

## Visitor groups & interpretation in parks



Visitors listen attentively as a park naturalist relates *The Grand Canyon Story* at Yavapai Museum.

## and other outdoor leisure settings

By Donald R. Field and J. Alan Wager

RESOURCE MANAGEMENT involves the interactions between people and resources and requires knowledge about human behavior and social organization equivalent to that for a particular resource being managed. From the viewpoint of society, the objective of all resource management is to create and maintain a flow of benefits for people. Clearly, resources must be protected if they are to provide a continuing stream of benefits for people; but we must not lose sight of the fact that the management and stewardship of resources are for human benefit. Resource managers, however, have too seldom concerned themselves with people. Instead, they have concentrated their attention on the dynamics of the physical resources under their jurisdiction.

This limited view of resource management has worked fairly well for managers concerned primarily with material products like wood and beef that can be removed from their place of production and consumed elsewhere. Managers of such products seldom meet the consuming client groups. However, for parks and other recreational and esthetic resources, the final products are human experiences which are produced and enjoyed at the same location.

By adopting what we consider to be a mistaken view of their responsibilities, resource managers have neglected human response to resources. The physical environment is only one element affecting the quality of these experiences. Of equal and sometimes overriding importance are the visitor's values, preferences, attitudes, perceptions, and the social group within which he is participating. These in turn depend greatly upon his past associations and experiences with natural areas.

### A BASIS FOR INTERPRETATION

An understanding of individual behavior and group influences upon behavior is especially important for personnel responsible for interpretation. Interpretation includes naturalist talks, exhibits, audiovisual programs, labeled nature trails, brochures, publications, and other facilities and services which are provided to help people enjoy and understand the natural and cultural resources of the areas they visit. Effective interpretation requires a working knowledge of clientele groups for whom the messages are directed so that appropriate means can be used to achieve interest in as well as effective transmission of information.

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## AUTHORS

DONALD R. FIELD and J. ALAN WAGAR

Dr. Field is Research Sociologist for the National Park Service and Assistant Professor of Forest Resources, University of Washington.

Dr. Wagar is Leader of the Environmental Interpretation Research Project, U.S. Forest Service and Professor of Forest Resources, University of Washington.

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JOHN J. JACHINO

Mr. Jachino is a Ranger at Lake Le-Aqua-Na State Park, Illinois and his article as presented here was taken from a speech presented at the NRPA Midwest Regional Conference in Michigan.

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Interpretation can raise the quality of visitor experiences and is one way by which land management agencies can increase the flow of benefits they provide to the public. Interpretation can also increase benefits indirectly by providing an understanding of resources, perhaps leading people to support the management and use of resources with less impact.

We view interpretation primarily as the successful transmission of information to clientele groups. Facilities and methods are simply means to accomplish this end. Consequently, instead of beginning with a method—like a visitor center, amphitheater, or other familiar interpretive format—we need first to define our objectives. Second, we must evaluate alternative procedures for reaching that objective. Only then are we in a position to select the procedures for interpreting specific attractions or ideas for specific kinds of visitors or visitor groups. We must not rely upon a limited set of time honored techniques without examining their current appropriateness to a diversity of visitor publics. Therefore, our focus is upon two components of interpretation: 1.) the client and 2.) procedures for transmitting information. Current knowledge about human behavior in leisure settings is used to suggest alternative interpretive strategies.

### ESTABLISHING PRINCIPLES OF INTERPRETATION

Unfortunately, interpretation often falls far short of its potential for enhancing visitor experiences. Major problems diminishing its effectiveness include:

1. *An inadequate emphasis on interpretation in resource management agencies.* Do resource managers overlook the benefits of interpretation and thus allocate insufficient human and physical resources to interpretive programs? Do we recruit, train, and encourage top-flight personnel for interpretive positions?
2. *A misallocation of effort.* Do we interpret at times and places suited to our visitors? Do we present the same information repeatedly to the large percentage of repeat visitors?
3. *Working against usual behavioral patterns.* Do we harness within-group communication or work against it?
4. *Inadequate attention to visitor motivation.* Do we consider how interpretation will reward our visitors or only what we think should be communicated and how it should be communicated?
5. *Mismatching of messages to visitors.* Do we recognize the diverse ages, backgrounds, and interests among our visitors or do we aim at a "standardized" visitor?
6. *Not monitoring the effectiveness of our efforts.* Do we clearly state what we hope to accomplish with interpretation? If objectives are clear, what

feedback mechanisms do we use to diagnose how well our interpretive efforts are accomplishing these objectives?

