Benefits of Nonfacilitated Uses of Wilderness

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Abstract—Using the taxonomy of personal benefits attributed to wilderness and developed for the 1985 national wilderness conference, this paper summarizes the research since published on the benefits of nonfacilitated uses of wilderness. It describes recent developments in theory and methods regarding leisure experiences and discusses the implications of these developments for understanding wilderness benefits. The paper proposes that results of research on the benefits of wilderness can facilitate an outcome-focused approach to wilderness management.

An earlier state-of-knowledge review of wilderness benefits was written about 15 years ago by Driver and others (1987). Since that time, the number of acres in the National Wilderness Preservation System (NWPS) has increased from 89 million to over 104 million acres. This is a sizable hunk of "real estate" that is larger than many sovereign countries, and other large tracts of private and public land that could qualify as wilderness are not a part of the NWPS. While the on-site recreational use of the NWPS remained relatively constant during the 1980s, it has grown steadily in the 1990s (Cole 1996). This means that more and more people are realizing benefits from wilderness. More importantly to this paper, other more difficult to measure benefits of wilderness have been defined and better understood during the past 15 years. These "newer" benefits include spiritual growth/renewal of the human spirit; improved environmental/ecological learning, education and appreciation; maintenance and promotion of mental and physical health; a perception of one's sense of fit in the grand scheme of things; and promotion of environmental stewardship and ethics. In addition, since 1985, there have been wider appreciation and better understanding of the benefits of wilderness to the off-site users. Those off-site benefits include the proximity of wilderness and other natural amenities as a source of community pride and satisfaction, the economic value of wilderness-related tourism and, very importantly, the species diversity, sustainable ecosystem and natural laboratory values of wilderness.

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Purposes

Because of the expanding array of benefits, wilderness allocation, management and protection remain important public concerns. Put differently, we would not have the NWPS if these multiple benefits were not perceived. Therefore, understanding these benefits is fundamental to effective, efficient and responsive wilderness management. This paper addresses one category of these benefits, which we identify as the benefits of the nonfacilitated uses of wilderness. We will describe what is known scientifically about those benefits and relate knowledge about them to wilderness management. We will also explain the types of additional research needed.

Scope

Two papers in this proceedings examine the benefits of wilderness. The one by Ewert and McAvoy considers those benefits that accrue from facilitated, group-sponsored wilderness engagements where the sponsoring group, in advance of the trip, defines and establishes goals for the engagement. These goals are typically defined in terms of expected and desired outcomes, impacts or benefits, for which programs of actions/activities have been planned and are implemented to help assure realization of the preset goals and outcomes. These wilderness outings include those sponsored by the National Outdoor Leadership School, Outward Bound, Wilderness Vision Quest and outings planned and sponsored by institutions that use wilderness as some form of treatment, whether for at-risk youth or for patients/people under the care of some type of clinician. Also included are trips sponsored by churches, YM/WCAs, scout groups, etc., for which the degree of programming might not be so great.

Our paper addresses the benefits of wilderness realized by people other than those in group-sponsored, facilitated engagements. This category includes the off-site and the on-site users, typically referred to as the general public, whose visits to wilderness are usually composed of family or informal, small friendship groups. Generally, these individuals know each other before the trip and are unguided, with the exception of members of commercially organized outings such as hunting and float trips. As such, this paper focuses on the benefits realized by individuals who visit wilderness alone or in small groups and who do not follow any kind of imposed program or curriculum. While our focus is on the personal benefits realized individually by the on-site users,

we consider briefly the benefits of wilderness to off-site users and to the biophysical environment.

There will be some overlap in the types of benefits described in this paper and the one by Ewert and McAvoy, simply because members of sponsored groups receive some of the same types of benefits that the nonfacilitated users do, and vice versa. We see this as no problem because that overlap emphasizes the wide array of benefits provided by wilderness.

The Driver and others (1987) paper explained why an understanding of the benefits of wilderness is important; developed a taxonomy of such benefits; provided a lengthy review of empirical, philosophical and anecdotal evidence of wilderness benefits; and concluded with a discussion of how uniquely dependent these benefits are on wilderness. Because this paper draws heavily and builds upon the Driver and others paper, we urge the reader to become familiar with it. That is important because we modify slightly some of the concepts and conclusions of that earlier paper; to avoid redundancy, we assume the reader is familiar with the results of the empirical research about benefits contained therein. Specifically, we generally only cite studies and philosophical/conceptual articles about wilderness benefits published since 1985 (the Driver and others paper shows only one reference dated 1986 and most of them predate 1984). However, we do try to provide additional support for the Driver and others findings when it is warranted. In particular, we introduce some research approaches and managerial frameworks that did not exist or were little developed in 1985. Finally, when we believe the evidence warrants, we revise the conclusions of Driver and others.

To the extent that the scope of our paper permits, we pay particular attention to recent work on the six benefits that Driver and others felt were central to a wilderness philosophy. These were the value of wilderness as ideal places for learning about, appreciating and sustaining life, species diversity and natural ecosystems; the spiritual values of nature; the aesthetic values that go beyond scenic beauty to the sublime; the ethic of constraint that recognizes that populations of nonhuman organisms have rights to exist; historical and cultural values of our nation nurtured in wilderness, such as freedom, creative inspiration and pride in our natural bounty and splendor; and specific recreational experiences commonly sought in wilderness settings, such as challenge, skill-testing and self-sufficiency in a serene and primitive setting.

We end our discussion by recognizing the need to overtly manage wilderness to provide opportunities for realizing the benefits discussed by adopting an "outcomes-oriented approach" to wilderness management. We also emphasize the need for additional research to provide a more solid foundation for the proposed focus on outcomes in wilderness management.

Definitions

The above discourse has used the words "wilderness," "benefits" and "on-" and "off- site users." Because each of these words is used in different ways to mean different things to different people, we must define how we use them.

Wilderness

Since passage of the 1964 Wilderness Act, most land managers in the United States tend to think of wilderness as areas that have been designated as wilderness and are now included within the NWPS. We certainly include most of the acreage of those areas in the concept of wilderness, even though some parts of the existing NWPS are really buffer strips, not wilderness as we define it. However, we must take a broader perspective, because many of the benefits of wilderness considered here can accrue from wilderness areas not included in the NWPS. For that reason, we adopted the following definition of wilderness, used in the earlier state-of-knowledge paper on the benefits of wilderness by Driver and others (1987).

> ...wilderness has more to do with the contour lines in our heads than with those on maps; it exists, in other words, in the eye of the beholder. And there are a lot of beholders, which makes for a lot of definitions....Thus, any attempt at a definition is arbitrary....Included here will be *relatively large land areas that are neither easily accessible nor frequently used by motorized vehicles, where opportunities exist for primitive types of recreation, and past and current human activities are not readily noticeable. The concepts of spaciousness and wildness are central* [emphasis added to denote the definition of wilderness we use in this paper].

To reiterate, we are not limiting our attention to areas within the NWPS.

Benefits

Both of us have been closely associated with the development and refinement of the parks and recreation management system called "benefits-based-management." During those efforts, we discovered that the word "benefit" is not as clear as we first thought. One semantic difficulty is caused by the specialized way that economists use the word "benefit" to refer to an economic, usually monetary index or metric of the worth of a good or service. A second difficulty is that people often interchange the concepts of benefit, value and meaning. Third, all of the many dictionaries we consulted define a benefit as an improved condition or a gain, which we now consider as only one type of benefit that accrues from the management and use of recreation and other amenity resources, including wilderness.

A second type of benefit occurs without any improvement or change in condition because just the maintenance of a desired condition—and thereby the prevention of an undesired or unwanted condition—is beneficial. Examples include maintenance of: one's physical or mental health or friendships with close associates; community stability, cohesion and pride; or desired ecological processes of the biophysical environment. In addition, managers of recreation and other amenity resources strive to provide opportunities for people just to enjoy satisfying psychological experiences, whether or not they realize an improved condition or maintain a desired condition. For example, any improved or maintained condition realized from watching a beautiful sunset is hard to identify and define, but it is certainly satisfying.

For this reason, we decided that people benefit if they realize a satisfying psychological experience while recreating, which constitutes the third type of benefit. Such

enjoyment need not denote either an improved condition or the maintenance of a desired condition, but it must be recognized that one person's satisfying experience at a particular point in time (for example, being with a crowd of people) might not be satisfying to that person at another time or to another person at the same time.

In summary, we recognize three types of benefit—an improved condition, maintenance of a desired condition (and thereby prevention of a worse condition) and realization of a satisfying psychological experience. It should be emphasized that the first two types of benefits can accrue to individuals, groups of individuals (families, communities or society a large) or the natural or biophysical environment, with the last being a primary concern of wilderness managers. The last type of benefit—satisfying psychological experiences—is relevant only to individuals. For a detailed elaboration of these three types of benefits, see Driver and Bruns (1999).

