



# TRENDS

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The park movement today is perhaps in the most dynamic period of its history. Thus, it is particularly worthwhile for this new publication, TRENDS, to ride the crest of the wave and signal the ideas and events which are broadening the park course.

Increased population, increased leisure time, increased mobility, increased interest in outdoor recreation, and increased social sophistication are factors well known to parkmen. They are factors which make the job of park land management a far more complex situation than it was in 1916.

As recently as five years ago, the National Park Service bore the paramount national burden of facilities for America's vacationing public. Since then a multiple-use act has been passed by

millions of Americans who desire to vacation outdoors.

The pressing complexities of our times further necessitate additional areas where solitude can be known, where Americans can touch the slow swing of the seasons, and learn in depth the natural processes of this planet. I was impressed last September at the Nairobi meeting of the International Union for the Conservation of Nature and Natural Resources by the degree to which our world-wide conservation colleagues expect the United States to protect its wild park treasures as the heritage of all mankind.

The degree to which this country can maintain wilderness and civilization side by side will mark our success as conservation planners. We have lost all save a few fragments of the Indiana

Dunes. We have a Redwood remnant in the State of California, where by cutting and pasting and praying we may yet save a national park op-

## PARKS: THE CHALLENGE OF EXCELLENCE

● by STEWART L. UDALL - Secretary of the Interior



Congress, making outdoor recreation an avowed purpose of the national forests. Land and people-minded states like California, Pennsylvania, New York, and Wisconsin, have approved bond issues for major park and recreation land acquisition. Impressed by the importance of these examples, Congress is currently considering the Land and Water Conservation Fund bill, which will make Federal matched funds available to all states for conservation planning, acquisition, and land development.

A keystone in the endeavor to build an adequate people/land ratio is a series of proposed federal recreation areas: Tocks Island, Fire Island, Assateague, Bighorn Canyon, Oregon Dunes, and Ozark Rivers. These areas have been conceived for high-density visitation, and their proximity to population centers means that they will fulfill the recreation requirements of

portunity from the leveling tread of civilization—if we are lucky. There will be but a few more great national parks, and the larger task ahead will be that of preserving these treasures for posterity.

We are stepping into a new era of creative park management. The park experience is essentially a qualitative experience, and park managers are finding that their domain spans the most imaginative concepts of architectural design and spacial utilization, with the deepest insights in the realms of ecology.

The challenge of excellence is on all sides. Parkmen are challenged in the taste and design of campgrounds, facilities, and roads they construct, and are challenged more fundamentally in cases by whether to construct at all. Increasingly, it is being found that arrangements with complimentary agencies outside park boundaries can provide requisite facility expansion. Scenic and conservation easements and other voluntary devices are enabling parks to radiate an enjoyment of nature in more and more communities every day.

As a people, Americans have become obsessed with the sedentary mobility and speed that their automobiles provide, and in terms of park visitation this attitude often limits the outdoor experience to a surface glance. The Long Range Study of the National Park Service emphasizes that while adequate provision will be made for automobiles, a greater encouragement will be given visitors to leave their cars and enjoy a sojourn in nature, away from the roadway.

The importance of parks to science is growing as eminent scientists from all over the world recognize that these reserves are the ultimate stronghold of unmodified life processes. Science is making an increasingly important contribution to park management as the results of basic research are applied in developmental decisions.

Of all professions, the park profession has a chance to deal in superlatives. Its leaders are taste-makers, and they must be ambassadors of aesthetics, of good land use, and of national conservation attitudes.

*Yes--State, Federal, and local cooperation is needed in the outdoor recreation area as it was never needed before--alongside that American spirit of initiative and ingenuity found in private enterprise.*

### Trends in PARKS and RECREATION

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*"In seeking the creative," states Dr. Calvin W. Taylor of the University of Utah, "one may find some important leads by looking somewhat away from, instead of directly toward, the target. Clues for spotting creative talent may be obtained by watching the reactions of others around a person... if some individuals in a group appear excited, disturbed or threatened, perhaps there is a creative person around, whose ideas and work are being at least vaguely sensed as threatening the present scheme of things."*

*What do these "disturbed or threatened" people do in such a situation? "In control groups observed by psychologists, the uncreative, status-quo-directed people invariably united to humiliate, contradict and ultimately banish the creative person who came up with a new, original but, to them, threatening idea."*

## ANOTHER MILESTONE

With this, the first issue of TRENDS, we begin a new phase of the Park Practice Program. With it we hope to explore an entirely new dimension in the Program's efforts to communicate useful knowledge to park and recreation people.

The eminently successful Park Practice library, which now reaches across the nation and around the world with its publications DESIGN, GUIDELINE, GRIST, PLOWBACK, and supplements, has heretofore supplied people with information about tried and proven subjects. In this respect, these publications are reportorial in character but without any degree of advocacy. This is as it should be, for those persons who deal with the planning of the many facets of park and recreation developments, the administration of such developments, and who are dedicated to seeing that they are appropriately used and enjoyed, are amply qualified to determine which of the plans or the policies or the practices are best suited to their own particular needs.

This same philosophy will be followed in TRENDS, but with this important difference: everyone in any recreational calling, or in any discipline bearing upon parks and recreation, is warmly invited—indeed, urged—to contribute new concepts, new philosophies, new approaches to old problems. We ardently want this paper to be a forum for a wholesome exchange of views. The mounting problem of ever-greater numbers of people with more leisure time, with greater mobility, with increased earning power and with widely divergent recreational requirements furnishes a fertile ground for thoughtful contemplation. TRENDS can give them voice.

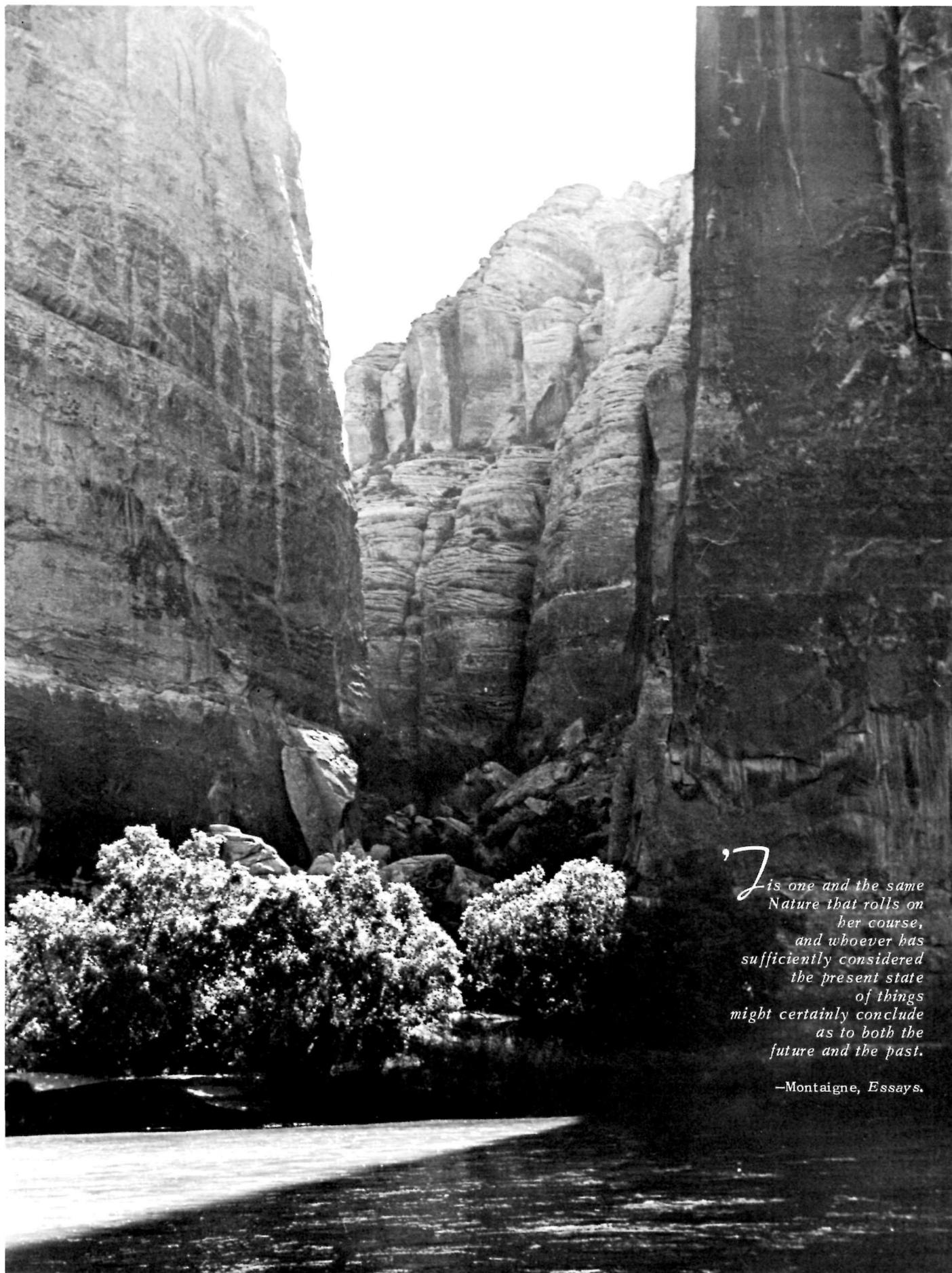
These pages, then, are dedicated to the diffusion of knowledge in answer to such broad questions as "Where are we going?", and "How do we get there?" rather than to the general statement "This is how we do it." Obviously, the Park Practice Program, its sponsoring and cooperating organizations and their officers cannot be always in true accord with the philosophies and pronouncements of the contributors, but TRENDS can, and will, encourage those having views worthy of consideration to present them here.

