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Thinking and Acting Regionally:

Toward Better Decisions about Appropriate Conditions, Standards, and Restrictions on Recreation Use

Recreation managers make and act on decisions, often implicit, about the conditions, management approaches, and visitor experiences that are most appropriate for the individual recreation areas they administer. As demand for recreation, particularly in wilderness, backcountry, and wild river settings, has increased, such decisions have become more difficult, complex, and contentious. We believe that managers, while charged with deciding what is appropriate in the individual places they manage, need to make decisions that are also appropriate within a regional context. A fundamental objective of recreation management is to maximize the values and benefits that accrue to the public from a system of recreation areas (Wagar 1966). Consequently, managers need to make decisions that maximize the values and benefits that accrue from that system, not just the individual areas for which they are responsible.

Backcountry settings are not only scarce—in terms of their acreage—but they are also highly demanded as locales for recreation and tend to be sensitive to recreation-use impacts. In responding to growth in demand for recreation in these settings, managers must make tradeoffs between access and provision of optimal biophysical and experiential conditions. One relatively popular management approach is to limit the amount of recreation use allowed in an area. This policy was first implemented for whitewater rivers of the West in the early 1970s, but the practice has since been adopted, in one form or another, in dozens of terrestrial backcountry areas. Managers have usually developed use limits on an area-by-area basis (e.g., the managers of one backcountry area develop their plan with little knowledge of the demand, supply, and opportunities provided in nearby areas). In addition to their intended protective effects, use limits have a number of unintended and potentially irreversible consequences, notably the displacement of visitors and impacts to other areas, the preferencing of one type of visitor over another, and the reduction of access and recreational opportunities (Freimund and Cole 2001).

In this paper, we argue that the systemic failure to both think and act regionally has resulted in the homog-

enization and suboptimization of recreation opportunities, and the displacement of problems from one area to another. In presenting this argument, we use the example of recreation-use limit policies to explore more completely the issues raised by the "area-by-area" management approach. We contend that a regional approach to planning and management is needed to reverse the trend toward homogenization and suboptimization. We discuss barriers to regional planning for recreation, and conclude with ideas about the basic outline of a regional analysis framework and suggestions about research questions that must be addressed. While we have more questions than answers, our intent is to point out the limitations of current science and management, and suggest a direction that might lead to better future decisions.

Suboptimization and Homogenization

Protected areas in the USA are each part of a larger biosocial region or system. Management actions developed for one area inevitably affect conditions and management in a nearby one. Area-by-area implementation of management actions is an example of incremental decision-making. Such decision-making focuses on the "art of the possible" but without reference to the long-term or spatially expansive consequences of this approach. A common outcome of incremental decision-making is that even though each manager may be acting responsibly for the area under his or her jurisdiction, the cumulative effect of individual, apparently unrelated decisions may be a situation that was never explicitly intended and is difficult to reverse. In particular, such decision-making tends to displace use and diminish important values, effects that result in the homogenization of conditions and suboptimization of the aggregate value and benefit of recreation systems.

To clarify our terminology, we offer the following definitions. "Displacement" is a process in which recreationists and their impacts move from one place to another, in response to management action (or lack of action). By "homogenization," we mean a decrease in the diversity of recreational opportunities that a region offers—again as a result of management action or inaction. By "suboptimization," we mean that a regional recreation system offers less than optimal value and benefit, primarily because the management actions taken (or not taken) do not adequately serve the diversity of recreation tastes in the region. It should be noted that, while these processes and effects result from management, they are typically unintended.

To illustrate the processes of displacement and homogenization, consider the multi-day wilderness-like whitewater river trips in the Colo-

rado Plateau country of Utah and Arizona—particularly on the Colorado River in Grand Canyon, the Green River in Desolation and Gray canyons, and the San Juan River between Bluff, Utah, and Lake Powell. This example was selected because displacement and homogenization occurred rapidly in these areas, with readily apparent results. We contend that similar processes are occurring—perhaps more slowly and subtly—throughout our parks and wilderness areas.

