INTERNATIONAL

# Journal of Wilderness

## In This Issue

- Changing Relationships with Wilderness
- Young Adults and Wilderness
- Bob Marshall Wilderness Visitor Trends
- Wilderness in Italy

DECEMBER 2007 VOLUME 13, NUMBER 3

INTERNATIONAL

# Journal of Wilderness

DECEMBER 2007 VOLUME 13, NUMBER 3



**DISCLAIMER**

The *Soul of the Wilderness* column and all invited and featured articles in *IJW*, are a forum for controversial, inspiring, or especially informative articles to renew thinking and dialogue among our readers. The views expressed in these articles are those of the authors. *IJW* neither endorses nor rejects them, but invites comments from our readers.

—John C. Hendee
*IJW* Editor-in-Chief

***On the Cover***

**FRONT:** Near Dutch Harbor, Aleutian Islands, Alaska. © Flip Nicklin; International League of Conservation Photographers; Minden Pictures.

**INSET:** Humpback Whales (*Megaptera novaeangliae*) South Pacific, Kingdom of Tonga, Mother and calf. © Kevin Schaefer (www.kevinschaefer.com).

# International Journal of Wilderness

The *International Journal of Wilderness* links wilderness professionals, scientists, educators, environmentalists, and interested citizens worldwide with a forum for reporting and discussing wilderness ideas and events; inspirational ideas; planning, management, and allocation strategies; education; and research and policy aspects of wilderness stewardship.




*International Journal of Wilderness (IJW)* publishes three issues per year (April, August, and December). *IJW* is a not-for-profit publication.

**Manuscripts to**: Chad P. Dawson, SUNY-ESF, 320 Bray Hall, One Forestry Drive, Syracuse, NY 13210, USA. Telephone: (315) 470-6567. Fax: (315) 470-6535. E-mail: cpdawson@esf.edu.

**Business Management and Subscriptions**: The WILD Foundation, P.O. Box 20527, Boulder, CO 80308, USA. Telephone: (303) 442-8811. Fax: (303) 442-8877. E-mail: info@wild.org.

**Subscription rates** (per volume calendar year): Subscription costs are in U.S. dollars only—$35 for individuals and $55 for organizations/libraries. Subscriptions from Canada and Mexico, add $10; outside North America, add $20. Back issues are available for $15.




**Submissions**: Contributions pertinent to wilderness worldwide are solicited, including articles on wilderness planning, management, and allocation strategies; wilderness education, including descriptions of key programs using wilderness for personal growth, therapy, and environmental education; wilderness-related science and research from all disciplines addressing physical, biological, and social aspects of wilderness; and international perspectives describing wilderness worldwide. Articles, commentaries, letters to the editor, photos, book reviews, announcements, and information for the wilderness digest are encouraged. A complete list of manuscript submission guidelines is available from the managing editor.

**Artwork**: Submission of artwork and photographs with captions are encouraged. Photo credits will appear in a byline; artwork may be signed by the author.

**Website**: www.ijw.org.

Printed on recycled paper.

EDITORIAL PERSPECTIVES

# New Relationships with Wilderness

BY YANG HE

I grew up in urban China, and to me wilderness was an enchanting yet elusive concept. Although I traveled extensively in China to remote locations, studied leisure and recreation management at Pennsylvania State University at the doctoral level, and taught recreation management at the University of Montana, backcountry camping is simply not a common practice among Chinese people and was not part of my relationship with nature. As a result, I did not know what to expect before my first wilderness trip in 2007. I recently visited the Boundary Waters Canoe Area Wilderness in the north woods of Minnesota. This five-day wilderness canoe trip was my first time camping and cooking outside, my first time canoeing, my first time fishing, and my first time seeing many of the wildlife species I encountered.

There were so many memorable things about this wilderness experience: taking in the beauty of the serene lakes for days and nights, mostly without other visitors in sight; awaking to the fluttering and chorus of birds around the tent at 5:30 in the morning, with the sweet song of the white-throated sparrow as my favorite melody; watching a turtle bask in the sun on a log in the middle of a lake; seeing a beaver search for and chew on branches at dusk; witnessing an osprey catching a fish at noon with amazing speed and accuracy; and watching loons sail quietly on the water, then dive suddenly without a splash, or flap of their wings while calling loudly across the water. I even learned the meanings of the loon calls by reading a book on loons during my time in the wilderness, when it was so convenient to match the written descriptions to the real calls I heard each day from my island campsite.

Swimming in a natural lake was another thing I experienced for the first time in my life. It was wonderfully refreshing. Fishing, a big attraction of the Boundary Waters for many visitors, was something I had mixed feelings about—I enjoyed learning how to cast and reel in the line, and I felt excitement when I caught my first fish, but I did not enjoy seeing the fish struggle on the hook. However, the many meals of fish soup, cooked over a small stove at the side of the lake, gave me a sense of pride. Learning and practicing low impact camping in the wilderness gave me a sense of accomplishment. I felt more comfortable and capable each day putting my knowledge of how to be a responsible visitor in the wilderness into practice. The only negative thing about the wilderness was the swarm of relentless mosquitoes who nearly loved this Chinese woman to death—well, as the wilderness is their home, I guess I will just have to learn how to be more "bug smart" next time.

Yang He in the Boundary Waters Canoe Area Wilderness on her first wilderness visit. Photo courtesy of the Aldo Leopold Wilderness Research Institute.

If I had to name the most significant change in me as a result of this wilderness trip, it would have to be the new image I have of my five-year-old daughter, Hanna. In my mind I will always see her little figure—in her swimming suit with her life jacket on, carrying all her clothes and books in a full backpack, holding a small paddle in one hand and a fishing pole in another, walking eagerly and confidently in front of me over all the short and long portages we encountered. Certainly she is having a very different childhood than I had. Unlike me, she began early having a personal relationship with wilderness and, hopefully, she will strengthen that relationship and become an advocate for wilderness among the next generation.

*Continued on page 11*

# Changing Human Relationships with Wilderness and Wildlands

## *Implications for Managers*

BY RICK POTTS

Randy Jones, the late deputy director and longtime career professional with the National Park Service (NPS), was asked late in his career, "What is the most profound change that you have seen in the management of national parks during the last 40 years?" The timing of this question was fortuitous because it came in 2004 on the 40th anniversary of the passage of the Wilderness Act. Because 84% of all lands in the NPS system are designated wilderness or in the process awaiting designation, Randy's answer can be extrapolated to characterize the change in wilderness management responsibilities from the passage of the Wilderness Act to 2004. His answer came quickly. "Forty years ago a manager's job was to manage the park from the boundary in; while today, the manager must focus most on issues originating outside the boundary."

The implications of this recognition are enormous, and require new thinking and retooling for managers, researchers, and educators alike. As a graduate student in the 1970s, I recall reading in Clay Schoenfelt and John Hendee's *Wildlife Management in Wilderness* an admonition that we need to differentiate between impacts that are easily observed and often cosmetic in their effects from those that may be more difficult to see and that left unchecked impart profound effects on the stability of the ecosystem. As we look back over the last 40 years of management of wilderness areas, we can see the prophetic wisdom of these men, and are left to ponder the fate of wilderness areas where that warning went unheeded, unfunded, or simply misunderstood. Standing in a sea of yellow star thistle, one might wonder if so much of our focus should have been on administering a wilderness permit system, when maybe we should have been aggressively eradicating incipient exotic species infestations. We shake our heads at the sad irony of conducting wilderness campsite condition surveys, when the ancient old-growth Eastern hemlock overstory that shaded and protected the site is now a skeleton forest, killed by the exotic hemlock woolly adelgid while we stood back and watched.

**Meridith and Rick Potts (author) in Montana. Photo by Klaus von Stutterheim.**

### Ecological Challenges

We face a litany of ecological challenges to preserving the nation's wild areas, perhaps none greater than global climate change. Climate change is here, it is real, and it is, at least, partially anthropogenic—and hence, unnatural, under the definitions of current management policies and widely held ecological tenets. Degradation of air and water quality, fragmentation and isolation of landscapes and wildlife populations, incompatible adjacent lands use, and the invasion of nonnative species are converging from *beyond* the boundary, not within. Ultimately, though, the greatest threat to the long-term preservation of the National Wilderness Preservation System (NWPS) will

come from Washington, DC, from the pens of elected representatives sent there by an American public who, faced with an acute and severe shortage of oil, gas, and other commodity resources, has decided that the wilderness value of wildlands is less important than the value of the commodity resources within.

How could this happen, most people will ask, when public polls report that most people say they love wilderness? Love is easy when it's free. Try this mental scenario just before bedtime: It is the year 2027. The Great Middle East War isn't going well, and oil production there has ceased. The cost of gasoline is $15 a gallon if you have the patience to wait in the long lines on your assigned day to purchase it. Petrogeologists have just announced the presence of a vast field of oil under the desert wilderness of Death Valley, Joshua Tree, and Mojave. What do you think the American public will tell their Congress to do? Sweet dreams. I hope you sleep well.

We must reframe our thinking about the relationship of people and wilderness. Most of us who now (somehow) find ourselves among the senior managers, researchers, and educators in the field of wildlands stewardship are products of our own experiences and the social conditions that affected us in the 1960s and 1970s. Our passion for wildland preservation was fueled by our experiences backpacking, river running, mountain climbing, skiing, and packing in on mules and horses. For many of us, our sleeping bags were always close at hand, ready at a moment's notice, and frequently used. Today, many of us, and the majority of younger generations, have traded the bedrolls for BlackBerries, iPods, and video games. Despite the significant increase in U.S. population, backcountry overnight use has *decreased more than 25%* since the mid-1970s. The danger to wilderness is no longer from recreationists who are coming to wilderness, but rather from the vast majority of Americans who are not visiting wilderness (see figure 1).

The danger to wilderness is no longer from recreationists who are coming to wilderness, but rather from the vast majority of Americans who are not visiting wilderness.

The refocusing I am prescribing will seem, at first, to some as a radical notion. I know. I have seen the incredulous looks from some seasoned wilderness specialists when I have made these comments. So, let me put an extra-fine point on the argument for the sake of lively discussion: *You cannot love a park or wilderness to death.* This oft-repeated myth has outlived its utility and needs to be permanently retired from our writings and speech, because this phrase over simplifies a complex management problem. We have managed parks and wilderness long enough now to have a body of case studies to draw on to demonstrate my point. When a wild area has a large constituency who have come to personally know and experience the place, their love of that place rises up to protect it when impacts become unacceptable. People demand change from the land managers and from their elected officials when these places are threatened. This feedback mechanism works very well when people know and love a place, and we have never had a park or wilderness area "die," despite the inappropriately large group sizes and recreational activities that have occurred in the past.

Although love cannot kill a wild area, apathy and irrelevance surely can. The 21st-century wilderness manager will need to develop and employ new skills to reach out and engage new generations of culturally and ethnically diverse Americans who were not around in 1964, and who have not had either the personal motivation or a family member or friend to serve as mentor and host on that all-important first wildland visit. The original group of staunch wilderness activists who pushed for the passage of the Wilderness Act were

**Figure 1—Children camping in wilderness may help form the advocacy for its future stewardship; Hanna Huang camping in wilderness. Photo courtesy of the Aldo Leopold Wilderness Research Institute.**

mostly white, mostly male, and, increasingly, mostly dead. This is not a formula for a sustainable constituency, and this is no longer your grandfather's National Wilderness Preservation System.

> Managing wilderness, ultimately, is about engaging people.

To some traditional land managers, the notion that part of the job of being a good steward may require marketing the area in order to draw more people in will sound heretical. Wilderness was created by people for people to enjoy; enjoyment leads to valuing a place; valuing a place leads to a constituency who will defend it against threats. Simply put: We, the professional wildland managers, will never be capable of preserving wilderness areas without the help and active support of the majority of the American public. It is ultimately naive to speak of preserving something or some place for the benefit of future generations, if the current generation cannot appreciate the value.

## What Is the Basis for Naturalness?

As if we didn't have enough challenges to contend with, the 21st-century wilderness managers have the benefit and curse of newly emerging knowledge that is shaking the very cornerstone upon which the construct of wilderness rests—that of *naturalness*. Since the writing of the Wilderness Act and its passage, we have begun feeling the initial shock as various fields of research, from archaeology to cultural anthropology to fire ecology, have methodically pieced together a picture of pre-European settlement in North and South America. This research gradually revealed that the population densities of humans and the extent to which they modified and reshaped the landscape were orders of magnitude greater than originally imagined. With this knowledge has come a challenge to our definition of just what is natural in the landscape and what are natural conditions. More and more we are forced to face the apparent truth that some of our past standards of naturalness—including the condition of many wilderness ecosystems at the time they became part of the NWPS—are in fact the result of previous human manipulation. So, if this degree of historic human manipulation caused an area to change—and managing for natural conditions is our current legislated goal—how do we define what that naturalness means today? How do you reconstruct Humpty Dumpty when you suddenly realize that the first portrait you have of him was from after the fall?

What do you do when you have finally restored the natural process of fire to a fire-dependent wilderness ecosystem, only to observe that, due to human-induced climate changes, the fire *behavior* may be *unnatural*. By that I mean, the fire season may begin earlier due to lessened snow pack and earlier melting, the fire may burn with greater intensity during mid-season due to higher temperatures and lower humidity and fuel moisture, and the fire season may be extended because the traditional fire-season-ending precipitation event doesn't happen as regularly as in the past. The result of this changing fire behavior may be an unnatural landscape, with less of a mosaic pattern and more uniform "down-to-mineral-soil" burn pattern; thus not achieving our stated goal of maintaining wilderness in a "natural" condition despite the restoration of a critical natural process.

The question of how to recalibrate our sights and rearticulate the desired goal for wilderness landscape conditions in light of our new understanding of previous human-induced landscape disturbances will likely be the most profound question with which 21st-century wilderness managers will grapple. Because wilderness designation is defined and created by humans, wilderness areas are in fact a cultural landscape for which we have developed a management prescription. That prescription is codified by the Wilderness Act and was based on our best understanding, at that time, of what was natural and how ecosystems functioned. Reexamining that prescription in light of today's knowledge will require thoughtful input from a wide range of natural, cultural, and social researchers and managers; a multicultural and multigenerational public; and from religious leaders and philosophers, poets, and painters. In effect, everyone who has a stake in the future preservation of wilderness character and our wildland heritage needs to be heard. How to construct a process for accomplishing that feat is a daunting thought.

## Stewardship Challenge

The first step toward an eventual solution will need to be a widespread recognition among managers, researchers, and educators that such a complex question is on the table for our deliberation and discussion. The public, including all stakeholders and user

***Continued on page 11***

# GPS and the Internet

## *Possible Effects on the Protection of Remote Areas and Wilderness Values*

BY JOE VAN HORN

**Abstract:** Humans have been sharing information about their travels through wildlands since the time that we could tell a story around a fire. For thousands of years we have passed on directions and destinations in this way, person to person, generation to generation. It is only relatively recently in our history as a species that we have begun to transfer this type of information in a more impersonal way by writing it down or making maps. The use of Global Positioning System (GPS) technology and the Internet is changing how we as visitors communicate about and interact with wilderness.

### The Dawning of GPS and Internet Combination

Although our orientation to wildlands has changed somewhat from basic survival to recreation, the urge to communicate about our travels has not. Most major U.S. wilderness areas have been described in at least one guidebook directed at recreational users. There are different opinions about the benefits or impacts of these books on the enjoyment and protection of wilderness. Until now, equilibrium had been established between the amount of information that is currently available and the level of use in an area.

However, a combination of technological advances and social changes are now altering the degree to which we can communicate our experiences in wild places to others. Through the use of GPS units (see figure 1), we can now record the location of our personal experiences in the wilderness in far greater detail than ever before, and instantly pass the information on to a large number of people via the Internet. The potential effects of these technological advances is compounded by a greater societal familiarity with technology that enables the quick and widespread adoption of new tools such as GPS, and by changes in social norms that have made it more acceptable to use a mass communication medium such as the Internet to share personal experiences with thousands of other people we don't even know.

**Joe Van Horn.**

What's the difference between these new communication techniques and the person-to-person contacts or guidebooks that land managers have been dealing with for many years? When information is transferred by direct person-to-person contacts, some of the details are often lost or changed each time the information is repeated, and a guidebook can present only so much information about a particular area or route because there is always a need to

PEER REVIEWED

**Figure 1—GPS units can now record points along our actual travel route and save the information to share with others or to allow us to return to the same places ourselves. Photo courtesy of the Aldo Leopold Wilderness Research Institute.**

balance volume with the cost of production and sale. Publishing a whole guidebook is a great deal of work and it has to provide a financial return. Consequently, there may only be one or two books published for even the most popular areas. All these factors tend to limit the total amount of route information that is available at any one time for an area. From the user's perspective, it also takes time, effort, and money to acquire information when it is only available in a guidebook.

In contrast, digital information is highly accurate and the accuracy can be maintained through multiple transmissions; it is very transportable, and it can be linked to other pieces of digital information such as photos. The total body of information in a hiking Internet forum is continually updated and expanded by the small efforts of many people rather than a large amount of work by any one person. There is almost no limit to how much information can be made available, because there is no "cost" to publish it on the Internet (see figure 2). It is easier for a user to search for digital information on the Internet than to find and read a guidebook, and, in most cases, it is free to the user. There are no ethical controls on the information that does get posted on the Internet. An author of a guidebook might exclude some routes because of personal sensitivity to a resource issue or a review from others; however, there is no guarantee of the same level of sensitivity in the impersonal environment of the Internet.

The result is that every user is now an author who can direct others to exactly the same route they followed and the same places they camped. Anyone can now do a cross-country hike (i.e., not on designated trails), take a digital "breadcrumb" trail of points, link it to digital photos and a narrative, and make it immediately available to thousands of other people who they don't even know by posting it on the Internet. Once the information is posted in the digital world, it essentially exists for long periods of time and any personal control over its use is lost. The consequences for a piece of land is that the normal dispersion of use along a travel route that typically occurs due to terrain or personal choices is now greatly reduced because the GPS route information continually brings each user back to the same exact travel line or camping location.

As a manager, I am concerned this exponential increase in the availability of detailed route information could quickly have a significant impact on the most remote portions of our wilderness areas and the cross-country travel zones that are *away from designated trail systems*. These areas are typically the most pristine portions of our wilderness resource and by their very nature the most sensitive to changes in visitor use levels or patterns. Trail systems and established campsites can absorb some increases in visitor use levels with minimal physical changes because the vegetation and soils have already been altered. Cross-country areas, on the other hand, can still be changed dramatically by even an extremely small increase in use because it is very easy to transition from a trailless condition to one with user-formed trails. Once a user-formed trail exists in a cross-country area, the experience in the future changes from exploration and discovery to one of simply following the obvious signs left by those that have been there in the past. The presence of a developing trail encourages continued use and the formation of other impacts such as repeated campsite use, litter, or sanitation problems. All of these can be managed with aggressive Leave No Trace (LNT) education when travel patterns remain dispersed, but this may not be effective when use increases and becomes concentrated. User-formed trails are also typically not in sustainable locations, so serious degradation can develop as more visitor use concentrates on a developing trail.

