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Recreation Planning Frameworks

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The frameworks that now guide much of contemporary planning and management of parks, wilderness and related outdoor recreation areas had their genesis in the mid 1980s, as the first International Symposium on Society and Resource Management meeting was convened in 1986. Development, refinement, and application of these frameworks have been well-represented in the abstracts of this important series of national and international symposia. This chapter briefly outlines the emergence of contemporary recreation planning frameworks; their application by park and wilderness management agencies; the research and management agendas they have spawned, and; theoretical, methodological and empirical issues surrounding their use.

From Carrying Capacity to Rational Planning

Perhaps the most fundamental issue in the planning and management of parks, wilderness, and related outdoor recreation areas is the inherent tension between *use* and *preservation*. The legislation creating the U.S. National Park Service illustrates this fundamental tradeoff by defining the twofold mission of national parks “to provide for the enjoyment of the public” while also “to conserve the scenery and the natural and historic objects therein.” This mission is embodied, explicitly or implicitly, in the planning and management guidelines of virtually all parks, wilderness, and related outdoor recreation areas.

The issue of how much recreation use can be accommodated without threatening the preservation of parks and related protected areas has conventionally been addressed under the rubric of *carrying capacity*. Carrying capacity has a rich history in the natural resources professions of wildlife and range management where it refers to the number of animals that can be ecologically sustained in a given habitat (Dasmann, 1964). It has

obvious parallels and intuitive appeal in the social aspect of park planning and management. In fact, it was first suggested as a park planning and management concept in the context of the U.S. national parks in the 1930s (Sumner, 1936). However, the first rigorous applications of carrying capacity to park and outdoor recreation planning and management did not occur until the 1960s (e.g., Wagar, 1964).

Burgeoning visitor use in parks, wilderness, and related outdoor recreation areas in the 1960s and 1970s gave rise to a number of legislative and policy initiatives designed to address social carrying capacity (Cole & Stankey, 1997; Hof & Lime, 1997). For example, the 1978 General Authorities Act (U.S. Public Law 95-625) requires national parks to develop *visitor carrying capacities*. Similarly, regulations emerging from the 1976 National Forest Management Act (U.S. Public Law 94-588) specified that national forest wilderness areas must “provide for limiting and distributing visitor use of specific portions in accord with periodic estimates of the maximum levels of use that allow natural processes to operate freely and that do not impair the values for which wildernesses were created.”

However, application of carrying capacity proved challenging. Despite a blossoming base of scientific literature documenting the ecological and experiential impacts of increasing outdoor recreation use, the question remained of how much impact should be allowed, or what are the *limits of acceptable change* (Frissell, 1963; Frissell & Stankey, 1972). Subsequent research and management experience suggested that the limits of acceptable change can be determined only within the context of specific management objectives. For example, what degree of resource protection should be maintained, or what type of recreation opportunity should be provided? Research generally illustrates that adverse impacts to natural resources and the quality of the visitor experience are caused by even relatively low levels of use, and that increasing levels of use may cause greater levels of impact (Hammit & Cole, 1998; Manning, 1999).

The concept of limits of acceptable change and the associated need for management objectives is illustrated in Figure 1. In this figure, two hypothetical relationships between 1) recreation use and 2) resource and social impacts (e.g., soil erosion and crowding, respectively) are shown. It is clear from both lines that recreation use and impact are related: even relatively low levels of use cause impacts, and increasing levels of use cause increasing amounts of impact. However, it is not clear at what point carrying capacity has been reached. The hypothetical relationships in Figure 1 suggest that some resource and/or social impact is inevitable, even with relatively low levels of visitor use. Thus, some level of environmental and social impact must be tolerated if parks and related outdoor recreation areas are to remain open. For the relationship defined by line A, X1 and X2 represent levels of visitor use; use that results in differing levels of resource and social impacts as defined by points Y1 and Y2. But which of these points -- Y1, Y2, or some other point along the axis -- represents the maximum amount of acceptable impact? Ultimately, this is a judgment that must be expressed within the context of management objectives. Empirical relationships such as those in Figure 1 can be helpful in making effective decisions about carrying capacity, but they must be supplemented with management objectives.

This perspective has given rise to a number of recreation planning and management frameworks based on the principle of management-by-objectives.