Recreational use on each of these Colorado Plateau rivers increased throughout the 20th century, but most explosively on the Colorado River. As of 1965, only about 1,000 people had ever gone done the Colorado through Grand Canyon. Just seven years later—in 1972—more than 16,000 people went down the river in a single year. Solitude and pristine environments were suddenly lost. People were no longer able to experience the conditions they preferred, and—in 1973—the National Park Service (NPS) implemented a management program that limited use to the 1972 level. Launches were limited such that typically 6-8 groups per day start down the river. Demand for the Grand Canyon rafting experience continued to increase, however. By 1980, the wait to obtain a noncommercial permit reached 10 years. Today, the number of people on the waiting list is so large that it would take 20 years to accommodate them all.

Grand Canyon managers were forced to make a tradeoff between legislated mandates both to provide preferred experiences and unimpaired environments and to provide access to park resources. Their choice—as the most appropriate course of action for Grand Canyon—was to select a compromise that provides (1) conditions that are still acceptable to most visitors but more crowded and less pristine than most prefer and (2) an ability to gain access that is much less frequent than desired but not as infrequent as it would be if use levels were even lower. They rejected alternative compromises such as (1) preferred experiences and virtually no access and (2) even less-preferred experiences and more frequent access.

Boating had also been increasing in the 1960s and early 1970s on the Green and San Juan rivers, but nothing like it did after floaters could no longer freely access the Colorado. Boating on the Green River through Desolation and Gray canyons increased 250% from 1973 to 1974, the year after use limits were imposed at Grand Canyon. Opportunities for experiencing solitude and pristine environments were lost here as well, and, by 1980, use was limited on the Green. Launches were limited to 6 groups per day. Today, the odds of obtaining a permit in a lottery during the prime use season are about 5%. Here—as on the Colo-

rado—managers chose the compromise of acceptable rather than preferred experiences (with use densities comparable to those on the Colorado) and infrequent access.

Demand to float the San Juan River increased more slowly than on the Green River. However, by 1980, managers chose to limit use to about 6 launches per day. Initially, permits were easy to obtain. Today, however, the odds of obtaining a permit are poor here as well. Consequently, the San Juan River—like the Colorado and the Green—provides acceptable experiences and is difficult to gain access to.

The choice made by managers appeared to be a reasonable one for each of these rivers. In fact, with only a few exceptions, managers of all whitewater rivers offering multi-day trips through primitive environments have made similar choices. There are about 5-8 launches per day, resulting in a situation in which use densities are not extremely high but experiences are far from those that are preferred, and permits are extremely to moderately difficult to obtain. On all of these rivers, managers— individually deciding what is most appropriate for the river they manage—have made nearly identical choices. Their decisions have affected each other, as both floaters and visitor impact problems have been displaced from one river to another. The result is a recreational system that is neither very good at providing access nor at providing preferred experiences. Such a homogeneous system is suboptimized because many of the values these rivers originally provided (e.g., preferred experiences and ready access) have been lost from the entire system.

In contrast, consider the situation on three river segments in Idaho: the Selway, the Middle Fork of the Salmon, and the Lower Salmon. These rivers were also experiencing rapid increases in use in the 1970s. Limitations were imposed on the Middle Fork of the Salmon in 1972, a year before Grand Canyon, with managers selecting a use level of 7 launches per day. The current odds of obtaining a permit on the Middle Fork during the prime use season are 3%. Thus Middle Fork managers made choices similar to virtually every other river manager. Managers of the Selway chose something different, however. They decided to provide opportunities for high levels of solitude (preferred experiences), even though it would be very difficult to gain access to that experience. Only one launch per day is allowed—providing a very different experience on the Selway. The likelihood of obtaining a Selway permit is even lower than the odds of obtaining a Middle Fork permit.