On- and Off-Site Users

When people think about the benefits of wilderness, they generally concentrate on the benefits realized by the on-site users, those who physically visit and enter the areas. However, several studies have documented that only small percentages (usually not more than about 16%) of the population of the United States actually visit wilderness areas. But surprisingly, 85-90% (with the percentages varying from study to study) of the respondents to at least three national or regional household surveys that focused on wilderness use and values reported that they valued the existence of wilderness and were willing to pay reasonable taxes for such—and remember that no more than 16% said they actually had visited wilderness areas. It is reasonable to assume that the very large numbers of off-site users with this willingness to pay realize sizable personal benefits just from the existence of wilderness. While little research exists to document the nature and scope of these benefits, they likely include the off-site users' vicarious appreciation of wilderness, their latent demands to sometime visit wilderness areas, the satisfactions they derive from watching wilderness scenes—and the associated plants and animals dependent on those natural ecosystems—on TV or seeing pictures of them in coffee-table atlases and their good feeling about the stewardship benefits they derive from wilderness preservation.

In addition, several studies have documented that peoples' perceived satisfaction with and/or quality of their lives is strongly influenced by the presence of nearby amenities, including nature-based amenities (Marans and Mohai 1991). It is reasonable to assume that these amenities include nearby wilderness areas. While we generally lack scientific understanding of the nature, scope, and magnitudes of the benefits of wilderness to the off-site users, those benefits in total probably exceed those realized by the on-site users, simply because of the much greater number of off-site users. There certainly would not be an NWPS of over 104 million acres without the support of off-site users. Thus, these benefits cannot be ignored. For this reason, when we refer to the benefits of wilderness, we are thinking of benefits of the preservation, use and appreciation of wilderness.

Some Perspectives Since 1985

In the introduction to their paper on wilderness benefits, Driver and others (1987) noted several limitations of past research addressing such benefits. These included recognition that: (1) some types of benefits had probably not yet been identified; (2) almost all studies had used self-reports in questionnaires of users' subjective appraisals of benefits or benefit-implying preferences, with too few studies using other triangulating methods such as physiological responses; (3) many studies purporting benefits had been poorly designed, often lacked control groups, a longitudinal design and/or were based on small and nonrandom samples; (4) there have been too few studies of the benefits of wilderness to off-site users; and (5) it was often difficult to determine, based on the study design, whether the benefit was attributable, especially uniquely attributable, to the wilderness setting.

Now, as we reach the new millennium, some advances have been made in the areas that concerned Driver and his associates back in 1985, when their paper was drafted. For example, with the support of many associates, Driver has sponsored major conferences and published two important books on benefits in the 1990s: Benefits of Leisure (Driver and others 1991) and Nature and the Human Spirit (Driver and others 1996). Cordell and others (1998) reported on wilderness values as a means to begin to understand the off-site benefits of wilderness in results of a national household survey of the American public. About 55% felt there was not have enough designated wilderness, a far larger percentage than actually visit wilderness, and only 2.5% saying we had too much. The respondents to that national survey rated the ecological and environmental protection values of wilderness most highly; about 70% said these outcomes were very or extremely important. About 60% rated the scenic, existence and option-to-use values of wilderness also as very or extremely important. About 50% rated protecting wilderness for its recreational opportunities as very or extremely important, while 45% rated the spiritual values of wilderness at that level. Thus, while the American public does not value the personal benefits of wilderness as highly as the environmental protection values, about half say the wilderness benefits of most concern to this paper are very or extremely important.

We have ignored other issues of concern to Driver and others in 1985, lost ground or purposefully turned our attention in other directions. For example, we have done few or no studies to determine the wilderness dependency of many of the benefits identified back in 1985. As a profession, we have sat idly on the sidelines even as the wilderness idea has come under unparalleled criticism (for example, see Callicott and Nelson 1998). Others have recently argued that some purported benefits of wilderness, such as environmental awareness, immersion in nature and nurturing of a land ethic, might be better learned in one's backyard or in one's garden than in wilderness (Cronon 1995).

Also ignored has been the criticism that most studies of wilderness benefits have lacked adequate design. Most studies of the personal benefits of wilderness in the late 1980s and the 1990s were one-shot case studies, lacked control groups and involved subjective self-assessments of benefit.

But there have been useful research paradigms and methodologies employed since 1985. For example, some social/behavioral scientists have become more interested in gaining a deeper understanding of the "total" wilderness experience-that is, in understanding the nature and process of personal experiences/benefits as they unfold in context, across time and as a person-environment transaction. One example is the pioneering work of Scherl (1990). Expansion of this perspective represents a significant theoretical contribution to recreation and related amenity research in the 1990s.

This broader perspective builds on the behavioral model of recreational engagements developed in the 1960s by Driver and Tocher (1970), and it recognizes that a recreational engagement has many phases across time and benefits flow before, during and after the on-site engagement (Clawson and Knetsch 1966; Driver and Tocher 1970). It incorporates, but goes beyond the work by Driver and his associates that identified and quantified the motivational bases for recreation choice specified by the Recreation Experience Preference scales (Driver, and others 1991; Manfredo and others 1997) and evaluated the attributes of settings and kinds of activities that shape these experience preferences. The newer and broader paradigm emphasizes that the total recreational experience is emergent; it ebbs and flows; it is highly personal; and it results from transactions between and among the person, the situation and the environment. By focusing on the total experience, these transactions not only shape and define the experience on-site; they shape and define the experience off-site. Thus, they shape and define the benefits (and nonbenefits) realized throughout the total experience because, as said in the section on Definitions, the third type of benefit is realization of a satisfying experience, whether that satisfaction occurs on- or off-site.

Because the broader perspective about the total experience places much greater emphasis on the highly individualistic and unfolding aspects of experiences, it has tended to reinforce the subjective self-appraisals of benefit. But adoption of this approach does not mean that we do not need other types of studies that use physiological and other measures, especially longitudinal studies. Instead, we need a variety of methods to triangulate the experience and benefit constructs so important to understanding the personal benefits of wilderness and to quantifying them.

A final important development since 1985, which we will touch on near the end of this paper, is an outcomes-focused framework to guide recreation and related amenity resources. That framework is based on our belief that the underlying purpose of any type of management is to optimize provision of clearly specified opportunities so that benefits can be realized. By analogy, the managers of other public resources, such as those that provide educational and health-related benefits, must understand what benefits they are expected to provide and how opportunities for their realization can best be provided. Thus, when applied to wilderness management, the outcomes-focused framework requires the same approach, which mandates that managers understand what the benefits of wilderness are and manage explicitly to optimize net benefits, or to the extent feasible, maximize benefits and minimize negative outcome or disbenefits.

State of Knowledge Since 1985

Benefits to be Considered

Our discussion of changes in the state of knowledge about nonfacilitated uses of wilderness since 1985 focuses on the personal benefits realized by on-site users. To be comprehensive, we also consider the most important social benefits to off-site users, such as those that promote local community satisfaction and economic stability and growth. Because of their great importance, we also comment briefly on the environmental/sustainable ecosystem benefits of wilderness.

Table 1 lists the personal benefits of the nonfacilitated uses of wilderness that we examine. The taxonomy is nearly a duplicate of the list given as table 1 of the Driver and others (1987) state-of-knowledge review. For some categories, we added subheadings to reflect additional thought or empirical research on the topic. We dropped other categories that are beyond the purview of this paper or have been subsumed under another category or heading. We purposefully retained much of the Driver and others taxonomy because it was based on a large number of research projects conducted from the mid-1960s to 1985, and it permits us to more clearly demonstrate both the continuity and change in wilderness benefit research and findings over the past 15 years.

Table 1—Taxonomy of personal benefits of wilderness.

A. Developmental
1. Self-concept/self-identity
2. Skill development
a. Outdoor skills
b. Adventure
3. Self-actualization
B. Therapeutic/mental health
C. Physical health
D. Self-sufficiency, independence
1. Self-reliance
2. Primitive living
E. Social identity
1. Family kinship
2. Group cohesion
3. Social recognition
F. Educational
1. Nature learning
2. Environmental ethic
3. Environmental stewardship
G. Spiritual
H. Aesthetic/creativity
1. Nature appreciation
2. Aesthetic appreciation

Continuation of Research Measuring Preferred Recreation Experiences

Prior to the early 1980s, most measures of the personal benefits of wilderness employed post-trip self-reports of respondents' perceived realization of recreation experience preferences. The logic then was that the users benefited from the satisfying experiences they realized. The methods generally involved collecting names and addresses of the respondents as they were leaving the wilderness areas and recording their most frequent recreation activities. Several months later, after the most important recollections were supposedly stored in their minds, the respondents were mailed a questionnaire, asking them to (1) imagine that they were going to visit the same area next year and engage in the their previously identified major activity, and (2) rate how satisfying or unsatisfying each of the experience preferences (perceived benefits) listed in the questionnaire would be on that future trip. The logic was that the most salient benefits could be recollected fairly accurately, as guided by the wide variety of possible experiences listed.