Research and study, as well as thoughtful analytical perception on the part of contemplative persons, shall be the prime source of knowledge for these pages to communicate. We offer now an opportunity for all who may wish to do so to express their points of view regarding the future of parks and recreation and the direction which should be taken in any one of its many disciplines, "for out of the minds of men shall proceed the future welfare of all the people."

—Ed.



A wilderness canoe route



*'Tis one and the same  
Nature that rolls on  
her course,  
and whoever has  
sufficiently considered  
the present state  
of things  
might certainly conclude  
as to both the  
future and the past.*

—Montaigne, *Essays*.



Forest recreation began with the dawn of history, but we were well along into this century before the public really discovered the woods and those of us in forestry realized a complex of problems was upon us and research was necessary for their solution.

Years ago, outdoor recreation on the National Forests was sort of an "extra"—a minor and somewhat incidental use of the forest. Even though recreation use was minor, recreation opportunities started to become part of the forester's thinking more than 50 years ago. The first official recognition of recreation on National Forests appeared in the Chief Forester's Report for 1912. In 1918, the first recreational survey of National Forest lands was made, and the potentials for forest recreation came into sharper focus. New land-use problems were also appearing. Recreation use was often concentrated and was of sufficient

## OUTDOOR RECREATION RESEARCH IN THE U. S. FOREST SERVICE

● by WALTER S. HOPKINS, Jr.

concern in the 1920's that E. P. Mieneke made studies of campground ecology in California (21) (22). A few years later (1940), Lincoln Ellison, similarly concerned that developed sites were becoming tired and worn, initiated studies of campground restoration in Utah (8). By 1940, annual National Forest recreation visits had tripled in 20 years to 16 million but the real impact of forest recreation came after World War II. By 1956, there were more than 50 million visits, and this year (1964) we expect to welcome at least 130 million visitors. Today, recreation is indeed a major forest use.

In 1956, the Forest Service employed Samuel T. Dana, Dean Emeritus, School of Natural Resources, University of Michigan, to identify and analyze the major problems in the field of forest recreation. Dr. Dana's "Problem Analysis—Research in Forest Recreation," which highlighted physical, biological, sociological, and economic problems related to the recreational use of forest lands, is the bench-mark for our recreation research program (7). The Forest Service Branch of Forest Recreation Research was established in 1957, and our first forest recreation research center was established in 1959, at Warren, Pennsylvania (3). At present, we have 22 professional research scientists at eight regional Forest Experiment Stations working full-time on problems of forest recreation.

Forest Service research in recreation deals with national and regional problems on both public and private forest lands. Two problems are in the vanguard. First, recreation administrators must know how to restore worn, heavily used sites, how to plan and select new sites, then be able to manage these areas so that a desirable recreation environment and the other forest resources can be maintained. To do this, we must learn more about the capabilities of soils and vegetation in intensively and extensively used recreation areas. Second, we must learn more about the people who go to the forests, woodlands, and wilderness

● A native of Denver, Colo., Mr. Hopkins earned his BS degree in Forestry at Colorado State Univ., in 1937. He has served in various fields of forest recreation research for 20 years, beginning his career with the U.S. Department of Agriculture, Forest Service as a Forest Research Assistant at Fort Collins, Colo. He spent 4 years as a Range Conservationist with the Soil Conservation Service in the Rocky Mountain Region, and served 3 years in the Navy during World War II. Since 1962 he has been Chief of the Branch of Forest Recreation Research in the Washington Office of the U.S. Forest Service.

areas for their outdoor recreation enjoyment. Much better information is needed on the amount and kind of use these lands are receiving and are likely to receive in the future.

### RECREATION SITE STUDIES

We are studying the heavily used recreation site in several geographic regions. Studies of trees, understory vegetation, and soils of 137 campgrounds and picnic areas in the Sierra Nevada by Art Magill and Eamor Nord showed that most of these sites are deteriorating faster than nature is rebuilding them. Tree seedlings, which must eventually replace old and mature larger trees, were absent on 55 percent of the campgrounds, and nearly 30 percent of the older trees had poor vigor (20). Insect and disease damage has added to the problem. Natural replacement of trees and shrubs has had little opportunity to get started, and hand-planted trees and shrubs have seldom survived. Shrubs in the forest understory often considered weeds by timber growers, are indeed a campground asset—they provide screening and privacy between camp units. But, because of thousands of little feet and some big ones, too, more than half of the camps studied lacked shrubs and another 35 percent contained only a medium density of such plants. Grasses and weeds were scarce on 60 percent of the campgrounds and entirely absent on 95 percent of the individual family units—and, of course, the soils were often compacted, bare, dusty and eroded (19).

Magill, in testing methods for assessing soil compaction, found that bulk density measurements did not provide consistent results. The Proctor penetrometer, however, proved to be durable, easy to use, and sensitive enough to show differences between moderate and heavy use (29).

While these California studies revealed many problems, they also provided some valuable suggestions for campground planning and management. Shrubs and herbaceous vegetation were more abundant on moist sites than on drier situations, and tough, spiny shrubs such as mountain whitethorn, not only provided effective screening between campsites but also protected tree seedlings of desirable species. Spiny shrubs may be objection-



Interviewing recreationists to find out about their activities and attitudes is an essential part of forest recreation research. Campers are very cooperative, and usually eager to assist in improving management. Over 800 groups have been interviewed as part of three Lake States studies without a single refusal.

able to some of the campers, but the campgrounds that had these shrubs in abundance were generally in better condition.

In the southern Appalachians, Tom Ripley has found that trees and shrubs on the more fertile recreation sites can better withstand trampling, insect attacks and disease; that hardwoods are generally more resistant to these destructive factors than conifers; and that plants, such as wild azalea, rhododendron, and mountain laurel, can withstand rather heavy, sustained trampling (31) (30).

A circular slide rule for estimating the tolerance and durability of understory vegetation in recreation sites was developed by Alan Wagar in southern Michigan. By "plugging in" (1) the percentage of low-growing vegetation (grasses and shrubs), (2) the

percentage of shade, and (3) the weight of low-growing vegetation in the absence of trampling, the slide rule provides an estimated weight of low-growing vegetation that will survive trampling (35).

A small study on the effect of fertilization in maintaining and rehabilitating worn sites was made by Wagar in the Northeast. Fertilization increased volume of vegetation in lightly trampled areas, but it had no apparent effect on grasses and shrubs in heavily trampled sites (34).

#### STUDIES OF FOREST RECREATION USE

Vegetation and soils studies at the recreation site are only part of the job. Recreation management decisions and investments can be sounder and more productive when we know more about the recreation visitors and their desires. How many and when? How long do they stay? What are their preferences and why? And, what is the impact of recreation development on other forest resources?

One task is to find better, inexpensive ways of counting recreation visitors. In California, Dick Bury and Ruth Margolies asked the question: "Can attendance at a 'bellwether' or indicator campground be reliably related to campground attendance throughout an entire administrative unit?" This idea was studied on a 23 campground district of the heavily used Stanislaus National Forest. The results indicate great promise. On an average day, total attendance could be estimated within 10 percent of true attendance from counts made at only one campground. Between-year stability also proved to be good. During the two years of the study, patterns of attendance were quite stable, and estimates for an entire season's use could be made with even greater accuracy than for single days (6).

At winter sports areas, Bury and Hall found that records of ski-lift tickets or restaurant receipts can be related to recreation use. Receipts related to use over a 2-month period provided estimates within 18 to 24 percent of true attendance for an average day, and estimates within 8 percent of true attendance for the 2-month period (5).

Bury also found that campgrounds along or near highways on California National Forests received a markedly different kind of use than campgrounds off the beaten track. Visitors were



Traffic counts recorded by the cars shown in this photo estimated total use at Alexander Springs on Ocala National Forest with a high degree of accuracy and a minimum expense.

more often without children, traveled in smaller groups and typically stayed only overnight. Less accessible campgrounds were occupied mostly by 4-person families who stayed for either a weekend or an entire week (4). A "by-product" gained from this study showed that about 70 percent of the camping families brought portable stoves, and that nearly half of the visitors did not use the installed fire grate (28).