The managers who made the decision on the Selway are revered in certain circles for their foresight in preserving something that is scarce, the opportunity for a preferred expe-

rience on one of these rivers. The same reverence should be given as well—though we seldom hear it—to the managers of the Lower Salmon River who have also tried to preserve something scarce, a river that you can float when you want to. Despite increasing use, resulting in increased use-density, managers of the Lower Salmon have not limited use. As a result, the conditions found along the system of rivers in Idaho have not been homogenized to the extent that they have been elsewhere (Allen 1991). There are rivers that offer preferred experiences (the Selway), rivers that offer acceptable experiences but somewhat easier access (the Middle Fork Salmon) and rivers that provide the opportunity to go floating, admittedly often under crowded circumstances, when one is not lucky enough to obtain a permit elsewhere. This system, we contend, provides more value and benefit, and is not as suboptimized as the system of rivers on the Colorado Plateau.

These two examples illustrate how the choices individual managers make—when deciding what is appropriate for the individual areas they manage—determine the aggregate value of the regional system of recreation areas within which individual areas are nested. Each individual decision affects neighboring areas, through displacement (or attraction) of use and impact, and either contributes to homogeneity or adds diversity to the system. Thus it is critical that managers make choices that maximize the value of the system at least as much as the value of their individual river.

Homogenization of recreation opportunities—as has occurred almost everywhere on rivers—is troublesome because many opportunities are increasingly scarce relative to demand, and because the lost opportunities are not easily recovered. It is unlikely that the managers of other river settings would lower current use limits to an equivalent level, even given the tremendous unsatisfied demand represented by applications for floating the Selway River. It is equally unlikely that managers on other river segments would raise use limits to accommodate the ever-increasing demand for river recreation. Managers—and the public—have been victimized by a "tyranny of small decisions" (Kahn 1966), each representing a tradeoff for any given setting, but in sum not maximizing the benefits of a system.

In most cases where use has been limited, the limit has been set at current use levels. Management actions that are based on preserving current conditions privilege current users over other users. Current users are found at recreation sites because the biophysical, social, and managerial conditions there provide the opportunity they seek—or are at least willing to tolerate in order to gain access. Maintaining current conditions thus protects what current users seek, re-

gardless of other demands existing within a population. The needs and desires of those who prefer other conditions—and either have chosen not to visit or who still come to the area but in small numbers—are marginalized, perhaps inadvertently. While managing for the average current visitor may be appropriate, at least some recreation managers need to provide for the preferences of other users or the system will become ever less diverse and less beneficial.

In summary, wilderness and backcountry areas exist not on a site-by-site basis, but within the context of a region where such areas constitute a system. Management actions in one area affect use patterns, biophysical and social conditions, and eventually actions in others. Area-by-area approaches to management ultimately result in homogenization and suboptimization of recreation systems. Regional analysis and planning, in contrast, would increase the likelihood that individual decisions lead to diversity and optimization instead.

Barriers to Thinking and Acting Regionally

Our observations about the regional character of recreation management are not new. Managers and scientists have argued for 25 years that management must occur at a regional level. Lime (1976) suggested that a "full range of recreation opportunities within the *region* to satisfy the diversity of recreation tastes is desirable" (emphasis added). Bruns (1984, 82) argued that one value "of the system of rivers concept is that it provides a framework for managers to actively plan for providing specific recreation opportunities rather than simply responding to whatever visitation occurs." Others have noted that management of recreational use must occur within the context of a regional system of opportunities, and that limiting recreational use in one of these areas without considering the management regime in others carries a variety of significant negative consequences (e.g., Stankey 1977; Schreyer 1977).

Thinking and acting at a regional level is not easy, as the evidence suggests. There are a number of significant barriers to doing so. A major barrier results from the number and variety of agencies often involved in providing backcountry opportunities. Each agency (U.S. Forest Service, Bureau of Land Management, NPS, state park agencies) operates under different mandates, policies, and priorities. Agency managers may simply be unaware of the consequences of their actions on other backcountry managers. Incentive systems are narrowly defined: protecting the area under one's jurisdiction takes priority, not areas managed by other managers or other agencies.

Figure 1. Parks within a region should provide a diversity of recreation opportun i-ties.

To think regionally, managers require institutional environments to encourage such activity and venues for doing so. Venues that encourage "working through" regional analyses, conflicting priorities and agendas, and differing missions (Yankelovich 1991) are rare. A venue would require participation of all relevant agencies, scientists and users (and others with interests in the parks). These interested parties should be able to interact in a non-threatening environment and in such a way that implications (benefits, costs and tradeoffs) can be described at a regional scale.

