to a computer proved tedious as well. A better formatting scheme would have helped.

Heavy traffic at the visitor center also interfered with determining the pattern of visitor flow to and from the touch screen computer. Often the large number of people around the computer would obscure the movements of those users who had just left the machine, making it difficult to track them throughout the visitor center.

Even with these shortcomings, the benefits of adding the unobtrusive techniques to the study far outweighed the problems encountered.

DATA FOR INTERPRETIVE PROGRAMMING:
A CASE STUDY IN OBSERVATION

Laura B. Szwak
Recreation Resources Assistance Division
National Park Service
Washington, DC 20240

Unobtrusive techniques of data collection can be used to gather valuable information about park visitors for planning, operations management and programming. This report describes a case study of an observation technique used in three parks of the national park system located in the Washington, D.C. area. The purpose of the project was to test the observation method at three different kinds of areas. A survey team worked with the park staffs responsible for designing interpretive programs. These interpreters kept records about who attended their programs, but they needed more information about the general park public for comparison with their statistics. They were trying to define their market with the purpose of potentially expanding it. The methodology was adapted to accommodate the different resource types and varying information needs of managers in each park.

Site Descriptions:

The sites where the methodology was tested are described and labeled as a reference for this paper.

Fort (Fort Washington Park, Maryland)--The area consisted of a Civil War fort, a historic site on the banks of the Potomac River, surrounded by 340 acres of grassy, open fields and group picnic areas.

Forest (Prince William Forest Park, Virginia)--The forest was a natural resource area of 33,000 acres with a 35-mile trails system and dispersed visitor patterns.

Falls (Great Falls Park, Virginia)--The falls referred to a natural resource area with a waterfall as the primary attraction and visitors concentrated in the area of the park developed with picnic areas, overlooks, and a visitors center.

Method

The study consisted of two types of observation--at the park entrance and onsite. Special observations were also conducted at the falls and the fort.

Entrance Observation

Purpose: The entrance observation resulted in a demographic description of the people entering the park as well as their mode of entry and origin.

Description: An observer sat at an entrance to the site recording the characteristics of each group entering the park. A group was defined by the mode of entry--car, camper, etc. Bicyclists or walkers entering the park in one cluster were defined as one group. Entrance observations were taken every two hours for 15 minutes. The observation period varied within each two-hour time period.

Observation elements: Mode of entry (jogger, car, walker, bicyclist, RV, etc.), state, handicap (from the international symbol or "HP" on the license plate), county (from the color-coded Virginia resident sticker on the wind shield), group size, gender, ethnicity and age.

Problems: The assignment of group size, limited to the type of vehicle, was not representative of an accurate group size onsite. However, vehicle group size was used as a multiplier with the traffic counter to determine visitor counts. The entrance observation provided verification or determination of an accurate multiplier. Some visitor characteristics were hidden, such as motorcyclists with helmets; vans and campers with many people sitting inside; vehicles with front windows only or shaded windows obscuring the view. Observers were instructed to omit an entry rather than record data based on a guess. Also, during heavy use periods, visitors in some vehicles were not counted due to a fast rate of vehicle entry.

Evaluation: For those parks with a traffic counter, the sample goal was to record 10% of the groups entering the park. The goal was realized overall for each of the areas. However, on weekdays and at the forest, a less frequented park, the percentage was slightly lower. Therefore, for future use, it was recommended that the observer remain at the entrance for 20 minutes when visitor use is expected to be light. License plates were not expected to be an accurate reflection of out-of-state use, especially in the Washington, D.C., area with its high concentration of local residents in the military. In the three parks selected for the study, the primary need for data was for the percentage of the park population coming from each of the neighboring states--Virginia, Maryland, and District of Columbia. The state designation along with the identification of county sticker provided an estimate of distance travelled by visitors to these suburban park areas.

Onsite Observation

Purpose: The data from the onsite observation was used to compare characteristics of people onsite with those entering the park and to sample the extent and variety of activity occurring in the park.

Description: For the onsite observation, the observer followed a predetermined route through the park recording characteristics and activities by visitor groups. The park was divided into sectors. The observer entered a sector and transferred his/her "snapshot" view of the people and activities in the area onto the observation form. The sectors represented areas in the park with higher visitor concentration. The observer's path started in different sectors every observation period, but the progression through the sectors remained the same. The observers were instructed to enter a particular sector, record the activities occurring by group and continue to the next sector. Emphasis was placed on recording the activities taking place in the area. Any group entering the sector after the observer entered it was not recorded.

Observation Elements: Age, gender, group size, activity, handicap, and ethnicity. The demographics were repeated as a reliability check with the entrance observation. Only observed handicaps could be recorded.

