Managing Recreational Use

Cynthia Warzechta
Robert Manning
David Lime
Wayne Freimund

Diversity in Outdoor Recreation:
Planning and Managing a Spectrum of Visitor Opportunities in and among Parks

Diversity in Outdoor Recreation

Outdoor recreation emerged as a scientific field of study in the 1960s, and over the last four decades, numerous studies of park and wilderness visitors have been conducted. While the objectives, scope, and methods of these studies are highly variable, at least one general finding has been pervasive: outdoor recreation is diverse. This is a recurring theme whether in regard to recreation activities, socioeconomic and cultural characteristics of visitors, attitudes about policy, preferences for services and facilities, sensitivity to crowding and conflict, experience level, and motivations for and benefits received from recreation participation. Diversity in tastes for outdoor recreation is found equally in studies of developed campgrounds and investigations of wilderness hikers. For example, an early study of users of vehicle-access campgrounds concluded that study data "illustrate the characteristic heterogeneity of camping as a recreation activity and the multitude of reasons people may have for camping. Diversity in the kinds of facilities provided is an important consideration in recreation planning" (King 1966, 2). A study of wilderness hikers concludes similarly: "Wilderness visitors are not in any sense a uniform or homogeneous population.... Represented among wilderness visitors are value systems that cover a wide and often conflicting range" (Stankey 1972, 92).

Research points out that not only 1966). A nationwide panel study of are there differences in taste among campers found similar relationships people, but that people's tastes between camping activity and the change over time as well. A study if family life cycle (LaPage 1973; La- the Pacific Northwest found that the Page and Ragin 1974). Based on type of camping chosen (wilderness these relationships, it has been sug- camping, automobile camping, or gested that "the forest camping sys- some combination of the two) was tem is like an omnibus—the seats are strongly related to changes in the often full but often occupied by dif- stage of the family life cycle (Burch
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different persons as they adjust to the toward the remote and primitive, for flow of time” (Burch 1966). Example, may consider wilderness

Diversity also is evident when the recreation to be of high quality and “averaging issue” in outdoor recreation vehicle-access campgrounds association is recognized. An early, important something less. But high quality can tant report on outdoor recreation and should be found among all types was pointedly titled, The Average of recreation opportunities. From the Camper Who Doesn’t Exist (Shaffer perspective of the individual, quality 1969). The potential problem of re-is most appropriately defined as the lying too heavily on averages has degree to which a recreation oppor- been illustrated as it might apply totality meets one’s needs. From a camping (Wagar 1963; Wagar 1966; broader, societal perspective, quality Lime 1974). Studies show that some in outdoor recreation can be equated campers prefer very elaborate facilities with provision of a diverse spectrum ties for comfort and convenience, of recreation opportunities.

while others prefer relatively simple Diversity in outdoor recreation facilities. Moreover, there is a wide also has been rationalized in eco-range of opinion between these ex-nomic terms using an example of a tремес. Providing a single, uniform hypothetical undeveloped recreation type of camping opportunity—near area (Wagar 1974). If the area were the midpoint of the range based onto be used for wilderness recreation, averages, indeed (atam) point along it might support 3,000 visitor-days of the range—will leave many campers, recreation each year. If intensively quite possibly even the majority, less developed, it might support 300,000 than fully satisfied. However, by of visitor-days of recreation. But the fer ing a range of possibilities, more decision between these two alternas camplers’ preferences can be met. tives should take into account the

This line of reasoning has been issue of scarcity. If developed rec-used to develop a definition of qual-reation opportunities are relatively ity in outdoor recreation based on plentiful and wilderness recreation diversity (Wagar 1966; Manning scarce, society may place more value 1998). The difficulty in distinguish- on creating additional wilderness ing between the quality and type of recreation opportunities even though recreation opportunities has been a they will accommodate fewer visitor-persistent problem for both visitors days. This is in keeping with the and park managers. It is common to economic theory of marginal utility: be quite subjective when associating the more we have of some good or certain types of recreation opportu- service, the less value or importance nities with high quality. Those is placed on each additional unit.

whose recreation tastes are oriented
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This economic rationale has been spectrum of recreation opportunities. borne out in an empirical test of examining each park or recreation Colorado deer hunting that explored area in isolation may lead to man- public willingness to pay for selected agement decisions favoring the types of hunting opportunities jory or plurality of potential visi- (Miller et al. 1977). The value of this. While justified in many cases, deer hunting was found to vary this process will ultimately result in among types of hunting opportuni an entire system of park and recrea- ties and types of hunting groups. tions designed for the average From this, it was demonstrated that visitor while neglecting a desirable total satisfaction of hunters (as meas- element of diversity. Instead, each used by willingness to pay) could bepark or recreation area should be increased by providing a spectrum of evaluated as part of a larger system of hunting opportunities. areas, each contributing as best it can