Another barrier to regional planning is the lack of social science research approaches capable of providing a strong empirical foundation for local decisions that optimize regional recreation values. Currently, the most prominent social science input to the decisions individual parks and wilderness areas must

make about appropriate conditions, experiences, and management programs is generated by surveys of current visitors to individual areas. The way that the results of this research are frequently applied to park management has contributed to suboptimization and homogenization in at least two ways.

First, although social science research conducted on an individual-area basis provides managers with useful information, it only provides information about the preferences of those currently visiting an area. Dissatisfied users or those seeking opportunities no longer provided by the area will not be sampled; thus their preferences will be inadvertently marginalized. As a result, such research usually shows support primarily for current conditions. Second, the practice of focusing most research attention on central tendencies (to simplify interpretation of the data) contributes to a predisposition to manage for the average visitor. A substantial and long-established literature (e.g. Wagar 1966, Shafer 1969) has developed showing that the average visitor simply does not exist. The population of outdoor recreationists consists of a series of segments, none of which account for the majority of participants. By directing management at a mythical average visitor, the needs and desires of few visitors are met (Wagar 1966). Returning to our rivers example, traditional visitor surveys will tend to suggest that every river should be managed for the average current visitor, meaning most rivers will be managed like the Middle Fork, with few rivers managed like the Selway or the Lower Salmon.

These limitations result, in part, from asking too much of science—a common malady in this era of so-called science-based management, in which descriptive data are frequently confused with prescriptive action. Managers need to develop *prescriptions of what should be* (desired or acceptable social and biophysical conditions at a site), but social science research can only provide *descriptions of what is* (visitor preferences and opinions). Some scientists have tried to get around this limitation by using evaluative or even prescriptive phraseology in their questions—asking visitors what is acceptable or what management should do. But, the tabulated responses to such questions are still merely descriptions of the opinions of a select group of stakeholders (average current on-site users). Information about this group enriches decisions about appropriate conditions but it suggests little about what the ultimate decision should be.

Several studies have attempted to develop a regional perspective by aggregating the results of several area-specific surveys conducted in the same region. Bruns (1984) was perhaps the first to do this. While these regional analyses recognize the

need to think regionally, they can still contribute to the problem if managers are not attentive to their strengths and weaknesses. Warzecha et al. (1998; and the article in this volume), for example, present the results of visitor surveys conducted on three river segments on the Colorado Plateau. The results are more striking in their similarity than in their differences, with the mean number of acceptable watercraft encountered per day varying between 8 and 11 on the three rivers. This study provides useful descriptive information; there is little difference in the acceptability judgments of the average current visitor on each of these three rivers. However, if decisions about conditions are largely based on such results, managers of all three river segments are likely to make similar choices about social settings, leading to homogenization of opportunities. Site-specific studies of visitors—even aggregations of several sites in a region—cannot provide an empirical basis for taking the risks associated with managing for preferred experiences or managing to provide access as frequent as desired. If we want to provide a scientific basis for decisions that lead to diversity and maximum aggregate value of recreation systems—instead of homogeneity and suboptimum value—we need more science that can explicate tradeoffs and consequences at large spatial scales and that can provide more insight into the needs of participants other than the average current users of an individual park, wilderness, or river.

In addition to new research approaches, thinking regionally requires research funded across agency administrative functions and boundaries and at longer time frames than is currently the case. Development of regional-level recreation research would require new ways of thinking, innovative conceptual frameworks, and approaches to technology transfer that are not readily accessible in today's managerial environment. Regional-level analyses are likely to require more time to plan, implement, and evaluate, a situation in conflict with today's "need it now" drive for information.

Toward a Regional Approach

The first step toward a regional approach to recreation decision-making is to recognize the problems and consequences associated with not doing so. Our fundamental contention is that—in the absence of a regional perspective—individual managers are likely to make decisions that, while appropriate for their individual park or wilderness, may be inappropriate for the systems of parks and wilderness areas that recreationists use. Uncoordinated individual decisions will result in a relatively homogeneous system that gives preference to the needs and desires of a minority—those with needs and desires close to those of the mythical

average recreationist.