The use of Global Positioning System (GPS) technology and the Internet is changing how we as visitors communicate about and interact with wilderness.

Once the visitor use pattern changes in this direction, the opportunity for the public to benefit from the special values of remote areas and cross-country hiking is going to be diminished one way or another. Either visitor-caused impacts will continue to expand without management and critical wilderness character values lost over time, or the agency will strictly limit access to the area in an attempt to preserve the cross-country experience and the spectrum of opportunities within the unit. There is also a good chance the agency will just incrementally reduce the area available for cross-country hiking by continually converting the user-formed trails into maintained and designated trails in an attempt to manage degrading social trail conditions.

**Figure 2—Publishing GPS information about a travel route on a public Internet Web site provides information to thousands of other visitors to retrace that travel route. Photo courtesy of the Aldo Leopold Wilderness Research Institute.**

## The Manager's Dilemma

Unfortunately, there appears to be very little awareness or discussion of the possible impacts that sharing detailed route information can have on the special qualities of remote cross-country areas in the forums or magazines where it is being promoted. This is ironic because many of the individuals posting this type of information clearly value the different experiences that are possible while hiking cross-country in these pristine areas. There are many comments about how fulfilling it was to discover a new route or how inspiring it was to hike in a pristine location with so few signs of human use. What does not appear to be well understood is that these areas cannot take much use and continue to provide these same experiences for others in the future.

*Backpacker* magazine and others have justified their sharing of GPS route information because they believe it will promote protection of wilderness (for example, see *Backpacker* magazine, April 2004). The rationale is that this information will make it easier for some people who might be hesitant about hiking to give it a try, and that if they do, it will help to create a larger constituency to protect wilderness. This reasoning may have some merit when directing users to maintained trail and campsite systems that can sustain additional concentrated use, but it contradicts the primary management strategy for cross-country areas, which depends on low levels of dispersed use to prevent impacts that last from season to season. Good intentions are not going to mitigate the direct effects of increased and concentrated use in these fragile areas that may be created by steering more users to specific travel corridors and campsites.

One of the better known ways that people are sharing map information over the Internet is through Google Earth. In just six months in 2007, Google Earth went from a novelty to a commonly used communication tool. New versions now allow users to put up maps with linked points, routes, photos, and descriptive text through the Google Earth Community or to develop a package of information that can be saved as a file and emailed to friends or posted to another Web site for anyone to see. Probably the most significant effect of this site is that it is introducing thousands of people a day to the idea of sharing digital information about landscapes over the Internet with others.

There are also Web sites that are specifically designed to share hiking information. Many of these sites have had user forums for years where people discuss all kinds of questions and information about hiking. In the last year or so many of them have started to adapt their sites to allow their well-established community of users to share GPS route information that is linked with photos and narrative descriptions. These sites typically provide a search engine so that a user can easily locate all posted hikes for

Sharing a hiking experience with close friends on the return from a trip has very different consequences for the protection of wild areas than sharing it with thousands of others via the Internet.

an area and download points and routes directly to a GPS unit. One example is backpacker.trimbleoutdoors.com/backpacker. This site is being promoted by *Backpacker* magazine and is linked to its extensive forum system at backpacker.com. This site was linked recently to Google Earth so that hiking routes can now be laid out on aerial photography and viewed in three dimensions or shared using the tools available on that site. There are similar sites that have been developed for the canyon exploration users of the Southwest that now include extensive GPS detail for cross-country routes.

Personal trip report Web sites have been created by ambitious individuals, and the amount of detail and personal information presented in these is incredible. Many of these sites can be found through any general Internet search engine by typing an area name, or even just a geographic location in your area along with some other key words such as *hikes* and *GPS*.

The rapid growth in the number and use of these sites has produced a large and expanding body of detailed route information that is far more available and much more accurate then anything land managers have had any experience with in the past. Although much of it still describes hikes along trails, more and more of the postings are targeting travels in cross-country areas.

## A Potential Solution

Land managers and others who are concerned about the preservation of wilderness values and the most pristine portions of wilderness areas need to start to educate users about the ecological and social sensitivity of cross-country areas and the effects their personal actions can have on them, including the posting of detailed route information on the Internet. One possible forum for doing this is the Leave No Trace program. LNT is well known and accepted by the recreational hiking community. It is essentially an ethical framework for guiding activities in wilderness and, therefore, I think an appropriate venue to discuss issues such as this one that involve restraint, respect for future users, and the appropriate application of new technologies relative to the sustainable use of wilderness.

The objective should be to raise awareness that cross-country areas are a valuable but fragile part of our wilderness system and that these new communication technologies can greatly magnify the effects of the individual choices we make while using them. Sharing a hiking experience with close friends on the return from a trip has very different consequences for the protection of wild areas than sharing it with thousands of others via the Internet. How we treat these areas on our return from a trip may now be just as important as our actions while we are in the field. Personal actions during and after a trip matter more in the protection of the experiences in fragile cross-country zones than in other areas of wilderness.

There is a need for land managers to take more direct action than just education because some increment of increased visitor use will occur in cross-country wilderness areas before any possible change in ethics can take hold. Managers should inventory the current level of visitor-caused impacts in cross-country areas now. Even a simple presence or absence inventory of trails and campsites would provide a basic benchmark to use in monitoring for visitor-caused change. However, many of the tools we currently have for the inventory and monitoring of impacts were not designed for detecting the incremental and dispersed kinds of changes that are likely to occur in cross-country situations. The techniques and measurement parameters in most trail and campsite monitoring systems were generally developed to address maintained trails or heavily used sites rather than newly developing or rapidly changing conditions that can occur when pristine areas are subjected to increased use. Additional help from the research community is still needed to provide managers with the appropriate monitoring tools to carry out well-designed inventories for these early stages of impact.

## The Future Is Now

Managers of cross-country areas in wilderness need to take a serious look at the planning and regulatory controls that are in place for these areas to see if they are adequate to protect them from increased visitor use in remote trailless areas (i.e., cross-country areas). If they are not adequately protected, then now is the

time to start the dialogue with the public on desired future conditions and the need for possible use controls so that actions can be taken when they are needed rather than waiting until irreversible visitor-caused impacts become established.

New technologies will continue to develop, but a rapid rate of change can hinder our ability to engage in full conversation about the potential gains and losses. The direct and short-term personal benefits are quickly described, but the broader and longer-term costs are harder to articulate, particularly when they involve values that are difficult to capture in language or are dependent on those wilderness places on the map without trails. A central concept of wilderness is restraint and respect. It is hoped, with some restraint in how we engage in our urge to communicate, the basic human need for exploration and discovery will be respected and protected in wilderness so that others may continue to experience it in the future. **IJW**


## Acknowledgments

This article is based on a presentation made at the George Wright Society Biennial Conference, April 16–20, 2007, St. Paul, Minnesota.


***Continued from SOUL OF THE WILDERNESS, page 6***

groups, will need to be offered this new understanding and its possible ramifications for wilderness and wildland stewardship. Author Charles Mann has done a wonderful job articulating a new historic perspective and understanding to the general reader with his recent book *1491*. As managers, we need to get past our comfort zone and face the real possibilities that some of the truths we've long held dear and inviolate are in fact wrong. This is not an easy thing to do, especially if an alternative is not available. I had the pleasure of meeting Mr. Charles Mann at a George Wright Society conference, and I congratulated him on his accomplishment, saying that I had never read a book so engaging and compelling that left me with such a long-lasting headache and so many sleepless nights.

For researchers, the challenge will be to reanalyze existing information, aggregate and integrate data from across multiple scientific and sociocultural fields, and then synthesize these into a new, higher order of understanding to help inform the dialogue. Educators have a critical role, right now, in preparing students for wildland area management careers. New 21st-century managers need to bring solid scientific expertise, first-hand knowledge of wilderness experience, and highly effective interpersonal relationship skills to the job. Managing wilderness, ultimately, is about engaging people. People are not the problem—people are the solution. Help people get into the wilderness, and they will love it with sufficient depth to stand and fight for it, even if it means personal sacrifice. I believe, with apologies to Henry David Thoreau, that "in people is the preservation of wildness."**IJW**


## Acknowledgments

This article is based on a presentation made at the George Wright Society Biennial Conference, April 16–20, 2007, St. Paul, Minnesota.



RICK POTTS is chief of the Wilderness Stewardship and Recreation Management Division, National Park Service, Washington, DC. Email: Rick_Potts@nps.gov.



REFERENCE

*Backpacker*. 2004. Editor's notes. *Backpacker* magazine. April 2004: 13, 15.



JOE VAN HORN has served as a natural resource manager and wilderness specialist at Denali National Park and Preserve for 29 years, and is currently a member of the National Park Service's National Wilderness Steering Committee. Email: Joe_Van_Horn@nps.gov.


***Continued from EDITORIAL PERSPECTIVES, page 3***

Some of the articles in this issue were first gathered for presentation at the 2007 George Wright Society Biennial Conference on Parks, Protected Areas, and Cultural Sites. The session was entitled "Rethinking Protected Areas in a Changing World" and focused on some of the social and technological changes that affect the relationships people have with wilderness and other wildlands. That session and many of the articles in this issue were organized in cooperation with the Aldo Leopold Wilderness Research Institute and the University of Montana. Dr. Alan Watson and I served as coleaders in organizing that session and this issue. Working on pieces submitted by managers and scientists on wilderness issues has stimulated my thoughts and opened my eyes to various aspects of the future of wilderness in the United States and my understanding of anticipated changes associated with wilderness. **IJW**


YANG HE is a visiting instructor in the College of Forestry and Conservation at the University of Montana. She was honored as a Student Scholar (Pennsylvania State University) at the 8th World Wilderness Congress in Anchorage, Alaska, in 2005.

# Changing Relationships with Wilderness

## *A New Focus for Research and Stewardship*

BY ROBERT G. DVORAK and WILLIAM T. BORRIE

**Abstract:** Wilderness managers strive to provide quality recreation experiences. Because of this commitment, a need exists to further incorporate experiential aspects into current planning and management frameworks. This article suggests a focus on relationships with wilderness, moving beyond the examination of single transactions with a setting toward a consideration of the dynamic engagements visitors accumulate with wilderness over time. Understanding these relationships relative to social and cultural change may allow managers to incorporate diverse meanings into management planning and provide better protection of wilderness character.

### A New Focus for Experience Quality

Wilderness managers are charged with the challenging goals of both ensuring resource protection and of providing opportunities for quality wilderness recreation experiences.

Social scientists have worked to provide managers with information that can assist them in facilitating achievement of those wilderness experiences. Although multiple approaches (e.g., satisfaction, benefits-based, experience-based) have been developed to understand visitor motivations, meanings, and experience quality, we still struggle to address and integrate experiential concepts within current planning and management frameworks (such as Limits of Acceptable Change). Although setting attributes clearly influence the quality of the wilderness experience and are largely under management control, these attributes do not sum to the total of the wilderness experience. For example, symbolic values, self-reflection, and spiritual experiences are among other concepts recognized as important and appropriate components of the wilderness experience. As more importance is placed upon understanding these types of values and meanings, a need exists to move beyond strictly considering setting attributes in the integration of resource and experience values.

Robert G. Dvorak. Photo by Lisa Dvorak.

William T. Borrie.

Current approaches are limited in their ability to integrate both resource and experience values. This is partly because wilderness experiences occur across vast landscapes and are ongoing personal constructions that are complex and embedded within the overall experience paths of our lives. These experiences are not one-time transactions between the visitor and the setting (Borrie and Roggenbuck 2001), but dynamic engagements that fluctuate and accumulate over time. In addition, there are numerous cultural and social forces in our society, social institutions, and our lives. These changes can influence our interactions with wilderness and the meanings constructed through our experiences.

A better understanding of how these constructions occur across an individual's life course may provide scientists

PEER REVIEWED

and managers with new ways to address and integrate quality experiences into planning frameworks. Therefore, we suggest a relationship approach as a new focus when investigating wilderness experiences over an individual's life course. By investigating the relationships individuals develop with specific wilderness areas over time, it may be possible to understand the different components of a relationship that may be changing and the role of management actions that facilitate, threaten, or strengthen these relationships.

## Why Relationships?

Relationships between the public and public lands have become of increasing interest in recent years (Watson and Borrie 2003). Some research has been responding to the need to steward these relationships. Brooks, Wallace, and Williams (2006) suggested that the concept of a relationship can be used as a metaphor for understanding experience quality, and explored how people develop committed relationships with specific places. These relationships contribute to the well-being associated with positive experiences and even a tolerance for "bad" experiences. Therefore, they argue that a relationship-oriented framework may contribute to the understanding of emergent experiences and meanings associated with a specific place over time.

Psychology and marketing research also provide further support for a focus on wilderness relationships (Berry 1995), suggesting several key concepts that match a wilderness context. First, relationships exist over time (Fournier 1998). They are not seen as fixed, but as dynamic entities that ebb and flow over an individual's lifetime. Similarly, the interactions and experiences visitors have with wilderness areas are more than single on-site transactions. Instead, they are an ongoing process that dynamically changes and influences future expectations and experiences.

**Figure 1—Ecological events such as the forest blowdown of 1999 in the Boundary Waters Canoe Area Wilderness may have dramatic effects on individual relationships. Photo courtesy of the U.S. Forest Service.**

Second, relationships are noted to involve at least two individuals or entities. These individuals are interdependent and part of a reciprocal exchange where changes in one cause changes in the other (Berscheid and Peplau 1983). This suggests that the relationships individuals develop are influenced by other entities and subject to a variety of cultural and social forces, such as institutional structures, personal values, social norms, and cultural stereotypes (Liljeblad and Borrie 2006). These forces influence the creation, maintenance, and negotiation of individual relationships over time. Participants in these exchanges may gain a certain level of trust and commitment to the partner involved in the relationship (Borrie et al. 2002). In the context of a wilderness relationship, managers responsible for administering wilderness areas act as relationship partners with visitors, developing expectations for future interactions with managers.

Third, relationships are purposive and have meaning in the larger context of our lives, adding significance and structure (Fournier 1998). Our interactions with others, and with wilderness, are purposeful efforts to define and represent our lifestyle and self-identity. Wilderness visitors accumulate experience with a place that is associated with a certain identity. That is, visitors develop loyalty to that area (or dependence on an area) because it begins to represent who they see themselves to be.

A relationship with wilderness, in part, represents a cultural and individual expression that defines who a person was, is, and hopes to be (Greider and Garkovich 1994). Wilderness represents symbolic environments that confer meaning onto us as individuals. Therefore, through experiences in wilderness and the construction of long-term meaning, people build ongoing relationships with wilderness areas.

## Forces of Change

Framing wilderness experience quality in the context of an ongoing relationship represents a new direction for research and management and it is important to understand the external forces of change that influence that relationship. The forces that operate within our culture and individual lives can affect how we interact with wilderness areas, and three types of change (socio-demographic, environmental, and policy) might be seen as influencing relationships with wilderness areas. For

example, Stankey (2000) suggested that recreation use has historically diminished as age increases. With the average age of the U.S. population increasing, he asked what effect this change will have on wilderness use and the perceived importance of wilderness areas. Similarly, environmental changes, such as natural disturbances like wildfires and flooding, have a direct effect on the character of the wilderness landscape. They can fundamentally alter how visitors are able to interact with the landscape and how they construct the meaning of a place (see figure 1). And then, policy changes, such as the introduction of recreation user fees, have an effect on how visitors use and access wilderness. Watson (2000) suggested fees and the perception of commercialization are two of the greatest threats to the relationship people have with wilderness. Changes in these conditions change the landscape of these special places and how visitors characterize the meanings associated with these places. That is, visitors notice and react to the intent and method of wilderness management and what it connotes about the meanings endorsed for wilderness.

Forces of change act at larger regional and societal levels. As a large segment of our population moves toward retirement, changes in the amounts of leisure time may occur and have an effect on how often visitors utilize wilderness resources. Conversely, the current generation has been raised with cell phones, video games, and computer simulation. Stankey (2000) suggests this generation, raised in a "virtual-reality" world, may have only minimal interest in and commitment to the use of wilderness. Over time, these intergenerational differences could have a dramatic effect on how wilderness recreation is characterized by large segments of the population.

Advances in technology have dramatically changed how we relate to wilderness areas. Whereas previous discussions have addressed the use of cell phones, GPS units, and other portable technology in wilderness settings (Freimund and Borrie 1997), other supposedly less obtrusive technologies have often been overlooked. Advances in lightweight gear (e.g., tents, stoves, canoes) have allowed visitors to travel farther and faster into wilderness areas. These advances have changed the accessibility of wilderness and the perception of what is appropriate within a wilderness context.

A relationship with wilderness, in part, represents a cultural and individual expression that defines who a person was, is, and hopes to be.

Some of these forces of change are under direct management control (e.g., use density, resource condition, fees, and permits) and are already addressed in current wilderness management plans. Others, such as changing demographics and intergenerational differences, represent trends in use and user characteristics that are not influenced through management action. Information regarding these changing trends can be understood through the use of permit data, trend studies, and other public resources. By acknowledging these distinctions, it may be possible to understand where to focus future management and research efforts.

## Future Management Implications

The use of a relationship framework has several implications for future wilderness experience stewardship. First, by understanding how visitors conceptualize their relationship with wilderness and the variety of cultural and social forces that influence these relationships, wilderness managers and researchers may be able to develop new indicators and standards to guide management. These relationship indicators and standards could be used to facilitate opportunities for quality wilderness experiences based on various concepts (e.g., experience use history, life stage, affinity for technology) of an individual's relationship. For example, wilderness recreation opportunities could be assessed to determine how they provide experiences for families with young children or for individuals considered as "veterans" in that area. Although developing such indicators and standards may be challenging, the process represents an evolution in thinking about protected areas and an attempt to find new ways to address experience quality.

Second, a relationship framework integrates with the responsibility of managers to preserve wilderness resources and character for future generations, but also current generations "in the future." By acknowledging that wilderness is an enduring resource with ongoing significance, a relationship framework posits the examination and understanding of management actions in the context of an individual's lifetime. It moves from documenting visitor experiences as snapshots of the individual or consumer-oriented one-time transactions, to attempting to understand how

experience and forces of change affect relationships over time. This shift in focus provides managers with information as they make difficult, value-based decisions about what desired wilderness conditions should be and mean for future generations.

Finally, acknowledging changing relationships could provide more latitude in future decision making. It focuses greater attention on the temporal and dynamic aspects of the interactions individuals have with an area. It places greater emphasis on the examination of both current visitor trends and possible future changes that occur in the general population. Such foresight may allow managers to be more proactive in decision making, in contrast to a reactive reliance on satisfaction or singular outcome-based approaches to understanding visitor experiences.

The importance of understanding relationships with wilderness may seem obvious. However, the framing of wilderness experience quality in the context of an ongoing relationship represents a new direction for research and management. It recognizes that visitors invest their personal identity and lifestyle into the interactions they have with wilderness areas. Relationships shape their perceptions and how they attribute meanings across the wilderness landscape. By implementing stewardship actions based on a relationship framework, managers may be better equipped to respond to changing relationships over time and increase future protection of wilderness character and experience quality. **IJW**

Framing of wilderness experience quality in the context of an ongoing relationship represents a new direction for research and management.