Although research on visitor groups and interpretation is relatively new, results already suggest alternative strategies to current management situations. It is convenient to organize the search for viable alternatives around five principles.

1. Visitors and leisure settings are diverse, and a variety of approaches will be required.
2. Visitors anticipate a relaxed and enjoyable atmosphere.
3. Interpretive information must be rewarding to our visitors.
4. Interpretive information must be readily understood.
5. *Feedback (i.e., communication from visitors to the interpreter) is essential.*

What follows is a discussion of interpretive options. Some are new; others are being employed successfully in a variety of places. Each is related to a principle of interpretation. We hope the reader will examine the ideas and determine the appropriateness for his situation.

### Diversity of Visitors and Leisure Settings

Although it would greatly simplify interpretive planning if all information could be directed in a standardized format to the "average" visitor (a mythical character who does not exist), visitors differ widely in their ages, educational attainment, interests, and goals to be achieved within a natural leisure setting. Many come only to enjoy a social outing, but nearly all visitors have experiences influenced to some degree by sociability.

The goals and objectives of recreationists are partially shaped by the frequency with which they visit these places. Differences perhaps arise among these visitor publics due to familiarity. Many of those who are familiar with a specific park often seek experiences that build upon knowledge from previous visits.

While outdoor recreation areas do attract new visitors each year, a majority of the visitation which occurs arises through repeat visits by groups who attend regularly (5). Therefore, a reexamination of interpretive strategies is suggested. A seasonal as well as within-season rotation schedule might provide repeat visitors an opportunity to enjoy a greater variety of interpretive experiences. One reason for a disproportionate number of newcomers found in visitor centers might be that repeat visitors have previously viewed the displays and thus may spend little additional time there.

While parks and similar areas attract visitors from all parts of the country, many repeat visits are by residents in the immediate vicinity. Therefore,

interpreters might consider having local residents plan and maintain one exhibit which is changed periodically. A theme might be park and community history, or park-community cultural and natural events.

If exhibits and displays were self-contained and movable, they could be modified with ease. Following a "modular unit" idea, a visitor center could be changed periodically to update the content, adjust it for the time of year, or provide variety for repeat visitors. Modular units would likewise offer a staff an opportunity to test, evaluate, and modify a proposed design prior to embracing it as a permanent part of their interpretation. In addition, modular units could be rearranged to accommodate different traffic flow patterns as visitor numbers change during different parts of the season. An interpretive staff would simply use flexibility of exhibit content, design, and spatial arrangements as additional means for enhancing message reception.

Exhibits might also be made modular in a slightly different sense. Equipment for presenting slides synchronized with sound is now available in a variety of forms. This allows quick substitution of one program for another, permitting presentations to be tailored to the needs of the moment.

Too often we find interpreters assigned to visitor contact areas where only a small proportion of the total visitor publics can be found. A rotation of staff assignments to areas of visitor concentration might be required. An examination of interpretive emphasis, where and to whom and at what time, is needed. One might develop a balance sheet to assess where the visitors are and where interpreters are assigned. Sightseeing by vehicle, for example, is one of the most popular activities found in parks. Interpreters who are available along major road systems have a greater contact opportunity. Interpreters on public conveyances such as buses likewise contact more visitors. Camping is a popular activity, and campgrounds are a traditional interpretive site. Yet very seldom do we find interpreters in campgrounds in the morning, midday, or afternoon. Because picnicking is the third most popular activity in parks, picnicking areas could be used much more widely for interpreting natural and cultural features.