Given our current understanding about how to conduct a regional approach that will minimize displacement, reduce suboptimization, and counteract the trend toward homogenization, the primary objective of this paper has been to point out the significance of these problems. However, in the following pages, we will present some initial ideas about a framework for regional analysis and identify some of the important research needs related to such a framework. Changing the questions that science asks and developing research approaches capable of addressing these critical questions is a necessary step. In addition, institutions will have to change in ways that encourage regional planning and management. This is critically important—and challenging—although we do not attempt to offer insights into how to do this.

The framework we envision is founded on two types of definitions. First, the region to be analyzed needs to be defined. This involves developing a better understanding of how areas and populations interact. Second, definition and classification of the range and types of recreation experience is needed. Levels of demand for these different experience types, within the population of the region, needs to be assessed.

Once the regions, types of experience, and demands have been identified, the places capable of providing these experience types need to be identified and mapped. The relationship between supply and demand for various experience types will suggest which types are relatively scarce, in the sense that there is high demand for a limited supply. Multi-day whitewater boating, through largely natural, undeveloped landscapes, is a good example of a scarce recreational opportunity. For scarce opportunities, it will be necessary to further subdivide recreational opportunities along a spectrum from places that provide preferred conditions but infrequent access, to places that provide conditions that are acceptable but not preferred and opportunities for more frequent access.

The next step of the framework involves allocating experiences—a series of prescriptive decisions driven primarily by concerns about suboptimization. Suboptimization is minimized by allocating experience types such that they are distributed in proportion to demand for them. It is further minimized by making sure that, within any individual experience type, there are opportunities for both preferred experiences and for frequent access (i.e., not every place makes the same compromise between these two goals). Finally, it will be necessary to allocate specific places both to experience types and position on the spectrum from preferred to acceptable conditions. For example, the Selway River has been allocated to nonmotorized whitewa-

ter recreation as opposed to motorized whitewater recreation. It has also been allocated to the preferred-experience, limited-accessibility end of the spectrum within that experience type.

Moving toward this type of framework will require new scientific approaches. Currently, the primary scientific approach is to conduct surveys of current visitors to particular parks, wildernesses, and rivers. Questions about preferences for or acceptability of conditions are used to make decisions about what is appropriate in that place. As noted before, we contend that using this approach *for this purpose* can contribute to suboptimization of the system—even if these results are aggregated in regional analyses illustrating differences between individual places within a region. Information about the preferences of current visitors to a specific place is useful in identifying alternatives and in evaluating the consequences of alternative decisions. Our intent is not to suggest that this research is not valuable for these purposes. Rather, our point is that this research approach is not very helpful in deciding among alternatives. Other research approaches are more likely to contribute a stronger empirical foundation to decisions about appropriate conditions.

Traditional research provides important insights into such questions as (1) how many current users' preferences can be met given a particular management alternative? (2) how far are proposed conditions from most current users' preferred condition? and (3) are proposed conditions still within the tolerable range of most current users? However, while this type of research might suggest the right approach to satisfy the most current users in any single place, it will often not be the right approach for the recreation system as a whole.

To make good prescriptive decisions about what is appropriate, we need to consider more than visitor preferences. We need empirical studies of demand and supply and to consider legislative mandates and administrative policy. We need science directed at regional populations of participants to complement research on area-specific visitors. Much as the biological sciences have profited from studying phenomena at multiple scales (from landscapes to communities, populations, individuals and cells), the social sciences could profit from studying phenomena at all scales, from the regional population of participants to the individual participant and his or her experience. Studies of individuals provide a richer vocabulary for describing larger-scale systems, while studies of regions provide a context for decisions about populations and communities.