A study by Wagar on the White Mountain National Forest in New Hampshire shows that we can relate by ratio and regression the number of campers in unsupervised campgrounds (where a family simply drives in and camps) to the number in supervised campgrounds (where fees are charged or campers are registered). A relatively small count of the number of campers in unsupervised campgrounds provided an estimate within four percent

of the actual total season use on all the campgrounds on the forest (36).

In the southern Appalachians, using highway traffic counters, George James and Tom Ripley developed a double-sampling system using relatively simple regression techniques to relate axle counts to type of recreation use (camping, boating, picnicking, etc.), number of visitors, average party size, and peak use (11).

Alan Wagar, now working in Utah, reminds us that campers come in many varieties. Some prefer to be surrounded by many of the conveniences of home and the sociability and security of other people. In contrast, other campers pack their equipment across miles of rugged country in search of solitude and the experience of roughing it in truly wild surroundings. Camping tastes of all shades lie between these extremes, and the needs of different campers cannot be fulfilled by one type of campground. Wagar suggests and describes 7 types of campgrounds to meet these varying needs (33).

Variation in design and layout within the campground itself may be desirable to protect areas from deterioration and to satisfy the needs of gregarious groups as well as those seeking privacy. In an Oregon study, Bill Burch found that 27 percent of the filled single-family campsite units were occupied by 2 or more families, even though there were empty and available single-family units in the same campground (27).

Further information on the importance of campground design and its effect upon the popularity of some campsites and nonuse of others was highlighted by Dudley Love in a Rocky Mountain study. Campsites within 50 feet of the parking area were used more than those over 50 feet; sites more than 100 feet apart were used more often than those closer together; and sites more than 50 feet but less than 200 feet from a fishing point were preferred. Love further found that visitors preferred to camp more than 50 feet but less than 200 feet from toilets, and they preferred to be not more than 150 feet from a source of drinking water. Tents outnumbered travel trailers by a ratio of only 3 to 2. Average number of visitors per party was 4.8. Young adult families (21-39 years) with children under 13 years of age were the dominant visitors. Middle-age adults (40-59 years) were next. Day users (picnickers) numbered about the same as



Swimming use, as shown in the photo was also estimated accurately.

overnight campers, but day users accounted for less than 10 percent of the total visitor hours—their average stay was 2-1/2 hours. Campers averaged 27-1/2 hours (15).

A study of the use of picnic facilities by Hubert Burke in Pennsylvania showed that picnickers seldom used tables more than 250 feet from a parking area (24). Even under extremely crowded conditions, only a few of the tables 300 feet from the cars were used, and tables beyond 400 feet were not used at all. People would spread a blanket between two occupied tables near the parking strip rather than walk the relatively short distance to an empty table. This, of course, means that portions of the recreation site are becoming heavily worn while the remainder of the site is underused—and it further means that recreation planners must reconsider layout designs and must also search for ways to encourage picnic visitors to

want to walk a few extra yards.

An analysis by George James, Frank Johnson, and Frank Barrick was made of the location of 4,100 deer kills during four hunting seasons on 14 wildlife management areas in North Carolina. Most deer were harvested close to roads and trails, but important differences were found between the Piedmont and the western mountain region in the use of forest access. In the steep, rugged mountain areas, largely populated with rural residents, hunters made exceptionally good use of all portions of the forest, and their kills were uniformly distributed. Hunters in the gently rolling Piedmont, on the other hand, coming from nearby cities, apparently stayed close to access and did not penetrate into the more remote sections. In all areas, trails were used as heavily as roads, indicating that for hunting areas where additional access is desired, trails, which are less expensive and usually more aesthetic, may be considered (10).

In the Northwest and in the Lake States, we are measuring recreation use in wilderness-type areas. In Oregon, Wiley Wenger and Bill Burch found that most of the wilderness visitors were Oregonians or out-of-State friends accompanied by Oregonians, who walked into the area in groups of 2 to 5; stayed just for the day, and returned to their homes less than 100 miles away (26).

In Minnesota's Boundary Waters Canoe Area, Bob Lucas finds that the number of visits per year is considerably higher than had been estimated by older measurement systems. However, total man-days use is less than previous estimates because the average stay is shorter (16). A large number of the visitors stay on the area's fringes (in motels and hotels), and like most of the Oregonians, enter only for the day for sight-seeing and fishing. This characteristic of many recreation visitors was substantiated by Ross Tocher and Frank Kearns at Utah State University whose study showed that our urbanized citizen is accustomed to and wants modern conveniences. They found that many campers would camp for two days, then spend the next night in a motel to enjoy clean white sheets and a hot bath (32).

Minnesota's Boundary Waters Canoe Area might be called a semi-wilderness. Recreation under primitive conditions is combined with logging which is limited to protect scenic values. Visitors in all parts of the area were interviewed by Bob Lucas and Dave King (17). Only 18 percent of the visitors were aware of the logging and only 5 percent of the visitors were bothered by it. A greater conflict is the family in the motorboat vs. the family in the canoe. Boundary Waters canoeists apparently don't mind sharing the lakes with many other canoeists, but they object to motorboats; even one is considered a violation of the pristine surroundings (13).

Solitude and wilderness are subjective concepts and hard to define, but research by Lucas has shed some light on how visitors "see" the wilderness in the canoe country (18). Many different types of visitors come to the area—canoeists, boat campers, fringe campground campers, summer home users, resort guests, and one-day fishermen. Canoeists are the largest group and see the wilderness differently than other visitors. They considered wilderness the main appeal of the area, and they set a high standard for their wilderness. The more visitors an area had the fewer canoeists saw it as wilderness. This loss of wilderness, however, was fairly gradual so long as motorboats were absent. The land area that met their image of wilderness was smaller than for other visitors and smaller than the officially established area.

The other types of visitors—most of whom used motorboats—had a different picture of the wilderness. Wilderness was a less important attraction for most of them—fishing and scenery equaled or exceeded wilderness as an appeal. Their "wilderness" was not lost even where recreational use was fairly heavy. Simple roads were accepted. A large area, much of it outside the boundaries of the Canoe Area met these standards and was viewed as wilderness by the boaters. These images help explain some of the distribution patterns, and also suggest ways of zoning to increase the recreation capacity of the area.

A study to encourage more dispersed use has been started by Roscoe Herrington in the high mountains of northeastern Utah. There we are exploring the idea of expanding the recreation opportunity by providing "pint-size" primitive units easily

traversed on foot—a micro-wilderness (9). The objective is to make the entire perimeter of such an area readily accessible. Then, with an adequate system of trails and maps, and with simple, appropriate signs, one may hike reasonably short distances to surroundings just as wild and lovely as those in the center of a large wilderness. If successful, the micro-wilderness can broaden the recreation opportunity and lessen the pressure on highly developed areas.

In Colorado and Wyoming, Dudley Love found that hunters prefer undeveloped campgrounds (14). In 1961, only 9 percent of the hunters in 1,791 camps used campsites especially developed for them; 24 percent used existing campgrounds or picnic sites; the remaining 67 percent simply camped in the woods. As is true of the family camper in California, the traditional campfire and fireplace seem to have no great appeal to the Rocky Mountain hunter—58 percent of the hunters used a wood or gasoline stove for both cooking and warming.

#### ECONOMIC ASPECTS OF FOREST RECREATION

The Forest Service, Economic Research Service, and State Agricultural Experiment Stations are exploring the recreation resources and opportunities on small woodlands. Twenty percent of our Nation's people live in six Midwestern States (Iowa, Missouri, Illinois, Indiana, Ohio and Kentucky), and 95 percent of the forest land in these States is privately owned—mostly in small woodland tracts. Publicly owned recreation areas are limited and crowded. The opportunity for income-producing forest recreation developments on many of these private holdings would appear good, but survey results so far show that many of the farmer-owned recreation campgrounds and related woodland enterprises have not been profitable (2) (25). The task now is to probe deeper, learn more about these private enterprises, their problems, their opportunities, and their customers.

Owners of small woodlands in Ohio who provide forest recreation for a fee were compared by Dwight McCurdy with neighboring woodland owners who are not in the recreation business. Recreation providers were more often (1) nonfarmer businessmen who had attended college, (2) newcomers to the area, (3) from an urban background, (4) in debt, (5) active in community affairs, (6) avid readers, and (7) were themselves vigorous participants in outdoor recreation.