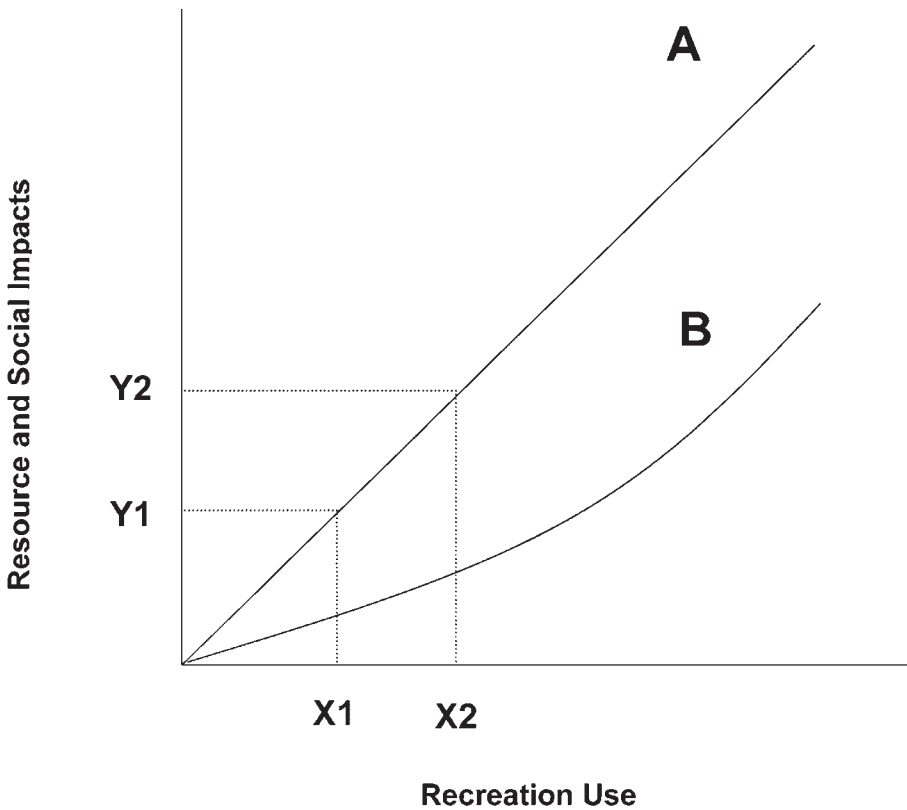


Figure 1. Hypothetical relationships between recreation use & resource and social impacts

While these frameworks were originally designed to address carrying capacity, or the fundamental tension between use and preservation, they can be (and have been) applied to multiple outdoor recreation issues across a spectrum of park and related protected areas. Now, these frameworks constitute an increasingly important and expanding guidance for rational, comprehensive outdoor recreation planning and management (Cole & McCool, 1997c).

Management-by-Objectives Frameworks

The initial management-by-objectives framework to emerge was limits of acceptable change (LAC), developed for application to USDA Forest Service wilderness (Stankey, Cole, Lucas, Peterson & Frissell, 1985). Similar frameworks have evolved, including Management Process for Visitor Activities (VAMP) developed by Parks Canada (1985); Carrying Capacity Assessment Process (C-CAP) developed by Shelby and Heberlein (1986); a generic outdoor recreation planning and management framework outlined by Manning (1986, 1999); Visitor Impact Management (VIM) developed with the National Parks and Conservation

Step 1. Agree that two or more goals (e.g., recreation and preservation) are in conflict. Contemporary recreation planning frameworks can be seen as a means of resolving such conflict. Goals conflict whenever it is impossible to simultaneously optimize conditions for all management goals.
Step 2. Establish that all goals must be compromised to some extent.
Step 3. Decide which conflicting goal(s) will ultimately constrain the other goal(s). In other words, a hierarchy of goals must be established. If there are multiple constraining goals, either these constraining goals cannot conflict with each other or it must be possible to establish a hierarchy among the constraining goals. For parks and related areas, protection of natural resources and the quality of the visitor experience is generally considered the ultimately constraining goal.
Step 4. Formulate indicators and standards of quality and monitor the ultimately constraining goal(s). Indicators and standards of quality must be measurable.
Step 5. Allow the ultimately constraining goal(s) to be compromised until the standard of quality is reached. The process of balancing conflicting goals begins by allowing the most important goal(s) – the one(s) for which standards of quality have been written – to be compromised somewhat. Standards of quality define the maximum amount of compromise that will be accepted.
Step 6. Compromise the other goal(s) so standards of quality are not violated.