Results of these types of studies were summarized in Driver and others (1987). Reference to table 1 of that paper shows that there were similar preference patterns for certain highly valued experiences across the 12 designated and undesignated wilderness areas studied across the United States. Put differently, on the average, the five to seven most highly valued perceived benefits were almost always ranked the same across all 12 areas. By order of perceived contribution to respondents' satisfaction, the most highly rated perceived benefits were enjoyment of the natural setting, enhanced physical fitness, general tension release, temporarily escaping the noise and crowds of people back home, outdoor/environmental learning, sharing similar values with close friends and a feeling of independence and self-sufficiency. Each of these benefits is listed in our table 1, sometimes under other names.

In our review of the literature for this paper, we found only five studies published since 1985 on recreation experience preferences of wilderness users, at four areas. Results of two studies of areas administered by the Bureau of Land Management in Colorado, Ruby Canyon-Black Ridge (Stein and Lee 1995) and America Flats (Virden and Knopf 1989) were very similar to the results of similar studies reported by Driver and others (1987), despite the fact that most of these areas, while largely undeveloped, would not qualify as wilderness as defined above. Two other studies using a similar research design focused on rather specialized mountain climbers at Mount Rainier National Park (Ewert 1985) and McKinley National Park (Ewert 1993,1994). Not too surprisingly, these studies showed that the mostly highly valued perceived benefits were related to being in those settings suited to technical climbing, challenge, risk taking, exhibition (social status), locus of control and catharsis.

These studies suggest that the preferences of recreationists for at least certain kinds of perceived benefits do shape their preferred settings for the activity. For example, at the American Flats Recreation Area, recreationists who scored higher on achievement preferences tended to prefer a primitive setting, and this was true for individuals who preferred hiking or angling. Those whose first activity choice was hiking or camping and who had stronger desires to share/lead others also more strongly preferred a primitive setting. In contrast, those who preferred angling and scored highest on sharing/leading others were least likely to prefer a primitive setting. Finally, no matter what the preferred activity, recreationists with the lowest preferences for social support were most likely to prefer a primitive setting (Verdin and Knopf 1989).

Stein and Lee (1995) identified four groups of recreationists at the Ruby Canyon-Black Ridge area on the basis of their benefit-implying experience preferences and found that at least some of the groups differed on certain setting preferences. For example, the two groups that scored highly on stress relief/fitness/nature appreciation, achievement/stimulation and independence, and lowest on meeting new people, preferred to recreate in large, undisturbed natural settings, with little contact with other people and few facilities, much more than the other two groups did.

Ewert's work on Mt. McKinley climbers (1993) suggests that success at reaching the top strongly influenced benefit-implying trip motives. Those who successfully reached the summit scored significantly higher on exhilaration/excitement, accomplishment, social aspects (such as being part of a team and helping others) and image and recognition. In contrast, those who failed to reach the top scored higher on slowing down/disengaging from normal life and on scenery/wilderness appreciation. Guided trip members scored higher on exhilaration/excitement than climbers on independent and solo trips; the guided trip members were also significantly more motivated by social aspects of the trip than the solo climbers. Finally, guided trip members reported higher experience nature/wilderness motives than the solo and some independent climbers.

In summary, the relatively few studies done since 1985 on the recreation experience preferences of visitors in nature-based recreation areas continue to provide evidence that nature appreciation, escape, stress reduction, physical fitness and environmental learning are extremely important perceived benefits. Other benefit, such as family kinship, group cohesion and sense of independence, also remain important. Other benefits shown in table 1, such as those related to spiritual growth and renewal and skill development, were rated somewhat positively, but were not considered nearly as important, except the importance of challenge to the specialized mountain climbers studied by Ewert (1985,1993,1994).

Thus, as in the past, we continue to find that desired trip outcomes vary by type of group and activity. For example, while the mountain climbers strongly sought exhilaration, risk and achievement, guided climbers had different experience preferences than unguided and solo ones. The recent studies also continue to suggest that, while wilderness or wilderness-like conditions may not be necessary for achieving preferred benefits; many types of recreationists seeking certain identifiable benefits do prefer and seek out primitive settings for their activities—an important point to which we will return in the section, Setting Dependencies of the Benefits.

Given this consistency in the types of what we call the overall most salient perceived benefits sought, as revealed by the recreation experience preference research, leisure

scientists concerned with the total recreation experience, as defined above, have recently employed other methods to evaluate it. As noted, this has been done to better understand the entire experience and how that experience unfolds during the different phases of the recreation engagement-from planning through actual engagement to recall. These studies are usually done while the recreationist is on-site instead of with post-trip surveys. These typically more qualitative methods are considered by the scientists who use them as less obtrusive and less structured than the other methods, such as the Recreation Experience Preference scales.

However, as with the more structured methods, some cautions must be raised. First, the people doing the research can still strongly influence the results just by their presence and demeanor and by the types of instructions given. Second, because users' responses are so rich and varied, the highly qualitative/subjective results can be (and have been, in some instances) interpreted differently by different researchers analyzing the same data sets. Third, without control groups, it is impossible to know how much the settings in which the studies are done actually influenced the responses or whether similar responses would have been given for different settings—a problem with most, if not all, types of self-report methodologies to which we return shortly.

The discussion of the results of these various methods is organized by the categories of benefits listed in our table 1.

Developmental Benefits

This category of personal benefits refers to any positive changes in on-site wilderness users' self-concept/self-identity, skill development and self-actualization from nonfacilitated trips. Skill development includes outdoor or "woodsman" skills and skills for "adventuring" or "mountaineering."

Self-Concept/Self-Identity Benefits

Williams and others (1988) make a distinction between self-esteem, or self-concept, and self-definition, or self-identity, and discuss how wilderness contributes to each. Self-concept refers to our evaluation of how good we are, and self-definition deals with the issue of who we are. Both a positive self-concept and clear self-definition are critical to healthy human functioning, but self-definition seems to be one of the most fundamental requirements for successful human development. Self-identity both clarifies who we are for our own sake and serves to define or interpret ourselves to others. Both forms of self-definition require constant maintenance, and affirming our identity is as important to growth and development as enhancing our feelings of self-worth (Williams and others 1988).

Some people believe strongly that wilderness environments, as physical places or as symbols, are ideally suited to the development of identity and a sense of self-worth. They argue that in wilderness, there is an almost endless supply of mountains to be climbed, lakes to be navigated, food to be collected, wildlife to be cherished, weather to be confronted and insects to battle. They propose that there is, ideally, almost complete freedom to meet these "challenges" as one sees fit. Thus, for them, wilderness is an ideal place to test and define themselves as more or less rugged, adventurous, poetic, wild, self-sufficient and a host of other human attributes.

In addition, wilderness, either as place or as symbol, can contribute to our cultural definition of self and to our sense of biological self as members of the human species in the community of life. Nash (1982) has argued that the development of our nation out of wilderness helps us to define ourselves as Americans, a people who are rugged individualists, pioneers and creative problem-solvers, and who can act to get things done.

Finally, some people argue that in wilderness, perhaps more than in any other place, humans can feel and act as vital members of the web of life. At least ideally, we can observe, sense and act again in such vital biological relationships as predator or prey; we can feel and perhaps observe ancient rhythms of geological time, and, in moments of deep immersion, we can feel the timelessness of endless time.

Others view these arguments as romantic and suggest that self-identity is more socially constructed and, if not, there are many alternatives to wilderness to promoting self-identity. They also point to countries that do not have much wilderness, such as The Netherlands, and say folks there are doing quite well, thank you.

The answer to this debate is that we do not really know which side is right, simply because these issues remain little studied. This is probably because studies of self-concept are fraught with difficulty, especially because it is known that a person's self-concept changes very slowly, and problems of extinction of any noted changes over time are characteristic of most findings in past studies of self-concept/identity. But there has been some progress.

Driver and others (1987) reviewed the research on self concept/self-sufficiency and concluded that there is some evidence of these types of benefits, especially for the more facilitated forms of engagement such as in Outward Bound, but that more studies are needed.

Talbot and Kaplan (1986) studied individuals who participated in a nine-day Outdoor Challenge Program that centered on the natural environment and closely resembled a typical backpacking excursion. Over time in the wilderness setting, participants gradually noticed more of nature's details, felt increasingly comfortable in the woods, felt increased awe and wonder about nature and, important here, gradually felt like they knew themselves better. The individuals' developing perceptions had direct consequences on their views of their own abilities and interests; the experience seemed to shape their definitions of who they were as individuals.