People usually visit recreational areas as members of social groups. Patterns include family groups, friendship groups of the same age, and groups of different ages. Although most resource managers recognize that people come to parks with others such managers often do not understand the influence of the social group upon the perceptions, attitudes, and/or behavior of individual members (4).

Because so many of the visitors reached by interpretive programs arrive in social groups rather than as individuals, the social group is an important vehicle (or format) for the transmission of interpretive messages. One of the important aspects of group behavior is the shaping of information to the level of understanding for children of different

ages. At the same time, group members who assume leadership roles as teachers or interpreters, rather than passive learners or listeners, tend to gain improved understanding of the information they present.

We must also consider opportunities for the group to gather together to share information being received. For example, relief models that show the topography of an area are among the most popular exhibits in visitor centers (12). One reason for this popularity is that they readily accommodate groups. When gathered at a relief model, members of a family or other group can discuss information of interest among themselves and can set their own pace.

#### Visitors Anticipate a Relaxed Atmosphere

Visitors consider parks and other outdoor leisure settings to be places where informality prevails and group members are free to interact. Unfortunately, however, a great number of interpretive facilities are now designed to deal impersonally with individuals as individuals, without opportunity for group interaction. Thus, in the press of serving increasing numbers of people, informal campfire programs have become formal lectures to large audiences seated in neat rows. Instead of ready access to a real live naturalist, many visitors meet only audiovisual programs and message repeaters.

We recognize budgets for interpretation severely constrain the amount of face to face interpretation that can be offered. However, informal contacts with interpreters are in many cases the most rewarding for the visitor and should be the rule to the greatest extent possible. In amphitheaters, for example, fixed benches might be replaced with less formal seating patterns, and the interpreter might move among the visitors while presenting his topic. By avoiding a stage as much as possible and allowing for periodic interruption, such as discussions or questions from visitors, he might create an atmosphere which encourages informality and participation.

As part of their informality, parks and other outdoor leisure settings are places where it is considered appropriate behavior for strangers to interact with one another. This may be unique to leisure settings and should be encouraged (1,2). Interpretive planners might capitalize on both this informality and the diversity among visitors by hiring interpreters of various age groups who could initiate informal interpretive happenings spontaneously. For example, in the Southwest where many retirees visit parks, a few should be hired to specialize in informal interpretive contacts with others of the same age. Their discussions of opportunities for retired visitors would focus not only on park attractions but on the recreational and social opportunities available in nearby communities catering to our elder citizens. In other settings where teenagers are predominant visitors, selected teenagers might be employed to present interpretive information to

their own age group. Familiarity of retired and teenage interpreters with the life style of their colleagues might make such interpreters especially effective at involving segments of our society that are often neglected in specialized presentations. In both cases, qualified people might well be available on a volunteer basis.

#### Rewarding the Visitor

One of the dependable verities of human behavior is that people tend to persist in doing the things they find enjoyable and rewarding. Yet this has often been overlooked in interpretation, especially among interpreters who have strong preconceptions about what people ought to know or ought to find enjoyable. For example, Graves (6) protested the use of tape players, movies, and exhibit systems designed for participation. If, however, we want to enhance the quality of people's experiences and want to help them understand the attractions they visit, we had better reject notions that the only worthwhile visitors are those whose values duplicate those of the professional resource manager.

Our research has demonstrated a number of factors that contribute to visitor interest in interpretation. One of the most important is to provide for visitor participation and involvement. For example, at the Ohanepecosh Visitor Center in Mt. Rainier National Park, we installed a recording quizboard that simply presented four written multiple-choice questions and permitted each to be answered by pushing electric buttons opposite the answers selected (11). When a correct answer button was pushed, a green panel reading "right answer" lighted up, the question panel just answered darkened, and another question panel lighted up. In addition, the quizboard made a rather satisfying clicking sound as relays snapped and as hidden counters registered people's answers.