## Acknowledgments

This article is based on a presentation made at the George Wright Society Biennial Conference, April 16–20, 2007, St. Paul, Minnesota.

## REFERENCES

Berry, L. L. 1995. Relationship marketing of services: Growing interest, emerging perspectives. *Journal of the Academy of Marketing Science* 23(4): 236–45.

Berscheid, E., and L. A. Peplau. 1983. The Emerging science of relationships. In *Close Relationships*, ed. H. K. Harold et al. (pp. 1–19). New York: W. H. Freeman.

Borrie, W. T., and J. W. Roggenbuck. 2001. The dynamic, emergent, and multi-phasic nature of on-site wilderness experiences. *Journal of Leisure Research* 33(2): 202–28.

Borrie, W. T., N. Christensen, A. E. Watson, T. A. Miller, and D. W. McCollum. 2002. Public purpose recreation marketing: A focus on the relationships between the public and public lands. *Journal of Park and Recreation Administration* 20(2): 49–68.

Brooks, J. J., G. N. Wallace, and D. R. Williams. 2006. Place as relationship partner: An alternative metaphor for understanding the quality of visitor experience in a backcountry setting. *Leisure Sciences* 28: 331–49.

Freimund, W. A., and W. T. Borrie. 1997. Wilderness in the 21st century: Are there technical solutions to our technical solutions? *International Journal of Wilderness* 3(4): 21–23.

Fournier, S. 1998. Consumers and their brands: Developing relationship theory in consumer research. *Journal of Consumer Research* 24(4): 343–73.

Greider, T., and L. Garkovich. 1994. Landscapes: The social construction of nature and the environment. *Rural Sociology* 59(1): 1–24.

Liljeblad, A., and W. T. Borrie. 2006. Trust in wildland fire and fuel management decisions. *International Journal of Wilderness* 12(1): 39-–43.

Stankey, G. H. 2000. Future trends in society and technology: Implications for wilderness research and management. In *Wilderness Science in a Time of Change Conference—Volume 1: Changing Perspectives and Future Directions,* ed. D. N. Cole, S. F. McCool, W. T. Borrie, and J. O'Loughlin (pp. 10–23). May 23—27, 1999, Missoula, MT. Proc. RMRS-P-15-VOL-1. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Watson, A. E. 2000. Wilderness use in the year 2000: Societal changes that influence human relationships with wilderness. In *Wilderness Science in a Time of Change Conference—Volume 4: Wilderness Visitors, Experiences, and Visitor Management,* ed. D. N. Cole, S. F. McCool, W. T. Borrie, and J. O'Loughlin (pp. 53–60). May 23—27, 1999, Missoula, MT. Proc. RMRS-P-15-VOL-4. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Watson, A. E., and W. T. Borrie. 2003. Applying public purpose marketing in the USA to protect relationships with public land. In *Nature-based Tourism, Environment and Land Management,* ed. R. Buckley, C. Pickering, and D. B. Weaver (pp. 25–33). Oxon: UK and Cambridge, MA: D. B. CABI Publishing.

ROBERT G. DVORAK is a Ph.D. candidate in the College of Forestry and Conservation at the University of Montana, 32 Campus Drive, Missoula, MT 59812, USA. Email: bob_dvorak47@yahoo.com.

WILLIAM T. BORRIE is a professor in the College of Forestry and Conservation at the University of Montana, 32 Campus Drive, Missoula, MT 59812, USA. Email: bill.borrie@umontana.edu.

# Emerging Adults and the Future of Wild Nature

BY HARRY C. ZINN and ALAN R. GRAEFE

**Abstract:** Many resource managers and wilderness advocates see links between appreciating wild nature, participating in traditional outdoor activities, and support for protecting wild areas. Some of these individuals express concern that the values and recreation behavior of today's young people may suggest less support for protecting wilderness in the future. Although emerging adults appear to express strong pro-environmental values, they exhibit outdoor recreation patterns strikingly different from the past. More questions than answers exist about emerging adults' environmental and wilderness values, and how these values relate to their outdoor recreation behavior.

## Introduction

Those who manage, study, advocate for, and care about wilderness sometimes express concern about the values and recreation behavior of young people and implications for the future of wilderness protection. We suggest that this concern is, in part, a product of three factors. First, there are links between traditional outdoor recreation and support for protecting wilderness (e.g., Knudson 1980; Moore and Driver 2005). Second, there is strong support for protecting wilderness among urban, educated members of society (e.g., Schmitt 1969). Third, there is a perception that today's urban, educated young adults seem to be rapidly reinventing outdoor recreation by developing new activities and relying on new technologies (A. E. Watson, personal communication, April 2007). In response to these expressions of concern, our purpose is to: (1) review literature about values and outdoor recreation trends among today's urban, educated young adults; (2) consider possible implications for the future support for protecting wilderness; and (3) identify questions for future research.

In our title we refer to urban, educated young adults as *emerging adults* (Arnett 2000), a term increasingly used to describe young people who are in "a prolonged period of independent role exploration during the late teens and twenties" (Arnett 2000, p. 469). A key characteristic of emerging adulthood is semiautonomy, which often occurs when young people attend postsecondary school or when they have completed their studies and work outside the home while continuing to be partially supported by parents (Arnett 2000). We use the term *wild nature* in our title to refer to statutory designated wilderness, de facto wilderness, and environments that are widely perceived to be little-influenced by human activity. By using the term *wild nature*, we emphasize that the general population tends not to make the same distinctions between wilderness and nonwilderness that are made by wilderness managers, researchers, and highly involved advocates.

## Human Values, Environmental Values, and Wilderness Values

Human values are deeply held, enduring, "trans-situational" (Schwartz 1996) beliefs about good and bad ways to behave and good and bad goals to pursue in life (e.g., Rokeach 1979; Schwartz 1996). Research suggests that fundamental human values take shape and stabilize during the transition from adolescence to adulthood, in other words, during emerging adulthood (e.g., Arnett 2000; Pascarella and Terenzini 1991), and that, among adults, values are more enduring or stable than other types of beliefs (e.g., Rokeach 1979; Schwartz 1996). Many typologies

PEER REVIEWED

of fundamental human values make no overt reference to nature or the environment (e.g., Rokeach 1979). Schwartz's (1996) typology, for example, identifies 10 broad value types, including power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. Empirical research is limited, but environmental values may relate to at least three of Schwartz's 10 value types. First, the power value type includes deeply held beliefs about domination and control and may underlie anthropocentric versus biocentric environmental values. Second, the universalism value type includes, for some individuals and/or cultures, deeply held beliefs about natural beauty, living in harmony with nature, and protecting the environment (Schwartz 1996). Third, for some individuals and/or cultures, the benevolence value type may include deeply held beliefs about benevolence toward the natural world.

Researchers have developed a number of different environmental values typologies. For example, Dunlap and colleagues created the "new environmental paradigm" scale (e.g., Dunlap and Van Liere 1984), which was later modified and renamed the "new ecological paradigm" (e.g., Dunlap et al. 2000). Stern and colleagues created a scale measuring overall environmental values (e.g., Stern et al. 1993). Other researchers have focused more narrowly on either wildlife or forests. Kellert and colleagues, for example, identified nine types of values or attitudes toward wildlife (e.g., Kellert and Barry 1987). Manfredo and colleagues introduced and continue to refine the "wildlife value orientations" concept (e.g., Manfredo et al. 2003; Zinn and Pierce 2002). To study deeply held beliefs about forests, several researchers have adopted the value orientations approach (e.g., Vaske et al. 2001; Zinn et al. 2003), and others have developed new scales (e.g., Tarrant et al. 2003).

Although each of these approaches to environmental values uses unique items and terminology, one characteristic they share is measuring the relative weight individuals or groups put on human use versus human protection of the natural environment. This characteristic highlights an important distinction between the environmental values concept and the wilderness values concept. Environmental values researchers tend to study the degree to which different individuals or groups hold use-oriented or protection-oriented values toward the natural environment. Wilderness values researchers, in contrast, tend to study (1) the relative importance different individuals or groups assign to different "meanings" wilderness (Watson and Landres 1999, p. 387) can provide (e.g., Johnson et al. 2004) or (2) judgments about the appropriateness of different wilderness management philosophies (e.g., Watson and Landres 1999). Environmental values research tends to focus on understanding the balance people strike between using and protecting the natural environment. Wilderness values research tends instead to be based on an implicit assumption that wilderness *should be* protected. Whether or not wilderness should be protected, why wilderness should be protected, and what behaviors are compatible with wilderness are different but related questions. In this review, we address all three questions as they relate to the environmental values, wilderness values, and outdoor recreation behavior of emerging adults

Although emerging adults appear to express strong pro-environmental values, they exhibit outdoor recreation patterns strikingly different from the past.

## Emerging Adults and Values in the United States

A book published in late 2006, *Generation Me* (Twenge 2006), captured the attention of major media in early 2007 (e.g., Green 2007; National Public Radio 2007) by asserting that research had revealed American youth were more narcissistic and self-centered than earlier generations. This assertion was based on a series of national surveys of American young people (e.g., Twenge and Campbell 2001). Others have suggested contemporary emerging adults are self-centered and materialistic (e.g., Astin 1998; Hornblower 1997). One thing missing from media coverage of these assertions is context. For example, Astin (1998) analyzed 30 years of data (1966–1996) from an annual college freshman survey and found that, over time, students placed increasing importance on "being very well off financially" (p. 124) and "be[ing] able to make more money" (p. 125) after attending college. Although it is possible to interpret these results as a rise in crass materialism among emerging

**Figure 1—Little research has been conducted about the wilderness values held by emerging adults. Photo in the Olympic Wilderness by Bryan Bell.**

adults, it is also possible to interpret the results as a logical outgrowth of current trends, including increased borrowing to finance college, widely fluctuating energy prices, dire predictions about the future of Social Security benefits, erosion of lower- and middle-class earnings relative to upper-class earnings, and increasing uncertainty about long-term employment. Furthermore, other research puts emerging adults' values and goals in a more positive light. For example, college students in one study gave highest rank to "a warm, caring relationship with another adult … mastery of skills … a secure financial future … a comfortable relationship with their original family … [and] to be physically fit" (Eskilson and Wiley 1999, p. 66), goals which may seem positive to many. More importantly, it is not clear how reported increases in narcissism, self-centeredness, and materialism might relate to environmental values or wilderness values.

Although we found no studies of emerging adults' environmental values, research conducted over nearly three decades repeatedly links protection-oriented environmental values with more educated, more urban, younger adults. For example, data from a 1979 national survey demonstrated that pro-environmental values were stronger and more centrally held among younger, more highly educated, more urban adults than among their older, less educated, more rural counterparts (Mohai and Twight 1987). Surveys conducted during the early 1990s showed that younger adults in Pennsylvania expressed more pro-environmental values than older adults (Scott and Willits 1994) and younger, urban adults in Colorado were more likely than older, rural adults to express protectionist wildlife value orientations (Manfredo and Zinn 1996). Although age and urban residence were not tested, another 1990s Colorado survey showed that level of education was positively related to both biocentric forest value orientations and beliefs that human use of forests (for extractive production purposes or recreation) was less important than protecting wilderness, natural conditions, and forest health (Vaske et al. 2001). Data from the 2002 National Survey on Recreation and the Environment revealed protectionist forest values were higher among younger, urban respondents than among older, rural respondents (Tarrant et al. 2003). Finally, among a sample of adults (≥ 18 years old) living within 150 miles of Allegheny National Forest (an area centered on northwest Pennsylvania that includes parts of New York, Ohio, and West Virginia), protectionist forest value orientations were higher among younger, more highly educated respondents than among their counterparts (Zinn et al. 2003).

In our review we uncovered no data specifically about wilderness values of emerging adults (see figure 1), and only one study that suggests a relationship between wilderness values and age. In a study comparing wilderness values of native-born and immigrant Americans (Johnson et al. 2004), endorsement of seven of 13 wilderness values was significantly related to age. However, because the study focused on comparing native-born and immigrant Americans, age was treated as a control variable, and details of the wilderness values-age relationship were not examined.

In summary, trend data about fundamental human values can be interpreted to suggest that emerging adults are increasingly self-centered and materialistic, but how this trend relates to environmental or wilderness values is unknown. Although not specifically comparing the environmental values of emerging and older adults, multiple studies conducted from the late 1970s through 2002 demonstrate that younger, more urban, more highly educated Americans tend to express stronger pro-environmental values than older, more rural, less highly educated Americans. Wilderness values of emerging adults remain, to our knowledge, unmeasured.

## Emerging Adults and Outdoor Recreation in the United States

Like values, the outdoor recreation patterns of emerging adults have been a subject of little focused study, but existing data suggest both stability and change. On the one hand, traditional activities such as hiking (see figure 2), backpacking, camping, canoeing, and fishing continue to be practiced by many Americans, and some studies suggest participation numbers for these traditional activities are generally

increasing or stable (e.g., Cordell 2004; Kelly and Warnick 1999; Outdoor Industry Association 2006), whereas other studies suggest participation is down, particularly among emerging adults (e.g., Outdoor Industry Association 2003, 2007).

Although participant numbers remain large for traditional outdoor activities, four recreation trends suggest substantial change in the outdoor recreation of emerging adults. First, the "park and play" phenomenon can be seen, for example, among 20- to 30-year-old rock climbers, whitewater paddlers, and backcountry skiers as they spend less time in backcountry travel and more time participating in their activities at roadside destinations (e.g., Boulder Outdoor Center 2007). Second, speed and competition, which were formerly uncommon in activities such as rock climbing, backpacking, and whitewater boating, are becoming more common. Speed climbing, for example, now occupies an important new niche within a traditional activity, with speed being used as measure of skill in both competitive and noncompetitive settings (e.g., Florine and Wright 2004), and speed backpacking is one of the activities addressed by a new magazine, *Backpacking Light*. Third, "tow-in" surfing and "sled-skiing" by 20- to 30-year-old recreationists represent a degree of motorization in sports that were formerly nonmotorized (e.g., Lutz 2007; Towsurfer.com LLC 2007). Fourth, entirely new activities continue to emerge. During the last two decades, activities such as snowboarding, freestyle skiing, freestyle kayaking, sea kayaking, kiteboarding, and freeriding on mountain bikes have grown from outdoor fads to established outdoor sports. More recently, "parkour" has appeared among emerging adults in the United States (American Parkour 2007). Parkour is a gymnastic form of freestyle running, jumping, vaulting, and balancing, which began in outdoor urban settings and is now spreading to resource-based recreation areas. Interestingly, although the activity seems entirely new, participants link it to very old roots, saying, for example, "In some sense, Parkour has been around as long as man's need to hunt and avoid being hunted" (American Parkour 2007).

**Figure 2—A group of youth learning orienteering in the Yosemite Wilderness. Photo courtesy of WildLink.**

All four of these outdoor recreation trends appear to be related to a general speeding up of outdoor recreation. The speeding up of outdoor recreation can be seen in a decades-long tendency toward shorter outdoor recreation trips. For several decades, one-week, two-week, and longer outdoor recreation trips have gradually become less common, whereas trips less than a week long have become more common (e.g., Cordell 2004; Kelly and Warnick 1999). Like other outdoor recreation trips, wilderness visits have grown shorter and more frequent (e.g., Geary and Stokes 1999; Cole 1996), occur more on weekends and holidays (Geary and Stokes 1999), and are more often made by day-users (Cole 2001).

The speeding up of outdoor recreation may have multiple causes. First, Americans' free time is becoming more fragmented, causing people to experience "time famine" and recreate more frequently for briefer periods of time (Robinson and Godbey 1997). Second, some scholars suggest attention spans have grown shorter, perhaps because of children's extensive exposure to the fast pace of television programs such as *Sesame Street* (e.g., Curtis 2000; Zimmerman and Christakis 2005). Third, ongoing technological innovation has allowed people to travel to and from outdoor recreation sites more quickly and comfortably and allowed them to move more easily and rapidly during recreation activities.

The speed and ease of travel to outdoor recreation sites has been improved by technological innovations including aircraft, automobiles, railroads, and steamships, listed in *reverse* chronological order. Automobiles, in particular, played an

important role in the wilderness movement, on one hand by provoking a reaction against congestion and sprawl, but on the other hand by facilitating wilderness visits (Sutter 2002). Earlier, automobiles and railroads contributed to the protection of national parks, national forests, and state parks by facilitating visitation (e.g., Shaffer 2001). Earlier still, railroads and steamships contributed to interest in natural scenery and the protection of New York's Adirondack and Catskill Mountains (e.g., Brown 1997).

Examples of technological innovations (see figure 3) that make participation in traditional outdoor recreation activities easier and faster include improvements to firearms and archery equipment; materials and coatings that have made tents, packs, clothing, and shoes lighter, more durable, and more water resistant; materials that have made skis, snowshoes, and canoes more durable, more slippery, and easier to master; and information tools ranging from accurate, affordable government maps and charts to global positioning systems. In addition to impacting traditional outdoor recreation activities, technological innovation has repeatedly spawned new activities, many of which emphasize speed. Snowboarding, freeriding on mountain bikes, freestyle skiing, freestyle kayaking, and kiteboarding are recent examples, all of which are embraced by emerging adults. Many of these new outdoor activities have links to skateboarding and extreme sports and have deeper roots than commonly recognized. Extreme sports have been traced backward in time by one author through a chain of gravity-defying activities including skateboarding, bungee-jumping, surfing, mountain climbing, hot-air ballooning, and parachuting, the last three of which can be traced back to the 18th century (Soden 2003).

Considering changes in the pacing of mass media, the ways in which Americans spend their time, access to outdoor recreation opportunities, and the pace of outdoor recreation participation, it should not be surprising that a 2003 press release from the Outdoor Industry Association included the following observations:

> "Time compression is still a macro trend with Americans taking less vacation, as is virtual recreation via computers competing for time," said Casey Sheahan, president of Kelty. … Marked increases in participation occurred in climbing (ice and rock) and kayaking (all formats), which require specialized gear, places to recreate and skill to perform, but reward with a rush. … 16- to 24-year olds are ice climbing, kayaking, camping, climbing artificial walls, cross-country skiing and hiking more than they were in 2001. … Predictably, most of the sports that entertain today's youth and show signs of growing popularity are the ones that provide excitement, require demanding physical skills, and are cool—and I don't mean zip-off nylon hiking pants.