In a related Ohio study of fee-charge woodland picnic areas, McCurdy found that more than one-third of the entrepreneurs lost money in 1962. The more successful enterprises were within 30 to 40 minutes of a population center, were better financed, and offered a variety of activities such as outdoor game areas (softball, volleyball, horseshoes, etc.), boating, fishing, and swimming. A major management problem for the owners is



An extensive study of campgrounds and picnic areas in the southern Appalachians revealed important relations between area characteristics and use. Measurements of trees, shrubs, soil, facilities, and design on 280 family units provided information for analysis of factors relating to area use and degradation.



Extensive damage to campgrounds and picnic areas is associated with dense shade and little or no protective shrub barrier (above). The absence of ground cover not only contributes to erosion, but also is associated with a high rate of damage and loss in the overstory (below).



Ericaceous (Heath family) plants, especially rhododendron, provide good screening between units and afford protection to the site by controlling and limiting human activity.

keeping their enterprises neat and clean. Many of the less successful entrepreneurs recognize that lack of facilities limits their opportunity, but state they have been unable to expand because of insufficient capital (23).

Studies to characterize the campground visitors in Ohio and elsewhere are now underway. The socio-economic characteristics of family campers in the Huron-Manistee National Forests in Lower Michigan were compared by Dave King with the populations from which they came. Most of the campers were in the middle and upper-middle income brackets, and educational levels are fairly high. A high proportion of the campers are from professional, managerial, and skilled labor occupational categories. The study suggests that Visitor Information Service programs should not underestimate campers' level of understanding, and that recreation use fees would not be a serious barrier to this type of Michigan camper (12).

Similar results were obtained by Burch and Wenger in Oregon, who also found that most forest campers had significantly higher incomes than the population at large. Their Oregon study further showed that the majority of the campers came from urban areas, but had rural or small town family backgrounds (27).

The last research study I want to mention is an economic study made in California. The question has frequently been raised: "If all or most of the potential National Forest recreation sites were developed, what would be the effect upon timber production?" The results are quite encouraging. A study of the impact of recreation development upon commercial timber production was made by Elliot Amidon and Ernest Gould on three National Forests in California—one within easy access for 8 million Californians; one moderately accessible; and one in the north far removed from population centers. It was determined that the recreation capacity of the three Forests could be increased 1,000 percent by full development of all suitable sites, and that the sustained yield timber production capacity following such development would be reduced only 13 percent (1).

#### FUTURE NEEDS TRANSCEND MORE THAN FORESTRY AND RECREATION

Now, where do we go from here?

A major objective of research is to help determine what type of recreation opportunities are needed, where, and for whom, and then develop guidelines for planners and managers to provide the out-of-doors for visitors to use and enjoy and not spoil.

Certainly, along with universities, foundations, and other Federal agencies we must define the opportunity for private recreation development, especially in the East and Midwest. We need to know the requirements for a successful income-producing recreation enterprise. We must learn if and how these requirements will vary from region to region. To do so, we need to know a great deal more about recreation visitors, and I hope, be able to predict how they, their demands and interests will vary in the years ahead. Soon, there will be 50 million more of us. We are told we will have more leisure time, more mobility, and more disposable income. How will the recreation wants and needs of tomorrow's visitors reared in urban surroundings vary from many of today's visitors whose forebears grew up in a rural setting? We are assured, despite the magnitude of the technological changes of the past 50 years, that even greater changes can be expected in the next 50 years. Can we develop better ways to look ahead and predict some of the impacts on outdoor recreation?

I think those of us in forest recreation research have made some good progress in learning how to physically manage the recreation site. We should. Foresters have been managing lands for a long time, but we still have a long way to go. We still need to know more about soil capabilities, vegetation durability, and effective restoration procedures to manage heavily used areas and in planning new high-density sites. As we do so, we must coordinate recreation with the increasing demands of all kinds upon the forest and its resources. The land manager's job of knowing his recreation visitors—what they like to do, how long they will stay, and how many of their fellow visitors he can expect—then stay in tune with the years ahead—and help provide the throngs a wholesome recreation experience—isn't going to

be easy. Research of many kinds by many groups and individuals is a must, and we must penetrate more deeply than we have so far. And, the goals will be much clearer when you and I better understand these quantities we call "recreation" and "leisure."

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Under the leadership of its new Director, George B. Hartzog, Jr., the Park Service has recently undergone a major reorganization. Recognizing the importance of the overall research program for the Service as a whole, an Assistant Director for Resource Studies has been appointed to coordinate and direct this program and to represent research in the top councils of management. He is also responsible for the preparation and coordination of cost estimates for research projects so they may be budgeted and programmed in the furtherance of effective long-range planning. It is his responsibility to present, whenever required, the total overall Service research "picture". Thus a permanent, independent, and identifiable research unit has been established to conduct and supervise all research, whether performed by Service personnel or other cooperating agencies. Consultation with this unit will normally precede all decisions on management operations involving preservation, restoration, development, and interpretation.

A Resource Studies Review Committee has also been established in the Washington Office. This Committee is composed of those members of the management and administrative staff who are directly concerned with the research program. It functions in an advisory capacity in reviewing research proposals, and in recommending project priorities on a Service-wide basis. It is expected that a similar committee will be formed in each regional office to review the individual park research proposals and programs and to recommend priorities on a regional basis, thus assuring a well planned, comprehensive, coordinated research program for the entire National Park System.

The Park Service recognizes that one of the prime prerequisites to effective and original research is the necessity for a reasonably good atmosphere under good working conditions. It is the responsibility of the Assistant Director for Resource Studies and the staff of the research unit to endeavor to create the proper atmosphere for research by imbuing the entire Service with the desire for, and an appreciation of, applied research, and to encourage fresh ideas and original thinking in seeking solutions to conservation and preservation

## The FUTURE of HISTORICAL RESEARCH in the NATIONAL PARK SERVICE

● by JOSEPH P. CULLEN

President Kennedy declared: "There is little that is more important for an American citizen to know than the history and traditions of his country. Without such knowledge, he stands uncertain and defenseless before the world, knowing neither where he has come from nor where he is going."

The Congress in the Historic Sites Act of 1935, declared it to be a "national policy to preserve for public use, historic sites, buildings and objects of national significance for the inspiration and benefit of the people of the United States." The National Park Service is the Federal agency primarily charged with this preservation of America's historic heritage of sites and buildings, and with the obligation to "provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

Conrad L. Wirth, former Park Service Director, has stated: "Guess work is not good enough for our American heritage." The philosophy behind this statement calls for a strong historical research program, and considering the obligations and responsibilities of the Park Service to present and future generations, it is obvious that historical research will be a constant part of its program. In addition, to cope with the ever increasing pressures and complications of our fast changing society, this research program will have to increase in both magnitude and complexity.

problems.

In the future, in carrying out the program to support historical preservation, the Service will emphasize the urgent need for a broadened approach to saving valuable evidences of the past in all its aspects; not merely the classically antique, the quaint or the venerated period piece, whether an object, a building or a complex of buildings. An industrial building, a market place, a theater, a farm house or a brownstone tenement, indeed any piece in the mosaic of the American past, should be considered for salvage from the accelerating threat of destruction. Selective preservation that sacrifices valuable remains of other periods and facets of the nation's history in order to illustrate a single period may prove to be a disservice to later generations. The Service must thoughtfully examine its own standards of preservation and apply them to the needs of other with broad perception and foresight for the saving of those historical resources that, once lost, can never be replaced.

As in the past, historical research will always be essential in the evaluation, selection, development, interpretation, and management of the areas in the National Park System embodying historical values. Research is required to define boundaries and to determine the proper location of roads, utilities, visitor centers, signs, markers, exhibits, and other facilities. It is essential in presenting accurately to the public, either in publications, talks, guided tours, or museums, the significant historical data pertaining to the American heritage represented in historical areas.

But there are also other research needs. While the general histories of most areas in the Park System are known, their detailed history is not; data to relate vital events to definite points on battlefield terrain is lacking in many areas; and information for historical restoration and preservation of buildings is urgently needed. For example, more data is necessary to identify and provide information to guide the restoration and interpretation of prime features of the Independence Square

● Mr. Cullen, a native of New York City, earned his BA degree in 1947 and an MA degree in 1948 at Syracuse University. In April, 1958, following his position as College Representative for Prentice-Hall, Inc. Publishing Company, Mr. Cullen joined the National Park Service as Park Historian, Richmond National Battlefield Park. From 1961 to 1963, he served as Park Historian at Fredericksburg National Military Park, Virginia. He is presently serving as Historian with the Division of History and Archeology in the Service's Washington Office.

group of historic buildings in Philadelphia. These include the Assembly Room at Independence Hall, which witnessed the adoption of the Declaration of Independence and the drafting of the Constitution, and the House of Representatives Chamber, Congress Hall, where Washington was inaugurated for the second time and John Adams took the presidential oath; Congress Hall was also the Capitol of the United States from 1790 to 1800 and is the oldest building in existence relating to the operation of the Federal Government. To carry on authentic restoration of such historically important buildings, to develop the landscape pattern of Independence National Historical Park so that the natural and man-made features are completed in harmony with the historic scene, and to provide complete authoritative interpretation to millions of visitors each year—all this requires vast information that can be obtained only through skilled and intelligent research by the professional historian, architect, and archeologist.

