

History and Context of User Capacity Planning and Management

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Reflecting their importance in society, national parks have been called America's "crown jewels" and "the best idea we ever had." Data on visits to the national parks dramatically illustrate their popularity: annual visits are now counted in the hundreds of millions. But how many visits can the national parks ultimately accommodate? This issue is often referred to as "carrying capacity", "visitor capacity", and, in the case of this symposium, "user capacity." The popularity of the national parks presents both an opportunity and a challenge. The opportunity is to foster public appreciation and enjoyment of the parks in ways that will contribute to the wellbeing of both society and the parks. The challenge is to protect park resources and the quality of the visitor experience. Too many visitors and inappropriate visitor use can trample fragile vegetation, erode soils, pollute water, and disturb wildlife. Likewise, visitors can cause crowding and conflict, degrading the quality of the park experience.

The issue of carrying capacity has a long history and is a manifestation of what may be the most fundamental issue in all of environmental management: how much can we use the environment without ruining it? Aldo Leopold referred to this as "the oldest task in human history: to live on a piece of land without spoiling it." The National Park Service Organic Act of 1916 may be the most powerful and eloquent statement of the inherent tension between use and preservation. Carrying capacity and related issues such as "conservation", "sustained yield", "common property resources", and "sustainability" have been applied to wide ranging issues and areas, including forestry, grazing, wildlife and fisheries, parks and wilderness, and even human population growth. Scientifically based application of carrying capacity to parks and related areas began in the 1960s and has resulted in conceptual frameworks and methodological approaches that are now being applied to analyze and manage carrying capacity in national parks and elsewhere.

Based on this history, the contemporary context of the carrying capacity of national parks can be illustrated by a series of concepts and ideas that might ultimately be marshaled into a series of principles to guide application of carrying capacity. These emerging principles include 1) a three-fold framework of park and outdoor recreation opportunities, 2) a primary focus on the impacts of visitor use (as opposed to use levels), 3) the need for a structured planning/management framework, 4) a normative approach to carrying capacity analysis, 5) descriptive and evaluative/prescriptive components of carrying capacity, 6) the importance of management objectives/desired conditions, 7) quantification of carrying capacity through indicators and standards, 8) the role of "informed" management judgment, 9) carrying capacity as a form of adaptive management, 10) the potential role of simulation modeling as a form of "proactive monitoring", 11) the value of a diverse set of recreation opportunities, and 12) the extension of carrying capacity to the broad field of environmental management.

There is reason to be hopeful about our understanding and application of carrying capacity based on its historic development, a large and expanding scientific/professional literature, emerging principles, conceptual foundations, methodological approaches, a range of management practices, and a series of successful case studies. While application of carrying capacity can be challenging and even contentious, failure to act is likely to be more painful in the long run.