Journal entries of participants in the Talbot and Kaplan (1986) study also suggest that for some, the experience in nature helped them to connect with the biological self. About 26% of the sample felt a sense of oneness with the environment, felt close or related to the earth and its animals. Another 16% felt a sense of environmental coherence or harmony, including feelings that it was all part of a system and that nothing was either good or bad. These feelings and insights border on the spiritual, which is discussed in a section below.

Arnould and Price (1993) studied the evolving adventure and lived meaning of an extended river rafting trip on the Colorado River in the Grand Canyon. One of the three important themes that explained trip satisfaction, both as it

unfolded and after its conclusion, was personal growth and renewal of self. Guides worked with the wilderness environment to provide rafters with a sense of both great serenity and imminent danger. Participants internalized the sense of danger and the exhilaration of obstacles overcome. This helped them crystallize their sense of self and emerge from the trip with a sense of mastery and enhanced competency. Post-trip measures weeks or months after the trip contained many allusions to increased self-awareness, self-discovery and personal transformation as highlights of the trip.

The river rafters also gradually developed a deep sense of communion with nature, often facilitated by the guide's efforts. For many, this connection was deeply spiritual. But for many others, this communion seemed a development of the biological self. The water provided a profound experience of nature for some; for others, it was the geology or the wildlife. With the help of guides, participants gradually moved to "river time," getting up with the sun and going to bed when the sun went down.

Borrie (1995) used the experience-sample method to measure Okefenokee Wilderness users' connections with nature and the biological self in real time. Through measures taken multiple times during the experience, participants expressed moderate levels of feeling connected to and immersed in nature, but these feelings increased across time. They also felt a strong sense of timelessness throughout the experience; the scale measured a lack of concern for watches and knowing what time was. This may suggest a move to "sun time," a shift to moving to diurnal rhythms. This suggests deeper connection with the rhythms of nature, but it almost certainly does not indicate the sensing of a geological time horizon.

McIntyre (1998) replicated Borrie's study and methodology in a wilderness setting in Australia and obtained similar results. His respondents felt a strong sense of timelessness; their sense of oneness with nature was somewhat lower than that of Borrie's study participants. McIntyre also related level of activity in wilderness to the measures of biological self. Feelings of timelessness were greatest when the respondents were passive. In contrast, feelings of oneness with nature were much higher when the recreationists were actively engaged with the environment than when they were passive (that is, resting or sitting quietly) or engaged in maintenance activities such as cooking or eating.

Skill Development

Intuitively, wilderness seems like an ideal place for adventure and outdoor skill development. People there are on their own with no help from modern conveniences. The wilderness environment is also inherently complex and challenging. Yet, in 1987, Driver and others found only "a little importance" given this benefit, which was a part of the achievement domain in their categories. More recent studies evaluating this construct more specifically indicated its importance.

In the Talbot and Kaplan study (1986), participants in the Outdoor Challenge Program recalled that learning camping activities were some of the most enjoyable aspects of the trip. They expressed amazement and satisfaction at how quickly they felt comfortable in the woods.

Personal growth through the acquisition of new skills was a major theme in participant journals on the river trip in the Grand Canyon (Arnould and Price 1993). Progressive mastery over novel things and tools began at the put-in and continued throughout the entire trip. Acquired skills included learning to pack a dry bag, how to load and unload the raft, how to attach a life jacket, how to use other safety equipment, how to paddle, how to negotiate difficult rapids and how to cook over a campfire. Recollections of the trip included many statements of satisfaction at being able to handle the trip (camping/rapids), of being able to kayak down rapids and still feel somewhat in control and of becoming more and more comfortable with the risks involved.

Patterson and others (1998) recently reported a hermeneutic approach to understanding the nature of canoeists' experiences in Florida's Juniper Prairie Wilderness. With this research approach, respondents describe their experiences and what made them meaningful. Four general themes seemed to describe the experience, and two, challenges and decisions not faced in everyday life, were related to adventure and skill development. The most prevalent experiential dimension was challenge, but the meaning of challenge varied greatly. For some, the challenge of tortuous twists and turns while canoeing Juniper Run was frustrating. For others, it was a positive aspect. For yet others, it seemed initially negative, but as the interview unfolded, respondents began to construct the experience as a positive one. This suggests that even frustrating experiences can be redefined as beneficial. But we do not know how much of this is dissonance reduction.

Among the important aspects of decisions not faced in everyday life were way-finding and facing the unknown. Because of the nature of the river, with its twists and turns and many channels as it flows through a dense, semitropical forest, many respondents experienced the sensation of being lost, either in space or time. Again, the meaning of these sensations was interpreted differently across individuals and within individuals across time. These different responses to adventure and challenge likely relate to skill levels, but, more importantly, they probably shape benefits and disbenefits very differently.

Self-Actualization

Self-actualization was defined by Maslow (1968) as someone operating at the peak of his or her potential, when effective functioning is optimal and where the individual is being all that he or she can be. Maslow goes on to describe peak experiences as "moments of highest happiness and fulfillment," often achieved through the nature experience, aesthetic perception, creative movement, intellectual insight, organismic experience, athletic pursuit and the like.

Wilderness, because of its naturalness, solitude and awe-inspiring qualities, is viewed by some people as ideal for fostering peak experiences. Such advocates of wilderness as John Muir and Sigurd Olson describe their own epiphanies in wilderness as moments of such transcendence.

But there are few empirical studies of the apparent self-actualizing benefits of wilderness. Driver and others (1987) did report the results of a panel study (Young and Crandall 1986) of the degree of self-actualization among users of the Boundary Waters Canoe Area Wilderness. Both more frequent and less

frequent BWCA users increased in a self-actualization score from 1979 to 1984, but the more active users in the panel increased more. This is a bit of evidence that wilderness, or some other moderating variable, may provide more opportunities for peak experiences.

While we know of no studies of self-actualization in wilderness in the 1990s, the profession has been increasingly interested in psychologically deep experiences in nature. One recent development has been expansion of the conceptualization of optimal experiences to include flow and absorption (Csikszentmihalyi and Kleiber 1991). Flow experiences are characterized as a centering of an individual's attention, transitoriness, richer perception, forgetting oneself and becoming totally involved in the activity at hand, disorientation in time and space, and enjoyment and momentary loss of anxiety and constraint (Mannel 1996). Csikszentmihalyi (1990) describes moments of flow as the best moments of our lives. To our knowledge, flow experiences have not been measured in wilderness before or since 1985.

Quarrick (1989) indicates that during absorption, sense of self and time fades as the person merges with a fascinating stimulus. Kaplan and Kaplan (1989) believe that while absorption can occur with a wide variety of stimuli, natural objects may be especially fascinating. Walker and others (1998) recently related the level of optimal experiences, as measured by degree of absorption, attained by visitors to a forested national recreation area to the off-site benefits attained by individual recreationists. As a group, respondents achieved absorbing experiences at moderate levels, and these experiences were related to post-visit measures of meaning, social interaction and knowledge benefits in real but complex ways. Achieving the highest level of absorption on-site did not always result in the highest post-trip benefit. Moderate levels of absorption seemed to be best.

Therapeutic and Mental Health

No benefit of nature encounters has been so thoroughly researched and documented as the stress relief/mental health outcomes. This was true in the Driver and others (1987) review; it remains the case today. Escape from stresses of everyday life and search for privacy and solitude remain among the most important motivators of wilderness visits.

Three major sustained efforts have documented the research on mental health/healing: work on the restorative benefits of nature by the Kaplans and their colleagues (Kaplan 1995; Kaplan and Kaplan 1989); Ulrich and his associates (Ulrich and others 1991a; Ulrich and others 1991b); and Hartig and his associates (Hartig and others 1991). Because more (but certainly not all) of the Kaplans' work was done in wilderness or wilderness-like settings, we begin there.

Kaplan (1995) describes four critical components of restorative environments: being away, fascination, extent and compatibility. Wilderness settings, while certainly not the only places available for restorative experiences, certainly qualify for them. Wilderness, by definition, in America is "away." Nature is well endowed with objects and processes that readily hold attention; little effort is needed to attend to nature's fascinations, and the mind is free to wander and wonder. By definition, wilderness has extent. In wilderness, people have the opportunity to wander in space and time. For many, the natural environment is highly compatible. Many would argue that the predator role (hunting or fishing), the gathering role (collecting blueberries), locomotion (hiking or boating), domestication of the wild (gardening or caring for pets), observation of other animals (bird watching) and survival skills (setting up camps, way finding) are among the most deeply essential, the most deeply seated and therefore the most natural of all human activities. While wilderness, at least in its current American conception, doesn't provide opportunities for all of these behaviors, it certainly is a good place for most of them.