The value of this type of research has been proved time and again in the past. For example, it located the site of the original flagstaff from which the Star-Spangled Banner flew in 1814 at Fort McHenry in Baltimore, which enabled its restoration, and provided other basic knowledge for the development of this famed War of 1812 fortification. At San Juan National Historic Site in Puerto Rico, historical research has produced accurate data to guide the restoration of the oldest masonry fort under the United States flag. By means of historical, architectural and archeological research, the appearance and historic use have been established for the historic buildings at Harpers Ferry National Monument, West Virginia; in the early iron making community at Hopewell Village National Historic Site, Pennsylvania; and at the Old Hudson's Bay Post and United States military fortification at Fort Vancouver National Monument, Washington. Research at Jefferson National Expansion Memorial in St. Louis has accomplished the authentication of important museum exhibits to tell the great story of American expansion west of the Mississippi River after 1803.

The Park Service also conducts the National Survey of Historic Sites and Buildings. This is a continuing program, the major purpose of which is to discharge the Secretary of the Interior's responsibilities as set forth in the Historic Sites Act. The basic data developed by the program aid the Federal Government in determining its role in historic and prehistoric preservation. In like manner, state and local preservation groups are encouraged to take a more active part in saving the historical heritage. These data are also necessary in preparing Presidential proclamations, national historic site designation orders, Departmental reports on proposed legislation, replies to congressional inquiries, and to private and semipublic requests regarding the preservation of important sites. They are also essential in assisting the Department of the Army, Bureau of Reclamation, Corps of Engineers, and the Office of Territories with their historic sites problems. And it is the responsibility of the Survey staff to study historical preservation methods and techniques in foreign countries in order to keep abreast with new information and improvements.

The Park Service clearly recognizes that under such auspices as those of the United Nations and other public and private organizations, world wide interest in historical preservation and interpretation has greatly expanded. To continue to contribute its share in the world wide conservation movement, and to help as well as to learn, the Park Service will cooperate vigorously in international historical affairs. Its philosophy will be to encourage the conservation and wise use of the historical resources around the world, thereby promoting mutual understanding and friendship among nations.

In the final analysis then, the Park Service historical research program in the future will be judged on the basis of how significantly it contributes to the achievement of the overall Service objectives, the fulfillment of the master plans for the individual parks, the extent of cooperation and help given to other agencies and countries, and to a large degree, on the manuscripts and publications that are produced.

Carpenter's Hall showing the facade of New Hall to the right. Restored brick and stone walks and simulated cobblestone street are shown.



Practitioners in the park and recreation business like to speak of travel trends in huge numbers—seven, eight, or nine digit numbers. Their percentages, also, are big. Their disquisitions are replete with 150% increases, 84% expansions, and so on. About such effervescent pronouncements we want to ask a question: "Are they true?"

As to their raw validity, statistical statements about the explosion in total recreation are true—but they are not always the truth. Whether or not they are the truth is a function of one's knowledge and consciousness of the level of aggregation. Thus, if we are concerned with totals of park visitors changing over periods of time measured in decades, the assertion that travel is surging upward is both true and the truth. At the opposite extreme in level of aggregation, daily travel to a single recreation area customarily rises on weekends and falls off after the weekend. The daily change cannot be said to be one of continuous increase.

At the higher level of aggregation, monthly travel to systems of recreation areas customarily exhibits a violent seasonal pattern—sharp peaks during the summer and a deep trough in the winter. At a still higher level of aggregation, it is true that recreation travel to park systems is, in most years, higher than that in the preceding year. But not always. National park visits dropped rather sharply during 1932-35, 1942-45, and again in 1958.

Even during years of continuous increase the rise is not constant. Thus, national park travel from 1946 through 1962 followed an oscillating five year cycle around a long run rising trend. However, the expected cyclical softening of park visits in 1963 and 1964 has not materialized, so that absolute periodicity in cyclical behavior does not occur. A neat statistical theory is exploded. Spice has been added to the statistical adventure.

Moreover, all units of a recreation area system do not participate equally in the upward movement. To illustrate from the National Park System, Bryce Canyon, Rocky Mountain, Platt,

## THE NON-SIMPLE FUTURE

● by  
RENDEL B. ALLDREDGE

● Rendel B. Alldredge was born in Portland, Oregon and obtained his BS degree in Economics at the University of Oregon in 1942. Between 1946 and 1949 he attended Stanford U. From 1953 to 1956 Mr. Alldredge was an Economic Advisor to the Eritrean Government. He has been a statistician with the National Park Service since 1957.

Yellowstone and Yosemite have, over a recent decade, demonstrated significantly less strong upward propensities in their travel data than have Everglades, Mesa Verde, Kings Canyon and Great Smoky Mountains National Parks.

Still further, all types of recreation activity do not move in a uniform pattern over time. One study showed that parks situated so as to be conducive to through travel, (visitors could drive through on their way to another destination), showed significantly greater expansion than those not so situated. Camping, it is alleged, is exploding. This is true, but not wholly the truth. Campers are not a homogeneous lot. There are tent campers and campers with trailers, slip-on units, or other constructed or specially outfitted mobile units. Insofar as the national parks as a whole are concerned, tent camping has exhibited very little increase since 1955. Nearly one half of last year's camping occurred in trailers and the like. This 50% is virtually equivalent to the total of camping a decade ago when trailers and the like were just beginning to appear in volume. So it would seem that most of the increase in camping may be charged to trailer camping.

Enough has been said to support the assertion that a true statement may really hide the truth. Truth in statistics is a function of the level of aggregation.

The moral of the recitation is this: when we look to the future, plan, program, or design for the future, our gaze, we are persistently reminded, should be bold. But let us be not alone bold lest we cross the threshold into foolhardiness. The look need not be bold—but it must be sophisticated.

Every park, whether local state or national, has at least two things in common with all other parks. First, each park is for people—for people to use and enjoy. Though the uses and enjoyment may be different from park to park, people are a common denominator. And we are concerned—each of us—with how our park is used. We must protect it so its values, whatever they may be, will continue unimpaired. Everything that park people do is aimed at these two things—people using the park, and the maintenance of park values.

we take these things for granted. There probably is no park interpretive program which could not be improved in some way. We in the National Park Service recognize that personal service generally is the best form of interpretation. But, since we can no longer afford this, we must seek other ways to provide it.

This brings us to a consideration of audiovisual methods. Eight years ago the National Park Service turned its attention to the possibility of strengthening our interpretive efforts through the use of audiovisual tools. Many park people have been using slides and movies in evening and other programs since at least the 1930's. But the few projectors available then were a far cry from the wealth of equipment available now. Today the use of audiovisual tools and methods in park interpretation has improved to the point that sometimes an automatic audio or audiovisual device may do a better job even than a live interpreter. Let us consider an excellent interpreter who can really hold and inspire a group of visitors. No audiovisual device can compete with him for the first three or four presentations. But—what will be the quality of this man's tenth or fifteenth presentation on the same day?

Then consider those interpreters who are not excellent speakers—those whose first presentations are just passable. We cannot expect their tenth presentation to be even passable. On the other hand—a carefully planned and well produced audio or audiovisual presentation will have the same quality the tenth or the fiftieth time as it had the first time it was presented—granted that someone has given it a small amount of regular preventive maintenance. Furthermore, sometimes an electronic device can do things that could be done only rarely by a live interpreter. How many interpreters can effectively demonstrate bird songs or calls? A tape recording in a message repeater can.

There is one very important and basic rule for effective audio stations. The rule is that audio stations are most effective in situations which provide something to see related to what is being heard. If the subject is interesting to look at, what visitor would not prefer to continue to look, while listening to a description, rather than having to look away from the subject to read a label or sign?

And—how many lines on a label will visitors read anyway? Everyone of us has turned away from a label without finishing it simply because it was too long. Any label that takes more than

15 or 20 seconds to read probably will not be read by a majority of people. And what about labels that take two or three

## A-V MATERIALS IN INTERPRETIVE PROGRAMS

● by DONALD J. ERSKINE

This is so because improper use will result in the destruction of park values. This we cannot permit, so we try in various ways to get people to use the park properly. Most park people recognize that a program of park interpretation can, not only help people enjoy the park more, but can also contribute significantly toward proper park use. Through interpretation visitors gain understanding; through understanding comes appreciation; and through appreciation comes the desire to help protect park values.

So, we set up an interpretive program. We provide conducted walks, special talks at points of interest, evening programs; we develop museum or trailside exhibits; we put labels on things; we prepare descriptive booklets; and we answer questions from visitors. But after we have done these things, are we sure that we have a good interpretive program? Do visitors really read and understand the trail guides, the nature labels? Too often

minutes to read? Experience convinces us that people will listen to considerably longer messages than they will read—even up to three minutes IF the message is related to something that can be seen and is interesting or pertinent.