Problems: The observers were limited to one hour to complete the entire rotation through the park. If the park was extremely crowded, the rotation took longer. Factors affecting accuracy of results included observer fatigue (especially on hot, crowded summer afternoons) and observer perceptual differences. Activities of an illegal nature were expected to be underrepresented even though the observer tried to be unobtrusive. Observers did not wear official Park Service uniforms, but they carried clipboards and did not try to disguise their activity.

Evaluation: In two of the areas, the characteristics of the park visitor were similar between the onsite and entrance observation. At the fort, the results were quite different. Upon consultation with park staff, it was determined that the park was subject to a large number of visitors who drove into the park, but did not get out of their cars. A closer examination of the data supported this assumption; i.e. a high percentage of vehicles with a single occupant.

Special Observations

Purpose: Special observations determined if the characteristics of the public visiting a particular structure or area differed from the general park population.

Description: At the falls and the fort, the interpreters wanted to obtain data about the park population of a special site or area. These areas included the fort building and a visitors center. The observers followed the same procedures and used the same form as the entrance observation. The observer sat at the entrance of these special places for 15 minutes every two hours. As in the entrance count, the starting time varied within the 2-hour time period to avoid bias.

Observation elements: Gender, group size, handicap, ethnicity, age.

Problems: The special observations were relatively simple and provided the observers a needed rest on hot summer afternoons. However, on crowded days the onsite observation took longer than the one hour allotted, resulting in delays in the schedule. These delays were usually made up by skipping the special observation. A tally of the observations revealed that the data were significant for time of day/day of the week analyses, but this resulted only from oversampling the number of days.

Evaluation: The special observations supported the hypothesis that the people visiting these special areas differed from the general park population. Since park staff and other services were concentrated in these areas, the observations defined the market taking advantage of these park resources. As shown in the results, explained later, the special observations revealed highly useful management information.

General Sampling

One goal of the study was to show how the visitor profile changed by time of day and day of the week. Therefore, the sampling procedure was based on time and day of the week. The sample consisted of 18 days (22 days for the forest explained later)--4 Saturdays, 4 Sundays, 10 weekdays--selected randomly between July 1 and Labor Day. Holidays were excluded since these days represented atypical summer use in these parks. The time of day was defined differently for each park, but it was basically two-hour time segments. For each two-hour time period on those days, 15 minutes were spent at the entrance, 1 hour onsite, and 15 minutes at the special observation site (if applicable). Starting times and the sequence for each observation type were randomly assigned to avoid biases created by scheduling. The goal of the sampling plan was to fill each cell (time by day) with three observations to result in significant data. For example, three entrance observations were needed for 7-9 am on weekdays, 7-9 am on Saturdays, and 7-9 am on Sundays. Also, three onsite and three special observations were needed during these same time periods.

Observers were unobtrusive but not secret about their activity. That is, the observers did not wear official Park Service apparel or uniforms, but they carried clipboards and answered questions when approached. Only recreational visitors were included in the sample. Any groups participating in official park programs were also excluded since the study population focused on the general park visitor.

Training was conducted onsite. A total of six observers conducted the surveys. Overall observer reliability averaged from 75% to 90%. Age accounted for the most variability by observers.

Adaptations of the Method

The survey design and procedures were tailored to each area with the involvement of the staff who were benefitting from the information. The adaptations were dependent on the information needs identified by staff and by the different circumstances found in each resource type. The following topics illustrated how the study was tailored and how the resulting information was made more useful to the park staff.

Instrument development: The park managers selected categories and level of detail for the observation elements. For example, a list of recreation activities at urban parks guided their selections (from "A Practical Guide to the Use of Observation in the Study of Urban Parks," by Thomas A. More, Northeastern Forest Experiment Station, U.S. Forest Service, 1983). One park manager wanted the age categories delineated more discreetly--old/young adults and old/young teens. This delineation provided more useful data for programming. In one park, managers believed that the "older teens" represented a particularly troublesome group, and they needed more information about the activities of this group. Ethnicity ranged from "white," "black," "other" in one park to the addition of "hispanic" and "oriental" in the other areas.

Designation of park sectors: Due to its large size, the forest had to be defined by nonadjacent sectors. Each sector had a unique procedure for the observer to follow when recording information. Since staff wanted to find out the market served by their interpretive signs, the sectors included those areas including the signs as well as the most populous areas. Staff outlined the areas where they wanted information, but the survey designers defined the individual sectors to conform to methodological constraints and natural boundaries.

