

Visitor Experience and Resource Protection Framework in the National Park System: Rationale, Current Status, and Future Direction

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Abstract—The Visitor Experience and Resource Protection (VERP) framework was developed by the National Park Service to address carrying capacity questions associated with visitation-related resource impacts and impacts to the quality of visitor experiences. The framework can be applied as part of a park's general management planning process (general management plans, GMPs), to address visitor use issues for parks with existing GMPs, or to address issues in specific areas within a park. This paper explores similarities and differences between VERP and other planning frameworks as well as assesses the National Park Service's experience in applying VERP. Conceptual issues and changes that may be needed to make VERP more useful also are discussed.

The National Park Service has been required by law since 1978 to address carrying capacity in units of the system. The General Authorities Act of 1978 (U.S. Public Law 95-625) specified the requirement for all park units to have a general management plan (GMP), and prescribed several required elements that must be contained in such plans. Among these requirements is the "identification of implementation commitments for visitor carrying capacities for all areas of the unit" (U.S. Public Law 95-625). Additional National Park Service policies also state that GMPs will address carrying capacity.

Until recently, GMPs addressed carrying capacity in one of two ways—if, indeed, they addressed it at all. One approach was simply to establish a facility capacity based on the sizes of existing parking areas, visitor centers, campgrounds, and other developments. A second approach was to predict, based on visitation projections, the point in time or visitation level at which facilities would be considered "full" or "crowded." The GMP would call for "visitor use studies" at some future time to define specifically what is meant by full or crowded. Regardless of the approach, there was an absence of a process or framework to address visitor use management issues and impacts systematically. Both within and outside the agency, there was criticism of the National Park Service's ability to meet its legislative mandate.

In: McCool, Stephen F.; Cole, David N., comps. 1997. *Proceedings—Limits of Acceptable Change and related planning processes: progress and future directions*; 1997 May 20–22; Missoula, MT. Gen. Tech. Rep. INT-GTR-371. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

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As visitation to units of the National Park System has continued to rise, agency and public concerns have increased with respect to congestion, crowding, other impacts to the quality of visitor experiences, visitation-related resource impacts, and reductions in the diversity of experience opportunities in parks (Lime and others 1995; Lime 1996; Mitchell 1995; Wilkinson 1995). The traditional management response of increasing the size of the infrastructure (building more and bigger parking areas, campgrounds, visitor centers, roads, and trails) to accommodate more and more people is no longer an adequate solution. Deteriorating facilities and declining construction and maintenance budgets are making this response unrealistic. More important, many park managers, as well as many segments of the public, are challenging the appropriateness of "sacrificing" more park lands to pavement and other facilities.

By the early 1990's, the lack of planning and management processes to address visitor use and visitor use impacts was becoming a critical issue in many parks. The Washington directorate charged the Denver Service Center (a primary facility for the National Park Service's planning, design, and construction activities) to develop and test processes that would allow parks to deal with visitor use issues. Two major caveats were specified: (1) any processes developed would have to be incorporated into existing planning and management frameworks, and (2) the processes had to ensure that decisions would be trackable and justifiable.

VERP and Planning

The National Park Service response to developing a carrying capacity framework is VERP—Visitor Experience and Resource Protection (USDI National Park Service 1993). Since 1992, an interdisciplinary team of National Park Service employees and researchers have been working to develop and test a process that is responsive to National Park Service needs and is conceptually grounded in the scientific literature.

Nine elements are included in the VERP framework (appendix A). While the scope of the elements, the order in which they are undertaken, and the specific methods used to complete elements may vary in different situations, all of the elements are necessary to implement a VERP program. Although the elements are numbered and may appear to follow a linear process, it is important to remember that the VERP framework is iterative, with feedback and feed-forward occurring throughout the elements.

The VERP framework was primarily conceived and designed to be part of the park GMP process. Indeed, many elements in the VERP framework are incorporated into each park's GMP. However, there are other situations where VERP may be applied outside the GMP process. For example, it may be necessary at times to address visitor use issues for parks with existing GMPs or to address visitor use issues in only one or two areas within a park. A separate visitor management plan or an amendment to an existing plan may be appropriate in these cases.