Although the other exhibits in the visitor center were extremely well done, the quizboard was the only exhibit that permitted participation and manipulation. Within seconds after it was installed, it became, for children, the most popular exhibit in the center. We might further harness the "kid power" of participation which also increases the retention of information received. Ecological float trips, for example, have been initiated at Yosemite National Park. Other possibilities might include organized bike trips to interpret a particular topic. An organized game of litter removal can be more than a cheap way to clean up areas, it can be an interpretive device to instill a philosophy for "keeping America clean (3)." Interpretive programs for children only, combined with an activity like roasting marshmallows (again employed at Yosemite National Park) and puppet shows or reading of stories based on ecological principles are other examples.

To capitalize upon the principle of visitor participation, living demonstrations should be encour-

aged like those which show Eighteenth Century life patterns at Colonial Williamsburg. In addition, where possible, opportunities for visitor groups to engage in an activity like painting, shooting a musket, or throwing a pot might be developed where appropriate to the social, cultural, and natural history of an area. Nothing is more convincing to the novice regarding the skill required or the life of a period in history than watching his family or friends recreate an object or event.

A study of exhibits at five different visitor centers showed additional factors that were rewarding to visitors (12). Holistic presentations that included cause and effect relationships were found to be more interesting to people than isolated facts.

Among subject matter, violence and violent events were of greater interest than all others, as seems to have been well known by writers and entertainers for thousands of years. Fortunately, leisure settings abound in examples of violence that can be interpreted in good taste. For example, life in the ocean is so hazardous that, for most organisms, millions of young must be hatched to insure that a few will survive to maturity.

Interest was far above average for exhibits with such dynamic or animated presentations as movies, changed lighting (to direct the visitor's attention from place to place), and recorded sound. By contrast, interest was below average for such inert presentations as texts and mounted photos. Viewed another way, visitors find the media normally used for entertainment to be more rewarding than the less dynamic media that have traditionally been used for education (9).

As media commonly associated with entertainment, television, tape recorders, and radio have all been employed one place or another with varying degrees of success. However, their full potential has not been exploited.

Closed-circuit television offers enormous possibilities, especially now that relatively inexpensive videotape systems are available. For example, at a central control unit, one interpreter might interact with visitors at a number of monitors. By talking to visitors at any monitor, he could determine their interests and levels of knowledge, answer their questions, and then show them a videotape while interacting with other visitors on other monitors. Where the construction of a theater in a visitor center would be questionable, television might offer a less costly alternative.

Portable cassette tape players also offer great flexibility. During a recent study visitors could choose tapes of different lengths for a nature trail (10). The choice could have been extended to tapes with different emphases, different levels of difficulty, or even different languages.

Short-range radio transmitters are now being used in parking lots at a number of places to contact visitors through their own car radios. Use of transmitters at intervals along a road has also been considered as a means of presenting a sequence of information to visitors as they drive along. Costs

NPS Photo



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per visitor contact appear to be quite reasonable. At the moment, however, it is not certain that available equipment will provide adequate range from a simple antenna without exceeding the power output permitted for unlicensed transmitters. New limits for power output currently seem to be under consideration by the Federal Communications Commission. Or, at a substantially higher cost, cables can be laid under the roadway to control the transmission zone.

### Being Understandable

In addition to making interpretation rewarding, interpreters must use language that is readily understood by the visitor. As an extreme example, most Americans would not understand a lecture delivered in Chinese; but more subtle differences in signal systems can also cause difficulty. For ready understanding, the terminology, examples, and analogies used for interpretation must be within the vocabulary and experience of the visitor. Ideally, examples should draw upon situations and experiences well known to the visitor. For example, it would be foolish to compare a smell to the aroma of new mown hay for visitors whose olfactory environment has included only factory smoke.

In addition to easily grasped language and examples, understanding depends on prior knowledge. Before understanding how DDT can threaten brown pelicans with extinction, one must understand food chains and the mechanisms by which DDT is passed along from species to species in increasing concentrations. Or before understanding a geyser, a person must recognize that the boiling point of water increases with pressure.