Table 1. Basic logic underlying contemporary recreation planning frameworks.
(adapted from Cole and McCool, 1997b)

Association (Graefe, Kuss & Loomis, 1986); Visitor Experience and Resource Protection (VERP) developed by the U.S. National Park Service (Manning, 2001a; National Park Service, 1997); and a generic goal-achievement framework outlined in the text, *Wilderness Management* (Hendee & Dawson, 2002).

Despite the apparent diverse and alphabet soup nature of these frameworks, most observers agree that they are more similar than different (Brunson, 1997; Cole & McCool, 1997c; Hof & Lime, 1997; McCool & Cole, 1997; Nilsen & Tayler, 1997). Each share common procedural and rational foundations, as well as fundamental procedural elements, including the following:

1. Formulation of management objectives that are expressed by quantitative indicators and standards of quality.
2. Monitoring of indicator variables to determine their condition relative to standards of quality.
3. Application of management actions to ensure that standards of quality are maintained.

A common rationale or logic underlying these frameworks is outlined in Table 1 (Cole & McCool, 1997b; Cole & Stankey, 1997).

Distinctions among contemporary recreation planning frameworks are mostly a matter of terminology and sequencing, although some differences might be considered more substantive. For example, LAC explicitly incorporates the Recreating Opportunity Spectrum concept (Clark & Stankey, 1979; Driver, Brown, Stankey & Gregoire, 1987), an approach that encourages zoning and development of a spectrum of recreation experiences. VIM emphasizes analysis of the potential causes of recreation-related impacts as a means of enhancing the selection and implementation of management actions. VERP requires that planning begin with an analysis of park purpose as a way to help formulate management objectives, and design a public involvement strategy.

The frameworks outlined above provide a strong professional basis for outdoor recreation planning (McCool & Cole, 1997; Shelby, Stankey & Shindler, 1992). They provide a conceptual basis for addressing the tradeoffs that are inherent in outdoor recreation, a structured process in which values are more explicitly considered and presented, and a context in which more transparent, traceable, and defensible recreation plans can be derived. In addition, these planning frameworks emphasize the consideration of desired future outcomes or conditions: the appropriate output measures of outdoor recreation planning. Their inclusion of long-term monitoring helps ensure that planners and managers are explicitly aware of changing resource and experiential conditions, and thus enhances the capability of park and wilderness management agencies to respond to changing conditions.

Applications

The planning frameworks noted above have been applied in both the United States and internationally, and the literature suggests these applications have generally been successful (Absher, 1989; Graefe, Kuss & Loomis, 1986; Graefe et al., 1990; Hendee & Dawson, 2002; Kaltenborn & Emmelin, 1993; Ritter, 1997; Warren, 1997). Two relatively prominent examples illustrate this. The initial application of LAC focused on the Bob Marshall Wilderness area in the northern Rocky Mountains of the U.S., and culminated in a plan adopted in 1987. This application employed a transactive planning approach – an extensive process of public involvement designed to enhance dialogue, mutual learning and societal action among stakeholders – to complement the rational nature of LAC and related frameworks (Friedmann, 1973; Yankelovich, 1991). The resulting plan divided the wilderness into four zones, or opportunity classes, each defined by a series of indicators and standards of quality for both resource and social conditions. For example, Opportunity Class 1, the most pristine zone, specifies that the barren core of campsites should not exceed 100 square feet, and that visitors should have an 80 percent probability of not encountering any other groups. An evaluation found that both managers and citizens believed this application would lead to better maintenance of natural conditions while providing high quality wilderness recreation opportunities (Ashor, 1985). In addition, a lack of appeals to management directives in this potentially contentious wilderness area further indicates that such an approach can be successful (McCoy, Krumpe & Allen, 1995). This result coincides with the results of a broader evaluation of LAC in

national forests in six U.S. western states (McCoy et al., 1995).

A second prominent applied example of successful contemporary recreation planning frameworks involves the initial application of VERP to Arches National Park in the Colorado Plateau region of the U.S. (Manning, 2001a; Manning, Lime, Hof & Freimund, 1995; National Park Service, 1995). This application included a program of ecological and social research designed to provide a strong scientific basis for the formulation of indicators and standards of quality (Belnap, 1998; Hof et al., 1994; Manning, Lime, Freimund & Pitt, 1996; Manning, Lime & Hof, 1996). The park was ultimately divided into nine zones, each defined by management objectives, associated resource and experiential indicators, and standards of quality. For example, the pedestrian zone specified that 30 percent or more of soil samples adjacent to trails should be rated as less than four (4) on the soil crust index and that no more than 30 people at one time should be present at Delicate Arch more than 10 percent of the time. This application resulted in the first comprehensive carrying capacity plan implemented in the U.S. National Park system (National Park Service, 1995).