Diversity also has been rational to serve the diverse needs of the ized in political terms (Burch 1974). public. In this way, low density and It can be argued that without broader minority recreation opportuni- politcal support, parks and outdoor ties can be justified. It has been sug- recreation areas are not likely to begested that this systematic approach maintained by society at large, and be applied on a broad, regional basis; that this support is not likely to behis way management can best ensure forthcoming if outdoor recreation “a diverse resource base capable of areas do not serve the needs of a providing a variety of satisfactions” broad spectrum of the population. (Stankey 1974). Therefore, park managers should. Recognition of the need for diver- strive to serve this diversity and notsity has led to a number of suggested necessarily adhere too closely to the classification or zoning systems for preferences or tastes of any one recreation areas. Very early precu- group or type of visitor.

Conceptual Frameworks for Providing Diversity in Outdoor Recreation

A number of reports in the out- door recreation literature have em- phasized that a systematic approach “from the flowerpot at the window to outdoor recreation management is the wilderness” (Wagar 1951). One needed if diversity is to be designed the earliest, more formal sugges- appropriately. It would be diffi- cultions was contained in a handbook for a single park or recreation area, on wildland planning which sug- regardless of size, to provide a full
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gested seven zones ranging from emphasize the desirability of a di-
"wilderness" to "semi-suburban" verse array of recreation opportuni-
(Carhart 1961). Just a year later, theties, both within and among parks
Outdoor Recreation Resources Re-
and related areas. Carrying capacity
view Commission included among frameworks such as Limits of Accept-
it major recommendations a pro-
able Change (LAC) (Stankey et al.
posal for a six-fold classification sys-
em and Visitor experience and
for recreation areas, ranging Resource Protection (VERP) (Na-
from high-density use to extensive tional Park Service 1997), suggest
primitive areas, to be applied to all
that recreation opportunities should
federal recreation lands (ORRRC
be defined through formulation of
1962).

More recently, two conceptual
frameworks—the recreation oppor-
tunity spectrum (ROS) and carrying
capacity—have emerged in the out-
door recreation literature that help
guide design and implementation of
a diversity of outdoor recreation op-
opportunities. In the broadest sense,
ROS is a conceptual framework for
thinking about recreation opportuni-
ties (Driver et al. 1987; Driver and
Brown 1978; Clark and Stankey
1979; Brown et al. 1978; Brown et al.
1979). It explicitly recognizes that
experiences derived from recreation
are related to the settings in which
they occur, and that settings in turn
are a function of environmental, so-
cial, and managerial attributes (e.g.,
degree of environmental impacts,
visitor-use levels, and regulation of
visitor behavior). By describing
ranges and alternative combinations
of these attributes, ROS illustrates
the potential diversity of recreation
opportunities.

Similarly, contemporary ap-
proaches to carrying capacity also
indicators and standards of quality
for the resource, social and manage-
rial components of recreation experi-
ences. Moreover, such recreation
opportunities should comprise a
broad range of experiences at both
the park and regional levels. For ex-
ample, LAC suggests use of ROS in
planning recreation opportunities
within wilderness and related areas,
and also suggests a regional analysis
of the supply and demand for alter-
native types of recreation opportuni-
eties. Similarly, VERP advocates
analysis of a range of visitor experi-
ence and resource conditions, and
recommends that such an analysis
include a strong regional component
by noting that "a range of recrea-
tional opportunities in a region is
desirable to satisfy the diversity of
recreation tastes (National Park
Service 1997, 49).

Empirical Approaches to
Planning and Managing Diversity
in Outdoor Recreation

It is clear from the proceeding
sections of this paper that a diversity
opportunities is a desir-
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able element of a system of park throughout the park. Four representa-
recreation areas. But how can such atative photographs from the two se-
system of recreation opportunities be ries of 16 photographs used at Deli-
designed empirically? This section of cate Arch and North Window are
the paper presents a series of studies shown in Figures 1 and 2. Repre-
conducted at both the park and re-sentative samples of visitors were
regional levels that illustrate how em-asked to judge the acceptability of
pirical data might be used to help these series of photographs. Study
guide planning and management of findings indicate that maximum ac-
spectrum of visitor opportunities at cceptable levels of crowding vary
park and recreation areas. Among study sites. For example, the