Before looking in more detail at the process differences between VERP and the Limits of Acceptable Change (LAC) process (Stankey and others 1985), it might be helpful to explain how the future of VERP is seen within the National Park Service at this time. Developing VERP has taught us a great deal about how to do better planning. Many of these new insights are being incorporated into a new National Park Service planning guideline and handbook that currently are under development. Identifying desired future conditions by individual management zones and assessing alternative allocations of those zones will be integral to the new GMP in the National Park Service.

The term VERP, as part of the GMP, will be lost in future plans. According to current National Park Service guidance, GMPs will qualitatively address carrying capacity by describing visitor experiences and resource conditions by zone. Most future GMPs, therefore, will not contain further carrying capacity details. In most cases the more quantitative elements of the VERP framework—specifying indicators and standards, developing a monitoring strategy, and identifying management actions to address conditions when standards are reached or exceeded—will be accomplished in an implementation plan that will follow a GMP.

The prototype GMPs currently in progress (Mt. Rainier and Isle Royale National Parks, the St. Croix National Scenic Riverway, and the Flagstaff Group, which includes Wupatki, Walnut Canyon, and Sunset Crater Volcano National Monuments) will include the VERP implementation steps, but this probably will not be the pattern in the future. Under this scenario or way of thinking, if VERP retains a process identity over time, it will be associated with an independent, implementation level of visitor use planning and management.

Comparing VERP and LAC

Conceptually, VERP does not differ from LAC or other planning frameworks (such as Visitor Impact Management, VIM (Graefe and others 1990); Carrying Capacity Assessment Process, C-CAP (Shelby and Heberlein 1986); Quality Upgrading and Learning, QUAL (Chilman and others 1990); Visitor Activity Management Process, VAMP (Environment Canada and Park Service 1991). All propose to address questions of carrying capacity, appropriate visitor use, and biophysical impacts caused by recreation use. While each framework calls for its own steps and general procedures, they all address both environmental and experiential (social) conditions. In one way or another they call for the formulation of management direction for the future (such as desired future conditions, objectives, goals) and specify such direction through indicators and standards of quality. Monitoring is required to assess when minimally acceptable

conditions (carrying capacity) has been reached or exceeded. And management strategies, tactics, and actions are identified to deal with situations when conditions are no longer acceptable.

Defining desired future conditions, identifying indicators of quality, setting standards, monitoring, and taking appropriate management actions fit well with National Park Service planning and management frameworks, including VERP. A few process changes were needed, however, to address the diversity of frontcountry situations in the National Park system and to integrate fully the LAC-type approach into the National Park Service planning process. The VERP process, because it is part of the GMP process, includes some initial steps to establish a planning foundation based on park purpose and significance; VERP alternatives are the same as GMP alternatives, and so are broad and conceptual and contain elements unrelated to visitor use management; management zones are described somewhat differently from Recreation Opportunity Spectrum classes; and the definition of steps and their order is changed from LAC.

LAC begins with identification of issues and concerns (step 1), and then later in step 6, alternatives are developed to respond to those issues. In National Park Service planning, a conceptual shift is made from “issue driven” planning to “goal-driven” planning. This is a subtle difference, but one the National Park Service is finding to be important. Goal-driven planning is based on a philosophy that issues are nothing more than the obstacles that lie between existing conditions and future desired conditions. This implies that you must know what your desired state is (goals) before you can really understand issues. Certainly, issues are identified at the beginning of a planning process, but a great deal of time and energy is spent establishing future goals—beginning with affirmation and articulation of the purpose and significance of the park. All subsequent planning alternatives and eventual decisions are bounded by the park's purpose and significance. Alternatives are developed that describe different futures (presented largely, but not entirely as different allocations of management zones), based on different conceptual frameworks. The obstacles that must be overcome (issues that must be solved) to implement different alternatives may differ with each alternative, even though, admittedly, many fundamental issues will be common to all alternatives.

Because VERP is integral to the GMP, the alternatives developed include desired future conditions at both parkwide and zone levels. Management zoning is explored for the entire park, and zones include appropriate types and levels of development (including park administrative facilities and concession services), appropriate management tactics and actions, visitor experience opportunities, and biophysical and cultural resource conditions. Some alternatives may include parkwide goals, such as desired outcomes of fire management or wildlife protection, or general intent of interpretation programs.