Other environmental issues and areas subject to the basic rationale or logic underlying these frameworks (as outlined in Table 1) may be amenable to this planning approach. In fact, a recent analysis concludes that “the LAC process [and related frameworks] has widespread applicability to issues other than recreation management and in places other than protected areas” (Cole & McCool, 1997b, p. 71). Consideration is now being given to more expansive applications of these recreation planning frameworks, including to a spectrum of protected areas that extends beyond national parks, wilderness and similar areas (Brunson, 1997; Brunson & Rodriquez, 1992); incorporation of non-recreational values into park and wilderness planning (Manning, 1992); and application to non-recreation issues such as fire management, air pollution, exotic plant and animal invasion, domestic livestock grazing, and fish stocking (Cole, 1995; Cole & McCool, 1997b; Cole & Stankey, 1997; Merigiano, Cole & Parsons, 1997).

Issues

Standards of Quality

Research and management experience with the recreation planning frameworks described above have revealed a number of conceptual, methodological, and managerial issues associated with their design and application. Standards of quality play an especially important role in contemporary recreation planning frameworks, but their formulation can be challenging and sometimes contentious. Consequently, standards have received substantial attention by researchers, planners and managers. First, what are standards of quality? Contrary to common first impressions, standards do not necessarily represent desired future conditions. Rather, they define the limits of acceptable change. Given that recreation planning frameworks can be viewed as processes for conflict resolution, standards might be most appropriately defined as a desirable compromise (Cole & Stankey, 1997).

A related issue considers whether management action should commence before a given condition deteriorates to the point that standards of quality may be violated. The answer to this issue is unclear. Management practices are often classified as



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indirect or direct, the former preserving freedom of choice for visitors and the latter imposing use restrictions (Manning, 1999; Peterson & Lime, 1979). It may be appropriate to implement indirect management practices in an effort to maintain areas in a desired condition, but it is probably not appropriate to restrict visitor use before standards of quality are in danger of being violated (Cole & McCool, 1997a). A number of observers have noted that standards of quality should meet several criteria, including characterized as being quantitative, time or space-bounded, expressed as a probability, impact-oriented, and realistic (Brunson, Shelby & Goodwin, 1992; Manning, 1999; Whittaker & Shelby, 1992). Standards of quality can be derived from several sources, including legal and policy mandates, historic precedent, interest group politics, regional context, and information received via public involvement.

Indicators

Other elements of recreation planning frameworks have received less attention. Additional research is needed to help identify and define a broad range of indicators of the quality of recreation experiences. Much of the previous research has focused on crowding-related standards of quality, and this is in keeping with the emphasis

on solitude defined by the U.S. Wilderness Act in 1964 and other relevant legislation. However, research suggests that the quality of wilderness and other recreation experiences is multidimensional, and a broad array of potential indicators of quality should therefore be defined. Several observers have noted desirable criteria for indicators of quality, including being specific, objective, reliable and repeatable, related to visitor use, sensitive, manageable, efficient and effective to measure, and significant (Manning, 1999; Stankey et al., 1985; Whittaker & Shelby, 1992).

Monitoring

More research and management attention is also needed on monitoring indicators of quality (Manning & Lime, 2000). Monitoring of indicator variables is an inherent and important part of contemporary recreation planning frameworks. It determines when and where management action is needed to maintain standards of quality. However, monitoring can be time-consuming and costly, and it can challenge the personnel and financial resources of park and outdoor recreation management agencies. There is little guidance to be found in the professional and scientific literature on cost-efficient and effective monitoring approaches and techniques.

Management Action

Management actions also warrant more consideration, particularly their potential effectiveness (Manning & Lime, 2000). A wide range of management practices is available to maintain standards of quality (Manning, 1999). However, most research has focused on the effectiveness of only two basic management approaches: information/education programs and use rationing. While these are important management approaches, other management practices warrant additional attention, including rules and regulations, law enforcement, zoning, and site design and management. As indicator variables reveal a deteriorating condition that begins to threaten standards of quality, more research attention will be needed on the efficiency and equity of allocation techniques (Warren, 1997). In addition to issues of effectiveness, more attention to management actions in the planning process can be useful as a way to enhance understanding of the potential costs of alternative standards of quality (Cole & McCool, 1997a). High standards of quality will help protect important natural resources and the quality of the visitor experience, but their cost may entail restrictive management actions.