Talbot and Kaplan (1986) found that participants in their nine-day Outdoor Challenge Program felt refreshed and restored during and as a result of their experience. About 24% mentioned in their journals feeling mentally and physically renewed, very relaxed and alive.

Hartig and others (1991) found that wilderness vacationers showed improved proofreading performance, a task that demands attention, after the trip, while the performance of comparable groups of nonwilderness vacationers and nonvacationers actually declined. Interestingly, the wilderness vacationers' overall happiness scores were the lowest of the three groups at the post-trip measure (re-entry blues?), but three weeks later, their scores had rebounded to the highest level. In a second study reported in the Hartig and others paper (1991), participants completed tasks that resulted in cognitive fatigue. Then subjects received one of three treatments: a walk in a nature area, an urban walk, or passive relaxation. Subjects in the natural area rated their environment as more restorative, in terms of being away, fascination, coherence (an aspect of extent) and compatibility. They also had higher overall happiness and lower feelings of anger and aggression.

Ulrich's view of restorative experiences suggests that nature has a calming effect because it is a nontaxing stimulus that elicits deep-seated and almost automatic positive emotional states and blocks negative or taxing feelings (Ulrich and others 1991a). To test these notions, Ulrich and Simons (1986) and Ulrich and others (1991b) first showed study participants a stressful movie and then presented color/sound videotapes of different natural and urban settings. Stress recovery was measured during the environmental presentations with self-ratings of feeling states and by four physiological measures. Findings from both the subjective and physiological measures showed that recovery was faster and more complete during exposure to the natural scenes, as opposed to the urban environments. But it should be noted that those natural areas were far from being wilderness.

Other studies suggest that even glimpses of nature can have healing effects. For example, Ulrich (1984) found that hospital patients recovering from surgery had more favorable postoperative recovery if they had a window view overlooking trees. Prisoners with cell views of nature had fewer sick calls and fewer stress symptoms such as digestive illness and headaches (Moore 1982; West 1986). Finally, Katcher and others (1984) found that stress associated with dental surgery could be reduced by passive concentration on natural content (such as an aquarium).

We conclude our discussion of stress relief values of nature encounters with two precautionary statements. First of all, the work of Ulrich and his colleagues cannot be directly generalized to the stress relief benefits of wilderness visits. However, the mechanisms involved in stress reduction in wilderness and "near-nature" environments are likely the same. Second, all encounters with nature are not necessarily stress-reducing. Some may even be stress-causing. Wilderness visitors who experienced 100 mph winds in their canoes or huddled in their tents during the July 4, 1999, storm in the Boundary Waters Canoe Area Wilderness likely experienced high levels of anxiety and stimulation overloads. Specifically, Bunting and others (1986) found that both self-reports and physiological measures indicated that inexperienced individuals who engaged in rock climbing and rappelling had high stress levels both before and after the activities. This was true for both physically fit and less fit subjects, with the less fit individuals experiencing the highest stress levels. This suggests a lack of compatibility between the perceived risk and perceived competencies and indicates a strong negative psychological reactance.

Physical Health

Physical activity is beneficial and indeed essential to human health and survival (Paffenbarger and others 1991). Recreational exercise is a common way for Americans to keep physically fit, as seen by the participation rates in such activities as walking for pleasure, jogging and aerobic classes at the health club. Wilderness use requires physical exercise, and travel within wilderness is typically extended and aerobic. Studies of the experience preferences of recreationists in wilderness reviewed by Driver and others (1987) and those described earlier in this manuscript typically have placed the desire for physical fitness and physical health among the most important of all trip motives.

In their 1987 review, Driver and others were unable to cite any studies that physiologically measured the physical fitness values of contacts with nature. Instead, they mentioned that much research has documented the benefits of physical exercise, and they pointed out that wilderness hiking is good exercise and logically provides exercise-related health benefits. Since then, some progress has been made. Montes (1996) points to a growing body of evidence that indicates that gardening, caring for potted plants, watching fish in an aquarium or having a pet dog or cat can help reduce hypertension and offers other mental and physical health benefits.

Cimprich (1992, 1993) studied the recovery patterns of breast cancer patients. Such patients typically have difficulty remembering to carry out recommended care practices after discharge from the hospital and have coping problems and difficulties in interpersonal relationships. Participants who were part of an experimental group that participated in three short, restorative activities each week, typically nature-based activities such as walking in nature and gardening, showed significant improvement over a control group in attentional performance, inclination to start new projects and ability to return to work and to do so full-time.

Ulrich (1984) found that patients recovering from surgery who had a view of nature were able to leave the hospital more quickly than a comparable control group without such a view. In another study, Ulrich and Simons (1986) found that heart rate, muscle tension and pulse transit time (a systolic blood pressure correlate) subjected to stress recovered to normal very quickly in response to viewing a nature videotape. Heart rate accelerated during the urban exposure. These data suggest the possibility that natural settings elicited responses which included a parasympathetic nervous system component; such influences are associated with perceptual sensitivity and restoration of physical energy (Ulrich and others 1991b). The rapidity of recovery also suggests that relatively brief exposures to nature can restore vital bodily functions.

Hartig and others (1991) tested Ulrich and Simon's (1986) findings outside the laboratory. They randomly assigned students to a walk in a natural environment, a walk in an urban environment or a passive relaxation condition and measured their post-experience systolic blood pressure, diastolic blood pressure and heart rate. They found no difference in any of these physiological measures across the three groups. This finding may have been procedural. Researchers did not take the physiological measures until about 50 minutes after the experimental event. The quick recovery found by Ulrich and Simon may have already occurred, thus masking any effect of response to the experimental intervention. These findings, taken together, suggest that for some kinds of physiological benefits, engagements in wilderness, indeed even in nearby nature, need not be long.

Self-Sufficiency Benefits

Self-sufficiency includes two dimensions: self-reliance and primitive living. Robert Marshall (1930) applauded the opportunity for self-sufficiency in wilderness. Thoreau went to the woods "to live deliberately, to front only the essential facts of life,...to live deep and suck out all the marrow of life, to live so sturdily and Spartan-like as put to rout all that was not life" (Torry and Allen 1949). Olson (1938) observed and cherished how quickly a man in the Boundary Waters "sheds the habiliments of civilization and how quickly he feels at home in the wilds . . . now that he is back at the real business of living." Sax (1980) expresses this outcome as "you would like to emulate the pioneer explorers...you would like independently to raft down the wild Colorado as John Wesley Powell did a century ago. You would like to go it alone in the mountain wilderness as John Muir did."

We have evidence that people who visit primitive settings value these kinds of experiential outcomes (Driver and others 1987). We assume that those few solo hikers/climbers in wilderness are there in part to test their self-reliance. But we have surprisingly little research on whether people actually attain these benefits in this time of high-tech gear and synthetic clothing, especially in wildernesses where such late 20th century gadgetry as backpack stoves are mandated by regulations.

Participants in the Talbot and Kaplan (1986) study of an Outdoor Challenge Program listed the solo experience as one of the hardest things they did but also one of the best things they did. In addition, about 24% mentioned the simplicity of woods living, where days were reduced to a few simple tasks, as among the most meaningful of experiences.

Borrie (1995) assessed the feelings of primitiveness or "simple living" and "living like a pioneer" among Okefenokee Wilderness visitors at several moments during their trip

into the swamp. Such primitive living scores were quite low among his respondents, but they did increase progressively across time in wilderness.

Social Identity Benefits

The social identity benefit includes family kinship or bonding, group cohesion and social recognition. While wilderness use is commonly seen as the domain of the rugged individualist, people seldom visit alone. Recent research suggests that wilderness visitors spend much of their time in wilderness focusing on others in their group. For example, Borrie (1995) found that, among Okefenokee Wilderness users, focus on others and gaining acceptance from others in the group was as important as focus on the environment and much higher than focus on self, emotions and task. In the Juniper Prairie Wilderness of Florida, canoeists on a challenging stream on average focused more on the environment and task than on other people, but respondents gave much more attention to others than to their own thoughts and emotions (Borrie and Roggenbuck 1996). In Australian wilderness, McIntyre (1998) found that, over the course of the trip, concern about whether group members were accepting them was the most important wilderness experience mode, more important than task orientation, environmental awareness and introspection.

Clearly, visitors go to wilderness for social group benefits, and once there, they are very concerned about small and intimate group dynamics. Wilderness is a place where formality and role barriers are reduced. Often, group members become highly dependent on each other. These are conditions where establishment of trust, open communication and sharing of ideals and problems are enhanced and sometimes required. It is during these times that persons gain and share information about some of their most important decisions (Driver and others 1987).

