Patuxent Wildlife Research Center
Science Brief for Resource Managers

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Research to Support Application of the Visitor Experience and Resource Protection Framework at Zion National Park

Description:

The increasing popularity of the national park system presents substantial management challenges. Too many visitors may cause unacceptable impacts to fragile natural and cultural resources, and may also cause crowding and other social impacts which degrade the quality of the visitor experience. How many visitors can ultimately be accommodated in a park or related area? How much resource and social impact should be allowed? These and related questions are commonly referred to as carrying capacity.

The overall purpose of this study is to gather information that will help support application of the Visitor Experience and Resource Protection (VERP) carrying capacity framework to Zion National Park. In particular, study objectives will focus on the four elements of the VERP framework that can benefit the most from empirical data: 1) collecting baseline data on visitor use and associated resource impacts, 2) identifying indicators and standards of quality, 3) monitoring indicator variables, and 4) management of visitor use to ensure that the standards of quality are maintained. Specific study objectives are as follows:
1) Determine baseline conditions of visitor-use associated resource impacts - data will be gathered to characterize and monitor trail and campsite degradation.
2) Identify indicators and standards of quality. Indicators of quality are measurable, manageable variables that help define the quality of natural resources and the visitor experience while standards of quality represent the minimum acceptable condition of indicator variables. Data will be gathered to help managers identify indicators and standards of quality for natural resources at Zion National Park.
3) Explore the acceptability of alternative visitor management practices. VERP requires that management actions be undertaken to ensure that standards of quality are maintained. A study of visitor, attitudes toward potential management actions is needed to ensure that management actions implemented are as acceptable as possible to those who will be most directly affected.

This work will be conducted in collaboration with social scientists from the University of Vermont and the University of Montana.

Progress to Date:

Due to activity concentration and duration of stay, resource conditions at 26 backcountry campsites were assessed as part of this research (with 12 additional campsites to be assessed in 2003). A campsite survey methodology suitable for long-term monitoring was developed, field tested and applied. Procedures integrated condition class, photographic, and quantitative measurements. Replicating procedures allow monitoring of changes in site conditions, which can be used to document trends and to evaluate the effectiveness of management actions. The boundaries and size of each campsite were determined using a variable transect method and permanent reference points. Six to eight impact indicators were assessed on each campsite, including site size, area of vegetation loss and exposed soil, tree root exposure, damaged trees, and stumps.

A trail survey methodology suitable for long-term monitoring is also being developed for field-testing and application to a sample of park trails in 2003. Trail condition assessments seek to describe resource conditions and impacts for the purpose of identifying trends in trail conditions and investigating relationships with influential factors. Trail surveys will employ point sampling at a standardized interval (e.g., every 300 feet) along each sampled trail. At these locations a transect is temporarily established

perpendicular to the trail tread and measurements of selected indicators are taken and recorded. Indicators such as tread width, maximum tread incision, and tread composition (e.g., vegetation, organic litter, dry soil, wet soil, rock, and exposed roots) can be assessed and summarized. A continuous assessment of several trail problems will also be simultaneously assessed. For example, the beginning and ending distance of each occurrence of excessive tread muddiness.

Management Implications:
Research results will be used to inform managers in their selection of appropriate indicators and standards of quality within a VERP management and decision making framework. The tools for monitoring changes in resource and social conditions will also be provided, along with staff training in their use. Data from current and future monitoring cycles can be compared to standards to evaluate management success in achieving desired resource and social conditions in various park zones. Data can also be evaluated to aid in understanding impact relationships and may suggest appropriate and effective management interventions.

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