Hiking on the Colorado Plateau. point at which aggregate visitor
In the early 1990s, an initial applica-judgments of crowding become "un-
tion of the VERP framework was acceptable" is approximately 20
conducted at Arches National Park, PAOT for North Window and is ap-
Utah (Hof et al. 1994; National Park approximately 30 PAOT for Delicate
Service 1995; Manning et al. 1995; Arch. These and related data pro-
Manning, Lime, and Hof 1996; vided an empirical basis for formu-
Manning et al. 1996). This work was lating alternative standards of quality
supported by a program of natural and an associated array of recreation
and social science research designed opportunities within the park.
to help formulate indicators and More recent studies have begun to
standards of quality (Manning et al. expand this research to other parks
1993; Lime et al. 1994; Belnap in the Colorado Plateau region (Lime
1998). Initial social science research et al. 2001). For example, represen-
found that visitors were sensitive to tative samples of hikers to four Colo-
the number of other people using therado Plateau parks—Arches National
park, including the number of people Park, Capitol Reef National Park,
encountered along trails and at at-Colorado National Monument, and
traction sites. Thus, the number of Natural Bridges National Monu-
people at one time (PAOT) seen ment—were asked to judge the ac-
along trails and at attraction sites was cceptability of a series of 16 photo-
adopted as an indicator of the quality graphs showing a range of visitor use
of the visitor experience. A second levels along a 100-meter section of
phase of research focused on setting trail representative of the high des-
standards of quality. Several series of set environment of the Colorado
photographs were developed using Plateau. Representative examples of
photo-editing computer software to these photographs are shown in Fig-
show a range of visitor-use levels stature 3.

selected trails and attractions
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Figure 1. Sample photographs of a range of visitor-use levels (PAOT) at Delicate Arch.

Figure 2. Sample photographs of a range of visitor-use levels (PAOT) at North Window.
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Figure 3. Sample photographs of a range of visitor-use levels (PAOT) along a generic section of trail.

Study findings, as shown in Figure 4, suggest that visitors to all four sets at any point in the "acceptable" park areas judge the acceptability of range of the curves shown in Figure 4 (i.e., at any point between 0 and 8. However, rather than manage all four 12 PAOT) parks at a similar crowding-related. Further studies have begun to re-standardize quality (for example, in fine this type of research (Lime et al. the range of 8 to 12 PAOT, the poir2001). For example, representative at which aggregate visitor judgments samples of visitors to the four park of crowding cross the line from the areas noted above were asked to exceed-acceptable into the unacceptable amine the series of 16 photographs of range), hiking standards in each park trail use described above and select might be based on resource sensitivity-the one that represented the maximality, accessibility, or simply the man-mum acceptable level of use. How-agement objective of providing a di-ever, this series of questions incorporate set of recreation opportunities rated four dimensions of "acceptable within a region. The data graphed inability" (Manning et al. 1999). The Figure 4 begin to provide an empiri-first question asked: "Which photo-cal basis for such decisions. For ex-graph looks most like the number of ample, PAOT-related standards of people you would prefece see at any
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Figure 4. Visitor acceptability ratings of photographs of a range of visitor-use levels (PAOT) along a generic section of trail.

one time along this section of themost like the highest number of peo-
trail?" (This dimension is called ple at one time that the National Park "preference".) The second question Service should allow along this sec-
asked: "Which photograph looks tion of trail?" (This dimension is most like the highest number of peo-called "management action.")
ple that you think acceptable to see Study findings are shown in Ta-
at any one time along this section ofle 1, and once again suggest there is the trail?" (This dimension is called considerable similarity and consis-
acceptability").) The third question tency among visitor judgments of all asked: "Which photograph looks four dimensions of acceptability most like the highest number of peo-across the four study parks. These ple at any one time along this section data help provide an empirical foun-
of the trail that no unacceptable that dation for formulating an array of you would end your hike sooner than overcrowding-related standards of quality planned?" (This dimension is called and an associated spectrum of rec-
tolerance"). The fourth question reaction opportunities. Hiking in one asked: "Which photograph looks or more parks, for example, could be
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managed for high levels of solitude River, and Cataract Canyon, the (i.e., the "preference" dimension of whitewater stretch of the Colorado acceptability) while other parks River below the confluence, were might provide hiking opportunities found to receive more commercial that are lower in solitude, but ac-use (guided trips) and more motor-commodate relatively large numbers ized use than the Green River.
of visitors (i.e., the "management As an alternative to judging the action" or even "tolerance" dimen- acceptability of a series of photosions of acceptability). In this way, agraphs, representative samples of diverse spectrum of outdoor recrea- river users were asked to answer a set tion opportunities might be provided of questions addressing the four di- within and among a regional system mensions of acceptability toward of parks.