Past research on experience preferences confirms that many recreationists seek family bonding and friendship with others of similar values in wilderness settings. These benefit preferences typically fall mid-range in importance, just below nature appreciation, fitness and stress relief values (Driver and others 1987). In contrast, the desire for social recognition or status from demonstration of skills usually scores low in experience preference checklists, except among certain groups such as technical mountain climbers. This may reflect a social bias against admitting that one wants to draw attention to oneself, but several cross-validating and unpublished tests by Driver of such social desirability bias in social recognition and other Recreation Experience Preference scales did not support the existence of such biases (Driver and others 1991). We do know that wilderness and primitive recreationists tell stories and share photographs of their enviable experiences with enthusiasm and joy, and the construction of stories begins during and immediately after the experience (Arnould and Price 1993, Patterson and others 1998).

The recreation profession has become increasingly interested in the family bonding benefits of leisure (see Orthner and Mancini 1991). However, we know of no measures of family kinship benefits of wilderness use other than those using the Recreation Experience Preferences scales. This represents one of the greatest deficiencies of all research on wilderness benefits. However, progress has begun in understanding small group behavior and bonding in wilderness. Heywood (1987) classified the different types of groups on river trips as primary, some (others) known and all unknown and found that they differed in their experience preferences for the trip. He also recognized that collectives (groups that combined people who were known and unknown to each other before the trip) faced very different challenges in achieving their desired experiences and benefits than groups of family or friends (Heywood 1990). He recommended a theoretical basis for understanding how collectives develop structure, use resources and develop activity patterns to attain their goals. This can help guides and outfitters better facilitate the achievement of satisfying experiences and beneficial outcomes for their guests.

Finally, recent research has begun to document group cohesion benefits. Arnould and Price (1993) found that *communitas*, or the evolving feeling of communion with friends, family and strangers, was among the most important themes of a river trip in the Grand Canyon. People who did not know each other before the trip seemed to come to the trip ready to act in a communitarian way. The guides facilitated the communion by developing rules for the trip, by encouraging group members to cast off goods that differentiated themselves in favor of shared goods, by putting all group members into a common uniform (wet suit, rain gear or life jacket), by asking for help in loading and unloading the boat and by encouraging the group to help paddle and to assist when others in the group needed help. The challenges of the water and the canyon also fostered bonding as the group worked together to achieve difficult but definable goals. Communion gradually deepened during the course of the trip and remained long afterward. One-third of respondents in a post-trip measure mentioned that interaction with others was one of the best things that happened on the trip. Post-trip measures also indicated that being with family and connecting with others on the trip helped participants to see life in a new perspective and to see what really mattered.

Frederickson and Anderson (1999) studied the wilderness experiences of two groups of women, one in the Boundary Water Canoe Area Wilderness and one in the Grand Canyon. Careful reading of participants' journals indicated that three of nine thematic codes developed to characterize the experience directly involved interactions and relationships among the group. Interviews indicated that being with an all-women's group was important to participants because it fostered group trust and emotional support, the sharing of common life changes and a noncompetitive atmosphere. This group cohesion, along with being in a bona fide wilderness, helped the women achieve spiritual inspiration, a benefit that we turn to in a later section.

Educational Benefits

The educational benefits of wilderness include nature learning, developing an environmental ethic and undertaking responsible environmental stewardship. Educational psychologists have identified a variety of kinds of learning, and several of these seem to be the possible result of leisure engagements: information (factual) learning, concept learning, schematic learning, metacognition

learning, direct visual memory, behavior change and skill learning and attitude and value learning (Roggenbuck and others 1991). The environmental education profession has developed principles on how best to educate environmentally: hands-on strategies, multidisciplinary approaches, higher-order thinking skills and developmental learning (Roggenbuck and Driver 1996). The best predictors of responsible environmental behavior and environmental activism are environmental sensitivity, respect for and knowledge about the environment, knowledge and skill at using environmental action strategies, high locus of control and feelings of personal responsibility toward the environment (Hines and others 1986; Sia and others 1985). Finally, environmental educators have discovered that environmental sensitivity is one of the best correlates of responsible environmental behavior (Roggenbuck and Driver 1996).

Marcinkowski (1989) suggests that such sensitivity appears to result from the interplay of outdoor experiences (usually at an early age), role models who are empathetic to the environment and knowledge about the natural environment. Chawla (1992) reports that children develop an empathetic connection with the environment through positive outdoor experiences over extended periods of time in natural places, either during solitary play or activities with friends or families.

These findings on kinds of environmental learning and how people learn about the environment suggest that wilderness and wilderness-like environments are excellent settings for nature learning and care. In addition, other authors claim that periodic visits to wilderness help us to recognize that we are plain citizens or at most stewards, not masters, of the land; help us gain long-sighted ecological and evolutionary wisdom; instill in us a reverence for life and a proper sense of beauty; and promote a sense of individual responsibility (Nelson 1998). In other words, wilderness visits are ideal for developing an environmental land ethic and environmental stewardship.

But is there any evidence that wilderness or wild places are uniquely suited for providing these benefits? While we certainly acknowledge that most people learn about nature and develop a responsible environmental ethic without ever setting foot in wilderness-like settings, there is some evidence that wilderness is a special learning laboratory. Large numbers of wilderness recreationists indicate that they seek out wild places in order to learn about nature (Driver and others 1987). Boy Scouts, Girl Scouts and other youth groups seek out and utilize wilderness or wilderness-like settings as classrooms to learn outdoor skills, wildlife lore and ecological relationships.

Participants in the Talbot and Kaplan (1986) Outdoor Challenge Program reported that learning was one of the best things about their time in wilderness. Over time in wilderness, they were increasingly able to notice and appreciate the details of nature, and they came away from the experience resolved to become more involved with nature. Commitment for continued involvement with nature was greatest among groups who stayed longer in wilderness.

Borrie (1995) measured desire to care for Okefenokee Wilderness among its visitors at multiple points in time during their wilderness stay. Care was very high at all times and increased as the stay in wilderness progressed.

Finally, environmental philosophers and activists often point to significant nature experiences, often singular events, where they felt an almost spiritual connection with the earth that shaped or sustained their love and commitment for nature (Tanner 1980). For Rachel Carson (1962), it was childhood explorations of the woods and fields around the family farm in the Allegheny Mountains. For Aldo Leopold, it was the encounter with the green eyes of a dying wolf in a Mexican wilderness and with cranes in a Wisconsin marsh (Leopold 1949). We believe that such epiphanies occur and shape the environmental connection, care and commitment among today's wilderness visitors, but we have little research on the nature, extent and implications of such deep experiences.

Spiritual Benefits

Nelson (1998) has suggested that, for some, wilderness is "a site for spiritual, mystical, or religious encounters; places to experience mystery, moral regeneration, spiritual revival, meaning, oneness, unity, wonder, awe, inspiration, or a sense of harmony with the rest of creation." This was certainly the case for John Muir. For him, the wilderness of Yosemite's Hetch Hetchy Valley was a shrine to a higher existence, whose destruction was tantamount to sacrilege. Transcendentalists such as Ralph Waldo Emerson, Thoreau and William Cullen Bryant went so far as to suggest that one could only understand moral and aesthetic truths in wilderness (Nelson 1998).

Do today's wilderness visitors seek and gain such spiritual outcomes? While little research has yet been done on nature/wilderness and the human spirit, interest in this topic has grown dramatically in the last decade. For example, Driver and others (1996) recently edited a well-received volume on the topic. Our own sense is that while a diversity of spiritual meanings are today assigned to wilderness-person transactions, and while many, if not most, are quite likely different from those described by Muir and Emerson, the spiritual benefits are among the most special and valued of all wilderness benefits.

Past measures of recreation experience preferences have typically placed the importance of spiritual outcomes as moderate to low relative to many other outcomes sought in wilderness. But we believe that the several-item "Spiritual" Recreation Experience Preference scale is too simple and global to capture the complexity and tremendous breadth of the human spirit-nature interaction. As a part of this complexity, spiritual experiences in wilderness frequently look outward, to an almost mystical breaking down of the boundaries between humans and nature, between humans and the cosmos. In these epiphanies, people feel an almost out-of-body connection with forces outside themselves and a sense of merging in time and space with earth's objects, creatures or processes. These feelings promote interacting senses of reverence, awe, elation, mystery, continuity and, at the same time, humility.