When pamphlets or brochures are needed, as at park entrances or for nature trails, they might well be written in several versions. A variety of styles oriented to different visitor publics might be appropriate. Different versions or sections might be aimed at different age groups, different interest groups, or might assume different levels of prior knowledge. The National Park Service already has some materials for children, describing natural or cultural features in story form and including pictures which can be colored. This provides an excellent way to orient children to natural resources. A question-answer series wherein parents and children could interact while discussing a park or recreational feature is another format which would reinforce the natural parent-child relationship existing among family units. If planned to accommodate diverse groups of visitors, pamphlets or other material would better serve new visitors, repeat visitors, youth, retired visitors, or even visitors who do not speak English.

### Feedback

Perhaps no general concept or principle is more important for interpretation than that of feedback. In general terms, feedback is simply a set of signals

indicating the extent to which an operation is going as planned and showing what corrective action would be useful. For interpretation, feedback is a flow of information from the visitors that lets the interpreter know how well he is achieving both his objectives and the visitors' objectives. Because different visitors will have different objectives, feedback is essential for tailoring presentations to a variety of people.

When an interpreter meets with small visitor groups on a face-to-face basis, feedback is readily available. Unless he is totally insensitive, the interpreter can tell from people's expressions, questions, and other behavior if they are interested or disinterested and if they understand his words and examples. Using this continuous flow of feedback, he can continually correct his presentation to increase its effectiveness.

Once the easy and informal exchange of face-to-face interpretation is lost, obtaining feedback becomes much more difficult. Instead of direct interaction with a good cross section of visitors, the interpreter is increasingly exposed to fellow interpreters, to visitors who are especially receptive to interpretive presentations, or to visitors who are too polite to criticize shortcomings. More than one interpreter has had his bad habits perpetuated by compliments that were not sincere.

When feedback is used to evaluate effectiveness, objectives must be clear. Surprisingly, however, many interpreters and interpretive planners cannot specify exactly what it is they are trying to do effectively. To be useful objectives must be taken beyond vague generalities and stated in terms of behaviors the visitor could express because of interpretation (8). An objective that lends itself to evaluation would be: To enable the visitor to describe food chains in general and the particular food chain which permits solar energy to be utilized by the cave cricket.

Once clear objectives are defined, feedback procedures can be devised to monitor the effectiveness with which objectives are being accomplished. These procedures can range from the interpreter's informal collection of impressions during face-to-face contact, to suggestion boxes, to formal studies in which visitors are asked to indicate how enjoyable they found interpretation and are tested on their understanding of the information presented.

Evaluation, to avoid the many problems of attitude measurement, should be concentrated on objective information (7). Not only are attitude changes difficult to measure, but attitudes are unlikely to change much in the short exposure provided by most interpretation. It is far better to measure effectiveness in transmitting basic concepts. If people understand these, their attitudes and behavior are quite likely to shift in appropriate directions.

Ideally, feedback mechanisms should be designed right into interpretive programming. The recording quizboard mentioned earlier is simply a device to determine how well visitors understand ideas presented to them. It lends itself especially well to determining whether a change in interpretation is increasing or decreasing comprehension by visitors.

Currently, we are working with audio-visual exhibits that intermittently present the visitor with questions and that record his answers. This equipment not only shows how well different kinds of visitors are understanding presentations, it also permits interpretive presentations to be tested in a "mock-up" stage without great cost. Such testing should become the rule in interpretation. If the interpretation is not understood, the fault is usually with the presentation, not the visitor.

An added feature of our experimental audio-visual equipment is the fact that it can be programmed so the visitor's responses determine the level at which additional information will be presented, permitting diverse visitors to be served by a single system.

When integrated into interpretive programming, feedback procedures can permit the diagnosis of effectiveness and can indicate opportunities for improvement.

### SUMMARY

A central premise in this paper is that the objective of all resource management is to create and maintain a flow of benefits for people. Resource managers however, have often emphasized resource protection or manipulation, without clear recognition that such efforts are a means to an end for parks and similar resource areas where human experiences are emphasized. This view is not only inappropriate but can lead to a misconception of visitor objectives and a narrow view of what is considered appropriate human behavior in leisure settings.