Finally, foresight and analysis are needed to anticipate and circumvent potential barriers to applying contemporary recreation planning frameworks (Hendee & Dawson, 2002; McCool & Cole, 1997; Stankey, 1997). Of course, availability and commitment of adequate agency personnel and financial resources are necessary. But several structural and procedural barriers must also be overcome. The "compartmentalism" of many park and related agencies (e.g., separate divisions for planning, management, and research) can weaken the integrated nature of contemporary recreation planning frameworks. Government agencies in the U.S. have traditionally struggled with public involvement, and this has sometimes been exacerbated by laws such as the Federal Advisory Committee Act that, while ostensibly designed to curtail influence by special interests, may in fact make it more

difficult to seek democratic public involvement in planning. Similarly, the Paperwork Reduction Act may inhibit efforts to involve the public through survey research. Professional education and socialization of agency staff may place too much emphasis on the role of conventional, positivistic science in the planning process, while denigrating the potential role of local citizens and other non-experts. Finally, agencies must exercise the political will and leadership needed to make decisions that require value judgments and that may be controversial.

Conclusions

Emergence of the recreation planning frameworks described in this chapter has been instrumental in guiding contemporary management of parks, wilderness, and related outdoor recreation areas, and applications of these frameworks are likely to become more numerous and expansive in both outdoor recreation and environmental planning. Key elements of these recreation planning frameworks, along with the research and management activities needed to support them, can be summarized as follows.

- Management-by-objectives frameworks have shifted the emphasis and definition of conventional carrying capacity from *how many recreation visits can be accommodated in an area* to *desired future conditions* of such areas. This clarifies and elevates recreation planning by formulating positive and output-oriented measures of success (or failure), and opens and exposes the process of planning to public participation and scrutiny by explicitly emphasizing the tradeoffs and value judgments inherent in recreation planning.
- While the frameworks outlined in this chapter are conventionally defined by a series of steps or elements, they should be considered more iterative than linear (Cole & McCool, 1997a; Hof & Lime, 1997; Manning, 1999). There are strong connections among the elements, including feedback and “feed-forward” loops, and recycling through portions of the process may be both necessary and desirable during their application.
- Recreation planning is fundamentally adaptive in nature (Brunson, 1997; Manning & Lime, 2000; McCool & Cole, 1997). By definition, contemporary recreation planning frameworks require monitoring to measure the existing conditions of indicator variables and to implement or modify management actions to ensure that standards of quality are maintained. This is a fundamentally adaptive process. Further, as more information becomes available, planning should be revisited, though experience suggests this may be resisted (Ritter, 1997).
- Recreation planning is a *process*, not a *product*, as its adaptive nature would suggest. Consequently, planning and management cannot be fully disentangled (Cole & McCool, 1997a; McCool & Cole, 1997). Obviously, plans emerge from the planning process, but they require management for their implementation. The lessons learned from the experience of management should be used to refine plans when and where appropriate. It is common to hear criticism of planning as “taking too long,” but in reality, planning is an on-going and long-term process that is coupled with management.

- Application of recreation planning must be a careful blend of science and public values (Manning & Lawson, 2002; McCool & Cole, 1997; Shelby et al., 1992). The rational nature of management-by-objectives planning frameworks suggests a deterministic process that is driven by technical experts and derived exclusively from scientific research. However, recognition of the inescapable role of value judgments in carrying capacity analysis and recreation planning has more broadly been an important advancement in the professional and scientific literature. Contemporary recreation planning frameworks make such value judgments more explicit by means of formulating indicators and standards of quality, and by opening this process to public participation and scrutiny. Nevertheless, recreation planning can (and should) be informed by the best science available, including research on public values (Manning & Lawson, 2002).
- Finally, recreation planning frameworks should be seen as helping to guide management of outdoor recreation by design rather than by default. In its most generic form, planning might be defined as a deliberate and thoughtful consideration of desired future conditions. Contemporary recreation planning frameworks are designed to enable this process and to shape its expression in the form of management objectives and associated, measurable indicators and standards of quality. Without such design, parks, wilderness and related outdoor areas may evolve by default in ways that unacceptably degrade natural resources and the quality of the visitor experience, diminish the diversity of recreation opportunities, and otherwise fail to meet the needs of society, both now and in the future.

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