Sigurd Olson, wilderness philosopher and advocate, described one such spiritual experience in the his book *The Singing Wilderness* (1956):

> I once climbed a great ridge called Robinson Peak to watch the sunset and to get a view of the lakes and rivers below, the

> rugged hills and valleys of the Quetico-Superior. When I reached the bald knob of the peak the sun was just above the horizon, a flaming ball ready to drop into the dusk below....As I watched and listened, I became conscious of the slow, steady hum of millions of insects and through it the calling of the white-throats and the violin notes of the hermit thrushes. But it all seemed very vague from that height and very far away, and gradually they merged one with another, blending in a great enveloping softness of sound no louder, it seemed, than my breathing.
>
> The sun was trembling now on the edge of the ridge. It was alive, almost fluid and pulsating, and as I watched it sink I thought that I could feel the earth turning from it, actually feel its rotation. Overall was the silence of the wilderness, that sense of oneness which comes only when there are no distracting sights or sounds, when we listen with the inward ears and see with inward eyes, when we feel and are aware with our entire beings rather than our senses. I thought as I sat there of the ancient admonition, 'Be still and know that I am God,' and knew that without stillness there can be no knowing, without divorcement from outside influences man cannot know what spirit means.

Recent studies disclose these psychologically deep feelings about wilderness. Frederickson and Anderson (1999) reported that two groups of women, one in the Boundary Waters Canoe Area Wilderness and one in the Grand Canyon, had deeply spiritual experiences, experiences that in many ways were beyond the capability of words to describe. Their experiences had a certain ineffability and intangibility about them. Nevertheless, the women reported heightened sensory awareness and momentary loss of the passage of time. Feelings of empowerment, hopefulness, feeling grounded and secure, wonder and awe and humility accompanied the spiritual moments. Finally, self-reports by the women, both during and after the trip, indicated the wilderness environment was conducive to these experiences. More specifically, the women mentioned the impact of big, remote wilderness, the long periods of solitude and the inherent physical challenges as critical to their experiences.

Borrie (1995) also measured the spiritual benefits of the Okefenokee Wilderness visit by assessing feelings of humility during the experience. Respondents as a group felt moderate levels of humility, but this sense of awe and insignificance in nature increased dramatically as the trip unfolded.

In conclusion, we believe that the existence of the spiritual benefits and the preservation of natural ecosystems represent the two most important reasons for protecting designated wilderness.

Aesthetic and Creativity Benefits

Driver and others (1987) describe well the meanings and value of the aesthetic in the American wilderness context. Here we are talking about much more than grand scenery, although scenic enjoyment is a major motivator of wilderness visits. We are speaking of places of awe and the sublime, and such responses border on the mystical or religious discussed above; in fact, it is difficult to clearly differentiate between the spiritual and the aesthetic. Nash (1982) argues that the experience of wild things involves "awe in the face of large, unmodified natural forces and places—such as storms, waterfalls, mountains and deserts." Scenery that produces awe borders on the terrifying; even a man as self-confident as Henry David Thoreau experienced fear on the brooding slopes of Mount Katahdin in Maine (Torry and Allen 1949). But the awesome is inspirational, and it unleashed the creative forces of romantic writers and painters of the American wilderness. This literary genre transformed the awesome, the terrifying, to the sublime. And today, the sublime is beautiful, transcendent, a mirror of God and, most importantly, a continued source of inspiration for artists and intellectuals alike (Driver 1996).

Nature appreciation/enjoyment of nature remains consistently at the top of preferred experiences in wilderness (Driver and others 1987). The desire for opportunities for creativity is less often included on experience preference checklists, but when present, it usually has moderate importance.

Three of the studies frequently cited here provide direct evidence of the benefits of contact with awesome nature. Over 60% of the participants on the Talbot and Kaplan (1986) wilderness program cited awe and wonder about nature in their journals. Such encounters with nature were a special thrill and were hard to believe. One such encounter, seeing a bear, was described as incredible. Feelings of awe were described as sacred, mysterious and spiritual by more than half of the respondents.

Grand Canyon river runners remembered the river and the canyon long afterwards as stark but grand, as awesome (Arnould and Price 1993). This helped promote a communion with nature. Borrie's (1995) measure of humility assessed the level of felt awe as respondents canoed through the Okefenokee Swamp. While this area lacks grand scenery, it does brood. There, subjects felt only moderate levels of awe, but these feelings intensified as time passed in the swamp.

Other Benefits

While our focus has been on the personal benefits of nonfacilitated uses of wildness and almost entirely on the benefits realized by the on-site users, we would be remiss if we did not emphasize again that other types of benefits are very important. Of most importance is the apparently wide array of benefits realized by the off-site users we mentioned at the beginning of this paper. Quite unfortunately, we cannot quote more research results about those benefits, other than our earlier reference to the household surveys that identified many off-site supporters of wilderness protection and to the Cordell and others' study (1998). This is a vital area for much future research because we believe that, in aggregate, the benefits of wilderness to off-site users greatly exceed those of on-site users, simply because of many more off-site users.

We have mentioned only in passing the several studies documenting that existence of local natural and other amenities are important contributors to peoples' perceived satisfaction with the quality of their lives (see the "Quality of Life Benefits" section in the Driver and others' (1987) paper). In addition, many studies, including some in this volume, have documented the economic importance of nature-based tourism, including the recreational uses of wilderness, as very

important to many local communities for their economic stability and growth. This is especially true for communities that have become less dependent economically on the natural resource extractive industries.

Last, when defining the word "benefit" at the beginning of this paper, we emphasized that the first two types of benefit defined—an improved condition or maintenance of a desired condition—to the biophysical environment, as well as to individuals and groups of individuals. Certainly one of the most, if not the most, important benefit of wilderness is to improve and maintain the representative natural ecosystems that the NWPS was developed to protect.

Summary of Benefits

In summary then, much progress has been made on documenting the benefits of wilderness use since the Driver and others (1987) review. The evidence is strong for mental health/stress relief, skill development and nature appreciation values. Some related physical fitness research has been done, but we recommend more such research in wilderness. We believe there is much evidence for the personal development benefits of wilderness, but programmed, group-sponsored visits have been much more studied than nonfacilitated visits. Surprisingly, little research has been conducted on peak experiences, spiritual values, family bonding and group cohesion, and the self-sufficiency/primitive living benefits of wilderness or on the benefits realized by the off-site users. We recommend that the wilderness research profession give much more attention to these benefits.

Setting Dependencies of the Benefits

A central issue/question to the topic of this paper is: To what degree do the benefits attributed to wilderness in this paper actually depend or uniquely depend on a wilderness environment? Our answer, elaborated in Driver (1999), has three parts. The first part, as we discussed and referenced in our section on Social Identity Benefits, is the evidence that the influence of the social setting on perceived experiences and meanings frequently override the influence of the biophysical settings. The second part relates to the fact that when each satisfying psychological experience/perceived benefit is taken individually, it is difficult to support the claim of unique dependency for any of the benefits discussed; we reiterate that we are saying this when each benefit is considered by itself. Each of the experiences/perceived benefits discussed can be individually realized in nonwilderness and, frequently, in nonnatural settings.

However, much research, including that reviewed here, has shown that recreationists do not engage in a particular activity or set of activities in selected environments to realize only one type of satisfying experience. Instead, there is a bundle of experiences that are highly valued for a particular outing. Thus, there is an experience gestalt made up of that package or bundle of several separate satisfying psychological outcomes, such as nature appreciation or spiritual renewal. This bundle varies somewhat from recreation activity to activity and somewhat from user to user. We would guess that satisfaction realized from this total package is greater than the sum of satisfactions realized from each individual experience in the package; as with most gestalts, the whole is greater than the sum of the parts. The punch line is that we believe that these experience gestalts are highly dependent on particular recreation settings, including wilderness settings. But much complex research is needed to test this hypothesis.

The third part of our answer about setting dependencies of the experiences/benefits is that in a pluralistic republic, it really does not matter too much if setting dependency exists. Obviously, many people have shown by their revealed preferences/behaviors that they prefer to realize certain experiences/benefits in wilderness settings, just as each of us reveals preferences for different types of automobiles, food, clothing, books, TV programs and so on. In a representative democracy guided by reasonable voter and consumer sovereignty, we should be able to exercise our preferences so long as we have a willingness to pay—by price and/or taxation—for the goods and service we prefer. This obviously becomes complicated if others with greater willingnesses to pay demand that the facilitating wilderness resources be used for alternative purposes. That is what the political process is about--the allocation of scarce resources among completing values. But we emphasize that valid and reliable information about the recreational benefits of wilderness is very important in the political arena. Put simply, if enough people demand wilderness preservation and protection for its many benefits, including the recreational ones, political activity will continue to protect wilderness as it has in the past.

Developments in Describing and Measuring Wilderness Benefits in the 1990s

As noted in our introduction, there have been two advances in the 1990s regarding benefits research: developing a deeper understanding of the nature of the total experience of recreation and re-creation, and the development of a framework for benefits-informed management. We now briefly review some of the key tenets of the total experience approach, how recent benefit studies that we have cited have begun to measure experiences more holistically and how this approach has increased our understanding of benefits.