The following five topical areas of research seem particularly important to the development of regional analyses. First, we need to understand the

appropriate scale of a regional analysis, the emergent properties of a region, and how one would make decisions about the appropriate boundaries of a region. Regions may be best defined in terms of the supply of recreation areas capable of meeting the demand for particular recreation opportunities. The appropriate scale of a regional analysis probably varies with the scarcity of supply, or how specialized the opportunity is, or both. For example, the size of the region needed to assess mountain biking opportunities may be much smaller than that needed to assess mountaineering opportunities. Much as the emergent properties of large biological systems only became apparent recently, with the blossoming of landscape ecology, the emergent properties of regional recreation systems will not become apparent until they receive serious study. Such studies are likely to require new concepts, jargon, and measurement protocols.

Second, we need more research at smaller scales—research on individuals and on subpopulations. More in-depth study of individuals might contribute a richer vocabulary for describing recreation experiences than our current reliance on such vague terms as a "wilderness" experience. Ideally, we can learn how to describe experience opportunity types in terms of what is experienced, complementing our current ability to describe experiences in terms of activities or as setting attributes that we assume influence experiences. This should lead to better categorizations of the experience opportunities that could be provided regionally. It should also increase the ability to study relationships between setting attributes—which managers can readily influence—and experience opportunities managers are trying to provide.

A third type of research involves describing the distribution of preferences for experience opportunity types across the regional population. This research needs to build on categorizations of experiences developed from a richer understanding of the recreation experience. How large are the various subpopulations that seek different recreation experiences? One challenge with this research is to identify ways that measures of demand can be more readily related to measures of supply. Typically, demand is articulated in visitor-days, occasions, or as a proportion of the population interested in a particular recreational activity or experience opportunity. Estimates of supply are typically expressed in units of area such as acreages. If we are to effectively match supply to demand, better ways of relating one to the other are needed.

It is also important to conduct research that will help in making decisions about how to allocate recreation resources along the spectrum from preferred experiences to mini-

mally acceptable but readily accessible experiences. This research would address such questions as, "what is the minimally acceptable condition, below which denial of access is preferable to further degradation of the experience?" Together, studies of the "costs" of experiencing acceptable conditions as opposed to preferred conditions, along with studies of the "costs" of being unable to gain access to a desired activity, might suggest approaches to allocating resources along the spectrum. For example, should we have one Selway, ten Middle Forks and one Lower Salmon, or should the allocation be something different?

Finally, research is needed to guide the allocation of specific places to the various niches in the regional system. We might decide that the benefits of a system would be optimized by allocating 20 river segments to motorized recreation and 20 to non-motorized and then, within the non-motorized category, to allocate four segments to preferred conditions, six to ready access and ten to a compromise between these two. However, criteria are needed to decide which four places should be devoted to preferred conditions. Clearly, legal mandates, institutional policies, and existing conditions will play a large role. Descriptive information in traditional visitor surveys can help evaluate the consequences of alternatives. Finally, studies of place and place attachment would improve our understanding of the socially important values that may be present at particular places.

Conclusion

Our fundamental assertion is that the systemic failure of planners and managers to think and act regionally, and of researchers to conduct science relevant to regional approaches, has resulted in the loss of recreation values and scarce experience types. Individual managers continue to make decisions about experiences, conditions, and management actions that, while perhaps appropriate for their individual area, may be poor decisions for the system of recreation areas that serves society. Incremental, area-by-area decisions lead to problem displacement, homogenization of recreational opportunities, and suboptimization, reducing the flow of benefits from publicly provided recreational settings. The resulting loss of value, both at individual areas and within the system, is not easily recoverable. Social science research has inadvertently assisted in this process, since most research is conducted on current visitors to individual areas, with little research devoted to larger spatial scales, other populations, or even identification of the diverse tastes of subpopulations.

Our assertion is not new. The early literature on recreation management noted the importance of regional thinking and the shortcomings of area-specific survey research.

However, the lessons from that era have seldom been acted on, perhaps because institutions do not provide appropriate incentives for regional research or regional planning and management. Therefore, it seems timely to reassert the importance of regional analysis. We need to ask more questions about our responsibilities as managers and scientists in terms of how we can optimize the flow of benefits from a regional system of recreation areas. Regional thinking requires some revision of institutional structures and incentives, development of venues for the "working through" needed at the regional level, and innovative approaches to social science and its application.

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