Boating on the Colorado and many watercraft would you have Green Rivers. Recent research at preferred to see today?" ("prefer- Canyonlands National Park explored ence"), "What do you think is the use and users of the Colorado and maximum number of watercraft that Green rivers system, including the would have been acceptable to see four dimensions of acceptability (de- today?" ("acceptability"), "What do scribed in the previous section) to-you think is the maximum number of wards seeing other watercraft watercraft the National Park Service (Warzocha et al. 1998). The Green should have managed you to see River, which flows southward to today?" ("management action"), and merge with the Colorado River deep "What do you think is maximum within the park, is a flatwater stretchnumber of watercraft that you could that was found to be popular withsee today before you would consider canoeists and kayakers. The flatwater not visiting this river again?" ("toler-stretch of the Colorado River, northance"). On each day of their trip, of the confluence with the Green using a diary format, river users were

<table>
<thead>
<tr>
<th>Park</th>
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<tbody>
<tr>
<td>Arches</td>
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Table 1. Crowding-related standards of quality (maximum POAT along trails) using four "dimensions" of acceptability.
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asked to record a number of water-variety of watercraft types. This type
craft for each of the four questions asked researcher could be extended be-
these questions applied to the spe-yond park boundaries to comple-
cific stretch of river they had floated/m larger-scale regional planning
that day.

Study findings, shown in Table 2,rado and Green rivers system.
indicate variations in acceptability for
Seeing other watercraft based on the
stretch of the river system respon-
dents were traveling. The data from a system of park and recreation op-
river users provide support for de-portunities. Moreover, several con-
veloping a spectrum of recreation cephalic frameworks have been develop-
opportunities congruent with the operated in the scientific literature, in-
resource and its users. For example, cluding ROS and carrying capacity,
the maximum numbers of watercraft to help encourage and guide efforts
reported by Green River users, along to plan and manage parks and related
with the physical characteristics of areas for diverse recreation opportu-
the river, suggest the potential ap-nities. However, it is not feasible for prop-
riateness of managing that any one park to provide a full spec-
stretch for flatwater, nonmotorized, trum of recreation opportunities.
low-density recreation opportunities. This suggests that efforts to meet the
In contrast, the maximum numbers needs of a broad range of park vis-
of watercraft reported by river run-
tors will require a regional approa-
ners in Cataract Canyon suggest the to recreation planning and manage-
propriateness of that river stretch ment that spans parks and even sys-
for whitewater, relatively high-
tems of parks and related areas.
density opportunities that provide an

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<tr>
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<td>3.6</td>
<td>11.1</td>
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Table 2. Crowding-related standards of quality (maximum number of watercraft) for a re-
gional river system using four “dimensions” of acceptability.
Plateau suggests that empirical data can be developed to support a regional approach to park and recreation management to address a broader range of recreation management. At the park level, these attributes. Moreover, the study findings helped planners and managers design alternative recreation opportunities at major hiking-related geographic area. Clearly, this suggests (National Park Service search needs to be extended geo-1995). An extension of this research graphically by incorporating more opportunities across several National Park Service areas within the Colorado and Green rivers system. The recent rado Plateau. Similar research is administrative evolution of the National Park Service managers a new river management plan for Canyonlands National Park's "clusters" of parks, Park that specifies three distinct along with the multi-agency nature of types of boating opportunities on the evolving system of Cooperative Colorado and Green rivers system. Ecosystems Studies Units (CESUs),

The research described in this paper is clearly preliminary, and research approaches to the research, needs to be expanded to other planning, and management needed efforts of park and recreation experience to design and maintain a diversity of services and other parks and visitor opportunities and among graphic regions, and might be augmented by other research approaches. For example, the data described in this paper apply only to park and outdoor recreation overcrowding-related issues. Both ROS portunities, as suggested by Cole and carrying capacity explicitly rec- McCool in a companion paper in this paper, that recreation opportunities volume, would augment the usefulness defined by a variety of resourcelessness of the type of data illustrated in social, and managerial attributes. This paper.

Empirical research should be ex-

References
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Cynthia Warzocha, College of Forest Resources, University of Minnesota, St. Paul, Minnesota 55108; warze002@tc.umn.edu

Robert Manning, Recreation Management Program, School of Natural Resources, University of Vermont, Burlington, Vermont 05405; rmanning@nature.snr.uvm.edu

David Lime, College of Forest Resources, University of Minnesota, St. Paul, Minnesota 55108; dlime@forestry.umn.edu

Wayne Freimund, School of Forestry, University of Montana, Missoula, Montana 59801-0576; waf@forestry.umt.edu

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### Dimensions of Acceptability

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Table 1. Crowding-related standards of quality (maximum POAT along trails) using four “dimensions” of acceptability.
### Dimensions of Acceptability

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