We readily admit that there are some disadvantages to audio stations. They are more expensive to buy and install, and they require more maintenance than a simple sign or label. But, against that, their advantages weigh heavily in their favor. Certainly, they deserve serious consideration in planning any interpretive program. Remember, they are equally effective indoors or out IF the subject is interesting to look at while visitors listen to its story.

It is our opinion that, in general, audio stations indoors should normally be equipped with individual handphoned listening devices instead of a loudspeaker. An audio message from a loudspeaker usually is intrusive and thus objectionable in a room with more than one exhibit, or in a lobby or other heavily used room. Use of handphones overcomes this problem. In some of our installations we have installed both handphones and a loudspeaker—with a hidden switch available to permit use of the loudspeaker for large groups, while handphones are in use at other times.

Another type of installation we have found highly successful is the use of sets of captioned slides shown on a rear projection screen by an automatic projector with a rotary slide carrier or drum. The pictures and captions can be made to tell a connected story, or each captioned picture can carry its own individual message.

● Mr. Erskine, a native of Detroit, Michigan holds an AB degree in Economics and Sociology from Stanford University (1932). He began his career in the National Park Service as a Seasonal Ranger-Naturalist at Sequoia National Park in 1932 and remained in that capacity until 1955. He subsequently served in a number of permanent positions as Park Ranger and Park Naturalist, and as Superintendent of Muir Woods National Monument, California, 1955-1956. Following his position as Park Naturalist assigned to the Washington Office, he served in the capacity of Audiovisual Interpretive Specialist, and on December 6, 1961 became Chief of Audiovisual Services.

And then there are audio guiding systems of several types. Any series of regular audio stations that carry related messages can be considered an audio guiding system. But here let us consider leased systems which use devices that visitors rent. Most of you have heard of the radio type guiding systems. In these—small, specially-designed radio sets receive whatever message is transmitted from message repeaters to wire loops in each room. However, another type of rental electronic guiding system today is winning increasing favor for both indoor and outdoor use. This type utilizes small, lightweight tape repeaters powered by rechargeable batteries. This method has two advantages over radio type systems.

First, it doesn't require tearing up a floor or ceiling to install wires. Each repeater is self-contained. Second, the fidelity and intelligibility of the recorded message is generally superior to that in radio type systems. One such unit—the Tele-Tour unit—has four tracks, any of which may be selected at will. This permits the use of four different messages or the same message in four different languages.

Another excellent unit of this type is the Acoustiguide, which the National Park Service is using with the voice of the late Mrs. Eleanor Roosevelt at the Home of Franklin D. Roosevelt at Hyde Park, New York. The National Audubon Society is considering the Acoustiguide for guided tours on nature trails in state parks, for some of whom the Society acts as a consultant.

We've mentioned slide projection and tape repeaters separately. When you put them together and let tones on the lower or inaudible, track of the tape, trigger the slide changes, you have an automatic sound/slidefilm. And there are several automatic, repetitive motion picture projectors with sound—available for both 16mm and 8mm film. These have been improved greatly in the last few years and their use is increasing.

Let's suppose that your're interested in using audiovisual tools and want to get started. There are a few points on scripts that we've learned are important. Writing for listening is not the same as writing for reading. Remember, a listener must understand your words the first time he hears them. He can't go back and read over a sentence he doesn't understand. If he misses a point in an audio message, you can lose him completely.

This means that you must use simple words and short sentences—straightforward sentences. You're on very shaky ground if you write about things the listener will not be able to see, or which do not relate directly to what he can see.

Keep the message short. Our experience suggests that visitors won't stand in one place longer than about three minutes—so that is our usual top limit for a standing situation. We also feel that a good one-minute message will generally be more effective than a good two- or three-minute message. There are exceptions; these are generalities. But, remember you can't tell everything. Stick to a basic, essential story. Leave out non-essential details.

You, yourself, will have to determine the extent to which you should or can use audiovisual tools in your park. There are situations where audiovisual methods are not the answer—nor sometimes even appropriate. But, certainly, you should give equal consideration to audiovisual methods, along with other interpretive methods, before you finally select the method you will use to provide interpretive service for your park visitors.



Everglades National Park

## NATIONAL AQUATIC PARKS

● by RUSSELL K. GRATER

In the midst of rounding out the National Park System, there is a real need to give attention to our aquatic resources that are worthy of protection.

We have only scratched the surface thus far in the preservation of aquatic values. Buck Island Reef National Monument and the Virgin Islands National Park are only preliminary steps in a move that should bring into the System areas of unquestioned uniqueness as underwater parks.

Through the years the National Park Service has acquired as parks and monuments superlative examples of land areas featuring unique scenic, historic and scientific values. Today we have equally outstanding examples of underwater areas that are still in a relatively undisturbed condition. They possess all the qualities required to merit consideration as a part of the System. We have only to evaluate such areas and determine which are of sufficient quality to warrant designation as parks.

For several years I have urged that at least one major underwater park should be established on the West Coast. Outstanding examples can be found along the coast of Southern California and in the Channel Islands—to mention only one general region. Santa Cruz Island, now being considered for inclusion in the System, has some of the finest underwater areas to be found. It also possesses large marine animals in numbers that rival our land species. Similar conditions exist around some of the other nearby islands. The coast from Monterey south to San Diego has a number of possibilities. Time is important, however, as these areas are now undergoing damaging changes from unrestricted use and exploitation.

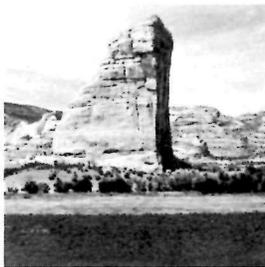
In the waters around the Hawaiian Islands are areas of unusual beauty, featuring coral formations and the usual colorful assortment of fishes. While not of the caliber of the Great Barrier Reef, they constitute the finest examples we have of the fauna of the South Pacific and Phillipine Sea. It would seem fundamental that we should study these waters thoroughly and select at least one outstanding example of this unique marine resource and preserve it for the future.

Other areas—around Puerto Rico, the Gulf, along the Northwest coastal region—have real potential. Wherever the waters are warm, there we can expect to find a rich assortment of animal and plant life.

There is no feature in Nature with a more universal appeal than water. Given the opportunity, the camper will choose to put his tent near water; the family on a picnic prefers the same situation. People love to stroll the ocean or lake shores, interested in all sorts of things that may be found there. Every tidewater pool is a source of interest and wonderment. With such a "built-in" interest in the aquatic world, it seems strange indeed that we have only one area specifically set aside to exhibit our finest marine values.

Within our national parks we possess a number of lakes and streams that have great, and as yet relatively unexplored, possibilities for aquatic interpretation. They are already protected; they can simply sit there until we get around to recognizing their potential. Such is not true, however, in our marine areas. These can, and are, being exploited. Whole environments are being destroyed. We do not have time on our side if we are to preserve the truly unique values that still remain. These values should be recognized for what they are—superlative examples of Nature, worthy of being preserved for all time as parks.

●Mr. Grater earned his AB degree at Wabash College, Indiana and subsequently studied at Denver University, Yale University, and Long Beach College. His career with the National Park Service began as a Seasonal Ranger at Glacier National Park and carried him to the position as Naturalist at Grand Canyon and the Western Regional Office in San Francisco. Since 1962 he has been Supervisory Education Specialist at the Service's Stephen T. Mather Training Center, Harpers Ferry, West, Virginia.



*"National Parks are . . . more than areas of importance for the aesthetic, spiritual, inspirational and educational values inherent in their physiographic and biological features. They are irreplaceable natural laboratories in which scientific studies can be carried out which would not be possible in even the most elaborate and conventional man-made laboratory. In the national parks it is possible to study the structure, interrelations and behavior of biological communities, discover how they are adapted to their environment and compare them with the artificial communities elsewhere created by the clearings, drainage, and contamination, and by the introduction of exotic animals and plants by man. They offer the opportunity to pursue long-term ecological studies difficult, if not impossible, to conduct elsewhere."*

. . . from the Report of an NAS-NRC Committee to the National Park Service on Research

National parks and monuments do indeed offer unparalleled opportunities for research on natural phenomena in an exceedingly wide variety of environmental conditions. The many biological investigations completed or underway in these areas, by scientists of universities, industry, and government, exemplify the diversity of research opportunity which these remarkable outdoor laboratories afford. Nearly all extremes and intergradations of environmental conditions can be found represented in the more than 200 parks, monuments, recreation areas, etc., administered by the National Park Service. These range from the high altitude and alpine conditions of Mount McKinley National Park, to the below-sea-level—extreme desert environment of Death Valley National Monument; from the luxuriant vegetation of Hawaii Volcanoes and Olympic National Parks to the relatively barren landscape of Craters of the Moon National Monument, or the cactus forest of Saguaro National Monument. Early post-glacial forests of Glacier Bay National Monument contrast with the flooded mangrove forests and sawgrass vistas of the subtropical Everglades National Park, and hot springs and geyser waters of Yellowstone National Park with the cold waters of alpine lakes in Glacier National Park, or the mineral springs of Platt National Park and the underground rivers of Mammoth Cave. From the North Atlantic marine habitat of Acadia National Park to the coral reefs of the Virgin Islands, and from new-formed ash and lavas of Katmai to the primitive climax hardwood forests of the Great Smokies, a remarkable range in environmental situations invites the attention of ecologists.