**Figure 3—The development of more flexible and lightweight equipment has made rafting a popular sport even in remote wilderness areas. Photo in the Bob Marshall Wilderness by Gordon Ash.**

## Unanswered Questions about Emerging Adults and Wild Nature

Data show that emerging adults are pursuing new, fast-paced forms of outdoor recreation in increasing numbers, but participation in more traditional forms of outdoor recreation remains higher than participation in newer activities. Studies designed specifically to track participation by age cohorts and project it into the future would give managers a much clearer picture of future outdoor recreation participation and its potential impacts on wilderness and nonwilderness resources. Studies of the extent to which recreation participant behavior and expectations evolve over time might also provide valuable information about future impacts. Although not a wilderness example, snowboarding began two decades ago with a reputation (among participants and nonparticipants

alike) as an activity for rebels. Many skiers demanded that resorts ban snowboards, and many resorts complied (e.g., Vaske et al. 2000). Since that time, driven partly by financial considerations, but also by changing behavior and expectations, snowboard bans have become uncommon, snowboarding's reputation appears to have softened, and snowboarder-skier conflict appears to have diminished (Thapa and Graefe 2003). Focused study of new activities and their relationship to established activities in wilderness may help managers understand factors that facilitate or inhibit similar evolution.

More is known about emerging adults' outdoor recreation than about their environmental or wilderness values. Although numerous studies of environmental and wilderness values exist, few have used directly comparable measures, few have specifically targeted emerging adults, and, to our knowledge, none have tracked the environmental or wilderness values of age cohorts through emerging adulthood and beyond. Thus, neither the content of emerging adults' environmental or wilderness values, nor values trends as emerging adults mature, can be described. Furthermore, we found no studies of emerging adults that examined relationships among environmental values, wilderness values, and specific wilderness-related behaviors. Questions about these relationships cannot be answered without targeted research, but the answers may help wilderness managers anticipate future recreation behavior, conflict, responses to wilderness management philosophies, and the acceptability of specific management actions.

Questions about emerging adults and their relationship to wilderness greatly outnumber answers. Yet today's emerging adults will eventually become the country's primary voters, taxpayers, opinion leaders, and wilderness visitors. Our current state of knowledge suggests that emerging adults may differ in important ways from older adults. Better understanding the extent of those differences and their implications will lay the groundwork for successful wilderness management in the future. **IJW**

## Acknowledgments

This article is based on a presentation made at the George Wright Society Biennial Conference, April 16–20, 2007, St. Paul, Minnesota. We are indebted to the Leopold Wilderness Research Institute for support.

## REFERENCES

American Parkour. 2007. What is Parkour?, http://www.americanparkour.com/component/option,com_frontpage/Itemid,1/ (accessed May 30, 2007).

Arnett, J. J. 2000. Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist* 55(5): 469–80.

Astin, A. W. 1998. The changing American college student: Thirty-year trends, 1966–1996. *Review of Higher Education* 21(2): 115–35.

Boulder Outdoor Center. 2007. Park and play boating, http://www.boc123.com/Kayak/ParkandPlay.cfm (accessed May 30, 2007).

Brown, D. 1997. *Inventing New England: Regional Tourism in the Nineteenth Century*. Washington, DC: Smithsonian Institution Press.

Cole, D. N. 2001. *Day Users in Wilderness: How Different Are They?* Research Paper RMS-RP-31. Fort Collins, CO: U.S.D.A. Forest Service, Rocky Mountain Research Station.

———. 1996. Wilderness recreation in the United States: Trends in use, users, and impacts. *International Journal of Wilderness* 2(3): 14–18.

Cordell, H. K. 2004. *Outdoor Recreation for 21st Century America—A Report to the Nation: The National Survey on Recreation and the Environment*. State College, PA: Venture.

Curtis, S. C. 2000. Listening to Generation X. *Journal of Educational Media and Library Sciences* 38(2): 122–32.

Dunlap, R. E., and K. D. Van Liere. 1984. Commitment to the dominant social paradigm and concern for environmental quality. *Social Science Quarterly* 65: 1013–28.

Dunlap, R. E., K. D. Van Liere, A. G. Mertig, and R. E. Jones. 2000. New trends in measuring environmental attitudes: Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues* 56(3): 425–42.

Eskilson, A., and M. G. Wiley. 1999. Solving for the X: Aspirations and expectations of college students. *Journal of Youth and Adolescence* 28: 51–70.

Florine, H., and B. Wright. 2004. *Speed Climbing! How to Climb Faster and Better*, 2nd ed. Guilford, CT: Globe Pequot Press/FalconGuide.

Geary, T. F., and G. L. Stokes. 1999. Forest Service wilderness management. In *Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends*, principal investigator H. K. Cordell (pp. 388–91.) Champaign, IL: Sagamore.

Green, E. W. 2007. A Q&A with Jean Twenge on her insights into a generational change and trend toward narcissism. *U.S. New and World Report*, March 12, http://www.usnews.com/usnews/news/articles/070304/12qa.htm (accessed May 30, 2007).

Hornblower, M. 1997. Great Xpectations. *Time,* June 9: 58–68.

Johnson, C. Y., J. M. Bowker, J. C. Bergstrom, and H. K. Cordell. 2004. Wilderness values in America: Does immigrant status or ethnicity matter? *Society and Natural Resources* 17(7): 611–28.

Kellert, S. R., and J. K. Berry. 1987. Attitudes, knowledge, and behaviors toward wildlife as affected by gender. *Wildlife Society Bulletin* 15: 363–71.

Kelly, J. R., and R. B. Warnick. 1999. *Recreation trends and markets: The 21st century*. Champaign, IL: Sagamore.

Knudson, D. M. 1980. *Outdoor recreation*. New York: McMillan.

Lutz, C. 2007. Powder to the people: Sled-skiing threatened in Aspen, http://www.powdermag.com/features/news/aspen-richmond/index.html (accessed May 30, 2007).

Manfredo, M. J., T. L. Teel, and A. D Bright. 2003. Why are public values toward wildlife changing? *Human Dimensions of Wildlife* 8(4): 285–304.

Manfredo, M. J., and H. C. Zinn. 1996. Population change and its implications for wildlife management in the new West: A case study of Colorado. *Human Dimensions of Wildlife* 1(3): 62–74.

Mohai, P. and B. W. Twight. 1987. Age and environmentalism: An elaboration of the Buttel model using national survey evidence. *Social Science Quarterly* 68: 798–815.

Moore, R. L., and B. L. Driver. 2005. *Introduction to outdoor recreation:*

## Questions about emerging adults and their relationship to wilderness greatly outnumber answers.


*Providing and managing natural resource based opportunities*. State College, PA: Venture.

National Public Radio. 2007. Study sees rise in narcissism among students, Feb. 27, http://www.npr.org/templates/story/story.php?storyId=7618722 (accessed May 30, 2007).

Outdoor Industry Association. 2007. *The Next Generation of Outdoor Participants*, http://www.outdoorindustry.org/research.php?action=detail&research_id=55 (accessed July 30, 2007).

———. 2006. *Outdoor Recreation Participation Study,* 8th ed. (for year 2005), http://www.outdoorindustry.org/research.php?action=detail&research_id=27 (accessed July 30, 2007).

———. 2003. Planning for 2004? Stay informed and get ahead of the trends with the fifth edition of the participation study, http://www.outdoorindustry.org/media.oia.php?news_id=196&sort_year=2003 (accessed July 30, 2007).

Pascarella, E. T., and P. T. Terenzini. 1991. *How College Affects Students: Findings and Insights from Twenty Years of Research*. San Francisco: Jossey-Bass.

Robinson, J. P., and G. Godbey. 1997. *Time for Life: The Surprising Ways Americans Use Their Time*. University Park: Pennsylvania State University Press.

Rokeach, M. 1979. From individual to institutional values: With special reference to the values of science. In *Understanding Human Values*, ed. M. Rokeach (pp. 47–70). New York: Free Press.

Schmitt, P. J. 1969. *Back to Nature: The Arcadian Myth in Urban America*. New York: Oxford University Press.

Schwartz, S. 1996. Value priorities and behavior: Applying a theory of integrated value systems. In *The Psychology of Values: The Ontario Symposium,* vol. 8, ed. C. Seligman, J. M. Olson, and M. P. Zanna (pp. 1–24). Mawah, NJ: Erlbaum.

Scott, D., and F. K. Willits. 1994. Environmental attitudes and behavior: A Pennsylvania survey. *Environment and Behavior* 26: 239–60.

Shaffer, M. S. 2001. *See America First: Tourism and National Identity, 1880–1940*. Washington, DC: Smithsonian Institution Press.

Soden, G. 2003. *Defying gravity: Land divers, roller coasters, gravity bums, and the human obsession with falling*. New York: Norton.

Stern, P. C., T. Dietz, and L. Kalof. 1993. Value orientations, gender, and environmental concern. *Environment and Behavior* 25: 322–48.

Sutter, P. 2002. *Driven wild: How the fight against automobiles launched the modern wilderness movement*. Seattle: University of Washington Press.

Tarrant, M. A., H. K. Cordell, and G. T. Green. 2003. PVF: A scale to measure public values of forests. *Journal of Forestry* 101(6): 24–30.

Thapa, B., and A. R. Graefe. 2003. Level of skill and its relationship to recreation conflict and tolerance among adult skiers and snowboarders. *World Leisure* 45(1): 13–25.

Towsurfer.com LLC. 2007. About towsurfing, http://www.towsurfer.com/about.asp (accessed May 30, 2007).

Twenge, J. M. 2006. *Generation me: Why Today's Young Americans Are More Confident, Assertive, Entitled—and More Miserable Than Ever Before*. New York: Free Press.

Twenge, J. M., and W. K. Campbell. 2001. Age and birth cohort differences in self-esteem. *Personality and Social Psychology Review* 5: 312–44.

Vaske, J. J., P. Carothers, M. P. Donnelly, and B. Baird. 2000. Recreation conflict among skiers and snowboarders. *Leisure Sciences* 22: 297–313.

Vaske, J. J., M. P. Donnelly, D. R. Williams, and S. Jonker. 2001. Demographic influences on environmental value orientations and normative beliefs about national forest management. *Society and Natural Resources* 14(9): 761–76.

Watson, A. E., and P. Landres. 1999. Changing wilderness values. In *Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends*, principal investigator H. K. Cordell (pp. 384–88). Champaign, IL: Sagamore.

Zimmerman, F. J., and D. A. Christakis. 2005. Children's television viewing and cognitive outcomes: A longitudinal analysis of national data. *Archives of Pediatrics and Adolescent Medicine* 159: 619–25.

Zinn, H. C., and C. L. Pierce. 2002. Values, gender, and concern about potentially dangerous wildlife. *Environment and Behavior* 34(2): 240–57.

Zinn, H. C., G. A. Wang, Y-F. Tung, D. L. Kerstetter, and A. R. Graefe. 2003. *Stakeholder Characteristics, Forest Value Orientations, and Management Preferences for the Allegheny National Forest: Report on a 2002 Survey*. Report for USDA Forest Service, Allegheny National Forest. University Park: The Pennsylvania State University, Recreation and Park Management Program.




HARRY C. ZINN is associate professor at The Pennsylvania State University, Department of Recreation, Park and Tourism Management, University Park, PA 16802, USA. Email: hzinn@psu.edu.

ALAN R. GRAEFE is associate professor, The Pennsylvania State University, Department of Recreation, Park and Tourism Management, University Park, PA 16802, USA.

# The Prevalence and Significance of Displacement for Wilderness Recreation Management and Research

BY INGRID E. SCHNEIDER

**Abstract:** The concept of visitor displacement has important implications for wilderness management and research. Research on actual displacement of wilderness visitors is extremely limited, but this displacement likely follows patterns found for general recreationists: visitors employ a variety of coping responses and displacement is prevalent. Understanding if and when visitors are displaced is useful for anticipating and responding to resource impacts, impacts to visitor experiences, and needs to improve regional management strategies. Displacement implications extend beyond evaluation of on-site experiences to also serve as an indicator of the condition of a visitor's relationship with the resource or agency. Management and research must be more prepared to respond to use and user displacement as an indicator of changing relationships with wilderness and other wildlands.

## Introduction

Change is inevitable. In the 21st century, wilderness visitors contemplate not only the number and type of visitors they may encounter (common indicators used in the past to evaluate threats to wilderness character), but also new forms of personal technology and changes in their own age or family life cycle (see figure 1). Although managerial response to social change can be implemented through policy changes, visitor responses have no such formal response mechanisms. Visitors can respond to change by forming new perceptions about a place or experience and change their visitation patterns, as well as changing their inclination to politically or financially support an area. Visitor response ultimately influences not only their own experiences but the experiences of others, the resource itself, and the type and amount of public support for wilderness. Therefore, visitor response to change requires attention (see figure 2). Among the range of possible responses to change, displacement deserves particular attention as it can significantly impact resource benefits and may ultimately indicate a change in the public's relationship with an area or agency. Therefore, in this article displacement is reviewed within the context of wilderness, and its consequences for management and research are considered.

Ingrid E. Schneider. Photo by C. Wentworth.

## Displacement

Displacement occurs when users leave the site or change activities in response to an

PEER REVIEWED

**Figure 1—As family life stage changes, changes in wilderness experience opportunities may follow. Photo courtesy of Explore Minnesota Tourism.**

unacceptable or adverse change in social, managerial, or resource conditions (Anderson and Brown 1984; Shelby, Bregenzer, and Johnson 1988). Displacement not only entails unacceptable changes, but settings that are substitutable. Essential components of the displacement process are changes in behavior, time, or in the environment (Anderson and Brown 1984). An example of displacement in outdoor recreation is an angler who desires a wilderness fishing experience but encounters more people at an area than desired. The angler might leave the area, seeking a less crowded site either within the area (intrasite displacement) or at an entirely new area (intersite displacement). If anglers change the time they fish, they are temporally displaced. Displacement can be categorized as a problem-focused coping response. Visitor responses to change, or use of coping mechanisms, have been broadly identified as either emotion- or problem-focused (Schneider and Hammitt 1995). Emotion-focused coping regulates distressing emotions, whereas problem-focused coping does something to change the problem causing the distress. Within the realm of problem-focused coping, perhaps the most studied response is displacement.

**Figure 2—Visitors can respond to change by forming new perceptions about a place or experience and change visitation patterns, as well as change their inclination to politically or financially support an area. Photo Photo courtesy of Explore Minnesota Tourism.**

Displacement might arise in response to on-site social conditions such as crowding, managerial changes such as fee implementation, or resource changes such as erosion. Among all recreation visitors, the majority of research has focused on displacement in response to on-site conditions, such as crowding (Arnberger and Haider 2007). Until 2000, knowledge of actual visitor responses to change was limited in that the majority of research focused on hypothetical responses to changes rather than actual changes (Shelby et al. 1988; Hammit and Patterson 1991; Lime and Lewis 2000). Researchers asked visitors what they would likely do in response to something such as new fees rather than what they actually did in response to fees. A handful of studies examined actual visitor response to either on-site social or managerial conditions. These projects revealed that up to 55% of visitors changed their behaviors with subsequent changes in resource conditions and in other visitor experiences (Kuentzel and Heberlien 1992; Robertson and Regula 1994; Schneider and Hammitt 1995).

Studies since 2000 similarly suggest that between 42% and 92% of visitors can be temporally displaced due to on-site social conditions, whereas 15% to 86% can be spatially displaced (Barnett 2004; Gramann 2002; Hall and Shelby 2000; Hall and Cole 2007; Johnson and Dawson 2004; Schneider 2000). Displacement due to managerial conditions can range from 22% to 46% (Barnett 2004; Schwartz and Lin 2006). In summary, between 15% and 92% of visitors have reportedly chosen displacement in response to social or managerial changes. But, how does this relate to wilderness visitors?

Research on actual displacement among wilderness visitors is extremely limited, but findings suggest the same pattern of displacement as among recreationists as a whole. Multiple coping responses are employed, and some form of displacement is prevalent (Hall and Shelby 2007; Johnson and Dawson 2004; Schneider 2000). Considering crowding specifically, Johnson and Dawson (2004) found that visitors who coped with crowded conditions responded most frequently with temporal displacement (64%) or spatial displacement (51%). Similarly, Hall and Shelby (2007) found that more than 50% of visitors were either temporally or spatially displaced due to perceived crowding, with 13% completely leaving the

area. Interestingly, several of Johnson and Dawson's respondents indicated they would like to temporally displace, but could not due to life circumstances. Therefore, the potential for even more temporal displacement is high when visitor life circumstances change. Beyond crowding as a motivation to displace, Schneider (2000) examined wilderness visitor conflict and found about 32% of visitors were intrasite displaced, and 15% left the area altogether in response to conflict occurrence. However, 24% planned to avoid the area on their next visit. This intrasite displacement and planned intrasite displacement indicate that within wilderness areas substitutable sites exist. These results indicate that the proportion of wilderness visitors employing displacement in response to on-site social conditions is similar to the general recreationist.

Understanding if and when visitors are displaced is useful for anticipating and responding to resource impacts, impacts to visitor experiences, and needs for regional management change. Displacement can lead to changes in resource conditions. For example, if visitors are temporally displaced to earlier in the season, they could have greater impact on the soil and/or wildlife nesting patterns. If visitors are displaced to a different time of the week, staffing levels and monitoring efforts may need to be evaluated. If visitors are displaced within a site, their use of previously lightly used areas will increase the impacts to these sites and influence resource conditions. When visitors change the time or location of their experiences, changes and perhaps increases in visitor encounters may follow (see figure 3). By understanding changes in visitation patterns as a result of displacement, managers can influence visitor expectations for numbers of encounters and, also, enhance opportunities for experiences that match expectations. For example, managers may monitor changes in trailhead or entrance use to understand displacement or substitution occurrence. Knowledge of intersite displacement can assist regional wilderness and recreation management planning through anticipation of increases in visitors and development of appropriate information or other managerial responses.

**Figure 3—Displaced visitors who change the time or location of their visits may experience increases in visitor encounters. Photo courtesy of the Aldo Leopold Wilderness Research Institute.**

## Displacement as an Indicator of Relationships with Wilderness

Beyond being important for immediate management response, displacement has potential longer-term outcomes as well. Displacement may serve as an indicator of the public's relationship with the resource or agency. Therefore, and in response to Hall and Shelby's (2000) call to "link displacement to other frameworks that account for individual decision-making" (p. 454), considering how displacement fits into visitor-area and agency relationships is warranted. One framework that seems appropriate to help understand the role of displacement as a relationship is relational marketing.

Relational marketing, as the name implies, focuses on the relationship between entities such as the public and protected areas or organizations. In contrast to the more commonly applied transactional marketing approach in which products or services are provided for profit, Borrie, Christensen, Watson, Miller, and McCollum (2002) suggested that relational marketing focuses more on the identification, development, and maintenance of relationships. Thus, in addition to monitoring the number of on-site interactions between visitors, one might also monitor relationship elements. These relationships depend on social trust, commitment, and perceptions of social responsibility. Trust in this context is viewed in one of two ways: (1) based on confidence in competence, objectivity, fairness, consistency, and caring (Earle and Cvetkovich 1995), or (2) perceptions of shared values, direction, goals, actions, and thoughts (Winter, Palucki, and Burkhardt 1999). Commitment refers to willingness to invest, intensity of attachment, and length of attachment, whereas social responsibility is the perception by a person of social equity protected through public land administration.