While zone descriptions help identify indicators and standards of quality in a relatively broad sense and are based on qualitative judgments, specific indicators and standards for monitoring are not finalized until the implementation phase of VERP planning. At that time more quantitative and in-depth studies can probe for specific indicators and set

associated standards. This approach seems to make sense because, while indicators and standards are tied to zones and so would generally be consistent throughout alternatives, the eventual preferred alternative may not incorporate all potential zones. Particularly with the difficulties in selecting indicators and standards of quality in high use, frontcountry settings, and the research needed to increase our understanding of these issues, National Park Service planning leadership is hesitant to include this level of detail (not to mention costs) in the GMPs. A potential problem with this approach is asking the public to buy into a conceptual plan without being able to evaluate fully the tradeoffs involved in managing for particular standards. This makes public involvement critical during VERP implementation planning.

During early discussions concerning park zoning and the need to differentiate among experience opportunity types, the Recreation Opportunity Spectrum (ROS) was investigated as a promising tool. It was decided that the range of opportunity classes and traditional definitions specified for ROS were not diverse enough to accommodate application to the diversity of experience opportunities that National Park System areas need to offer. Conceptionally there is little difference in LAC and VERP zones, but it was decided that each park unit probably will need to describe a unique set of zones. Some zones may transfer from park to park, but experience so far indicates that this will not be the norm. Some experience opportunities are similar from park to park, but each park seems to need to tailor the zone description to its particular situation, resource limitations, and visitor characteristics.

VERP Works, But Questions Remain

Has the VERP process been a success for the National Park Service? We offer a qualified, "We think so, but time will tell!" The fact of the matter is that the VERP process has been applied at very few places (fewer than five), and an implementation plan has been completed only at Arches National Park in southeastern Utah (USDI National Park Service 1995). The VERP effort began in early 1992 (USDI National Park Service 1993), and the Arches test did not begin until later that year (Manning and others 1996a,b). Only now is the staff at Arches beginning a monitoring program in earnest. Therefore, it is far too early to be reporting on definitive successes or failures associated with this process. Nevertheless, we offer the following observations about this process and some challenges that we think lie ahead.

We feel confident the elements of the VERP framework are offering parks improved tools to enhance visitor opportunities and resource protection, as well as to improve overall National Park Service planning. Interest in the VERP process has come from throughout the organization. Those associated with the effort, both within and outside the agency, are frequently asked to explain the process and report on its application at Arches National Park and elsewhere. A brochure concerning VERP was recently published to inform proponents and skeptics alike about what VERP is and what it can and cannot do for National Park Service planners and managers (USDI National Park Service 1997).

The new emphasis on prescriptive management zoning is particularly attractive to planners and managers. The zone prescriptions give managers guidance to make informed and defensible decisions for different areas of their parks without dictating specific actions that must be taken. This allows managers increased flexibility and control, and may lengthen the useful life of GMPs.

Application of the VERP-LAC-type process to recreation issues in frontcountry does not seem to have been an obstacle. The principles and tasks of specifying park purpose and significance, management zones, indicators and standards of quality, monitoring, and taking appropriate management action when standards are approached or exceeded seem to be as "comfortable" in frontcountry, high-density-use settings as in designated, low-density-use wilderness. The 1995 Arches National Park implementation plan (USDI National Park Service 1995), for example, included a variety of indicators and standards as well as guidance for monitoring both biophysical and experiential conditions. The plan included direction for frontcountry, backcountry, and several other types of relatively homogeneous settings—nine management zones were delineated.

Our experience with both VERP and LAC leads us to conclude that the conceptual issues associated with these frameworks and changes that may be needed to make them more useable and defensible are more similar than different. One area of concern has to do with creating an institutional setting in which **all levels** of the management system are **committed to and held accountable for** implementation of the process. Implementing such frameworks can be complicated and costly for agencies and institutions. Implementation requires substantial investments in employee training as well as in data collection to specify indicators and standards, and to develop long-term monitoring activities (Lime 1995; Lime and Lewis 1996). If a particular management area does not have the commitment and resources to monitor indicators and to take action when conditions are out of standard, then why do a VERP or LAC implementation plan or use the framework in the first place? Agencies using these planning and management tools should consider incorporating pertinent elements of the process in the annual performance standards of affected employees.

The recent National Park Service decision to deal with indicators, standards, monitoring, and management outside the GMP, raises important questions about the agency's commitment and ability to address these most significant elements of this planning framework. Without a rigid institutional process and requirement (teeth) for implementation, many managers may view completion of these activities as voluntary or optional. It is feared some managers could use this flexibility as administrative discretion to postpone action, perhaps indefinitely.