Key Tenets of the Total Experience Approach

Experience as Emergent

By emergent, we mean that experience evolves, most typically across time. Thus, the total experience cannot be fully measured at any one point in time. Many of the benefit studies reviewed here meet this requirement. Some recognize the multi-phasic nature of leisure experiences. While only the Arnould and Price (1993) study of "river magic" on the Grand Canyon rafting trips contained measures of the anticipation phase of the experience, many others combined both on-site and post-trip recollection measures. For

example, Arnould and Price (1993) had participant observation and interviews on-site and mail-back surveys and focus group discussions after the trip to better understand the emerging experience. Frederickson and Anderson (1999) used journals to understand women's experiences in wilderness and in-depth personal interviews three weeks after the trip to understand the permanency and strength of powerful spiritual experiences in wilderness. Walker and others (1998) measured experiences received on-site and recollected off-site benefits about three weeks later.

Several of the studies also measured the emerging experience at several points in time and in space during the on-site experience. For example, Frederickson and Anderson (1999) and Talbot and Kaplan (1986) used journals to obtain almost daily accounts of the unfolding experience. Participant observers measured critical aspects of the river magic trip throughout the entire stay in the canyon.

Borrie (1995) and McIntyre (1998) used the experience sampling method to obtain multiple measures of respondents' focus of attention and feelings of wilderness at random points in time throughout their stay in wilderness. Through these means, the researchers were able to learn how the experience ebbed and flowed in real time.

Experience as States of Mind

The emphasis here is on states of mind (Stewart 1998). Several of the studies of experiences cited in our review recognize that leisure experiences are complex, and they measure more than one of the cognitive, affective and behavioral dimensions of leisure. For example, while studies of the learning benefits of recreational engagements tended to focus on cognitions, many also measured a "sense of wonder." Borrie (1995) and McIntyre (1998) not only measured feelings about wilderness with real time measures, they also measured focus of attention at the same moment. McIntyre went further to identify what the respondent was doing at the moment. This begins to permit a much richer analysis of the person-environment transaction.

The work on benefits by the Kaplans, Ulrich and his colleagues and Hartig and his associates measured multiple aspects of nature experiences and related them to multiple behavioral and physiological measures of health, with the Kaplans tending to emphasize cognitive response and Ulrich stressing interacting physiological and affective responses. These two different theoretical approaches not only help us understand health benefits, they also permit us to understand how people process stimuli from the natural environment.

Experience as Transactions

We believe that the view of a leisure experience as transactions needs more emphasis. This really not novel view sees the individual as an active player in negotiating his or her transaction with the environment. This has two important implications for understanding recreational experiences and benefits. The transaction becomes the unit of analysis of interest, more so than the person or the environment. And analysis and reporting of experiences become much more idiosyncratic, or presumably much more variable across individuals in a leisure setting. Such an approach presumably suggests much more variability in benefits attained. While we see increased lip service given to the advantages of viewing the experience in wilderness from a transactional perspective, few of the studies that we reviewed actually focused on these transactions. Fewer still have fully operationalized this perspective in any meaningful way.

There certainly has been a move to focus on the individual in reporting and describing experiences. The Arnould and Price (1993) study of river magic and the Frederickson and Anderson (1999) study of spiritual values represent examples. This focus has the advantage of describing experiences in a deep and rich manner; it has the disadvantage of not being generalizable across a population. The Patterson and others' study (1998) has elements of a transactional perspective, and to that we now turn.

Experience as Story

This view of leisure rests on the assumptions of experience as emergent and experience as transaction. Because human experience is mutually defined by transactional relationships among settings, individuals with unique identities and situational influences, humans are in some measure free to create their own meaning of their experiences (Patterson and others 1998). They do this, in part, by creating stories of their experience.

The Patterson and others' study of Juniper Prairie Wilderness canoeists represents an example of experience as story or narrative. It rests on the notion of situated freedom-that is, the notion that there is structure in the environment which sets boundaries of what can be perceived or experienced, but that within those boundaries, recreationists are free to express the world in highly individual, unique and variable ways. For example, while Patterson and his coauthors found challenge a pervasive experience dimension among canoeists, they also found that their respondents defined the meaning of challenge quite differently. Some saw challenge as the defining characteristic of the experience, some said challenge defined the meaning of the experience, some saw challenge as creating a good story, and others were ambivalent about challenge. Within the categories of challenge as defining characteristic or as story, some felt negative about challenge and others felt positive. In addition, meaning could and did appear to change across time, confirming that experiences are emergent not only because of evolving transactions with the environment on-site, but also based on situational circumstances across time.

Implications of the Total Experience Paradigm for Benefits

The total experience paradigm implies:

- The environment-experience-benefit linkages are very complex, probably more complex than previously thought.
- The environment sets broad parameters within which the nature and intensity of experiences and benefits are constituted. There is a need to better understand these parameters.

- Experiences as they are preferred, expected, and lived, and as they relate to subsequent improved or maintained conditions, can be described at varying levels of specificity. Planners, managers and researchers must decide on the level of analysis most useful for their purposes.
- Experiences and benefits ebb and flow during the multiple phases of recreational engagement.
- Experiences and benefits likely ebb and flow during on-site engagements.
- There is a need to know how the ebb and flow of experience satisfaction during phases of the recreational engagement relate to overall satisfaction and benefits.
- There is a need to understand the process that creates narratives to assign meaning to experiences of nature and how narratives shape benefits. Experiences as they are preferred, expected, and lived, and as they relate to subsequent improved or maintained conditions, can be described at varying levels of specificity. Planners, managers and researchers must decide on the level of analysis that is most useful for their purposes.

The second author offers a precautionary note about this last implication. He clearly recognizes that the total experience approach will contribute greatly to advancement of leisure theory-that is, to our understanding of recreation motivations, preferences and behavior. Nevertheless, he wonders how the diversity of values, meanings, preferences, reflections and behaviors disclosed can be integrated usefully into the management of recreation, park and other amenity resources. As scientists, we will lose much support if we fail to address and answer that question. Yes, we must advance theory, but that is not enough.

We view the "total experience" paradigm as a supplement or complement to research that has used instruments such as the Recreation Experience Preference (REP) scales. We need different methods, including physiological measures, to define and quantify the benefits in the most valid and reliable ways we can. We disagree with those (for example, Stewart 1998) who have suggested that the large body of research on recreation experiences reviewed here, which provides much of the empirical support for benefits-informed management, has slowed efforts to gain a deeper understanding of recreation experiences. We don't think this is the case, for two reasons. First, there has been relatively little use of the Recreation Experience Preference (REP) scales reported in the research literature since 1985. During the same period, much progress, as we have reported here, has been made. Second, the conceptual framework within which those scales are housed explicitly includes the concept of a recreation experience continuum and acknowledges that human behavior and responses are dynamic (see Driver and Tocher 1970). Therefore, the theory fully accommodates and supports the "total experience" perspective. For these two reasons, one should look elsewhere (beyond use of REP scales) for explanations of why the total experience framework has not been adopted more widely.

And we should not forget the great contributions that results of the REP scales have made in changing professional mindsets toward more seriously considering visitors' wants and preferences and in providing the base for most of the outdoor recreation and other amenity resource management systems now being used by land management agencies in the United States and other countries. To reiterate, we are not advocating a one-and-only approach to quantifying recreation experiences; instead, we suggest wider use of the total experience approach, which we think will supplement and add to the results found from the other approaches.

Managing for Benefits

We end this paper with a brief discussion of why wilderness areas should be managed overtly to provide opportunities for the realization of benefits explicitly targeted for provision by managers. To our way of thinking, the only reason that any public lands, including publicly administered wilderness areas, are managed is to provide benefits and prevent disbenefits, whether to humans or to the biophysical environment. Put differently, the fundamental purpose of management is to create positive outcomes and minimize negative outcomes. Within that framework, it is our position that managers know what they are doing to the extent that they understand what the desired positive and undesired negative outcomes are, as well as how well they know how to optimize opportunities for the realization of net benefits. Just as medical doctors must understand how they can positively and negatively impact their patients, managers of wilderness must have the same degree of understanding; as noted, those impacts can accrue to humans or to the biophysical environment.

Elsewhere, this approach to management has been called benefits-based management and, more recently, outcomes-focused management to explicitly cover the need to address negative outcomes (Driver 1999, Driver and Bruns 1999). These other papers explain the concept of outcome-focused management, and the interested reader can easily interpret how that approach can be applied to management of wilderness resources. We believe that such application is necessary and that we now know enough about the many benefits of wilderness to implement it.

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