Displacement may indicate the status of visitor trust in or commitment to an area or agency, as well as influence perceptions of social

Management and research must be more prepared to respond to use and user displacement as an indicator of changing relationships with wilderness and other wildlands.

responsibility. For example, if a visitor is displaced in response to fees, they may be indicating that they perceive the fee to be unfair to them or others, or they do not share the agency's goals related to cost recovery. Similarly, if visitors are displaced due to on-site social conditions, this may indicate that the agency is not managing the site in alignment with visitor goals or perceptions of public purpose. Inter-site displacement is an indicator of commitment in a relationship, as it changes the temporal nature of the relationship. Although there are reasons for displacement beyond changes in an area or an agency, such as a visitor's time or ability, displacement still reflects the visitor's willingness to invest in the site. Visitor displacement appears to be a prime candidate to serve as a relationship indicator for wilderness management agencies.

## Conclusions

Relationships with anyone, particularly the public, can be both rewarding and challenging. We cannot reap the rewards of support, trust, and confidence in meeting the public purpose of public lands without meeting the challenge of understanding, enhancing, and revitalizing such relationships. There are management and research opportunities to better understand visitor displacement in response to change and as an indicator of relationships with the public.

Management opportunities include the need to establish objectives for understanding current relationships with various stakeholders, visitor use monitoring, and the optimization of education and interpretive services to strengthen relationships. Although research efforts have examined public perceptions for decades, only recently has a focus on relationship elements emerged (Winter et al. 1999; Borrie et al. 2002). It is important to understand that a visitor's relationship with the area, relationship with on-site management staff, and relationship with an organization as a whole can differ. Once these differences are identified, they can shed light on what and how to manage to obtain trust and commitment among constituents. A differentiation of on-site management and organizational relationships points to the possibility of separate, but related, stewardship efforts that work to increase effectiveness and efficiency in accomplishing agency missions regionally and nationally. Obviously, such intensive efforts cannot and should not be done in isolation by the managing authorities. Rather, coordinated and integrated communication campaigns among government, nongovernmental organizations, and the private sector can work to benefit both the organizations involved and the public. These efforts will positively impact the relationship of visitors and nonvisitors to wilderness. Visitor use monitoring is heralded and often discussed, but the resources to achieve it are sometimes scarce or prioritized to other areas. However, the significant impacts that intra- and intersite displacement can have make visitor use monitoring essential for effective stewardship of both the resource and relationships. Given that one-quarter of wilderness visitors have been found to consider intersite displacement, monitoring their proposed and actual behaviors will greatly inform management efforts both on-site and off-site. Revisiting interpretive and educational materials in light of the relational marketing paradigm can be constructive. Any revisions may lead to a better visitor understanding of the managing organization and subsequently increase support.

The current direction of visitor research to study actual, rather than hypothetical, visitor responses to change should be applauded and continued. Although knowing what visitors plan to do is informative, their actual behavior has significantly more impact on the resource and other visitors. Identifying actual responses to change can be achieved through several means such as panel studies, pre- and postchange assessments, and observations. Although not without their challenges, the value of actual data on visitor behavior far outweighs their costs. Innovative visual assessments of conditions that instill displacement (Arnberger and Haider, 2007) are one relatively low-cost opportunity to understand potential displacement. Following up with those visitors that indicate they are going to displace would be an opportunity to check the correlation between planned and actual displacement. Attention to nonvisitors is needed so that management agencies can understand leisure preference and participation constraints, identify a baseline for the relationship with nonusers, and work

to enhance the perceived trust and commitment among the public. Challenges to studying nonvisitors include finding them, employing effective methodology to engage them in the research, and locating research resources to conduct the research.

Certainly social and managerial forces will continue to evolve and influence how visitors and nonvisitors perceive and experience wilderness. Considering and expanding research on actual visitor changes, such as displacement, will inform management and the public. Active management and science cooperation in these efforts can minimize recreation constraints, improve relationships with the public, and enhance the benefits of wilderness management overall. **IJW**


## Acknowledgments

This article is based on a presentation made at the George Wright Society Biennial Conference, April 16–20, 2007, St. Paul, Minnesota.


There are management and research opportunities to better understand visitor displacement in response to change and as an indicator of relationships with the public.

REFERENCES


Anderson, D. H., and P. J. Brown. 1984. The displacement process in recreation. *Journal of Leisure Research* 16(1): 61–73.

Arnberger, A., and W. Haider. 2007. Would you displace? It depends! A multivariate visual approach to intended displacement from an urban forest trail. *Journal of Leisure Research* 39(2): 345–65.

Barnett, A. 2004. Displacement and coping at wilderness climbing destinations: A survey of mountaineers in Washington and Oregon. Masters thesis, University of Idaho, Moscow.

Borrie, W. T., N. Christensen, A. E. Watson, T. A. Miller, and D. W. McCollum. 2002. Public purpose recreation marketing: A focus on the relationships between the public and public lands. *Journal of Park and Recreation Administration* 20(2): 49–68.

Earle, T. C., and G. T. Cvetkovich. 1995. *Social Trust: Toward a Cosmopolitan Society*. Westport, CT: Praeger Publishers.

Gramann, J. H. 2002. *The Role of Crowding in Visitor Displacement at Mount Rainer and Olympic National Parks*. Final Report. Subcontract No. GNK097. Moscow: University of Idaho.

Hall, T. E., and D. N. Cole. 2007. *Changes in the Motivations, Perceptions, and Behaviors of Recreation Users: Displacement and Coping in Wilderness*. Research Paper RMRS-RP-63. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Hall, T., and B. Shelby. 2000. Temporal and spatial displacement. *Journal of Leisure Research* 32(4): 435–56.

Hammitt, W. E., and M. E. Patterson. 1991. Coping behavior to avoid visitor encounters: Its relationship to wildland privacy. *Journal of Leisure Research* 23: 225–37.

Johnson A. K., and D. P. Dawson. 2004. An exploratory study of the complexities of coping behavior in Adirondack Wilderness. *Leisure Sciences* 26: 281–93.

Kuentzel, W., and T. Heberlein. 1992. Cognitive and behavioral adaptations to perceived crowding: A panel study of coping and displacement. *Journal of Leisure Research* 24: 377–93.

Lime, M., and M. S. Lewis. 2000. *Boundary Waters Canoe Area Wilderness User Fee Evaluation: 1999 Study of Camper Party Leaders*. Technical Report to the USDA Forest Service, Superior National Forest. St. Paul, MN: University of Minnesota, Department of Forest Resources.

Robertson, R. A., J. A. Regula. 1994. Recreation displacement and overall satisfaction: A study of central Iowa's licensed boaters. *Journal of Leisure Research* 26: 174–81.

Schneider, I. E. 2000. Responses to conflict in urban-proximate areas. *Journal of Park and Recreation Administration* 18(2): 37–53.

Schneider, I. E., and W. E. Hammitt. 1995. Visitor responses to on-site recreation conflict. *Journal of Applied Recreation Research* 20(4): 249–68.

Schwartz, Z., and L. Lin. 2006. The impact of fees on visitation of national parks. *Tourism Management* 27: 1386–96.

Shelby, B., H. Bregenzer, and R. Johnson. 1988. Displacement and product shift: Empirical evidence from two Oregon rivers. *Journal of Leisure Research* 20: 274–88.

Winter, P. L., L. J. Palucki, and R. L. Burkhardt. 1999. Anticipated response to a fee program: The key is trust. *Journal of Leisure Research* 31: 207–26.



INGRID E. SCHNEIDER is an associate professor in Forest Resources and director, Tourism Center, University of Minnesota, 115 Green Hall, 1530 Cleveland Avenue North, St. Paul, MN 55108, USA. Email: ingridss@umn.edu.

# Describing Change in Visitors and Visits to the "Bob"

BY WILLIAM T. BORRIE and STEPHEN F. McCOOL

**Abstract:** Understanding wilderness use and users is essential to wilderness management. However, there have only been a limited number of studies specifically designed to detect changes in use and user characteristics across time. Recreation use of the U.S. National Wilderness Preservation System (NWPS) has increased since its creation in 1964, along with many other changes in influences on society's relationship with wilderness. This article describes a series of visitor trend studies at the Bob Marshall Wilderness Complex in Montana, and identifies some of the challenges encountered in estimating long-term use and user trends.

## Introduction

The call for greater understanding of trends in wilderness visitation is not new (Hendee et al. 1968; Roggenbuck and Lucas 1987; Cole and Hall 1992). Although many wilderness areas have systematically collected data on the amount of visitation, far fewer (approximately a quarter of the units of the NWPS) have even baseline data on visit and visitor characteristics (Cole and Wright 2003). And then, only a handful of those data collection efforts were specifically designed as longitudinal research.

This article highlights some challenges encountered in understanding trends at the Bob Marshall Wilderness Complex (BMWC) in Montana. This area of around 1.4 million acres (600,000 ha), sits astride the Continental Divide of the northern Rocky Mountains in the United States and is composed of three contiguous wildernesses: the Bob Marshall, Great Bear, and Scapegoat. The "Bob," as it is colloquially known, contains a broad and diverse wildlife population that includes representatives of nearly every species present at the time of Euro-American exploration and settlement. It is managed for unroaded, primitive recreation, including backpacking, horseback riding and packing, river floating, and fishing. Big game hunting is popular during the fall (mid-September through October), and there are a number of outfitters and guides that provide services to the public. With around 55 of these small businesses, plus the economic activity generated in nearby towns, visitation to the "Bob" is an important source of local income.

William T. Borrie and Stephen F. McCool in the "Bob." Photo by Polly Cote.

## Methods

In 2004 visitors to the "Bob" were surveyed to help understand long-term trends in visit and visitor characteristics. This study replicated methods and questions from two previous studies: 1970 (Lucas 1980) and 1982 (Lucas 1985). Although this article compares data from the 2004 study with the 1970 and 1982 surveys, it is worth noting that another visitor survey was conducted in 2003 (Dear,

PEER REVIEWED

McCool, and Borrie 2005). However, a series of lightning-ignited fires significantly constrained visitation patterns that year in the BMWC. Although there is confidence that the 2003 sample accurately reflects visitation for that year, it was felt that 2003 was not a particularly representative year (Borrie, McCool, and Whitmore 2006), and, thus, is not considered in this article.

The sample population was all summer and fall visitors, aged 16 years or older, who spent three or more hours in or near the BMWC. Sampling began when a majority of the trailheads (and mountain passes) were clear of snow and open to travel (June 18 in 2004), ending when the first significant snow event covered access roads and visitation dropped off sharply (October 18 in 2004). Visitors to the BMWC choose from more than 75 different trailheads, but a relatively few of those trailheads account for the majority of visitation. In each study, the highest used trailheads were sampled proportional to size, such that those with heavier levels of visitation were sampled more frequently (Lucas 1985). Inverse weighting in the analysis provided equal representation in the overall sample. Trailheads were sampled in blocks of four-day weekdays (Monday through Thursday) and three-day weekends (Friday through Sunday). In 1970 40 blocks were sampled, while in 1982, 74 blocks were sampled. Due to financial and logistical limitations, the 2004 study sampled 26 blocks, allocated proportionally across the 13 busiest trailheads.

As visitors entered or left the wilderness they were contacted and asked some questions. Visitors were requested to receive and return a mail-back questionnaire. Follow-up reminder postcards and replacement questionnaires were sent to nonrespondents. Most of the questions asked in 1970 were repeated with identical wording and response format in 1982 and 2004. Several items were, however, dropped from the questionnaire due to less importance to current management concerns, and a few were added reflecting current management interests.

**Table 1. Sample sizes and response rates, by year of study, BMWC**

| | Year | | |
|---|---|---|---|
| | 1970 | 1982 | 2004 |
| Number of questionnaires mailed | 552 | 972 | 408 |
| Number completed and returned | 502 | 785 | 294 |
| Percentage completed and returned | 91% | 82% | 72% |

## Results

Although response rates declined over the three surveys, the 2004 survey still saw 72% of questionnaires returned (see table 1). Some characteristics of visitors to the "Bob" have changed over the years: for example, on average, visitors are older and have more years of education (see table 2). Significantly more of the 2004 visitors are in the 45 years and older group (around 50%). Most visitors to the Bob Marshall are male, although the proportion of female visitors grew from 20% in 1970 to 30% in 1984, and a little less than 30% in 2004.

In general, today's visitor is more likely to have previously visited the BMWC and other wildernesses (see table 2). Nearly all visitors in 2004 (91%) had previous experience in wilderness, whether at the Bob Marshall or elsewhere, and about 65% had previous experience at the "Bob."

Some visit characteristics also changed (see table 3). Although the "Bob" offers outstanding opportunities for multiday, horse-based travel,

**Table 2. Selected visitor characteristics[a], by year of study, BMWC**

| | Year | | |
|---|---|---|---|
| Characteristic | 1970 | 1982 | 2004 |
| Age, percent 45 and older[b] | 26 | 21 | 50 [± 4%] |
| Educational attainment, percent completing college and those with some graduate school | 41 | 47 [± 5%] | 62 [± 9%] |
| Sex, percent female | 20 | 30 | 29 [± 5%] |
| Previous experience, percent with prior BMWC visits[b] | 55 | 44 [± 5%] | 65 [± 5%] |
| Previous experience, percent with prior visits to any wilderness[b] | 78 | 78 [± 5%] | 91 [± 4%] |

a Confidence intervals, where known, shown at 95% level.
b Shows significant statistical difference, at 95% level, between 1982 and 2004.

**Table 3. Selected visit characteristics[a], by year of study, BMWC**

| | Year | | |
|---|---|---|---|
| Characteristic | 1970 | 1982 | 2004 |
| Travel by horseback, percent | 50 | 36 [± 7%] | 42 [± 2%] |
| Travel by raft, percent | 4 | 3 [± 2%] | 7 [± 2%] |
| Average length of stay, in nights | 4.1 [± 0.6] | 3.7 [± 0.5] | 3.3 [± 0.3] |
| Average size of group | 4.9 [± 0.7] | 4.3 [± 0.5] | 4.6 [± 0.4] |
| Use of outfitters, percent | 31 | 17 [± 4%] | 22 [± 4%] |

a Confidence intervals, where known, shown at 95% level.

the days of equal numbers of hikers and horse users have ended. In 1970 about half of the visitors used horses, but in 1982, only about 36% of visitors traveled by horseback. In 2004 this increased slightly to 42%. Floating the South Fork of the Flathead River is increasingly popular, with 7% of wilderness visitors in 2004 traveling by boat (raft, canoe, or kayak) compared with 3% in 1970 and 1982. We found that, on average, visitors' lengths of stay were shorter in 2004, down to 3.3 nights from 3.7 in 1982 and 4.1 in 1970. Nearly 35% of visitors contacted in 2004 were day visitors, compared to 22% in 1982 and 20% in 1970. Group size in the "Bob" has stayed somewhat stable, with an average of 4.6 in 2004, 4.3 in 1982, and 4.9 in 1970. Use of outfitters declined from 1970 to 1982 (31% of visits in 1970, 17% of visits in 1982), then with little change to 2004, when 22% of visitors had an outfitter or guide on their trip (see figure 1).

Respondents were asked to describe and evaluate conditions found on their visits to the BMWC. Whereas the number of other groups encountered on the trip increased, from an average of 1.3 in 1970, to 1.6 in 1982, and 2.3 in 2004 (see table 4), there was little change in the evaluations of these conditions. A slight majority felt that the number of people they encountered was "about right," with 24% saying they met too many, and 20% indicating it didn't matter one way or the other. The proportion preferring no other parties camping within sight or sound did not change significantly (86% in 1970, 81% in 1982, and 83% in 2004). Visitors who had visited the Bob previously were asked if they thought "the quality of this area" was getting better, about the same, or getting worse. In 1970 just over half felt conditions were about the same. This rose to just over three-fourths in 1982 and 2004.

Visitors had the opportunity to indicate how desirable or undesirable they considered some management actions (see table 5). Bob Marshall visitors continue to strongly reject issuing permits that list assigned campsites, with more than 70% rating this action undesirable. Limits on group size, however, were less objectionable, with only 19% saying they were undesirable in 2004 (relatively stable, compared to 19% in 1970, 22% in 1982). In 2004 29% of visitors found a policy of no fish stocking and of leaving barren lakes barren to be undesirable (compared with 48% in 1982 and 55% in 1970). Similarly, only 12% of 2004 visitors found natural forest fires started by lightning to be undesirable (23% in 1982 and 45% n 1970) (see figure 2). Support for visitor regulations that promote resource protection also seems to be increasing. In 2004 only 40% of visitors found a prohibition of camping within 200 feet of lakes, rivers, and streams to be undesirable, compared to 57% of 1982 visitors. Similarly, 34% of 2004 visitors found a ban on wood fires where firewood is scarce to be undesirable (down from 48% in 1982 and 46% in 1970).

## Discussion

Many of the trends seen at the BMWC mirror previous findings, but our investigations have raised some

**Figure 1—Around 22% of 2004 visitors to the BMWC had an outfitter or guide go with them, about the same percentage as in 1982. Photo by Josh Whitmore.**

**Table 4. Evaluation of conditions[a] during visits to the BMWC, by year of study**

| | Year | | |
|---|---|---|---|
| Dimension | 1970 | 1982 | 2004 |
| Average number of visitor groups encountered per day | 1.3 | 1.6 [± 0.3] | 2.3 [± 0.3] |
| Opinions about number of visitors encountered, percent stating "too many" | 24 | 24 | 24 [± 7%] |
| Preferred number of other groups camped nearby, percent stating zero | 86 | 81 [± 4%] | 83 [± 3%] |
| Perceptions of changing conditions,percent saying quality did not change | 52 | 76 [± 4%] | 75 [± 5%] |

a Confidence intervals, where known, shown at 95% level.

broad questions concerning interpreting and conducting trend studies. Hendee and Dawson (2002) noted a changing age and population structure in the United States, and we found this to be the case at the "Bob." This corresponds with a higher percentage of visitors with previous experience visiting wilderness, at both the "Bob" and elsewhere. What does this mean for the future? Does an aging population with greater experience levels imply greater commitment to wilderness in our society or less? What will the relationship between the next generation and wilderness be like?

The trend toward shorter visits to wilderness has been recognized previously (Roggenbuck and Lucas 1987; Hendee and Dawson 2002). However, many other characteristics of visits to the "Bob" have not changed. For example, group size and the percentage traveling with a guide or outfitter have changed little. Also, as Hendee and Dawson (2002) suggested, "Despite some managerial concerns about declining quality of wilderness conditions and experiences, there is little evidence that user dissatisfaction is negatively influencing wilderness use levels" (p. 403). The evaluations of visitors to the "Bob" have remained stable, despite encountering different conditions.

Support by visitors for group size limits remains high, and attitudes toward visitor regulations that promote resource protection seem to be increasing. Likewise, support is increasing for resource management policies that favor natural fisheries and natural fire regimes. This may be indicative of an increased understanding and appreciation of natural processes, and perhaps a shift in the values that visitors associate with wilderness (Watson 2000).