Resource managers responsible for interpretation must understand both human behavior and resources sufficiently to inform and enhance experiences for various visitor publics. For this task, five principles of effective interpretation have been suggested: 1.) visitors are diverse, 2.) visitors anticipate a relaxed and enjoyable atmosphere, 3.) interpretive information must be rewarding, 4.) interpretive information must be understood, and 5.) the effectiveness of interpretation must continually be evaluated. The objectives of interpretation must be defined prior to the selection of an interpretive method or format. In this regard, alternative approaches were presented to accomplish a comprehensive interpretation program attractive to a wide variety of visitor publics.

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# Environmental concerns of the park manager

By John J. Jachino

A better title for this topic, in terms of practicality, might be a question—"What can we, at the field level, do to recognize and safeguard the environmental integrity of the area to which we are assigned?" I have always believed that a federal or state park, or for that matter any park unit, should be a "showcase" of the best talents of the professional forester, game biologist, and aquatic biologist, as well as the on-site park or resource manager. Impeccable sanitary standards and a high degree of visitor safety are important corollaries.

With all the expertise of the various scientific disciplines at hand, the park manager still has the primary responsibility in *enlisting* their aid, *implementing* their recommendations, and *maintaining* the resource in such a condition as to afford quality outdoor experiences for the visitor.

I often think the term, "jack-of-all-trades" was invented especially for the park manager. He must be a bit of a biologist, an upholder of regulations, a first aider, a public water supply supervisor, a social scientist, and a walking information center, among other things. It is into a part of this vast spectrum that "environmental concern" falls. The problem of imposing masses of people on a natural resource base, and the resulting environmental concerns, grows more intense every moment, with bulging populations and woefully inadequate "green space" acquisition usually the rule.

The parklands are victim of an interesting paradox—with all the talk of economic restraints, unemployment, and inflation, the public is buying more trailbikes, more snowmobiles, more backpacking outfits, more campers, powerboats, and the list goes on. In fact, bicycles outsold automobiles last year. The *demand* for suitable areas to operate these grows *proportionately*.

How do we identify potential environmental concerns to the resource base? I will attempt in two ways—first to assess the "people effect" on four characters of the total resource base—land, water, flora, and fauna.



Let us impose masses of people on land:

- a. Roadways, culverts, parking lots and bridges will be required. Careful placement, and careful planning with aesthetic and ecological considerations is demanded.
- b. Horse and foot trails have real inherent dangers—littering, destruction of vegetation, danger of fire, and most importantly, the influence on natural drainage patterns and potential erosion.
- c. Impervious camping pads, roads, and parking lots have a profound effect on the ability of surface water to percolate into the soil. Depending on the soil type, this can be another sure way to erosion problems.

If we impose masses of people on water, we should be conscious of:

- a. Contamination of the water, making it unfit for consumption or contact.
- b. Unlawful dumping of bilge tanks, etc. into water resource.
- c. Power boat operation can result in erosion of shoreline, high level of noise pollution, and conflict with other water users.
- d. Overfishing can upset the desirable aquatic balance in the lake or stream.
- e. If wastes from land based sanitary facilities enter water resource water quality will be affected—smells, algae, and perhaps the result will be eventual abandonment of the uses the water originally was intended for.

Let us now look at the "people effect" on flora:

- a. Compaction of soil may destroy trees or plants.
- b. Destruction of vegetation by removal, trampling, etc. may result in erosion.
- c. People caused fires may denude vast tracts of land of vegetation.



Masses of people will have a definite effect on fauna.

- a. Nests and breeding areas may be destroyed.
- b. The mere physical presence of masses of people may have a deleterious effect on certain species.
- c. Overkill during hunting season, and illegal "poaching" of protected or out of season species may be serious.
- d. "Semi-domestication" of wildlife (feeding, etc.) can only have an undesirable effect.