The institutional setting is not the only possible constraint to implementation of these important elements. Suitable funding is another issue. No funding sources or mechanisms currently exist for VERP implementation planning. This should be interpreted not so much as a lack of interest or belief in the need for VERP, but rather as a function of the overriding need to spread limited GMP dollars as far as possible. It should be noted, for example, that fewer than half the National Park Service's 374 units have up-to-date or approved GMPs. Current thinking of the planning leadership is stressing that GMPs be long-term,

broad, and conceptual and should not include implementation planning of any kind.

Monitoring is an integral part of these and related frameworks—they are **not** add-on's. Often, we fear, monitoring of selected indicators of quality is seen as some sort of extracurricular activity that is separate from the overall process. And as we learned during the Arches test, monitoring activities need to be thoughtfully considered **during** the formulation of indicator variables and their associated standards, not **after** they are agreed upon. That is, monitoring is much dependent on the way in which indicators and standards are defined and expressed. As such monitoring cannot occur unless there is a clear understanding of what needs to be measured and in what context (Lime and Lewis 1996).

Our experience in implementing VERP at Arches National Park and elsewhere reconfirms the lack of understanding or agreement about what is a standard. From our perspective, standards are minimally acceptable conditions or thresholds of acceptability for indicator variables. That is, if a particular standard is not violated, the condition is considered to be within an acceptable limit. When the standard is violated, the condition is deemed unacceptable and management should initiate action to bring the condition back within the acceptable limit. Standards should not be viewed as management goals, targets, or desired future conditions.

Agency administrators, researchers, and others will continue to grapple with the question of how much research is necessary to identify indicators of quality and to specify standards. The costs, in time and funding, to conduct biophysical, cultural, and social research are significant, and there are legitimate concerns about the ability of park units, especially small ones, to participate in such activities. In lieu of conducting more research to define appropriate indicators and standards, perhaps there is an opportunity for the research community to collaborate with practitioners in an effort to specify a set of key indicators that are relatively constant across all types of park units—or determine if there are groups of key indicators that are fairly constant among certain types or categories of units (Manning and Lime 1996). This exercise also might identify a key set of standards for which a range of realistic parameters could be specified. The intent would not be to establish a “cookbook” approach to identifying indicators and standards of quality that users would go to for the solution to their problem, but rather a collection of experienced-based findings illustrative of the general target for a particular situation. It would be recognized that more appropriate or better indicators and standards could evolve through more research and field experience.

In lieu of conducting research about indicators and standards at sites where there is interest in using VERP or other frameworks, perhaps an expert panel of individuals could visit a site to offer their informed and collective ideas. We envision an interdisciplinary team that would spend 3 to 4 days at a location exploring park purpose and significance, existing resources (biophysical, cultural, and social) and resource conditions, and so forth. They would conclude their visit with an interactive meeting with park staff and a set of written recommendations concerning what might be appropriate indicators and standards of quality for the site, ideas about a monitoring plan to track potential change over time,

and suggestions about management tactics and actions to address impacts that are found to be reaching or exceeding acceptable standards. Results of the exercise would be useful in further staff planning activities and for public involvement. In this approach we risk being too “expert-driven” unless some work with the public could occur ahead of time to identify potential indicators and ranges of acceptable conditions. Of course, the public also should have an opportunity to comment on and refine the standards identified. Such “design teams” have been used successfully in Minnesota to explore community development and rehabilitation questions in urban areas for more than a decade.

Ideas for additional research to enhance LAC-type programs have been discussed in many meetings and publications (see Shelby and others 1992), and there is no lack of suggestions. Research is needed to address both biophysical and social science questions concerning visitor use management and carrying capacity. A workshop to identify research needs specifically associated with VERP, and more generally with congestion and crowding in the National Park system, was held in Minnesota in 1993 (Lime 1996). Many information needs and research questions were offered on a variety of topics, primarily related to the role of social science (appendix B). The topics addressed three interrelated research themes: (1) refining the VERP framework and its application to a variety of park and recreation settings, (2) enhancing the capabilities of direct management of visitor behavior to alleviate unacceptable impacts, and (3) enhancing the capabilities of communication (information, education, interpretation, and persuasion) and other indirect management to address congestion, crowding, and other impacts.

