

## Wilderness Recreation Research

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Although conceptions of wilderness recreation research had begun before 1964, the Wilderness Act (P.L. 88-577) set the ground rules for much of the visitor behavior research that was to follow. Firstly, it mandated that wilderness areas would be places where people could go to achieve an experience of solitude and engage in primitive kinds of recreation. Secondly, it provided that wilderness areas would be untrammelled by humankind, showing only traces of civilization.

In response to the first criterion, public land managers were mandated by federal agency regulations to determine optimal "carrying capacities" for wilderness areas. The term "carrying capacity," borrowed from the range and wildlife management sciences, is typically defined as the maximum number of people that can visit a wilderness without decreasing the enjoyment derived from the place or its unique natural features.

Recreational carrying capacity (as the term is used in practice) usually is divided into three compartments: physical capacity (the total space available for recreation); ecological capacity (the capacity of the biological environment to withstand recreational use); and sociological capacity (in my view, most accurately defined as the capacity of people to withstand each other in a wilderness area). Most carrying capacity research has focused on the latter compartment, sociological capacity.

Early efforts to establish capacities for wilderness areas used econometric-like models that were designed to determine the visitation level at which the total satisfaction of all visitors, in sum, was maximized. The assumption was that people visited wilderness primarily to achieve solitude and that increased visitation resulted in less solitude and, therefore, reduced levels of individual satisfaction.

Similar to the satisfaction approach to recreational carrying capacities was the crowding model. This model assumed that as visitation levels increased, people felt increasingly crowded. Consequently, visitors, by being crowded, were not experiencing solitude and the goals of the wilderness act were not being achieved.

These rather simplistic views of human behavior were countered with the notion that people visit wilderness areas for a number of reasons. Accordingly, they derive satisfaction from a variety of aspects of the wilderness experience rather than simply solitude. For example, visitors coming to the wilderness for physical exercise may be unaffected by the number of people they meet or see.

Additionally, different types of groups met in a wilderness have differential influence on feelings of crowding or

solitude. Large groups of people (generally 10 or more) were found to be far more psychologically impacting than small groups (of three to five people). And, rather than numbers of people met or seen during a wilderness visit, numbers of groups became the important independent variable.

Add to these confounding factors the influence that visitors' expectations, physical characteristics of the place, and popular notions about the particular wilderness have on feelings of crowding or solitude, it becomes easy to see why initial attempts to find optimal capacities based on the satisfaction and crowding models became quite muddled. Consistent empirical relationships between numbers of people in a wilderness and feelings of crowding or satisfaction could not be found.

Eventually, an alternative approach was proposed that relied on normative theories of human behavior. Namely, the theory was advanced that people have norms for the number of people they expect to see in particular situations. For example, people expect to find a number of people at a cocktail party but would be dismayed to find the same number at a wilderness campsite.

This approach has proven more fruitful than earlier, capacity-oriented theories, particularly from a managerial point of view. Based on mail surveys and on-site interviews, social contact norms form the basis of "contact standards" established by managers for wilderness areas. Regulations of two major wilderness-managing agencies, the U.S. Forest Service and the Bureau of Land Management, require establishment of such standards in lieu of capacity determinations.

Growing out of the contact norm approach have been investigations into the social factors that influence norm formation and the differential acceptance that wilderness visitors have of varying types of visitor groups. This latter research orientation has become of recent importance in wilderness areas located near large urban centers; urban growth has resulted in a greater cultural diversity of wilderness visitors and greater potential for interethnic conflict. Consequently, researchers are currently studying the topic of determining how public land managers can satisfy the recreational needs of such a variety of wilderness users.

Determining people's acceptance of different types of recreational activities in a wilderness area has also been important in addressing the "primitiveness" portions of the first criterion. Appropriate recreational activities, styles of dress, and equipment coloring have been investigated for this reason.

Out of the second criterion (relating to the untrammelled nature of wilderness) have been studies on how attributes of a wilderness influence visitors' experiences and choices. For example, investigators have examined how artifacts of civilization (such as litter) influence visitors' perception of the environment.

Growing out of this orientation has been a wealth of research on recreation choice behavior. This branch of wilderness research relies on highly quantitative models to

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predict the ecological and other attributes that influence visitors to choose to visit one wilderness area over another.

Relatedly has been research into "displacement" or "the last settler syndrome." Scientists, here, have theorized that wildernesses go through a succession of visitor populations as visitation increases or conditions in the wilderness deteriorate. Each successive population is theorized to be more tolerant of crowded and environmentally degraded conditions. Theoretically, ratings of satisfaction remain high in the face of increasingly poorer conditions because each succeeding population is happy with what they find. Thus, the last settler is as happy as the first.

Research, though, has not thoroughly documented this phenomenon. A better explanation seems to lie in the notion that visitors change their expectations to remain happy with their experience. In other words, the wilderness product that people are seeking "shifts;" people are so determined to have a pleasant recreational experience that they alter their expectations and standards to match conditions found on-site.

One attribute of wilderness that has been of significant interest is management presence itself. Scientists have examined the influence that site developments (such as toilet facilities and trails), rules and regulations, and ranger patrols have on wilderness experiences. The assumption is that the least intrusive managerial actions provide for the best wilderness environment.

Finally, a great deal of research has explored the benefits that are derived from wilderness areas. A variety of benefits have been ascribed to wilderness, including improvement of physical and psychological health; spiritual fulfillment; education; and meeting symbolic, identity needs. Although research has documented that wilderness provides such benefits, the questions remains as to which benefits are intrinsic to wilderness; many of the benefits could be derived from non-wilderness settings. Nevertheless, one benefit that wilderness has definitely provided is an excellent laboratory for studies of human behavior.

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