Sample characteristics: Park staff decided the time periods sampled and the days. Originally, the study was designed to sample time periods to correspond with the park's opening and closing--sunup and sundown. Recreation studies have also documented the differences between Sunday and Saturday park visitors. Each manager also chose the level of sampling by day, i.e. Saturday, Sunday, weekdays. Since the forest park also accommodated overnight camping, staff wanted Fridays treated as a separate day of the week, under the assumption that different visitor patterns resulted on Fridays.

Results

Percentages were calculated showing changes in park composition by time of day and day of the week. Generally, of all the variables describing visitor characteristics, ethnicity resulted in the most differences by both time of day and day of the week. Overall, percentages by age did not vary significantly by time of day or day of the week. For gender, the percentages were typically even for men and women, with slightly higher percentages of males in the early morning. Fishing also was recorded more frequently during this time, which might explain the overrepresentation of males. Each park analysis resulted in a 40-page report, but a few interesting observations affecting park operations planning and programming resulted. These findings are grouped by park area.

Falls: The falls area resulted in a visitation pattern that varied by time of day for each day of the week category. For both weekdays and Saturdays, the peak visitation was reached between 1-3 p.m. On Sundays, heavy visitation did not begin until after 3 p.m. yet remained fairly high after 7 p.m. As is typical in many recreation areas, Sundays accounted for over 50% of the visitation. All kinds of activities occurred in the park--weddings, candlelight dinners on the rocks, sports. One interesting finding showed that persons recorded as "other" for ethnicity accounted for 33% of the problem or illegal behaviors (drinking alcohol, littering, picking flowers, unleashed pets, other inappropriate behaviors) recorded. In this park, the "other" category included persons of primarily middle eastern/arab background. This percentage is much higher than their overall percentage in the park. The observation at the visitors center also showed that this ethnic group did not go to the center. From this finding, the park interpreters learned that the visitors center was not an effective place to expose this population to lessons on "environmental ethics."

Forest: The sectors in this large resource area included trail heads and picnic areas. Campgrounds and organized group camp areas were not part of the

sample. Each sector had a different procedure. Generally, the observer had to spend one hour in each sector recording visitors and their activities. The goal was to observe each sector three times. The data were not significant for each sector by time of day and day of the week. This procedure showed what visitors did in each sector at random times of day and days of the week. It also provided park staff with information about the concentration of visitors in this remote area. For example, a total of 55% of the sample were recorded in the picnic area near the park entrance; i.e. half of the people in the park who got out of their vehicles used this area. The most valuable data obtained was a picture of activity within each sector. The trailheads were not areas frequently visited by park staff. By obtaining data concerning concentration of visitors and activities, the staff felt better equipped to serve the needs of the people presently using the areas as well as to attract potential users.

Fort: The observations showed two different parks in terms of types of visitation patterns, visitor characteristics and activities. These areas corresponded to inside and outside the fort. Happily, no sports, games or picnicking was recorded inside the fort, but these were the primary activities outside the fort. Weekends showed the same visitation patterns, with weekdays showing a completely different group of visitors. The table illustrates the results more clearly. The interpreters at this particular park were especially interested in finding out where the children were located. As shown in the table, a slightly higher percentage of children were recorded in the fort.

Comparison of the park population visiting the fort with the general park population (in percents)

	<u>Fort</u>	<u>Rest of the Park</u>
Average Group Size (in persons)	3	7
Gender:		
Male	53	53
Female	47	47
Ethnicity:		
White	69	11
Black	29	87
Other	2	2
Age:		
Children	29	25
Teens	21	18
Adults	48	55
Senior Citizens	2	2

Comparison of the park visitor population on weekends and weekdays
(in percents)

	<u>Weekdays</u>	<u>Weekends</u>
Average Group Size (in persons)	2	2.5
Gender:		
Male	67	57
Female	33	43
Ethnicity:		
White	63	22
Black	35	76
Other	2	2
Age:		
Children	14	18
Teens	17	15
Adults	66	65
Senior Citizens	3	2

Conclusion

The observation technique yielded information about the visitors actually onsite an area. The nonreactive nature of the survey did not interrupt the recreational experience of the visitor, yet it provided a system to record what people were actually doing within a recreational area. It did not rely on what people said they were doing or going to do. A consistent data-gathering process would reveal changes in visitor composition and activity behavior over time. Repeating the process over time would identify trends in visitor use, giving park managers the ability to plan resources to meet visitor needs, and helping them mitigate visitor impacts on the resource.



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environment and cultural value of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

U.S. DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCIENCE PUBLICATIONS OFFICE
75 SPRING ST., S.W.
ATLANTA, GEORGIA 30303

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF THE INTERIOR
INT-417