Conclusions

The VERP framework is more similar than different when compared to other planning frameworks. What changes have been implemented for the VERP process have been driven by the need to fit with various National Park Service planning and management guidelines and procedures. While the VERP framework generally seems to be working successfully for the National Park Service so far, there are too few applications and experience within the agency to embrace the process as a model for the future. Furthermore, the VERP experience in the National Park Service seems to have uncovered many of the same obstacles and concerns as have other planning frameworks such as LAC, VIM, and VAMP.

VERP, along with other planning frameworks, is no panacea for dealing with growing visitation and potentially unacceptable impacts to biophysical resources and visitor experiences. We think the most challenging aspect of applying VERP and other frameworks will be to create an institutional or agency commitment to carry out and sustain effectively all the important elements required. We are concerned the recent National Park Service decision to address indicators, standards, and monitoring outside the GMP will continue to raise many questions about this agency's ability to implement and commit to the process. Without a mechanism that would ensure that all VERP elements are addressed, the GMP process could revert to the

production of vague, general documents without clear guidance for visitor use planning and management. VERP implementation plans might, at worst, never be completed, or at best, postponed. One big advantage of VERP being embedded in the GMP is that funding and other resources are allocated for this activity at one time, and all the VERP tasks could be addressed under this umbrella effort. As such, the park, the Denver Service Center, and other collaborators in the process would have a clear vision concerning funding, required tasks, and responsibilities for completing the necessary steps. It now appears that many important questions remain concerning how the most critical elements of the VERP framework (such as elements 7-9) will be accomplished in an implementation plan produced after the GMP is completed.

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Appendix A: Elements of the VERP Framework

---- FRAMEWORK FOUNDATION ----

Element 1: Assemble an interdisciplinary project team

A core team is needed, comprised of those people who can develop the plan and those who will implement the plan. A wide variety of consultants with various backgrounds and expertise may be needed to assist the core team.

Element 2: Develop a public involvement strategy

As in any planning effort, the public must be involved in VERP planning. Both NPS staff and publics external to the agency should be considered. A public involvement strategy should be prepared, early in the framework.

Element 3: Develop statements of park purpose, significance, and primary interpretive themes; identify planning constraints

These statements form the foundation upon which the VERP plan and implementation strategies are built. All subsequent elements must be consistent with and supportive of these statements. This element may already exist in many parks, having been developed in previous planning efforts. But if this work has not been done, VERP work should not continue until all of these statements are articulated and clearly understood.

---- ANALYSIS ----

Element 4: Analyze park resources and existing visitor use

The objective of this element is to understand as fully as possible the park's resources and existing visitor uses and experiences. This analysis should be documented, usually through a combination of maps, matrixes, and text.

---- PRESCRIPTIONS ----

Element 5: Describe a potential range of visitor experiences and resource conditions (potential prescriptive zones)

Potential zones are described by different desired visitor experience opportunities and resource

conditions that could be provided in a given park, consistent with the park's purposes and significance. The zone descriptions prescribe appropriate kinds and levels of activity, development, and management. These potential zones are described in text only; they are applied to specific geographical areas in element 6.

Element 6: Allocate the zones to specific locations within the park (prescriptive management zoning)

In this element the zones described in element 5 are assigned to specific locations within a park. The zoning scheme *prescribes* future conditions; it is not descriptive of existing conditions (although in some cases the continuation of existing conditions could be the desired future). If appropriate, the planning team should develop alternative zoning schemes and assess their beneficial and adverse impacts, consistent with the National Environmental Policy Act.

Element 7: Select indicators and specify standards for each zone; develop a monitoring plan

Indicators (specific, measurable variables that will be monitored) and standards (minimum acceptable conditions) are identified for each zone. A monitoring plan is developed that identifies priorities, methods, funding, and staffing strategies, and analysis requirements.

---- MONITORING AND MANAGEMENT ACTIONS ----

Element 8: Monitor resource and social indicators

Park staff regularly monitors resource and social conditions in various zones. Staff and funding limitations will usually necessitate setting priorities and monitoring only in the most critical areas.

Element 9: Take management actions

When monitoring indicates that social or resource conditions are out of standard or deteriorating toward a standard, management actions must be taken.

Appendix B: Types of Social Science Research

These types of social science research are recommended to refine the VERP and related planning frameworks. Modified from Manning and Lime 1996, McCool and Christensen 1996, and Vander Stoep and Roggenbuck 1996.

Apply and evaluate VERP to the range of Park Service areas nationwide.