To approach the problem a different way, let us briefly list some of the more popular recreational pursuits, and list, in "Shotgun" fashion, some of the obvious, and subtle, "people effect," they might have.

FISHING—littering, stream bank erosion, overtake.

BOATING—shore erosion, bilge tank emptying, conflict with other users, easier access to areas formerly difficult.

TRAIL BIKES—erosion, compaction, wandering off trail.

CAMPING—sanitation considerations, impervious pads, destruction of trees for firewood, compaction.

SNOWMOBILING—harassment of wildlife, compaction of snow blanket, easy access to delicate, remote areas, noise pollution.

These are but a few of the activities practiced on the natural resource base, and that we have only been concerned with environmental concerns and not of the social problems of crime, overcrowding, etc. To put the problem into some kind of perspective, let us view a park, that at one corner, contains a few thousand acres of relatively wild land that is served only by a few foot trails. It is visited by photographers, hikers, bird watchers, and adventure-some botanists.



Under pressure and the misguided philosophy that we must "open it up", get some "use" out of it, we put in a road system, a campground, parking lots and toilets. While none of the following is guaranteed to happen, it is likely a few will.

The deer that used to drop their fawns back there no longer come, and it seems like there are fewer around each year. Wonder if it could be the snowmobiles that criss cross the area in winter when the does are weak and pregnant?

The road and those beautiful blacktop parking lots and camp pads have caused a lot more run off, and now ugly scars of ruts, lace the area. That stand of lady slipper and showy orchis just past the parking lot are almost gone now—picked or trampled.

Those massive rock outcroppings are now billboards that advertise the prowess of the spray can artist.

That grassy banked stream that always held native brook trout now has trampled dirt paths along both sides. The trout have been replaced by the ubiquitous carp. Where the road crosses the stream, an aquatic junkyard has bloomed.

A sordid story indeed! But one that has happened too many times to be pushed out of sight, out of mind.

What then, can we do, both to stop this from happening, and to recognize "trends" in wildlife, vegetation, and land forms that might signal environmental sickness. I am hopeful the following will be of help:

\*"Spread out the use", both "inter" and "intra" park. Can we publicize some of the lesser known parks?

\*Use "indicator species"—We don't need a Ph.D. in ecology to know that if suddenly watercress disappears from a stream, that something has happened. Or that if trout are replaced by carp, for example, a problem exists. Certain species of fish are tolerant of very definite thresholds of oxygen and pollutants. Any decrease in dissolved oxygen or the introduction of pollutants will affect them.

\*Constant surveillance, checking sources of potential dangers, noting trends in wildlife census, stream samples.

\*Implementation of "controlled areas". Certain areas can *not* be indiscriminately opened to the public. There are solutions—in Florida, the elevated walkways over portions of the Everglades, in New York, a wild area planned carefully, having one access road and large parking lot serving a visitor center and a lacework of foot trails only. In other states, entry to an area is only allowed by groups, and a tour guide accompanies them—protecting the resource and enriching the visitor's experience.

\*Encouraging certain activities, discouraging others. We must convey the idea sooner or later that each and every park can not be all things to all people. We can not let multiple use become multiple abuse.

\*Careful planning can eliminate a majority of environmental concerns *before* the first person sets foot on the resource. Careful identification and inventory of the resource components is paramount.

\*Adherence to comprehensive "master plans". A good master plan should contain careful justification, and can *not* be written and forgotten—it must be constantly evaluated and improved.

\*A viable in-service training program to educate all phases of park management to environmental concerns.

\*Resource "interpretation"—through use of slide programs, campfire programs, guided hikes, self guiding trails, habitat demonstrations, and visitor centers, a sense of respect, even kinship, can hopefully be instilled in the visiting public. We must strive to create a place in the public's value system for wild things, for wild places.

\*Recognizing the overt, obvious threats to the environmental integrity of the areas we manage is relatively easy; it is sensing the subtle trends of gradual, though sure, environmental degradation that is our challenge.