We found it difficult to exactly replicate previous sample plans, and we are not confident that the assumptions underlying those earlier sample plans were still applicable to a later study. Some sampling locations changed (such as changes in infrastructure at the trailhead and along the trail), and this may have changed the numbers and types of visitors using those locations. We necessarily used past estimated use levels to allocate sampling intensity across trailheads (as we did not know current use intensities). New constraints on sampling, such as increased awareness of safety concerns of field workers and differences in availability of housing for survey technicians, also limited our ability to exactly replicate earlier study designs. A major constraint was the budget allocated to accomplishing this trend study, possibly signifying an even

**Figure 2—Visitor support for natural forest fires started by lightning is increasing in the BMWC. Photo by Josh Whitmore.**

**Table 5. Visitor attitudes toward management policies, by year of study, BMWC**

| | | Year | | |
|---|---|---|---|---|
| Percent finding management policy undesirable | | 1970 | 1982 | 2004 |
| Visitor management policies | | | | |
| | Issue trip permits so visitors could only camp each night in the area assigned to them | 75 | 79 | 72 |
| | Allow visitors to catch fish to eat in the wilderness, but not to bring out | 30 | 26 | 13 |
| | Limiting the size of parties to 12 people | 19 | 22 | 19 |
| Resource management policies | | | | |
| | A natural fishery—no stocking and barren lakes left barren | 55 | 48 | 29 |
| | Natural forest fires started by lightning | 45 | 32 | 12 |
| Campsite management policies | | | | |
| | Prohibiting camping within 200 feet of lakes, Wild and Scenic Rivers, or streams | — | 57 | 40 |
| | Prohibiting wood fires where dead wood is scarce | 46 | 48 | 34 |
| Trail management policies | | | | |
| | A few trees blown down across the trail, maybe 1 or 2 per mile | 30 | 41 | 35 |
| | High standard trails (wide, steady grades, fairly straight) | 33 | 16 | 12 |
| | Low standard trails (somewhat like a game trail—narrow, grade varies, winding, not the shortest route) | 15 | 18 | 22 |

greater challenge in recognizing the value of trend studies by funding organizations or simply tightened budgets among federal management agencies.

Furthermore, as we designed the study within our constraints and analyzed data, we were confronted with a fundamental question of what trends are important to consider. That is, are trends in visitation or trends in visitors more important? Contact with some previous visitors who may now be recreating elsewhere, perhaps displaced by changing conditions, would provide different insight than gained in this study. Those still visiting may be more satisfied, more or less critical, or more or less experienced, than those now choosing to go elsewhere. However, panel studies that contact the same sample of visitors across time are particularly prone to difficult logistics and profound threats to external validity such as biases associated with "mortality" of respondents.

## Conclusions

Even considering the difficulties mentioned above, trend studies are of great importance to managers. Good stewards of the land need to know who is visiting the area and how their visits are changing. Understanding change in evaluations of conditions and perceptions of visitors are valuable components in any monitoring program, such as is commonly part of most planning approaches, such as the Limits of Acceptable Change (McCool 2005; Stankey et al. 1984).

Should studies indicate a change in visit or visitor characteristics, however, changes in management approaches should be carefully considered. Two dynamics in particular can be exacerbated by changes in management. First, displacement, where new management policies can displace existing groups, thus leaving only visitors who endorse those new policies. Similarly, cascading expectations, where the status quo serves as a standard for evaluations, without acknowledgment of what that starting comparison point represents.

Finally, it is not always clear what has caused changes in visit and visitor characteristics and in the attitudes and evaluations of those visitors. Large-scale social forces, well beyond the influence of wilderness managers, can be at play. For example, it may be more difficult for a family to schedule or afford travel for a two-week pack trip than it was in the past. Instead, that same family may be making more frequent, shorter visits to home-proximate wilderness. This is not to imply that those home-proximate experiences are less important or meaningful. Instead, this points out the need for resources to develop a good understanding of the relationship people have with wilderness, how it evolves across a person's life course and potentially across several wilderness areas, and the value of such knowledge to managers compared to additional one-time, single-area studies focused on current evaluations of conditions experienced. **IJW**

## Acknowledgments

Thanks to employees on the Flathead, Lolo, Helena, and Lewis and Clark National Forests for their assistance with this project and to the Aldo Leopold Wilderness Research Institute for technical and financial support.

REFERENCES

Borrie, William T., Stephen F. McCool, and Joshua G. Whitmore. 2006. Wildland fire effects on visits and visitors to the Bob Marshal Wilderness Complex. *International Journal of Wilderness* 12(1): 32–38.

Cole, David N., and Troy E. Hall. 1992. *Trends in Campsite Condition: Eagle Cap Wilderness, Bob Marshall Wilderness, and Grand Canyon National Park*. Research Paper INT-453. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Cole, David N., and Vita Wright. 2003. *Wilderness Visitors and Recreation Impacts: Baseline Data Available for Twentieth Century Conditions*. General Technical Report RMRS-GTR-117. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Dear, Chad, Stephen F. McCool, and William T. Borrie. 2005. Bob Marshall Wilderness Complex: 2003 visitor study. Unpublished report, College of Forestry and Conservation, the University of Montana–Missoula. Available online at http://www.fs.fed.us/r1/flathead/wilderness/bmwcomplex/meeting_notes/2003bmwcvisitorreport_4_1.5.pdf.

Hendee, John C., William R. Catton, Jr., Larry D. Marlow, and Frank Brockman. 1968. *Wilderness Users in the Pacific Northwest—Their Characteristics, Values, and Management Preferences*. Research Paper PNW-61. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station.

Hendee, John C., and Chad P. Dawson. 2002. *Wilderness Management: Stewardship and Protection of Resources and Values*. Golden, CO: Fulcrum Publishing.

Lucas, Robert C. 1980. *Use Patterns and Visitor Characteristics, Attitudes and Preferences in Nine Wilderness and Other Roadless Areas*. Research Paper INT-253. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

———. 1985. *Visitor Characteristics, Attitudes, and Use Patterns in the Bob Marshall Wilderness Complex, 1970–1982*. Research Paper INT-345. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

McCool, Stephen F. 2005. Social science research and planning in the Bob Marshall Wilderness Complex. *International Journal of Wilderness* 11(2): 28–29.

Roggenbuck, Joseph W., and Robert C. Lucas. 1987. Wilderness use and user characteristics: A state-of-knowledge review. In *Proceedings—National Wilderness Research Conference: Issues, State-of-Knowledge, Future Directions*, comp. Robert C. Lucas (204–245). July 23–26, 1985, Fort Collins, CO. General Technical Report INT-200. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

Stankey, George H., Stephen F. McCool, and Gerry L. Stokes. 1984. Limits of Acceptable Change: A new framework for managing the Bob Marshall Wilderness Complex. *Western Wildlands* 10: 33–37.

Watson, Alan E. 2000. Wilderness use in the year 2000: Societal changes that influence human relationships with wilderness. Wilderness Science in a Time of Change Conference—Volume 4: Wilderness Visitors, Experiences, and Visitor Management, comp. David N. Cole, Stephen F. McCool, William T. Borrie, and Jennifer O'Loughlin, (53–60). May 23–27, 1999, Missoula, MT. Proceedings RMRS-P-15-VOL-4. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Many of the trends seen at the BMWC mirror previous findings, but our investigations have raised some broad questions concerning interpreting and conducting trend studies.

WILLIAM T. BORRIE is professor in the Department of Society and Conservation at the University of Montana, Missoula, MT 59812, USA. Email: bill.borrie@umontana.edu.

STEPHEN F. McCOOL is emeritus professor in the Department of Society and Conservation at the University of Montana, and is currently camping somewhere in the Northern Rockies. Email: stephen.mccool@umontana.edu.

## WILD 9—World Wilderness Congress in Mexico during November, 2009

The WILD Foundation and its partner in Mexico—Unidos para la Conservation—have just announced that the 9th World Wilderness Congress will convene in Mexico in early November 2009. Two venues, Merida and Monterrey, are under consideration, and exact dates and place will soon be announced. As these details are finalized, they will be posted on www.wild9.org, www.wild.org, and in the *IJW*. The 9th WWC will be called **WILD 9—Siente, Piensa, Actúa!** (Feel, Think, Act!). The Chairman of WILD 9 is Dr. Exequiel Ezcurra, Director, Biodiversity Research Center of the Californias (San Diego Natural History Museum), and previously the Director of the Instituto Nacional de Ecología (Mexico). Planning is underway and the Wild 9 Executive Committee has scheduled its first meeting, after which the first Call for Papers will be issued. An international WILD 9 planning session is also scheduled during the IUCN's World Conservation Congress in Barcelona (October, 2008).

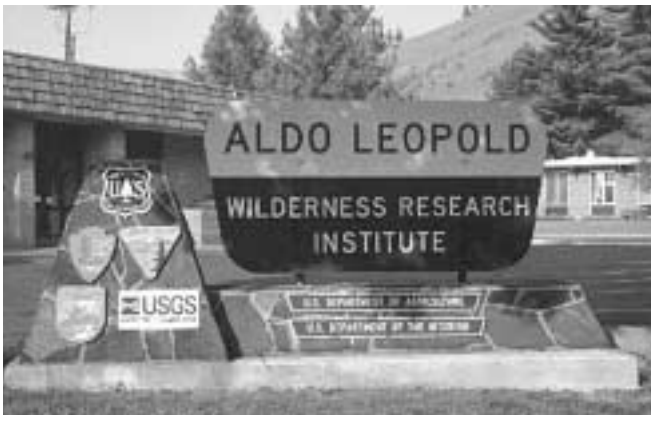
PERSPECTIVES FROM THE
ALDO LEOPOLD RESEARCH INSTITUTE

# An Outside Assessment of Wilderness Research in the Forest Service

BY DAVID J. PARSONS

In February 2007 the U.S. Forest Service (FS) hosted an external peer review of the agency's wilderness research program area. In response to Office of Management and Budget (OMB) and Office of Science and Technology direction to review all federal research programs, the FS has been systematically conducting external peer reviews of its various research program areas. Wilderness was identified as a candidate for such review due to its crosscutting nature; both across disciplines and its applicability and importance to the five federal agencies with management and science responsibilities for the National Wilderness Preservation System (Bureau of Land Management, Fish and Wildlife Service, National Park Service [NPS], U.S. Geological Survey [USGS], and FS). Monica Turner, a respected landscape ecologist and professor in the Department of Zoology at the University of Wisconsin, served as chair of the review panel. The six other panel members included three university faculty (Dorothy Anderson, Chad Dawson, Barry Noon) as well as representatives of the USGS (Jack Waide), NPS (John Dennis), and The Wilderness Society (Greg Aplet). The charge to the panel was to review the FS wilderness research program area, to assess the capacity of that program to address future needs, and to provide guidance for the future direction of wilderness research activities in the FS.

The review panel was provided background information on the organization and conduct of the FS's overall research program, including how wilderness research fits into the overall program. They were also provided an overview of interagency efforts to coordinate wilderness management and research activities through the Interagency Wilderness Policy Council, Interagency Wilderness Steering Committee, and the Arthur Carhart Wilderness Training Center and Aldo Leopold Wilderness Research Institute (ALWRI), both of which are managed by the FS, but receive support and oversight from all five federal agencies with wilderness responsibilities. The panel heard from each of these agencies regarding how FS research contributes to their overall wilderness programs. In addition to detailed written summaries of all wilderness-related research supported by the FS, the panel heard from, and questioned, FS scientists about the breadth and depth of the program.




The FS manages approximately 35 million acres (14.1 million ha) of congressionally designated wilderness,

representing about 18% of all FS lands. The panel explicitly recognized the unique contribution of wilderness to the American landscape, including the multiple values it provides and the statutory responsibility of the agency to maintain the wilderness character of these lands. The panel further recognized that "sound stewardship requires a detailed knowledge base from which to manage," and that the FS "is well positioned to have a well-defined, meaningful and high profile wilderness research program and to continue its leadership role among the federal wilderness management agencies." Whereas the primary focus of the ALWRI has traditionally been on science to support wilderness stewardship, recent efforts have expanded into areas related to the role of wilderness in larger social and ecological systems as well as understanding relationships and values people place on wilderness. The panel, although recognizing this work, identified a need for a more coordinated and comprehensive wilderness research agenda that includes work conducted across all FS Research Stations. They recommended that a comprehensive wilderness research program should include three complementary components:

1. **Science for wilderness:** science that informs effective stewardship and management of wilderness, including the status and trends of ecological conditions
2. **Wilderness for landscape sustainability:** science that improves understanding of the contributions of wilderness to the ecological processes, services, and integrity of larger landscapes
3. **Wilderness for science:** science that uses wilderness and similarly managed lands as laboratories to understand the causes and consequences of environmental change, minimally confounded by other influences

In noting the crosscutting nature of wilderness, the panel recommended that "wilderness research be substantively integrated into FS Research and Development efforts to understand the effects of global climate change … and the effects of human land use and activities." They recognized the scientific value of wilderness as the "minimally disturbed end of the continuum represented by the wildlands-rural-urban gradient." Among the many specific recommendations provided by the review panel, were creation of a service-wide searchable database of projects, findings, and outcomes relevant to wilderness; development of improved mechanisms for creating research collaborations and partnerships across federal agencies and with universities; and improved communication and collaboration between FS research and wilderness managers, including a process for setting national wilderness research priorities and regular meetings of wilderness scientists and managers.

***Continued on page 39***

## A Comment by an External Peer Review Panel Member

BY CHAD P. DAWSON

Serving on the External Peer Review Panel for the Wilderness Research Program Area was challenging—especially reading and trying to understand and comprehend the breadth and depth of the many past and ongoing USDA Forest Service (FS) funded research projects in and about wilderness. We had come together as a panel to review the Wilderness Research Program, and, even though we were warned that there was not a formal "program," I was surprised to see how much had been accomplished and, more importantly, to see the possibilities of what more could be done if, in fact, there was a formally articulated and administered Wilderness Research Program within the FS. As a panel, we readily recognized the valuable work of the Aldo Leopold Wilderness Research Institute, and we also unanimously identified the compelling need for a more coordinated and comprehensive wilderness research agenda that includes studies conducted across all FS Research Stations and the entire Research and Development arm of the FS. As the panel report indicates, the focus and enthusiasm of the panel was for what could be accomplished through FS research leadership to support the stewardship and management of the National Wilderness Preservation System, which includes 18% of the lands managed by the FS and more than 4.5% of the U.S. landscape.

CHAD P. DAWSON is a professor at SUNY College of Environmental Science and Forestry, Syracuse, NY, a member of the External Peer Review Panel for the Wilderness Research Program Area, and managing editor of *IJW*.

# New Opportunities for Educating Future Wilderness and Wildland Managers in a Changing Technological World

BY CHAD P. DAWSON

## Introduction

The approach to educating college students is shifting as technology and the interests and skills of younger learners require educators to adapt their teaching styles and techniques. Advances in learning theory and new student skills require educators to adjust to these changes. Changes in the use of high technology communication in education, business, management, and general society is changing our future workforce and the way they will accomplish their work.

What is not commonly understood is that the use and demonstration of high technology in education has some unintended, and possibly threatening, outcomes for educating future wilderness and wildland managers. For example, increasing reliance on "instant" access communication and information retrieval may predispose managers to expect such capabilities wherever they are in their workplace, which for wilderness managers is often in extremely remote areas. In turn, the increasing availability of high technology equipment, and the associated operational skills, influences the culture, atmosphere, and standard operating procedures for public land managers in the office, in the field, and when interacting with visitors.

Public land managers must be aware of how their actions will affect visitor experiences through the management practices and techniques they adopt, such as communication for enforcement, search and rescue, education, and other purposes. Discussion of these impacts must be included in education and training processes. Furthermore, intergenerational differences must be acknowledged and considered when decisions about "minimum tool" approaches to management in wilderness and wildland areas are made.

Each generation generally views the technology present while they were growing up and during their school years as acceptable and a "given" baseline condition (Oblinger 2003). The example of high-speed communication and information retrieval will be used here to illustrate a discussion of how these kinds of changes could affect future wilderness managers. The intent here is not to suggest that we shun technology, but rather that we understand its effects on management and visitor experiences, and look at some examples of how educational processes can address some of these challenges when teaching wilderness and wildland public land managers.

## Today's College Students

The current generation of college students was born in or after 1982 and has been variously referred to as the Millennial, NeXT, or Net generations. Every generation has its generalized characteristics, differences in attitudes, preferred learning styles, and historic and cultural events that shaped its collective perspective (Coomes 2004; Coomes and DeBard 2004). The Millennial generation differs from the previous generations (Generation X, birth years 1961 to 1981; Boomers, birth years 1943 to 1960) in some significant ways.

Today's college students are early adopters of computer and communication technology with the majority of

them initiating use of this technology in school and then going on to be heavy users for Internet, cell phones, email, instant messaging, computer games, and other activities as an integral parts of their lives (Oblinger and Oblinger 2005; Prensky 2001). By the time these Millennial students reach college, Prensky (2001) refers to them as "digital natives" because they are very adept at a digital language that is not common to most other older generations, whom he refers to as "digital immigrants" because it is a new language to them. The class of students who entered college in the fall of 2006 (see figure 1) generally think of the world of communication as wireless and are always connected through communication technology. To them, text messaging, instant messaging, and cell phones have always existed (Oblinger 2003; Oblinger and Oblinger 2005; Jones 2002).

Each generation has a personality or generalized characteristics (Howe and Strauss 2003). The generalized character and tendencies of any generation shapes the social, political, and economic world they inherit. The Millennial generation had 6.9 million students in colleges and universities by 2002 and is projected to increase to 10.5 million by 2010 (National Center for Educational Statistics 2006). As the largest generation in the history of the United States, they number about 80 million Americans (U.S. Bureau of the Census 2004) and will begin to establish themselves in professional and administrative positions by 2012.

The characteristics of the Millennial generation have been summarized fairly positively by some educational authors (Howe and Strauss 2003; Coomes and DeBard 2004) and more critically by others as the research and educational feedback has accumulated (Taylor 2006); they note that Millennial students can (1) act as informed and involved consumers regarding education; (2) expect education to be entertaining; (3) multitask and shift attention rapidly; (4) seek immediate gratification of needs; (5) exhibit poor long-term planning, critical thinking, and problem-solving skills; (6) constantly seek personal connections and to be socially involved over various forms of communication; (7) demonstrate open, adaptable, and pragmatic approaches to experiential problem solving; (8) be skeptical about information and more often trust personal experience; (9) act cynically toward social institutions; (10) show concern about safety; (11) be stressed about the expectations placed upon them; and (12) disengage intellectually and academically.

Some of the characteristics of staying constantly connected and heavy multitasking have affected the Millennial generation more than other generations. Prensky (2001) asserts that the multitasking and different experiences of the Millennial generation have led to different brain pathways and patterns of thinking and learning. Each generation generally has different patterns of thinking due to their shared and different life-altering events, shared historical events, and the societal values of the time. Neuroplasticity refers to the capacity of the brain to change. It is greatest in youth and allows individuals to adapt to their experiences, surroundings, learning, and societal value systems. The modern scientific interest in the concept of neuroplasticity is that mental activity changes the brain and that it can be retrained. Some writers contend that while our capacity to change declines with age, there is always some capacity to adapt and work consciously at change (Begley 2007). The Millennial generation exhibits changes in thinking processes and skills from other generations and have likely developed different brain pathways (Prensky 2001).