- How well do the theories, concepts and processes apply to the variety of units found in the system?
- What methods are most effective to evaluate the application of VERP?
- What criteria should be used to judge how well the framework works?

Broaden research to identify indicators of quality that include more heavily developed and visited frontcountry, historical sites, cultural areas, national recreation areas, and urban parks.

- In such settings to what extent does the quality of the visitor experience have less to do with the number of contacts between visitor groups and more to do with other physical manifestations of use intensity such as traffic congestion, full campgrounds, and waiting in lines?
- How do planner and manager definitions of appropriate indicators of quality compare with visitor definitions?
- Are there “key” indicators that are relatively constant across all types of park units or other settings? Or are there groups of “key” indicators that are relatively constant across selected types or categories of units?
- How well can the quality of the visitor experience be reduced to a set of specific, measurable variables?

Expand research concerning standards of quality—especially research on social norms and for a variety of indicator variables.

- Do visitors to parks and related areas have valid norms concerning appropriate use levels and other potential indicators of quality?
- A closely related question concerns the degree to which visitor behavior conforms to visitor norms (norm congruence).
- To what extent do visitors or subgroups of visitors agree about norms concerning appropriate use levels (crystallization)?
- How should norms be measured—such as using a narrative format or responses to visual patterns?
- How do personal and social norms concerning crowding and other indicators of the quality of the visitor experience evolve or change over time?
- Normative research should continue to address questions about geographic differences within park and recreation settings as well as temporal patterns.

Further research on monitoring indicators of quality to identify strategies that are reliable, cost efficient, and easily operationalized by field personnel.

- Testing of procedures seems especially needed to compare findings from diverse areas and conditions.

- Once applied in the field, research should evaluate whether or not procedures justify the time and resources necessary to operate them.
- What role can geographic information systems (GIS) play as a medium to display information about indicators and standards of quality?
- A closely related question concerns what role monitoring data can serve to inform and educate visitors (such as using the Internet) about resource conditions, availability of facilities and services, visitor use patterns, and other components of a quality experience.

Initiate research to assess whether or not a standardized zoning or ROS-type system for describing visitor opportunities can be developed and applied to the range of areas within the national park system or other systems.

- Can a standardized zoning or ROS-type system for describing visitor opportunities be developed for the national park system or other public land management agencies?
- Are the three components of carrying capacity (social, environmental, and managerial) appropriate to defining the diversity of visitor opportunities across the national park system, for example?

Intensify research on the coping behaviors of current and potential visitors—particularly regarding questions concerning displacement, substitution, and rationalization (the way visitors change their views of a situation).

- To what extent is visitor displacement a problem in leisure settings, and what social impacts are responsible for displacement?
- Could a regional or national study approach (including general population studies) be useful in analyzing visitor displacement? If visitors are being displaced, are substitute areas available?
- To what extent are cognitive coping behaviors employed by visitors to National Park Service and other areas? If visitors are employing a product shift strategy, does this mean such systems increasingly are providing more highly developed areas in the minds of visitors? If so, does this mean these areas can (should) accommodate ever increasing levels of visitor use?

Evaluate the effectiveness of various management strategies, tactics, and actions to address impacts of visitors on biophysical resources and the experiences of other visitors.

- Studies to evaluate various management tools are especially needed in frontcountry areas, in natural resource settings, cultural sites, historical areas, and urban locations. Results should not be considered transferable without much more study.
- How can the potential diversity of visitor management practices and actions best be organized and presented to practitioners?
- What are the social and administrative costs of direct management techniques (direct strategies rely on regulation of behavior)?

- To what extent are visitors willing to tradeoff decreased freedom under a direct management strategy for increased access to a site under indirect management (emphasizing information and education)?
- How does the desirability of a direct management technique differ from its acceptability?
- Which techniques along a continuum of possible management solutions provides the most equitable outcome (fairness) in a given situation?
- Determine under what conditions incentives, rewards, and punishment are appropriate in shaping visitor behavior in leisure settings; determine the relative

effectiveness of each of those strategies; and determine which, if any, results in long-term behavior change.

- What messages are given to park visitors about appropriate park behavior based on environmental cues (such as design and maintenance standards), and how do these cues shape behavior?
- How effective are various information, education, and persuasion programs in park settings at teaching a long-term low impact ethic?
- What visitor characteristics (including cultural differences and in what situations) influence the effectiveness of information, education, and persuasive communication?