A number of the areas contain the sole remaining populations of certain animals and plant species in North America. The protection provided these organisms by the Park Service enables them to survive despite the pressures of man and other inroads of civilization. In addition, however, this protection permits the animals and plants to be studied in their natural habitats, relatively unchanged and undisturbed.

Recognizing the remarkable opportunities available in the parks and monuments for natural area research, the National Park Service seeks to encourage competent investigators to make the fullest use of national park areas for research. Well-planned, bona-fide investigations, that contribute to the

training of your scientists, or give promise of adding to man's knowledge of nature, are very much a part of the use benefits of national parks. Such research may not, of course, be of a kind or involve methods which would damage or alter the natural character of the environments involved.

#### ADDITIONAL RESEARCH IS NEEDED

National parks are a scientific resource—an outdoor laboratory for the use of scientists in advancing man's knowledge of nature and nature processes. Moreover, their objectives must be stated in ecological terms, and their management based upon

scientific knowledge and techniques. This was stated clearly by the Secretary's Committee on Wildlife Management.—

"The goal of managing the national parks and monuments should be to preserve, or where necessary to re-create, the ecological scene as viewed by the first European visitors . . . A national park should represent a vignette of primitive America.

"The implications of this seemingly simple aspiration are stupendous. Many of our national parks—in fact most of them—went through periods of indiscriminate logging, burning, livestock grazing, hunting and predator control. Then they entered the park system and shifted abruptly to a regime of equally unnatural protection from lightning fires, from insect outbreaks, absence of natural controls of ungulates, and in some areas elimination of normal fluctuations in water levels. Exotic vertebrates, insects, plants, and plant diseases have inadvertently been introduced. And of course lastly there is the factor of human use—of roads and trampling and campgrounds and pack stock. The resultant biotic associations in many of

our parks are artifacts, pure and simple. They represent a complex ecologic history but they do not necessarily represent primitive America.

"Restoring the primitive scene is not done easily nor can it be done completely . . . Yet, if the goal cannot be fully achieved it can be approached. A reasonable illusion of primitive America could be recreated, using the utmost in skill, judgment, and ecologic sensitivity . . ."

from WILDLIFE MANAGEMENT IN THE NATIONAL PARKS  
by Drs. Leopold, Cain, Gabrielson, Cottam and Kimball



The coral reefs of the Virgin Islands invite the attention of ecologists

## NATIONAL PARKS AS NATURAL SCIENCE RESEARCH AREAS

by GEORGE SPRUGEL, Ph.D.,  
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with HOWARD STAGNER, M.A.  
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National Park Service

*Research is the key  
to knowledge;  
Knowledge is the  
master of tomorrow.*

Despite the number of investigations completed or in progress, a great deal more research in the Natural Sciences will be required to meet the management goal described by the Leopold Committee. Natural Sciences research is often a long and drawn out effort. Final answers cannot be expected to appear overnight. Although stop-gap management measures can sometimes be identified in a relatively short time, the basic information upon which really sound management is based must be carefully and methodically obtained and then be most carefully related and interpreted.

Proper management of animals and plants is not a simple matter, but must be based on intimate understanding and careful manipulation of factors which limit the organisms' wellbeing. Thus, we must have a thorough knowledge of not only the biotic form to be managed but, in addition, it is necessary to develop an intimate understanding of the basic biology of other plants and animals whose interrelationships with the managed organism may be the factors determining its survival and wellbeing. Fur-



A study of insect infestation in ponderosa pine trees

ther, in the case of plants and certain animals, it is essential to know the characteristics of the substrata and of the microclimate to which they are exposed.

The mission-oriented program of the National Park System must meet both the long range needs. Of immediate importance is the research that seeks quick solutions to some of the very urgent natural history problems facing our management personnel in certain of the parks and monuments at the present time. These should be recognized as stop-gap measures designed to reduce the rate of deterioration of the resource until more adequate management principles can be established following thorough study.

But, in the long view, research that will ultimately be of greatest usefulness to the Service will involve basic studies of every feature and factor represented in each natural area. These are not the kind of investigations that are simply defined, easily financed and programmed. Nor will they give quick, sharply focused answers to management problems. These are investigations, however, that over a period of many years will provide the data and the basic ecological understanding upon which sound management and preservation must be based.

As suggested by the Leopold Committee, restoration of the primitive scene might be impossible to achieve in all instances. Yet, if the National Park Service is to respond satisfactorily to the charge contained in the legislation pertaining to the Service, and the areas which it administers, every reasonable effort must be made to reestablish and/or maintain the natural conditions as they obtained when the national parks and monuments were authorized. This means a high degree of ecological management in which research and the application of scientific skills play an important role. The first step is to ascertain as accurately as is possible the natural conditions as they existed at the time the sites were officially established. Next, is the determination of the environmental requirements of the organisms and the environments for whose preservation the areas were established.

An analysis of habitats as they presently exist leads to the recognition of departures from the natural, and indicate the ecological actions necessary for the reestablishment or stimulation of the desired species or ecosystem. Finally, programs of small scale experimentation will be required to test the suggested hypotheses and management procedures so indicated.

As a first step in a concerted effort to achieve a more sound and active research program, the National Park Service has organized a Division of Natural Sciences as a unit under an Assistant Director for Resource Studies who reports directly to the Director, National Park Service. The general function of this Division is to encourage the conduct of the types of earth and life sciences research which appear necessary to support the Service's mission and, hence, achieve the general objectives stated earlier.

The funds available to the Service for research are presently so limited that even studies aimed at solving the very pressing natural history problems currently existing in some of the parks cannot be financed and manned at the level desired. These budgetary and personnel limitations are such that the Service as it has in the past, must depend upon cooperation of appropriate investigators from the scientific community to initiate and carry out basic studies in the parks and monuments with funding obtained elsewhere. We are confident that such cooperation will continue. As natural scientists take more of a leading role in public affairs, it is expected that they will recognize an increasing responsibility for assuring that the best policies are established for managing our country's natural resources. Unless they also assume a responsibility for aiding in obtaining the basic information required for the identification and development of such practices and techniques, however, there can be no certainty that these objectives will be achieved.

Scientists who wish to conduct a research program in a park or monument should make their wishes known to the Superintendent of the facility concerned. Although final approval by the appropriate Superintendent is required for research to be



The climax hardwood forests of the Great Smokies, an irreplaceable natural laboratory

conducted in the area under his control, scientists may wish to address preliminary inquiries to the Regional Director of the National Park Service region in which the study site is located. These Regional Offices are located in Richmond (Southeast), Philadelphia (Northeast), Omaha (Midwest), Santa Fe (Southwest), and San Francisco (Western, including Hawaii and Alaska). Such inquiries may be addressed, as well, to the Director, National Park Service, Washington, D. C. 20240, attention, Chief Scientist.

The Service must have the active participation of these scientists in the various phases of its research program. To encourage this invaluable assistance, it can be expected that the various units within the Service will do everything commensurate with their capabilities and authority to facilitate the prosecution of such investigations.

Campground managers would be among the first to say, "Some campers just don't fit our facilities!" They have seen problems arise as equipment, activities, and interests of their visitors change. They've often found two families staying together at a campsite designed for but one. They've watched more and more vacationists rumble into their campgrounds with large trailers, and wonder how to accommodate them.

Two conclusions seem obvious: First, campers' needs remain neither unchanging nor identical. Second, problems inevitably develop when people use a campground in ways unanticipated in its design. The results can be unhappy campers, misused or unused facilities, or increased site deterioration. The difficul-

ties may be new or long-standing, simply annoying or mighty serious.

## DO CAMPERS FIT OUR CAMPGROUNDS?

● by RICHARD L. BURY

ties may be new or long-standing, simply annoying or mighty serious.

But how can a planner or manager tell which problem is worth investigating? How many of his visitors really experience each problem? Is the problem so common and so annoying—either to himself or his visitors—that a policy change should be considered?

For example, take the planner who is designing a new campground. How much space, he wonders, should he provide at each campsite for tents, trailers, cars, general activity, and separation from neighboring campsites? First, he'll probably look up specifications from existing campsite designs. These may well be suitable. On the other hand, they may be inappropriate if visitor preferences or natural features at the new site aren't similar to those underlying the model design. What our planner needs at this point is orderly, reliable information about visitor activities and equipment in areas similar to the new site.