**Figure 1—A typical multitasking situation for many Millennial students—talking on a cell phone while listening to music, working online on a class project, and instant messaging classmates. Photo by Chad Dawson.**

## Changing Training and Educational Approaches

The Millennial generation has developed different ways of processing information and accomplishing tasks

Will we be able to consciously transmit the values, benefits, knowledge, and wisdom to sustain and steward wilderness characteristics and conditions to the Millennial generation and other generations?

**Figure 2—Students on a wilderness experience trip as part of a college course on wilderness management. Photo by Chad Dawson.**

than previous generations. That leads to us to trying to anticipate some of the challenges of engaging and involving Millennial students and other generations in wilderness and wildland management. We can likely resolve the challenges of storing, accessing, and transmitting information at high speeds to interested students, and they are likely to be skilled at accessing the information. However, will we be able to consciously transmit the values, benefits, knowledge, and wisdom to sustain and steward wilderness characteristics and conditions to the Millennial generation and other generations?

Some of the adaptations suggested in general education settings (Carlson 2005; Howe and Strauss 2003; Oblinger 2003; Oblinger and Oblinger 2005; Taylor 2006; The New Media Consortium 2007; Wilson 2004) can be adapted for use in wilderness and wildland training programs. Here are examples of some of the things we could do to be more effective in the future:

- Use technology in educational and training programs that fits the skills and expectations of the Millennial generation, but also have detailed discussions of how technology and communication methods will affect wilderness conditions and experiences for visitors and managers, both positively and negatively.
- Foster social connectivity and interaction among wilderness professionals while simultaneously developing the skills and expectations that field conditions require—self-reliance and independence, in many cases.
- Develop critical thinking and inductive and deductive reasoning to enable students to build the linkages between policy, research, planning, and management.
- Expand digital and open access information depositories about wilderness information and research results, such as www.wilderness.net and leopold.wilderness.net.
- Develop more educational programs and information that are readily accessible in online systems and electronic files, such as the Arthur Carhart Wilderness Training Center site (carhart.wilderness.net/index.cfm) and not just in printed books and materials.
- Teach that the context of information and knowledge about wilderness systems is as important as individual facts and skill sets about planning and management.
- Develop more access to scientists and educators on a real-time basis for information sharing and explanations of scientific data application and limitations; augment the transmission of wilderness wisdom based on integrating the results of scientific research with management decision making.
- Directly address the apparent conflict of field staff using technological communication equipment in wilderness that may conflict with visitors' interest in solitude and remoteness or may be viewed very differently by staff and visitors from different generations.
- Develop older-generation mentors to work with younger generations of staff to transmit the experiences, values, and benefits of wilderness stewardship and preservation through contact and fieldwork that shares the heritage and culture of wilderness experiences (see figure 2).
- Continue fostering the establishment of a wilderness professional organization that supports communication and interaction among wilderness planners, managers, interpreters, maintenance, and enforcement staff.

Recruiting good, qualified students will not be easy because although interest in environmental and natural resources issues is high among high schools students currently, actual interest in starting such a career is low (Hager, Straka, and Irwin 2007). We need to work at recruiting, training, and mentoring the best students we can find in order to assure the future of wilderness areas and programs such as the 107-million acre (43.3 million ha) National Wilderness Preservation System.

Many natural resources educational programs are attempting to set new directions in more comprehensive and challenging programs to ensure that students are well trained (Jacobson 1995); however, much remains to be done in revitalizing wilderness programs in colleges and universities (Dawson and Hendee 2004), as well as in state and federal

agency training programs, if we are to have well-trained and dedicated wilderness professionals in the coming decades. **IJW**

## Acknowledgments

This article is based on a presentation made at the George Wright Society Biennial Conference, April 16–20, 2007, St. Paul, Minnesota.

### REFERENCES

Begley, S. 2007. *Train Your Mind, Change Your Brain: How a New Science Reveals Our Extraordinary Potential to Transform Ourselves*. New York: Ballantine Books and Random House.

Carlson, S. 2005. The Net generation in the classroom. *The Chronicle of Higher Education* 52(7): A34–A37.

Coomes, M. D. 2004. Understanding the historical and cultural influences that shape generations. *New Directions for Student Services* 106: 17–31, accessed January 22, 2007, from www3.interscience.wiley.com.

Coomes, M. D., and R. DeBard. 2004. A generational approach to understanding students. *New Directions for Student Services* 106: 5–16, accessed January 22, 2007, from www3.interscience.wiley.com.

Dawson, C. P., and J. C. Hendee. 2004. Wilderness-related courses in natural resource programs at U.S. colleges and universities. *International Journal of Wilderness* 10(1): 33–36.

Hager, S., T. Straka, and H. Irwin. 2007. What do teenagers think of environmental issues and natural resources management careers? *Journal of Forestry* 105(2): 95–98.

Howe, N., and W. Strauss. 2003. *Millennials Go to College*. Great Falls, VA: American Association of Registrars and Admissions Officers and LifeCourse Associates.

Jacobson, S. K. 1995. New directions in education for natural resources management. In *A New Century for Natural Resources Management*, ed. R. L. Knight and S. F. Bates (pp. 297–310). Washington, DC: Island Press.

Jones, S. 2002. The Internet goes to college: How students are living in the future with today's technology. Pew Internet and American Life Project, accessed January 22, 2007, from www.pewinternet.org.

National Center for Educational Statistics. 2006. Digest of education statistics: 2006. Retrieved July 22, 2007, from nces.ed.gov/programs/digest/d06.

Oblinger, D. 2003. Boomers, Gen-Xers and Millennials: Understanding the "new students'." *Educause Review* 38(4): 36–45.

Oblinger, D. G., and J. L. Oblinger, eds. 2005. Educating the Net generation. Educause e-book accessed January 22, 2007, from www.educause.edu/educatingthenetgen.

Prensky, M. 2001. Digital natives, digital immigrants. *On the Horizon* 9(5): 1–6, NCB University Press, Nebraska, accessed January 22, 2007, from www.marcprensky.com/writing.

Taylor, M. L. 2006. Generation NeXt comes to college: 2006 updates and emerging issues. In *A Collection of Papers on Self-study and Institutional Improvement*, volume 2, ed. S. E. VanKollenberg (pp. 48—55). Chicago: The Higher Learning Commission, accessed July 20, 2007, from http://www.taylorprograms.org/images/Gen_NeXt_article_HLC_06.pdf.

The New Media Consortium. 2007. *The Horizon Report*, 2007 edition. Produced by The New Medical Consortium and EDUCAUSE Learning Initiative, accessed January 22, 2007, from www.educause.edu.

U.S. Bureau of the Census. 2004. U.S. interim projections by age, sex, race, and Hispanic origin: 2000 to 2050. Washington, DC: U.S. Bureau of the Census, accessed May 31, 2007, from www.census.gov/ipc/www/usinterimproj.

Wilson, M.E. 2004. Teaching, learning, and Millennial students. *New Directions for Student Services* 106: 59–71, accessed January 22, 2007, from www3.interscience.wiley.com.

CHAD P. DAWSON is the managing editor of *IJW* and a professor at the SUNY College of Environmental Science and Forestry, Syracuse, NY, USA. Email: cpdawson@esf.edu.

***Continued from ALDO LEOPOLD, page 35***

The panel recognized that the FS "has been conducting wilderness-related research for many years" and that there are "excellent ongoing programs from which to frame a focused wilderness research and development program." They recognized that important wilderness-relevant research occurs in all the FS Research Stations, but many of the scientists doing this work "do not consider their work to be wilderness research." The panel stated that the FS has a great opportunity to provide leadership among the federal agencies by demonstrating "strong commitment and support for this research area." Special acknowledgment was given to the success of the ALWRI in providing focus for the "science for wilderness" component of wilderness research.

In addition to using this assessment as a measure of program performance to OMB, the FS has committed to "work to implement the panel's recommendations" and use the information provided in planning and priority identification. A committee of FS scientists and research managers has been constituted to review the panel recommendations and to make suggestions for possible use within the agency. **IJW**

### REFERENCE

Turner, M. et al. 2007. *Report to USDA Forest Service Research and Development: External Peer Review Panel for the Wilderness Research Program Area*. Submitted April 4, 2007, from meeting of February 20–22, 2007 in Arlington, Virginia.

DAVID J. PARSONS is the director of the Aldo Leopold Wilderness Research Institute, USDA Forest Service, Rocky Mountain Research Station. Email: djparsons@fs.fed.us.

# A Perspective on Wilderness in Europe

BY FRANCO ZUNINO

Promoting wilderness conservation in Italy, a country with a long history of civilization and settlement, is a significant challenge. Few very large areas remain, almost none of them in a pristine state. Moreover, there is no obvious Italian equivalent to the word *wilderness* and no deeply ingrained wilderness culture as there is in such countries as the United States or Canada. Nonetheless, finding a way forward for a wilderness conservation strategy is a high priority. Italy, in particular the Alps in the northern parts of the country and in the central Appennini Mountains, can provide critical habitat for large mammals, such as bears and wolves. Italy is an integral part of the Mediterranean Hotspot, and has many endemic species—and, unfortunately, many species on The World Conservation Union's (IUCN) Red List: 12 of 39 threatened European mammal species, 15 of the 29 threatened bird species, and 4 of the 14 threatened reptile species (Italian Ministry for the Environment and Territory 2005). As a whole, despite its relatively small size, Italy contains more than one-third of all European fauna (Ministry of the Environment 1998).

Despite the obvious challenges, Italy has many rural areas throughout the country that still contain wildlands (see figure 1), and many local human populations have a deep appreciation for these areas. As a result, there is a strong basis for wildlands conservation in Italy, and it has been possible to implement a gradual, highly effective strategy to start securing some of Italy's remaining wild areas, and just as importantly, to develop a wilderness conservation ethic.

Many of the wilderness areas that have been established in Italy are small by international conservation standards, and some of these units might not qualify as wilderness in other countries. However, despite their small size, many of these areas can be expanded over time, or are already part of a larger protected complex. As such, they are in many respects building blocks: providing a foundation for larger wilderness areas to be assembled in the years to come, or just as importantly, serving as a tool for developing a wilderness conservation culture in Italy.

**Franco Zunino in the Val di Vesta Wilderness Area. Photo by Riccardo Tucci.**

An incremental approach to wilderness protection is a necessity for a highly populated country that does not have a culture of wilderness conservation (see figure 2). The wilderness ethic must be nurtured and a wilderness network must be established gradually, as awareness, understanding, and acceptance of the concept grows. The good news is that this incremental approach is producing results: new wilderness areas are being established on a regular basis in Italy (see figure 3), providing a model that can followed not only in new areas throughout the country, but throughout the European Union as well.

## Origins of the Wilderness Movement in Italy

Italy's wilderness movement began with a booklet written by the author (then in the staff of the Abruzzo National Park, as expert naturalist) entitled "Wilderness, a New Necessity for the Preservation of Natural Areas" (Zunino 1980), and published in 1980 by the former National Department of Agriculture and Forests (which today is divided between the Department of Agriculture and the Department of the Environment). The booklet briefly

illustrated the American history of the wilderness philosophy and concept, the importance of wilderness areas, and the history of the U.S. Wilderness Act of 1964. The booklet also illustrated the first proposal for wilderness areas in Italy, as well as criteria for future European wilderness areas.

In 1981 the author began publishing and distributing a newsletter entitled "Documenti Wilderness" (Wilderness Papers), designed to raise awareness among Italian environmentalists about both the wilderness philosophy and the broad parameters of wilderness conservation and management. At the Third World Wilderness Congress (WWC) in Scotland in 1983, the author presented "A Wilderness Concept for Europe" during the Congress's plenary sessions, which was later included in the Congress's proceedings (Zunino 1984). Momentum from the 3rd WWC inspired the author and several friend and colleagues to found an Italian wilderness society: Associazione Italiana per la Wilderness (AIW), which then began working to establish wilderness areas in Italy.

**Figure 1—The Pizzo Madama Marta peak in the Monte Maggiore Wilderness Area. Photo by Anna Filomena De Simone.**

## Wilderness Areas in Italy

By December 2006 there were 42 wilderness areas covering more than 29,000 hectares (71,600 acres) in seven regions of Italy and 15 provinces—from the Alps to the coast, to the central-southern Appenine Mountains (see figure 4). The very first Italian wilderness area was the Fosso del Capanno Wilderness Area, established in 1988, now covering 760 hectares (1,877 acres). This area was first established via a management agreement with a private foundation and covering 118 hectares (283 acres). The area was expanded when the Regional Forest Authority classified an additional 259 hectares (622 acres), and then expanded again when the Municipality of Bagno di Romagna added another 383 hectares (919 acres) (Zunino 1995). The largest wilderness area is the Ausoni Wilderness Area, with 4,230 hectares (10,338 acres). The smallest is Brizzulera at 0.3 hectare (0.741 acre). Most of these areas are protected by municipalities, regional forestry authorities, or private landowners, including, in some cases, AIW. Only one designation is by a national park authority (Vesuvio). The largest de facto roadless, wild area in Italy is the Val Grande National Park at 14,700 hectares (36,300 acres). AIW played a key role in the protection of the first 11,700 hectares (29,000 acres) of this park (see figure 5), an effort that was strongly supported by several WWC resolutions.

**Figure 2—A creek and ravines in the Burrone di Lodisio Wilderness Area. Photo by Riccardo Tucci.**

## Definition of Wilderness and Allowed Uses

AIW defines a wilderness area as an area with no roads or other industrial infrastructure, no houses or permanent buildings, no ski resorts, no wind-power mills, no industrial artifacts, and no motorized use of the land. AIW adopts strict protection measures to preserve the territorial

**Figure 3—A boundary cartel of the Val di Vesta Wilderness Area. Photo by ERSAF.**

integrity of the areas. However, AIW is generally open to a sustainable use of renewable natural resources, such as hunting, fishing, gathering forest products, some logging, and grazing. With respect to logging, AIW generally does not allow any cutting in wilderness areas managed by the regional forest authorities, on lands for which AIW holds an easement, or on lands that AIW acquires directly. For other wilderness areas, only very small parcels of coppice woods are clear-cut, and mature forests are always logged very selectively. Grazing generally has low impacts and in some cases is useful from a biodiversity perspective.

These criteria take into account the fact that in Italy local people are often in favor of the idea of preserving their wildlands if protection does not mean a strict no-use policy of renewable natural resources, as it does in national or regional parks and nature reserves. This approach of respecting traditional resource use is consistent with the approach taken by many countries around the world, from Finland to Mexico, to achieve a balance between wilderness values and local uses. However, AIW always requests of the authorities who designate wilderness areas that at least part of the area must be preserved as a core area (46%) without any logging or other loss of habitat, and that at least some portion of the wilderness area (37%) must be closed to hunting.

## Designation Process

Italy's wilderness areas have not been created by legislation, but rather by internal administrative initiatives of the authorities that manage municipal, regional, or federal lands. As a result, most designations are made by decrees, drafted in partnership with AIW based on the criteria above, and issued by municipalities or regional forestry authorities. In some instances, wilderness areas designated by municipal councils are then added into town planning guidelines and regulations. There are of course some exceptions to this rule: some wilderness areas are established entirely privately by easements held by AIW or by private philanthropies, or in a few cases through direct land acquisition of wooded areas by AIW. As mentioned above, one wilderness area was established in a national park.

Direct land acquisitions and wilderness areas created by easement are indefinite in duration. Designations by municipal councils or regional authorities are ideally indefinite, although their status could in principle be revoked. In practice this almost never happens. Almost all the wilderness areas have been approved unanimously with support from both the majority and minority parties on the municipal councils. To date, only one municipality has ever attempted to revoke a wilderness designation (to build a wind energy farm); however, AIW successfully intervened to prevent this from happening.

In a very positive development, a regional Wilderness Act has been proposed in the Lazio Region, which has the highest number of wilderness areas. Because of a change in government, the Lazio Region has yet to act on this proposal, although AIW has hopes that this could be the first step toward a regional legislation, and ultimately perhaps a national law. Another possibility for legislation is emerging in the Friuli Venezia Giulia Region, where in December 2006 a decree (Friuli Venezia Giulia Regional Executive Board 2006) was

By December 2006 there were 42 wilderness areas covering more than 29,000 hectares (71,600 acres) in seven regions of Italy and 15 provinces.

**Figure 4—The Val di Vesta drainage, with a reservoir in the foreground, in the Val di Vesta Wilderness Area. Photo by Riccardo Tucci.**

passed to authorize a program for the designation of regional wilderness areas, and which identified nine areas for a total of 4,103 hectares (10,134 acres). These areas may be the most similar to the U.S. wilderness areas, they would be the first designations made by a regional government (rather than a regional land management authority), and, therefore, this initiative represents the highest legislative point reached in Italy to date.



## Conclusion

Thirty years ago, there was almost no dialogue in Europe about wilderness areas. Certainly there was no discussion of any sort about wilderness in Italy, and very few people even knew the term existed. Today, every environmentalist in Italy is familiar with the term, literature on the wilderness concept is developing, and experiential wilderness trail programs are gaining in popularity. In 2005 the Italian government officially recognized the AIW as an official environmental preservation association through a decree from the Department of the Environment. And some organizations are even beginning to speak about the necessity of a wilderness areas concept by national law.

There is much work yet to do, both at the policy level and in terms of designating new wilderness areas in Italy. Nonetheless, it is important to take stock of the successes to date, and to recognize the fact that we have successfully adopted the philosophy of Aldo Leopold, who referred to a wilderness area as "a continuous stretch of country preserved in its natural state, open to lawful hunting and fishing, devoid of roads, artificial trails, cottages, or other works of man" (Leopold 1921). **IJW**

**Figure 5—A wild aspect of the Corni di Nibbio peaks in the Val Grande National Park, saved by an AIW and WWC battle. Photo by Riccardo Tucci.**

REFERENCES

Friuli Venezia Giulia Regional Executive Board (Delibera della Giunta Regionale). 2006. Decree no. 3117/2006.

Italian Ministry for the Environment and Territory. 2005. Five years to make a difference, Italy launches countdown 2010 initiative to halt the loss of biodiversity. 13 June 2005 Montecatini, Italy.

Leopold, A. 1921. The wilderness and its place in forest recreation policy. *Journal of Forestry.* reprinted in *The River of the Mother of God and other Essays by Aldo Leopold,* 1991, ed. S. Flader, and J. B. Callicott (78). Madison: University of Wisconsin Press.

Ministry of the Environment. 1998. *Italian National Report on the Implementation of the Convention on Biological Diversity.* Nature Conservation Service, Ministry of the Environment.

Zunino, F. 1980. *Wilderness, a New Necessity for the Preservation of Natural Areas.* Italy: National Department of Agriculture and Forests (in Italian).

Zunino, F. 1984. A wilderness concept for Europe. In *Wilderness—The Way Ahead: Proceedings of the 3rd World Wilderness Congress,* ed. V. Martin and M. Inglis (pp. 61–65), Forres, Scotland: Findhorn Press and Middleton, WI: Lorian Press.

Zunino, F. 1995. The wilderness movement in Italy—A wilderness model for Europe. *International Journal of Wilderness* 1(2): 41–42.

FRANCO ZUNINO is the founder of Associazione Italiana per la Wilderness.

An incremental approach to wilderness protection is a necessity for a highly populated country that does not have a culture of wilderness conservation.

# Announcements

COMPILED BY GREG KROLL

## Nominations Sought For Wilderness Stewardship Research Award

The U.S. Forest Service is seeking nominations for the Excellence in Wilderness Stewardship Research Award. The award is co-sponsored by the *International Journal of Wilderness* and the USDA Forest Service. Wilderness Stewardship Research Award nominations will be accepted through January 31, 2008 for accomplishments in calendar year 2007. This award recognizes excellence in an individual or team wilderness research accomplishment or research accomplishment in related fields that has direct application to U.S. wilderness. Employees of the Federal and State governments, other private or public organizations, and private individuals are eligible under five criteria: (1) ability to identify management implications of the research; (2) creativity and innovation in scientific method; (3) effectiveness of research accomplishments in addressing wilderness stewardship issues of critical importance; (4) effectiveness in communicating research results to management; and (5) where appropriate, an interdisciplinary design of the research project occurred recognizing the interactions between the physical, biological, and social components of the wilderness resource. To obtain specific instructions for submitting nominations and to submit nominations, contact Alan Watson, Aldo Leopold Wilderness Research Institute (awatson@fs.fed.us).

## Nominations Solicited for the Keith Corrigall Wilderness Stewardship Award

The *International Journal of Wilderness* and The WILD Foundation seek nominations for the "Keith Corrigall Excellence in Wilderness Stewardship Award" to honor persons whose efforts to protect and manage wilderness are worthy of special recognition. The award honors the late Keith Corrigall, who was wilderness branch chief for the Bureau of Land Management during that agency's formative years of their wilderness program from the mid 1980s to mid 1990s.

Keith was a strong leader and advocate for wilderness education, protection of wilderness and wilderness study areas, low impact use of all public lands and wilderness skills training. His influence extended beyond BLM to all the wilderness agencies, universities, and environmental organizations. Keith's quiet determination, passion and high standards for wilderness and all resource management provided leadership and mentoring to all his colleagues and cooperators. Rarely outspoken, he set an outstanding example of dependability, vision and professionalism that charted direction and fostered cooperation.

The Award is sponsored by the *International Journal of Wilderness* and The WILD Foundation and given annually to an individual or team of persons whose efforts to protect and/or steward wilderness is worthy of special recognition. Nominees may be professionals from any agency, consultants, agency partners or volunteer citizens involved in wilderness work. Nominations are solicited until January 31, 2008 for the 2007 award.

Submit a 500 word statement and seconding letter titled "Nomination for The Corrigall Wilderness Stewardship Award" directly to the *IJW* Managing Editor [cpdawson@esf.edu], describing why the award is deserved, with complete snail mail, e-mail and telephone contact information for the nominee[s] and the person[s] making and seconding the nomination. The nominations will be evaluated with the involvement of appropriate wilderness agency personnel and the *IJW* Editorial Board.

## Izembek Wilderness Again Under Attack

Izembek National Wildlife Refuge covers 315,000 acres (121,410 ha) of Alaska's Aleutian Peninsula, of which 300,000 acres (127,480 ha) were designated as wilderness in 1980 under the Alaska National Interest Lands Conservation Act. Although it is the smallest of Alaska's refuges, it is also one of the state's most ecologically unique reserves. At the heart of the refuge is the 150-square mile

**Submit announcements and short news articles to GREG KROLL, IJW Wildernss Digest editor. E-mail: wildernessamigo@yahoo.com**

(38,850 ha) Izembek Lagoon, where shallow, brackish water covers one of the world's largest beds of eelgrass, creating a rich feeding and resting area for hundreds of thousands of waterfowl. Virtually the entire population of Pacific black brant, Taverner's Canada goose, and emperor goose inhabit the lagoon each fall. Refuge headquarters and the local airport are located at Cold Bay, adjacent to the refuge. King Cove, a village of 550 full-time Aleut and non-Aleut residents, lies across the bay from the Cold Bay community. Since the late 1990s, King Cove residents have pushed for the construction of a one-lane, nine-mile gravel road from their village to Cold Bay, as a direct way to access the all-weather airport during medical emergencies. The road would pass through designated wilderness in violation of provisions in the Wilderness Act. Consequently, Alaska's two senators and one congressman have introduced bills that would exempt the road from the act's road-building prohibition. In an attempt to resolve the issue, Congress allocated $37.5 million in 1998 to build a medical facility in King Cove, construct a road to a landing, and provide a hovercraft to take residents across the bay to the Cold Bay airport, even in bad weather. However, King Cove officials say the community has been unable to attract a doctor, and has had difficulty keeping the hovercraft running. Environmentalists fear that allowing construction of the road would set an unacceptable precedent, making all federal wilderness areas vulnerable to development at the whim of Congress. According to Evan Hirsche, president of the National Wildlife Refuge Association, "If this crucial portion of Izembek can't be protected as wilderness, then wilderness everywhere is threatened." Further complicating the issue is the Peter Pan Seafoods cannery in Cold Bay, one of the largest canneries in North America. Opponents of the road fear the cannery might eventually want to truck salmon, salmon roe, and king crab, as well as employees, to and from the Cold Bay airport. (Sources: *Washington Post,* July 23, 2007; http://www.fws.gov/refuges/profiles/index.cfm?id=74520, and http://izembek.fws.gov)

## Ski Film Permit Denied on Wilderness Impact Grounds

Colorado's White River National Forest has denied a request to film skiing on the forest's 14,000-foot (4270 m) peaks. Forest supervisor Maribeth Gustafson stated that normally staff works with filmmakers to modify their plans to match land management goals, but in this case, the filming had taken place before the special use authorization was requested. Filmmaker Ben Galland's request to photograph skier Chris Davenport involved the use of a helicopter to film skiing on peaks located in designated wilderness. According to forest spokesman Rich Doak, use of low-flying helicopters for commercial filming over, or immediately adjacent to, wilderness areas does not promote the concept of "primitive recreation" as outlined in the Wilderness Act. Doak stated that "the film does not promote wilderness values or ethics but rather focuses on the concept of the 'ski challenge.' In order to be beneficial to wilderness, a film must benefit wilderness values, including concepts such as solitude, untrammeled nature and the absence of urbanism." Doak explained that the White River Forest Plan instructs that certain parts of wilderness areas be minimally used, and because many of those areas are peaks more than 14,000 feet high, "by approving a film that promotes additional use of these areas, we would only be contributing to loving these wild places to death." Skier Davenport says he will comply with the Forest Service decision, even though he feels strongly that the film would have promoted wilderness values. "I'm a little disturbed by their take on that," he said. (Sources: http://www.fs.fed.us/r2/whiteriver/news/2007/20070430_ski_permit_denied.shtml, and *Aspen Times,* April 30, 2007)

## Opposing Groups Spar over Guzzlers

Arizona's Kofa National Wildlife Refuge is again in the news: last time it was over Web cams in wilderness (*IJW* Digest, August 2007), and now it's over guzzlers, those artificial water sources intended to benefit wildlife. The U.S. Fish and Wildlife Service and Arizona Game and Fish Department announced in June 2007 the completion of a new 13,000-gallon (49,200 lt) watering station in the Kofa Wilderness. Federal and state officials said the construction of a second guzzler was underway. On June 15, the Arizona Wilderness Coalition and Wilderness Watch asked the U.S. District Court in Arizona for a temporary restraining order halting the new developments, stating that backhoes, other heavy equipment, and human-made structures are not normally allowed in designated wilderness. Coalition executive director Kevin Gaither-Banchoff said his organization is primarily concerned with the way the decision was made in secret. "We believe more public involvement and a more thorough environmental analysis is needed," he said. According to Wilderness Watch, agency officials responded, "We cannot talk about the project for security reasons and we

cannot tell you why." On June 19, the U.S. Sportsmen's Legal Defense Fund (the litigation arm of the U.S. Sportsmen's Alliance Foundation) and several other groups filed to join the suit, claiming the guzzlers are critical to the survival of bighorn sheep and other desert wildlife. According to U.S. Sportsmen's Alliance representative Rob Sexton, "The environmentalists want to use the wilderness designation to prohibit active wildlife management on the Kofa refuge … it will set a precedent that will apply to other refuges that have been partially designated as Wilderness." The foundation is joined in the suit by the National Rifle Association, Safari Club International, Arizona Desert Bighorn Sheep Society, Arizona Deer Association, Arizona Antelope Foundation, Foundation for North American Wild Sheep, and the Yuma Valley Rod and Gun Club. According to the U.S. Sportsmen's Alliance Web site, its mission is to protect and advance American's heritage of hunting, fishing and trapping, including by protecting "against legal and legislative attacks by the animal rights movement." (Sources: www.wilderness watch.org, and www.ussportsmen.org)

## Backcountry Hunters and Anglers Champion Wilderness

Backcountry Hunters and Anglers (BHA) is a membership organization whose stated mission is to ensure America's outdoor heritage in a natural setting, through education and work on behalf of clean water and wilderness. According to their Web site (www.backcountryhunters.org), they are dedicated hunters and anglers who cherish the peace, solitude, and challenge of the backcountry experience. Unlike some hunter organizations, they feel that "adventure begins where the roads end," and through the advocacy of their membership they involve themselves in campaigns to establish wilderness areas, stop All Terrain Vehicle (ATV) abuse on public lands, and defend the role of predators in natural ecosystems, among other issues. BHA publishes the *Backcountry Journal* newsletter, and their Web site provides updates on wildlands legislation, a reading list, a photo gallery, a selection of stories submitted by members, and an extensive section of Web links.

## Legal Energy Corridors Would Dilute Wilderness Quality

The U.S. Department of Energy has proposed two National Interest Electric Transmission Corridors (NIETCs) under provisions of the Energy Policy Act of 2005. Section 1221 of the act gives the secretary of energy authority to identify public and private lands as potential energy corridors. The proposed Southwest NIETC encompasses southwestern Arizona, southern California, and southern Nevada. The Mid-Atlantic NIETC would include eastern Ohio and large swaths of Pennsylvania, New Jersey, New York, West Virginia, Maryland, Virginia, and Washington, D.C. Once the areas are identified, approval of high-voltage power lines can be issued by the Federal Energy Regulatory Commission (FERC), even overriding the concerns of state and local authorities. There are no exceptions for places already receiving protection, including designated wilderness, wildlife refuges, parks, and historical sites. In the Southwest alone, the proposed corridor would impact four U.S. Fish and Wildlife wilderness areas, three National Park Service wildernesses (including Joshua Tree and Death Valley National Parks), 27 Bureau of Land Management (BLM) wilderness areas, four BLM wilderness areas within National Monuments, and 51 BLM wilderness areas within National Conservation Areas. In addition, 127 proposed wilderness areas would be affected. Furthermore, Section 368 of the act requires the secretaries of several federal agencies, in consultation with FERC, to designate corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on federal lands. A programmatic environmental impact statement (PEIS) is currently being prepared covering 11 western states, designating the corridors, specifying the centerline, width, and compatible uses, and serving to amend the affected federal land use plans. The most recent documents propose a corridor width of 3,500 feet (1,065 m). (Sources: http://www.federalnewsradio.com/index.php?nid=80&sid=1189490, and http://www.wilderness.org/NewsRoom/Release/20070618.cfm)

## New DVD Champions Rangers Risking Lives for Conservation

The lives and stories of rangers on six continents and in 19 countries are the subject of the recently released DVD *The Thin Green Line*. Filmed over the course of 14 months by Australian park ranger Sean Willmore, and professionally mastered in English, Spanish, and French, 100% of profits from the sale of the documentary will help support the families of rangers killed in the line of duty. According to the DVD's producers, "It is a compelling story of men and women who every day cope with corruption, ignorance, politics and greed. Often undergunned, under-resourced and outnumbered, they daily risk their lives. Their passion, dedication and skills see them prevail … mostly." Giant

tortoises of the Galapagos Islands, threatened mountain gorillas of Uganda, reindeer of the Norwegian tundra, koalas of Australia, and elephants of South Africa serve as the backdrop for the human face of conservation. The DVD is available for purchase at the Thin Green Line Web site: http://www.thingreenline.info.

### Wildlands Conservation Painting Expedition

The Mexican environmentalist painter Beatriz Padilla is embarked on an innovative personal initiative for international wildlands conservation. The Wildlands Conservation Painting Expedition is a multi-year, multi-expedition initiative during which Ms Padilla visits and paints many wildland areas around the world—some hotspots are highly threatened, some protected, all of them with a message to relate.

The original paintings are being accumulated as the expedition continues. While prints will be sold to raise money for conservation projects and to help fund the expedition, the originals will form the basis of a worldwide tour of exhibitions. When the originals are auctioned by 2013, the majority of the proceeds will be used principally for the protection of Mexico's Water Forest (adjacent to Mexico City), and for other international projects. The WILD Foundation is an international project advisor and non-profit representative in the USA.

The WCPE is an applied conservation initiative, using the arts to raise funds, internationally communicate key wildlands and their messages, and assist local people. For example, during some painting expeditions, Beatriz leads art workshops with teenagers of native communities. With a focus on their natural and cultural heritage, these workshops culminate with at least one exhibit, preferably at a tourist destination. Strong emphasis is placed on the quality of the paintings and on marketing them, for teenagers can generate a source of livelihood directly from portraying the intrinsic value of their natural environment. The experience of how people from other countries love and even purchase their paintings, reveals to the teenagers, from a new perspective, the value of what is truly theirs and which they may otherwise take for granted.

As the expedition continues, *IJW* will provide occasional progress reports in the Digest. For more details, www.beatrizpadilla.com.

# Book Reviews

### *Parks and Carrying Capacity: Commons without Tragedy*

By Robert E. Manning. 2007. Washington, DC: Island Press. 313 pp. $35 (paper), $70 (hardcover). 1718 Connecticut Avenue NW, Suite 300, Washington, DC 20009-1148, USA.

Bob Manning has again proven his ability to collect a body of literature for a single focused objective. *Parks and Carrying Capacity: Commons without Tragedy* integrates and synthesizes recreation carrying capacity research into one volume. Manning works from the premise that "carrying capacity may largely be a social issue driven by the needs and wants of society" (p. 248), which reflect desired conditions that translate to management objectives in protected areas.

The book is an accumulation of Manning's impressive, career-long effort to prevent the tragedy of the commons from occurring in the U.S. national park system. It is an excellent representation of theory-based research driving on-the-ground management decisions. The text is information dense in order to address multiple target audiences (researchers, students, and managers). Although each audience may sometimes find themselves skipping sections, the content is readable and well presented, so that even nonrecreation management professionals can easily understand the concepts.

Providing this depth required sacrificing the breadth that might have included comparing and contrasting other approaches to capacity decisions. The potential reader should be aware that there are multiple theoretical and operational approaches to addressing recreation carrying capacity, and this text focuses on one approach. This book should not be taken as a cookbook approach to arriving at capacity decisions, but should be used within a context of

capacity decision making that goes beyond visitor perception of social capacity (e.g., ecological, physical, and facility capacity). In light of page limitations and Manning's purpose for this text, it was a good decision to focus on one thing and do it well.

The text is presented in five parts. The first, a historical and conceptual review of carrying capacity research, eloquently frames the national parks as commons susceptible to the tragedy of overuse. The second section describes various approaches used to analyze carrying capacity, focusing on social norms. The emphasis placed on using a visual preference approach leaves less room for elaboration on other methods. This section also includes an informative chapter describing computer simulation modeling of visitor use. The third section is devoted to a series of case studies describing analysis and management of carrying capacity in eight National Park Service units. A high point of this section is the application of computer modeling discussed in the previous section. Section four is a discussion of management practices that can be used to address capacity issues. Information in this section spans from elementary definitions of management practices to specific data-supported applications. One strength of this section is the discussion supporting information and education as a visitor management technique. The fifth section is an attempt to extend the norms-driven carrying capacity approach to a broader environmental context.

I will use significant portions of this text in upper-level undergraduate classes and graduate research seminars. Recreation professionals charged with providing public access to recreation areas should also be aware of the concepts in this book.

Reviewed by RUDY M. SCHUSTER, associate professor, Recreation Resource Management, SUNY College of Environmental Science and Forestry, Syracuse, New York. Email: rschuster@esf.edu; http://www.esf.edu/for/faculty/schuster.htm.

### *The End of the Wild*

By Stephen M. Meyer. 2006. MIT Press. 105 pp. $14.95 (cloth). The MIT Press, c/o Triliteral, 100 Maple Ridge Drive, Cumberland, RI 02864, USA.

---

This book may be short, but it packs quite a punch. Meyer starts off with a bang: the extinction crisis, he believes, has already been lost. He also suggests that "the great irony here is that this anthropogenic transformation of the biosphere springs as much from our deliberate efforts to protect and manage the life around us as from our wanton disregard for the natural environment" (p. 9). Conservation efforts are described as "far too little, far too late (p. 42) and "too small and too isolated" (p. 49), as they do not alter the ultimate outcome from human destruction of the biosphere: "massive species loss with the attendant disappearance of the wild" (p. 42). Moreover, the few conservation successes are themselves evidence of the growing dominance of human selection in evolutionary processes: we choose which species and habitats will survive based on aesthetic, economic, and political rationales, transforming wilderness into a product of the human imagination—"like a Disney cartoon" (p. 47).

Meyer categorizes species as either "weedy" (those that will thrive in disturbed, human-dominated habitats) or "relic" (those unable to do so). Meyer believes that 50% of all species are destined to become extinct relics over the next hundred years, and as result of the proliferation of weedy species, "the web of life will become the strand of life" (p. 17). Although protected areas cannot ultimately save the wild, Meyer agrees that this "benign neglect approach" (p. 65) still serves an important function, as without it, extinctions and habitat loss would increase even further, and our quality of life would decrease through the loss of beloved species.

What, then, does Meyer suggest we do? First, he notes humanity must come to terms with the fact that "the end of the wild is about how we have chosen to live and how those choices relate to the world around us" (p. 74). That is, individual choices have led to the extinction crisis, and we must all take responsibility for the damage we have individually and collectively caused. To shift from human back to natural selection, an ethical transformation must occur, one which creates an "ecological identity" for our society. Meyer also suggests that we need to comprehensively map species and their interactions, focus on protecting ecological integrity and ecological processes rather than species and habitats, and acknowledge the need to even more intensively manage species and ecosystems (especially alien species).

This is an extremely passionate, articulate book, filled with the disconcerting message that we have already created a future world in which weedy species will dominate and wilderness will be destroyed. The strength and clarity of Meyer's grim message is extremely impressive; he forces the reader to come to grips with our future losses, yet also provides a glimmer of hope that we can make the tough decisions necessary to deal with the future ecological order.

Reviewed by JOHN SHULTIS, *IJW* book editor. Email: shultis@unbc.ca