Well-planned surveys, designed specifically to answer the questions at hand, are one of the most efficient ways of getting the required information. The kind of factual information a planner or manager can obtain may be illustrated by results of a recent survey by the Pacific Southwest Forest and Range Experiment Station of the U.S. Forest Service. While investigating the need for space at campsites, the Station's research team found that 1 of every 5 campsites was occupied by two families, a fifth of the groups hauled travel trailers, and about a fifth of the visitors slept in the open with no shelter. These results all had definite implications for campsite design in the survey area.

Periodic surveys of how people use campgrounds can produce information not only about current situations and trends, but also about difficulties unrecognized by managers or planners. With this sort of information in hand, planners can identify gaps between existing facilities and those apparently needed by visitors. Because of the great variety in camper needs and desires, some campgrounds can be less developed—and therefore less expensive to build—than others. And cooperation between public agencies and private industry can produce great opportunities for meeting needs of campers. The result should be

● Dr. Richard L. Bury joined the forest recreation staff of the U. S. Forest Service experiment station at Berkeley, California, in 1960, and has spent most of his time since then in studies of recreation use and ways to improve estimates of use. Before 1960 he had served as timber management assistant on the Ukonom District, Klamath National Forest. A native of Columbus, Ohio, he holds a bachelor's degree in forestry from Purdue University (1950), a master's in conservation from Yale (1955), and a doctor's in agricultural economics from the University of Connecticut (1961). His Ph.D. thesis was done on the impact of urban development on non-urban land uses, and besides his Forest Service experience, he has aided State and local planning agencies in Connecticut. He has accepted an appointment with Arizona State College as associate professor of forestry and will report there this summer to begin teaching of several courses in outdoor recreation.

fewer dissatisfied visitors and better use of money in campground development. Let's look again at the Station's survey to find out how it was done, where, and what were the results. Researchers recorded the kinds and combinations of equipment brought to seven campgrounds on the Stanislaus National Forest, which lies just north of Yosemite National Park in central California. The survey included all visitors staying at these campgrounds during July of 1961—a total of 1,476 groups. Six of the campgrounds were along a 12-mile stretch of road beside a good fishing stream, and the seventh lay within half a mile of a 300-acre lake. Size varied from only 4 campsites to 89 campsites; roads and other facilities were more highly developed at the larger campgrounds.

Land managers and researchers interested in the full report, "Survey of Shelter Equipment and Group Size of Campers in Summit Ranger District, 1961," may obtain a copy from the Director, Pacific Southwest For-

est and Range Experiment Station, P. O. Box 245, Berkeley, California 94701.

Here are some specific results of the survey, and some implications for campsite design in the study area.

### THE SINGLE-FAMILY CRITERION

Traditionally, most campgrounds have been built as a collection of essentially identical single-family campsites. This basic feature of design was adopted because most people camped in single-family groups, and because planners believed that uniformity would ease management and lower the costs of planning and development. Management regulations often specify only one family per campsite in order to protect these single-family campsites from accelerated soil compaction and damage to trees and shrubs.

Yet the Station's survey found that 17 percent of the 1,476 groups at these single-family campsites contained two families;



Tent Campers

another 3 percent contained three families. Thus, about a fifth of the groups that used the campgrounds were larger than single families. Must such groups be expected to cramp themselves into single-family campsites or be forced to split up among several campsites?

Suppose our planner's survey indicated that multi-family groups would be fairly common in his new campground. He would then face the problem of balancing visitor needs against ease of planning and management. For example, campground designs specifying only single-family sites are easier to apply because the planner or manager need not decide about the proportion or location of multi-family sites. And management could become more complex if more than one type of campsite were used, because the manager would have to fit campers to the facilities he had on hand.

These multi-family groups appear common enough—at least in the Station's sample area—to justify special facilities. But

provision for multi-family groups must be uncommon, since the planner's bible (Park Practice: Design) contains no campground design keyed to groups larger than a single family but smaller than organized groups. Here, then, is a matter well worth further surveys and research.

#### TENTAGE SPACE

Again, surveys can help in setting design specifications by measuring the apparent needs for tentage space. For example, consider the types of shelter used by visitor groups in the Station's survey: 45 percent slept in tents, 35 percent in trailers or coaches, and 20 percent in cars or in the open.

Campers with more than one tent need more level and cleared space within the campsite than is often provided on sloping or densely wooded sites. Where bulldozing is necessary to prepare such sites for sleeping space, level space for a second tent could be provided at little extra cost. In our Stanislaus Forest Survey, only 6 percent of the groups put up two or more tents. Therefore, this situation was probably not worth followup action. But the problem might be more important in wetter, colder climates or where insects are more common.

#### FACILITIES FOR TRAILERS

Campgrounds built in the 1930's were not designed to handle today's large number of camping trailers. The problem is becoming more acute as trailers become increasingly popular. Although campgrounds in the Station's survey had no trailer hookups for water, sewage, or electricity, 21 percent of the campers surveyed brought travel trailers, and another 11 percent hauled small trailers. Thus, about a third of the parking spurs contained trailers.

Planners and managers have met the shortage of trailer space by rehabilitating campgrounds and by restricting trailers to separate portions of campgrounds. Special trailer campgrounds have been built.

How many future vacationists can be expected to arrive with trailers? This will depend on such factors as installed facilities, fees, and the general trend of trailer popularity in the residence areas of the visitors. Again, surveys can be specially tailored to provide planners with needed information on current or seasonal use, or trends in use for areas similar to those currently being planned.

Like other campers, trailerites are enthusiastic about development of useful, attractive facilities to meet their particular needs. But some public agencies have felt they could not justify special hookups for trailers without charging a fee and, in any case, that private investment might best meet this need. In the face of current conditions, this policy of cooperation between public and private sectors should produce good opportunities for development of privately-operated trailer parks.

#### THE NEED FOR PRIVACY

People differ in their desire for privacy; some prefer large campgrounds and crowds of people, others favor seclusion. In addition, people without tents or other shelter clearly need privacy from neighboring campers. Surprisingly, about 10 percent of the family groups in the Station's survey put up no shelter, and campers from another 10 percent of the groups also slept in the open. Perhaps fewer shelterless campers would be found where the climate is less mild or insect-free; again, we might find considerable differences among locations.

Activity patterns like these must be considered when specifying standards for protective screening between campsites. Adequate screening may be assured through several means, including proper spacing of campsites within the campground, planting shrubbery and small trees where necessary, or choosing campground sites that have trees and shrubs found to stay thrifty under intensive use. The Pacific Southwest Station is investigating this problem of screening; a similar study by the Southeastern Forest Experiment Station has already produced results that can be applied to soils and plants in the mild southeastern United States.

#### CONCLUSION

A single standard for campground development won't suit everyone. Campers take to the field with a wide variety of equipment, and each expects to find facilities suitable to his preferences and equipment. And just as all campers don't want the same kind of facilities, neither do their desires and needs stand still. Equipment appears today that doesn't fit in with facilities built under yesterday's standards.

As a result, many campers can't find facilities that reasonably fit their needs and must "make do" with what is available. This lack of fit between campers and facilities also leads to management problems, including deterioration of soil and trees, conflict with established rules, and other forms of friction.

Are the rules or the campground designs wrong? Should we consider changing them? And if we did, which should be changed and in what way? None of these critical questions can be answered without detailed information about the problems at hand.

Surveys of campers can provide this vital kind of data. First, they produce the information needed for finding and sizing up the gaps between existing facilities and those apparently needed by campers. Secondly, survey results can guide overall planning by helping to specify the apparently best mix of facilities. And if surveys are repeated periodically, the resulting information on trends in visitor equipment and activities can be considered when new campgrounds are designed.



Trailer Campers

Such surveys need not be complicated or expensive. They can be just refined enough to answer the question at hand, considering what's at stake. Since types of equipment or activity are likely to depend on the area visited, questions may often be answered best through surveys designed and executed by local managers or planners. The findings from the Stanislaus National Forest survey, for example, might be perfectly valid for that area but miss the mark on others.

After the needs of campers are identified by surveys, the agencies and individuals providing recreation facilities are better equipped to decide which gaps in facilities can be filled. This could be done by comparing needs or desires of campers with such other planning criteria as maintenance of site conditions, ease of operation, and effective use of investment money. A cooperative effort might plug some gaps without major adjustments in current designs of facilities or agency programs. Privately operated campgrounds or trailer parks could supply a variety or level of facilities not found on public campgrounds, and campers could find the kind of facilities they want if a well-financed public information program were instituted.

The best solutions can be reached only if well-grounded information is available. As Franklin put it, "An investment in knowledge pays the best interest."